2011

Creating a Healthier Community

City of Nashua
Community Health Assessment

CITY OF NASHUA

COMMUNITY HEALTH ASSESSMENT

SEPTEMBER 9, 2011

CITY OF NASHUA, NEW HAMPSHIRE

DIVISION OF PUBLIC HEALTH
AND COMMUNITY SERVICES

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Letter from the Director

Dear Colleagues,

I am happy to share with you the first Community Health Assessment in over a decade to look at the health status of residents in Nashua and the Greater Nashua Region. This report covers many aspects of health and highlights the most pressing health needs – obesity, access to healthcare and mental health. As the Director of Public Health for Nashua, this year has been a very exciting time for me as I have watched how this process has unfolded. I hope you find the information contained in this report useful and that it helps your agency to promote health in our community.

As with any project of this size, there were many individuals and agencies that participated in the different phases of the assessment. From the 207 Nashua residents who opened their doors and shared their health and life information with us; the Mayor of Nashua, Donnalee Lozeau, who approved the project and convened key community leaders for a focus group; the 60 volunteers who walked miles and miles of Nashua neighborhoods to conduct the surveys; the 16 key community leaders and 18 medical providers who participated in our focus groups; the 17 Nashua high school photography students and their two instructors; and last but certainly not least, the staff from the NH Departments of Health and Human Services and Environmental Services – we owe you all a debt of gratitude.

I want to thank the agencies that helped fund the Community Health Assessment. Without their support, this project would not have been possible. Thank you to the City of Nashua Board of Health, New Hampshire Department of Health and Human Services, Southern New Hampshire Medical Center and St. Joseph Hospital.

Over the course of the past 14 months, many of you have spent time working with my staff. I am very proud of the work they have done and what has been accomplished so far. I know there have been many meetings and hours of planning and I just want you to know how grateful my staff and I are for your continuing support and involvement. We are looking forward to continuing these partnerships as we move towards the next steps in creating a safer and healthier Nashua together.

Sincerely,

Kerran Vigroux, BS, MPH
Director
Division of Public Health and Community Services

Acknowledgements

Acknowledgements

Photos on the cover were taken by the Nashua High School North (Eddie Sullivan) and Nashua High School South (Alexis Abbot and Mary Barnovsky) photography students and the City of Nashua, Division of Public Health and Community Services.

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Data Sources

2-1-1 New Hampshire
2010 Nashua Community Health Survey
Greater Nashua Council on Alcoholism, Inc. Keystone Hall
Greater Nashua Dental Connection
Greater Nashua Mental Health Center at Community Council
Harbor Care Clinic, a program of Harbor Homes, Inc
Lamprey Healthcare – Nashua Center
Nashua Fire Department
Nashua Police Department
Nashua School District
NH Behavioral Health Risk Factor Surveillance Survey
NH Cancer Registry
NH Department of Education
NH Department of Health and Human Services
NH Electronic Disease Surveillance System
NH Environmental Public Health Tracking Program
NH Office of Energy and Planning
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Nashua School District Photography Project

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Photography I and Photography II High School Students

Executive Summary

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.

The 2011 City of Nashua Community Health Assessment includes data on the City of Nashua, the Greater Nashua Public Health Region and the State of New Hampshire. The overarching goal for the CHA is to engage community members, identify emerging issues and set the foundation for future programming in the Greater Nashua Public Health Region. 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.

Health Priorities and Health Resources

Overall, Nashua is a healthy community in comparison to many communities throughout the country. During the CHA process, Nashua residents and key leaders were asked to rank the health of the community. About 49% of Nashua residents said the community was healthy or very healthy, 40% said somewhat healthy, and 4% said unhealthy. When the same question was asked in a survey of key leaders, 73% said healthy or very healthy, 18% said somewhat healthy and 9% said very unhealthy. In addition, Nashua has met some of the Healthy People 2020 objectives in the percent of women receiving early and adequate prenatal care, the percent of women receiving prenatal care in the first trimester, the percent of newborns with a very low birth weight, the percent of adults with their cholesterol checked and the percent of adults that are neither overweight or obese. However, through the CHA process, the top three health issues identified were obesity, access to healthcare and mental health.

Obesity

Nutrition, weight management and physical fitness are important components of maintaining a healthy lifestyle. During a door-to-door survey of Nashua residents, weight management, fitness and nutrition, was identified as a health issue. There was an emphasis on access to healthy foods and better nutrition for children. Also, obesity was identified as the top health issue in Nashua during focus groups with medical providers and key leaders. Focus group participants stated that by decreasing obesity, we also decrease complications from obesity such as diabetes, high cholesterol and heart disease. The focus groups stated the resources to address obesity are available in the community but are "fragmented". One key leader stated, "We're not using them the right way" and "…greater coordination…will allow resources to go further". Although Nashua has met the Healthy People 2020 objective for obesity, about 33% of Nashua adults are overweight and 26% are obese. Obesity data for children in Nashua is lacking but approximately 16% of children in Hillsborough County are obese and 14% are overweight.

Access to Healthcare

Access is a broad term referring to the ability of individuals or groups to obtain needed medical services. A survey of medical providers showed a need for better care coordination

and collaboration between various sections of healthcare. Key leaders also commented that more needs to be done to assist individuals with low income or no health insurance in accessing care and preventative services. Furthermore, access to healthcare and insurance was the number one health issue identified by residents. Located in the City are several agencies that serve low-income individuals, Lamprey Health Care – Nashua Center, which provides primary care regardless of ability to pay, the Harbor Care Clinic (a program of Harbor Homes, Inc.), dedicated to serving the homeless, and a dental clinic, the Greater Nashua Dental Connection. It is still uncertain what the economic situation in the United States and New Hampshire will have on the established healthcare system in the Greater Nashua Region. About 90% of Nashua residents saw a doctor for a check-up within the past two years and 5% had difficulty accessing care due to lack of insurance and the cost of care. For oral health, 77% have been to a dentist for a routine cleaning within the past 2 years and 12% had difficulty accessing dental care due to lack of insurance, the cost of care or dental practices not accepting insurance.

Mental Health

Key leaders cited access to mental health services as a health issue and medical providers said there needs to be better access to mental health providers and an increase in mental health services, especially for low income residents. In 2010, the Greater Nashua Mental Health Center at Community Council had 3,468 unique clients and 102,307 visits. From 2005 to 2010, the number of clients seen increased by 48% and the number of clients without insurance increased by 175%. On average, Nashua residents experience 3.6 mentally unhealthy days every month, 15% have anxiety, and 18% have a depressive disorder.

Health Priorities Identified by Nashua Residents, Medical Providers and Key Leaders

	Residents	Medical Providers	Key Leaders
Method	**Door-to-Door Survey**	**Focus Group/ Survey**	**Focus Group**
Question	**What one health issue would you fix to make Nashua a healthier place to live?**	**In your Nashua clinical practice, what are the three most important health issues you encounter?**	**What do you think are the three most important health issues in the Nashua community?**
Top Issue	**Healthcare (Access, Insurance)**	**Obesity**	**Unhealthy Behaviors: Obesity**
Second Issue	**Environmental Health**	**Mental Health**	**Access to Health Resources**
Third Issue	**Physical Exercise, Nutrition, Obesity**	**Substance Abuse**	**Mental Health**

Moving Forward

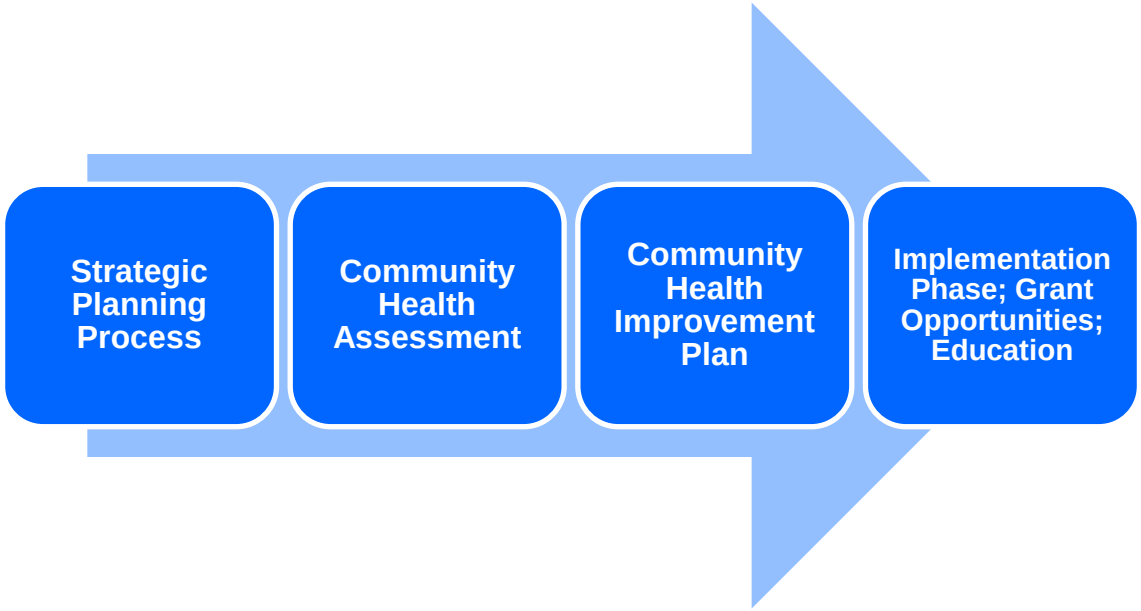
Following the CHA, the work towards bettering the health of the community will continue with the development of a Community Health Improvement Plan. The improvement plan is a long-term effort to address health problems that were identified in the CHA. Stakeholders will collaborate to develop a plan that will be used by organizations in the community to enhance or develop health programs and coordinate resources to address the identified health priorities. If your organization would like to participate in the improvement plan, contact the Epidemiologist at the DPHCS by calling 603-589-4560.

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

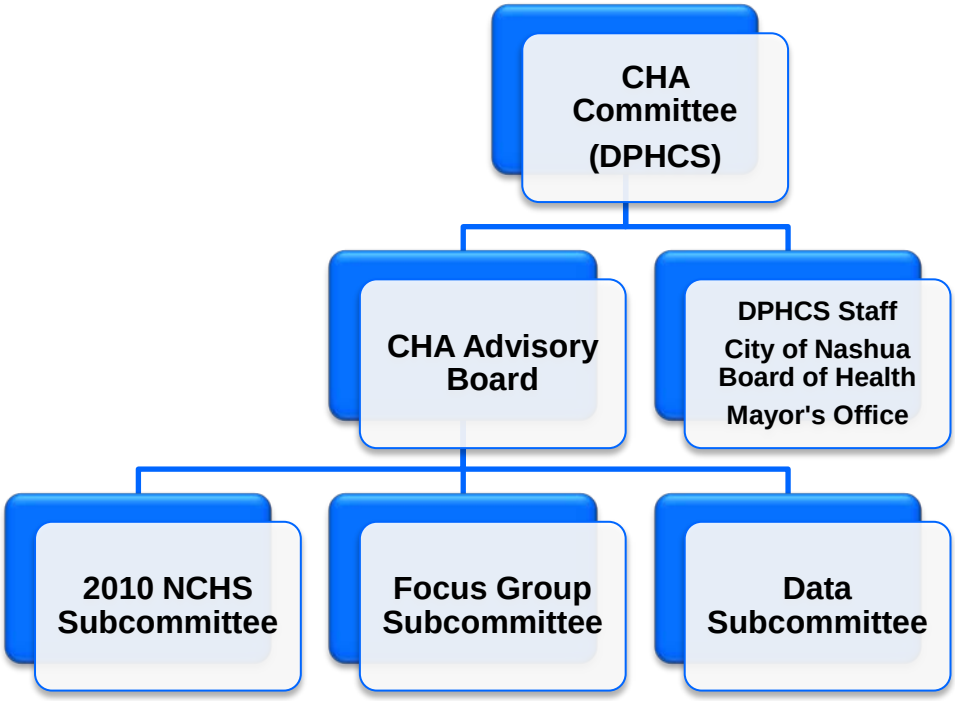


The steps for conducting a CHA are detailed below and followed a fourteen month timeframe from June 2010 to August 2011.

Figure I.2 Steps for Conducting a CHA

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



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

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.

Chapter 1:

Demographics

Source: City of Nashua, Division of Public Health and Community Services

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 US 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. There are 34,801 households in Nashua with an average household size of 2.45 people and 21,537 families with an average household size of 3.05 people. According to the 2010 US Census, the Greater Nashua Public Health Region has a population of 205,765 and covers twelve towns that surround Nashua including Amherst, Brookline, Hollis, Hudson, Litchfield, Lyndeborough, Mason, Merrimack, Milford, Mont Vernon, Nashua, Pelham and Wilton (Table 1.1).[1]

Ten-year population trends charted by the NH Office of Energy and Planning from 1960 to 2010 show significant growth from 1960 to 1970 and again during each of the ten-year periods ending in 1980, 1990, and 2000. The population of Nashua has remained relatively stable since 2000 with a -0.1% decrease in the population from 2000 to 2010. Between 1960 and 2010, the population of Nashua increased 121%. In the Greater Nashua Region, eleven towns saw an increase in population between the 2000 and 2010 US Census. The highest increase was a 20% population increase in Mason followed by Brookline with an increase of 19% (Table 1.1).[1,2,3]

Table 1.1 Population Trends, 1960-2010

Town	1960	1970	1980	1990	2000	2010	Change # (2000-2010)	Change % (2000-2010)
Amherst	2,051	4,605	8,243	9,068	10,769	11,201	432	4.0%
Brookline	795	1,167	1,766	2,410	4,181	4,991	810	19.4%
Hollis	1,720	2,616	4,679	5,705	7,015	7,684	669	9.5%
Hudson	5,876	10,638	14,022	19,530	22,928	24,467	1,539	6.7%
Litchfield	721	1,420	4,150	5,516	7,360	8,271	911	12.4%
Lyndeborough	594	789	1,070	1,294	1,585	1,683	98	6.2%
Mason	349	518	792	1,212	1,147	1,382	235	20.5%
Merrimack	2,989	8,595	15,406	22,156	25,119	25,494	375	1.5%
Milford	4,863	6,622	8,685	11,795	13,535	15,115	1,580	11.7%
Mont Vernon	585	906	1,444	1,812	2,034	2,409	375	18.4%
Nashua	39,096	55,820	67,865	79,662	86,605	86,494	-111	-0.1%
Pelham	2,605	5,408	8,090	9,408	10,914	12,897	1,983	18.2%
Wilton	2,025	2,276	2,669	3,122	3,743	3,677	-66	-1.8%

Source: NH Office of Energy and Planning

In New Hampshire, approximately 50.7% of the total population is under 40 years of age. Similarly in Nashua, approximately 53.5% of the population is under 40 years of age. Twenty-five percent of the Nashua population is under the age of 20 years, 18.4% between the ages of 5 and 19 years, and 6.6% under the age of 5 years. According to the 2005-2009 American Community Survey, the largest segment of the population is persons 40 to 59 years of age which makes up 28.5% of the total population. Of the remainder, 11.2% are aged 60 to 74 years and 6.2% are aged 75 and older. Broken down by gender, the population of Nashua is approximately 49.1% male and 50.9% female. There was a minimal gender gap between the percentages of males versus females until 60 years of age, when women begin to outnumber men (Table 1.2).[5]

Table 1.2 City of Nashua Population Estimates by Gender, 2005-2009

New Hampshire			
Age	**Total 1,315,419**	**Male 648,885**	**Female 666,534**
Under 5	5.8%	5.9%	5.6%
5 to 19 years	20%	20.8%	19.2%
20 to 39 years	24.9%	25.3%	24.4%
40 to 59 years	31.3%	31.6%	30.9%
60 to 74 years	12%	11.7%	12.3%
75 years & over	6.2%	4.7%	7.5%
Nashua			
Age	**Total 87,032**	**Male 42,735**	**Female 44,297**
Under 5	6.6%	6.6%	6.6%
5 to 19 years	18.4%	18.5%	18.4%
20 to 39 years	28.5%	29.6%	27.4%
40 to 59 years	29%	30.1%	28%
60 to 74 years	11.2%	10.3%	12.1%
75 years & over	6.2%	4.8%	7.5%
Source: US Census Bureau. 2005-2009 American Community Survey			

Race & Ethnicity

In terms of race and ethnicity, the 2005-2009 American Community Survey revealed that Nashua is more racially diverse than the rest of the state, with 85.7 % of the population identifying as white, versus 94.8% of the state's overall population identifying as white. The next largest group identifies as Asian, which makes up 6.9% of the city's population, but only 1.9% of the overall state population. Nashua is also more ethnically diverse than the state overall, with 7.8% of Nashua residents identifying as Hispanic or Latino compared with 2.6% of New Hampshire residents overall identifying as such (Table 1.5).[5]

85.7% of Nashua's population is white and 7.8% is Hispanic, compared to 94.8% of the State's population that identifies as white and 2.6% that identifies as Hispanic.

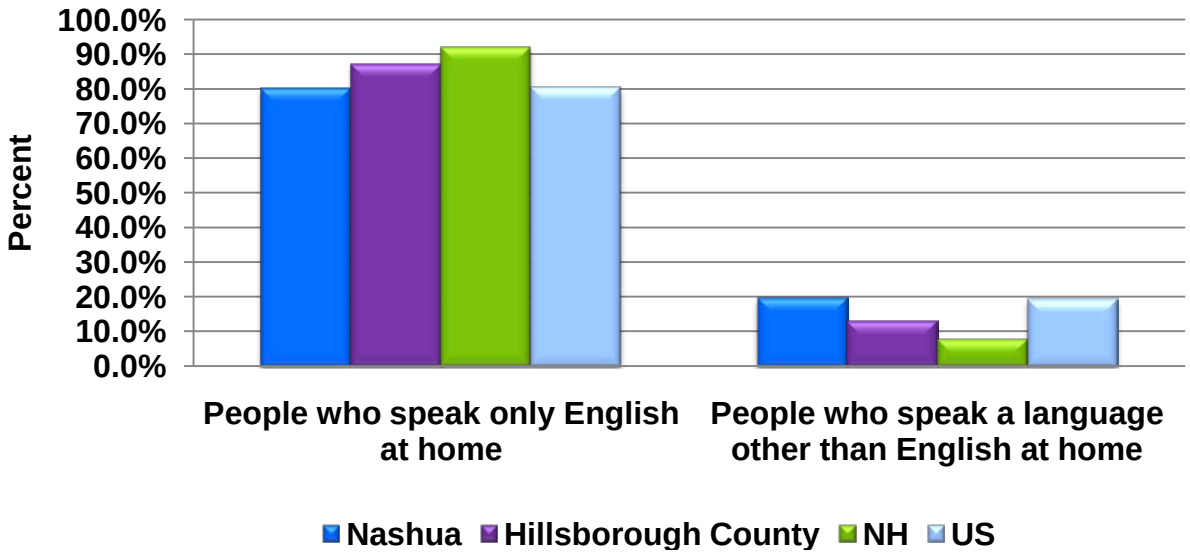
Table 1.3 Race and Ethnicity, 2005-2009

	Nashua (%)	Hills. Co (%)	NH (%)	US (%)
White	85.7%	91.8%	94.8%	74.5%
Black or African American	2.3%	2%	1.1%	12.4%
American Indian and Alaska Native	0.4%	22.4%	0.24%	0.8%
Asian	6.9%	3%	1.9%	4.4%
Native Hawaiian and Other Pacific Islander	0.1%	0.04%	0.02%	0.1%
Some other race	2.9%	1.5%	0.7%	5.6%
Two or more race	1.7%	1.4%	1.2%	2.2%
Not Hispanic or Latino	92.2%	95.1%	97.4%	84.9%
Hispanic or Latino	7.8%	4.9%	2.6%	15.1%
Source: US Census Bureau 2005-2009 American Community Survey				

Language Spoken at Home

Similarly, this diversity is reflected in the percentage of Nashua residents who speak a language other than English at home. The 2005-2009 American Community Survey reveals that 80% of Nashua residents speak only English at home, compared with 92% of New Hampshire residents. Twenty percent (20%) of Nashua residents report speaking a language other than English at home, compared to 8% of New Hampshire residents (Figure 1.1).[5] In the Nashua School District there are over 49 languages spoken at home. English is spoken in 85% of the student's homes followed by Spanish in 9.5% of homes.[6]

Figure 1.1 Language Spoken at Home



Source: US Census Bureau, 2005-2009 American Community Survey

Income & Poverty

A segment of the Nashua population has achieved a certain level of affluence according to the 2005-2009 American Community Survey. The estimated median household income was $64,219, which is only slightly more than the statewide median household income of $63,033. This represents a 24% increase over Nashua's median household income of $51,969 in 2000.[5]

At the lower end of the income scale, however, the city is experiencing increasing rates of poverty. The poverty thresholds for 2009 are listed in Table 1.4.[7] The 2005-2009 American Community Survey reveals that 5.2% of all families are living in poverty. Of all married couple families, 0.9% are below the poverty level and of all female householder families with no husband present, 26.8% are below the poverty level. When further broken down, 40% of female householder families with related children under 18 years of age are below the poverty level (Table 1.5).[5]

Table 1.4 Poverty Thresholds for 2009 by Size of Family and Number of Related Children Under 18 Years

Size of Family Unit	Weighted Average Threshold	Related Children Under 18 Years								
		None	One	Two	Three	Four	Five	Six	Seven	≥Eight
One person	10,956									
Under 65 years	11,161	11,161								
65 years and over	10,289	10,289								
Two people	13,991									
Householder under 65 years	14,439	14,366	14,787							
Householder 65 years and over	12,982	12,968	14,731							
Three people	17,098	16,781	17,268	17,285						
Four people	21,954	22,128	22,490	21,756	21,832					
Five people	25,991	26,686	27,074	26,245	25,603	25,211				
Six people	29,405	30,693	30,815	30,180	29,571	28,666	28,130			
Seven people	33,372	35,316	35,537	34,777	34,247	33,260	32,108	30,845		
Eight people	37,252	39,498	39,498	39,130	38,501	37,610	36,478	35,300	35,000	
Nine people or more	44,366	47,514	47,514	47,109	46,576	45,701	44,497	43,408	43,138	41,476

Note: The poverty thresholds are updated each year using the change in the average annual Consumer Price Index for All Urban Consumers (CPI-U). Since the average annual CPI-U for 2009 was lower than the average annual CPI-U for 2008, poverty thresholds for 2009 are slightly lower than the corresponding thresholds for 2008.
Source: US Census Bureau, www.census.gov/hhes/www/poverty/data/threshld/thresh09.xls

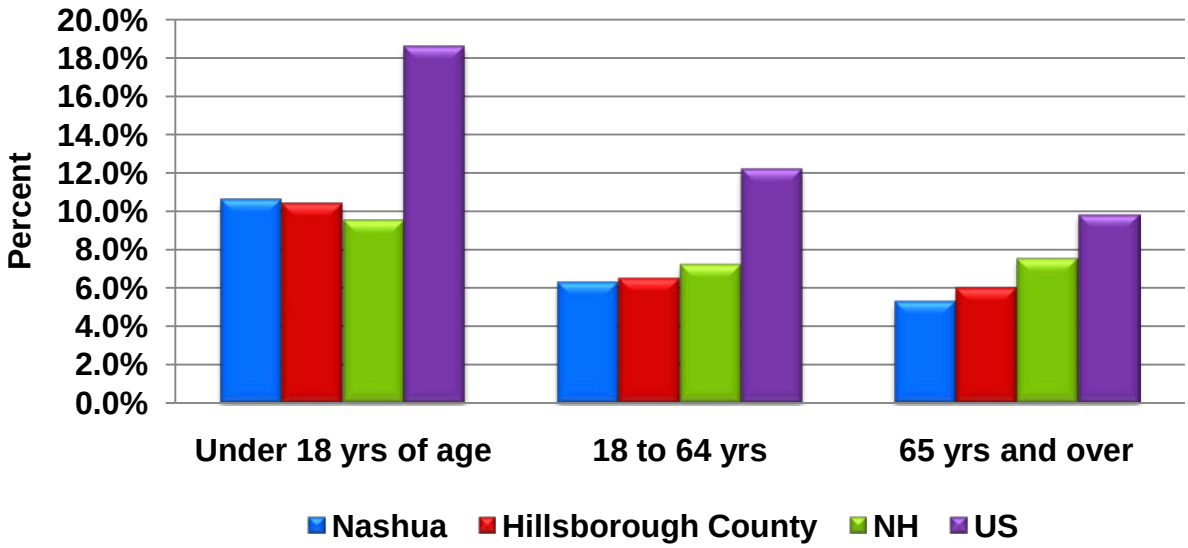
To access demographic information, visit the US Census Bureau website at www.census.gov.

Table 1.5 Nashua Families Living Below the Poverty Level

	All families	Married-couple families	Female Householder
Families	5.2%	0.9%	26.8%
Families with Related Children Under 18 Years	9.2%	0.6%	40.3%
Source: US Census Bureau, 2005-2009 American Community Survey			

Nashua residents who were living in poverty between 2005 and 2009 could be found in every age group; however, the age group that had the greatest number was those under 18 years of age, at approximately 11%. At the state level, only 9% of those under 18 years of age were living in poverty. Slightly more than 6.2% of Nashua residents aged 18 to 64 years were living in poverty, compared to approximately 7% of those aged 18 to 64 years statewide and approximately 5% of Nashua residents ages 65 years and over were living in poverty, compared to the statewide rate of 7.5% (Figure 1.2).[5]

Figure 1.2 Percent below Poverty Level by Age, 2005-2009



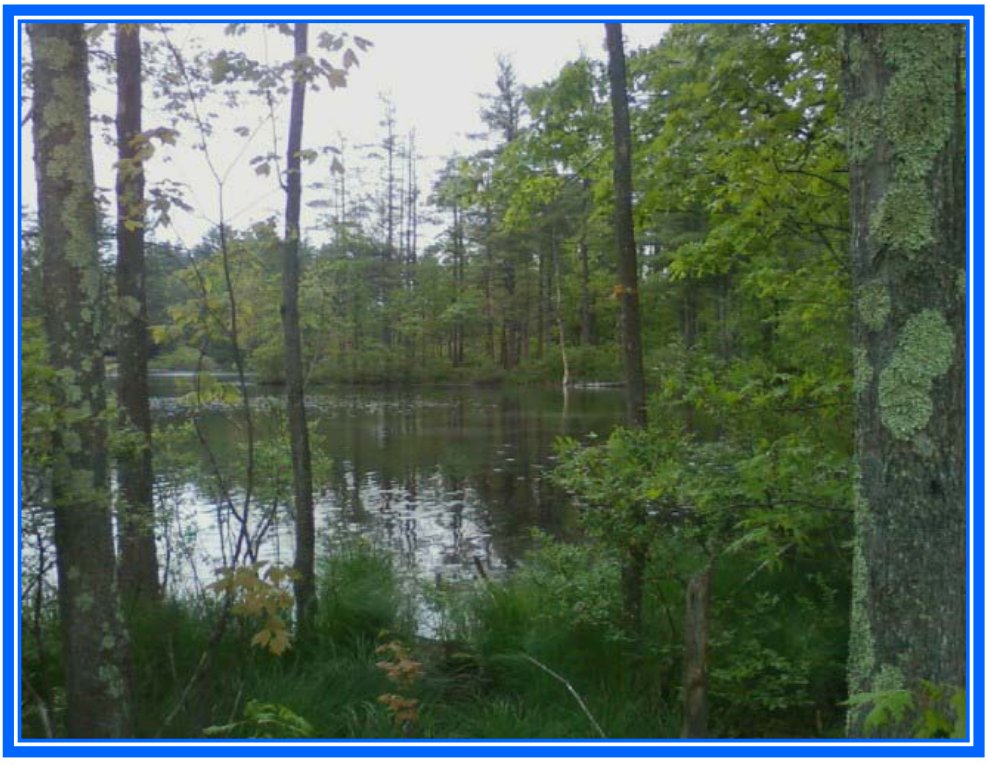
Source: US Census Bureau, 2005-2009 American Community Survey

If broken out by race and ethnicity, data on poverty levels in Nashua shows that poverty affects those identifying as "American Indian and Alaska Native" at a rate that is almost double the rate of poverty among those identifying as "White". The rate of poverty among those identifying as "Blacks or African American" is slightly more than double the rate for whites, while those identifying as "some other race" experienced poverty at a rate nearly three times that of whites. In terms of ethnicity, those identifying as "Hispanic or Latino" experienced poverty at a rate that is more than four times that of those identifying as "White alone, not Hispanic or Latino" (Table 1.6).[5]

Table 1.6 City of Nashua, Poverty Status in the past 12 Months by Race and Hispanic Origin

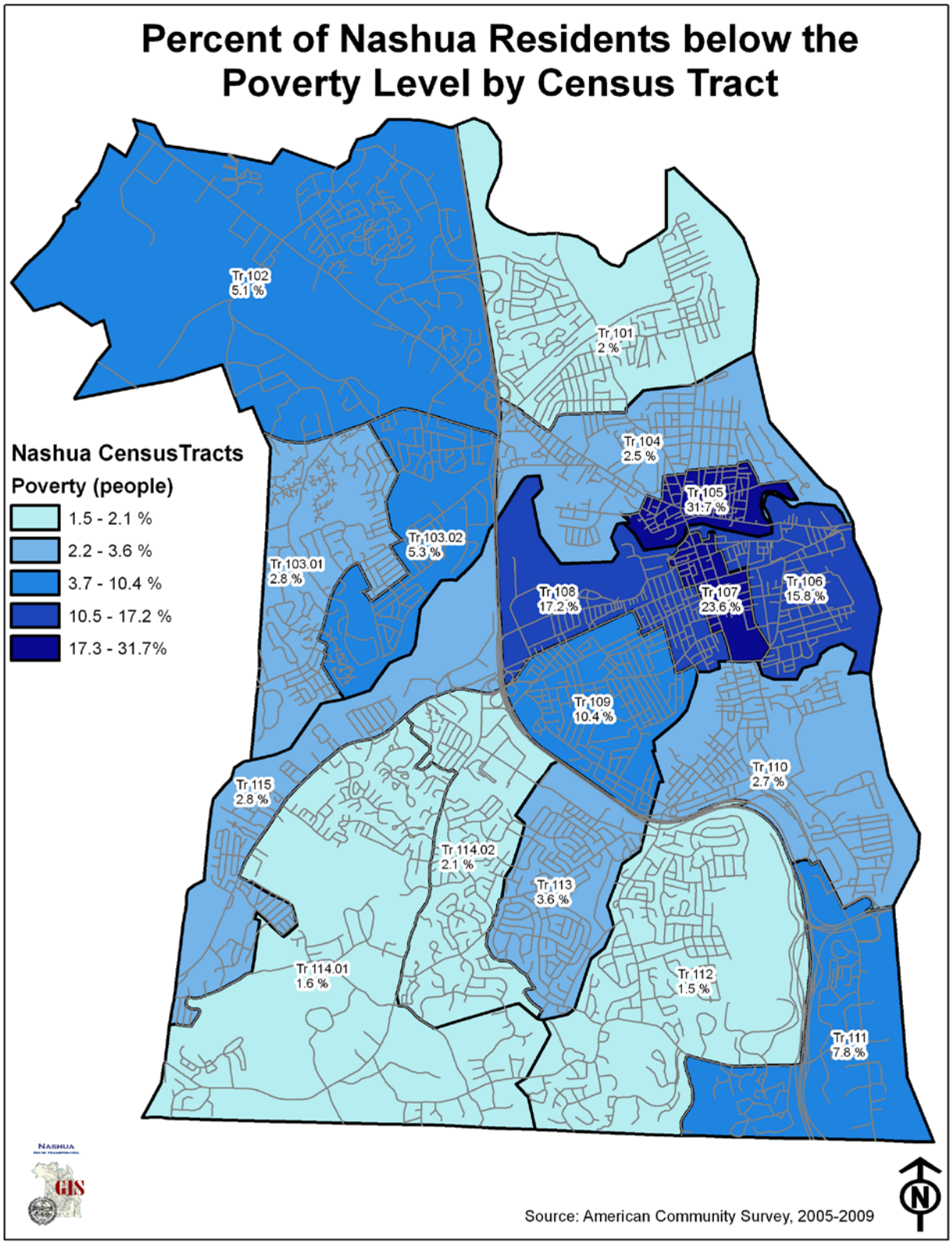
	Total	% Below Poverty Level
One race	83,336	7.0%
White	72,485	6.8%
Black or African American	1,884	15.4%
American Indian and Alaska Native	349	13.2%
Asian	6,004	1.5%
Native Hawaiian and Pacific Islander	53	0.0%
Some other race	2,561	20.3%
Two or more races	1,440	13.6%
Hispanic or Latino Origin		
Hispanic or Latino origin	6,706	24.2%
White alone, not Hispanic or Latino	68,609	5.8%
Source: US Census Bureau, 2005-2009 American Community Survey		

The census tracts in Nashua with the highest percentage of people living in poverty are Census Tracts 105 and 107, followed by Census Tracts 108 and 106 where the percent of people living in poverty ranges from 10.5% to 31.7% (Map 1.1).[5]



Source: City of Nashua, Division of Public Health and Community Services

Map 1.1 Poverty by Nashua Census Tracts



Source: US Census Bureau, 2005-2009 American Community Survey

Employment

Employment statistics compiled for the 2005-2009American Community Survey, show that of the 69,642 residents of Nashua aged sixteen or older, 72.6% were in the work force and 68.3% were employed. The unemployment rate among this population was at 5.8%, slightly higher than the unemployment rate among these populations statewide. Employment statistics compiled for New Hampshire residents aged sixteen or older showed that 70% were in the labor force, 66.2% were employed, and the unemployment rate was 5.3%. While those figures have risen due to the ongoing recession, both New Hampshire and the City of Nashua have rates of unemployment that are lower than the national average (Table 1.7).[5]

Table 1.7 Employment Status, 2005-2009
(Population 16 Years and Over)

	Total	In Labor Force	Employed	Unemployment Rate
Nashua	69,642	72.6%	68.3%	5.8%
Hillsborough County	316,189	72.5%	68.5%	5.3%
NH	1,055,833	70%	66.2%	5.3%
US	235,871,704	65%	66.2%	5.3%
Source: US Census Bureau, 2005-2009 American Community Survey				

Crime in Nashua

In terms of crime, the statistics reported by the Nashua Police Department in the 2009 Annual Report show that there were 4,157 arrests in the city in 2009, which is lower than the total number of arrests in 2006 and 2008, but an increase over the numbers reported in 2005 and 2007 (Table 1.8). There were 1,073 assaults in the city during 2009, a 3% decrease between 2008 and 2009. There were 74 forcible sexual offenses and 18 non-forcible sex offenses in Nashua in 2009, which also represents a 12% and 38% decrease in the numbers from 2008 to 2009. The city saw a single homicide in 2009, resulting in a murder rate equal to or less than the rate reported in any year dating back to 2005. There were a total of 1,220 arrests for driving while intoxicated (DWI) and 1,563 drug-related arrests from 2005-2009 in Nashua. DWI arrests stayed the same between 2008 and 2009, but drug-related arrests increased by 9% during this same time period. In addition, the 21 weapons law violations reported in 2009 were the most reported in any year prior to 2005, and represents a 163% increase between 2008 and 2009.[8]

In terms of juvenile crime, the 448 reported arrests of individuals under the age of 17 years in 2009 represents the lowest number of juvenile arrests in any year prior to 2005. There was a 13% decrease in juvenile arrests between 2008 and 2009 (Table 1.7).[8]

Table 1.8 Arrests for Nashua, 2005-2009

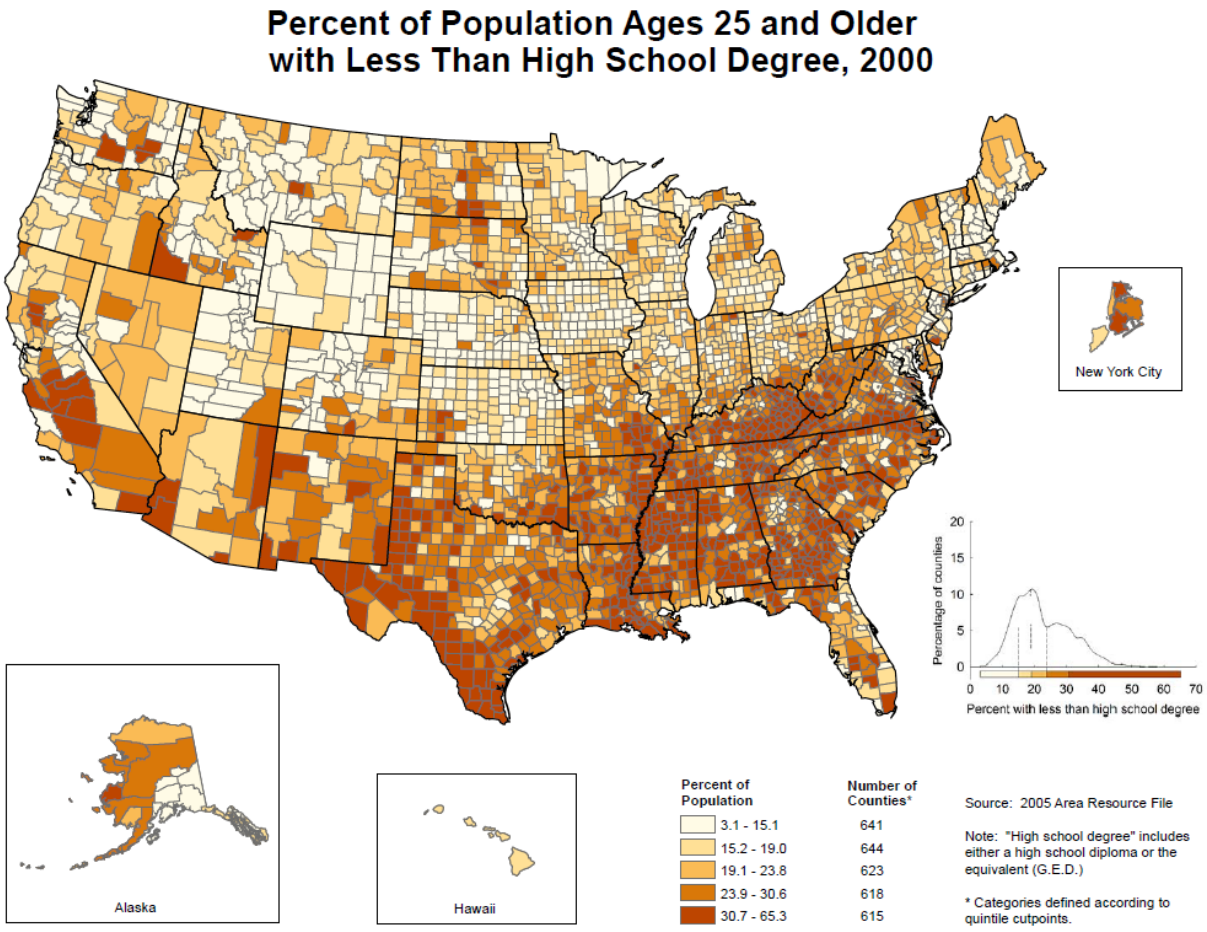
	2005	2006	2007	2008	2009	% Change 2008-2009
Total Arrests	4,117	4,519	4,111	4,411	4,157	-6%
Juvenile Arrests	641	716	488	517	448	-13%
Source: Nashua Police Department, Annual Report 2009						

The Annual Report of the Nashua Police Department also includes statistics on traffic accidents within the city which shows an overall decline over the past four years. In 2009, there were a total of 3,495 traffic accidents, 1,785 of which required a state report due to bodily injury and/or damage in excess of $1,000. These numbers represent the lowest numbers since before 2005 for both traffic accidents overall as well as those requiring a state report.[8]

Education

Compared to the rest of the country, New Hampshire is highly educated with 21 to 64% of residents having a college degree or higher in all but two counties (Figure 1.3).[12] Nashua compares evenly with the state at the high school level, with over 90% of both Nashua and New Hampshire residents graduating with a high school diploma or higher. At the college level, however, there is a slightly higher percentage of Nashua residents achieving a Bachelor's degree or higher compared with New Hampshire residents (Table 1.9).[5]

Figure 1.3 Populations with Less Than a High School Degree, 2000



Source: Centers for Disease Control and Prevention

Table 1.9 Educational Attainments, 2005-2009

	Nashua Total	Nashua Males	Nashua Females	NH Total	US Total
Population 25 years and over	59,875	29,316	30,559	889,457	197,440,772
Less than 9th grade	3.6%	3.1%	4.0%	3.0%	6.4%
9th to 12th grade, no diploma	5.7%	5.2%	6.2%	6.5%	9.1%
High school graduate (includes equivalency)	27.3%	26.3%	28.3%	30.2%	29.3%
Some college, no degree	18.3%	17.7%	19.0%	18.7%	20.3%
Associate's degree	8.8%	7.7%	9.8%	9.2%	7.4%
Bachelor's degree	23.7%	26.0%	21.6%	20.9%	17.4%
Graduate or professional degree	12.6%	14.0%	11.3%	11.6%	10.1%

Source: US Census Bureau, 2005-2009 American Community Survey

Nashua School District

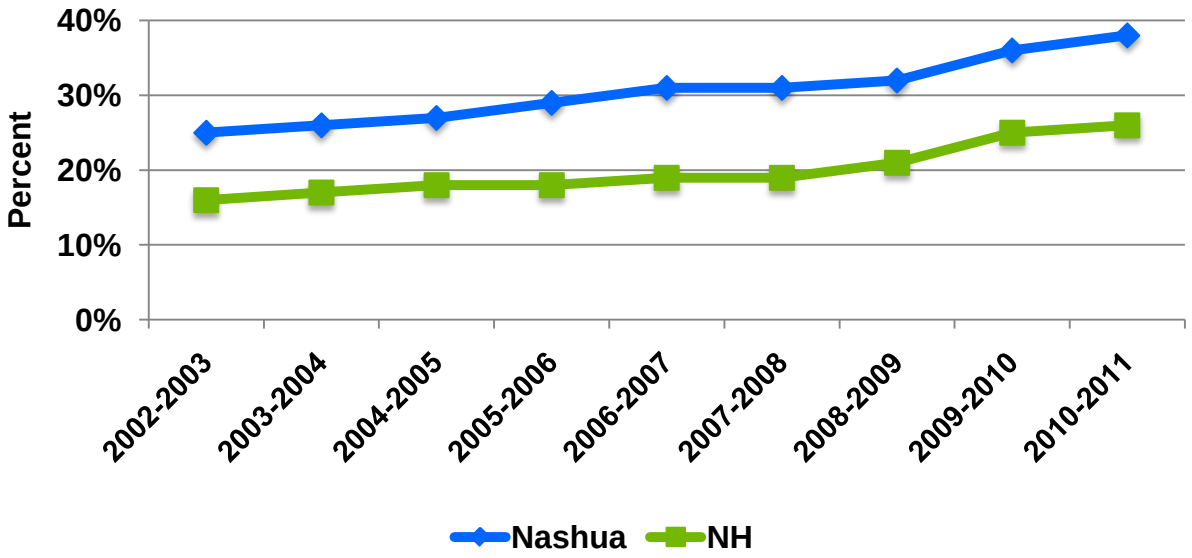
Each year the City of Nashua averages 12,000 students in its kindergarten to grade 12 school system. Each grade level sustains between 750-970 students annually. The Nashua School District maintains 12 elementary schools, 3 middle schools, and 2 high schools and remains one of the largest school systems in New Hampshire. Indicators that relate to the health and well-being of Nashua's children include: students eligible for the free and reduced lunch program; students eligible for English as a Second Language (ESL)/Limited English Proficiency (LEP) programming; school drop-out rates; race/ethnic enrollment numbers; home-schooled children; school attendance rates; and high school graduation rates.[9]

From 2002-2011, the Nashua School District reported that at any one time, 25% to 38% of its students were enrolled in the USDA Free/Reduced Lunch Program. At the same time, New Hampshire reported 16% to 26% of its students participated in the program. During this time period, Nashua's USDA enrollment numbers increased by 13%, while NH's enrollment increased by 10% (Figure 1.4). In Nashua, a 1%-2% increase in participation rates are experienced annually. [9]

"From 2002-2011, the Nashua School District reported that at any one time, 25% to 38% of its students were enrolled in the USDA Free/Reduced Lunch Program."

- NH Department of Education

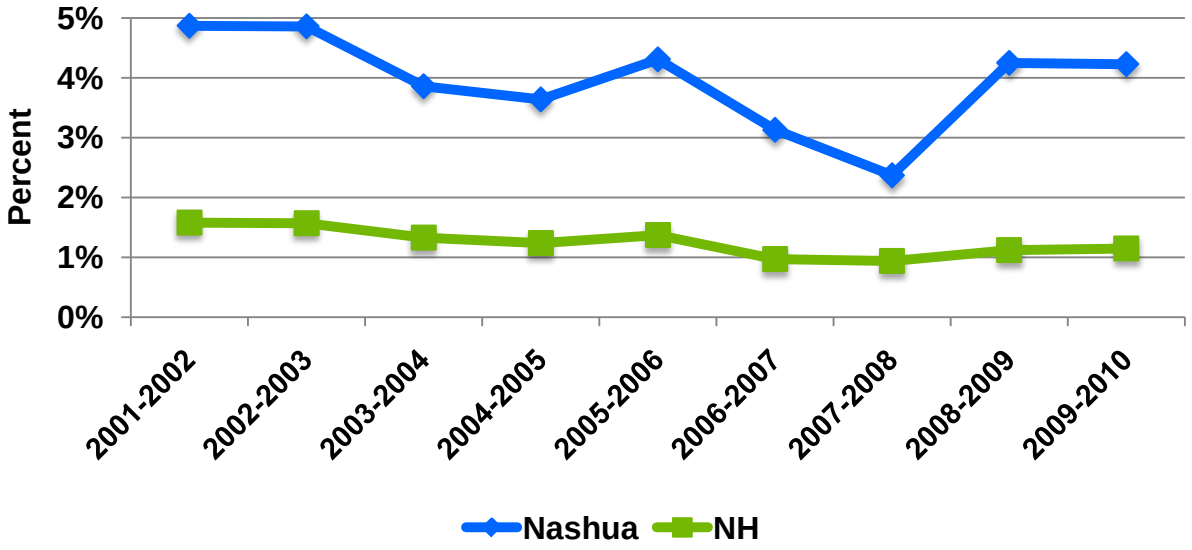
Figure 1.4 Percent of Students Eligible for Free/reduced Lunch, 2002-2011



Source: NH Department of Education

The percentage of children who are in need of ESL/LEP services in the Nashua School District has ranged from a low of 3% to a high of 4% of the total student body in any one year from 2001-2010. Nashua's lowest enrollment of ESL/LEP students was 2% in the 2007-2008 school year and the highest enrollment year was 4.8% in 2001-2002. The state of New Hampshire's total ESL/LEP program enrollment over the same period of time has ranged from its lowest at 0.94% in 2007-2008 to its highest at 1.5% in 2001-2002 (Figure 1.5).[9]

Figure 1.5 Percent Enrollment of Limited English Proficiency, 2001-2010



Source: NH Department of Education

Both Nashua and the State of New Hampshire track race/ethnic school enrollment data. In 2009-2010, the Nashua School District reported 72.7% of its total population as White, Non-Hispanic and 15.7% as Hispanic. This is a change from 2001-2002 when the White, Non-Hispanic student population was approximately 82% and the Hispanic population was 11%. In comparison, New Hampshire reported 90.8% of its total student population was White, Non-Hispanic and 3.5% as Hispanic in 2009-2010 (Table 1.10).[9]

Table 1.10 Race/Ethnic Enrollment in Public Schools

Race/Ethnicity	Nashua 2001-2002	NH 2001-2002	Nashua 2009-2010	NH 2009-2010
American Indian or Alaskan Native	44 (0.3%)	505 (0.2%)	39 (0.3%)	676 (0.3%)
Asian or Pacific Islander	525 (3.9%)	3,016 (1.5%)	868 (7.0%)	5,022 (2.5%)
Hispanic	1,448 (10.8%)	4,255 (2.1%)	1,950 (15.7%)	6,936 (3.5%)
Black, Non-Hispanic	378 (2.8%)	2,539 (1.2)	475 (3.8%)	4,008 (2.0%)
White, Non-Hispanic	11,024 (82.2%)	196,532 (95.0)	9,008 (72.7%)	179,118 (90.8%)
Multi-Race	N/A	N/A	45 (0.4%)	1,400 (0.7%)

Source: NH Department of Education

Other indicators that are followed by the NH Department of Education (NH DOE) include home schooling, drop out rate and students that complete high school. Students whose families wish to provide educational curriculum in the home-setting are permitted by the NH Department of Education to participate in an approved Home Schooling experience. In 2009, the city of Nashua reported the home schooling of 145 students. These children could range in age from 6 years old to 18 years old. During this same school year, the NH Department of Education reported a total of 4,581 children statewide in home schooling settings. Nashua families opting for the home-school curriculum represented 3.1% of the total students in home-schooling in NH. According to the NH DOE, there were a total of 628 high school students that dropped out of high school during the fall 2009 enrollments. Forty-one of these students were from the Nashua School District. However, this is a significant decrease from the 2003-2004 school year in which 197 Nashua high school students dropped out of school.

When looking at high school students that complete their graduation requirements, 897 students completed their high school requirements in the 2008-2009 school year. Of those high school completers, Nashua reported 51.55% were entering four year colleges and 25.35% were entering less than 4 year colleges. Non-college students made up a total of 22.2% of the students in Nashua completing their high school requirements: 10% would be working, 4% enlisted in the armed forces, and 8.2% were undeclared. The New Hampshire Department of Education reported for the 2008-2009 school year that 15,172 students had completed high school graduation requirements. Of those students, 7,740 (51%) would be attending four year colleges, 3,482 (23%) would be enrolled in less than four year colleges, and 3,950 (26%) were non-college students (armed forces, unemployed, status undeclared).[9]

Head Start

Established in 1965, the national Head Start program is an early childhood development program that focuses on the development of the physical, social, emotional, and intellectual needs of young children. While in its initial program phases, three and four year olds were the primary focus for program development. With the inclusion of the Early Head Start Project, Head Start has emerged as a birth to six year old child/family empowerment program. In the past forty years, over 22 million children and families who met the poverty guidelines, have accessed Head Start programming.[10]

Head Start programs in both Hillsborough County and Nashua have served an annual average of 395 and 143 children respectively from 2001 to 2009. In 2007, both the County and Nashua experienced their highest participation numbers over the nine year period. Both the County and Nashua recorded their lowest enrollments in 2001 (Table 1.11). Over the time period 2001-2009, Nashua represented an average of 36% of the total County Head Start enrollment.[10]

Table 1.11 Head Start Enrollments, 2001-2009

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Nashua Participants	93	114	137	155	163	151	199	137	137
Rate of Change	*	+23%	+20%	+13%	+5%	-7%	+32%	-31%	0%
Hillsborough County Participants	299	334	394	410	331	379	574	431	402
Rate of Change	*	+12%	+18%	+4%	-19%	+15%	+51%	-25%	-7%

Source: Southern NH Services

Women, Infants & Children

In the 1960's, the United States began to recognize that many low-income Americans were suffering from malnutrition. Food insecurity, or the inability to access or obtain food, was identified as a major problem in this country. In 1969, a national conference was convened with the intention of focusing national attention and resources on the problem of malnutrition and hunger due to poverty. Among the recommendations stated in the conference report was to give special attention to the nutritional needs of low-income pregnant women and preschool children.[11] In response, the United States Department of Agriculture (USDA) established the Commodity Supplemental Food Program in 1969. The Women, Infants and Children (WIC) Program provides nutritious foods to supplement diets, nutrition education, and referrals to health care and other social services.[10]

Since WIC's authorization, the number of program participants has expanded dramatically. From an annual national average of 88,000 participants in 1974, the program grew to an average of 9,175,478 in 2010. The local organization managing the WIC program for the Hillsborough County area is Southern New Hampshire Services.[10]

WIC client numbers in both Hillsborough County and Nashua have grown steadily between 2001 and 2009. Over this time period the numbers of participants in Nashua has increased by

27% (829) and in the County by 23% (n=2,338). In 2002, the Nashua WIC program experienced a 4.5% drop in participants, and again in 2007, there was a drop of 7.2%. For all other years, there was an increase in participant numbers. The most significant increase for Nashua was in 2004-05, when there was a 20.5% (n=566) increase in participants.[10]

In Hillsborough County, the greatest increase in numbers of participating clients in the WIC program occurred during the 2008 reporting year. The 2008 numbers reflected a 21% increase over the 2007 participation rate, and 2008 remains the highest year of growth percentage over the nine year period. The County reported a reduction in participation numbers in 2002 and 2007, paralleling Nashua statistics for the same time period. Nashua's overall participation rates represent an average of 30% of the total County participation rates in WIC from 2001 to 2009.[10]

Table 1.12 WIC Enrollments, 2001-2009

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Nashua Clients	2,228	2,128	2,166	2,191	2,757	2,810	2,607	3,055	3,057
Rate of Change	*	-4%	+2%	+1%	+26%	+2%	-7%	+17%	<0%
Hillsborough County Clients	7,621	7,304	7,470	7,520	8,894	9,062	8,590	10,947	9,959
Rate of Change	*	-4%	+2%	+0.7%	+18%	+2%	-5%	+27%	+9%
Source: Southern NH Services									

For additional information on Head Start or WIC, call Southern NH Services, Inc at 603-668-8010 or visit their website at www.snhs.org/.

Nashua's Neighborhoods: Select Demographics by Census Tract

The City of Nashua is divided into 17 separate Census Tracts, numbered 101 through 115 (Map 1.2). The demographic data on Nashua compiled using the US Census Bureau, 2005-2009 American Community Survey, reveals some startling disparities when broken down by Census Tract (Table 1.13). The data for the remaining 12 towns in the Greater Nashua Region, Hillsborough County, New Hampshire and the United States are displayed in Tables 1.14 and 1.15.[5]

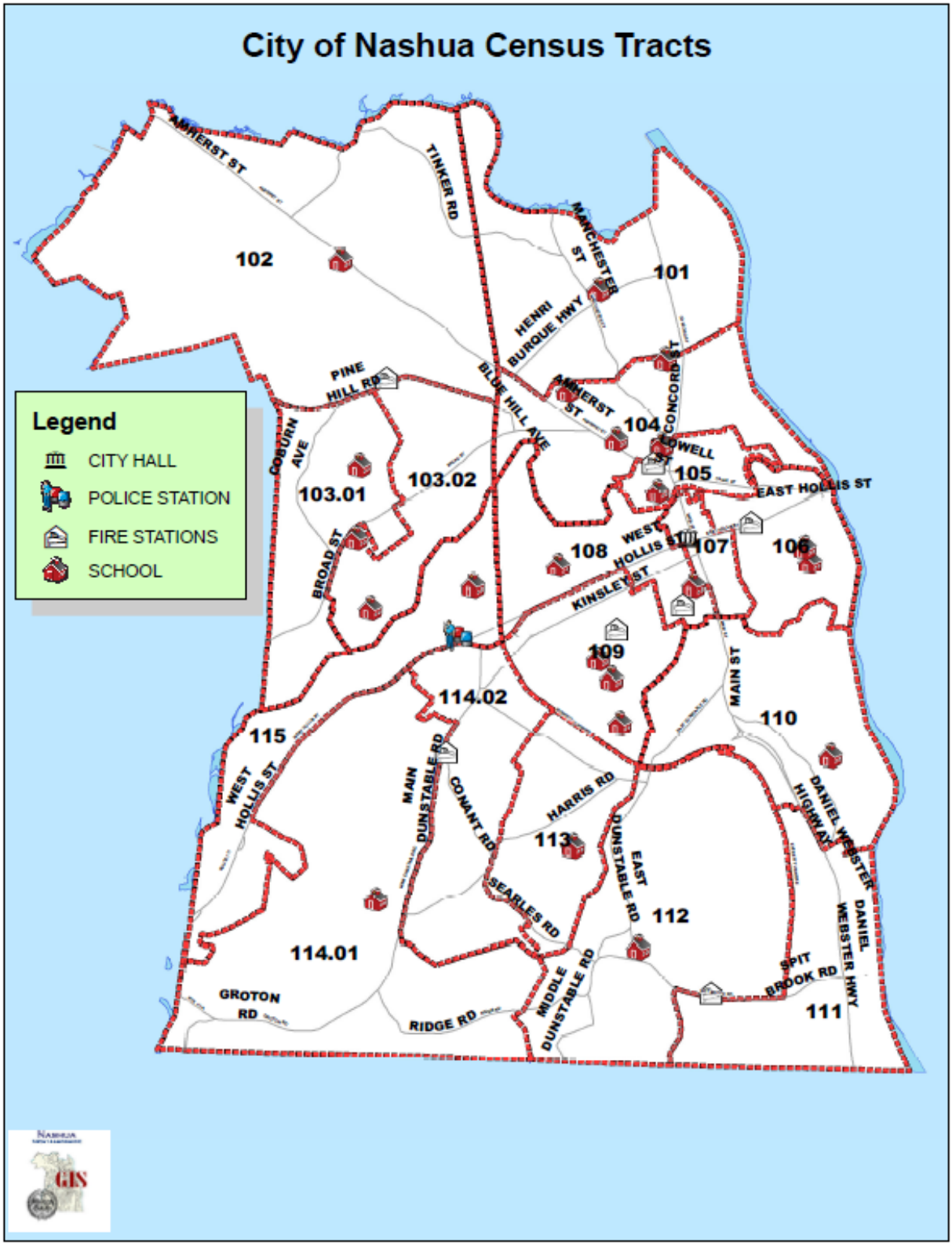
Looking at the demographics within each Census Tract in Nashua, the data shows that the Census Tracts with the highest median household income are 103.01 and 112, where the median household income is upwards of $100,000 per year. Census Tracts with the lowest median household income (105, 106, 107, and 108) have median household incomes of less than $40,000.00 per year, with Census Tract 105 being the lowest at $29,269.00 per year and Census Tract 108 being the highest at $38,966.00 per year. These same Census Tracts have the highest percent of poverty for individuals and for families with a female only head of household (Table 1.10). The median household income in the United States is $51,425 and in NH it is $63,033. Within the region, Hollis has the highest median household income at $116,168 and Wilton has the lowest at $62,132. Unemployment rates are the highest in Census Tracts 105 and 108 in Nashua with 9.1% and 10.5% unemployed. The unemployment rate in the United States is 7.2%, 5.3% in NH and 5.8% in Nashua as a whole. In the region, Mason has the lowest unemployment rate at 2.9% and Wilton has the highest at 8.1% (Tables 1.13, 1.14, 1.15).[5]

In the United States, approximately 15% of the population identifies as Hispanic or Latino. In Nashua, it is about 7.8% and the three Census Tracts with the highest percentages of residents identifying as Hispanic or Latino, ranging from 17.3% to 25.7%, are Census Tracts 105, 106, and 108. The Census Tracts with the lowest percent are 112 and 101. In the Greater Nashua Region, outside of Nashua, the town with the highest percent of Hispanics or Latinos is Hudson, while Mason, Litchfield and Wilton have the lowest (Tables 1.13, 1.15).[5]

In terms of race and ethnicity in Nashua, Census Tracts 102, 105, 108 and 114.02 have the highest percentages of residents who are members of a racial minority, ranging from 19.5% to 27.4%. Approximately, 25.5% of the United States identifies as a racial minority, 5.2% in NH and 14.3% in Nashua. All of the towns in the region fall below 8% with Amherst having the highest at 8%. The Nashua Census Tracts with the lowest percent of households where English is the only language spoken at home is 108, 111 and 114.02, two of which also have the highest percents of residents identifying as a minority. In Nashua, about 80% of residents speak only English at home in comparison to the other towns in the region where 88% or more of residents speak only English at home (Tables 1.13, 1.15).[5]

In terms of education levels achieved among Nashua residents, Census Tracts 107 and 108 have the highest percentage of individuals who did not receive a high school diploma and/or did not progress beyond the 9th grade level at 17.5% and 20.7%. Nationally, 15.5% of individuals have less than a high school diploma compared to 9.3% of Nashua residents and 9.5% of New Hampshire residents (Tables 1.13, 1.15).[5]

Map 1.2 Nashua's Census Tracts



Source: City of Nashua Assessing Department

Table 1.13 Nashua's Demographics by Census Tract, 2005-2009 American Community Survey

	CT 101	CT 102	CT 103.01	CT 103.02	CT 104	CT 105	CT 106	CT 107
Total Population (#)	5,512	6,964	5,068	4,097	5,310	3,386	5,698	1,228
Total Households (#)	1,973	2,861	2,021	1,703	2,088	1,609	2,412	811
Race & Ethnicity								
% Minority	8.1%	22.4%	10.4%	12.2%	4.9%	19.5%	17.7%	12%
% Hispanic or Latino (of any race)	1.6%	7.2%	5%	4.7%	4.6%	21.6%	17.3%	11.8%
Educational Attainment (25 years and older)								
% Less than 9th grade or no diploma	7.1%	4.6%	4.7%	8.9%	4.7%	16.4%	13.6%	17.5%
% High School Grad	21.4%	22%	20.1%	27%	25.9%	33.3%	37.4%	37.9%
% Some College, No degree	19.5%	13.2%	19.4%	21%	15.9%	29.5%	30.3%	17.5%
% Associate's degree	8.5%	8.6%	8.5%	8.5%	14.6%	11%	9.6%	1.2%
% Bachelor's Degree	25.0%	33.7%	31.4%	25.7%	24.3%	7.9%	7.9%	19.8%
% Graduate or professional degree	18.5%	17.9%	16.1%	8.9%	14.5%	1.9%	1.3%	6%
Language Spoken at Home (5 years and over)								
% English Only	86.5%	78.3%	87.2%	80.6%	88.6%	77.4%	75%	75.6%
% Language other than English	13.5%	21.7%	12.8%	19.4%	11.4%	22.6%	25%	24.4%
Employment Status (16 years and over)								
% Employed	67.5%	69.4%	65.4%	65.6%	68%	63%	67.8%	54.3%
% Unemployed	4.2%	4.1%	4.4%	3.1%	0.6%	9.1%	6.5%	0%
% Not in Labor Force	28.3%	26.5%	30.2%	31.3%	31.4%	27.9%	25.7%	45.7%
Income & Poverty								
Median Household Income	$85,270	$63,655	$100,954	$66,404	$72,135	$29,269	$36,896	$30,313
People Below Poverty Level	2.0%	5.1%	2.8%	5.3%	2.5%	31.7%	15.8%	23.6%
Families with female householder below poverty level	3.1%	13%	11%	12.7%	0%	69.3%	55.8%	48.8%

Table 1.13 Nashua's Demographics by Census Tract, 2005-2009 American Community Survey (cont.)

	CT 108	CT 109	CT 110	CT 111	CT 112	CT 113	CT 114.01	CT 114.02	CT 115
Total Population (#)	6,561	6,437	5,257	6,805	6,576	4,932	5,079	5,717	2,405
Total Households (#)	2,694	2,399	1,830	3,500	2,443	1,525	1,990	1,822	1,120
Race & Ethnicity									
% Minority	27.4%	5.6%	8.6%	17.6%	18.8%	10.9%	9.5%	25%	5.2%
% Hispanic or Latino (of any race)	25.7%	12.7%	4.1%	3.4%	1.5%	2%	4.6%	2.7%	3.1%
Educational Attainment (25 years and older)									
% Less than 9th grade or no diploma	20.7%	16%	10.2%	3.9%	3.5%	7.1%	6.7%	8.4%	16.6%
% High School Grad	30.2%	37.4%	27.8%	24.3%	16.3%	30.9%	29.2%	26.3%	32%
% Some College, No degree	23%	15.8%	18%	17.7%	10.6%	14.9%	18.1%	16.2%	19.3%
% Associate's degree	3.8%	9.8%	7.2%	8.7%	6.7%	9.8%	8.5%	12.4%	8.2%
% Bachelor's Degree	15.5%	14.7%	27.4%	26.1%	34.4%	22.8%	28.2%	24.5%	21.8%
% Graduate or professional degree	6.8%	6.3%	9.3%	19.4%	28.6%	14.6%	9.2%	12.3%	2.1%
Language Spoken at Home (5 years and over)									
% English Only	63.4%	80.6%	84.6%	73.3%	80.6%	86.6%	87.2%	74.3%	89.1%
% Language other than English	36.6%	19.4%	15.4%	26.7%	19.4%	13.4%	12.8%	25.7%	10.9%
Employment Status (16 years and over)									
% Employed	63.8%	68.7%	69.4%	75.1%	65.5%	69.7%	70.7%	74.5%	67.1%
% Unemployed	10.5%	3.8%	2.5%	2.4%	2.5%	2.5%	3.7%	5.6%	4.4%
% Not in Labor Force	25.6%	27.5%	28.1%	21.1%	32%	27.8%	25.3%	19.9%	28.6%
Income & Poverty									
Median Household Income	$38,966	$56,078	$78,321	$56,979	$111,477	$90,361	$87,429	$81,638	$46,170
People Below Poverty Level	17.2%	10.4%	2.7%	7.8%	1.5%	3.6%	1.6%	2.1%	2.5%
Families with female householder below poverty level	43.2%	26.3%	0%	37.7%	0%	7.2%	0%	0%	0%

Source: US Census Bureau, 2005-2009 American Community Survey

Table 1.14 Select Demographics for Nashua, Hillsborough County, NH and the US

	Nashua	Hillsborough County	NH	US
Total Population (#)	87,555	405,906	1,324,575	307,006,550
Total Households (#)	34,801	150,302	502,201	112,611,029
Race & Ethnicity				
% Minority	14.3%	8.2%	5.2%	25.5%
% Hispanic or Latino (of any race)	7.8%	4.9%	2.6%	15.1%
Educational Attainment (25 years and older)				
% Less than 9th grade or no diploma	9.3%	9.8%	9.5%	15.5%
% High School Grad	27.3%	28%	30.2%	29.3%
% Some College, No degree	18.3%	18.8%	18.7%	20.3%
% Associate's degree	8.8%	9.2%	9.2%	7.4%
% Bachelor's Degree	23.7%	22.5%	20.9%	17.4%
% Graduate or professional degree	12.6%	11.7%	11.6%	10.1%
Language Spoken at Home (5 years and over)				
% English Only	80.1%	87.1%	91.9%	80.4%
% Language other than English	19.9%	12.8%	8.1%	19.6%
Employment Status (16 years and over)				
% Employed	68.3%	68.5%	66.2%	59.9%
% Unemployed	5.8%	5.3%	5.3%	7.2%
Income & Poverty				
Median Household Income	$64,219	$68,513	$63,033	$51,425
People Below Poverty Level	7.2%	7.4%	7.7%	13.5%
Families with female householder below poverty level	26.8%	22.7%	21.4%	28.7%
Source: US Census Bureau, 2005-2009 American Community Survey				

Greater Nashua Public Health Region: Select Demographics by Town

Including the towns of: Amherst, Brookline, Hollis, Hudson, Litchfield, Lyndeborough, Mason, Merrimack, Mont Vernon, Milford, City of Nashua, Pelham, Wilton

Map 1.3 Greater Nashua Public Health Region

Source: City of Nashua, Assessing Department

Table 1.15 Select Demographics for the Greater Nashua Public Health Region

	Amherst	Brook-line	Hollis	Hudson	Litch-field	Lynde-borough	Mason	Merri-mack	Mont Vernon	Milford	Pelham	Wilton
Total Population (#)	11,939	4,956	7,763	25,008	8,813	1,777	1,394	26,693	2,374	15,121	12,745	3,966
Total Households (#)	4,005	1,546	2,655	8,578	2,753	534	551	9,390	828	5,434	4,159	1,517
Race & Ethnicity												
% Minority	8.0%	0.7%	6.6%	6.1%	1.9%	0.9%	6.2%	5.1%	7.6%	4.3%	2.6%	2.5%
% Hispanic or Latino (of any race)	3.8%	3%	3.4%	4.7%	0%	1.6%	0.6%	3.6%	1.5%	2.6%	2.3%	0%
Educational Attainment (25 years and older)												
% Less than 9th grade or no diploma	3.3%	5.1%	3%	8.9%	7.8%	7.2%	8.5%	6%	6.4%	7.6%	9.1%	8.7%
% High School Grad	14.2%	19.4%	11.1%	28.7%	25.1%	33.9%	29.7%	24.1%	23.4%	31%	34.9%	28.9%
% Some College, No degree	13%	17.7%	13%	20.9%	24.1%	18.1%	20.3%	17.9%	17.3%	18.5%	18.4%	12.7%
% Associate's degree	6.7%	9.6%	7.9%	9.9%	11.6%	9.4%	7.7%	12.4%	7.9%	12.5%	9.1%	7.9%
% Bachelor's Degree	39.6%	30.1%	32.8%	22%	20.7%	23.9%	22.6%	26.9%	25.9%	21.8%	20.4%	26.7%
% Graduate or professional degree	22.2%	18.1%	32.1%	9.6%	10.7%	7.4%	11.3%	12.7%	18.9%	8.6%	8.2%	15.1%
Language Spoken at Home (5 years and over)												
% English Only	94.3%	97.2%	94.1%	88.5%	97.1%	97.5%	94.5%	91.8%	94.2%	91.2%	92.1%	94.3%
% Language other than English	5.7%	2.8%	5.9%	11.5%	2.9%	2.5%	5.5%	8.2%	5.8%	8.8%	7.9%	5.7%
Employment Status (16 years and over)												
% Employed	67.1%	76.5%	65.8%	70.5%	74.7%	70.4%	67.9%	73%	67.9%	72.1%	71.4%	63.3%
% Unemployed	6.2%	3.6%	4.1%	6.5%	3.9%	5.4%	2.9%	4.8%	5%	5.7%	5.6%	8.1%
Income & Poverty												
Median Household Income	$104,745	$99,221	$116,168	$80,778	$97,591	$80,784	$78,403	$88,371	$96,932	$69,788	$90,949	$62,132
People Below Poverty Level	2.9%	2.8%	2.3%	3%	5%	2.4%	6.2%	3.1%	4.2%	6.1%	2.2%	4.6%
Families with female householder below poverty level	6.2%	16.4%	30.2%	8.2%	17.4%	0%	0%	9.3%	9.5%	7.2%	4%	23.4%
Source: US Census Bureau, 2005-2009 American Community Survey												

[1]US Census Bureau. (2010). *2010 US Census*. Retrieved in April 2011 from http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

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

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[5]US Census Bureau. (2005-2009). *2005-2009 American Community Survey 5-Year Estimates*. Retrieved on April 26, 2011 from http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuId=population_0&_lang=en&_ts=.

[6]Nashua School District, personal communications, 2010.

[7]US Census Bureau. (2009). *Poverty Thresholds for 2009 by Size of Family and Number of Related Children Under 18 Years*. Retrieved on July 7, 2011 from www.census.gov/hhes/www/poverty/data/threshld/thresh09.xls.

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Source: City of Nashua, Division of Public Health & Community Services

Chapter 2:

Access to Healthcare

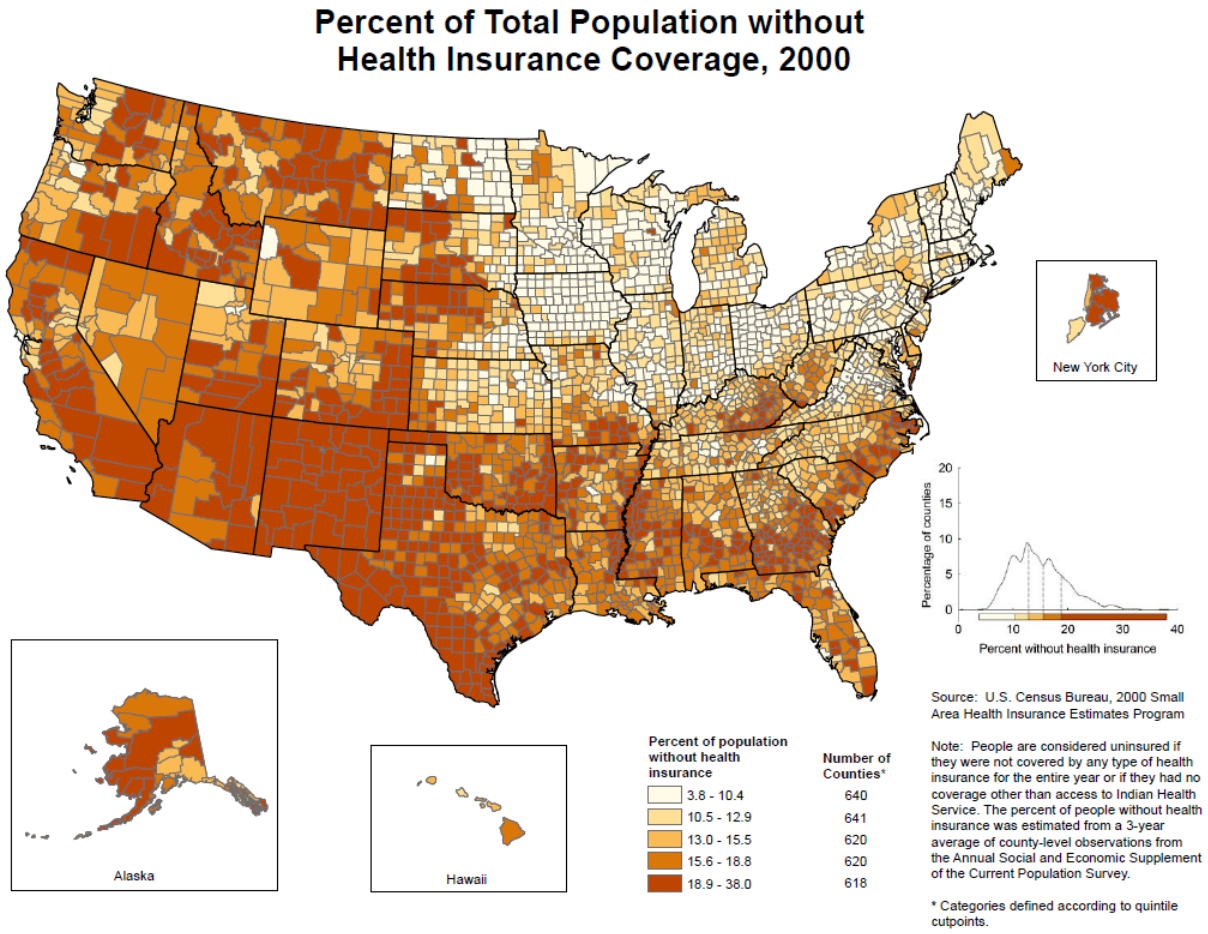
Source: Alexis Abbott, Nashua High School Photography Project

Access is a broad term referring to the ability of individuals or groups to obtain needed medical services.[1] Access can center on individual concerns such as affordability, lack of health insurance and difficulty navigating a health care system or on system's issues such as limited health care facilities, lack of public transportation or insufficient interpreter services. This chapter focuses on access concerns in Nashua.

Medical Care & Health Insurance Coverage

The overarching goal for "Access to Services" for Healthy People 2020 is to improve access to comprehensive, quality health care services. Within access to healthcare, the objective is to increase the proportion of persons with health insurance with a target of total health care coverage.[2] Nationally, 17% of adults and 6% of children lack a health care plan compared to 11% of adults and 4% of children in New Hampshire.[4] As a State, New Hampshire has more residents that are covered by health insurance than most the states in the southern and western parts of the country but New Hampshire residents with less education, lower incomes and younger ages are more likely to lack a health care plan (Figure 2.1)[3,4]. About 7.3% of adults in the Greater Nashua Public Health Region lack health insurance, which is significantly lower than the statewide estimate but does not meet the Healthy People 2020 objective of total health care coverage.[4]

Figure 2.1 Population without Health Insurance, 2000

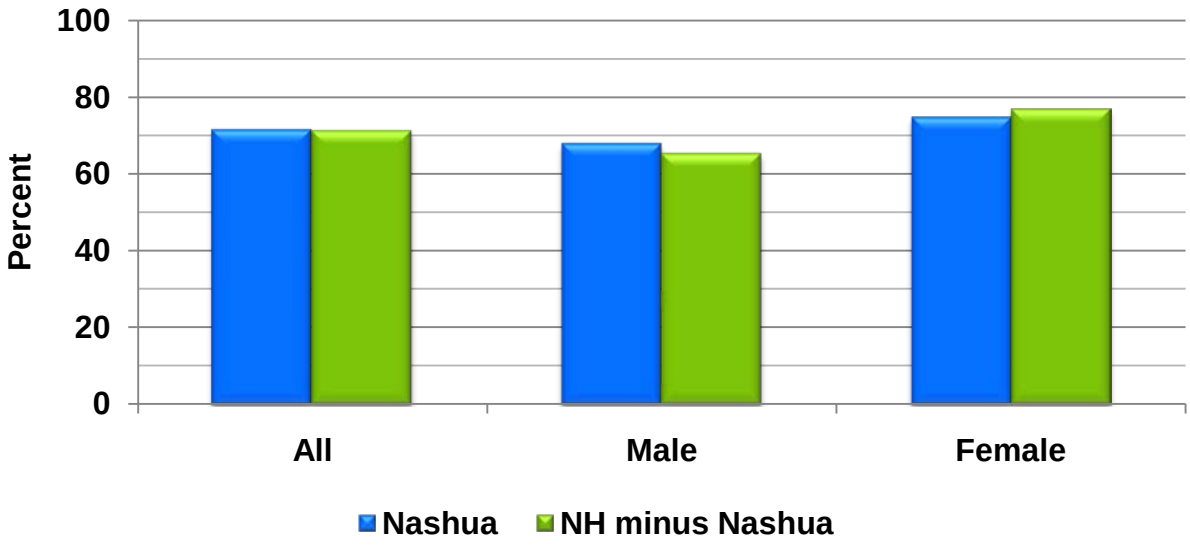


Source: U.S. Census Bureau, 2000 Small Area Health Insurance Estimates Program, CDC[3]

In 2007, 76% of the US population had a usual primary care provider.[5] Per the 2010 Nashua Community Health Survey (2010 NCHS), 88% of Nashua residents have a personal physician or health care provider.[6] This is similar to the 2008-2009 NH Behavioral Risk Factor Surveillance System numbers for Nashua where 86% of males and 92% of females had a personal health care provider (Figure 2.2).[7] For NH excluding Nashua, these numbers were similar at 85% and 92%, respectively. Thus, the Healthy People 2020 goal of 83.9% of the population having a personal health care provider has been exceeded in both Nashua and NH.[2]

The 2010 NCHS shows 90% of Nashua adults having had a routine physical within the last two years, whereas the combined 2008 and 2009 NH BRFSS shows 71% of Nashua adults having had a physical within the previous year.[6,7]

Figure 2.2 Routine Physical in Past Year, 2008 and 2009



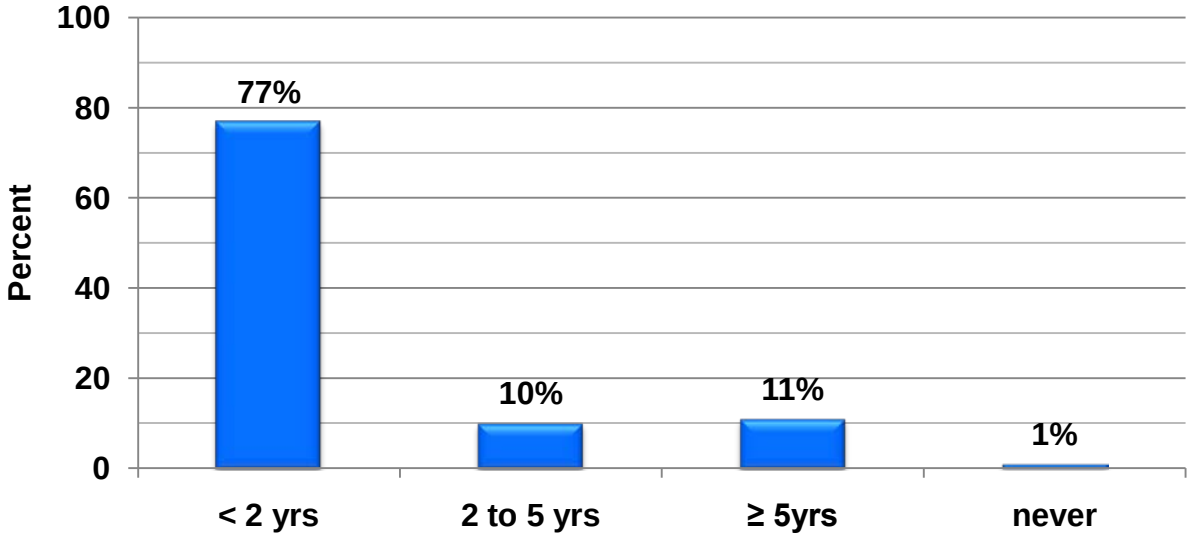
Source: NH DHHS

According to the 2010 NCHS, when medical and surgical care was needed, 95% of Nashua adults did not have difficulty obtaining this care. The 4% who had difficulty obtaining care cited lack of insurance and cost as the two most prohibitive factors. For emergency care, 75% of respondents did not visit an ER for their own health in the past 12 months, 18% visited only once and 7% visited two or more times.[6]

Dental Care

National Institutes of Health recommends a yearly dental exam for adults.[8] In the 2010 NCHS, 77% of Nashua's adults had a dental cleaning within the past two years as seen in Figure 2.3. Eighty-eight percent of these respondents did not have trouble accessing dental care when needed. Of the 12% of respondents who had difficulty accessing needed dental care, several issues were cited, including having only a minor dental problem, lack of insurance, difficulty getting an appointment, insurance that was not accepted and affordability.[6]

Figure 2.3 Last Dental Cleaning in Nashua Adults, 2010



Source: 2010 NCHS

77% of Nashua's adults have had a dental cleaning within the past two years.
-2010 Nashua Community Health Survey

Lamprey Health Care – Nashua Center

Since 2000, Lamprey Health Care's (LHC) Nashua Center has provided primary health care to pediatric, adult and obstetric populations in the Greater Nashua Region regardless of insurance status or ability to pay.[9] The following tables include data on LHC's patient race and ethnicity, primary insurance payor and top three ICD-9 codes. In 2010, 54% (n=3,711) of the patients served were minority and/or non-English speaking (Table 2.1, 2.2).

Table 2.1 LHC – Nashua Center Race & Ethnicity for GNR Patients

	2005[1] (No.)	2010 (No.)	2010 (%)	Increase 2005 to 2010 (%)
White/Caucasian	2027	4209	61	108
Hispanic / Latino	1446	1457	21	< 1
Black / African American	141	243	4	72
Asian /Pacific Islander	72	135	2	88
Other, multiracial, none	527	829	12	57
TOTAL	4213	6873	100	NA

Source: LHC – Nashua Center
[1]Limitations in 2005 data include patient relocation and reporting system restrictions.

Table 2.2 LHC – Nashua Center Primary Payor by Age for Nashua Patients[1]

	2005[2]			2010		
Payor	**0 to 17 Years**	**18 Years and Older**	**% of Total**	**0 to 17 Years**	**18 Years and Older**	**% of Total**
Medicaid	1,685	2,776	34.2	2,401	3,634	32.1
Sliding scale	686	4,117	36.8	806	6,696	39.9
Self pay	671	1,544	17.0	762	1,922	14.8
Private	204	632	6.4	200	1,118	7.0
Medicare	0	719	5.5	0	1,258	6.7

[1]*Source: LHC – Nashua Center*
[2]Limitations in 2005 data include patient relocation and reporting system restrictions.

Table 2.3 Top Three LHC – Nashua Center ICD-9 Codes

2005[1]	2010
0 to 17 Years	
Well child visit	Well child visit
Immunization	Immunization
Otitis Media	Otitis Media
18 to 100 Years	
Prenatal visit	Diabetes Mellitus
Routine medical visit	Prenatal visit
Routine GYN visit	Routine Medical visit

Source: LHC – Nashua Center
[1]Limitations in 2005 data include patient relocation and reporting system restrictions.

Harbor Care Clinic

Since 2009, Harbor Care Clinic (HCC), a program of Harbor Homes, Inc., has provided primary and preventive health care to homeless adults in the Greater Nashua Region. Ninety-four percent of these patients are Nashua residents. In 2010, HCC had 1,175 medical visits with 386 unique adult patient visits. In 2010, 93% of HCC patients were uninsured with 4% on Medicaid and 3% on Medicare. In the same year, HCC had 91% non-Hispanic and 9% Hispanic patients. Racially, 80% of HCC patients are White/Caucasian, 5% Black/African American and 5% multiracial with the remaining 10% classified as other or refused.[10]

Cross-Border Hospitalization

Often residents in one state utilize health care facilities in another; NH and MA are no exception. In 2005, 1,987 MA residents utilized NH hospitals which slightly increased to 2,074 by 2010. During the same time period, 17,610 NH residents utilized MA hospitals which decreased to 17,196 by 2010. Table 2.4 demonstrates cross-border hospitalizations by year, sex and age.

Table 2.4 Cross Border Hospitalizations[1,2]

Trend in Cross Border Hospitalizations				
	MA resident in Nashua hospital	MA resident in NH[3] hospital	Nashua resident in MA hospital	NH resident in MA hospital
2005	663	1324	1490	16120
2007	625	1344	1424	16067
2009	643	1431	1458	15738
2009 Cross Border Hospitalizations				
	MA resident Nashua hospital	MA resident NH hospital	Nashua resident MA hospital	NH resident MA hospital
Male	286	728	661	7480
Female	357	703	797	8257
0 to 17 years	107	135	267	2286
18 to 64 years	312	700	824	8356
65 years and older	224	596	367	5096

[1]*Source: MA hospitalization data from MA Health Data Consortium*
[2]*Source: NH hospitalization data from NH Hospital Discharge Data, NH DHHS*
[3]NH = NH minus Nashua throughout table

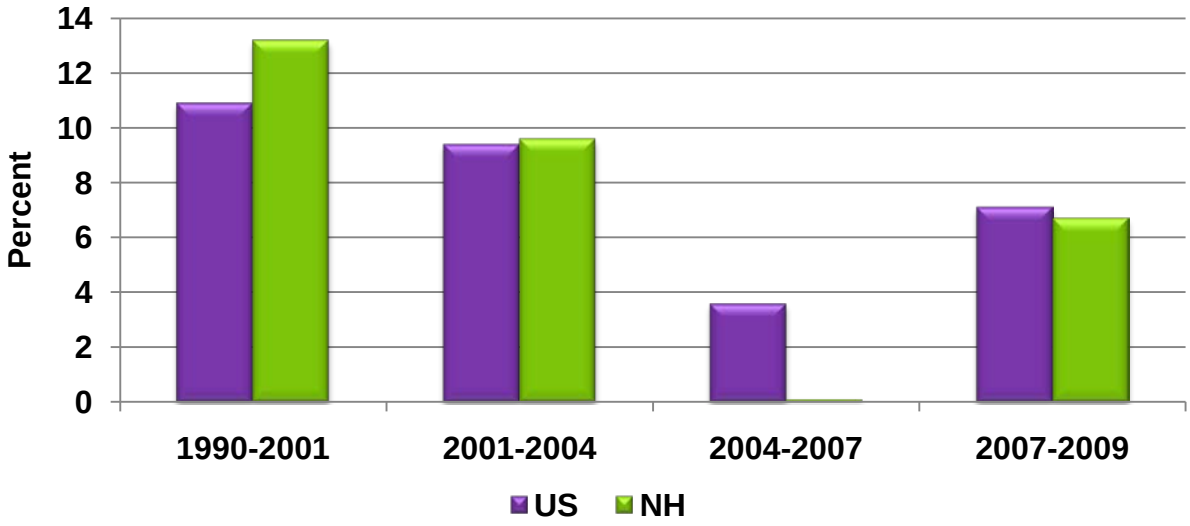
Medicaid

In 1965, through Title XIX of the Social Security Act, Medicaid was founded as a jointly funded federal and state entitlement program that pays for health care for low income and disabled individuals and families.[11] States operate their Medicaid programs under broad federal guidelines through customized State Plans that are approved by the federal Centers for Medicare and Medicaid Services.[12] States have differing Medicaid programs with some optional benefits and eligibility criteria being tailored to states' priorities.[12] In 2009, the US spent $366.5 billion on Medicaid with NH ranking as the 10th lowest state with $1.3 billion in spending which accounts for approximately 0.4% of the national cost.[7] Between 2007 and 2009, NH ranked 18th lowest in the nation for growth in Medicaid spending with an annual growth rate of 6.7%.[13] In State Fiscal Year 2010 (SFY 2010: July 1, 2009 to June 30 2010), the NH Medicaid Program covered in whole or in part the health care costs of over 165,000 individuals, including low income children, pregnant women, families, elderly persons and the disabled.[12]

"In State Fiscal Year 2010 the NH Medicaid Program covered in whole or in part the health care costs of over 165,000 individuals, including low income children, pregnant women, families, elderly persons and the disabled."

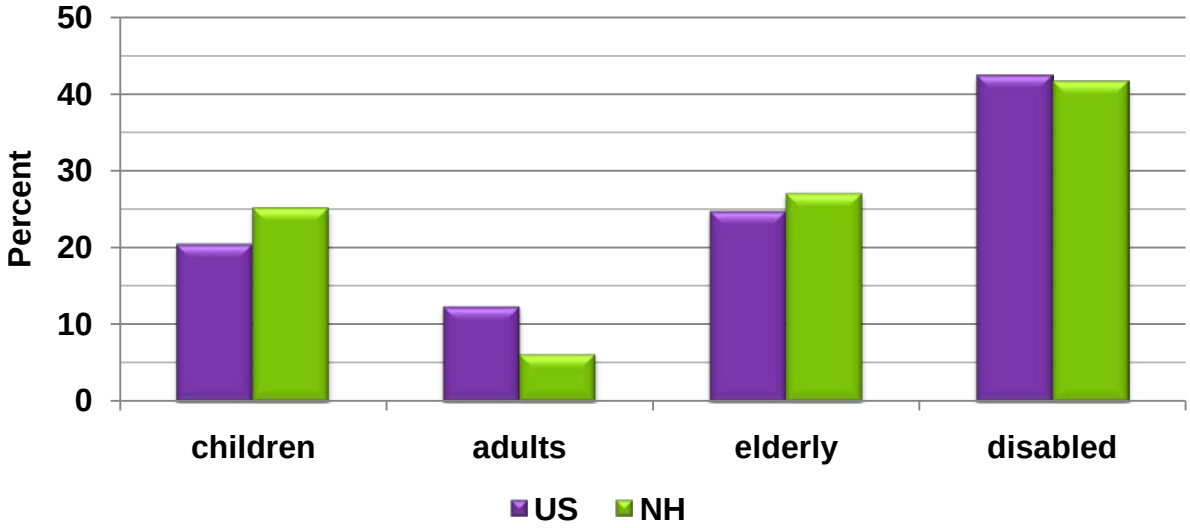
- ***NH Medicaid Annual Report***

Figure 2.4 Average Annual Growth in Medicaid Spending, FY1990-FY2009



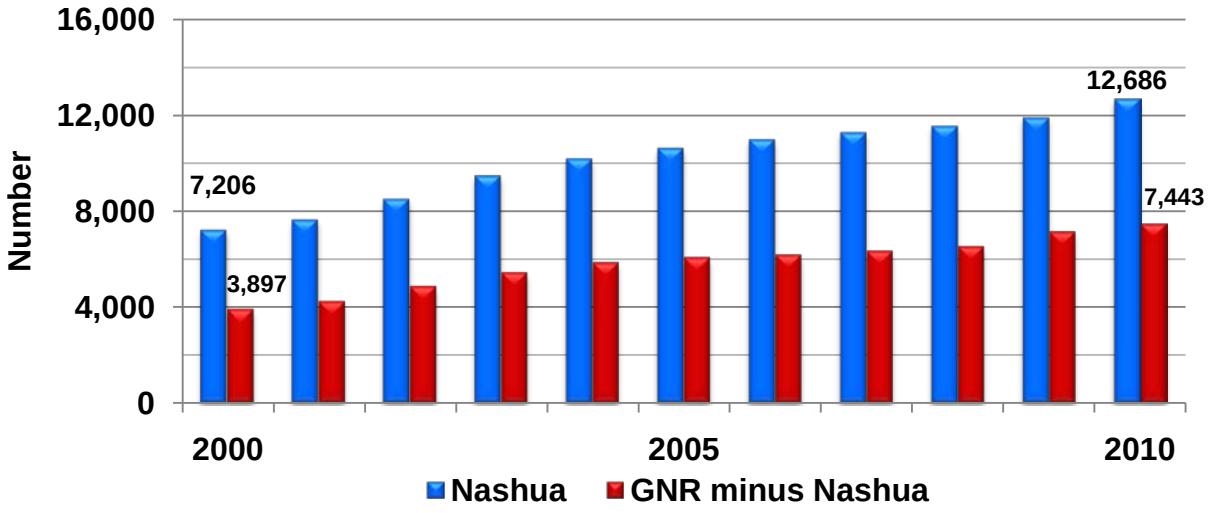
Source: Kaiser Family Foundation

Figure 2.5 Medicaid Payments by Enrollment Group, FY 2007



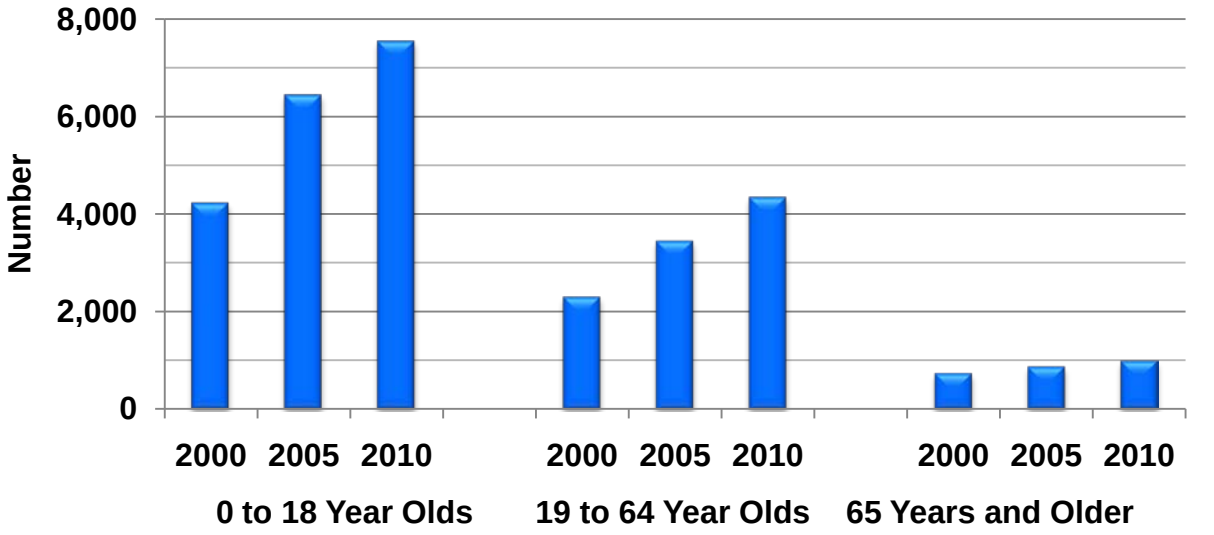
Source: Kaiser Family Foundation

Figure 2.6 Nashua & GNR Medicaid Enrollees, 2000 – 2010



Source: NH DHHS, Office of Medicaid Business and Policy

Figure 2.7 Nashua Medicaid Enrollees by Age, 2000 – 2010



Source: NH DHHS, Office of Medicaid Business and Policy

Nationally, in 2008 to 2009, 43% of non-elderly Medicaid enrollees were White/Caucasian with 21% being Black/African American, 28% Hispanic and 8% other. In NH, during the same time period, 84% of enrollees were White/Caucasian and 7% Hispanic with insufficient data for other racial groups.[13]

Table 2.5 Increase in Medicaid Enrollees by Race and Ethnicity, 2000 – 2010

Nashua				
Race/Ethnicity	**2010 Enrollees (No.)**	**Population on Medicaid (%)**	**Increase 2000 to 2005 (%)**	**Increase 2005 to 2010 (%)**
All	12,686	15	47	19
Non-Hispanic White	9,034	13	38	15
Non-Hispanic Black	504	26	34	13
Non-Hispanic Asian/PI	190	3	49	40
Hispanic	2,850	33	100	40
GNR minus Nashua				
Race/Ethnicity	**2010 Enrollees (No.)**	**Population on Medicaid (%)**	**Increase 2000 to 2005 (%)**	**Increase 2005 to 2010 (%)**
All	7,443	---	55	23
Non-Hispanic White	6,914	---	52	23
Non-Hispanic Black	114	---	22	46
Non Hispanic Asian/PI	77	---	67	28
Hispanic	281	---	151	64
New Hampshire				
Race/Ethnicity	**2010 Enrollees (No.)**	**Population on Medicaid (%)**	**Increase 2000 to 2005 (%)**	**Increase 2005 to 2010 (%)**
All	162,756	12	72	37
Non-Hispanic White	147,132	12	59	32
Non-Hispanic Black	4,035	30	120	39
Non Hispanic Asian/PI	2,059	7	101	144
Hispanic	8,051	22	227	87
Source: NH DHHS, Office of Medicaid Business and Policy				

NH Healthy Kids

Beginning in 1997, the Children's Health Insurance Program (CHIP), administered by the US Department of Health and Human Services, allowed modest income families with incomes too high for Medicaid to obtain state subsidized health insurance for their uninsured children. In NH, the State Children's Health Insurance Program (NH SCHIP) is administered in part by a private, non-profit organization named NH Healthy Kids (NHHK). NHHK provides outreach, education and application assistance for children's Medicaid and SCHIP programs. The children's Medicaid program is called Healthy Kids Gold, and the SCHIP program is Healthy Kids Silver. Both programs offer assistance for medical and dental care and are funded jointly by federal and state dollars.[14] In 2009, President Obama signed the Children's Health Insurance Program Reauthorization Act which extends federal CHIP funding to 2013.[15]

ENROLLMENT

Compared to SFY 2008, in SFY 2009, NH witnessed a 6% increase in child enrollment in both the Medicaid and SCHIP programs while commercial insurance had a 5% decrease. [16]

Table 2.6 NH Child Health Insurance by Payor, 2007-2008[1,2]

Employer	Individual	Medicaid	Other Public[3]	Total Insured	Uninsured
72%	4%	18%	NSD	95%	5%

[1]*Source: NH DHHS/Onpoint Health Data from the Current Population Survey*
[2]There is known underreporting in the Current Population Survey of Medicaid coverage and the percent of NH children enrolled because 1) areas close to the borders of NH may be less well represented than areas in the interior 2) companies that self-fund their health care and do not use a Third Party Administrator (TPA) to pay claims are not captured in the data set.
[3]NSD = Not sufficient data.

Table 2.7 Regional Child Health Insurance by Payor, SFY 2009[1,2]

Area	Total Population	0 to 18 years (No.)	0 to 18 years (%)	Average Child Membership			Total Child Membership
				Medicaid	SCHIP	Commercial[3]	
NH	1,327,019	314,565	24%	71,876 (23%)	7,937 (3%)	117,149 (37%)	196,962 (63%)
GMR[4]	220,596	56,108	25%	13,242 (24%)	1,128 (2%)	20,798 (37%)	35,168 (63%)
GNR	211,386	54,779	26%	9,010 (16%)	964 (2%)	17,493 (32%)	27,467 (50%)

[1]*Source: NH DHHS/Onpoint Health Data*
[2]Note: Average members = member months / 12. Population estimates are from Claritas.
[3]The NH Comprehensive Health Care Information System (NH CHIS) Commercial represents membership contained in CHIS database and is not a complete count of the commercially insured. No data is available on counts of uninsured.
[4]GMR=Greater Manchester Region

ACCESS

Consistent with national trends, between FY2008 and FY2009, well child visits increased for all insurances types, including Medicaid. In 2009, 88.1% of children ages three to six on commercial health insurance had a well-child visit while 80.4% of SCHIP children obtained this care. This is in comparison to only 72.5% of Medicaid children which is a statistically significant difference from the former two payors. For all three types of health insurance, well child visits declined with the age of the child. For example, with Medicaid, 88.4% of children 16 to 35 months had a well child visit in comparison to only 52.1% of 12 to 18 year olds.[16]

The 3M Health Systems Clinical Risk Grouper (CRG) utilizes all diagnostic codes from health care administrative claims to assign a chronically ill individual to a health status group depending on severity of illness. A higher clinical risk grouper (CRG) score indicates poorer health. In SFY 2009, among continuously enrolled child members, Medicaid enrollees had the highest average CRG score at 0.62 with SCHIP at 0.50 and commercial insurance at 0.49. Thus, the Medicaid score was 24% higher than SCHIP and 27% higher than commercial insurance. Nonetheless, the Medicaid CRG has been decreasing over time, indicating a lower percentage of chronically ill children on Medicaid than in prior years.[16]

Table 2.8 demonstrates access to a primary care provider (PCP) by payor and age. Among Medicaid enrollees, statistically significant differences are seen between children under and over two years of age. In one year olds, both Medicaid and SCHIP enrollees have significantly higher access to their PCP than commercial insurance enrollees. Throughout age groups, SCHIP enrollees have the highest PCP access in comparison to the other two payors.

Table 2.8 Access to a Primary Care Provider by Payor, SFY 2009[1,2]

Age Group	Medicaid	SCHIP	NH CHIS Commercial[3]
0 to 11 months	98.7% (97.8-99.5)	NA[4]	96.8% (95.0-98.5)
12 to 24 months	98.0% (97.5-98.4)	100.0% (98.5-100.0)	95.9% (95.2-96.6)
25 months to 6 years	90.0% (89.5-90.4)	94.4% (92.9-95.9)	91.3% (90.9-91.7)
7 to 11 years	87.2% (86.6-87.8)	92.3% (90.3-94.3)	88.6% (88.1-89.1)
12 to 18 years	92.0% (91.5-92.4)	94.2% (92.7-95.6)	91.1% (90.8-91.4)

[1]*Source: NH Administrative Claims Data*
[2]Note: 95% confidence intervals (CI) in parentheses
[3]Indemnity/TPA plans were excluded from the Comprehensive Health Care Information System (NH CHIS) commercial rates
[4]NA: SCHIP does not cover children under the age of one.

UTILIZATION

In SFY 2009, child Medicaid hospitalization rates were 24.1 per 1,000 members which was significantly higher than the SCHIP and commercial rates at 19.0 and 16.4, respectively.[10] (These utilization rates exclude infants 0 to 11 months old and are standardized for differences in CRG group and age.) In the same year, the rate of ER visits for children on Medicaid at 552 per 1,000 was also significantly higher than SCHIP or commercial health insurance at 260 and 232 respectively. Between SFY 2008 and SFY 2009, Medicaid ER visits increased from 519 to 552 per 1000 and office visits from 3,060 to 3,320 per 1000 members.[16]

Hospitalization rates for five Ambulatory Care Sensitive Conditions (asthma, dehydration, bacterial pneumonia, urinary tract infections and gastroenteritis) were compared between the three types of health insurance with the Medicaid hospitalization rate at 4.5 per 1000 members and SCHIP and commercial insurance at 2.1 and 1.9 per 1000 members, respectively.[10] Similarly, conditions that may have been managed in an outpatient clinic (e.g. bronchitis, ear infection and upper respiratory infection) resulted in ER visits in 249 per 1000 members for Medicaid and only 113 and 61 per 1000 members for SCHIP and commercial insurance, respectively.[16]

Medicare

Medicare is a federal health insurance program for people 65 years and older, those under 65 with certain disabilities and persons of any age with end stage renal disease. Medicare Part B covers outpatient and home health care, including some preventive services while Part A covers care in the hospital, at a skilled nursing facility, in hospice and some home health care. Medicare Part D is a prescription drug program, run by Medicare-approved private health insurance companies to help cover prescription drug costs.[17]

In 2009, 45.5 million people or 14.8% of the US population (includes all 50 states and Washington DC) were enrolled in Medicare while in NH, 217,378 people or 16.4% of the state's population were enrolled. In 2010, 58.7% of the 47.7 million US enrollees (includes all 50 states, Washington DC, territories and possessions) were also enrolled in Medicare Part D. In the same year, NH had 102,866 Medicare Part D enrollees which accounted for 47.2% of NH Medicare recipients.[18]

In 2004, the US spent 303.4 billion dollars on Medicare while NH spent 1.2 billion and ranked the 11th lowest state in Medicare spending. In the same year, per enrollee Medicare spending was $7,439 nationally and $6,302 in NH, ranking NH as the 15th lowest state in Medicare

spending. Between 1995 and 2004, Medicare spending grew 4.8% per enrollee in the US and 5.3% in NH, ranking NH as the 36th highest state in the growth of Medicare spending.[19]

From 2008 to 2009, 16% of US and NH Medicare enrollees were 19 to 64 years old, representing disabled persons and those with end stage renal disease. In 2009, 78% of US Medicare enrollees were White/Caucasian, 10% Black/African American and 8% Hispanic, while in NH, 97% of enrollees were White/Caucasian with insufficient data on other racial and ethnic groups. During the same time period, 56% of US Medicare enrollees were female with 55% female NH Medicare enrollees. From 2008 to 2009, 17% of US and 13% of NH Medicare enrollees were under the federal poverty level while 52% and 59%, respectively, were at or above 200% poverty.[19]

2-1-1 New Hampshire

One marker of access to health information and medical services is 2-1-1 NH, a hotline that provides referrals for a wide range of information and services. In 2009, 34,955 calls were received statewide to 2-1-1 NH. In 2010, this number increased to 39,393. In 2010, the GNR residents received 384 referrals for health-related information and services from 2-1-1 NH (Table 2.9).[20]

Table 2.9 2-1-1 NH's Health-Related Referrals for the GNR, 2010

Information or Service	Greater Nashua Region (No.)
Dental care	115
H1N1 influenza and vaccine	91
Health or dental insurance	52
Medical care	45
Diseases or disability	26
Medical and disability transport	19
Mental health	17
Alcohol & drug abuse	16
Prescription assistance	2
Other vaccines	1
TOTAL	**384**
Source: 2010 2-1-1 NH Statistical Reports	

"In 2010, the GNR residents received 384 referrals for health-related information and services from 2-1-1 NH."

- 2-1-1 NH

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[6] City of Nashua, Division of Public Health & Community Services. *2010 Nashua Community Health Survey*. Nashua, New Hampshire: City of Nashua, 2010.

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Data.

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[20]Heather Aicholtz, 2-1-1 NH, personal communications, 2011.

Source: Zach Roberge, Nashua High School Photography Project

Chapter 3:

Maternal Health

Source: Public Domain

According to the World Health Organization, maternal health can be defined as, "the period of a women's health during pregnancy, childbirth and the post-partum period".[1] Maternal health behaviors, such as nutrition, weight management and substance abuse can significantly impact the health and survival of the mother, the developing fetus, and the newborn. Social determinants of health, such as age, race and ethnicity, marital status, education, income, and health insurance coverage can directly affect maternal health during pregnancy and influence birth outcomes.[2,3] The initiation of timely and adequate prenatal care, good nutrition and refraining from tobacco, alcohol and illicit drugs are shown to result in positive health outcomes for newborns. These factors also play a role in preventing pregnancy-related complications, such as depression, complications from obesity, gestational diabetes and pre-term birth.[2] The overarching Healthy People 2020 goal for Maternal Health is to ensure all women have a safe and healthy pregnancy.[7]

Compared to other states in the nation, New Hampshire has the lowest teen birth rate and a low infant mortality rate. Despite these trends, women of lower social economic status and young women have higher rates of smoking, inadequate prenatal care, and less favorable birth outcomes than women who have higher incomes in New Hampshire. For instance, the percentage of births paid by Medicare jumped from 21% in 1999 to 31% in 2009 and the child poverty rate increased from 6% in 2000 to 11% in 2009.[6] In 2009, there were noted health disparities among ethnic groups in New Hampshire with regards to prenatal care where only 66% of Black mothers received prenatal care in the first trimester compared to 83% of White mothers.[5]

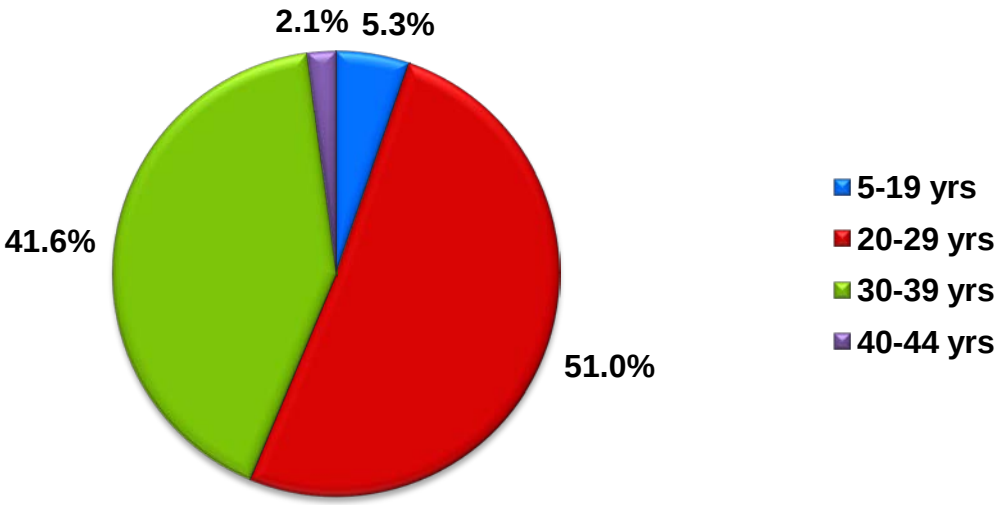
Birth Trends

In 2009, there were 13,310 births in New Hampshire with 1,071 (8%) of the births to Nashua mothers and an additional 1,179 (9%) births to mothers in the Greater Nashua Region (without Nashua). The crude birth rate for Nashua is 60.6 per 1,000compared to 53.1 per 1,000 for the Greater Nashua Region and 49.2 per 1,000 for New Hampshire (Table 3.1). In 2009, about 9% of births by Nashua mothers occurred out of state which is less than the 11% of births that took place out of state in 2007. The majority of births are to Nashua mothers between the ages of 20 and 29 years of age, however, in the Greater Nashua Region (without Nashua) a majority of the births are to mothers 30 to 39 years of age (Figures 3.1, 3.2).[9]

Table 3.1 Crude Rate for Live Births to Mothers Ages 15 to 44 years, 2009

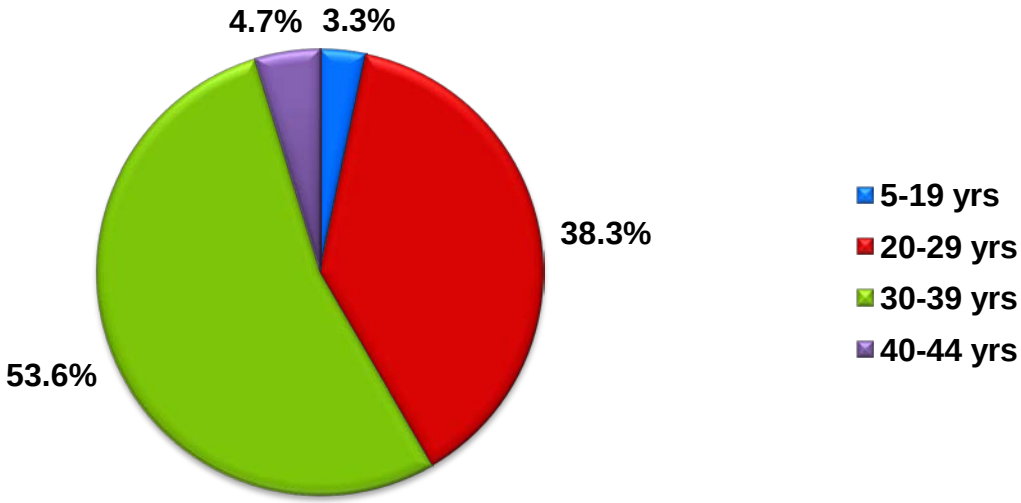
	Number of Births	Crude Rate (per 1,000)	95% Confidence Interval
NH	13,310	49.2	48.4-50.1
Greater Nashua Region	2,250	53.1	50.9-55.3
Nashua	1,071	60.6	57-64.2
Source: NH DHHS			

Figure 3.1 Percent of Live Births to Nashua Mothers by Age, 2009



Source: NH DHHS

Figure 3.2 Percent of Live Births to Greater Nashua Region (w/out Nashua) Mothers by Age, 2009



Source: NH DHHS

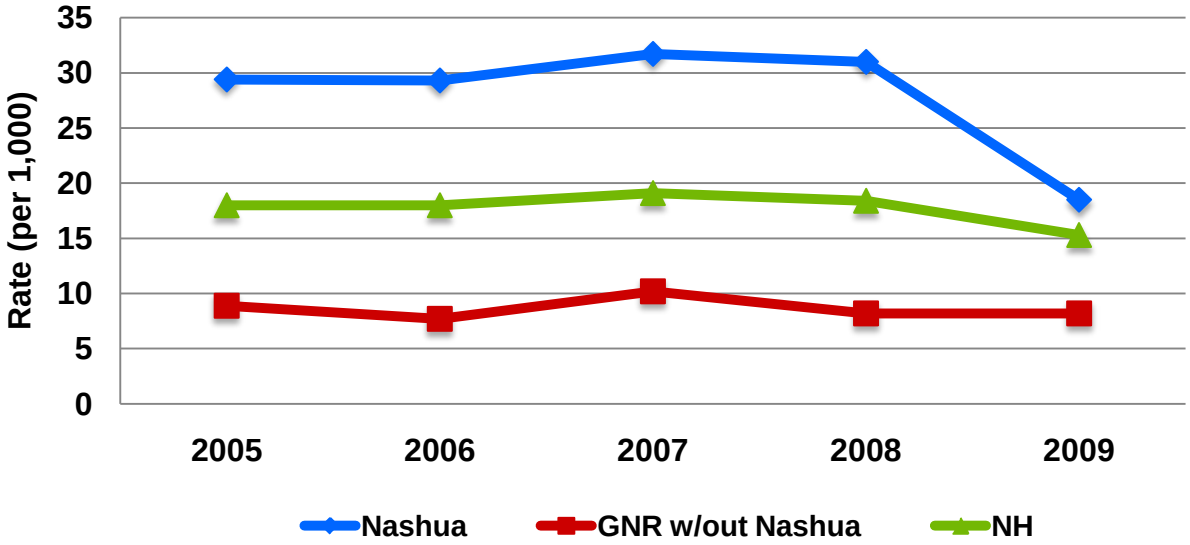
Teen Pregnancy

In the United States, more than 400,000 teen girls between 15 and 19 years of age give birth every year and one out of every ten new mothers is a teenager. Each year, it costs about $9 billion in taxpayer dollars for teen childbearing costs. Disparities exist with Hispanic and African American teenage girls being 2-3 times more likely to give birth and less likely to use birth control than Caucasian teen girls. Teen pregnancy has a profound emotional, physical and

financial effect on the teen mother and the cycle of teen pregnancy often continues, with girls born to teen parents being 33% more likely to become a teen parent themselves.[8]

As a nation, teen pregnancy rates declined in every state between 2000 and 2005 and New Hampshire ranks first in the nation for low teen births.[4, 5] In 2007, the teen birth rate was 42.5 live births per 1,000 females ages 15-19 years in the United States compared with 20 live births per 1,000 females in New Hampshire.[5] In 2009, the teen birth rate for New Hampshire was 15.3 births per 1,000 compared to 8.2 births per 1,000 for the Greater Nashua Region (without Nashua) and 18.5 births per 1,000 for Nashua (Figure 3.3).[9] The teen birth rate for Nashua is higher than the New Hampshire teen birth rate but it has reduced considerably since 2008.

Figure 3.3 Teen Live Birth Rate for Mothers Ages 15 to 19 years, 2005-2009



Source: NH DHHS

In New Hampshire, children can become enrolled in New Hampshire Medicaid and the NH State Children's Health Insurance Program (CHIP) if they meet income and eligibility requirements. Pregnant women may also qualify depending on income and will be covered for up to 60 days after delivery with additional coverage for their newborn following birth.[10] As a state, 61% of teen mothers were utilizing Medicaid/CHIP in 2009 compared with 57% for Nashua and 52% for the Greater Nashua Region (Table 3.2).[9]

Table 3.2 Percent of Live Births to Teen Mothers by Primary Payor, 2009

	Not Medicaid/ CHIP	Medicaid/ CHIP	Unknown
NH	31.7%	61.6%	6.7%
Greater Nashua Region	38.5%	52.1%	9.4%
Nashua	33.3%	57.9%	8.8%

Source: NH DHHS

Prenatal Care

Early and regular prenatal care (PNC) helps to protect the health of pregnant women and their unborn children. During these visits, providers conduct screenings and monitor the pregnancy to identify potential problems that may need to be addressed as well as plan for good birthing outcomes. Nationally, 71% of mothers between the ages of 15 to 44 years received prenatal care in the first trimester in 2007. When broken down by age category, only 54% of mothers age 15 to 17 years received care in the first trimester compared to 79% of mothers age 25 years and older.[12] There were also differences in race with 72% of white mothers compared to 59% of black mothers receiving prenatal care in the first trimester.[18] Similar trends were noticed for mothers receiving early and adequate prenatal care. The Adequacy of Prenatal Care Utilization Index (APNCU) or Kotelchuck Index of Prenatal Care is a measure of the timeliness and dosage of prenatal care visits by a mother (Table 3.3).[11] In the United States, 70% of mothers received early and adequate prenatal care in 2007. Only 58% of teen mothers age 15 to 17 years received early and adequate prenatal care compared to 77% of mothers over the age of 25 years. Additionally, 72% of Caucasian mothers compared to 61% of African American mothers received early and adequate prenatal care in 2007.[13]

Table 3.3 Adequacy of Prenatal Care Utilization Index

Category	Adequacy of Initiation of Prenatal Care	Adequacy of Received Services (Proportion of the number of visits)	Summary of Adequacy of Prenatal Care Utilization Index
Adequate Plus	1st or 2nd month	>110% of recommended visits	PNC by 4th month and >110% visits
Adequate	3rd or 4th month	80-109%	By 4th month and 80-109% visits
Intermediate	5th or 6th month	50-79%	By 4th month and 50-79% of visits
Inadequate	7th month or later	<50%	After 4th month or <50% of visits

Source: Adapted from NH DHHS[11]; American Journal of Public Health (1994), 84, 1414-1420

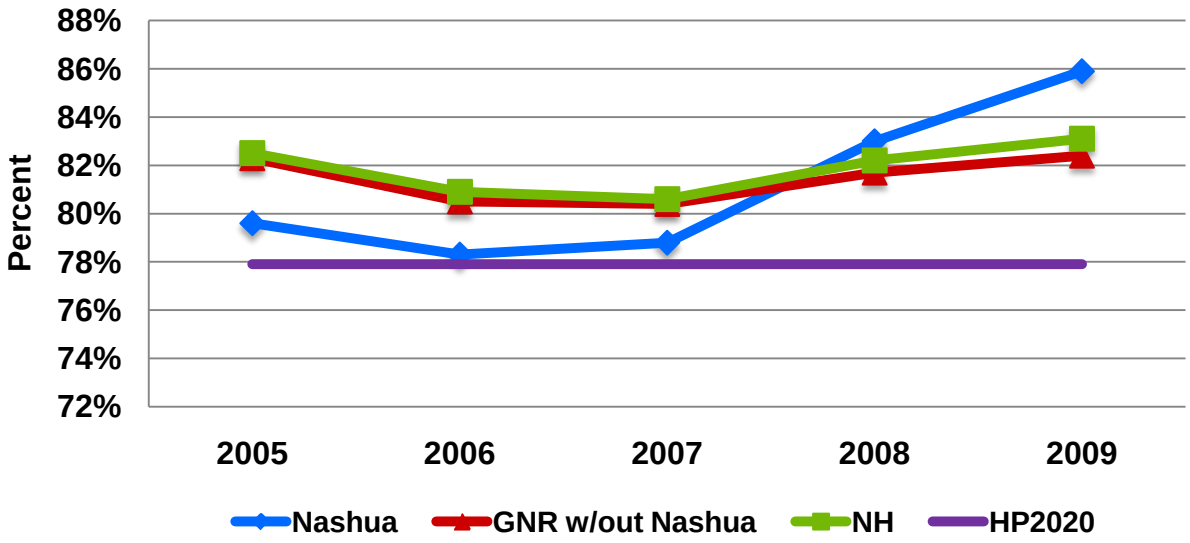
The Healthy People 2020 objective is to increase the proportion of pregnant women who receive early and adequate prenatal care. The target is for 77.9% of mothers to receive prenatal care in the first trimester and for 77.6% to receive early and adequate prenatal care during their pregnancy.[7]

New Hampshire, the Greater Nashua Region and Nashua all exceed the Healthy People 2020 target for receiving prenatal care in the first trimester. In 2009, 86% of Nashua mothers received prenatal care in the first trimester which is higher than the Greater Nashua Region (82%) and New Hampshire (83%). The percent of Nashua mothers accessing care in the first trimester has been steadily increasing since 2006 (Figure 3.4). When looking at care in the first trimester by age categories, there is little difference between geographies but there is a difference between age groups. Similar to the national trends, teen mothers are less likely to access prenatal care in the first trimester compared to mothers age 30 to 39 years. In Nashua, only 67% of teen mothers accessed prenatal care in the first trimester in 2009 compared to 91% of mothers age 30 to 39 years (Figure 3.5).[9]

The Healthy People 2020 target was also reached for receiving early and adequate prenatal care in Nashua and New Hampshire. Seventy-nine percent (79%) of Nashua mothers and 81%

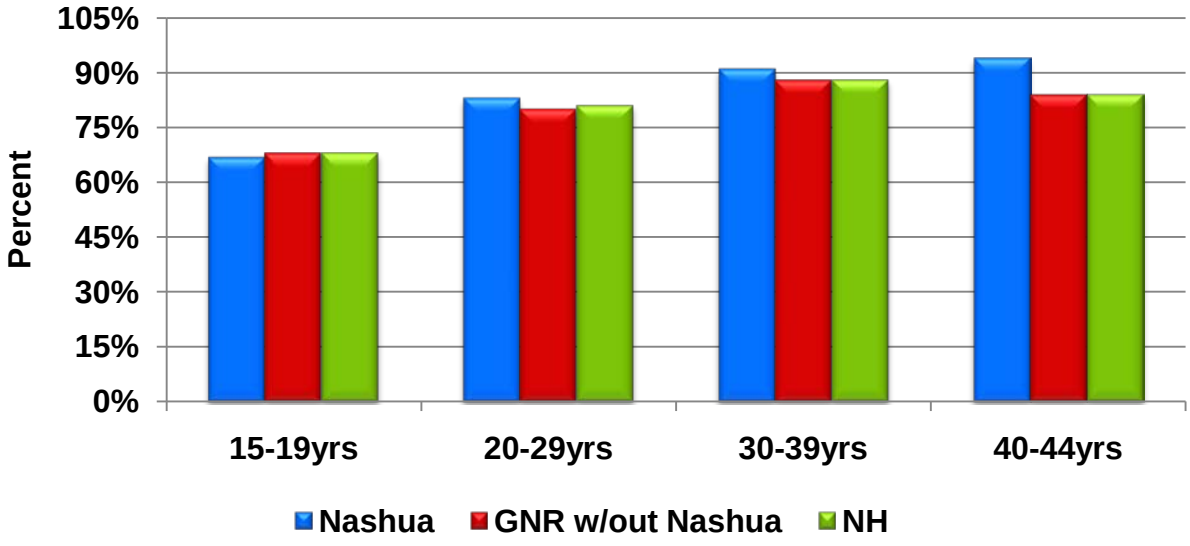
of New Hampshire mothers received “adequate” or “adequate plus” prenatal care according to the APNCU in 2009 (Figure 3.6).[9]

Figure 3.4 Live Births to Mothers Age 15 to 44 years, Prenatal Care in First Trimester, 2005-2009



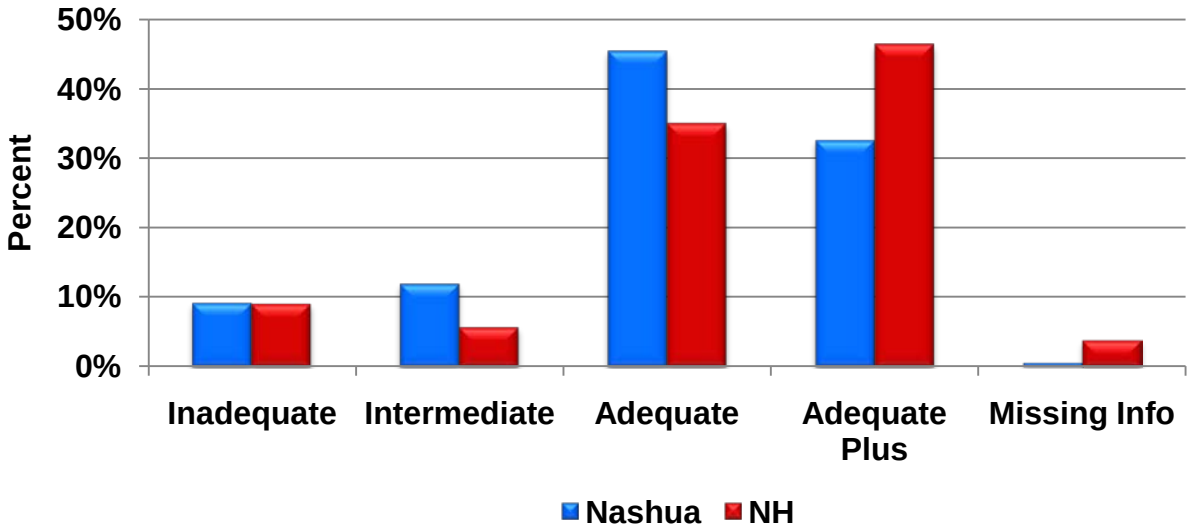
Source: NH DHHS

Figure 3.5 Live Birth to Mothers Age 15 to 44 years, Prenatal Care in First Trimester by Age Group, 2009



Source: NH DHHS

Figure 3.6 Adequacy of Prenatal Care Utilization Index, 2009



Source: NH DHHS

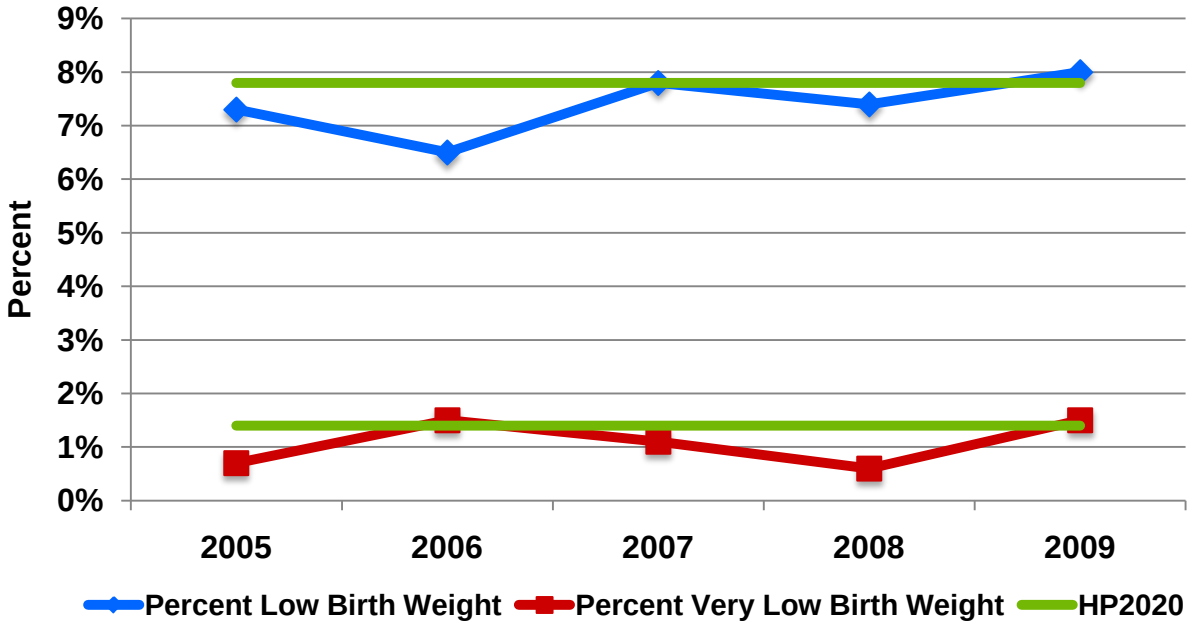
Birth Weight

Birth weight is the "first weight of the newborn obtained after birth" and can be a predictor of infant growth and survival. Low birth weight infants are at higher risk for impaired growth and death. According to the World Health Organization, low birth weight is defined as a weight of less than 2,500 grams (5lbs, 8oz), very low birth weight is defined as less than 1,500 grams (3lbs, 4oz) and extremely low birth weight is defined as less than 1,000 grams (3lbs, 2oz).[16] In the United States in 2007, 8.2% of births were considered low birth weight and 1.4% were considered very low birth weight. Mothers 14-15 years of age and African American mothers were more likely than Caucasian mothers to have newborns that had a low or very low birth weight.[14, 15] The Healthy People 2020 objective is to reduce low birth weight and very low birth weight newborns. The target is to have less than 7.8% of newborns with a low birth weight and less than 1.4% of newborns with a very low birth weight.[7]

In 2009, New Hampshire and the Greater Nashua Region met the Healthy People 2020 targets for birth weights and Nashua came close to meeting the goal for low birth weight and met the goal for very low birth weight newborns. From 2005-2009 in Nashua, the percent of newborns with a low birth weight or very low birth weight remained relatively stable, about 7% on average. In 2009, 8% of Nashua newborns were born with a low birth weight and 1.5% were born with a very low birth weight compared to 5% of the Greater Nashua Region newborns with a low birth weight and 0.6% with a very low birth weight. For the same year, 7% of New Hampshire newborns had a low birth weight and 1% had a very low birth weight (Figures 3.7 and 3.8).[9]

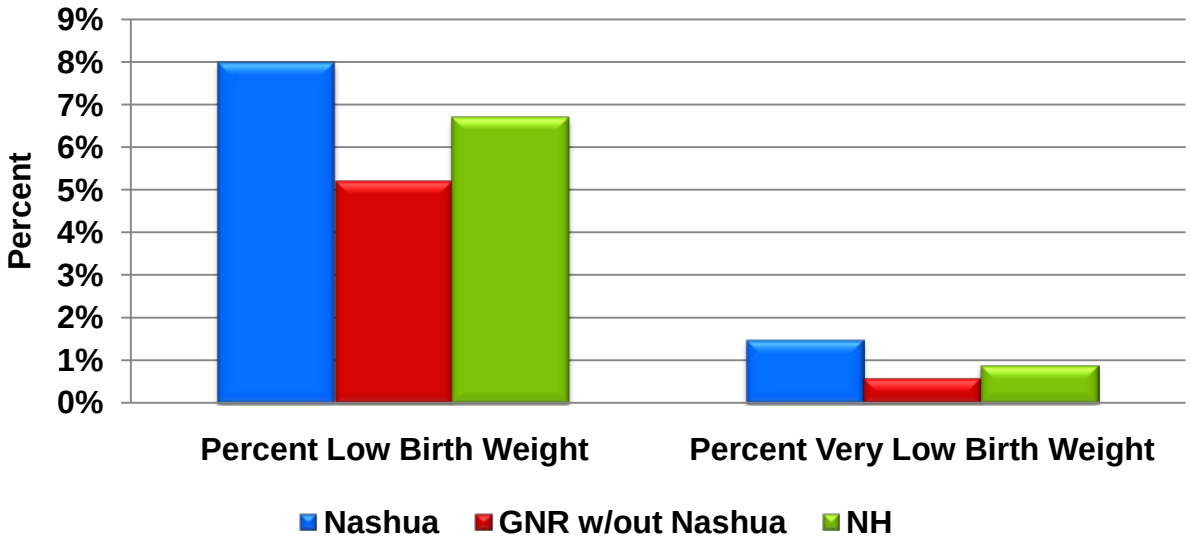
If you are pregnant or plan to get pregnant, sign-up to receive free text messages through text4baby.org to receive information about having a healthy pregnancy and caring for a newborn! For more information, visit www.text4baby.org or text "BABY" to 511411.

Figure 3.7 Birth Weight for Live Births to Nashua Mothers Ages 15 to 44 years, 2005-2009



Source: NH DHHS

Figure 3.8 Birth Weight for Live Births to Mothers Ages 15 to 44 years, 2009



Source: NH DHHS

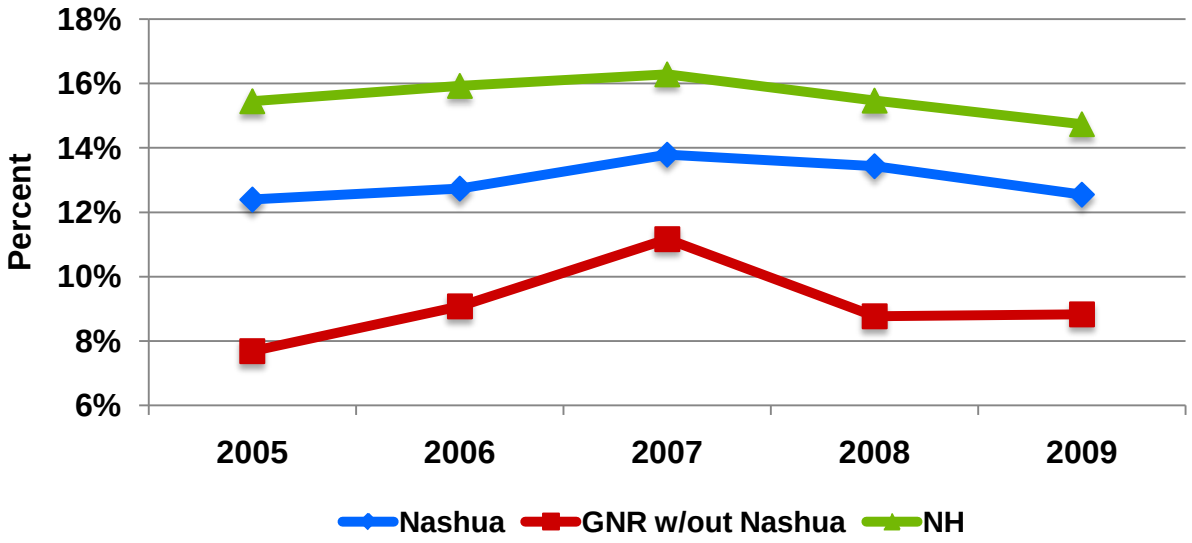
Tobacco and Pregnancy

Smoking during pregnancy results in problems for both the mother and the unborn child. According to a 2001 United States Surgeon General's report, women who smoke are more likely to experience delays in conception, as well as problems with primary and secondary infertility. Once a female smoker successfully conceives, there is a greater risk for conditions that result in fetal mortality, such as ectopic pregnancy and spontaneous abortion.[17] One of the Healthy People 2020 goals for tobacco use is to increase smoking cessation during pregnancy and to reach a target where 30% of women stop smoking during their first trimester and refrain from smoking for the duration of their pregnancy.[7] In 2005, 11.3% of women stopped smoking during their first trimester in the United States.[18] A second Healthy People 2020 objective is to have 98.6% of pregnant mothers refrain from smoking during pregnancy.[7] In the United States approximately 90% of women abstained from smoking while pregnant in 2007.[19]

In New Hampshire, maternal smoking accounts for 10% of infant deaths, 14% of premature births and 20 to 30% of low birth weight babies. The cost for caring for preterm or low birth weight babies due to smoking is estimated at $2.3 million in New Hampshire. Approximately 17% of women of childbearing age reported smoking in New Hampshire compared to 20% of women in the United States.[5]

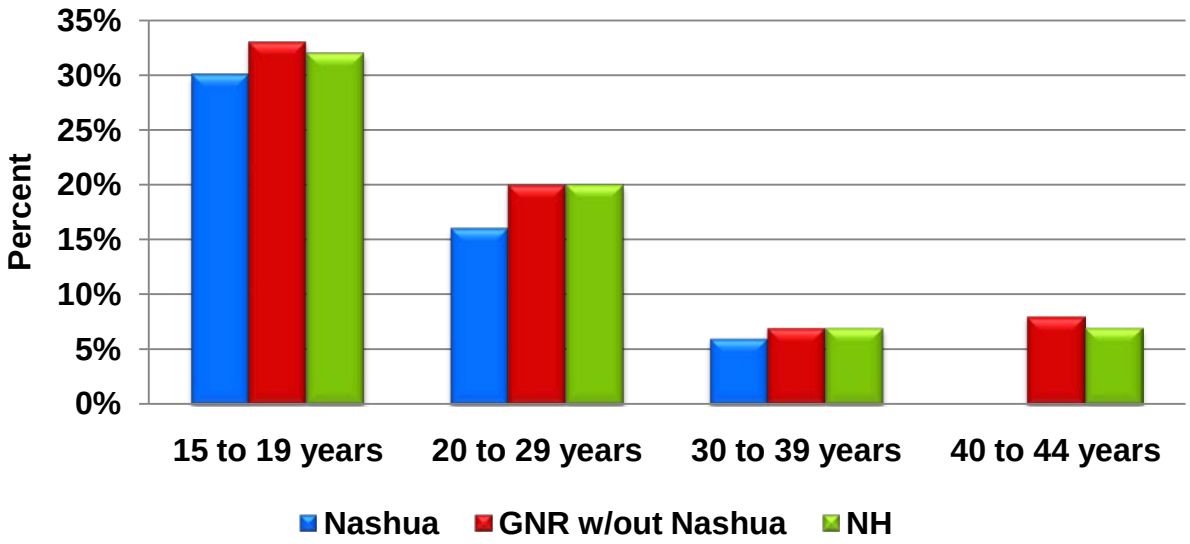
The percent of mothers using tobacco while pregnant has remained relatively stable over the past five years in New Hampshire, the Greater Nashua Region and Nashua. The Greater Nashua Region and Nashua consistently have a lower percentage of mothers using tobacco while pregnant than New Hampshire as a whole. In 2009, 9% of mothers in the Greater Nashua Region (without Nashua) used tobacco while pregnant compared to13% of Nashua mothers and 15% of New Hampshire mothers (Figure 3.9). Teen mothers have higher rates of smoking while pregnant than mothers in their 20's and 30's. In Nashua, approximately 30% of teen mothers smoked while pregnant in 2009 and 33% of teen mothers in the Greater Nashua Region (without Nashua) smoked while pregnant (Figure 3.10).[9]

Figure 3.9 Live Births to Mothers Ages 15 to 44 years, Percent Tobacco Use by Year, 2005-2009



Source: NH DHHS

Figure 3.10 Live Births to Mothers Ages 15 to 44 years, Percent Tobacco Use by Age, 2009



Source: NH DHHS

Maternal smoking accounts for 10% of infant deaths, 14% of premature births and 20 to 30% of low birth weight babies. The cost for caring for preterm or low birth weight babies due to smoking is estimated at $2.3 million in New Hampshire.

- 2011 NH State Profile

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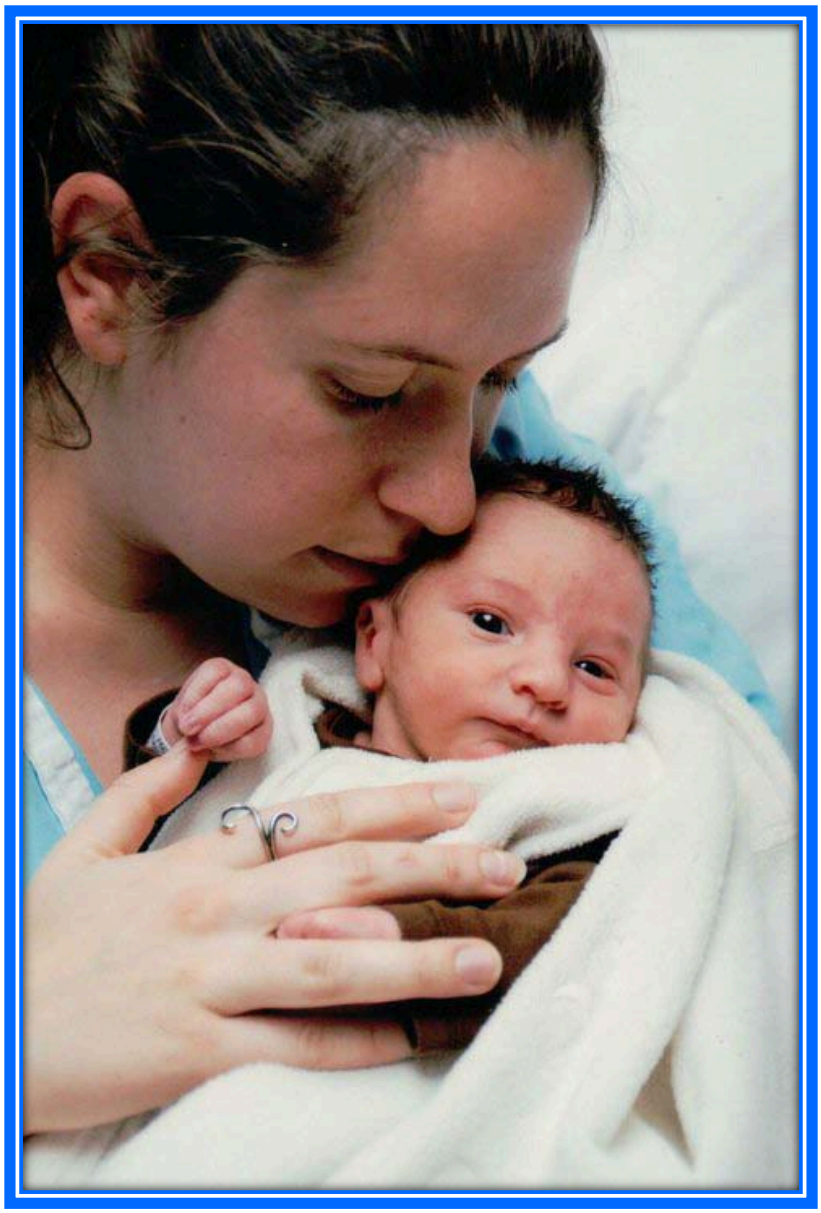


Source: City of Nashua, Division of Public Health and Community Services

Chapter 4:
Birth to Adults - Health Across the Lifespan

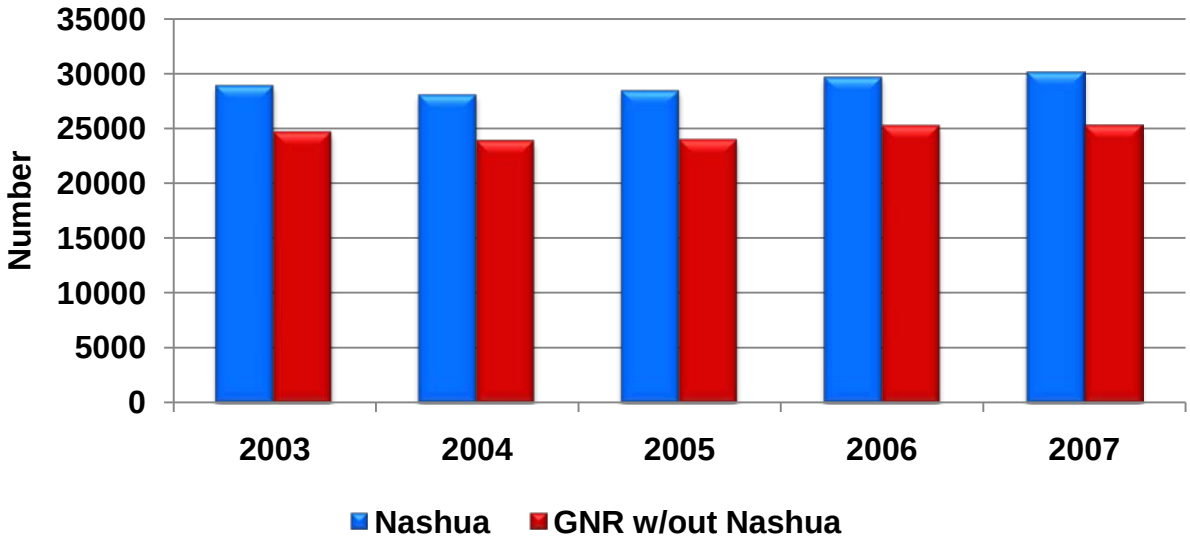
Source: Clip Art

Throughout every life stage, from birth to older adults, health is an important part of the overall well-being of individuals and families. The World Health Organization defines health as, "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

When an individual's health deteriorates due to illness, disease or injury, they may go to an emergency department or become hospitalized. The most common reason for emergency department visits for Nashua residents from 2003 to 2007 were for injuries and poisonings. In 2007, there were 30,158 emergency department visits by Nashua residents and an additional 25,312 visits by Greater Nashua Region residents (Figure 4.1). The reason for hospitalization varies between age groups. The most frequent cause of hospitalization for children under 23 months was for respiratory diseases. Children 2-12 years of age were hospitalized most frequently for respiratory diseases, injuries and poisonings, and digestive disorders and 13-64 year olds were hospitalized most frequently for pregnancy, childbirth, injuries and poisonings and mental disorders. For individuals over 65 years of age, cardiovascular disease is the most common reason for hospitalization (Table 4.1).

According to the 2011 New Hampshire State Profile, the age-adjusted death rate in New Hampshire in 2007 was 711 deaths per 100,000 compared to the United State death rate of 757 deaths per 100,000. The death rate for males (869 per 100,000) is higher than females (634 per 100,000) in New Hampshire, which follows national trends and is most likely due to accidents in young males.[4] The leading causes of death for all age groups are cancer, heart disease, chronic lower respiratory disease and stroke.[1, 4]

Figure 4.1 Emergency Department Visits, 18 Years and Older, 2003-2007



Source: NH DHHS

Table 4.1 Top 5 Emergency Department Visits, Hospitalizations and Deaths by Age Group, 2003-2007

Age	Emergency Department Visits	Hospitalizations	Death
0 to 23 months	Ill Defined Conditions Respiratory Diseases Injury & Poisonings, Nervous System Disorders Infectious Diseases	Newborn Perinatal Condition Respiratory Diseases Congenital Anomaly Ill Defined Condition	N/A
2 to 12 years	Injury & Poisonings Respiratory Diseases Ill Defined Conditions Nervous System Disorder Infectious Diseases	Respiratory Diseases Injury & Poisonings Digestive Disorders Endocrine or Immune Disorder Ill Defined Condition	N/A
13 to 19 years	Injury & Poisonings Ill Defined Conditions Respiratory Diseases Mental Disorder Nervous System Disorder	Pregnancy, Childbirth and Complications Injury & Poisonings Mental Disorders Digestive Disorders Respiratory Diseases	(NH DATA ONLY) Accidents or Unintentional Injuries Suicide Cancer
20 to 64 years	Injury & Poisonings Ill Defined Condition Respiratory Diseases Musculoskeletal Digestive Disorder	Pregnancy, Childbirth & Complications Mental Disorder Digestive Disorder Cardiovascular Disease Injury & Poisonings	Cancer Heart Disease Accident Suicide Liver Disease
65 years & over	Injury & Poisonings Ill Defined Condition Musculoskeletal Respiratory Disease Cardiovascular	Cardiovascular Respiratory Diseases Digestive Disorder Injury & Poisoning Musculoskeletal	Cancer Heart Disease Alzheimer's Disease Lung Disease Cerebrovascular Disease

Source: NH DHHS

Cancer & Screenings

Cancer is a "group of diseases characterized by uncontrolled growth and spread of abnormal cells." Cancer can be caused by genetics as well as external factors such as tobacco, chemicals and infectious organisms. The American Cancer Society estimates more than 1,529,560 new cancer cases in 2010 and reports that approximately 1,500 Americans die every day from cancer.[3] Cancer is the second most common cause of death in the United States and the leading cause of death in New Hampshire. The most diagnosed cancers in the United States, New Hampshire and Nashua are prostate, female breast and lung and bronchus followed by bladder and colon and rectum cancer. There are 7,000 new cases and 2,600 deaths of cancer every year in New Hampshire and males are more likely to be diagnosed and die from cancer than females.[4] In 2010, the National Institutes of Health estimated that the costs of cancer totaled $263 billion; $20.9 billion for indirect morbidity costs, or the costs of lost productivity due to illness, and $140 billion for indirect mortality costs, or the costs of lost productivity due to premature death.[3] Some cancers can be prevented by eliminating tobacco use, eating a well

balanced diet, preventing infections, and limiting sun exposure. The cancer incidence rate for New Hampshire for all cancers declined by 1.5% per year from 2003 to 2007 and matched the national rate in 2007. The overall cancer incidence rate for Hillsborough County is statistically significantly lower than the statewide estimate. Cancer incidence rates and death rates can be found in table 4.1. As a state, bladder cancer and lung cancer rates are higher in New Hampshire than the rest of the nation and the mortality rate from prostate cancer continues to be higher than the national rate. On the other hand, the breast cancer rate in New Hampshire is less than the national rate, however cases are not being diagnosed early in the disease.[4]

Table 4.2 Age-Adjusted Cancer Incidence Rates & Death Rates, 2003-2007

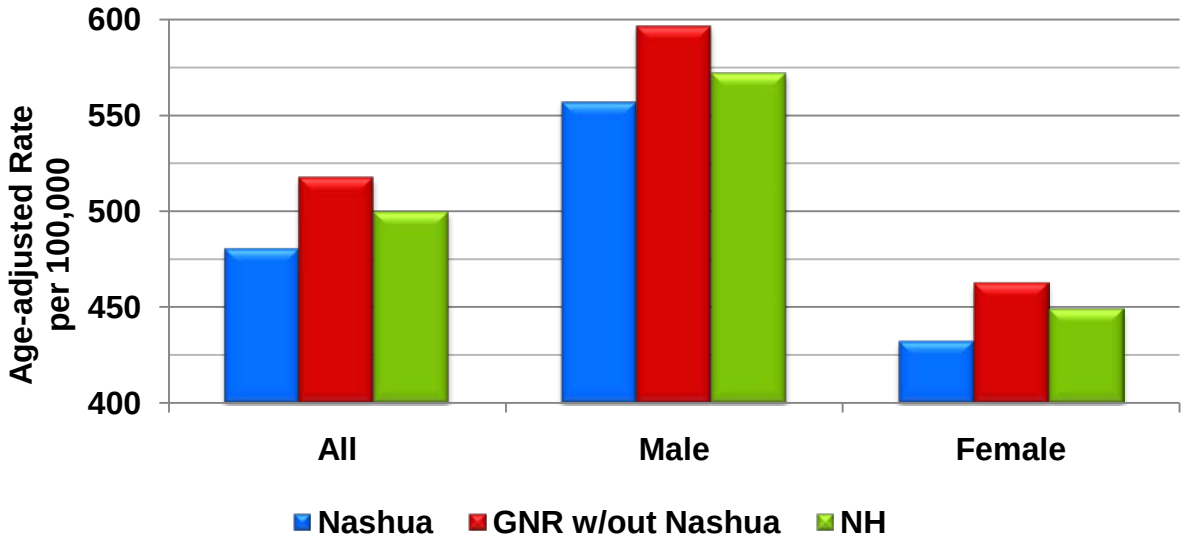
Age-Adjusted Cancer Incidence Rates								
Geography	Lung & Bronchus		Prostate Cancer	Breast Cancer	Bladder Cancer		Colon & Rectum Cancer	
	Male	Female	Male	Female	Male	Female	Male	Female
NH	81.7	61.5	153.1	128.4	46.1	13.0	55.4	40.4
US	61.5	55.0	158.4	133.8	42.5	10.2	54.1	41.1
Age-Adjusted Cancer Death Rates								
NH	64.3	43.8	26.0	22.8	8.6	2.4	20.6	14.6
US	71.1	43.9	22.9	24.0	8.2	2.3	21.0	14.6

Individuals that are uninsured and are from ethnic minorities are more likely to be diagnosed with cancer at a later stage when the treatments are more costly. Higher death rates have been identified in people of lower socioeconomic status who also have less favorable outcomes due to an increase in tobacco use, poor diet, inadequate health insurance and a lack of preventative screenings. African Americans are more likely to die from cancer than Caucasians. African American men have a 34% higher death rate than Caucasian males and African American females have a death rate 17% higher than Caucasian females. On the other hand, Hispanics have lower incidence rates for all cancers combined compared to Caucasians, but have higher rates of cancer associated with infections such as liver cancer.[3]

The cancer rates for Nashua and the Greater Nashua region are found in figure 4.2. The overall cancer rate, for both males and females is slightly higher in the Greater Nashua Region (without Nashua) than in Nashua or New Hampshire, but it is not a statistically significant difference. This difference is also seen when separated by the most common cancers of breast, prostate and lung/bronchus, although a statistically significant difference was not identified (Table 4.3).[5]

For more information on cancer, visit the American Cancer Society website at www.cancer.org or call 1-800-227-2345.

Figure 4.3 Cancer Rates, 2003-2007



Source: NH DHHS

Table 4.3 Age-Adjusted Rates for Breast, Prostate and Lung Cancer, 2003-2007

	Breast Cancer (95% Confidence Intervals)	Prostate Cancer (95% Confidence Intervals)	Lung Cancer (95% Confidence Intervals)
Nashua	111 (98-124)	135 (119-152)	77 (68-85)
GNR w/out Nashua	134 (120-147)	164 (147-182)	75 (67-83)
NH	128 (125-132)	153 (149-158)	70 (68-72)

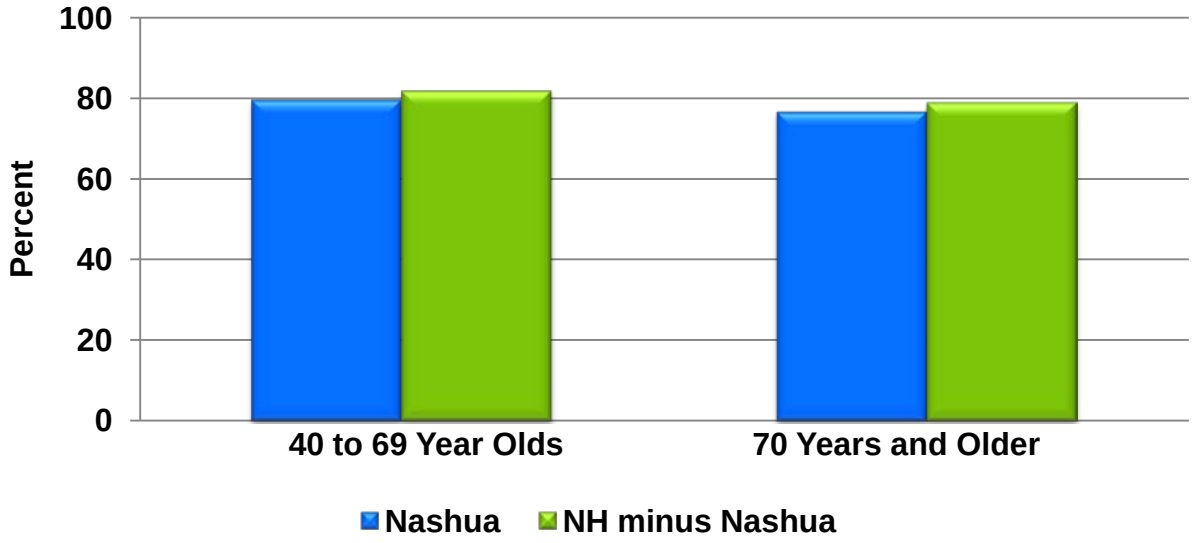
Source: NH DHHS

Not all types of cancers have screening tests, but for those that do, such as breast, prostate, colon and cervical cancer, the screenings can have a significant impact on outcome by detecting cancer at an early stage. For cervical cancer, the Pap test is used to screen women between 25 and 60 years of age to look for abnormal cells of the cervix every three years. Research has shown that regular Pap screening decreases cervical cancer and mortality by 80%.[6] Pap smear screening rates are affected by income and education. About 73% of low income (<$15,000) women compared to 92% of high income women (>$75,000) received a Pap smear in the past three years, while 69% of women with less than a high school diploma received a Pap smear compared to 93% of college graduates.[4] According to the New Hampshire Behavioral Risk Factor Surveillance System (BRFSS), 90% (CI 85.4-93.8%) of Nashua's adult females ages 30-69 years have had a Pap test in the past 3 years compared to 92% (CI 90.6-92.5%) of New Hampshire's (without Nashua) adult females (Table 4.4).[2] When looking at all New Hampshire women over 18 years of age, only 86% had a Pap smear in 2008, compared to almost 90% in 2000, demonstrating a decreasing trend in cervical cancer screening in New Hampshire.[4]

Mammograms and clinical breast exams are the two most common screening tests used by healthcare providers to detect breast cancer. Mammography has been shown to decrease breast cancer mortality, especially for older women.[9] Nationally in 2008, about 74% of women 50 to 74 years of age received a breast cancer screening.[40] For women 40 to 69 years of age in

Nashua, 80% (CI 73-86.1%) of them have had a mammogram in the past 2 years and for women over 70 years of age, 77% (CI 66.3-86.9%) of them have had a mammogram (Figure 4.3).[2] There is no statistically significant difference with mammograms between Nashua and New Hampshire. There are disparities in mammography for women with less than a high school education or an income under $15,000. As reported in the 2011 New Hampshire State Health Profile, 86% of women with a high school degree or higher have received a mammogram compared to 66% of those with less than a high school education. About 89% of women with an income over $75,000 obtained mammograms compared to 67% of women with a low income.[4] The Healthy People 2020 goal is to increase the number of women who receive a breast cancer screening to 81.1%.

Figure 4.3 Mammograms in the Past 2 Years, 2006 & 2008



Source: NH DHHS

For prostate cancer, there is inconclusive evidence as to whether the prostate-specific antigen (PSA) test or a digital rectal exam (DRE) reduces mortality, but they are both able to detect cancer at an early stage.[7] Forty-eight percent (48% CI 39.0-57.3%) of Nashua adult males over 40 years of age have received a PSA in the past 2 years and 48% (CI 39.8-56.9%) have received a DRE in the past year (Table 4.4).[2]

Table 4.4 Cancer Screenings, 2006 & 2008

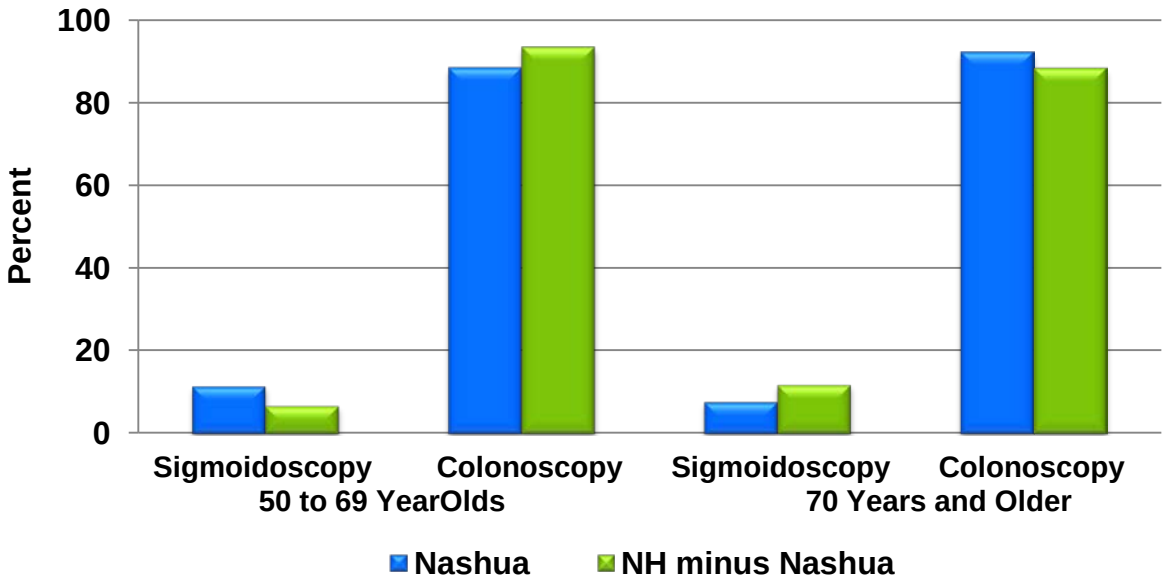
	Pap Smear in past 3 years, females 30-69 years old (95% Confidence Intervals)	PSA in the past 2 years, men 40 years and older (95% Confidence Intervals)	DRE in past year, men 40 years and older (95% Confidence Intervals)
Nashua	90% (85.4-93.8%)	48% (39-57.3%)	48% (39.8-56.9%)
NH w/out Nashua	92% (90.6-92.5%)	44% (42.3-46.2%)	52% (50.4-54.3%)

Source: NH DHHS

There are many types of screening tests to detect colon cancer, including a fecal occult blood test, sigmoidoscopy, digital rectal exam and a colonoscopy. Adults between 50 and 75 years should be screened every year with a fecal occult blood test, every 5 years with a

sigmoidoscopy or every 10 with a colonoscopy. The type of screening test conducted is based on the patient's age, medical history, preparation for the tests and their overall general health.[4,8] The Healthy People 2020 objective is to increase the number of adults who receive a colorectal cancer screening to 70.5%. In 2008, only 54.2% of adults ages 50 to 75 years received a colorectal cancer screening nationally.[40] Sixty-three percent (63% CI 55.8-71.1%) of Nashua's adults 50 to 69 years of age and 86% (CI 79.3-93.1%) over 70 years of age have received a colonoscopy or sigmoidoscopy in the last 10 years. However, this does not meet the Healthy People 2020 objective.[2] Of those that have received a colonoscopy or sigmoidoscopy, a majority of New Hampshire and Nashua adults have received a colonoscopy verses a sigmoidoscopy with no statistically significant difference between Nashua and New Hampshire (Figure 4.4).[2] In the Greater Nashua Region, about 59% of residents report having a colonoscopy in the past five years.[4]

Figure 4.4 Colonoscopy or Sigmoidoscopy, 2008



Source: NH DHHS

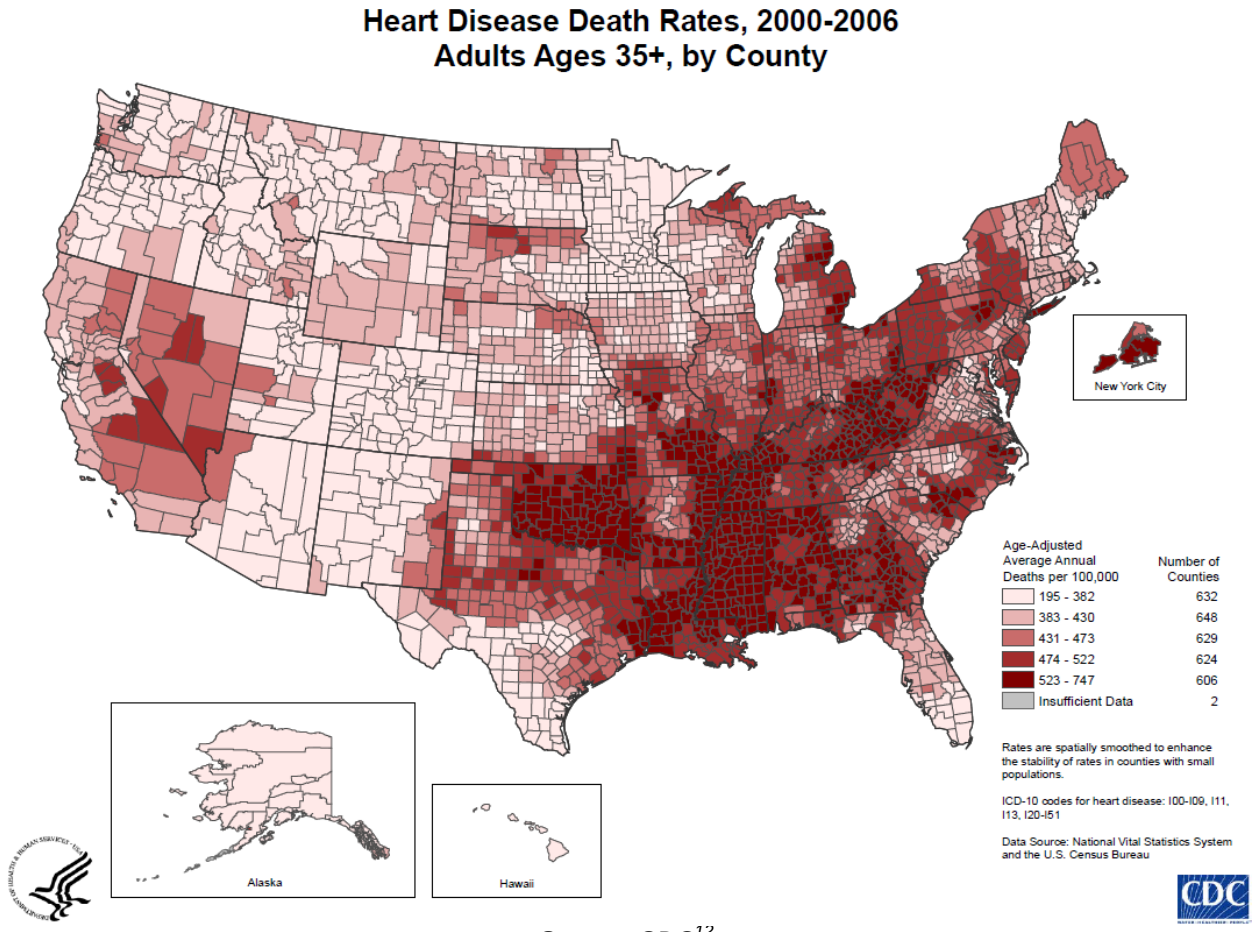
Coronary Artery Disease & Risk Factors

HEART DISEASE

The most common type of heart disease is coronary heart disease which can lead to a heart attack when not prevented or treated appropriately.[10] The cost for heart disease in the United States is estimated to be about $503 billion for lost productivity from death, disability and health care expenditures.[14] Someone in the United States dies each minute from a heart-disease related event and every 34 seconds someone has a heart attack. Risk factors for heart disease include high cholesterol, high blood pressure, diabetes, tobacco, obesity, physical inactivity and poor nutrition.[10] Of those that died from heart disease in 2006 in the United States, 151,000 were under 65 years of age.[11] According to a map assembled by the CDC, Hillsborough County has one of the lowest death rates for heart disease in individuals over thirty-five years of age with an age-adjusted average annual death rate of 195-382 per 100,000. In comparison, all of the counties in Mississippi have the highest death rates for this age group at 523-747 per 100,000 (Figure 4.5).[12]

The prevalence of heart disease in the United States is about 4%, similar to the prevalence in New Hampshire at 3.7%.[4,2] The 2010 Nashua Community Health Survey (2010 NCHS) also shows that 4% of residents in Nashua have been told by a healthcare provider that they have coronary heart disease.[13] Overall, heart disease is more prevalent among males and the risk for disease increases with age and decreases with income and education level.[4]

Figure 4.5 Heart Disease Death Rates, 2000-2006

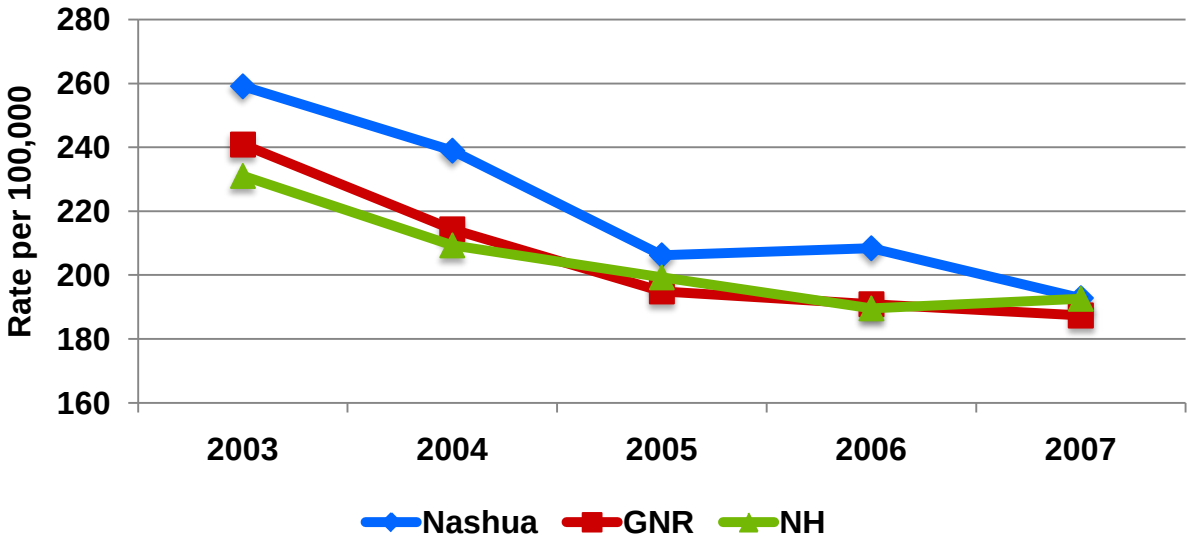


Source: CDC[12]

HEART ATTACKS

Nationally, there are approximately 935,000 heart attacks every year.[14] In New Hampshire, the prevalence for heart attacks is 4%, which is similar to national trends and close to the data collected by the 2010 NCHS for Nashua residents at 5.3%.[4,13] From 2003-2007, there were 408 emergency department visits for heart attacks from Greater Nashua Region residents, including Nashua. During this same time period, the inpatient discharge rate for heart attacks for New Hampshire, the Greater Nashua Region and Nashua declined. In 2003 in Nashua, the inpatient discharge rate was 259 per 100,000 and dropped to 193 per 100,000 people in 2007 (Figure 4.6).[15]

Figure 4.6 Inpatient Discharges for Heart Attack, 2003-2007

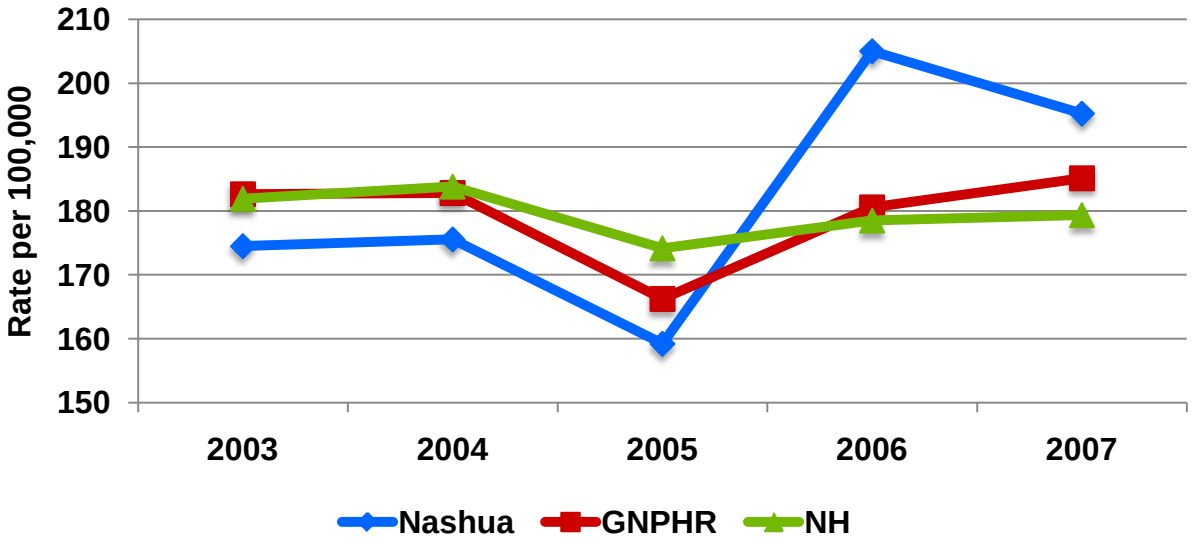


Source: NH DHHS

STROKE

The fifth leading cause of death in New Hampshire, strokes cause a decrease in blood flow to the brain, often resulting in permanent brain damage and costing $73 billion in direct and indirect costs each year in the United States.[4, 14] The prevalence of stroke is approximately 2% for both New Hampshire and Nashua.[2] From 2003-2007, there were 706 emergency department visits for stroke from Greater Nashua Region residents, including Nashua (Figure 4.7). During this same time period, the inpatient discharge rate for New Hampshire, the Greater Nashua Region and Nashua increased. In 2003, in Nashua, the inpatient discharge rate was 174 per 100,000 and increased to 195 per 100,000 people in 2007 (Figure 4.7).[15]

Figure 4.7 Inpatient Discharges for Stroke, 2003-2007



Source: NH DHHS

DIABETES

Diabetes is a "group of diseases marked by high levels of blood glucose resulting from defects in insulin production, insulin action, or both." There are two main types of diabetes, type 1 diabetes, previously known as juvenile diabetes, and type 2 diabetes, previously known as adult-onset diabetes. Type 1 diabetes accounts for approximately 5% of all diagnosed cases, is usually genetic or autoimmune and there is no known way of preventing it. On the other hand, type 2 diabetes accounts for 90-95% of diagnosed cases in adults, is associated with obesity, family history, physical inactivity and race, and can be prevented or delayed with lifestyle changes, such as good nutrition and physical activity.[16]

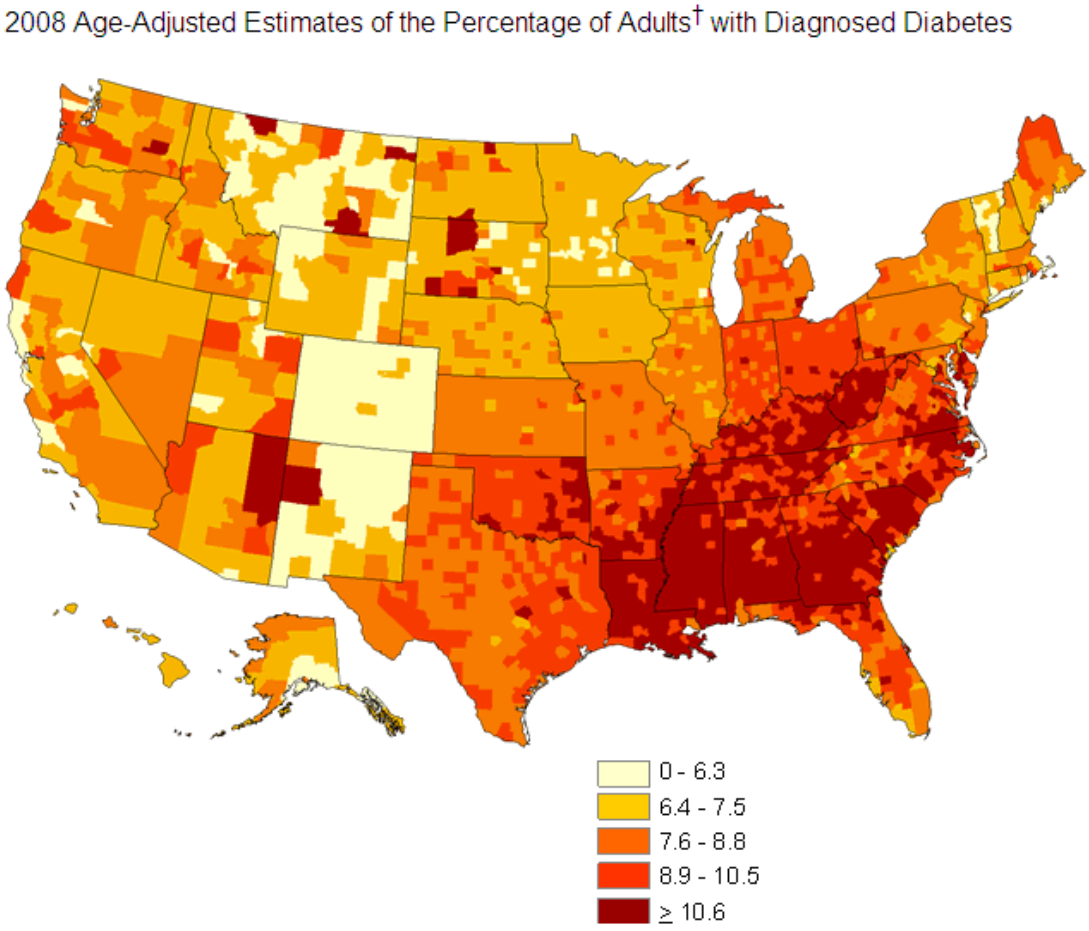
Diabetes is the seventh leading cause of death in both the United States and New Hampshire and is responsible for most kidney failures, non-traumatic lower limb amputations and new cases of blindness for adults. In 2010, about 1.9 million people over the age of 20 years were newly diagnosed with diabetes and 10.9 million adults over 65 years of age had diabetes in the United States. Moreover, there were 15,600 newly diagnosed children with type 1 diabetes and 3,600 children diagnosed with type 2 diabetes. The estimated total cost for diabetes in the United States in 2007 was approximately $174 billion.[16]

Nationally, the prevalence of diabetes averages at 8.4% but can be higher than 10.6% for some parts of the country, especially in the south eastern states. About 7% of New Hampshire residents (without Nashua) and 10% of Nashua residents have diabetes (Figure 4.8).[17,2] The 2010 Nashua Community Health Survey shows that 9% of Nashua residents report diabetes, similar to the 10% from the BRFSS.[13]

"There were 15,600 newly diagnosed children with type 1 diabetes and 3,600 children diagnosed with type 2 diabetes in the United States in 2010…type 2 diabetes can be prevented or delayed with lifestyle changes."

- Centers for Disease Control and Prevention

Figure 4.8 Diagnosed Diabetes in the United States, 2008



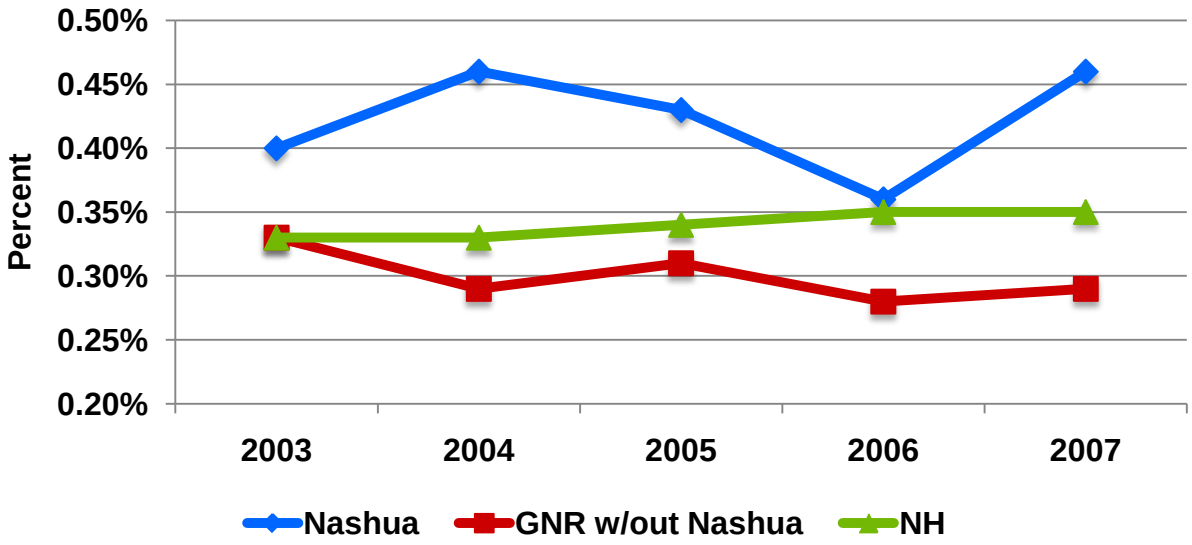
Source: CDC[17]

In 2007, there were 171 emergency department visits for diabetes for Nashua residents and an additional 97 for the remaining residents in the Greater Nashua Region. Approximately 0.46% of all emergency department visits for Nashua residents were due to diabetes in 2007 (Figure 4.9). In the same year, there were 585 inpatient discharges for Nashua residents for a rate of 153 (CI 128-179) per 100,000 which is significantly higher than the rate of discharges for New Hampshire which was 113 (CI 107-119) per 100,000. The rate for inpatient discharges has increased steadily for Nashua and the Greater Nashua Region since 2004 (Figure 4.10).[15]

There were 585 inpatient discharges due to diabetes for Nashua residents for a rate of 153 per 100,000 which is significantly higher than the rate of 113 per 100,000 for New Hampshire.

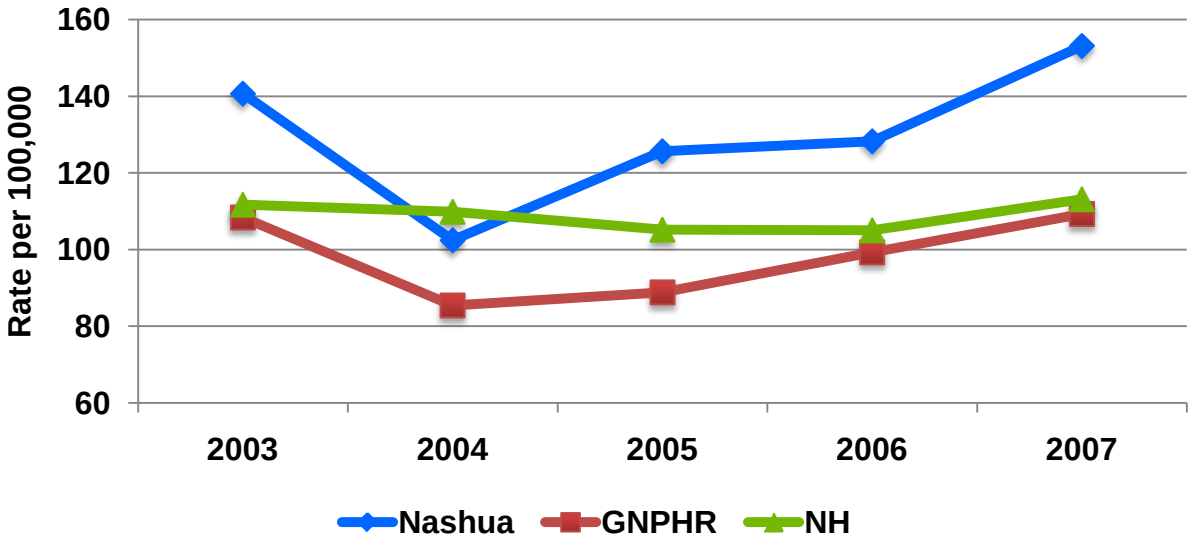
- ***NH DHHS Inpatient Hospitalizations Database***

Figure 4.9 Emergency Department Visits for Diabetes, 2003-2007



Source: NH DHHS

Figure 4.10 Inpatient Discharges for Diabetes, 2003-2007

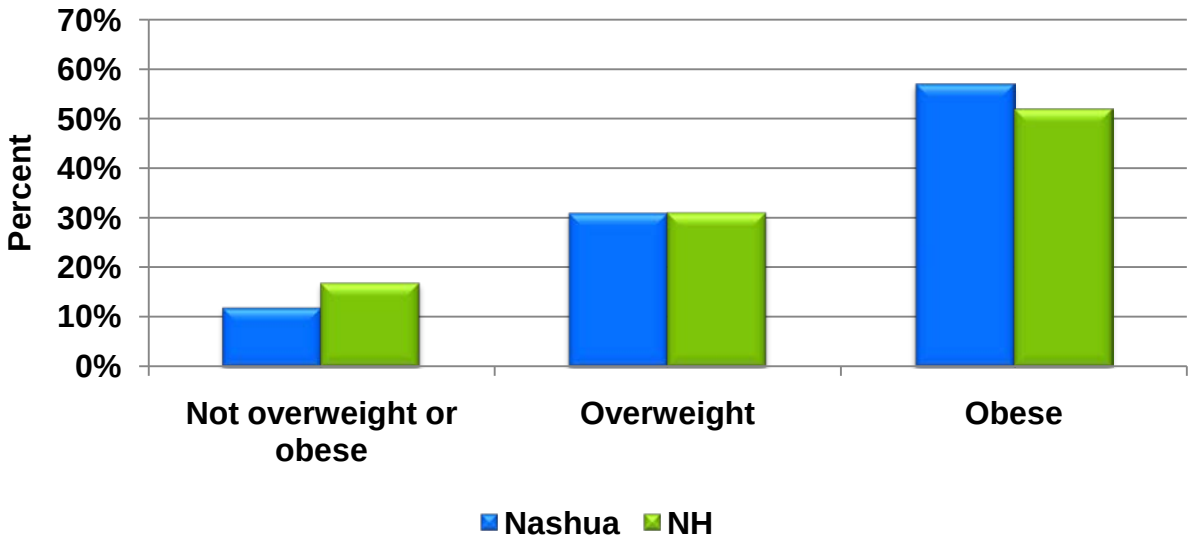


Source: NH DHHS

As already mentioned, lifestyle changes can assist in preventing or delaying type 2 diabetes. The Diabetes Prevention Program, a large-scale, multicenter research study, showed that losing weight and increasing physical activity reduced the development of type 2 diabetes by 58% during a 3 year period and reduced it by 71% for adults over 60 years of age. In addition, heart disease was noted on 68% of diabetes-related death certificates for adults over 65 years of age in 2004.[16] Of Nashua diabetics, 57% of them are obese and 31% of them are overweight (Figure 4.11).[2] Adults with diabetes have a two to four times higher risk for stroke, and have heart disease death rates two to four times higher than adults with no diabetes.[16] Of Nashua

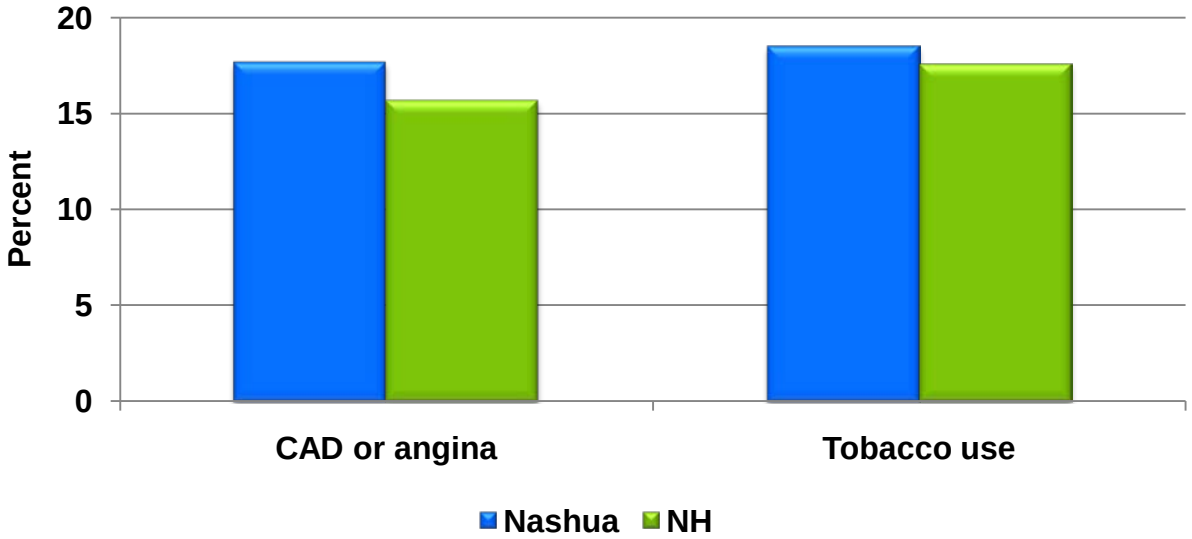
residents with diabetes, 12% report having a heart attack, 6% report having a stroke, 18% have coronary artery disease and 18% report using tobacco (Figure 4.12).[2]

Figure 4.11 Adult Diabetics and Body Mass Index, 2005-2009



Source: NH DHHS

Figure 4.12 Adults with Diabetes & Second Risk Factor for Heart Attack, 2005-2009



Source: NH DHHS

HYPERTENSION

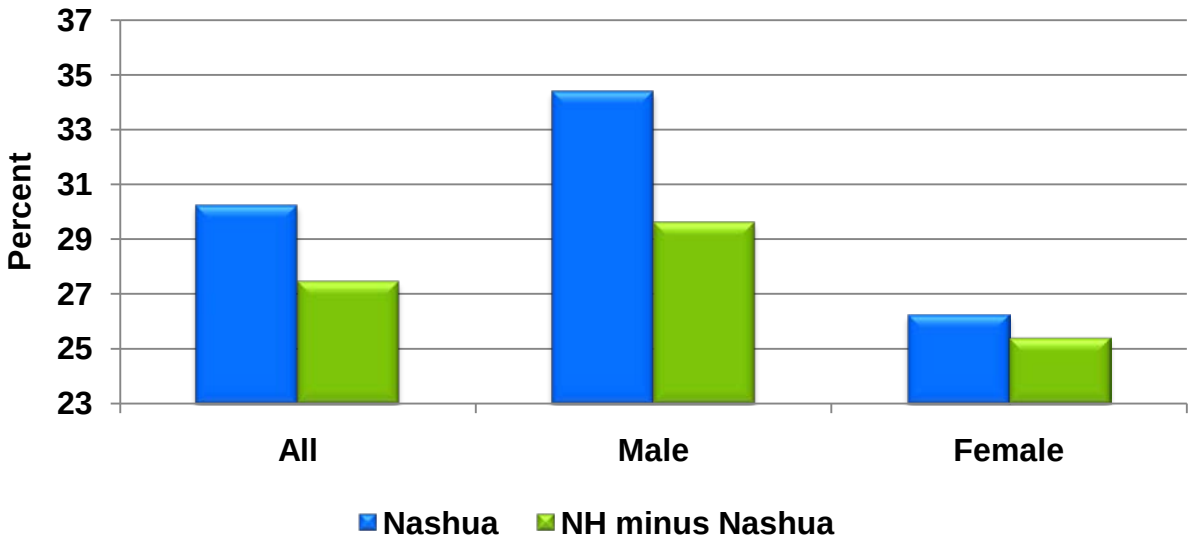
In the United States, about 68 million adults have hypertension, or high blood pressure, which increases the risk for heart disease and stroke. In 2007, high blood pressure was a primary or contributing cause of death for 336,353 adults and resulted in more than 46 million visits to the

doctor's office in the United States.[18] Uncontrolled blood pressure caused about 20-30% of heart disease cases and 20-50% of strokes in adults in the United States.[4]

Blood pressure is measured as two numbers, the first (systolic) represents the pressure when the heart beats and the second (diastolic) is when the heart rests.[18] If individuals reduce the systolic blood pressure by 12-13 points, it can reduce heart disease risk by 21%, stroke risk by 37%, and risk for death from heart disease or stroke by 25%.[19] The Healthy People 2020 objective is to reduce the proportion of persons in the population with hypertension from 29.9% to 26.9%.[20]

In 2001, about 23% of New Hampshire adults reported hypertension which increased significantly to 29% in 2009.[4] In Nashua, about 30% (CI 25-35%) of adults reported hypertension according to the BRFSS, which is the same percent reported by the 2010 NCHS (Figure 4.13). Males are more likely than females to have hypertension which is also demonstrated in Nashua residents where 34% (CI 26-43) of males, compared to 26% (CI 22-31%) of females, have hypertension (Figure 4.13).[2]

Figure 4.13 Adults with High Blood Pressure by Gender, 2007 & 2009



Source: NH DHHS

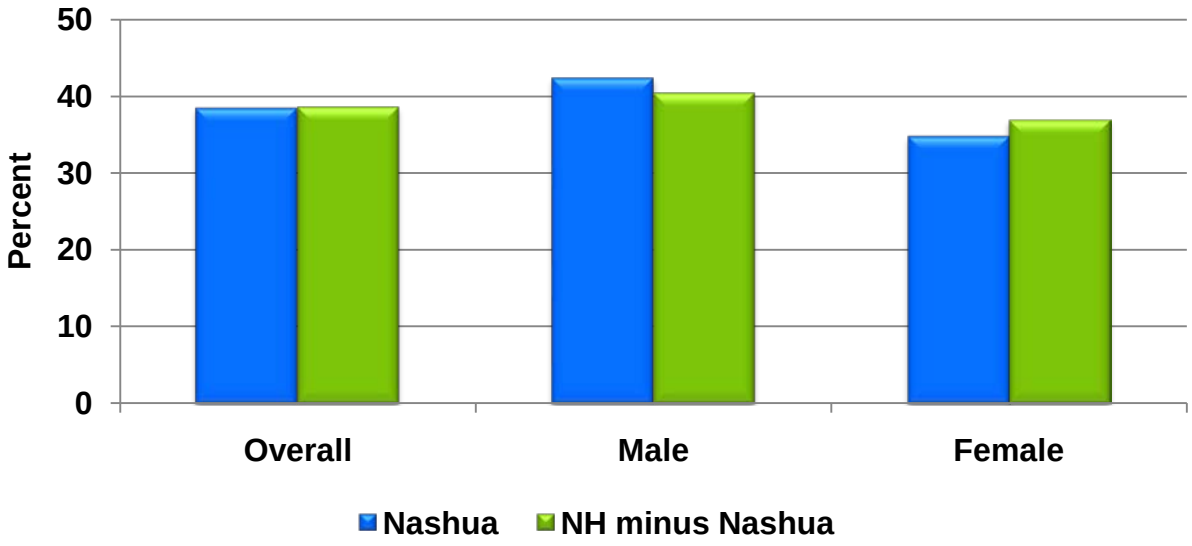
HIGH CHOLESTEROL

A desirable total cholesterol level is less than 200mg/dL but in the United States, 102 million adults have total cholesterol levels above 200mg/dL and more than 35 million of these adults have levels above 240mg/dL, which increases their risk of heart disease. Children can also have high cholesterol with more than 20% of youth 12 to 19 years of age having an abnormal lipid level in the United States.[21] A 10% decrease in total blood cholesterol can lead to a 30% reduction in the rate of heart disease. Eating low-fat foods, increasing physical activity and maintaining a healthy weight can also prevent high cholesterol.[19,21]

Adults over 20 years of age should have their cholesterol levels checked every 5 years. The Healthy People 2020 objective is to increase the proportion of adults that have had their blood cholesterol levels checked within the past 5 years from 74.6% to 82.1%.[20] In New Hampshire, 83% of adults have had their cholesterol checked and 40% of adults report having high

cholesterol.[4] In Nashua, 87% (CI 81-94%) have had their cholesterol checked in the past 5 years and 38% (CI 34-43%) of adults reported high cholesterol, while 10% (CI 3-16%) of Nashua's adults have never had it checked (Figure 4.14).[2] The 2010 NCHS reported that 30% of Nashua residents report high cholesterol.[13] Nationally, New England leads the way in cholesterol screening compared to the Midwest and Western parts of the country and both New Hampshire and Nashua meet the Healthy People 2020 goal (Figure 4.15).[22,20]

Figure 4.14 Adults with High Cholesterol by Gender, 2007 & 2009

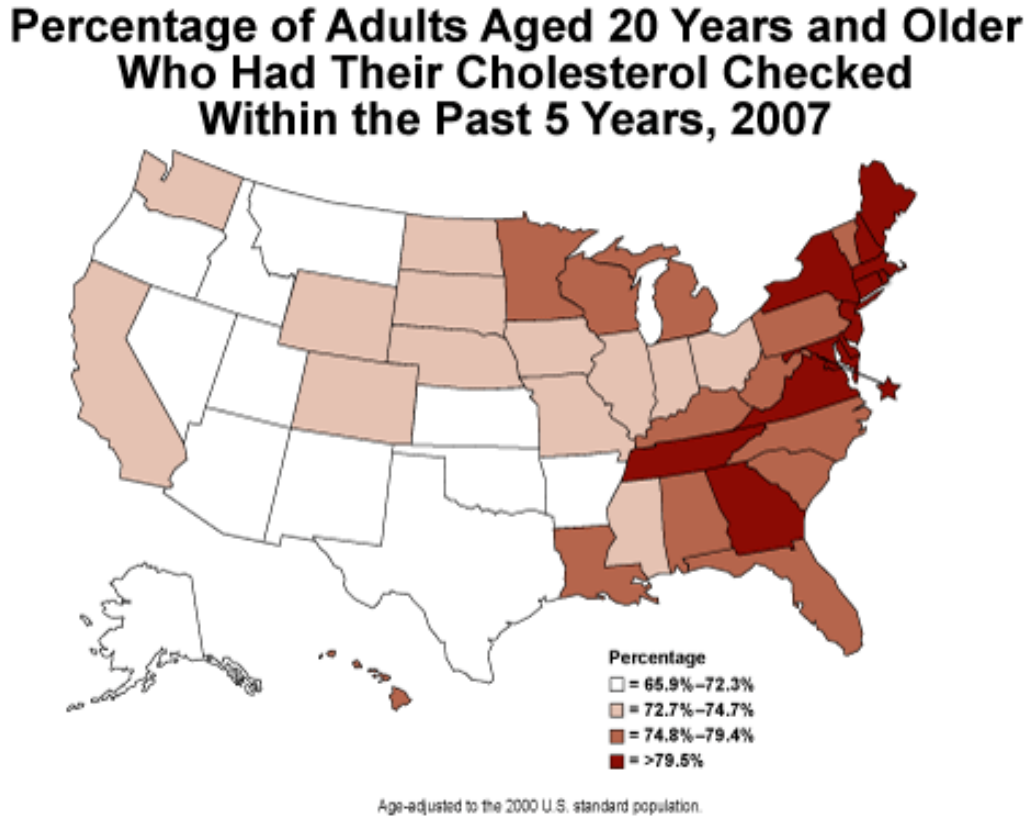


Source: NH DHHS

"A desirable total cholesterol level is less than 200 mg/dL but in the United States, 102 million adults have total cholesterol levels above 200mg/dL and more that 35 million of these adults have levels above 240mg/dL, which increases their risk of heart disease…..In Nashua, 38% of adults reported high cholesterol and 87% have had their cholesterol checked in the past 5 years, while 10% have never had it checked."

- ***Centers for Disease Control and Prevention; NH Behavioral Risk Factor Surveillance Survey***

Figure 4.15 Cholesterol Screening, 2007



Source: CDC

Immunizations

Vaccines not only prevent infectious diseases, they also save lives and decrease health care costs, including time away from work and school. The Centers for Disease Control and Prevention (CDC) states, "Vaccine-preventable diseases have a costly impact, resulting in doctor's visits, hospitalizations and premature deaths. Sick children can also cause parents to lose time from work."[23] One of the major accomplishments of public health has been the introduction of vaccines to reduce or eliminate infectious diseases. Vaccines have had a significant impact on reducing disease in the 20th century as shown in table 4.5.[24]

Table 4.5 Impact of Vaccines in the 20th Century for the United States

	Typical # of annual cases in the 20th century (US)	Number Cases in the United States in 2008	% Decrease
Smallpox	48,164	0	100%
Diphtheria	175,885	0	100%
Measles	503,282	132	99.9%
Pertussis	147,271	10,007	93.2%
Polio (paralytic)	16,316	0	100%
Rubella	47,745	17	99.9%
Tetanus	1,314	15	98.8%

Source: NH Immunization Data 2011[24]

IMMUNIZATIONS FOR ADULTS

Each year, it is estimated that 47,000 adults die from vaccine preventable diseases, in particular pneumococcal disease and influenza. It is important for adults to consult with their medical provider about vaccines.[24]

The pneumococcal vaccine protects against *Streptococcus pneumonia*, a bacteria that can cause severe illness in the very young and the elderly. Each year, pneumococcal disease accounts for 2,000 cases of meningitis, 8,000 cases of bloodstream infection, 3.1 million cases of acute otitis media in children and 106,000 to 175,000 pneumonia cases that result in hospitalization. For those with invasive pneumococcal disease, about 12% will die from the disease, with the elderly and patients with underlying medical conditions being at higher risk. It is recommended that the elderly, 65 years and older, and individuals with certain medical conditions, receive the pneumococcal vaccine.[25] The Healthy People 2020 objective is to increase the percent of persons 65 years and over that report receiving the pneumococcal vaccine to 90%. In 2008, only 60% of adults in this age range reported receiving the pneumococcal vaccine in the United States.[26] The BRFSS data shows that 70% of Nashua's elders and 73% of New Hampshire's elders received a pneumococcal vaccine, which does not meet the Healthy People 2020 objective of 90%.[2,28]

Influenza, which is more commonly referred to as the flu, is a viral respiratory disease that infects the throat, nose and lungs and is spread by the cough or sneeze of an infected individual. Fever, cough, and sore throat are the most common symptoms, but complications such as dehydration and exacerbation of chronic medical conditions such as congestive heart failure or asthma can result in hospitalizations or deaths. The CDC Advisory Committee on Immunization Practices recommends universal vaccination for anyone over the age of six months that is eligible to receive the flu vaccine. It is especially important for the elderly, pregnant women, individuals with chronic medical conditions, and persons living in dorm-type settings to get the seasonal influenza vaccine every year.[27] The Healthy People 2020 goal for non-institutionalized adults over 65 years of age is to increase seasonal influenza vaccination coverage to 90% of the population.[26] According to the BRFSS, 43% of New Hampshire adults 18 years and older received a flu shot within the past year and 72% of adults 65 years and older received the flu shot within the past year, which does not meet the Healthy People 2020 goal of 90%.[4] The 2010 NCHS shows that 51% of Nashua adults over 18 years of age received the influenza vaccine within the past twelve months.[13]

IMMUNIZATIONS FOR CHILDREN

Healthy People 2020 has set vaccination goals for 19 to 35 month olds, kindergarteners and 13 to 15 year olds.[2] For toddlers, the goal of 90% vaccination is set for the following: Four doses of DTaP and pneumococcal conjugate vaccine, three of polio, hepatitis B and *haemophilus influenza* type b vaccine and one each of the varicella and measles/mumps/rubella (MMR) vaccines. According to the 2009 National Immunization Survey, New Hampshire has a 73% vaccination rate for the seven vaccines listed for this age group.[29]

Healthy People 2020 set coverage goals for kindergarteners at 95% for the following vaccines: Four DTaP (diphtheria, tetanus, pertusis), three polio and hepatitis B, two MMR and two varicella vaccinations. Nationally, one surveillance method for estimating the number of vaccinated children in kindergarten is the School Vaccination Coverage Reports from the CDC. As a state, New Hampshire comes close to meeting the Healthy People 2020 goal for polio, diphtheria, tetanus, pertussis, and measles and exceeds the goal for Hepatitis B, mumps/rubella and varicella (Table 4.6).[2]

Table 4.6 Estimated Vaccination Coverage for Children in Public Kindergarten, NH 2008-2009

Vaccine	NH
Polio	93.3%
Diphtheria	94.2%
Tetanus	94.2%
Pertussis	94.2%
Measles,	93%
Mumps, Rubella	97.1%
Hepatitis B	97.1%
Varicella	98%
Source: NH Immunization Data, School Vaccination Survey	

It is recommended that adolescents receive the tetanus (Td) or tetanus/pertussis (Tdap), meningococcal (MCV4) and human papillomavirus (HPV) vaccines as part of their routine adolescent visits because the vaccines received in childhood begin to weaken. There are many reasons why protection against tetanus, meningococcal disease and human papillomavirus is important. Tetanus is a serious disease that leads to tightening of the muscles and can lead to death in one out of ten cases. Meningicoccal disease is caused by the bacteria, *Neisseria meningitidis*, and the case fatality rate for this disease is 10-14% with antibiotic therapy. One of the high risk groups includes those living in closed quarters such as dormitories and military barracks. The Human Papillomavirus (HPV) is one of the most commonly transmitted sexual diseases, causes genital warts and is the leading cause of cervical cancer in women. The American Cancer Society estimates that over 12,200 women will be diagnosed and 4,210 will die from cervical cancer in the United States in 2010.[24]

The Healthy People 2020 objective is to increase vaccine coverage for adolescents for the tetanus, meningococcal and HPV vaccines to 80%. New Hampshire meets this target for the tetanus vaccine with 88% (CI 82.7-91.8%) coverage. However, New Hampshire does not meet the Healthy People 2020 objective for the meningococcal vaccine with 68% coverage and the HPV vaccine with 40% coverage for all three shots in the HPV vaccine series.[24]

Vision Screening in Children

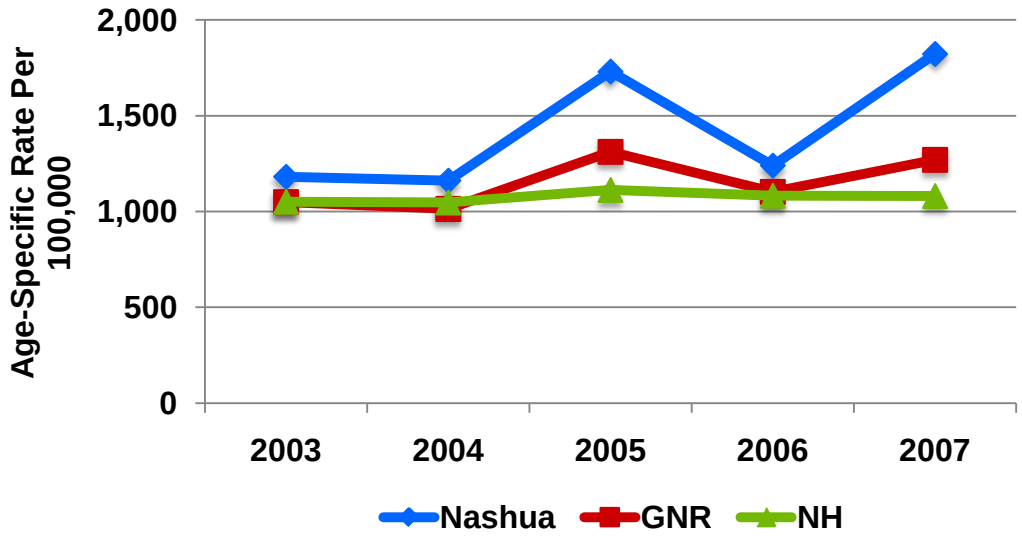
Children with poor vision can have difficulty in reading and performing everyday tasks. Although 2.9 million of the 3.3 million individuals with impaired vision are over the age of 65, 5-10% of preschool age children do not see as well as they should. Common eye problems in children include nearsightedness and amblyopia, or lazy eye which affects 2-4% of preschoolers. It is estimated that only one out of every seven preschoolers receives an eye exam and less than one in four receives a vision screening. The Nashua School District provides vision screening for all 2nd graders. During the 2010 to 2011 school year, 11.2% of the students receiving vision screening failed and were recommended for follow-up.[30]

Preventable Hospitalizations

According to the Agency for Healthcare Research and Quality, ambulatory care sensitive conditions (ACSC) are conditions where an individual has been hospitalized with a condition or issue that could have been prevented with appropriate prevention or management of a chronic disease. A high rate may signify a lack of obtaining appropriate primary care or lack of adequately managing their condition. Examples of ambulatory care sensitive conditions include asthma exacerbations and short term complications of diabetes.[31] Hospitalizations for ACSCs accounted for 14% of all inpatient hospitalizations from 2003-2007 in New Hampshire residents. The estimated cost for ACSC's in New Hampshire was $11 billion and patients with Medicare accounted for 21% of all ACSC admissions followed by 12% of self-payers, 9% of Medicaid and the remaining from private insurance or worker's compensation.[4]

Children without adequate primary care and preventative services are at risk of going to the emergency department or being hospitalized for ACSCs. In New Hampshire, the age specific rate was 1,081 per 100,000 (CI 1,006-1,156) for children under four years of age which is significantly lower than the Nashua rate at 1,822 per 100,000 (CI 1,474-2,228) in 2007. The Greater Nashua Region is also significantly lower than Nashua at 1,269 (CI 1,076-1,461) (Figure 4.16).[1]

Figure 4.16 Hospitalization for Ambulatory Care Sensitive Conditions, Under 4 Years Old, 2003-2007



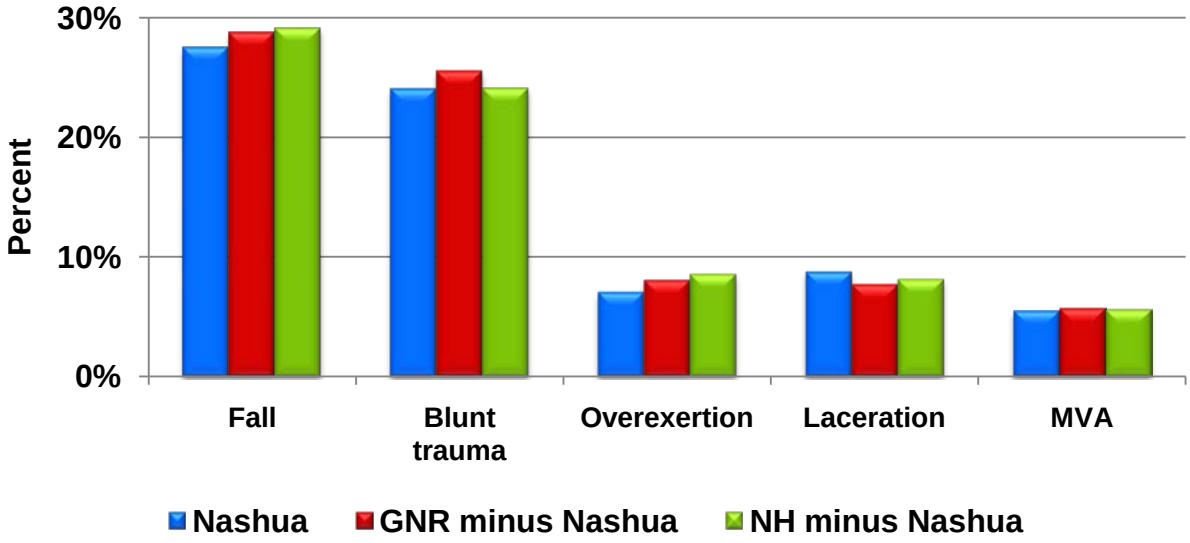
Source: NH DHHS

Injury

Injuries can cause serious health effects or death for children and adolescents. Injuries and poisonings are the number one cause of emergency department visits and the number two cause of hospitalizations for children 2 to 19 years of age in New Hampshire and Nashua. The number one leading cause of death for teenagers 13 to 19 years of age in New Hampshire are injuries and unintentional poisonings.[1] Prevention of injuries in children is crucial to preventing emergency department visits, hospitalizations, and deaths. For more information on unintentional poisonings reference Chapter 5: Healthy Homes and Environmental Health.

In Nashua and the Greater Nashua Region, the top five causes of injury for children under 17 years are falls, blunt trauma, overexertion, lacerations and motor vehicle accidents (MVA).[1,] With the exception of motor vehicle accidents, the New Hampshire rates for these injuries are higher than the national rates. The cost for the top five causes of injury was $134 million in acute emergency department care and $165 million for inpatient care in 2007.[4] Of all the emergency department visits for injury for children in Nashua from 2003-2007, 28% (3,644) of them were due to falls and 24% (3,181) were for blunt trauma. For Greater Nashua Region children, not including Nashua, there were an additional 5,564 falls and 4,941 blunt trauma cases from 2003-2007 (Figure 4.17).[1]

Figure 4.17 Top 5 Causes of Emergency Department Visits for Injury, Under 17 Years Old, 2003-2007



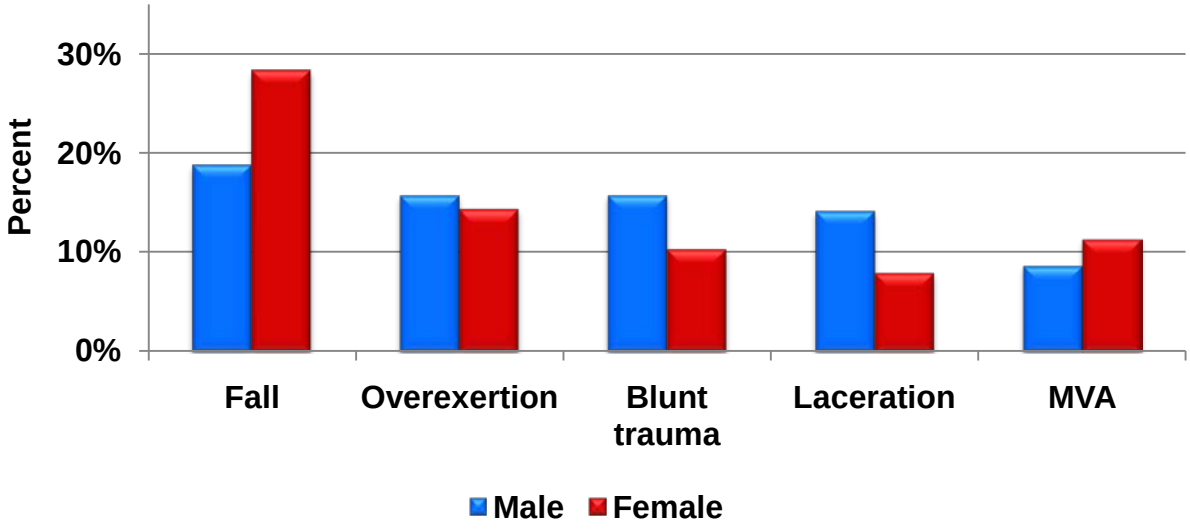
Source: NH DHHS

Similar to children, the top 5 injuries for adults over 18 years of age are falls, overexertion, blunt trauma, lacerations and motor vehicle accidents (MVA). Of all the emergency department visits by adults in Nashua from 2003-2007, 23% (10,262) were due to falls and 15% (6,646) were for overexertion. When separated by gender, more females experienced falls than males and more males experienced lacerations than females (Figure 4.18). These trends are similar for the Greater Nashua Region.[1]

"The top five causes of injury in children under 17 years old are falls, blunt trauma, overexertion, lacerations and motor vehicle accidents."

- NH DHHS ED Database

Figure 4.18 Top 5 Causes of Emergency Department Visits for Injury in Nashua Adults by Gender, 2003-2007



Source: NH DHHS

Motor Vehicle Accidents

According to the Nashua Police Department, there were 3,495 motor vehicle accidents in Nashua in 2009, which has decreased 10% since 2005. In the United States, injuries sustained in motor vehicle accidents account for 150 emergency department visits for children under 19 years of age every hour. Prevention measures such as using a car seat for babies, using seatbelts and not driving while under the influence can reduce the number of injuries sustained from motor vehicle accidents.[32] In 2005 in the United States, 1,617 children under the age of 15 died in a car accident and of all occupants that died (31,415), more than half were not wearing their seat belt. Additionally, using child safety seats can reduce the risk of death by 71% for infants and 54% for toddlers.[33]

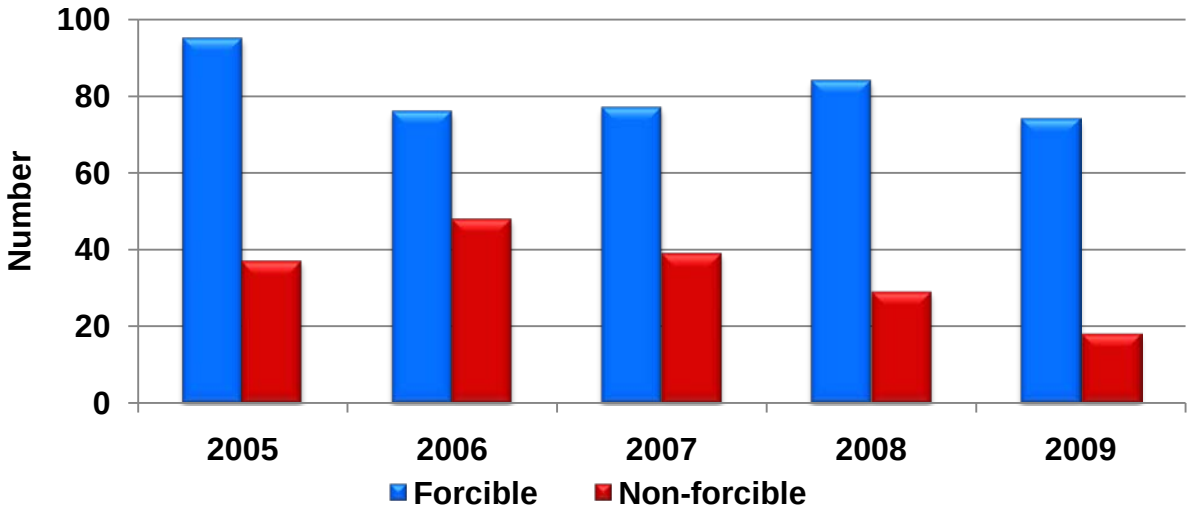
In 2007, New Hampshire had more than 32 emergency department visits per day and 850 hospitalizations due to motor vehicle accidents with a total cost of $61 million.[4] Nationally, 84% of drivers used a seat belt in 2009.[34] In comparison, approximately 66% of New Hampshire adults and 62% of Nashua adults always use a seatbelt.[2,4] The Healthy People 2020 objective for seat belt use is 92.4%, which New Hampshire and Nashua do not currently meet. According to the YRBS, 13% of New Hampshire's adolescents do not wear seatbelts, 23% have been in the car with a drunk driver, and 9% have operated a vehicle while intoxicated.[35]

Assault, Violence & Bullying

Violence affects people from all age groups and walks of life and is a serious public health issue. In 2007 alone, more than 18,000 people were victims of homicide and for those that survived, the physical and emotional scars can last a lifetime.[36] From 2003-2007, there were 1,787 emergency department visits for assault for Nashua residents, 604 for females and 1,183 for males, and an additional 991 for Greater Nashua Region residents, 331 for females and 660 for males.[1] According to the 2009 Nashua Police Department Annual Report, there were nine homicides from 2005-2009 and 1,073 assault offenses in 2009, including aggravated assaults,

simple assaults and intimidation in Nashua. From 2005 to 2009, there was a 17% increase in assaults in Nashua. Additionally in 2009, there were 74 forcible sex offenses and 18 non-forcible sex offenses, which decreased slightly from 2008 (Figure 4.19).[37]

Figure 4.19 Sex Offense Arrests, 2005-2009



* statistically significant decrease

Source: Nashua Police Department, 2009 Annual Crime Report

More recently, bullying and cyberbullying have received publicity and attention throughout New Hampshire and the nation, especially with the passing of the revised "Pupil Safety and Violence Prevention Law" in 2010. Bullying often involves actions towards another person due to their physical characteristics, gender identity, socioeconomic status or learning ability.[38] Nationally, 20% of students in grades 9-12 were bullied on school property. According to the YRBS, 22% of high school students in New Hampshire were bullied on school property in the past 12 months.[35] Furthermore, New Hampshire teenagers also reported:

- 14% of males compared to 3% of females carried a weapon on campus in the past 30 days,
- 5% of students did not go to school because it felt unsafe,
- 31% of males compared to 20% of females had at least one physical fight in the past 12 months,
- 4% of students were injured at least once in a fight in the past 12 months and were treated by a doctor or nurse,
- 10% were intentionally hit, slapped, or physically hurt by a boyfriend or girlfriend in the past 12 months,
- 7% were forced to have sexual intercourse.[35]

[1]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.

[2] 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.

[3]American Cancer Society. (2010). *Cancer Facts and Figures 2010*. Retrieved on April 14, 2011 from http://www.cancer.org/acs/groups/content/@epidemiologysurveilance/documents/document/acspc-026238.pdf.

[4]New Hampshire Department of Health & Human Services (NH DHHS). (2011). *2011 New Hampshire State Health Profile.* Retrieved on April 14, 2011 from http://www.dhhs.nh.gov/dphs/documents/2011statehealthprofile.pdf.

[5]Bureau of Public Health Statistics and Informatics. (2003-2007). *New Hampshire State Cancer Registry; Surveillance Epidemiology and End Results Program (SEER)*. Concord, New Hampshire: New Hampshire, 2003-2007.

[6]National Cancer Institute. (2011). *Cervical Cancer Screening Overview*. Retrieved on July 17, 2011 from http://www.cancer.gov/cancertopics/pdq/screening/cervical/HealthProfessional.

[7]National Cancer Institute. (2011). *Prostate Cancer Screening Summary of Evidence*. Retrieved on July 17, 2011 from http://www.cancer.gov/cancertopics/pdq/screening/prostate/HealthProfessional.

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Source: Clip Art

Chapter 5:
Healthy Homes and Environmental Health

Source: City of Nashua, Division of Public Health and Community Services

This section of the Community Health Assessment was completed in collaboration with the University of New Hampshire, Masters of Public Health program. A special thank you goes to the advisors and five students that worked diligently during their course to gather and analyze data and write this section of the Community Health Assessment!

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A healthy home, a healthy environment and personal health are inextricably linked as American's spend about 50% of their time in their household and 50% of their time at work and in the community.[1] Substandard housing and environmental hazards can contribute to childhood lead poisoning, injuries and respiratory illnesses. Although there have been many improvements to housing in the past few decades, such as sanitation and ventilation, poorly maintained homes create an unhealthy and unsafe environment for individuals and families of all income levels and geographic areas. Some of the leading causes of preventable deaths, diseases and disabilities in the United States are from asthma, lead poisoning, house fires, falls and injuries, which directly relate to housing and the environment. Studies have demonstrated improved health outcomes with policies that target the home environment. For example, lead poisoning prevention policies have significantly reduced childhood lead exposure and policies requiring smoke alarms in public, commercial and multifamily dwellings have reduced fire fatalities in the United States.[1]

With the need to create healthier living environments, in 2009 the Surgeon General released a "Call to Action to Promote Healthy Homes" to highlight the public health impact of housing and how it contributes to the health of Americans. The Healthy Homes Program from the Centers for Disease Control and Prevention (CDC) embraces this call to action by identifying health, safety, and quality of life issues in the home and acting systematically to eliminate or mitigate the problems.[2] This section will reference factors within the residential setting, as well as external factors, such as air and water quality, which affect an individual's health and well being.

"The connection between the health and the dwelling of the population is one of the most important that exists."
—Florence Nightingale

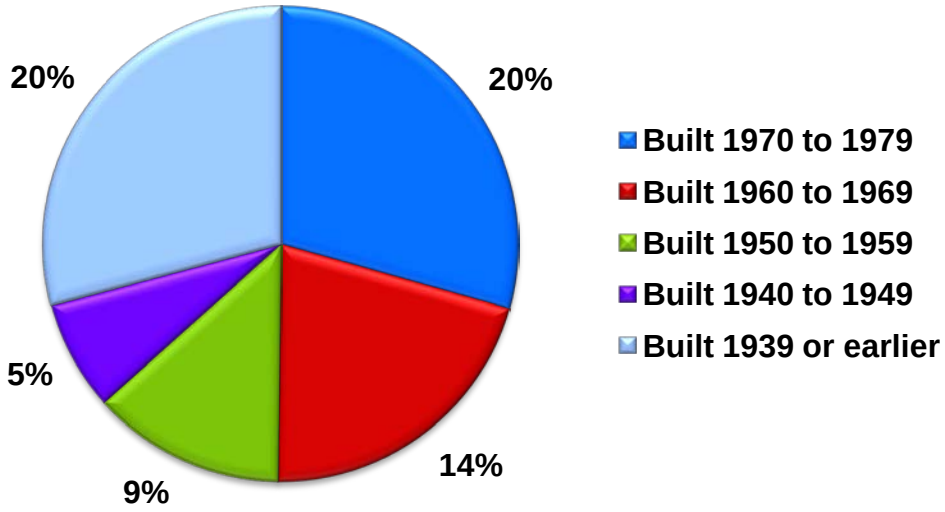
Lead Poisoning

Children are at an increased risk for health problems associated with lead poisoning when their brains and nervous systems are still developing. According to the U.S. Environmental Protection Agency, without early detection, children with elevated blood lead levels can suffer from:

- Damage to the brain and nervous system,
- Behavior and learning problems, such as hyperactivity,
- Slowed growth,
- Hearing problems, and
- Headaches.

Exposure to lead can occur through a variety of sources, such as dust and soil, but the most common route is through the ingestion of lead-based paint.[3] The United States banned lead-based paint in 1978 however, many older homes still contain lead-based paint that can expose young children to lead when the paint deteriorates or the property is renovated. In 2000 in the United States, there were an estimated 1.2 million housing units with children under six years of age with lead-based paint hazards.[1] Nashua has been identified by the New Hampshire Healthy Homes and Lead Poisoning Prevention Program as a high risk community because of the number of housing units built prior to 1950, the proportion of the population under the age of six, the number of children living in poverty and the number of children enrolled in Medicaid and federal assistance programs.[4] In Nashua, about 8,732 (25%) housing units were built prior to 1950 and roughly 23,837 (69%) were built before 1978.[5]

Figure 5.1 Nashua Housing by Year Structure Built



Source: U.S. Census Bureau, 2000 U.S. Census

For more information on Healthy Homes and lead poisoning in New Hampshire, visit http://www.dhhs.nh.gov/dphs/bchs/clpp/index.htm.

Elevated lead levels can be detected by testing the blood of an individual. A blood lead level of 10 micrograms per deciliter (µg/dL) or higher for children ages six and under is considered to be an elevated blood lead level.[4] In the United States, there were 3,136,843 children under 72 months of age tested for lead poisoning and 31,524 of these children had confirmed elevated blood lead levels in 2007.[6] In New Hampshire from 2003-2009, there were 1,402 children with lead poisoning and specifically in 2009, 118 of the 14,750 (0.8%) children screened for lead had newly confirmed elevated blood lead levels. Similarly in Nashua in 2009, 0.6% of the children screened had newly confirmed elevated blood lead levels. To avoid duplication in numbers, "newly confirmed" indicates children that have not been previously confirmed as having an EBLL.[4] The Healthy People 2020 objective and target for lead poisoning is to eliminate elevated blood lead levels in children.[7] Nashua comes close to reaching the Healthy People 2020 target, however, in 2009, the screening rate for 12 to 23 month olds was 59.5%, and for 24 to 35 month olds it was 33%, demonstrating the need to increase the screening rates for children (Table 5.1). In comparison, the Town of Berlin, New Hampshire had a screening rate of 78.3% for 12 to 23 month olds and a rate of 77.5% for 24 to 35 month olds in 2009. The screening rates for Nashua have increased steadily since 2006 with rates slightly higher than the state average (Figure 5.2).[4]

Table 5.1 Lead Level Screening Rates, Nashua, 2006-2009

	Age Group	Initial Screening Rate[1,2] (%)	Confirmed Elevations / Total Children Tested (0-71 months)
2009	12-23mo	59.5%	0.6%
	24-35mo	33.0%	
2008	12-23mo	52.1%	0.4%
	24-35mo	29.7%	
2007	12-23mo	47.5%	0.9%
	24-35mo	20.9%	
2006	12-23mo	43.6%	0.9%
	24-35mo	18.3%	

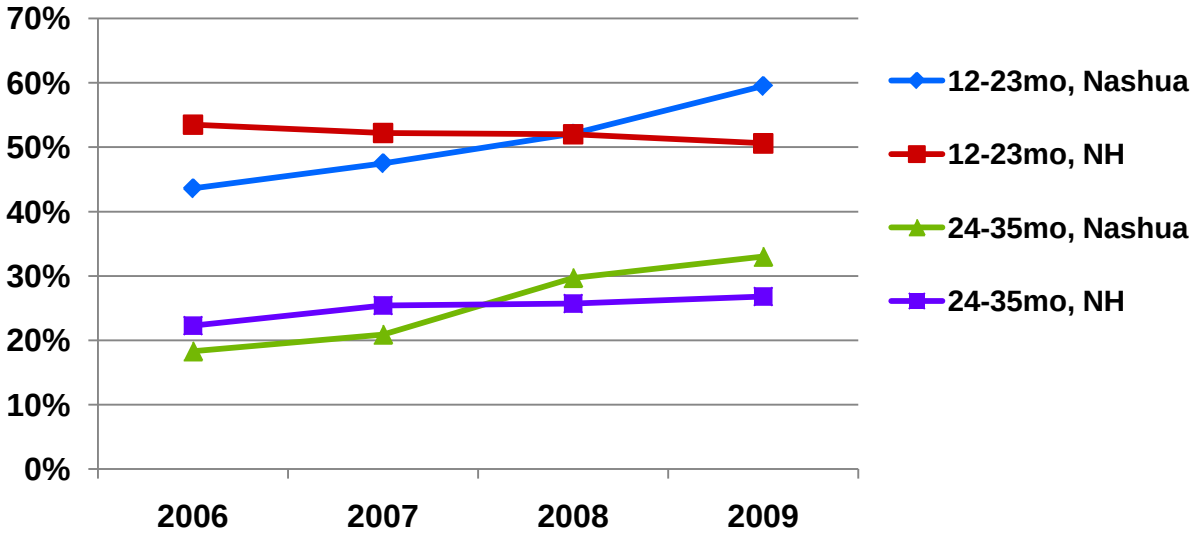
Source: New Hampshire Healthy Homes and Lead Poisoning Prevention Program, NH DHHS

[1]In 2006 and 2007, screening tests included any test where the child has never had a confirmed elevation and the test is not a confirmatory test, only includes one test per child. Confirmed elevations included children confirmed as elevated (one venous ≥10 µg/dL or two capillaries ≤12 weeks apart that is ≥10µg/dL) for the first time.

[2]In 2008 and 2009, screening tests included any test where the child has never had a confirmed elevation, only includes one test per child. Confirmed elevations includes children confirmed as elevated (one venous ≥10µg/dL) for the first time.

In 2009 in Nashua, the screening rate for 12 to 23 month olds was 59.5% and for 24 to 35 month olds it was 33%, demonstrating the need to increase the screening rates for children.

Figure 5.2 Screening Rates by Year for Nashua and NH, 2006-2009



Source: NH DHHS

Map 5.1 was created to highlight the percent of pre-1950 housing units in each census tract in Nashua and the neighborhoods with the largest number of children with elevated blood lead levels. A red dot was *randomly* placed for each case in the census block where the child was living when they were tested for lead poisoning from 2000 to 2010 and does not represent an actual housing unit. Census Tracts 105, 106 and 108 have the largest number of elevated blood lead level cases in children and also have the greatest percent of pre-1950 housing according to the 2005-2009 American Community Survey (Map 5.1). About 40% of the elevated blood lead level cases were in census tract 108, 20% were in census tract 105, 13% were in census tract 106 and 27% were in the remaining fourteen census tracts.[8,9] Additionally, the census tracts in Nashua with the highest percentage of people living in poverty are Census Tracts 105 and 107, followed by Census Tracts 108 and 106, where the percent of people living in poverty ranges from 10.5% to 31.7% (reference Chapter 1:Demographics for the map on poverty).

The City of Nashua Community Development Division received a grant from the U.S. Department of Housing and Urban Development (HUD) to address lead hazards in housing units. As part of the grant, there were a total of 191 units (56 properties) were the lead hazard was mitigated. In these units, eight had children with elevated blood lead levels and 73 of the units had children under the age of six. Thirty-three percent (33%) of the units were in census tract 108, 20% were in census tract 105 and 13% were in census tract 106, which, as stated earlier, have the greatest number of children with elevated blood lead levels and pre-1950 housing (Table 5.2).[10]

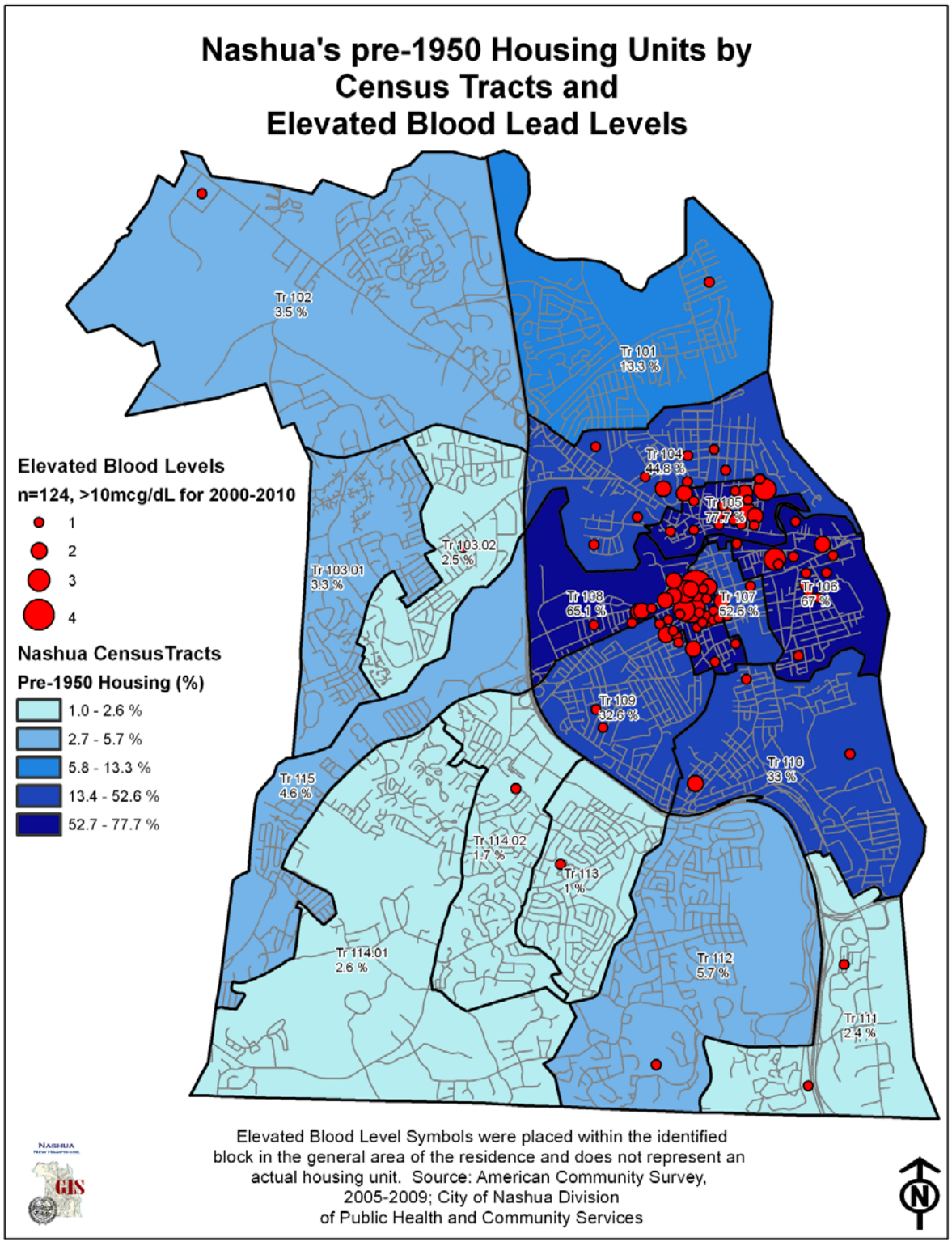
Table 5.2 Pre-1950 Housing, Lead Poisoning and Lead Hazards by Select Census Tracts

Census Tract (CT)	Pre-1950 Housing in each CT (%)[1]	Lead Poisoning Cases by CT, 2000-2010 (%)[2]	Housing Units with Lead Hazards Addressed by CT (HUD Grant) (%)[3]
104	268 (44.8%)	11 (8.9%)	3 (1.6%)
105	1,414 (77.7%)	25 (20.2%)	53 (28%)
106	1,760 (67%)	16 (13%)	31 (16.2%)
108	2,106 (65.1%)	49 (39.5%)	63 (33%)

[1] *2005-2009 American Community Survey*
[2] *City of Nashua, Division of Public Health and Community Services*
[3] *City of Nashua, Community Development Division*

Source: City of Nashua, Division of Public Health and Community Services

Map 5.1 Pre-1950 Housing Units and Lead Poisoning by Census Tract



Source: U.S. Census Bureau, 2005-2009 American Community Survey; City of Nashua, Division of Public Health & Community Services

Unintentional Poisonings

Poison is defined as any product or substance that can harm someone if it is used in the wrong way, by the wrong person, or in the wrong amount. Potentially poisonous items can include household products, chemicals at work or in the environment, drugs (prescription, over-the-counter, herbal, illegal or animal medicines), snake bites, spider bites, and scorpion stings. Poisons can enter the body through the eyes and skin, inhalation or ingestion.[12] Unintentional poisoning refers to a person who accidentally takes or is administered the wrong medication, the wrong dosage or accidentally ingests, inhales or absorbs a toxic substance. This would not include the intentional misuse or abuse of a substance.

The Northern New England Poison Center (NNEPC) receives calls about poisonings from health professionals and the public and provides treatment advice to the caller. In 2010, there were 79 calls from Nashua, 137 calls from the Greater Nashua Region (including Nashua) and 1,104 calls from New Hampshire. The most common reasons for the calls to the NNEPC were:

- Cosmetics and personal care products,
- Foreign bodies,
- Topical preparations,
- Cardiovascular drugs,
- Antihistamines,
- Cleaning products,
- Analgesics,
- Vitamins,
- Antimicrobials,
- Plants and pesticides.

Visit the Northern New England Poison Control website at http://www.mmc.org/mmc_body.cfm?id=2046

or call 1-800-222-1222.

Non-pharmaceutical substances are a greater hazard among children less than five years old and pharmaceuticals are a greater hazard among those over twenty years old. About 37% of the calls were for cosmetics and cleaning products.[13]

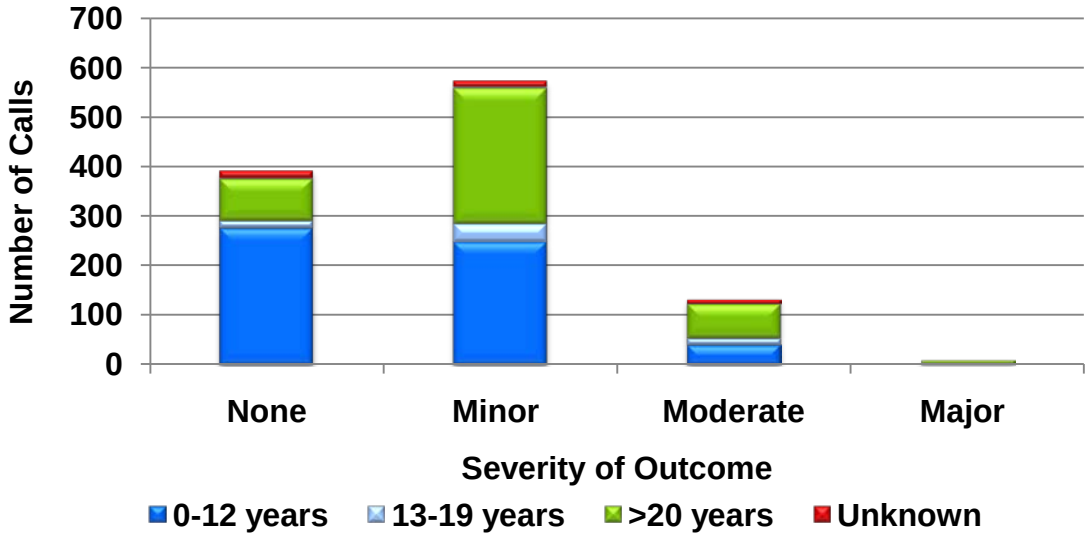
Calls from the poison centers across the nation are entered into a database called the Toxic Exposures Surveillance System (TESS). The demographics, medical outcomes, the route of exposure (e.g. ingestion), management site and information on the substance is collected and maintained in the database. For medical outcomes, TESS differentiates them into five categories:

- No effect,
- Minor effect (self limiting such as brief vomiting or headache),
- Moderate effect (more persistent or severe, such as sustained rapid heart rate with associated decrease in blood pressure or seizures),
- Major effect (potentially life-threatening),
- Death.[14]

There were no deaths reported to the NNEPC in 2010 attributed to poisonings in New Hampshire. Deaths are coded for the cause of death, such as cardiac arrest or respiratory arrest, rather than a causal factor such as poisoning, so the NNEPC data base is not a strong source of mortality data for unintentional poisonings. The medical outcome data for New Hampshire, the region and Nashua showed predominantly “no effects” and “minor effects” with

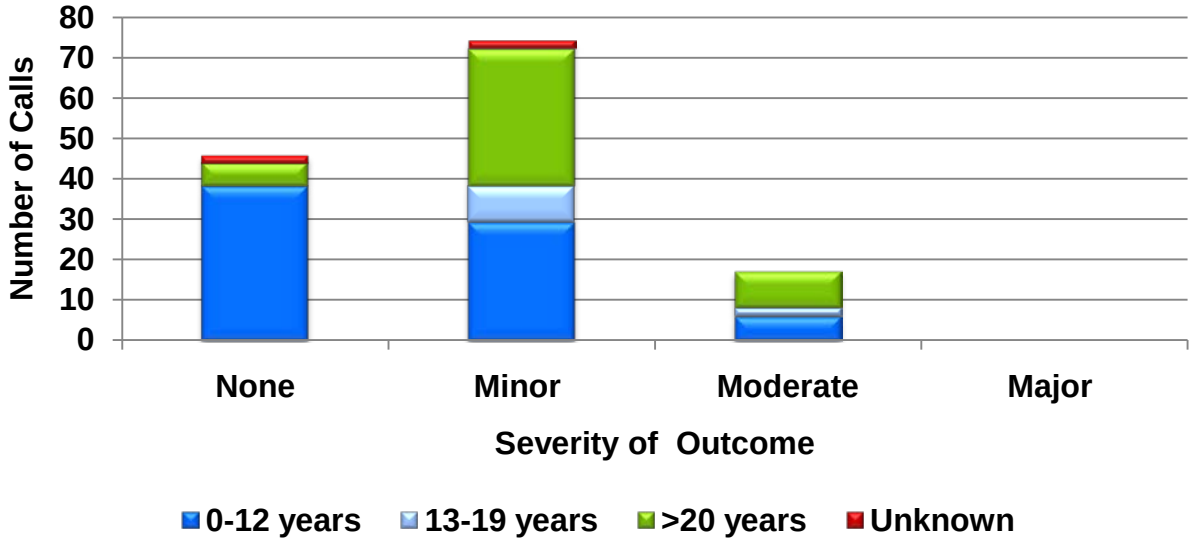
very few “moderate effects” and “major effects” (Figure 5.3, Figure 5.4, data for Nashua not shown).[14]

Figure 5.3 Medical Outcomes for New Hampshire, 2010



Source: Northern New England Poison Center

Figures 5.4 Medical Outcomes for the Greater Nashua Region, 2010



Source: Northern New England Poison Center

The NNEPC also captures the management site for callers which are classified as a non-healthcare facility, a healthcare facility or “other”. The distinctions in the management sites are based on the presence or absence of a physician. A health care facility has a physician present, where an ‘other’ might have a school nurse or Emergency Medical Technician present. In most cases, a non-healthcare facility would be an individual’s home. For New Hampshire, 92% of the calls were handled in a non-healthcare facility and 8% were handled in a healthcare facility. The calls from the Greater Nashua Region and Nashua differed from the state with

approximately 50% of the calls coming from a non-healthcare facility and about 40% of the calls coming from a healthcare facility (Table 5.3).[15]

Table 5.3 Calls to NNEPC by Management Site

	New Hampshire	Greater Nashua Region	Nashua
Non-Healthcare Facility	92%	51%	54%
Healthcare Facility	8%	40%	36%
Other	0%	9%	10%

Source: Northern New England Poison Center

Carbon Monoxide Poisonings

A colorless, odorless, poisonous gas, carbon monoxide is produced when a fuel, such as gas or kerosene, is burned. When done within or in close proximity to the home, carbon monoxide gas can build up. Human exposure to high levels can cause unconsciousness, long-term neurological disabilities and death. Low-level exposure can cause dizziness, headache and disorientation. Each year there are more than 450 deaths and 15,000 emergency department visits in the United States for carbon monoxide. Most carbon monoxide exposures occur in the winter months when households are burning fuel to heat their homes or use a generator during a power outage. The elderly and middle-aged adults account for about 60% of unintentional carbon monoxide deaths in the United States.[1]

In New Hampshire from 2003-2007, there were 533 emergency department visits for carbon monoxide poisoning and 70 emergency department visits for Greater Nashua Region residents (including Nashua).[16] In 2010 in Nashua, the fire department responded to 133 carbon monoxide calls. Of these calls, 32% were attributed to a detector malfunction and at 27% of the calls, carbon monoxide was detected.[17] According to the 2010 Nashua Community Health Survey, only 65.3% (22,264) of households have a working carbon monoxide detector in their home.[18]

Prevent Carbon Monoxide Exposure:

- ***Have your heating system, water heater and gas, oil, or coal burning appliances services by a qualified technician every year.***
- ***Install a battery operated carbon monoxide detector in your home and check the batteries every six months.***
- ***If you suspect carbon monoxide poisoning, seek medical attention.***
- ***Don't use a generator, charcoal grill, camp stove or other gasoline burning device inside your home, basement, garage, or near a window.***

For more information, visit the Centers for Disease Control and Prevention website http://www.cdc.gov/co/default.htm.

Radon

Radon is derived from the radioactive decay of uranium within the soil, water and earth's rock layers. Once it is released, the radioactive particles are dispersed in the air putting those who inhale it at risk for health concerns. According to the United States Surgeon General, radon exposure is the second leading cause of lung cancer after tobacco smoking in the United States.[19] Jeffrey Homestead from the Office of Air and Radiation at the Environmental Protection Agency said, "It's important to know that this threat is completely preventable. Radon can be detected with a simple test and fixed through well-established venting techniques. Americans need to know about the risks of indoor radon and have the information and tools they need to take action. That's why EPA is actively promoting the Surgeon General's advice urging all Americans to get their homes tested for radon."[20] Each year, it is estimated that nearly 20,000 Americans die from lung cancer that is linked to radon exposure and one in fifteen homes in the United States has a radon level above the recommended level of four picocuries per liter (pCi/L).[1] In New Hampshire, it is estimated that 14-20% of lung cancer cases are caused by radon inhalation.[21] Radon gas enters buildings through structural deficiencies such as cracks in the foundation and can be detected in many different places including residential homes and businesses.

The NH DHHS Environmental Public Health Tracking Program (NH EPHT) has selected radon as a top New Hampshire public health priority based on the following factors:

- The incidence of lung cancer in New Hampshire is above the national average for lung cancer.
- Due to its geological composition, New Hampshire is at an increased risk for radon exposure.
- An estimated one hundred residents die each year due to long term exposure to radon.
- An estimated 250,000 New Hampshire homes are untested for radon.[21]

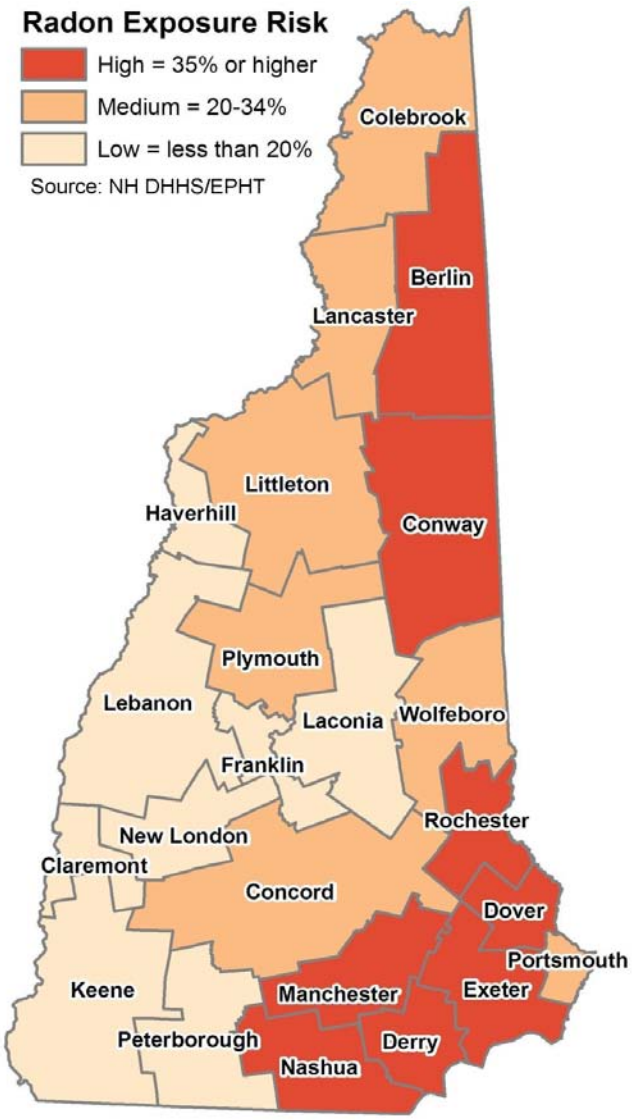
Certain geographical areas of New Hampshire, such as the northeastern and southeastern regions of the state, have a higher radon exposure risk (Figure 5.5). Radon Exposure Risk is defined as the percentage of homes in each hospital service area (HSA) with elevated radon levels. (Note: There are twenty-three hospital service areas that cluster around the twenty-three acute care facilities in New Hampshire and are slightly different from the Public Health Regions discussed in this Community Health Assessment.) The Nashua HSA is considered high risk because more than 50% of households reported testing their house for radon and between 35% and 45% of the radon tests came back as elevated.[22]

For information on radon testing in NH, call 603-271-6845 or visit http://des.nh.gov.

"When Nashua residents were asked what health condition was attributed to radon in the air, only 26% of Nashua residents correctly identified it as lung cancer with an overwhelming 62% that did not know the answer."

- ***NH Behavioral Risk Factor Surveillance System***

Figure 5.5 Map of Radon Exposure Risk by Hospital Service Area



Source: NH DHHS, NH Environmental Public Health Tracking Program[22]

Knowledge of Radon by the General Public

In 2008, data was collected using the New Hampshire Behavioral Risk Factor Surveillance System (BRFSS) to determine the knowledge base of residents on radon. The survey asked New Hampshire and Nashua residents:

- Have you ever heard of radon?
- Which conditions are associated with radon?
- Has your present home been tested for radon?
- Was the radon level in your house at or above 4 pCi/L?
- Have you installed a radon vent?

Eighty-three percent (83% CI 76.3-89.8%) of Nashua residents who participated in the BRFSS survey indicated that they had heard of radon in comparison with 87.8% (CI 86.5-89.1%) of New Hampshire residents. Of those that have heard of radon, 74.8% (CI 69-80.5%) of Nashua residents correctly identified it as a natural radioactive gas, others thought it was a byproduct of a nuclear plant, was emitted by power lines or did not know the answer. When asked what health condition is associated with radon in the air, only 26% (CI 20.5-31.8%) of Nashua residents correctly identified it as lung cancer with an overwhelming 62% (CI 55.5-68.4%) that did not know the answer and another 6.5% (CI 3.3-9.7) that associated radon to asthma. On the other hand, 35% (CI 33.3-36.5%) of New Hampshire residents were able to correctly identify lung cancer as the health condition (Table 5.4).[23]

Table 5.4 Knowledge about Radon and Health Effects

	Nashua	95% Confidence Intervals	New Hampshire	95% Confidence Intervals
What most closely described radon?				
By Product of Nuclear Plant	1.6%	0-3.6%	1.7%	1.2-2.3%
Natural Radioactive Gas	74.8%	69-80.5%	79.8%	71.3-74.4%
Emitted from Power Lines	2.6%	0.4-4.8%	2.4%	1.3-2.4%
None of the Above, Don't Know, Unsure	21.0%	15.7-26.4%	16.2%	22.2-25.0%
What health condition is most often associated with radon?				
Asthma	6.5%	3.3-9.7%	6.5%	5.6-7.4%
Heart Disease or Stroke	0.6%	0-1.6%	0.8%	0.5-1.2%
Lung Cancer*	26.2%	20.5-31.8%	34.9%	33.3-36.5%
Breast Cancer	0%	0%	0.8%	0.3-1.2%
Emphysema	0.4%	0-1.0%	1.8%	1.3-2.2%
Other	4.3%	1.4-7.3%	4.7%	3.9-5.6%
No condition/ don't know	61.9%	55.5-68.4%	50.5%	48.8-52.2%

Source: NH BRFSS
*Statistically significant.

Radon Testing

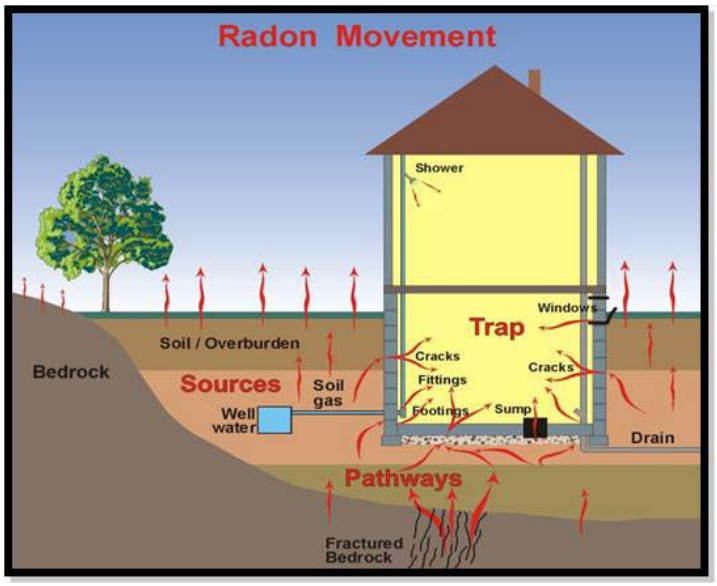
One of the Healthy Homes objectives is to test households for the presence of radon and to install a mitigation system if the test result is 4 picocuries per liter (pCi/L) or higher. The BRFSS asked Nashua residents that have heard of radon and live in a single or multi-family house or a condominium with a living space below the third floor, if their home has ever been tested for radon. Fifty percent (50% CI 43.2-57.7%) of residents indicated their home was tested for radon and of these, 20.9% (CI 12.6-29.2%) had a test result that was equal to or more than 4pCi/L, indicating measures should be taken to reduce the levels of radon in the air. Of those that had their home tested, only half (10.8% CI 4.2-17.5%) installed a radon vent to decrease radon levels.[23]

The New Hampshire Department of Environmental Services (NH DES) compiles data on the number and results of radon tests conducted through the state radon program. The data does not include test results from private radon testing agencies. From 1987 to 2009, there were 25,156 tests conducted through the program and 30.8% had a radon level above 4pCi/L. In Nashua, there were only 246 tests conducted, but 36% of them were above the recommended levels, indicating the city is high risk for radon exposure (Table 5.5).[24]

Table 5.5 Radon Tests and Results, 1987-2009

	Number of Tests	Number ≥4 pCi/L	Percent ≥4 pCi/L
Nashua	246	89	36.2%
Greater Nashua Region minus Nashua	3,864	1,445	37.4%
New Hampshire	25,156	7,759	30.8%

Source: NH DES



Source: U.S. Environmental Protection Agency[25]

Asthma

According to the CDC, asthma is a disease characterized by episodes of wheezing, breathlessness, chest tightness, and nighttime or early morning coughing. Allergic asthma accounts for 50% of all asthma and is attributed to common household triggers such as mold, cockroach droppings, pest dander, pet dander, particulate matter, and smoke. In 2009, the prevalence of asthma in the United States was 9.6% for children and 7.7% for adults. Current asthma prevalence is higher among females (9.3%) than males (7.0%) and is higher among African Americans (11.1%) than Caucasians (8.1%) and Hispanics (6.3%).[26] In 2007 in the United States, there were 3,447 deaths and more than $30 billion was spent on the direct expenditure of treating asthma.[27] Nationally, New Hampshire has one of the highest rates of asthma. The rate of asthma in adults has increased 27% since 2000 and each year about 8% of children and 10% of adults are diagnosed with asthma in New Hampshire.[28] In 2008, the prevalence of asthma in New Hampshire adults 18 years and over was 10.5% with 6.4% of males with asthma and 14.3% of females with asthma.[34] In Nashua, about 15% of adults have had asthma at some point in their life and 8.7% currently have asthma. For children in Hillsborough County, 8.3% currently have asthma (Table 5.6).[23]

Table 5.6 Prevalence of Asthma

Adult (2008 & 2009)		
	Lifetime Asthma (95% CI)	**Current Asthma (95% CI)**
Nashua	15.1% (11.5-18.8%)	8.7% (6.3-11.1%)
New Hampshire minus Nashua	16% (15-17%)	10.5% (9.7-11.2%)
Child (2005, 2006, 2007, 2008)		
	Lifetime Asthma (95% CI)	**Current Asthma (95% CI)**
Hillsborough County	*	8.3% (6.9-9.7%)
New Hampshire minus Hillsborough County	*	9.3% (8.3-10.3%)

** = Not Available*
Source: NH DHHS

According to a study completed by the CDC on data from the National Health Interview Survey, the rates of asthma among the poor in the United States are significantly higher at 11.2% (CI 10.5-12%) than the nonpoor at 7% (6.7-7.3%). When broken down by age, poor children and adults in the United States have significantly higher asthma rates than children and adults that are not poor. An abbreviated chart from the full report is below and highlights the prevalence of asthma among children and adults by race and poverty status (Table 5.7).[29]

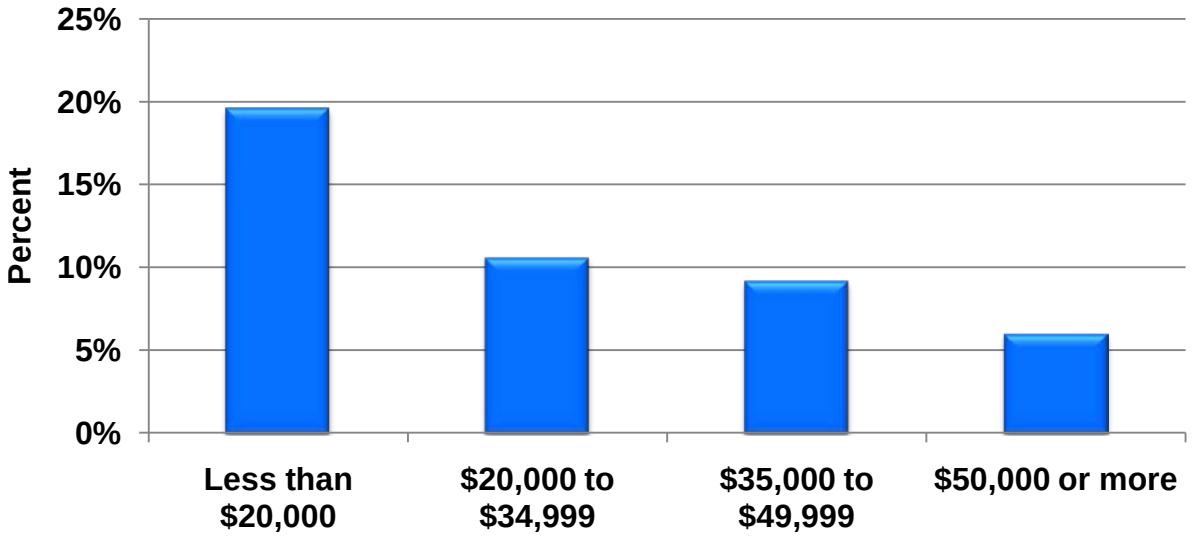
In Hillsborough County, children with houshold incomes of less than $20,000 are more likely to have asthma than children in households with an income over $50,000. There is a statistically significant difference with 20% (CI 10.9-28.3%) of poor children with asthma compared to 6% (CI 4.6-7.5%) of children with a household income over $50,000 (Figure 5.6). Similarly, adults in Nashua with an income less than $20,000 are more likely to have asthma than adults with a household income above $50,000, although there is no statistically significant difference (Figure 5.7).[23]

Table 5.7 Prevalence of Current Asthma Among Children and Adults by Race and Poverty, United States, National Health Interview Survey, 2006-2008

	Children % (95% CI)	Adults % (95% CI)	Total % (95% CI)
Poor	**11.7 (10.6-12.9)**	**11 (10.2-11.9)**	**11.2 (10.5-12)**
White, non-Hispanic	10.1 (8.1-12.5)	13.3 (11.9-14.7)	12.5 (11.3-13.8)
Black, non-Hispanic	15.8 (13.7-18.3)	10.9 (9.6-12.4)	12.2 (11.0-13.4)
Multiracial	21.1 (15.4-28.2)	20.2 (14.3-27.8)	20.5 (15.6-26.4)
Hispanic, Puerto Rican descent	23.3 (16.8-31.4)	22.1 (17.6-27.4)	22.4 (18.7-26.7)
Nonpoor	**8.2 (7.7-8.8)**	**6.6 (6.3-6.9)**	**7 (6.7-7.3)**
White, non-Hispanic	7.6 (7-8.3)	6.8 (6.4-7.2)	7 (6.7-7.4)
Black, non-Hispanic	13.6 (11.8-15.7)	6.5 (5.8-7.4)	8.4 (7.6-9.2)
Multiracial	9.2 (6.4-13.2)	14.9 (11.5-19.1)	13.4 (10.8-16.6)
Hispanic, Puerto Rican descent	14 (10-19.3)	9.1 (6.8-12.2)	10.4 (8.3-13)

Source: MMWR, January 14, 2011, Vol. 60

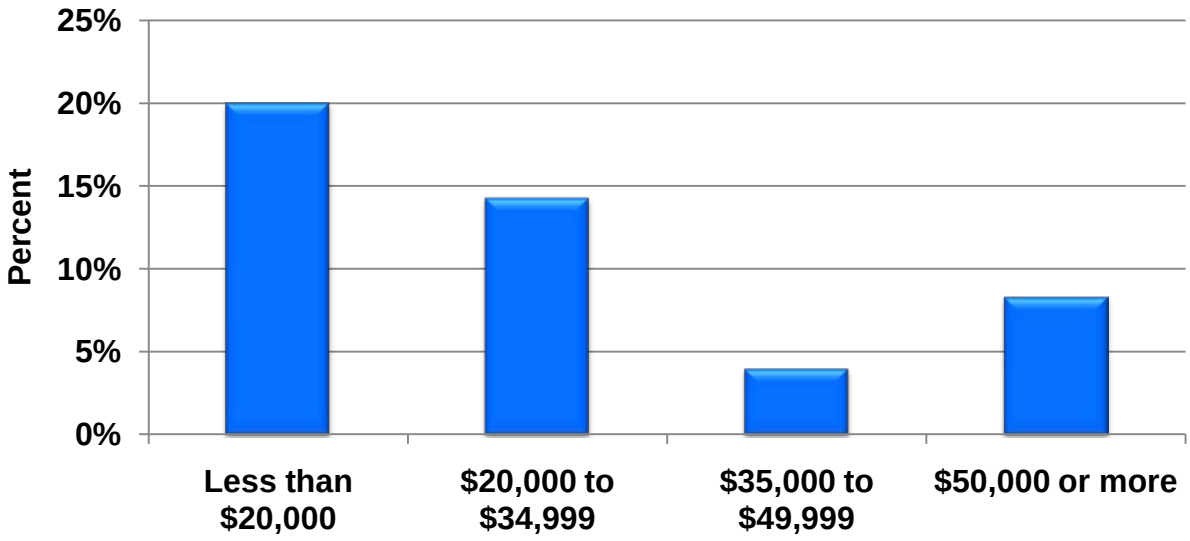
Figure 5.6 Childhood Asthma by Household Income, Hillsborough County, 2005-2008



Source: NH DHHS

For information on the Asthma Program in NH, visit http://www.dhhs.nh.gov/dphs/cdpc/asthma/index.htm.

Figure 5.7 Adult Asthma by Household Income, Nashua, 2005-2008



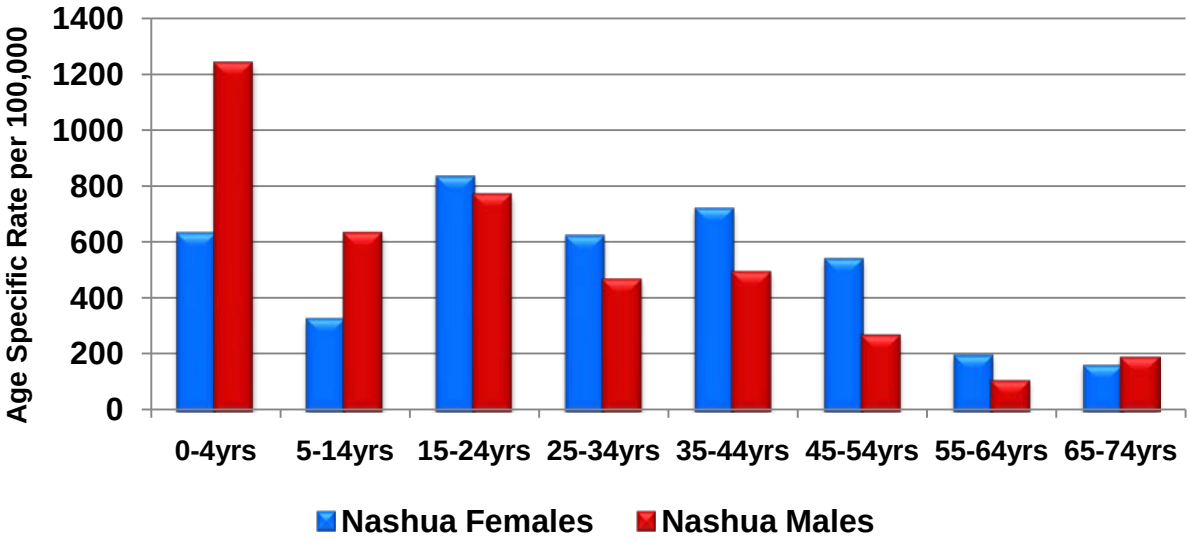
Source: NH DHHS

Visits to the emergency department can be limited with appropriate management and control of asthma by minimizing triggers, proper treatment and follow-up care with providers. In the United States in 2006, asthma accounted for 1.1 million inpatient hospital visits and 1.6 million emergency department visits.[27] Nashua, along with Manchester, has one of the highest rates of emergency department visits for asthma in the state.[28] One of the Healthy People 2020 goals for asthma is to reduce emergency department visits and inpatient hospitalizations relating to asthma for children under the age of five.[30]

In 2007, there were 428 emergency department visits and 120 inpatient hospitalizations for asthma for all age groups in Nashua residents. For the remaining Greater Nashua Region residents, there were an additional 396 visits to the emergency department and 90 inpatient hospitalizations. [16]

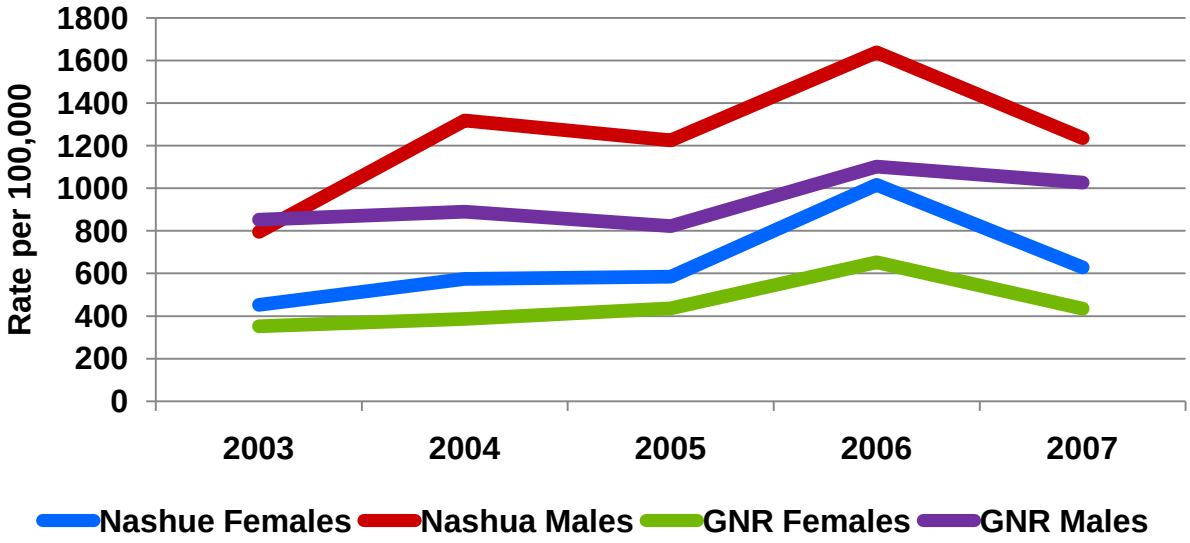
In Nashua in 2007, the rate of emergency department visits for females under the age of five was 628 per 100,000 compared to 1,236 per 100,000 for males. Nashua males ages zero to four years old had the highest rate of emergency department visits and Nashua males ages 55-64 had the lowest rate (Figure 5.8). Likewise, the males under the age of four years in the Greater Nashua Region (including Nashua) had a higher rate of emergency department visits compared to females under the age of four years (Figure 5.9). Overall, the rates of emergency department visits for children under the age of four years has increased from 2003 to 2007.[16]

Figure 5.8 Emergency Department Rate per 100,000 by Gender and Age, Nashua, 2007



Source: NH DHHS

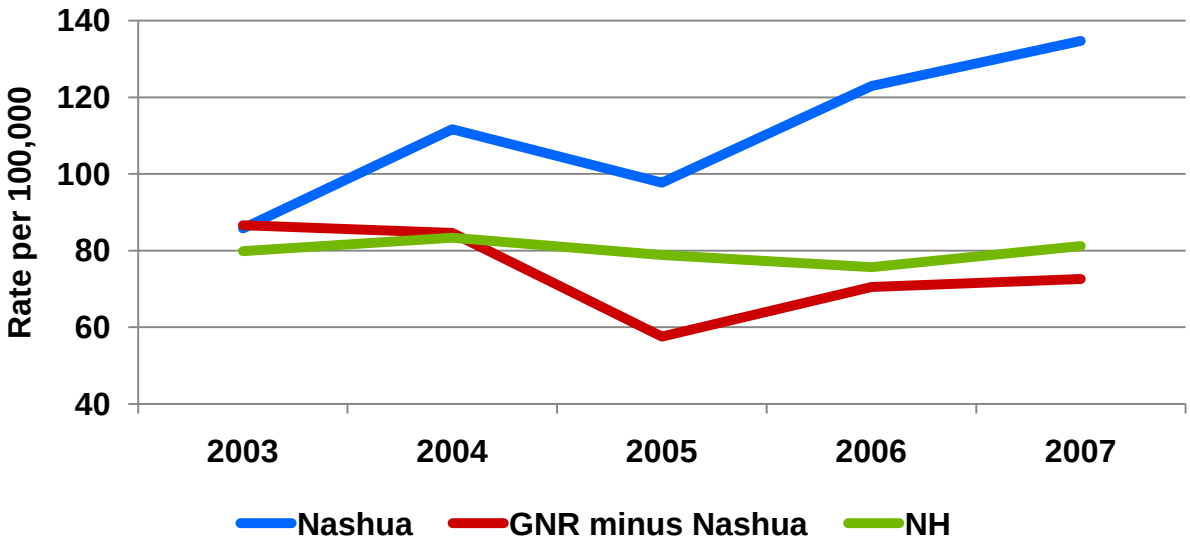
Figure 5.9 Emergency Department Rate per 100,000 for Children under 4 Years, 2003-2007



Source: NH DHHS

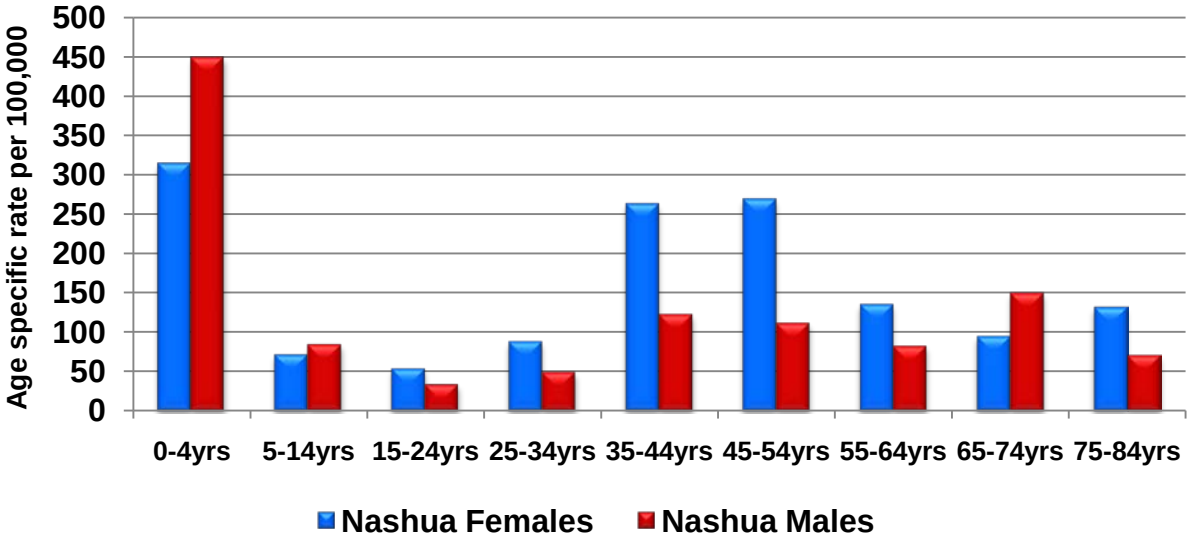
The hospitalization rates for Nashua are higher than the Greater Nashua Region and New Hampshire. In 2007, the rate for hospitaliztions due to asthma in Nashua was 135 per 100,000 while the rate in New Hampshire was 81 per 100,000 and the rate in the Greater Nashua Region (without Nashua) was 73 per 100,000 (Figure 5.10). In this same year, the hospitalization rate for Nashua males under four years of age was 479.7 per 100,000 and for Nashua females under four years of age was 314 per 100,000, which is higher than the rates for the other age groups (Figure 5.11).[16]

Figure 5.10 Asthma Hospitalization Rates, 2003-2007



Source: NH DHHS

Figure 5.11 Inpatient Hospitalization Rate per 100,000 by Gender and Age, Nashua, 2007



Source: NH DHHS

The averge cost per discharge for asthma in a Nashua resident in 2007 ranged from $1,109 to $3,886 for an emergency department visit and $11,768 to $40,145 for inpatient hospitalization (Table 5.8).[16]

Table 5.8 Average Cost per Discharge by Payor, Nashua, 2007

	Medicaid	Medicare	Private/Other	Self Pay	Workers Compensation
Emergency Department Discharge	$2,031	$2,945	$3,886	$2,102	$1,109
Inpatient Hospitalization Discharge	$11,768	$40,145	$26,093	$14,706	*

** = Not Available/Applicable*
Source: NH DHHS

Although the seasonal flu vaccine is recommended for all eligible individuals over 6 months of age, it is especially important for individuals with chronic medical conditions to receive the seasonal influenza vaccine. Influenza can cause inflammation of the airways and lungs which can complicate asthma by triggering asthma attacks and making asthma symptoms worse. Adults and children with asthma are more likely to develop pneumonia after getting sick with influenza than people who do not have asthma. When children and adults are hospitalized with influenza, the most common medical condition seen in these patients is asthma.[31] According to the BRFSS, about 50% (40.6-59.4%) of Nashua's asthmatics received the influenza vaccine compared to 37% (34.4-40.9%) of non-asthmatic adults. For asthmatic children in Hillsborough County, about 47% (37.4-57%) were vaccinated compared to 23% (20.2-25.8%) of non-asthmatic children (Table 5.9).[23]

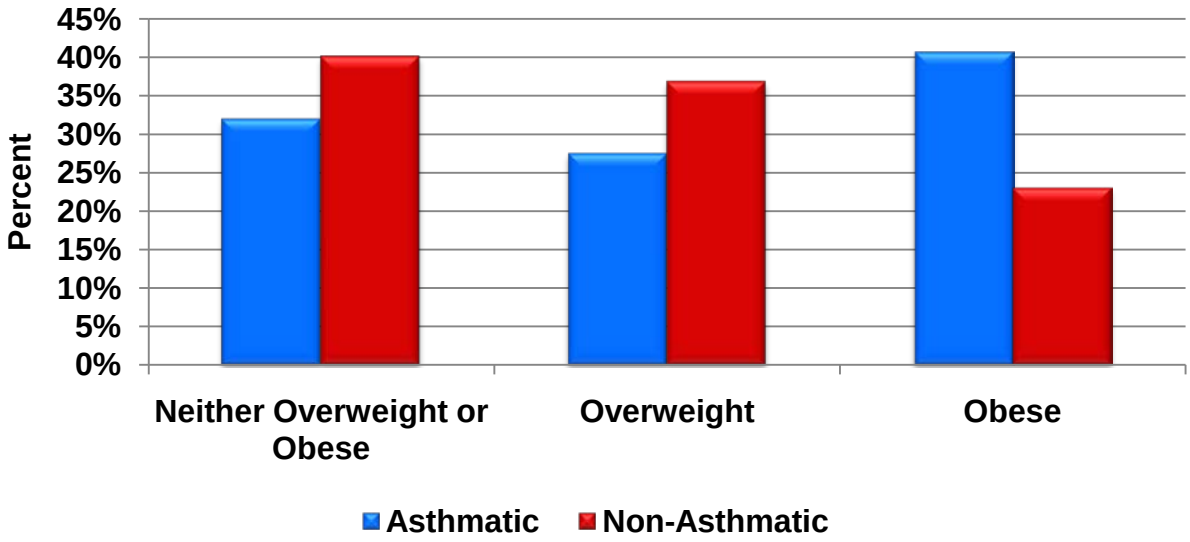
Table 5.9 Seasonal Influenza Vaccination in Last 12 Months by Asthma Status

Adults (2008 & 2009)		
	Vaccinated Asthmatics (95% CI)	**Vaccinated Non-Asthmatics (95% CI)**
Nashua	50% (40.6-59.4%)	37.6% (34.4-40.9%)
New Hampshire minus Nashua	50.1% (47.7-52.5%)	37% (36.3-37.8%)
Children (2005, 2006, 2008)		
	Vaccinated Asthmatics (95% CI)	**Vaccinated Non-Asthmatics (95% CI)**
Hillsborough County	47.2% (37.4-57%)	23% (20.2-25.8%)
New Hampshire minus Hillsborough County	43% (36.7-49.3%)	23% (21.2-24.7%)
Source: NH DHHS		

Obesity has been associated with an increase in asthma severity but additional research is needed to better understand the links.[32,33] In a report from the American Thoracic Society, it was found that obesity is a risk factor for asthma, with more severe disease that does not respond well to asthma therapy.[33] According to the BRFSS, about 40% (CI 31.2-50%) of

Nashua's obese adults have asthma compared to 31% (CI 22.6-41.1%) of Nashua's adults that are neither overweight or obese.[23]

Figure 5.12 Body Mass Index and Asthma in Nashua Adults, 2005-2009



Neither Overweight or Obese: BMI < 24.9; Overweight: BMI 25 to 29.5; Obese: BMI ≥30
Source: NH DHHS

Source: Clip Art

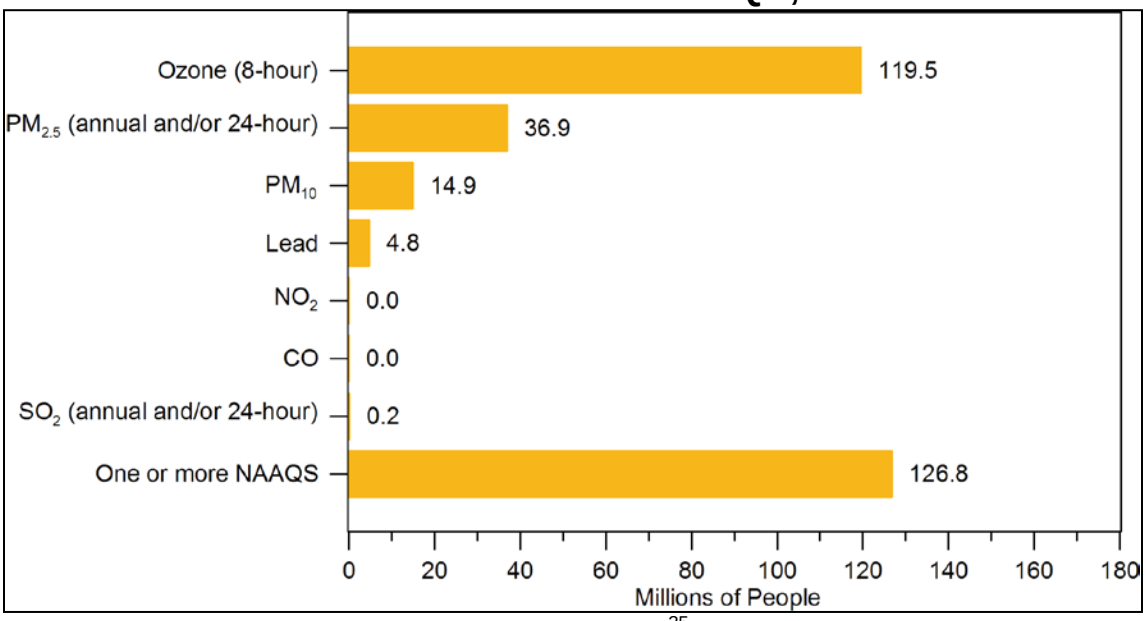
"Most persons with asthma can be symptom-free if they receive appropriate medical care, use inhaled corticosteroids when prescribed, and modify their environment to reduce or eliminate exposure to allergens."
-CDC

Air Quality

Our health is affected by the quality of the air we breathe. Although air pollution can be released by natural processes (volcanoes, wildfire), most air quality issues are due to human activities associated with industrial plants, power plants and vehicles with internal combustion engines. For New Hampshire, the major sources of air pollution are from woodstoves in the winter, emissions from metropolitan areas south of New Hampshire and large power plants in the Midwest. Poor air quality is linked to premature death, cancer, and long-term damage to respiratory and cardiovascular systems. Air pollution poses a greater health risk to sensitive individuals including those with heart and lung diseases, diabetes, the elderly and children.[35]

In order to protect the public's health, the US Environmental Protection Agency (EPA) has set National Ambient Air Quality Standards (NAAQS) for six key air pollutants including: ozone, fine particulate matter ($PM_{2.5}$), nitrogen dioxide, sulphur dioxide, carbon monoxide, and total reduced sulphur compounds.[35] The two most common outdoor air pollutants are ozone and fine particulate matter.[28] Since 1990, progress has been made in reducing these harmful air pollutants but despite improvements, millions of Americans continue to be exposed to unhealthy air. According to the EPA, approximately 127 million Americans lived in counties that exceeded national air quality standards in 2008 (Figure 5.13).[35]

Figure 5.13 People Living in Counties with Air Quality Concentrations above the Level of the NAAQS, 2008



Source: U.S. EPA[35]

Air Quality Index

The Air Quality Index (AQI) is based on pollutant concentration for four major air pollutants: ground level ozone, particle pollution, carbon monoxide, and sulfur dioxide. The AQI ranges from 0 to 500; the higher the AQI value, the greater the level of air pollution. As an AQI exceeds 100, the pollutant also exceeds the NAAQS and the air quality is considered to be unhealthy. This index is useful for reporting daily air quality levels and an associated level of health concern can be represented graphically to communicate health risks to the general public (Table 5.10). The Healthy People 2020 objective for Environmental Health seeks to improve air

quality by reducing the number of days the nation's AQI exceeds 100 to ten days or below. In 2008, there were eleven days for which the United States exceeded 100 on the AQI.[36]

Brief definitions from the EPA for the four major air pollutants are below:

- **Ozone:** a gas found in the air we breathe, which is classified as "good" or "bad". Bad ozone forms near the ground and can react chemically with sunlight while good ozone is in the Earth's atmosphere and shields us from ultraviolet rays.
- **Particle pollution (aka particulate matter):** a mixture of solid and liquid droplets that come in a variety of sizes and are small enough to enter the lungs where they can cause health problems. Fine particles are less than 2.5 micrometers and major sources are power plants, motor vehicles and forest fires. Coarse particles are between 2.5 and 10 micrometers and are commonly seen near grinding operations or dust that is stirred by traveling vehicles on the road.
- **Carbon monoxide:** odorless, colorless gas that is emitted by vehicle exhaust and wildfires.
- **Sulfur dioxide:** colorless, reactive gas that is produced when coal and oil are burned.[37]

Source: Clipart

Table 5.10 Actions to Protect Your Health from Major Air Pollutants

AQI Value	Ozone	Particle Pollution	Carbon Monoxide	Sulfur Dioxide
Good (0-50)	None	None	None	None
Moderate (51-100)	Sensitive groups should consider reducing prolonged or heavy outdoor exertion.	Sensitive groups should consider reducing prolonged or heavy outdoor exertion.	None	None
Unhealthy for Sensitive Groups (101-150)	Reduce prolonged or heavy outdoor exertion: • People with heart or lung disease • Children and older adults • People who are active outdoors	Reduce prolonged or heavy outdoor exertion: • People with heart or lung disease • Children and older adults	People with heart disease, such as angina, should reduce heavy exertion and avoid sources of carbon monoxide.	People with asthma should consider reducing exertion outdoors.
Unhealthy (151-200)	Avoid prolonged or heavy outdoor exertion: • People with heart or lung disease • Children and older adults • People who are active outdoors Everyone else should limit prolonged outdoor exertion.	Avoid all physical activity outdoors: • People with heart or lung disease • Children and older adults Everyone else should avoid prolonged or heavy exertion.	People with heart disease, such as angina, should reduce moderate exertion and avoid sources of carbon monoxide.	Children, asthmatics, and people with heart or lung disease should reduce exertion outdoors.
Very Unhealthy (201-300)	Avoid all outdoor exertion: • People with heart or lung disease • Children and older adults • People who are active outdoors Everyone else should limit outdoor exertion.	Everyone should avoid all physical activity outdoors.	People with heart disease, such as angina, should avoid exertion and sources of carbon monoxide.	Children, asthmatics, and people with heart or lung disease should avoid outdoor exertion. Everyone else should reduce exertion outdoors.
Hazardous (301-500)				

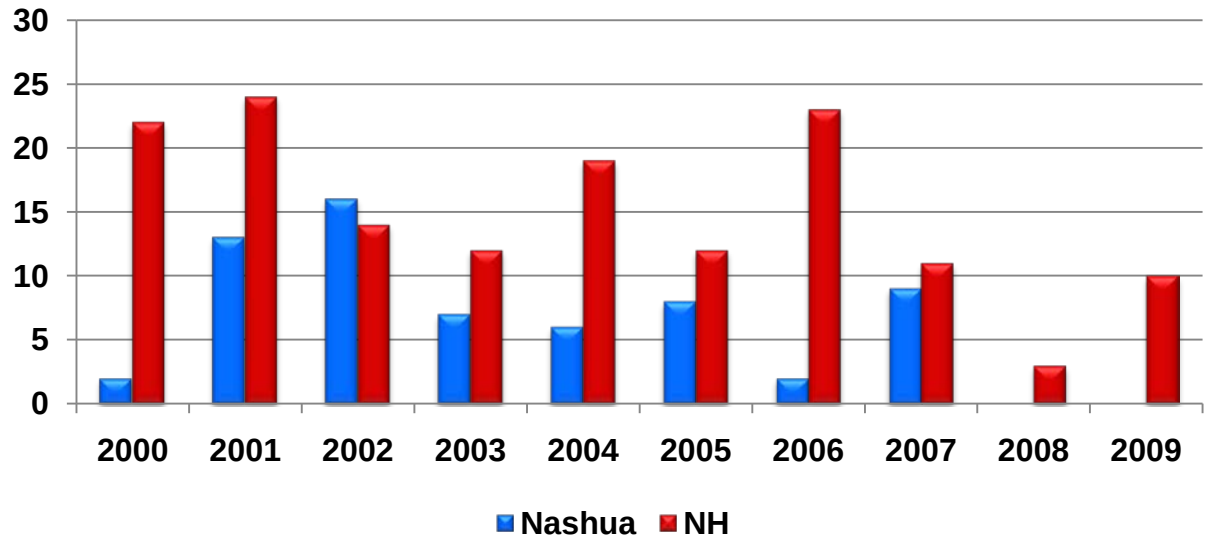
Source: Adapted from the U.S. EPA[37]

For more information on the Air Quality Index, visit http://www.epa.gov/airnow/aqi_brochure_08-09.pdf.

According to the NH DES, New Hampshire experiences an average of 10 days per year during which the state's AQI exceeds 100. New Hampshire's air quality is primarily due to ground level ozone and small particle pollution. Ninety-two percent (92%) of air pollution (ozone and small particle pollution) occurring in New Hampshire is transported from sources outside of the state and the health-related impact of air pollution transported into New Hampshire exceeds $1 billion annually.[38]

From 2000 to 2009, there were 57 days in Nashua and 135 days in New Hampshire that exceeded the NAAQS for ozone. In the same time frame, there were six days in Nashua and 15 days in New Hampshire that exceeded the NAAQS for particulate matter (PM). The total NAAQS exceedence days for ozone and $PM_{2.5}$ from 2000 to 2009 are shown in figure 5.14.[39]

Figure 5.14 Total NAAQS Exceedances for Ozone and $PM_{2.5}$, 2000-2009



Source: NH DES

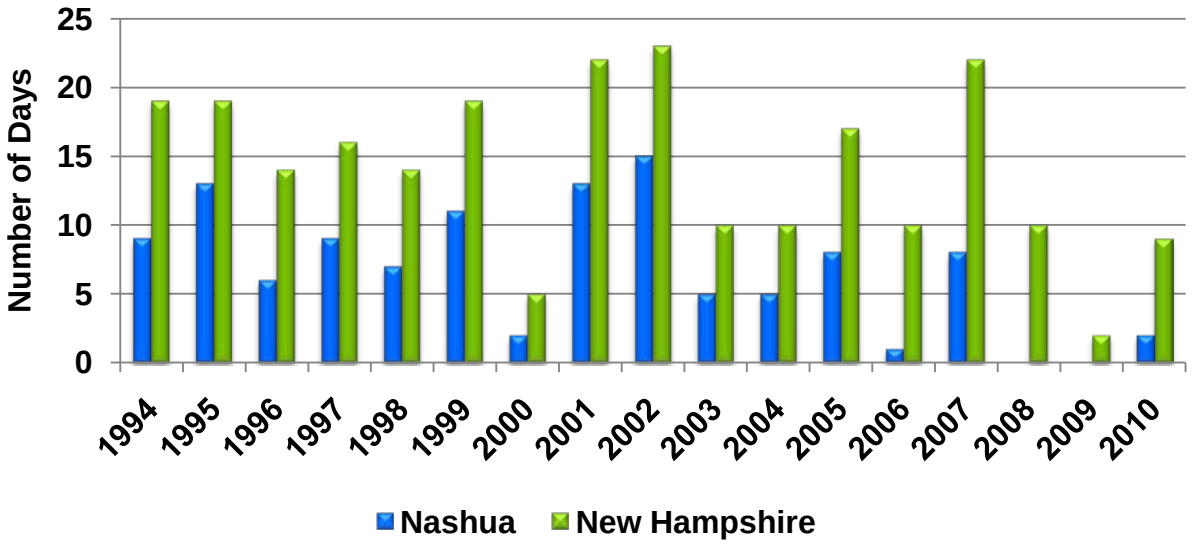
Ozone

Ozone is proven to negatively affect health even at levels lower than the current NAAQS of 0.075 parts per million (ppm). Short term ozone exposure may cause: coughing, painful breathing, and temporary loss of some lung function. Long term ozone exposure may cause repeated inflammation of the lungs, impairment of lung function and changes in lung structure, which could lead to premature aging of the lungs. Exposure to ozone can aggravate asthma, emphysema, bronchitis, and other respiratory diseases.[37]

Overall, there has been a downward trend in ozone levels over the last 20 years. Nationally, ozone levels were 10% lower in 2008 than in 2001.[35] The number of exceedence days for New Hampshire and Nashua have varied from 1994 to 2010 but the number of days has decreased in the past three years (Figure 5.15).[39] The NAAQS levels for 8-hour ozone were lowered in 2008 to 0.075 parts per million (ppm) from the 1997 standard of 0.084 ppm. Historically, Southern New Hampshire has experienced higher ozone levels than the 0.075 ppm NAAQS. Therefore, these geographies have been designated by the EPA as a non-attainment area because they have not maintained a level below 0.075 ppm for ozone. As of December 17, 2010, nine of the thirteen towns in the Greater Nashua Region were included in New

Hampshire's ozone non-attainment area: Amherst, Brookline, Hollis, Hudson, Litchfield, Merrimack, Milford, Nashua, and Pelham (Figure 5.16).[40]

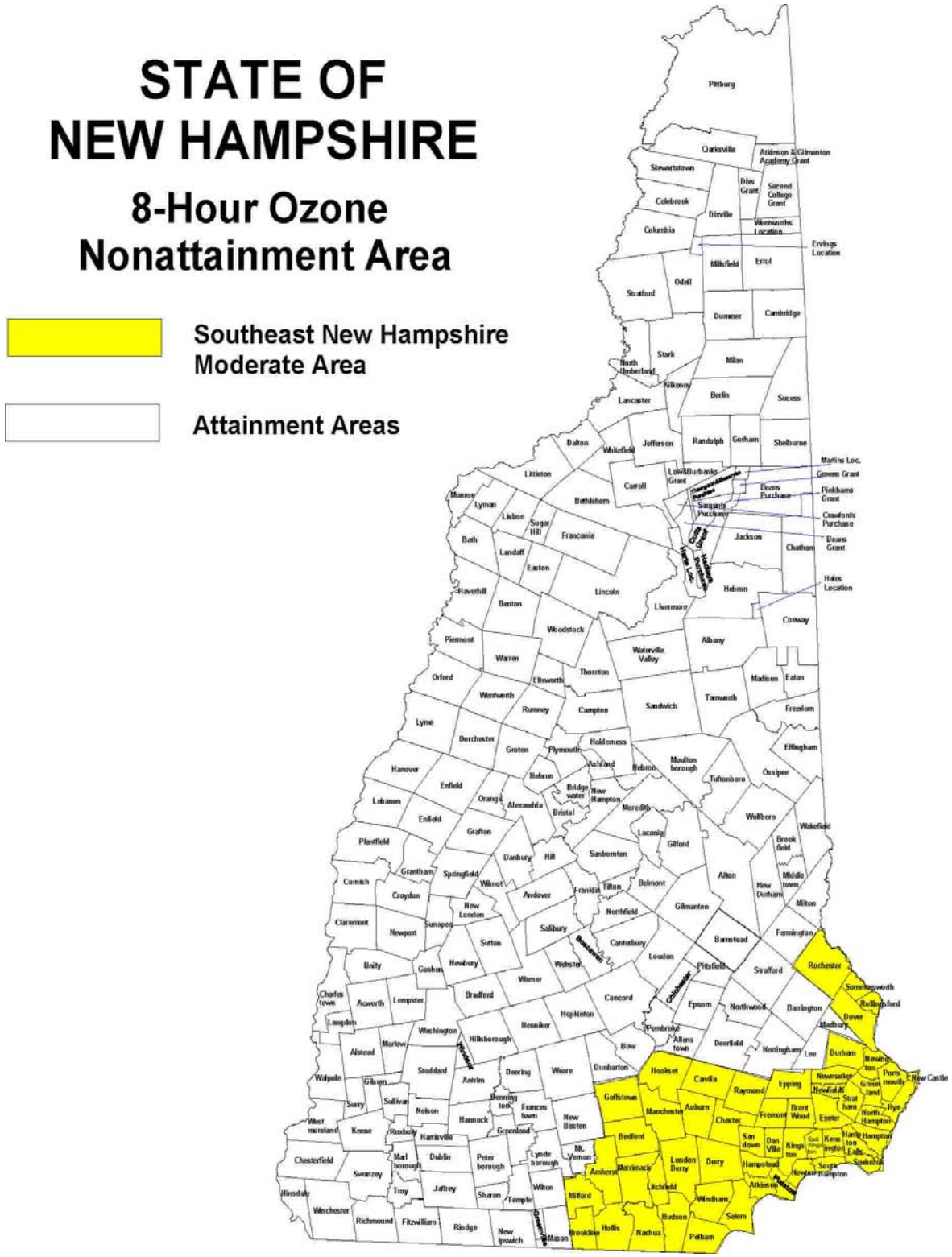
Figure 5.15 Ozone Exceedance Days (>0.075ppm) in Nashua and NH



Source: NH DES

Source: City of Nashua, Division of Public Health and Community Services

Figure 5.16 New Hampshire Nonattainment Areas

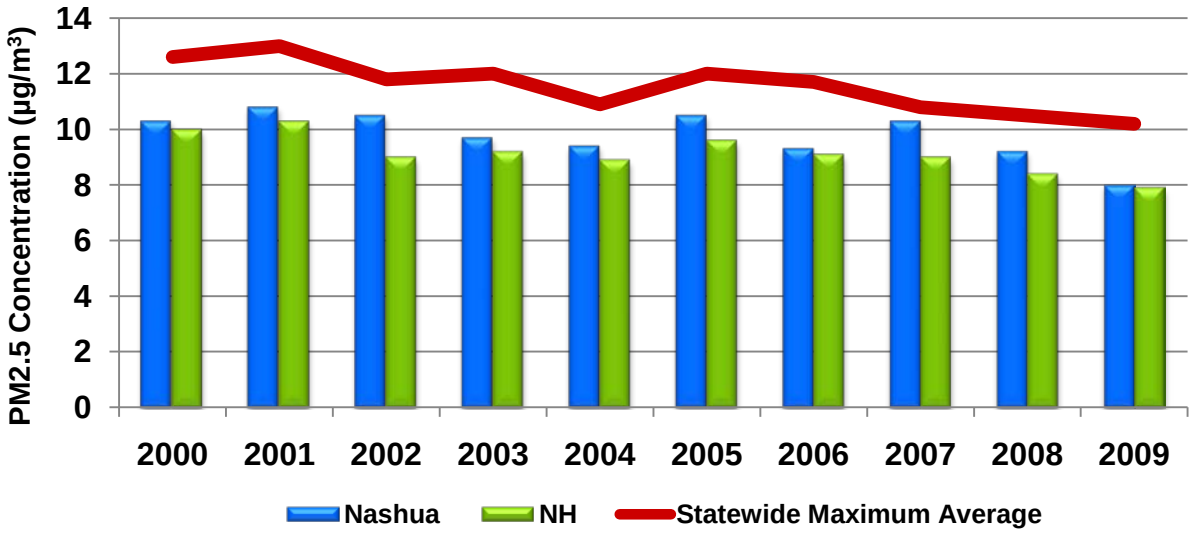


Source: NH DES[40]

Particulate Matter

Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The current NAAQS for particulate matter $PM_{2.5}$ is 35 µg/m^3. Health effects associated with particulate matter include exasperation of heart or lung diseases, development of heart or lung diseases, and premature death. According to the EPA, national $PM_{2.5}$ levels were 17% lower in 2008 than in 2001.[35] The average $PM_{2.5}$ concentrations have remained stable for Nashua and New Hampshire over the past 10 years and New Hampshire is currently considered an attainment area for particulate matter (Figure 5.17).[41]

Figure 5.17 Annual Average $PM_{2.5}$ Concentrations, 2000-2009



Source: NH DES

> ***"Health effects associated with particulate matter include exasperation of heart or lung diseases, development of heart or lung diseases, and premature death. According to the EPA, national $PM_{2.5}$ levels were 17% lower in 2008 than in 2001."***
>
> *- U.S. EPA*

Water Quality

Contamination of drinking water occurs from natural processes, such as the release of arsenic from bedrock, and from man-made processes, such as sewer overflow and agricultural run-off. Consumption of drinking water contaminated with chemicals or infectious agents is associated with adverse health conditions such as increased cancer risk, liver, kidney and neurological damage, and gastrointestinal illness.[42] Aside from public drinking water, about 40 million Americans get their drinking water from private wells. While public drinking water sources are regulated by the EPA, private wells are unregulated and testing for contaminants is left to the homeowner. The EPA has established regulations for maximum contamination levels (MCL) for public drinking water sources under the Safe Water Drinking Act. Chemical or microbial levels above MCL are known to be harmful to human health.[42] Healthy People 2020 objectives for water quality include increasing the proportion of persons served by community water systems who receive a supply of drinking water that meets the regulations of the Safe Drinking Water Act and to reduce waterborne disease outbreaks arising from water intended for drinking.[36]

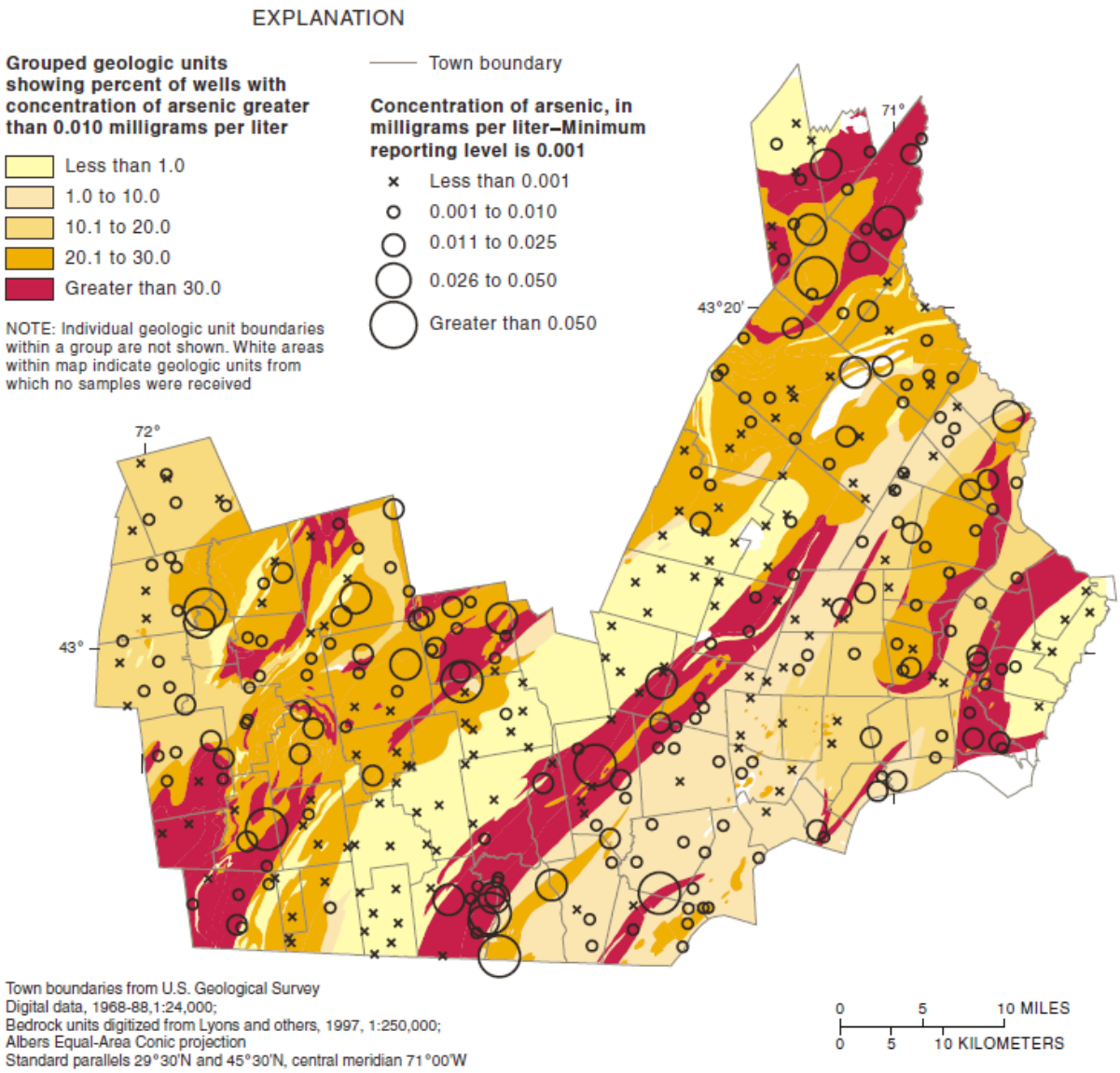
According to the NH DES, there are 2,413 active Public Water Systems (PWS) in New Hampshire. Of which, 709 are community systems that serve a population of 856,331. Most of the community PWSs in New Hampshire are small and serve a population of less than 500. Although New Hampshire's PWS provides high-quality public drinking water throughout the state, these public systems may experience minor contamination with natural and man-made pollutants. According to the NH DES 2009 New Hampshire Annual Compliance Report, most of the PWS violations in 2009 were due to failure to monitor or report levels of contaminants in the water system. Most of the violations occurred in a PWS that served a population of less than 500 people. Although these violations are of concern, a larger public health concern is the exceedance of an MCL in a water system.[43]

The Pennichuck Water Works, Inc. is the primary active public water system supplying the Nashua region. Approximately 110,000 residents in the region utilize Pennichuck Water Works, Inc. for their drinking water.[46] In Nashua specifically, about 7,880 households utilize private wells and 27,716 households utilize the public water system.[39] According to NH DES records, Pennichuck Water Works, Inc. is approved for operation and is subject to routine water quality monitoring and a sanitary survey every three years. Routine water quality monitoring includes testing for radionuclides, such as uranium, for bacteria, such as fecal coliform and for organic and inorganic chemicals, such as arsenic, beryllium, fluoride, lead and copper.[42]

It is important to recognize that approximately 526,000 (40%) of New Hampshire's residents obtain their water from private wells which is potentially a significant source of contaminated drinking water for a large number of New Hampshire's residents. This is especially true for those natural contaminants such as arsenic and radionuclides (radon, uranium, radium and gross alpha) which are known to be found in high concentrations throughout the state.[44] Southeastern New Hampshire has been identified as "having moderate to high concentrations of arsenic in drinking water from ground-water sources". Results from a U.S. Geological Survey showed that about 19% of private bedrock wells tested for arsenic contained concentrations of arsenic that exceed the MCL of 0.010 milligrams per liter.[45] Long-term exposure and high levels of arsenic in the drinking water have been linked to bladder cancer.[28] The incidence of bladder cancer in New Hampshire is higher than that of the United States. From 2003-2007, the incidence of bladder cancer for New Hampshire was 27.3 per 100,000 persons compared to 24.1 per 100,000 persons in the United States.[28] The level of arsenic in southeastern New Hampshire is due to geologic origins but may also be related to current or past land-use practices. Figure 5.18

shows the concentration of arsenic in private bedrock wells and the percent of wells with concentrations of arsenic greater than 0.010 milligrams per liter.[45]

Figure 5.18 Percent and Concentration of Arsenic Levels Found in Private Wells in Southern New Hampshire



Source: U.S. Geographical Survey[45]

[1]U.S. Department of Health and Human Services. (2009). *The Surgeon General's Call to Action to Promote Healthy Homes.* Retrieved on February 1, 2011 from http://www.surgeongeneral.gov/topics/healthyhomes/calltoactiontopromotehealthyhomes.pdf.

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Chapter 6:
Weight Management, Nutrition & Physical Fitness

Source: City of Nashua, Division of Public Health and Community Services

Nutrition, weight management and physical fitness are important components of maintaining a healthy lifestyle. During the 2010 Nashua Community Health Survey (2010 NCHS), Nashua residents were asked, "What one health issue would you fix to make Nashua a healthier place to live?" Fifteen percent (15%) of respondents chose issues related to physical exercise, nutrition and weight. Key leader and medical provider focus groups met to discuss health issues in Nashua as part of the CHA and both groups chose obesity as the number one concern. In 2007- 2008, the U.S. had approximately 73 million adults who were obese,[1] indicating that obesity is one of the major public health issues affecting the nation. Obesity can lead to serious health consequences – coronary heart disease, stroke, type 2 diabetes, liver and gallbladder diseases, sleep and respiratory issues – to name a few.[2]

According to the 2010 NCHS, when Nashua residents were asked about health conditions they have been diagnosed with by a healthcare provider, 30% said overweight/obesity, 30% said high blood pressure and 30% said high cholesterol. These results indicate the seriousness of obesity and obesity related complications at the local level. One medical provider at the focus group emphasized the link between obesity, mental health and emotional issues, commenting that food is used as a means of "self-medicating". A part from health consequences, obesity has significant financial costs. It is estimated that annual costs can be up to $147 billion in the US. Individuals who are obese can have medical costs almost $1,500 more per year than someone of a healthy weight. "Obesity is common, serious, and costly"[1] and it is critical that public health directs community interventions to address the problem.

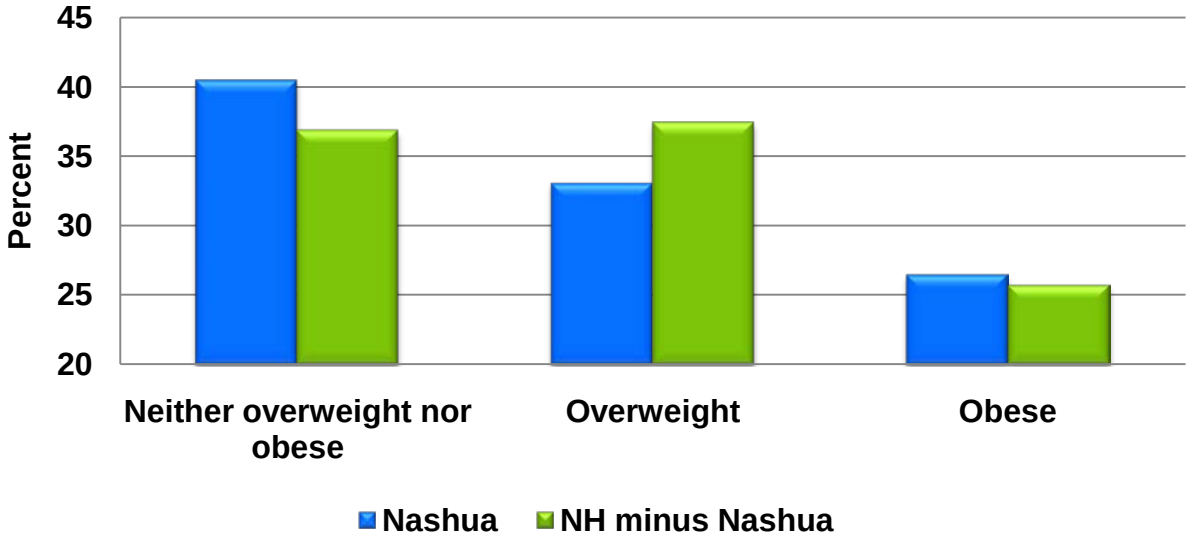
The Behavioral Risk Factor Surveillance System (BRFSS) uses a telephone survey to gather and track health related conditions and behaviors across the U.S. On the survey, respondents self-report their weight and height which is used to calculate the body mass index (BMI). Adults (aged 18 and over) with a BMI between 25 and 29.9 are considered overweight, while those with a BMI of 30 or more are considered obese.[3] According to BRFSS, 26.7% of US adults were obese in 2009.[1] The National Center for Health Statistics (NCHS), through the Health Indicators Warehouse, reports that 34% of adults aged 20 years and over were obese from 2005-2008. Some populations are disproportionately affected by obesity, having higher percentages of obesity than other groups. For example, 41% of adults aged 55 – 64 are obese compared to 25% of adults aged 20-44. Forty five (45%) percent of non-Hispanic Blacks are obese compared to 33% of non-Hispanic Whites.[4] When considering educational level, 33% of individuals who did not graduate from high school were obese compared to 21% of those with a college degree.[1] Obesity is significantly affecting the nation's adult populations.

"Obesity is common, serious, and costly."
- CDC

Adults and Weight Management

According to the New Hampshire BRFSS, 37.2% (CI 35.9-38.4%) of New Hampshire (minus Nashua) adults were overweight and another 25.8% (CI 24.7-26.9%) were obese. Approximately 40.5% (CI 34.9-46.0%) of Nashua residents reported a BMI lower than 25. However, 33.1% (CI 28.5-37.6%) of residents were overweight while another 26.5% (CI 22.3-30.7%) were obese (Figure 6.1).[5] Among Nashua adults, males were more commonly overweight than females, with 38.3% (CI 30.6-46.0%) of males being overweight compared to 27.8% (CI 22.7-32.9%) of females, although this is not a statistically significant difference.

Figure 6.1 Adult Body Mass Index, 2008 & 2009



Source: NH DHHS, BRFSS

In 2000, the *Healthy People 2010* objective concerning obesity was to reduce the prevalence of obesity among US adults to 15%. However, as of 2007, no state had met this objective.[1] *Healthy People 2020* set new goals regarding weight using NCHS estimates of obesity. Two of them are to:

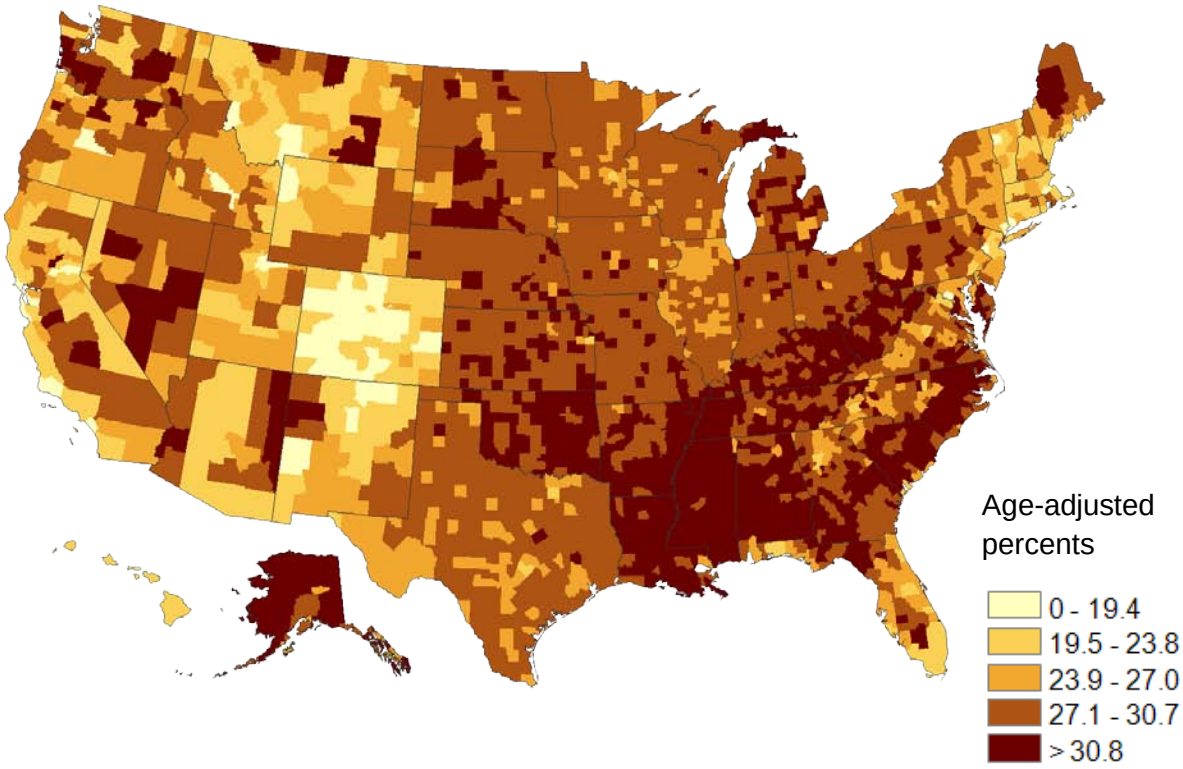
- Increase the proportion of adults who are at a healthy weight from 30.8% to 33.9%
- Reduce the proportion of adults who are obese from 34% to 30.6%.[6]

Nashua is currently surpassing these goals with 40.5% of Nashua residents self-identifying as neither overweight nor obese and 26.5% of Nashua's residents classifying themselves as obese. However, these percentages may vary as individuals self-reported and may have underestimated their actual weight and height.[5]

Figure 6.2 shows 2008 county-level estimates of obesity among adults in the US. Regions in the South have adult obesity estimates equal to or more than 30.8%. In New Hampshire, estimates of obese adults range from 19.5% to 30.7%. Similar to results from the 2010 NCHS, this map shows that for Nashua, obesity rates can range from 23.9% to 27.0%.[22]

In 2000, the Healthy People 2010 objective concerning obesity was to reduce the prevalence of obesity among US adults to 15%. However, as of 2007, no state had met this objective.
- CDC

Figure 6.2 County-level Estimates of Obesity among Adults aged ≥ 20 years: United States, 2008



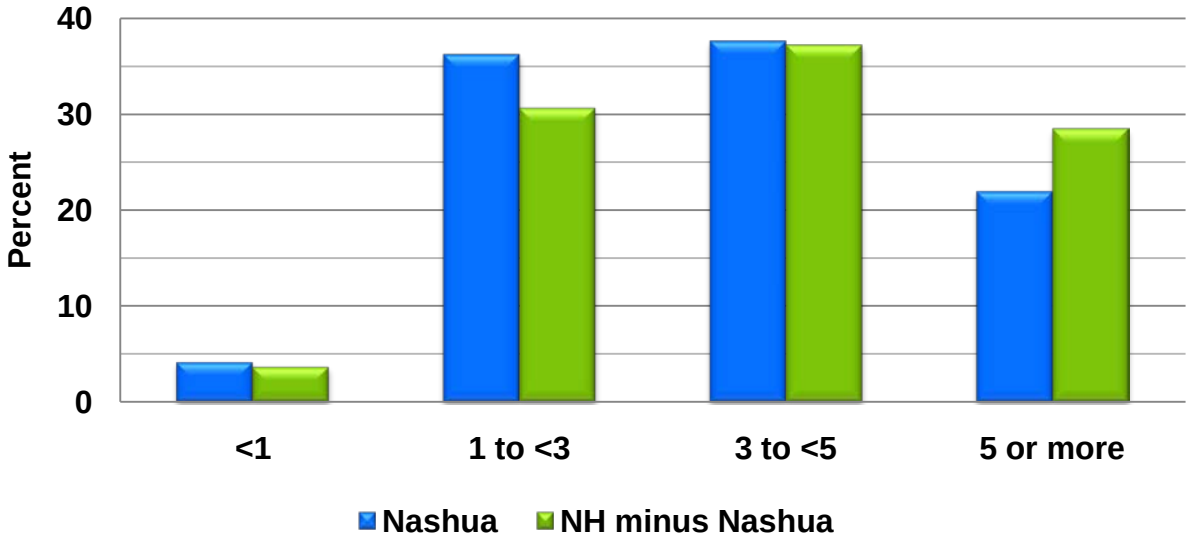
Source: CDC

Adults and Nutrition

Several factors can contribute to obesity – from genes and metabolism to the environment and culture. However, increased consumption of fatty and processed foods, which have excess calories and sugar, are most often associated with obesity.[8] Therefore, including fruits and vegetables into one's diet is important for maintaining good health. They provide the body with necessary vitamins and minerals and may also reduce the risk of certain chronic diseases.[8] According to BRFSS, only 22.0% (CI 18.1–25.8%) of Nashua residents ate 5 or more fruits and vegetables daily and about 28.5% (CI 27.3-29.6%) of New Hampshire adults outside of Nashua ate 5 or more fruits and vegetables daily (Figure 6.3). There is a significant difference between how many fruits and vegetables are consumed when focusing on gender. Approximately 29% (CI 24.0-34.6%) of Nashua females ate 5 or more fruits and vegetables daily while only 14.5% (CI 9.3-19.7%) of Nashua males ate 5 or more fruits and vegetables daily (Figure 6.4).[5]

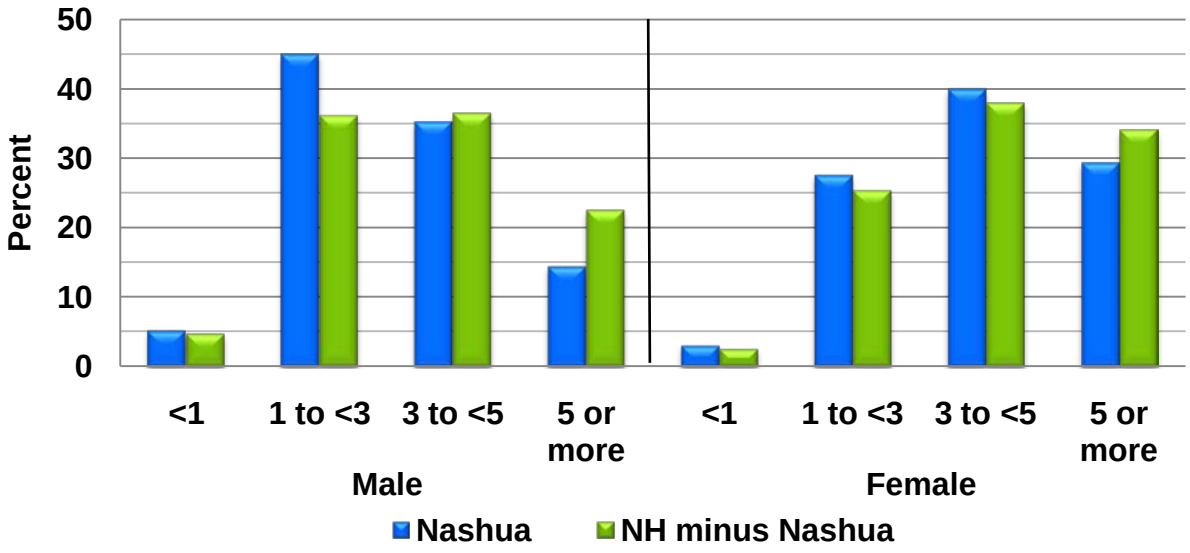
For more information on nutrition, visit the Centers for Disease Control and Prevention website at http://www.fruitsandveggiesmatter.gov/

Figure 6.3 Daily Fruit & Vegetable Consumption for Adults, 2007 & 2009



Source: NH DHHS, BRFSS

Figure 6.4 Daily Fruit & Vegetable Consumption by Gender for Adults, 2007 & 2009



Source: NH DHHS, BRFSS

Eating healthy, nutritious foods is an essential component of weight management. However, evaluating the built environment and a community's access to food establishments that sell these foods is equally important. County Health Rankings, a component of a collaborative health project of the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute, ranks counties within the 50 states according to various health outcomes. The Rankings measures the availability of healthy food outlets in local environments because they "can play a role in whether those foods are consumed". Supermarkets can offer a variety of fruits and vegetables at lower costs than smaller grocery or convenient stores. However, studies show that supermarkets are less common in minority and low income areas, making healthier foods less accessible to those families.[9]

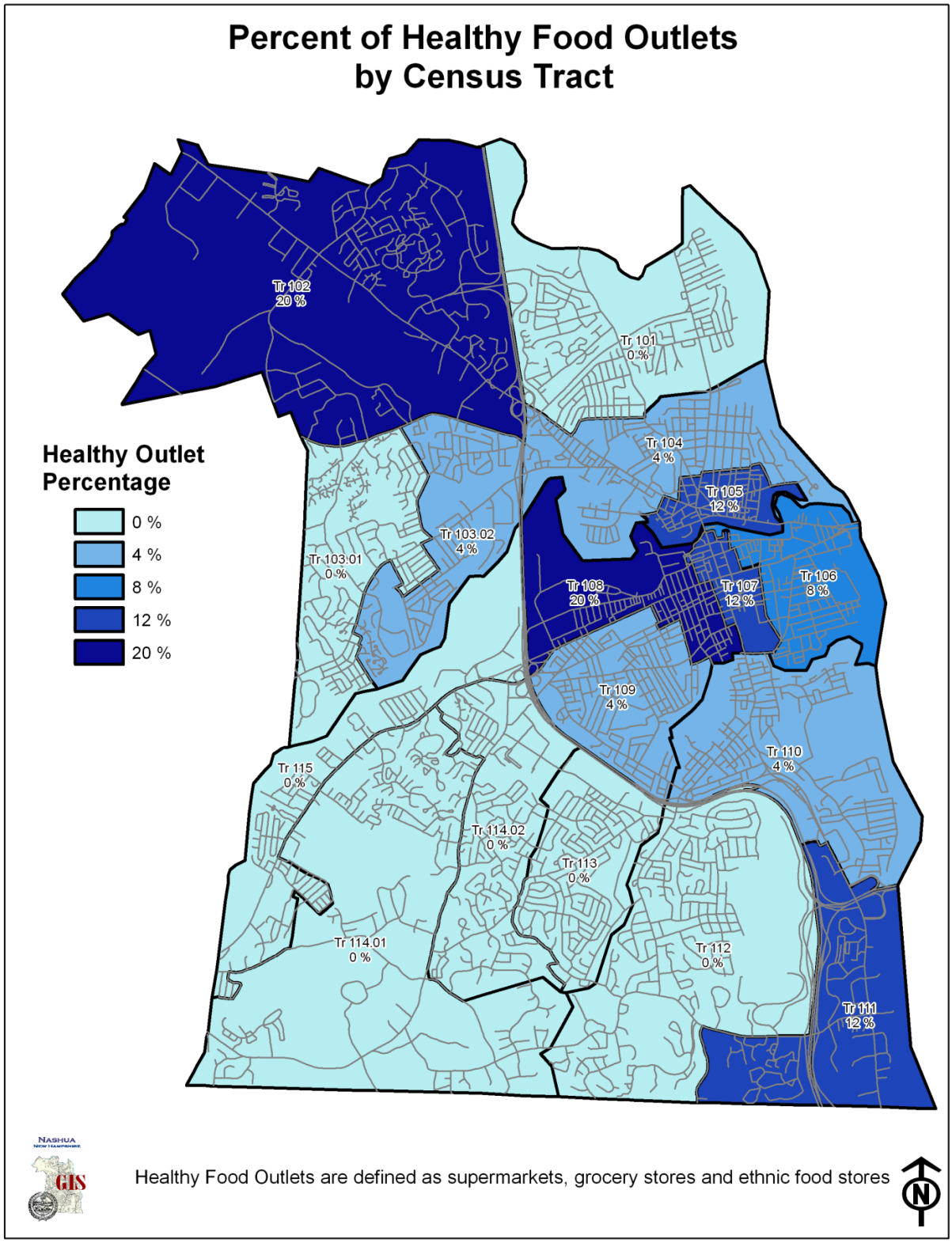
A map showing the Nashua census tracts and the percentage of healthy food outlets within each was developed. For this assessment, healthy food outlets are defined as supermarkets, grocery stores and ethnic food stores that sell a variety of foods including fresh fruits and vegetables. Census tracts 105, 107 and 108 have the highest percentages of people living below the poverty line. As seen by the map, these areas also have some of the highest percentages of healthy food outlets in Nashua. Census tracts 105 and 107 have 31.7% and 23.6% of people living below the poverty line. However, they both have 12% of Nashua's healthy food outlets. Census tract 108 which has 17.2% of people living below the poverty line has 20% of the healthy food outlets in Nashua (Map 6.1; Reference Chapter 1: Demographics for the map on poverty). Overall, there is availability of healthy food stores in Nashua. Factors such as affordability of healthy foods and access to transportation may still impede one's ability to buy healthier foods and maintain healthy eating habits.

"The availability of healthy food outlets in the local environment can play a role in whether those foods are consumed."

- County Health Rankings

Source: Mary Barnovsky, Nashua High School Photography Project

Map 6.1 Healthy Food Outlets

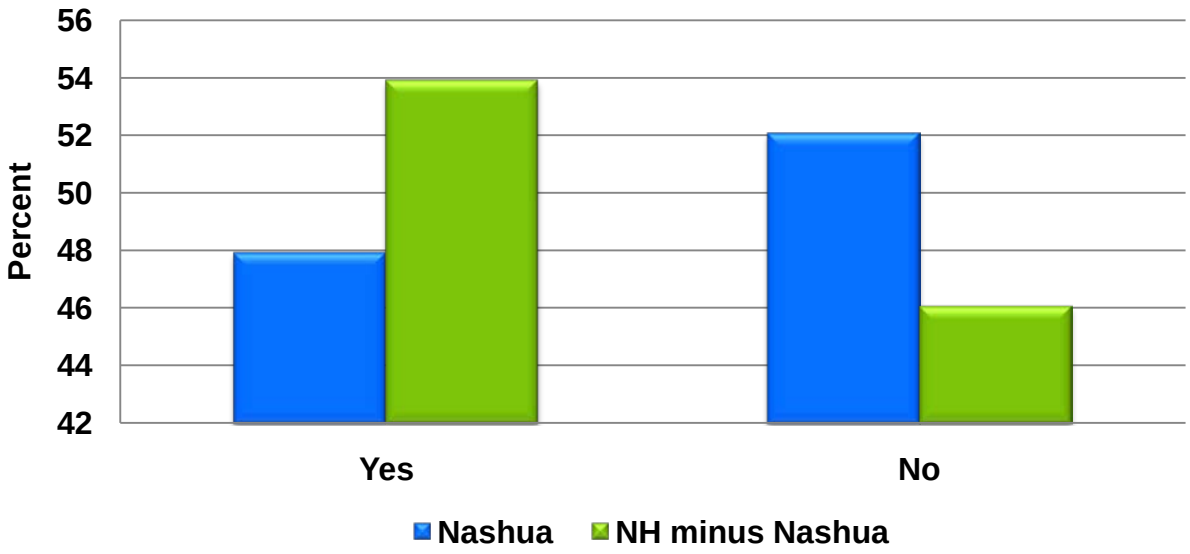


Source: City of Nashua, Division of Public Health and Community Services

Adults and Physical Fitness

Regular physical fitness helps burn calories and reduces the risk of cardiovascular diseases such as high blood pressure.[10] According to the 2008 Physical Activity Guidelines for Americans, adults should engage in at least two and a half hours of moderate activity (walking) or one hour and fifteen minutes of vigorous activity (jogging) a week. Additionally, adults should do muscle-strengthening activities on two or more days a week.[11] Healthy *People 2020*'s goal is to increase the proportion of adults who engage in aerobic activity, either moderately or vigorously, from 43.5% to 47.9%.[12] Approximately 48% (CI 42.6-53.3%) of Nashua residents participated in moderate or vigorous physical activity each week. Fifty four percent (54% CI 52.6-55.2%) of New Hampshire residents outside of Nashua engaged in moderate or vigorous physical activity each week (Figure 6.5). When considering gender, 51.9% (CI 43.2-60.7%) of Nashua males and 44.1% (CI 38.0-50.1%) of females engage in moderate to vigorous physical activity a week (Figure 6.6).[5] Overall, Nashua residents are engaging in physical activity, yet it is still important to encourage and provide the support for those who lack opportunities or face challenges engaging in physical activity.

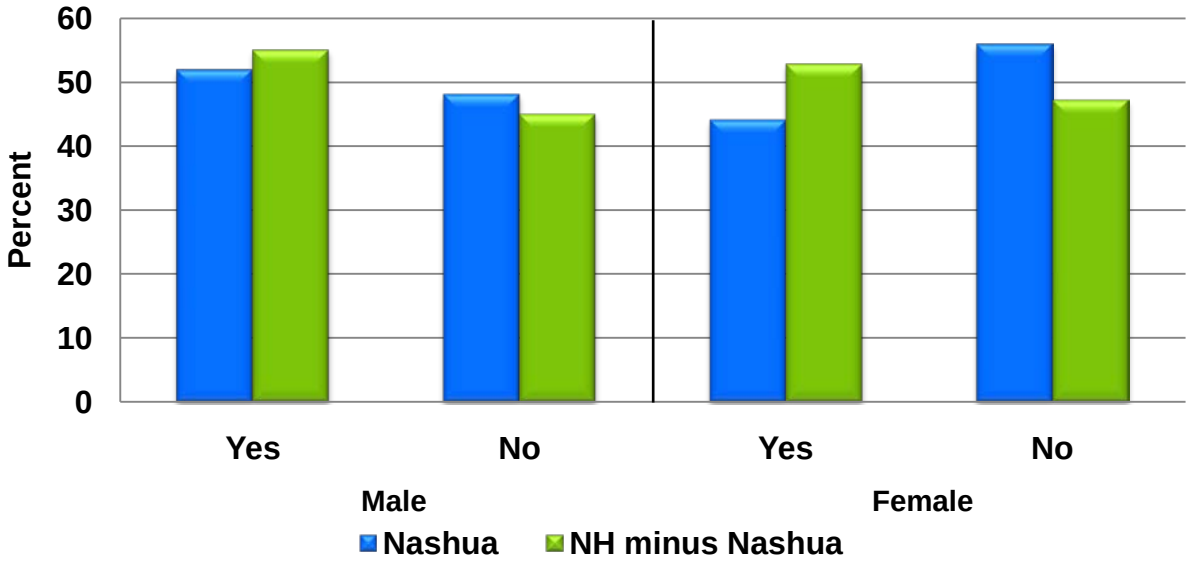
Figure 6.5 Moderate/Vigorous Physical Activity in Adults, 2007 & 2009



Source: NH DHHS

For more information on physical fitness and activity, visit the Centers for Disease Control and Prevention website at http://www.cdc.gov/physicalactivity/

Figure 6.6 Moderate/Vigorous Physical Activity by Gender, 2007 & 2009



Source: NH DHHS

During the 2010 NCHS, residents were asked how often they watched television, played video games or used the computer recreationally (Table 6.1). Eighty two percent (82%) of residents said they participated in these activities 1-2 hours per day. Almost 18% responded that they spent 3 or more hours engaged in such activities.[21]

Table 6.1 Hours of Screen Time for Nashua Adults

How many hours per day do you watch TV, play video games, or use the computer for recreation that is not work related?		
	Estimated Number of Housing Units	**Percentage (n)**
0 Hours	164	0.5% (1)
1-2 Hours	28.004	82% (170)
3 or more Hours	5,904	17.5% (36)
Source: 2010 Nashua Community Health Survey		

For more information on the 5-2-1-0 Program in NH, visit
http://www.healthynh.com/fhc/initiatives/ch_obesity/5210.php

Youth and Weight Management, Nutrition and Physical Activity

Obesity is becoming an important health concern not only for the nation's adults, but for the youth as well. According to the CDC, approximately 17% or 12.5 million children and adolescents between the ages of 2 and 19 are obese.[13] Data collected from the NCHS shows that obesity rates among children have almost tripled over the past thirty years (Table 6.2).[14]

Table 6.2 Prevalence of Obesity among US Children

Prevalence of obesity among U.S. children and adolescents aged 2-19, for selected years 1963-1965 through 2007-2008, NHANES

Age[1]	1963-65; 1966-70[2]	1971-1974	1976-1980	1988-1994	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008
2-5 yrs	*[3]	5.0	5.0	7.2	10.3	10.6	13.9	11.0	10.4
6-11 yrs	4.2	4.0	6.5	11.3	15.1	16.3	18.8	15.1	19.6
12-19 yrs	4.6	6.1	5.0	10.5	14.8	16.7	17.4	17.8	18.1
Total	*[3]	5.0	5.5	10.0	13.9	15.4	17.1	15.5	16.9

[1] Excludes pregnant women starting with 1971-1974. Pregnancy status not available for 1963-1965 and 1966-1970.
[2] Data for 1963-1965 are for children aged 6-11; data for 1966-1970 are for adolescents aged 12-17, not 12-19 years.
[3] Children aged 2-5 were not included in the surveys undertaken in the 1960s.
NOTE: Obesity defined as body mass index (BMI) greater than or equal to sex- and age-specific 95th percentile from the 2000 CDC Growth Charts.
Source: CDC

Similar to adults, obese children are at higher risk for cardiovascular diseases, type 2 diabetes and respiratory problems. They are also at higher risk for developing social, psychological and emotional problems.[15] One focus group participant commented that these health issues may affect a child's ability to perform well in school. Obese children are more likely to grow into obese adults, [15] so interventions should be implemented early to prevent these health issues from progressing into adulthood.

There is a lack of data on childhood obesity at the local level. However, NH DHHS conducted the *Third Grade Healthy Smiles – Healthy Growth Survey* starting in 2008 to gather information on the oral health and height/weight status of third grade students enrolled in public schools throughout the state. According to the report, in 2008-2009, 18% of New Hampshire third grade students were obese, while another 15% were overweight (Table 6.3). Coos and Belknap/Merrimack regions had the highest prevalence of obesity among students (22.2% and 23.4% respectively). However, 16% of students in Hillsborough County (in which Nashua is located) were obese, while another 15% of students were overweight.[16]

According to the CDC, approximately 17% or 12.5 million children and adolescents between the ages of 2 and 19 are obese.

-CDC

Table 6.3 Prevalence of Obesity by Region in NH

Region Specific Prevalence* Estimates and 95% CI of Overweight and Obesity, 2008-2009							
Variable	**Belknap Merrimack (n=389)**	**Carroll Grafton (n=402)**	**Cheshire Sullivan (n=298)**	**Coos** (n=220)**	**Hillsborough (n=1,021)**	**Rockingham (n=405)**	**Strafford (n=347)**
Obese	23.9% (19.2-28.6)	17.7% (12.7-22.7)	18.7% (13.7-23.6)	22.2%	16.2% (13-22.3)	18.1% (13.9-22.3)	13.6% (8-19.3)
Over-weight	17.8% (13.9-21.6)	16.9% (12.6-21.2)	13.6% (9.9-17.3)	19.3%	14.5% (12.1-17)	15.3% (12.8-17.9)	13.6% (10-17.2)
Normal Weight	57.1% (53.6-60.6)	64.2% (59.4-68.9)	66.5% (60.9-72.2)	55.9%	67.4% (63.9-71)	64.7% (60.7-68.6)	69.7% (62.7-76.7)
Under-weight	1.2% (0-2.5)	1.2% (0-2.8)	1.2% (0-2.8)	2.6%	1.8% (0.6-3.6)	1.9% (0.2-3.5)	3.1% (0.8-5.4)

** Only children 7-10 years (3,082) included*
*** Coos County estimated based census data*
Source: NH DHHS

Statewide, obesity rates were significantly higher among children in schools where fifty percent or more of students receive free or reduced lunch compared to those in schools where 25 percent or less of students are on free or reduced lunch (Table 6.4).[16]

Table 6.4 Prevalence of Obesity by Free and Reduced Price Lunch Status

Statewide prevalence* of overweight and obesity, stratified by Free and Reduced Price Lunch (FRL) Status of School, 2008-2009			
Variable	**<25% FRL* 95% CI (n=1,665)**	**25-49% FRL* 95% CI (n=1,111)**	**≥ 50% FRL* 95% CI (n=306)**
Obesity	16.3% (14.2-18.4)	20.1% (16.8-23.4)	27.3% (22.2-32.3)
Overweight	15.2% (13.5-16.9)	16.6% (14.7-18.6)	13.4% (11.7-15.1)
Normal weight	66.5% (64.1-68.9)	62.1% (59.1-65.1)	58.1% (53.9-62.3)
Underweight	2.0% (1.1-2.9)	1.1% (0.3-1.8)	1.2% (0.0-2.6)

*Percent of children in the school that participate in the free/reduced price lunch program, 2007-2008.
Source: NH Department of Education

Lack of physical activity at home and in schools, marketing for sugary drinks and high caloric foods and increased television viewing are some factors that contribute to childhood obesity.[17] New Hampshire's public education campaign *5-2-1-0 Healthy NH* raises awareness of the nutritional and physical activity guidelines that families can follow to prevent childhood obesity. The program highlights eating fruits and vegetables at least 5 times a day, limiting television, computer and video game screen time to 2 hours or less, engagement in physical activity for at least 1 hour per day and consumption of zero sugary drinks.[18]

The 2009 NH Youth Risk Behavior System (YRBS) was completed by 1,493 students in public high schools throughout New Hampshire.[19] Table 6.5 highlights some of the weight, nutrition and physical activity characteristics of New Hampshire's youth as compared to youth nationally.

Table 6.5 Weight Management & Physical Activity, NH YRBS, 2009

	NH	US
Obese	12.4%	12.0%
Male	16.4%	15.3%
Female	7.7%	8.3%
Overweight	13.3%	15.8%
Male	13.6%	NA
Female	12.9%	NA
Ate less food, fewer calories or low-fat foods to lose weight or keep from gaining weight during the past 30 days	40.6%	39.5%
Male	28.4%	28.4%
Female	53.4%	51.6%
Watched 3 or more hours of TV per day on an average school day	23.0%	32.8%
Male	27.1%	NA
Female	18.6%	NA
Physically active for at least 60 min per day on 5 or more days of the past 7 days	45.3%	37.0%
Male	52.9%	45.6%
Female	37.1%	27.7%
Drank a can, bottle or glass of soda or pop one or more times per day during the past 7 days	22.1%	29.2%
Male	29.6%	34.6%
Female	14.5%	23.3%

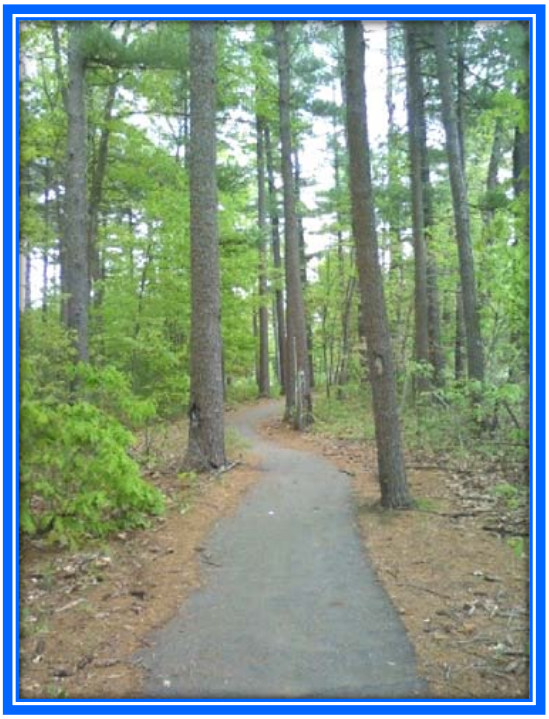
NA = Not Available
Source: NH YRBSS, CDC

Similar to students throughout the country, approximately 13.3% of NH high school students were overweight and 12.4% were obese in 2009. 40.6% of NH students ate less food, fewer calories or low-fat foods to manage their weight. 45% of NH students were physically active for at least an hour per day, compared to 37% of students in the rest of the country.[19] Although unknown for NH youth, nationally, 22.3% of students ate fruits and vegetables five or more times per day.[20] Overall, NH students engage in physical activity and eat to manage their weight. However, efforts to encourage them to eat more fruits and vegetables, decrease their screen time, and drink less sugary drinks continue to be necessary to prevent childhood obesity.

Surgeon General Regina Benjamin commented in *The Surgeon General's Vision for a Healthy and Fit Nation* that "children should be having fun and playing in environments that provide parks, recreational facilities, community centers, and walking and bike paths." [7] As shown in Map 6.2 (page 6-14), Nashua has several areas – parks, playgrounds and soccer fields - for children and families to engage in physical activity.

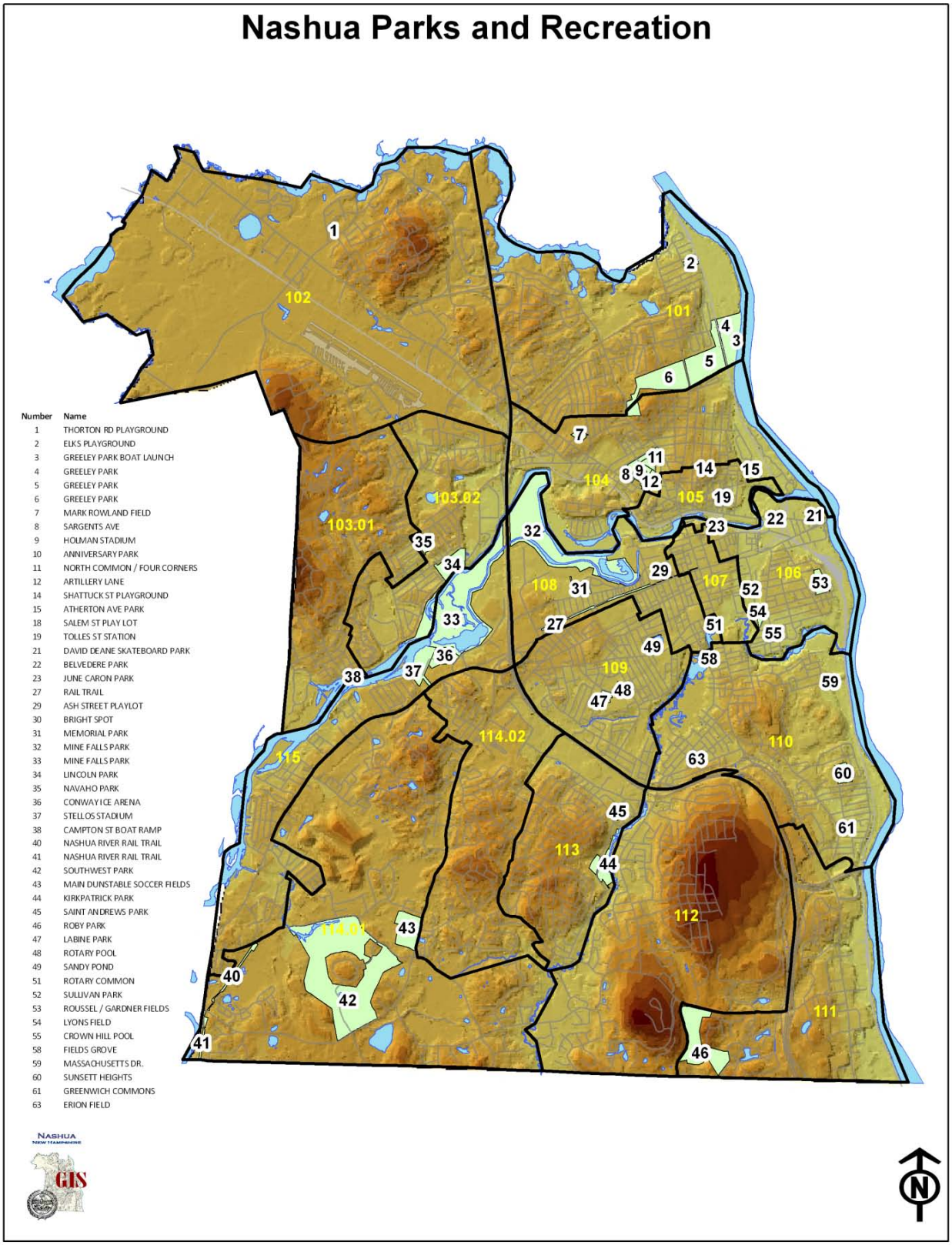
"Children should be having fun and playing in environments that provide parks, recreational facilities, community centers, and walking and bike paths."

- Surgeon General Regina Benjamin



Source: City of Nashua, Division of Public Health and Community Services

Map 6.2 Nashua Parks and Recreation



Source: City of Nashua, Assessing Department

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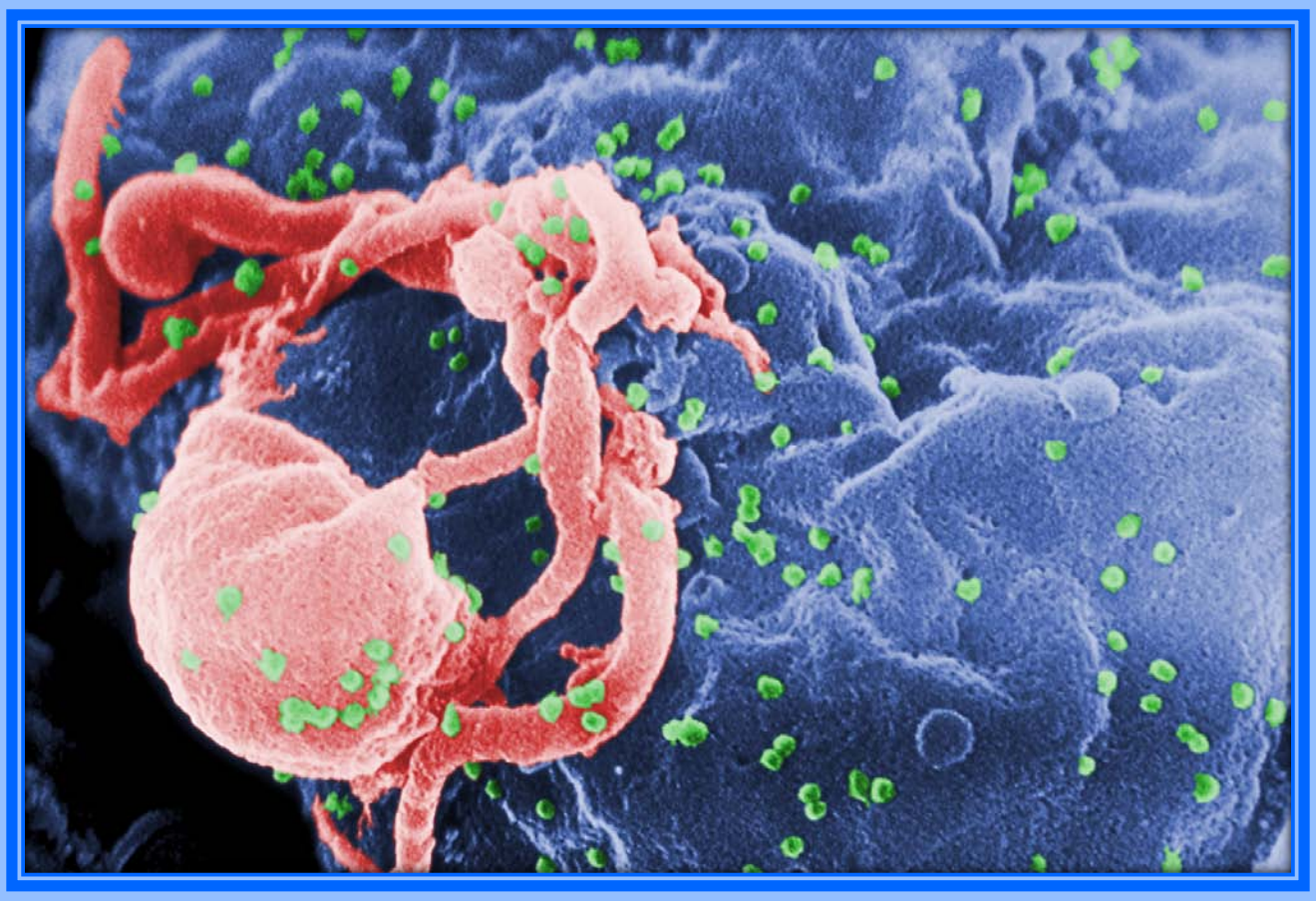
Source: Zach Roberge, Nashua High School Photography Project

Chapter 7:
Preventable Risks to Health – Tobacco, Substance Abuse and Sexually Transmitted Diseases



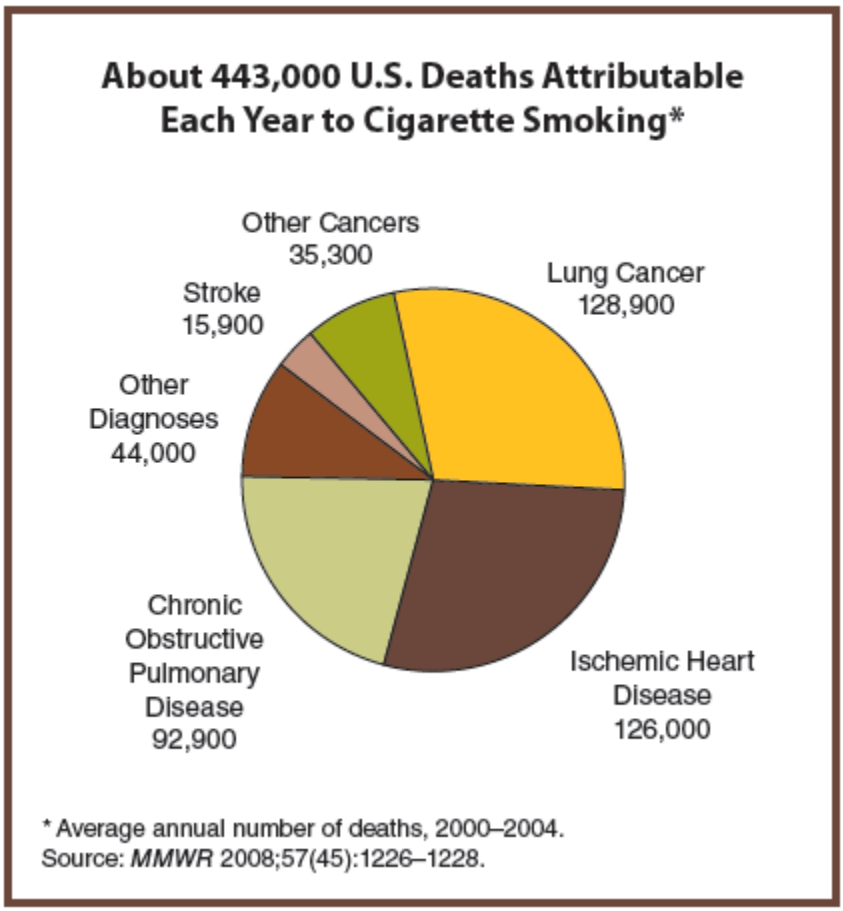
Scanning electronic micrograph of HIV-1 budding from cultured lymphocytes.

Source: CDC Public Health Image Library, C. Goldsmith, P. Feorino, E. Palmer, W. McManus

Tobacco

Tobacco is the number one preventable cause of death in the United State and kills more than 443,000 people each year.[1] With more than 7,000 toxic chemicals found in a cigarette, it is irrefutable that tobacco use will damage the body, compromise the immune system and cause premature death.[2] Ninety percent (90%) of all lung cancer deaths are caused by smoking.[3] Lung cancer, ischemic heart disease, chronic obstructive pulmonary disease, and strokes are the leading causes of death due to cigarette smoking In the United States (Figure 7.1). In New Hampshire in 2007, the data continues to be dismal with 1,764 premature deaths from smoking-related illnesses and an additional 200 deaths from second-hand smoke.[4]

Figure 7.1 U.S. Deaths and Smoking



An individual does not have to smoke to be negatively affected by it. Involuntary exposure to secondhand smoke can cause disease and death.[5] Secondhand smoke is the sidestream smoke from the end of a cigarette and the smoke in the air that is exhaled from someone smoking.[6] Approximately, 46,000 premature deaths from heart disease in non-smokers are caused by secondhand smoke and 3,400 lung cancer deaths a year are attributed to secondhand smoke.[7] There is no amount of secondhand smoke exposure that is risk-free.

Other types of tobacco products that are most commonly used in the United States are snuff and chewing tobacco.[8] Smokeless tobacco is comprised of over 28 carcinogens and can cause

oral, esophageal, and pancreatic cancers.[9] In the United States, 3.5% of adults (18 years and older) and 6.1% of high school students use smokeless tobacco.[10]

The economic costs of tobacco in the United States are devastating. From years 2002 to 2004, it was reported that $96 billion were direct medical costs of smoking and $97 billion was associated with lost productivity.[11] In New Hampshire, $1.4 billion in direct medical costs are attributed to smoking annually.[5] The cost and tax on tobacco products have a direct relationship on sales. Nationally, the average cost of cigarettes is $5.33 a pack and the tax is approximately $2.19.[4] However, in New Hampshire the average retail price is $4.19 and tax is approximately $1.08.[4]

Smoking Cessation

Each year, thousands of people attempt to quit tobacco and try several different strategies. In the United States, nearly 17 million people try to quit smoking every year. However, only 1.3 million of these smokers are successful.[12] According to the Behavioral Risk Factor Surveillance System (BRFSS), 52.9% (CI54.3-61.7%) of New Hampshire adult regular smokers have quit for one or more days in the past twelve months. Also, nearly 58.7% of all NH smokers are seriously considering quitting in the next six months. Of the smokers that have seen a medical provider in the last 12 months, 40.1% (CI33.9-46.3%) received a recommendation to begin nicotine replacement therapies, 31.7% (CI25.9-37.6%) identified a specific quit date, 25.4% (CI 19.9-30.9%) were provided with educational materials and 20.1% (CI 15.1-25.3%) received a recommendation to take a smoking cessation class, seek counseling or call a quitline.[4] According to the Centers for Disease Control and Prevention (CDC), 2.1% of New Hampshire residents called the quit line in the past year compared to the national average of 2.8%

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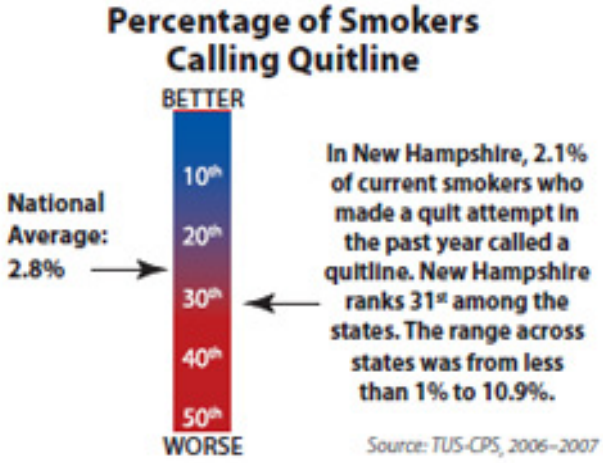
Figure 7.2 Percentage of NH Smokers Calling the Quitline



Source: CDC

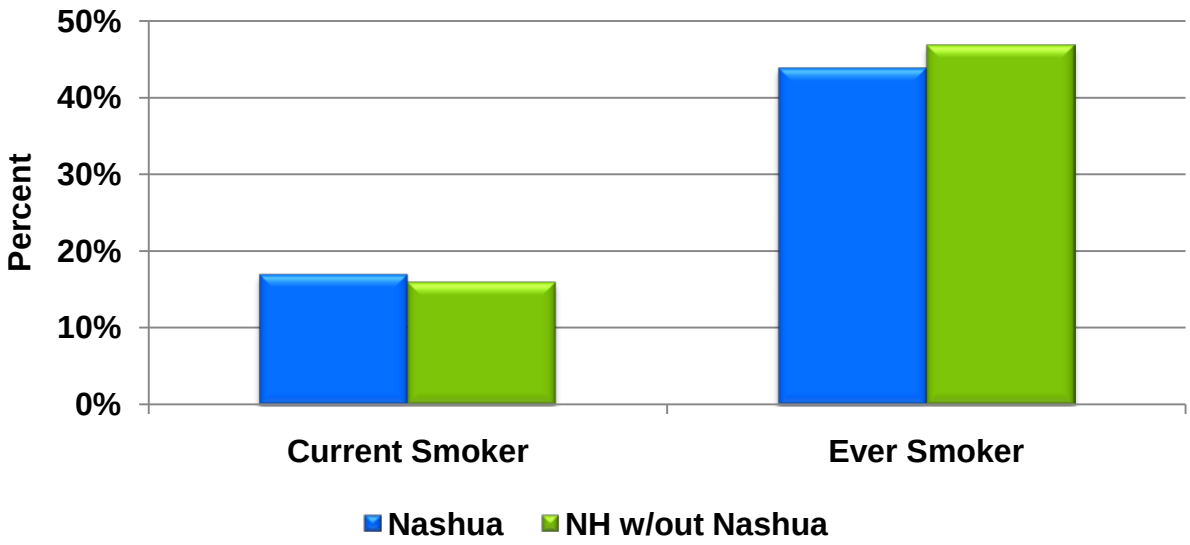
Adults and Tobacco

In 2009, the CDC reported that 20.6% of U.S. adults over the age of 18 are current smokers, 23.5% are males and 17.9% are females. Smoking continues to be a public health concern as the decline of cigarette smoking has stalled over the past five years.[4]

In New Hampshire, the number of adult smokers has slowly declined from 25.3% in year 2000 to 18.7% in 2006. However, in 2007 the number of current NH smokers increased slightly to 19.3%.[4] According to Healthy People 2020, the goal over the next 10 years is to reduce illness, disability, and death related to tobacco use and secondhand smoke exposure. The national objective is to reduce cigarette smoking rates for adults 18 years and older from 20.6% to 12%. Although Nashua is better than the national average at 17% of adults smoking, Nashua does not meet the Healthy People 2020 target of 12%.

In Nashua, 43.9% (CI 38.8-49%) of adults have smoked in their lifetime and 17% (CI 12.1-22%) are current smokers (Figure 7.3). Similarly, the 2010 Nashua Community Health Survey (2010 NCHS) states that during the past 30 days, 17% of residents said they smoked cigarettes on one or more days. In addition, survey results showed that if a family member or friend does smoke and wants to quit, 58% would tell them to speak to a doctor, 11% would reference the NH Quitline, 6% would tell them to seek a private counselor or therapist and 25% would tell them to see help from other agencies or medical providers (Figure 7.4).[15]

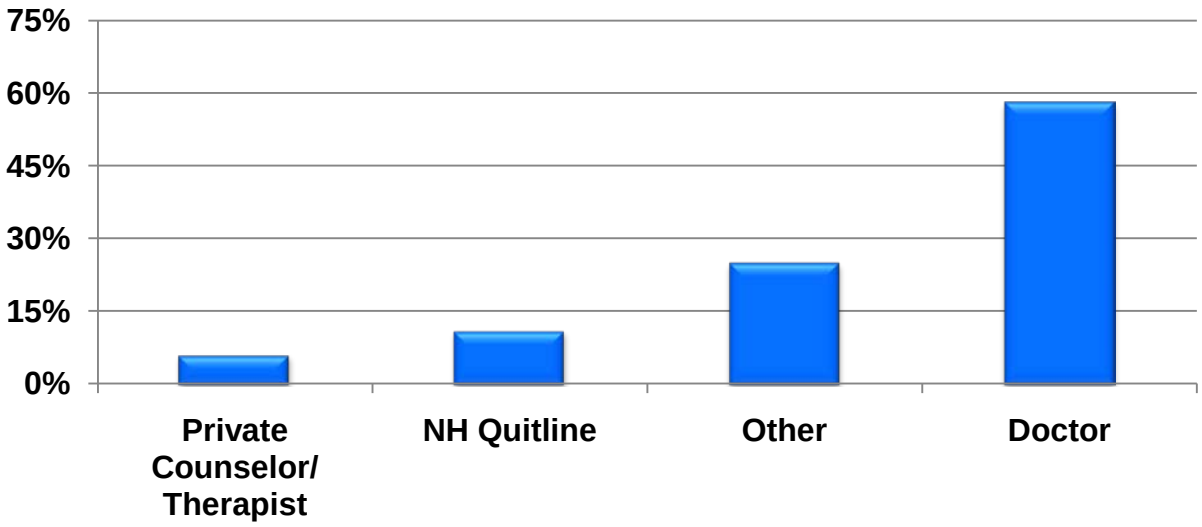
Figure 7.3 Current Smoker and Ever Smoker, 2008 & 2009



Source: NH DHHS, BRFSS

For more information on smoking cessation, call the state quitline at 1-800-TRY TO STOP (1-800-879-8678) or visit http://www.trytostopnh.org.

Figure 7.4 Sources of Assistance for Quitting Smoking



Source: 2010 Nashua Community Health Survey

Source: Shauna Vautier, Nashua High School Photography Project

Youth and Tobacco

Tobacco use is often initiated during the middle and high school years with approximately 80% of adult smokers starting before the age of 18. Each day in the United States, 3,450 youth between the ages of 12 and 17 smoke their first cigarette. Among these young adults, nearly 850 sustain the habit and become regular smokers each day. Other health risks that are associated with high school age smoking are drug use, alcohol use and risky sexual behavior.[13] In the State of New Hampshire, the 2009 Youth Risk Behavioral System (YRBS) was completed by 1,493 students in 53 public high schools. In the survey, students were asked about tobacco use and highlights of this data include (not Nashua specific):

- 20.8% have smoked cigarettes on one or more of the past 30 days,
- 8.4% have used chewing tobacco, snuff, or dip on one or more of the past 30 days, 13.8% were males and 2.6% were females,
- 4.2% think they are at no risk to harming themselves if they smoke 1 or more packs of cigarettes a day,
- 66.4% think it's very wrong or wrong for someone their age to smoke cigarettes.[16]

According to the 2004 Pregnancy Risk Assessment and Monitoring System conducted by the CDC, 13% of U.S. women smoked cigarettes throughout the last three months of their pregnancy. Of these smokers, 52% said they smoked 5 or less cigarettes a day, 27% smoked six to ten cigarettes and 21% smoked 11 or more cigarettes a day.[14] For more information on smoking and maternal health go to Chapter 3.

"Cigarette smoking is clearly identified as the chief, preventable cause of death in our society."

- C. Everett Koop, former Surgeon General

For more information on Tobacco Prevention and Control for the Greater Nashua Region, visit www.nashuanh.gov and go to the Nashua Division of Public Health and Community Services page.

Substance Abuse

In the United States, alcohol and illicit drug abuse continue to have a negative impact on the health and public safety of communities and the nation. Medical issues such as drug overdoses, Hepatitis C and HIV infections can be directly linked to the use of illicit drugs such as heroin, cocaine, methamphetamine and non-prescribed pain relief medications. In regard to alcohol abuse, health issues have a significant impact on the public's health and safety. Liver disease, injuries and deaths caused by drunk driving, as well as other types of accidents and violence also contribute to the high financial and emotional costs of abusing these substances. A 2004 report from the Office of National Drug Control Policy estimated that the overall cost of substance abuse, including loss of productivity and health and crime related costs exceeded $600 billion annually in the United States. These numbers included approximately $181 billion for illicit drug abuse and $235 billion for alcohol abuse.[18]

Illicit Drug Abuse

According to the 2009 Substance Abuse and Mental Health Services Administration (SAMHSA) National Survey on Drug Use and Health (NSDUH), 21.6 million persons aged 12 years or older in the United States admitted to having used an illicit substance over the past month. This number represented 8.7% of the population, and indicates a rise in illicit drug use over the previous year where 15.2 million persons (6.1% of the population) reported using an illicit substance. In examining specific drug use, the United States was found, in a 2008 survey of 17 countries, to have the highest levels of cocaine and cannabis abuse in the world.[19]

In New Hampshire, almost 11% of citizens (ages 12 or older) reported use of an illicit substance in the past month. When examining specific drugs being abused in the state, they found:

- In the past month, 9% of the population used marijuana,
- In the past month, 3.5% of the population used other illicit drugs,
- In the past year, 2.2% of the population reported use of cocaine and 5.2% of the population admitted to abuse of non-prescribed pain medications.

According to the U.S. Drug Enforcement Administration, marijuana use is the predominant drug of choice for New Hampshire, and is readily available in all parts of the State. This report also indicated that heroin and methamphetamine use and availability were increasing, particularly in the seacoast and western parts of the state.[26]

Youth and Illicit Drug Abuse

Data on illicit drug abuse for youth in the United States is available from the National Institute on Drugs and Alcohol (NIDA) Monitoring the Future (MTF) survey. In the 2010 survey, students in grades 8, 10 and 12 from targeted states were questioned about their alcohol, illicit drug and cigarette use. In this study, the survey questioned youth about their attitudes towards these substances. The survey revealed the use of marijuana for high school seniors was 6.1%, 3.3% for 10th graders and 1.2% for 8th graders. There was also an increase in the use of MDMA or Ecstasy (a designer drug) for 8th graders from 1.3% in 2009 to 2.4% in 2010. For 10th graders, there was an increase of Ecstasy use from 3.7% in 2009 to 4.7% in 2010.[20]

New Hampshire students were asked about drug use in the 2009 YRBS that was completed by 1,493 students in 53 public high schools in the State of New Hampshire (not Nashua specific). The report states:

- 40.5% of the students used marijuana one or more times during their life,
- 8.4% of the students tried marijuana for the first time before age 13 years,
- 20.4% of the students have taken a prescription drug (such as OxyContin, Percocet, Vicodin, Adderall, Ritalin, or Xanax) without a doctor's prescription one or more times during their life,
- 10.4% of the students have taken a prescription drug (such as OxyContin, Percocet, Vicodin, Adderall, Ritalin, or Xanax) without a doctor's prescription one or more times during the past 30 days,
- 6.5% of the students used some form of cocaine, including powder, crack, or freebase, one or more times during their life,
- 11.9% of the students sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high one or more times during their life,
- 3.0% of the students used heroin one or more times during their life,
- 4.7% of the students used methamphetamines one or more times during their life,
- 6.8% of the students used ecstasy one or more times during their life.[16]

When students were asked about their attitudes towards marijuana, 57.1% of students think it is very wrong or wrong for someone their age to smoke marijuana and 84.7% of the students say their parents think it is very wrong or wrong for something their age to smoke marijuana. In regards to availability of drugs, 43.8% of the students think it would be very easy for them to get some marijuana if they wanted it and 10.4% of the students think it would be easy for them to get cocaine, LSD or amphetamines if they wanted to.[16]

"No one is immune from the consequences of drug use. Every family is vulnerable."

- ***National Criminal Justice Reference Service***

Source: Public Domain

Adults and Alcohol Abuse

Although 130.6 million (51.9%) people in the United States report current alcohol use, or at least one drink in the past 30 days, the 2009 SAMHSA survey reports one quarter (23.7%) of people over the age of 12 years binge drinks and 6.8% (17.1 million) of the population are heavy drinkers.[19]

Heavy drinking is defined as more than two drinks a day for a man and more than one drink a day for a woman. Binge drinking is defined as five or more drinks at one time for a man and four or more drinks at one time for a woman. According to the BRFSS, 5.5% of NH adults report heavy drinking and 16% of NH adults report binge drinking, which is similar to the national trend. In New Hampshire, males age 25 to 34 years are most likely to report heavy drinking and binge drinking.[5] In Nashua, 11.5% of males and 5.8% of females are heavy drinkers. Of those that report binge drinking, 29.4% were male and 8.7% were female, which is a statistically significant difference between males and females for binge drinking (Tables 7.1 and 7.2).[17]

Table 7.1 Reported Heavy Drinking, 2008 & 2009

	Residence	Percent	95% Confidence Intervals
Heavy Drinking (All)	Nashua	8.6%	3.8-13.4%
Male Heavy Drinking	Nashua	11.5%	2.5-20.6%
Female Heavy Drinking	Nashua	5.8%	2.9-8.7%
Heavy Drinking (All)	NH w/out Nashua	5.8%	5.2-6.5%
Male Heavy Drinking	NH w/out Nashua	6.1%	5.1-7.1%
Female Heavy Drinking	NH w/out Nashua	5.6%	4.8-6.3%
Source: NH BRFSS			

Table 7.2 Reported Binge Drinking, 2008 & 2009

	Residence	Percent	95% Confidence Intervals
Binge Drinking (All)	Nashua	18.9%	13.3-24.5%
Male Binge Drinking	Nashua	29.4%	19.7-39.1%
Female Binge Drinking	Nashua	8.7%	5.3-12.1%
Binge Drinking (All)	NH w/out Nashua	15.9%	14.8-17%
Male Binge Drinking	NH w/out Nashua	22.1%	20.2-24%
Female Binge Drinking	NH w/out Nashua	10.1%	9-11.2%
Source: NH BRFSS			

Youth and Alcohol Abuse

New Hampshire high school students that were surveyed as part of the YRBS report that:

- 68% of students had at least 1 drink of alcohol on one or more days during their life,
- 39% of students had at least one drink of alcohol on one or more of the past 30 days,
- 24% of students had 5 or more drinks of alcohol in a row, within a couple of hours on one or more of the past 30 days.

When asked about their attitudes towards alcohol use, 48.8% of students think it is very wrong or wrong for someone their age to drink beer, wine or liquor regularly and 8% of the students think people are at no risk of harming themselves (physically or in other ways) if they have 5 or more drinks of an alcoholic beverage (beer, wine, or liquor) each weekend. Furthermore, 37.9% of students think it would be very easy for them to get some beer, wine, or liquor if they wanted to.[16]

Public Safety

In 2009, an estimated 1/3 of drug tests completed on motorists who were killed in auto accidents in the United States were found to be positive for illicit drugs or medications ranging from hallucinogens to prescription pain killers.[21] From the 2009 SAMHSA national survey, 10.5 million persons, approximately 4.2% of the population aged 12 or older, reported driving under the influence of an illicit drug during the past year.[19] Illicit substance abuse remains a major challenge to public health and safety interventions on both a state and national level.

Nationally, 12% of the population drove a vehicle at least once in the past year under the influence of alcohol. This percentage has dropped since 2002, where 14.2% of the population drove under the influence. In spite of this decrease, examination of 2009 data showed that the highest percentage of persons who drive under the influence (DUI) of alcohol were between the ages 21 and 25 years old. The 2010 Profile of Drug Indicators reports that there were 4,676 driving DUIs for adults and 68 DUIs for juveniles in New Hampshire that year.[26] In 1986, 81% (139 deaths) of fatal traffic accidents were related to alcohol abuse. Since then, the lowest number of drunk driving fatalities was in 1992 with 40 deaths in New Hampshire.[22]

According to the 2009 Nashua Police Department Annual Report, there were a total of 1,220 arrests for driving while intoxicated (DWI) and 1,563 drug arrests from 2005-2009 in Nashua. DWI arrests stayed the same between 2008 and 2009, but drug arrests increased by 9% during this same time period (Table 7.3).[23]

Table 7.3 City of Nashua DWI and Drug Arrests, 2005-2009

Year	DWI Arrests	Drug Arrests
2005	293	272
2006	236	330
2007	192	312
2008	249	310
2009	250	339
TOTAL	1,220	1,563
Source: Nashua Police Department		

Emergency Department and Inpatient Discharges

In 2007, there was a total of 37,239 emergency department discharges for Nashua residents and 33,308 for residents in the Greater Nashua Region (does not include Nashua residents). Of these, 486 (1.31%, CI 0.92-1.12%) of the discharges for Nashua residents were for drug/alcohol dependence or abuse and 229 (0.69%, CI 0.60-0.78%) were for residents in the Greater Nashua Region, for a total of 715 discharges for drug/alcohol dependence or abuse. Nashua has a significantly higher number of emergency department visits for drug/alcohol dependence or abuse than the Greater Nashua Region. The number of emergency department visits, due to drug/alcohol dependence or abuse, has also increased steadily since 2005 for Nashua residents (Table 7.4, Figure 7.5).[24]

There was a 154% increase in emergency department discharge costs between 2003 and 2007. In 2003, the total cost for emergency department discharges for drug/alcohol dependence or abuse was $296,825 whereas; in 2007 the total cost was $754,958 (Table 7.4, Figure 7.5).[24]

Table 7.4 Emergency Department Discharges and Cost for Nashua, 2003-2007

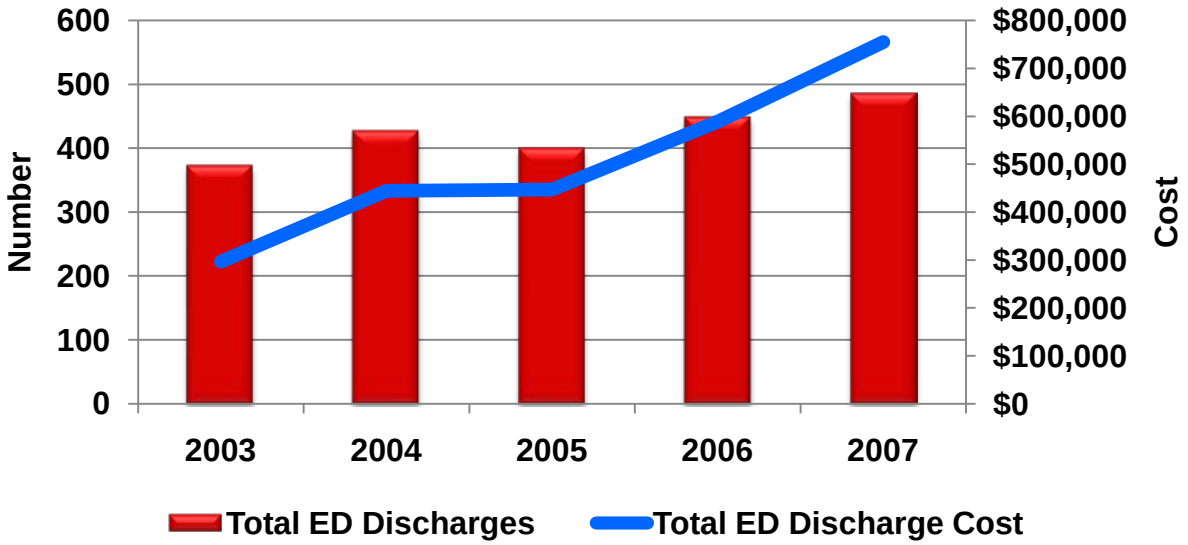
Year	Total Emergency Department Discharge Cost	Emergency Department Cost per Discharge	Total Emergency Department Discharges
2003	$296,825	$798.78	373
2004	$444,389	$1,040.72	427
2005	$446,921	$1,117.30	400
2006	$588,350	$1,310.36	449
2007	$754,958	$1,553.41	486

Source: NH DHHS

Many Americans believe that drug abuse is not their problem. They have misconceptions that drug users belong to a segment of society different from their own…they are wrong. Almost ¾ of drug abusers are employed.

- ***National Criminal Justice Reference* Service**

Figure 7.5 ED Discharge Cost for Drug/Alcohol Dependence or Abuse, Nashua, 2003-2007



Source: NH DHHS

In 2007, there was a total of 10,493 inpatient discharges for Nashua residents and 10,364 for residents in the Greater Nashua Region (does not include Nashua residents). Of these, 167 (1.59%, CI 1.35-1.83%) of the inpatient discharges for Nashua residents were for drug/alcohol dependence or abuse and 63 (0.61%, CI 0.46-0.76%) were for residents in the Greater Nashua Region, for a total of 230 discharges for drug/alcohol dependence or abuse. Nashua has a significantly higher number of inpatient visits for drug/alcohol dependence or abuse than the Greater Nashua Region. The number of inpatient visits has also increased steadily since 2005 for Nashua residents (Figure 7.5).[24]

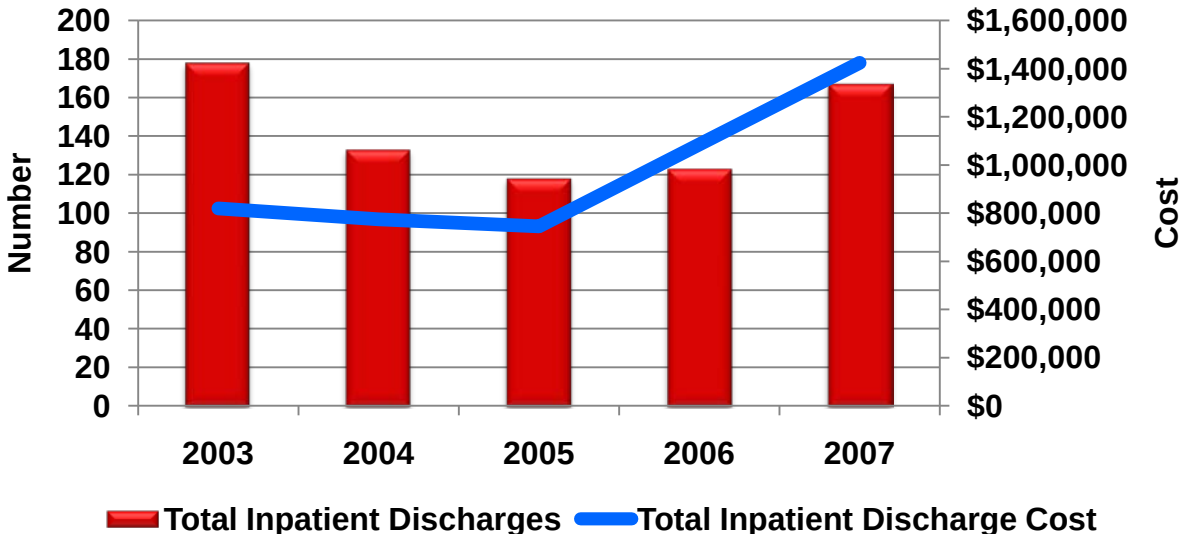
There was a 74% increase in inpatient discharge costs for drug/alcohol dependence or abuse between 2003 and 2007. In 2003, the total cost for inpatient discharges was $819,684 whereas; in 2007 the total cost was $1,423,943 (Table 7.5, Figure 7.6).[24]

Table 7.5 City of Nashua Inpatient Discharges and Cost

Year	Total Inpatient Discharge Cost	Inpatient Cost per Discharge	Total Inpatient Discharges
2003	$819,684	$4,604.97	178
2004	$774,732	$5,825.05	133
2005	$745,314	$6,312.22	118
2006	$1,085,168	$8,822.50	123
2007	$1,423,943	$8,526.60	167

Source: NH DHHS

Figure 7.6 Inpatient Discharge Cost for Drug/Alcohol Dependence or Abuse, Nashua, 2003-2007



Source: NH DHHS

Treatment for Alcohol and Illicit Drug Abuse

In the 2009 NSDUH report, the number of persons seeking out substance abuse treatment remained relatively stable across the United States between 2008 and 2009. SAMHSA defines "treatment" as any form of support such as Alcoholics Anonymous/ Narcotics Anonymous self-help groups, outpatient counseling, inpatient treatment, mental health care, or visits to an emergency room or physician's office. In 2008, a total of 4.0 million persons accessed treatment, while in 2009, 4.3 million persons received some form of treatment services. Of these, 1.6 million received treatment for the use of alcohol and drugs, 0.8 million obtained treatment for only illicit drug use and 1.5 million received care for only alcohol use.[19]

The 2009 SAMHSA survey defined "specialty treatment " as treatment received at any of the following facilities: inpatient hospital care, inpatient/ outpatient rehabilitation centers or mental health centers. A primary requirement placed on all of these respondents who needed or accessed a specialty treatment program was their need to meet a Diagnostic Statistical Manual of Mental Disorders diagnosis of having dependence to alcohol / illicit drugs or abuse of one of these substances.[19] The survey showed that:

- 23.5 million persons aged 12 or older qualified as needing treatment for an alcohol or illicit substance abuse disorder,
- 2.6 million persons were able to obtain treatment at a defined specialty substance abuse facility,
- 20.9 million persons aged 12 years or older needed to receive treatment at a specialty care center but were unable to access treatment.

For youth ages 12 to 17, there were 1.2 million young persons who needed treatment for their alcohol abuse issues. Of that number, only 96,000 received care at a specialty facility causing almost 1.1 million youth to go without specialty treatment.[19]

The 2010 Profile of Drug Indicators for New Hampshire revealed that in 2009 there were 6,332 admissions for treatment:

- 1,724 (27.3%) persons were admitted for treatment of alcohol abuse,
- 826 (13.1%) persons were admitted for treatment for marijuana issues,
- 461 (7.3%) persons were admitted for treatment for cocaine abuse,
- 946 (15%) persons were admitted for treatment for heroin issues,
- 904 (14.3%) persons were admitted for treatment of opiate abuse,
- 1,471 (23%) persons were admitted for treatment for other drugs.[26]

In examining "specialty treatment" resources in the Nashua community, a significant number of persons with substance abuse issues have been referred to the Greater Nashua Council on Alcoholism, Inc. at Keystone Hall. This state funded agency provides several levels of treatment including: Crisis Intervention/ Sobriety Maintenance (CIC/ESMC) for persons who have just stopped their alcohol/ illicit drug use and who are waiting to enter a higher level of treatment such as a 28-day rehabilitation program, Transitional Living Community (TLC) a one – year residential program for clients who have completed a 28-day inpatient treatment program elsewhere in NH who request support in adjusting to a non substance abusing lifestyle, The Intensive Outpatient Program group/individual treatment services (IOP) and Project Recovering Lives (PRL), a four week intensive outpatient group and individual counseling experience for persons coming out of the NH Department of Corrections prison system and into parole status.[25]

In 2010, Keystone Hall staff completed 680 telephone screenings of persons requesting entry into their CIC/ ESMC program. Of this number, 228 persons were admitted into this program for non-medical detoxification/sobriety maintenance services. For the other programs at this center, 269 persons were enrolled into the IOP program, 18 persons were accepted into the TLC program and 149 persons were enrolled into the PRL program. The breakdown of drugs of abuse by clients entering treatment were reported as 262 alcohol, 67 cocaine, 169 heroin, 86 non-prescribed opiod based pain medications, 24 marijuana, 1 methamphetamine and 8 benzodiazepines.[25]

In examining the reasons or barriers for persons' not getting into any form of specialty treatment, the NSDUH survey revealed that based on 2006 to 2009 data, there were six primary reasons for persons aged 12 or older not obtaining treatment at a specialty treatment facility (Table 7.6).[19] When reviewing the local environment in Nashua for persons not accessing care at the area substance abuse treatment program (Keystone Hall), it was reported by admission staff that the three primary reasons for persons who needed care but who did not obtain treatment were: the facility did not have the capacity to immediately take a person into treatment, the need for clients to wait long periods of time (3 to 6 weeks) in order to be accepted into treatment and the inability of the center to maintain communication with persons waiting for care because they did not have stable housing or telephone contacts.[25]

For more information on preventing alcohol and drug abuse, contact the Bureau of Alcohol and Drug Services at 603-271-2677.

To contact Keystone Hall, visit www.keystonehall.org or call 603-881-4848.

Table 7.6 Reasons for Not Accessing Treatment

Reasons for Not Accessing Treatment	
39.8%	Believed they were not ready to stop their drug use
33.7%	Did not have health insurance or the ability to afford treatment
12.4%	Concern over negatively impacting their job
12%	Receiving treatment might cause neighbors/community to have a negative opinion of them
10.9%	Believed they could handle their substance abuse issues by themselves without assistance of treatment
0.7%	Did not know where to go for treatment
Source: National Survey on Drug Use and Health	

"The social and health costs to society of illicit drug use are staggering. Drug-related illness, death, and crime cost the nation approximately $66.9 billion….Illicit drug use hurts families, businesses, and neighborhoods; impedes education; and chokes criminal justice, health and social service systems.

- ***National Criminal Justice Reference* Service**

Sexually Transmitted Diseases and Human Immunodeficiency Virus

Sexually transmitted diseases (STDs) are caused by pathogens, such as bacteria and viruses that can be acquired and transmitted through sexual activity.[27] STDs remain a significant public health problem in the United States and many, including the Human Immunodeficiency Virus (HIV), are without symptoms. Social, economic and behavioral factors that affect the spread of STDs include: racial and ethnic disparities; poverty and marginalization; substance abuse; sexuality and secrecy; and sexual networking. STDs often have financial, physiological, and psycho-social consequences. These infections may cause harmful, often irreversible and costly clinical complications such as reproductive health problems; fetal and perinatal health problems, cancer and increased susceptibility to other diseases and illnesses.[27]

The CDC estimates that there are approximately 19 million new STD infections each year—almost half of them among young people ages 15 to 24 years of age. The cost of STDs to the United States health care system is estimated to be as much as $15.9 billion annually. Because many STDs often go undiagnosed, the reported cases of chlamydia, gonorrhea, and syphilis may only represent a fraction of the true burden of STDs in the United States. The CDC estimates that undiagnosed and untreated STDs are responsible for at least 24,000 women in the United States becoming infertile each year.[28]

The occurrence of STDs in New Hampshire is significant. In 2009 in New Hampshire, there were 2,299 cases of reportable STDs, accounting for 57.5% of all reportable diseases in the State of NH. In 2010, there were 2,675 cases of reportable STDs, accounting for 51% of all reportable diseases (Table 7.7). Hepatitis C is not included in these numbers because it is not reportable in the State of New Hampshire. Of all the reportable STDs, chlamydia cases accounted for 90.5% of all reportable STDs in 2010 and 91.3% in 2009.[32]

"There are approximately 19 million new STD infections each year in the United States."

-Centers for Disease Control and Prevention

Table 7.7 State of NH Reportable Sexually Transmitted Diseases, 2009-2010

Sexually Transmitted Diseases		
	2009	2010
Chlamydia	2,099	2,423
Gonorrhea	117	146
Syphilis	36	43
HIV	25	40
AIDS	22	23
TOTAL	2,299	2,675
Other Reportable Communicable Diseases		
Other Reportable Communicable Diseases	3,114	2,796
Source: NH DHHS		

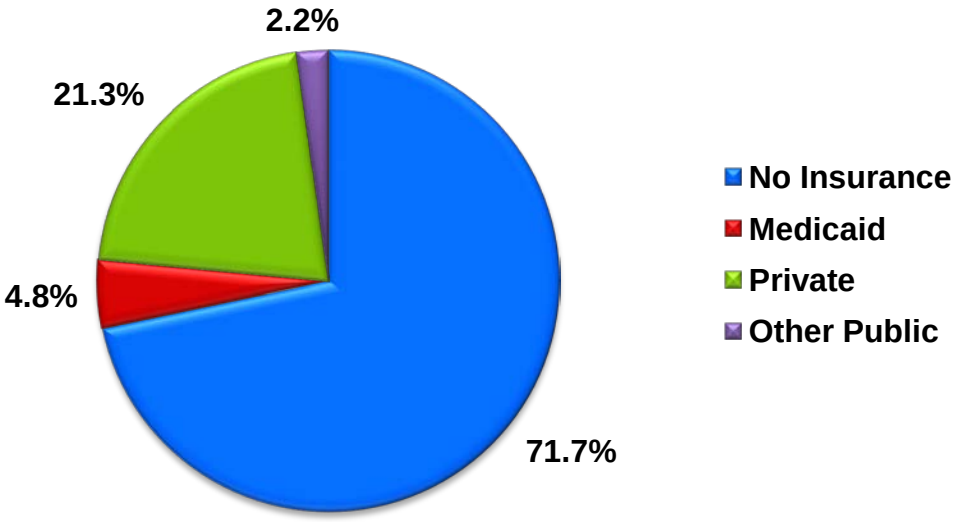
Until July 1, 2011, the STD/HIV Prevention Section within the NH Division of Public Health Services contracted with 20 health care agencies to provide comprehensive services including confidential diagnosis, testing and treatment for STDs in the State of New Hampshire. All treatment provided was consistent with the national guidelines established by the CDC. Below are counts for services provided by the State of NH and City of Nashua, Division of Public Health and Community Services in regards to services provided (Table 7.8).[29] While at the clinic, clients were vaccinated with Twinrix (Hepatitis A&B) vaccine, Tdap (Tetanus, diphtheria, acelular pertussis), Menactra, Td, Gardisil (Human Papilloma Virus) vaccine, Pneumovax, and influenza vaccine if needed.

Table 7.8 NH STD/HIV Clinic Services, 2010

STD/HIV Clinic, 2010					
	Nashua Clinic	Nashua Outreach Van	Total Nashua	Total Statewide	Nashua's Contribution to Statewide Visits
Number of Clinic Visits	945	141	1086	6243	17.4%
Number of Male Visits	611	88	699	3215	21.7%
Number of Female Visits	333	53	386	3022	12.8%
Number of MSM Visits	60	6	66	524	12.6%
Number of IDU Visits	74	59	133	364	36.5%
Number of Comprehensive Visits	500	90	590	4055	14.5%
STD/HIV Clinic, Fiscal Year July 2009-June 2010					
Number of HIV Tests	543	N/A	543	4,918	11%
Source: NH DHHS					

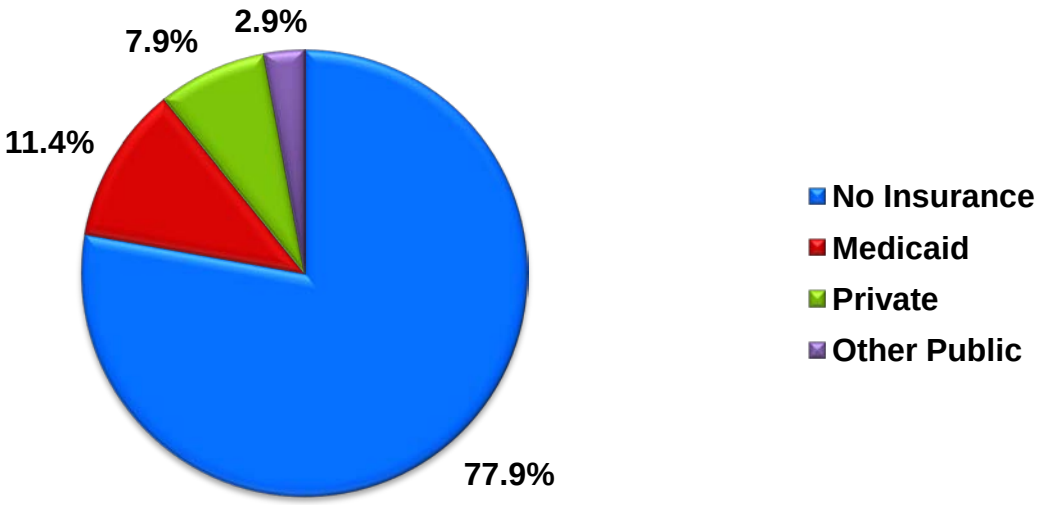
The insurance status of clients was collected as they sought services at the STD/HIV clinic or on the outreach van as it provided services in the community. On the outreach van, 77.9% of clients did not have insurance and at the clinic 71.7% of clients did not have insurance. Additionally, 21.3% of clients at the clinic have private insurance, whereas only 7.9% of clients who access the outreach van have private insurance (Figure 7.7 and 7.8).[29]

Figure 7.7 Insurance Statuses of STD/HIV Clinic Patients



Source: NH DHHS

Figure 7.8 Insurance Status of STD/HIV Clinic Patients from Outreach Van



Source: NH DHHS

Chlamydia

In 2009, a total of 1,244,180 chlamydial infections were reported to CDC from the 50 states and the District of Columbia. This case count corresponds to a rate of 409.2 cases per 100,000 population, which is an increase of 2.8% compared with the rate of 398.1 per 100,000 in 2008. During 1990-2009, the rate of reported chlamydial infections increased from 160.2 to 409.2 cases per 100,000 population.[31]

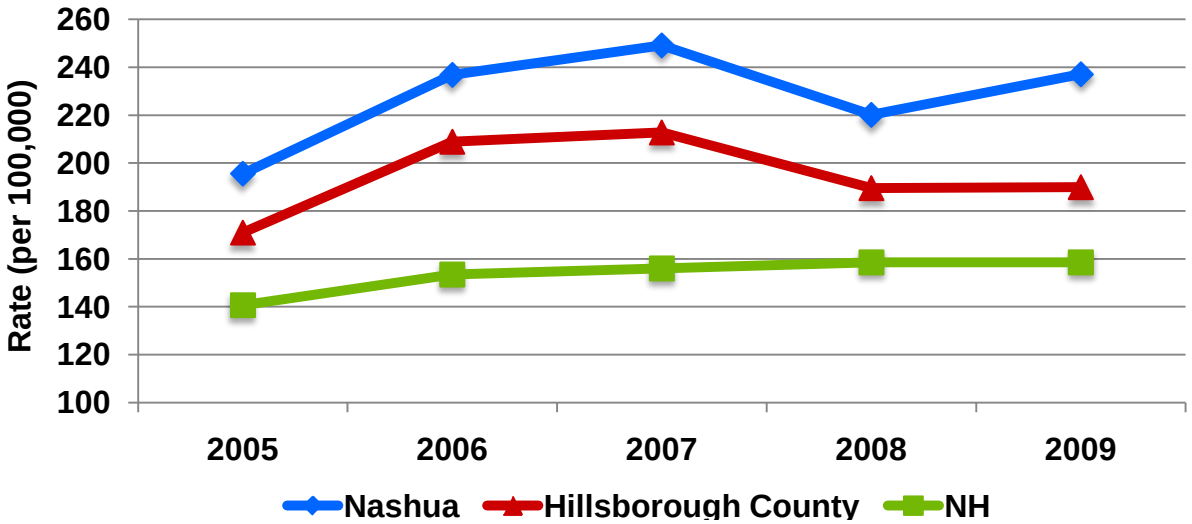
In Nashua, the rate of chlamydia increased from 195.6 per 100,000 in 2005 to 249.2 per 100,000 in 2007. In 2009, the rate of chlamydia was 237.1 per 100,000 in Nashua compared to 189.9 per 100,000 in Hillsborough County and 158.5 per 100,000 in the State of New Hampshire. In 2009, Nashua's chlamydia cases accounted for 9.9% of all the chlamydia cases in NH and 26.9% of all cases in Hillsborough County (Table 7.9, Figure 7.9).[33] From 2005-2009, there were a total of 10,095 cases of chlamydia in the State of NH. Of these, 7,349 (73%) were for females ages 15 to 44 years. In Nashua, 701 (71%) out of 993 cases of chlamydia were for females ages 15 to 44 years of age.[34]

Figure 7.9 Chlamydia Cases and Rates, 2005-2009

	Cases/Rate (per 100,000) 2005	Cases/Rate (per 100,000) 2006	Cases/Rate (per 100,000) 2007	Cases/Rate (per 100,000) 2008	Cases/Rate (per 100,000) 2009
City of Nashua	170/195.5	206/236.8	217/249.2	192/220.1	208/237.1
Hillsborough County	682/171.0	838/208.9	857/212.8	766/189.6	771/189.9
State of NH	1831/140.7	2013/153.4	2055/156.0	2096/158.6	2100/158.5

Source: NH DHHS

Figure 7.9 Rates of Chlamydia Cases by Year, 2005-2009



Source: NH DHHS

Gonorrhea

In 2009, a total of 301,174 cases of gonorrhea were reported in the United States, a rate of 99.1 cases per 100,000 population. This is a rate decrease of 10.5% since 2008.[31]

From 2005-2009, there were 58 cases of gonorrhea in Nashua and 711 cases in the State of NH. Nashua's cases accounted for 8% of the cases in NH and 18% of the cases for Hillsborough County (Table 7.10). The greatest risk for gonorrhea is heterosexual contact followed by male-to-male sexual contact. In 2009, person's ages 20-24 years accounted for the

largest rate of gonorrhea cases and females had a rate of 9.5 per 100,000, while males had a rate of 8.2 per 100,000 in the State of NH.[33]

Table 7.10 Gonorrhea Cases and Rates, 2005-2009

	Cases/Rate (per 100,000) 2005	Cases/Rate (per 100,000) 2006	Cases/Rate (per 100,000) 2007	Cases/Rate (per 100,000) 2008	Cases/Rate (per 100,000) 2009
Hillsborough County	85/21.3	81/20.2	60/14.9	46/11.4	49/12.1
State of NH	179/13.8	177/13.5	138/10.5	100/7.6	117/8.8
Source: NH DHHS					

Syphilis

During 2008-2009, the number of cases of early latent syphilis reported to CDC increased 5.4% (from 12,401 to 13,066 cases) while the number of cases of late and late latent syphilis decreased 13.1% (from 19,945 to 17,338 cases). The total number of cases of syphilis (primary and secondary, early latent, late, late latent and congenital) reported to CDC decreased 3.2% (from 46,291 to 44,828 cases) during 2008-2009 in the United States.[31]

From 2005-2009, there were 11 cases of syphilis in Nashua, 54 cases in Hillsborough County and 136 in the State of NH. Nashua's cases account for 20% of the cases in Hillsborough County and 8% of the cases in New Hampshire.[33]

Table 7.11 Syphilis Cases and Rates, 2005-2009

	Cases/Rate (per 100,000) 2005	Cases/Rate (per 100,000) 2006	Cases/Rate (per 100,000) 2007	Cases/Rate (per 100,000) 2008	Cases/Rate (per 100,000) 2009
Hillsborough County	10/2.5	7/1.7	12/3	11/2.7	14/.4
State of NH	16/1.2	16/1.2	42/.2	25/1.9	37/2.8
Source: NH DHHS					

Human Immunodeficiency Virus

CDC estimates that more than one million people are living with HIV in the United States. It is believed that one in five (21%) of those people living with HIV is unaware of their infection. Despite increases in the total number of people living with HIV in the U.S. in recent years, the annual number of new HIV infections has remained relatively stable. However, new infections continue to rise with an estimated 56,300 Americans becoming infected with HIV each year. More than 18,000 people with Acquired Immune Deficiency Syndrome (AIDS) still die each year in the United States. Gay, bisexual, and other men who have sex with men (MSM) are strongly affected and represent the majority of persons who have died. Through 2007, more than 576,000 people with AIDS in the United States have died since the epidemic began.[31]

From 2005-2009, Hillsborough County had 102 cases of HIV and 74 cases of AIDS, while New Hampshire had 227 cases of HIV and 159 cases of AIDS (Table 7.12). HIV cases in Hillsborough County account for 45% of the cases in NH and 47% of AIDS cases in New Hampshire. The greatest risk for HIV and AIDS from 2005-2009 was male-to-male sexual

contact and in 2009, 49% of HIV cases had a concurrent diagnosis of AIDS. Concurrent diagnosis is defined as receiving an AIDS diagnosis within 12 months of an initial HIV diagnosis. The age group with the highest rate of infection in 2009 was young adults ages 25 to 29; the rate for males (5.2) was higher than females (1.6) and the rate for African Americans (44.2) was higher than Caucasians (2.7).[33]

Table 7.12 HIV Cases and Rates, 2005-2009

	Cases/Rate (per 100,000) 2005	Cases/Rate (per 100,000) 2006	Cases/Rate (per 100,000) 2007	Cases/Rate (per 100,000) 2008	Cases/Rate (per 100,000) 2009
Hillsborough County	21/5.3	21/5.2	17/4.2	24/5.9	19/4.7
State of NH	40/3.1	50/3.8	45/3.4	47/3.6	45/3.4
Source: NH DHHS					

The Southern New Hampshire HIV/AIDS Task force is a private, nonprofit agency that serves Greater Nashua by providing community based HIV prevention education and direct services to people living with HIV and AIDS. In 2010, they served 75 (63%) clients in Nashua out of 119 clients from the rest of the state. All 119 clients received case management, 72 received housing assistance, 103 received food and nutrition services, 22 received mental health counseling, 16 received substance abuse counseling and 41 received transportation services.[35]

Hepatitis C

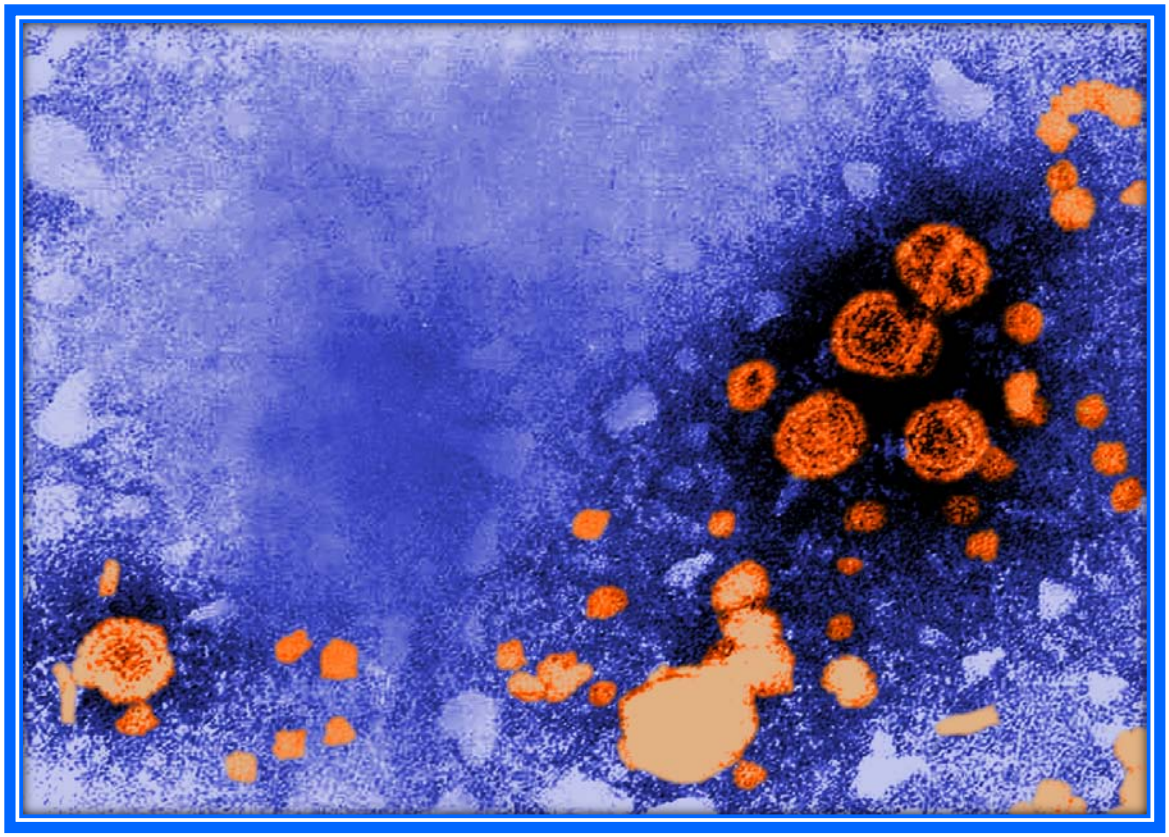
Hepatitis C virus (HCV) infection is the most common chronic bloodborne infection in the United States; an estimated 3.2 million persons are chronically infected. Although HCV is not efficiently transmitted sexually, persons at risk for infection through injection drug use might seek care in STD treatment facilities and other public health settings where STD and HIV prevention and control services are available.[31]

From June 1, 2000 to December 31, 2008, the Division of Public Health and Community Services sent 2,632 tests to the NH Public Health Laboratory for Hepatitis C testing. Of these, 19% (511) of the tests came back positive by polymerase chain reaction and 25% (660) had a history of infection. During this timeframe, the NH Public Health Laboratory received 10,070 tests for Hepatitis C. Nashua's tests accounted for 26% of the tests sent to the lab.[36]

Youth and STDs

The 2009 YRBS was completed by 1,493 students in 53 public high schools in the State of New Hampshire. In the survey, students are asked about their sexual behavior and highlights of this data include (not Nashua specific):

- 46% of students stated they have had sexual intercourse,
- 4.3% of them had sexual intercourse for the first time before the age of 13 years,
- 11.4% of the students has sexual intercourse with 4 or more people during their lifetime,
- 21.4% of the students who has sexual intercourse during the past 3 months drank alcohol or used drugs before last sexual intercourse,
- 57% of the students (or their partners) who had sexual intercourse during the past 3 months used a condom during sexual intercourse,
- 90% of the students have been taught about AIDS or HIV infection in school.[36]



This digitally-colorized transmission electron micrograph (TEM) revealed the presence of hepatitis B virions. The large round virions are known as Dane particles.

Source: CDC Public Health Image Library, Erskine Palmer

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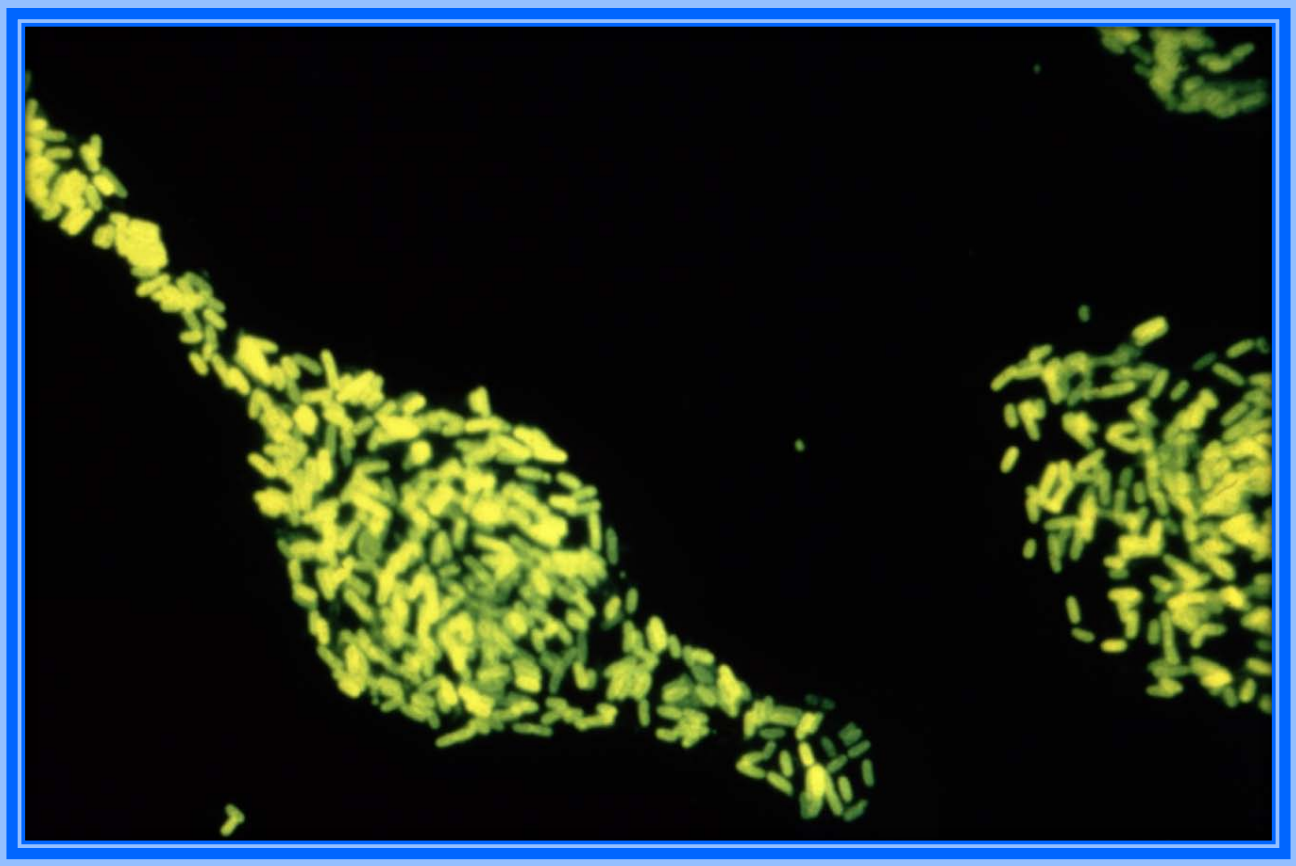
Chapter 8:

Microbial Threats



Salmonella

Source: CDC Public Health Image

Foodborne Illness

According to the Centers for Disease Control and Prevention (CDC), every year approximately 1 out of 6 Americans get sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases. Over 90% of domestically acquired foodborne illnesses are caused by one of five pathogens, norovirus (58%) *Salmonella spp.* (11%), *Clostridium perfringens* (10%), *Campylobacter spp.* (9%), and *Staphlococcus aureus* (3%). Although salmonella is not the leading cause of foodborne illness, it is the leading cause of hospitalizations (35%) and death (28%) for foodborne illnesses.[1]

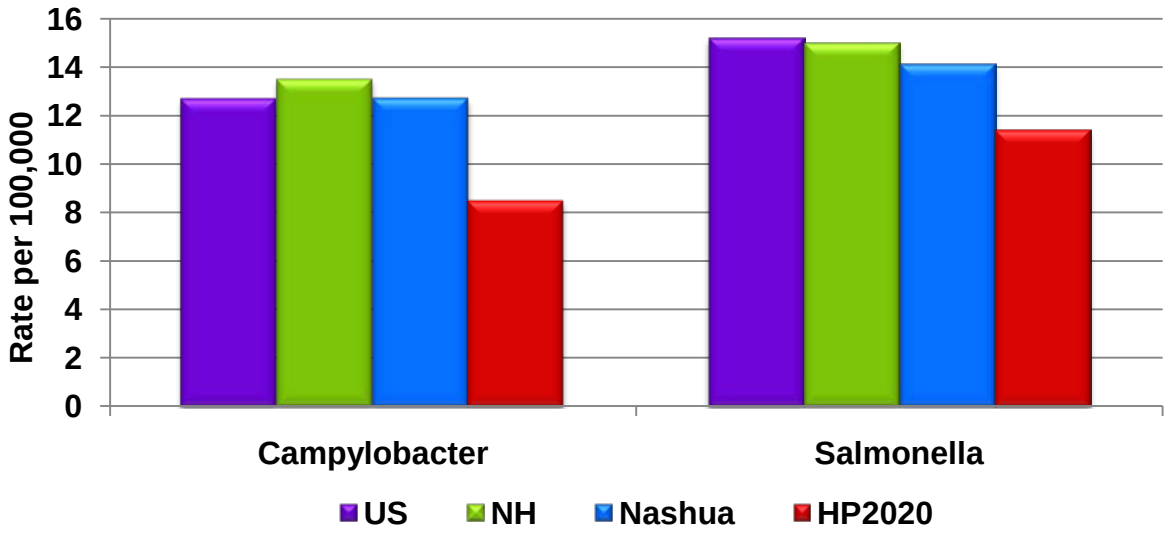
Reducing foodborne illness by just 10% would keep about 5 million Americans from getting sick each year. Preventing a single fatal case of *Escherichia coli* O157 infection would save an estimated $7 million.[1] The Healthy People 2020 overall objective is to improve food safety and reduce foodborne illness.[2] One way in which this is to be achieved is by reducing infections caused by key pathogens transmitted commonly through food.[2]

The two most common reportable foodborne illnesses in New Hampshire are campylobacter and salmonella.[3] Nationally, there were approximately 15.2 cases of salmonella per 100,000 population per year and 12.7 cases of campylobacter per 100,000 population per year from 2006 to 2008.[2] From 2005 to 2010, New Hampshire had similar rates of salmonella (15 cases per 100,000 per year) and campylobacter (13.5 cases per 100,000 per year).[3] Nashua rates from 2005 to 2010 were also comparable to national rates with 12.7 cases per 100,000 per year of campylobacter and 14.1 cases per 100,000 per year of salmonella (Figure 8.1).[4] Healthy People 2020 seeks to decrease campylobacter infections from 12.7 cases per 100,000 population per year to 8.5 cases per 100,000 (a 33% improvement), and salmonella infections from 15.2 cases per 100,000 population per year to 11.4 cases per 100,000 (a 25% improvement).[2] In Nashua, there were 55 cases of campylobacteriosis, 12 cases of *Escherichia coli O157* infections or other shiga-toxin producing *E. coli,* 61 cases of salmonellosis and four other confirmed foodborne illness cases from 2006-2010 (Table 8.1).[4]

"Every year approximately 1 out of 6 Americans get sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases."

- CDC

Figure 8.1 Rates of Confirmed Salmonella and Campylobacter Cases, 2006-2010



Source: NH DHHS, NHEDSS

Table 8.1 Foodborne Illnesses in Nashua, 2006-2010

	Total
Campylobacteriosis	55
Escherichia coli 0157* or other shiga-toxin producing *E. coli	12
Salmonellosis	61
Other	4
Source: Nashua DPHCS; NH DHHS	

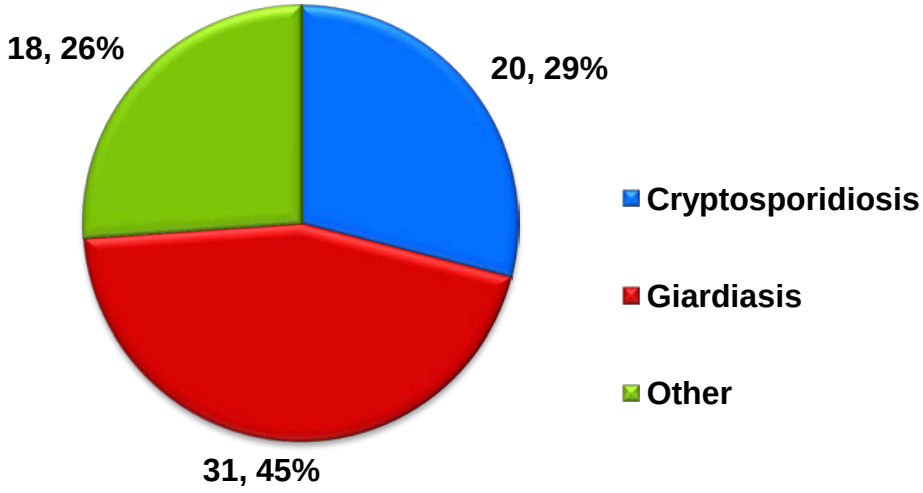
Waterborne Illness

Waterborne diseases are caused by organisms that are directly spread through water and water-related illnesses can be acquired due to a lack of water for hygiene and a lack of sanitation.[5]

Water-related diseases can be caused by bacteria (e.g. species of *Legionella*, *Pseudomonas*, *Shigella, Vibrio*), parasites (e.g. *Cryptosporidium, Giardia*), viruses (e.g. hepatitis A, norovirus, rotovirus) and the presence of chemicals (e.g. arsenic, copper, lead).[6] The top five causes of illness outbreaks in drinking water are *Giardia intestinalis*, *Shigella*, norovirus, hepatitis A, and the presence of copper. The top five causes of recreational water illness outbreaks are *Pseudomonas*, *Cryptosporidium*, *Shigella*, *Legionella*, and norovirus/calcivirus.[7]

In New Hampshire, the most common reportable cause of waterborne illness is giardiasis, with an average of 114 cases per year from 2006-2010, followed by cryptosporidosis (59.4 cases per year), legionellosis (18 cases per year), shigellosis (11.6 cases per year) and vibriosis (2.6 cases per year).[3] In Nashua, from 2006-2010, giardiasis was the leading reportable cause of waterborne illness with 6.2 cases per year and accounting for 45% of waterborne illnesses from 2006-2010, followed by cryptosporidiosis with 4 cases per year and accounting for 29% of cases from 2006-2010. There are approximately 2.4 cases per year of shigellosis in Nashua (Figure 8.2, Table 8.2).[4]

Figure 8.2 Waterborne Illnesses by Percent in Nashua, 2006-2010



Source: Nashua Division of Public Health and Community Services

Table 8.2 Waterborne Illnesses in Nashua, 2006-2010

	Total
Cryptosporidiosis	20
Giardiasis	31
Shigellosis	12
Other	6

Source: Nashua DPHCS; NH DHHS

For more information on foodborne and waterborne diseases, visit the Centers for Disease Control and Prevention website at http://www.cdc.gov/ncezid/dfwed/.

Vaccine Preventable Diseases

Although vaccine-preventable disease levels are near record lows, only 68% of infants and toddlers have received all recommended vaccines by age three. Many children, adolescents and adults remain under-immunized, leading to the potential for outbreaks of disease including pertussis, varicella and measles.[8, 10] Under-immunization also results in missed opportunities for people to protect themselves against diseases such as hepatitis B, influenza, and pneumococcal disease.[8]

Vaccines are among the most cost-effective clinical preventive services and childhood immunization programs provide a high return on investment. According to Healthy People 2020, each birth cohort vaccinated with the routine immunization schedule (DTap, Td, Hib, Polio, MMR, Hep B, and varicella vaccines) saves 33,000 lives, prevents 14 million cases of disease, reduces direct health care costs by $9.9 billion, and saves $33.4 billion in indirect costs.[9]

Unvaccinated and under-vaccinated people place their community at risk for outbreaks of vaccine-preventable diseases.[9] For example, according to the CDC, there were more measles cases reported in 2008 than in any other year since 1997 and more than 90% of those people infected had either not been vaccinated or their vaccination status was unknown.[12] Although measles was declared eliminated in the US in 2000, approximately 200,000 people around the world continue to die each year from measles and measles complications.[12, 23] As long as measles remains endemic in the rest of the world, there will continue to be cases that appear in the US. In the first 19 weeks of 2011, 118 cases of measles were reported in the US and 105 (89%) of those have been associated with travel from other countries.[24]

"Unvaccinated and under-vaccinated people place their community at risk for outbreaks of vaccine-preventable diseases."

- **Healthy People 2020**

Healthy People 2020 seeks to reduce, eliminate, or maintain elimination of cases of vaccine-preventable diseases including *Haemophilus influenza* type b, hepatitis B, measles, mumps, pertussis, polio, rubella and varicella. In addition, Healthy People 2020 challenges us to reduce group B streptococcal infections in infants, meningococcal disease and invasive pneumococcal infections.[10]

In 2008, 115 confirmed cases of measles, 421 confirmed and probable cases of mumps, 10 confirmed cases of rubella, and 582,535 reported cases of varicella (children aged 17 years or younger) were reported in the United States.[10] Before the introduction of Tdap (Tetanus, Diphtheria, Pertussis vaccine) in 2005, there was an average of 3,995 confirmed and probable cases of pertussis per year among adolescents 11 to 18 years of age from 2000-2004 in the United States.[10,11] There was also an average of 2,777 cases per year of pertussis in children under 1 year of age from 2004-2008 in the United States.[10]

In New Hampshire from 2006-2010, there was one confirmed case of measles, 14 confirmed cases of mumps, and no cases of rubella. There was also an average of 288 cases per year of varicella and 91 cases per year of pertussis (all ages).[3] In Nashua, there was a total of 22

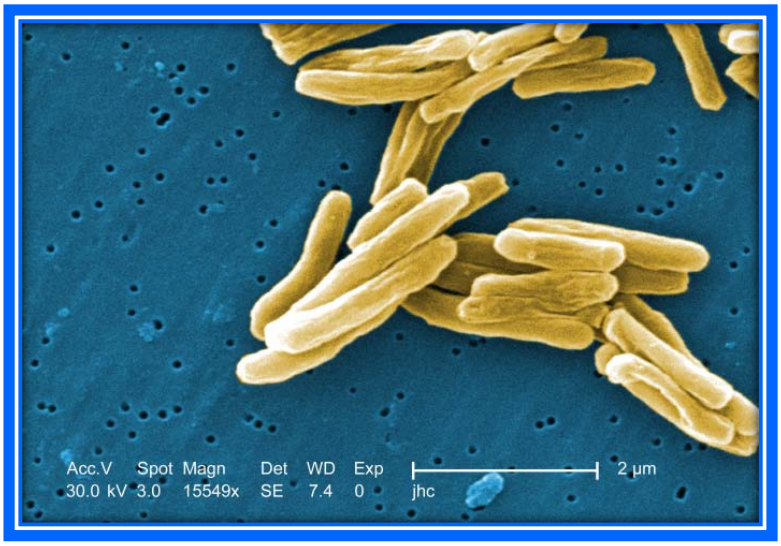
probable and confirmed cases of pertussis in Nashua with an average of 4.4 cases per year from 2006-2010. In Nashua, there were also 150 probable and confirmed cases of varicella reported from 2006-2010 (average 30 cases per year) with 143 of those cases occurring in children aged 17 years of age or younger.[4]

Healthy People 2020 seeks to reduce the number of measles cases in the US from 115 cases (reported in 2008) to 30 cases per year. Other Healthy People 2020 goals include targets of no more than 2,500 cases per year of pertussis in children under one year, 2,000 cases of pertussis in children aged 11 to 18 years of age, and 100,000 cases per year or less of varicella among persons aged 17 years or younger. Current incidence of mumps and rubella in the United States have met the Healthy People 2020 goals of 500 cases per year or less of mumps and 10 cases per year or less of rubella.[10]

Tuberculosis

Tuberculosis (TB) is a disease caused by a bacterium called *Mycobacterium tuberculosis*. Although this bacteria usually attacks the lungs, it can affect any part of the body including the kidney, spine, and brain. If not treated properly, TB disease can be fatal.[15] TB disease was once among the leading causes of death in the United States, accounting for 194.4 deaths per 100,000 population in 1900.[14,16] As recently as 1953, over 84,000 people in the US had active TB and more than 19,000 of them died (12.4 people per 100,000 population).[3] Although these numbers have improved, in 2007 there were still over 13,000 cases of active TB disease in the US with 554 deaths.[15]

The Healthy People 2020 objective is to reduce the rate of active TB cases reported to the CDC from 4.9 cases per 100,000 population to 1.0 case per 100,000.[13] In New Hampshire, the current case rate is just over the Healthy People 2020 goal at 1.1 cases of active TB per 100,000 population, although the Nashua case rate is slightly higher at 1.4 cases per 100,000.[4,16]



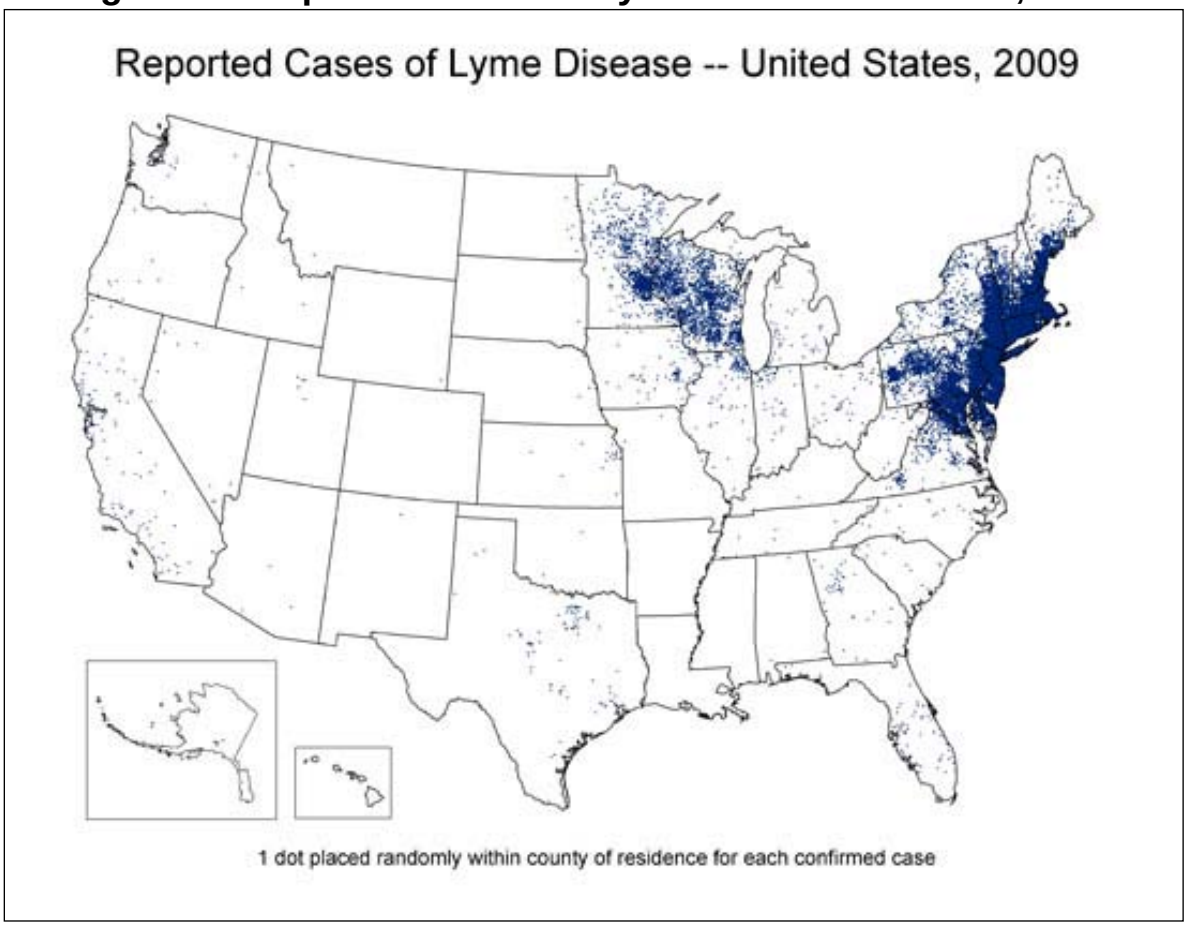
Scanning electron micrograph of gram-positive *Mycobacterium tuberculosis*
Source: CDC Public Health Image Library, Ray Butler

Lyme Disease

Lyme disease is caused by a bacterium called *Borrelia burgdorferi,* which is transmitted to humans by the bite of an infected blacklegged tick.[17] Initial symptoms of lyme disease include fever, chills, fatigue, headache, muscle and joint pain, and a characteristic "bull's eye" skin rash called erythema migrans.[17, 20] If left untreated, infection can spread to the joints, the heart and the nervous system. Lyme Disease can cause long term pain and swelling in the joints, arthritis, and neurological problems including shooting pain, numbness and tingling in the hands and feet, and changes in short-term memory.[17, 20] Lyme disease is typically diagnosed based on signs and symptoms and a history of possible exposure to infected blacklegged ticks. Laboratory blood tests are available and Lyme disease can often be treated successfully with a few weeks of antibiotics if started in the early stages of infection.[17] Ten to twenty percent of people with Lyme disease have post-treatment Lyme disease syndrome, and continue to have persistent or recurrent symptoms, even after receiving appropriate antibiotic treatment.[21]

In 2009, the incidence of Lyme disease in the US was 13.4 confirmed cases per 100,000 population.[18] The distribution of Lyme disease in 2009, however, was highly concentrated in the northeast with the incidence of Lyme disease as high as 111.2 per 100,000 population in Delaware, 78.2 per 100,000 population in Connecticut, and 75.2 cases per 100,000 in New Hampshire (Figure 8.3).[18, 19]

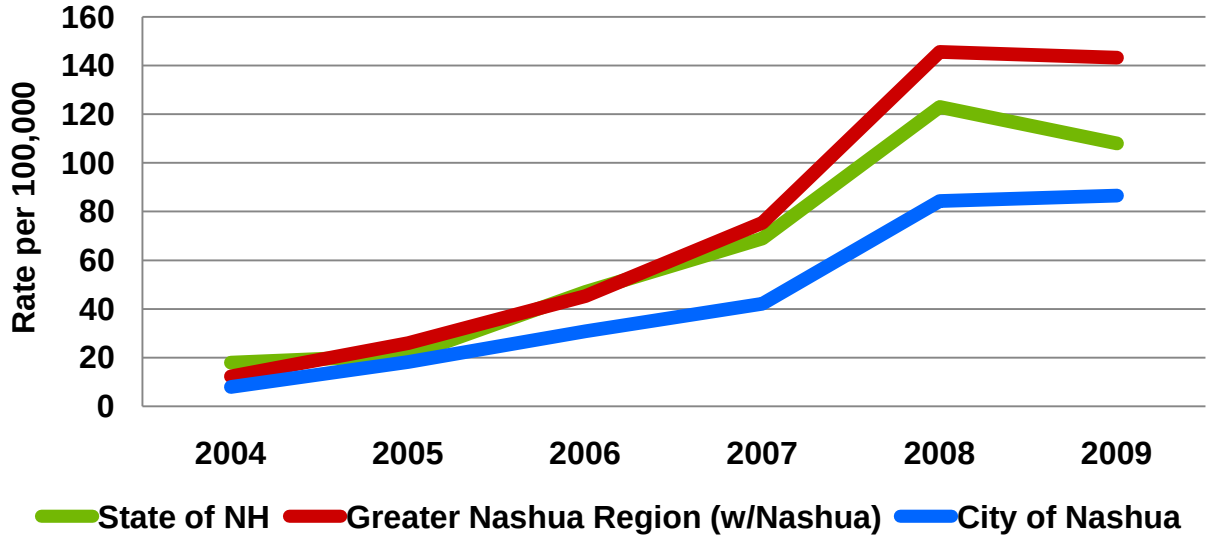
Figure 8.3 Reported Cases of Lyme Disease in the US, 2009



Source: CDC

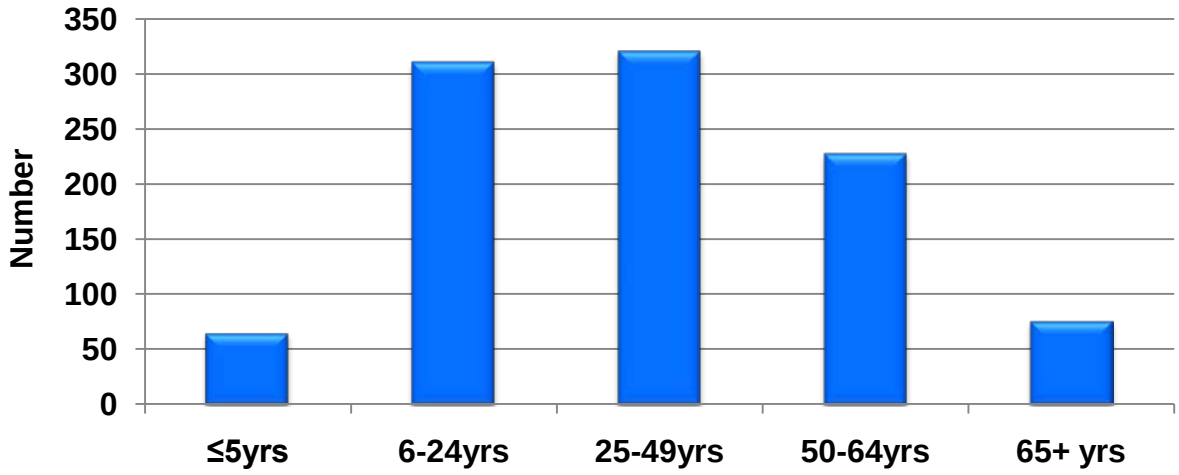
In 2010, there were 1,342 cases of Lyme disease in NH and 425 cases in Hillsborough County. Strafford County had the highest rate of Lyme disease in 2010 at 168.7 and Hillsborough came in third with a rate of 106.1. Over 60% of the ticks that were sampled and tested were infected with *Borrelia burgdorferi*. [22] The incidence of Lyme in the Greater Nashua Region in 2009 was 143 per 100,000 and in Nashua it was 87 per 100,000 (Figure 8.4). In 2009, 21.4% of the Lyme cases in NH came from the Greater Nashua Region. The age groups that are predominately affected by Lyme disease in the Greater Nashua Region are 6 to 24 and 25 to 49 year olds.[4]

Figure 8.4 Incidence of Lyme Disease, 2004-2009



Source: NH DHHS; Nashua DPHCS

Figure 8.5 Reported Lyme Disease Case Count for the Greater Nashua Region by Age, 2002-2009



Source: NH DHHS, Nashua DPHCS

[1]US Centers for Disease Control and Prevention. (2011). *CDC Estimates of Foodborne Illness in the United States*. Atlanta, GA. Retrieved from http://www.cdc.gov/foodborneburden/2011-foodborne-estimates.html.

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[13]Healthy People 2020. (2010). *Healthy People 2020 Objectives: Immunization and Infectious Diseases*. Retrieved from http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=23.

[14]US Centers for Disease Control and Prevention. (2011). *Tuberculosis (TB).* Retrieved from http://www.cdc.gov/tb/default.htm.

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[23]US Centers for Disease Control and Prevention. (2011). *Measles (Rubeola): Overview of Measles Disease.* Retrieved from http://www.cdc.gov/measles/about/overview.html.

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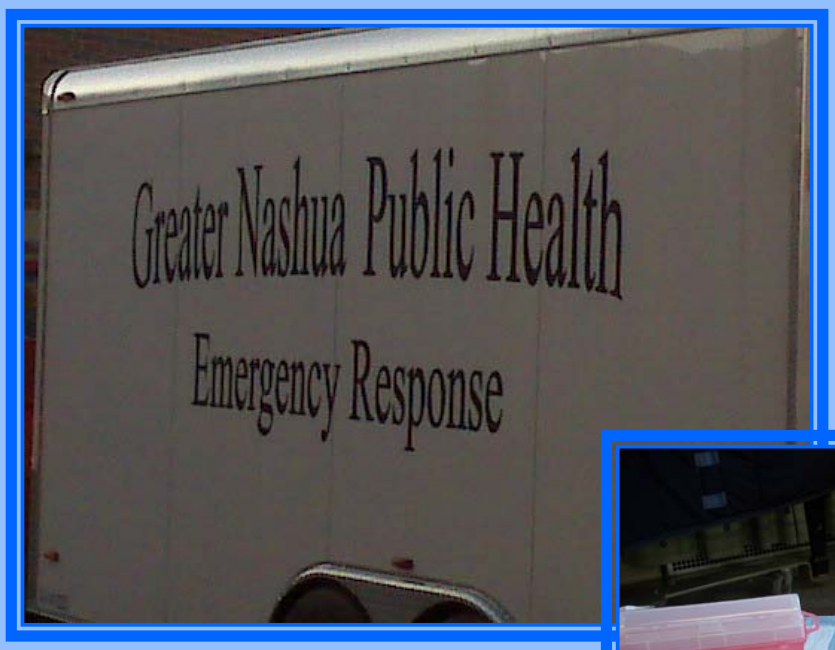
The adult female blacklegged tick, *Ixodes pacificus*, which is known to transmit Lyme disease.
Source: CDC Public Health Library, Amanda Lottis, William Nicholson, Will Reeves, Chris Paddock

Chapter 9:

Emergency Preparedness



Source: City of Nashua, Division of Public Health and Community Services

The United States Department of Homeland Security National Response Framework defines a disaster as "any natural or manmade incident, including terrorism that results in extraordinary levels of mass casualties, damage, or disruption severely affecting the population, infrastructure, environment, economy, national morale, and/or government functions."[1] Examples of disasters include hurricanes, tornados, volcanoes, terrorism, anthrax attacks, and chemical emergencies. In the recent past, large scale disasters such as Hurricane Katrina and the Deepwater Horizon Oil Spill have affected the United States. Following the terrorist attacks of September 11, 2001 and the anthrax bioterrorism attacks in 2001, the public health field became more intertwined and involved in overall public health emergency preparedness and incident specific plans became "all hazard" plans. Since 2000, New Hampshire has experienced 18 federally declared weather disasters (10 declared as Major Disasters) including severe rain, flooding, snow and ice events.[2] In addition, on April 26, 2009 the US Department of Health and Human Services declared a national Public Health Emergency in response to the emergence of novel H1N1 Influenza.[3] On June 11, 2010 the World Health Organization declared that H1N1 had reached pandemic levels, marking the first influenza pandemic since 1968.[4] Some of the most common disasters experienced in New Hampshire and Nashua include blizzards and flooding, most notably the Mother's Day floods in 2006 and the ice storm in 2008.

Learning how to prevent, prepare for and recover from potential disasters and emergencies greatly increase the resiliency of individuals and communities. For example, in New Hampshire, the average resident has significant experience in preparing for and responding to winter weather emergencies. In much the same way, public health preparedness relies upon a strong base of individuals who are trained to watch for and respond to potential threats to the health of the community. By continually monitoring for illness in the community, the public health system is prepared to rapidly initiate a response at the first sign of any potential threat.

Community-Level Emergency Preparedness

It is important for individuals and families to prepare for a natural disaster or an act of terrorism. According to the Behavioral Risk Factor Surveillance System (BRFSS), 13.9% (CI 9.3-18.4%) of Nashua residents are well prepared to handle a large-scale disaster, 59.9% (CI 52.8-67%) are somewhat prepared and 26.2% (CI 19.6-32.8%) are not prepared at all. State and local officials recommended that individuals, families and cities prepare to be self-sufficient for at least three days. Ready.gov, a website maintained by FEMA to assist in preparedness efforts, tells people to get a kit, make a plan and be informed. An emergency kit should include food, water, prescription medication, battery operated radio, first aid kit, flashlight, and maps. Considerations also need to be made for pets, individuals with functional needs, infants and the elderly.[5] According to the BRFSS, when asked if

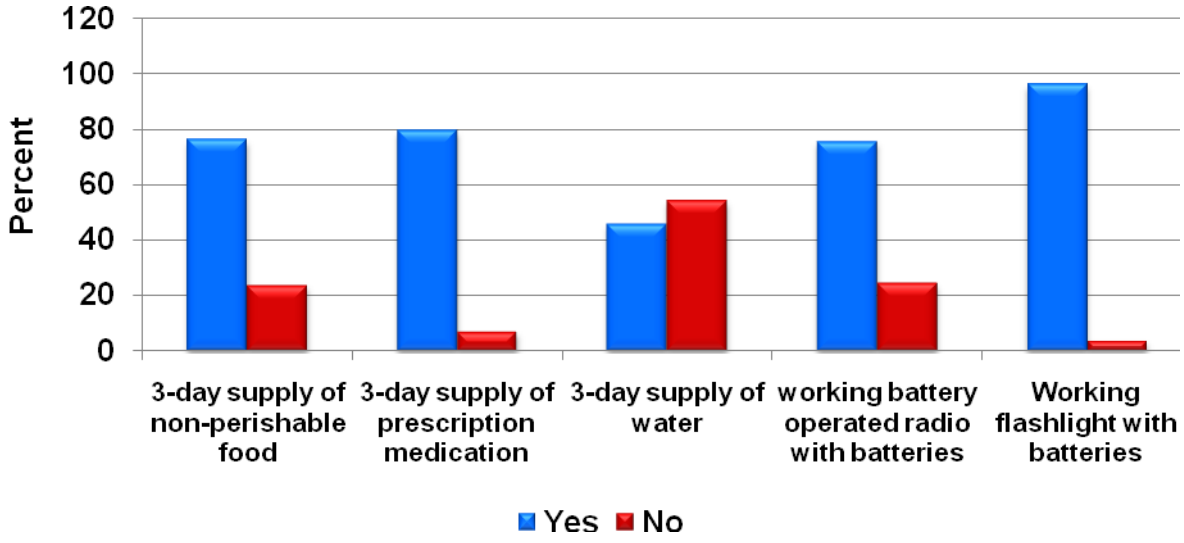
"Local public health agencies are the front line in all of this. Preparedness, at its heart, is a local phenomenon.

- Dr. Julie Gerberding

Former Director of the CDC

the household has a 3-day supply of non-perishable food, medications, and water, the percent of affirmative responses varied from 76.2% (CI 69.8-82.6%) with non-perishable food, 79.6% (73.8-85.3%) with prescription medications, and 45.8% (CI 38.6-53%) with water for everyone that lives in the household (Figure 8.1). Seventy-five percent (75% CI 69.6-81.7%) of respondents have a working battery operated radio and 96.2% (CI 93.6-98.8%) have a working flashlight and working batteries (Figure 8.1). However, only 30.1% (CI 23.6-36.5%) of Nashua residents have all five of these preparedness components.[6] Furthermore, according to the 2010 Nashua Community Health Survey (2010 NCHS), when evaluating preparedness in the household prior to an event, 98% percent of households have smoke detectors, 65% have carbon monoxide detectors and 73% have fire extinguishers. Only 49% of households have an alternate source of heat but 93% have air conditioning (Table 8.1).[7]

Figure 8.1 At Home Emergency Supplies for Nashua Residents



Source: NH DHHS

65% of households have a working carbon monoxide detector.

- ***2010 Nashua Community Health Survey***

For more information on carbon monoxide poisoning, go to Chapter 5: Healthy Homes and Environmental Health.

Table 8.1 Household Safety and Preparedness

Do you have - ? (Weighted Frequencies)			
	Estimated number of housing units with Item	**Percentage (n) with Item**	**95% Confidence Intervals**
Working smoke detector	33,580	98.6% (204)	98.4-98.7%
Working carbon monoxide detector	22,264	65.3% (135)	64.8-65.8%
Working fire extinguisher	24,724	72.6% (150)	72.1-73.0%
Adequate heating for the winter	33,908	99.5% (206)	99.4-99.6%
An alternate heating source if the power goes out	16,728	49.1%(102)	48.6-49.6%
Working air conditioner or central air	31,776	93.3% (193)	93-93.5%

Source: City of Nashua, Division of Public Health and Community Services

Ready.gov also recommends that citizens be informed and knowledgeable about the incident. Individuals and families need to be able to get emergency information and recommendations from emergency officials in a timely and accurate manner.[5] During the 2010 NCHS, 52% of respondents said they would use the television as their primary means of getting information from authorities and 20% said they would use the radio (Table 8.2).[7] However, the presence of power in the household would affect the way residents received information from authorities. Using battery powered radios and other methods such as signs and door-to-door flyers may be needed during the emergency.

Table 8.2 Information Gathering During an Emergency

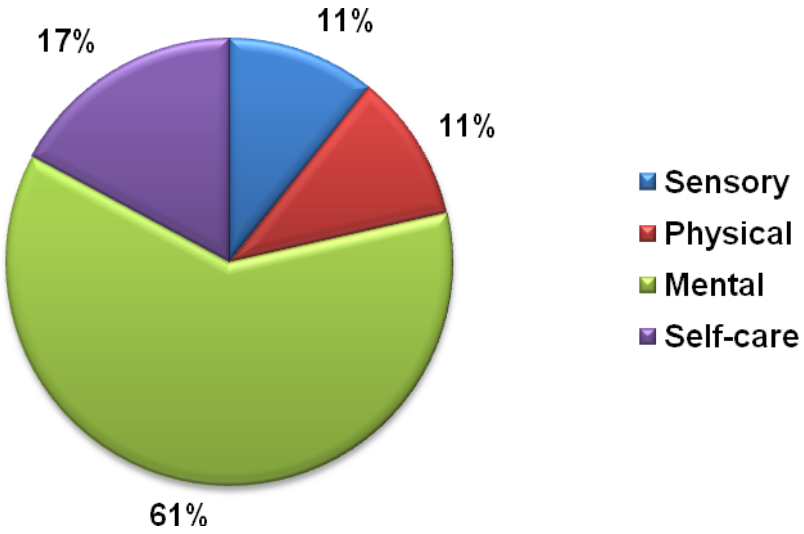
What would be your main method or way of getting information from authorities in a large-scale disaster or emergency?		
Weighted Frequencies	**Estimated number of housing units**	**Percentage (n)**
Television	17,876	52% (109)
Radio	6,888	20% (42)
Internet	6,192	18% (37)
Other	3,116	10% (19)
Source: 2010 Nashua Community Health Survey		

Functional Needs Populations

Planning for individuals with functional needs is imperative to ensure the services they need during and following a disaster are available and accessible. Functional needs includes individuals with a wide range of issues, such as physical or mental disabilities, hearing or visual impairments, and not using English as their primary language. Individuals that are at fixed facilities, such as long-term care facilities, are also considered to have functional needs. Evacuation planning, emergency sheltering and communications are important pre-disaster considerations to have in place in order to accommodate these needs. Some examples of this type of planning are supplying durable medical equipment and planning for transport of wheelchairs during evacuations.[8]

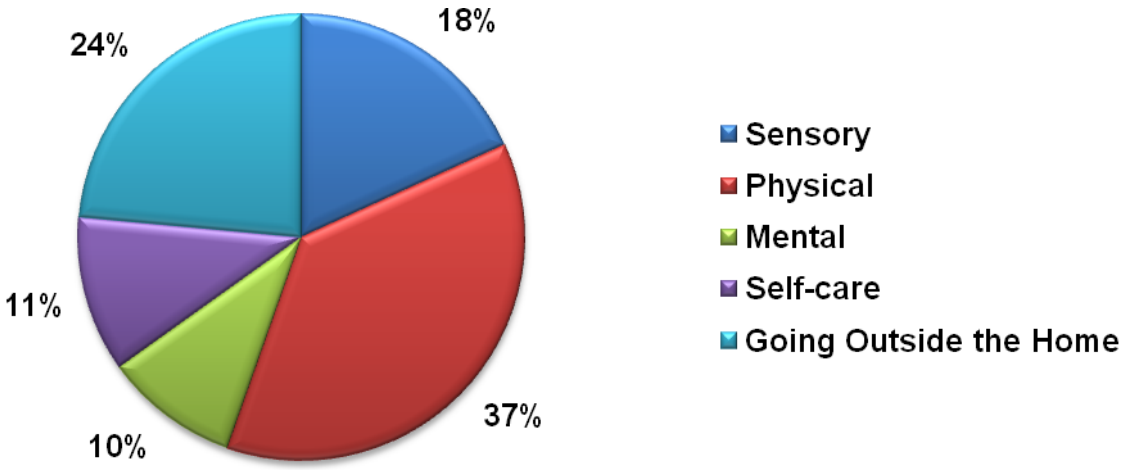
According to the 2000 US Census, 5.4% of children 5 to 15 year olds, 17.1% of 16 to 64 year olds and 38.7% of those 65 years and older have a disability in Nashua. Of those individuals 5 to 15 years of age with a disability, 61% have a mental disability and 11% have a physical disability. For adults over the age of 65 years, 37% have a physical disability and 24% have difficulty going outside of the home (Figure 8.2; 8.3).[9] In Nashua, census tracts 103.01, 103.02, 109, and 112 have over 530 households with individuals over the age of 65 years. Senior housing and special elderly facilities which includes long-term care and assisted living facilities are indicated on the map with a yellow or red circle (Map 8.1).

Figure 8.2 Nashua's Children 5-15 years of Age by Type of Disability



Source: 2000 US Census

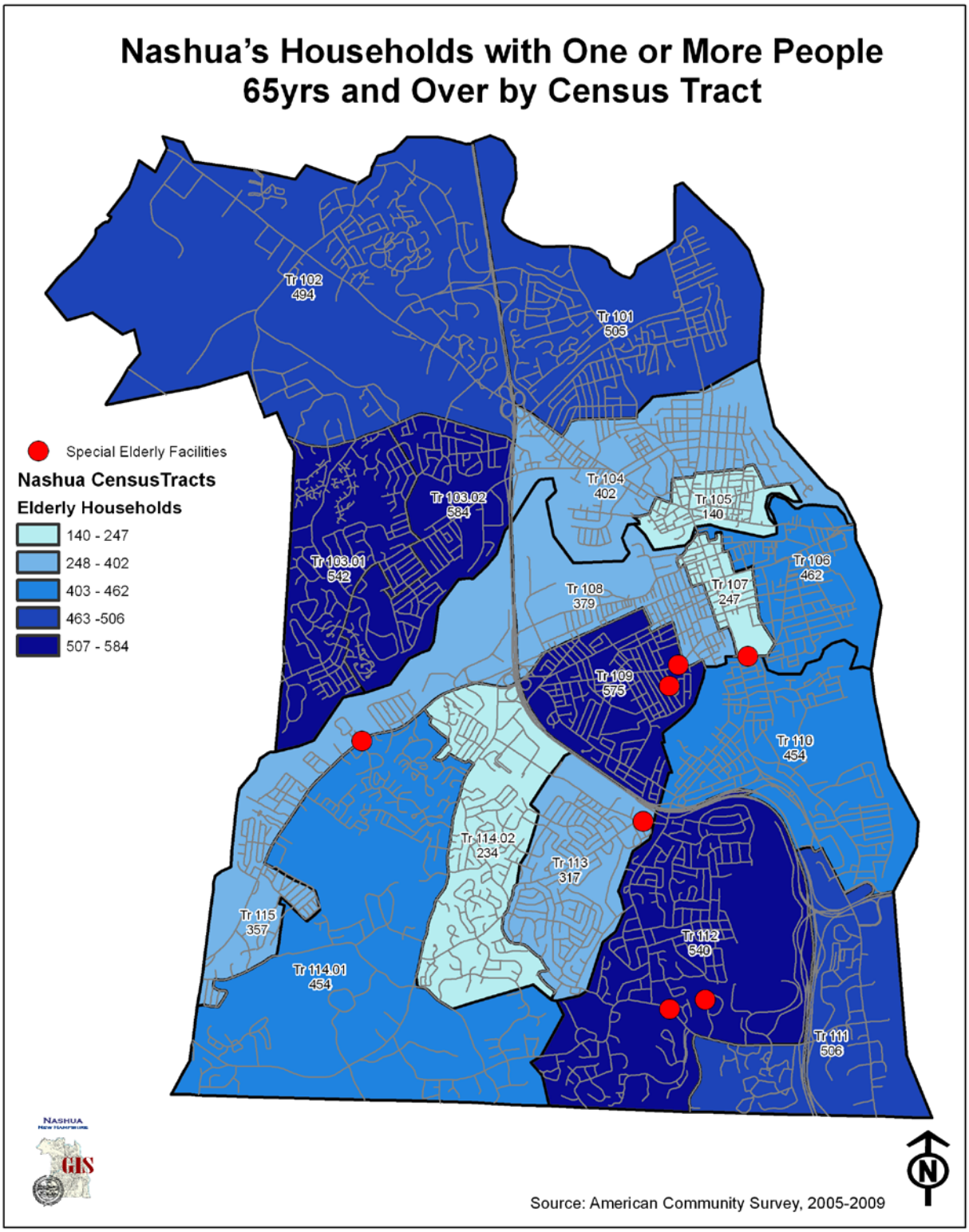
Figure 8.3 Nashua's Adults 65 years and Over by Type of Disability



Source: 2000 US Census

For more information on getting prepared for emergencies, visit www.ready.gov or www.getreadyforflu.org.

Map 8.1 Elderly Households by Census Tract



Source: City of Nashua Assessing Department; US Census Bureau

Heat and Cold Exposure

Extreme heat or cold can affect the human body and cause damage. During exposure to extreme heat and high humidity the body has to work harder to maintain a normal temperature. When it is unable to do so, one may experience heat cramps, heat exhaustion and heat stroke, the latter of which can result in death. People living in urban areas and the elderly are at increased risk of illness due to extreme heat for prolonged periods of time.[10] In the State of NH, emergency department visits from 2003-2007 for heat related exposures ranged from a low of 94 in 2004 to a high of 164 in 2005.[11] The last heat wave to affect NH was in the summer of 2010.

Heavy snow storms and ice storms can cause power outages and a lack of adequate heat in households. After prolonged exposure to extreme cold, individuals can suffer from hypothermia and frostbite.[12] The last major ice storm to hit New Hampshire was in the winter of 2008 and caused power outages to half of the State's population. For cold-related exposures, there were 70 emergency department visits in 2006 and 141 in 2004 (Table 8.3).[11] According to the 2010 NCHS, 16,728 (49%) of households have an alternate heating source and 93% have working air conditioning. Power outages also increase the risk of carbon monoxide exposure from improper use of generators. For more information on carbon monoxide exposure, go to Chapter 5: Healthy Homes & Environmental Health.

Table 8.3 State of NH Emergency Department Visits for Cold and Heat Exposures

Year	Cold-related exposures including frostbite and hypothermia	Heat-related exposures including heat cramps, exhaustion, stroke
2003	133	111
2004	141	94
2005	117	164
2006	70	159
2007	114	127
Source: NH DHHS		

Evacuations

Development of evacuation plans and protocols is an important part of emergency preparedness planning and can range from the evacuation of a single facilty to the entire community. During the 2010 NCHS when residents were asked if they would comply if a mandatory evacuation was issued by local officials, 94% or 32,104 households would evacuate. If evacuated, 11% indicated they would go to an emergency shelter, 13% would go to a hotel and 63% would go to a relative or friends house (Table 8.4). The main concerns shared by residents about evacuation orders include traffic jams and leaving pets and property behind.[7] According to the BRFSS, only 23.9% (CI 17.7-30.1%) of residents have a household disaster evacuation plan.[6]

Table 8.4 Evacuations

If you had to evacuate from your home, where would you go?		
	Estimated number of housing units	**Percentage (n)**
Relative/Friends House	21,608	63% (131)
Hotel	4,264	13% (26)
Emergency Shelter	3,772	11% (23)
Other	1,328	10% (27)
Source: NH DHHS		

Source: Eddie Sullivan, Nashua High School Photography Project

"Preparedness is the only way we can combat a natural disaster."

- John Ouinlan

[1] US Department of Homeland Security. (2008, January). *National Response Framework*. Retrieved on April 26, 2011, from *http://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf*.

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Source: Eddie Sullivan, Nashua High School Photography Project

Chapter 10:

Oral Health

Source: Public Domain

Oral health is an integral part of one's overall health. According to Donna E. Shalala, former Secretary of the United States Health and Human Services, "Oral health means more than healthy teeth and you cannot be healthy without oral health." The negative impacts of decreased oral health are far reaching. Some of the oral and craniofacial (skull and face) conditions that may occur from poor oral health include dental caries (tooth decay), periodontal (gum) diseases, oral and facial pain, oral and pharyngeal (mouth and throat) cancers, and cleft lip and palate. Oral diseases worsen over time, and they can affect one's self-esteem, ability to eat certain foods, and ability to go to work or school. Each year, employed adults lose more than 164 million hours of work due to dental disease or dental visits. In addition, more than 51 million school hours are lost each year due to dental-related illness. Unfortunately, certain populations face barriers to accessing dental care such as limited income or lack of insurance, lack of transportation to receive dental care, fear of dental services and the inability to take time off from work to attend to personal or family dental needs.[1] Addressing oral health is crucial to ensuring the general health of an individual.

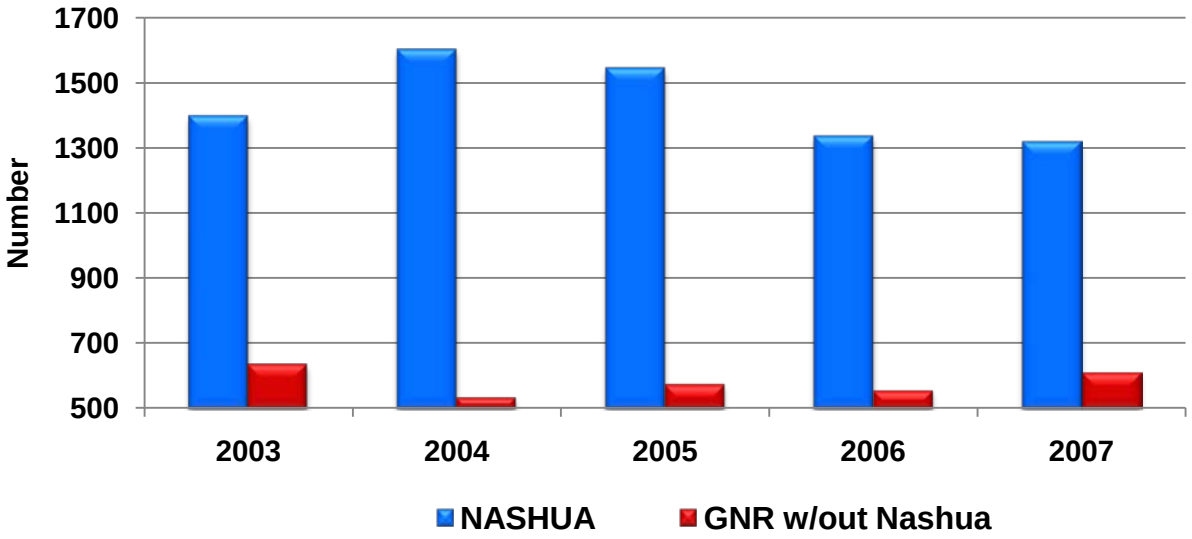
Adults and Oral Health

According to *Oral Health in America: A Report of the Surgeon General,* adults in the United States experience several challenges in the area of oral health. Fourteen percent (14%) of adults aged 45 to 54 and 23% of adults aged 65 to 74 experience severe periodontal diseases. Annually, 30,000 Americans are diagnosed with oral and pharyngeal cancers, while 8,000 die from these diseases each year.[1]

Untreated oral diseases and serious head and facial injuries can send individuals to the emergency room.[1] Data from the New Hampshire Department of Health and Human Services (NH DHHS) shows that from 2003 to 2009, 7,199 Nashua's residents visited the emergency department because of dental issues (Figure 10.1). In 2003, there were approximately 1,400 visits to the emergency department which increased to almost 1,600 in 2004, but decreased to about 1,300 in 2007. The Greater Nashua Region, without Nashua, had 500 to 600 emergency department visits annually.[5]

"Oral health means more than healthy teeth and you cannot be healthy without oral health."
- Donna E. Shalala

Figure 10.1 Number of Emergency Department Dental Visits, 2003-2009



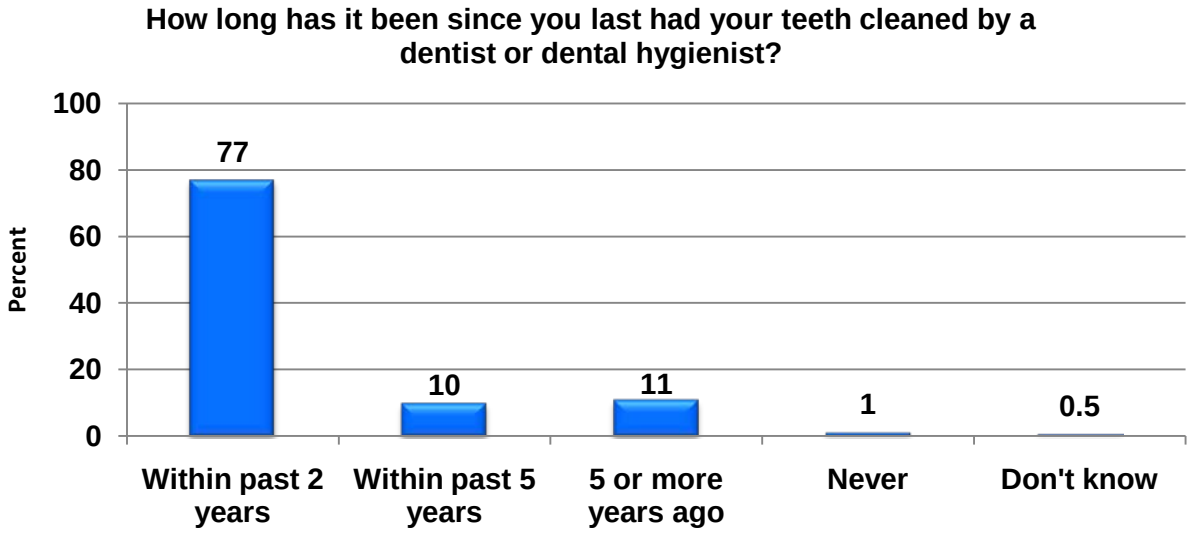
Source: NH DHHS

Oral health and access to dental services is an important part of the health and well-being of the elderly population. Five percent (5%) of Americans aged 65 and older are living in long term care facilities with dental care issues.[1] In 2010, the NH DHHS conducted the NH Senior Center Dental Survey of six senior centers across the State which showed that:

- 34% had full dentures and 27% had partial dentures,
- 39% of respondents did not have dentures,
- 62% of respondents did not have dental insurance,
- 72% received their care from a private dentist, 5% from a dental clinic, and 1% from the emergency room,
- 23% reported that they did not get dental care,
- 11% had trouble accessing dental care. [7]

Healthy People 2020 set an objective to increase the proportion of children, adolescents, and adults who use the oral health care system in the past year from 44.5% to 49.0%. According to the New Hampshire Behavioral Risk Factor Surveillance System (BRFSS), approximately 76% of adults had visited a dentist, dental hygienist or dental clinic within the last year.[3] Data from the 2010 Nashua Community Health Survey shows that 77% of Nashua residents have had their teeth cleaned by a dentist or dental hygienist within the past two years. Only 1% of Nashua residents reported never having had their teeth cleaned (Figure 10.2).[4]

Figure 10.2 Last Dental Cleaning by a Dentist or a Dental Hygienist

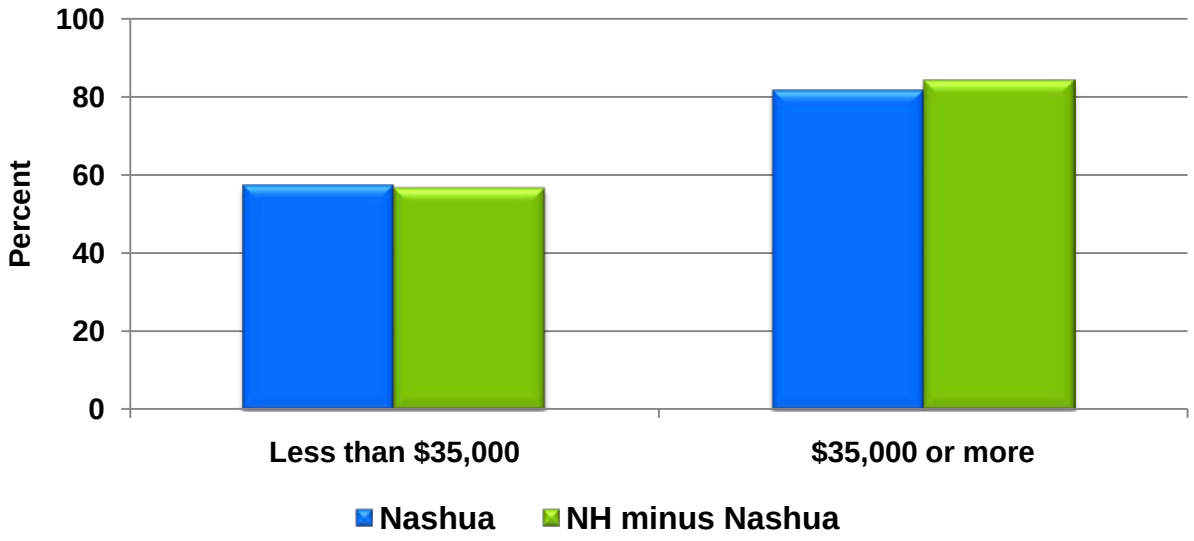


Source: 2010 Nashua Community Health Survey

Although 77% of Nashua adults have had a teeth cleaning within the past 2 years, 12% of residents had difficulty accessing dental care during the past year.[4] Lack of insurance or insurance not being accepted by the dental offices were the major reasons for difficulty in accessing care. For every adult 18 years or older without medical insurance, there are three without dental insurance. Individuals with low socioeconomic status are also more likely to be burdened with oral diseases and conditions.[1] According to BRFSS, more than 80% of adults in Nashua with an income of $35,000 or more visited a dentist or dental hygienist within the past year. However, this percentage is reduced among adults with an income less than $35,000 where only 57% of adults visited a dentist or dental hygienist within the past year (Figure 10.3).[3] Similar trends exist in NH regions outside of Nashua.

"For every adult 18 years or older without medical insurance, there are three without dental insurance."
- DHHS

Figure 10.3 Dental Visits in the Last Year by Income, 2006-2008



Source: NH DHHS

This data demonstrates that overall, Nashua residents are taking preventative measures to ensure good oral health. However, factors such as lack of dental insurance and low income still compromise the ability of some populations access care.

Youth and Oral Health

Dental caries or tooth decay is the single most common chronic disease among children. It is five times more common than asthma and seven times more common than hay fever. Over 50 percent (50%) of five to nine year old children have at least one cavity or filling, and that proportion increases to 78% among 17 year olds.

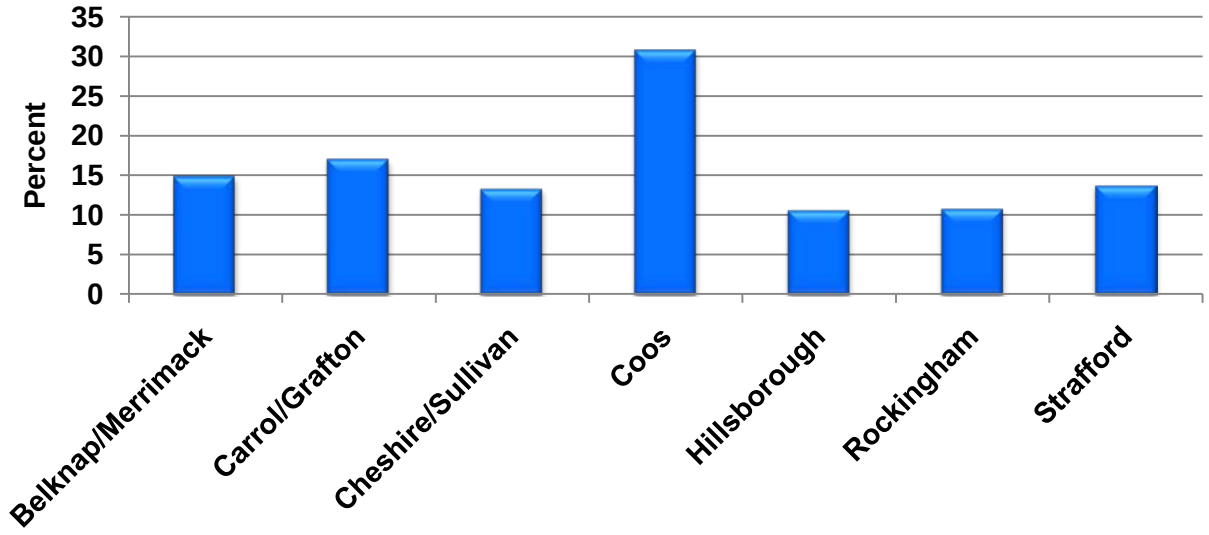
From 2008-2009, the NH DHHS conducted a survey of third grade students to determine the oral health and disease burden of students throughout the state. According to the survey, 43.6% of New Hampshire third grade students experienced tooth decay and 12% had untreated tooth decay. When analyzed by county, Coos County had the highest prevalence of decay (64%), untreated decay (30.7%) and the need for dental treatment (31.1%) among students (Figure 10.4). In Hillsborough County, 43.9% (CI 34.7%-53.1%) of students had decay, 10.6% (CI 6.8%-14.4%) had untreated decay and 10.7% (CI 7%-14.4%) needed treatment. Conversely, 60.3% (CI 53.9% -66.7%) of students in Hillsborough County had dental sealants.[2]

Simple Steps for Kid's Smiles

1. ***Start cleaning teeth early.***
2. ***Use the right amount of fluoride toothpaste.***
3. ***Supervise brushing***
4. ***Talk to your child's doctor or dentist***

- ***Centers for Disease Control and Prevention***

Figure 10.4 Percent of NH Third Grade Students with Untreated Decay, by Region, 2008-2009 School Year



Source: NH DHHS

Similar to adults, two of the strongest predictors of good oral health for children are income and access to health insurance. Children in poverty suffer twice as much from dental caries and are more likely to have untreated dental diseases. Uninsured children are 2.5 times less likely than insured children to receive dental care. For every child under 18 years old without medical insurance, there are at least two children without dental insurance. Medicaid has not been able to fill the gap in providing dental care to poor children and despite the NH Healthy Kids program, many children are still left without coverage.[1]

According to the NH DHHS survey of third graders, students were more likely to experience tooth decay and need treatment in schools where >50% of students participate in the free and reduced school lunch program. These students were also less likely to have dental sealants than students in schools where less than 25% of the students were on free or reduced lunches (Table 10.1).[2]

"Uninsured children are 2.5 times less likely than insured children to receive dental care."
- DHHS

Table 10.1 Tooth Decay by Free and Reduced Price Lunch

Statewide prevalence of tooth decay experience, dental sealants and treatment urgency, stratified by Free and Reduced Price Lunch (FRL) Status of School, 2008-2009			
Variable	**<25% FRL* 95% CI (n=1,615)**	**25-49% FRL* 95% CI (n=1,099)**	**≥ 50% FRL* 95% CI (n=301)**
Decay experience	38.5% (34.8-42.2)	51.4% (44.6-58.2)	68.4% (63.5-73.4)
Untreated decay	9.7% (7.0-12.4)	15.6% (12.4-18.8)	22.3% (13.1-31.5)
Dental sealants	62.9% (58.1-67.7)	55.5% (51.5-59.6)	52.5% (50.8-54.1)
Need treatment (early & urgent)	9.8% (7.2-12.5)	15.5% (12.3-18.8)	22.5% (13.3-31.7)
Need urgent treatment	1.0% (0.3-1.7)	0.6% (0.2-1.1)	2.6% (0.8-4.9)

** Percent of children in the school that participate in the free/reduced price lunch program, 2007-2008*
Source: NH DHHS

Greater Nashua Dental Connection

The Greater Nashua Dental Connection (GNDC) is a non-profit dental clinic focused on improving access to dental care for children and families in need of service in the Greater Nashua area. Primary dental services include oral examinations and cleanings, fluoride treatments, fillings and sealants, and oral health education. From 2009-2010, there were 372 emergency visits and 2,936 dental appointments at the GNDC. They had 565 unduplicated adult patients (18 years and older) and 787 unduplicated pediatric patients (17 years and under), with 403 pediatric patients receiving sealants. Through school programs, they were able to treat 185 unduplicated students.[6]

For more information on the Greater Nashua Dental Connection, visit http://nashuadentalconnection.com/ or call 603-879- 9314.

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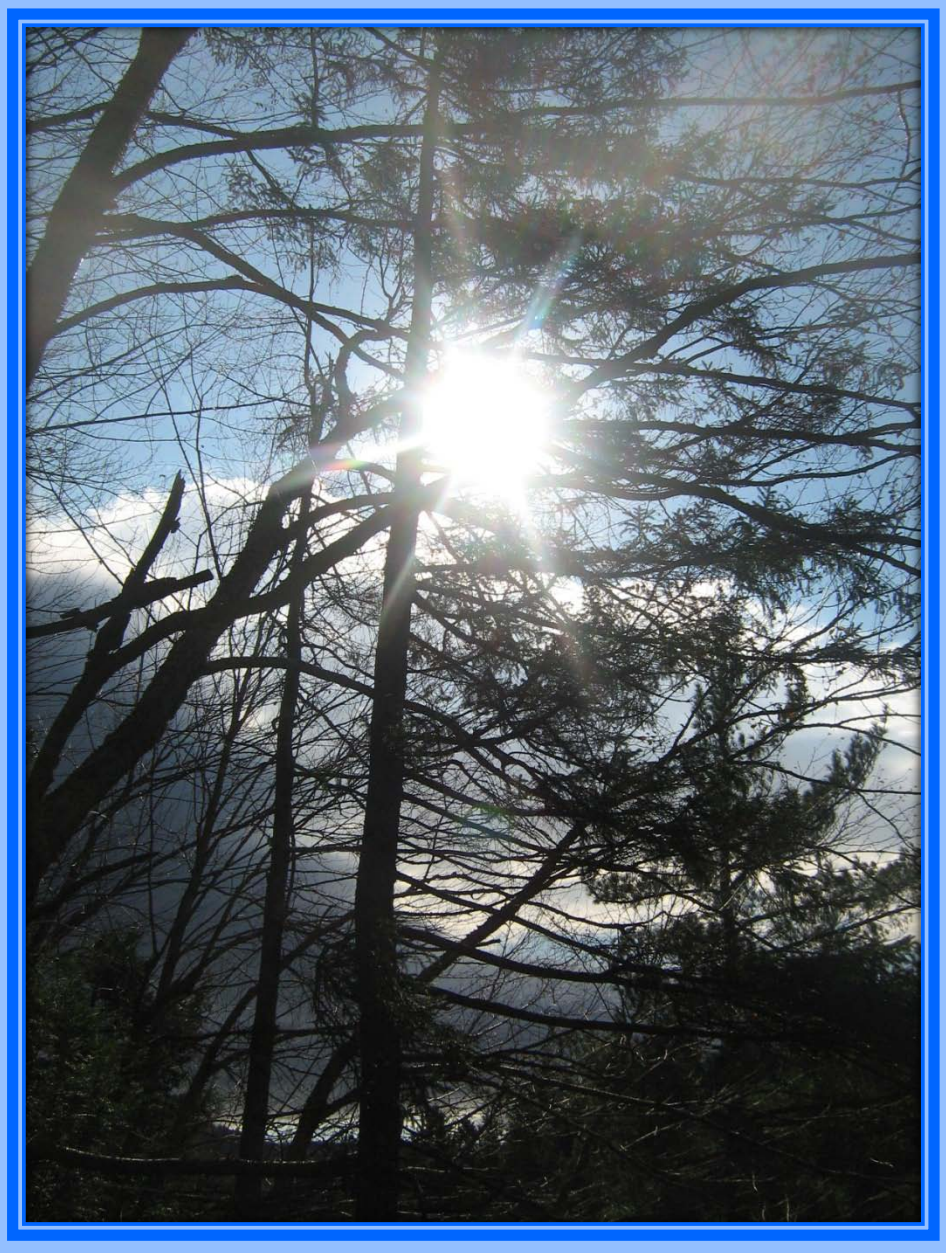
Source: Public Domain

Chapter 11:

Mental Health



Source: City of Nashua, Division of Public Health and Community Services

Healthy People 2020 defines mental health as a "state of successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with challenges".[1] Mental disorders are health conditions characterized by alterations in thinking, mood and/or impaired function. Mental illnesses refer to all diagnosable mental disorders. In the United States, mental health disorders are the leading cause of disability accounting for 25% of all years of life lost to disability and premature mortality. According to the National Institute of Mental Health approximately 13 million adults have a serious, debilitating mental illness. The overarching Healthy People 2020 goal for mental health is to improve mental health through prevention and ensuring access to quality mental health services.[1]

The average age of onset of a mental disorder is 14 years old. Fifty-two (52%) percent of adults aged 18-29 and 55% of adults aged 30-44 experience mental disorders. Non-Hispanic blacks are 30% less likely than non-Hispanic whites to experience a mental disorder in their lifetime. Women are no more or less likely to experience a mental disorder over their lifetime than men.[2] However, if a woman does experience a mental disorder, she is twice as likely as a man to have a serious mental illness where serious functional impairments interfere with or limit major life activities.[3]

In 2006, the National Alliance on Mental Illness (NAMI) graded the states on their progress in providing a "life-saving, recovery-oriented, cost-effective, evidence-based system of care". The national average for the country was a "D". As a state, New Hampshire also received a "D", but according to the 2009 report card New Hampshire has improved to a "C". Six states received a "B", 18 received a "C", 29 received a "D" and 6 received an "F". [4]

The NAMI report stated that in 2005, New Hampshire's legislature created a commission to drive decision-making around mental health that involved legislators, providers, and consumers. The report highlights some of the urgent issues that are still present - decreasing numbers of psychiatric beds, shortages in community resources, and a shrinking mental health workforce. Since 2000, admissions for inpatient care increased 69%, even as the number of psychiatric beds decreased. NAMI suggested innovations for improving mental health services in New Hampshire that included telemedicine, a statewide planning process and developing a preventative care model.[4]

13 million adults have a serious, debilitating mental illness.

Average age of onset of a mental disorder is 14 years old.

52.4% of adults aged 18-29 and 55% of adults aged 30-44 experience mental disorders.

Suicide is the fourth leading cause of death in adults 18-65 years.

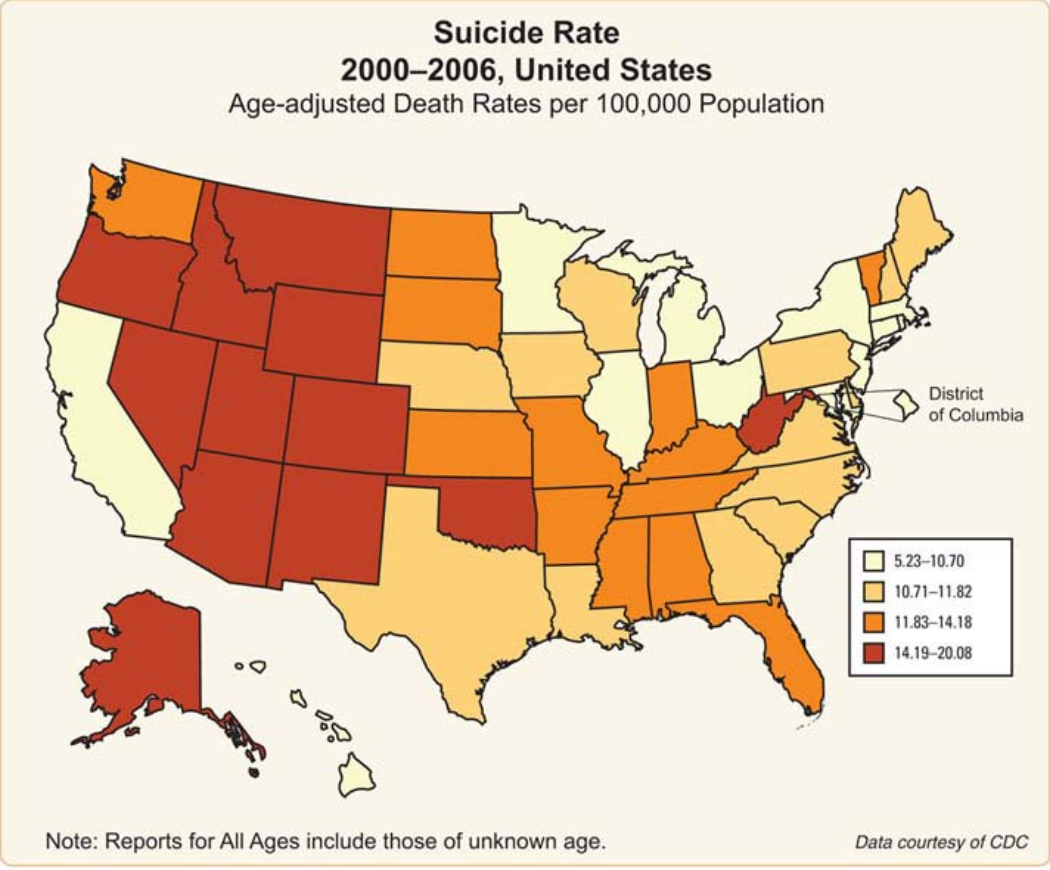
- National Institute of Mental Health

Adults and Mental Health

Suicide is the fourth leading cause of death in adults 18-65 years of age. In 2007, there were 28,628 suicides in the United States and the overall rate of suicide was approximately 11 per 100,000 people.[5] The rate for males was approximately 19 per 100,000 while only 5 per 100,000 for females.[6] In New Hampshire, the suicide rate is lower than states in the western part of the country but slightly higher than Massachusetts and New York (Figure 11.1).[7] From

2003-2007, there were 931 emergency department (ED) discharges for suicide attempts accounting for 0.21% of ED visits for Nashua residents. In the Greater Nashua Region, excluding Nashua, there were 645 suicide attempts accounting for 0.11% of all emergency department visits. The vast majority of the suicide attempts were made by 18 to 64 year olds.[8]

Figure 11.1 Suicide Rates in the United States, 2000-2006



Source: National Institute of Mental Health

The Behavioral Risk Factor Surveillance System (BRFSS) asks New Hampshire adults about the number of mentally unhealthy days they had in the past 30 days, and the average was 3.6 days for Nashua residents. In comparison, NH residents outside of Nashua reported 3.2 mentally unhealthy days (Table 11.1).[9,10] Moreover, 81% of Nashua residents reported receiving needed social and emotional support "always or usually", while 19% received support "sometimes, rarely or never".[9] According to the 2009 National Health Interview Survey, 12% of adults in the United States experienced feelings of sadness all, most, or some of the time, and 7% felt hopeless.[11]

Table 11.1 Mentally Unhealthy Days, 2005 – 2007

Mentally Unhealthy Days Past 30 Days, 2005-2007			
	Average Days	95% Confidence Intervals	
Nashua	3.6	2.9	4.2
NH minus Nashua	3.2	3.0	3.3
US (2009)*	3.5	3.4	3.6
*Source: NH DHHS; *CDC*			

Anxiety is one of the most common mental disorders in the United States. Approximately 18% of adults are diagnosed with an anxiety disorder and women are more likely than men to experience anxiety during their lifetime.[12] According to BRFSS, in 2006 approximately 15% (CI 9-20%) of Nashua residents had been diagnosed with an anxiety disorder at some point in their life compared to 13% (CI 12-14%) in NH (Table 11.2). For depression, 5% (CI 2-9%) of Nashua residents had a moderate to severe depression score (≥10), compared to 7% (CI 6-8%) in NH. Additionally, 18% (CI 12-24%) of Nashua's adults have been told by a healthcare provider that they have a depressive disorder (including depression, major depression, dysthymia, or chronic depression, and minor depression) at some point in their lifetime.[9]

The results of the 2010 Nashua Community Health Survey were similar to the BRFSS data, showing that 15% of Nashua's adults have been told by a doctor, nurse or healthcare provider that they have anxiety and 20% have been told that they have depression.[13]

Table 11.2 Mental Health Disorders, 2006

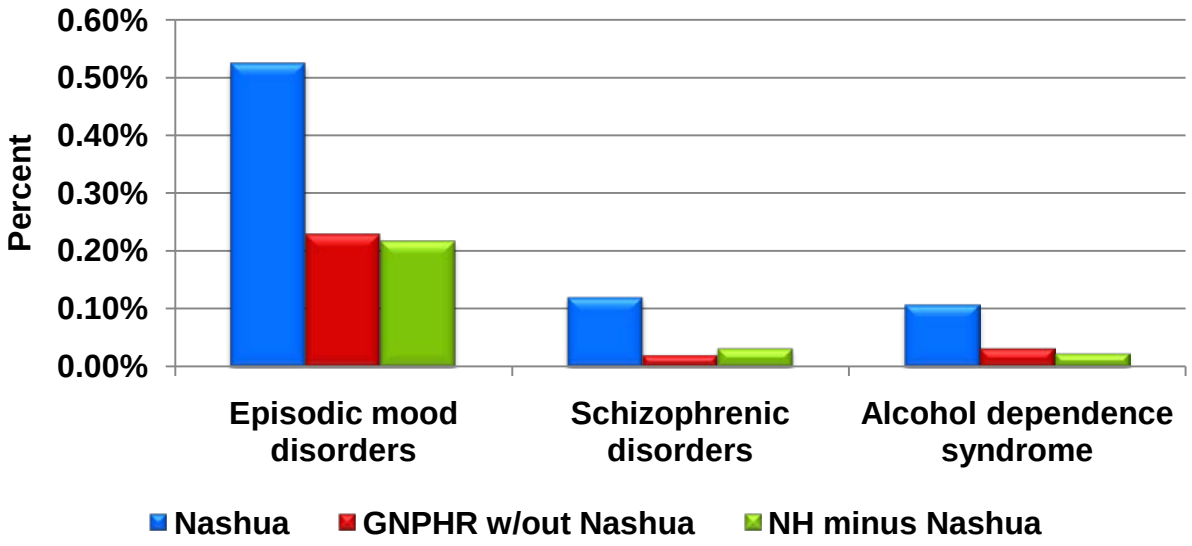
Prevalence of Mental Health Disorders, BRFSS, 2006		
	Anxiety	95% Confidence Intervals
Nashua	15%	9-20%
NH	13%	12-14%
	Depression	95% Confidence Intervals
Nashua	5%	2-9%
NH	7%	6-8%
	Depressive Disorder	95% Confidence Intervals
Nashua	18%	12-24%
NH	17%	16-18%
Source: NH DHHS		

For more information on mental illness, visit the National Alliance on Mental Illness (NAMI) at www.nami.org.

Emergency Department and Inpatient Discharges for Psychiatric Conditions

From 2003-2007, there were 4,781 inpatient hospitalizations for psychiatric conditions for Nashua residents, mostly for episodic mood disorders. Approximately 0.52% (CI 0.50-0.54%, n=2,308) of Nashua adults have been hospitalized for episodic mood disorders and 0.42% (CI 0.40-0.44%, n=1,841) of Nashua adults have gone to the emergency department for anxiety, dissociative disorders (disorders that cause a person to disconnect from their personal identity[20]) and somatoform disorders (psychiatric disorders that cause unexplained physical symptoms[21]) (Figure 11.2 and 11.3). There were an additional 2,523 inpatient hospitalizations during this time period in the remaining 12 towns in the Greater Nashua Region. The majority of people with psychiatric hospitalizations for Nashua, the region and the state were of adults aged 18-64 years. For residents of Nashua and the Greater Nashua Region, there is little variation in psychiatric hospitalization rates by gender (Figure 11.4).[8]

Figure 11.2 Top Three Psychiatric Conditions for Hospitalization, 2003-2007

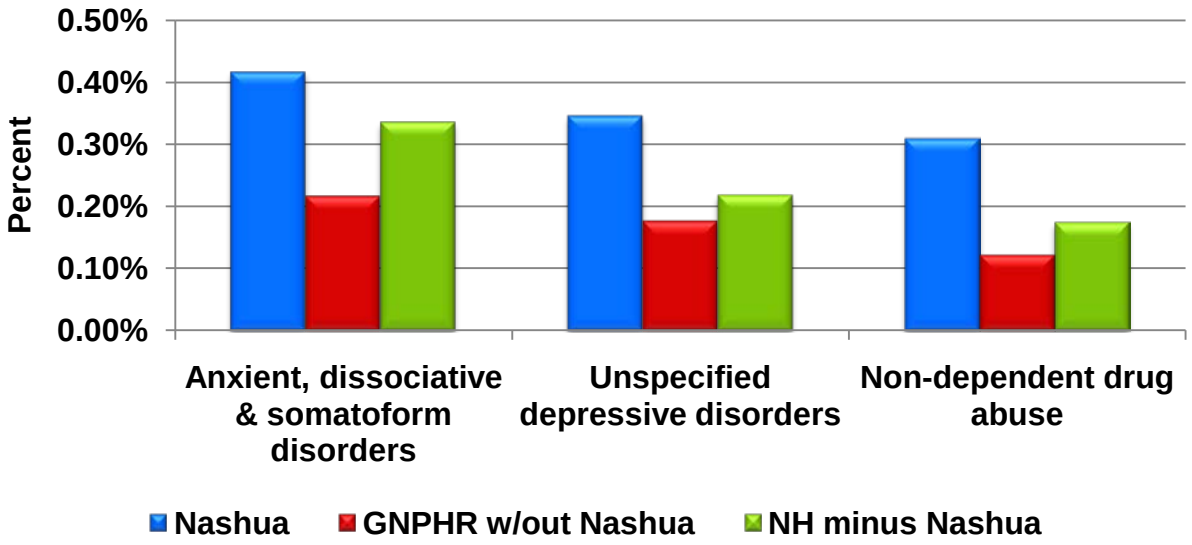


Source: NH DHHS

15% of Nashua's adults have been told by a doctor, nurse or healthcare provider that they have anxiety and 20% have been told that they have depression.

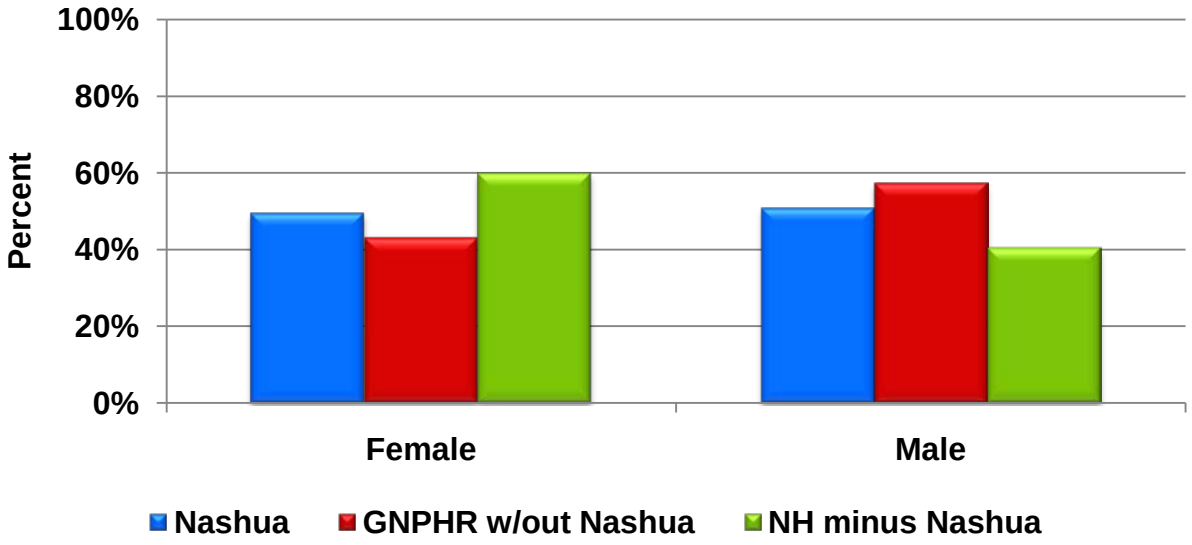
- 2010 Nashua Community Health Survey

Figure 11.3 Top Three Psychiatric Conditions on ED Discharge, 2003-2007



Source: NH DHHS

Figure 11.4 Psychiatric Hospitalizations by Gender, 2007



Source: NH DHHS

Treatment and Costs

According to the federal Substance Abuse and Mental Health Services Administration (SAMHSA), 13.4% of adults in the US received treatment for a mental health problem in 2008. This includes those who received care in both inpatient and outpatient settings, as well as those who used prescription medication to manage their mental or emotional issues.[14] According to the National Health and Nutrition Examination Survey, approximately 50% of children with mental disorders received treatment.[15]

In the United States, mental health disorders rank third as the most costly medical condition after heart conditions and trauma.[16] An estimated $300 billion is spent on direct and indirect costs of serious mental illness in the United States. Indirect costs include expenditures for disability support and lost earnings.[17] In 2006, 36.2 million people paid for mental health services that totaled over $57 billion, averaging $1,591 per person. Within this population, 4.6 million children received mental health services that totaled over $8.9 billion, averaging $1,931 per child.[18] For Nashua residents, the average cost per discharge for inpatient hospitalizations for psychiatric conditions was approximately $10,532 and $1,278 for emergency department visits in 2007.[8]

The Greater Nashua Mental Health Center at Community Council (GNMHC) works with the community to meet the mental health needs of its residents by providing evaluation, treatment, resource development, education, and research. The top ICD-9 Codes for 2010 for their adult Nashua clients were:

- Moderate Bipolar Disorder,
- Severe, recurrent, major depressive disorder with psychotic features,
- Moderate, recurrent, major depressive disorder.

For children, they were:

- Anxiety Disorder,
- Mood Disorder, and
- Attention Deficit Hyperactivity Disorder (ADHD)

Between 2005 and 2010, the number of clients seen at the GNMHC increased by 48% and the number of service units increased by 15%. Of these clients, those with no insurance dramatically increased by 175% between 2005 and 2010.[19]

There are ten Community Mental Health Centers in New Hampshire that contract with NH DHHS to provide publicly funded mental health services to individuals and families who meet certain criteria for services. For more information, visit http://www.dhhs.nh.gov/dcbcs/bbh/centers.htm or call 603-271-5000.

Table 11.3 Greater Nashua Mental Health Center Clients by Payor

Greater Nashua Mental Health Center, Nashua Clients by Payor, 2005 & 2010						
2005			2010			% Change from 2005-2010
	All Clients	Percent		All Clients	Percent	
Unique Clients	2,345	*	Unique Clients	3,468	*	48%
Total Visits	391,645	*	Total Visits	102,307	*	-74%
Service Units	232,700	*		266,479	*	
Payor						
Private Insurance	268	11%	Private Insurance	355	10%	32%
Private Insurance /Medicaid	93	4%	Private Insurance /Medicaid	55	2%	-41%
Private Insurance /Medicare	N/A	*	Private Insurance /Medicare	79	2%	N/A
Medicaid	973	42%	Medicaid	975	28%	0.2%
Medicare	89	4%	Medicare	192	6%	116%
Other	478	20%	Other	590	17%	23%
No Insurance	444	19%	No Insurance	1,222	35%	175%
Total	2,345	100%	Total	3,468	100%	*

** Not Applicable*
Source: Greater Nashua Mental Health Center at Community Council

Between 2005 and 2010, the number of clients seen at the GNMHC increased by 48% and the number of service units increased by 15%.

Of these clients, those with no insurance dramatically increased by 175% between 2005 and 2010.

- Greater Nashua Mental Health Center at Community Council

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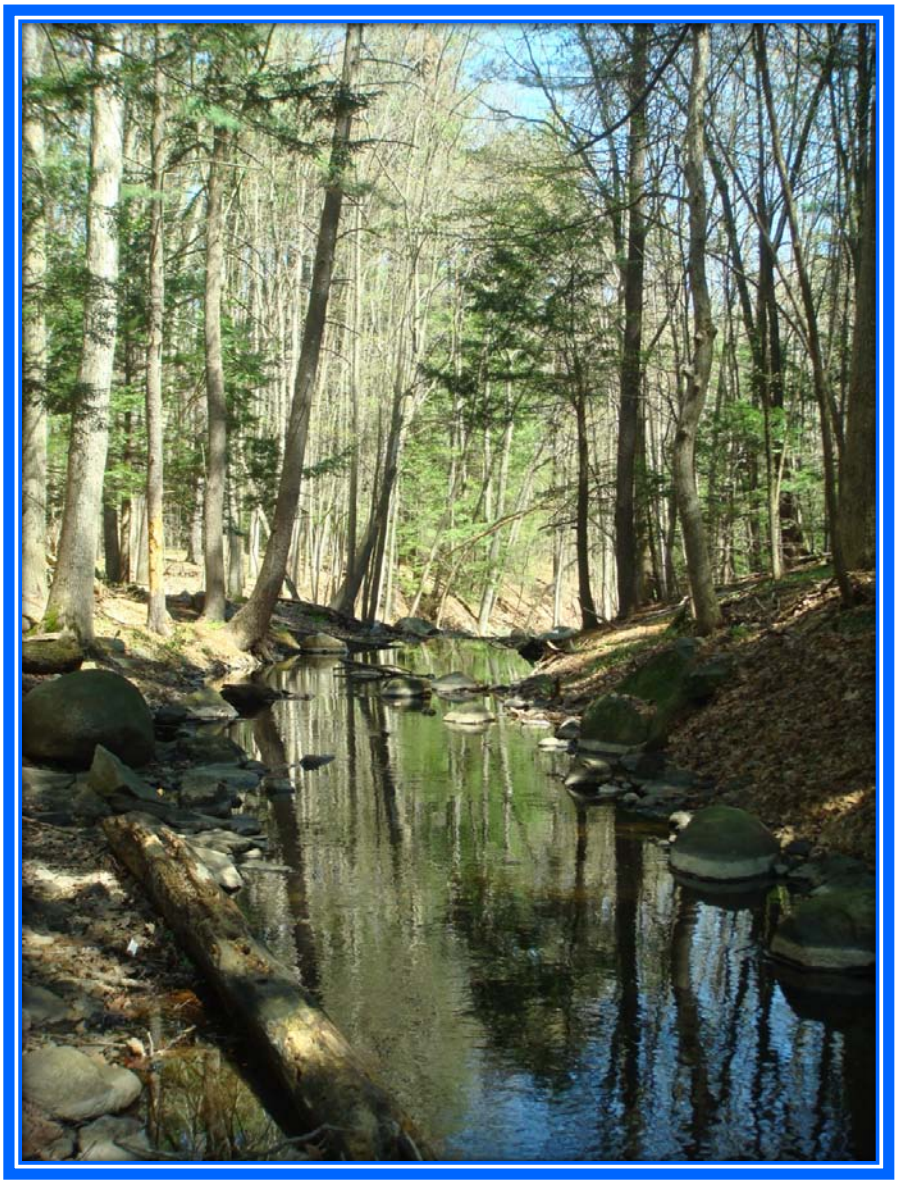

Source: City of Nashua, Division of Public Health and Community Services

APPENDICES

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Source: Chris Franzini, Nashua High School Photography Project

Source: Eden Tomaszewski, Nashua High School Photography Project

Appendix 1:

Healthcare Provider Profiles

City of Nashua, Parks & Rec Department

City of Nashua Division of Public Health and Community Services

18 Mulberry Street
Nashua, NH 03060
603.589.4560
www.NashuaNH.gov

Mission

To promote, protect and preserve the health and well-being of the Greater Nashua Region through leadership and community collaboration.

Description

The Division of Public Health and Community Services (DPHCS) is the Public Health entity for the City of Nashua. It is one of only two full-service local health departments in the State of New Hampshire. The Division focuses on providing public health services based upon the 10 Essential Services of Public Health. Over thirty Division staff members are employed under the following departments and programs: Community Health Department, Environmental Health Department, City Welfare Department, Emergency Preparedness Program, Child Care Services Program, and Health Education and Prevention Services Program.. All of the Departments within the Division offer services that directly impact the health, social, and economic well-being of the residents of the City of Nashua and the surrounding communities. The Division is centrally located in downtown Nashua and is easily accessed by pedestrian, vehicle, and public transportation.

Mobile Van Outreach: To provide barrier free, off-site access to community residents seeking: adult and childhood immunizations; blood pressure screening; TB, syphilis and hepatitis information and screening; referrals for shelter, food or medical care; and drug and alcohol information/referral to facilitate entry into chemical treatment programs.

Nashua Health Clinic: Both childhood and adult immunizations are made available to improve health standards and to prevent diseases for the individual, the family and the community. We also provide confidential HIV counseling and testing by trained counselors. Education is offered on risk-reduction measures and behaviors.

Immunization Clinics:

Tuesdays	4:00 PM – 7:00 PM
Fridays	8:30 AM – 10:30 AM

Service

Servicing primarily the City of Nashua and the Greater Nashua Region.

Lamprey Health Care –

Nashua Center

10 Prospect Street, Suite 102
Nashua, NH 03060
603.883.1626
www.lampreyhealth.org

Mission

Our mission is to provide high quality primary medical care and other health related services with an emphasis on prevention and lifestyle management, to all individuals regardless of their insurance status or ability to pay.

Description

Lamprey Health Care (LHC) is a private, nonprofit community health center providing comprehensive family-oriented primary health care and health related services to individuals and families from the City of Nashua and thirteen surrounding towns. We seek to be a leader in providing access to medical and health services that improve the health status of the individuals and families in the communities we serve and strive to remove the barriers that prevent access to care by eliminating barriers such as language, finances, and lack of transportation. LHC's Nashua center has been serving patients in the City of Nashua since 2000 and in that time demand for services has continued to rise each year. The Nashua center is the chosen primary health care provider for a total of 5,416 patients, an over 27% increase since the start of the recession in 2008 and an over 232% increase from 2000.

Service

Nashua Area Health Center, a Center for Lamprey Health Care's primary service area includes the following towns: Amherst, Brookline, Hollis, Hudson, Litchfield, Merrimack, Milford, Nashua, Pelham and Wilton.

Southern New Hampshire Medical Center

8 Prospect Street, PO Box 2014,
Nashua, NH 03061
603.577.2000
www.snhmc.org

Mission

Southern New Hampshire Health System is committed to improving, maintaining, and preserving the overall health and well-being of individuals living in the greater Nashua area by providing information, education, and access to exceptional health and medical care services.

Description

Southern New Hampshire Health System consists of Southern New Hampshire Medical Center founded in 1891 and its physician arm, Foundation Medical Partners founded in 1993. The Health System is committed to improving, maintaining and preserving the health of people in the greater Nashua area.

Southern New Hampshire Medical Center is a 188 bed acute care facility that retains the personal touch of a traditional community hospital while offering patients the resources of a regional medical center. It has a medical staff of over 550 primary and specialty care providers from Foundation Medical Partners, Dartmouth-Hitchcock Nashua and local independent practices. The Medical Center was awarded the prestigious Magnet Recognition status in 2007, recognizing excellence in nursing services. The hospital is now housed on two Nashua campuses.

Foundation Medical Partners is the second largest multi-specialty practice group in New Hampshire. The Foundation includes over 195 primary care and specialty providers in 55 practices, serving the greater Nashua community. Provider offices with rehabilitation clinics are located in communities throughout the greater Nashua area.

Through an established and developing relationship with the Massachusetts General Hospit patients have access to collaborative programs in children's services, cancer care, and t management of stroke patients. In addition, partnerships and affiliations with Dartmouth Medi School, Dartmouth-Hitchcock Medical Center, Lahey Clinic, Joslin Diabetes Center and Childre Hospital in Boston, allow Southern New Hampshire Health System to provide its patients w seamless access to these centers of excellence and deliver a full complement of adult and mater child health care.

Service

Southern New Hampshire Medical Center's primary service area includes the following towns: Nashua, Amherst, Brookline, Greenville, Hudson, Hollis, Litchfield, Londonderry, Lyndeborough, Merrimack, Milford, Mont Vernon, Pelham, Wilton, Windham, and northern Massachusetts.

ST. JOSEPH HOSPITAL

172 Kinsley Street
Nashua, NH 03061-2013
603.882.3000
www.stjosephhospital.com

Mission

To provide high quality, compassionate care that contributes to the physical, emotional and spiritual well-being of our community of patients, families and neighbors.

Description

St. Joseph Healthcare is a regional, full-service healthcare system serving the Greater Nashua area, western New Hampshire and northern Massachusetts. We have built on over a century of service to meet the growing needs of our community through innovation, leading-edge technology, and the highest-quality medical care, our tradition since 1908. Our medical staff, employees, and volunteers are recognized among the very best by all the standard quality measures and by those who count the most - our patients.

On the main campus, St. Joseph Hospital, a designated magnet hospital for nursing excellence, is leading the way in the prevention, diagnosis, and treatment of disease. Our 208-bed facility combines the latest technologies with personalized medicine. Here's just some of the leading edge services we provide:

- Round-the-clock emergency services
- Comprehensive, specialized treatment and preventive services at The Cardiovascular and Diabetes Center, Breast Care Center and Oncology Center
- The state's only CARF-accredited stroke program at the Acute Rehabilitation Center
- Labor and delivery services voted among the best in the nation by our patients at The Childbirth Center
- An extensive physician network with specialists from the New England Heart Institute and primary care providers from SJ Family Medical Centers, SJ Internal Medicine, the Nashua Medical Group, Dartmouth-Hitchcock Nashua, and many more.

Service

St. Joseph's Hospital primary service area includes the following towns: Nashua, Amherst, Brookline, Greenville, Hudson, Hollis, Litchfield, Londonderry, Lyndeborough, Merrimack, Milford, Mont Vernon, Pelham, Wilton, Windham, and northern Massachusetts.

Greater Nashua Mental Health Center
at Community Council

Strengthening Individuals, Families and Our Community Since 1920!

7 & 15 Prospect Street, 100 West Pearl Street
Nashua, New Hampshire 03060
603.889.6147
www.ccofnashua.org

Mission

Greater Nashua Mental Health Center at Community Council works with the community to meet the mental health needs of its residents by providing evaluation, treatment, resource development, education and research.

Description

Programs for Adults:

- Assessment & Brief Treatment,
- Individual, Couples & Group Therapy
- Community Support Services
- Assertive Community Treatment
- Psychopharmacological Consultation & Management
- Substance Abuse Services
- Batterer's Intervention Program
- Older Adult Services

Programs for Children & Adolescents

- Individual & Family Therapy
- Psychiatric Treatment
- Young Adult Program
- Group Therapy, including Adolescent Dialectical Behavior Therapy (DBT)
- School Based Mental Health Services
- Trauma Focused Treatment
- Supervised Visitation Center
- Child Impact Seminars for Divorcing Parents

Specialized Programs include:
24-Hour Emergency Services, Deaf Services Team, Community Connections Mental Health Court Project and Youth Program, Homeless Outreach Services and a Place to Live Housing Program, , and Healthy Connections - Integrated Health Care

Service

Greater Nashua Mental Health Center service area includes the following towns: Amherst, Brookline, Hollis, Hudson, Litchfield, Mason, Merrimack, Milford, Mont Vernon and Nashua

East Center - 21 East Hollis Street, Nashua, NH 03060
West & Squires Centers
589 & 591 West Hollis Street, Nashua, NH, 03062
www.dartmouth-hitchcock.org

Mission

Dartmouth-Hitchcock advances health through research, education, clinical practice and community partnerships, providing each person the best care, in the right place, at the right time, every time.

Description

Dartmouth-Hitchcock has more than 100 providers who provide basic & specialty care for the whole family at our 6 locations: Nashua East Center, Nashua West Center, Squires Center, Hudson, Merrimack, and Milford. Our services include internal & family medicine, pediatrics, cardiology, orthopedics, podiatry, surgery, dermatology, allergy, gastroenterology, obstetrics, gynecology & nurse midwifery, breast health & imaging center and more.

Patients and providers benefit from convenient in-house lab and X-ray services at multiple locations; an Urgent Appointment center for same day, evening, and weekend care; and expanded radiology services include Bone Density testing (DEXA), MRI and CT services. As a multi-specialty group practice, an array of primary and specialty services is available, and many under one roof. Outpatient tertiary care is also onsite, including reproductive endocrinology/infertility services provided by specialists who travel from Lebanon.

In January 2012, Dartmouth-Hitchcock Nashua's new multi-specialty group practice facility will open at 2300 Southwood Drive off of exit-8 in Nashua, combining the existing services of the East, West & Squires Center's into one location. The building is designed to be "green" and more space-efficient and will also provide services via a new "Medical Home" practice model. This type of practice addresses patients' acute, chronic, and preventive health care needs with teams of professionals who collaborate to find the best possible outcome for each patient.

Dartmouth-Hitchcock Nashua is part of the growing Dartmouth-Hitchcock health care system, which includes the nationally recognized teaching and research care facility, Dartmouth-Hitchcock Medical Center, 90 miles north in Lebanon. The Dartmouth-Hitchcock system is also home to pediatric specialists from Children's Hospital at Dartmouth-Hitchcock (CHaD), New Hampshire's only NACHRI-approved, comprehensive, full-service, children's hospital; Norris Cotton Cancer Center, one of 40 National Cancer Institute-designated comprehensive cancer centers in the U.S. and the only one in New Hampshire.

Service

Dartmouth-Hitchcock's primary service area includes the following towns: Nashua, Litchfield, Milford, Amherst, Merrimack, Hudson, Hollis, Brookline

45 High Street,
Nashua, NH 03060
603.882.3616
www.harborhomes.org

Mission

To create and provide quality residential and supportive services for individuals and their families who are homeless and/or living with mental illness.

Description

Harbor Homes was formed in 1980 for individuals and families challenged by homelessness or mental illness. Today, it is the largest provider of permanent supportive housing for the homeless within New Hampshire, with more than 32 programs addressing the varying and complex needs of disadvantaged, vulnerable populations including individuals and families who are chronically homeless, veterans, developmentally disabled, elderly, and those who have been diagnosed with mental illness, substance abuse issues, chronic disease, and/or HIV/AIDS. In 2010, the agency provided affordable, supportive housing to more than 740 people, including more than 350 with mental illness, 70 honorably-discharged homeless veterans, and over 100 children; more than 1,550 people were provided with a variety of supportive services.

Harbor Homes operates numerous complimentary programs including:

- Harbor Care Clinic: provides free to low cost primary, preventive, and supplementary healthcare to men, women, and youth experiencing homelessness.
- Employment Services: Employment and workforce development programs including a Department of Labor-funded Homeless Veteran Reintegration Program that provides veterans with training and job placement, and an Employment Services Program that provides in-house employment to individuals with mental illness.
- Connections Clubhouse: committed to providing a positive, encouraging and welcoming environment that is dedicated to improving the quality of life of our members by providing social, educational and employment opportunities.
- Veterans FIRST (Federal Investment Recognizing our Servicemen and women in Transition): provides transitional housing and supportive services to honorably discharged homeless veterans and their families since 2004. Harbor Homes provides more veteran-specific housing than any other entity in the state.

Service

Harbor Homes services the state of New Hampshire, with a focus on Southern New Hampshire.

Greater Nashua Dental Connection

31 Cross Street
Nashua, NH 03064
603.879.9314
www.nashuadentalconnection.com

Mission

GNDC's primary purpose is to provide oral health care access to those who are at or below 200% of the national poverty level, are without insurance, and live in Nashua and its surrounding communities.

Description

The GNDC is the only collaborative dental clinic of its kind in Southern New Hampshire and is the only agency in Greater Nashua area that provides comprehensive, preventive, restorative and emergency oral health care for all life cycles

GNDC provides: Exams, X-rays, Oral Hygiene Instruction, Prophylaxis (cleaning), Sealants, Fillings, Simple Extractions, Dentures and Oral Health Education. Besides in-clinic dental services, the organization provides education and dental outreach to area schools, single mothers and children, veterans, elderly, homeless, mentally ill and disabled individuals.

The Denture Program:

The Denture Program dramatically improves the quality of life and overall health of many impoverished elderly citizens and individuals with deteriorating health issues. Our clinic is seeing more patients in dire need of denture care.

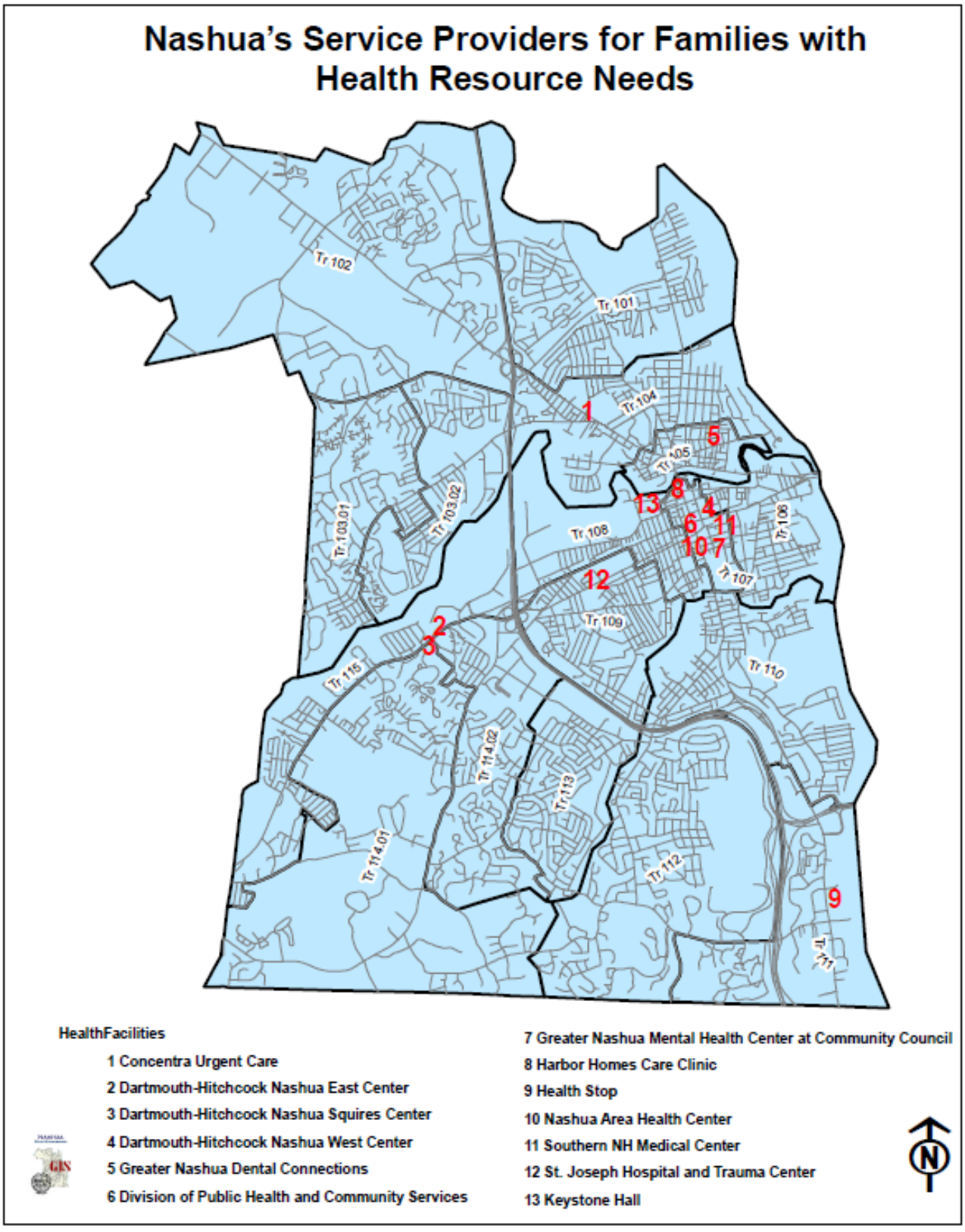
The School Program:

Based on community need and local school requests, Greater Nashua Dental Connection offers oral health services for children from 18 Nashua schools. Several local dentists volunteer their time at the clinic to provide checkups for students from the city who do not have dental insurance. With the support of Nashua school nurses and health administrators, the clinic serves approximately 15-25 students every week or every other week depending on the needs of each school. What is unique about this program is it is the only dental program that provides in-clinic oral health care to uninsured/impoverished children.

Service

Nashua Dental Connection's primary service area includes the following towns: Amherst, Brookline, Hollis, Hudson, Litchfield, Lyndenborough, Merrimack, Milford, Mont Vernon, Nashua, Wilton

Map A1.1 Providers for Families with Health Resource Needs



Nashua's Service Providers for Families with Health Resource Needs			
#	**Organization**	**Address**	**Phone**
1	Concentra Urgent Care	14A Broad St Nashua, NH	603-889-2354
2	Dartmouth-Hitchcock Nashua East Center	21 East Hollis St Nashua, NH	603-577-4000
3	Dartmouth-Hitchcock Nashua Squires Center	589 West Hollis St Nashua, NH	603-577-4260
4	Dartmouth-Hitchcock Nashua West Center	591 West Hollis St Nashua, NH	603-577-4400
5	Greater Nashua Dental Connection	31 Cross St Nashua, NH	603-879-9314
6	Division of Public Health & Community Services	18 Mulberry St Nashua, NH	603-589-4560
7	Greater Nashua Mental Health Center at Community Council	7 Prospect St Nashua, NH	603-889-6147
8	Harbor Homes Care Clinic	45 High St Nashua, NH	603-821-7788
9	Health Stop	228 Daniel Webster Highway Nashua, NH	603-888-9200
10	Lamprey Health Care – Nashua Center	10 Prospect St Nashua, NH	603-883-1626
11	Southern NH Medical Center	8 Prospect St Nashua, NH	603-577-2000
12	St. Joseph Hospital	172 Kinsley St Nashua, NH	603-882-3000
13	Greater Nashua Council on Alcoholism, Inc. Keystone Hall	5 Pine St Nashua, NH	603-881-4848

Hospitals		
Facility Name	**Phone**	**Facility Type**
Southern NH Medical Center	603-577-2000	Hospital
St. Joseph Hospital	603-882-3000	Hospital
Pharmacies		
Facility Name	**Phone**	**Facility Type**
Nashua		
Costco Pharmacy 311 Daniel HWY	603-888-0514	Pharmacy
CVS Pharmacy 240-242 Main St	603-886-1786	Pharmacy
CVS Pharmacy 633 Amherst St	603-880-6861	Pharmacy
CVS Pharmacy 214 Daniel Webster HWY	603-888-4354	Pharmacy
Hannaford Supermarket & Pharmacy 175 Coliseum Ave	603-889-6663	Pharmacy
Peter's Pharmacy 495 Amherst St	603-889-3333	Pharmacy
Medicine World 262 Main Dunstable Rd	603-881-9500	Pharmacy
Rite Aide 331 Main St	603-886-9210	Pharmacy
Rite Aide 145 Amherst St	603-598-9450	Pharmacy
Shaw's Osco Pharmacy 300 Main St	603-579-5445	Pharmacy
Shaw's Supermarket 213 Daniel Webster HWY	603-891-1174	Pharmacy
Target Pharmacy 310 Daniel Webster HWY	603-891-4858	Pharmacy
Walgreen Pharmacy 217 Daniel Webster HWY	603-891-2907	Pharmacy
Walgreen Pharmacy 550 Amherst St	603-595-3373	Pharmacy
Walgreen Pharmacy 283 Main St	603-889-6124	Pharmacy
Wingate Pharmacy 129 Main St	603-882-9733	Pharmacy
Basic Needs/Food Pantries		
Facility	**Phone**	**Facility Type**
Milford		

Share 34 Amherst St Milford, NH 03055	603-673-9898	Food Pantry
Nashua		
Corpus Christi Food Pantry 43 Franklin St Nashua, NH 03064	603-598-1641	Food Pantry
Salvation Army Food Pantry 1 Montgomery Ave Nashua, NH 03060	603-883-7841	Food Pantry
Tolles Street Mission 52 Whitney St Nashua, NH 03060	603-880-4984	Food Pantry
Nashua Soup Kitchen & Shelter 42 Chestnut St Nashua, NH 03060	603-889-7770	Soup Kitchen and Homeless Shelter
Nashua Pastoral Care Center 7 Concord St Nashua, NH 03060	603-886-2866	Basic Needs/ Food Pantry

End of Life Care

Facility	Phone	Facility Type
Merrimack		
Community Hospice House 210 Naticook Rd Merrimack, NH 03054	603-595-5688 603-437-3525	Hospice
Home Health & Hospice Care 80 Continental Blvd Merrimack, NH 03054	603-424-3822 603-882-2941	Hospice
Milford		
Souhegan Home & Hospice Care 24 North River Rd Milford, NH 03055	603-673-3460	Hospice
Nashua		
Beacon Hospice 157 Main Dunstable Rd Nashua, NH 03060	603-579-0665	Hospice
Life Coping, Inc 266-A Main St Nashua, NH 03060	603-888-3588	Hospice

Home Health & Hospice Care 22 Prospect St Nashua, NH 03060	603-424-3822 603-882-2941	Hospice

Funeral Homes

Funeral Home Name	Phone	Facility Type
Hudson		
Dumont-Sullivan Funeral Homes 50 Ferry St Hudson, NH 03051	603-882-9431	Funeral Home
Merrimack		
George R. Rivet Funeral Home Inc 425 Daniel Webster HWY Merrimack, NH 03054	603-424-5530	Funeral Home
Milford		
Smith and Heald Funeral Home 63 Elm St Milford, NH 03055	603-673-1422	Funeral Home
Nashua		
Anctil-Rochette and Son Funeral Home 21 Kinsley St Nashua, NH 03060	603-883-3041	Funeral Home
Davis Funeral Home 1 Lock St Nashua, NH 03064	603-883-3401	Funeral Home
Farwell Funeral Service Inc 18 Lock St Nashua, NH 03064	603-882-0591	Funeral Home
St. Laurent Funeral Home 116 Elm St Nashua, NH 03060	603-882-1771	Funeral Home
Zis-Sweeney Funeral Home 26 Kinsley St Nashua, NH 03060	603-882-3501	Funeral Home
Pelham		
Pelham Funeral Home 11 Nashua Rd Pelham, NH 03076	603-635-3333	Funeral Home

Home Care and Support

Facility	Phone	Facility Type

Meals on Wheels & Congregate Dining/St. Joseph's Community Services P.O. Box 910 Merrimack, NH 03054	603-424-9967	Support
Home Health & Hospice Care 80 Continental Blvd Merrimack, NH 03054	603-424-3822 603-882-2941	Home Care and Hospice
Care Givers Inc 491 Amherst St Nashua, NH 03063	603-595-4502	Drivers
Gateway of Greater Nashua 144 Canal St Nashua, NH 03060	603-882-6333	Support
VNA of Manchester and Southern NH 33 S. Commercial St Suite 401 Manchester, NH 03101	603-622-3781 800-624-6084 603-622-3782	Home Care
La Leche League 7 Poliquin Dr Nashua, NH 03062	603-891-3530	Infant care

Long Term Care

Facility	Phone	Facility Type
Hudson		
Fairview Nursing Home 203 Lowell Rd Hudson, NH 03051	603-882-5261	Elderly/Nursing Home
Laurel Place 203 Lowell Rd Hudson, NH 03051	603- 883-2419	Elderly/Nursing Home
Merrimack		
Rose Haven Home 8 Jennifer Dr Merrimack, NH 03054	603-424-5919	Elderly/Nursing Home
Milford		
Pillsbury Home 95 High St Milford, NH 03055	603-672-1232	Elderly/Nursing Home
Mont Vernon		
Mont Vernon Inn 26 Main St Mont Vernon, NH 03057	603-673-4585	Elderly/Nursing Home
Nashua		

Greater Nashua Subacute & Rehabilitation Center 55 Harris Rd Nashua, NH 03062	603-888-4829	Elderly/Nursing Home
Greenbriar Terrace Healthcare 55 Harris Rd Nashua, NH 03062	603-888-1573	Elderly/Nursing Home
Hunt Community 10 Allds St Nashua, NH 03060	603-882-6511	Elderly/Nursing Home
Nashua Crossings Assisted Living 674 W. Hollis St Nashua, NH 03060	603-882-2898	Elderly/Nursing Home
The Aynsley 80 Lake St Nashua, NH 03060	603-881-4190	Elderly/Nursing Home
The Courville at Nashua 22 Hunt St Nashua, NH 03060	603-889-5450	Elderly/Nursing Home
Senior Centers		
Facility	**Phone**	**Facility Type**
Nashua		
Nashua Senior Activity Center 70 Temple St Nashua, NH 03060	603-889-6155 603-816-2640	Senior Activity Center
Area Agency of Greater Nashua 144 Canal St Nashua, NH 03060	603-882-6333	Adult Day Care
Pelham		
Pelham Senior Center 8 Nashua Rd Pelham, NH 03076	603-635-3800	Senior Activity Center

Appendix 2:
2010 Nashua Community Health Survey

Source: City of Nashua, Division of Public Health and Community Services

The purpose of this study was to conduct an efficient, low-cost health survey for the City of Nashua's Community Health Assessment and to exercise a rapid needs assessment for use in disaster response. An operations-based functional exercise was developed to test communications capabilities, emergency operations center management and epidemiological surveillance and investigation capabilities. The Health Survey Committee was composed of Division of Public Health and Community Services staff and Community Health Assessment Advisory Board members. Volunteers were from numerous agencies including Greater Nashua Public Health regional partners, medical partners and the local colleges. The Health Survey Committee determined the content and length of the health survey, qualifications for volunteers, avenues to publicize the survey, and the structure of 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 (2010 NCHS):

- Objective 1: To test the Greater Nashua Public Health Region 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 residents using the Centers for Disease Control and Prevention's Community Assessment for Public Health Emergency Response (CASPER) protocol and Capturx software and Anoto digital pens and paper.

The assessment protocol was based on the Centers for Disease Control and Prevention's 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 with 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 pre-determined, 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 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. It's nearly 31 square miles are home to an estimated 86,494 people according to the 2010 US Census, or roughly 6.6% of New Hampshire's total population of 1,316,470 people. The second largest city in New Hampshire, Nashua's population is more than double that of Concord, the state's capitol and third largest city. There are 34,801 households in Nashua with an average household size of 2.45 people and 21,537 families with an average household size of 3.05 people. Assessment teams approached 833 households and completed 207 surveys for a 25% response rate. Of the 833 households, contact was made with a resident at 426 households for a 49% cooperation rate. When compared with the 2000 US Census and 2005-2009 American Community Survey, the respondents were similar in age, gender, income and race (Table A2.1).

The rapid needs assessment tool 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. A formal After Action Report and Improvement Plan were developed and are available upon request from the City of Nashua, Division of Public Health and Community Services (603-589-4560).

Survey Methods

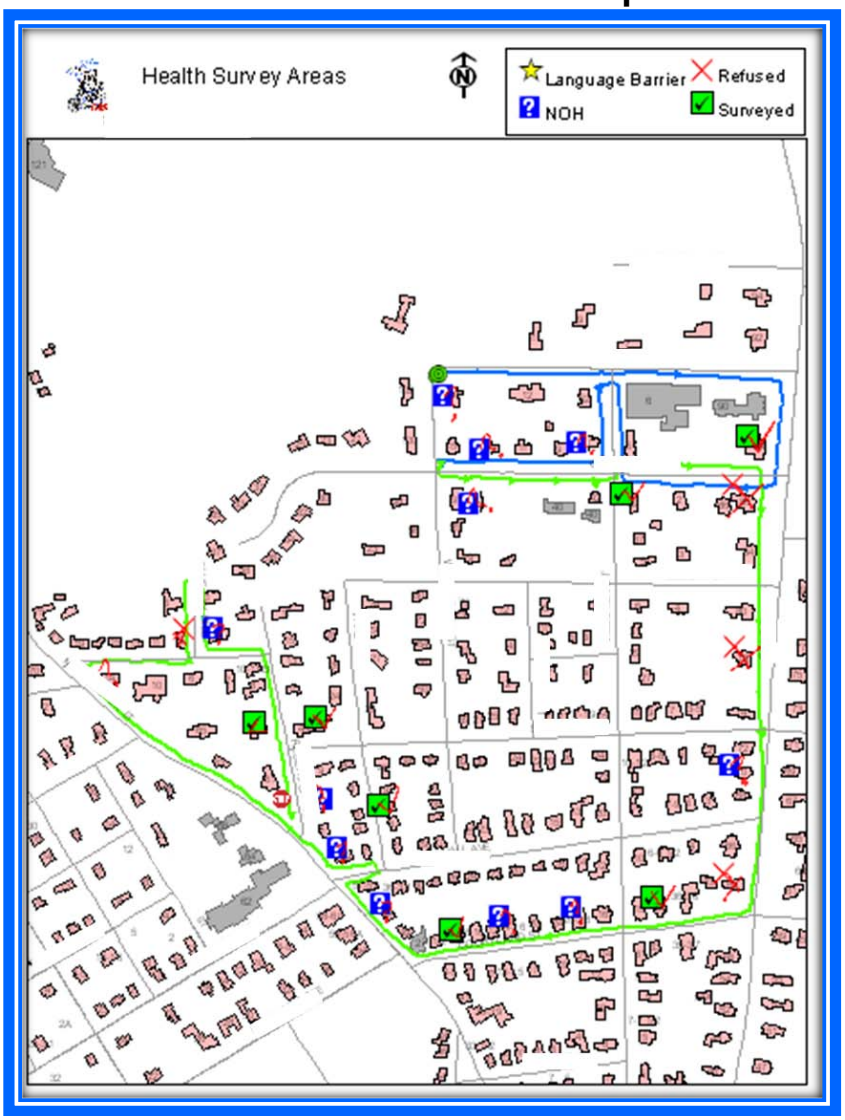
The survey was conducted over the course of four Saturdays in October and November 2010 as an operations-based Homeland Security Exercise and Evaluation Program (HSEEP) compliant exercise. The start and end times of the health survey were kept consistent. The population for the survey consisted of consenting City of Nashua residents that were 18 years of age or older. The survey consisted of thirty-four questions from a variety of health topics, as well as several questions on emergency preparedness. Prior to conducting the survey, a small focus group reviewed the questions for cultural sensitivity and readability. Most of the questions on the survey were gathered from existing national surveys such as the Center for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS). Four of the questions were not included in the final analysis because the data was inconsistent and it was determined that the interviewers and/or respondents misinterpreted the questions. The survey was translated into Spanish and Portuguese and translators were sent to the block groups within the City with the highest percentage of Spanish and Portuguese speakers. The volunteers tracked the answers to the survey on an answer sheet utilizing Capturx software for Anoto digital pens (Figure A2.1, Figure A2.2). Verbal consent from respondents was obtained and personal identifiers were not collected. Survey completion times averaged from fifteen to thirty minutes, depending on the interviewer and the respondent.

Figure A2.1 Image of Anoto Digital Pen

Figure A2.2 Close-up Image of Digital Paper

For this two-stage cluster sampling technique, the City of Nashua was divided into block groups of which 30 clusters were randomly selected using probability proportionate to the estimated number of housing units. Maps of the selected block groups were printed using ESRI's ArcGIS onto digital paper. Next, a random walking path was plotted in each cluster for the volunteers to follow (Figure A2.3). The starting point was pre-determined at the top left hand corner of the block group. The direction of the walking path was determined by rolling a dice. In the field, the volunteers went to every third house to conduct a survey and used the digital pens on the maps to document the houses that were surveyed, refused, had no one home and those that had a language barrier. A language barrier that could not be overcome was encountered at 6 (1.4%) of the 426 households visited where a resident was reached.

Figure A2.3 Example of a Random Walking Path in a Census Block Group



Interview teams, consisting of two members each, were deployed into the field and assigned a team leader. Team leaders were stationed at the public health emergency operations center with the project coordinator.

The CASPER toolkit includes templates for orienting and debriefing teams, consent forms and tracking forms which were used as guides for the health survey. Following the protocol, the necessary supplies were organized and the teams were provided a red vest, identification badges, handheld radios, clipboards and supporting documentation. Prior to deployment, fifty-eight volunteers received six hours of training on the survey methodology, the questionnaire and the maps with their walking path. After completing the surveys, volunteers were debriefed, completed an evaluation form and were provided a certificate of appreciation. A hotwash, or debrief, was held with the evaluator, team leaders and support staff to gather the highlights and challenges of the day.

Data Analysis

Data from the answer sheets and maps was collected using Capturx software for Anoto digital pens. The information from the answer sheets was downloaded into Microsoft Excel and analyzed using Epi Info™ while the data from the maps was downloaded into ESRI's ArcGIS. To account for the lack of a simple random sample, each housing unit was assigned a weight so the estimates could be generalized to every housing unit from the sampling frame. Weighted and unweighted frequencies were calculated with 95% Confidence Intervals.

Results

A total of 207 (98.6%) out of a possible 210 health surveys were completed. Forty-four percent (44%) of the respondents were male and 7% were Hispanic compared to the 2005-2009 American Community Survey which states 49% of the population is male and 8% is Hispanic. Overall, the respondents were a good representation of the community and were comparable by age, gender, income, education and race (Table A2.1).

Table A2.1 2010 Nashua Community Health Survey
Respondent Demographics

US Census Bureau, 2005-2009 American Community Survey			
Gender	**Health Survey (n)**	**Health Survey (%)**	**US Census (%)**
Male	92	44%	49%
Female	115	56%	51%
US Census Bureau, 2005-2009 American Community Survey			
Ethnicity	**Health Survey (n)**	**Health Survey (%)**	**US Census (%)**
Hispanic	14	7%	8%
Not Hispanic	192	93%	92%
Refused	1	0.5%	*
US Census Bureau, 2005-2009 American Community Survey			
Race	**Health Survey (n)**	**Health Survey (%)**	**US Census (%)**
Caucasian	168	81%	86%
Asian	15	7%	6.9%
Other	24	12%	*
US Census Bureau, 2005-2009 American Community Survey			
Income	**Health Survey (n)**	**Health Survey (%)**	**US Census (%)**
Less than $10,000	5	2%	4%
$10,000-$14,999	7	3%	4%
$15,000-$24,999	16	8%	8%
$25,000-$34,999	18	9%	8%

$35,000-$49,999	18	9%	13%
$50,000-$74,999	34	16%	19%
$75,000-$99,999	29	14%	15%
$100,000 or more	50	24%	28%
Don't Know	8	4%	NA
Refused	22	11%	NA
TOTAL	207	100%	*

US Census Bureau, 2005-2009 American Community Survey			
	Health Survey (n)	**Health Survey (%)**	**US Census (%) (For 25 years and over)**
Less than 9th grade	9	4.3%	3.6%
9th to 12th grade, no diploma	5	2.4%	5.7%
High School graduate	39	18.8%	27.3%
Some college, no degree	37	17.9%	18.3%
Associate's degree	34	16.4%	8.8%
Bachelor's degree	48	23.2%	23.7%
Graduate or professional degree	34	16.4%	12.6%

US Census Bureau, 2000 US Census			
Age	**Health Survey (n)**	**Health Survey (%)**	**US Census (%)**
18 to 24yrs	15	7.2%	8.1%
25 to 34yrs	30	14.5%	15.9%
35 to 44yrs	48	23.2%	17.6%
45 to 54yrs	43	20.8%	13.6%
55 to 64yrs	36	17.4%	8.5%
65 to 74yrs	17	8.2%	6.1%
75 to 84yrs	13	6.3%	4.1%
≥85yrs	5	2.4%	1.4%
TOTAL	207	100%	*

* = Not applicable

Community Health

The first two questions of the survey asked residents about the health of the Nashua community. When respondents were asked how they would rate the health of the Nashua community, 49% said healthy or very healthy, 40% said somewhat healthy and 4% said unhealthy (Figure A2.4, Table A2.2). If residents could fix one health issue, 18% would fix some aspect of healthcare (e.g. access to healthcare, insurance and affordability), 16% would fix some aspect of environmental health (e.g. sanitation, air quality, sidewalks) and 15% would change inadequate physical exercise, nutrition and weight management (Figure A2.5).

Figure A2.4 Perceived Health of the Nashua Community

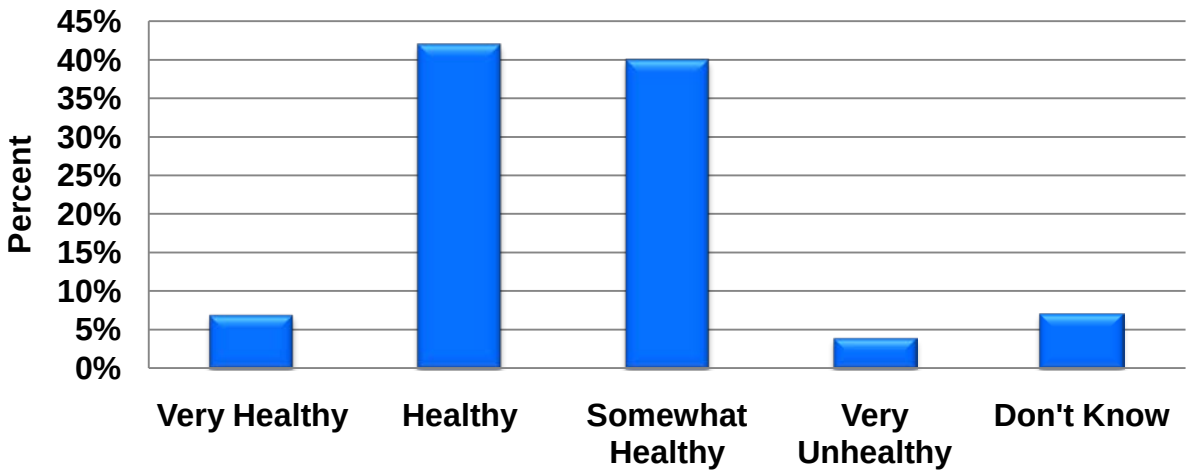
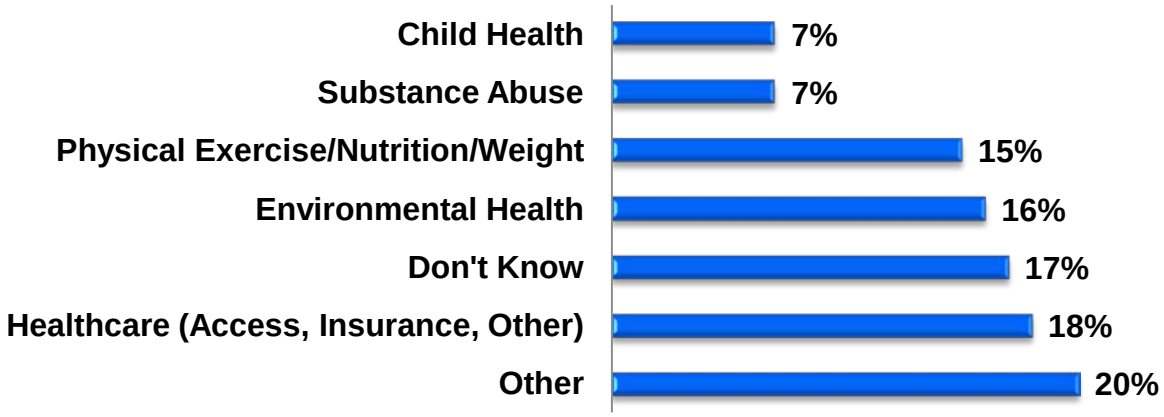


Table A2.2 Perceived Health of the Nashua Community

How would you rate the health of our community? (Weighted Frequencies)			
	Estimated number of housing units	Percentage (n)	95% Confidence Intervals
Very Healthy	2,296	6.7% (14)	6.5-7.0%
Healthy	14,432	42.4% (88)	41.8-42.9%
Somewhat Healthy	13,736	40.3% (83)	39.8-40.8%
Very Unhealthy	1,312	3.9% (8)	3.7-4.1%
Don't Know	2,296	6.7% (14)	6.5-7.0%

Figure A2.5 Health Issues as Perceived by Residents

What one health issue would you fix to make Nashua a healthier place to live?



Personal Health

The second section of the survey focused on the health of residents and access to healthcare and dental care. A routine check-up is a general physical exam, not an exam for a specific injury or illness and 90% of Nashua residents have seen a doctor for a routine check-up within the past 2 years and 2% have never been to a doctor for a routine check-up. Additionally, 88% of residents have one person they think of as their personal doctor and 18% have visited the emergency room one time for their own health and 7% went to the emergency room two or more times in the past 12 months for their own care. When looking at access to healthcare, 95% percent of residents did not have trouble accessing medical care or surgery in the past 12 months. Of those that did experience trouble, insurance and not being able to afford the cost of healthcare were the most common reasons (Table A2.3).

90% of residents have seen a doctor for a routine check-up within the past 2 years and 2% have never seen a doctor for a routine check-up.
- 2010 NCHS

Table A2.3 Access to Healthcare

A routine check-up is a general physical exam, not an exam for a specific injury, illness, or condition. About how long has it been since you last visited a doctor for a routine checkup? (Weighted Frequencies)			
	Estimated number of housing units	**Percentage (n)**	**95% Confidence Intervals**
Within the past year	25,748	75.6% (157)	75.1-76.0%
Within past 2 years	4,920	14.4% (30)	14.1-14.8%
Within past 5 years	1,804	5.3% (11)	5.1-5.5%
5 or more years ago	820	2.4% (5)	2.2-2.6%
Never	780	2.3% (4)	2.3-4.7%
Do you have one person you think of as your personal doctor or healthcare provider? (Weighted Frequencies)			
Yes	30,136	88.4% (183)	88.1-88.8%
No	3,772	11.1% (23)	10.7-11.4%
Don't Know	164	0.5% (1)	0.4-0.6%
In the past 12 months, how many times have you gone to an emergency room for your own health? (Weighted Frequencies)			
0	25,420	74.6% (155)	*
1	6,232	18.3% (38)	*
≥2	2,420	7.1% (14)	*
During the past 12 months, was there any time when you needed medical care or surgery but did not get it?			
Yes	1,476	4.3% (9)	4.1-4.6%
No	32,268	94.7% (196)	94.5-94.9%
Don't Know	328	1% (2)	0.9-1.1%
* = Not applicable			

For dental care, 77% of residents have visited a dentist or dental hygienist for a cleaning within the past 2 years, 10% within the past 5 years, 11% five or more years ago and 1% have never visited a dentist for a cleaning. Eighty-eight (88%) percent of residents did not have trouble accessing dental care, but of those experiencing problems, most cited insurance, not being able to afford dental care and dental practices not accepting their insurance as the common reasons (Table A2.4).

Table A2.4 Access to Dental Care

How long has it been since you had your teeth cleaned by a dentist or dental hygienist? (Weighted Frequencies)			
	Estimated number of housing units	**Percentage (n)**	**95% Confidence Intervals**
Within the past year	23,452	68.8% (143)	68.3-69.3%
Within the past 2 years	2,624	7.7% (16)	7.4-8.0%
Within the past 5 years	3,568	10.5% (21)	10.1-10.8%
5 or more years ago	3,772	11% (23)	10.7-11.4%
Never	492	1.4% (3)	1.3-1.6%
Don't Know	164	0.5% (1)	0.4-0.6%
During the past 12 months, was there a time when you needed dental care but could not get it at that time? (Weighted Frequencies)			
Yes	4,100	12% (25)	11.7-12.4%
No	29,808	87.5% (181)	87.1-87.8%
Don't Know	164	0.5% (1)	0.4-0.6%

Unhealthy behaviors were referenced in the health survey by looking at smoking tobacco and the amount of daily "screen time" for adults. Screen time is defined as the amount of time spent watching TV, playing video games or using the computer for recreation that is not work related. Fifteen percent (15%) of the population smoked cigarettes for all 30 days during the past month and an additional 1.5% smoked between three to nineteen days during the past month. When residents were asked where they would send a friend that wanted to quit smoking, 58% would tell them to talk to a doctor and 11% would suggest the NH Quitline. Screen time is a strong component of residents' lives where 17.5% spend three or more hours and 82% spend one to two hours of screen time each day (Table A2.5).

Source: City of Nashua, Division of Public Health and Community Services

Table A2.5 Behaviors Related to Health

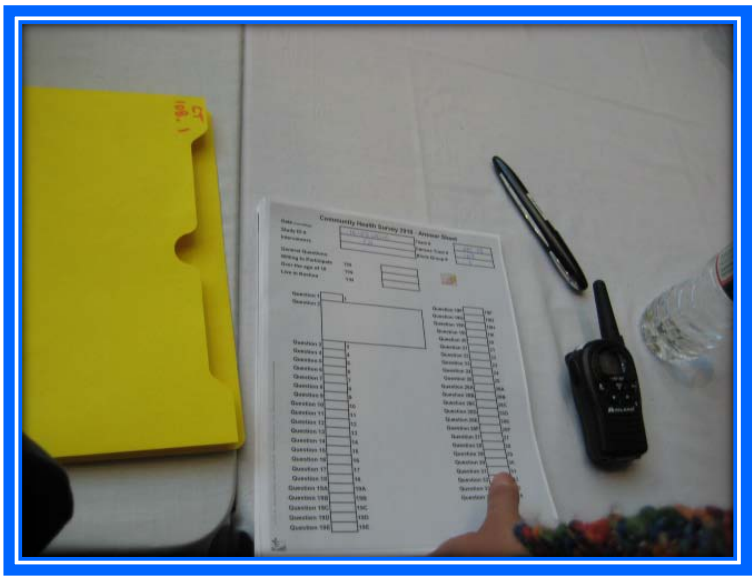
During the past 30 days, on how many days did you smoke cigarettes? (Weighted Frequencies)			
	Estimated number of housing units	**Percentage (n)**	**95% Confidence Intervals**
0 Days	28,372	83.3% (173)	82.9-83.7%
3 to 5 Days	164	0.5% (1)	0.4-0.6%
6 to 9 Days	0	0% (0)	0
10 to 19 Days	328	1.0% (2)	0.9-1.1%
20 to 29 Days	0	0% (0)	0
All 30 Days	5,208	15.3% (31)	14.9-15.7%
If a friend or family member wanted to quit, where would you tell them to go to get help? (Weighted Frequencies)			
NH Quitline	3,772	11.1% (23)	10.7-11.4%
Doctor	19,844	58.2% (121)	57.7-58.8%
Church	984	2.9% (6)	2.7-3.1%
Pharmacy	1,928	5.7% (11)	5.4-5.9%
Hospital	656	1.9%	1.8-2.1%
Private Counselor/ Therapist	2,132	6.3% (13)	6.0-6.5%
Health Department	328	1.0% (2)	0.9-1.1%
Other	2,788	8.2% (17)	7.9-8.5%
Don't Know	1,640	4.8% (10)	4.6-5.0%
How many hours per day do you watch TV, play video games, or use the computer for recreation that is not work related? (Weighted Frequencies)			
0-1 Hours	10,988	32.3% (67)	*
2-3 Hours	20,460	60% (124)	*
4-5 Hours	2,460	7.2% (15)	*
6+ Hours	164	0.5% (1)	*
* = Not applicable			

To access help for a mental health or substance abuse problem, 33% of residents would tell a friend or family member to talk with their doctor, 22% would tell them to go to a private counselor or therapist and 20% would recommend the Greater Nashua Mental Health Center at

Community Council (Table A2.6). To get health related information, 51% reported that they go to a doctor or nurse, 26% referenced the internet and 9% talked to friends and family (Table A2.7).

Table A2.6 Obtaining Assistance for Mental/Substance Abuse

If a friend or family member needed counseling for a mental health or a drug/alcohol abuse problem, who would you tell them to call or talk to? (Weighted Frequencies)			
	Estimated number of housing units	**Percentage (n)**	**95% Confidence Intervals**
Private Counselor or Therapist	7,544	22.1% (46)	21.7-22.6%
Doctor	11,152	32.7% (68)	32.2-33.2%
Support Group (e.g. AA, Al-Anon)	4,428	13.0% (27)	12.6-13.4%
Minister/ Religious Official	1,640	4.8% (10)	4.6-5.0%
School Counselor	164	0.5% (1)	0.4-0.6%
Greater Nashua Mental Health Center	6,684	19.6% (40)	19.2-20.0%
Other	1,312	3.9% (8)	3.7-4.1%
Don't Know	1,148	3.4% (7)	3.2-3.6%



Source: City of Nashua, Division of Public Health and Community Services

Table A2.7 Obtaining Health Information

Where do you go to get most of your health-related information? (Weighted Frequencies)			
	Estimated number of housing units	**Percentage (n)**	**95% Confidence Intervals**
Friends and Family	2,952	8.7% (18)	8.4-9.0%
Hospital	1,312	3.9% (8)	3.7-4.1%
My child's school	164	0.5% (1)	0.4-0.6%
Doctor/Nurse	17,344	50.9% (105)	50.4-51.4%
Pharmacist	328	1.0% (2)	0.9-1.1%
Help Lines	164	0.5% (1)	0.4-0.6%
Church	0	0% (0)	0%
Internet	8,856	26% (54)	25.5-26.5%
Books/ Magazines	1,312	3.9% (8)	3.7-4.1%
Health Department	0	0% (0)	0%
Other	1,476	4.3% (9)	4.1-4.6%
Don't Know	164	0.5% (1)	0.4-0.6%

The prevalence of chronic conditions was ascertained by asking respondents if they have ever been told by a physician or medical provider that they have a medical condition. Approximately, 15% of adult residents have been told by a provider at some point in their lifetime that they have asthma, 20% have depression, and 15% have anxiety. Thirty percent (30%) of residents reported overweight/obesity, cholesterol and high blood pressure. Coronary heart disease was the lowest at 4% (Table A2.8).

Annually, the seasonal influenza vaccine is administered by clinics, provider's offices and pharmacies throughout Nashua. Receiving the influenza vaccine is especially important for individuals with chronic medical conditions. According to the survey, 51% of adult residents received their seasonal influenza vaccine during the 2009-2010 flu season (Table A2.9).

51% of Nashua adults received their seasonal influenza vaccine during the 2009-2010 influenza season.
- 2010 NCHS

Table A2.8 Prevalence of Chronic Conditions

Has a doctor, nurse, or other health professional EVER told you that you have any of the conditions I am about to read? (Weighted Frequencies)			
	Estimated number of housing units with condition	Percentage (n) with condition	95% Confidence Intervals
Asthma	5,248	15.4% (32)	15-15.8%
Depression	6,724	19.7% (41)	19.3-20.2%
Anxiety	5,084	14.9% (31)	14.5-15.3%
Heart Attack	1,804	5.3% (11)	5.1-5.5%
Coronary Heart Disease	1,476	4% (9)	4.1-4.6%
Overweight/Obesity	10,168	29.8% (62)	29.4-30.3%
High Blood Pressure	10,332	30.3% (63)	29.8-30.8%
High Cholesterol	10,168	29.8% (62)	29.4-30.3%
Diabetes	3,280	9.6% (20)	9.3-9.9%

Table A2.9 Seasonal Influenza Vaccination

Last year, did you get the seasonal flu vaccine? (Weighted Frequencies)			
	Estimated number of housing units	Percentage (n)	95% Confidence Intervals
Yes	17,384	51% (106)	48.4-49.5%
No	16,688	49% (101)	50.5-51.6%

Emergency Preparedness

The third section of the health survey was dedicated to emergency preparedness and included questions relating to evacuation, safety in the household, and communications. Results of the study show that 52% percent of households utilize the television, 20% use the radio and 18% access the internet for gathering information from authorities during an incident. If a mandatory evacuation from authorities was issued, 94% of households indicated they would evacuate and 63% would go to a relative or friend's house. The main reasons households might not evacuate when asked to do so were due to concerns over traffic jams and leaving property or pets behind. Furthermore, when evaluating preparedness in the household prior to an event, 98% of households have smoke detectors, 65% have carbon monoxide detectors and 73% have fire extinguishers. Only 49% of households have an alternate source of heat but 93% have air conditioning (Table A2.11).

Table A2.10 Emergency Evacuations

If public authorities announced a mandatory evacuation from your community due to a large-scale disaster or emergency, would you evacuate? (Weighted Frequencies)			
	Estimated number of housing units	**Percentage (n)**	**95% Confidence Intervals**
Yes	32,410	94.2% (195)	94-94.5%
No	492	1.4% (3)	1.3-1.6%
Don't Know	1,476	4.3% (9)	4.1-4.6%
If you had to evacuate from your home, where would you go? (Weighted Frequencies)			
Relative/Friends House	21,608	63% (131)	62.9-63.9%
Hotel	4,264	13% (26)	12.2-12.9%
Emergency Shelter	3,772	11% (23)	10.7-11.4%
Other	1,328	10% (27)	9.8-10.4%
What would be your main method or way of getting information from authorities in a large-scale disaster or emergency? (Weighted Frequencies)			
Television	17,876	52.5% (109)	51.9-53.0%
Radio	6,888	20.2% (42)	19.8-20.6%
Internet	6,192	18.2% (37)	17.8-18.6%
Print Media	820	2.4% (5)	2.2-2.6%
Neighbors	492	1.4% (3)	1.3-1.6%
Other	1,804	5.3% (11)	5.1-5.5%

Table A2.11 Household Safety and Preparedness

Do you have - ? (Weighted Frequencies)			
	Estimated number of housing units with Item	**Percentage (n) with Item**	**95% Confidence Intervals**
Working smoke detector	33,580	98.6% (204)	98.4-98.7%
Working carbon monoxide detector	22,264	65.3% (135)	64.8-65.8%
Working fire extinguisher	24,724	72.6% (150)	72.1-73.0%
Adequate heating for the winter	33,908	99.5% (206)	99.4-99.6%
An alternate heating source if the power goes out	16,728	49.1%(102)	48.6-49.6%
Working air conditioner or central air	31,776	93.3% (193)	93-93.5%

Limitations of Data

Selection bias, or only surveying individuals that were home or willing to participate in the survey, was a limitation of the study.

Conclusion

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. The collected health data provides additional situational awareness on the current health and well-being of Nashua residents and the emergency preparedness data will assist emergency management with enhancing existing plans and protocols prior to an incident.

After reviewing debriefing notes and evaluations, a formal After Action Report and Improvement Plan were completed. Identified best practices include working with apartment complexes to survey their residents, using new technology with the Capturx software for Anoto digital pens, employing risk communications as part of our media campaign to notify residents and using ArcGIS to track households. Lessons learned included the need to develop training specifically for the team leaders, utilizing handheld radios instead of walkie talkies for communications, and expanding risk communications to target the elderly population in the community.

Health Survey Sponsors

City of Nashua, Division of Public Health & Community Services
Lamprey Health Care – Nashua Center
New Hampshire Department of Health & Human Services,
Public Health Emergency Preparedness Grant
St. Joseph Hospital
Southern New Hampshire Medical Center

Project Coordinators

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Division of Public Health & Community Services

Patty Crooker, Regional Public Health Preparedness Coordinator
Division of Public Health & Community Services

2010 Nashua Community Health Survey Committee

Division of Public Health & Community Service
Victoria Alabi, Public Health Associate
Mike Amichetti, Case Technician
Theresa Calope, Public Health Nurse
Debbie Daniels, Medical Director
Corinn Dembkoski, Public Health Specialist
Meredith Lyons, Environmental Health Specialist

Community Health Institute
Amy Cullum, Senior Consultant

Lamprey Health Care – Nashua Center
Mariellen Durso, Director

United Way of Greater Nashua
Ray Peterson, Vice President

Number of Participants

October 23, 2010
Volunteers: 33
Evaluators: 1
Support Staff: 9

November 6, 2010
Volunteers: 26
Evaluators: 0
Support Staff: 5

Note: On two additional days, Nashua DPHCS staff went into the neighborhoods to get remaining surveys from residents to reach the goal of 210 surveys.

Participating Organizations

City of Nashua, Assessing & GIS Department
City of Nashua, Board of Health
City of Nashua, Division of Public Health & Community Services
City of Nashua, Risk Management
City of Nashua, Police Department
Community Members
Dartmouth-Hitchcock
Gateways Community Services
Greater Derry Medical Reserve Corps
Greater Nashua Public Health Region
Greater Nashua Mental Health Center at Community Council
Hillsborough County Amateur Radio Emergency Services
Lamprey Health Care – Nashua Center
Nashua Community College
Nashua Police Athletic League
NH Department of Health & Human Services
NH Gateway Chapter of the American Red Cross
NH Homeland Security & Emergency Management
Parent Coach
Rivier College
Southern New Hampshire Medical Center
Southern NH Services
St. Joseph Hospital
St. Luis de Gonzague Parish

Technical Assistance

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Elizabeth Daly, NH DHHS
Jennifer Horney, University of North Carolina
Angelo Marino, City of Nashua Assessing & GIS Department
Bebe Jo Selwyn, University of Texas

Volunteers

American Red Cross
Ashley Pushkarewicz

City of Nashua, DPH&CS
Victoria Alabi
Mike Amichetti
Theresa Calope
Ashley Conley
Patty Crooker
Debbie Daniels
Corinn Dembkoski
Janet Graziano
Sue LaPointe
Meredith Lyons
Al Matkowsky
Sandy Mulcahy
Luis Porres
Howard Price
Barbara Scacco
Kerran Vigroux
Betty Wendt

Community Members
Jim Dembkoski
Linda Fielding

Dartmouth-Hitchcock
Tracy Bennett
Lorraine Schreib

Gateways Community Services
Kristen Leppanen
Jo-Ann Sheehan

Greater Derry Medical Reserve Corps
Maria Rocheleau

Greater Nashua Mental Health Center at Community Council
Joan Haskell
Jennifer McGrath

Hillsborough County Amateur Radio Emergency Services
Jim Blaine

Lamprey Health Care – Nashua Center
Mariellen Durso
Mara Lessard
Justine Nims-Largy
Maria Cecilia Pereira
Janice Watson

Nashua Community College
Emma DeLosAngeles
Angela Mercado
Tresa Ann O'Connor

Nashua Police Athletic League
Leah Nora Chauvin

Nashua Police Department
Ed Lecius

NH Dept. Health & Human Services
Adnela Alic
Rick Cricenti
Melissa Gravilla
Deborah LaFave
Darlene Morse
Carole Totzkay
Sandy Weld

NH HSEM
Fallon Reed

Rivier College
Sandra Harrington
Elizabeth Kilar
Susan Mika
Edlie Rivas
Danielle Spinhirn
Sarah Stauff
Kristen Tyler
Emily Veloso

Southern NH Medical Center
Mark Hastings

Southern NH Services
Amy Moutenot

St. Joseph Hospital
Fran Dupuis

St. Louis De Gonzague Parish
Carmen Dussault

2010 Nashua Community Health Survey Press Release

Contact: Ashley Conley & Debbie Daniels
City of Nashua
Division of Public Health & Community Services
18 Mulberry Street
Nashua, NH 03060
Phone: (603) 589-4560

PRESS RELEASE

Nashua will Conduct a City-Wide Health Survey

Nashua, NH: On October 23, 2010 the City of Nashua, Division of Public Health & Community Services will be conducting a city-wide Community Health Assessment. Volunteers will be administering the survey by visiting randomly selected households throughout Nashua from 10:00 AM to 4:30 PM. They will be carrying identification and wearing red vests.

This survey is part of a larger Community Health Assessment that the city is conducting. The goal of this assessment is to gain an understanding of the health concerns of the community by identifying, collecting and analyzing health information from the residents and organizations within Nashua. Survey questions include topics such as individual health, emergency preparedness and basic demographic information.

The Nashua Community Health Assessment Advisory Board is comprised of the City of Nashua and over 20 community organizations. "We believe that conducting a health assessment will help us to identify the existing and emerging health issues in Nashua. With this data, we can develop a Community Health Improvement Plan that will benefit all residents," says Dr. Debbie Daniels, Medical Director of the Nashua Division of Public Health & Community Services. Once the surveys are completed, the data will be compiled and analyzed by Division staff. A final report will be available in 2011 and will be used to guide programs within the city to improve the health and well-being of Nashua residents. For additional information contact the Division at 603-589-4560. The rain date is scheduled for Saturday, November 6th 2010.

###

2010 Nashua Community Health Survey Flyer

NASHUA PUBLIC HEALTH

Nashua's Community Health Assessment

Date: October 23rd 2010
Time: 10:00am to 4:30pm
Where: In your neighborhood!

Rain Date: November 6th 2010

The City of Nashua and over 20 community partner agencies want to know what you think about your health and the health of the city. Representatives will be coming door-to-door with a survey with a variety of health questions. The survey is voluntary and completely anonymous.

For more information, please contact the Division of Public Health & Community Services at 589-4560

2010 Community Health Survey

Hello, I am _____ and I am from the Nashua Health Department. We are doing a survey on the health of our City, and your household was randomly chosen to be a part of it. The survey will help us develop health programs and make Nashua a healthier place to live. The survey is voluntary and all the information you give us will be confidential and will not be linked to you in any way. It should take no longer than 20 minutes to complete.

Would you be willing to complete the survey?	**YES**	**NO**
Are you over 18yrs of age?	**YES**	**NO**
Do you live in Nashua?	**YES**	**NO**

If yes to all, start questionnaire.
If no to any, politely thank them and move to the next appropriate household.

Internal Use Only:	
Date:	10/23/2010
Names of Interviewers:	
Team #:	

In an emergency, dial 911.
Nashua Police Department: 594-3500
Headquarters: 589-xxxx

PART 1: Community Health

First, I am going to ask you some questions about the health of our community. Remember, the answers you give will not be linked to you in any way. You can choose not to answer a question if you feel uncomfortable.

Q1	**How would you rate the health of our community?** **(Read answers.)**	1 Very Healthy 2 Healthy 3 Somewhat healthy 4 Very unhealthy 98 Don't Know 99 Refused
Q2	**What one health issue would you fix in order to make Nashua a healthier place to live?**	Answer: 98 Don't Know 99 Refused

PART 2: Personal Health

Now, I am going to ask you some questions about your own personal health. Remember, you can choose not to answer a question if you feel uncomfortable.

Q3	**A routine checkup is a general physical exam, not an exam for a specific injury, illness or condition. About how long has it been since you last visited a doctor for a routine checkup?** **(Read answers.)**	1 Within the past year 2 Within past 2 years 3 Within past 5 years 4 5 or more years ago 5 Never xxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q4	**Do you have one person you think of as your personal doctor or healthcare provider?**	1 Yes 2 No 98 Don't Know 99 Refused
Q5	**In the past 12 months, how many times have you gone to an emergency room for your own health?**	____Number of times 98 Don't know 99 Refused
Q6	**Sometimes people have difficulties in getting medical care when they need it. During the past 12 months, was there any time when you needed medical care or surgery but did not get it?**	1 Yes **(go to Q7)** 2 No **(go to Q8)** 98 Don't Know **(go to Q8)** 99 Refused **(go to Q8)**

Q7	**The LAST time you did not get the care you needed, what was the MAIN reason you didn't get care?** **(Please check one answer. Give the card, read question, read answers.)**	1 Could not afford it 2 No insurance 3 Doctor did not accept Medicaid/insurance 4 Insurance didn't cover it 5 Not serious enough 6 Waiting too long in clinic/office 7 Difficulty in getting an appointment 8 Doesn't trust/like/believe doctors 9 No doctor available 10 Didn't know where to go 11 No way to get there 12 Hours not convenient 13 Speak a different language 14 Health of another family member xxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't know 99 Refused
Q8	**How long has it been since you had your teeth cleaned by a dentist or dental hygienist?** **(If necessary, read answers.)**	1 Within the past year 2 Within the past 2 years 3 Within the past 5 years 4 5 or more years ago 5 Never xxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q9	**During the past 12 months, was there a time when you needed dental care but could not get it at that time?**	1 Yes **(go to Q10)** 2 No **(go to Q11)** 98 Don't Know **(go to Q11)** 99 Refused **(go to Q11)**

Q10	**The last time you could not get the dental care you needed, what was the main reason you couldn't get care?** **(Please check one answer. Give the card, read question, read answers.)**	1 Could not afford it 2 No insurance 3 Dentist did not accept Medicaid/insurance 4 Not serious enough 5 Waiting too long in clinic/office 6 Difficulty in getting an appointment 7 Doesn't trust/like/believe doctors 8 No doctor available 9 Didn't know where to go 10 No way to get there 11 Hours not convenient 12 Speak a different language 13 Health of another family member 14 Other reason xxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't know 99 Refused
Q11	**If a friend or family member needed counseling for a mental health or a drug/alcohol abuse problem, who would you tell them to call or talk to?** **(Please check one answer. Give the card, read question, read answers.)**	1 Private counselor or therapist 2 Doctor 3 Support group (e.g. AA, Al-Anon) 4 Minister/religious official 5 School counselor 6 Greater Nashua Mental Health Center 7 Other xxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q12	**During a normal week, outside of your regular work, how many times do you exercise at least half an hour?** **(If needed, give the following examples: Walking, running, playing sports, weight lifting.)**	____Times **(If "0," go to Q13, otherwise go to Q14)** 98 Don't know **(go to Q14)** 99 Refused **(go to Q14)**

Q13	**What is the main reason you do not exercise for at least a half hour during a normal week?** **(Please check one answer. Give the card, read question, read answers.)**	1 Lack of time 2 Cost 3 Lack of convenient exercise facility 4 Lack of child care 5 Lack of sidewalks 6 Lack of motivation 7 Don't know where to go to exercise 8 Physical disability 9 I don't know how 10 Too tired 11 My job is physical/labor 12 Other xxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q14	**How many hours per day do you watch TV, play video games, or use the computer for recreation that is not work related?** **(Read answers.)**	1 0-1 hours 2 2-3 hours 3 4-5 hours 4 6+ hours xxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q15	**Not counting juice, think about how often you eat fruit. On average, how many cups of fruit do you eat every day? One apple equals one cup.**	___ Number of cups of fruit 97 Never eat fruit 98 Don't Know 99 Refused
Q16	**Not counting potato products, such as French fries or chips, think about how often you eat vegetables. On average, how many cups of vegetables do you eat every day? One large tomato equals one cup.** **(Note: Ketchup is not a vegetable)**	___Number of cups of vegetables 97 Never eat vegetables 98 Don't Know 99 Refused
Q17	**During the past 30 days, on how many days did you smoke cigarettes?**	1 0 days 2 1 or 2 days 3 3 to 5 days 4 6 to 9 days 5 10 to 19 days 6 20 to 29 days 7 All 30 days 98 Don't Know 99 Refused

Q18	**If a friend or family member wanted to quit, where would you tell them to go to get help?** **(Please check one answer. Give the card, read question, read answers.)**	1 NH Quitline 2 Doctor 3 Church 4 Pharmacy 5 Hospital 6 Private counselor/therapist 7 Health Department 8 Other xxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q19	**Has a doctor, nurse or other health professional EVER told you that you have any of the conditions I am about to read?**	A. Asthma 1 Yes 2 No B. Depression 1 Yes 2 No C. Anxiety disorder 1 Yes 2 No D. High blood pressure 1 Yes 2 No E. High cholesterol 1 Yes 2 No F. Diabetes (not during pregnancy) 1 Yes 2 No G. Heart attack 1 Yes 2 No H. Angina or coronary heart disease (also known as coronary artery disease) 1 Yes 2 No I. Overweight/Obesity 1 Yes 2 No 98 Don't Know 99 Refused

Q20	**Where do you get most of your health-related information?** **(Please check one answer. Give the card, read question, read answers.)**	1 Friends and family 2 Hospital 3 My child's school 4 Doctor/nurse 5 Pharmacist 6 Help lines 7 Church 8 Internet 9 Books/magazines 10 Health department 11 Other xxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q21	**Now I will ask you a question about seasonal flu. A flu vaccine can be a flu shot injected into your arm or a spray in the nose. Last year, did you get a seasonal flu vaccine?** **(Note: the nasal spray is called "FluMist". This question is not referring to the H1N1/swine flu/pandemic vaccine.)**	1 Yes 2 No 98 Don't Know 99 Refused

PART 3: Emergency Preparedness

Now I am going to ask you some questions about being prepared for emergencies and disasters.

Q22	**What would be your main method or way of getting information from authorities in a large-scale disaster or emergency?** **(Read answers.)**	1 Television 2 Radio 3 Internet 4 Print media (e.g. newspaper) 5 Neighbors 6 Other xxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q23	**If public authorities announced a mandatory evacuation from your community due to a large-scale disaster or emergency, would you evacuate?**	1 Yes 2 No 98 Don't Know 99 Refused

Q24	**If you had to evacuate from your home, where would you go?** **(Read answers.)**	1 Relative or friend's house 2 Hotel 3 Emergency Shelter 4 Other xxxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q25	**What would be the main reason you might not evacuate if asked to do so?** **(Please check one answer. Give the card, read question, read answers.)**	1 Lack of transportation 2 Lack of trust in public officials 3 Concern about leaving property behind 4 Concern about personal safety 5 Concern about leaving pets 6 Concern about traffic jams and inability to get out 7 Health problems 8 Other xxxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q26	**Do you have -** **(Note: Carbon monoxide (CO) detectors check the level of CO in your home. It is not a smoke detector.)**	A. A working smoke detector 1 Yes 2 No B. A working carbon monoxide detector 1 Yes 2 No C. A working fire extinguisher 1 Yes 2 No D. Adequate heating for the winter 1 Yes 2 No E. An alternate source of heat if the power goes out 1 Yes 2 No F. A working air conditioner or central air 1 Yes 2 No 98 Don't Know 99 Refused

PART 4: Demographic Questions

Next, we would like to ask you some general questions about you. Your answers will remain anonymous.

Q27	**What is your age?**	____Code age in years 98 Don't Know 99 Refused
Q28	**For this survey, may I ask, are you male or female?**	1 Male 2 Female 99 Refused
Q29	**Are you Hispanic or Latino?**	1 Yes 2 No 99 Refused
Q30	**Which one of the following would you say is your race?** **(Please check one answer. Give the card, read question, read answers.)**	1 Black or African American 2 American Indian or Alaskan Native 3 Asian 4 Native Hawaiian or Other Pacific Islander 5 White or Caucasian 6 Multiracial 7 Other xxxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q31	**What is the highest level of school, college or vocational training that you have finished?**	1 Less than 9th grade 2 9-12th grade, no diploma 3 High school graduate (or GED/equivalent) 4 Associate's Degree or Vocational Training 5 Some college (no degree) 6 Bachelor's degree 7 Graduate or professional degree 8 Other 98 Don't Know 99 Refused

Q32	**Is your annual household income from all sources –** **(Please check one answer. Give the card, read question, read answers.)**	1 Less than $10,000 2 $10,000 to $14,999 3 $15,000 to $24,999 4 $25,000 to $34,999 5 $35,000 to $49,999 6 $50,000 to $74,999 7 $75,000 to $99,999 8 $100,000 or more xxxxxxxxxxxxxxxxxxxxxxxxxxxxx 98 Don't Know 99 Refused
Q33	**How many people does this income support?**	____Number of people 98 Don't know 99 Refused
Q34	**Do you have working internet access in your household?**	1 Yes 2 No 98 Don't Know 99 Refused

That is the end of the survey! Thank you for your time, we appreciate your help in making Nashua a healthier place to live. Here is a packet of information you may find useful. Have a nice day!

Interviewer: Hand them the information packet. Remember to SMILE.

Appendix 3:
Focus Groups – Facilitated Discussions on Health

Source: City of Nashua, Division of Public Health and Community Services

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 (Table A3.1) and a second with medical providers (Table A3.2) were held in March 2011.

The first focus group was with 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. The second focus group was held on Monday, March 7, 2011 at St. Joseph Hospital with 18 medical providers from the City of Nashua. In total, the medical providers represented four disciplines – family medicine, obstetrics and gynecology, pediatrics and internal medicine – and 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, Inc.

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.

Table A3.1 Key Leader Focus Group Attendees

KEY LEADER	TITLE	AGENCY
Sanders Burnstein, MD	Medical Director	Dartmouth-Hitchcock (Nashua)
Danielle Fuller	Director, Human Resources	Gateways
Rolf Goodwin	Vice Chair, Board of Directors	United Way of Greater Nashua
Tracey Goyette, RN BSN	School Nurse	City of Nashua, Nashua School District
Donnalee Lozeau	Mayor	City of Nashua
Melinda Luther, RN	Professor, Nursing Department	Nashua Community College
Ann Peters	CEO	Lamprey Health Care – Nashua Center
David Ross	President & CEO	St. Joseph Hospital
Melissa Sears	Vice President, Strategy/Business Development	St. Joseph Hospital
Jason Smith	Executive Director	Courville at Nashua
Susan Stearns	Director, Development	Greater Nashua Mental Health Center of Community Council
Anthony Storace, DMD	Chairman	City of Nashua, Board of Health
Dedra Twomey	Business Manager	Greater Nashua Dental Connection
Ronald Vaillancourt	Director, Field Operations	Rockingham Regional Ambulance
Scott Westover	Vice President, Planning and Communication	Southern New Hampshire Medical Center
Tom Whilhelmsen	President & CEO	Southern New Hampshire Medical Center
Facilitator: Kathy Hersh, Nashua Community Development Division Director		

Table A3.2 Medical Provider Focus Group Attendees

MEDICAL PROVIDER	PRACTICE	AGENCY
Albee Budnitz, MD	Internal Medicine	Southern New Hampshire Medical Center
Mark Conway, MD	Obstetrics & Gynecology	St. Joseph Hospital
Rebecca Cooper Piela, APRN	Internal Medicine	Southern New Hampshire Medical Center
Leslie Dionne, MD	Internal Medicine	Dartmouth-Hitchcock
Rob Dorf, MD	Family Medicine	Southern New Hampshire Medical Center
Jack Faraci, MD	Obstetrics & Gynecology	St. Joseph Hospital
Larry Learner, MD	Pediatrics	Merrimack Valley Pediatrics
Donald Levi, MD	Pediatrics	St. Joseph Hospital
Louise Mermer, APRN	Pediatrics	St. Joseph Hospital
Dana O'Shea, MD	Internal Medicine	Harbor Care Clinic
Mary Peterson, PA	Internal Medicine	St. Joseph Hospital
Joanne Pomeranz, ARPN	Internal Medicine	Harbor Care Clinic
Donald Reape, MD	Internal Medicine	St. Joseph Hospital
Chris Riccio, MD	Internal Medicine/ Pediatrics	Southern New Hampshire Medical Center
Ajay Sharma, MD	Family Medicine	City of Nashua, Board of Health
Edward Scully, MD	Medical Director	Lamprey Health Care – Nashua Center
Jon Thyng, MD	Family Medicine	Dartmouth-Hitchcock
Barbara Watrous, CNM	Obstetrics & Gynecology	St. Joseph Hospital
Facilitator: Debbie Daniels, MD, MPH, Medical Director for DPHCS		

Key Leader Focus Group

Prior to the focus group, formal invitation packets were mailed to all the key leaders. Included in the packet was an official invitation letter from the Division of Public Health and Community Services (DPHCS) Director, a one-page pamphlet highlighting the major components of the overall assessment, and a brief survey to gather data on their views of Nashua's health and resources.

The focus group began with a welcome from the Mayor, followed by introductions of the DPHCS staff and focus group participants. The facilitator opened the session by providing an overview of the evening, reviewing the ground rules and asking the key leaders the first of five questions, "*What do you think are the three most important health issues in the Nashua community?"*

For this question, key leaders were given five minutes to record their answers on a sheet of paper. Once the brainstorming was complete, each person was asked to read their answers aloud. The assistant facilitator recorded each answer on a post-it on the wall. When all key leaders were done reading their answers, the assistant facilitator rearranged the post-its so that similar ones were grouped together. The facilitator then helped the key leaders name each of the grouped post-its under a broader category (e.g. preventative health, long term disease management).

Each participant was given five red dots to put on the major categories they considered to be most important in Nashua. The category with the most dots was chosen for further discussion using the following questions:

- Why is this a major health issue? What do you see in your daily work that makes you think this is an issue?
- What is the Nashua community currently doing to address this health issue?
- Are the resources we currently have adequate to address this health issue?
- What actions can we take as a community to address this group of issues?

The three CHA Division staff present during the session served as scribes and recorded participant responses with laptops and Adapx pens and paper. The assistant facilitator also recorded major responses on easels at the front of the room. At the end of the focus group, the assistant facilitator thanked the key leaders for their participation, reminded them to complete the quantitative survey, and explained the next steps in the CHA process. Evaluation forms were then administered to each participant.

Results

What do you think are the three most important health issues in the Nashua community?

According to the key leaders, the three major health issues affecting the Nashua community are:

- Unhealthy behaviors (with a specific concern around obesity),
- Access to health resources, and
- Mental health issues.

Other health topics expressed in the focus group were:

- Lack of a common understanding of what healthcare includes and failure to recognize other components (e. g. dental care) that contribute to overall health
- Transportation to health services for families with decreased access
- Child and elder abuse
- Substance abuse (including smoking)
- Safe and affordable housing

Why is this (unhealthy behaviors - obesity) a major health issue? What do you see in your daily work that makes you think this (unhealthy behaviors - obesity) is an issue?

Key leaders highlighted that unhealthy behaviors contribute to chronic disease, poor mental health and poor quality of life. Children were identified as vulnerable populations for several reasons. They are learning unhealthy eating habits at home and are experiencing health complications such as Type II diabetes as a result. One participant stated that some children have never eaten fruits and vegetables and can not recognize healthy foods. Another commented that during a specific event the kids present “[didn’t] know what a salad was and wouldn’t touch it”. Unhealthy behaviors have direct effects on the greater community - increased medical and insurance costs, loss of work hours and decreased work productivity among

employees. For these reasons, the participants felt that it is important for Nashua to tackle this issue sooner rather than later.

What is the Nashua community currently doing to address this (unhealthy behaviors - obesity) health issue?

The key leaders mentioned certain programs and opportunities currently available throughout the City organized to address the issues of unhealthy behaviors. Women, Infants and Children (WIC) provides coupons for low income families to shop at farmer's markets. The hospitals offer a variety of education and wellness programs and activities such as classes held within grocery stores to teach people how to shop for and cook healthy foods. Activities promoted by the 5-2-1-0 campaign allow for a common approach to issues of nutrition and physical activity. Some schools within the Nashua School District have used state grants to introduce salad, fruits and vegetables to schoolchildren which are especially important for children who may not receive such foods at home. Nashua's biking and walking trails, and parks such as Mines Falls were also identified as physical resources allowing residents the opportunity to engage in physical activity.

Are the resources we currently have adequate to address this (unhealthy behaviors – obesity) health issue?

The key leaders believe that Nashua has the necessary resources to address unhealthy behaviors, but one participant commented, "We're just not using them the right way". Another participant stated that "All the key stakeholders need to collaborate more effectively" because "greater coordination…will allow the resources to go further". They identified important human resources – college students, non-healthcare employers, restaurant owners and chefs, members of the religious community – that are important partners in creating energy around healthy eating and living. They identified physical resources such as schools and community health centers as places to reach and engage parents and other members of the public. However, any coordination and programming is going to need funding, as one participant asked, "Where is the money going to come from?" So they did acknowledge the important need for financial resources.

What actions can we take as a community to address this group of issues (unhealthy behaviors)?

When asked about action steps to address unhealthy behaviors and obesity, one participant said "education and awareness is critically important". Emphasizing the financial and social costs of eating poorly versus the benefits of eating well, must be properly communicated. Additionally, another participant verbalized the need to diversify the pool of those delivering these educational messages. Community resources and spaces such as schools, community kitchens, community gardens and farmer's markets can be tools in promoting the notion that cooking can be simple, fun and done on a limited budget. With the many cooking shows currently on television, "cooking has become cool" and it is important to capitalize on this energy according to one participant. Participants suggested creating a financial pool of resources to not only create but also sustain new initiatives and organizations working on obesity issues.

In summary, action steps around obesity should be focused on:

- Education and outreach
- Community partnership and programming
- Financial sustainability of health programs/organizations

At the end of the focus group, key leaders were eager to contribute to future efforts focused on addressing unhealthy behaviors in Nashua, such as the Community Health Improvement Plan.

Quantitative Survey for Key Leaders

Surveys were administered to all 16 key leader focus group participants. 12 out of 16 key leaders completed the survey (75% response rate). If a participant did not answer a question, or provided more than one answer, he/she was not included in the analysis of that question. Below is a copy of the survey with the data from each question inserted in each field.

How would you rate the health of the Nashua community? (Please circle) (N=12)	
Very Healthy	1 (8%)
Healthy	7 (58%)
Somewhat healthy	2 (17%)
Very unhealthy	1 (8%)
* No response	1 (8%)

What one health issue would you fix in order to make Nashua a healthier place to live? (N=8)

- Decrease Obesity
- Access to Mental Health Service
- Better access to preventive care for low income or no insurance citizens
- Promote healthier lifestyles
- Improve care coordination among all providers involved in care
- Reduce incidences of c-difficile, MRSA and VRE's
- Continued emphasis upon the whole person - not just physical health vs. mental health vs. substance abuse, etc.
- Nutrition/exercise

Please rate how well you think the Nashua community does the following? (Place a checkmark)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Promotes regular physical activity (n=12)	1 (8%)	6 (50%)	3 (25%)	2 (17%)	
Promotes healthy weight and good nutrition (n=12)	1 (8%)	4 (33%)	6 (50%)	1 (8%)	
Prevents childhood obesity (n=12)		5 (42%)	5 (42%)	2 (17%)	
Prevents and reduces tobacco use (n=10)	1 (10%)	4 (40%)	5 (50%)		
Prevents and reduces alcohol use (n=12)		6 (50%)	6 (50%)		
Prevents and reduces drug use (n=11)		6 (55%)	5 (45%)		
Promotes mental health and well-being (n=11)		6 (55%)	5 (45%)		
Promotes healthy environments (n=11)	1 (9%)	9 (82%)		1 (9%)	
Makes available quality health care (n=11)	6 (55%)	4 (36%)	1(9%)		
Makes available quality dental care	1 (8%)	9 (75%)	1 (8%)	1 (8%)	

(n=12)					
Provides access to transportation for health care and resources throughout the community (n=12)	2 (17%)	5 (42%)	4 (33%)	1 (8%)	
Provides interpretation services for non-English speakers (n=12)	3 (25%)	5 (42%)	4 (33%)		

According to the survey, more than 50% of the key leaders that participated in the focus group believe that Nashua is a healthy city. A majority of the participants agree that Nashua promotes regular physical activity (50%), promotes mental health and well-being (55%) and promotes healthy environments (82%). Responses from the focus group indicate that the key leaders are invested in increasing efforts to create an even healthier Nashua.

Medical Provider Focus Group

Prior to the medical provider focus group, hospital administrators from each of the medical sites were contacted to help organize a group of medical providers. Some providers were also contacted directly. Confirmatory emails were sent to all participants prior to the meeting. The medical provider focus group was facilitated similarly to the key leader focus group with a few adjustments. The first question the medical providers were asked was, *"In your Nashua clinical practice, what are the three most important health issues you encounter?"*

For this question, the facilitator provided participants with three post-its and asked each of them to write one health issue per post-it. They were also instructed to write an "O", "P", "A" or "other" on the post-it to specify the category to which the health issue belonged - obstetrics, pediatrics, adult or other respectively. Going around the room, the participants stated and explained each of their three health issues. The facilitator collected the post-its after each provider and placed them into the four categories as denoted. After all the participants offered their answers, the facilitator approached each respective category and grouped similar post-its together, ensuring that the participants agreed with the groupings. The providers agreed that obesity was the most important health issue. Therefore, the facilitator led a discussion about obesity with the following questions:

- Why is this a major health issue?
- Are the resources necessary to deal with this health issue available? If so, what resources are available? If not, why not?
- What additional resources within your practice or in the community could be provided to better address this health issue?

Three scribes were present to record participant responses. At the end of the session, the participants were thanked, reminded to complete the surveys and asked to fill out evaluation forms.

Results

In your Nashua clinical practice, what are the three most important health issues you encounter?

The focus groups allowed the medical providers to discuss some of the health issues they confront on a daily basis in their practices. From their perspective, the three major health issues affecting their patients are:

- Obesity,
- Mental health, and
- Substance abuse.

Other health topics that were brainstormed in the focus group were:

- Diabetes and other chronic illnesses,
- Asthma and respiratory issues,
- Tobacco and substance use,
- Lack of health insurance, and
- Uncoordinated care among providers/lack of professional communication and information sharing.

Why is this (obesity) a major health issue?

Similar to the key leaders, the medical providers named obesity as the major health issue affecting the Nashua community. Obesity leads to life-threatening issues, leads to poor school performance in children and can lead to mental health issues. One provider commented that "people overeat as a means of self-medicating for emotional issues". Participants did recognize some of the challenges that influence healthy living – high costs of healthy foods, busy work schedules that prevent healthy food preparation at home and unsafe neighborhoods that prevent outside physical activity. But they also emphasized society's role in promoting obesity – the media's role in marketing unhealthy foods and distorting nutritional information, big portion sizes at restaurants and emphasis on what not to eat, rather than what to eat.

Are the resources necessary to deal with this health issue (obesity) available? If so, what resources are available? If not, why not?

One participant felt that the "resources are inadequate to combat constant bombardment from commercials" while another participant said that the resources are available but "fragmented". Another participant commented that there is so much information available to people, "but people don't seem to be motivated to change". One provider commented that schools can be good resources to reach children and teach them basic education about nutrition. However, some providers felt that because schools are underfunded there will be a focus on serving foods that kids will eat, which may not always be healthy.

The participants touched on some clinical issues that impede proper management of obesity issues. It was said that some providers do not acknowledge obesity in their patients and that there are still significant issues in how providers document obesity. One provider commented that they have such limited face time with patients during an office visit that they must prioritize which issues to address and unfortunately, not all of the patient's health issues are properly addressed.

What additional resources within your practice or in the community could be provided to better address this health issue (obesity)?

The providers felt strongly about countering the negative messages present in society that encourage unhealthy behavior. It was suggested that physicians improve their delivery of key health messages to their patients so that the messages are understandable but not oversimplified. Messaging should be directed towards adults and parents so they understand the health care costs associated with unhealthy eating and so they come to recognize their responsibility in ensuring not only their health but also the health of their children. Motivational interviewing was said to be an effective tool in not only talking with people about healthy alternatives but also in supporting and encouraging them to make healthy choices. Ideas to explore audio-visual capabilities, interactive media, and public service announcements to reach the public were also discussed.

Because time is such a crucial resource when meeting with patients, one provider noted the importance of scheduling more frequent follow-up visits with patients so they are up-to-date with the patient's health status and progress.

Overall, the providers recognize that there needs to be a "coordinated approach" to deal with the issue of obesity. As one provider said, "it's got to be more than doctors in medicine…it's got to be community based, school based".

In summary, action steps around obesity should be focused on:

- Positive health messaging
- Adult education on healthy behaviors
- More frequent patient follow-ups

Quantitative Survey for Medical Providers

1. What is your specialty?		
	Family Practice	**28% (5)**
	Obstetrics & Gynecology	**17% (3)**
	Internal Medicine	**33% (6)**
	Pediatrics	**17% (3)**
	Internal Medicine/Pediatrician	**6% (1)**
2. How many years have you practiced in Nashua? _____		
3. In your Nashua practice, what three health concerns do you encounter most frequently in your patients? Please rank them from most to least frequent, A being most.		
1. Nutrition, Obesity and Physical Activity 2. Mental Health 3. Chronic Conditions		
4. Do you participate in the NH Health Alert Network (HAN) through e-mails from the NH Division of Public Health Services? Circle one. (N=17)	**YES 67%**	**NO 28%**
5. Do you feel that you have been made sufficiently aware of public health concerns in Nashua through the City or State Divisions of Public Health? (N=18)	**YES 83%**	**NO 17%**

6. Please rate whether the following health problems are a significant concern in your Nashua practice. Place an 'X' in the corresponding box.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Asthma (n=16)					
Diabetes (n=17)					
Hypertension (n=17)					
High cholesterol (n=17)					
Coronary artery disease (n=17)					
Mental health issues (n=17)					
Obesity (n=17)	*Most rated among all practices				
Low birth weight (n=13)					
Tobacco use (n=17)					
Alcohol use (n=17)					
Drug use (n=17)					
Lack of preventive care (n=17)					
Lack of regular exercise (n=17)					
Lack of proper nutrition (n=17)					
Lack of health insurance (n=17)					
Lack of interpretation services (n=17)					*Least rated among all practices

7. What one health issue would you fix in order to make Nashua a healthier place to live? (n=10)

- Obesity and lack of exercise
- More mental health services
- Motivate patients to assume personal responsibility for healthy lifestyle choices
- Better access to mental health providers
- Mental health services for low income women with access and communication with other providers
- Better care coordination/collaboration between various sections of health care providers
- Community/teaching resources for diabetes/obesity
- More fitness program - schools; more walking to school when possible
- G-M-N (obesity, lack of regular exercise, lack of proper nutrition) can't separate them
- Obesity

Similar to their answers during the focus group, when asked what health concern do they most frequently encounter in their patients, providers responded that it was some issue related to obesity, nutrition or physical activity. The second most frequent health concern encountered was related to mental health and the third was chronic disease. When looking closely within practices, the answer to question three varied. For example, obesity was ranked the most

frequent health concern observed among family practitioners and pediatricians. For OBGYNs it was women's health issues and for internal medicine practitioners it was chronic diseases.

Regardless of specialty, obesity was chosen as the most significant concern for all practices in question six. In addition to obesity, family practitioners strongly agreed that chronic disease (diabetes, hypertension, high cholesterol) and tobacco use were issues of specific concern. OBGYNs and pediatricians strongly agreed that lack of exercise and nutrition were issues of concern. All practices strongly disagreed that the lack of interpretation services was a significant concern.

"It's got to be more than doctors in medicine…it's got to be community based, school based".

- Medical Provider Focus Group

Source: Alexis Abbott, Nashua High School Photography Project

Appendix 4: Acronyms

Source: Chris Franzini, Nashua High School Photography Project

2010 NCHS	Nashua Community Health Survey
AIDS	Acquired Immune Deficiency Syndrome
APNCU	Adequacy of Prenatal Care Utilization Index
BRFSS	Behavioral Risk Factor Surveillance System
BMI	Body Mass Index
CDC	Centers for Disease Control and Prevention
CHA	Community Health Assessment
CHIP	Community Health Improvement Plan (Introduction)
CHIP	Children's Health Insurance Program (Chapter 2)
CI	Confidence Interval
DES	Department of Environmental Services
DHHS	Department of Health and Human Services
DPHCS	Division of Public Health and Community Services
DUI	Driving Under the Influence
DWI	Driving While Intoxicated
FEMA	Federal Emergency Management Agency
GNPHR	Greater Nashua Public Health Region
HCC	Harbor Care Clinic, a program of Harbor Homes, Inc
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
HP2020	Healthy People 2020
LHC	Lamprey Healthcare – Nashua Center
MSM	Men who have sex with men
NAMI	National Alliance on Mental Illness
NCHS	National Center for Health Statistics
NHHK	NH Healthy Kids

NIDA	National Institute on Drugs and Alcohol
NH	New Hampshire
PCP	Primary Care Provider
PNC	Pre-natal Care
SAMHSA	Substance Abuse and Mental Health Services Administration
SCHIP	State Children's Health Insurance Program
STD	Sexually Transmitted Disease
TB	Tuberculosis
USDA	United States Department of Agriculture
WIC	Women, Infant and Children
YRBS	Youth Risk Behavioral System

Appendix 5:
Nashua High School
Photography Project

Source: Eddie Sullivan, Nashua High School North

Purpose

The Community Health Assessment focuses on the needs and health concerns of the Nashua community. To enhance the visual components of the report while adding a personal touch from community, the Division of Public Health and Community Services partnered with teachers from Nashua High School North and Nashua High School South. Their photography students were asked to take pictures of what they considered to be public health and healthy and unhealthy items or behaviors within the community. The students submitted their pictures for the Nashua Community Health Assessment and are displayed throughout the report. The collaboration was a success and created a partnership for future endeavors and allowed students to express their creative talents for a city-wide initiative. The students were able to gain insight into the field of public health and provide a service to the community. The students that participated in the project received a Certificate of Appreciation and are acknowledged below.

Nashua High School North

Teacher:
Erin Knoetig

Students:
Emily Bedard
Alexa Brouillard
Hailey Butler
Amanda Clarke
Morgan Delapena
Chris Franzini
Chris Gollihue
Emerald Hardiman
Sylvia Lund
Danielle Sicurella
Eddie Sullivan
Eden Tomaszewski

Nashua High School South

Teacher:
Angela Walsh

Students:
Alexis Abbott
Mary Barnovsky
Carolyn Deibert
Zach Roberge
Shauna Vautier

Nashua High School North

Erin Knoetig, Teacher
Photography I Class

Alexa Brouillard

Chris Franzini

Amanda Clarke

Danielle Sicurella

Chris Gollihue

Eddie Sullivan

Emily Bedard

Morgan Delapena

Sylvia Lund

Emerald Hardiman

Eden Tomaszewski

Hailey Butler

Nashua High School South

Angela Walsh, Teacher
Photography II Class

Mary Barnovsky

Carolyn Deibert

Shauna Vautier

Zach Roberge

Alexis Abbott