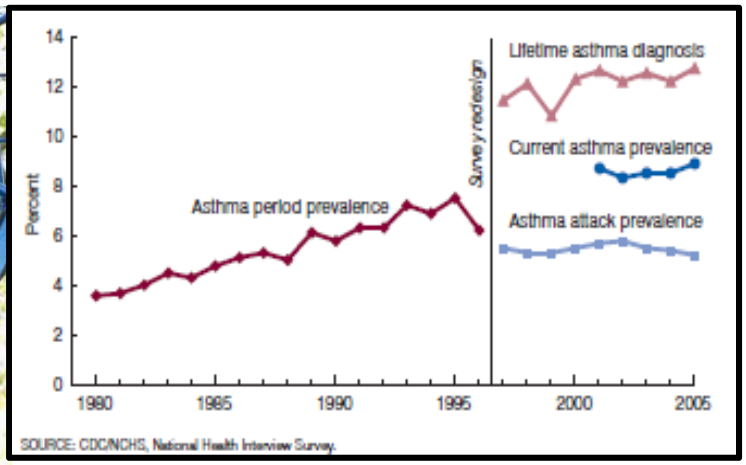
Using Health Data to Highlight Milestones: A Cookbook for Non-profit Program Managers



Top Cause of Unintentional Injury Deaths by Age Group, United States, 2007

Age	Cause of Death	Number of Deaths
Under 1 year	Suffocation	959 deaths
1–4 years	Drowning	458 deaths
35–54 years	Poisoning	16,581 deaths
65+ years	Fall	18,334 deaths

National Vital Statistics System, 2007.

Acknowledgments

The Centers for Disease Control and Prevention's (CDC) Healthy Homes and Lead Poisoning Prevention Branch recognizes the following individuals for their dedication and commitment to preparing this document.

Grant T. Baldwin, PhD, MPH
Director, Division of Unintentional Injury Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Joseph Ralph, MPH, CHES
LCDR. US Public Health Service
Public Health Advisor
Health Homes and Lead Poisoning Prevention Branch
National Center for Environmental Health
Centers for Disease Control and Prevention

Tina Sang, MPH, MSW
Public Health Prevention Service Fellow
Division of Leadership and Practice
Scientific Education and Professional Development Program Office
Centers for Disease Control and Prevention

Contributors

Using Health Data to Highlight Milestones: A Cookbook for Non-profit Program Managers was developed in collaboration with the Centers for Disease Control and Prevention, the Atlanta Regional Commission, the Center for Working Families Inc., the Georgia Department of Public Health, the Fulton County Department of Health and Wellness, and the Coalition to End Childhood Lead Poisoning. In addition, CDC's Healthy Homes and Lead Poisoning Prevention Branch recognizes the following individuals who contributed subject-matter expertise:

Stephen Babb, MPH
Public Health Analyst
Office on Smoking and Health
National Center for Chronic Disease Prevention and Health Promotion
Centers for Disease Control and Prevention

Mary Jean Brown ScD, RN
Chief, Healthy Homes and Lead Poisoning Prevention Branch
National Center for Environmental Health
Centers for Disease Control and Prevention

Michael Carnathan, MPA
Principal Researcher
Atlanta Regional Commission

Vietdoan Cheng, MPH
Epidemiologist
Epidemiology Program
Chronic Disease, Healthy Behaviors, and Injury Epidemiology Section
Division of Health Protection
Georgia Department of Public Health

Gerald B. Curtis, BA
GIS Consultant to the Healthy Homes and Lead Poisoning Prevention Branch
McKing Consulting Corporation

Rose Glass-Pue, MA
Public Health Advisor
Health Homes and Lead Poisoning Prevention Branch
National Center for Environmental Health
Centers for Disease Control and Prevention

Samantha Harrykissoon, JD, MPH
Public Health Analyst (Policy)
Office of the Director
Office of the Associate Director for Policy
Centers for Disease Control and Prevention

Christopher D. Jones, PhD
Health Scientist
Division of Injury Response
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Priti Kolhe, MSHA
Epidemiologist
Fulton County Department of Health & Wellness

Karin Mack, PhD
Senior Behavioral Scientist
Division of Unintentional Injury Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Michael McKnight, BA
Senior Project Officer
Green & Healthy Homes Initiative
Coalition to End Childhood Lead Poisoning

Michele M. Mercier, MPH
Advisor, Public Health Prevention Service
Scientific Education and Professional Development Program Office
Division of Leadership and Practice
Centers for Disease Control and Prevention

Elizabeth W. Sirk, MPA, EMT-I
Projects Director
The Center for Working Families, Inc.

Forrest Staley, MUP, MCPH
Program Director
Georgia Lead Hazard Control Program
Georgia Department of Public Health

Judy A. Stevens, PhD
Epidemiologist
Division of Unintentional Injury Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Marissa Scalia Sucosky, MPH
Epidemiologist
Healthy Homes and Lead Poisoning Prevention Branch
National Center for Environmental Health
Centers for Disease Control and Prevention

Nikki Walker, MPH
Public Health Analyst
Health Homes and Lead Poisoning Prevention Branch
National Center for Environmental Health
Centers for Disease Control and Prevention

Paige Welch, BA
Public Health Advisor
Air Pollution and Respiratory Health Branch
National Center for Environmental Health
Centers for Disease Control and Prevention

LaToria Whitehead, PhD, MPH
Public Health Advisor
Health Homes and Lead Poisoning Prevention Branch
National Center for Environmental Health
Centers for Disease Control and Prevention

Fuyuen Yip, PhD, MPH
LCDR, US Public Health Service
Team Lead, Air Pollution and Asthma Epidemiology Team
Air Pollution and Respiratory Health Branch
Division of Environmental Hazards and Health Effects
National Center for Environmental Health
Centers for Disease Control and Prevention

Table of Contents

Preface

Increasingly, public sector and non-profit programs are expected to demonstrate that the services they provide work. In the area of healthy homes, that means that funders and program participants are interested in knowing whether program interventions will result in measurable improvements in health and well-being. Programs that use data to design, implement, and evaluate their interventions and to present the effectiveness of their work in reducing lead poisoning, asthma, or home injuries are much more likely to be successful in the highly competitive world of grant writing.

We have called this document a “cookbook” in order to highlight its hands-on nature. Although programs in Georgia are used throughout as examples, the datasets described here are available in most states and local areas, and they are often accessible on the Internet. The techniques for data analysis and comparison are straightforward, not only making them easy to use but also providing useful data that can be understood by all stakeholders.

Mary Jean Brown ScD, RN
Chief, Healthy Homes, Lead Poisoning Prevention Branch
Centers for Disease Control and Prevention
Atlanta, GA

Purpose

Budget cuts at all levels of government and decreased funding from foundations are reducing the programs and social services offered by non-profit organizations. In today's competitive grant-writing climate, data-driven demonstration of need can help your non-profit make a stronger argument for the importance of continuing/expanding services to the populations served by your organization.

This cookbook was created to introduce program managers and grant writers to available data sources on the housing-related health conditions of lead poisoning, asthma, and unintentional home injuries and to provide guidance on how to use these data to highlight milestones and successes.

The cookbook presents national, Georgia, Fulton County, Atlanta, and Atlanta Neighborhood Planning Unit-V (NPU-V)-level data as examples of comparisons of morbidity and mortality across the different geographic areas. However, most of the datasets described here are available in other areas of the country. Information in this cookbook about which organizations collect and analyze health data, along with the key staff members at those organizations, is intended to help program managers build relationships for data-sharing, learn from best practices, and develop referral networks.

This cookbook also describes surveillance systems for elevated blood lead, asthma, and home injuries; the description can assist program managers in creating evaluation plans for their organizations' green and healthy homes interventions. Lastly, this cookbook discusses the overlapping risk factors that result in health disparities related to housing.

The Healthy Homes and Lead Poisoning Prevention Branch

The Centers for Disease Control and Prevention's (CDC) Childhood Lead Poisoning Prevention Program (CLPPP) was created by the Lead Contamination Control Act of 1988 to initiate program efforts to eliminate childhood lead poisoning in the United States. The primary responsibilities are stated as follows:

- Develop programs and policies to prevent childhood lead poisoning.
- Educate the public and health-care providers about childhood lead poisoning.
- Provide funding to state and local health departments to determine the extent of childhood lead poisoning by screening children for elevated blood lead levels, helping to ensure that lead-poisoned infants and children receive medical and environmental follow-up, and develop neighborhood-based efforts to prevent childhood lead poisoning.
- Support research to determine the effectiveness of prevention efforts at federal, state, and local levels.

In 2009, the CDC's Childhood Lead Poisoning Prevention Program recognized the need to address housing-related issues by use of a more comprehensive approach, and the program transitioned to the Healthy Homes and Lead Poisoning Prevention Program (HHLPPP). This name change reflects the program's new direction of implementing healthy homes initiatives that reduce or eliminate housing-related health hazards and promote housing that is healthy, safe, affordable, and accessible. In 2011, the HHLPPP funded 35 states to:

- Build a consortium of strategic partners to address unsafe and/or unhealthy housing conditions.
- Assure that follow-up care is provided for high-risk populations who are identified with housing-related health issues.
- Develop a surveillance system that monitors blood lead levels, environmental test results, and healthy housing variables.
- Develop a regulatory structure and enforcement process to prevent or control housing-related environmental health hazards.

Childhood Lead Poisoning

Background

Lead is a neurotoxic chemical that is harmful to all individuals. No safe blood lead threshold in children has been established. The adverse health impacts of lead are particularly damaging to the nervous systems of developing fetuses and young children. Exposure to lead causes harm to children even at levels once thought "safe." Such exposure results in IQ reduction, learning impairment, and behavioral problems. Reduction in IQ has negative social ramifications for children with elevated blood lead levels and society at large. These problems relate to school attendance, workforce participation, wage earnings, and worker productivity [1]. Lead poisoning is a serious health problem that can affect entire generations of American children. Because of the consequences, it robs society of our future leaders.

Lead Paint

In the United States, the primary source of childhood lead exposure is lead-based paint and paint dust. Paint manufacturers began phasing out lead in paint in the 1950s, but lead was not banned in residential paints in the United States until 1978. Older homes are more likely to contain lead paint. Lead paint chips and dust can contaminate a home and be ingested by children when the paint is deteriorated or when home renovation projects occur [2].

Diagnosis through Blood Lead Testing

Overt clinical symptoms of lead poisoning, such as abdominal pain, headaches, and low appetite, are rare at blood lead levels of less than 70 µg/dL [3]. For this reason, blood lead testing is necessary to identify asymptomatic children with elevated blood lead levels [3]. Blood lead testing/screening can be conducted in two ways: through a capillary test, also known as a finger stick, or through a venous test (blood is drawn directly from a vein.) Elevated blood lead levels identified through a capillary test are usually confirmed through a venous test. CDC currently defines child blood lead levels of greater than or equal to 5 µg/dL as elevated [4].

Risk Groups for Lead Poisoning

Children under six years of age are highly susceptible to lead poisoning because their hand-to-mouth behaviors provide a route of ingestion for lead from the environment. In addition, since young children's nervous systems are still developing, exposure to lead results in long-term negative health and social consequences.

A study of trends in blood lead levels among US children from 1988–2004, using CDC's National Health and Nutrition Examination Survey (NHANES) data, revealed additional risk groups for lead poisoning, namely non-Hispanic blacks, low-income individuals, Medicaid recipients, and residents of pre-1950 housing [3].

CDC [5] identifies the following as high-risk groups of children who should be screened for elevated blood lead:

- Residents of pre-1978 housing, and especially residents of pre-1950 housing
- The poor
- Members of racial/ethnic minority groups, including non-Hispanic blacks and some groups of Hispanic and Asian Americans
- Those with occupationally exposed parents
- Medicaid recipients

National Housing Data

An estimated 38 million housing units have lead-based paint. Twenty-five percent of the nation's housing units (24 million) have significant lead hazards, such as deteriorated paint or lead dust. 1.2 million of these housing units are homes of low-income families (less than $30,000 per year) with children under 6 years old [6].

Age of Housing

The US Census Bureau's American Housing Survey (AHS) collects national data on such housing characteristics as age of housing; structural problems; electrical, sanitation, and heating facilities; as well as residents' overall opinion of their housing [7]. Results from the American Housing Survey are available for odd-numbered years, with the latest data available online for year 2009 at http://www.census.gov/hhes/www/housing/ahs/ahs.html. The AHS also collects housing information for select cities and their surrounding counties. The most current AHS results for the Atlanta Metropolitan Statistical Area are for 2004 http://www.census.gov/hhes/www/housing/ahs/ahs04alt/atlanta/atlantaahs 04alt.html.

Table 1: Age of housing, United States

Total Housing Units	Pre-1950	Pre-1980	% Pre-1950	% Pre-1980
130,112,000	28,184,000	81,466,000	21.66%	62.61%

Source: [7].

National Trends in Blood Lead Levels

The National Health and Nutrition Examination Survey (NHANES) is a study of health and nutritional status of adults and children in the United States conducted by the Centers for Disease Control and Prevention. The survey combines interviews and physical examinations of a nationally representative sample of individuals. NHANES data reveal that there has been a steady decline in elevated blood lead levels among American children 1 to 5 years old.

Though the prevalence of elevated blood lead levels has declined, even among high-risk children, disparities still exist between groups of children. According to NHANES 1999–2004

data, the average blood lead level of Non-Hispanic black children is 2.8 µg/dL while Non-Hispanic white children have an average blood lead level of 1.7 µg/dL. 3.3% of children residing in pre-1950s housing have blood lead levels of greater than or equal to 10 µg/dL compared to 0.4% of children who live in homes built in 1978 and later. 1.8% of children who are low-income have elevated blood lead, while 0.8% of middle to high-income children have such levels [3].

Table 2: Trend of declining prevalence of elevated blood lead levels of ≥ 10 µg/dL

- 1988–1991: 8.6% of American children
- 1991–1994: 4.4%
- 1999–2004: 1.4%

Source: [3].

Georgia, Fulton County, Atlanta, and Neighborhood Planning Unit-V (NPU-V) Data

Age of housing on the state and local level can be obtained from the US Census.

Table 3: Age of housing, Georgia, Fulton County, NPU-V

Location	Total Housing Units	Pre-1950	Pre-1980	% Pre-1950	% Pre-1980
Georgia[1]	3,006,369	299,840	1,492,175	9.97%	49.63%
Fulton[1]	321,242	49,264	190,775	15.34%	59.39%
NPU-V [2]	5,337	1,877	4,566	35.17%	85.56%

Source: [1][8]; [2][9].

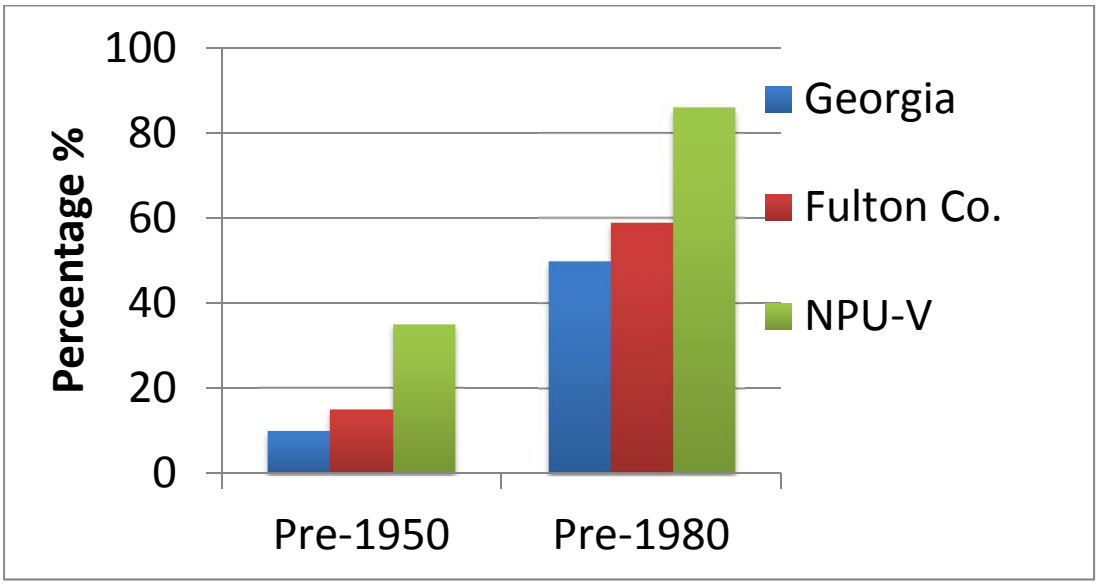
Table 4: Age of housing, Atlanta

Location	Total Housing Units	Pre-1950	Pre-1978	% Pre-1950	% Pre-1978
Atlanta	186,998	51,399	148,917	27.49%	79.64%

Source: [9].

The following bar graph is a visual representation of data from Table 4 above. The data show that NPU-V has a greater percentage of both pre-1950 and pre-1980 housing than either Fulton County or the state of Georgia.

Figure A: Percentage of total housing units by age and location



Source: [8,9].

Blood Lead Testing in Georgia

Most blood lead testing in Georgia is performed by private physicians during physical exams or well-child visits. A smaller number of tests may be done at county or district health departments or WIC programs. According to a federal requirement, all children enrolled in Medicaid are to be screened at approximately 12 and 24 months of age [2].

The Blood Lead Screening Guidelines for Georgia established in 2004 by the Georgia Department of Community Health's CLPPP [10] are as follows:

- All high-risk children should be screened at 12 and 24 months of age
- High-risk children in Georgia between ages 36 months and 72 months who have not had previous testing must receive a blood lead test

High-risk children are defined as:

- Medicaid or PeachCare for Kids-eligible children
- WIC-eligible children

- Children adopted from outside the United States
- Children whose parent answered "yes" or "don't know" on verbal lead risk assessment questionnaire
- Children with parent employed in certain occupations or with hobbies in which they come into contact with lead
- Children residing in 12 high-risk counties, including Fulton County

For more information on Georgia's Blood Lead Screening Guidelines, please visit http://health.state.ga.us/programs/lead/screeningtypes.asp.

Surveillance

Laboratories send all blood lead test results electronically to GA DCH's CLPPP. As of March 2009, all blood lead levels must be reported within 7 days. Elevated blood lead results of greater than or equal to 10 µg/dL are faxed to CLPPP daily from labs in order to expedite follow-up with patients. The addresses of those screened for lead and those who test positive for elevated blood lead are geocoded by the Georgia Department of Public Health's GA CLPPP to determine the geographical distribution of screening and elevated blood lead levels [9].

Case Management

Lead case management begins with confirmed elevated blood lead level of greater than or equal to 10 µg/dL. Regional lead coordinators from health district offices inspect a child's housing for lead hazards when the child's blood lead level is greater than or equal to 10 µg/dL. Case management includes the following [10]:

- Clinical evaluation for complications of lead poisoning
- Family lead education and referrals
- Chelation therapy, if appropriate
- Follow-up testing

Case management of those with elevated blood lead levels is conducted by the Georgia Department of Public Health's CLPPP, by health care management organizations, by regional lead coordinators, and by private physicians through close communication and cooperation [9].

Data Notes [11]

- A child can be screened only once initially within a specified period of time. All other tests are confirmatory and/or follow-up tests. Elevated blood lead data are based on the highest test result (capillary or venous) within that period of time
- The listed age is the child's age when the blood specimen with the highest test result was collected
- The data represent all records reported to the GA CLPPP during the year.
- The listed county is the county of residence of the child at the time of screening

- Data are updated annually and posted on the GA CLPPP Web site in November or December

Blood Lead Data for Georgia

2009 saw a large increase in the number of children screened because that was the year lead screening was included in measures of the Healthcare Effectiveness Data and Information Set (HEDIS). HEDIS acts like a report card for health care management organizations and health care providers. For 2009, a similar jump in screenings can be seen in the following tables of Fulton County, Atlanta, and NPU-V data.

Table 5: Number of children less than 6 years old screened and those with elevated blood lead levels (EBLL) by year, Georgia

Year	Total Number Screened	10–19 µg/dL	≥ 20 µg/dL
2005	72,320	773	145
2006	65,366	692	141
2007	64,059	544	104
2008	72,286	526	124
2009	123,253	834	164
TOTAL	397,284	3,369	678

Source: [12].

Blood Lead Data for Fulton County

Table 6: Number of children less than 6 years old screened and those with EBLL by year, Fulton County, Georgia

Year	Total Number Screened	10–19 µg/dL	≥ 20 µg/dL
2005	8,336	69	19
2006	7,589	54	8
2007	6,095	30	7
2008	8,111	60	7
2009	15,091	64	18
TOTAL	45,222	277	59

Source: [12].

Blood Lead Data for Atlanta

Table 7: Number of children less than 6 years old screened and those with EBLL by year, Atlanta, Georgia

Year	Total Number Screened	10–19 µg/dL	≥ 20 µg/dL
2005	5,940	53	18
2006	5,262	41	8
2007	4,671	20	4
2008	7,331	46	10
2009	11,394	51	12
TOTAL	34,598	211	52

Source: [9].

Blood Lead Data for NPU-V

Table 8: Number of children less than 6 years old screened and those with EBLL by year, NPU-V

Year	Total Number Screened	≥ 10 µg/dL
2005	120	0
2006	109	1
2007	82	0
2008	168	0
2009	288	4
TOTAL	767	5

Source: [9].

Over the past five years, there have been only a handful of children in NPU-V with confirmed elevated blood lead. However, this is most likely an underestimation of the true number of NPU-V children with elevated blood lead because there is an inadequate amount of screening in this geographic area.

NPU-V contains proportionally more pre-1980 housing than Fulton County or the state of Georgia, with a resultant increase in children's exposure to lead paint. A study of blood lead testing in Atlanta showed a lack of correlation between testing and the risk factor of older housing [13], a reflection of inadequate screening.

A second factor is that the federal requirement to screen all Medicaid children for lead at 12 and 24 months of age is not comprehensively being met in Georgia [2]. Since these insured children

are not being screened at the adequate level, it can be concluded that children without health insurance are even less likely to receive a blood lead test. The Atlanta Community Access Coalition states that between 55–66% of children in the three zip codes related to NPU-V are uninsured [14]. Children in Georgia are usually tested for lead by their primary care physicians. Those without health insurance have less access to primary care and thus are less likely to receive blood lead testing.

Finally, the Centers for Disease Control and Prevention [5] recommends targeted screening of high-risk children, namely those who live in older housing, are poor, are members of racial/ethnic minorities, recent immigrants, children newly adopted from oversees and refugees and have occupationally exposed parents. Children in NPU-V are considered high-risk by this CDC definition, and therefore all NPU-V children should be screened for lead in order to provide a means of understanding the true number of young people in these neighborhoods with elevated blood lead levels and to reduce their lead exposure.

Other Data Sources to Explore

In addition to exploring the age of housing, the number of children screened for blood lead, and the number of children who tested positive for elevated blood lead, those interested in learning more about blood levels should consider exploring these other data sources:

- Atlanta City Office of Code Compliance: Code violations for lead hazards and housing conditions related to chipping and peeling paint

- GA DCH CLPPP:
  - Location of properties in which multiple people have encountered elevated blood lead levels
  - Blood lead screening of pregnant women
  - Blood lead screening rate for NPU-V children = Number of NPU-V children screened for lead in a given year divided by number of NPU-V children enrolled in Medicaid during that year. By using the number of Medicaid children as the denominator of this proportion, this calculation will provide a good estimate of the screening rate based on the idea that all Medicaid children should be screened for lead. An alternative method of calculating the screening rate is to use the number of Medicaid-eligible children in NPU-V as the denominator. This number can be obtained by using census data on household income.

Demonstrating Need in NPU-V

The population of NPU-V is similar to the distribution of high-risk groups for elevated blood lead, as demonstrated by data from NHANES, CDC, and the Georgia Department of Community Health's Childhood Lead Poisoning Prevention Program. If blood lead data is available only at the state or county level, the Center for Working Families can demonstrate that NPU-V would most likely have a higher proportion of individuals with elevated blood lead levels, for a larger

percentage of NPU-V residents belong to high-risk groups than do other residents of Georgia or Fulton County. US census data can be used to compare the proportions of children, African Americans, low-income individuals, and residents of older housing across different geographic areas. The census tracts that correspond to NPU-V are Georgia → Fulton County → Census tracts: 44, 46, 48, 49, 55.01, 56, 57, 58, and 63. A similar process of gathering census information on risk groups who reside in NPU-V can be used for demonstrating NPU-V's greater need for interventions for asthma and unintentional home injuries.

Asthma

Background

Asthma is a chronic inflammatory disorder of the lungs and airways. The disease causes recurrent episodes of wheezing, breathlessness, chest tightness, and coughing [15]. Asthma episodes are distressing and potentially life-threatening experiences [16]. The breathlessness of an asthma episode can be described as trying to inhale and exhale air exclusively through a coffee stirring straw. Asthma is the most common chronic disease among children [17]. An estimated 34 million Americans, or 11.5% of the US population, have been diagnosed with asthma in their lifetimes. 22.9 million Americans, or 7.7% of the US population, currently have asthma [18]. Asthma costs the United States more than $30 billion every year [18]. The adverse health and social outcomes from asthma include

- Urgent doctor visits, ER visits, and hospitalizations
- Missed school and work days
- Limitations in activity, such as playing sports, and sleep disruptions
- Disability
- Death

Diagnosis

Asthma is a syndrome, meaning that a group of signs and symptoms together are characteristic or indicative of the disorder. Key symptom indicators outlined in the National Heart, Lung, and Blood Institute's 2007 Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma [19] are

- Wheezing: high-pitched whistling sounds when breathing out
- A history of any of the following:
  - A cough that is worse, particularly at night
  - Recurrent difficulty in breathing
  - Recurrent chest tightness

Asthma symptoms occur or worsen in the presence of

  - Exercise
  - Viral infection
  - Inhalant allergens (e.g., animals with fur or hair, dust mites, mold, pollen)
  - Irritants (tobacco or wood smoke, airborne chemicals)
  - Changes in weather
  - Strong emotional expression (laughing or crying hard)
  - Stress
  - Menstrual cycles

For more information on asthma clinical practice guidelines, please refer to the National Heart, Lung, and Blood Institute's Web site, http://www.nhlbi.nih.gov/guidelines /index.htm

These key symptom indicators, combined with a spirometry or lung function test, are necessary for establishing an asthma diagnosis [19]. It is difficult to diagnose infants and toddlers for asthma, given the many causes of wheezing in young children [16].

Causes and Triggers

Two key reports from the Institute of Medicine identified the association between biological and chemical exposures in the home with asthma. House dust mites and secondhand smoke exposure for preschool-aged children are associated with the development of asthma in sensitive individuals. Indoor triggers or exposures associated with asthma episodes [20] are

- Cockroaches
- Dust mites
- Cats
- Dogs
- Secondhand smoke
- Fungi or molds
- Viral infections

Asthma Control

Asthma is a chronic condition that can be controlled with appropriate management in the form of medications, patient health education, management of co-morbidities, environmental control measures (e.g. reducing the amount of asthma triggers in the home), and monitoring of symptoms [19]. There are two types of asthma medications. Quick-relief medication (rescue inhalers) is used during an asthma episode. Long-term medication (corticosteroids) is used to reduce inflammation in the lungs and airways to bring about fewer and milder asthma episodes. Patients with persistent asthma require long-term control medication [21].

Health Indicators for Asthma

Data sets on the national, state, and county level provide information on asthma prevalence or the number of individuals who have asthma [16]. The two main sources of national asthma surveillance data used to generate regional, state, and county-level data are CDC's National Health Interview Survey (NHIS) and CDC's Behavioral Risk Factor Surveillance System (BRFSS). Both of these surveillance systems measure asthma prevalence using lifetime asthma diagnosis and current asthma. Since asthma is a syndrome, some individuals may have been diagnosed with asthma but do not currently experience asthma symptoms or episodes. Thus, the number and percentage of individuals who received an asthma diagnosis at some time during their lives are larger than the numbers and percentages who currently report having asthma.

Table 9: Design, sample, and geographic coverage of NHIS and BRFSS

National Health Interview Survey (NHIS) Administered by National Center for Health Statistics, CDC Survey questionnaires available at: http://www.cdc.gov/nchs/nhis/nhis_questionnaires.htm	▪ Has gathered asthma information since 1997 ▪ Household face-to-face interview ▪ Nationally representative sample ▪ Geography: National, four regions, some states ▪ Conducted annually
Behavioral Risk Factor Surveillance System (BRFSS) Administered by National Center for Chronic Disease Prevention and Health Promotion, CDC Survey questionnaires available at: http://www.cdc.gov/asthma/survey/brfss.html	▪ Has gathered asthma information since 1999 ▪ Telephone interview ▪ Nationally representative sample ▪ Geography: National, 50 states, D.C., US territories. Data available for large metropolitan areas, including Atlanta, through Selected Metropolitan/Micropolitan Area Risk Trends (SMART BRFSS) http://apps.nccd.cdc.gov/BRFSS-SMART/SelMMSAPrevData.asp ▪ Conducted annually ▪ Respondents with asthma are asked to participate in the asthma call-back survey http://www.cdc.gov/brfss/acbs/index.htm

Source: [16].

BRFSS respondents with asthma are asked if they would like to participate in a subsequent telephone interview called the asthma call-back survey, which collects information on time since diagnosis, medication use, health care use, symptoms, risk factors, and disease management. National data and information from selected states were first collected by use of the asthma call-back survey in 2003 [16]. Georgia has participated in the asthma call-back survey since 2006.

Other health indicators that measure asthma morbidity and mortality include death records from the National Vital Statistics System, emergency department data from the National Hospital Ambulatory Medical Care Survey, and hospitalization data from the National Hospital Discharge Survey [16].

National Asthma Prevalence Data

Table 10: Asthma prevalence from 2008 National Health Interview Survey

Age Group	Lifetime	Current
Children 0-17 years old	10,190,000 13.8%	6,953,000 9.4%
Adults	28,260,000 12.6%	16,380,000 7.3%
All	38,450,000 12.9%	23,333,000 7.8%

Source: [22].

Table 11: Asthma prevalence from 2008 Behavioral Risk Factor Surveillance System

Age Group	Lifetime	Current
Children 0–17 years old	7,600,135 13.3%	5,058,373 9.0%
Adults	30,450,370 13.3%	19,462,632 8.5%

Source: [23].

Note that on both of the previous two tables the number and percentage of individuals with lifetime asthma prevalence are larger than the number and percentage of those with current asthma prevalence. In addition, the data in these tables show that children are proportionally more likely to have asthma than adults.

Risk Groups for Asthma

Prevalence data of current asthma from NHIS 2006–2008 reveal that among adults females are more likely than males to have asthma. Conversely, male children are more likely to have asthma than female children. In the overall US population, children, low-income individuals (< 100% Federal Poverty Level), and African Americans are proportionally more likely to have asthma [24]. Those who lack health insurance are at risk for asthma morbidity and mortality, since they have less access to disease management services such as regular primary care visits, education and family supports, medication, and disease monitoring. Poorly managed asthma leads to increased hospitalizations and emergency department visits [25]. Asthma morbidity and mortality are preventable with proper disease management.

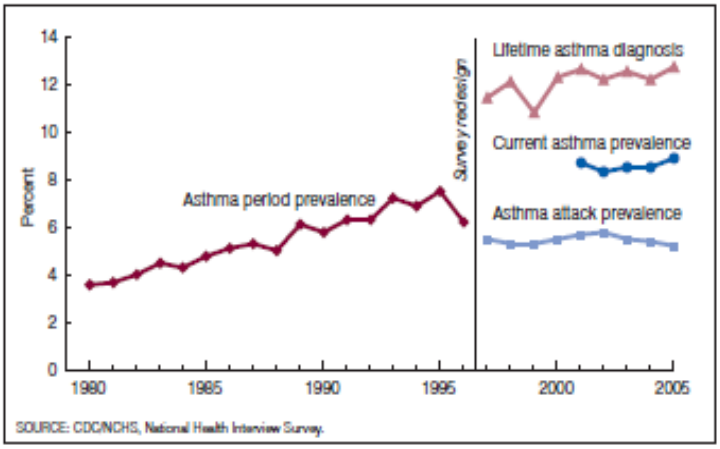
Asthma and the Housing Connection

As much as 40% of excess asthma risk in minority children may be attributable to exposure to residential allergens [26]. Health disparities in asthma morbidity and allergic sensitization may be due in part to substandard housing and poverty. Substandard housing is more likely to have moisture and dampness problems, poor ventilation, deteriorated carpeting, structural deficits, and cockroach/pest problems, all of which create environmental conditions that may cause asthma or may trigger an asthma episode [26].

Childhood Asthma Trends in the United States

Asthma prevalence remains at historically high levels following dramatic increase from 1980 to the late 1990s [16].

Figure B: Asthma prevalence among children 0–17 years of age, United States, 1980–2005



Source: [16].

Despite the plateau in current asthma prevalence, physician office visits for asthma problems continue to grow since the year 2000 [16]. This can be interpreted as a trend that illustrates better asthma control for children through regular preventative/primary care visits. Since 1992, the rate of emergency department visits has remained relatively stable—at around 100 visits for asthma per 10,000 children. Hospitalization rates follow a trend similar to prevalence rates during1980–2005. Child death rates from asthma declined in the mid-2000s following a rising trend from 1980 to the mid-1990s [16]. The decline in asthma-related deaths may be related to improved disease management.

Georgia Asthma Prevalence Data

In 2008, approximately 297,000 (12%) Georgia children ages 0–17 had asthma, and approximately 600,000 (9%) Georgia adults had asthma [15].

The 2006 BFRSS data listed below show which groups of adults in Georgia are more likely than their counterparts to have asthma [27]. For example, an estimated 13.8% of Georgia adults with less than a high school education reported having asthma, as compared to 5.8% of college graduates. These statistics support the argument that low-income individuals, those with less than a high school education, the uninsured, and African Americans in Georgia are at greater risk for asthma.

- Income: Less than $15,000 18.2%
- Income: $35,000 to $44,999 6.4%
- Education: Less than high school 13.8%
- Education: College graduate 5.8%
- No health insurance coverage 9.5%
- Has health insurance coverage 7.6%
- Black 8.4%
- White 7.9%

Fulton County Asthma Prevalence Data

The data from 2000–2008 indicate that an estimated 9.2% of adults in Fulton County currently have asthma. Data from BRFSS 2000–2004 allow an estimate that 11.1% of Fulton County African American adults have asthma, compared to 4.7% of white adults [28]. The child asthma prevalence rate for Fulton County cannot be reported because the Relative Standard of Error is greater than 30%, making the estimate unreliable [29]. In other words, asthma surveillance data were not collected on a large enough number of Fulton County children to allow generation of a reasonably accurate child asthma prevalence rate.

Asthma Emergency Room Visits

Table 12: Asthma ER visit data for Georgia and Fulton County [36]

Location	Visits and Rates per 100,000	De-duplicated Visits and Rates per 100,000	De-duplicated Visits Age-Adjusted Rates per 100,000
Georgia	52,415 (541.2)	40,708 (420.3)	413.7
Fulton Co.	8,114 (799.5)	5,594 (551.2)	553.8

Source: [30].

The number of ER visits provides information on one aspect of health care utilization for asthma. Knowing the rate of ER visits per 100,000 in the population for each geographic area allows for comparisons between Georgia and Fulton County, two areas with populations of differing sizes. The Georgia Department of Community Health's Online Analytical Statistical Information System (OASIS) defines de-duplicated ER visits as the number of ER patients discharged live from non-federal, acute-care inpatient facilities (hospitals) for illness [31]. Persons are counted

only once if readmitted for the same chronic condition during a calendar year. De-duplicated visits also exclude people discharged dead, healthy newborn infants, and healthy mothers giving birth to newborn infants. Thus, de-duplicated visits provide the basis for an estimate of the number of patients in each geographic area who went to the ER for asthma. For more information on OASIS variables and their definitions, please refer to http://oasis.state.ga.us/oasis/oasis/help/er.html and http://oasis.state.ga.us/oasis/oasis/help/death.html.

Age-adjusted rates of deduplicated visits are derived by a statistical method that standardizes a specific geographic area's population by using the age distribution seen in a standard population, such as the general US population. Because of age adjustment, observed differences in rates across geographic areas are not due solely to the different proportion of people in various age groups who live in those areas. The age-adjusted rates therefore make it possible for one to compare geographic areas containing different age structures. The table above, which contains age-adjusted rates, shows that Fulton County has more asthma-related ER visits than Georgia—553.8 per 100,000 in Fulton County, compared to 413.7 per 100,000 for the state as a whole. By use of such an understanding of visits, de-duplicated visits, rates, and age-adjusted rates, one can correctly interpret the asthma and home injury hospitalization and death data presented later in this report.

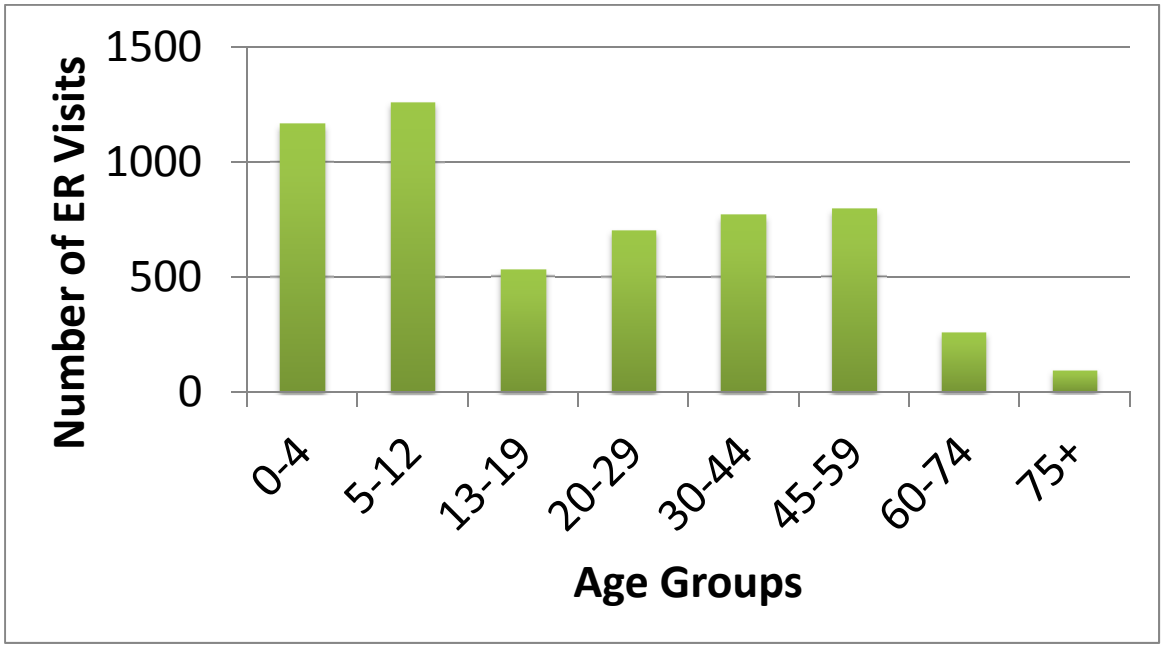
Table 13: Asthma ER visits de-duplicated, age-adjusted rates per 100,000

Location	non-Hispanic blacks	non-Hispanic whites
Georgia	783.1	227.3
Fulton County	1,048.1	124.5

Source: [30].

The information in this table can be used to calculate a ratio that compares asthma ER visit rates for non-Hispanic blacks and non-Hispanic whites in Georgia, as well as in Fulton County. The use of de-duplicated, age-adjusted rates ensures that the difference in rates is not due solely to differences in age structure between the black and white populations of each geographic area. In Georgia, non-Hispanic blacks were 3.4 times more likely than non-Hispanic whites to visit the ER due to asthma. This ratio was calculated by dividing 783.1 by 227.3. In Fulton County, non-Hispanic blacks were 8.4 times more likely than non-Hispanic whites to visit the ER due to asthma. This ratio was calculated by dividing 1,048.1 by 124.5. The following racial health disparity ratios for asthma hospitalizations and asthma deaths are calculated by use of the same methodology.

Figure C: Asthma ER visits by age group, de-duplicated, Fulton County, 2008



Source: [30].

This figure shows that young children 0–4 and 5–12 years old have more ER visits for asthma than other age groups.

Table 14: Asthma ER visit rates by age group, de-duplicated, Fulton County, 2008

Age Group in years	Rates per 100,000 in population
0–4	1,615.8
5–12	1,109.7
13–19	556.3
20–29	534.1
30–44	307.6
45–59	366.7
60–74	263.9
75+	275.5

Source: [30].

This table shows that children 0–4 years old have the highest rate of asthma-related ER visits (1,616 per 100,000 population).

Asthma Hospitalizations

Table 15: Asthma hospitalization data for Georgia and Fulton County, 2008

Location	non-Hispanic blacks	non-Hispanic whites
Georgia	152.9	75.4
Fulton County	182.8	42.3

Source: [32].

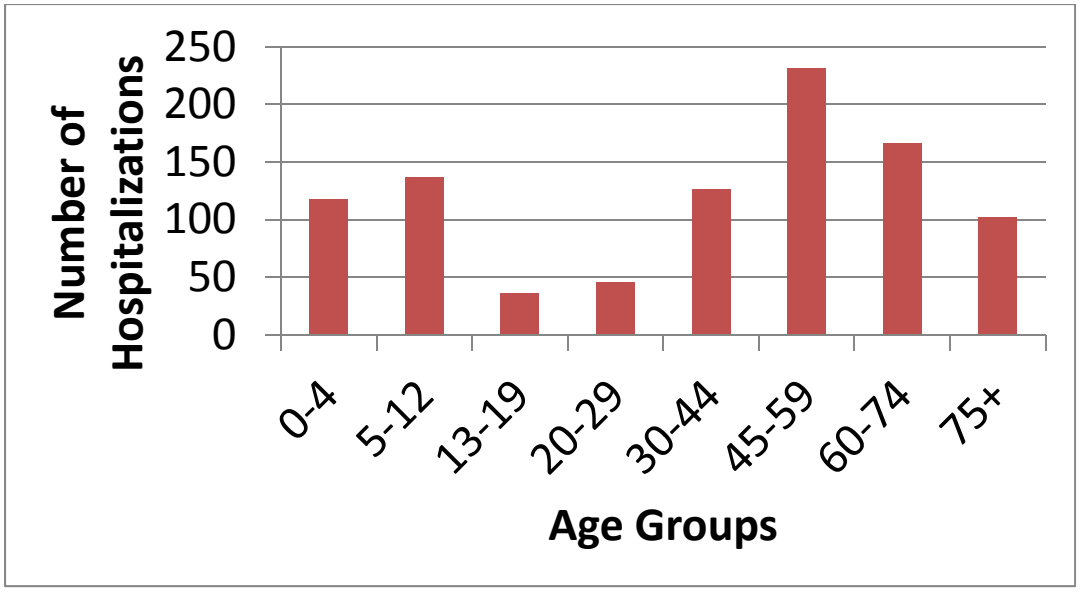
Table 16: Asthma hospitalizations de-duplicated, age-adjusted rates per 100,000

Location	Discharges and Rates per 100,000	De-duplicated Discharges and Rates per 100,000	De-duplicated Discharge Age-Adjusted Rates per 100,000
Georgia	10,996 (113.5)	9,403 (97.1)	98.9
Fulton Co	1,192 (117.4)	962 (94.8)	102.7

Source: [32].

In Georgia, non-Hispanic blacks were twice as likely as non-Hispanic whites to be hospitalized with asthma. In Fulton County, non-Hispanic blacks were 4.3 times more likely than non-Hispanic whites to be hospitalized with asthma.

Figure D: Asthma hospitalizations by age group, de-duplicated, Fulton County, 2008



Source: [32].

The age groups with the largest number of asthma-related hospitalizations are 45–59-year olds and 60–74-year-olds.

Table 17: Asthma hospitalization rates by age group, de-duplicated, Fulton County, 2008

Age Group in years	Rate per 100,000 in population
0–4	163.1
5–12	120.3
13–19	37.6
20–29	34.8
30–44	50.1
45–59	106.3
60–74	169.1
75+	302.1

Source: [32].

Asthma hospitalization rates were highest among children 0–4 years old and older adults 60+ years old.

Asthma Deaths

Deaths due to asthma are relatively rare, thanks to preventative care, ongoing treatment, and monitoring. Because a single year's asthma deaths would not be great in number, he following data tables and graphs draw upon asthma death data over a series of years, 2001–2007.

Table 18: Asthma deaths in Georgia and Fulton County by sex and race, 2001-2007

Location	Deaths, White Males	Deaths, White Females	Deaths, Black Males	Deaths, Black Females
Georgia	127	267	145	236
Fulton Co	7	16	25	47

Source: [33].

Note that there are more deaths among white and black females than among their male counterparts. The difference may be related to a national trend showing a greater asthma prevalence among adult females than among adult males.

Table 19: Asthma deaths in Georgia and Fulton County by age group, 2001–2007

Location	Deaths, 0–4 Years	Deaths, 5–19 Years	Deaths, 20–59 Years	Deaths, 60+ Years	Deaths, TOTAL	Deaths, Average per year
Georgia	11	32	369	376	788	113
Fulton Co	1	3	46	47	97	14

Source: [33].

The average number of asthma deaths per year was calculated by dividing the total of 788 deaths by the number of years between within the year range (7 years).

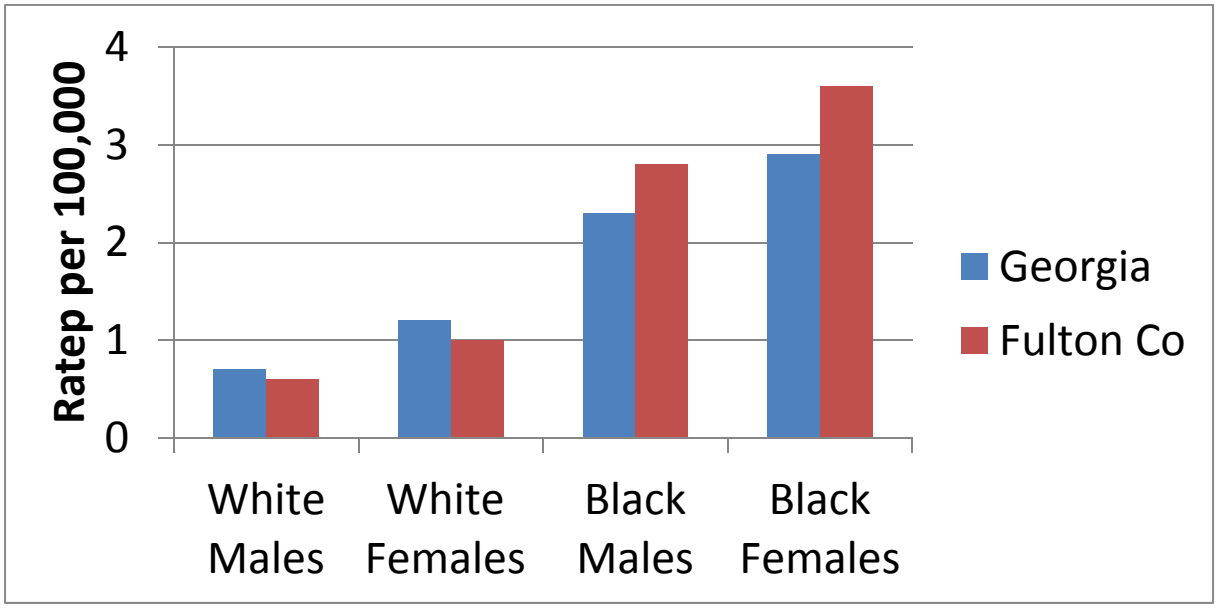
Table 20: Asthma age-adjusted death rates per 100,000 population, 2001–2007

Location	non-Hispanic blacks	non-Hispanic whites
Georgia	2.7	1.0
Fulton Co	3.2	0.9

Source: [33].

In Georgia, non-Hispanic blacks were 2.7 times more likely than non-Hispanic whites to die from asthma. In Fulton County, non-Hispanic blacks were 3.6 times more likely than non-Hispanic whites to die from asthma.

Figure E: Asthma age-adjusted death rates by race and sex, 2001–2007



Source: [33].

In both Georgia and Fulton County, the age-adjusted death rates from asthma are significantly greater for non-Hispanic blacks than for their white counterparts.

Secondhand Smoke and Cigarette Smoking Prevalence

Understanding Georgia residents' level of exposure to secondhand smoke and their cigarette smoking prevalence rates is important because tobacco smoke is both a cause and a trigger for asthma. Nationally, only 32% of households with smokers have adopted smoke-free policies in the home, policies that do not allow anyone, whether residents or visitors, to smoke inside the home [34]. In Georgia, approximately 63% of middle school students with asthma and 68% of high school students with asthma are exposed to secondhand smoke [35].

Table 21: Cigarette smoking prevalence in Georgia by age group

Age Group	Number of Smokers	Percent
Middle School Students	19,000	5%
High School Students	72,000	17%
Adults	1.4 million	20%

Source: [35].

The legal age to purchase tobacco products in Georgia is 18 years old; yet, a significant number of middle and high school students are cigarette smokers.

Table 22: Cigarette smoking prevalence in Georgia among those with asthma by age group

Age Group	Percent
Middle School Students	4%
High School Students	16%
Adults	17%

Source: [35].

Note the large percentage of adults and high school students with asthma who also smoke cigarettes.

Data Limitations

Ideally there would be readily available asthma data at the national, state, county, Atlanta, and NPU-V levels, data that were collected in a similar manner so that one could compare the prevalence rates across the various geographic areas. Unfortunately, asthma data for Atlanta and NPU-V are not readily available. Rather, asthma prevalence information is often obtained through nationwide interviews, and accurate numbers are not available for smaller geographic areas. The best available easy-to-access local data are at the Fulton County level; that data can be accessed through the Georgia Department of Community Health's OASIS database [36].

Other Data Sources to Explore

- Emory University researcher Dr. Matthew Strickland (mjstric@emory.edu). Dr. Strickland has 2002–04 data on asthma emergency room visits from 41 metro Atlanta hospitals. Dr. Strickland obtained the data in order to conduct a research study. The data use agreement prohibits him from sharing data specific to a hospital, but he can provide information on all 41 metro Atlanta hospitals in the aggregate form. He can sort the data by using the following variables: patient age, sex, race, health insurance, and zip code. The data set has already been processed to exclude same-day repeat visits by patients for the same condition. Dr. Strickland is open to helping the Center for Working Families obtain asthma data from this data set for NPU-V zip codes 30310, 30312, and 30315. Be aware that these zip codes cover both NPU-V and the neighborhoods south of NPU-V. The asthma information, after it is sorted by patient zip code, can further be categorized by patient age. The recommended age groupings are 0–4 years old, since asthma is difficult to diagnosis in young children and an asthma diagnosis for young children may not be accurate; 5–17 years old; 18–59 years old; and 60+ years old.
- Atlanta City Office of Code Compliance: Number of code violations for pests or mold in the past 5 to 10 years.
- Clinical data from Grady Hospital, Children's Healthcare of Atlanta, and federally-qualified health centers, such as Southside Health Center. A Memorandum of

Understanding will most likely need to be established between the hospital/clinic and the Center for Working Families to share health data. Suggested patient information to collect includes

- Number of days with asthma symptoms
- Number of emergency department visits and hospitalizations
- Level of asthma control, medication use
- Home address or location by census tract

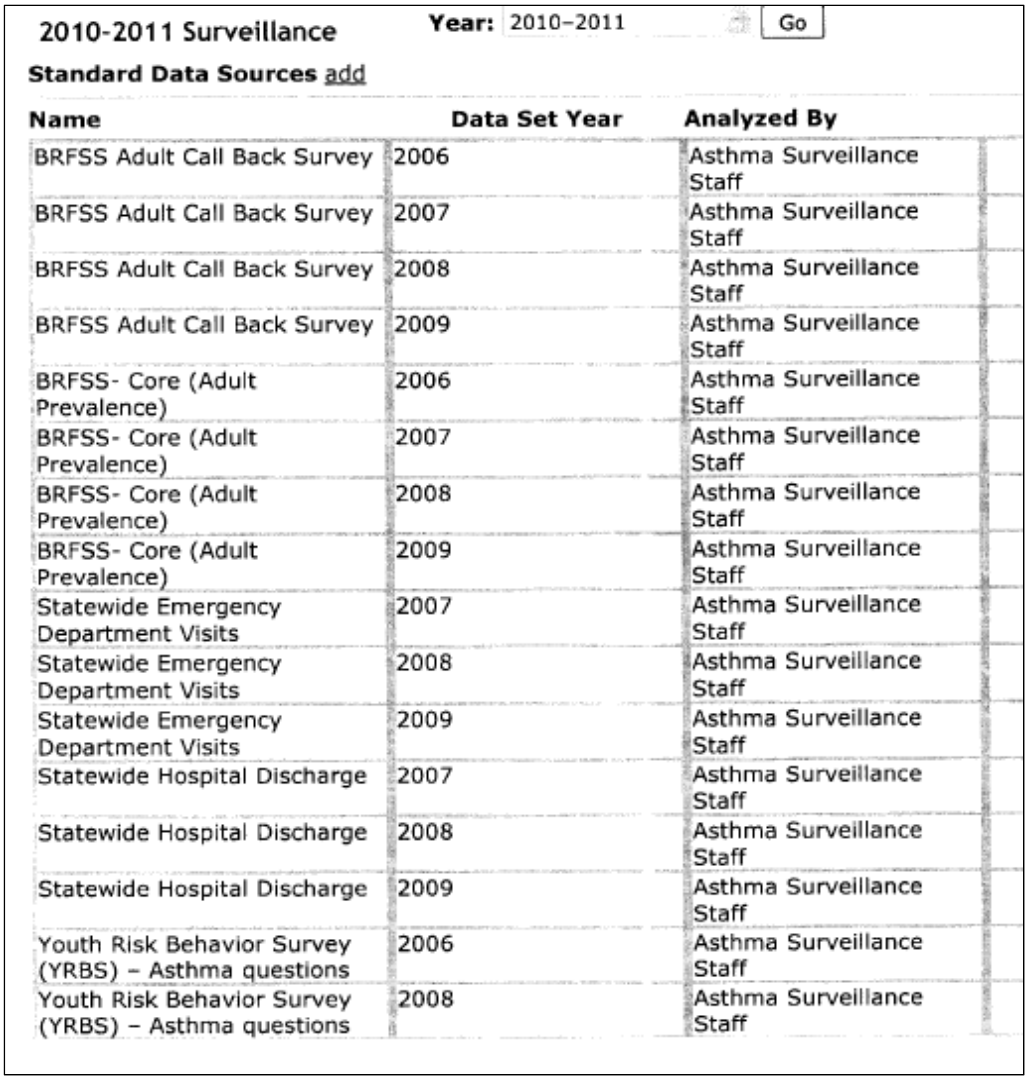
- Environmental data from home assessment, indoor air quality tests, and house dust samples of those homes that receive interventions. Consider conducting a pre- and post-intervention collection of environmental data to evaluate whether interventions were beneficial.

- Combine clinical and environmental data with interviews/self-reports from children with asthma and their caregivers.

- Implement a feedback loop to ensure that health care providers are aware of the housing/environmental health conditions of their patients.

- GA DCH State Asthma Program, Asthma Epidemiologist Vietdoan Cheng (vtcheng@dhr.state.ga.us). One of her job responsibilities is to provide data to community-based organizations and others who request asthma information. She knows the various asthma surveys administered in Georgia, analyzes survey data for state- and count- level statistics, and can provide referrals to other GA DCH epidemiologists for such health and housing conditions as injury or lead poisoning.

- The Asthma Information Reporting System (AIRS) is a CDC internal system that shows each grantee's asthma surveillance participation. The following table shows the asthma-related surveys for the state of Georgia. By knowing which surveys Georgia participated in, one can search online for the survey questionnaire and then contact GA DCH Asthma Epidemiologist Vietdoan Cheng for the survey results. Please contact CDC Georgia asthma project officer Paige Welch for more information about AIRS (pmc0@cdc.gov).



2010-2011 Surveillance **Year:** 2010–2011 Go

Standard Data Sources add

Name	Data Set Year	Analyzed By
BRFSS Adult Call Back Survey	2006	Asthma Surveillance Staff
BRFSS Adult Call Back Survey	2007	Asthma Surveillance Staff
BRFSS Adult Call Back Survey	2008	Asthma Surveillance Staff
BRFSS Adult Call Back Survey	2009	Asthma Surveillance Staff
BRFSS- Core (Adult Prevalence)	2006	Asthma Surveillance Staff
BRFSS- Core (Adult Prevalence)	2007	Asthma Surveillance Staff
BRFSS- Core (Adult Prevalence)	2008	Asthma Surveillance Staff
BRFSS- Core (Adult Prevalence)	2009	Asthma Surveillance Staff
Statewide Emergency Department Visits	2007	Asthma Surveillance Staff
Statewide Emergency Department Visits	2008	Asthma Surveillance Staff
Statewide Emergency Department Visits	2009	Asthma Surveillance Staff
Statewide Hospital Discharge	2007	Asthma Surveillance Staff
Statewide Hospital Discharge	2008	Asthma Surveillance Staff
Statewide Hospital Discharge	2009	Asthma Surveillance Staff
Youth Risk Behavior Survey (YRBS) – Asthma questions	2006	Asthma Surveillance Staff
Youth Risk Behavior Survey (YRBS) – Asthma questions	2008	Asthma Surveillance Staff

- GA DCH Director of Chronic Disease, Shonta Chambers (srchambers@dhr.state.ga.us). She is the interim program manager for the GA DCH Asthma Control Program while the vacancy is being filled.
- Local asthma coalition. Please contact Vietdoan Cheng for more information. The asthma coalition has not had regular meetings since the fall of 2010. The coalition will most likely become active once a program manager is hired for the GA DCH Asthma Control Program.
- GA DCH Strategic Plan for Addressing Asthma in Georgia
- Georgia Asthma Surveillance Report 2007. The report is updated every three years (http://health.state.ga.us/epi/cdiee/asthma.asp)
- SMART BRFSS for Metro Atlanta and Fulton County (http://apps.nccd.cdc.gov/BRFSS-SMART)
- Asthma Call Back Survey (http://www.cdc.gov/brfss/acbs/index.htm)

- Sharing of Medicaid data between GA DCH and Medicaid in order to know the number of Medicaid recipients with asthma. For more information on the progress of this data-sharing process, contact Vietdoan Cheng.
- CDC's Asthma Morbidity and Mortality Weekly Report from 2007 provides background information and national statistics on asthma. A new asthma MMWR report will be released in 2011 (http://www.cdc.gov/asthma/mmwr.html)
- Tobacco Use
  - Georgia Youth Risk Behavior Survey (http://www.cdc.gov/HealthyYouth/yrbs/state_district_comparisons.htm)
  - Georgia Youth Tobacco Survey (http://apps.nccd.cdc.gov/statesystem/Default/Default.aspx)
  - BRFSS Smoking Module
- Child Health Indicators
  - National Survey of Children's Health (http://www.cdc.gov/nchs/slaits/nsch.htm)

Unintentional Injuries (Accidents) in the Home

Background

Unintentional is defined as without the intent to harm; thus, unintentional injury deaths as well as injuries exclude homicide, suicide, and forms of assault. Injury results from contact with an external force or cause. Examples of such external causes include falls, mechanical accidents, injury by chemicals and poisons, injury by temperature extremes, electricity, or radiation, or the absence of necessities such as air [37]. Home is a place where people live independently; home therefore does not include dormitories, prisons, nursing homes, long-term care facilities, mental health institutions, shelters, and barracks. In addition to the structure of a house, the home also entails areas surrounding the house, such as the yard, garage, and driveway [37]. Unintentional home injury is a broad category that includes injuries related to the structure of a home (i.e., poor lighting at a staircase that can result in falls) and those injuries that happen within the home (e.g., accidental medication overdose).

Health Indicators for Injury

Several of the health indicators for injury are similar to those mentioned previously in the asthma section, namely death records from the National Vital Statistics System, emergency department data from the National Hospital Ambulatory Medical Care Survey, and hospitalization data from the National Hospital Discharge Survey. The National Electronic Injury Surveillance System is an additional source for emergency department visits data collected from emergency departments of 100 US hospitals. Non-fatal injury data are collected at the national level by use of the National Health Interview Survey (NHIS), an in-person interview that asks respondents about the number of injuries they sustained that required advice from a health care professional and that resulted in missed school/work days within a given period of time [37]. A major difficulty in gathering unintentional home injury data is that the location where the injury occurred is not recorded for 33% of unintentional injury deaths, and data are missing regarding 25% of unintentional injuries resulting in emergency department visits. Thus, the available sources of injury data most likely underestimate the true numbers and rates of unintentional injuries that occur in the home [37].

Readily accessible injury data are available online through the Georgia Department of Community Health's OASIS database and through the Centers for Disease Control and Prevention's National Center for Injury Prevention and Control's Web-based Injury Statistics Query and Reporting System (WISQARS) database.

National Fatal and Non-Fatal Unintentional Injuries

More than 91,000 individuals die each year in the United States from unintentional injury. Approximately 20% of these deaths occur in the home—more than 18,000 deaths in the home per year. An estimated 28 million nonfatal unintentional injuries occur each year. Approximately 42% of these events occur in the home—nearly 12 million nonfatal home injuries per year [37].

Note that fatal injuries are measured by the number of deaths, while nonfatal injuries are measured by the number of events, since a person could have more than one nonfatal injury per year.

Table 23: Top 5 unintentional home injury deaths, United States, 1992–1999

Cause of Death	Average Annual Number	% All unintentional home injury deaths	Rate per 100,000
Fall	5,961	33.0	2.25
Poisoning	4,833	26.8	1.83
Fire/Burn	3,402	18.8	1.29
Choking/Suffocation	1,092	6.1	0.41
Drowning/Submersion	823	4.6	0.31

Source: [38].

Table 24: Top cause of unintentional injury deaths by age group, United States, 2007

Age	Cause of Death	Number of Deaths
Under 1 year	Suffocation	959 deaths
1–4 years	Drowning	458 deaths
35–54 years	Poisoning	16,581 deaths
65+ years	Fall	18,334 deaths

Source: [39].

Note that the above listed deaths may or may not have occurred in the home. Motor vehicle injury, a type of injury outside the home, was the leading cause of unintentional injury deaths for people ages 5–34 and 55–64.

Table 25: Top 10 states for unintentional home injury deaths, 1992–1999

State	Average Annual Rate (per 100,000)
New Mexico	13.0
Mississippi	11.0
Arizona	10.1
Pennsylvania	8.9
West Virginia	8.6
Alaska	8.4
Washington	8.1

State	Average Annual Rate (per 100,000)
Georgia	8.1
Missouri	8.0
Florida	7.9

Source: [38].

Georgia is ranked 8th in unintentional home injuries when all types of home injuries are combined (falls, fires/burns, poisonings, drowning, suffocations, other).

Falls

Falls are defined as all accidental injuries caused by an individual's losing his/her balance (definition from OASIS, http://oasis.state.ga.us/oasis/oasis/help/death.html#external) [31]. The following table shows that the majority of fatal falls occur within the home.

Table 26: Location of fatal falls, United States, 1992–1999

Location	Percentage
Home	54%
Other than home	35%
Unknown	11%
TOTAL	100%

Source: [38].

Table 27: Unintentional fatal falls, by geographic area, 2007

Location	Number	Age-Adjusted Rate (per 100,000)
United States[1]	22,631	7.08
Georgia[2]	580	7.5
Fulton County[2]	60	8.4

Source: [1][38]; [2][40].

This table shows the total number of fatal falls that occurred within each geographic area during 2007, but it does not denote whether these falls happened inside or outside the home. The previous table shows the percentage of fatal falls by home, other than home, or by unknown

location. By combining these two pieces of information, one can estimate the number of fatal falls that happened within Georgia and Fulton County homes.

Example: Unintentional fall deaths that occurred in the home in Georgia = 580 x 0.54 = 313, a rough estimate that most likely under-states the true number of fall deaths that occur in the home because location was unknown for 11% of fall deaths at the national level.

This calculation can be used to estimate the number of unintentional injury deaths that occur within homes whenever the percentage listed under the "unknown" location is not large, for example, the calculation can be used to estimate fire/burn and drowning injury deaths.

Unintentional Nonfatal Fall Injuries

Table 28: De-duplicated ER visits, 2008

Location	Number	Age-Adjusted Rate (per 100,000)
Georgia	196,398	2,079.7
Fulton County	14,173	1,513.9

Source: [41].

Table 29: De-duplicated hospital discharges, 2008

Location	Number	Age-Adjusted Rate (per 100,000)
Georgia	17,694	214.1
Fulton County	1,469	198.5

Source: [41].

When one is gathering health data from the OASIS online database, using the variables "de-duplicated visits" or "de-duplicated discharges" ensures that one is capturing only the patients who sustained a nonfatal injury and were released live from the ER or hospital. In OASIS, all hospital discharges having external causes (injuries) have been assigned their appropriate valid External Cause of Injury Code, in accordance with State and Territorial Injury Prevention Directors Association 2003 guidelines. The standards can be found at http://www.stipda.org (definition from OASIS, http://oasis.state.ga.us/oasis/oasis/help/death.html) [31]. In addition to falls, OASIS contains fatal and nonfatal injury data for poisoning, fire, and drowning.

Table 30: Costs of unintentional fatal falls, United States, 2005*

Type of Cost in 2005 Dollars	Average	Total
Medical Costs	$22,187	$436,101,000
Work Loss Costs	$215,862	$4,242,975,000

*Deaths: 19,656. Source: [42].

Medical costs are those attributable to a fatal injury event. Work loss costs are those attributable to lost wages, fringe benefits, and missed household work due to death (definition from WISQARS, http://www.cdc.gov/injury/wisqars/cost_help/statistical_2_6.html). A combined cost can be calculated by adding the medical costs to the work loss costs.

Table 31: Cost of unintentional fatal falls, Georgia, 2005*

Type of Cost in 2005 Dollars	Average	Total
Medical Costs	$20,392	$11,215,000
Work Loss Costs	$249,283	$137,106,000

*Deaths: 550. Source: [42].

Medical costs and work loss costs due to other types of fatal unintentional injuries, such as fire/burn, poisonings, drowning, and suffocations, can be calculated by use of the WISQARS cost of injury reports for the United States as a whole and by state [42].

Table 32: Costs of unintentional nonfatal falls, United States, 2005

Costs in 2005 Dollars	Average
Hospitalizations: Medical Costs	$19,672
Hospitalizations: Work Loss Costs	$29,007
ED Visits: Medical Costs	$1,474
ED Visits: Work Loss Costs	$2,948

Source: [42].

The average medical costs and work loss costs in the above two tables refer to lifetime costs from an unintentional nonfatal fall (definition from WISQARS, http://www.cdc.gov/injury/wisqars/cost_help/statistical_2_6.html). Costs from nonfatal unintentional injury, as measured by hospitalizations and ER visits, are available from WISQARS only at the national level [42]. Costs of unintentional nonfatal injury data are available through WISQARS for other injuries, such as fire/burn, poisonings, drowning, and suffocations.

Cost of Unintentional Falls, Georgia and Fulton County

An estimate of costs related to nonfatal injuries at the state or county level can be calculated by use of the number of nonfatal injuries for Georgia or Fulton County multiplied by the national average medical and/or work loss costs.

Example: 2008 ED visits for nonfatal falls in Fulton County

- Number of de-duplicated ED visits = 14,173
- National average medical costs in 2005 for ED visits for nonfatal falls = $1,474
- 14,173 x 1,474 = $20,891,002

Costs would be even greater if medical costs are combined with work loss costs.

National average cost is based on 2005 dollars. Current costs would be greater due to inflation. 2005 dollars can be updated to current year's dollars by use of the US Department of Labor's consumer price index, which includes adjustments for inflation on both all costs and medical costs. For more information, visit http://stats.bls.gov

This method of calculation can be used for other types of nonfatal injuries when state or county level data on the number of injuries are available through WISQARS or OASIS. When using this method of calculation for fatal injuries, a person should use average medical costs or work loss costs generated from WISQARS cost of injury reports for Georgia, rather than national costs, to improve the accuracy of the estimated costs.

Table 33: Risk groups for falls

Fatal Falls, National	Nonfatal Falls, National
Adults 70 years and older had the highest rates of death due to falls in the home, followed by 60 to 69 year olds Males experienced a higher rate of death from falls than females Females experienced a higher rate of nonfatal home falls than males	Adults 70 years and older have the highest rates of nonfatal falls in the home Children under 5 have the second highest rate of nonfatal home falls

Source: From [37].

Poisoning

Poisoning is the act of ingesting or coming into contact with a harmful substance that may cause injury, illness, or death (definition from OASIS, http://oasis.state.ga.us/oasis/oasis/help/death.html#external). Poisoning is a broad category that includes harm from such substances as medications, narcotics, alcohol, carbon monoxide gas,

pesticides, soaps, and detergents (WHO ICD codes for external causes). Data on specific types of poisonings can be obtained for the national and state level by use of CDC's WISQARS leading causes of death reports. The WISQARS database allows one to drill down by selecting unintentional injuries under an age group → poisonings → International Classification of Disease (ICD) 10 codes for each substance that caused the poisoning (http://webappa.cdc.gov/sasweb/ncipc/leadcaus10.html). The WISQARS drilling down feature can be used with any type of unintentional injury, including falls, suffocations, drowning, etc.

Carbon Monoxide Poisoning

Carbon monoxide, or CO, is a toxic gas that is colorless and odorless. CO is given off when fuel or other materials are burned. Breathing CO can cause severe illness or death in minutes.

CO exposure can occur from [43]

- using poorly maintained or unvented heating equipment
- warming up vehicles in garages
- using a gas stove or oven to heat the home
- leaving chimneys clogged or blocking heating exhaust vents
- running generators or gas-powered tools in enclosed areas or near windows, doors, or vents

In 2006, there were 25 deaths in Georgia from CO poisoning, with an age-adjusted death rate of 0.27 per 100,000 [44]. Georgia's CO deaths and death rates can be compared to those of other states by using the CDC's National Environmental Public Health Tracking Network online database [44].

Table 34: Location of fatal poisonings, United States, 1992–1999

Location	Percentage
Home	51%
Other than home	16%
Unknown	33%
TOTAL	100%

Source: [38].

It is necessary for one to be aware that the location is unknown for 33% of poisoning deaths; thus, using the national percentage of home or other-than-home deaths as a basis will not provide an accurate estimate of poisoning deaths that occurred in the home in Georgia.

Table 35: Unintentional poisoning deaths, 2007

Location	Number	Age-Adjusted Rate (per 100,000)
United States[1]	29,846	9.83
Georgia[2]	764	7.9
Fulton County[2]	100	9.4

Source: [1][38]; [2][40].

Georgia and Fulton County data on unintentional nonfatal poisonings, as measured by hospitalizations and ER visits, can be obtained from the Georgia Department of Community Health's OASIS online database.

Table 36: Risk groups for poisonings

Fatal Poisoning, National	Nonfatal Poisoning, National
Males experienced a higher rate of death than females [37]	Children under 5 had the highest rate of nonfatal poisoning in the home Females are more likely to experience nonfatal poisoning than males [37]
Fatal Poisoning, Georgia	
35–54 year olds had the highest poisoning death rate among all age groups 40% of these deaths were caused by narcotics and hallucinogens [45]	

Fire/Burn

A fire injury is defined as accidental exposure to smoke, fire, and flames. A burn injury is defined as accidental contact with heat and hot substances [46].

Table 37: Location of fatal fires/burns, United States, 1992–1999

Location	Percentage
Home	90%
Other than home	6%
Unknown	4%
TOTAL	100%

Source: [38].

Note that the vast majority of fatal fires/burns (90%) occur within the home.

Table 38: Unintentional fatal fire/burn injuries, 2007

Location	Number	Age-adjusted Rate (per 100,000)
United States	3,375	1.09
Georgia	131	1.49

Source: [38].

An estimate of the number of fire/burn deaths that occurred within homes in Georgia can be calculated by use of the following method of combining two pieces of data, namely the number of fatal fire/burn injuries in Georgia in 2007 and the national percentage of fatal fire/burn injuries that occur within the home.

Example: Unintentional fire/burn deaths that occurred in the home in Georgia = 131 x 0.90 = 118

Table 39: Unintentional fatal fire injuries, 2007

Location	Number	Age-adjusted Rate (per 100,000)
Georgia	120	1.3
Fulton County	10	1.4

Source: [40].

One should be aware that the Georgia Department of Community Health's OASIS database contains Fire and not Fire/Burn data. Georgia and Fulton County data on unintentional nonfatal fire injuries, as measured by hospitalizations and ER visits, can be obtained from the Georgia Department of Community Health's OASIS online database. For Fire/Burn data, please refer to CDC's WISQARS database.

Risk Groups for Fires/Burns

Table 40: Risk groups for fires/burns

Fatal Fires/Burns, National	Nonfatal Fires/Burns, National
Males have a higher death rate than females [37] Children 4 years old and younger Older adults 65 years and older African Americans and Native Americans Poorest Americans Persons living in substandard housing [47]	Rates were highest among children under 5 years old [37]

Choking/Suffocation

Choking/Suffocation is defined as all accidental injuries from threats to breathing, including choking on food, vomit, or a foreign object; however, the category excludes smoke inhalation [46]. The top causes of choking/suffocation deaths in the home are inhalation and ingestion of food that causes obstruction of the respiratory tract or suffocation, unintentional mechanical suffocation (e.g., accidental hanging except in a bed or cradle), and accidental suffocation in a bed or cradle [37].

Table 41: Location of fatal chokings/suffocations, United States, 1992–1999

Location	Percentage
Home	25%
Other than home	13%
Unknown	62%
TOTAL	100%

Source: [38].

One should be aware that the location is unknown for 62% of choking/suffocation deaths, and thus using the national percentage will not provide an accurate estimate of choking/ suffocation deaths that occurred in the home in Georgia.

Table 42: Unintentional choking/suffocation deaths, 2007

Location	Number	Age-Adjusted Rate (per 100,000)
United States	5,997	1.92
Georgia	178	2.12

Source: [38].

Georgia Department of Community Health's OASIS database does not include data on choking/suffocation. Therefore, this section does not contain a Fulton County statistic on choking/suffocation deaths.

Unintentional nonfatal choking/suffocation injury data at the national level are available through CDC's WISQARS database (http://webappa.cdc.gov/sasweb/ncipc/nfirates2001.html).

Risk Groups for Chokings/Suffocations

Table 43: Risk groups for chokings/suffocations

Males had a higher rate of home choking and suffocation deaths than females
Children under 9 years old, especially those younger than 5, are at high risk
Older adults 70+ years old are at high risk

Source: [37].

Drowning

Drowning is defined as suffocation as a result of being submerged in water or other fluid (definition from OASIS, http://oasis.state.ga.us/oasis/oasis/help/death.html#external). Drowning injuries include incidents that occur in bathtubs, swimming pools, and natural bodies of water [46]. In Georgia, 9% of drownings occurred in bathtubs, and14% of drownings occurred in swimming pools [45].

Table 44: Location of drowning/fatal submersions, United States, 1992–1999

Location	Percentage
Home	23%
Other than home	68%
Unknown	9%
TOTAL	100%

Source: [38].

Table 45: Unintentional drowning deaths, 2007

Location	Number	Age-Adjusted Rate (per 100,000)
United States[1]	3,443	1.13
Georgia[2]	118	1.2
Fulton County[2]	12	1.2

Source: [1][38]; [2][40].

An estimate of the number of drowning deaths that occurred within homes in Georgia can be calculated by use of the following method of combining two pieces of data, namely the number of fatal drowning injuries in Georgia in 2007 and the national percentage of fatal drowning injuries that occur within the home.

Example: Unintentional drowning deaths that occurred in the home in Georgia = 118 x 0.23 = 27

Georgia and Fulton County data on unintentional nonfatal drowning/submersion injuries, as measured by hospitalizations and ER visits, can be obtained from the Georgia Department of Community Health's OASIS online database.

Risk Groups for Drowning

Table 46: Risk groups for drowning

National
Children younger than 5 years old had a higher rate of drowning in the home than all other age groups
Males had a higher rate of home drowning than females [37]
African Americans [48]
The State of Georgia as a whole
Drowning was the second leading cause of unintentional injury deaths for children 1 to 4 years old
Black males had the highest drowning rate (3.2 per 100,000 in population), followed by white males [45]

Data Limitations

Similar to the data limitations described in the asthma section, unintentional home injury data are not readily available at the Atlanta and NPU-V levels. Fatal injury data are collected through national and state vital statistics, but often the location of the fatal injury is not included on death records, making it difficult to determine if the event happened within the home. A main

surveillance system for nonfatal injuries is a nationally representative in-person interview called the National Health Interview Survey, which is not designed to provide data specific to such smaller geographic areas such as states, counties, and cities. The best available, easy-to-access local data on fire, drowning, fall, and poisoning injuries are at the Fulton County level; that data can be accessed through the Georgia Department of Community Health's OASIS database. CDC's WISQARS database has Georgia-level data for fire/burn, drowning, suffocation, fall, and poisoning injuries.

Other Data Sources to Explore

- Home Safety Council, State of Home Safety in America 2002 National Survey (http://www.homesafetycouncil.org/AboutUs/Research/re_sohs_w001.asp) Contains data on the prevalence of safety devices and practices in US homes, such as stairs with banisters, grab bars and non-skid pads in the bathroom, window locks or safety guards, medical and chemical storage practices, carbon monoxide and smoke detectors, fire extinguishers, and fire escape plan.
- US Consumer Product Safety Commission (http://www.cpsc.gov/library/data.html) Injury information related to such consumer products as bedding, toys, cribs, and appliances.
- The Georgia Poison Control Center fields calls on poisonings and helps consumers with pill identification, in addition to answering questions on environmental health issues. Data on calls to the Center can be sorted by unintentional or intentional injury, type of poisoning, and zip code of caller. For more information, please contact the following individuals:
  - Dr. Robert Geller RGELLER@georgiapoisoncenter.org
  - Tanneshia Sherrer TSHERRER@georgiapoisoncenter.org
  - Stephanie Hon SHON@georgiapoisoncenter.org
  - anthony.oloni@phiconcorp.com
  - rgorodetsky@georgiapoisoncenter.org
- The Georgia Department of Community Health's Smoke Alarm Installation and Fire Safety Education Program is a rural-oriented program that uses firefighters who go door-to-door installing smoke alarms in homes of low-income residents. The program identifies homes at high risk for fire as those with the following characteristics:
  - Homes poorly maintained
  - Homes with inadequate heating or wiring
  - Homes with large numbers of children under 5 years old and adults over 65 years old
  - Homes located in low-income neighborhoods, homes inhabited by predominately minority residents, and homes with high turn-over in residents

Contact Steve Davidson (sdavidson@dhr.state.ga.us) for more information about the program and how to adapt the program's lessons learned to an urban setting.

- The Atlanta Fire Rescue Department's Office of Assessment and Planning collects information on the prevalence of smoke alarms in Atlanta homes. For more information, contact Kelvin Cochran, Fire Chief (KJCochran@atlantaga.gov).
- FEMA US Fire Administration (http://www.usfa.dhs.gov/statistics). The Web site contains national and state statistics on different types of fires and causes of fires in homes.
- Georgia home visiting programs. Some programs may collect information on home injury and use of home safety devices. For more information, contact Marcia Wessels, Director of Georgia's federal home visiting initiative (marciaw@uga.edu).
- The Centers for Disease Control and Prevention's Injury in the United States 2007 Chartbook (http://www.cdc.gov/nchs/data/misc/injury2007.pdf). This resource provides national injury statistics organized by age, race, sex, level of education, place of occurrence, and other variables.
- Home Safety Council and Safe Kids USA [49].

Table 47: Coalition contact information

State Coalition for Georgia	**Fulton County—South**
Beverly Losman Children's Healthcare of Atlanta 1655 Tullie Circle, NE Atlanta, Georgia 30329 beverly.losman@choa.org	Carolyn Atwater-Wooten Fulton County Department of Health & Wellness 99 Jesse Hill Jr Dr. SE Atlanta, Georgia 30303 carolyn.atwater@fultoncountyga.gov

Conclusion

Table 48: Convergence of at-risk groups—vulnerability by health issue

Health Issue	African Americans	Children	Elderly	Low-Income	Sub-standard Housing	Lack Health Insurance
Asthma						
Lead						
Fall						
Fire						
Poisoning						
Drowning						
Suffocation						

The table above visually represents the convergence of various at-risk populations that are disproportionally affected by childhood lead poisoning, asthma, and unintentional home injuries. As the use of color patterns illustrates, African Americans are a risk group for lead poisoning as well as asthma and home injuries. This racial health disparity is related to the ongoing discrimination experienced by African Americans in the United States. Discrimination, combined with segregated communities where substandard housing is concentrated in low-income or predominately minority neighborhoods, causes African Americans to have more exposure to lead paint, mold, pests, and housing without adequate safety devices such as smoke alarms.

The table also illustrates the importance of addressing health and housing from a holistic approach, rather than by focusing on each health issue separately. The national Green and Healthy Homes Initiative (GHHI) seeks to improve health through primary prevention interventions that address the environmental exposures and safety issues related to homes. By building collaborations and bringing multiple resources to bear, GHHI's one-touch model includes housing improvements to end lead exposure, reduce indoor asthma triggers, and prevent injuries, along with weatherization and structural renovations to homes of low-income residents. The convergence of at- risk groups lends support to GHHI's comprehensive approach that draws upon the resources and expertise of non-profit organizations, philanthropy, government agencies, and for-profit companies for synergy to tackle the interconnectedness of health and housing problems.

References

1. Brown MJ. Costs and benefits of enforcing housing policies to prevent childhood lead poisoning. Med Decis Making. 2002;22:482–92.
2. Georgia Department of Community Health, Childhood Lead Poisoning Prevention Program. Childhood lead poisoning in Georgia: A needs assessment; 2004. Available from http://health.state.ga.us/programs/lead/data.asp.
3. Jones RL, Homa DM, Meyer PA, Brody DJ, Caldwell KL, Pirkle JL, et al. Trends in blood lead levels and blood lead testing among US children aged 1 to 5 years, 1988–2004. Pediatrics. 2009;123(3), e376–85.
4. Advisory Committee on Childhood Lead Poisoning Prevention of the Centers for Disease Control and Prevention. Low Level lead exposure harms children: a renewed call for primary prevention; 2012. Available from http://www.cdc.gov/nceh/lead/ACCLPP/Final_Document_030712.pdf.
5. Centers for Disease Control and Prevention. Screening young children for lead poisoning: Guidance for state and local public health officials. Atlanta: US Department of Health and Human Services, CDC; 1997.
6. Jacobs DE, Clickner RP, Zhou JY, Viet SM, Marker DA, Rogers JW, et al. Prevalence of lead-based paint hazards in US housing. Environ Health Perspect. 2002;110(10), A599–A606.
7. US Census Bureau, American Housing Survey. National detailed tables introductory characteristics-all housing units [data file]; 2009. Available from http://www.census.gov/hhes/www/housing/ahs/ahs09/ahs09.html.
8. Georgia Department of Community Health, Childhood Lead Poisoning Prevention Program. Housing update 2000 [data file]. Retrieved from http://health.state.ga.us/pdfs/epi/lead/updatehousing.00.pdf.
9. Interview on 12/13/2010 with Forrest Staley, Director of Georgia Childhood Lead Poisoning Prevention Program. Forrest Staley compiled the housing data.
10. Georgia Department of Community Health, Childhood Lead Poisoning Prevention Program. 2004 blood lead screening guidelines for Georgia; 2004. Retrieved from http://health.state.ga.us/programs/lead/screeningtypes.asp.
11. Georgia Department of Community Health, Childhood Lead Poisoning Prevention Program. Data and reports. Retrieved from *http://health.state.ga.us/programs/lead/data.asp*.
12. Georgia Department of Community Health, Childhood Lead Poisoning Prevention Program. Yearly data [data files]; 2009. Retrieved from http://health.state.ga.us/programs/lead/data.asp.
13. Vaidyanathan A, Staley F, Shire J, Muthukumar S, Kennedy C, Meyer PA, et al. Screening for lead poisoning: a geospatial approach to determine testing of children in at-risk neighborhoods. J Pediatr. 2009;154, 409–14.
14. Mosaic Group. NPU-V health scan. Atlanta Civic Site and Annie E. Casey Foundation; 2009.

15. Georgia Department of Community Health, Georgia Asthma Control Program. Asthma 2010 Georgia data summary; 2010. Retrieved from http://health.state.ga.us/epi/cdiee/asthma.asp.
16. Akinbami L. The state of childhood asthma, United States, 1980–2005. Advance data from vital and health statistics, 381; 2006. Retrieved from http://www.cdc.gov/asthma/links_data.html.
17. Breysse P, Farr N, Galke W, Lanphear B, Morley R, Bergofsky L. The relationship between housing and health: Children at risk. Environ Health Perspect. 2004;112(15), 1583–8.
18. Centers for Disease Control and Prevention. Asthma fast facts; 2010. Retrieved from http://www.cdc.gov/asthma/asthmadata.htm.
19. US Department of Health and Human Services, National Heart Lung and Blood Institute. Expert panel report 3: guidelines for the diagnosis and management of asthma; 2007. Retrieved from http://www.nhlbi.nih.gov/guidelines/asthma/index.htm.
20. National Center for Healthy Housing. Summary of two key Institute of Medicine reports regarding asthma, indoor air quality, damp indoor spaces, and mold. Retrieved from http://www.healthyhomestraining.org.
21. Centers for Disease Control and Prevention, National Asthma Control Program. Management and treatment webpage. Retrieved from http://www.cdc.gov/asthma/management.html.
22. Centers for Disease Control and Prevention, National Asthma Control Program. National Health Interview Survey data, lifetime and current asthma [data file]; 2008. Retrieved from http://www.cdc.gov/asthma/nhis/08/data.htm.
23. Centers for Disease Control and Prevention, National Asthma Control Program. Behavioral Risk Factor Surveillance System data, lifetime and current asthma [data file]; 2008. Retrieved from http://www.cdc.gov/asthma/brfss/default.htm#09.
24. Moorman JE, Zahran H, Truman BI, Molla MT. Current asthma prevalence—United States, 2006–2008. MMWR. 2011;60(Suppl 1):84–6.
25. James CV, Rosenbaum S. Paying for quality care: implications for racial and ethnic health disparities in pediatric asthma. Pediatrics. 2009;123:S205–10.
26. Takaro TK, Krieger J, Song L, Sharify D, Beaudet N. The Breathe-Easy Home: the impact of asthma-friendly home construction on clinical outcomes and trigger exposure. Am J Publ Health. 2011;101(1):55–62.
27. Georgia Department of Community Health. OASIS, BRFSS, Georgia, chronic condition, Asthma, 2006 [data file]. Retrieved from http://oasis.state.ga.us/oasis/oasis/oasis/brfss/qryBRFSS.aspx.
28. Georgia Department of Community Health. OASIS, BRFSS, Fulton District, Chronic condition, Asthma [data file]. Retrieved from http://oasis.state.ga.us/oasis/oasis/oasis/brfss/qryBRFSS.aspx.
29. Email from Vietdoan Cheng, Asthma Epidemiologist at Georgia Department of Community Health. Received on 2/2/2011.

30. Georgia Department of Community Health. OASIS, Emergency room visits [data file]. Retrieved from http://oasis.state.ga.us/oasis/oasis/oasis/qryER.aspx, Georgia Emergency Department and Hospital Inpatient Discharge Data.

31. Georgia Department of Community Health. (2010). OASIS web query definitions. Retrieved from OASIS: http://oasis.state.ga.us/oasis/oasis/help/er.html.

32. Georgia Department of Community Health. OASIS, Morbidity [data file]. Retrieved from http://oasis.state.ga.us/oasis/oasis/oasis/qryMorbMort.aspx, Georgia Emergency Department and Hospital Inpatient Discharge Data.

33. Georgia Department of Community Health. OASIS, Mortality [data file]. Retrieved from http://oasis.state.ga.us/oasis/oasis/oasis/qryMorbMort.aspx, Georgia Vital Statistics.

34. Interview on 12/27/2010 with Steve Babb from Centers for Disease Control and Prevention Office of Smoking and Health.

35. Georgia Department of Community Health, Georgia Asthma Control Program. Asthma and secondhand smoke 2010 Georgia data summary; 2010. Retrieved from http://health.state.ga.us/epi/cdiee/asthma.asp.

36. Interview on 2/1/2011 with Priti Kolhe, Director, Office of Epidemiology, Fulton County Department of Health Services.

37. Runyan CW, Casteel C, eds. The state of home safety in America: facts about unintentional injuries in the home, 2nd edition; 2004. Retrieved from Home Safety Council: http://www.homesafetycouncil.org/AboutUs/Research/au_research_w001.asp.

38. Centers for Disease Control and Prevention. WISQARS injury mortality reports; 1997–2007. Retrieved from National Center for Injury Prevention and Control, Office of Statistics and Programming: http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html.

39. Centers for Disease Control and Prevention. Ten leading causes of death and injury; 2007. Retrieved from National Center for Injury Prevention and Control, Office of Statistics and Programming: http://www.cdc.gov/injury/wisqars/LeadingCauses.html.

40. Georgia Department of Community Health. OASIS mortality/morbidity web query tool; 2010. Retrieved from OASIS: http://oasis.state.ga.us/oasis/oasis/qryMorbMort.aspx.

41. Georgia Department of Community Health. OASIS Emergency room visits web query tool; 2010. Retrieved from OASIS: http://oasis.state.ga.us/oasis/oasis/qryER.aspx.

42. Centers for Disease Control and Prevention. WISQARS cost of injury reports; 2011. Retrieved from National Center for Injury Prevention and Control, Office of Statistics and Programming: http://wisqars.cdc.gov:8080/costT/.

43. Centers for Disease Control and Prevention. Carbon monoxide poisoning exposure and risk; 2010. Retrieved from National Environmental Public Health Tracking Network: http://ephtracking.cdc.gov/showCoRisk.action.

44. Centers for Disease Control and Prevention. Info by location query and results; 2010. Retrieved from National Environmental Public Health Tracking Network: http://ephtracking.cdc.gov/loadCIMForState.action.

45. Georgia Department of Community Health. Profile of injuries in Georgia; 2005. Retrieved from Injury Prevention Publications: http://health.state.ga.us/programs/injuryprevention/publications.asp.

46. World Health Organization. International classification of diseases; 2007. Retrieved from WHO Programs and Projects: http://apps.who.int/classifications/apps/icd/icd10online/.

47. Centers for Disease Control and Prevention. Fire deaths and injuries: fact sheet; 2010. Retrieved from National Center for Injury Prevention and Control, Home and Recreational Safety: http://www.cdc.gov/HomeandRecreationalSafety/Fire-Prevention/index.html.

48. Centers for Disease Control and Prevention. Unintentional drowning: fact sheet; 2010. Retrieved from National Center for Injury Prevention and Control, Home and Recreational Safety: http://www.cdc.gov/HomeandRecreationalSafety/Water-Safety/index.html.

49. Safe Kids USA. Raising safe kids: one stage at a time; 2009. Retrieved from Safe Kids USA Research Reports: http://www.safekids.org/our-work/research/reports/.

Appendix A: How-to Guide to Online Analytical Statistical Information System (OASIS)

Georgia Department of Community Health http://oasis.state.ga.us/oasis/

Youth Risk Behavior Survey and Behavioral Risk Factor Surveillance System Query Tool

Youth Risk Behavior Survey:

- Select year and school level (middle school or high school)
- Under Youth Risk Behavior Category select Tobacco Use then the Survey Question on Cigarette Use

Behavioral Risk Factor Surveillance System:

- Select geography, either State or District (Fulton County Health District)
- Under Behavior Category select Chronic Conditions, then under Behavior select Asthma
- Under Behavior Category select Risk Behaviors, then under Behavior select No Health Coverage or Smoking

OASIS Web Query Tool

Emergency Room Visits:

- Use the Definitions tab on the right-hand side of the Web page to understand the various data options, such as visits, de-duplicated visits, and age-adjusted rates
- Under Cause select Respiratory Diseases, then Asthma
- Under Cause select External Causes, then type of injury: fall, drowning, fire, poisoning
- To calculate racial health disparity ratio, under Measure select Deduplicated ER Visits & Age-Adjusted Rates, then generate two separate data tables by selecting Black under Race and then White under Race. Divide the Black rate by the White rate. The same calculation can be used for hospitalization and death data. See the following section on Mortality and Morbidity to learn how to generate this data by using OASIS.

Mortality/Morbidity Web Query Tool:

Mortality

- Use the Definitions tab on the right-hand side of the Web page to understand the various data options, such as deaths and age-adjusted rates
- Under Measure select Mortality Measures, then Deaths and Age-Adjusted Death Rates
- To get a measure of premature death, select YPLL 75 & YPLL Rate. YPLL stands for Years of Potential Life Lost; YPLL is useful when one is collecting data on health conditions that lead to death among young children, conditions such as injuries.
    - Select several years (example: 2000–2007)

- Select age group (example: infancy, early childhood, later childhood)
- Select external causes and specific type of injury
    - Drowning
    - Poisoning
    - Fire
    - Fall

Morbidity

- Use the Definitions tab on the right-hand side of the Web page to understand the various data options, such as hospital discharges, de-duplicated discharges, and age-adjusted rates
- Under Measure select Morbidity Measures, then:
    - Discharges and Discharge Rate
    - De-duplicated Discharges and Rate
    - Discharges and Age-Adjusted Discharge Rate
    - De-duplicated Discharges and Age-Adjusted Rate

Appendix B: How-to Guide for Web-based Injury Statistics Query and Reporting System (WISQARS)

Centers for Disease Control and Prevention, National Center for Injury Prevention and Control
http://www.cdc.gov/injury/wisqars/index.html

Consult Help function, Tutorial, and FAQs for assistance in using database

Fatal Injury Data

- Geography: national and by state
- Under Intent of the Injury select Unintentional
- Report options:
    - Cost of Injury Reports: Select Deaths, then generate the medical and work loss costs for each type of injury
    - Fatal Injury Mapping: goes down to county level
    - Fatal Injury Report: generates number of deaths, crude rate, and age-adjusted rate
    - YPLL: calculates Years of Potential Life Lost based on life expectancy of 65–85 years

Nonfatal Injury Data

- Geography: national
- Under Intent of the Injury select Unintentional
- Report options:
    - Cost of Injury Reports: Select Hospitalization or ED, then generate the medical and work loss costs for each type of injury
    - Nonfatal Injury Report: generates number of injuries, crude rate, and age-adjusted rate

Drill Down Feature to Specific Cause of Injury Death

- Geography: national and by state
- Drill down feature can be used with any type of unintentional injury, including falls, suffocation, drowning, etc.
- Leading Causes of Death Reports allow one to drill down by selecting unintentional injuries under an age group, then the type of injury, such as poisoning, then the International Classification of Disease (ICD) 10 codes for each substance that caused the poisoning (http://webappa.cdc.gov/sasweb/ncipc/leadcaus10.html)

Appendix C: How-to Guide to Charts and Graphs

Data can be presented in table, graph, or chart format. Graphs and charts can help to visualize the broader patterns and trends in data. The Excel software program has functions that transform raw data from spreadsheet/table format into graph and chart format. For the steps on how to generate a chart or graph by using Excel, consult the Help feature in the software program.

Bar charts display data from a one-variable table. Each value of a variable is represented by a bar. Bar charts can be used to display information from discrete, non-continuous categories, such as sex, race, or state.

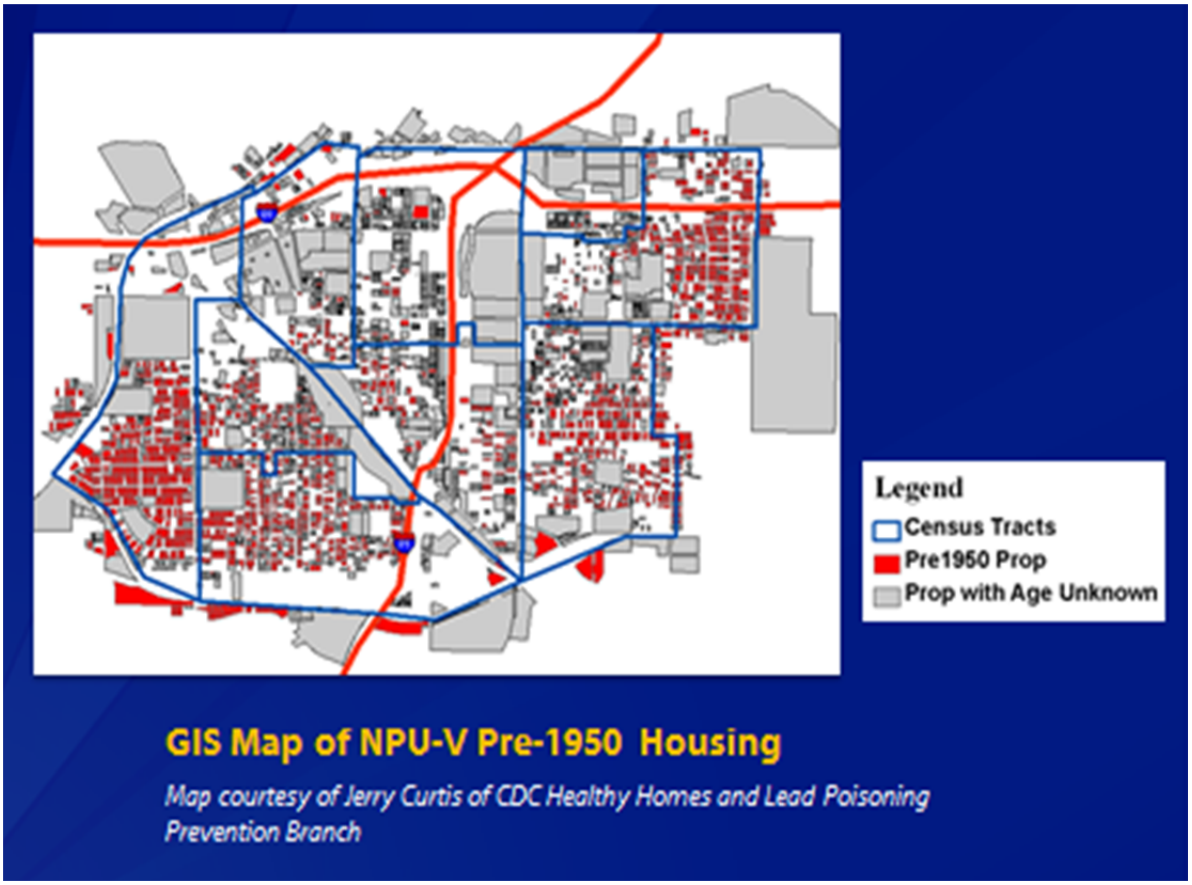
Pie charts are useful in displaying the component parts of a single variable in which all of the pieces combine to be 100% of the pie. Be aware that it is difficult to compare components between two or more pie charts.

For more information on tables, graphs, and charts, as well as their various uses, please consult the Centers for Disease Control and Prevention's Epidemiology Program Office's publication entitled *Principles of Epidemiology 2nd Edition*.

Appendix D: How-to Guide to GIS Mapping

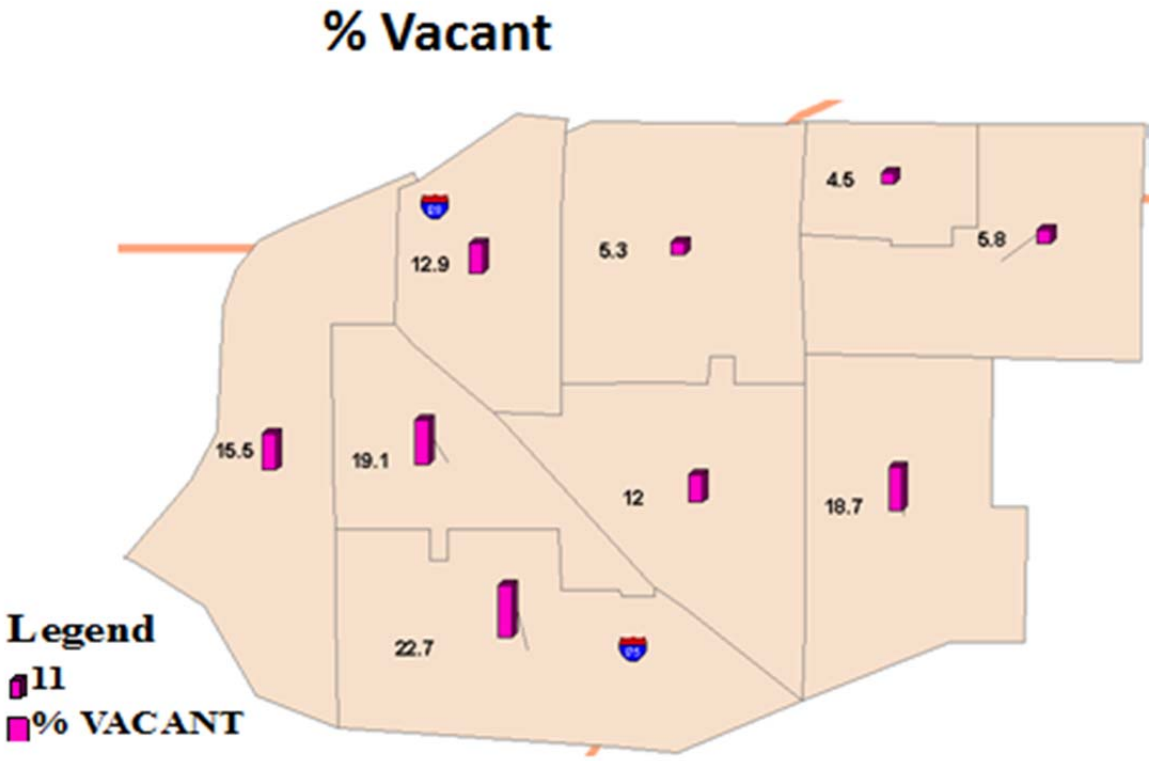
Sample GIS Maps

Figure F: GIS Map of NPU-V Pre-1950 Housing



Age of housing can be mapped by use of tax assessor data containing information on the age of properties. Be aware that tax assessor data are based on properties and not housing units. For example, one property/building may contain multiple housing units. Census data, on the other hand, are from a sample of households and thus are based on housing units. Consult the Centers for Disease Control and Prevention's publication entitled *Using GIS to Assess and Direct Childhood Lead Poisoning Prevention* for more information on the technical aspects of using data for GIS mapping.

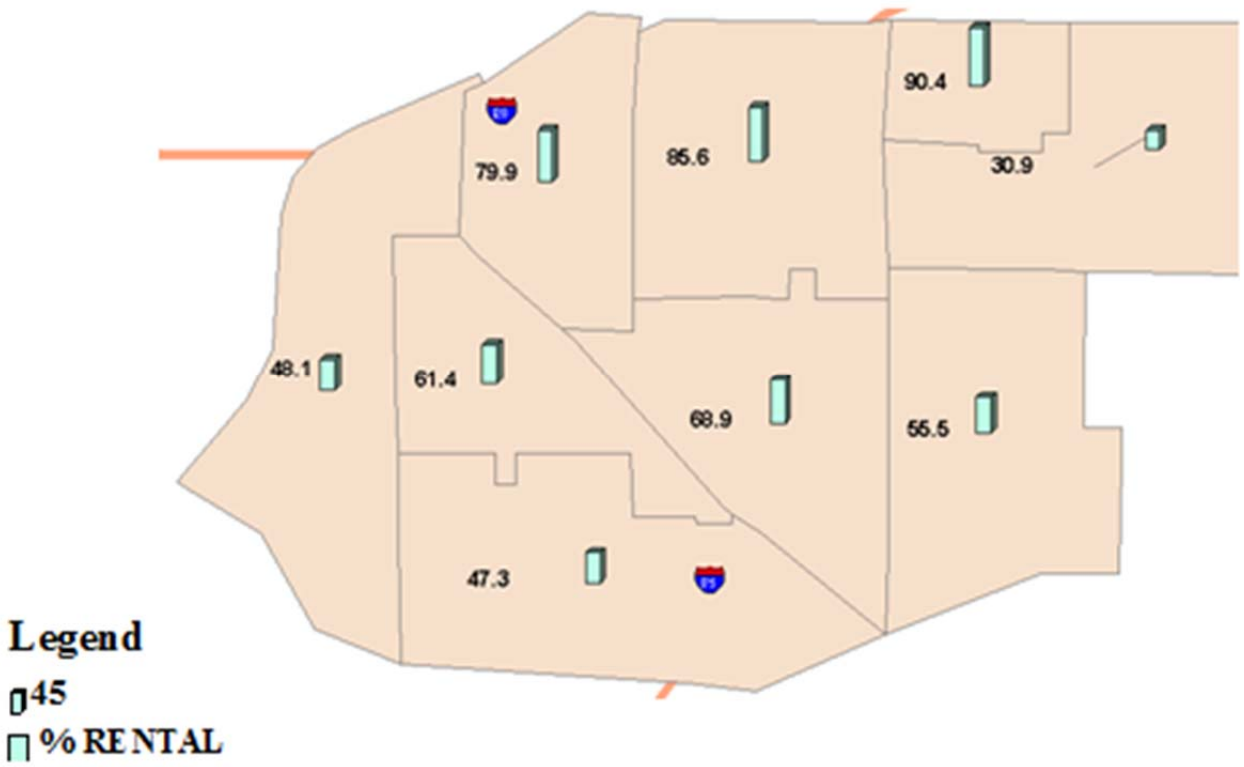
Figure G: Vacant Housing per Census Tract



This map shows the percentage of vacant housing in each census tract of NPU-V. The percentage was calculated by use of 2000 census data of total vacant housing units divided by total housing units.

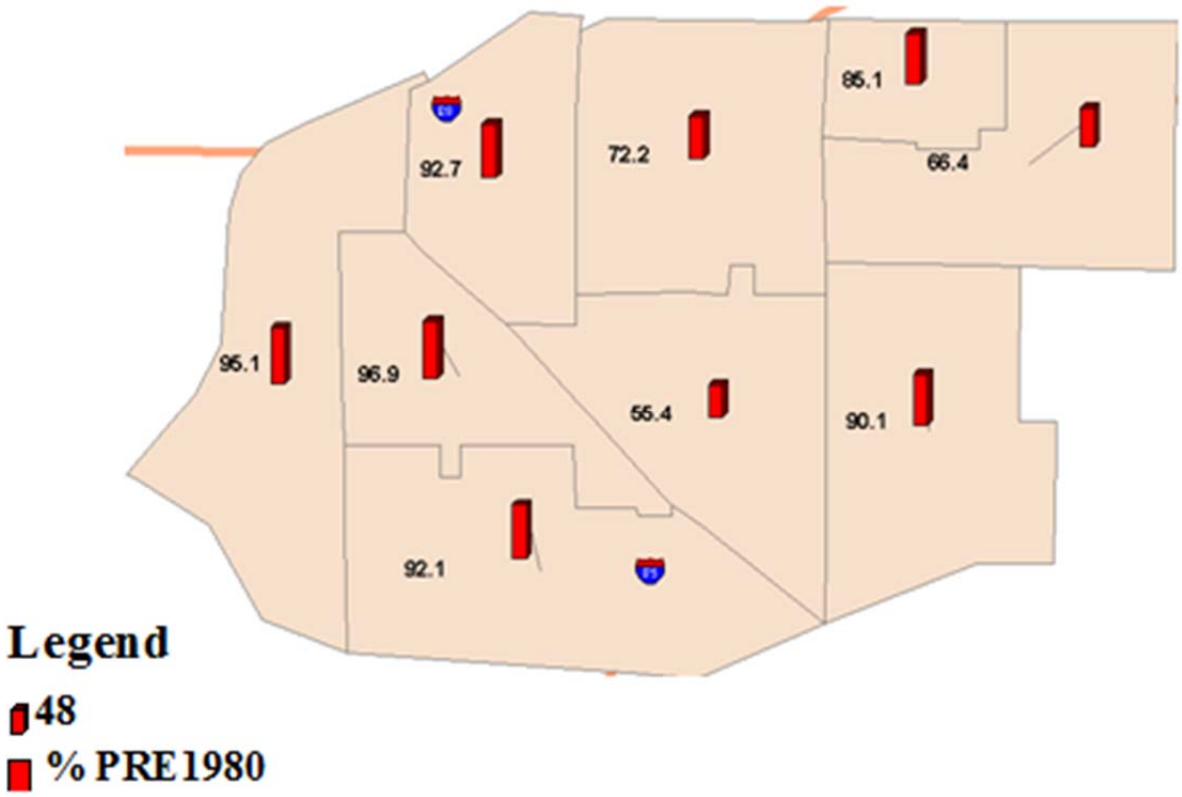
Similar maps can be generated by use of 2010 census data once that information is available.

Figure H: Percent of Rental Housing pre Census Tract



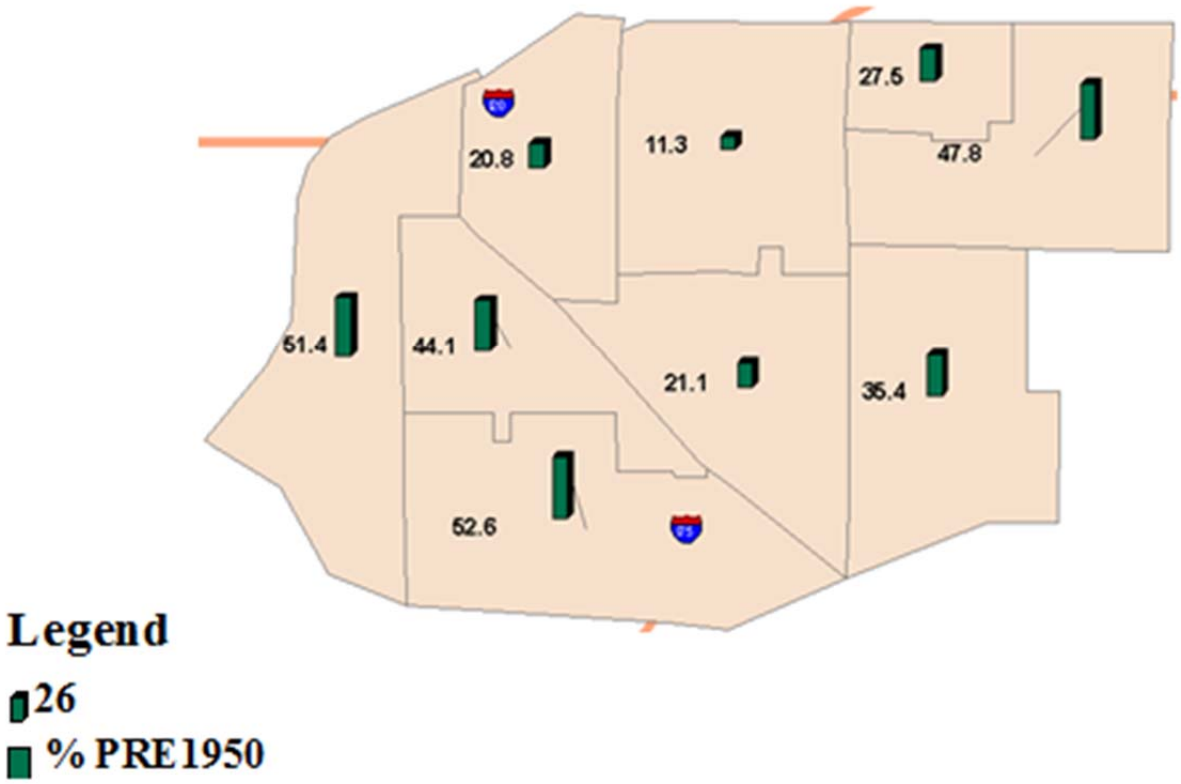
This map shows the percentage of rental housing in each census tract of NPU-V. The percentage was calculated by use of 2000 census data of total renter-occupied housing units divided by total housing units.

Figure I: Percentage of Pre-1980 Housing per Census Tract



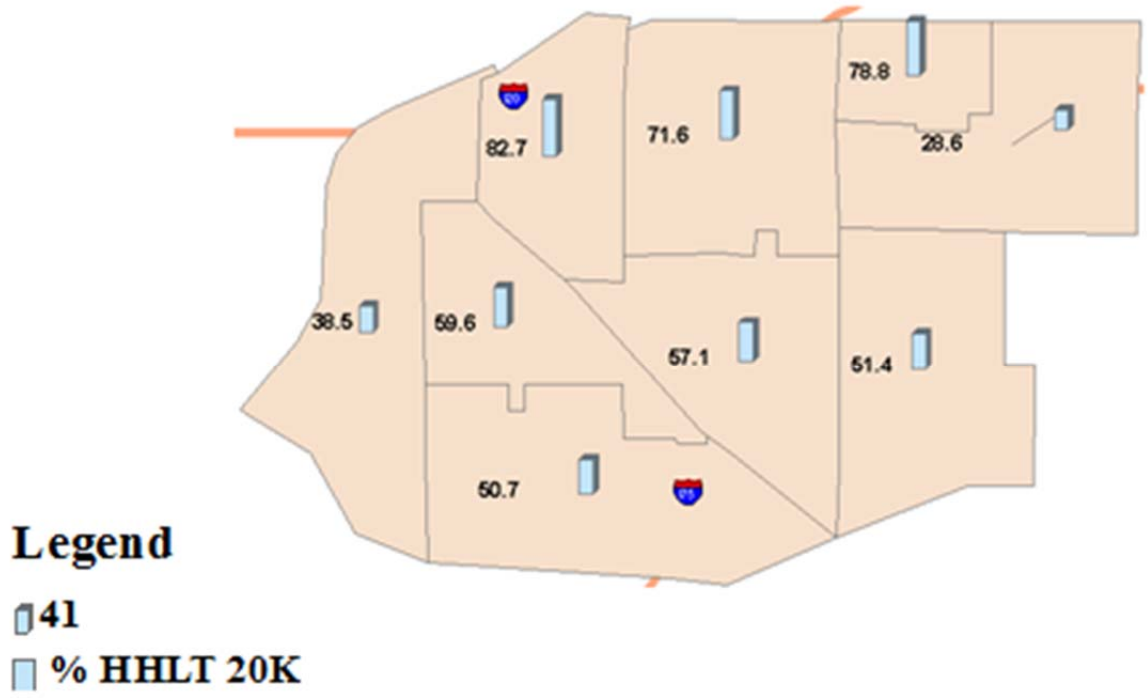
This map shows the percentage of pre-1980 housing in each census tract of NPU-V. The percentage was calculated by use of 2000 census data of total housing units that are pre-1950 + 1950s + 1960s + 1970s divided by total housing units.

Figure J: Percent of Pre-1950 Housing per Census Tract



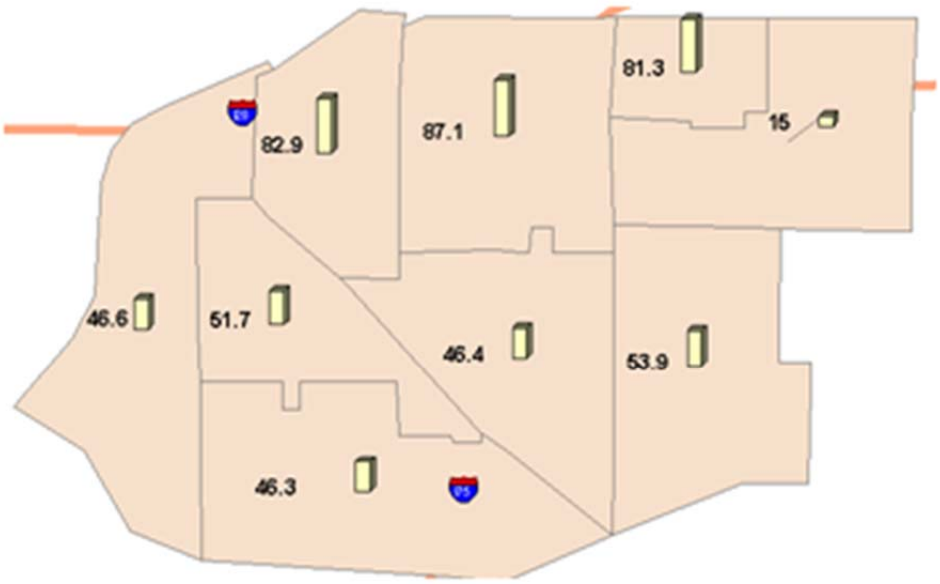
This map shows the percentage of pre-1950 housing in each census tract of NPU-V. The percentage was calculated by use of 2000 census data of total pre-1950 housing units divided by total housing units.

Figure K: Percent of Households with Incomes less than $20,000 per year



This map shows the percentage of households with incomes less than $20,000 per year in each census tract of NPU-V. The percentage was calculated by use of 2000 census data of total households with incomes of less than $10,000 + $10,000 to $14,999 + $15,000 to $19,999 divided by total households.

Figure L: Percent of Children 0 to 5 years old Living below Poverty per Census Tract



This map shows the percentage of children 0 to 5 years old living below poverty in each census tract of NPU-V. The percentage was calculated by use of 2000 census data of total children 0 to 5 years old living below poverty divided by total children 0 to 5 years old.

Appendix E: Example of Healthy Homes Survey

Baseline Survey

GENERAL INFORMATION

Name:_____

Address:_____

City:_____County:_____Zip:_____

Home Phone: _____

Cell Phone:_____Email:_____

Work Phone:_____

1. Do you own or rent your home?
   - ❑ Own
   - ❑ Rent

2. Was the home built before 1978?
   - ❑ Pre-1978
   - ❑ Post-1978
   - ❑ Not known

3. Do you have a basement?
   - ❑ Yes
   - ❑ No

4. Do you have a crawlspace?
   - ❑ Yes
   - ❑ No

5. Is your house built on a slab (concrete)?
   - ❑ Yes
   - ❑ No

6. Is your house a manufactured home (mobile home, travel trailer, camping trailer, park trailer, etc.)?
   - ❑ Yes
   - ❑ No

7. How many children live in your home with you?

Age 0 to 5 _____ # of children

Age 6 to 17 _____ # of children

8. Not including yourself, how many adults age 18 and over live in your home with you?

_____ # of adults

9. How many children (under 18 years old) currently living in your home have been told by a doctor (or nurse practitioner) that they have the following?
(Put "0" if zero.)

Asthma _____

Allergies _____

Lung disease other than asthma _____

Eczema (skin rash) _____

10. How many adults (over 18 years old) currently living in your home (other than yourself) have been told by a doctor (or nurse practitioner) that they have the following?
(Put "0" if zero.)

Asthma _____

Allergies _____

Lung disease other than asthma _____

Eczema (skin rash) _____

MOISTURE AND MOLD

11. Do you currently smell mold or other biological growth (pollen and mold spores, pet dander, cockroach and dust mite particles) in your home?

- ❑ Yes
- ❑ No (if No, skip to Question 12)

11a. If yes, where has this odor occurred?
State, "yes" to all of the options that apply.

- ❑ a) In the hall, elevator, stairs of the home building
- ❑ b) Basement of building

- ❑ c) Other _____

Inside your home in:

- ❑ c) Kitchen
- ❑ d) Living room
- ❑ e) Bedroom
- ❑ f) Bathroom
- ❑ g) Other_____

11b. Would you describe the mold odor as:

- ❑ Consistent (ex. every day, all day)
- ❑ Intermittent (ex. Certain times of day)

12. Do you currently see mold on the surfaces in your home?

- ❑ Yes
- ❑ No (if No, skip to question 13)

12a. If yes, what rooms do you see the mold in?

(State "yes" to all that apply)

- ❑ a) Bathroom
- ❑ b) Living Room
- ❑ c) 1 Bedroom
- ❑ d) 2 Bedrooms
- ❑ e) 3 or more bedrooms
- ❑ f) Kitchen
- ❑ g) Other_____

13. In the past 6 months, have you seen mold on surfaces in your home?

- ❑ Yes
- ❑ No

14. How are you treating the mold?

_____

_____

15. Has water leaked into your home in the last 6 months?

- ❑ Yes
- ❑ No (if No, skip to question 16)

15a. Which room(s) had water leaks?

(For both outdoor and indoor sources. State "yes" to all that apply)

- ❑ a) Bathroom
- ❑ b) Kitchen
- ❑ c) Bedrooms

- ❑ d) Living Room
- ❑ e) Basement/Crawlspace
- ❑ f) Other_____

15b. Where was the water leaking from?

- ❑ Outside (Include roof, windows and outside wall leaks)
- ❑ Don't Know
- ❑ Inside (include plumbing or other leaks from indoor sources)

15c. Was water leaking through:

(State "yes" to all that apply)

- ❑ a) Walls
- ❑ b) Ceiling
- ❑ c) Windows

15d. If leaks started within the building, where did they come from?

(State "yes" to all that apply)

- ❑ a) Radiators
- ❑ b) Toilets
- ❑ c) Tub/shower
- ❑ d) Sink
- ❑ e) Washing machine
- ❑ f) Don't know
- ❑ g) Other_____

Go to 16

16. Is there standing water in your home?

- ❑ Yes
- ❑ No (If No, skip to Question 17)

16a. If yes, where is the standing water in your home?

- ❑ a) Bathroom
- ❑ b) Kitchen
- ❑ c) Bedrooms
- ❑ d) Living Room
- ❑ e) Basement/Crawlspace
- ❑ f) Other_____

17. Do you have a working sump pump?

- ❑ Yes
- ❑ No

18. Are there water stains in your home?

- ❑ Yes
- ❑ No

18a. If yes, where?

- ❑ a) Bathroom
- ❑ b) Kitchen
- ❑ c) Bedrooms
- ❑ d) Living Room
- ❑ e) Basement/Crawlspace
- ❑ f) Other_____

19. Other than from leaks, has water/moisture formed droplets on walls, ceiling, and windows not including those in the bathroom, in the last 6 months?

- ❑ Yes
- ❑ No

20. What is the current humidity level in your home? _____

21. Are you using a dehumidifier?

- ❑ Yes
- ❑ No (if No, skip to question 22)

21a. If yes, how often do you empty the dehumidifier? _____

22. If you have a clothes dryer inside the home, is it vented to the outside?

- ❑ a) Yes
- ❑ b) No
- ❑ c) Do not have a dryer
- ❑ d) Don't know

23. Do you hang clothes to dry inside your home?

- ❑ Yes
- ❑ No

24. Do you have a washing machine in your home?

- ❑ Yes
- ❑ No

AIRBORNE IRRITANTS

25. Are there visible indications of cockroaches, mice or rats in or around the building?

❑ No (if No, skip to Question 26)

❑ Yes, cockroaches

❑ Yes, mice or rats

25a. Do you know how cockroaches or mice get into your home?

State, "yes" to all of the options that apply.

- ❑ a) From openings under the sink.
- ❑ b) From openings in the walls.
- ❑ c) Through the window screens.
- ❑ d) From the hallway.
- ❑ e) Other_____
- ❑ f) Don't know

If Yes, cockroaches ↓

Identify steps that you have taken to control roaches or other insects:

_____
_____
_____
_____

If Yes, mice or rats ↓

Identify steps that you have taken to control mice:

_____
_____
_____

26. How often have you or your family personally used pesticides (pest killers) in your home in the past 6 months?

- ❑ a) Every day
- ❑ b) Once a week
- ❑ c) Once a month
- ❑ d) A few times a month
- ❑ e) Never

27. Do you smoke?

- ❑ Yes
- ❑ No

28. How many people living in your home (other than yourself) smoke?
_____ # of smokers

29. Do you ever prohibit (not allow) smoking in your home?

- ❑ Yes
- ❑ No

30. Do you have pets?

- ❑ Yes
- ❑ No

31. What type of pets do you have and how many?

- ❑ a) Dogs # _____
- ❑ b) Cats # _____
- ❑ c) Birds # _____
- ❑ d) Fish # _____
- ❑ e) Turtles # _____
- ❑ f) Other # _____ Specify: _____

32. Can you see dust or dirt on your furniture, walls, ceiling, and curtains?

- ❑ Yes
- ❑ No

33. Do you vacuum less than once a week?

- ❑ Yes
- ❑ No

34. Do you have wall-to-wall carpeting in your kitchen or bathrooms?

- ❑ Yes
- ❑ No

35. Do you have wall-to-wall carpeting in more than half of the rooms in your home?

- ❑ Yes
- ❑ No

36. Have any recent changes been made to the home?
(Examples: repairs, painting, remodeling, new items purchased)

- ❑ Yes
- ❑ No

37. (*If repairs)* What caused the need for repairs?
(Show the list to resident and read each one to them. State "yes" to all that apply.)

- ❑ a) Water damage starting outside your unit
- ❑ b) Water damage starting inside your unit
- ❑ c) toilet
- ❑ d) tub/shower
- ❑ e) bathroom sink
- ❑ f) kitchen sink
- ❑ g) Heating system
- ❑ h) Windows
- ❑ i) Paint on walls/ceiling
- ❑ j) Electrical system and appliances
- ❑ k) Lead paint removal
- ❑ l) Other_____

38. How do you cool your home?

- ❑ Central Air
- ❑ Window AC Units
- ❑ Fans
- ❑ None

39. How do you heat your home?

- ❑ Gas
- ❑ Electric
- ❑ Oil
- ❑ Wood burning stove
- ❑ Other_____

40. What type of heating system does your home have?

- ❑ Forced Hot Air
- ❑ Electric Baseboard
- ❑ Radiant

- ❑ Fireplace or Wood/Pellet Stove
- ❑ Space heaters

41. How often do you change your furnace filters?

- ❑ Every 3 months
- ❑ Annually
- ❑ Never
- ❑ Not sure
- ❑ N/A

42. Are you using exhaust fans in the bathroom?

- ❑ Yes
- ❑ No

43. Are you using exhaust fans in the kitchen?

- ❑ Yes
- ❑ No

CHEMICAL EXPOSURES

44. Which of the following household products have you stored or used in the home in the past 6 months?

State, "yes" to all of the options that apply.

- ❑ a) Paints/Finishes/Maintenance supplies (such as adhesives, varnishes and stains)
- ❑ b) Pesticide
- ❑ c) Automotive products (such as fuel or motor oil)
- ❑ d) Cleaning supplies (such as Ammonia or Bleach)
- ❑ e) Air fresheners
- ❑ f) Personal care product (such as hair dye or perm products)
- ❑ g) Drain cleaner
- ❑ h) Oven cleaner
- ❑ i) Other household cleaners (specify)_____

45. Are you currently using green cleaning supplies?

- ❑ Yes
- ❑ No

46. Where do you store chemicals? *(check all that apply)*

- ❑ Within children's reach
- ❑ Outside of children's reach
- ❑ In a locked cabinet

SAFETY

47. Is your smoke alarm working?
- ❑ Yes
- ❑ No

48. Do you have a smoke alarm on each floor?
- ❑ Yes
- ❑ No

49. Is your Carbon Monoxide alarm working?
- ❑ Yes
- ❑ No

50. Where is your Carbon Monoxide alarm placed?

_____

51. Do you have combustion appliances?
- ❑ Yes
- ❑ No

52. Have you tested for radon?
- ❑ Yes
- ❑ No

53. Are you aware of asbestos in your home?
- ❑ Yes
- ❑ No
- ❑ N/A

54. Are you aware of lead based paint in your home?
- ❑ Yes
- ❑ No
- ❑ N/A

BED BUGS

55. Do you suspect that you have bed bugs?
- ❑ Yes
- ❑ No

55a. Have you seen bed bugs?
- ❑ Yes
- ❑ No

55b. Have you noticed bites?

- ❑ Yes
- ❑ No

55c) Have you seen evidence of bed bugs (insects that are small, flat, reddish-brown in color, wingless, and range from 1 to 7 millimeters in length)?

- ❑ Yes
- ❑ No

Follow-up Survey

GENERAL INFORMATION

1. How many children live in your home with you?

Age 0 to 5 _____ # of children

Age 6 to 17 _____ # of children

2. Not including yourself, how many adults age 18 and over live in your home with you?

_____ # of adults

3. How many children (under 18 years old) currently living in your home have been told by a doctor (or nurse practitioner) that they have the following?
(Put "0" if zero.)

Asthma _____

Allergies _____

Lung disease other than asthma _____

Eczema (skin rash) _____

4. How many adults (over 18 years old) currently living in your home (other than yourself) have been told by a doctor (or nurse practitioner) that they have the following?
(Put "0" if zero.)

Asthma _____

Allergies _____

Lung disease other than asthma _____

Eczema (skin rash) _____

MOISTURE AND MOLD

5. During the last 6 months, did you see an improvement in the mold conditions?

6. Do you currently smell mold or other biological growth in your home?

- ❑ Yes
- ❑ No (if No, skip to Question 7)

6a. If yes, where has this odor occurred?
State, "yes" to all of the options that apply.

- ❑ a) In the hall, elevator, stairs of the home building
- ❑ b) Basement of building
- ❑ c) Other _____

Inside your home in:

- ❑ c) Kitchen
- ❑ d) Living room
- ❑ e) Bedroom
- ❑ f) Bathroom
- ❑ g) Other_____

6b. Would you describe the mold odor as:

- ❑ Consistent – the odor is present throughout the day
- ❑ Intermittent – the odor is only present during certain times of day (after a rain storm, someone takes a shower, after boiling water on the stove)

7. Do you currently see mold on the surfaces in your home?

- ❑ Yes
- ❑ No (if No, skip to question 9)

9a. If yes, what rooms do you see the mold in?
(State "yes" to all that apply)

- ❑ a) Bathroom
- ❑ b) Living Room
- ❑ c) 1 Bedroom
- ❑ d) 2 Bedrooms
- ❑ e) 3 or more bedrooms
- ❑ f) Kitchen
- ❑ g) Other_____

8. How are you treating the mold?

_____

_____

9. Has water leaked into your home in the last 6 months?

- ❑ Yes
- ❑ No (if No, skip to question 16)

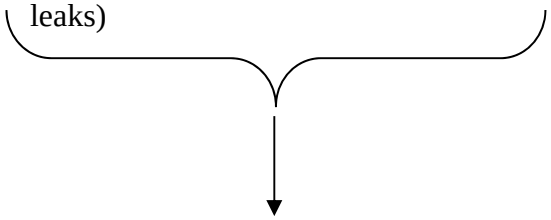
9a. Which room(s) had water leaks?
(For both outdoor and indoor sources. State "yes" to all that apply)

- ❑ a) Bathroom

- ❑ b) Kitchen
- ❑ c) Bedrooms
- ❑ d) Living Room
- ❑ e) Basement/Crawlspace
- ❑ f) Other_____

9b. Where was the water leaking from?

- ❑ Outside (Include roof, windows and outside wall leaks)
- ❑ Don't Know
- ❑ Inside (include plumbing or other leaks from indoor sources)



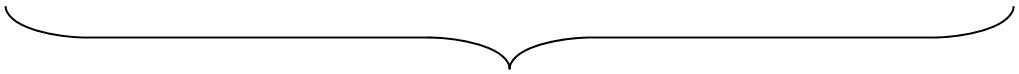
15c. Was water leaking through:
(State "yes" to all that apply)

- ❑ a) Walls
- ❑ b) Ceiling
- ❑ c) Windows

9d. If leaks started within the building, where did they come from?

(State "yes" to all that apply)

- ❑ a) Radiators
- ❑ b) Toilets
- ❑ c) Tub/shower
- ❑ d) Sink
- ❑ e) Washing machine
- ❑ f) Don't know
- ❑ g) Other_____



Go to 10

10. Is there standing water in your home?

- ❑ Yes
- ❑ No (If No, skip to Question 11)

10a. If yes, where is the standing water in your home?

- ❑ a) Bathroom
- ❑ b) Kitchen
- ❑ c) Bedrooms
- ❑ d) Living Room
- ❑ e) Basement/Crawlspace
- ❑ f) Other_____

11. Do you have a working sump pump?
- ❑ Yes
- ❑ No

12. Are there water stains, with no visible mold growth, in your home?
- ❑ Yes
- ❑ No (If No, skip to Question 13)

12a. If yes, where?
- ❑ a) Bathroom
- ❑ b) Kitchen
- ❑ c) Bedrooms
- ❑ d) Living Room
- ❑ e) Basement/Crawlspace
- ❑ f) Other_____

13. Other than from leaks, has water/moisture formed droplets on walls, ceiling, and windows not including those in the bathroom, in the last 6 months?
- ❑ Yes
- ❑ No

14. What is the current humidity level in your home? _____

15. Are you using a dehumidifier?
- ❑ Yes
- ❑ No (if No, skip to question 16)

15a. If yes, how often do you empty the dehumidifier? _____

16. If you have a clothes dryer inside the home, is it vented to the outside?
- ❑ a) Yes
- ❑ b) No
- ❑ c) Do not have a dryer
- ❑ d) Don't know

17. Do you hang clothes to dry inside your home?
- ❑ Yes
- ❑ No

18. Do you have a washing machine in your home?
- ❑ Yes
- ❑ No

AIRBORNE IRRITANTS

19. In the past 6 months, have the pest conditions improved?

- ❑ Yes
- ❑ No

20. Are there visible indications of cockroaches, mice or rats in or around the building?

- ❑ No (if No, skip to Question 21)
- ❑ Yes, cockroaches
- ❑ Yes, mice or rats

20a. Do you know how cockroaches or mice get into your home?

State, "yes" to all of the options that apply.

- ❑ a) From openings under the sink.
- ❑ b) From openings in the walls.
- ❑ c) Through the window screens.
- ❑ d) From the hallway.
- ❑ e) Other_____
- ❑ f) Don't know

If Yes, cockroaches ↓

Identify steps that you have taken to control roaches or other insects:

_____
_____
_____
_____

If Yes, mice or rats ↓

Identify steps that you have taken to control mice:

_____
_____
_____
_____

21. How often have you or your family personally used pesticides (pest killers) in your home in the past 6 months?

- ❑ a) Every day
- ❑ b) Once a week
- ❑ c) Once a month
- ❑ d) A few times a month
- ❑ e) Never

22. What type of pesticide have you used in your home?
- ❑ a) A spray can
- ❑ b) A insecticide fogger or bug bomb
- ❑ c) Insect bait or traps
- ❑ d)

23. Do you smoke?
- ❑ Yes
- ❑ No

24. How many people living in your home (other than yourself) smoke?
_____ # of smokers

25. Do you ever prohibit (not allow) smoking in your home?
- ❑ Yes
- ❑ No

26. Do you have pets?
- ❑ Yes
- ❑ No

27. What type of pets do you have and how many?
- ❑ a) Dogs # _____
- ❑ b) Cats # _____
- ❑ c) Birds # _____
- ❑ d) Fish # _____
- ❑ e) Turtles # _____
- ❑ f) Other # _____ Specify: _____

28. Can you see dust or dirt on your furniture, walls, ceiling, and curtains?
- ❑ Yes
- ❑ No

29. Do you vacuum less than once a week?
- ❑ Yes
- ❑ No

30. Do you have wall-to-wall carpeting in your kitchen or bathrooms?
- ❑ Yes
- ❑ No

31. Do you have wall-to-wall carpeting in more than half of the rooms in your home?
- ❑ Yes
- ❑ No

32. Have any recent changes been made to the home?
(Examples: repairs, painting, remodeling, new items purchased)

- ❑ Yes
- ❑ No

33. (*If repairs)* What caused the need for repairs?
(Show the list to resident and read each one to them. State "yes" to all that apply.)

- ❑ a) Water damage starting outside your unit
- ❑ b) Water damage starting inside your unit
- ❑ c) toilet
- ❑ d) tub/shower
- ❑ e) bathroom sink
- ❑ f) kitchen sink
- ❑ g) Heating system
- ❑ h) Windows
- ❑ i) Paint on walls/ceiling
- ❑ j) Electrical system and appliances
- ❑ k) Lead paint removal
- ❑ l) Other_____

34. How often do you change your furnace filters?

- ❑ Every 3 months
- ❑ Annually
- ❑ Never
- ❑ Not sure
- ❑ N/A

35. How do you cool your home?

- ❑ Central Air
- ❑ Window AC Units
- ❑ Fans
- ❑ None

36. Are you using exhaust fans in the bathroom?

- ❑ Yes
- ❑ No

37. Are you using exhaust fans in the kitchen?

- ❑ Yes
- ❑ No

CHEMICAL EXPOSURES

38. Which of the following household products have you stored or used in the home in the past 6 months?

State, "yes" to all of the options that apply.

- ❑ a) Paint
- ❑ b) Pesticide
- ❑ c) Flea control products for pets
- ❑ d) Motor oil
- ❑ e) Bleach such as Clorox
- ❑ f) Ammonia such as Windex
- ❑ g) Air fresheners
- ❑ h) Hair colorants, relaxers or perm chemicals
- ❑ i) Drain cleaner
- ❑ j) Oven cleaner
- ❑ k) Other household cleaners (specify)_____

39. Are you currently using green cleaning supplies?

- ❑ Yes
- ❑ No

40. Where do you store chemicals? *(check all that apply)*

- ❑ Within children's reach
- ❑ Outside of children's reach
- ❑ In a locked cabinet

SAFETY

41. Is your smoke alarm working?

- ❑ Yes
- ❑ No

42. Do you have a smoke alarm on each floor?

- ❑ Yes
- ❑ No

43. Is your Carbon Monoxide alarm working?

- ❑ Yes
- ❑ No

44. Where is your Carbon Monoxide alarm placed?

_____

45. Are you aware of asbestos in your home?

- ❑ Yes
- ❑ No
- ❑ N/A

46. Are you aware of lead based paint in your home?

- ❑ Yes
- ❑ No
- ❑ N/A

BED BUGS

47. Do you suspect that you have bed bugs?

- ❑ Yes
- ❑ No

47a. Have you seen bed bugs?

- ❑ Yes
- ❑ No

47b. Have you noticed bites on anyone in your household's skiin?

- ❑ Yes
- ❑ No

47c) Have you seen evidence of bed bugs?

- ❑ Yes
- ❑ No

Appendix F: Example of Asthma Survey

In addition to the National Health Interview Survey, the Behavioral Risk Factor Surveillance System, and the asthma callback survey, consider using the following asthma questionnaire to survey residents about asthma and indoor air allergens.

Asthma Survey

ASTHMA SYMPTOMS

1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?

- ❑ All of the time
- ❑ Most of the time
- ❑ Some of the time
- ❑ A little of the time
- ❑ None of the time

2. During the past 4 weeks, how often have you had shortness of breath?

- ❑ More than once a day
- ❑ Once a day
- ❑ 3 to 6 times a week
- ❑ Once or twice a week
- ❑ Not at all

3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?

- ❑ 4 or more nights a week
- ❑ 2 or 3 nights a week
- ❑ Once a week
- ❑ Once or twice a week
- ❑ Not at all

4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?

- ❑ 3 or more times per day
- ❑ 1 to 2 times per day
- ❑ 2 to 3 times per week
- ❑ Once a week or less
- ❑ Not at all

5. How would you rate your asthma control during the past 4 weeks?

- ❑ Not controlled at all
- ❑ Poorly controlled
- ❑ Somewhat controlled
- ❑ Well controlled
- ❑ Completely controlled

ASTHMA CARE

6. During the past 6 months, did you have an emergency or urgent care visit because of your asthma?

- ❑ Yes
- ❑ No (if No, skip to Question 7)

6a. If yes, did you travel by ambulance?

- ❑ Yes
- ❑ No (If No, skip to Question 7)

6b. If yes, how many times did you travel by ambulance in the past 6 months?____

7. During the past 6 months, were you admitted to the hospital overnight because of asthma? How many times?

- ❑ Yes
- ❑ No (If No, skip Question 7a)

7a. If yes, how many times were you admitted to the hospital overnight because of asthma in the past 6 months? _____

Appendix G: Asthma Surveillance Systems Summary Chart

Minimum Required Core Population-based Measures

This template is only an example of how to present the information

Measures	**Years Analyzed**	**Data Source**
<u>Minimum Required Core Population-based Measures</u>	*Indicate a range or specific years*	*Indicate which data source is used for both adults and children*
Lifetime prevalence - Adult		BRFSS Or Other (specify)
Lifetime prevalence - Child		BRFSS Or National Survey of Children's Health Or Other (specify)
Current prevalence - Adult		BRFSS Or Other (specify)
Current prevalence - Child		BRFSS Or National Survey of Children's Health Or Other (specify)
Mortality rates (underlying cause)		Vital Statistics
Hospital discharge rates (first listed diagnosis)		Specify

Measures	**Years Analyzed**	**Data Source**
Asthma Education Taken formal class Taught symptoms Taught attack response Taught peak flow use Given a written asthma action plan		BRFSS Call-Back (preferred) Or Other (specify)

Additional Population-based Measures

This template is only an example of how to present the information

Measures	Years Analyzed	Data Source
Additional Population-based Measures	*Indicate a range or specific years*	*Indicate which data source is used for both adults and children*
Asthma mortality rates (Multiple cause)		Vital Statistics
Hospital discharge rates (Multiple diagnoses)		Specify
Asthma Control Scale Daytime symptoms Sleep disturbance Days of activity limitations Emergency dept. visits Urgent visits		BRFSS Adult Module Or BRFSS Call-Back Or Other (specify)
Symptom free days		BRFSS Call-Back
Routine care visits		BRFSS Adult Module Or Call-Back
Asthma Medication Rescue medication Control medication		BRFSS Adult Module Or Call-Back
Incidence		BRFSS Call-Back Or BRFSS Adult Module
Age at Diagnosis		BRFSS Call-Back Or BRFSS Adult Module

Measures	Years Analyzed	Data Source
Cost as a Barrier Primary care Specialist care Prescriptions		BRFSS Call-Back
Quality of life Days of work or school missed Degree of activity limitation		BRFSS Call-Back
Work-related Asthma		BRFSS Call-Back Or BRFSS State-added Or Workers Compensation Data
Environmental Exposures and Risk Reduction Scale		BRFSS Call-Back
Complementary and Alternative Therapy		BRFSS Call-Back
Emergency Department Visit Rates		Hospital Emergency Department Data
Physician's Office Visit Rates		Specify

NOTE: Population-based measures are defined as those from data sets that attempt to cover the entire population of the state (vital statistics, hospital discharges) or at least a large demographic group (e.g. BRFSS, National Survey of Children's Health). Population-subset measures are defined as those from data sets that are more limited in scope (e.g. Medicare, Managed care, insurance providers).

Additional Population-subset Measures

This template is only an example of how to present the information

Measures	Years Analyzed	Data Source
Additional Population-subset Measures	*Indicate a range or specific years*	*Indicate which data source is used for both adults and children*
Medicare: 1. Prevalence 2. Hospitalizations 3. ED visits 4. Outpatient visits 5. Office visits 6. Prescriptions		
Medicaid: 1. Prevalence 2. Hospitalizations 3. ED visits 4. Outpatient visits 5. Office visits 6. Prescriptions		
Managed care: 1. Prevalence 2. Hospitalizations 3. ED visits 4. Outpatient visits 5. Office visits 6. Prescriptions		
Measure (Specify if population-based or subset)		
Measure (Specify if population-based or subset)		

Measures	**Years Analyzed**	**Data Source**
Measure (Specify if population-based or subset)		

NOTE: Population-based measures are defined as those from data sets that attempt to cover the entire population of the state (vital statistics, hospital discharges) or at least a large demographic group (e.g. BRFSS, National Survey of Children's Health). Population-subset measures are defined as those from data sets that are more limited in scope (e.g. Medicare, Managed care, insurance providers).

Appendix H: Research and Government Publications

Centers for Disease Control and Prevention (CDC)

Asthma: A Presentation of Asthma Management and Prevention (Slide Presentation and Speaker Notes)

This 75-slide presentation depicts the pathophysiology of asthma; prevalence, mortality, and morbidity measures at the national level; risk factors; medical management; and the public health response needed to successfully fight asthma.

http://www.cdc.gov/asthma/speakit/default.htm

Environmental Protection Agency (EPA)

The EPA serves as a convener for community-based asthma programs and the organizations that sponsor them. EPA's Asthma Community Network *Communities in Action* Web site provides a variety of useful resources. Look under Community Programs, Exemplary Award Winners, for a number of these programs that use community health workers and address other health topics in addition to asthma. Also, be sure to look under Resources, specifically the Asthma Change Package.

http://asthmacommunitynetwork.org/

http://www.epa.gov/asthma/publications.html

http://www.epa.gov/region4/air/radon/

City of Boston

The Breathe Easy at Home program is designed to improve access and communication between medical homes for children with asthma, public health agencies, and housing agencies within the City of Boston.

http://www.cityofboston.gov/isd/housing/bmc/

The Boston Public Health Commission
http://www.bphc.org/programs/cib/healthyhomescommunitysupports/healthyhomes/breatheeasy/Pages/Home.aspx

Journal of Public Health Management and Practice, September/October 2010, Supplement 5

Articles on healthy housing issues and evidence-based housing interventions to address asthma, lead poisoning, and home injuries.

http://journals.lww.com/jphmp/toc/2010/09001