




*I want to  
conduct a Health  
Impact Assessment  
on a greenway.*



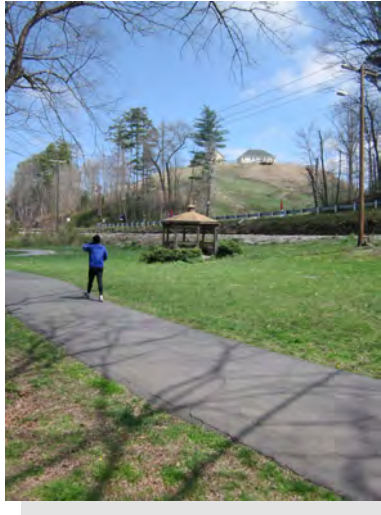
**CONNECT  
BUNCOMBE**  
*Making Greenways Happen*

# Buncombe County Greenways & Trails Master Plan

## Health Impact Assessment Workshop—July 26, 2012

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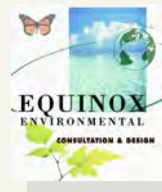


Buncombe County  
Department of Health &  
Parks, Greenways and  
Recreation Services



Healthy Buncombe

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## Buncombe County Greenways & Trails Master Plan Health Impact Assessment

### Introduction

Thank you for participating in the Buncombe County Greenways & Trails Plan Health Impact Assessment (HIA). Your contributions will be valuable to the process and ultimately help determine the likely impacts of the proposed greenway routes on varying measures of community health.

You have been identified as a key contributor to the HIA process and vital to the assessment process. In order to maximize each individual's contribution, this document was compiled as a means to capture current health conditions in Buncombe County and to provoke thought for the stakeholder workshop forthcoming. It is meant to be a working document that can evolve through the HIA process.

Please take some time to review each section, reflect on both the information included or data you think is missing but important to consider, and the numerous questions posed throughout the document. We have provided space to write responses and your thought throughout the booklet.

This document is a synthesis of statistics, measures, survey responses and Plan goals and objectives—all of which have a tie to the Greenway & Trails Master Plan. The July 26 workshop will be highly interactive and to capture not only health impacts, but also partnerships, community needs, preventive measures to possible negative impacts, and help to determine how the Greenways are prioritized for construction.

### Description of the HIA Process

A Health Impact Assessment (HIA) is a method of determining potential impacts on community health measures of a proposed plan, policy or project. The HIA process utilized for the Buncombe County Green-

ways & Trails Master Plan is what's known as a "Rapid HIA". A Rapid HIA generally consists of a stakeholder workshop, assessment, and development of mitigation and evaluation strategies. A detailed outline of this method is shown in Exhibit 1 on the following page. When finished, the HIA will be an element of the Greenways & Trails Master Plan and hopefully a tool to help measure health impacts and pursue funding for greenways.

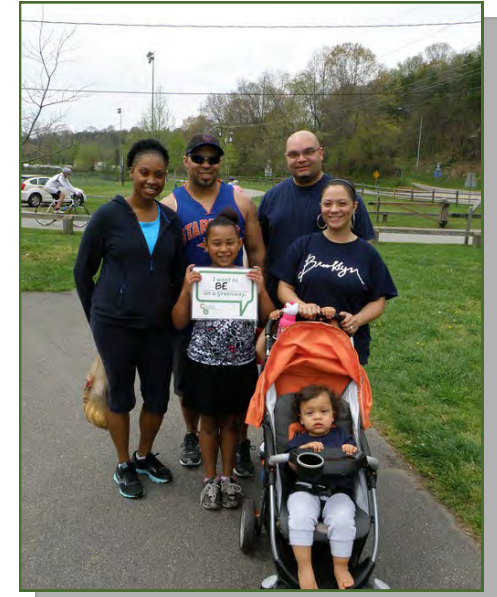
Additionally the document will determine the range of impacts—from economic and physical to social and psychological—and can serve to strengthen initial recommendations of the Plan as well as prioritize implementation steps for the many project stakeholders.

### Defining the Greenway Area

In order to gain an insight as to the level of impacts possible from the Greenways, defining who may be impacted is key. The definition utilized for the Plan is located at right.

The direct impacts will occur from those people living or working nearest the proposed routes, more specifically the corridors shown as dotted yellow lines on Exhibit 2.

Most planning professionals consider ½ mile a "walkable" distance for access to schools, parks, greenways and other destinations. If optimal conditions such as directness of the route, safety and convenience, are maximized, a comfortable walking distance to such destinations can be up to one-mile. With respect to bicycling, 1 to 2 miles is possible for most users likely to access a greenway; some more experienced bicyclists will travel longer distances.



**Greenway** (*grēn' - wā*) *n* 1. A linear open space established along either a natural corridor, such as a riverfront, stream valley, or ridgeline, or overland along a railroad right-of-way converted to a recreational use, a canal, a scenic road, or other route. 2. Any natural or landscaped course for pedestrian or bicycle passage. 3. An open-space connector linking parks, nature reserves, cultural features, or historic sites with each other and with populated areas. 4. Locally, certain strip or linear parks designated as a parkway or greenway.

Exhibit 1: Health Impact Assessment Process

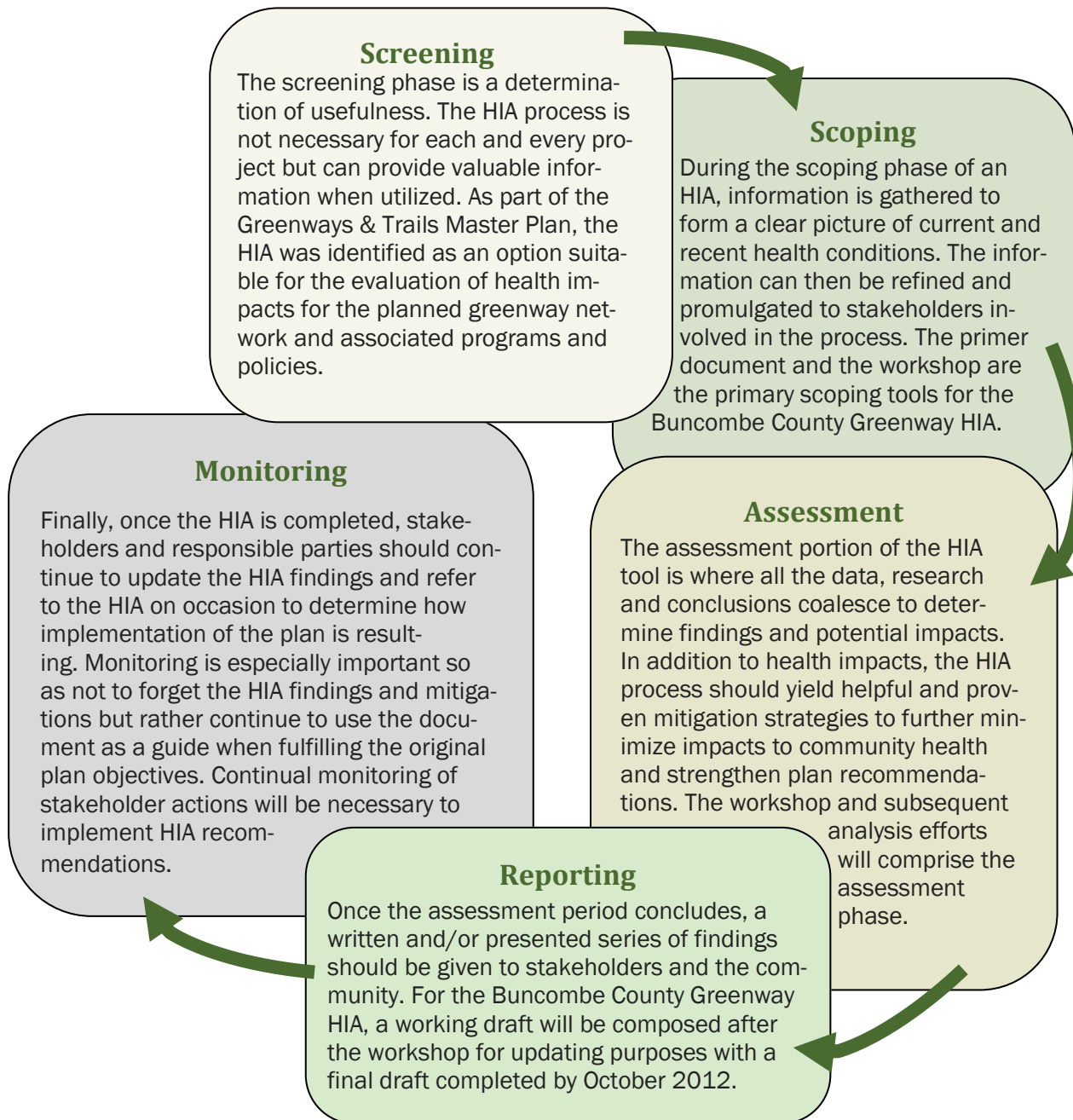


Exhibit 2 shows the direct geographic impact areas of the Priority Corridors identified in the Master Plan, using a one mile buffer around the trails to denote an area of influence.

The Priority Corridors identified in the Greenways & Trails Master Plan are in no particular order:

- ◆ **Wilma Dykeman RiverWay** along the French Broad River and Swannanoa River in Asheville.
- ◆ **US 70 / Swannanoa River Greenway** from Azalea Park in east Asheville to Black Mountain via Warren Wilson College and Black Mountain.
- ◆ **French Broad River / NC 251 Greenway** from the north city limit of Asheville to Madison County.
- ◆ **Weaverville / Reems Creek Greenway** from the French Broad River, through Weaverville, to the Vance Birthplace.
- ◆ **Enka / Candler Greenway** from the confluence of Hominy Creek and the French Broad River to Enka High School.
- ◆ **Bent Creek Greenway** from the confluence of Hominy Creek and the French Broad River, parallel or along Brevard Road to Bent Creek and the NC Arboretum.
- ◆ **Lake Julian / Arden Greenway** from the Arboretum, along the French Broad River, to Lake Julian and Arden.
- ◆ **Azalea Park / AC Reynolds Greenway** from the Park, connecting across the Blue Ridge Parkway and parallel to US 74 to the AC Reynolds school complex.

Please consider the map information and think about neighborhoods, population groups, businesses and others who may be positively or negatively impacted by the greenways and connections to the planned greenways as you read the balance of this document. Write your thoughts in the call-out box on the next page.

Exhibit 2: Buncombe County Planning Greenways & Census Tracts Adjacent to Planned Greenways

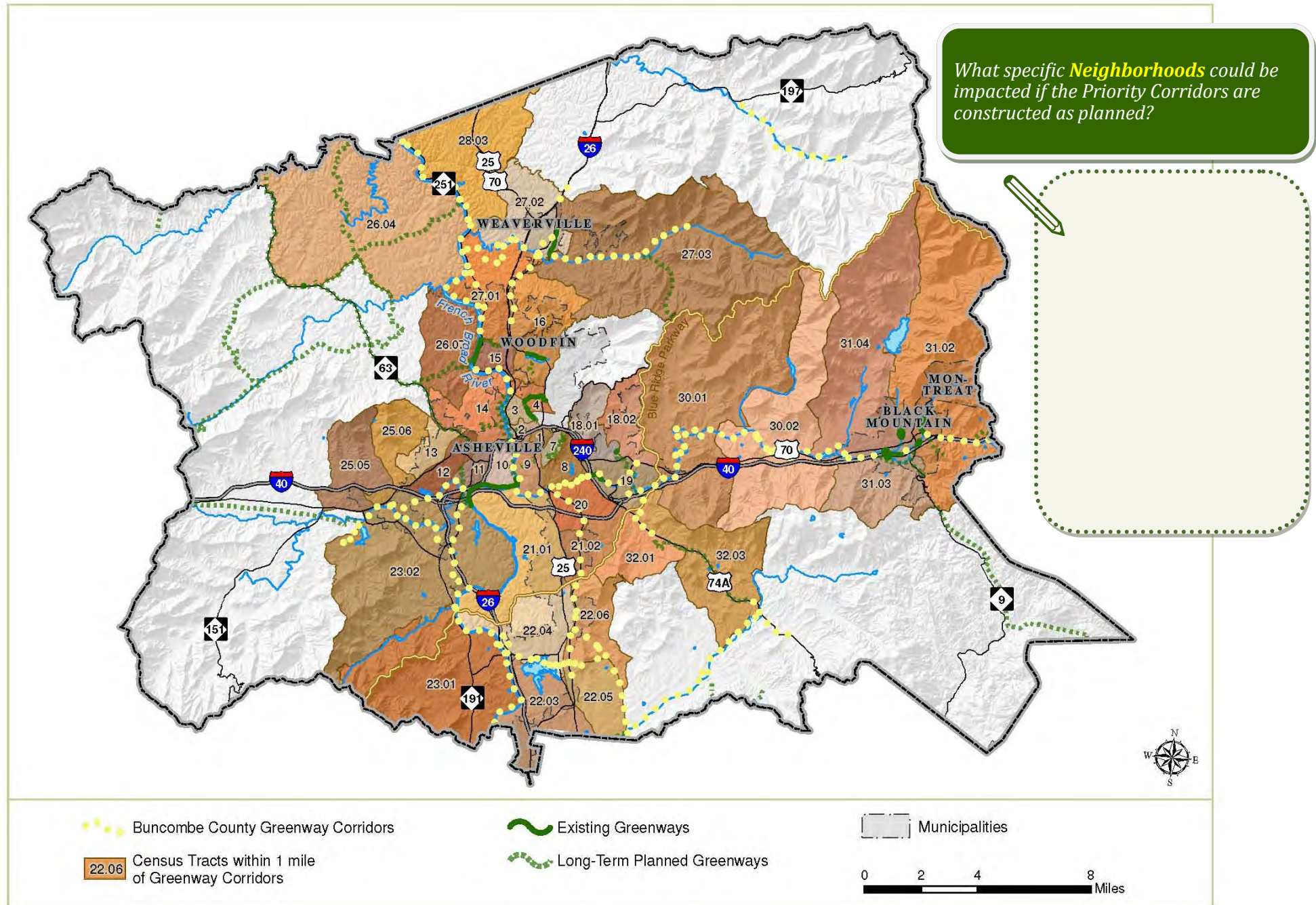


Exhibit 3: Buncombe County Leading Causes of Death (2010)

Buncombe County 2005-2009 Age-Adjusted Death Rates (per 100,000), Ranked by rates and percent of deaths by race	Overall			Minority			White		
	Rank	Rate	% of deaths	Rank	Rate	% of deaths	Rank	Rate	% of deaths
Leading Cause of Death									
Diseases of the Heart	1	178.4	23.2%	1	251.7	24.7%	2	174.6	23.1%
Cancer	2	177.5	22.4%	2	228.3	22.2%	1	175.7	22.4%
Chronic lower respiratory diseases	3	53.0	6.8%	4	37.0	3.6%	3	54.3	7.1%
Cerebrovascular disease	4	45.5	6.0%	3	60.8	5.9%	4	44.8	6.0%
Alzheimer's disease	5	30.8	4.2%		N/A		5	31.7	4.4%
All other unintentional injuries(no MV injuries)	6	30.7	3.4%	7	N/A	2.2%	6	31.4	3.5%
Nephritis and kidney diseases	7	17.3	3.4%	5	49.4	4.8%	8	15.3	2.0%
Pneumonia and influenza	8	17.0	2.2%	9	N/A	1.9%	7	17.1	2.3%
Unintentional Motor Vehicle Injuries	9	13.6	1.3%		N/A		10	13.6	1.4%
Suicide	10	13.3	1.4%		N/A		9	13.8	1.4%
Diabetes Mellitus		12.9		6	31.2	3.1%		11.5	
Chronic liver disease and cirrhosis		10.9			N/A			10.7	
Septicemia		8.3			N/A			8.3	
Homicide		4.5		10	N/A	1.4%		3.4	
AIDS (Acquired Immune Deficiency Syndrome)		2.7		8	N/A	1.9%		N/A	
All other causes (that are not ranked)			26.8%			28.3%			26.4%

Source: Buncombe County 2010 Community Health Assessment / NC State Center for Health Statistics, 2010 County Health Data Book

### General Health Descriptors

The planned greenways and trails have the potential to provide a series of recreational opportunities while also serving as transportation corridors, generators of economic activity, and built environments that immerse users in a more natural setting. The following sections describe current conditions of the many health indicators and risk factors for morbidity (incidence of disease) and mortality (death) in Buncombe County.

**General.** Health descriptors come in a variety of measures and data points. We know that constructing a series of greenway paths in Buncombe County will largely bring about positive impacts in numerous areas of health. However, what is desired from the HIA effort is a deeper level of assessment that touches not just on physical health, but mental health as well as social and environmental factors. The purpose of this section is to give a glimpse at what is afflicting County residents, to highlight their thoughts on what strategies may make positive and potentially negative changes, and to prompt rigorous consideration of the impacts building a series of pathways may produce.

The Buncombe County Department of Health has continued to provide valuable information about the health of residents. Most of the health data in this document comes from the different reports generated by the Department. With respect to mortality rates, Exhibit 3 shows how health conditions rank with Heart Disease and Cancer listed as the top two and highlights health disparities seen among minority populations.

**Community Health Assessment.** Every year the Buncombe County Department of Health combs data and the latest health statistics as well as surveys area



residents to determine the current health and environment conditions and to forge guiding principles for strategic focus. The 2010 Community Health Assessment or CHA was the last comprehensive update. The purpose of the document states: “The priorities outlined in this report focus on helping all of our people stay healthy. Gathering a wealth of information, reviewing data, and setting priorities are only the first steps. Now we begin the search for strategies that can push our community forward and reduce death and disease.”

Through this planning effort the public was asked to contribute in numerous ways including providing their thoughts and opinions. The public generated six strategies which were prioritized by the health department for near term focus. The six strategies include:

1. **Promote Healthy Weight Through Healthy Living**
2. **Improve Women’s Health During Childbearing Years**
3. **Improve Children’s Health Outcomes through a Focus on Family Support and Education**
4. **Increase Readiness of All Students to Learn & Succeed in School**
5. **Access to and Continuity of a Mental Health Home**
6. **Access to and Continuity of a Primary Care Home**

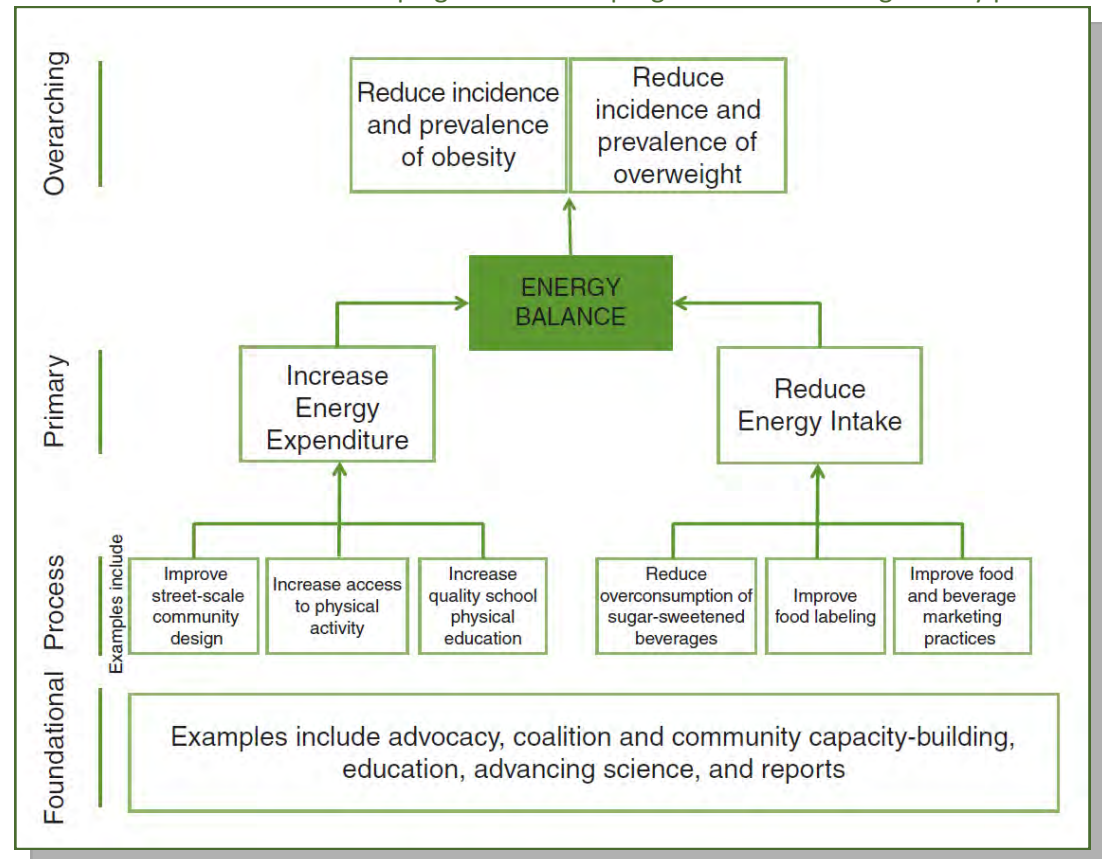
Many of the health statistics, graphs and descriptions in this document can also be found in the 2010 Community Health Assessment and proved valuable to this effort specifically when establishing current conditions for Buncombe County residents.

**Healthy Weight.** It has been well-publicized that the US is experiencing an obesity epidemic. With nearly 2/3 of Americans measured as overweight or obese,

growing attention is being paid to the impact obesity has on morbidity and mortality as well as the impact on economics—medical costs associated with obesity reached \$147 billion in the U.S. in 2008. Maintaining a proper energy balance (Exhibit 4) is a key element in preventing obesity. Normal weight is generally described as someone who is under a 24.9 Body Mass Index (a weight-to-height ratio

*In what ways can greenways affect energy intake through associated Programs or Policies?*

Exhibit 4: Framework for developing indicators of progress in accelerating obesity prevention.



Source: Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation (2012)

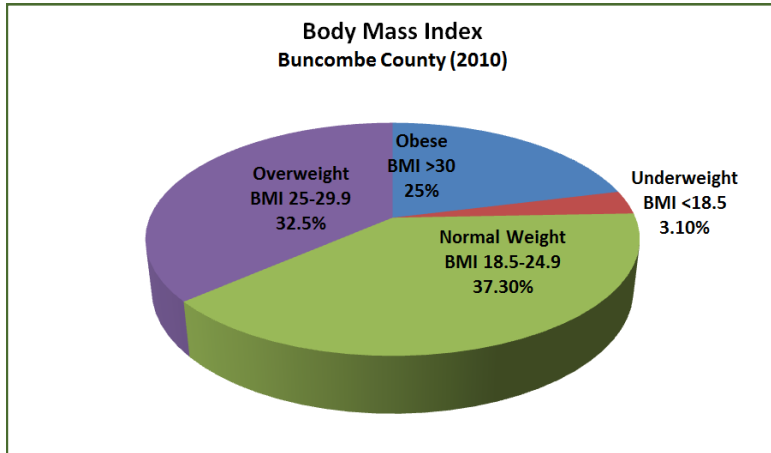


Exhibit 5: Buncombe County Body Mass Index (2010)

Source: Buncombe County 2010 Community Health Assessment

used to assess overweight and obesity) calculation.

In Buncombe County, approximately 124,580 of the 230,000 residents or 57.5% of the population are either overweight or obese (Exhibit 5) (CHA, 2010). Among elementary school children, 34% are in the overweight or obese category (CHA, 2010). What is known is that overweight and obesity are products of an energy imbalance—too many calories consumed versus calories expended. What are becoming more understood are the conditions that impact each part of the energy imbalance equation. Neighborhoods with limited healthy food options, degraded or incomplete street networks, or fewer recreational opportunities can contribute to the likelihood of obesity amongst residents.

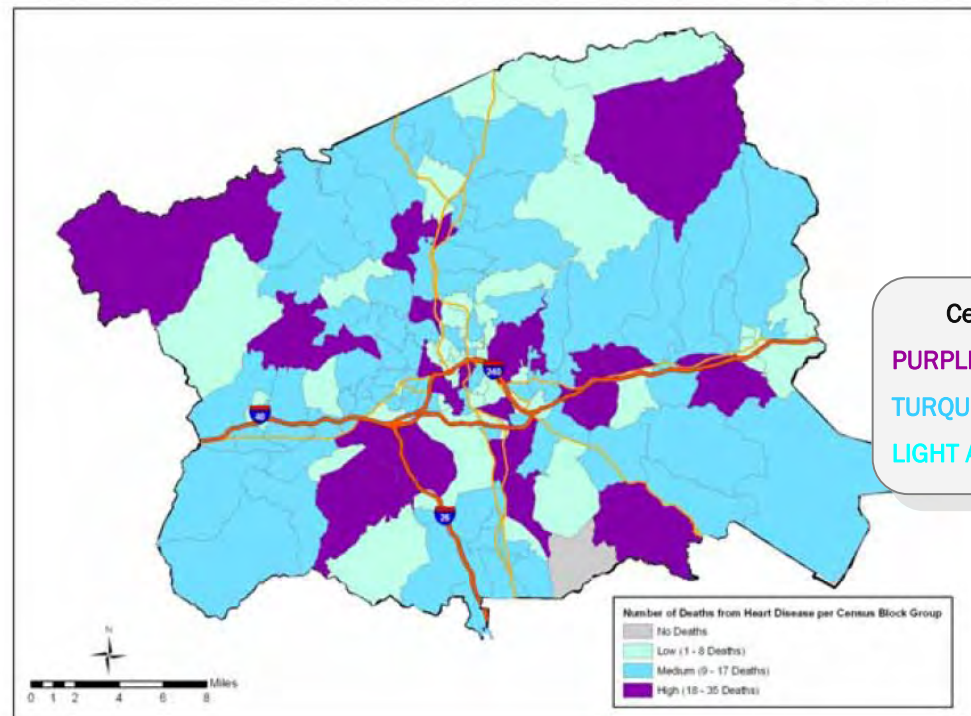


Exhibit 6: Deaths from Heart Disease of Buncombe County Residents 75 Years Old and Younger (2000-2008)

Source: Buncombe County 2010 Community Health Assessment

**Heart Disease.** Diseases of the heart are the leading cause of death in Buncombe County, accounting for 23.2% of deaths overall between 2005 and 2009. Individuals can reduce their risk through various lifestyle changes including quitting smoking, improving nutrition, increasing physical activity, limiting alcohol use and maintaining healthy weight. Exhibit 6 highlights areas of the county by rate of occurrences of heart disease among residents younger than 75.

**Asthma.** In a 2010 survey, 12% of Buncombe County respondents reported having an asthma diagnosis. Applying this to the general population, more than 26,000 residents may be affected by this disease. Acute asthma attacks can be triggered by poor outdoor air quality from automobile exhaust and industrial emissions. Exercise by people not used to strenuous activity, high humidity and breathing dry, allergies, cold air are other potential triggers.

**Diabetes.** More than 90% of diabetes cases nationwide are Type II diabetes. Some of the risk factors

for Type II diabetes include older age, obesity, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Pacific Islanders are at particularly high risk for Type II diabetes.

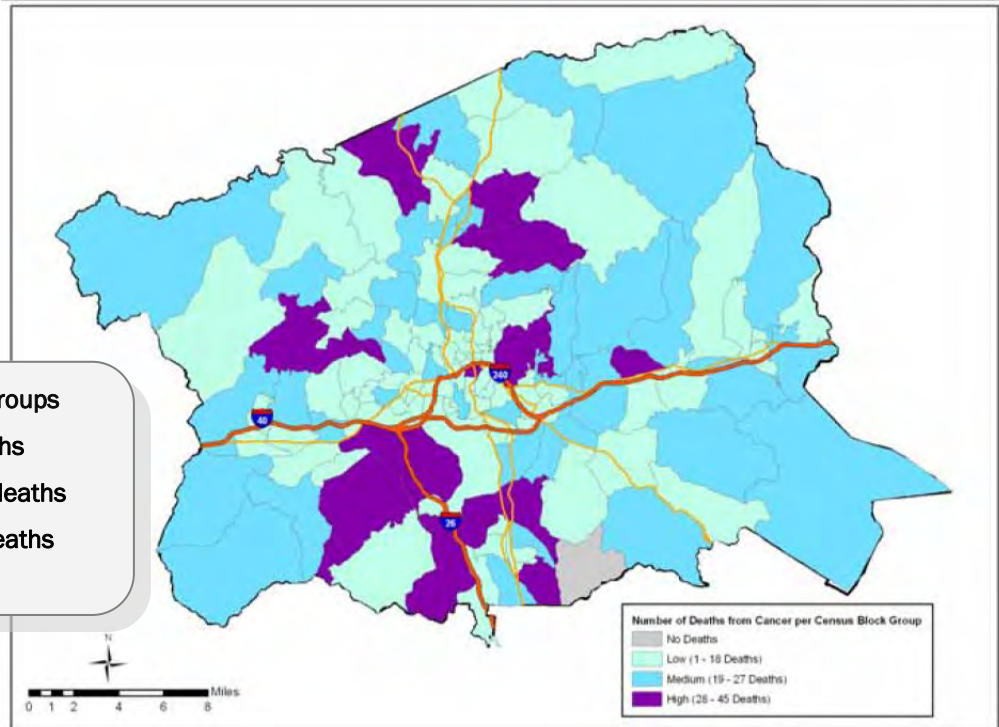
Ranking 11<sup>th</sup> for cause of death among the general population in Buncombe County, diabetes ranks 6<sup>th</sup> among minority citizens. Complications of undiagnosed and unmanaged diabetes include heart disease, stroke, and some cancers, as well as specific complications of diabetes such as kidney disease, blindness, and lower-limb amputations. Healthy eating and physical activity are key components of effective diabetes treatment. Approximately 13% of North Carolinians are diagnosed with diabetes.

**Cancer.** There are more than 100 types of cancer. Lung, colorectal and breast cancers are the leading causes of cancer death in Buncombe County. An individual's cancer risk can be lowered by adopting various health behaviors: receiving regular medical care and screenings, limiting alcohol use, eliminating tobacco use, reducing exposure to UV rays, living a physically active lifestyle, maintaining a healthy weight and eating a diet rich in vegetables and fruits. Cancer is the second leading cause of death of Buncombe residents at 22.4% and is less than 1% behind Heart Disease. Exhibit 7 illustrates areas of the County by number of cancer-related deaths.

**Racial Disparity.** For numerous cited reasons, racial makeup is often linked to rates of morbidity and mortality. Discrepancies in these measures are strongly associated with culture, diet, income levels, public safety, stress, conditions of the built environment, and access to preventive care.

Exhibit 7: Deaths from Cancer of Buncombe County Residents 75 Years Old and Younger (2000-2008)

**Census Block Groups**  
**PURPLE: 28-45 deaths**  
**TURQUOISE: 19-27 deaths**  
**LIGHT AQUA: 1-18 deaths**



Source: Buncombe County 2010 Community Health Assessment

Cause of Death (under age 75)	Population-based death rate*		Disparity Ratio
	Blacks	Whites	Black : White
Alzheimer's disease	1.5	2.8	1 to 1.9
Cancer - breast	12.5	11.1	1.1 to 1
Cancer - colorectal	16.9	9.4	1.8 to 1
Cancer - lung	36	48.3	1 to 1.3
Cancer - pancreas	9.6	7.8	1.2 to 1
Cancer - pancreas	5.9	3.8	1.6 to 1
Cerebrovascular disease	24.3	15.6	1.6 to 1
Chronic lower respiratory disease	19.1	30.4	1 to 1.6
Diabetes	25.7	9.6	2.7 to 1
Heart disease	130.2	92.6	1.4 to 1
HIV disease	25.7	1.9	13.5 to 1
Homicide	22.8	3.7	6.2 to 1
Kidney disease	18.4	6.3	2.9 to 1
Suicide	5.2	15.1	1 to 2.9
Unintentional injuries (other than MV)	19.9	22.6	1 to 1.1

\* Number of deaths per 100,000 persons in the specified population

Exhibit 8: Racial Disparities Among Causes of Death in Buncombe County (2010)

Source: Buncombe County 2010 Community Health Assessment / NC State Center for Health Statistics, 2010 County Data Book

Exhibit 9: Physical Activity & Lifestyle Indicators among North Carolina Residents

	<b>25.7% NC adults reports not having participated in any physical activity or exercise in the past month.</b>
	<b>53.6% of NC adults do not get the recommended amount of physical activity<sup>9</sup></b>
	<b>50.9% of NC high school students report meeting the physical activity recommendations.</b>
	<b>84.6% NC high school students and 79.4% NC adults<sup>13</sup> eat fewer than five servings of fruits and vegetables per day, the minimum healthy recommendation.</b>
	<b>42.3% NC children age 5 - 10 eat fewer than five servings of fruits and vegetables per day, including 100% fruit juice.</b>
	<b>31.8% of NC children and youth eat fast food two or more times per week, and 33.9% of NC adults report eating two or more fast food meals per week.</b>
	<b>42.2% of NC children and youth spend more than two hour per day in "screen time".</b>










Exhibits 8 illustrates race-related statistics as summarized in the 2010 Buncombe County Community Health Assessment.

**Mental Health.** Indicators of mental health include: emotional well-being—perceived happiness, life satisfaction and peacefulness; psychological well-being—self-acceptance, personal growth, hopefulness, control of one’s environment, spirituality, and positive relationships; and social well-being—social acceptance, usefulness to society, and sense of community (CDC, 2011). Nearly 95% of those surveyed in Buncombe County reported being very satisfied or satisfied with their lives. 20.5% report that they only sometime, rarely or never receive the social or emotional support that they need. Based on survey responses, as many as 33% of Buncombe County residents may experience some level of depression, according to the Community Health Survey reported experiencing some level of depression in 2009-2010.

**Physical Activity & Nutrition.** Survey data regarding exercise and nutrition data has also been tabulated in recent years. North Carolina residents’ answers generated the following statistics and can be found in the 2012 North Carolina Obesity Data Reference Guide (Exhibit 9).

Source: North Carolina Obesity Data Reference Guide (2012)

Please think about and write some responses to the questions below after reading the preceding section.

<p><i>What kinds of impacts might the Greenway Plan have on the <b>Health Behavior</b> of Buncombe area citizens?</i></p>	 
<p><i>What kinds of impacts might the Greenway Plan have on <b>Diabetes</b> rates of Buncombe area citizens?</i></p>	
<p><i>What kinds of impacts might the Greenway Plan have on the <b>Mental Health</b> of Buncombe area citizens?</i></p>	
<p><i>What kinds of impacts might the Greenway Plan have on <b>Heart Disease</b> of Buncombe area citizens?</i></p>	
<p><i>What kinds of impacts might the Greenway Plan have on the <b>Asthma</b> rates of Buncombe area citizens?</i></p>	
<p><i>What kinds of impacts might the Greenway Plan have on Buncombe area citizens' perception of their <b>Health Status</b>?</i></p>	
<p><i>What kinds of impacts might the Greenway Plan have on <b>Healthy Weights</b> of Buncombe area citizens?</i></p>	
<p><i>What kinds of impacts might the Greenway Plan have on <b>Cancer</b> rates of Buncombe area citizens?</i></p>	



**Buncombe County**  
**Health Opinion Survey Findings**  
**Ranked #4: Increasing opportunity to**  
**make healthy choices such as access to**  
**walking trails and healthy foods.**

**Demographic Indicators**

Demographics can be indicators of health conditions. We know, for example, that with those less individuals with less discretionary income, proper preventative health screenings and exams are often ignored or unattainable.

Race, age, sex, employment status, educational achievement, and other areas can help paint a picture in Buncombe County to better understand where pockets of poorer health are focused and how best to prioritize infrastructure improvements which could positively impact those populations.

Information contained in the maps in this section was collected using data from the 2010 Census. Census Tracts that had a Priority Corridors from the Greenways & Trails Master Plan selected for analysis in the HIA.

**Population.** Utilizing Census Tracts, then studying those tracts in proximity of the Greenway system, we can focus on population segments that will have the greatest access to the planned greenway systems and therefore be more likely to use the trails. Important to note is that accessibility to greenways and trails is measured differently by mode of travel to the greenway—walking, bicycling or driving.

Walking distance for those trying to access a facility or destination is generally between ¼- and ½-mile, while bicycling is generally a bit further reaching upwards of three miles. Census Tracts located within one mile of the proposed Priority Corridors of the Greenways and Trails Master Plan are shown in Exhibit 10.

**Race.** As discussed in previous sections, many health disparities exist along racial lines. When

measuring for non-white populations, Buncombe County Census tracts vary greatly with a low of 0.4% to a high of 53.7%. Exhibit 11 illustrates how the County’s non-white population is geographically distributed in proximity to planned Priority Corridors for greenways.

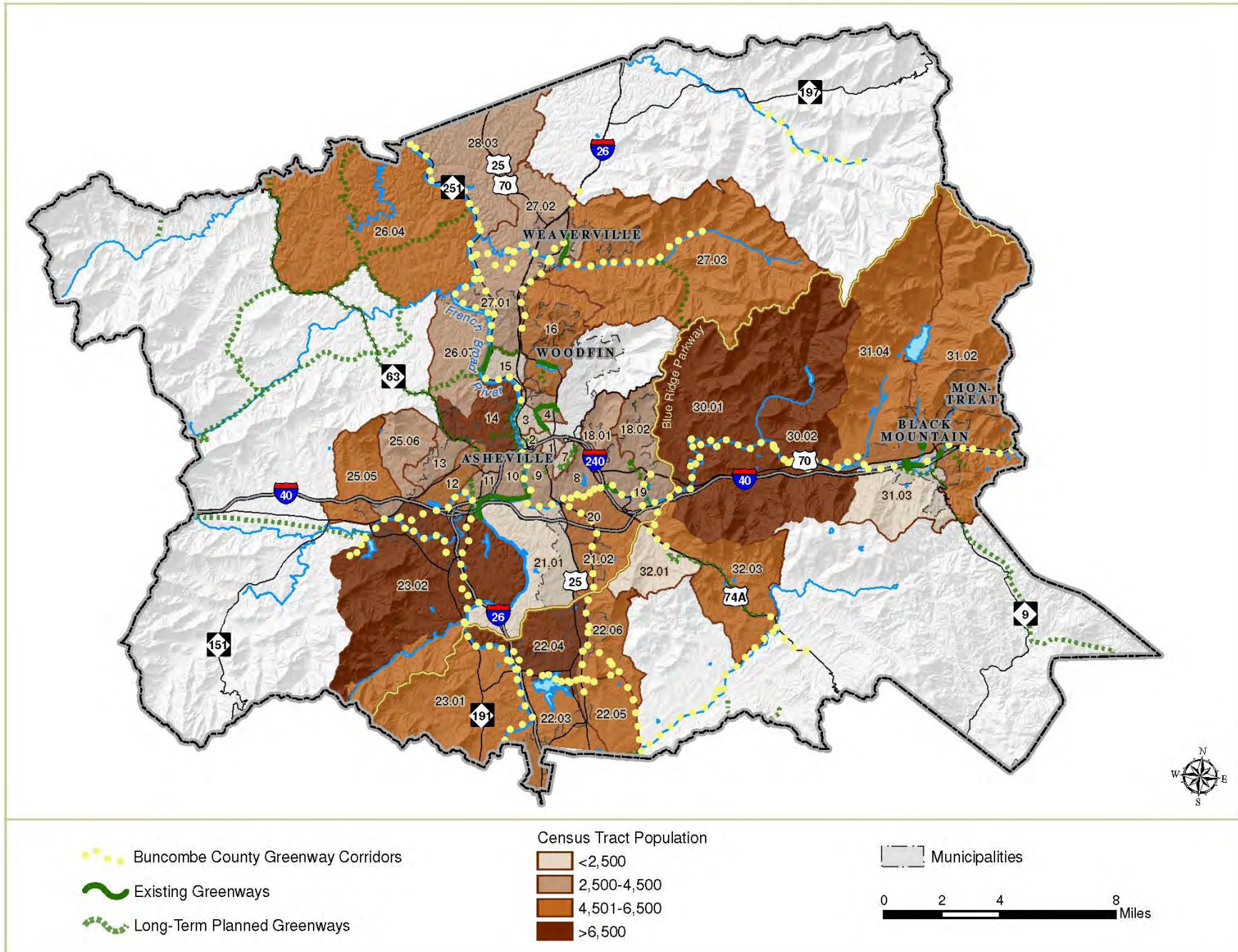
**Age.** Older populations generally are likely to have higher incidence of chronic diseases, may be limited in mobility, and are often on fixed incomes. Doctors may prescribe exercise for patients, and retirees are encouraged to remain active to sustain and preserve their health.

The methods by which older adults access greenways and trails can differ from how both younger populations and parents of young children prefer to access trails. Younger populations are now more likely to choose active transportation for some trips rather than single occupancy vehicles. Exhibit 12 illustrates the distribution of the population based on age.

**Household Income.** Lower income households often have less access to quality health care, healthier foods, and recreational opportunities due to minimal discretionary income. On the contrary, higher income earners traditionally have better health care access, can afford higher quality foods with better options, and generally have income and time to join gyms, participate in recreational activities, or have such facilities in their neighborhoods.

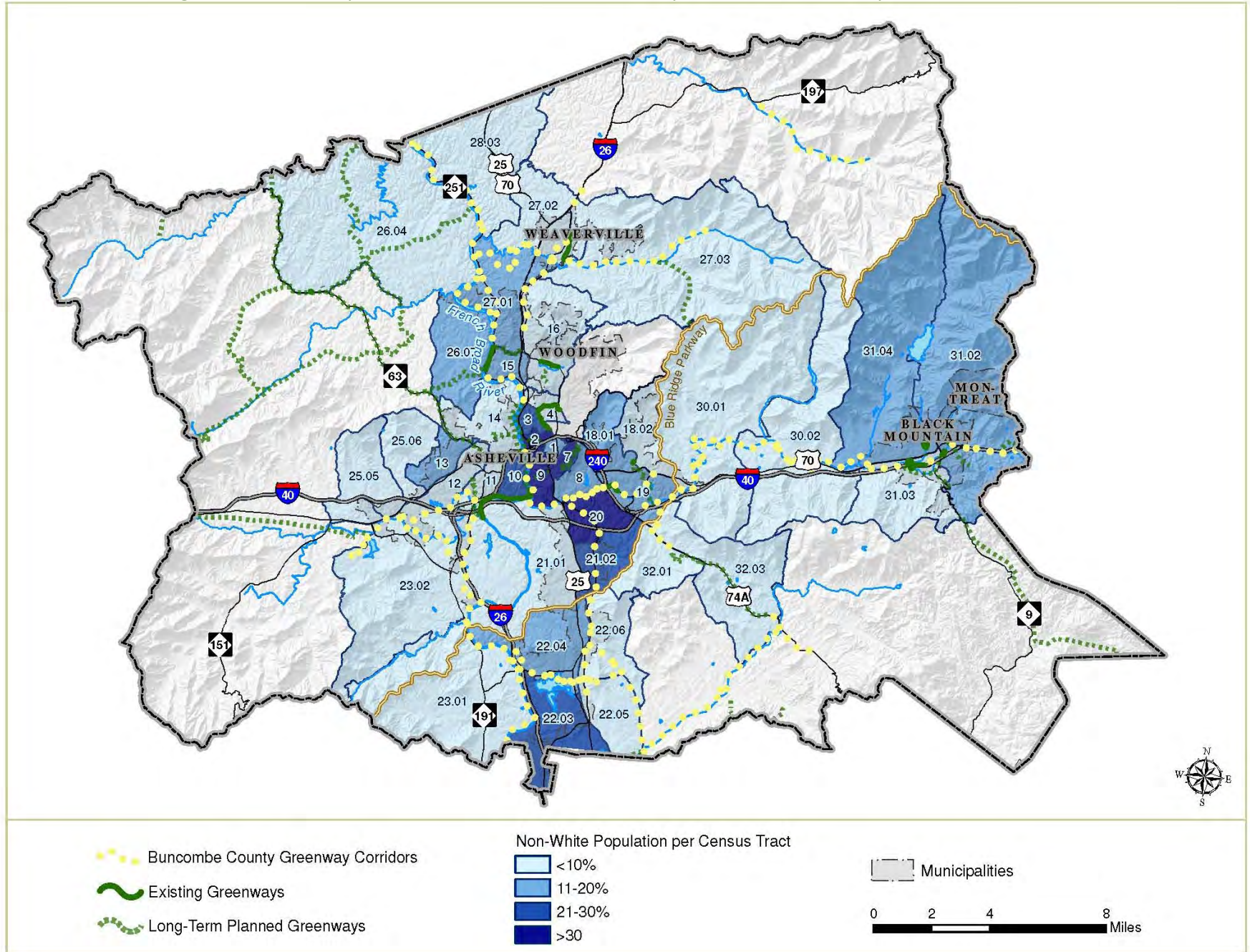
Household median income ranges from \$27,500-

Exhibit 10: Population by Census Tracts near Priority Corridors for Greenways



Source: US Census 2010

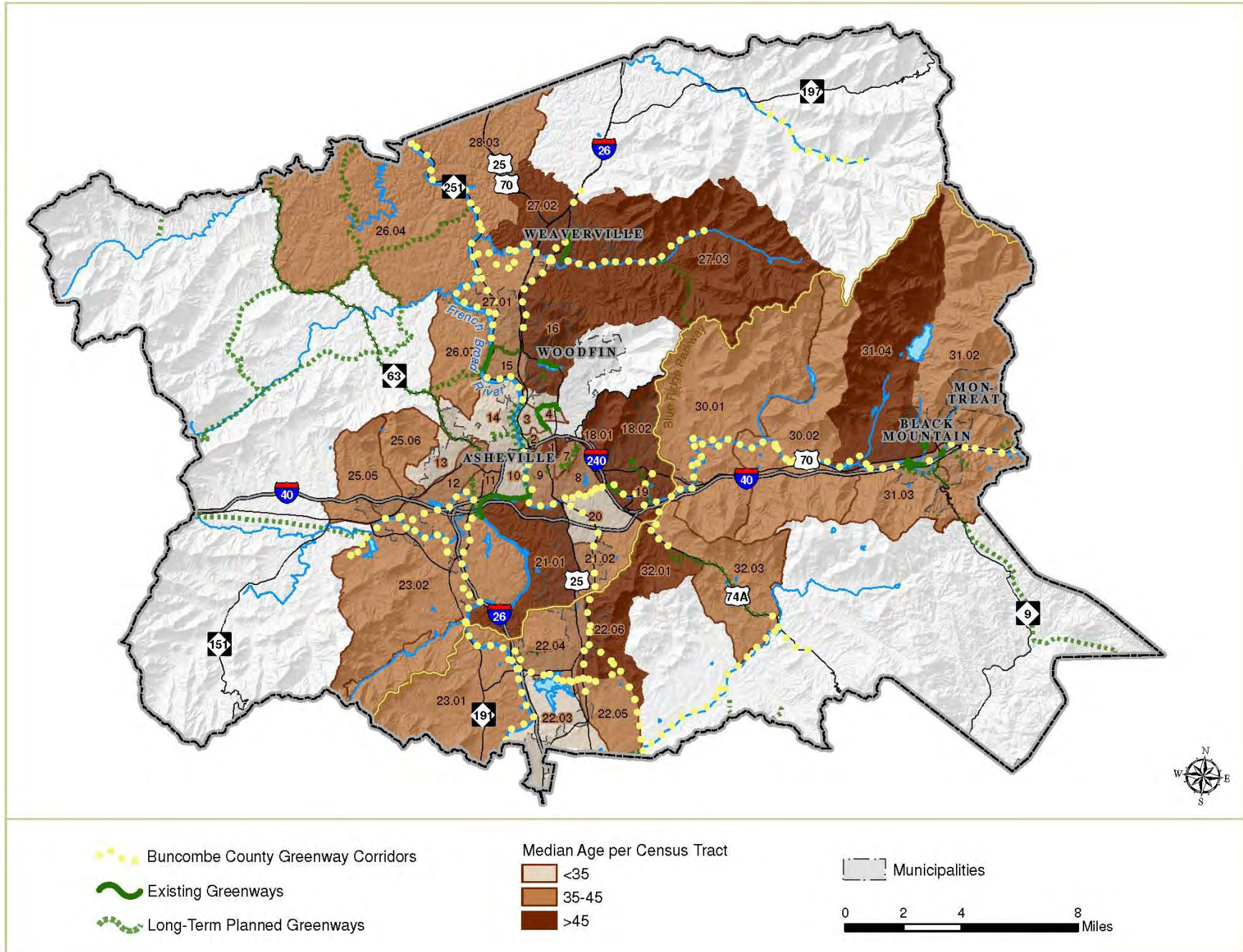
Exhibit 11: Percentage of Non-White Population for Census Tracts near Priority Corridors for Greenways



Source: US Census 2010

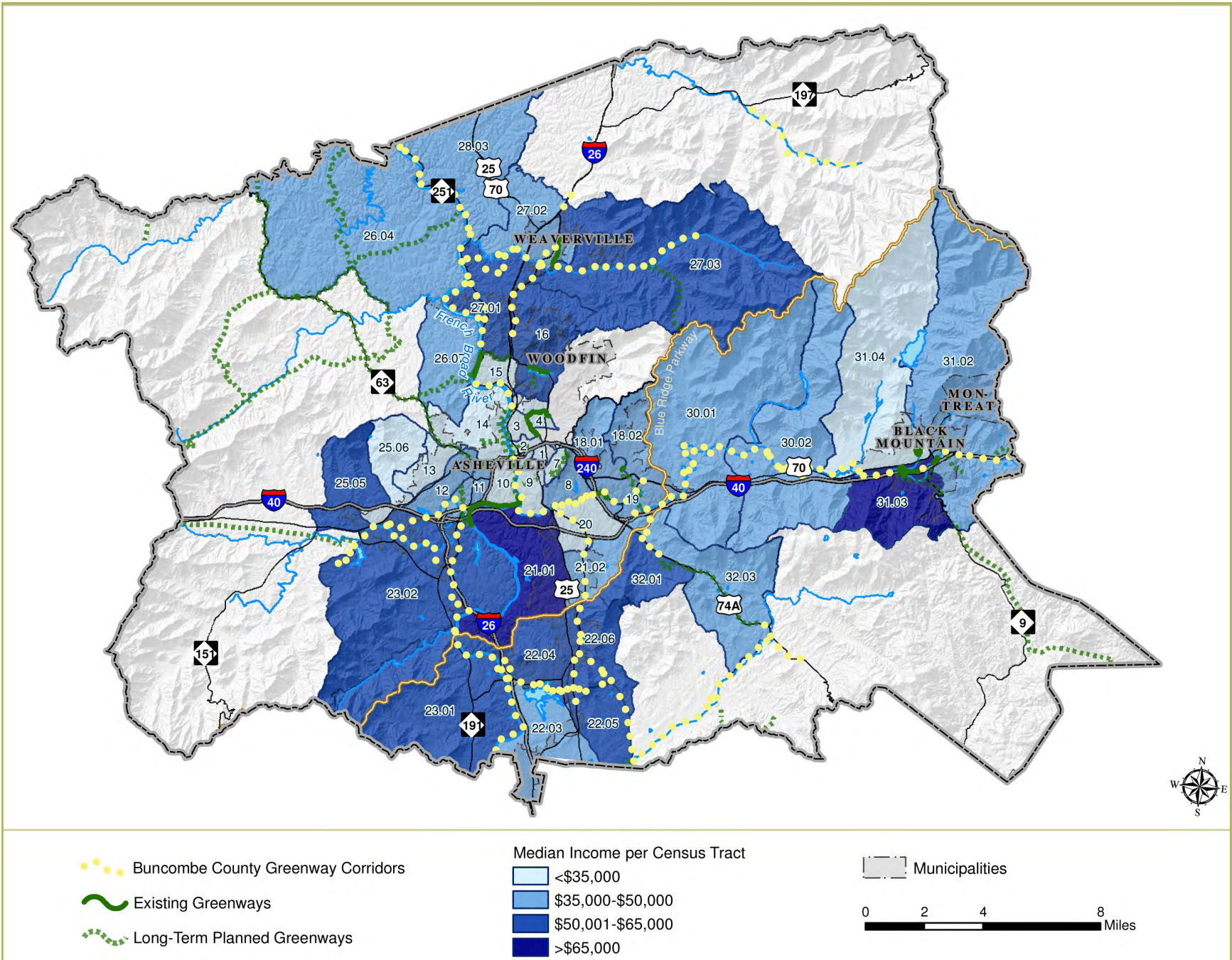


Exhibit 12: Median Age for Census Tracts near Priority Corridors for Greenways



Source: US Census 2010

Exhibit 13: Median Income for Census Tracts near Priority Corridors for Greenways



Source: US Census 2010

Exhibit 14: Labor Force Statistics for Buncombe County (2008-2012)

\$64,972 for Census tracts with conditions illustrated in Exhibit 13.

**Employment Status.** Similar to household income, general conclusions can be made from employment status. Employment information by Census Tract is highly inaccurate due to temporal and logistical factors but countywide data is available through multiple outlets. Greenway facilities can serve as a viable transportation option for people commuting to and from work or searching for work or those who wish to make short distance trips to run errands. Buncombe County has not endured the same drastic declines in employment status as many other counties in North Carolina, but still, a higher than historic average numbers of people are either unemployed or underemployed. As of April 2012, Buncombe County unemployment (Exhibit 14) was at 7.3% while the state was 9.4%.

	Oct 2008	Apr 2009	Oct 2009	Apr 2010	Oct 2010	Apr 2011	Oct 2011	Apr 2012
<b>Labor Force</b>	123,117	121,385	121,449	124,568	125,276	124,249	127,274	124,799
<b>Employed</b>	116,928	111,208	111,369	113,581	115,182	114,553	117,243	115,689
<b>Unemployed</b>	6189	10,177	10,080	10,987	10,094	9,696	10,031	9,110
<b>Rate of Unemployment</b>	5.6%	8.4%	8.3%	8.8%	8.1%	7.8%	7.9%	7.3%

Source: North Carolina Department of Commerce, Division of Employment Security

**Travel Behavior.** How people chose to travel often translates into determinations of health. Long bouts of sitting have shown to be precursors to obesity and all that it entails and active transportation modes can enable individuals to obtain the recommended 30 minutes per day of physical activity. Buncombe County residents and their travel behavior to and from work are included in the American Community Survey data included (Exhibits 15 & 16). Numerous factors contribute to selection of mode including distance, convenience, time of day, vehicle access, fuel and driving costs, and others. Worth noting is the comparison between driving and either walking or biking shorter distances. As an example, a person walking 3.5 mph—a fairly brisk pace—will travel 6/10 of a mile in 10 minutes and just over one mile in 20 minutes. A

Exhibit 15: Journey to Work Mode Share by Travel Time to Work

Travel Time to Work	% Estimate	Drove Alone	Carpool	Public Transportation
<10 Min	13.0%	12.7%	9.5%	0.0%
10-14 Min	19.5%	18.1%	27.4%	17.9%
15-19 Min	17.9%	19.1%	10.7%	6.1%
20-29 Min	28.8%	29.3%	34.9%	7.2%
30+ Min	20.8%	20.8%	17.7%	68.9%

Source: American Community Survey

Income per Person	% Estimate	Drove Alone	Carpool	Public Transportation
<\$10K	16.4%	14.0%	20.2%	25.4%
\$10-\$15K	10.7%	8.7%	20.3%	30.8%
\$15-\$25K	18.2%	17.4%	25.1%	12.7%
\$25K-\$35K	19.5%	22.4%	12.3%	0.0%
\$35K-\$50K	15.3%	16.0%	10.5%	25.1%
\$50K-\$75K	11.2%	9.0%	4.4%	0.0%
\$75K +	8.7%	12.5%	7.1%	6.1%

Exhibit 16: Journey to Work Mode Share by Income

Source: American Community Survey

bicyclist traveling at 12 mph can travel 2 miles every 10 minutes and 4 miles in 20 minutes.

**Physical Conditions.** The planned greenway system is anticipated to be an outlet for a variety of physical activities. Numerous safety, environmental, and social conditions have a bearing on the utilization of a greenway system. Therefore it is important

to gain an understanding of these factors to determine the impacts of users and indicators. As an example, if there are 30 reported bicycle/automobile crashes per year in Buncombe County, and it is anticipated that, once completed, the Greenway system will draw 10% of current bicyclists off roadways, it might be reasonable to estimate a reduction of approximately 10% or three crashes per year.

**Pedestrians & Bicyclist Crash Data.** Crashes involving pedestrians/bicyclists and motorists on roadways will continue no matter the outcome of the greenway plan. What is unknown are the impacts the greenway system may have on the crashes occurring on roadways. The planned network of greenways in Buncombe County is intended for a variety of users and abilities. The trails are typically located along streams and natural areas, with some segments anticipated along streets or highways.

The absence of automobiles along greenways makes for a generally safer environment for pedestrians and bicyclists and will thus be an attractive alternative for some to local roadways.

Exhibits 17 and 18 reflect data from NCDOT for pedestrian and bicycle crashes over the past 10 years of crash history and identifies the severity of the resulting collision. Note they do not reflect all crashes or crashes between a pedestrian and bicyclists on a street or greenway. When reviewing the information, please consider how the greenways can impact these figures and what that means for health impacts in all areas of society, as well as visibility for users as more pedestrians and bicyclists are seen by motorists.

**Air Quality.** The quality of the air we breathe can have a severe impact on our health. Poor air quality with hazardous content including many identified particu-

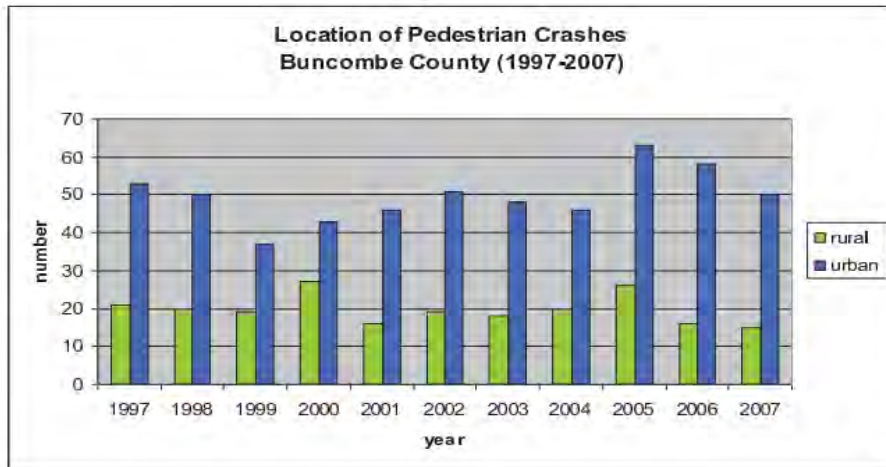
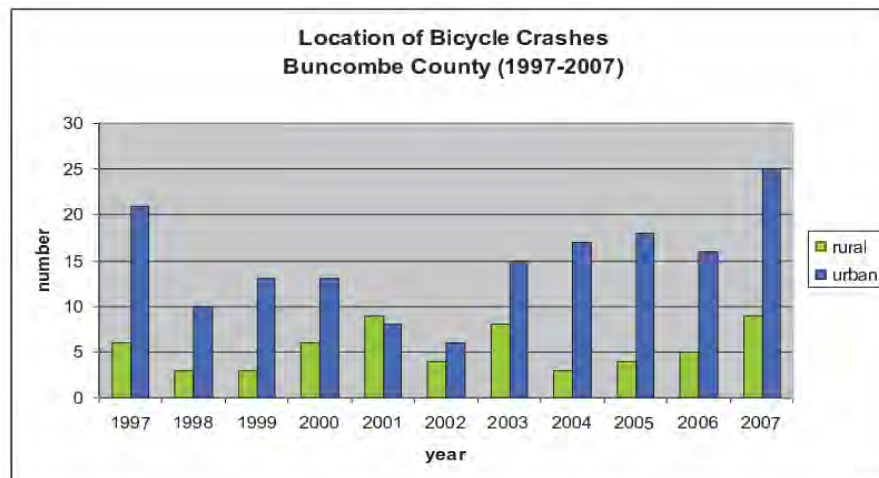


Exhibit 17: Pedestrian Crashes in Buncombe County (1997-2007)

Source: North Carolina Department of Transportation

Exhibit 18: Bicyclist Crashes in Buncombe County (1997-2007)

Source: North Carolina Department of Transportation



lates can contribute to or worsen asthma and respiratory illness, which can then lead to increased frequency of emergency room visits, reduced quality of life, and hamper the capacity of a person to stay active.

Buncombe County is continuing a trend of improving air quality and is consistently below the national standards. Data for both 2011 and the 12-year trend are shown in Exhibit 19, which illustrates the trend in common measurements for air quality analysis.

**Categories of Crime.** Perception of crime or actual exposure to crime, especially violent crime, can impact people’s actions and health, either physical or mental. Buncombe County has continually seen a decline in several crimes since 2001 including assaults, burglary, and larceny. Some crimes like murder and rape vary from year to year and are thus difficult to forecast. Statistics for Countywide crimes are shown in Exhibit 20 from the NC Department of Justice.

Exhibit 19: Ozone Statistics for Buncombe County (2000-2011)

Source: Western North Carolina Regional Air Quality Agency, 2011 Annual Report

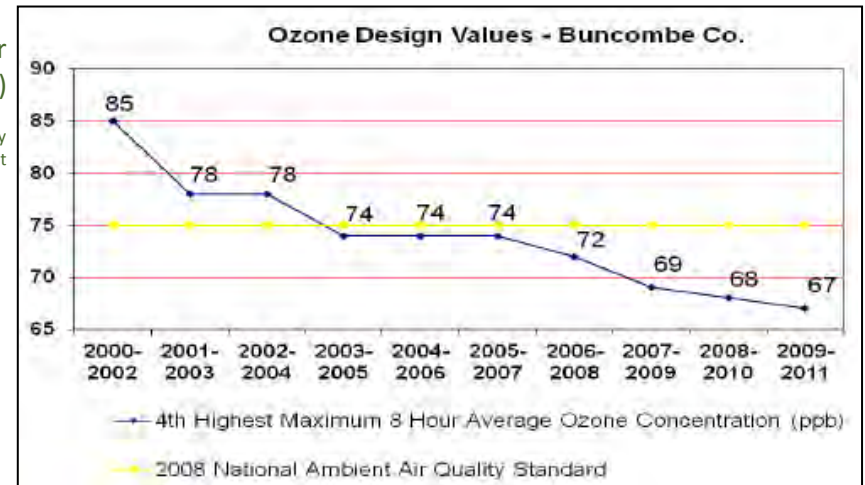



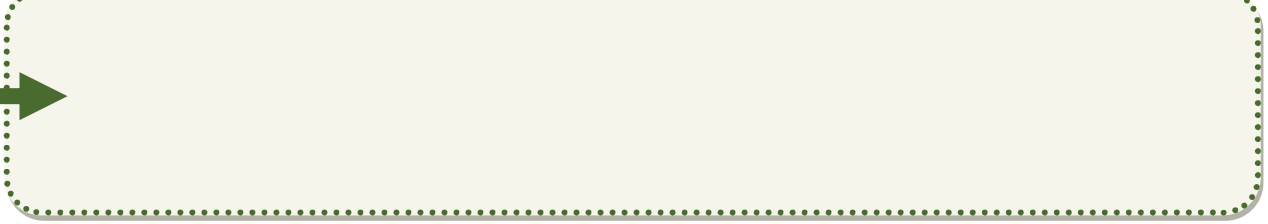



Exhibit 20: Crime Rates in Buncombe County (1997-2007)

Year	Index Rate	Violent Rate	Property Rate	Murder Rate	Rape Rate	Robbery Rate	Assault Rate	Burglary Rate	Larceny Rate
2001	3,938	353	3,585	0.5	26.6	125.7	200	905	2,329
2002	3,905	370	3,535	9.1	26.9	108.7	225	833	2,343
2003	4,069	321	3,747	4.3	17.2	118.2	182	943	2,451
2004	4,238	312	3,925	3.3	24.6	139.9	145	1,086	2,448
2005	4,149	287	3,861	3.3	15.4	122.2	146	972	2,462
2006	3,715	341	3,373	2.3	31.5	123.6	184	923	2,100
2007	3,619	351	3,267	7.2	21.7	121.3	201	937	2,032
2008	3,532	366	3,166	3.1	26.2	137	199	840	2,034
2009	3,056	271	2,784	3.1	20.2	95.5	152	805	1,765
2010	2,926	259	2,666	2.2	19.2	87.1	151	733	1,728

Source: Unified Crime Report 10-Year Trend, NC Department of Justice

Please think about and write some responses to the questions below after reading the preceding section.

<p>After looking at the data, how can the greenway impact <b>Commuters</b> trying to get to and from work?</p>	 
<p>In what ways can greenway contribute to strengthening or weakening <b>Employment Conditions</b> in Buncombe County?</p>	
<p>What impact could <b>Crime</b> have on greenway use? What considerations of design should be incorporated into greenways to help allay fears of criminal activity? What impacts could greenways have on crime?</p>	
<p>What impacts can greenways have on <b>Air Quality</b> in Buncombe County and Western North Carolina?</p>	

### Greenways & Trails Master Plan Goals

A fundamental element of good long range planning is the identification of goals, barriers, and desirable outcomes identified by various segments of the impacted population. In the case of the Buncombe County Greenway Plan, a rigorous outreach effort was undertaken to include the opinions representative of geography, demographics, and affiliation. Through the use of an on-line survey, seven public meetings, 12 information booths and a two-day workshop, the Plan was informed by hundreds of County residents.

**Stakeholder/Survey Response.** General surveys aimed at the public garnered a series of helpful ideas and concepts which further strengthen the plan. Several of those results were codified and summarized for the plan and helped inform its findings. Exhibits 21 and 22 illustrate feedback from the survey.

Overall, respondents identified common destinations for places they would like to reach on a greenway (Exhibit 21). When asked about influences in their decision to use a greenway, not surprisingly walking/running and bicycle riding were the top responses with some variations of those activities also listed.

### Assessing Plan Goals from a Health Perspective

Buncombe County had more than 130 stakeholders attend a two-day workshop in September 2011 to identify critical themes for the Greenways & Trails Master Plan. The following page contains key findings from the Health & Wellness session of that stakeholder workshop.

*Please fill in the bubbles on the next page that best reflects the potential you feel each theme has in generating a positive health outcome, if implemented.*

Exhibit 21: To what places do you think greenway connectivity should be a priority?

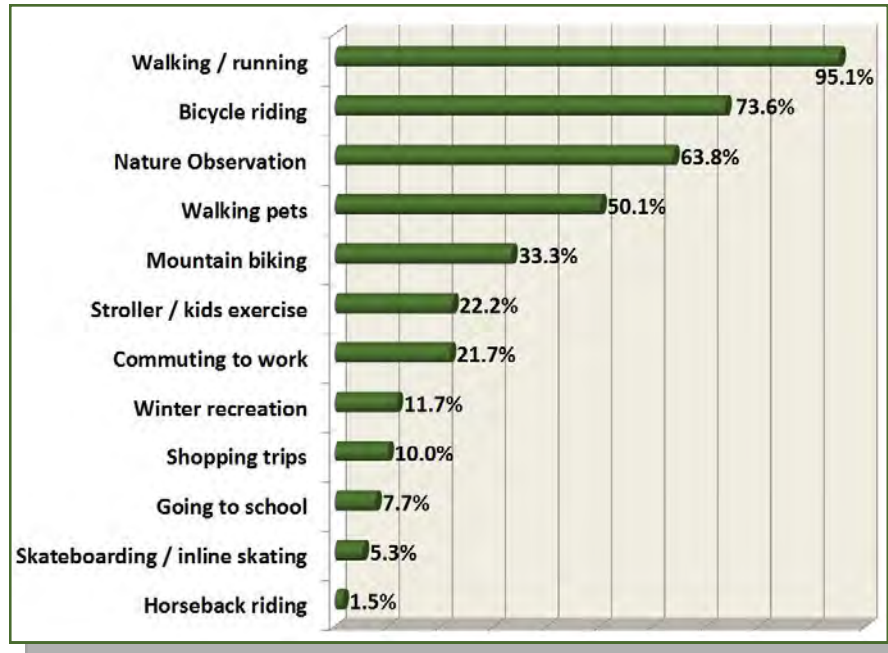
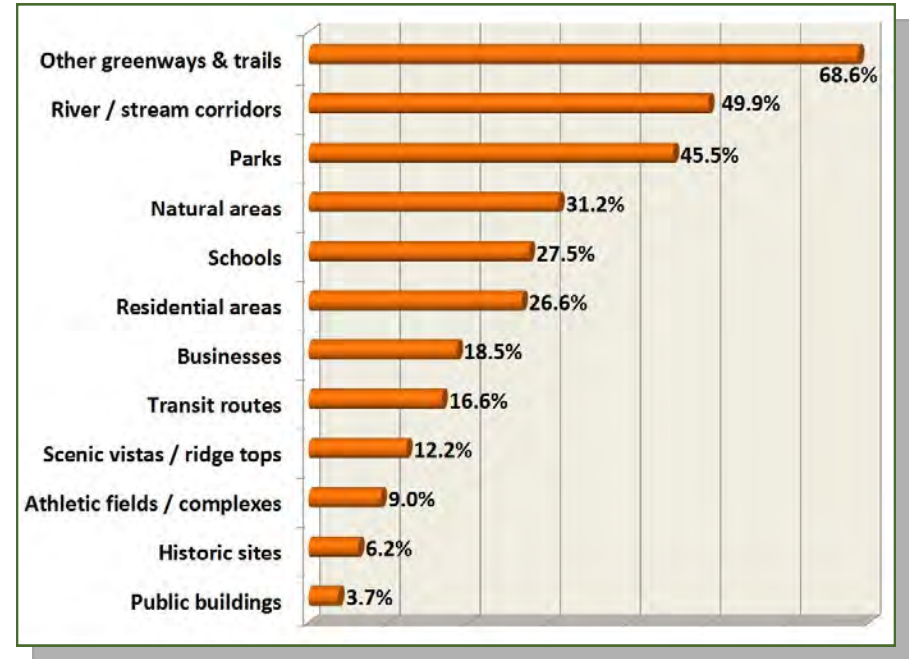


Exhibit 22: What activities influence your use of greenways?

### Likely Health Impacts of Goals

The capsules below reflect goals identified for health in the Greenways & Trails Master Plan. Please mark what you believe to be the potential for positive health outcomes of each goal.

	High Potential	Moderate Potential	Low Potential	Little or No Potential		High Potential	Moderate Potential	Low Potential	Little or No Potential
<i>Be equitable by constructing greenway in communities that benefit the most</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<i>Prioritize schools, parks and natural areas</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Build upon the creativity, spirituality and salubrious lifestyles of people.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<i>Understand the need for safety features at greenway access points.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Understand the impacts of safe practices and design on health.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<i>Making connections to transit are increasingly important.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Recognize the positive role greenways play in stress relief, family dynamics and mental health.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<i>Pay close attention to the amount and type of amenities to complement greenways.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Know that design and access make a difference in who is able and willing to use greenways.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<i>Reach out to people of all ages and abilities.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Provide direct connections from greenways to community gathering places.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<i>Coordinate with schools, universities and colleges to help build, maintain and promote greenways.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Enhance neighborhoods through greenway connectivity.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					



## Local Plan Review

Perhaps it shouldn't come as a surprise that many local plans now include supporting health and wellness as an objective. Recreation and transportation plans in particular set out goals for more pedestrian and bicycle friendly miles to fulfill a healthy living objective.

No fewer than 24 local plans in Buncombe County, ranging in scope from city development to master transit to greenways plans, mention health, wellness, exercise, vitality, or safety as main goals or objectives. This section is an overview of the plans with summaries of those that have the strongest health and wellness themes or elements of their guiding principles that promote healthy outcomes.

**Buncombe County Sustainability Plan.** The Buncombe County Sustainability Plan is under review for adoption and was developed in 2011 and 2012. It is an overarching plan with some influence on the Buncombe County Greenways Plan. The vision of a health and safe community and the mission to strengthen quality of life are directly related to a connected greenway network.

This Sustainability Plan lists two main *Community Sustainability Goals* with objectives relating to health: Healthy People and Healthy Environments.

### Healthy People

- ◆ Decrease rates of childhood and adult obesity
- ◆ Reduce tobacco use and exposure to second hand smoke
- ◆ Assure the availability of a medical home for all to increase appropriate age-specific health screenings and preventative care
- ◆ Decrease infant mortality and low-weight births

- ◆ Increase access to mental health and substance abuse prevention programs, especially for youth and aging populations
- ◆ Increase access to affordable health insurance

### Healthy Environments

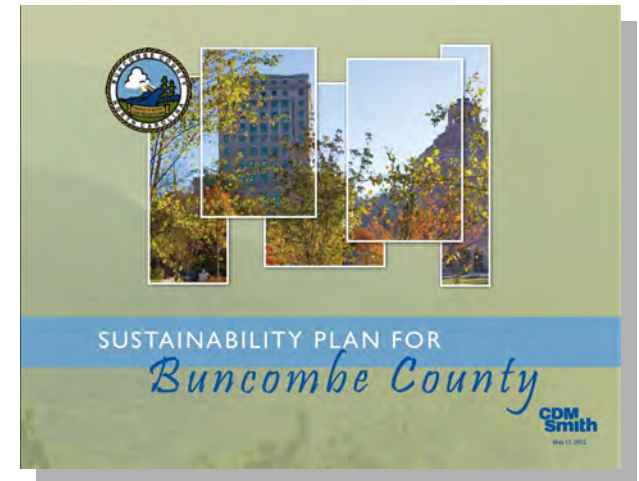
- ◆ Improve and increase opportunities for safe, active living
- ◆ Promote healthy buildings and homes
- ◆ Decrease unintentional injuries
- ◆ Improve safety for pedestrians and cyclists

### Buncombe County Comprehensive Land Use Plan Update.

The Comprehensive Plan for Buncombe County seeks to provide policy guidance for several key elements of governance. Elements of a Comprehensive Plan typically include land use, transportation, parks and recreation, core services, economic development and many others.

The Buncombe Plan contains a description of intent for the Plan as well as numerous goals and implementation strategies which also pertain to greenway planning. The Comprehensive Plan is described as being:

1. A guide to direct provision of core services that state and federal government require counties to provide
2. A guide for desirable and beneficial development and redevelopment
3. A guide for improving the physical environment of the County as a setting for human activity... to make it more functional, beautiful, decent, healthful, interesting and efficient



“Because sustainability is defined in many different ways, it was important for us to develop an understanding of sustainability that speaks specifically to Buncombe County.”

- Sustainability Plan for Buncombe County

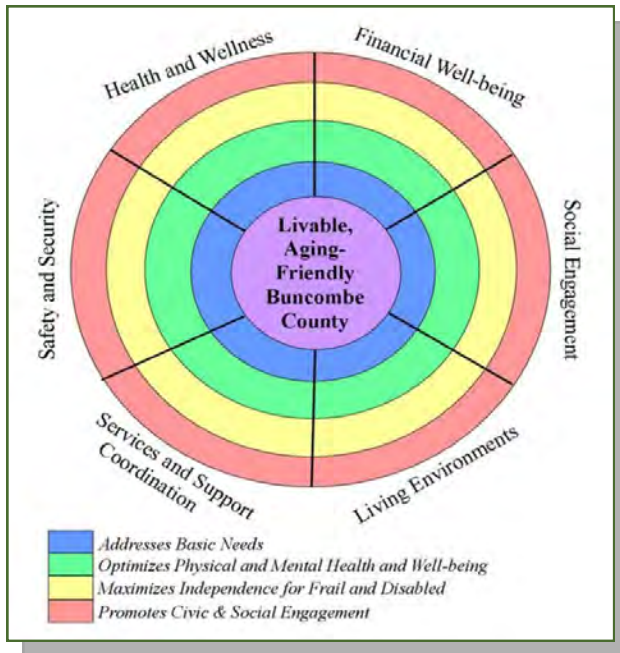


Exhibit 23: The Buncombe County Aging Plan utilized the AdvantAge Initiative model (above) to frame the evaluation of needs for older adults.

4. A framework for management, enhancement and preservation of the natural and man-made environment
5. A declaration of long range goals and how to achieve them
6. An expression of the County’s assessment of itself and a vision of what it can become
7. A means for guiding, influencing and achieving coordination in public and private decision making...an effort to make sure that today’s decision will lead to tomorrow’s goal

A few of the objectives pertaining to greenways include:

- ◆ Improve quality of life for citizens of Buncombe County through maintenance and improvement of existing parks and recreation facilities
- ◆ Improve quality of life for citizens
- ◆ Continue to seek State, Federal, and foundation funding for greenways, bike trails, hiking and water trails, and other recreation projects
- ◆ Acquisition of new lands for open space and recreation facilities to meet forecasted needs
- ◆ Support economic development activities that attract and generate “place based” quality jobs and businesses within the community that focus on the unique strengths and capabilities of the community, e.g. tourism, the arts, healthcare

**Buncombe County Aging Plan (2008-2012).** Another local plan is the Buncombe County Aging Plan. Buncombe County is a haven for retirees for numerous reasons. The popularity amongst the cohort continues to swell retired population figures which

necessitated a plan of action from the County to determine ways to improve lives and needed services.

The fundamental goals of the Buncombe County Aging Plan include six intertwined elements essential for quality living (Exhibit 23):

*In a livable, aging-friendly Buncombe County:*

- ◆ **Safety and Security**...home and community environments are safe and support self-sufficiency for older adults and caregivers.
- ◆ **Health and Wellness**...the health care system maximizes wellness and health potential and meets the diverse and unique needs of older adults.
- ◆ **Financial Well-being** ...resources, services and opportunities support and enhance the financial well-being of older adults and caregivers.
- ◆ **Social Engagement**...life enrichment opportunities engage older adults with people, places and programs.
- ◆ **Living Environments**...the living environments (built and natural) support and enhance the functioning of older adults.
- ◆ **Services and Support Coordination**...a collaborative network of formal and informal services and support is coordinated to meet the needs of older adults and caregivers.

Several objectives were generated through the efforts which correspond to the five guidelines. Some of these goals relating to those of the greenway plan include:

- ◆ Assist older adults and caregivers to develop skills needed to achieve a healthy lifestyle, e.g., in nutrition, exercise, disease management, fall prevention, and medication management.

- ◆ Provide affordable fitness opportunities for older adults, e.g., fitness clubs to offer discounts for older adults for use during off-peak times.
- ◆ Promote awareness of civic engagement and volunteer opportunities through comprehensive and up-to-date listings
- ◆ Promote participation and leadership in civic and volunteer roles that draw upon the diverse skills, wisdom, and life experiences of older adults.
- ◆ Improve safe travel options to and from their destinations.
- ◆ Conduct walk-ability audits to identify and remedy pedestrian safety concerns, particularly near bus stops

**Buncombe County Parks and Recreation Plan.** To identify current and future needs of Buncombe County parks and recreation locations, the County embarked on a Master Plan in 2008. The Plan sought to improve conditions of locations and quality of life for area residents. The Mission Statement for the Plan is: “To maintain and improve the quality of life for residents and visitors through recreational, cultural, and educational opportunities while continually seeking revenue enhancing approaches through which to develop a more efficient and effective operation.”

The overall goals of the Plan is also stated: “To assess, renovate, upgrade and develop new programs and facilities in order to provide Buncombe County citizens with necessary and accessible family oriented recreational opportunities.”

Several guiding principles were also developed and utilized through the duration of the planning stages. Two which may pertain to the Greenways efforts are:

- ◆ Develop a plan to provide needed programs and facilities in all geographic areas of the county in order to make the programs offered through the department easily accessible to the majority of Buncombe County Citizens,
- ◆ Maintain a family oriented atmosphere at all BCPR events and facilities.

**French Broad River MPO Long Range Transportation Plan 2035.** The Long Range Transportation Plan or LRTP includes several sections and focus areas centered on health and mobility. Language can be found in Chapters 5 and 8 specifically linking health and active transportation. The *Chapter 5 Bicycle and Pedestrian Element* states:

- ◆ Walking and bicycling “are viable transportation options which make communities *safer* and more *livable*,” and
- ◆ “Promote *physical activity* and *health*, and improve *air quality*.”
- ◆ Greenways can play a role in improving safety conditions when compared with roadway riding due to the reduced conflicts with vehicles.

*Chapter 8: Safety and Security Element* describes additional considerations for improving mobility options in Buncombe County by framing conditions:

- ◆ Poor air quality is responsible for a portion of the rates of respiratory illness and premature deaths.
- ◆ Built environment patterns can lead to less walking and fewer transportation options which is a factor in the rate of obesity.

## French Broad River Metropolitan Planning Organization: Long-Range Transportation Plan

“Increased emphasis has been placed on providing facilities for recreational walking and bicycling, including **greenways** as well as on-road commuting facilities, to encourage active transportation for pleasure and health as well as to replace car travel on shorter routine daily trips.”

Due to both factors there is increased demand to develop multi-modal transportation planning that facilitates walking and cycling accessibility

**Wilma Dykeman RiverWay Plan.** The RiverWay plan set the tone for development of a regional greenway system, amenities and other enhancements—both for the build and natural environment—along the French Broad River and Swannanoa River. Themes of the Plan (Exhibit 24) included: recrea-

tion, health, education, transportation, economic development and environment. The RiverWay Plan also serves as demonstration plan for the French Broad River watershed to be replicated elsewhere in the region. The RiverWay is one of eight Priority Corridors in the Buncombe County Greenways and Trails Master Plan; the other seven Priority Corridor have either direct connections or linkages to the RiverWay.

**University Connections.** UNC Asheville and Warren Wilson College in Swannanoa both have campus objectives that would be served by the Buncombe County Greenways Plan. Sustainability is a tenant of Warren Wilson College and it drives their mission and objectives on campus, including transportation, with the aim of healthier and more environmentally friendly living. UNC Asheville’s Campus Master Plan asserts institutional pride in being a small, pedestrian-focused campus. Their goals include continuing to mitigate vehicle use and promote biking and walking as alternate forms of accessing and getting around campus. In addition, the NC Center for Health and Wellness at UNC Asheville focuses on promotion of an active lifestyle through their programs.

**Plan Summary.** Exhibit 25 illustrates the 16 plans in Buncombe County that had a strong relationship to the HIA effort. Some are broad in scope, such as the Asheville City Development Plan and the Buncombe County Sustainability Plan, while others are very specifically focused on recreational activity, such as the Black Mountain Pedestrian and Asheville Comprehensive Bike plans.

All included key words or ideas that fall under the premise of public welfare, including health (primarily physical but also mental health), wellness, safety, air and water quality, and active living. The most common among these plans was ‘physical health.’

Exhibit 24: The Sustainability Wheel from the Wilma Dykeman RiverWay Plan identified the community themes addressed by the RiverWay and its design. Source: RiverLink



Exhibit 25: Health-Related Themes from Area Plans

Applicable Plans	Physical Health	Mental Health	Community Health	Physical Activity/ Exercise	Active Living	Healthy Lifestyle	Recreation	Wellness	Air Quality	Water Quality	Disease prevention	Safety	Welfare	Quality of Life	Livability	Vitality
FBRMPO Long Range Transportation Plan 2035	●		●		●		●		●		●				●	
FBRMPO Comprehensive Transportation Plan	●					●	●									
Buncombe County Parks & Recreation Plan			●	●			●	●				●		●		
Buncombe County Sustainability Plan	●	●		●	●		●		●		●	●				
Buncombe County Land Use Plan				●	●		●			●				●		
US 70 / Swannanoa River Greenway Plan				●			●			●		●			●	
French Broad River/NC 251 Greenway Plan					●		●					●		●		
Asheville Development Plan 2025	●								●						●	●
Asheville Transit Master Plan	●		●			●							●			
Asheville Greenways Master Plan	●						●									
Asheville Pedestrian Plan	●		●	●					●		●	●		●	●	

Exhibit 25 continued: Health-Related Themes from Area Plans

Applicable Plans	Physical Health	Mental Health	Community Health	Physical Activity/ Exercise	Active Living	Healthy Lifestyle	Recreation	Wellness	Air Quality	Water Quality	Disease prevention	Safety	Welfare	Quality of Life	Livability	Vitality
Asheville Comprehensive Bike Plan	●			●				●	●		●	●				
Broadway Corridor Plan							●			●		●				
Charlotte Street Corridor Plan												●				
Shiloh Community Plan	●		●	●		●	●			●						●
WECAN Citizens Master Plan							●					●				
Wilma Dykeman RiverWay Plan	●	●		●			●	●		●				●	●	●
Black Mountain Comprehensive Plan	●		●			●	●	●	●	●		●		●	●	●
Black Mountain Greenway Master Plan	●	●		●	●	●										
Black Mountain Pedestrian Transportation Plan	●	●	●		●		●	●	●		●	●	●	●		
Black Mountain Parks & Recreation Plan				●	●		●			●		●		●		
Montreat Bicycle and Pedestrian Plan	●	●	●	●	●	●	●		●	●	●	●		●	●	

### Healthy Pathway Model.

A Healthy Pathway Model is in essence a logic framework which attempts to determine how the proposed plan, project or policy will ultimately impact community health. Please look at the following model, consider how the Buncombe County Greenways & Trails Master Plan can affect community health in the region, and fill in the text boxes with your conclusions.

Immediate impacts can include changes in social and economic landscape, as well as specific actions and behaviors people may take as the greenway system is built. The anticipated health impacts are the likely impacts made on human health resulting from the immediate impacts identified. This model can include more than one immediate impact and more anticipated health impacts.

