Performance Measurement System Report

Livable Communities Planning Project
Thomas Jefferson Planning District Commission
November 2013

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Executive Summary

The Performance Measurement System is a tool to evaluate existing conditions, monitor trends, and track progress towards achieving regional sustainability goals. This System is the first deliverable for the Sustainable Communities Planning Grant and focuses on seven broad aspects of the local community. These include: housing costs, environmental quality, transportation access, socioeconomic inequity, economic opportunity, fresh food access, and healthy communities. For consistency and clarity these topics were simplified into five topics: Community and Neighborhoods, Economy, Housing and the Built Environment, Natural Resources and Environment, and Transportation. These topics serve as the framework for organizing the many important indicators included in this Performance Measurement System.

Before setting baselines or goals, the project needed to identify an appropriate definition of "sustainability". This project uses The Partnership for Sustainable Communities (Department of Housing and Urban Development, Department of Transportation and the Environmental Protection Agency) six principals of livability as the working definition for sustainability. These principles were adopted by the Partnership for Sustainable Communities and act as the foundation for interagency coordination. The six principles are:

1. Provide more transportation choices
2. Promote equitable, affordable housing
3. Enhance economic competitiveness
4. Support existing communities
5. Coordinate policies and leverage investment
6. Value communities and neighborhoods

The Performance Measurement System is intended to describe the baseline conditions of livability in the City of Charlottesville and Albemarle County. When measurements are taken over time, the results will inform where we are heading as a region, providing a resource for local government decision makers to make informed choices about our community's future. This report does not set out to set targets or goals. It is intended to highlight the existing baseline conditions that exist in the community. Setting of targets or goals for performance measures is left to the individual localities who in the future might use this document as a starting point for such a process.

The Livable Communities Planning Project formed a Research Panel tasked with studying existing performance measurement systems, proposing a system for our region, and collecting preliminary data. The Research Panel, comprised mainly of graduate students from UVA's Urban and Environmental Planning program, who worked in collaboration with TJPDC staff from January to April 2011. Continued research and refinement of the system was performed by TJPDC staff and interns, based on input received in the public review process and feedback from City and county Staff.

System Overview

What Are the Principles of Livability?*

1. Provide more transportation choices.
   Develop safe, reliable and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health.

2. Promote equitable, affordable housing.
   Expand location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation.

3. Enhance economic competitiveness.
   Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers as well as expanded business access to markets.

4. Support existing communities.
   Target federal funding toward existing communities- through such strategies as transit-oriented, mixed-use development and land recycling- to increase community revitalization, improve the efficiency of public works investments, and safeguard rural landscapes.

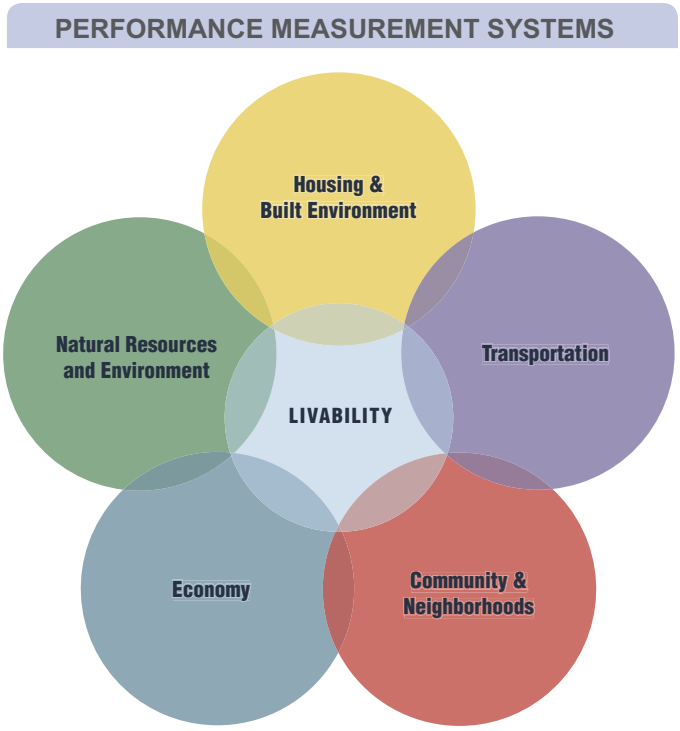
5. Coordinate policies and leverage investment.
   Align federal policies and funding to remove barriers to collaboration, leverage funding and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.

6. Value communities and neighborhoods.
   Enhance the unique characteristics of all communities by investing in healthy, safe and walkable neighborhoods rural, urban or suburban.

**Source: HUD Office of Sustainable Housing and Communities Partnership for Livable Communities.*

What is the Performance Measurement System?

The Livability Performance Measurement System is a framework developed by the partners of the Sustainable Communities Regional Planning Grant (Albemarle County, the City of Charlottesville, the University of Virginia and the Thomas Jefferson Planning District Commission). This framework was created to develop a baseline report that identifies and measures key community characteristics that are considered indicators of livability. The Performance Measurement System is designed to be easy to read, informative, and accessible to members of the public. It brings together existing community data into one concise easy to use document. The document is organized into five chapters, or systems, that cover a common set of indicators. The diagram below illustrates how Livability is achieved through a balanced approach where no one system is given a greater weight than any other. A highly "livable" community is one in which there is balance between all of its important systems.



System Overview

Who Can Use the System?

The Performance Measurement System can be used by anybody. The layout of the system allows each chapter and indicator to be used as a group or individually. This allows people interested in particular issues such as housing to quickly access the relevant section and data. More information on using the report is included in the User Guide section on page 5.

How Does it work?

In order to understand how well each of these community systems are functioning, baseline data was gathered on a variety of topics that affect quality, environment and general well-being. Once the data was collected, it was organized into the following five topics, which were used as chapters in this report:

- **Community and Neighborhoods**
- **Economy**
- **Housing and the Built Environment**
- **Natural Resources and Environment**
- **Transportation**

This organization of information allows the system to grow from a baseline report into a document that provides trends and benchmarks as new data for indicators becomes available. Future updates to the system will show trends and help the partners set goals for various indicators and systems. Where possible, data for indicators was obtained from sources that are updated at regular intervals.

Where Does the Data Come From?

To the extent possible, data for indicators was obtained from publicly available sources and data sets that are updated at regular intervals. For a small number of indicators, data was only available from a particular study or report on a scale appropriate for this project. Where this occurred, it is noted in the indicator description. The majority of indicator data came from:

- The U.S. Decennial Census
- The U.S. Census American Community Survey
- The Bureau of Labor Statistics
- Center for Neighborhood Technology
- Virginia Partnership for Economic Development
- State Agencies
- Regional Organizations
- Local government

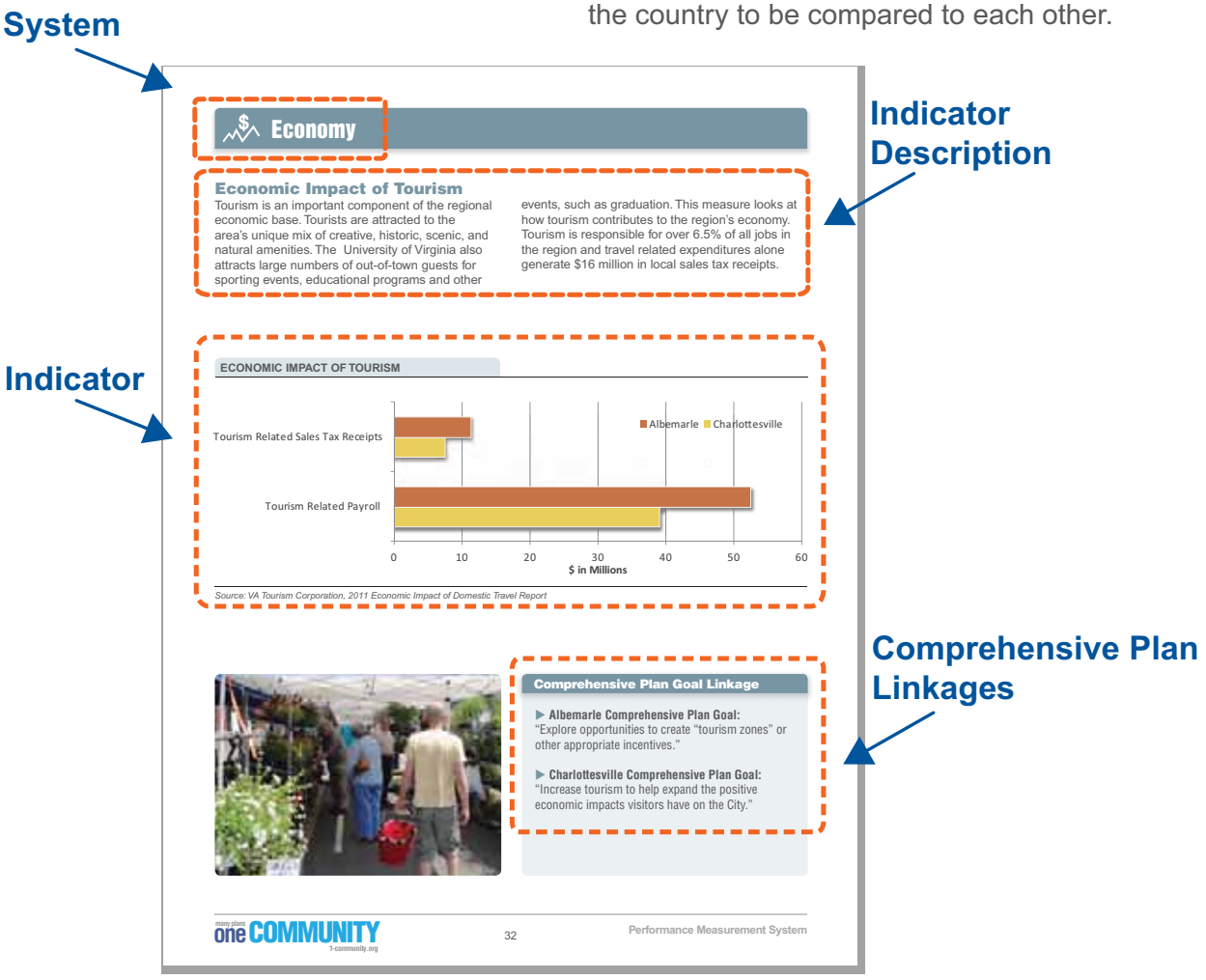
Links and descriptions of each data source used in this report are included in Appendix 3.

How is the Report Organized?

The Performance Measurement System is divided into five chapters which cover a grouping of indicators called a "system". These systems are:

- Community and Neighborhoods
- Economy
- Housing and the Built Environment
- Natural Resources and Environment
- Transportation

Each of the chapters contains a collection of related indicators that act as performance measures for assessing the overall sustainablilty of the community. To make the report easy to use each page in the chapters contains the following common elements: a description, a chart or table and linkages to each of the Albemarle and Charlottesville Comprehensive Plans. Note: Since the Comprehensive plans for Albemarle and Charlottesville have not been finalized, changed made after publication of this report will not be included. The diagram below illustrates the common elements found on all indicator pages. A few of the indicators in this report were included at the suggestion of the grantee agency (the Department of Housing and Urban Development). These indicators are marked with an asterisk in the index and are referred to as "Flagship" indicators. Flagship indicators allow for communities across the country to be compared to each other.



Synthesis and Selection of Indicators

How Were Indicators Selected?

The indicators in this report were selected by the Livable Communities Research Panel with input from City and County staff and feedback from the Livable Communities Partnership. The Project Panel began the process by first reviewing the City and County comprehensive plans and the MPO's long-range transportation plans. After reviewing these plans, the project panel had a broad view of priorities and goals of the community as documented in existing plans. During this review process, the Panel Staff found that most of the goals fit into the categories that became the five core systems of the Livability Performance Measurement System Report.

The next step was to choose indicators for each system. Indicators are simply tangible measurable metrics that depict community characteristics. For each goal, one or more indicator were drafted which could evaluate performance in that area. For example, for the related goals to "Generate and sustain successful small businesses" in the Charlottesville comprehensive plan and "Increase local business development opportunities" as listed in the Albemarle County Comprehensive Plan, an applicable measurement could be the number of new businesses created. Based on an extensive list of possible indicators, a final list was created, eliminating indicators that would be difficult to measure and selecting those that could pertain to multiple goals.

What Data Was Chosen to Monitor?

Data used in reporting the "baseline conditions" were chosen based on being:

- Easy to obtain;
- Available from a reliable source;
- Simple to calculate;
- Available for both Charlottesville and Albemarle and,
- Regularly updated by the source.

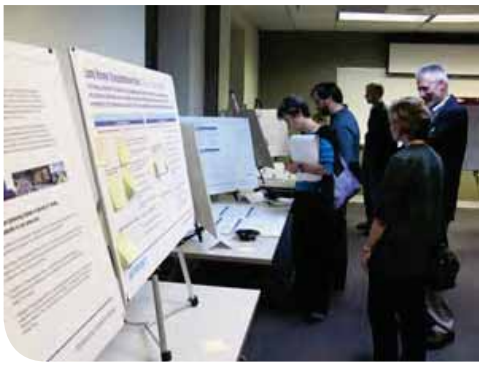
These requirements narrowed the scope for indicators. The requirements also provided a method for eliminating indicators that might have come from a single report or study, or that required significant complex data analysis. The requirements also eliminated data that was only available for a portion of the study area. For example, natural gas usage rates were suggested as an indicator but this information was only available for homes and businesses served by Charlottesville Gas.

Synthesis and Selection of Indicators

Public Involvement

Public involvement was used in the selection of indicators. An Open House was held on June 23, 2011 to share the first draft of the Performance Measurement System and solicit feedback. Posters displayed information describing each indicator, why it was chosen, and providing current data. The public provided feedback by placing Post-It notes on posters and by filling out comment sheets. This input was collected and recorded by staff. Additionally, these posters were displayed at Cityspace, a public gallery on the Charlottesville downtown mall, for the month of July 2011. The public had the opportunity to leave comments at the public display.

In addition to the 2011 posters and open house event, the public was asked to participate in a survey that was used to gage the public's priorities. A wide range of residents and community stakeholders participated in the survey. This included members of the Livability Partnership, representing over 50 local community groups. The system was also presented to both the Charlottesville and Albemarle Planning Commissions and the Planning and Coordination Council Technical Committee (PACC Tech) for feedback. PACC Tech is the Technical committee of the Planning and Coordination Council (PACC), which exists to promote cooperation in planning and community development between Albemarle County, the City of Charlottesville, and the University of Virginia. PACC is also the primary decision making body for this grant project.



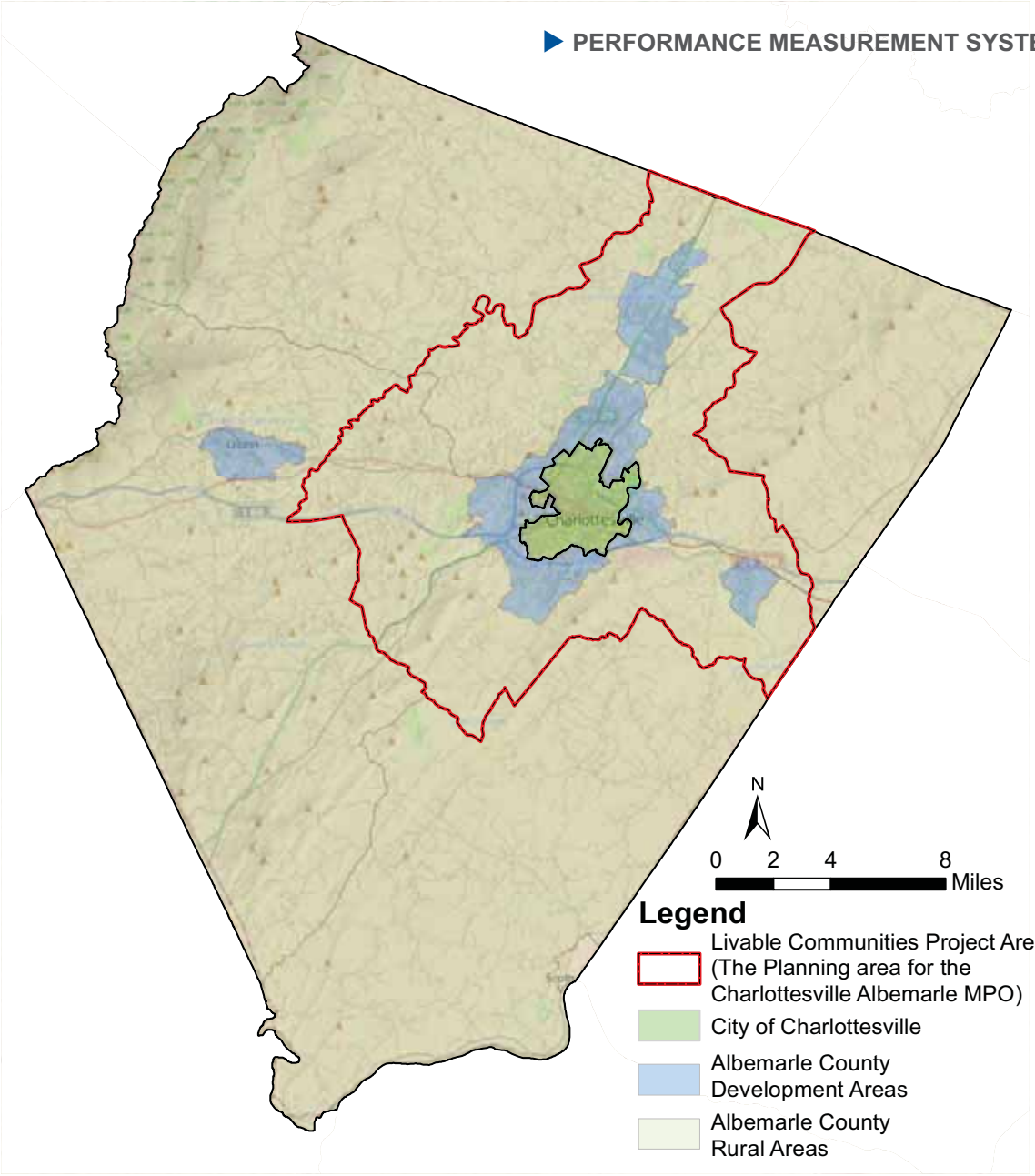
Based on the feedback received from the public, the Planning Commissions, and PACC Tech, a number of indicators were removed, added, or modified. Additional explanation was included for a number of indicators to better describe the factors being measured and the reasons it was chosen. The text of all feedback received, as well as the initial set of indicators presented in June 2011, can be found on the 1-community.org website.

Focus Area

Project Area Overview

The Performance Measurement System covers Albemarle County and the City of Charlottesville. In order to provide a more direct comparison between Charlottesville (shaded in green) and Albemarle, data for Albemarle County was calculated for the County's Development Areas (shown in blue on the map) and the County designated Rural Area (shown in olive). This helps provide a more direct comparison of data between the City and the County's Designated Development Areas covered by this project.

▶ PERFORMANCE MEASUREMENT SYSTEM MAP



Index of Performance Measures

The index of indicators is found below. Measurements in the system represent baseline information for future comparison.

*These are Flagship Indicators. Flagship Indicators were recommended by the Department of Housing and Urban Development office of Sustainable Housing and Communities (The granting agency).

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Community & Neighborhoods

The Community and Neighborhoods system serves the community by enabling all citizens to live engaged, active, healthy and economically fulfilling lives. The indicators help to provide an overall picture of health, age and proximity to important services.

INDICATORS	PAGE

**Flagship Sustainability indicator recommended by HUD*




Population Density

Comparing residential density in urban and rural areas indicates where population is concentrated. The table below and the map on the next page illustrate the distribution of population densities in the region. Charlottesville, which is located at the region's core, has the highest population density with 6.5 residents per acre. Densities for Albemarle range from 2.3 residents per acre in the Development Areas to 0.1 residents per acre in the Rural Area. Densities presented in the map and table below were derived by taking the total populations of the various areas and dividing them by the total area resulting in an average population density.

TOTAL POPULATION, AREA AND POPULATION DENSITY

	Total Population	Area (acres)	Population Density (residents per acre)
Charlottesville	43,475	6,656	6.5
Albemarle Development Areas	54,643	23,412	2.3
Albemarle Rural Area	44,327	441,212	0.1
Total	142,445	471,280	0.3

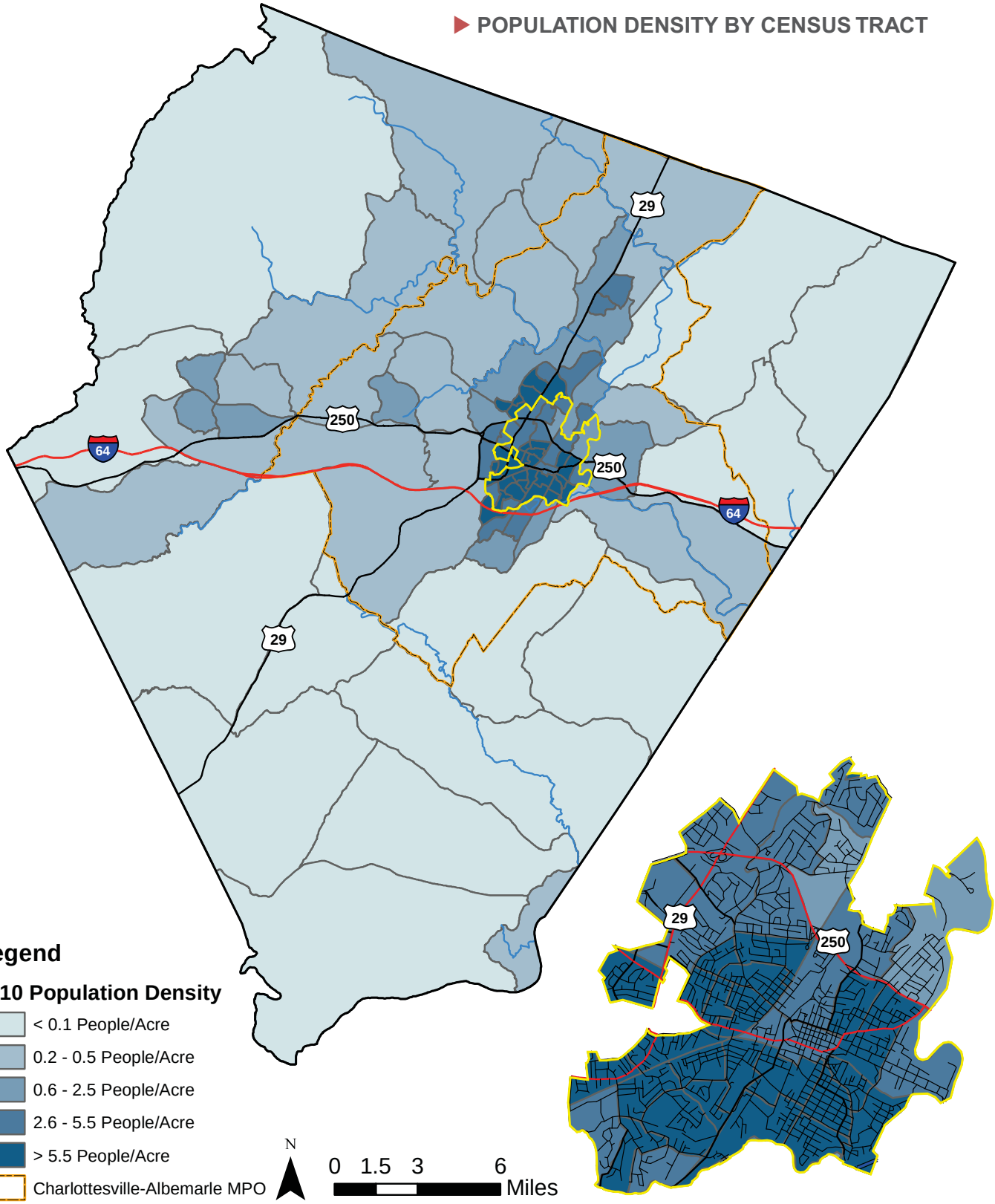
Source: 2010 U.S. Census population by block. Albemarle County GIS, City of Charlottesville GIS

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Promote the efficient use of County Resources through a combination of: A.) Protecting the elements that define the Rural Area: Agricultural resources, forestry resources, land preservation, land conservation water supply resources, natural resources, historical, archaeological and cultural resources and B.) Promoting the Development Areas as the place where a variety of land uses, facilities, and services exist and are planned to support the County's future growth, with emphasis placed on density and high quality design in new and infill development."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Encourage housing development where increased density is desirable and strive to coordinate those areas with stronger access to employment opportunities,transit routes and commercial services."

POPULATION DENSITY BY CENSUS TRACT

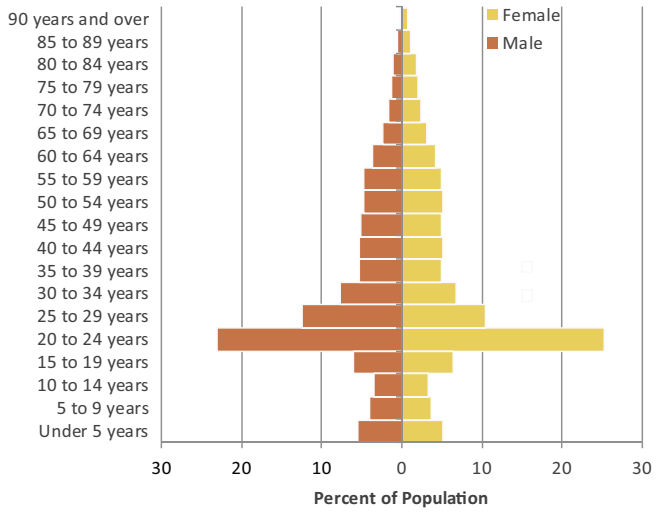


Age Breakdown

The two charts below show the age and gender breakdown for both Charlottesville and Albemarle. These charts show the percentage of persons in each age category and their sex. Over time the graphs have moved from a pyramid shape to more of a rectangle or skyscraper shape. A pyramid shaped graph indicates a typical population distribution with a greater number of younger people than older people. While the rectangular or skyscraper shape indicates an aging population. The graphs can be used to see trends so the community can ensure that there are appropriate services available for all age groups in the community. For example, an aging community would need more geriatric and adult services than a younger community. The Charlottesville graph is skewed in the 20-24 year old category due to the large number of university students who reside in the City.

AGE BY SEX

Charlottesville



Albemarle County

Source: U.S. Census Bureau: 2008-2010 American Community Survey 3-Year Estimates, Table B01001 (Age By Sex)

Comprehensive Plan Linkage

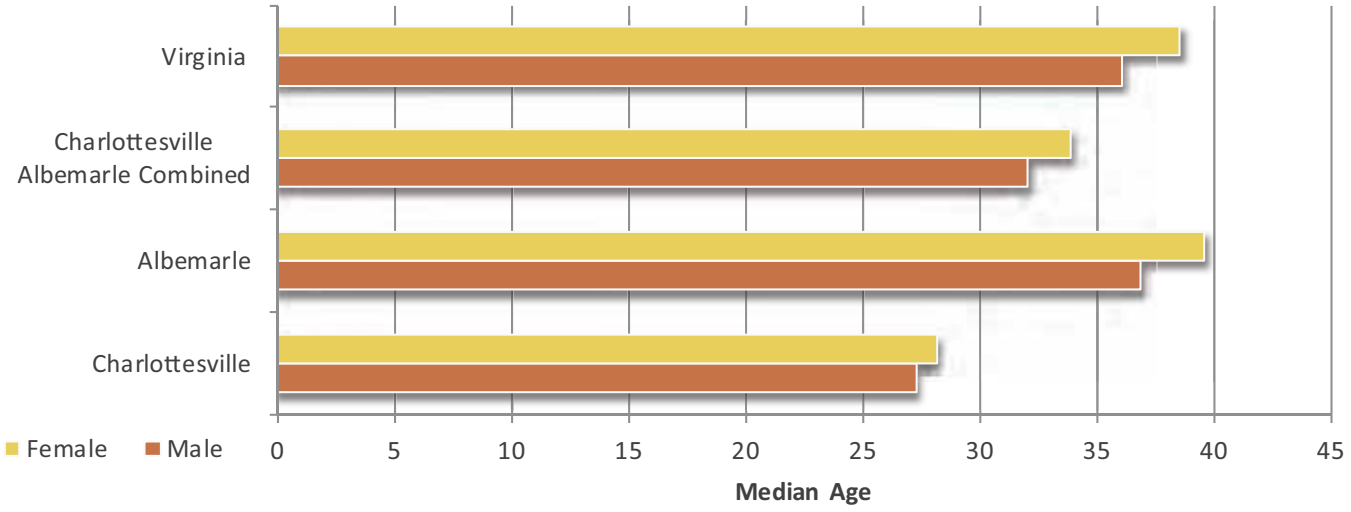
▶ **Albemarle Comprehensive Plan Linkage:**
"Ensure that housing is equally available to all populations."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Grow the City's housing stock for residents of all income levels."

Median Age

This indicator measures the middle, or median, age for the various communities presented below. Looking at the median age for a geographic area is another useful tool for determining what kinds of services the community needs. For example, A younger median age might suggest the need for more schools, playgrounds and children's services. Charlottesville has the lowest median age for both males and females.

MEDIAN AGE OF POPULATION BY GENDER



Source: U.S. Census Bureau; 2008-2010 American Community Survey 3-Year Estimates, Table B01002 (Median Age By Sex)

Comprehensive Plan Linkage

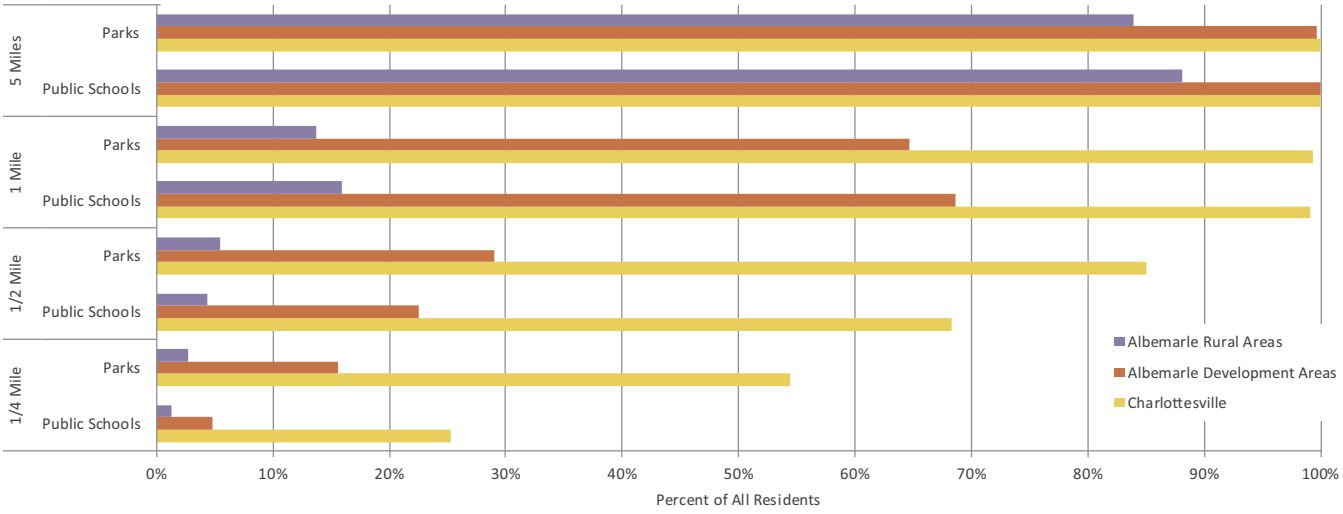
Albemarle Comprehensive Plan Linkage:
"Ensure that housing is equally available to all populations."

Charlottesville Comprehensive Plan Linkage:
"Grow the City's housing stock for residents of all income levels."

Residential Proximity to Parks and Schools

This indicator measures the population's proximity to parks and schools. Proximity is measured at four distances: quarter-mile, half-mile, one mile and five miles. The quarter-mile and half-mile distances represent walkable or bikeable proximity. The one and five mile distances represent a short drive for residents. The areas measured include the City of Charlottesville and both the Rural and Development Areas of Albemarle County. Access to parks allows residents a safe way to exercise, engage nature, and participate in leisure and recreational activities. Schools provide access to education and can serve as centers of community engagement. The bars on the graph represent the percent of the population's varying levels of access to the listed services. Unlike the Development Areas, walkability is not expected for Albemarle County's Rural Area residents.

PROXIMITY TO PARKS AND SCHOOLS



Source: Albemarle, Charlottesville and TJPDC GIS data (2011).

Comprehensive Plan Linkage

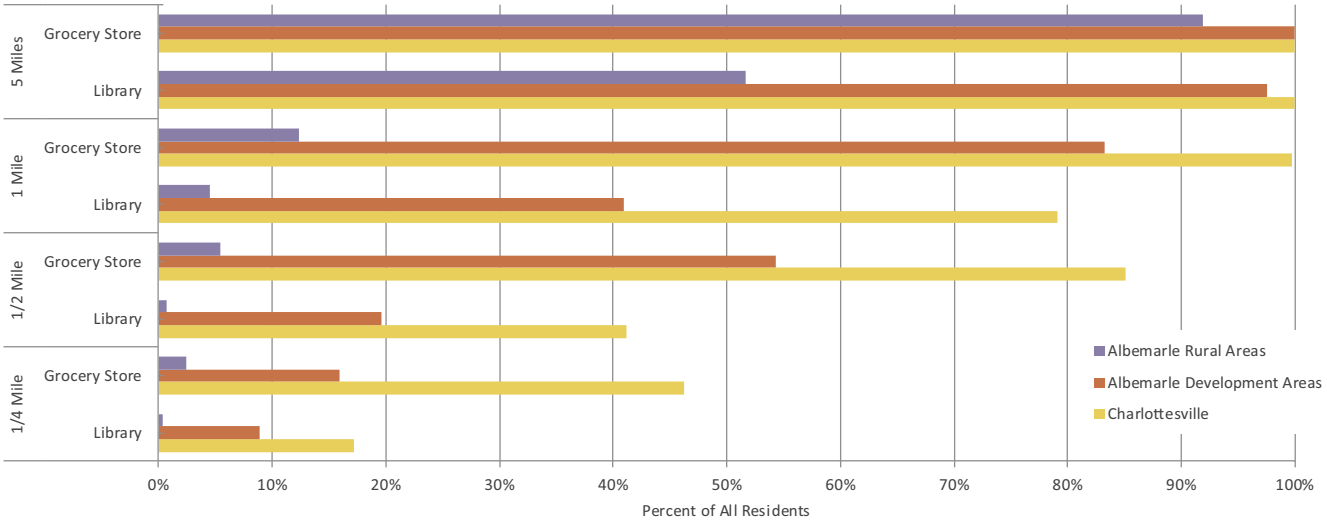
▶ **Albemarle Comprehensive Plan Linkage:**
"Provide bicycle and pedestrian connections to City and County parks and schools in the Development Areas from neighborhoods, employment centers, shopping areas, public parks and public schools"

▶ **Charlottesville Comprehensive Plan Linkage:**
"Create balance and accessibility for all types of parks and facilities across the City."

Residential Proximity to Grocery Stores and Libraries

This indicator measures the population's proximity to grocery stores and libraries. Proximity is measured at four distances: quarter-mile, half-mile, one mile and five miles. The quarter-mile and half-mile distances represent walkable or bikeable distances. The one and five mile distances represents a short drive for residents. The areas measured include the City of Charlottesville, and both the Rural and Development Areas of Albemarle County. Proximity to a grocery store is especially important in ensuring access to fresh food for populations who may not have reliable access to a vehicle. Libraries provide important gathering spaces and act as centers for community engagement. The bars on the graph represent the percent of the population's levels of access to the grocery stores and libraries. Unlike the Development Areas, walkability is not expected for Albemarle County's Rural Area residents.

PROXIMITY TO GROCERY STORES AND LIBRARIES



Source: USDA Database of SNAP Retailers (February 2013). Albemarle, Charlottesville and TJPDC GIS data (2011).

Comprehensive Plan Linkage

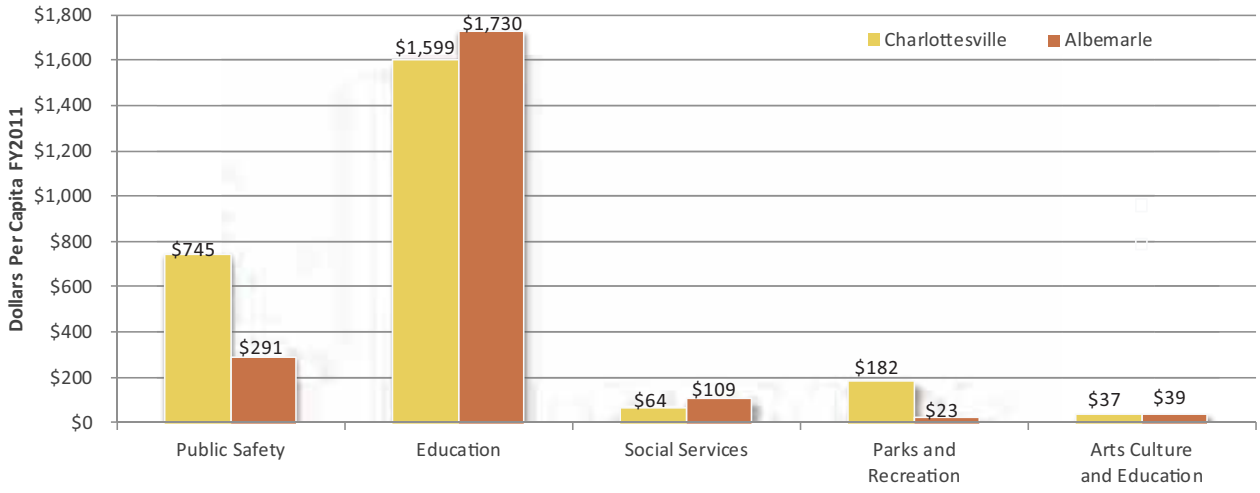
▶ **Albemarle Comprehensive Plan Linkage:**
"Provide bicycle and pedestrian connections to City and County parks and schools in the Development Areas from neighborhoods, employment centers, shopping areas, public parks and public schools"

▶ **Charlottesville Comprehensive Plan Linkage:**
"Create balance and accessibility for all types of parks and facilities across the City."

Local Government Expenditures on Public Services

Per capita expenditures on public services is a way to measure and compare community priorities, normalized by a community's population. It also provides insight on how each community chooses to allocate their limited resources. The table below highlights city and county budget expenditures for public safety, education, social services, parks and recreation, and arts, culture and education.

PUBLIC SERVICE EXPENDITURES PER CAPITA



Source: Charlottesville Budget FY 13: 2010-2011 actual adopted budget funds. Albemarle Budget FY 13: 2010-2011 adopted budget.

Comprehensive Plan Linkage

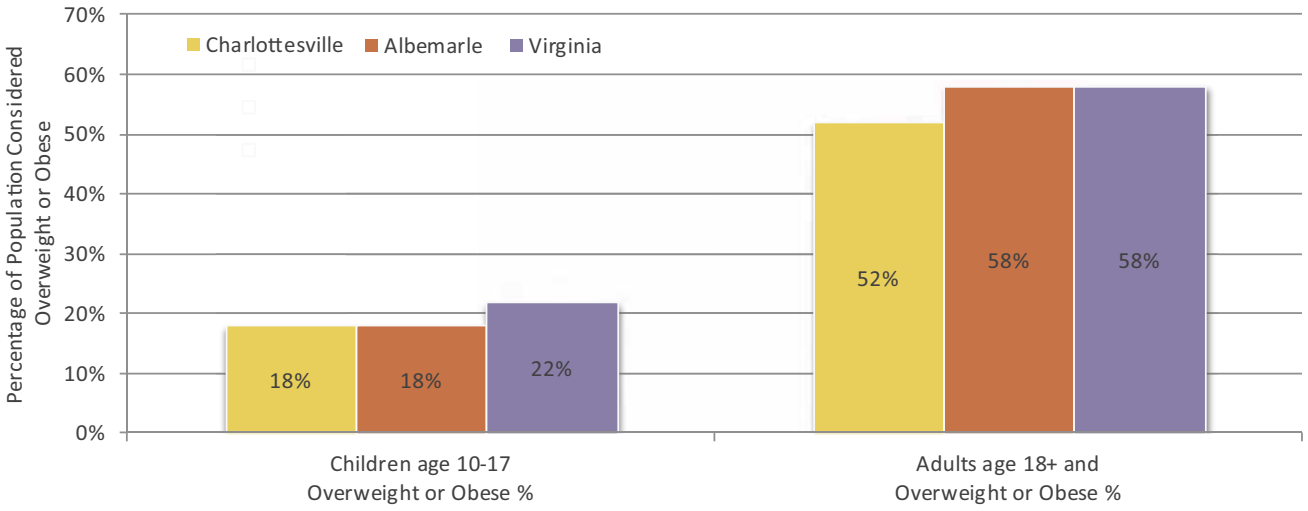
▶ **Albemarle Comprehensive Plan Linkage:**
"Continue to provide public facilities and services in a fiscally-responsible and equitable manner."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Seek out opportunities for public-private partnerships in the provision of infrastructure that supports the tourism industry."

Overweight and Obesity

The proportion of an area's population that is overweight or obese is a good measure of public health. An overweight adult is defined as having a body mass index (BMI) of greater than 25 and an obese adult is defined as having a BMI over 30. For children, being overweight is defined as a BMI above the 85th percentile, while obese is define as being above the 95th percentile for children of the same age and sex. The Virginia Department of Health's Thomas Jefferson Health District identified the increasing rate of obesity as the number one public health issue in Charlottesville and Albemarle. Childhood obesity is an especially important public health issue because it can be a precursor for many health problems later in life. According to the graph below, Charlottesville has the lowest percentage of overweight residents, with 52% of adults being classified as overweight. This is lower than the state average of 58%. Both localities have a childhood obesity rate of 18%, which is lower than the statewide average of 22%.

PERCENTAGE OF THE POPULATION CONSIDERED OVERWEIGHT OR OBESE



Source: The Virginia Atlas of Community Health (http://www.atlasva.com/) accessed 2012, (data for CY 2010)

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Continue to use County school facilities as an integral part of providing recreational opportunities for County residents."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Ensure that the City's housing portfolio offers a wide range of choices that are integrated and balanced across the City to meet multiple goals including: increased sustainability, walkability, bikeability, and use of public transit, augmented support for families with children, fewer pockets of poverty, sustained local commerce and decreased student vehicle use."

Access to Healthy Food Choices*

This indicator measures the proportion of the low-income population that is not located in close proximity to a supermarket or a grocery store. This indicator can be used to identify populations that are currently under served by the existing distribution of grocery stores, or reside in what is referred to as a food desert. Food deserts are areas in which a population does not have adequate access to healthy food, either because no retailers are located nearby or because those that are offer food at more expensive prices than the community can afford. The distances of one mile for urban areas and 10 miles for rural areas are thresholds used by the USDA Food Environment Atlas to determine adequate access in urban and rural areas across the country.

PERCENT OF POPULATION RESIDING IN LOW INCOME CENSUS TRACTS THAT RESIDE MORE THAN 1 MILE (URBAN) OR 10 MILES (RURAL) FROM A SUPERMARKET OR GROCERY STORE

	Albemarle	Charlottesville
Percent of Population Residing in Low Income Census Tracts That Reside More Than 1 Mile (Urban) From A Supermarket Or Grocery Store	11.6%	0.2%
Percent of Population Residing in Low Income Census Tracts That Reside More Than 10 Miles (Rural) From A Supermarket Or Grocery Store	0.1%	n/a

Source: USDA2011 Food Environment Atlas Data File
http://www.ers.usda.gov/data-products/food-environment-atlas/data-access-and-documentation-downloads.aspx. Accessed January 3rd 2013

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Consider allowing for urban agriculture practices to increase access to healthy, local, and affordable foods and encouraging the productive use of vacant land."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Leverage the growing demand for locally-sourced products by encouraging business creation and expansion downtown, and, more specifically, at the City Market."

**Flagship Sustainability indicator recommended by HUD*

Land Conversion*

This indicator measures the extent to which new development consumes land that was previously set aside for agriculture and natural resources. Values closer to zero indicate that community growth is occurring through reinvestment in existing communities and infill development, whereas higher values indicate that new growth is occurring primarily on undeveloped land. The table below presents the indicator for the region as a whole and does not separate out Charlottesville from Albemarle County.

NET ACRES OF AGRICULTURAL AND NATURAL RESOURCE LAND LOST ANNUALLY TO DEVELOPMENT PER NEW RESIDENT

	Land Lost Per New Resident (acres)
1992-2001*	0.33
2001-2006	0.07

**Note: Data collection methodologies and technological changes between the 1992 and the 2001 datasets confound any direct comparison between the two National Land Cover Databases. The data is presented for illustrative purposes only.*

Source: Population, Weldon Cooper Center Virginia Population Estimates 2000-2010. USGS National Land Cover Database 2001-2006 From To Change Index, downloaded 1/6/13 National Land Cover Database 1992/2001 Retrofit Land Cover Change Product, downloaded 1/7/13

**Flagship Sustainability indicators recommended by HUD*

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Promote the efficient use of County Resources through a combination of: A.) Protecting the elements that define the Rural Area: Agricultural resources, forestry resources, land preservation, land conservation water supply resources, natural resources, historical, archaeological and cultural resources and B.) Promoting the Development Areas as the place where a variety of land uses, facilities, and services exist and are planned to support the County's future growth, with emphasis placed on density and high quality design in new and infill development."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Respect natural resource and sensitive environmental areas, including designated floodplain areas, rivers and streams."

Economy

The Economic System serves the community by providing a diverse and resilient economic base to meet the needs of a growing, dynamic community. The indicators help to provide an overall picture of the economic vitality and competitiveness of the region's local economy.

INDICATORS	PAGE

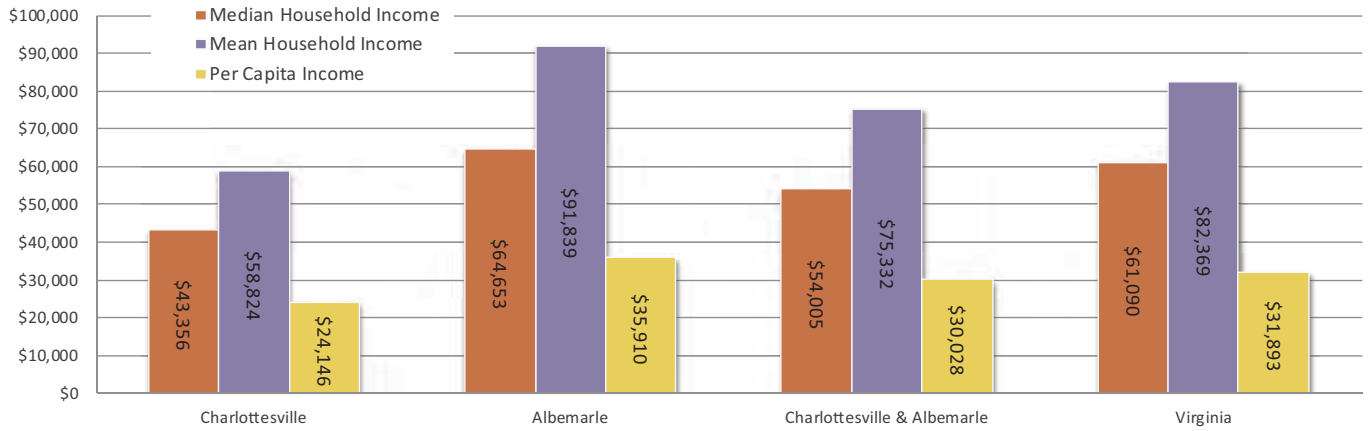
**Flagship Sustainability indicator recommended by HUD*



Income

Median and mean household incomes are indicators of household wealth. Per capita income is an indicator of individual wealth. Higher incomes suggest greater financial stability for individuals and households in a given geographic area. The median (middle) and the mean (average) household incomes are the earnings that households make in the region regardless of the number of earners living in a household. The per capita income is the average income per individual, which is lower than median household income and median family income. The chart below illustrates these measures of income for Albemarle, Charlottesville and Virginia.

INCOMES



Source: U.S. Census Bureau; 2008-2010 American Community Survey 3-Year Estimates, Table B19301

Comprehensive Plan Linkage

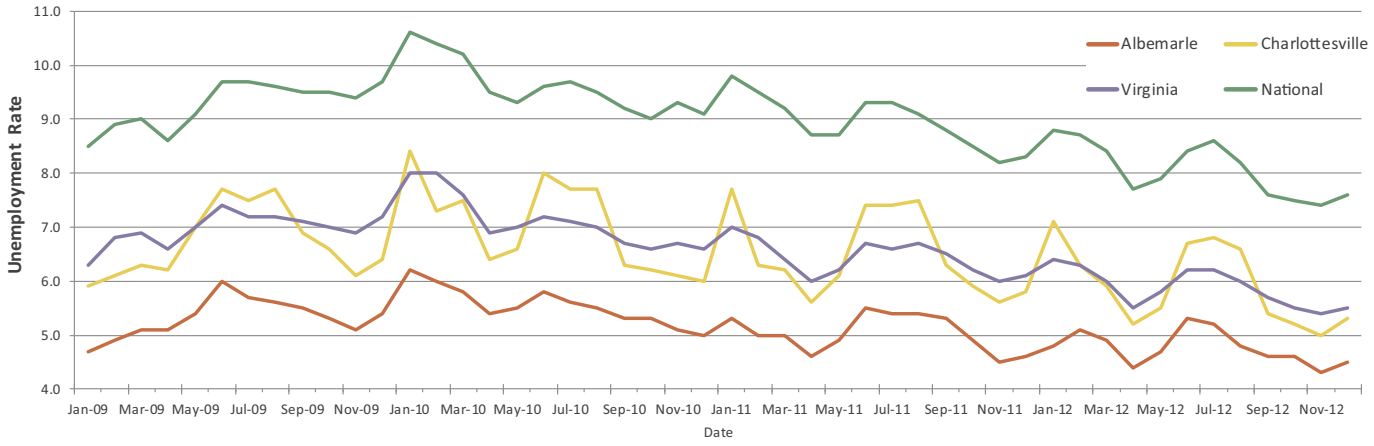
▶ **Albemarle Comprehensive Plan Linkage:**
"Increase workforce development opportunities to further career-ladder opportunity and higher wages."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Be an effective partner in creating a well-prepared and successful workforce."

Unemployment

The unemployment rate measures the percentage of people out of work who are actively looking for employment. It does not include those people who have dropped out of the labor market or who are under-employed. The indicator demonstrates whether there is a match between job seekers and available job opportunities. Low unemployment contributes to stability of the local economy. The chart below shows the unemployment trends between January 2009 and December 2012. The data illustrates that both Charlottesville and Albemarle have unemployment rates below the national average. Note: The unemployment rates shown below are not seasonally adjusted rates.

UNEMPLOYMENT RATE 2009-2012



Source: Bureau of Labor Statistics; Local Area Unemployment Statistics (LAUS), accessed 7/13/13

Comprehensive Plan Linkage

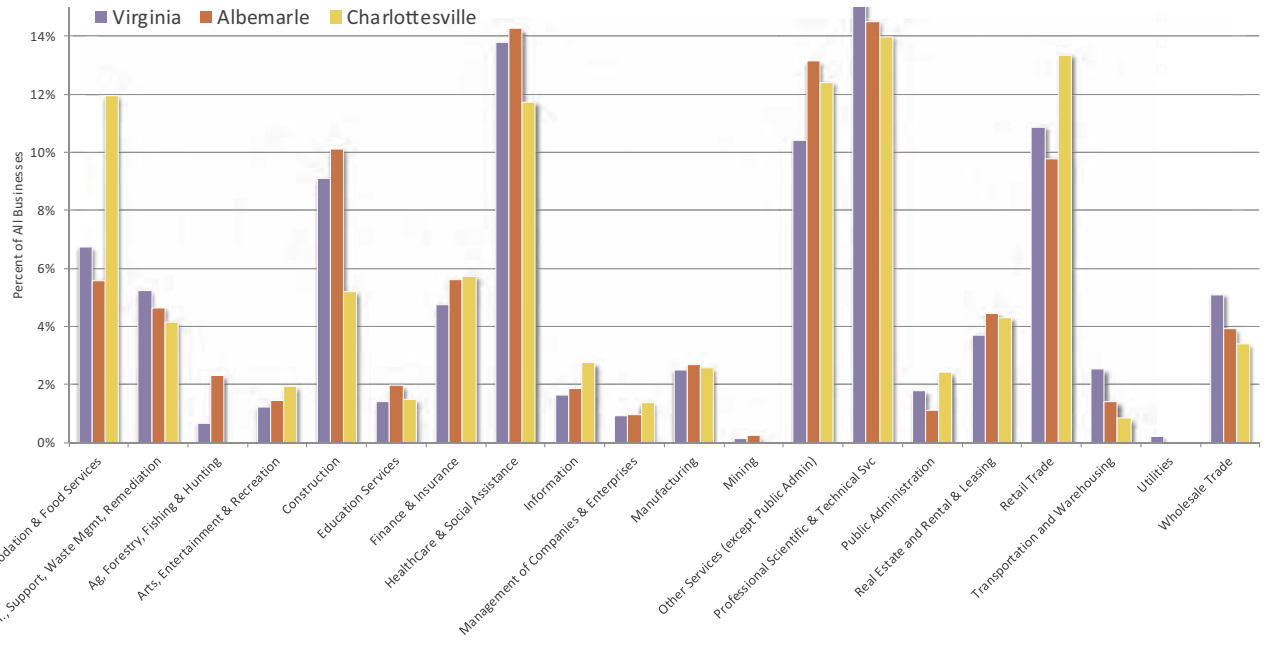
▶ **Albemarle Comprehensive Plan Linkage:**
"Provide diversified economic opportunities that benefit County citizens and existing businesses by basing policy decisions on efforts which support and enhance the strengths of the County."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Partner with local workforce service providers to offer retraining opportunities for City residents in order to increase their chances of gaining employment in new and emerging industries."

Economic Diversification by Number of Establishments

A diverse economic base, characterized by the presence of a range of industries, can help an area withstand changes in the global and national economy and help provide economic stability. The region has a diverse mix of employment sectors which are illustrated on the graph below. Note: The graph shows the percentage of businesses concentrated in each sector of the local economy. The region's highest concentration of businesses are in the professional, scientific & technical services industry, which is followed by health care and other services. Data for the City and the County fall close to the State average, except for the accommodation and food services in Charlottesville, which is approximately double that of the State average.

DIVERSIFICATION BY NUMBER OF ESTABLISHMENTS



Source: Accessed via Virginia Workforce Connection. Data Source: Labor Market Statistics, Quarterly Census of Employment and Wages Program (Q3 2012)

Comprehensive Plan Linkage

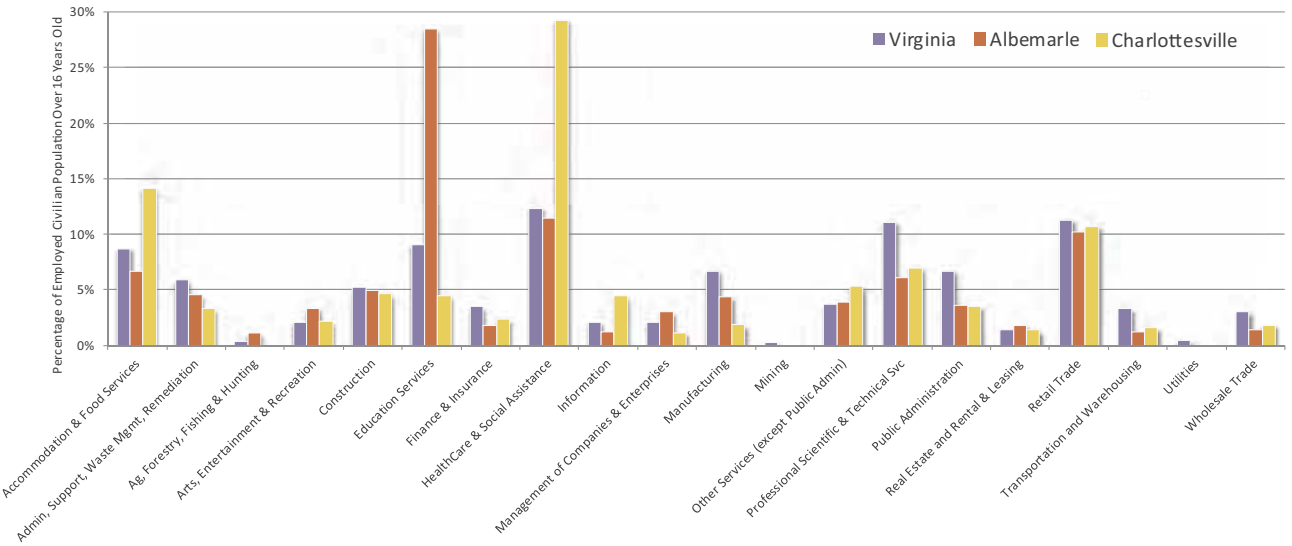
▶ **Albemarle Comprehensive Plan Linkage:**
"Provide diversified economic opportunities that benefit County citizens and existing businesses by basing policy decisions on efforts which support and enhance the strengths of the County."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Create an entrepreneurial environment that fosters the creation and success of businesses."

Economic Diversification by Number of Jobs

Economic Diversification by occupation ensures that opportunities exist for residents with varying skill and education levels. Providing diverse opportunities by occupation allows workers to advance in their career while remaining in the area. The figure below represents the percentage of the employed civilian population over 16 years in age working in each industry. The data show where jobs are located rather than where the employee lives. The region's highest concentration of employment is in the health care and education services sectors. Combined, these sectors account for almost to 40% of the region's jobs.

DIVERSIFICATION BY NUMBER OF JOBS



Source: Accessed via Virginia Workforce Connection. Data Source: Labor Market Statistics, Quarterly Census of Employment and Wages Program (Q3 2012)

Comprehensive Plan Linkage

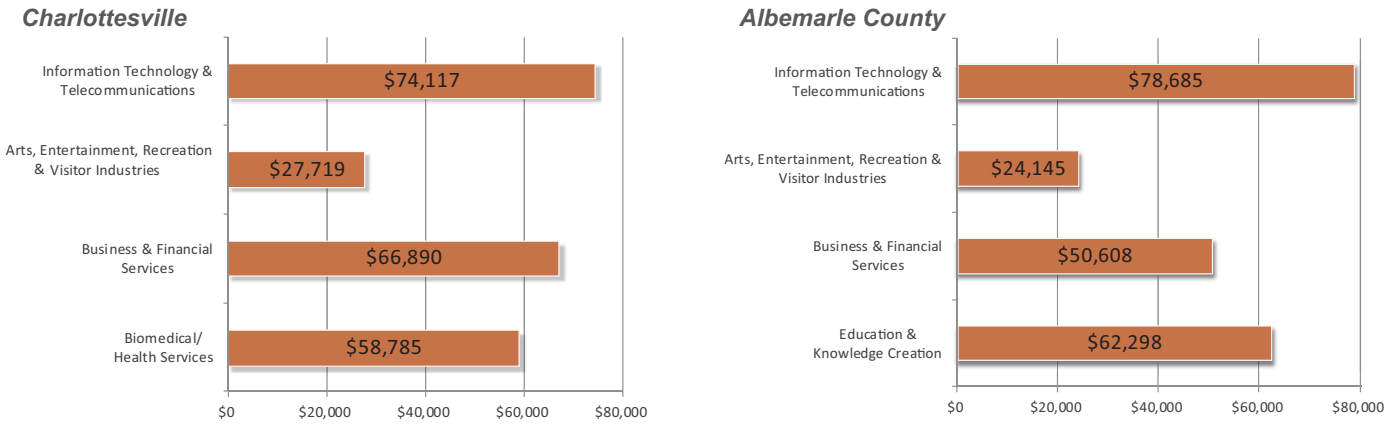
▶ **Albemarle Comprehensive Plan Linkage:**
"Provide diversified economic opportunities that benefit County citizens and existing businesses by basing policy decisions on efforts which support and enhance the strengths of the County."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Create an entrepreneurial environment that fosters the creation and success of businesses."

Wages in Major Business Clusters/Industry Groups

This indicator looks at the average wages for workers in the region's top four business clusters. This indicator can help the region better understand where there are prospects for growth in salaries and employment prospects. The indicator can also be used to show how the economy changes over time, especially as the local economy reacts to larger trends. The graphs below highlight the average annual wages in the top four sectors for Albemarle and Charlottesville. Note that Charlottesville and Albemarle share three out of four top business clusters/industry groups.

AVERAGE WAGES IN MAJOR BUSINESS CLUSTERS/INDUSTRY GROUPS



Source: Central Virginia Partnership for Economic Development (CVPED), Comprehensive Target Markets Report. (2011)

Comprehensive Plan Linkage

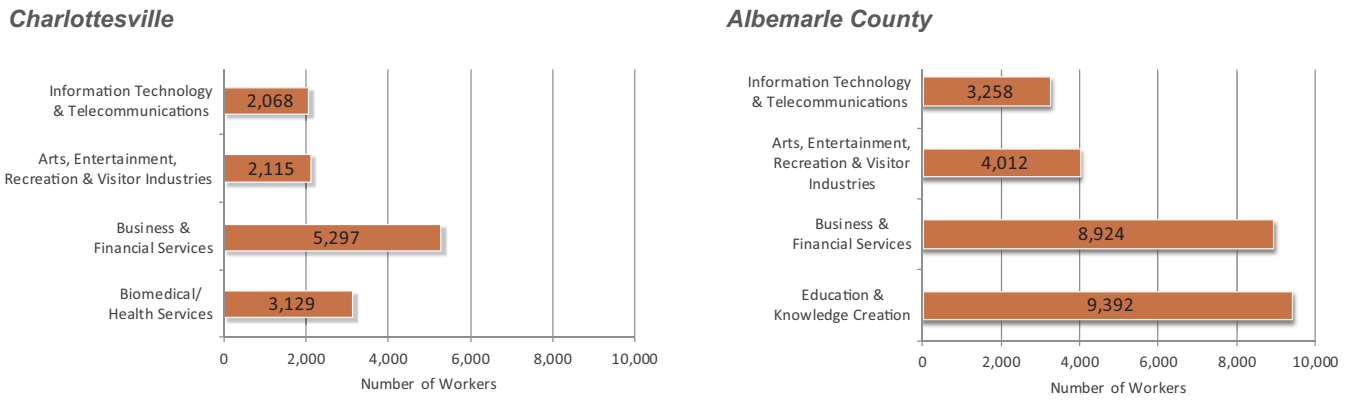
▶ **Albemarle Comprehensive Plan Linkage:**
"Increase workforce development opportunities to further career-ladder opportunity and higher wages."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Develop educational programs/training that coincide with target industries (i.e., Biosciences and Medical Devices, Information Technology and Defense & Security, Business & Financial Services, and Health Services and Arts, Design, Sports & Media) to ensure that the local workforce has the qualifications needed to find employment within these industries."

Wages in Major Business Clusters/Industry Groups

This indicator looks at the average number of workers employed in the region's major business clusters as identified by the Central Virginia Partnership for Economic Development's Comprehensive Target Markets Report. It measures the average number of workers employed in the top business clusters/industry groups for Albemarle and Charlottesville. Looking at this measure can help the community understand which economic sectors in the local economy have the highest levels of employment concentration. Note that Charlottesville and Albemarle share three out of four top business clusters/industry groups.

EMPLOYMENT CONCENTRATION IN MAJOR BUSINESS CLUSTERS/INDUSTRY GROUPS



Source: Central Virginia Partnership for Economic Development (CVPED), Comprehensive Target Markets Report. (2011)

Comprehensive Plan Linkage

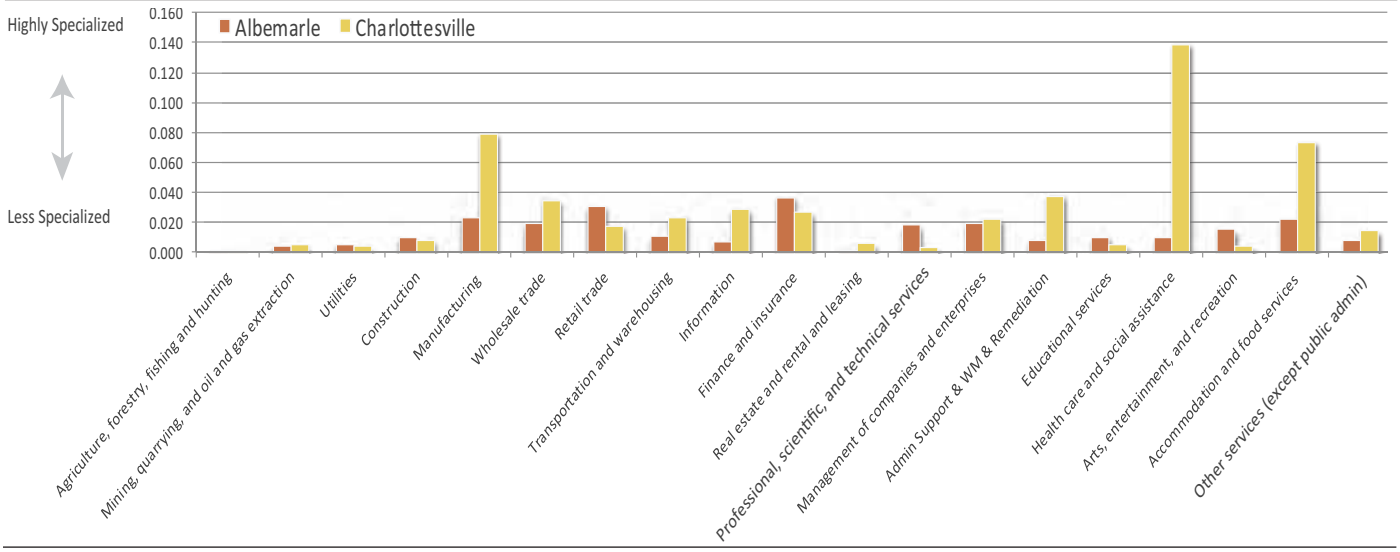
▶ **Albemarle Comprehensive Plan Linkage:**
"Increase workforce development opportunities to further career-ladder opportunity and higher wages."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Develop educational programs/training that coincide with target industries (i.e., Biosciences and Medical Devices, Information Technology and Defense & Security, Business & Financial Services, and Health Services and Arts, Design, Sports & Media) to ensure that the local workforce has the qualifications needed to find employment within these industries."

Economic Diversification Index*

This indicator is intended to measure how diverse and resilient the local economy is in comparison with the national economy. It compares employment concentration in local industry groups with national average concentrations. The chart shows the distribution of employment across major sectors, benchmarked against the national level of employment distribution. Higher values for a sector indicate that the employment is more specialized and therefore less diverse in the local economy. An ideal local economy has high industry diversification across all major sectors, indicated by all local industry groups with index values close to zero.

ECONOMIC DIVERSIFICATION INDEX



Source: US Census; County Business Patterns (CBZ) for Nation and U.S., States and Counties (1998-2010)

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Provide diversified economic opportunities that benefit County citizens and existing businesses by basing policy decisions on efforts which sup-port and enhance the strengths of the County."

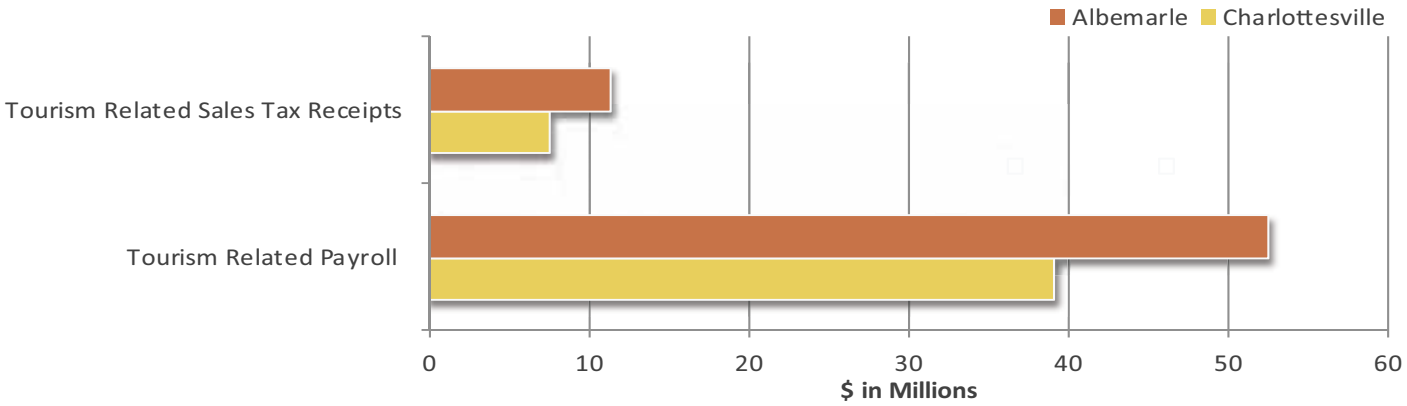
▶ **Charlottesville Comprehensive Plan Linkage:**
"Create an entrepreneurial environment that fosters the creation and success of businesses."

**Flagship Sustainability indicators recommended by HUD*

Economic Impact of Tourism

Tourism is an important component of the regional economic base. Tourists are attracted to the area's unique mix of culture, historic, scenic, and natural amenities. The University of Virginia also attracts large numbers of out-of-town guests for sporting events, educational programs, and other events, such as graduation. This measure looks at tourism's contribution to the region's economy. Tourism is responsible for over 6.5% of all jobs in the region and travel related expenditures alone generate $16 million in annual local sales tax receipts.

ECONOMIC IMPACT OF TOURISM



Source: VA Tourism Corporation, 2011 Economic Impact of Domestic Travel Report

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Explore opportunities to create "tourism zones" or other appropriate incentives."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Increase tourism to help expand the positive economic impacts visitors have on the City."

Economic Impact of Arts and Entertainment

The arts and entertainment sector of the region's economy is important for job creation and wealth generation. It is also adds significantly to the attractiveness and vibrancy of the region's community. The local arts scene also is an important factor in the region's strong tourism economy. Data on the value of arts and entertainment is often hard to quantify because it is not tracked or reported to one common source. Quantitative data also cannot adequately represent the importance of arts and culture in the community. The data used in this measure is from one report published by Americans for the Arts. A follow-up study would need to be conducted in the future for comparison. Note: The data in the table is for the region as a whole.

ECONOMIC IMPACT OF ARTS AND ENTERTAINMENT

	Impact
Economic Activity Generated by Nonprofit Arts and Culture Industry	$114.4 Million
Number of Fulltime Jobs in the Region's Arts and Culture Industry	1,921
Local and State Tax Revenue Generated by the Arts and Entertainment Industry	$114.4 Million
Average Event-Related Spending per Person by Arts and Culture Audiences	$40.82

Source: The Economic Impact of Non Profit Arts & Culture Organizations & Their Audiences in the Greater Charlottesville Area (FY 2010). Published by Americans for the Arts.

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
Albemarle has no specific goal relating to arts or entertainment in their Comprehensive Plan.

▶ **Charlottesville Comprehensive Plan Linkage:**
"Partner with arts organizations to identify ways to better assist businesses/proprietors in the arts and culture industry."

Economic Impact of Agriculture

Agriculture is an important part of the region's economy. According to the U.S. Department of Agriculture's 2007 Census of Agriculture, the market value of all agricultural products sold in Albemarle County was $24,174,000, which is about $27,101 per farm. Along with traditional agriculture, the region is home to a growing number of agricultural-related enterprises, including award winning wineries, organic farms, cideries, and agri-tourism operations.

Data in the table below was obtained from the USDA Census of Agriculture, which is voluntary and has a history of underestimating the agricultural contributions of new, or smaller agricultural operations. The table highlights the value of agri-tourism, organic production and commodity crops harvested in Albemarle County.

ECONOMIC IMPACT OF AGRICULTURE

	2007 (Albemarle County Only)
Agri-Tourism & Farm Based Recreation Receipts	$ 1,211,000
Organic Agriculture Sales	$ 39,000
Retail Sales of Crops for Human Consumption	$ 651,000

Source: 2007 U.S. Department of Agriculture, Census of Agriculture (Albemarle)

Comprehensive Plan Goal Linkage

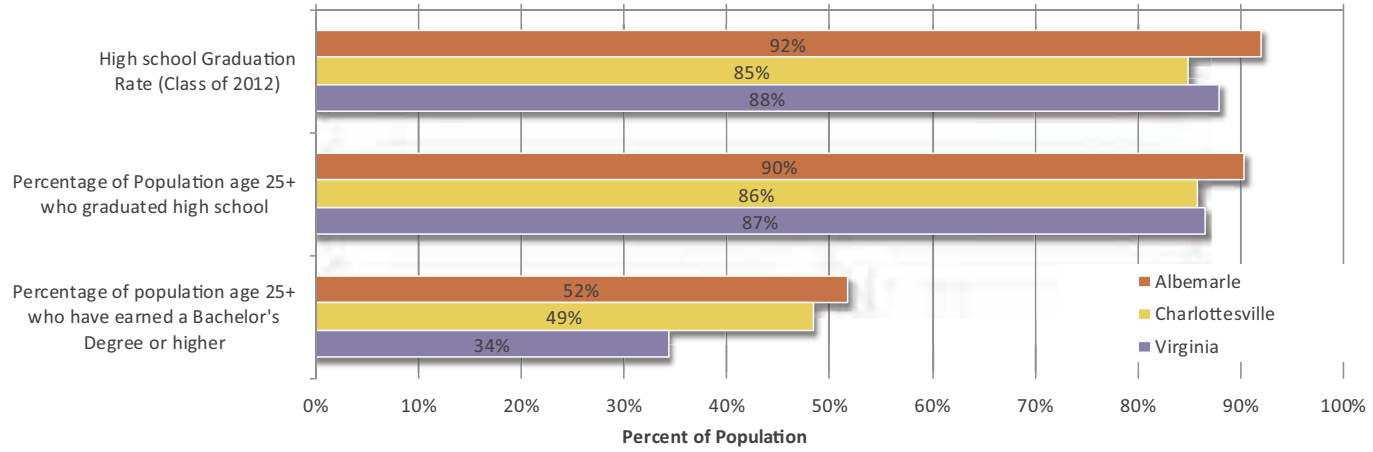
▶ **Albemarle Comprehensive Plan Goal:**
" Continue to promote farming and forestry activities in the County by retaining Rural Area zoning on Rural Area designated land."

▶ **Charlottesville Comprehensive Plan Goal:**
"Leverage the growing demand for locally-sourced products by encouraging business creation and expansion downtown, and more specifically, at the City Market."

Educational Attainment

This indicator measures the education level of the region's workforce. Education levels are an important indication of how well the education system is serving residents and the local economy. Having a well-trained workforce is important for a community's future success because it provides businesses with skilled employees. The graph below illustrates the percentage of students from the high school class of 2012 who graduated. It also measures the number of residents over the age of 25 who graduated high school and who have earned a bachelor's degree or higher. According to the graph below, the region is well educated with Albemarle (52%) and Charlottesville (49%) having significantly higher rates of college educated residents than the state average (34%).

EDUCATIONAL ATTAINMENT AND HIGH SCHOOL GRADUATION RATE



Source: Virginia Economic Development Partnership Community Profile Reports for Albemarle, Charlottesville and Virginia. (Educational Attainment is from the US Census American Community Survey 5-year, 2007-2011)

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Increase workforce development opportunities to further career-ladder opportunity and higher wages."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Improve and maintain Charlottesville's Public School facilities to continue providing an excellent education to City students."

Housing and the Built Environment

The Housing and the Built Environment System serves the community by providing an array of housing options that meet the needs of all citizens. The integration of housing within the community, the availability of safe, affordable housing types, densities and location are indicators of the health of Housing and the Built Environment.

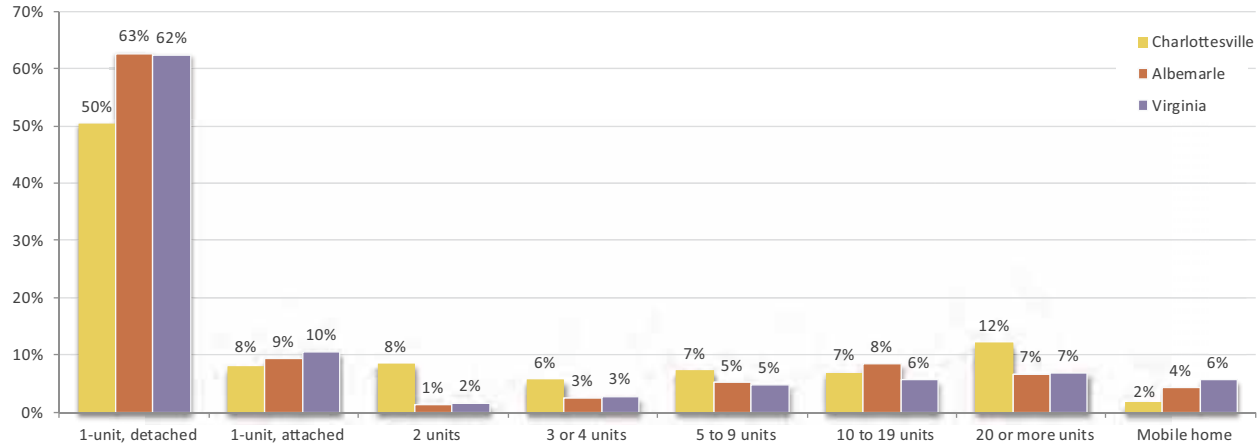
**Flagship Sustainability indicators recommended by HUD*




Types of Housing Units

A variety of single family detached, single family attached and multi family homes provides options for a diverse range of housing needs in the community. The graph below breaks down the housing stock according to the number of units associated with each type of dwelling structure. Note: one unit attached units share at least one common wall, but are located on separate lots, an example being a townhouse. These are different than duplexes which are two or more units on the same lot. The chart illustrates that the predominant housing type in both Charlottesville and Albemarle is single family detached homes. These account for over 50% of units in the region.

TYPES OF HOUSING UNITS



Source: US Census Bureau, 2005-2009 (5-Year) American Community Survey DP04: Select Housing Characteristics

Comprehensive Plan Goal Linkage

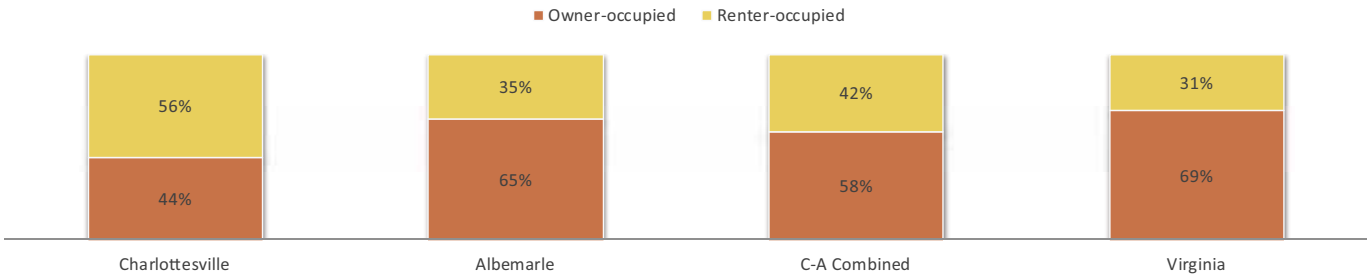
▶ **Albemarle Comprehensive Plan Goal:**
"Provide for a variety of housing types for all income levels and help provide for density in the Development Areas."

▶ **Charlottesville Comprehensive Plan Goal:**
"Ensure that the City's housing portfolio offers a wide range of choices that are integrated and balanced across the City to meet multiple goals including: increased sustainability, walkability, bikeability, and use of public transit, augmented support for families with children, fewer pockets of poverty, sustained local commerce and decreased student vehicle use."

Renter and Owner-Occupied Housing

A mix of properties available to renters and owners ensures choices for citizens of various incomes and lifestyles. Homeownership can bring stability to a neighborhood, as owners tend to reside in a home for longer periods of time than renters. Renting often better meets the needs of students and others who cannot afford to or do not wish to purchase a home. Having rental housing can provide more affordable housing options. The chart below finds that the rate of owner occupancy in the Charlottesville-Albemarle area is 58% as compared to the state average of 69%. This is likely due to the area's high percentage of students, who tend to be renters rather than homeowners.

RENTER AND OWNER-OCCUPIED HOUSING



Source: US Census Bureau, 2005-2009 (5-Year) American Community Survey DP04: Select Housing Characteristics

Comprehensive Plan Linkage

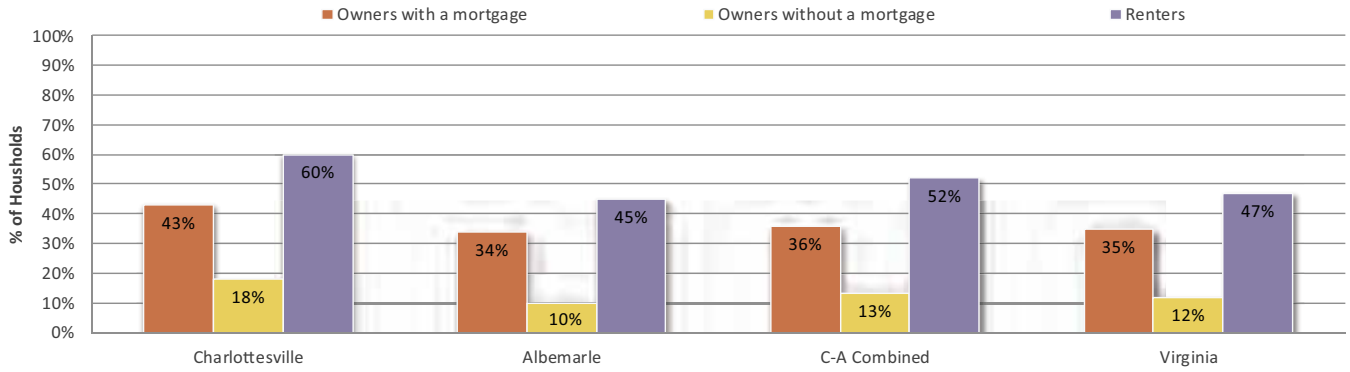
▶ Albemarle Comprehensive Plan Goal:
"Provide for a variety of housing types for all income levels and help provide for density in the Development Areas."

▶ Charlottesville Comprehensive Plan Goal:
"Ensure that the City's housing portfolio offers a wide range of choices that are integrated and balanced across the City to meet multiple goals including: increased sustainability, walkability, bikeability, and use of public transit, augmented support for families with children, fewer pockets of poverty, sustained local commerce and decreased student vehicle use."

Income and Housing

Income, coupled with the cost of housing, provides a measure of affordability that is important in determining livability. A commonly accepted guideline is that housing costs should not exceed 30% of a family's income to be considered affordable. Housing costs typically include mortgage or rent payments, insurance, real estate taxes, utilities and mortgage insurance. The graph below compares these rates for Charlottesville, Albemarle and Virginia. In the Charlottesville-Albemarle region, 52% of renters spend more than 30% of their income on housing. This is just slightly higher than the Virginia average of 47%. In contrast, in our region 36% of homeowners with a mortgage and 13% of homeowners without a mortgage spend more than 30% of household income on housing. This indicator shows that housing cost burden is both a local and statewide issue.

HOUSEHOLDS SPENDING GREATER THAN 30% OF THEIR INCOME ON HOUSING COSTS



Source: US Census Bureau, 2005-2009 (5 -Year) American Community Survey DP04: Select Housing Characteristics

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Provide for a variety of housing types for all income levels and help provide for density in the Development Areas."

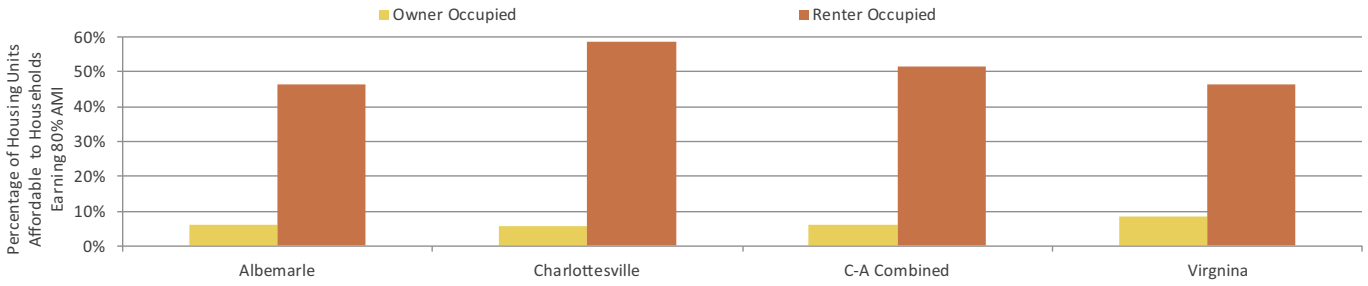
▶ **Charlottesville Comprehensive Plan Linkage:**
"Grow the City's housing stock for residents of all income levels."

Housing and the Built Environment

Housing Affordability*

This measure captures the percentage of housing within the region that is affordable to low-income households. Low income households, are households where occupants earn up to 80% of the area's median income. These households make up 15.9% of Charlottesville and Albemarle households. This indicator, in association with current housing cost burdens experienced by residents, demonstrate the challenges associated with affordability in this region. The chart below illustrates that in the region 52% of the rental units in the region are affordable to low income households. This is in contrast to the area's owner-occupied units where only 6.1% of the units are considered affordable to low income households.

PERCENTAGE OF HOUSING UNITS AFFORDABLE TO HOUSEHOLDS EARNING 80% OF THE AREA MEDIAN FAMILY INCOME



Source: Department of Housing and Urban Development Consolidated Plan mapping Interface http://egis.hud.gov/cpdmaps/ Accessed on January 3, 2013 and 2006-2010 HUD Consolidated Planning data
Note: Area Median Household Income is based on the HUD adjusted Area Median Household Income.

**Flagship Sustainability indicators recommended by HUD*

Comprehensive Plan Linkage

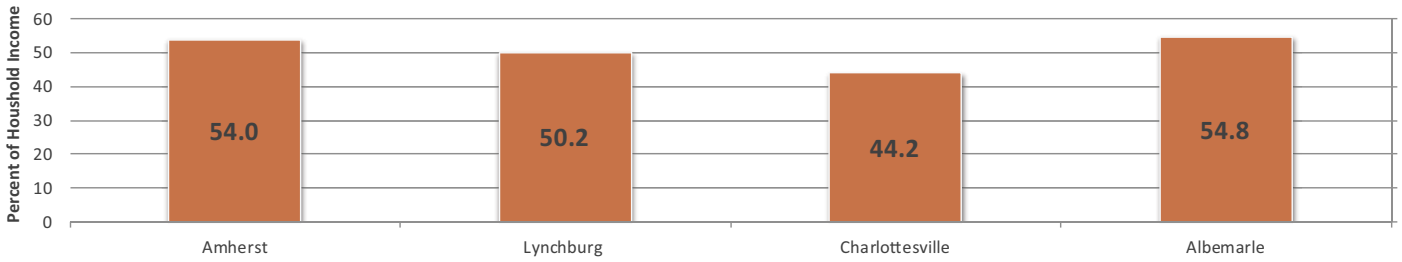
▶ **Albemarle Comprehensive Plan Linkage:**
"Provide affordable housing options for low-to-moderate income residents of Albemarle County and Albemarle County workers who wish to reside in Albemarle County."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Continue to work toward the City's goal of 15% supported affordable housing by 2025"

Housing and Transportation Cost*

Housing is the number one household expense and generally should not exceed 30% of a household's expenses. Transportation is the second largest expense, but is rarely considered when people choose a place to live. This measure combines these two costs to produce a more complete measure of affordability. It is recommended that a household's combined housing and transportation costs should be 45% or less of the household's income. Estimated transportation costs are based on economic characteristics of the average household in the region and neighborhood characteristics such as residential and job density, intersection density and transit connectivity. Data for Amherst County and Lynchburg City has been included to provide a comparison because state level averages do not currently exist for the Housing and Transportation Affordability Index produced by the Center for Neighborhood Technology.

HOUSING AND TRANSPORTATION COSTS AS A PERCENT OF HOUSEHOLD INCOME



Source: Center for Neighborhood Technology (www.CNT.org) accessed on January 3, 2013

**Flagship Sustainability indicators recommended by HUD*

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Complete transportation projects for sidewalks and provide for and support transit."

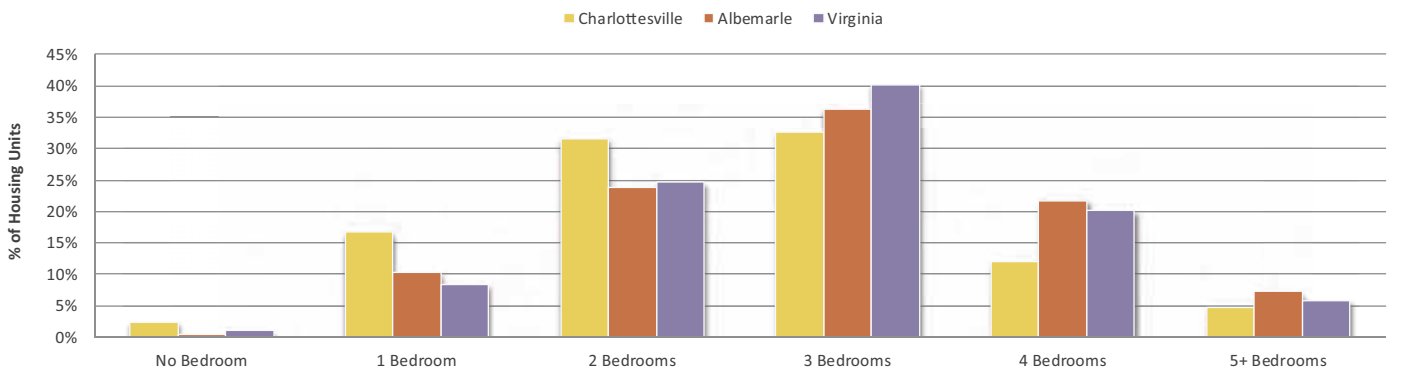
▶ **Charlottesville Comprehensive Plan Linkage:**
"Incorporate affordable units throughout the City, recognizing that locating affordable units throughout the community benefits the whole City."

Number of Bedrooms in Housing Units

Number of bedrooms is an indicator of the size of a housing unit and the number of occupants it can accommodate without leading to overcrowding. The distribution of housing units by bedroom number can be compared to the patterns of household size to determine whether the current housing stock meets the needs of the local population.

Having an array of units with a range in the number of bedrooms provides housing choices for residents with varying incomes, family sizes and lifestyles. Three bedroom units are the most common type of housing units in both Albemarle and Charlottesville, followed by two and four bedroom units.

NUMBER OF BEDROOMS



Source: US Census Bureau, 2005-2009 (5-year) American Community Survey DP04: Select Housing Characteristics

Comprehensive Plan Linkage

▶ Albemarle Comprehensive Plan Linkage:
"Provide for a variety of housing types for all income levels and help provide for density in the Development Areas."

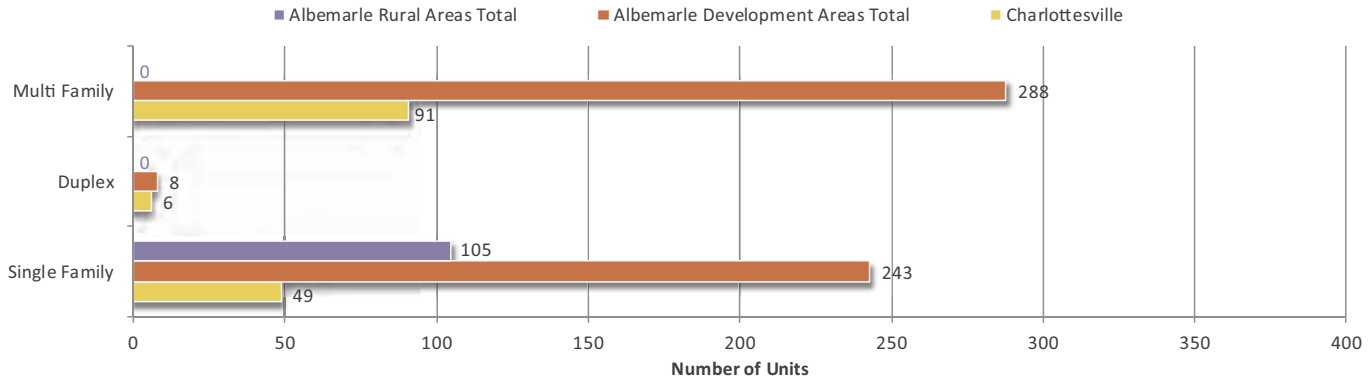
▶ Charlottesville Comprehensive Plan Linkage:
"Offer a range of housing options to meet the needs of Charlottesville's residents, including those presently underserved, in order to create vibrant residential areas or reinvigorate existing ones."

Number and Type of Units by Building Permits Issued

This indicator provides insight into the types of residential units being built in the region. On its own it is a data point; however, when tracked, it can be an indicator of the number and type of new units that may be built in the future.

In 2011, a total of 800 new residential building permits were issued in the region with the majority in Albemarle County's Development Areas (540) and Charlottesville (146). The remaining 114 permits were issued in Albemarle's Rural Area. The data suggest that development is primarily occurring in the region's urban areas.

NUMBER AND TYPE OF NEW BUILDING PERMITS ISSUED IN 2011



Source: U.S. Census Bureau; 2008-2010 American Community Survey 3-Year Estimates, Table B19301

Comprehensive Plan Linkage

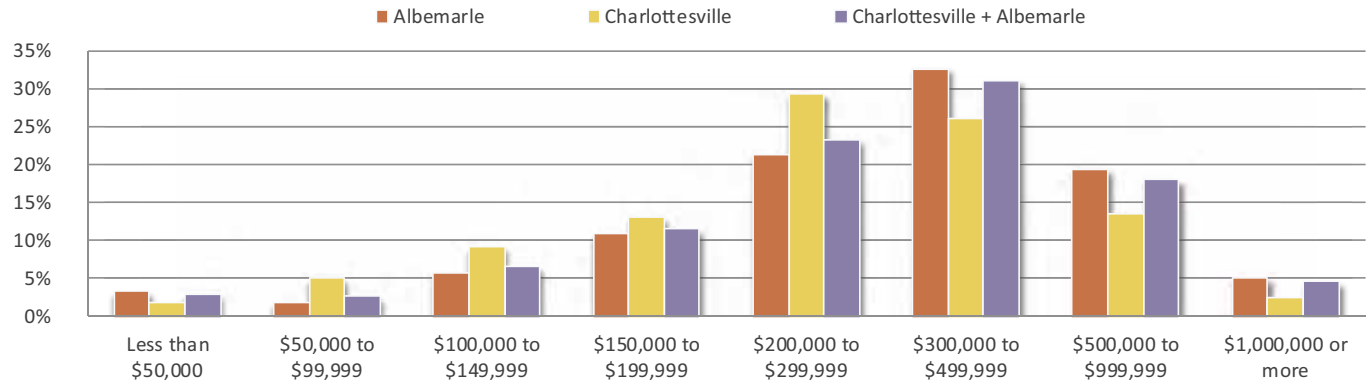
▶ **Albemarle Comprehensive Plan Linkage:**
"Designate and zone land for residential development in the Development Area to accommodate future populations."

▶ **Charlottesville Comprehensive Plan Linkage:**
""Ensure that the City's housing portfolio offers a wide range of choices that are integrated and balanced across the City to meet multiple goals including: increased sustainability, walkability, bikeability, and use of public transit, augmented support for families with children, fewer pockets of poverty, sustained local commerce and decreased student vehicle use."

Home Values

The value of area housing units indicates how accessible homeownership is for households in a geographic area. Homeownership is a means of financial security and savings. For many households the home provides most of the household's net worth. This data is based on a homeowner's own assessment of the amount they would expect their home to sell for rather than the assessed value used for taxation purposes. Greater than three quarters (77%) of households believe their home is worth over $200,000.

HOME VALUES



Source: US Census Bureau, 2005-2009 (5-Year) American Community Survey DP04: Select Housing Characteristics

Comprehensive Plan Linkage

▶ Albemarle Comprehensive Plan Linkage:
"Through rezonings and special use permits, continue to ensure a mixture of housing types are provided that also support all income levels of residents in Albemarle County."

▶ Charlottesville Comprehensive Plan Linkage:
"Evaluate the impact of housing decisions on other City Goals and City Vision with the understanding that any regulatory land use changes may affect housing because of the City's limited geographic size of only 10.4 square miles. All such changes must be considered within the context of City Council's goal of achieving a minimum 15% supported affordable housing throughout the City by 2025."

Median Value of Housing Units

Median housing unit value of all owner-occupied housing indicates how accessible homeownership is, particularly when compared to the local median income (see Economy Chapter). The median housing unit value of for both Charlottesville and Albemarle is higher than the Virginia Median, which suggests that households need higher incomes than the state average to afford a home in the region. Note: these values are self-reported by property owners as part of the US Census American Community Survey.

MEDIAN VALUE OF HOUSING UNITS

	Median Value ($)
Charlottesville	284,400
Albemarle	346,200
Virginia	256,600

Source: US Census American Community Survey 2008-2010 (3-Year) DP04: Select Housing Characteristics

Comprehensive Plan Linkage

▶ Albemarle Comprehensive Plan Linkage:
"Provide for a variety of housing types for all income levels and help provide for density in the Development Areas."

▶ Charlottesville Comprehensive Plan Linkage:
"Evaluate the impact of housing decisions on other City Goals and City Vision with the understanding that any regulatory land use changes may affect housing because of the City's limited geographic size of only 10.4 square miles. All such changes must be considered within the context of City Council's goal of achieving a minimum 15% supported affordable housing throughout the City by 2025."

Natural Resources and Environment

The Natural Resources and Environmental Systems serve the community by providing access to natural resources, healthy air, and clean water. The indicators help to provide information on accessibility and quality of natural resources.

**Flagship Sustainability indicator recommended by HUD*




Solid Waste and Recycling

The recycling rate and tons of solid waste generated are indicators of consumption level and refuse materials generated by the community. Recycling diverts refuse from the waste stream and reduces the amount of material that must be landfilled. The table below illustrates the solid waste generation and recycling trends from 2009 to 2011. This data is for the Rivanna Solid Waste Authority (RSWA) service area, which includes both Charlottesville and Albemarle. The variation in rates year to year is the result of the volatile nature of the recycling markets.

SOLID WASTE GENERATED AND RECYCLING RATES^

Year	Recycling Rate (%)	Solid Waste Generated (Tons)
2011	29.2	97,003
2010	34.0	107,882
2009	28.9	74,002

Source: Thomas Jefferson Solid Waste Planning Unit; 2011 Solid Waste Management Plan
^Note: Rates shown are for the Rivanna Solid Waste Authority District which includes Albemarle and Charlottesville.

Comprehensive Plan Linkage

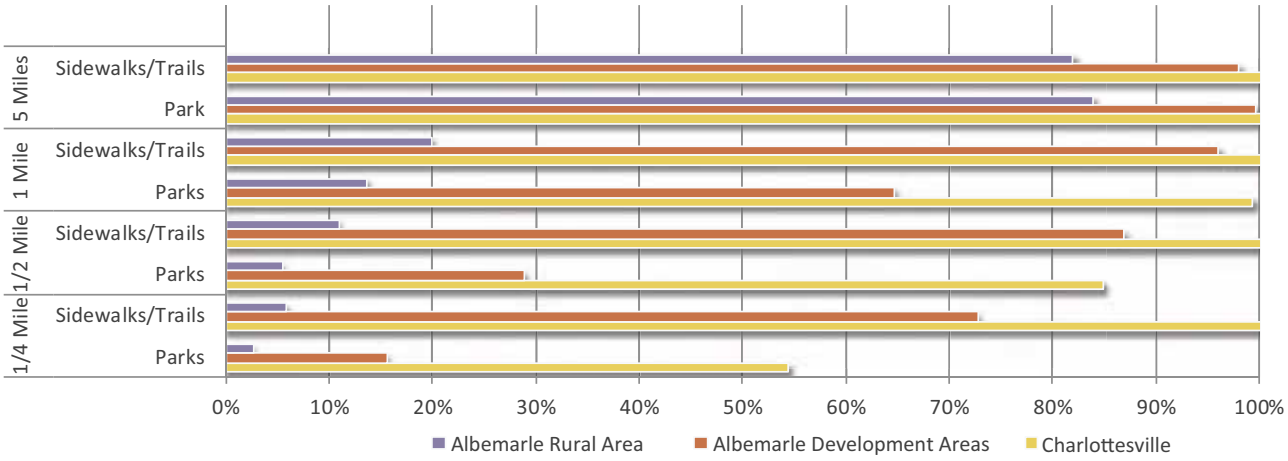
▶ **Albemarle Comprehensive Plan Linkage:**
"Provide solid waste management services in an efficient and cost-effective manner."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Promote and implement strategies to reduce waste generation and increase recycling, composting, and waste diversion to decrease environmental impacts, including greenhouse gas emissions."

Residential Proximity to Parks and Trails*

This indicator measures residential proximity to recreation facilities. Proximity is measured at 4 distances: quarter-mile, half-mile, one-mile and five-mile. The quarter-mile and half-mile distances represent walkable or bikeable proximity. The one and five mile distances represent a short drive for residents. Data is provided for Charlottesville and Albemarle's Development and Rural Area. Access to facilities in Albemarle's Rural Area is expected to be by car. Information on residential proximity to parks was sourced from the Albemarle and Charlottesville Geographic Information (GIS) datasets and includes all parkland owned by the City or the County. It excludes State, National Parks and privately owned parkland. Sidewalk and trail location data was sourced from various TJPDC's Transportation datasets. The datasets include trail and sidewalk location information for facilities located on public and private lands.

RESIDENTIAL PROXIMITY TO PARKS AND TRAILS



Source: US Census 2010 Total Population by Census Block GIS. Albemarle, Charlottesville and TJPDC GIS data (2011).

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Albemarle will have a system of high quality parks and recreational facilities throughout that is interconnected by greenways and paths and available to all residents."

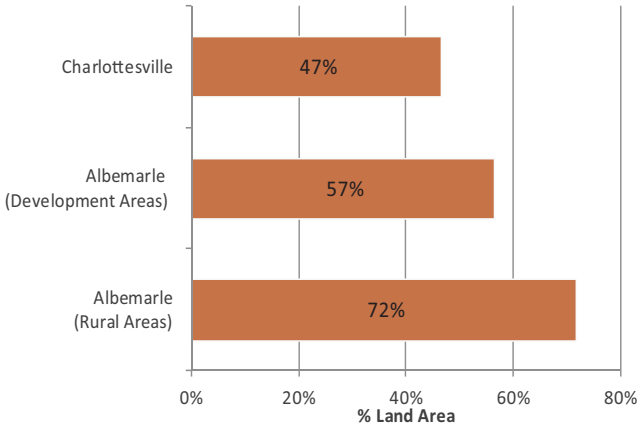
▶ **Charlottesville Comprehensive Plan Linkage:**
"Create balance and accessibility for all types of parks and facilities across the City."

**Flagship Sustainability indicator recommended by HUD*

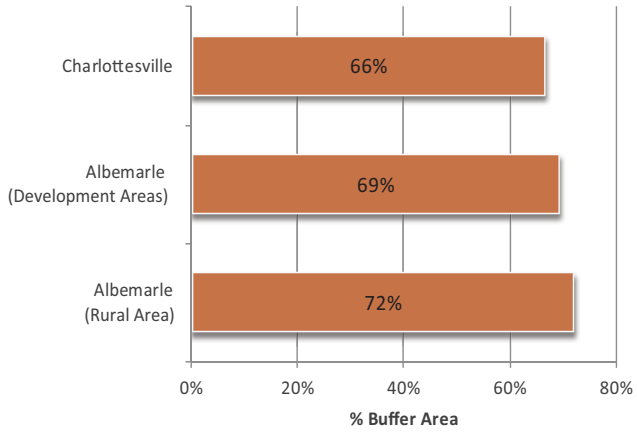
Tree Canopy and Forested Stream Buffers

This measurement provides information on both the environmental and quality of life benefits of the presence of trees. The presence of trees in an urban area can provide benefits such as CO_2 absorption, improved air quality, and shading, which reduces energy costs for indoor cooling. Trees also provide aesthetic benefits, which can increase property values and contribute to overall quality of life. In rural areas, trees protect soil from erosion and provide vital habitat for many species. Forested stream buffers provide stream bank stability, filter pollution and control stormwater runoff. Albemarle and Charlottesville have policies in place that aim to protect buffers within 100 feet of streams. Charlottesville has developed tree canopy goals for urban areas (25%), suburban areas (50%) and city center business zones (15%).

TREE CANOPY COVERAGE



FORESTED AREA WITHIN 100 FEET OF STREAMS



Source: Rivanna River Basin Commission 2009 land cover analysis GIS dataset

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Review County Code requirements for preserving environmental features and, where needed, tighten restrictions so that these features can be preserved in the Development Areas."

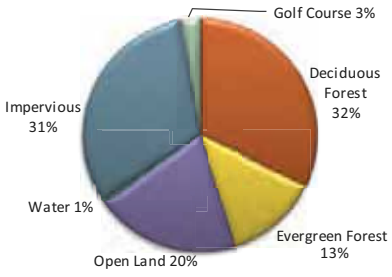
▶ **Charlottesville Comprehensive Plan Linkage:**
"Expand and protect the overall tree canopy of the City and increase the canopy of neighborhoods in an effort to achieve American Forest canopy recommendations (urban: 25%, suburban: 50% and center business zones:15%)."

Land Cover

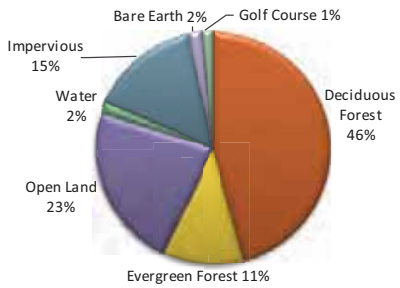
Land cover is a good indicator of the unbuilt parts of a community. It differs from land use in that it represents the vegetation and ground cover rather than patterns of development. Rural communities tend to have greater amounts of natural land cover while urban areas have more man-made land cover. Types of land cover include forests, open land such as lawns, pastures, and cropland, and impervious surfaces such as buildings, roads and parking lots. Land cover data was acquired from satellite imagery using GIS and spatial analysis software. About two-thirds of the land cover in the region is made up of deciduous or evergreen forest types. Charlottesville's dense urban form and small area means it has far more impervious surfaces than Albemarle County.

LAND COVER

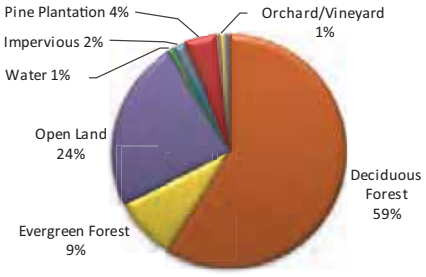
Charlottesville



Albemarle Development Area



Albemarle Rural Area



Source: Data Calculated from RRBC 2009 Land Cover GIS Dataset.
Note: Data was processed from aerial imagery and may include some margin of error when compared with other individual datasets.

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Regularly repeat the land use/land-cover data-gathering process carried (as begun in 2009) for the purpose of monitoring landscape changes."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Promote practices throughout the city that contribute to a robust urban forest."

Regional Habitats Framework

Habitat quality is an indicator of environmental health. Regional habitat information was analyzed spatially using GIS. This produced the The Regional Habitats Framework (RHF) map on page 50. The map represents the regional distribution of habitats and species information. The map combines various sources of ecological and habitat data into a single data layer. The map can also be used to identify regionally important habitat areas (darker green areas in the map). In addition to showing the spatial distribution of important habitats, the map provides a tool for tracking habitat loss and for evaluation of a construction project's potential environmental impact. More information about the indicator can be found in the TJPDC Eco-logical: Integrating Green Infrastructure and Regional Transportation Planning Report (2011).

REGIONAL HABITATS FRAMEWORK

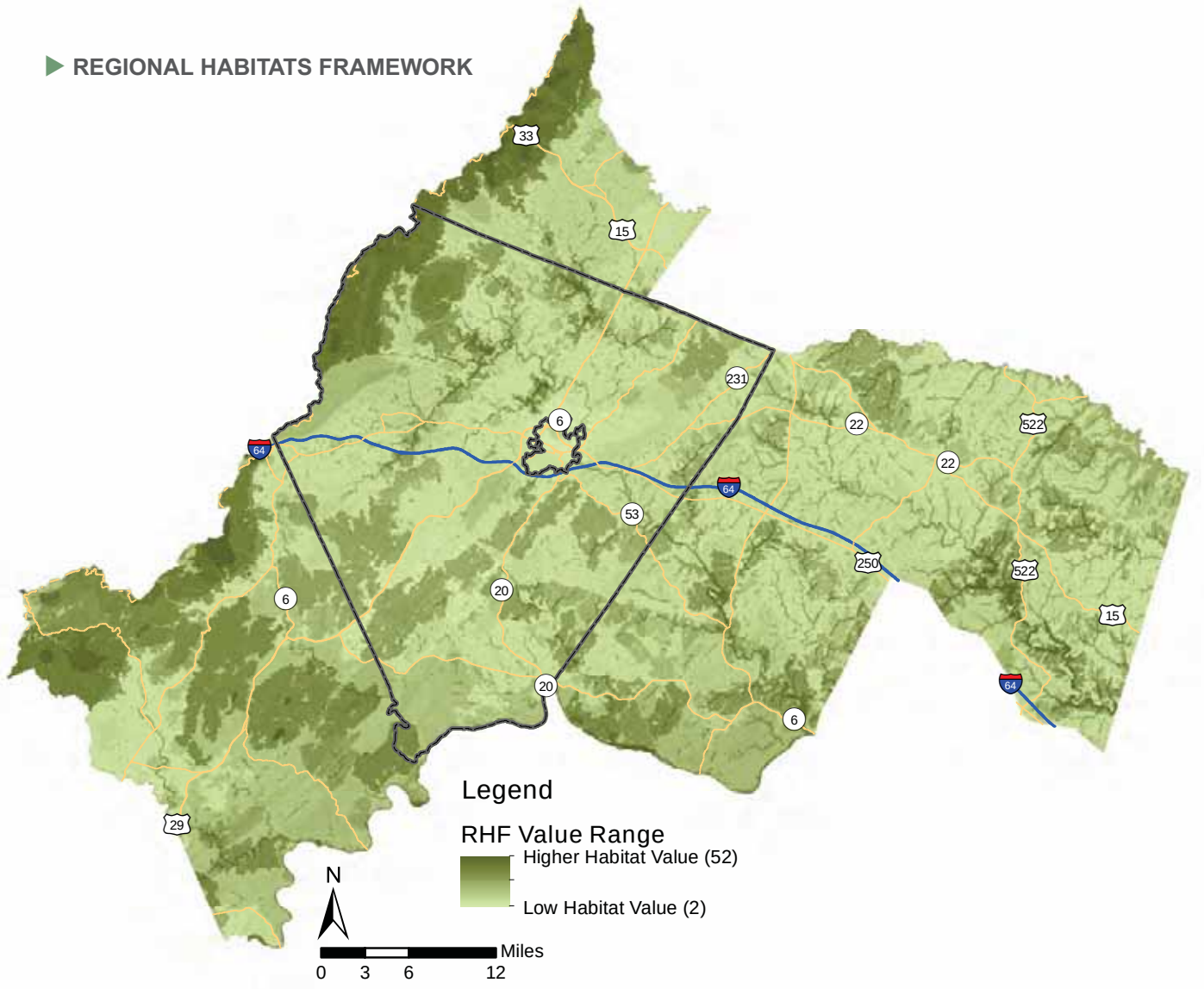
	Average Pixel Rank
Charlottesville	3.61
Albemarle	8.91
City & County	8.84

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Protect biological diversity and ecological integrity in both the Rural Area and the Development Areas."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Provide additional habitat corridors and implement natural habitat improvements."

REGIONAL HABITATS FRAMEWORK



Source: TJPDC Eco-logical: Integrating Green Infrastructure and Regional Transportation Planning Report (2011)

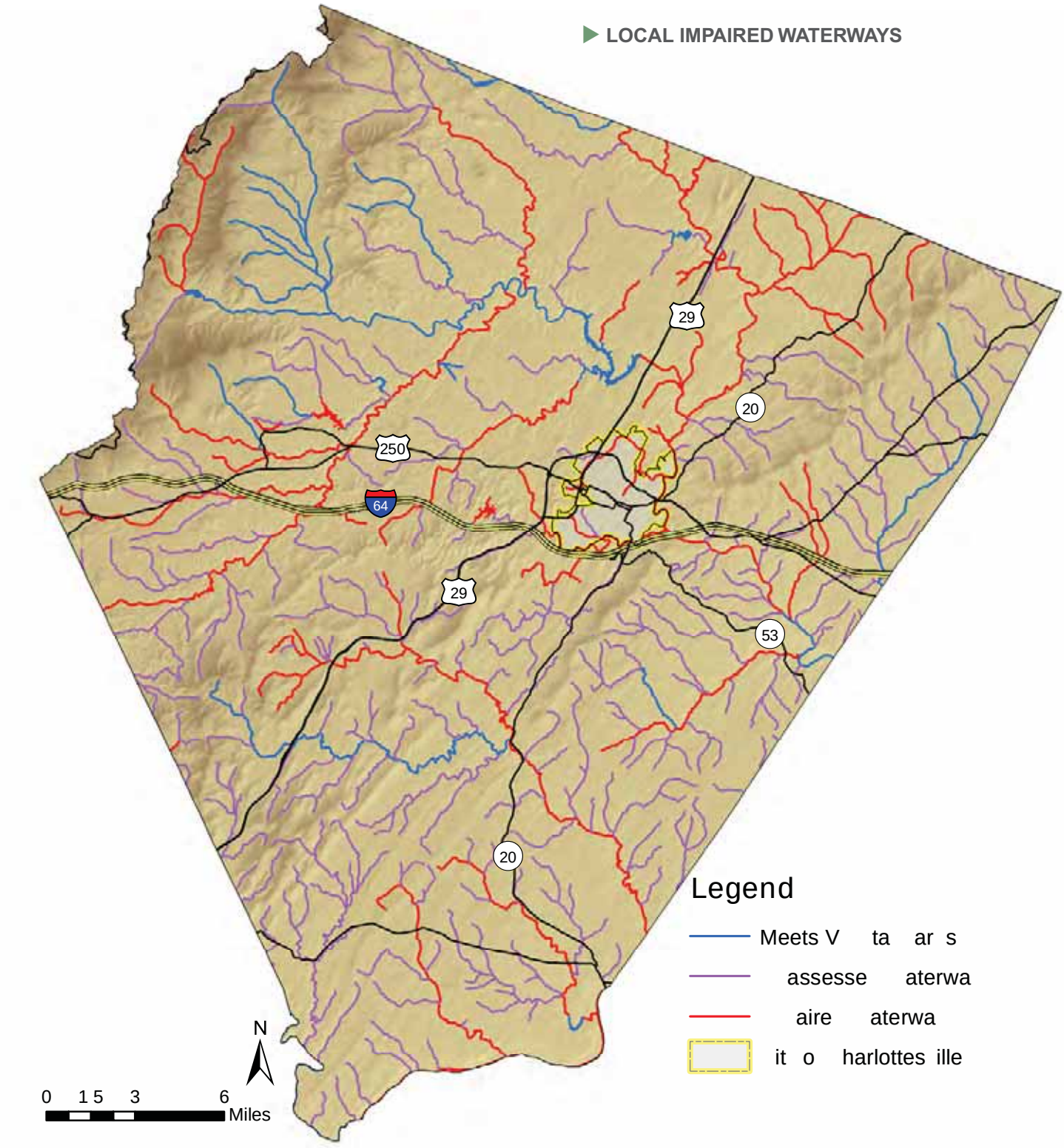
Impaired Waterways

The health of waterways is another important indicator of overall environmental health. The Department of Environmental Quality (DEQ) is responsible for assessing water quality and determining if the applicable water quality standards are met. Water quality standards are assessments are based on six designated uses; (1) fish consumption,(2) recreation (swimming), (3) aquatic life (benthic), (4) wildlife (5), public water supply (6) and shellfishing. DEQ is responsible for issuing statewide water quality assessment reports every two years. These reports are referred to as the 305(b)/303(d) reports and are mandated by the U.S Clean Water act and the Virginia Water Quality Monitoring, Information and Restoration Act. According to the 2010 report, there are approximately 871 miles of streams in Albemarle and Charlottesville of which 359 miles have been assessed for water quality. Of these 359 assessed miles, 29% meet State standards for water quality and 71% are failing to meet state standards. Note: The 305(b)/303(d) reports include monitoring data from DEQ and other monitoring groups like Streamwatch.

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Continue working with state agencies and local stakeholders to address impaired streams and protect healthy streams."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Provide technical assistance and educational outreach regarding water quality and land management practices for homeowners and businesses."



Source: Virginia DEQ 2010 305(b)/303(d) Water Quality Assessment Integrated Report

Waterway Impairment Sources

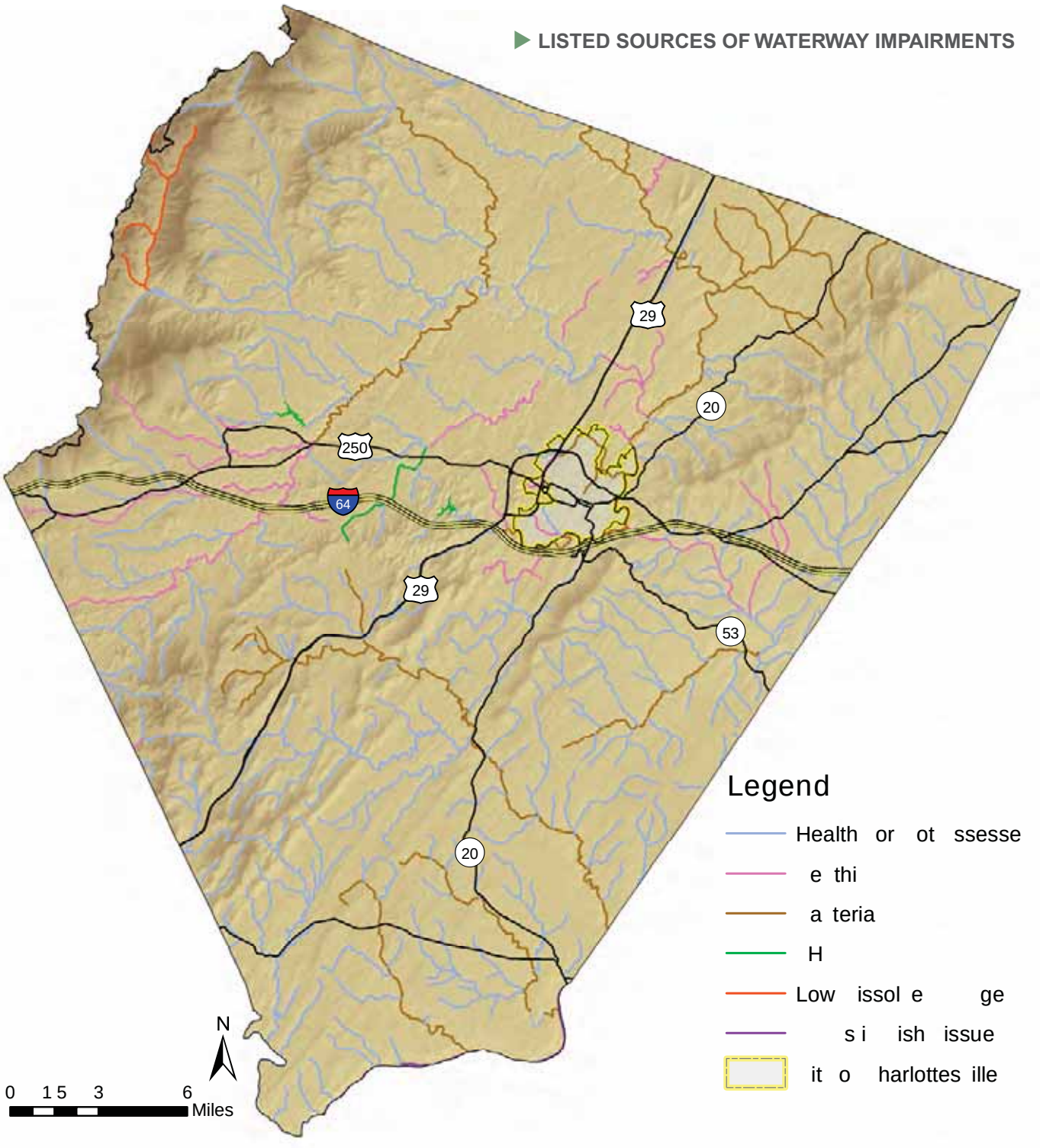
This measure provides information on the types of stream impairments and identifies the various reasons why waterways are failing to meet state water quality standards. The most common cause for impairment is high bacteria levels. These bacteria include E. coli and fecal coliforms, which are found in the intestines of humans and other mammals such as dogs and livestock. Higher bacteria counts increase the likelihood that people who come into contact with the water will get sick. Of the 871 miles, 144 miles (16%) of the assessed waterways were impaired for bacteria in the region. These streams are primarily located in watersheds with high levels of human settlement and agricultural activity. In addition to bacteria, excessive sedimentation has also been identified as a major contributor to degraded stream health.

Source of Waterway Impairment	Stream miles
Healthy or Not Assessed	618.7
Benthic	85.7
Bacteria	143.7
pH	5.2
Low Dissolved Oxygen	11.0
PCBs in Fish Tissue	6.7
Total Miles	**871.0**

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Continue working with state agencies and local stakeholders to address impaired streams and protect healthy streams."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Provide technical assistance and educational outreach regarding water quality and land management practices for homeowners and businesses."



Source: Virginia DEQ 2010 305(b)/303(d) Water Quality Assessment Integrated Report

Stormwater Management

This indicator measures the amount of stormwater protection in the region. It examines the extent of urban stormwater best management practices (BMPs) that have been implemented in both Albemarle County and the City of Charlottesville. These include practices such as stormwater ponds, rain gardens, bioretention and various Low Impact Development techniques (LID). The table below highlights the current number of BMP's and the amount of impervious area treated in both the Albemarle and Charlottesville. Stormwater control requirements were a direct result of the passing of the 1972 Clean Water Act. As a result, older neighborhoods built before stormwater regulations lack the same controls that are found in newer developments.

STORMWATER MANAGEMENT

Jurisdiction	Number of Stormwater BMP's	Impervious Area (Acres)	Impervious Area (%)	Impervious Area With Stormwater Treatment (Acres)	Percentage of Impervious Area Treated
Albemarle	765	11,367	2%	2,354	21%
Charlottesville	128	2,273	34%	557	25%

Source: Albemarle County urban stormwater BMP point GIS data file (May 2012). Albemarle County local background information submitted for the Chesapeake Bay TMDL Watershed Implementation Plan Phase II (February 2012)

Charlottesville urban stormwater BMP point GIS data file (December 11). Charlottesville local background information submitted for the Chesapeake Bay TMDL Watershed Implementation Plan Phase II (February 2012)

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Protect the quality of surface water and groundwater water resources in the County."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Improve public and private stormwater infrastructure while protecting and restoring stream ecosystems."

Greenhouse Gas Emissions Per Capita

Greenhouse gas emissions are an important environmental indicator because the presence of increased greenhouse gasses in the atmosphere has been linked to climate change, which has the potential to disrupt local weather patterns. Figures presented in the table below show equivalent carbon dioxide emissions in tons per capita for the Charlottesville and Albemarle. The greenhouse gas emissions data is only a snapshot and therefore it is hard to draw any conclusions from this data. However, the data does provide a good baseline for future comparisons.

GREENHOUSE GAS (GHG) EMISSIONS PER CAPITA

Locality	Tons of eCO_2 Per Capita	Tons of eCO_2 Per Capita	Tons of eCO_2 Per Capita	Tons of eCO_2 Per Capita	Tons of eCO_2 Per Capita
Year	2000	2006	2008	2009	2011
Charlottesville	16.8	17.6	n/a^	17.8	16.6
Albemarle	17.9	19.7	17.3	n/a^	n/a^

Source: County of Albemarle, VA Emissions Baseline Report. February 2009. 2012 Charlottesville Emissions Report Update
Note: The unit of measure for GHG emissions is eCO_2 which is the tons of carbon dioxide equivalent. This combines the emissions from carbon dioxide, methane and nitrous oxide into one comparable measurement.

^Study Years not included in reports

Comprehensive Plan Linkage

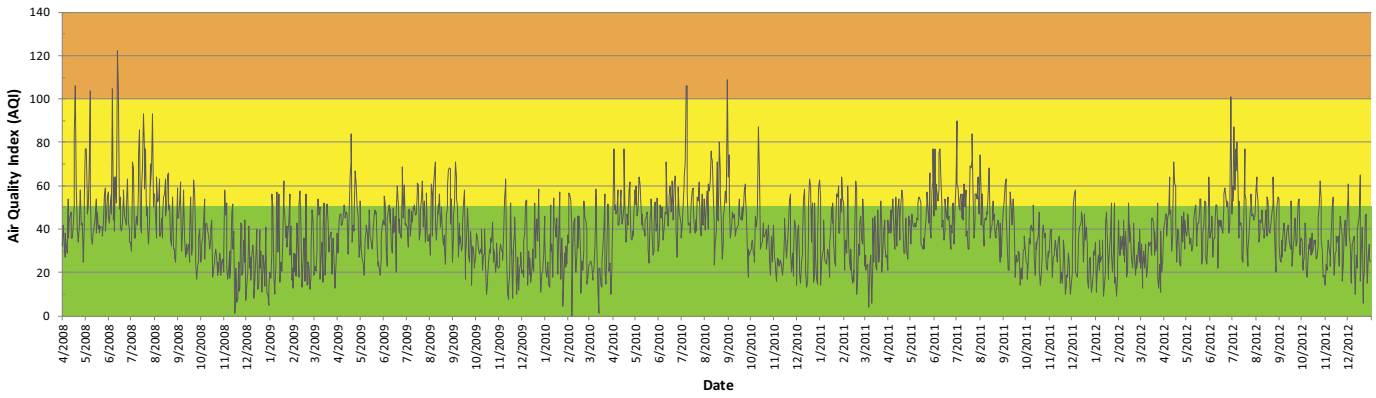
▶ **Albemarle Comprehensive Plan Linkage:**
" Help protect air quality by reducing the County's carbon footprint and by promoting alternatives to single-occupancy vehicles, such as pedestrian sidewalks, bicycle use, ride-sharing, and public transit services."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Track greenhouse gas emissions in City operations and the community and strategically explore and implement initiatives to achieve emissions reductions."

Air Quality

Air quality is an important measure of a community's environmental health. Poor air quality is associated with increased rates of adult and childhood asthma and other lung and breathing disorders. Poor air quality also affects the health of already vulnerable population groups such as those suffering from heart or lung diseases. The chart below illustrates the region's Air Quality Index (AQI) measured at the DEQ's monitoring station located at Albemarle County High School. The AQI measures fine particles, which are referred to as PM 2.5 (particles of 2.5 micrometers or smaller) and Ozone (O_3). The chart highlights the daily AQI. Since monitoring began there have been 7 days in which the region's air quality violated national standards, all of which were for ozone. In addition, there have been 359 days where the AQI was in the moderate range (between 51-100).

CHARLOTTESVILLE ALBEMARLE DAILY AIR QUALITY INDEX 4/2008-12/2012



Air Quality Index (AQI) Values	Levels of Health Concern
0 to 50	Good
51-100	Moderate
101-150	Unhealthy for Sensitive Groups
151-200	Unhealthy
201-300	Very Unhealthy
301 to 500	Hazardous

Source: DEQ Air Quality Index Data For Station #33-A Located at Albemarle HS (2008-2012)

Comprehensive Plan Linkage

▶ Albemarle Comprehensive Plan Linkage:
" Help Protect air quality by reducing the County's carbon footprint and by promoting alternatives to single-occupancy vehicles, such as pedestrian sidewalks, bicycle use, ride-sharing, and public transit services."

▶ Charlottesville Comprehensive Plan Linkage:
Reduce vehicle-related emissions through increase fuel efficiency, reduced vehicle miles traveled, fleet downsizing, anti-idling efforts and use of alternative fuels (e.g., compressed natural gas, biodiesel, or electric vehicle technology)."

Transportation

The Transportation System serves the community by enabling all citizens to access jobs, resources, and amenities in an efficient manner and at reasonable cost, and supports the area's quality of life and economy. Indicators in this system highlight the range, cost, and accessibility of transportation within the community.

INDICATORS	PAGE

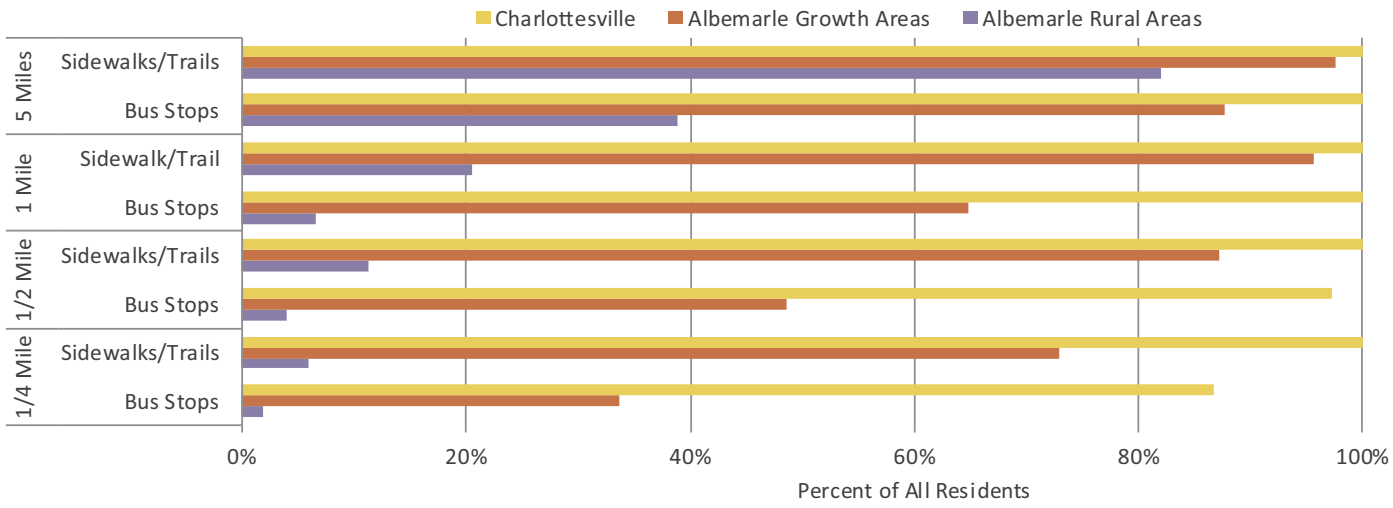
** Indicator is a Flagship Sustainability indicator recommended by HUD*



Residential Proximity to Transportation Facilities

This indicator measures proximity of housing to sidewalks/trails and bus stops. Proximity is measured at four distances: quarter-mile, half-mile, one mile, and five miles. Quarter-mile, half-mile, one mile represent a walkable or bikable distance. The areas measured include City of Charlottesville and both the Development Area and the Rural Areas of Albemarle County. Access to sidewalks/trails and bus stops provides resident with transportation choices and reduces vehicular congestion. It also provides increased mobility for those residents who don't have reliable access to a car.

RESIDENTIAL PROXIMITY TO SIDEWALKS/TRAILS AND BUS STOPS



Source: Albemarle, Charlottesville and TJPDC GIS data (2011).

Comprehensive Plan Linkage

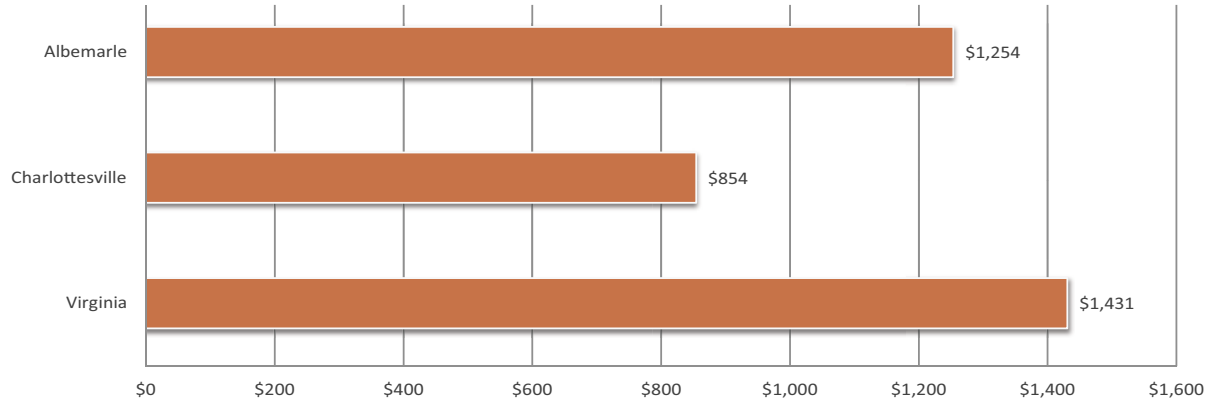
▶ **Albemarle Comprehensive Plan Linkage:**
"Promote and provide regional multimodal and accessible transportation options."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Increase safe, convenient and pleasant accommodations for pedestrians, bicyclists and people with disabilities that improve quality of life within the community and within individual neighborhoods."

Monthly Household Transportation Cost

Monthly household transportation cost is an estimate of monthly expenses on transportation. The measure includes estimates of the cost of vehicle ownership, maintenance, and operating costs (fuel). It also factors in the cost of riding public transit, where available. Transportation costs are typically the second largest category of monthly household expenditures after the cost of housing. The graph below illustrates average transportation costs for residents of Albemarle, Charlottesville and Virginia. The chart shows that Charlottesville and Albemarle residents have transportation costs which are lower than the state average.

MONTHLY HOUSEHOLD TRANSPORTATION COST



Source: Center For Neighborhood Technology
Note: Transportation costs are based on a fuel cost of $3.65/gal

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Albemarle's transportation network will be multimodal, environmentally sound, well maintained, safe and reliable."

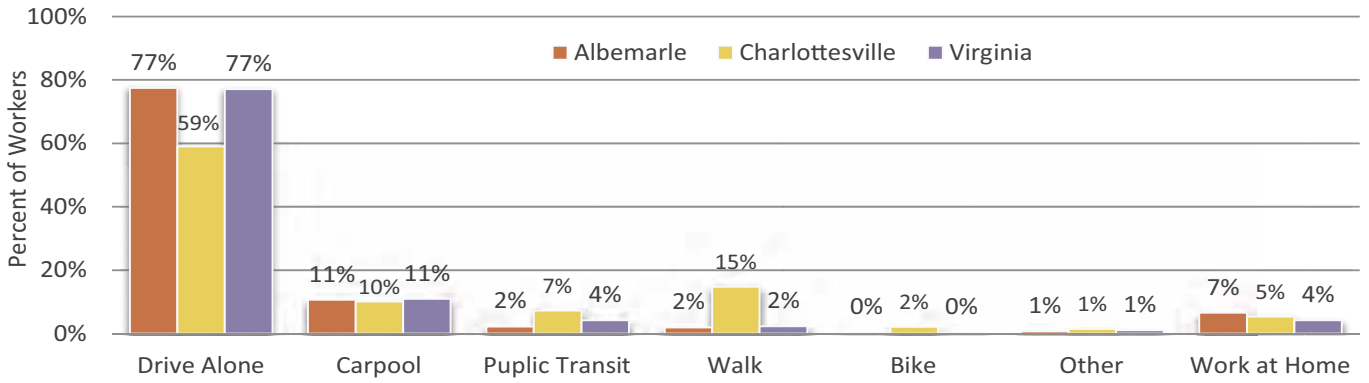
▶ **Charlottesville Comprehensive Plan Linkage:**
"Maintain an efficient transportation system that provides the mobility and access that supports the economic development goals of the City."

Transportation

Means of Transportation to Work*

The percentage of workers using various modes of travel to work can indicate balance of modes for a region's transportation system. Frequent comparisons of this data over time could illustrate emerging transportation trends and can help public officials appropriately plan and implement transportation projects. This data is gathered as part of the American Community Survey and only identifies the workers' transportation choices on the day they filled out the Census survey. The chart below illustrates resident's transportation choices. While walking, biking, carpooling and transit make up 21% of the region's trips to work, driving alone makes up the vast majority of work trips.

MEANS OF TRANSPORTATION TO WORK



Source: US Census Bureau, 2009-2011 (3-Year) American Community Survey, Commuting Characteristics (table S0801).

**Flagship Sustainability indicators recommended by HUD*

Comprehensive Plan Linkage

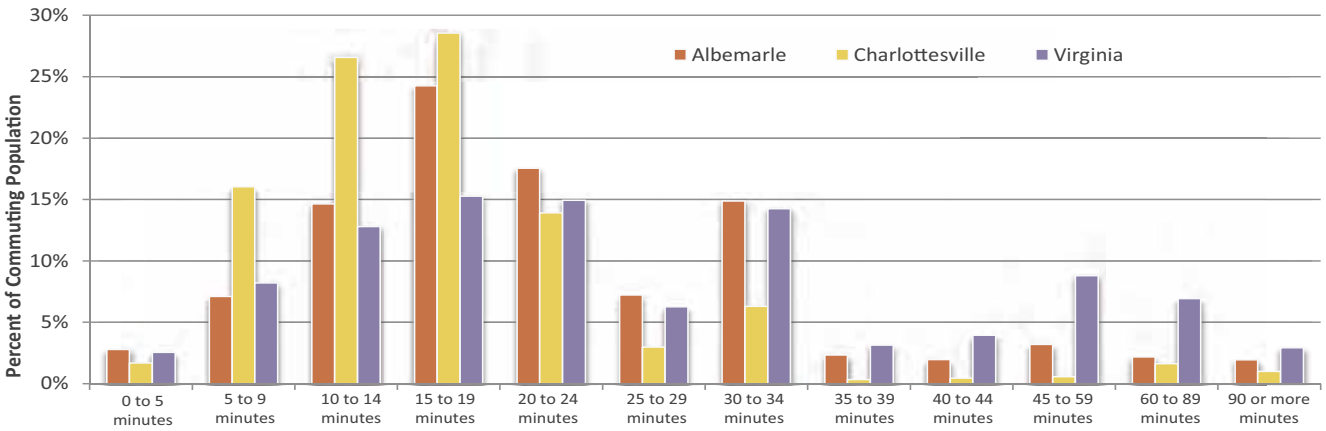
▶ Albemarle Comprehensive Plan Linkage:
"Work with area employers through the MPO to encourage developing ridesharing and vanpooling programs and transportation demand reduction programs. Encourage development of ridesharing and transportation demand reduction programs in evaluating rezoning and parking lot requests for major industrial, office, and commercial projects."

▶ Charlottesville Comprehensive Plan Linkage:
"Continue to encourage local employers to use Travel Demand Management (TDM) techniques, such as flexible work hours and financial incentives for using alternative modes of commuting, to preserve the traffic-moving capacity of the arterial roadway network."

Travel Times to Work

Information on average worker travel times shows how long it takes employees who live in Albemarle and Charlottesville to commute to their places of work. Measuring commute times is an important indicator of livability because long commute times result in lost worker productivity and increased stress. Long commute times also cause increased energy usage and air pollution. According to the Charlottesville MPO, in 2010 traffic congestion cost the region's economy $80,997 a day in lost productivity. The chart below compares Charlottesville and Albemarle commute times with statewide averages on four minute intervals. On average, 72% of the region's workers have commute times under 20 minutes.

AVERAGE COMMUTE TIMES TO WORK



Source: US Census Bureau, 2009-2011 (3-Year) American Community Survey Travel Time To Work (table B08012).

Comprehensive Plan Linkage

▶ **Albemarle Comprehensive Plan Linkage:**
"Work with area employers through the MPO to encourage developing ridesharing and vanpooling programs and transportation demand reduction programs. Encourage development of ridesharing and transportation demand reduction programs in evaluating rezoning and parking lot requests for major industrial, office, and commercial projects."

▶ **Charlottesville Comprehensive Plan Linkage:**
"Continue to encourage local employers to use Travel Demand Management (TDM) techniques, such as flexible work hours and financial incentives for using alternative modes of commuting, to preserve the traffic-moving capacity of the arterial roadway network."

Traffic Congestion

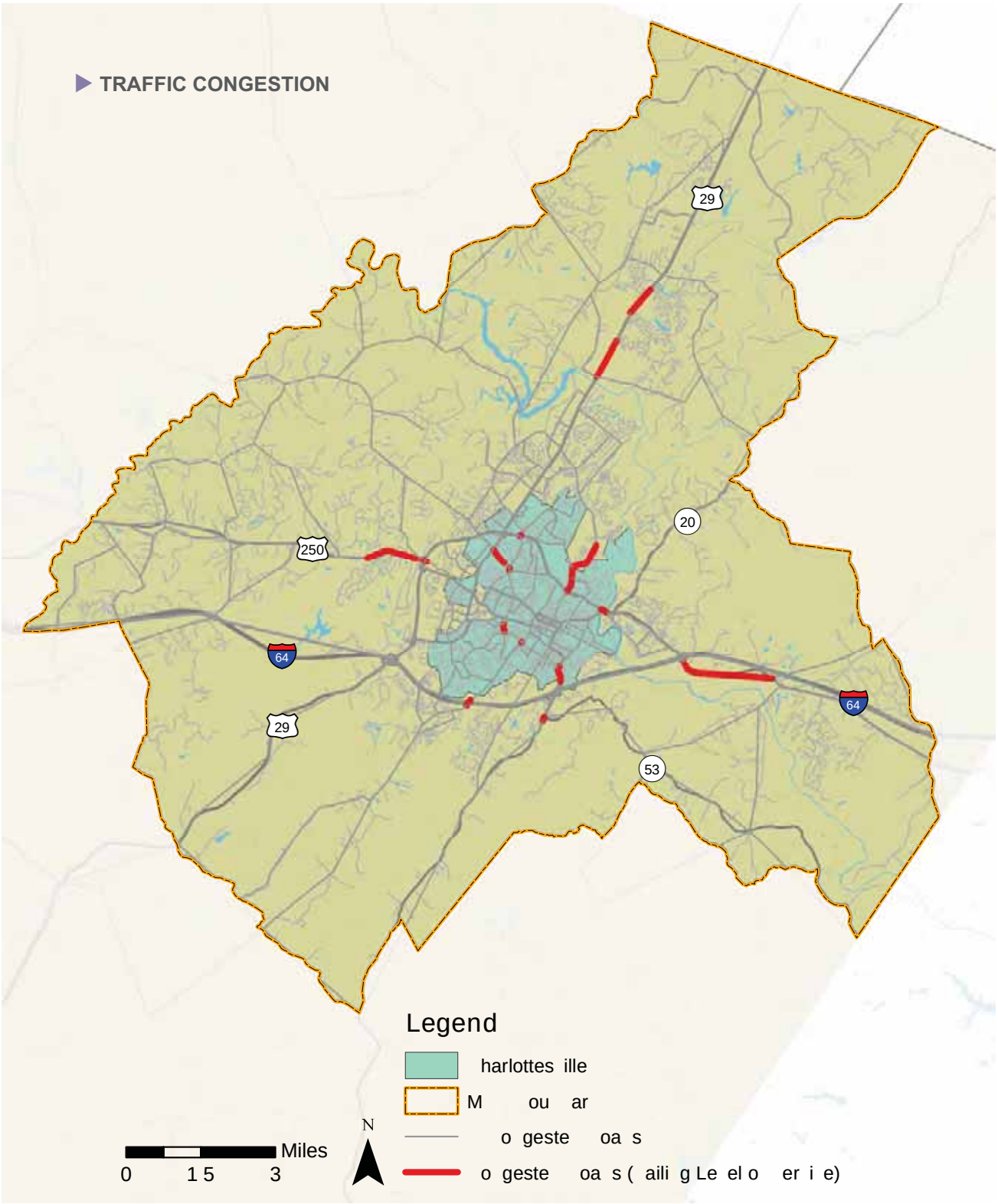
This indicator measures congestion on area roadways. The indicator uses data from the Charlottesville Albemarle Metropolitan Planning Organization's (MPO) Travel Demand Model to identify road segments where available capacity does not meet demand. The map on the following page shows the distribution of these failing segments within the boundaries of the MPO. A total of 84 miles (10.3%) of roadway in the MPO have a failing level of service. Level of Service is a ranking which illustrates how many vehicles are on a segment of roadway (volume) over how many vehicles that roadway was built to support (capacity). The rankings range from A to F, with level of service A meaning a roadway with light traffic and unhindered free-flow of movement, and level of service F meaning a roadway with heavy traffic that is unable to move freely or at speed.

Comprehensive Plan Goal Linkage

▶ **Albemarle Comprehensive Plan Goal:**
"Albemarle's transportation network will be multimodal, environmentally sound, well maintained, safe and reliable."

▶ **Charlottesville Comprehensive Plan Goal:**
"Minimize the effects of congestion on commuters and the movement of goods through such strategies as: signal coordination, parking management techniques that reduce the need to circle for a parking spot, encouragement of off peak deliveries and promotion of sustainable modes of transportation."

TRAFFIC CONGESTION

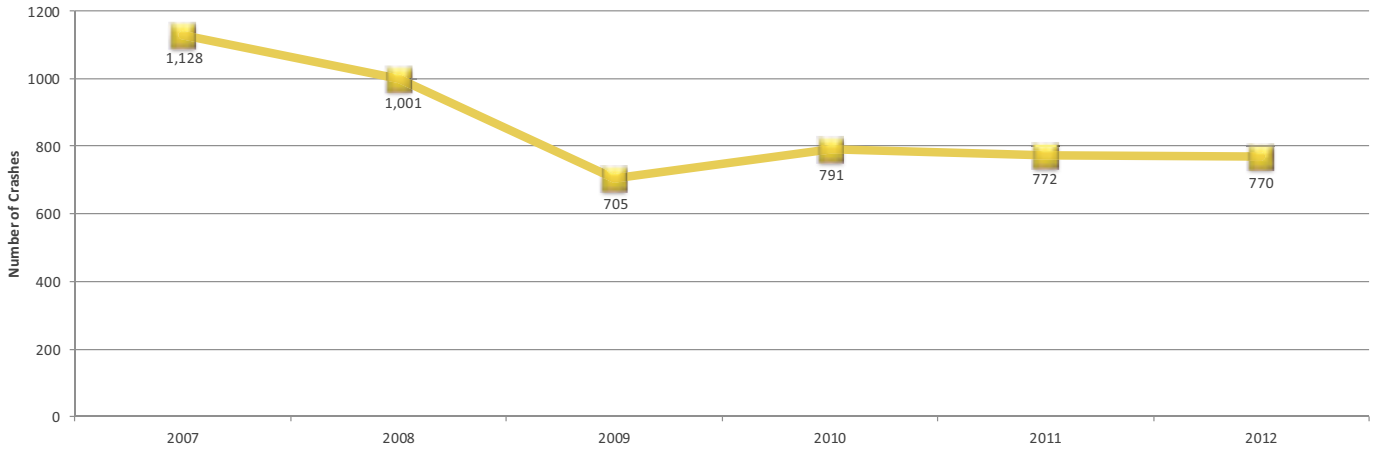


Charlottesville Albemarle Metropolitan Planning Organization Regional Travel Demand Model 2010 existing conditions (7/25/2013)

Motor Vehicle Crashes

This indicator looks at the number of motor vehicle crashes that occurred in Albemarle and Charlottesville between 2007 and 2012. The data is sourced from police incident reports that are filled out by officers at the scene. The indicator includes data on crashes involving vehicles, property, and pedestrians. The graph below illustrates the most recent six year trend in crashes for the region. Tracking crash data is a good indicator for measuring the effectiveness of road improvements and safety enhancements. Crash data can be analyzed with traffic counts and data on vehicle miles traveled to generate a crash rate. According to the Charlottesville Albemarle MPO, the crash rate in 2010 was 0.00054 crashes per million miles traveled.

ANNUAL NUMBER OF VEHICLE CRASHES



Source: Virginia Depertment of Transportation Statewide crash data database (7/5/13).

Comprehensive Plan Goal Linkage

▶ **Albemarle Comprehensive Plan Goal:**
"Albemarle's transportation network will be multimodal, environmentally sound, well maintained, safe and reliable."

▶ **Charlottesville Comprehensive Plan Goal:**
"Improve mobility and safety of the arterial roadway network."