GREENSBORO COMMUNITY INDICATORS
White Paper

What is a Community Indicator?

A Community Indicator is a type of data that provides insight into the overall social, economic, or environmental conditions and trends present in a community, by measuring a specific relevant detail about the community over time. An Indicators System is a collection of Community Indicators chosen for their effectiveness in presenting a pre-defined view of the community's conditions and trends.

What does a Community Indicators System do?

A Community Indicators System can help elected officials, staff, and citizens in several ways:

- Assessing the magnitude or rate of community processes or features;
- Comparing the community to other communities, or other regions;
- Identifying a problem or issue facing the community;
- Developing policies that address an identified problem or issue; and
- Setting goals and tracking performance in policy implementation.

What can an Indicators System not do?

Despite their versatility, Indicators Systems do have limitations. Generally speaking, an Indicators System *cannot*:

- Determine the causes of problems or issues it identifies;
- Determine what action should be taken in response to problems or issues it identifies;
- Identify exact conditions at a high level of detail; or
- Be acted upon at face value without critical examination of other relevant factors.

Why should Greensboro develop and implement an Indicators System?

The most important and compelling reason Greensboro should implement a Community Indicators System is that the *Connections 2025 Comprehensive Plan* specifically directs the City to "create an ongoing housing and neighborhood condition monitoring strategy" (Policy 6A.3). Beyond this mandate however, a Community Indicators System is a valuable tool for:

- Measuring quality of life;
- Monitoring provision of public services;
- Identifying disparities of opportunity; and
- Promoting responsive, accountable, effective, efficient, and equitable government.

How can Greensboro use an Indicators System?

A Community Indicators System would have numerous benefits for Greensboro, including:

- Help identify neighborhoods or areas that are most in need of enhanced City services, additional or upgraded City facilities, neighborhood or area planning assistance;
- Provide City staff with required data for grant applications;
- Help City council members better understand conditions affecting their consituents;
- Provide data for the next update to Connections 2025 and other long-range plans;
- Help guide development of the City's budget and capital improvement program; and
- Monitor progress in implementing goals and policies of adopted plans.

What steps have City staff already completed?

City staff have made substantial progress in developing a Community Indicators System. Based on a review of *Connections 2025*, an interdepartmental staff team identified nine dimensions that the Indicators System should incorporate. The team then collected and standardized numerous datasets that measure aspects of the nine dimensions. Based on detailed analysis, the team then determined which datasets provided the clearest insight into each of those dimensions. The datasets were then entered into GIS format and displayed geographically, along with the boundaries of the City, Council Districts, and neighborhoods. The resulting display was then checked for validity and needed refinements were identified. Staff then began refinements to the system and sought to present the preliminary work to the City Council for informational purposes.

What remains to be done?

Identified refinements are in progress, including acquisition of additional datasets, and creation of an interactive citywide atlas with summary reports for each council district and neighborhood.

Greensboro Community Indicators
Glenwood Neighborhood Profile

1. Background Data

Population: 4,297
Racial Composition
    White: 48%
    African American: 38%
    Hispanic: 9%
    Asian: 4%
    Native American: 1%

Households: 1,820
Unemployment Rate: 2.8%
Per Capita Income: $14,884
Average Household Size: 2.36 persons
Owner Occupancy: 47%

Area: 769.7 acres
        1.2 square miles
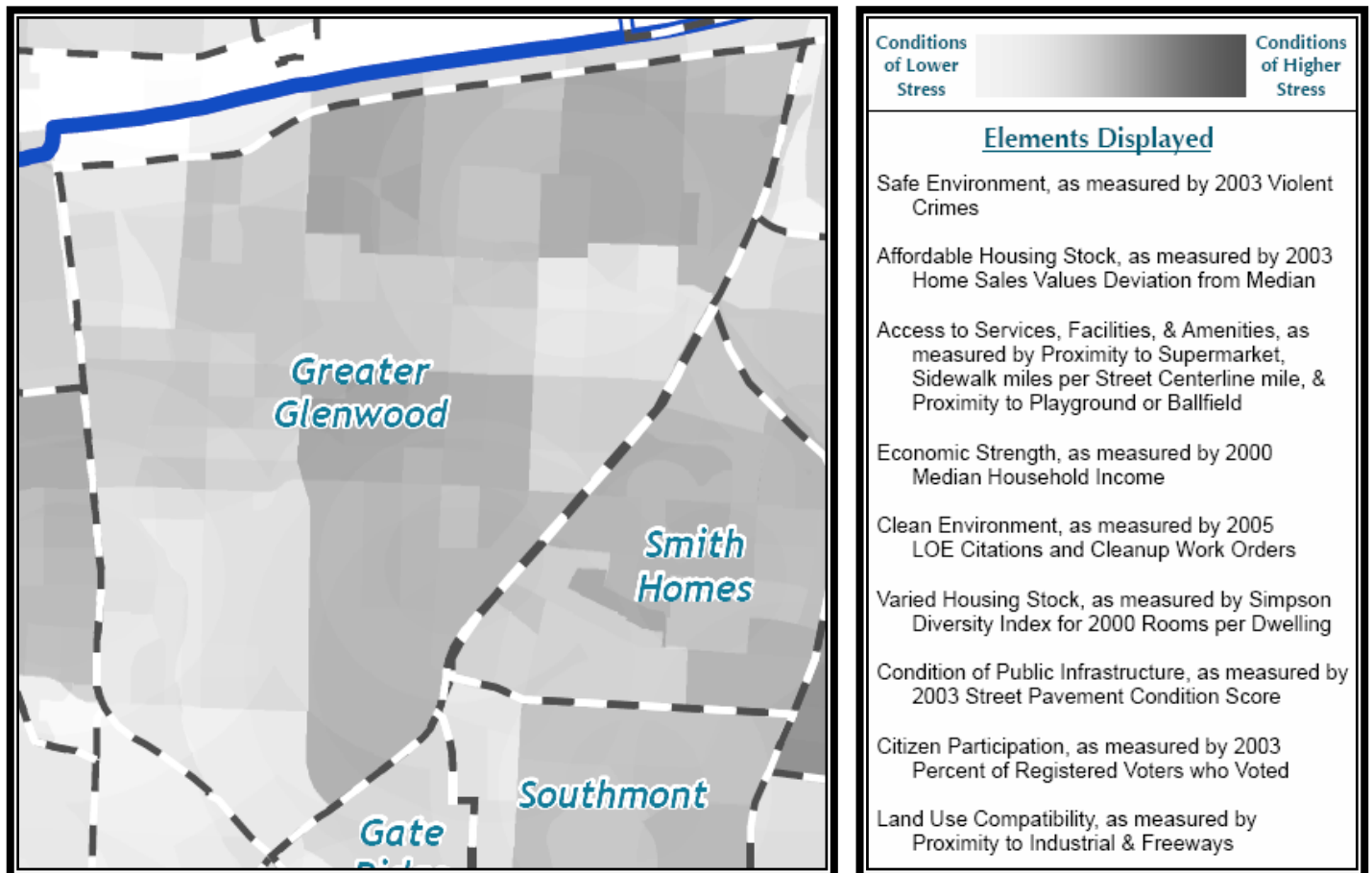**Land Use Composition**
    Single Family: 70.1%
    Industrial: 11.6%
    Multi-Family: 10.5%
    Commercial: 4.6%
    Office: 2.2%
    Mixed Use: 0.9%
    Institutional: 0.1%

Street Centerline: 24.3 miles
Sidewalk: 14.3 miles

2. Composite Indicator Map

Conditions of Lower Stress — Conditions of Higher Stress

Elements Displayed

Safe Environment, as measured by 2003 Violent Crimes

Affordable Housing Stock, as measured by 2003 Home Sales Values Deviation from Median

Access to Services, Facilities, & Amenities, as measured by Proximity to Supermarket, Sidewalk miles per Street Centerline mile, & Proximity to Playground or Ballfield

Economic Strength, as measured by 2000 Median Household Income

Clean Environment, as measured by 2005 LOE Citations and Cleanup Work Orders

Varied Housing Stock, as measured by Simpson Diversity Index for 2000 Rooms per Dwelling

Condition of Public Infrastructure, as measured by 2003 Street Pavement Condition Score

Citizen Participation, as measured by 2003 Percent of Registered Voters who Voted

Land Use Compatibility, as measured by Proximity to Industrial & Freeways

3. Indicator Summary

Measure	Glenwood Neighborhood Average Score		Quintile
Safe Environment	12.64	Severe Crimes Per Capita Per Year (2003)	5
Affordable Housing Stock	-$40,180	Average Single Family Home Sale Price, Difference From City Median (2003)	3
Access to Services, Facilities, & Amenities			3
Economic Strength	$35,140	Average Annual Household Income (2000)	5
Clean Environment	388	Total of LOE Housing or Nuisance Citations + Litter Clean-Up Work Orders (2005)	5
Varied Housing Stock	0.80	Simpson Index of Diversity for Number of Bedrooms Dwelling (2000)	3
Condition of Public Infrastructure	0.81	Average Street Pavement Condition Rating (2003)	5
Citizen Participation	15.6%	Registered Voters who Voted in November General Election (2003)	4
Land Use Compatibility			3
		Overall Average Score:	

The basic premise of the community indicators concept is to assess the health and vitality of an entire city and its component neighborhoods, using measurements on various aspects of community condition and performance. The ultimate aim is to create a tool for decision-making that is data-informed, rather than data-driven, or hunch-based. A successful indicators system reveals areas of a city where closer examination is warranted, in order to determine whether changes in public services or investment are needed. An indicators system can provide a 'bird's eye view' of factors contributing to elevated levels of stress in residential areas and the general distribution of those stressors throughout the community. While an indicators system can be a versatile tool for identifying and tracking quality of life throughout a city and smaller areas therein, it is important to keep in mind the limitations of the indicators concept. An indicators system *cannot*:

- Determine the causes of the conditions it identifies;
- Determine what action should be taken in response to the conditions it identifies;
- Identify exact conditions at a high level of detail; or
- Be acted upon at face value without critical examination of other relevant factors.

Development of the Greensboro Community Indicators System arose from the *Connections 2025* comprehensive plan. Policy 6A.3 of *Connections 2025* directs the City to "create an ongoing housing and neighborhood condition monitoring strategy." Implementation of this policy began with an interdepartmental staff team (HCD, Planning, & IT) that identified a series of nine dimensions that the system would be designed to evaluate. Each of the dimensions was derived from primary goals or policy elements of *Connections 2025*. The purpose of this project is to develop an array of indicators that can be used to both evaluate attainment of *Connections 2025* goals, and to inform decision-making related to prioritization and allocation of City resources.

The staff team identified and reviewed numerous datasets that could be used to measure conditions related to each of the nine dimensions. After assessing the availability, accuracy, consistency, relevance, update frequency, and specificity of these datasets, the staff team then selected one or two datasets for each dimension that appeared to best suited for inclusion in an initial round of Beta testing. The selected dimensions and initial datasets were:

TABLE 1

Dimension	Dataset(s)	Source	Geography	Period
Safe Environment	Total crimes per capita	Greensboro Police Department crime records	GPD tracts	1995 thru 2005
Affordable Housing Stock	Percent change in assessed property value per acre	Guilford County Parcel Database	Parcels aggregated to 2000 Census blocks	2003 to 2007
	Percent denial of non-white home mortgage applicants	Home Mortgage Disclosure Act data	2000 Census tracts	2005
Access to Community Services, Facilities, and Amenities	Distance to nearest supermarket	Yellow pages supermarket category listings	Multi-ring buffers from points in 1 mile increments	Present
	Ratio of sidewalk miles to street centerline miles	GDOT sidewalk and street centerline data	Ratios derived from lengths aggregated by 2000 Census blocks	Present
Economic Strength	Percentage of population ages 16 to 64 unemployed and looking for work	US Census Bureau 2000 Decennial Census	2000 Census block groups	2000

Dimension	Dataset(s)	Source	Geography	Period
Clean Environment	Total clean up work orders and total LOE citations	Local Ordinance Enforcement Division (Engineering & Inspections Dept.) and Field Operations Dept.	Points aggregated by 2000 Census blocks	2005
Varied Housing Stock	Simpson Index of Diversity calculated for number of rooms per dwelling unit	US Census Bureau 2000 Decennial Census	2000 Census block groups	2000
Condition of Public Infrastructure	Roadway pavement condition scores	GDOT pavement condition database	Average condition score per centerline mile, aggregated by 2000 Census blocks	2003
Citizen Participation	Percentage of registered voters who voted in last general election	Guilford County Board of Elections	Normalized to 2007 Electoral Precincts	1999 thru 2007
Neighborhood / Land Use Compatibility	Proximity to industrial zoned parcels	Greensboro and Guilford County Zoning Maps	Multi-ring buffers from parcels in $\frac{1}{8}$ mile increments	Present
	Proximity to existing controlled access freeways	GDOT street centerline data	Multi-ring buffers from centerlines in $\frac{1}{8}$ mile increments	Present

The needed datasets were then acquired, extensively cleaned, normalized, and processed as needed to serve as the basic inputs for the indicators system. Each of these datasets was assumed to indicate varying levels of stress (as might be experienced by a typical residential area) within the identified dimension. Once the data was in a usable format, it was imported into the GIS application and a display symbology theme was developed to indicate locations in the City where multiple indicators of high stress coincided. In this symbology, the polygons of a given dataset's geography are assigned one of five grey values ranging from 0% to 90%, where the darker shades of grey represent a higher level of stress. The polygons are grouped in quintiles (20% bands) from the least stressed to the most stressed. This approach ensures that all datasets have the same basic proportion of polygons in each band, regardless of the distribution of values within the dataset and avoids wide variations in the overall range of darkness or lightness across datasets.

With the individual dataset symbologies established, it was then necessary to set each of the datasets to display in semi-transparency, so that the level of overlap among the indicators would be evident. For the purposes of the initial Beta test, displays were created using two variants of the transparency settings. In the first variant, the display showed all datasets with the same level of transparency, using the assumption that all the indicator categories were essentially of equal importance. In the second variant, the display used differing levels of transparency, such that indicator categories deemed by the staff team to have greater importance (based on interpretation of the priorities expressed in Connections 2025) were assigned lower levels of transparency (ie: higher opacity), and indicator categories with lower perceived importance were correspondingly assigned higher levels of transparency. In both cases, as areas of greater stress in multiple datasets overlapped, they formed darker shaded areas, whereas areas with fewer indicators of stressful conditions remained less shaded.

These successive overlays produced a distribution of shading throughout the City. Boundaries of the City council districts and known neighborhoods were overlaid to facilitate interpretation. When reviewed by staff, the patterns of lower and higher stress generally substantiated what was already known (or suspected) about conditions in Greensboro. However, the shading in some areas ran counter to staff's established perceptions. Analysis and improved understanding of the the

conditions in these areas helped to inform refinements for development of a second Beta version. Among the shortcomings in the Beta 1 release, the following were identified through staff review:

TABLE 2

Beta 1 Weakness	Potential Problem	Beta 2 Refinement
Some indicator categories, for which time-series data are available, were displayed as multi-year averages	Creates comparisons of inconsistent time periods	Displays are now limited to a single year of data, or closest other year if no time-series is available
The two available datasets representing Affordable Housing Stock did not have a strong connection to this stated indicator	Presents invalid interpretation of housing affordability conditions	Acquired alternate dataset – price per square foot for single family home sales by year for 1994 thru 2003, aggregated by Census 2000 block groups*
The two datasets representing Access to Community Services, Facilities, and Amenities may not address a sufficient range of essential access needs	Presents incomplete view of access conditions	Developed additional dataset – distance to nearest playground or ballfield as multi-ring buffers in $\frac{1}{8}$ mile increments
The dataset representing Economic Strength is based on data that is nearly 10 years old	Presents an outdated view of economic conditions	Pending acquisition / development of alternate, more recent dataset
The dataset representing Varied Housing Stock is based on data that is nearly 10 years old	Presents an outdated view of housing variety conditions	Pending acquisition / development of alternate, more recent dataset
As initially presented, the system consisted of only a single map showing the composite conditions and did not reveal which indicators make the greatest contributions to a given area's overall stress level	May lead to mis-interpretation that the distribution of higher or lower stress conditions throughout the City is equal for all indicators	Summary reports will be developed to show average values of each indicator category for individual neighborhoods, and for council districts, which can then be accessed from the composite map via hyperlink
Conditions of high stress show up in many of Greensboro's non-residential areas	May lead to mis-interpretation that non-residential areas are in need of relief from such conditions	Developed a mask layer that partially suppresses the intensity of indicators in non-residential areas located outside of known neighborhood boundaries
The dataset representing Safe Environment was displayed using total crimes per capita, which may not have a sufficiently strong connection to the stated indictor	Overemphasizes magnitude of crime in non-residential areas and low density residential areas; does not distinguish severe or disturbing crimes from overall crime rate	Developed a mask layer (see above); modified display to focus on only violent and conspicuous crime categories

* Because annual home sales data includes information only for homes that sold within a given calendar year, distribution of datapoints may not present an accurate assessment of the overall affordability for all homes, especially in areas with fewer recorded sales.

In some instances, the Beta 1 test indicated significant conditions of stress present in neighborhoods that are known to be otherwise strong and vibrant. Investigation of this phenomenon has led staff to infer that the overall socio-economic status of the residents of a given neighborhood has a contributing role in the degree to which conditions of stress actually affect the health of that neighborhood. Thus, neighborhood populations appear to have varying levels of inherent vulnerability or resilience to such stressors. One example of this seeming contradiction can be found in the New Irving Park neighborhood. New Irving Park is generally considered to be one of the strongest and most desirable neighborhoods in Greensboro. Yet the Indicators Beta Test revealed significant conditions of stress in New Irving Park.

Upon closer review, however, it becomes clear that the stress affecting New Irving Park is almost entirely the result of the two measures with the highest priority weighting values: Safe Environment and Affordable Housing Stock. Specifically, the residents of New Irving Park are relatively affluent and enjoy some of the highest property values in Greensboro. Not surprisingly, New Irving Park's residents are frequently victims of property crimes and its housing stock is rated among the least affordable in Greensboro. These factors could point to serious problems in a

substantially less affluent neighborhood or one experiencing other significant conditions of stress. New Irving Park also highlights an important point common to all community indicator systems, namely that the indicator measures should not be interpreted at face value, but should be scrutinized in order to understand other factors relevant to a given area.

One key finding from the Beta 1 evaluation is that the conventional wisdom about quality of life in Greensboro tells only part of the story. Typically, when a conversation turns to living conditions in various Greensboro neighborhoods, "southeast Greensboro" is cited as the area with the poorest quality of life and greatest intensity of residential stress. To the casual observer, "southeast Greensboro" is somewhat vague area, usually centered around the Ole Asheboro neighborhood. Undoubtedly, this area does bear a higher than average degree of stress, but conditions of elevated stress are present in a broad crescent-shaped band of Greensboro, generally east of North Church Street, and south of the line formed by Spring Garden Street, West Wendover Avenue, and I-40 Business. Across all examined datasets and years, this area exhibits a consistently higher degree of stress and threat to quality of life, than other areas of Greensboro.

The Beta 1 system produced a composite map showing all nine indicator dimensions for the entire City, overlaid in a single view. For demonstration purposes an additional map layout was produced, with nine separate smaller maps of the entire City, each showing only one of the nine indicator dimensions. Finally, the Beta 1 phase also produced a sample "Indicator Summary" report for one of Greensboro's neighborhoods, namely Glenwood. This concise summary report consists of three sections: background information about the neighborhood; a map of the neighborhood's boundaries with the 9 indicator dimension layers; and a numeric summary of the actual indicator values measured in the neighborhood. The summary report format can also be applied to City Council districts, or other geographical subsets of the City.

The Beta 2 iteration of the Greensboro Indicators System, which is nearly complete, aims to be much closer to a "ready for public consumption" product. In addition to the refinements described in Table 2, the Beta 2 system will include a copy of the City-wide indicator map in a hyperlinked PDF document. In this document, the user will be able to click on any of the neighborhoods or City Council districts to view the Indicator Summary report for the specified area. Additional products may also be developed. The revised list of indicator datasets is presented below.

Dimension	Dataset(s)	Source	Geography	Year
Safe Environment	Total violent crimes per capita	Greensboro Police Department crime records	GPD tracts	2003
Affordable Housing Stock	Percentage of households able to afford the median home purchase mortgage value	Federal Financial Institutions Examination Council (mortgage data), and Environmental Systems Research Institute (household income data)	Percentages calculated for 2000 Census tracts	2007

Dimension	Dataset(s)	Source	Geography	Year
Access to Community Services, Facilities, and Amenities	Distance to nearest supermarket	Yellow pages supermarket category listings	Multi-ring buffers from points in 1 mile increments	Present
	Ratio of sidewalk miles to street centerline miles	GDOT sidewalk and street centerline data	Ratios derived from lengths aggregated by 2000 Census blocks	Present
	Distance to nearest playground or ballfield	P&R facilities locations	Multi-ring buffers from points in $\frac{1}{8}$ mile increments	Present
Economic Strength	Median Household Income	US Census Bureau 2000 Decennial Census	2000 Census block groups	2000
Clean Environment	Total clean up work orders and total LOE citations	Local Ordinance Enforcement Division (Engineering & Inspections Dept.) and Field Operations Dept.	Points aggregated by 2000 Census blocks	2005
Varied Housing Stock	Under development	N/A	N/A	N/A
Condition of Public Infrastructure	Roadway pavement condition scores	GDOT pavement condition database	Average condition score per centerline mile, aggregated by 2000 Census blocks	2003
Citizen Participation	Percentage of registered voters who voted in last general election	Guilford County Board of Elections	Normalized to 2007 Electoral Precincts	2003
Neighborhood / Land Use Compatibility	Proximity to industrial zoned parcels	Greensboro and Guilford County Zoning Maps	Multi-ring buffers from parcels in $\frac{1}{8}$ mile increments	Present
	Proximity to existing controlled access freeways	GDOT street centerline data	Multi-ring buffers from centerlines in $\frac{1}{8}$ mile increments	Present