

Shaping Our Future

Return-on-Investment Study

Urban3

June 2017

PURPOSE AND CONTEXT

The 10-county Upstate Region is growing, and is projected to welcome more than 300,000 new residents by 2040 to reach a total population of nearly 1,750,000 — an increase of 64% since 1990. How and where the region grows will have real impacts on residents' quality-of-life — affecting commute times and transportation choices, economic development opportunities, environmental sustainability, home choices, government finances, and family pocketbooks. The Shaping Our Future initiative is an opportunity to explore and debate alternative patterns for growth in the Upstate keeping in mind their associated trade-offs. Scenario planning — and specifically CommunityViz software — was used to evaluate the impact of competing growth alternatives to inform future decision-making in the region, especially with regard to land use.

The initiative includes a comprehensive assessment of current policies, market forces and development preferences (the trend development scenario), and illustrates how continued growth under the trend scenario might influence the cost of government, shape infrastructure, support/limit economic development initiatives, or impact the environment. The study also generates information regarding the trade-offs associated with three competing growth scenarios — compact centers, rural villages and major corridors — in terms of land consumption, government revenue generation, and government cost of services. Case studies supplement the region-wide scenario planning analysis and offer insights on a variety of topics important to future growth and development decision-making in the Upstate Region.

The initiative is being advanced by the Shaping Our Future Consortium — a partnership between Upstate Forever, Ten at the Top, and the Riley Institute at Furman University — and relies on guidance from a broad spectrum of partners, including: elected officials, the business sector, local governments and utilities, community organizations, schools and universities, and environmental groups. The study's findings and recommendations can serve as a valuable resource for demonstrating the impacts and trade-offs for alternative ways communities might grow in the future, and provide initial guidance for some of the most pressing growth-related issues facing communities in the region. More information about the Shaping Our Future initiative can be found at www.ShapingOurFutureUpstateSC.org.

The *Shaping Our Future Return-on-Investment Study* summarizes the work of Urban3 to calculate anticipated future tax revenues in the 10-county region based on different development patterns and intensities represented in the four growth scenarios. This work complements the *Shaping Our Future Cost of Government Services Study* in terms of categories studied and time period (2015 to 2040) so as to report anticipated return-on-investment for each of the scenarios. Both studies work with a concise set of land use categories developed for the CommunityViz Model (referred to as community types) that generalize all of the different terms, phrases and intensities used to describe future development in various local government comprehensive plans. Normalizing terms and concepts in the region helps standardize the process for scenario planning in a 10-county, nearly 6,000-square mile area.

Return on investment used in this report is a statistic used by all levels of government to compare expected revenues and expenditures (i.e., revenues divided by expenditures). A ratio of 1.0 or greater represents a condition where revenues equal or exceed expenditures, meaning governments should be able to fund needed infrastructure improvements — construction, operation, maintenance and replacement — in a timely manner with funds generated by new development.

Forecasting tax production on a parcel-by-parcel basis is a challenge across a 10-county region, with different municipalities and different County Tax Assessors. Urban3 utilized GIS tax parcel data from Anderson and Greenville Counties, and thereafter applied a suite of ancillary data to project/superimpose Greenville and Anderson tax values onto the remaining counties. New development that occurs in rural peripheral counties such as Abbeville County and Union County, will certainly have a lower assessed value than new development in Greenville or Anderson County.

Thus, the lion's share of Urban3's process and methodology is dedicated to scaling assessed values of the various Placetypes (neighborhood land use types varying from rural locations to dense urban development) from the sample size of Anderson/Greenville to remaining counties. Fortunately, each county utilizes the same general property tax assessment system mandated by the State of South Carolina. This report will give a picture of the integrated approach undertook to assign reasonable tax values to new development in each county across the 10-county region.

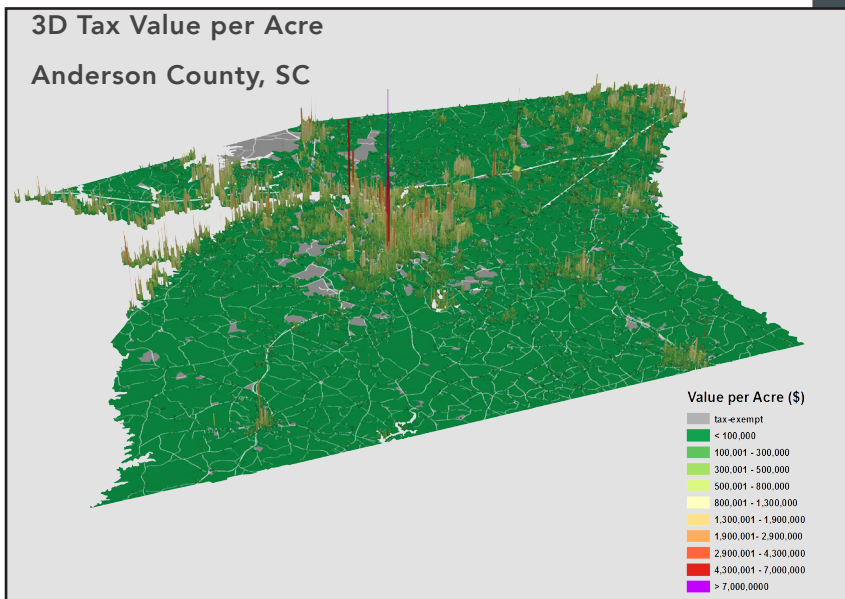
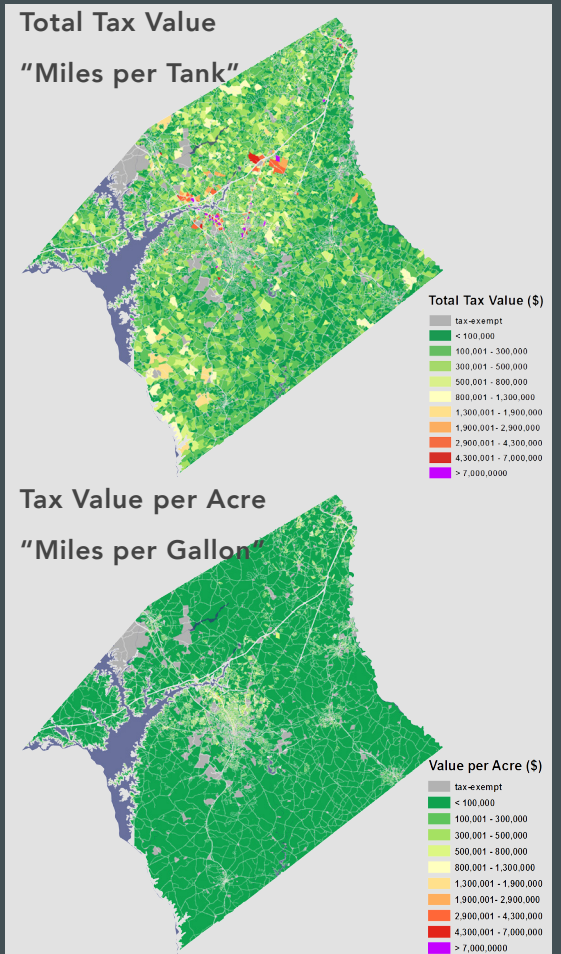
The focal point of Urban3's revenue analytics is processing County Assessor's tax parcel data into value per acre models. Each GIS parcel file contains land values, building values, and of course total tax values of each parcel in a county assessment area. Urban3's renowned Value per Acre metric enables different types of land uses and building types in different locations to be measured and compared against each other in regards to efficiency (see right).

To arrive at a usable assessed value per acre figure (which tax millage rates are directly applied, to calculate total tax paid to counties and municipalities), various steps were taken in both Greenville and Anderson Counties. First, exempt properties were identified and assigned a tax value per acre of '0'. These parcels, the overwhelming amount of them publicly-owned land and buildings, are still assigned a market tax value. However, including these parcels into the Placetype sample set would create distorted results.

WHY VALUE PER ACRE?

Anderson, SC Example¹

Different cars have differently-sized gas tanks, so we use the gallon as the measurement of efficiency, not the tank. In other words, we use "miles per gallon", not "miles per tank" to make a relative comparison of cars and trucks. Using a per acre metric for land helps to better understand the potency of one parcel against its neighbor, as well as the entire City and County.

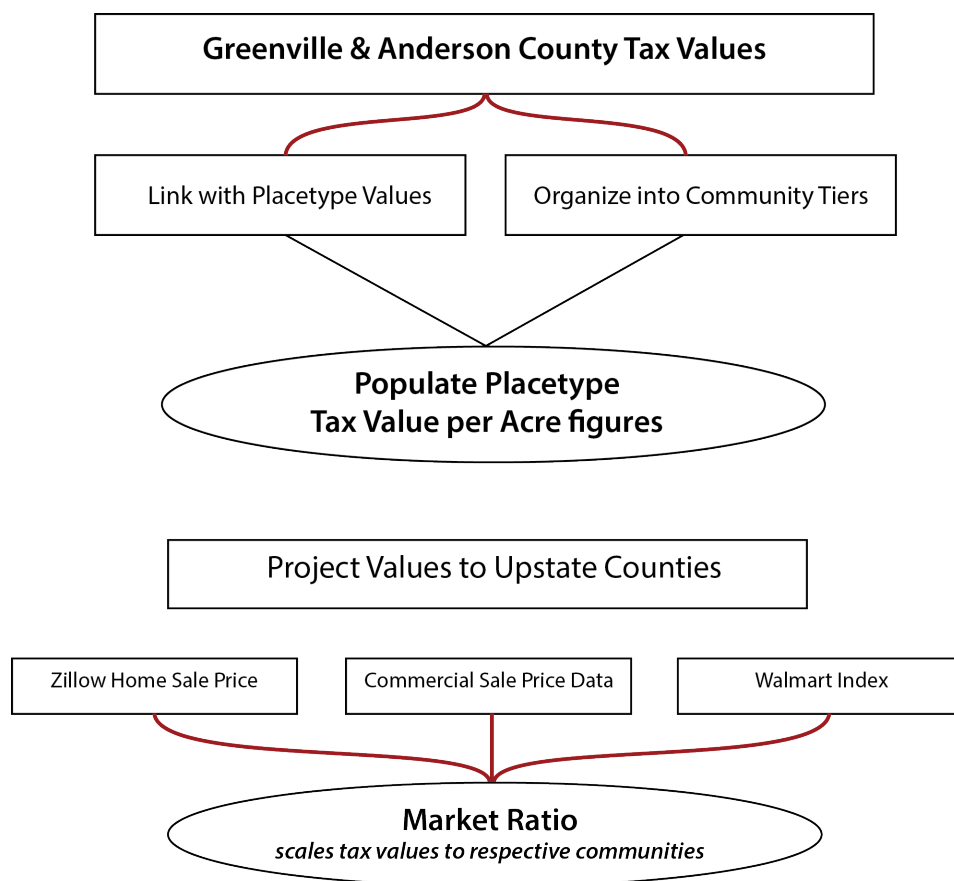


METHODOLOGY

While tax value per acre figures are the foundation of the regional revenue model, a variety of data layers and steps were thereafter applied to the figures to create value by Placetype in each jurisdiction. The process flow chart below gives an idea of the sequence of data processing and additions required for this analysis.

First, Placetype boundaries were applied to the tax value per acre figures to select out values in different land use/placetypes. The addition of Anderson County was a critical component during this step, effectively doubling the sample size and injecting a more rural example into the collection of Placetype values. Aggregated tax value per acre figures by Placetypes were delineated into “community tiers” in order to effectively create three Placetype tax values to apply to Upstate communities of varying urbanity.

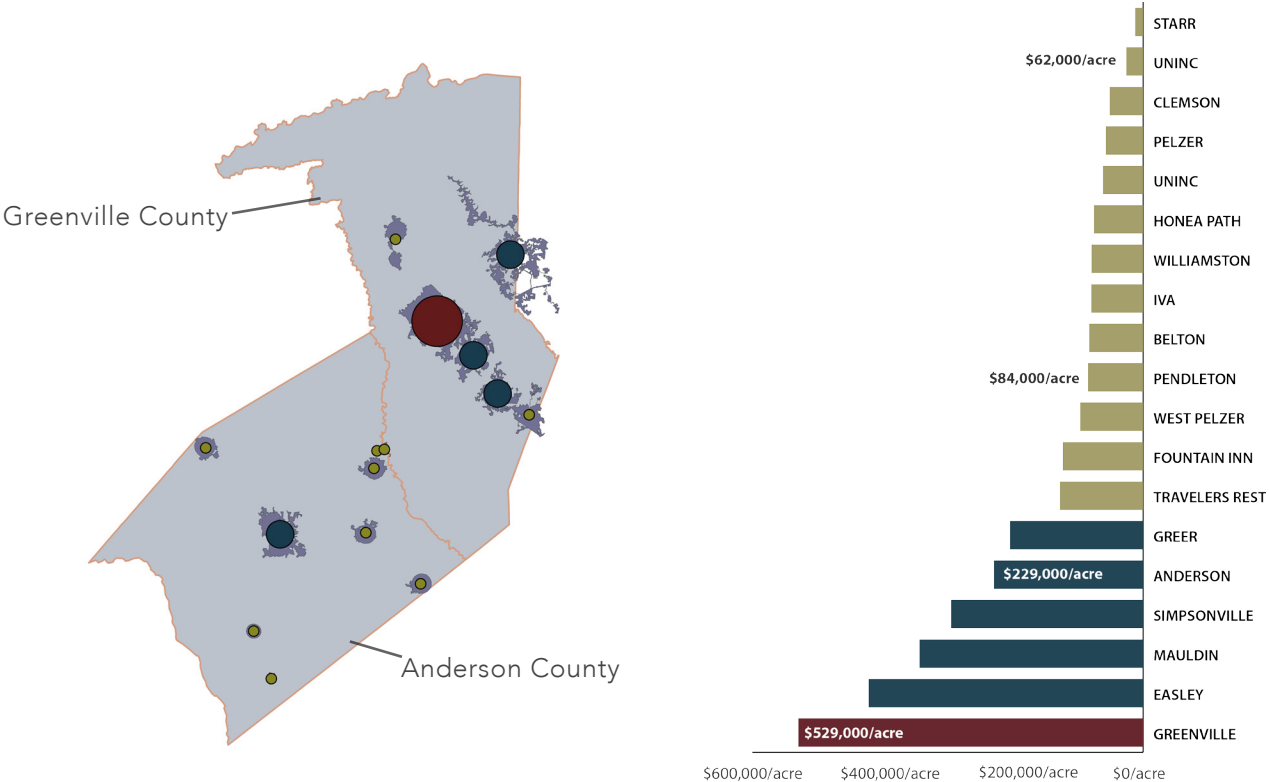
Process Sequence



Clearly, it would be unreasonable to apply Placetype values from the City of Greenville, or second-tier cities like Anderson, to estimate future tax production in more rural jurisdictions. The first step U3 implemented to mitigate this factor was to analyze the tax data we were able to utilize, and organize it into higher-value classes, moderate-values, and more rural classes. The visual below illustrates both the location (map, bottom-left) of urban/rural jurisdictions in the two-county sample set, and the total market value per acre of all Placetypes within those jurisdictions. It is evident that Greenville is in a class of its own, with a market value per acre 231% higher than the City of Anderson. Tier-two cities, however, still attained market value per acres at least 300% higher than rural jurisdictions. Utilizing these natural breaks in the tax data distribution, U3 was able to prepare three different sets of Placetype values to thereafter apply to urban/rural jurisdictions across the region. The overwhelming amount of jurisdictions were assumed to have rural Placetype values.

Delineating Tax Values into Growth Tiers

The two-county sample area has a variety of representative communities to use as case studies for the entire Upstate Region. The graduated circle map below visualizes the location of urban, second-tier, and rural community and their respective market value per acres (circles are to relative scale). Natural breaks in market value per acre across the sample set are evident in the histogram below.



The table below shows the distribution of assessed tax value per acre across each Placetype, in each tier. Greenville’s Urban Center produces a huge amount of value at \$178,206/acre, however Urban Center values in Tier-2, and Tier-3 classes still bring respective value per acres 475% and 303% higher than Suburban Neighborhood areas. There are notable differences in each class. However, a few trends remain constant: attached housing types bring more revenue per acre than suburban detached dwelling units, and while Suburban Commercial/Office produce more revenue per acre than residential Placetypes, they still lag behind the revenue potency of Suburban Mixed-Use and Urban Centers.

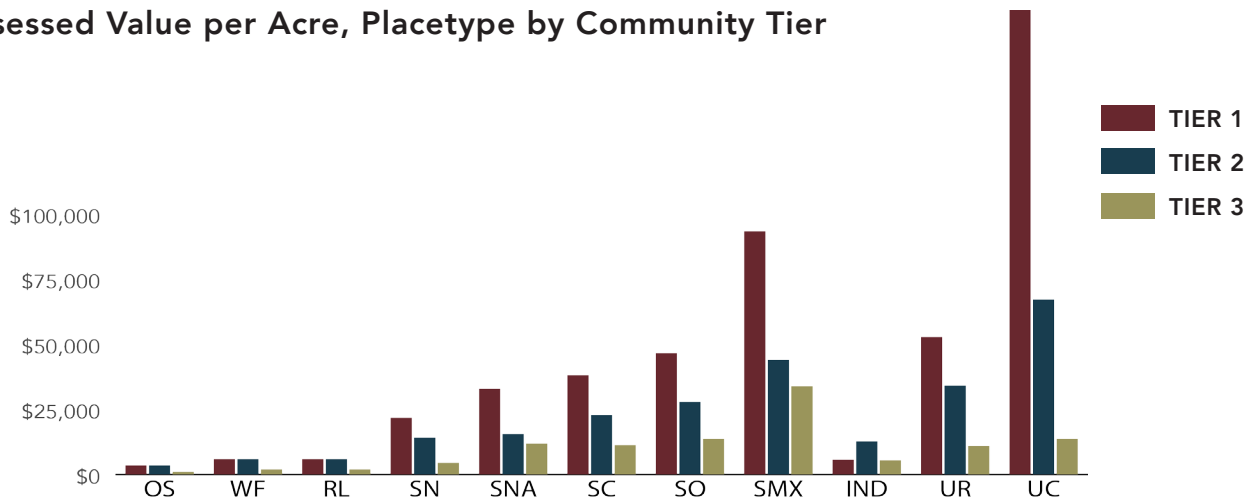
The next step in the analysis was to scale values in the two-county sample set to the

Assigning Value per Acres based on Placetype

	TIER 1: GREENVILLE	TIER 2: SECONDARY CITIES	TIER 3: RURAL
Open Space	3,454	3,454	1,094
Working Farm*	5,867	5,867	1,859
Rural Living	5,867	5,867	1,859
Suburban Neighborhood	21,827	14,119	4,521
Suburban Neighborhood Attached	32,975	15,561	11,953
Suburban Commercial	38,165	22,816	11,251
Suburban Office	46,562	27,836	13,276
Suburban Mixed-Use	93,295	44,027	33,819
Industrial	5,709	12,745	5,401
Urban Residential	52,830	34,172	10,943
Urban Center	178,206	67,176	13,717

**Working Farm and Rural Living were assigned identical figures due to limited sample sizes, and very little variability in values*

Assessed Value per Acre, Placetype by Community Tier



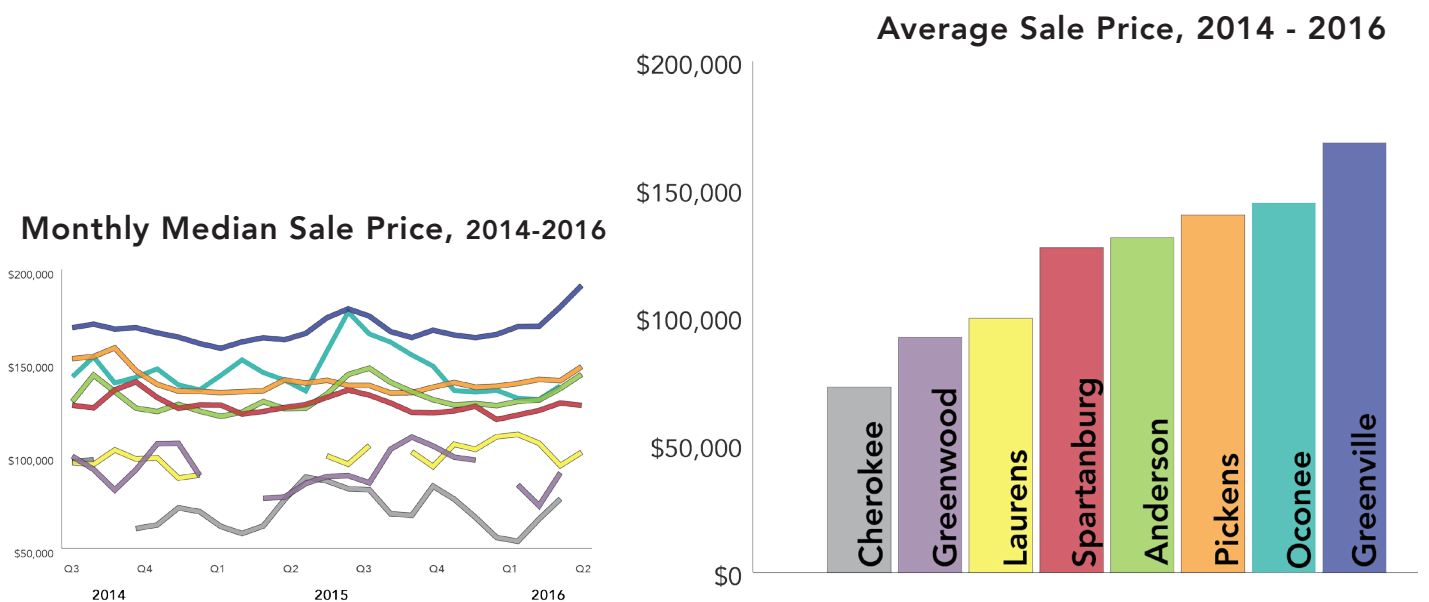
SCALING VALUES

remainder of the 10-county region. Utilizing data from foundational components of Tax Assessment methodology a market ratio was created to reduce values in rural counties and scale Placetype values to their respective jurisdictions. Fortunately for both taxpayers and this project, County Tax Assessors do not just guess an assessment value for new development. Tax Assessment in the United States is premised upon tangible figures in the market. In other words, Tax Assessor's use the sale price of comparable properties (size, year built, land use type, quality, etc.) in the immediate area to estimate the tax value of real property. Urban3's market ratio was created utilizing data from three sources:

- Median Sale Price by County, 2014 - 2016 (Zillow Research)²
- Average Commercial Listing Price, 2016 (Loopnet Market Trends)³
- Walmart Market Value Index, (premised upon a 200+ Urban3 database of Walmart market values across the United States)⁴

Residential Average Sale Price by County (2014 - 2016)

Zillow tracks the sale price of all residential properties across counties by month, in each year. The line graph below shows the fluctuation in monthly median sale price in each Upstate County (data unavailable for Abbeville and Union Counties). These figures were averaged over the two year period to create an average residential sale price in each County (right). Anderson County was thereafter used as the baseline to calculate a ratio difference in each county.



Next, U3 selected commercial listing data from Loopnet (essentially a market listing service similar to Zillow) across the Upstate region, where available. Commercial properties were separated into retail, office, and industrial properties. Average listing price/ft² in each commercial type, in varying geographies was organized to measure the variability in the commercial real estate market from the City of Greenville and Spartanburg, into peripheral counties and municipalities.

The table below shows the difference in commercial listing price in each geography. Greenville/Spartanburg average commercial listing price was used as a baseline in this particular situation. The ratio difference between the geographies in each parameter was calculated, then averaged to arrive at a single commercial market ratio. An average ratio of 0.95 was assumed to scale values from core counties to peripheral areas.

Average Commercial Listing Price, 2016, Upstate Region			
	Retail Listing Price/ ft ²	Office Listing Price/ft ²	Industrial Listing Price/ft ²
Greenville/Spartanburg Average	\$101.71/ft	\$94.21/ft	\$39.42/ft
Peripheral Counties/ Municipalities	\$98.21/ft	\$87.98/ft	\$37.67/ft
Ratio Difference	0.97	0.93	0.96

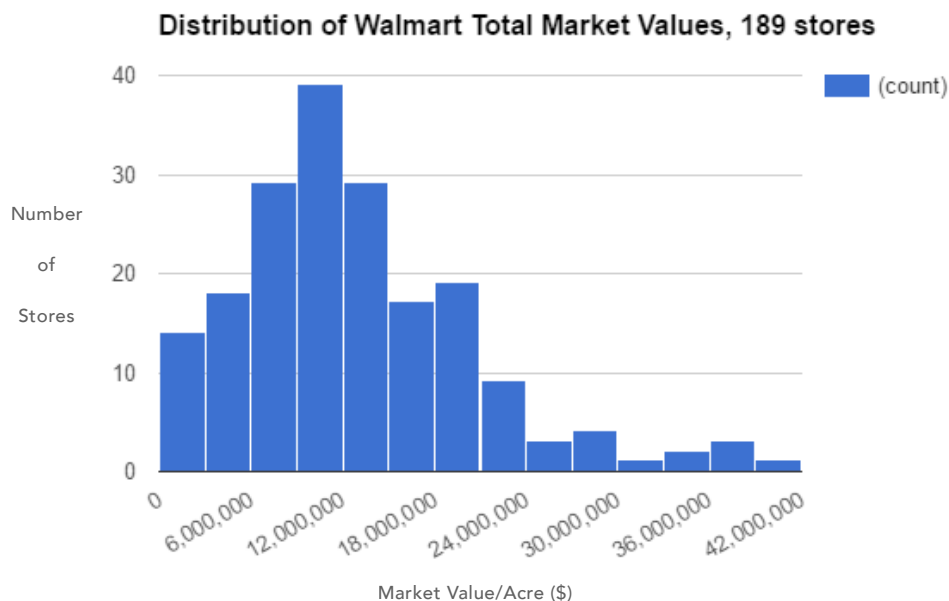
U3 added an additional commercial value component to increase the accuracy of the market ratio, and also temper any outlier that may exist within one facet of assumptions. U3 has done revenue analytics all across the country. During each project, U3 catalogs and tracks the value of various types of developments. This database is used to analyze the variability of tax assessment in each state, and within varying counties within the same state. U3 has spent considerable time tracking market value in Walmart locations across the country. Walmart has an extremely standardized real estate business model across each state. In other words, Walmarts are almost always valued at the same amount state to state, and county to county. U3 hypothesizes that the difference in Walmart market values in each Upstate county, can be attributed largely to differences in assessment. While commercial depreciation is a factor in varying market values of Walmart stores, no Walmart location in the region is at the very tail end of its depreciation cycle.

The table below shows the value of each Walmart location in each county (or the average, if there were multiple stores). The average market value of Greenville/Spartanburg/Andersons' 11 Walmart locations was used as a baseline value in this particular section. Thereafter the ratio difference between each county's Walmart market value was calculated to estimate the difference in assessment methodology in each county.

Average Walmart Market Value, 2016, by County

COUNTY	WALMART MARKET VALUE	RATIO
Greenville / Spartanburg / Anderson	\$12,930,525	1.0
Oconee	\$12,598,305	0.97
Greenwood	\$11,028,100	0.85
Pickens	\$9,742,200	0.75
Laurens	\$9,011,650	0.70
Cherokee	-	0.70
Union	-	0.70
Abbeville	-	0.70

Walmart Index, Urban3 National Database

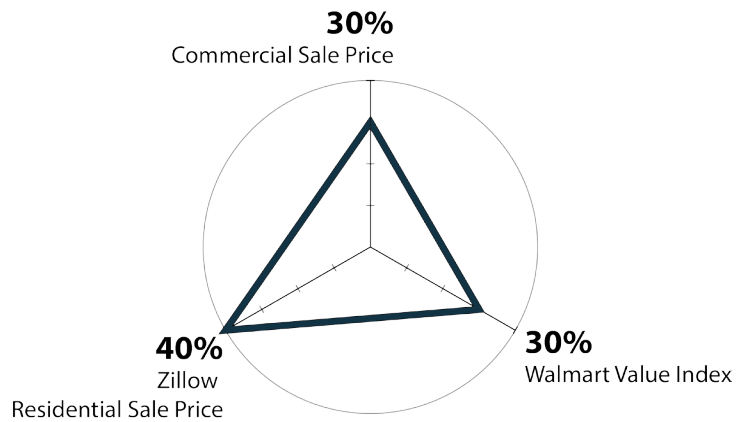


The histogram to your left visualizes the market value of each walmart location in U3's 189 store database (across 28 states). The majority of stores fall within a \$8M to \$14M range (similar to the Upstate Region).

Market Ratio Weighted Average

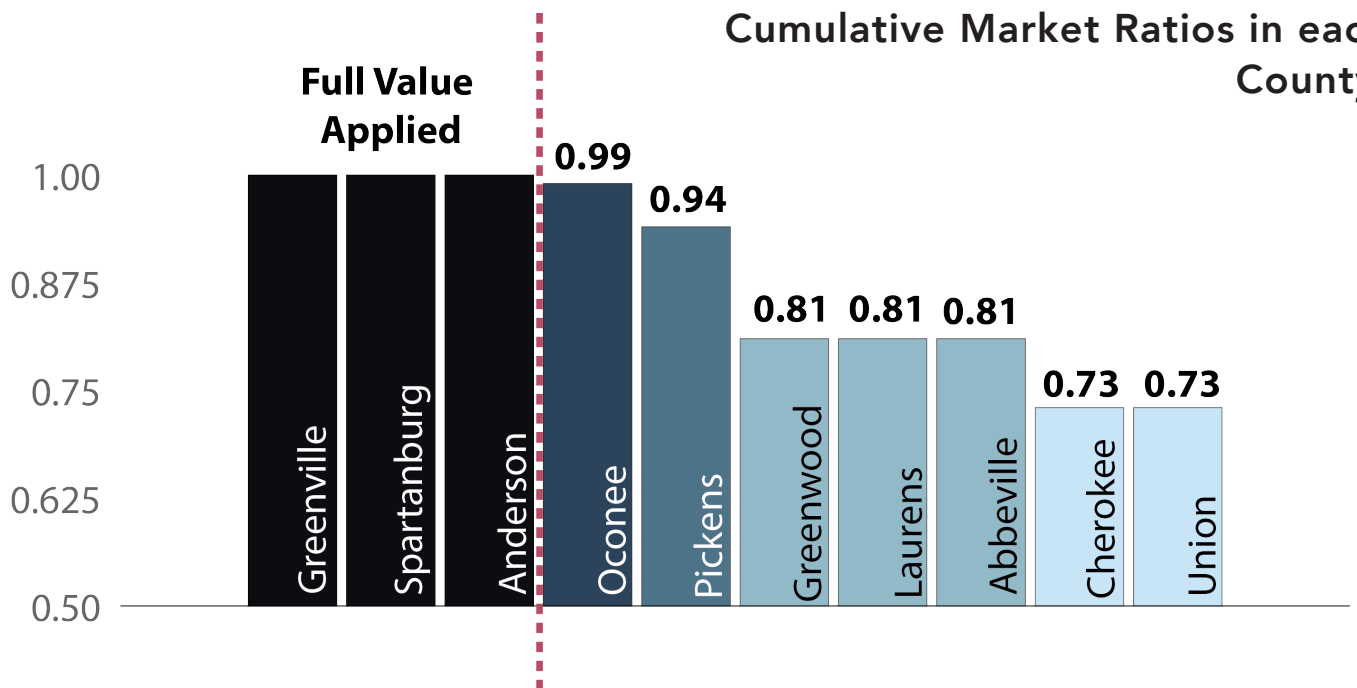
To temper any potential outliers in U3's market ratio assumption, a system of weights was applied to each data source. The most comprehensive/abundant data source was Residential Sale Price data from Zillow. This data was assigned the heaviest weight of 40%, while the Commercial Listing Price and Walmart Value index components were assigned weights of 30%.

Weights Applied to Data Variables



The cumulative results of this weighted average process are listed below. In Greenville, Anderson, and Spartanburg counties, the full Placetype values were applied to new development. In the remaining counties, a ratio was applied to reduce Placetype values to scale to respective markets. For instance, new development in Greenwood, Laurens, and Abbeville counties are assumed to have been assessed at 81% the rate of the aforementioned baseline counties.

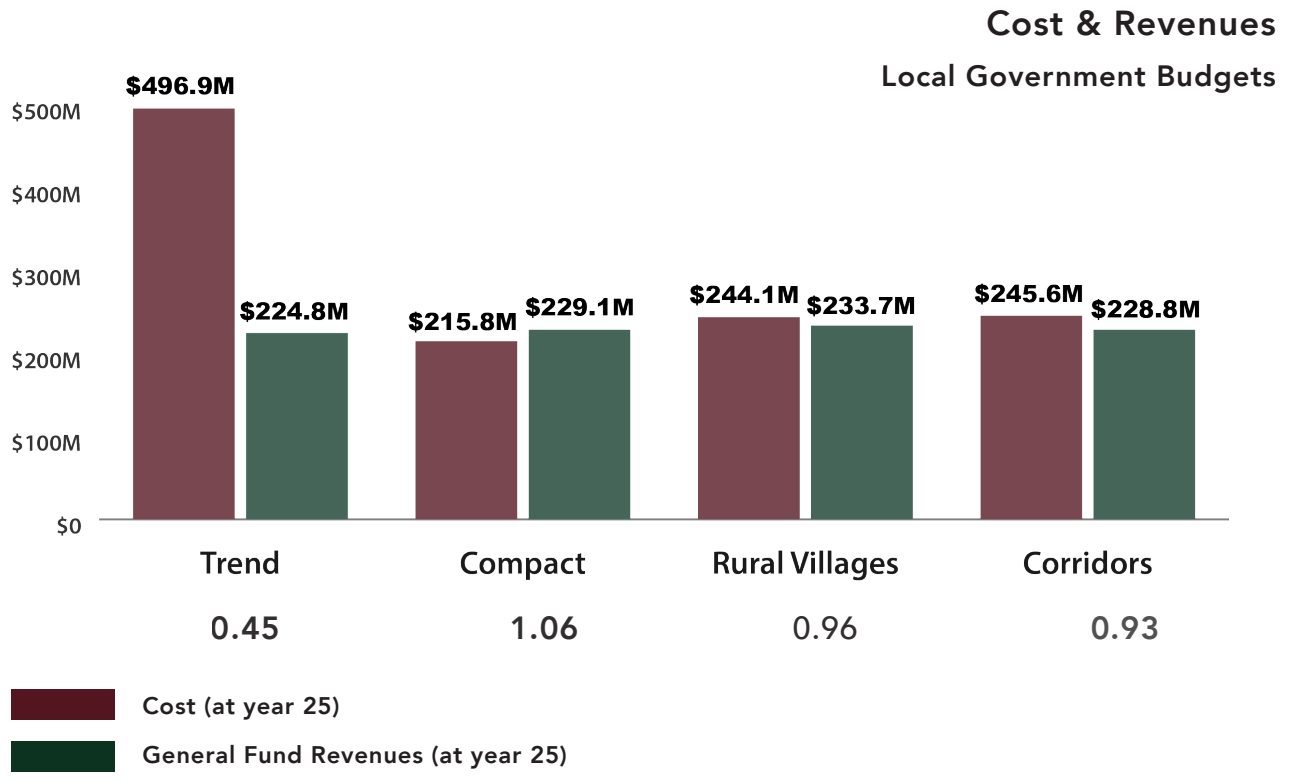
Cumulative Market Ratios in each County



RETURN-ON-INVESTMENT

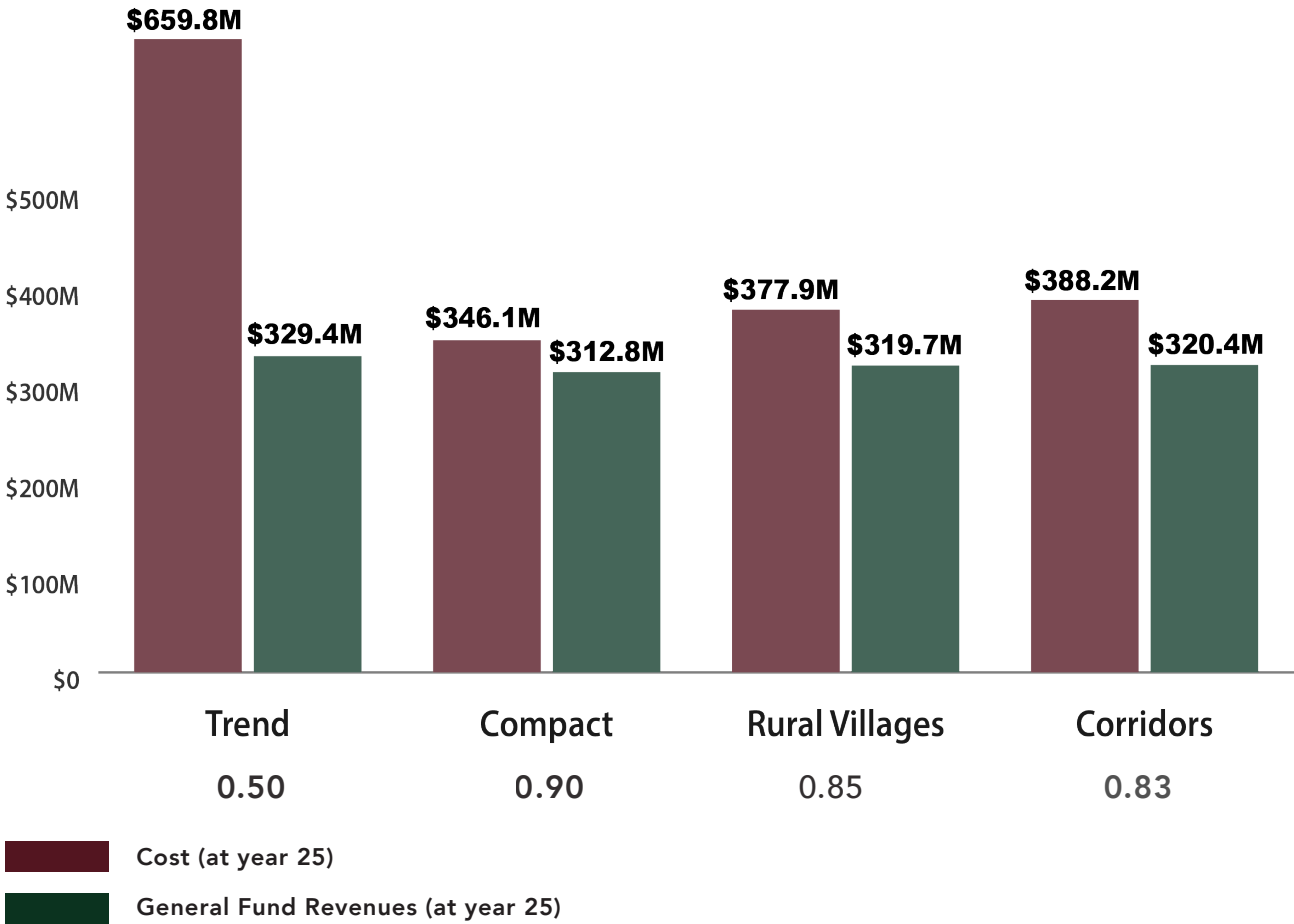
Return-on-investment (ROI) is a statistic used by all levels of government to compare expected revenues and expenditures (i.e., revenues divided by expenditures). A ratio of 1.0 or greater represents a condition where revenues equal or exceed expenditures, meaning revenue generation annualized over 25 years is expected to meet or exceed potential infrastructure costs — construction, operation, maintenance and replacement — annualized over 25 years.

The results of the regional revenue analysis had expected figures in regards to ROI. The Trend scenario, with a much larger area consumed by development brings a similar amount of total anticipated property tax revenue to the other scenarios, however, its cost is far higher. As development extends horizontally, the cost of providing services increases dramatically. In addition, while the trend scenarios experienced more land developed, the Placetypes that dominate this scenario generate a lower amount of tax revenue on a per acre basis. Conditions isolated for local governments in the Upstate (minus road system costs and federal and state revenues allocated to roadway infrastructure) indicate the alternative growth scenarios do, or nearly do, pay for themselves in 2040: Compact Centers (1.06), Rural Villages (0.96) and Major Corridors (0.93). The Trend Scenario is the only scenario to demonstrate a lower ROI (0.45) for conditions isolated to local governments.



Cost & Revenues

Total Federal, State, and Local Government Budgets



Statistics reported for the four growth scenarios indicate that while none is expected to pay for itself in 2040, the Trend Scenario performs substantially more poorly than the three alternatives. The ROI statistics above are assuming the responsibilities of all government levels combined, annualized infrastructure costs over a twenty-five year period, and holding constant current millage rates, utility service rates, federal and state government funding levels, etc. However, the ROI statistics for the three alternative growth scenarios could move above and below the 1.0 threshold over the 25 year planning period based on 1) the timing, location and intensity of new development and 2) the lifecycle of some infrastructure following dedication by private developers. The low ROI performance for the Trend Scenario (0.50) means it is unlikely to ever experience conditions where revenues exceed expenditures in a single year unless services are significantly reduced, delayed or privatized to come in line with available revenues.

FORMULA, SOURCES

(developed acres) * (estimated taxes per acre)¹ = anticipated property taxes

¹ estimated taxes per acre = [(taxable value per acre by placetype)^A * (millage rate in each community)^B] * (market adjustment ratio)^C

^A taxable value/acre by PT = (taxable value/acre) * (assessment ratio)

^B millage rate by community = (county general fund rate) + (city general fund rate) + (water/sewer/fire district rate)

^C market adjustment ratio = (residential sale price data) + (commercial sale price data) + (walmart index)

¹ Anderson County Tax Assessor

<http://www.sccounties.org/Data/Sites/1/media/publications/propertytax2016.pdf>

² Zillow Research, Median List Price:

<http://www.zillow.com/research/data/>

³ Loopnet Commercial Market Trends :

<http://www.loopnet.com/markettrends/>

⁴ Urban3 / Strongtowns Walmart Database :

<http://www.strongtowns.org/journal/2016/8/1/the-walmart-index-results-of-our-big-box-data-collection-are-in>