

## CREATE BRIDGES Briefs 23-6

### Using County Trade Pull Factor Analyses to Measure Retail Growth in the CREATE BRIDGES Counties of North Carolina.

Mark Seitz, North Carolina Cooperative Extension

#### Introduction

CREATE BRIDGES is a collaborative effort between the Southern Rural Development Center at Mississippi State University, University of Arkansas, the University of Kentucky, New Mexico State University, The University of Illinois Urbana-Champaign Extension, North Carolina State University and Oklahoma State University.

CREATE BRIDGES' goal is to bring community economic development research and expertise to rural communities; to raise awareness about the importance of retail, tourism, accommodations, and entertainment in their economies; to assess assets and challenges unique to each community; and to develop strategies that strengthen a community's retail sector and effectively implement those strategies. There are currently eight CREATE BRIDGES projects on-going in six states.

This brief's focus is on four western North Carolina counties: Macon, Jackson, Swain, and Graham, how county trade pull factors (CTPF) can be used to measure the success that CREATE BRIDGES teams have in their efforts to strengthen rural retail economies. With CTPF based on per capita sales tax revenue, those revenues are often directly associated with the tourism industry. Such tourism industry data from the CREATE BRIDGES counties and the other 17 counties of the West District of North Carolina Cooperative Extension (NC State Extension, Extension Information Technology



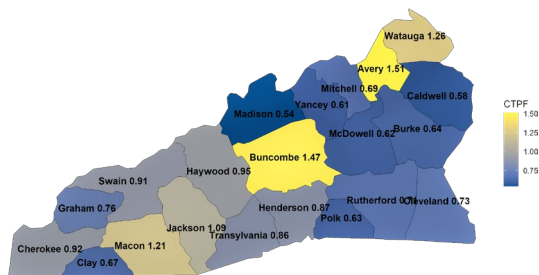
#### Program Overview

CREATE BRIDGES (Celebrating Retail, Accommodations, Tourism, and Entertainment by Building Rural Innovations and Developing Growth Economies) is a pilot project designed for multi-county regions to raise the awareness of the role retail, accommodations, tourism, and entertainment businesses play in the local economy; determine challenges, barriers, and opportunities related to those businesses; and develop and implement strategies to strengthen the retail, accommodations, tourism, and entertainment sectors within a region. CREATE BRIDGES is a collaborative partnership between the Southern Rural Development Center, the University of Arkansas, The University of Illinois, the University of Kentucky, New Mexico State University, North Carolina State University and Oklahoma State University. It is currently active in eight regions throughout the six partner states.

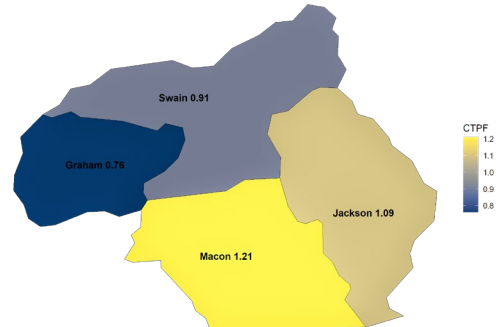
[Cartographers], 2022) are shown to offer a regional perspective of the economic pull that counties in the region have.

CREATE BRIDGES' focus on strengthening the retail sector in rural communities is important because "economic development and community viability in the future may depend heavily on the retail sector" (Nelson, Johnson and Darling, 2007). In North Carolina the retail and accommodation industry accounts for 27% of all jobs and 10% of GDP and impacts nearly 1 in 3 people (National Retail Federation, 2021). In comparison agriculture and manufacturing only impacts 1 in 12 people. So, focusing on measures to grow the retail sector will significantly impact employment, wealth generation and spending across the state.

Pull factor analysis has been used in economic impact analysis for decades. Gale (1996), Darling and Tublene (1996) studied the impacts transportation and population density have on county economies. Hughes (2004) and Toma (2010) looked at the economies of counties bordering other states and the pull that different sales tax rates have on those economies. And, while three of the four CREATE BRIDGES counties (Maps 1 and 2) in this study border Tennessee and South Carolina, those impacts go beyond the scope of this paper.



Map 1: NC Extension West District Counties

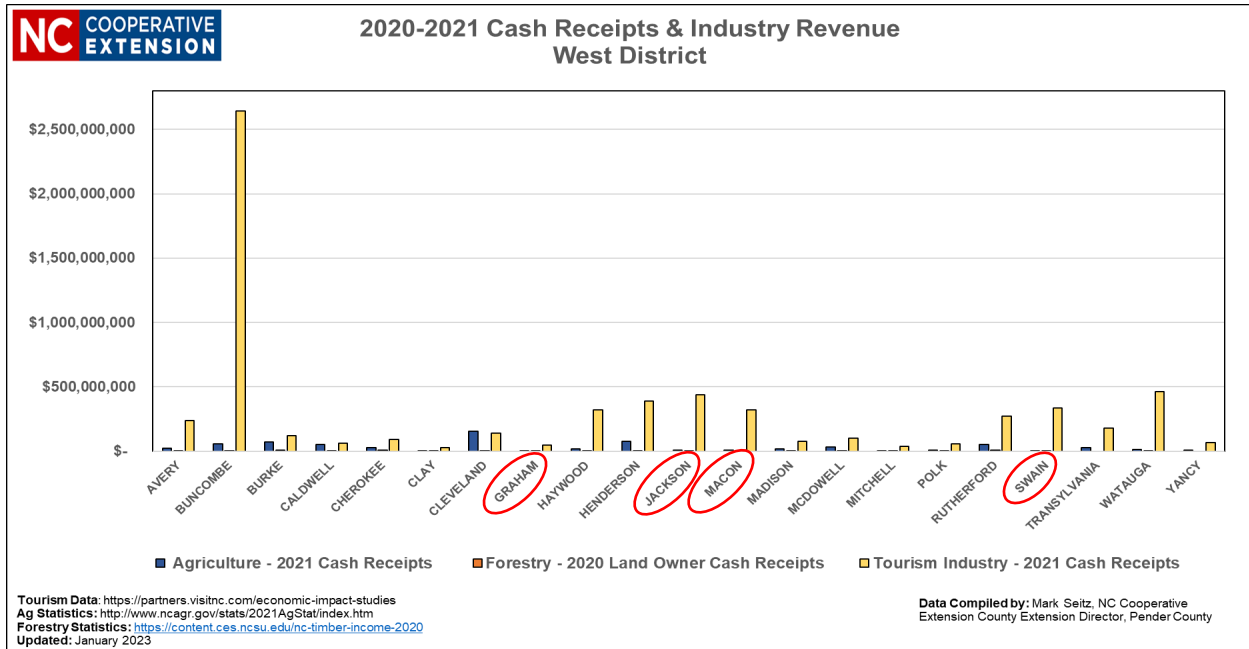


Map 2: CREATE BRIDGES Counties

Sources (for Maps 1 & 2): North Carolina Department of Revenue, 2022a; United States Census Bureau, U.S. Department of Commerce, 2022.

Created by: Bressingham, D., 2023.

Pull factor analysis is an effective way to measure the influx of revenue in comparison to the spending by permanent residents, and the results can be used to quantify the success of the strategies developed by CREATE BRIDGES teams.



Graph 1. 2020-2021 Agriculture, Forestry and Tourism Industry Cash Receipts – NC Cooperative Extension West District Counties

Sources: *Tourism Economics*, prepared for Visit North Carolina, 2022; Parajuli, R. and Bardon, R., 2022; Troxler, S., & Webb, D., 2022.

**Methods**

Upendram and Darling (2004) define county trade pull factors (CTPF) as a measure of the relative strength of the business community based on county per capita sales tax revenue (Formula 1). They further define trade area capture (TAC) as a measure of the customer base served by the community, meaning it is the CTPF times the county population (Formula 2) and they define percent market share (MS) as the TAC divided by the state population (Formula 3) to show what percentage of the state’s economy is generated by each county.

A CTPF greater than 1.0 means the county is pulling sales tax revenue from other counties because of its strong retail sector or natural attractions. A CTPF equal to 1.0 means the county is neither gaining nor losing revenue and a CTPF less than 1.0 means the county is losing revenue to an adjacent county. Formula 2 shows the TAC, which is a measure of the customer base served by the county, and Formula 3 is the MS, which shows the percentage of the state’s economy the county generates.

Formula 1:

CTPF = [(County STR ÷ County Population) / (State STR ÷ State Population)] where STR = sales and use tax revenue

Formula 2:

TAC = County CTPF X county population

Formula 3:

MS = County TAC ÷ State TAC

**Results**

The CTPF, TAC, and MS data for the four CREATE BRIDGES counties are shown in Tables 1, 2 and 3. Between FY 12-13 and FY 21-22, Macon County's CTPF rose 0.09 points to a value of 1.21, Jackson County rose 0.26 points to 1.09, Swain County's increased 0.29 points to 0.91 and Graham County's increased 0.17 points to 0.76 (Table 1). Jackson County's CTPF surpassed 1.00 for the first time in FY 20-21 and FY 21-22 while Macon County's CTPF has been greater than 1.00 since FY 2012-2013.

Jackson County's TAC (in per capita dollars) increased 15,357 (0.15% annually) between FY 12-13 and FY 21-22 giving it the spending strength of a county with a population of 49,060 in FY 21-22. While Macon County's CTPF is higher than Jackson County's, Jackson County's TAC moved ahead of Macon County in FY 18-19 making it the county with the most spending strength of the CREATE BRIDGES counties. In FY 21-22 Jackson County had a TAC equivalent to a county with a population of 49,060. Macon County's TAC gives it the spending strength of a county with a population of 45,576, Swain County's TAC increased 4,101 to 13,080 and Graham County's increased 1,218 to 6,407 (Table 2).

All four CREATE BRIDGES counties realized annual increases in CTPF and TAC between FY 12-13 and FY 21-22 but their impact on the state's economy in total is very small. Jackson County only generated 0.45% of the state's economy, Macon County 0.41%, Swain County 0.12% and Graham County 0.06% in FY 21-22 (Table 3).

**Discussion**

Multiple factors influence the retail strength of a county's economy. Among these are total population, a concentration of retail businesses, population growth; access to four lane interstates, ports and airports; universities and medical facilities; the abundance of natural amenities (rivers, lakes, beaches or mountains) and proximity to state borders.

The data in Tables 1, 2 and 3 highlight the economic pull in the CREATE BRIDGES counties. While all four counties have seen small increases in their CTPF, TAC and MS since FY 12-13, their impact on the state economy is small. Macon and Jackson County's CTPFs are two of the highest in North Carolina (Table 5). However, their small populations and lack

of significant retail business clusters, or more appealing natural attractions, result in TAC and MS rankings of 57th (Jackson) and 53rd (Macon) out of 100 North Carolina Counties.

Jackson and Macon County have seen their populations increase in the last 10 years, contributing to their increased CTPF but Swain and Graham County have both lost population (Table 4). Despite that population loss, their CTPFs have increased, suggesting an increase in retail activity, likely associated with an increase in outdoor recreation business in both counties.

### **Conclusion**

The research results in this paper are constrained by the assumptions that sales and use tax revenues collections only come from the residents of North Carolina. With significant access to interstates and four lane highways in the region and its relative proximity to Atlanta, GA, Knoxville and Chattanooga, TN, Winston-Salem and Charlotte, NC and other large cities, retail spending is likely coming from a much larger area than just North Carolina or the western counties of North Carolina. A pull factor analyses across a multi-state region, or on a much tighter district basis or a focus on the counties in SC, GA and TN that surround the CREATE BRIDGES counties in this study would offer additional perspectives on what is impacting these counties.

While these measures determine the economic pull of a county, they do not create a complete picture of a county's economy. Four other measures: median household income, per capita property tax valuation, unemployment and population growth rate, are used by the NC Department of Commerce to determine each county's level of economic distress. Those measures are used to rank North Carolina counties into three economic tiers: Tier 3 - least economically distressed, Tier 2 – moderately distressed, Tier 1 – severely distressed. Those tier rankings are used by state agencies to apply for economic development grants. A more detailed discussion of how county trade pull factors affect the economic distress measures of the four CREATE BRIDGES counties can be found in the report titled, "Measuring the Impact Economic Pull Factors Have on the Tier Status of the CREATE BRIDGES Counties in Western North Carolina."

Finally, this research can and should be used by the CREATE BRIDGES stakeholders as an evaluation tool to help quantify the efficacy of the strategies implemented to strengthen the retail sectors of the economies in Macon, Jackson, Swain and Graham Counties.

Mark Seitz is the Cooperative Extension Director for North Carolina Cooperative Extension in Pender County, North Carolina.

### **Funder Acknowledgement**

Funding for CREATE BRIDGES is provided by Walmart.

This work is supported by the Southern Rural Development Center through grant no. 2023-38811-39019, from the U.S. Department of Agriculture, National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and should not be construed to represent any official USDA or U.S. Government determination or policy.

### References

- Bressingham, Drew. (2023, April 7). Center for Geospatial Analytics, College of Natural Resources, North Carolina State University
- Darling, D. L., & Tublene, S. (1996). Determining the population threshold of minor trade centers: A benchmark study of non-metropolitan cities in Kansas. *Review of Agricultural Economics, Agricultural and Applied Economics Association*, 18(1), 95-101.
- Gale, H. F. Jr. (1996). Retail sales pull factors in U.S. counties. *The Review of Regional Studies*, 26(2), 177-195. <https://ideas.repec.org/a/rre/publsh/v27y1996i2p177-195.html>
- Hughes, David W. (2004). Pull factor estimates for retail sales in West Virginia Counties. *Regional Research Institute Working Papers*. 220. Retrieved from [https://researchrepository.wvu.edu/rri\\_pubs/220](https://researchrepository.wvu.edu/rri_pubs/220)
- National Retail Federation. (2021). *Retail's impact in North Carolina*. Retrieved from <https://cdn.nrf.com/sites/default/files/2020-09/north-carolina-2020-retails-impact.pdf>
- NC State Extension, Extension Information Technology (Cartographers). (2022). NC Cooperative Extension district map [District map]. Retrieved from <https://content.ces.ncsu.edu/nc-cooperative-extension-district-map>
- Nelson, R., Johnson, B. B., & Darling, D. L. (2006). Underlying causes and implications of Nebraska retail trade patterns. *Great Plains Research*, 16(1), 63-71. Retrieved from <https://proxying.lib.ncsu.edu/index.php/login?url=https://www.proquest.com/scholarly-journals/underlying-causes-implications-nebraska-retail/docview/755054201/se-2>
- North Carolina Department of Revenue. (2022). State sales and use tax statistics for fiscal year 2021-2022. Retrieved from <https://www.ncdor.gov/documents/reports/fy20-21salesusestats/open>

- Tourism Economics, prepared for Visit North Carolina. (2022). The economic impact of travel on North Carolina Counties. Retrieved from <https://partners.visitnc.com/contents/sdownload/72835/file/2021-County-Level-Visitor-Expenditures.pdf>
- United States Census Bureau, U.S. Department of Commerce. (2022). QuickFacts: United States. Retrieved from <https://www.census.gov/quickfacts/fact/table/US/PST045221>.
- Toma, M., Saadatmand, Y., & Brewer, A. (2010). An analysis of pull factors and local sales taxation in Georgia counties. *International Journal of Business and Economics Perspectives*, 5(1). Retrieved from <https://web-s-ebsohost-com.prox.lib.ncsu.edu/ehost/pdfviewer/pdfviewer?vid=0&sid=2373f2c8-076a-4b27-8f0f-5128c016dc53%40redis>
- Upendram, S., & Darling, D. L. (2004). County trade pull factors: Annual report for fiscal year 2004 (C.D. Study Report #230). *K-State Research and Extension, Department of Agricultural Economics*. Retrieved from [https://www.researchgate.net/profile/Sreedhar-Upendram-2/publication/237703351\\_COUNTY\\_TRADE\\_PULL\\_FACTORS\\_ANNUAL\\_REPORT\\_FOR\\_FISCAL\\_YEAR\\_2004/links/5410a6fb0cf2df04e75d6404/COUNTY-TRADE-PULL-FACTORS-ANNUAL-REPORT-FOR-FISCAL-YEAR-2004.pdf](https://www.researchgate.net/profile/Sreedhar-Upendram-2/publication/237703351_COUNTY_TRADE_PULL_FACTORS_ANNUAL_REPORT_FOR_FISCAL_YEAR_2004/links/5410a6fb0cf2df04e75d6404/COUNTY-TRADE-PULL-FACTORS-ANNUAL-REPORT-FOR-FISCAL-YEAR-2004.pdf)

**Appendix**  
Data Tables

**Table 1: NC Cooperative Extension West District: County Trade Pull Factors. Fiscal Years 2012 – 2022**

COUNTY	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
MACON	1.12	1.10	1.09	1.09	1.13	1.13	1.10	1.10	1.19	1.21
JACKSON	0.83	0.87	0.90	0.85	0.89	0.91	0.93	1.00	1.08	1.09
SWAIN	0.62	0.61	0.65	0.73	0.76	0.76	0.72	0.80	0.92	0.91
GRAHAM	0.59	0.56	0.54	0.56	0.63	0.61	0.61	0.69	0.76	0.76

Created by: Mark Seitz, NC Cooperative Extension – Pender County, March 2023

**Table 2: Western NC Counties: Trade Area Capture (TAC) by Fiscal Years 2012 – 2022**

	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
JACKSON	33,703	35,200	36,650	35,632	37,667	38,959	40,248	43,874	48,318	49,060
MACON	37,721	37,498	37,066	37,070	38,853	39,346	39,078	39,769	44,175	45,576
SWAIN	8,979	9,017	9,334	10,319	10,664	10,773	10,131	11,293	13,211	13,080
GRAHAM	5,189	4,896	4,581	4,759	5,354	5,148	5,086	5,715	6,405	6,407

Created by: Mark Seitz, NC Cooperative Extension – Pender County, March 2023

**Table 3: Western NC Counties: Percent Market Share (MS) by Fiscal Years 2012 – 2022**

County	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
JACKSON	0.35%	0.36%	0.37%	0.35%	0.37%	0.38%	0.39%	0.42%	0.45%	0.45%
MACON	0.39%	0.38%	0.37%	0.37%	0.38%	0.38%	0.38%	0.38%	0.41%	0.42%
SWAIN	0.09%	0.09%	0.09%	0.10%	0.11%	0.10%	0.10%	0.11%	0.12%	0.12%
GRAHAM	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.06%	0.06%

Created by: Mark Seitz, NC Cooperative Extension – Pender County, March 2023

**Table 4: County Population Data**

Table 4. County Population Data										
COUNTY	Jul-14	Jul-15	Jul-16	Jul-17	Jul-18	Jul-19	Jul-20	Jul-21	Jul-22	
JACKSON	40,622	40,809	41,039	41,265	42,241	42,973	44,276	44,614	44,950	
MACON	33,947	34,111	34,428	34,201	34,376	34,732	36,442	37,026	37,610	
SWAIN	14,454	14,566	14,831	14,434	14,346	14,294	14,293	14,315	14,337	
GRAHAM	8,850	8,863	8,829	8,616	8,558	8,541	8,421	8,401	8,381	

Source: Census Quick Facts. <https://www.census.gov/quickfacts/fact/table/US/PST045221>

Source: Census Quick Facts. <https://www.census.gov/quickfacts/fact/table/US/PST045221>



**Table 5: Top County Trace Pull Factor Counties in North Carolina – FY 12-13 through FY 21-22**

County	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
DARE	3.37	3.31	3.19	3.16	3.21	3.21	3.05	2.93	3.31	3.25
DURHAM	1.71	1.82	1.80	1.77	1.73	1.72	1.71	1.68	1.59	1.61
CURRITUCK	1.61	1.54	1.47	1.43	1.40	1.44	1.37	1.40	1.57	1.52
AVERY	1.01	1.04	1.07	1.09	1.11	1.16	1.23	1.31	1.51	1.51
NEW HANOVER	1.52	1.50	1.52	1.52	1.51	1.46	1.53	1.49	1.47	1.49
BUNCOMBE	1.46	1.46	1.52	1.55	1.56	1.59	1.56	1.47	1.42	1.47
MECKLENBURG	1.57	1.56	1.58	1.57	1.55	1.53	1.52	1.48	1.39	1.44
CARTERET	1.23	1.26	1.26	1.27	1.27	1.28	1.36	1.34	1.40	1.39
WATAUGA	1.20	1.25	1.22	1.21	1.21	1.18	1.17	1.20	1.25	1.26
WAKE	1.18	1.18	1.16	1.15	1.16	1.27	1.25	1.25	1.20	1.22
MACON	1.12	1.10	1.09	1.09	1.13	1.13	1.10	1.10	1.19	1.21
CABARRUS	1.31	1.31	1.29	1.29	1.27	1.24	1.20	1.15	1.17	1.15
JACKSON	0.83	0.87	0.90	0.85	0.89	0.91	0.93	1.00	1.08	1.09

*Created by: Mark Seitz, NC Cooperative Extension – Pender County, March 2023*