



Pull Factors: A Measure of Retail Sales Success

Estimates for 77 Oklahoma Cities (2018)

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Introduction

Whether people live in a small town or a major metropolitan area, they have the power to spend their money where they choose. This notion is very important to most cities, since many local government services (police, fire, parks and recreation) are heavily dependent on tax revenue from local retail sales (Semuels, 2017). It is helpful for cities to know the relative health of their retail sector – and in particular, if they are losing retail dollars when local residents shop elsewhere. To assess this, a calculation known as a “Pull Factor” is typically used. A pull factor is a measure of how well local retail stores are able to capture the sales of local and non-local people (see box). Because it compares actual retail spending in a city to that city’s population, it can be used to assess whether people are coming into the community to shop – or if people are leaving the community to shop elsewhere. Shopping online can also have repercussions for sales tax collections. Businesses currently only collect sales tax for online transactions in states where they have a presence (Whitacre, Ferrell and Hobbs,

2009); however, a recent 2018 Supreme Court decision has cleared the way for more taxation of online purchases (Liptak et al., 2018). This can impact the amount of revenue that local governments receive.

Pull factor analysis is important because it puts the health of the retail sector into a number that is easy to interpret. For example, if a city has a pull factor of less than 1, it is not capturing the retail sale expenditures of the local residents. In this case, retail spending is leaking out of the city and being spent in other locations. In contrast, a city with a pull factor of greater than 1 is capturing the entire expected retail sale spending of local residents - plus some extra. Pull factors can be used as indicators of the relative health of a community’s retail sector.

Large cities, such as Tulsa, typically have pull factors greater than 1 because they have an abundant number of retail stores with a variety of goods to offer. Because of this, these cities typically capture the “leakage” from nearby smaller cities, which have fewer stores and often see residents leave to shop in the bigger city markets. These smaller cities, such as Sperry (population 1,206), usually have pull factors of less than 1 because the city’s retail sector is smaller and generally struggles to keep all the spending within the city limits. Not only do these cities have a smaller retail sector, but they generally do not have the diversity and abundance of products that people want in their town. The retail sector is driven by population and disposable income, and a smaller population may not be able to support the volume of sales necessary for some types of goods and services. However, it is possible for some smaller cities to have strong pull factors – if they serve as hubs for surrounding rural areas and are relatively distant from larger towns with more developed retail sectors. This report discusses how pull factors are calculated (including the websites where data is available) and constructs them for the largest city in each of Oklahoma’s 77 counties, using data from 2016.

While it is possible to calculate pull factors for counties (as opposed to cities), this publication concentrates on cities because the decision to “go shopping” is typically focused on a particular location with specific stores or amenities in mind. The city-level measures detailed here help provide a basic overview of how the largest town in each county is performing in terms of retail activity. Furthermore, the largest county in the state, Oklahoma County, does not collect a sales tax.

What is a Pull Factor?

Pull factors measure the relative strength of a city’s ability to attract retail shoppers. They are a quantitative measure of how the retail trade sector of a community is performing, put into an easily interpretable number.

Interpreting a Pull Factor

- $PF < 1$: The city is losing local retail shoppers to other areas
- $PF = 1$: The city is capturing retail shopping activity exactly equal to its population
- $PF > 1$: The city is attracting non-resident retail shoppers (in addition to its own population)

A pull factor of 1.15 would indicate that the retail sector is attracting non-resident consumers equal to 15 percent of the city’s population.

Data and Methodology

The data that goes into the city pull factor calculation includes city and state-level per capita income (PCI), population, tax rate and total retail sales collected (see box below). There are two main websites that can be used to gather this data. The population and PCI data (for both the city and the state) can be found on the United States Census website (www.census.gov). The link in the box can be used for all cities with populations greater than 5,000. For smaller cities, the information can be found with the Census' American Factfinder tool. The PCI data is taken from the American Community Survey table B19301. The PCI is on a moving average over the past five years (for example, 2012-2016). Since this is the case, it is not as accurate as an annual estimate, but typically is the best source available. The population measures for this report also are taken from the same American Community Survey (table B01003). Yearly updates are available for cities using the Census' annual population estimates. Meanwhile, the tax rate and sales tax collections can be found on the Oklahoma Tax Commission website (again, for both the individual city and the state total). Using the OK Tax Commission link in the box, users should select "View Public Reports" and then "Tax by NAICS Report" before selecting the information (tax type, city, date) of interest. Note that the Tax Commission's reports are broken out by North American Industrial Classification System (NAICS) codes, and that codes 44-45 represent the retail sector. Sales tax is collected on other sectors within a city as well, such as entertainment, recreation and food services. These are an important part of the health of a city. However, this fact sheet only focuses on the predefined retail sector (NAICS codes 44-45) and the sales that storefront businesses collect. For these specific NAICS codes, the numbers available from this system represent the retail sales taxes collected by a city. To get the total amount of retail sales in a city, the total amount of retail sales sector tax collections should be divided by the city sales tax rate (which is also available from the Tax Commission's site). The June 2016 numbers were used for this analysis, since they contain a full year of data on retail sales tax collections. A step-by-step guide for constructing a city-level Pull Factor is available in Shideler and Malone (2017).

As the formula in the box shows, all of this information is combined to calculate a "Trade Area Capture (TAC)" which is an estimate of the number of shoppers the retail area at-

tracts for a given year. A PCI ratio is used in the denominator to adjust for income levels in the city versus the state. If the city PCI is above average, it requires the numerator to be larger to keep a positive pull factor. This feeds into the idea that retail sales are a factor of population and the disposable income of the residents. Finally, the Pull Factor is calculated by dividing the TAC by the overall population of the city. The Pull Factor indicates whether the retail market attracts non-local customers (i.e. has a value > 1.0) or loses local customers (i.e. has a value < 1.0).

Pull Factors for 77 Oklahoma Cities (2016 data)

This report calculates city-level pull factors for the largest city in each Oklahoma county, using the most recent data available (2016) (Figure 1). The city population is also listed. The county containing each city displays a color corresponding to four levels of city Pull Factors, ranging from the highest (over 2.0) to the lowest (less than 1.0). Table 1 displays the relevant information for each of the 77 cities by population category.

Discussion

Since each city displayed in Figure 1 was selected because it was the largest in its county, it probably has a stronger retail sector than many surrounding, smaller towns – and likely captures shoppers from those areas. Thus, only a small portion of the cities listed have a pull factor of less than 1. Most of the cities with pull factors less than 1 are found in the western half of the state, with quite a few in the southwestern quadrant. Many of these towns have less than 3,000 people and are within driving distance of larger cities [Cheyenne (Elk City), Mangum (Altus), Walters (Lawton) and Cordell (Weatherford)]. In the southeast quadrant, the largest cities in most counties have relatively strong pull factors (> 2). This may be because they are further away from larger cities (or with less direct routes to alternative shopping locations), and have developed retail sectors that cater to the needs of local residents and those living in the nearby towns. These southeastern towns also are generally larger in population (none are smaller than 1,000) compared to the southwestern cities noted above.

The Pull Factor Formula (and online data sources)

Pull factors are based on a measure of "Trade Area Capture" (TAC) which estimates the total number of shoppers an area attracts. The TAC is then divided by the city's population to get the Pull Factor.

$$\text{Calculated TAC} = \frac{RS}{\left[\frac{RS_{\text{State}}}{P_{\text{State}}} \right] \times \left[\frac{PCI}{PCI_{\text{State}}} \right]}$$

$$\text{Pull Factor} = \frac{\text{Trade Area Capture}}{\text{Population}}$$

Variable included:

RS: Retail Sales Tax Collections (city level)
 RS_{State}: Retail Sales Tax Collections (state level)

Available from:

OK Tax Commission Public Reports:
<https://oktap.tax.ok.gov/OkTAP/Web/#1>

P: Population (city level)
 P_{State}: Population (state level)
 PCI: Per Capita Income (city level)
 PCI_{State}: Per Capita Income (state level)

Census Quickfacts Website:
<https://www.census.gov/quickfacts/fact/table/US/PST045217>

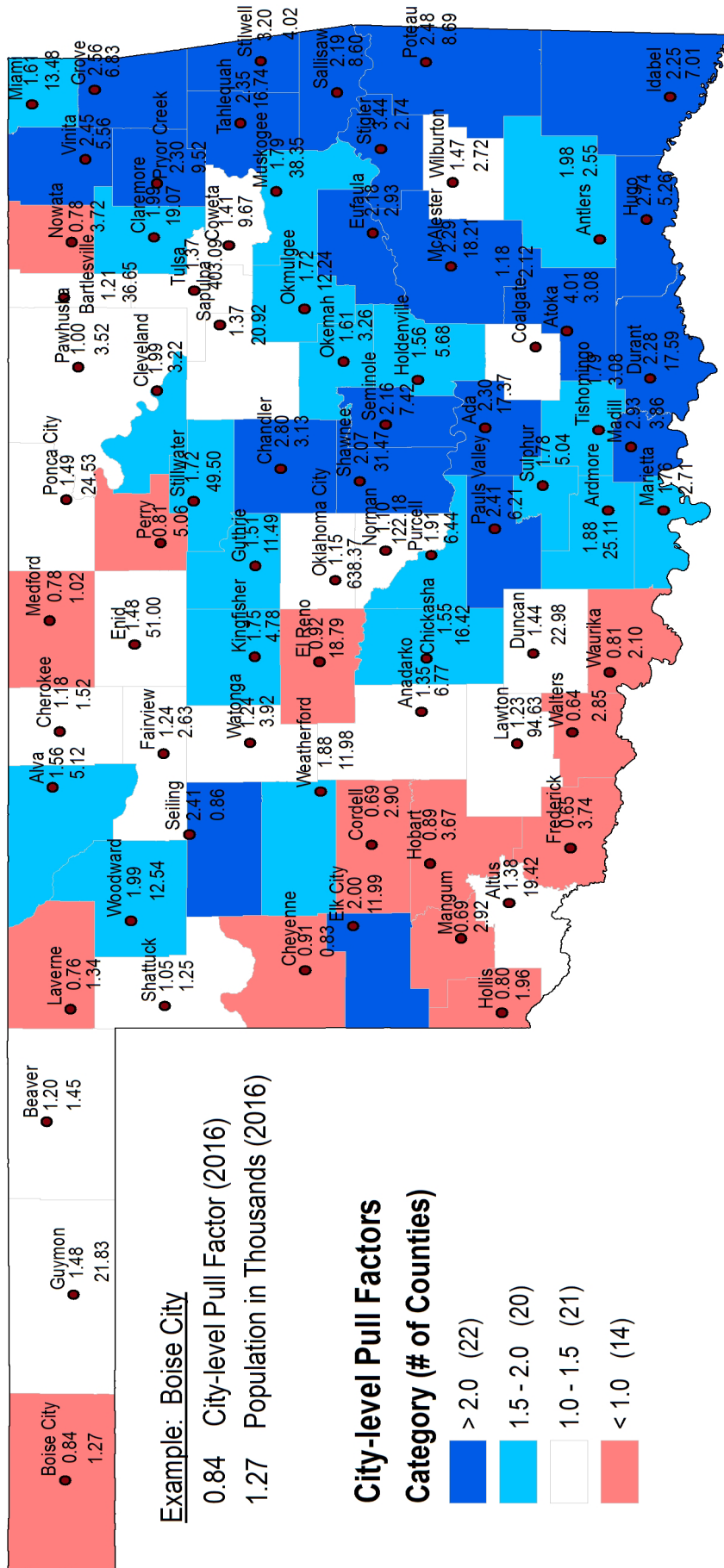


Figure 1. City-level Pull Factors for the Largest Town in each Oklahoma County (2016).

The three largest cities in the state have pull factors only slightly larger than 1 (Oklahoma City, 1.15; Tulsa, 1.37; Norman, 1.10). This still reflects they are able to attract non-locals to shop there – and in some ways masks how popular their retail sectors actually are. In Oklahoma City, for instance, the pull factor of 1.15 indicates that the local retail sector is not only capturing the expected shopping of the 638,000 residents, but also 95,000 non-residents ($638,000 \times 0.15$). That is a sizeable portion of the surrounding counties! Similarly, Tulsa's pull factor of 1.37 suggests that it is capturing an additional 149,000 shoppers on top of its 403,000 population ($403,000 \times 0.37 = 149,000$). Thus, they are likely capturing many shoppers from neighboring cities like Bixby and Owasso, as well as shoppers from Creek, Rogers and Wagoner counties.

Table 1 demonstrates that pull factors can vary widely across cities with similar populations. For instance, Seiling and Cheyenne both have around 850 people, but Seiling's pull factor is over twice that of Cheyenne. This may be due to Seiling capturing sales to small nearby communities like Taloga (population 303) and several unincorporated areas (Chester, Orion, Bado). Alternatively, Cheyenne does not have as many surrounding rural towns that might support their retail sector. In the same manner, Perry and Sulphur are both around 5,000 in population, but the pull factor for Perry (which is within driving distance of Stillwater) is less than half that of Sulphur's. This is true in larger towns as well: Claremore (population 19,069) has a pull factor of 2.00, while El Reno (population 18,786) has a pull factor of only 0.92 – likely due to El Reno's proximity to the OKC metropolitan area. These differences are largely dependent upon the types of amenities available in or near the communities. For example, Sulphur is located just outside of the Chickasaw National Forest, is 3 miles from the Chickasaw Cultural Center, and is home to the Chickasaw Nation's Artesian Hotel, Casino and ARTesian Gallery and Studios. Similarly, Claremore is home to Rogers State College and the Claremore Expo Center, both of which bring numerous visitors to town for special events.

Conclusion

While the pull factor is an easy way for communities to measure the retail trade in their communities, it does have

some limitations. First, it can leave communities wanting in terms of policy prescriptions; that is to say, how does someone increase the pull factor in their community? While the answer is to increase retail sales, it is difficult to determine how to go about doing that without an influx of population, income or new attraction in town. Shopping patterns and trends also are determined by other factors, such as commuting patterns to employment centers and life stages, which many communities also feel to be beyond their control. Second, retail leakage does not automatically equate to a business opportunity; there may be insufficient demand in a community (either due to lack of population or preferences), such that it makes sense for residents to purchase goods and services elsewhere. It is recommended, then, that the community using pull factors also conduct additional analysis, such as population thresholds or gap analysis (which uses pull factor analysis for each individual sector rather than all retail (Shideler and Malone, 2017)). Such analysis provides a better sense of which sectors might actually present opportunities for a viable business.

References

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Table 1. City-level Pull Factors, by Population.

FIPS Code	County	City	PCI (2016)	Population (July, 2016)	Tax Rate	Retail Sales (\$)(2016)	Trade Area Capture	Pull Factor
Population <1,999								
40129	Roger Mills	Cheyenne	22,010	833	0.03	4,552,322	759	0.91
40043	Dewey	Seiling	22,677	863	0.04	12,840,747	2,077	2.41
40053	Grant	Medford	26,562	1,015	0.04	5,739,888	793	0.78
40045	Ellis	Shattuck	27,667	1,246	0.03	9,870,995	1,309	1.05
40025	Cimarron	Boise City	26,458	1,266	0.03	7,661,028	1,062	0.84
40059	Harper	Laverne	24,605	1,344	0.0225	6,863,564	1,023	0.76
40007	Beaver	Beaver City	19,897	1,454	0.03	9,471,060	1,746	1.20
40003	Alfalfa	Cherokee	25,505	1,516	0.0325	12,425,634	1,787	1.18
40057	Harmon	Hollis	19,625	1,962	0.02	8,415,047	1,573	0.80
2,000 - 2,999								
40067	Jefferson	Waurika	20,470	2,097	0.03	9,454,614	1,695	0.81
40029	Coal	Coalgate	18,055	2,120	0.03	12,262,806	2,492	1.18
40127	Pushmataha	Antlers	16,999	2,548	0.035	23,378,195	5,046	1.98
40093	Major	Fairview	24,790	2,636	0.04	22,152,435	3,279	1.24
40085	Love	Marietta	16,857	2,710	0.02	21,903,233	4,767	1.76
40077	Latimer	Wilburton	18,463	2,717	0.035	20,131,265	4,000	1.47
40061	Haskell	Stigler	17,553	2,740	0.03	45,043,136	9,415	3.44
40033	Cotton	Walters	19,101	2,854	0.03	9,467,434	1,818	0.64
40149	Washita	Cordell	26,800	2,900	0.03	14,720,9912	2,015	0.69
40055	Greer	Mangum	20,709	2,922	0.03	11,298,260	2,0012	0.69
40091	McIntosh	Eufaula	18,549	2,929	0.035	32,210,129	6,371	2.18
3,000 - 4,999								
40005	Atoka	Atoka	15,365	3,076	0.03	51,682,810	12,341	4.01
40069	Johnston	Tishomingo	15,287	3,077	0.03	22,943,876	5,507	1.79
40081	Lincoln	Chandler	20,676	3,133	0.04	49,390,420	8,764	2.80
40117	Pawnee	Cleveland	22,541	3,221	0.035	39,329,852	6,402	1.99
40107	Okfuskee	Okemah	14,180	3,262	0.035	20,337,678	5,262	1.61
40113	Osage	Pawhuska	17,276	3,521	0.03	16,661,246	3,538	1.00
40075	Kiowa	Hobart	23,043	3,666	0.04	20,441,223	3,255	0.89
40105	Nowata	Nowata	17,106	3,717	0.03	13,530,187	2,902	0.78
40141	Tillman	Frederick	17,120	3,744	0.035	11,292,266	2,420	0.65
40095	Marshall	Madill	19,047	3,864	0.03	58,849,952	11,336	2.93
40011	Blaine	Watonga	16,004	3,921	0.05	21,160,565	4,851	1.24
40001	Adair	Stilwell	12,584	4,019	0.0325	44,126,238	12,865	3.20
40073	Kingfisher	Kingfisher	25,983	4,784	0.035	59,196,058	8,359	1.75

Table 1. City-level Pull Factors, by Population (cont'd).

FIPS Code	County	City	PCI (2016)	Population (July, 2016)	Tax Rate	Retail Sales (\$)(2016)	Trade Area Capture	Pull Factor
5,000 - 6,999								
40099	Murray	Sulphur	22,531	5,042	0.03	55,131,185	8,977	1.78
40103	Noble	Perry	25,214	5,056	0.0325	28,144,719	4,095	0.81
40151	Woods	Alva	27,376	5,120	0.0425	59,528,416	7,978	1.56
40023	Choctaw	Hugo	15,699	5,257	0.035	61,661,408	14,410	2.74
40035	Craig	Vinita	18,155	5,563	0.03	67,346,490	13,610	2.45
40063	Hughes	Holdenville	12,643	5,680	0.05	30,577,984	8,873	1.56
40049	Garvin	Pauls Valley	20,120	6,206	0.045	82,049,301	14,962	2.41
40087	McClain	Purcell	22,185	6,442	0.04	74,556,839	12,330	1.91
40015	Caddo	Anadarko	19,179	6,768	0.035	47,867,468	9,157	1.35
40041	Delaware	Grove	28,073	6,835	0.034	133,720,790	17,476	2.56
7,000 - 9,999								
40089	McCurtain	Idabel	17,293	7,007	0.03	74,294,802	15,762	2.25
40133	Seminole	Seminole	17,771	7,424	0.04	77,646,101	16,030	2.16
40135	Sequoyah	Sallisaw	17,731	8,602	0.04	91,128,695	18,856	2.19
40079	Leflore	Poteau	20,126	8,687	0.03	117,943,743	21,501	2.48
40097	Mayes	Pryor Creek	20,975	9,520	0.0375	125,180,744	21,896	2.30
40145	Wagoner	Coweta	20,966	9,673	0.03	77,748,063	13,605	1.41
10,000 - 16,999								
40083	Logan	Guthrie	19,250	11,492	0.03	90,787,037	17,303	1.51
40139	Texas	Guymon	21,832	11,703	0.04	103,172,218	17,338	1.48
40039	Custer	Weatherford	22,041	11,978	0.04	135,140,871	22,495	1.88
40009	Beckham	Elk City	25,292	11,997	0.045	165,428,851	23,997	2.00
40111	Oklmulgee	Oklmulgee	16,816	12,239	0.04	96,322,767	21,016	1.72
40153	Woodward	Woodward	25,827	12,543	0.04	175,968,867	24,997	1.99
40115	Ottawa	Miami	17,877	13,484	0.0365	105,807,456	21,715	1.61
40051	Grady	Chickasha	22,881	16,423	0.03969	158,578,059	25,427	1.55
40021	Cherokee	Tahlequah	18,336	16,741	0.0325	196,212,569	39,261	2.35
17,000 - 29,999								
40123	Pontotoc	Ada	21,263	17,371	0.04	231,781,537	39,993	2.30
40013	Bryan	Durant	18,130	17,583	0.04375	198,193,428	40,107	2.28
40121	Pittsburg	McAlester	21,166	18,206	0.035	240,036,158	41,608	2.29
40017	Canadian	El Reno	21,145	18,786	0.04	99,833,854	17,322	0.92
40131	Rogers	Claremore	22,406	19,069	0.03	232,404,493	38,055	2.00
40065	Jackson	Altus	21,845	19,422	0.0375	159,132,792	26,726	1.38
40037	Creek	Sapulpa	22,018	20,928	0.04	171,711,166	28,612	1.37
40137	Stephens	Duncan	23,051	22,985	0.035	208,347,323	33,161	1.44
40071	Kay	Ponca City	22,909	24,527	0.035	229,714,509	36,789	1.50
40019	Carter	Ardmore	25,217	25,107	0.0375	324,695,154	47,241	1.88

Table 1. City-level Pull Factors, by Population (cont'd).

FIPS Code	County	City	PCI (2016)	Population (July, 2016)	Tax Rate	Retail Sales (\$ (2016))	Trade Area Capture	Pull Factor
30,000 - 99,999								
40125	Pottawatomie	Shawnee	20,823	31,465	0.03	369,730,880	65,144	2.07
40147	Washington	Bartlesville	29,204	36,647	0.03	352,914,623	44,336	1.21
40101	Muskogee	Muskogee	19,695	38,352	0.04	369,195,603	68,776	1.79
40119	Payne	Stillwater	20,719	49,504	0.035	480,511,471	85,088	1.72
40047	Garfield	Enid	24,095	51,004	0.035	494,903,434	75,358	1.48
40131	Comanche	Lawton	21,892	94,653	0.04125	694,637,079	116,414	1.23
100,000+								
40027	Cleveland	Norman	28,466	122,180	0.04	1,046,761,4712	134,913	1.10
40143	Tulsa	Tulsa	28,104	403,090	0.031	4,240,207,309	553,545	1.37
40109	Oklahoma	Oklahoma City	27,370	638,367	0.03875	5,453,492,574	731,028	1.15
OK STATE TOTAL			25,628	3,923,561	0.045	27,406,979,825		

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