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Sales Capture Patterns among Nebraska Counties

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Introduction

Sales capture, the share of local spending power that is captured by area businesses, is an important measure of economic activity. Greater sales capture, which is typically measured using data on local taxable sales, creates multiple benefits for the economy.

1. **EMPLOYMENT:** Greater sales capture means more employment in retailers, wholesalers, restaurants, hotels, and other businesses subject to sales tax.
2. **TAX REVENUE:** Taxable sales are an important part of the tax base of many city governments.
3. **QUALITY OF LIFE:** Retail and hospitality (restaurants, lodging, amusement, and recreation) businesses account for a significant share of taxable sales. These industries are also crucial to the quality of life. Communities with more hospitality and retail options are more enjoyable places to live, and may be better able to attract or retain the population.

This report uses county-level taxable sales data from the Nebraska Department of Revenue to calculate sales capture, using a measure called a "pull factor." The value of the pull factor is found by dividing county per capita taxable sales by the state average per capita taxable sales. The state average represents the expected taxable sales in a county, given its population.

The Taxable Sales Measure

This report utilizes 2019 data. This is the most recent data available for a year that was not impacted by the Covid-19 pandemic. Data for 2019 also more fully captures online retailing. Specifically, the taxation of online retailing changed significantly in Nebraska during 2017 and 2018.

Prior to those changes, online retailers were not required to collect Nebraska sales tax if they did not have a physical presence in Nebraska. By June 2018, however, most online retailers were required to collect sales tax for purchases occurring in the state of Nebraska. A final reason to use data for a recent year like 2019 is the rapid growth in online shopping.

Taxable sales data from the Nebraska Department of Revenue also provide an appropriate measure of sales. A significant share of taxable sales in Nebraska occurs in industries such as retail stores, restaurants, hotels, and leisure and hospitality industries. These industries primarily reflect the spending patterns of household consumers, and as a result reflect the quality of life. At the same time, the sales of intermediate manufactured goods are excluded from taxable sales in Nebraska. This is appropriate for the current analysis. Manufacturing activity is an important component of the local economy but is not a focus for sales capture analysis.

Pull Factor Formula

As stated above, the pull factor value is found by dividing the local (county) per capita taxable sales by the state average per capita taxable sales. This calculation yields a number that exceeds 0. A pull factor value of 1 indicates that the county has the same per capita taxable sales as the state. A value of less than 1 indicates that the county captures less taxable sales than is expected, given its population. A value of more than 1 indicates that the county captures more taxable sales than expected given its population. Most values are close to 1 but some counties have much higher or much lower values. In 2019, the lowest pull factor value was 0.11, and the highest value was 1.59. For context, this result means that the county with the lowest pull factor had just 11% of statewide per capita taxable sales.

Pull Factor by Population

Figure 1 shows the average pull factor for counties grouped by population size. As is evident, more populated counties tend to have a higher pull factor. This is because the larger areas tend to have more shopping centers. In addition, certain forms of retail and services cannot be implemented without a large enough local market. The term sales capture comes into play, as people from smaller counties will come from their counties to the larger counties to do their spending, meaning the smaller counties will lose out on taxable sales to the larger counties.

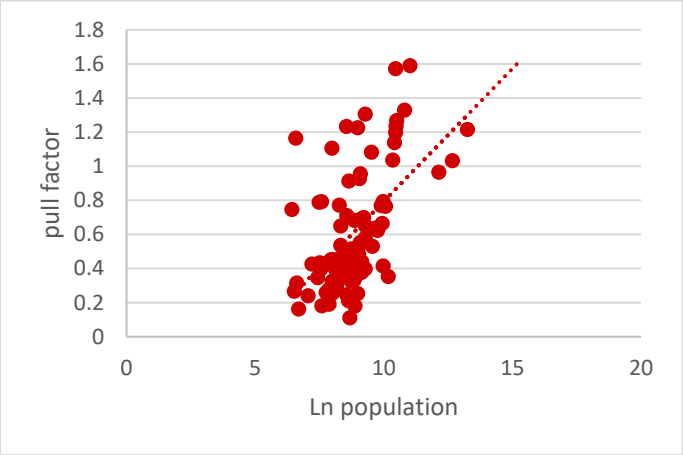
Figure 1 **Average Pull Factor by Population Range**

County Population	Average pull Factor
100,000+	1.070
20,000-99,999	1.008
10,000-19,999	0.722
5,000-9,999	0.516
2,500-4,999	0.461
1000-2,499	0.429
500-999	0.530

Source: US Census, Nebraska Department of Revenue

Figure 2 shows pull factor values for each individual county as a function of the natural log of the population. The natural log of population measure makes it easier to see the relationship between the two variables. Pull factors rise as the natural log of population rises. The correlation is 0.547. A correlation of 1.0 would indicate a perfect positive correlation, or that all data points fall perfectly on the line of best fit. Some other factors are influencing pull factor values in Nebraska counties.

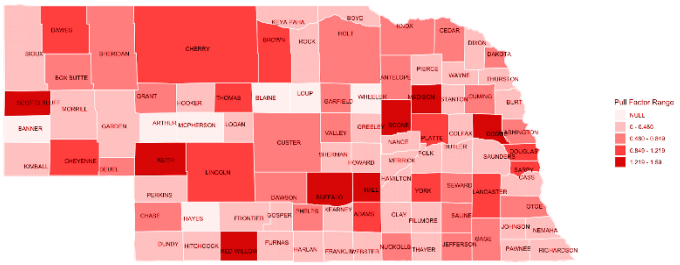
Figure 2 **County Pull Factors Values by Population**



Source: US Census, Nebraska Department of Revenue

Figure 3 shows a map of pull factor values for all Nebraska counties. Darker colors represent higher pull factors. Note that the counties with high pull factors are not clustered together. Rather, they are surrounded by counties with lower pull factors. Specific county values for pull factors and populations are listed in figure 5.

Figure 3 **Major US regions PSTS Share of Employment**



This pattern makes sense, given trade leakage. Counties have higher pull factors because people are coming from neighboring counties to spend their money. Leading regional counties which are "trade centers" have pull factor values above 1 while many or all neighboring counties have pull factor values below 1.

In summary, there are two major reasons for counties to have a larger pull factor value: 1) the counties have a larger population, and 2) their population is larger than neighboring counties. Both relative and absolute population matter in sales capture.

Figure 4 shows the results of a regression run on pull factors and the natural log of the population, and whether or not a county is a trade center. A trade center is defined as a county that has a larger population than adjacent counties. Regressions analysis provides a way to consider the influence of population and trade enter status simultaneously.

Figure 4 **Regression Results**

Variables	Coefficient	Standard Error	T-Statistic	P-Value
Intercept	-0.393	0.236	-1.665	0.0996
Ln(pop)	0.108	0.027	4.010	0.0001
Trade Center	0.387	0.101	3.834	0.0002

The natural log of the population has a coefficient of 0.108, and trade center status has a coefficient of 0.387. Both coefficients also were found to be statistically significant, given P-values smaller than .05. In other words, it is highly unlikely that the positive coefficient values arose by chance, rather there is a positive relationship. Nebraska counties with a larger population, and that are a trade center, do tend to have higher pull factor values. Both absolute and relative population contribute to greater sales capture.

How much greater? The coefficient value for the natural log of population indicates that a county with 100 percent more population would be expected to have a pull factor that is 0.108 larger. The coefficient value for the trade center variable indicates that a county which is a trade center would be expected to have a pull factor that is 0.387 higher than a similar county (i.e., same population) that is not a trade center.

Figure 5 **Counties by Population Including Pull Factor**

	Population	Pull Factor
Douglas County	571,327	1.21457289
Lancaster County	319,090	1.03115387
Sarpy County	187,196	0.9641047
Hall County	61,353	1.58894739
Buffalo County	49,659	1.32763758
Dodge County	36,565	1.26669865
Scotts Bluff County	35,618	1.23370055
Madison County	35,099	1.57091522
Lincoln County	34,914	1.19773083
Platte County	33,470	1.13777784
Adams County	31,363	1.03492261
Cass County	26,248	0.3517763
Dawson County	23,595	0.76413347
Saunders County	21,578	0.41399021
Gage County	21,513	0.79205531
Washington County	20,729	0.66368434
Dakota County	20,026	0.76784083
Seward County	17,284	0.62207579
Otoe County	16,012	0.63664936
Saline County	14,224	0.52915637
York County	13,679	1.08160681
Box Butte County	10,783	0.57814431
Custer County	10,777	0.64956247
Red Willow County	10,724	1.30449592
Colfax County	10,709	0.39698224
Holt County	10,067	0.69864957
Wayne County	9,385	0.44073932
Hamilton County	9,324	0.37614689
Phelps County	9,034	0.68842424
Cheyenne County	8,910	0.95479906
Cuming County	8,846	0.55219008
Dawes County	8,589	0.92595634
Cedar County	8,402	0.53519403
Knox County	8,332	0.48414351
Keith County	8,034	1.22449747
Butler County	8,016	0.25273597
Richardson County	7,865	0.3689911
Merrick County	7,755	0.36059395
Thurston County	7,224	0.17936542
Pierce County	7,148	0.36994328
Jefferson County	7,046	0.68190046
Nemaha County	6,972	0.33200729
Kearney County	6,495	0.39019284
Burt County	6,459	0.39473331
Howard County	6,445	0.41526205
Antelope County	6,298	0.51459396
Clay County	6,203	0.32495911
Stanton County	5,920	0.11044519
Cherry County	5,689	0.91271114
Dixon County	5,636	0.21033223
Fillmore County	5,462	0.4734281
Sheridan County	5,246	0.70923291
Polk County	5,213	0.24480394
Boone County	5,192	1.23215719
Johnson County	5,071	0.41430139
Thayer County	5,003	0.40448847
Furnas County	4,676	0.35327761
Morrill County	4,642	0.43096684
Valley County	4,158	0.64865425
Nuckolls County	4,148	0.53537994
Chase County	3,924	0.77025738
Kimball County	3,632	0.4528812
Nance County	3,519	0.29574239
Webster County	3,487	0.44400768
Harlan County	3,380	0.39482889
Sherman County	3,001	0.25395763
Franklin County	2,979	0.32442341
Brown County	2,955	1.10484783
Perkins County	2,891	0.45111071
Hitchcock County	2,762	0.44604513
Frontier County	2,627	0.1898699
Pawnee County	2,613	0.27655042
Greeley County	2,356	0.25818427
Gosper County	1,990	0.18003254
Garfield County	1,969	0.79110926
Boyd County	1,919	0.3974739
Garden County	1,837	0.43322894
Deuel County	1,794	0.78732217
Dundy County	1,693	0.34581316
Rock County	1,357	0.42531773
Sioux County	1,166	0.23934099
Keya Paha County	806	0.16130125
Logan County	748	0.31482609
Thomas County	722	1.16356142
Hooker County	682	0.26621872
Grant County	623	0.74550508