The 2024 Florida Price Level Index

January 24, 2025
Jim Dewey
Director of Economic Analysis
Florida Polytechnic University

The Florida Price Level Index (FPLI) is the basis for adjusting for labor cost differences in the Florida Education Finance Program (FEFP). It is a fixed weight price level index for labor procured by Florida's school districts. It is implemented using a comparable wage index methodology. The calculation is based on data for hundreds of occupations across Florida's 67 counties collected through the U.S. Bureau of Labor Statistics' Occupational Employment and Wage Statistics survey (OEWS). Table 1 presents the 2024 FPLI, along with the 2023 and 2022 indices.[1]

Table 1: The 2024 Florida Price Level Index

County	2024	2023	2022	County	2024	2023	2022
Alachua	96.79	97.51	97.79	Lake	96.60	96.29	95.40
Baker	92.60	93.19	92.91	Lee	100.38	100.83	100.82
Bay	95.73	97.00	97.13	Leon	91.05	94.08	95.83
Bradford	93.15	92.79	91.84	Levy	92.01	91.90	90.57
Brevard	99.74	99.85	99.90	Liberty	92.24	91.61	90.85
Broward	102.87	103.07	103.38	Madison	90.55	90.40	88.97
Calhoun	89.59	89.67	88.58	Manatee	100.04	100.04	99.46
Charlotte	96.79	96.28	96.06	Marion	93.04	93.01	92.96
Citrus	91.52	91.29	91.69	Martin	99.04	100.06	100.64
Clay	96.83	96.59	96.27	Monroe	102.55	103.42	104.07
Collier	105.54	105.69	105.81	Nassau	98.82	98.63	98.11
Columbia	94.51	93.92	92.64	Okaloosa	100.15	100.26	99.75
Dade	104.80	103.42	102.56	Okeechobee	93.86	93.43	92.30
De Soto	94.04	93.14	91.76	Orange	101.04	101.10	101.25
Dixie	91.94	90.91	89.35	Osceola	97.59	97.75	97.83
Duval	101.00	101.12	101.23	Palm Beach	103.80	104.17	105.35
Escambia	96.25	96.94	97.64	Pasco	97.79	97.73	97.56
Flagler	93.81	93.37	93.32	Pinellas	100.13	100.22	100.59
Franklin	91.52	92.55	91.03	Polk	96.35	97.01	97.06
Gadsden	91.02	92.22	91.25	Putnam	94.50	92.82	92.01
Gilchrist	92.28	91.91	91.22	Saint Johns	99.16	99.07	99.25
Glades	94.92	92.34	91.65	Saint Lucie	97.86	98.03	97.09
Gulf	93.98	93.14	92.36	Santa Rosa	94.53	95.55	95.20
Hamilton	94.94	91.20	90.37	Sarasota	101.43	101.70	101.68
Hardee	93.91	92.46	91.28	Seminole	99.63	99.34	99.02
Hendry	95.15	93.83	93.25	Sumter	96.38	96.87	96.96
Hernando	96.14	95.78	93.99	Suwannee	91.84	91.55	90.29
Highlands	90.05	90.02	89.81	Taylor	93.44	91.99	90.69
Hillsborough	101.79	101.59	101.60	Union	92.50	90.84	89.95
Holmes	90.69	89.56	87.87	Volusia	93.02	93.77	94.26
Indian River	98.79	99.71	99.73	Wakulla	93.17	92.87	92.79
Jackson	92.40	92.42	91.11	Walton	98.35	98.47	98.08
Jefferson	91.84	90.52	89.39	Washington	91.65	91.50	90.40
Lafayette	91.47	90.48	88.83				

[1] This report is available at http://www.fldoe.org/fefp/.

The Distribution of the FPLI

The FPLI is constructed so that the population-weighted state average is 100, though this does not impact the relative comparison between any two counties. The median Floridian, ranked by 2024 county FPLI, lives in Duval County, with an index value of 101. That is, less than half of Floridians live in counties with index values greater than 101, less than half live in counties with index values less than 101, and the rest live in Duval County.

Figure 1 displays the distribution of the FPLI across Florida. As population density increases, workers face higher housing costs, longer commute times, or both. This reduces the supply of labor, thereby increasing wages. Thus, though many things affect FPLI values, counties that are more populous tend to have higher values. Rounding to the nearest percent, five counties with values of 102 or more contain 30% of Florida's population, fifteen counties with values from 98 to 101.99 contain 40%, nineteen counties with values from 94 to 97.99 contain 20%, and twenty-eight counties with values below 94 contain 10%.

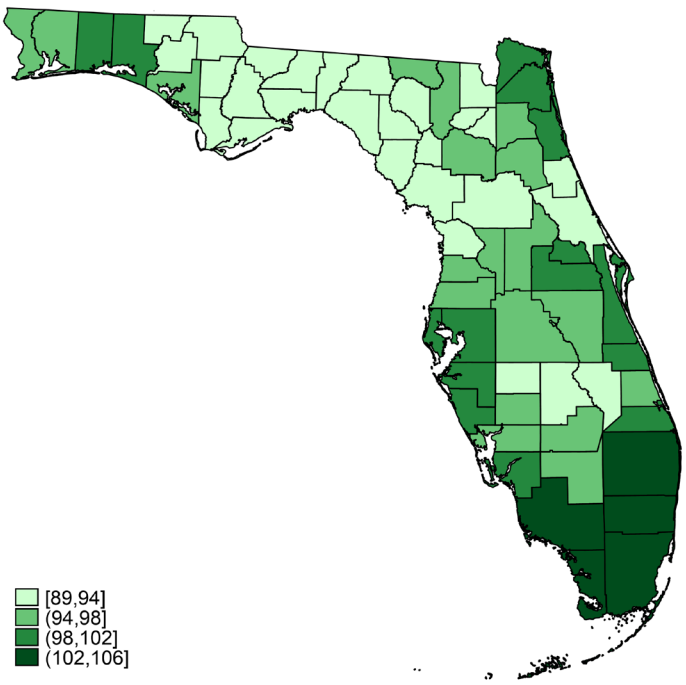
What the FPLI Measures

To see more precisely what the FPLI represents, imagine there are only two districts, A and B, with equal size classes. Each employs one aide for every two teachers and no other workers. In A teachers cost $50,000 and aides cost $30,000. In B teachers cost $70,000 and aides cost $50,000. The average cost of a teacher is $60,000 and the average cost of an aide is $40,000. Thus, a classroom requires one teacher and half of one aide and the associated state average labor cost for a classroom is $80,000.

Rounding to tens of thousands of dollars, the teacher share of the state labor bill is thus 6/(6+4/2)=3/4 and the aide share is 1/4. The wage relative to the state average in A is 5/6 for teachers and 3/4 for aides. The relative cost of labor in A is (3/4)(5/6)+(1/4)(3/4)=0.8125 and in B it is (3/4)(7/6)+(1/4)(5/4)=1.1875. If the world were this simple, the FPLI would be 81.25 in A and 118.75 in B.

This example illustrates the construct the FPLI represents—a fixed weight price level index for labor procured by Florida's school districts. However, in practice we cannot use school wage data in the calculation. Why? Districts may reach different decisions regarding qualifications or pay structure. Such differences impact labor expenditures but do not reflect cost conditions. As a result, a district that decided to pay higher wages than required to hire a standard teacher would receive higher FEFP funding, creating an incentive to inflate costs. Instead, a comparable wage index that does not depend on district decisions is used.

Figure 1



The Comparable Wage Approach[2]

The idea behind a comparable wage index is to select occupations that are comparable to school jobs and use wages in those occupations as the basis for measuring relative personnel costs. In what way must they be comparable? The example above makes this clear—in the geographic pattern of relative wages.

What determines whether relative wage patterns are similar? One crucial factor is the state average income for an occupation. Though a worker's actual income depends on where they take a job, their potential income, represented by the state average for their occupation, influences the way the supply of labor in that occupation to a location varies with housing costs and perceived amenities.

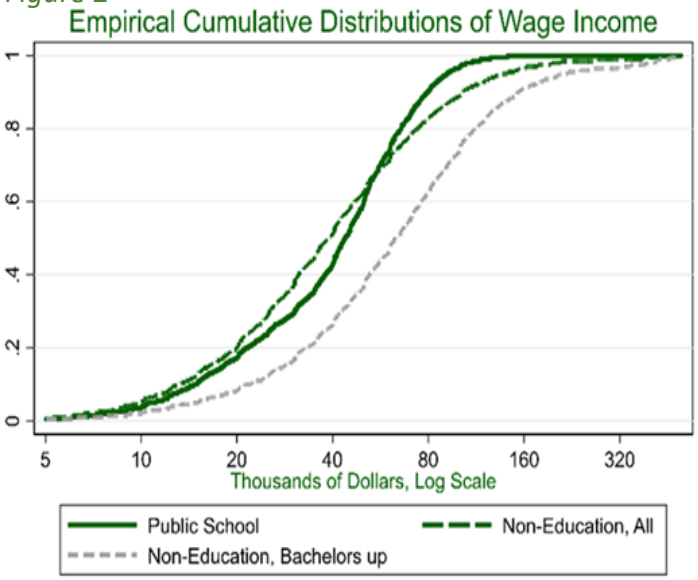
The FPLI relies on data from the OEWS survey, which is based on a massive employer sample. The calculation uses all occupations. This is because the distribution of wages for all occupations is similar to the distribution for school workers, as shown in Figure 2. Insofar as the relative wage pattern of school workers depends on income, it should resemble the pattern for all workers.

One might argue that the subset of workers with bachelor's degrees is more suitable, since teachers must hold one. Using data from the American Community Survey (ACS) instead of the OEWS would allow selecting that subset. This, however, misses two crucial points. First, 17% of the public-school labor bill is paid to workers without bach-

[2] For additional methodological details, see Jim Dewey (2022) *Florida Price Level Index Methodology—Revised January 2022*, available at https://www.researchgate.net/publication/358007872.

elor's degrees. Second, public-school workers with a degree earn less than the average worker with a degree. As Figure 2 shows, the wage distribution for workers with bachelor's degrees is shifted well to the right of the distribution for public school workers.

Figure 2



Using the ACS data would also allow controlling for many individual worker characteristics, potentially improving precision. However, the ACS data represents far fewer workers than the OEWS data. Further analysis suggests the gain in precision from using the larger OEWS sample outweighs the gain from controlling for other worker characteristics using ACS data. Moreover, in many counties there is too little ACS data to calculate an index.[3]

The FPLI accounts for another factor that systematically shapes occupational relative wage patterns—employment density at each occupation's typical employment location. Workers in jobs in relatively high-density locations within an area, such as Budget Analysts, face more variation in housing costs between areas than workers in relatively low-density locations, such as Machinists. This moderates the impact of between area differences in housing prices on the supply of workers.

Based on national ACS data, within local labor markets the density at the location of the typical school job is 12% below average. Selecting only occupations with relative employment densities comparable to school jobs would result in insufficient data. Therefore, the FPLI calculation controls statistically for the interaction of occupational relative employment density and county population.

Prior to 2003. From 1973 through 2002, the FPLI was an index of the relative cost of the market basket of goods and services purchased by typical Floridians, similar to the Consumer Price Index, albeit in a spatial context. This approach was adopted since data for a comparable wage index was unavailable. The rationale was that all else equal, wages adjust for differences in prices, particularly housing prices.

That construct was subject to numerous measurement challenges. Moreover, even if measured perfectly, the construct systematically misrepresents labor costs. Other things being equal, places that are more productive, and thus more attractive to business, will have higher wages and housing prices, while places that are more pleasant in which to live, and thus more attractive to workers, will have lower wages but higher housing prices. Estimates of relative wage and price patterns imply the market basket approach yields an index which less accurately reflects labor costs than would making no adjustment at all.[4]

The FPLI Calculation[5]

Initial Estimate The first step in the FPLI calculation is to make an initial estimate of relative wage differences between counties, holding occupation constant. This means a county's index is not impacted by its share of workers in high wage occupations, but rather by having higher or lower wages within occupations.

With perfect data the calculation would proceed as above. We would start by calculating the ratio of the average wage for each occupation in each county to the occupation's state average wage. We would then average these ratios for each county using weights representing each occupation's share in the state labor bill to produce the index.

However, not every occupation is observed in every county, so this method is infeasible. Therefore, the relative wage ratio is estimated using a linear regression model relating the natural log of the average wage in a specific county and occupation to county and occupation indicator variables. The natural log is used since wages are strictly positive and best thought of in relative terms.

To account for the impact of relative occupational density, we obtain data on worker location within labor markets from the ACS.[6] We use this data to estimate the relative average employment density for each occupation. That is, imagine asking each worker in a city how many workers there are per square mile near their workplace, averaging those answers for each occupation in the city, taking the ratio of that average to the city average, and then averaging

[3] For more information, see Jim Dewey, (2019) *Comparing the Florida Price Level Index and the Comparable Wage Index for Teachers*, available at https://www.researchgate.net/publication/337716504.

[4] Jim Dewey, (2005) *Improvements to the 2003 Florida Price Level Index*, available at https://www.researchgate.net/publication/338390730.

[5] The data and Stata code for FPLI calculations from the 2006 FPLI on are available at https://drive.google.com/drive/folders/146wFMB5jdaHlFuS40Wcz3peFHGUlCIqn?usp=sharing.

[6] Steven Ruggles, Sarah Flood, Matthew Sobek, Daniel Backman, Annie Chen, Grace Cooper, Stephanie Richards, Renae Rodgers, and Megan Schouweiler. *IPUMS USA: Version 15.0 American Community Survey 2022 5-Year Sample. Minneapolis*, MN: IPUMS, 2024. https://doi.org/10.18128/D010.V15.0 Accessed 1-16-2025. The ACS survey is conducted by the U.S. Census Bureau.

these ratios across cities for each occupation. This represents the construct behind the measure used. The interaction of relative occupational density with population is included in the regression to control for the effects of differences in relative occupational density on effective housing cost differentials and thereby on relative wage patterns.

Columns 3 and 4 of Table 2 provide the initial log index estimate and its standard error. An increase of 0.01 in a county's log index represents approximately a 1% increase in the relative wage.[7]

Smoothing. Prior to adoption of the current methodology, otherwise similar counties sometimes had very different FPLI values though the estimates' margins of error were large, meaning there was little evidence that the difference was real. Similarly, the law of one price implies wages in nearby counties cannot sustainably differ more than the cost of commuting between them. If the wage difference is larger, workers have an incentive to commute from the low wage county to the high wage county, increasing the supply of workers in the latter and reducing it in the former, reducing the wage difference. However, in some cases the difference between FPLI values in neighboring counties was large enough to cast doubt on their plausibility. To improve accuracy, the index is smoothed to address both statistical similarity and geographic proximity between counties.

The smoothing process minimizes the population weighted sum of squared differences between the final smoothed index and both the initial index and the index value expected in statistically similar counties. The differences are expressed relative to the indices' standard errors, accounting for the precision of the estimates. Minimization is subject to the constraint that the difference between every pair of counties is no greater than the cost of commuting between them. The resulting index is a geographically constrained minimum mean square error estimate.

Predicted Index. Estimating the relationship between the initial index estimate and other county characteristics using least squares regression is a preliminary step in smoothing. This relationship is used to determine index values expected in statistically similar counties, referred to as the predicted index. For the 2024 FPLI the county characteristics used were total employment, the average annual wage, the share of dividends, interest, and rents in personal income, and the population share of those under eighteen. These characteristics account statistically for 77% of the variation in the initial index. Columns 5 and 6 of Table 2 provide the predicted log index and its standard error.

Commuting Cost. Estimating the cost of commuting between county pairs is accomplished by identifying the two elementary, middle, and high schools in each county nearest two schools of the same level in each other county, provided the straight-line distance does not exceed fifty miles, and measuring the commute time and driving distance between them.[8] These are averaged to estimate incremental commute time and distance. The value of time commuting is assumed to be half the wage rate, based on guidance from the US Department of Transportation. Monetary commuting costs are estimated using fuel and maintenance cost per mile from the American Automobile Association.

When the Geographic Constraint does not Bind. Most counties are not directly impacted by the geographic constraint. In such cases the smoothed index is a weighted average of the initial and predicted indices. The weights depend on the standard errors of the indices. Consider the entries for Alachua County in columns 3-6 of Table 2. Rounding to three digits, the log index is:

$$\frac{0.006^2}{0.006^2+0.003^2}(-0.035)+\frac{0.003^2}{0.006^2+0.003^2}(-0.02)=-0.032.$$

The smoothed index is nearer the initial estimate when it is more accurate. Differences between statistically similar counties persist only if justified by the precision of the estimates.

When the Geographic Constraint Binds. When the geographic constraint binds, the smoothed index is increased in the lower wage county and decreased in the higher wage county, moving more in counties with less precisely estimated indices. Consider the entries for Collier County and Lee County in columns 3-7 of Table 2. If the geographic constraint were not binding, the log index would be 0.0605 in Collier and 0.0027 in Lee. However, Lee borders Collier and that relative wage difference is inconsistent with estimated commute costs. As a result, the estimate for Lee is raised to 0.0047 and the estimate for Collier is lowered to 0.0547.

Final Step. The final step in producing the FPLI is to express it as a relative wage index, not the log of a relative wage index. To do so, the geographically smoothed log index values are exponentiated. The exponentiated values are then divided by their population weighted average and multiplied by 100. The resulting index has a population weighted average of 100. This convention facilitates display and interpretation of results but does not affect the ratio of FPLI values between any two counties.

Consider Alachua and Baker Counties in Table 2. Exponentiating after smoothing gives $e^{-0.0317}\approx0.9688$ for Alachua and $e^{-0.0760}\approx0.9268$ for Baker. Multiplying by 100 and slightly rescaling so the population weighed state average is 100 yields the final values of 96.79 and 92.60. However, both 0.9268/0.9688 and 92.60/96.79 equal 0.9567, the estimated cost of school labor in Baker relative to Alachua.

[7] Note $e^{0.01}\approx1.01$, where $e\approx2.718$ is the base of the natural logarithm.

[8] The Florida Department of Education's Master School ID file at https://eds.fldoe.org/EDS/MasterSchoolID/ and the HERE geocoding application at https://www.here.com/ are used to do this.

Table 2: Additional Detail

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Avg. Annually	Represented	Log Initial Estimate		Log Predicted Index		Log Smoothed Index		
County	Occupations	Workers	Value	Std Err	Value	Std Err	Without Geo	With Geo	FPLI
Alachua	374	108276	-0.0348	0.0030	-0.0200	0.0058	-0.0317	-0.0317	96.79
Baker	61	3612	-0.0644	0.0086	-0.0830	0.0067	-0.0760	-0.0760	92.60
Bay	330	66787	-0.0443	0.0033	-0.0404	0.0041	-0.0428	-0.0428	95.73
Bradford	61	3255	-0.0556	0.0088	-0.0741	0.0046	-0.0701	-0.0701	93.15
Brevard	410	204548	-0.0017	0.0026	-0.0015	0.0053	-0.0017	-0.0017	99.74
Broward	489	743949	0.0296	0.0021	0.0259	0.0058	0.0291	0.0291	102.87
Calhoun	29	1198	-0.1009	0.0126	-0.1112	0.0065	-0.1091	-0.1091	89.59
Charlotte	237	43765	-0.0284	0.0039	-0.0485	0.0086	-0.0318	-0.0317	96.79
Citrus	207	27643	-0.1036	0.0043	-0.0574	0.0059	-0.0876	-0.0877	91.52
Clay	225	43371	-0.0289	0.0039	-0.0356	0.0052	-0.0313	-0.0313	96.83
Collier	347	137783	0.0630	0.0030	0.0409	0.0084	0.0605	0.0547	105.54
Columbia	171	17644	-0.0491	0.0049	-0.0612	0.0045	-0.0557	-0.0557	94.51
Dade	513	1045949	0.0484	0.0020	0.0410	0.0066	0.0477	0.0478	104.80
Desoto	74	4696	-0.0237	0.0077	-0.0750	0.0048	-0.0606	-0.0606	94.04
Dixie	28	972	-0.0846	0.0134	-0.0829	0.0056	-0.0832	-0.0832	91.94
Duval	496	492382	0.0109	0.0022	0.0100	0.0072	0.0108	0.0108	101.00
Escambia	380	121541	-0.0427	0.0029	-0.0252	0.0043	-0.0372	-0.0373	96.25
Flagler	181	20140	-0.0730	0.0047	-0.0492	0.0055	-0.0629	-0.0630	93.81
Franklin	32	1363	-0.0851	0.0122	-0.0886	0.0066	-0.0878	-0.0878	91.52
Gadsden	107	8855	-0.1171	0.0062	-0.0765	0.0052	-0.0933	-0.0932	91.02
Gilchrist	33	1142	-0.0836	0.0122	-0.0787	0.0054	-0.0795	-0.0795	92.28
Glades	23	604	-0.0421	0.0151	-0.0566	0.0114	-0.0513	-0.0513	94.92
Gulf	42	1695	-0.0560	0.0107	-0.0633	0.0069	-0.0612	-0.0612	93.98
Hamilton	18	752	-0.0644	0.0163	-0.0449	0.0111	-0.0511	-0.0511	94.94
Hardee	71	3069	-0.0333	0.0083	-0.0799	0.0065	-0.0622	-0.0620	93.91
Hendry	105	6545	-0.0451	0.0066	-0.0527	0.0066	-0.0489	-0.0488	95.15
Hernando	200	36833	-0.0243	0.0042	-0.0627	0.0055	-0.0384	-0.0385	96.14
Highlands	180	20649	-0.1211	0.0047	-0.0753	0.0061	-0.1040	-0.1039	90.05
Hillsborough	496	660405	0.0200	0.0022	0.0190	0.0073	0.0199	0.0186	101.79
Holmes	31	1215	-0.1148	0.0124	-0.0922	0.0063	-0.0969	-0.0969	90.69
Indian River	262	46283	-0.0148	0.0037	0.0014	0.0071	-0.0113	-0.0113	98.79
Jackson	112	9208	-0.0723	0.0062	-0.0819	0.0049	-0.0782	-0.0781	92.40
Jefferson	31	1090	-0.1170	0.0126	-0.0774	0.0057	-0.0842	-0.0842	91.84
Lafayette	11	378	-0.1010	0.0210	-0.0868	0.0073	-0.0883	-0.0883	91.47
Lake	306	90714	-0.0305	0.0032	-0.0432	0.0055	-0.0337	-0.0337	96.60
Lee	411	252471	0.0038	0.0026	-0.0013	0.0050	0.0027	0.0047	100.38
Leon	369	128026	-0.1083	0.0029	-0.0330	0.0058	-0.0932	-0.0929	91.05
Levy	80	4903	-0.0770	0.0074	-0.0866	0.0065	-0.0824	-0.0825	92.01
Liberty	13	454	-0.0591	0.0197	-0.0833	0.0079	-0.0800	-0.0799	92.24
Madison	46	1969	-0.0987	0.0101	-0.0983	0.0056	-0.0984	-0.0984	90.55
Manatee	370	116202	0.0080	0.0029	-0.0098	0.0037	0.0012	0.0013	100.04
Marion	330	96438	-0.0774	0.0031	-0.0484	0.0061	-0.0714	-0.0713	93.04
Martin	304	63107	-0.0119	0.0034	0.0012	0.0062	-0.0089	-0.0088	99.04
Monroe	249	36742	0.0331	0.0040	0.0043	0.0070	0.0260	0.0260	102.55
Nassau	146	17984	-0.0048	0.0051	-0.0186	0.0056	-0.0111	-0.0110	98.82
Okaloosa	341	74999	0.0047	0.0032	-0.0034	0.0051	0.0024	0.0024	100.15
Okeechobee	104	7466	-0.0462	0.0065	-0.0699	0.0044	-0.0624	-0.0625	93.86
Orange	491	781715	0.0133	0.0021	-0.0052	0.0077	0.0120	0.0112	101.04
Osceola	278	85712	-0.0250	0.0034	-0.0465	0.0064	-0.0298	-0.0236	97.59
Palm Beach	475	568516	0.0363	0.0022	0.0619	0.0078	0.0382	0.0382	103.80
Pasco	314	113581	-0.0235	0.0031	-0.0355	0.0050	-0.0269	-0.0215	97.79
Pinellas	472	407396	0.0027	0.0023	-0.0029	0.0067	0.0021	0.0022	100.13
Polk	415	221045	-0.0369	0.0026	-0.0327	0.0064	-0.0363	-0.0363	96.35
Putnam	129	10794	-0.0599	0.0057	-0.0536	0.0040	-0.0557	-0.0557	94.50
Saint Johns	290	74292	-0.0114	0.0034	0.0035	0.0058	-0.0076	-0.0076	99.16
Saint Lucie	323	71625	-0.0134	0.0032	-0.0339	0.0043	-0.0207	-0.0207	97.86
Santa Rosa	225	32799	-0.0674	0.0041	-0.0369	0.0051	-0.0554	-0.0554	94.53
Sarasota	391	160914	0.0161	0.0028	0.0099	0.0061	0.0150	0.0151	101.43
Seminole	388	183956	-0.0014	0.0027	-0.0084	0.0053	-0.0028	-0.0029	99.63
Sumter	198	29524	-0.0353	0.0043	-0.0451	0.0157	-0.0360	-0.0360	96.38
Suwannee	96	6330	-0.0945	0.0068	-0.0793	0.0048	-0.0843	-0.0843	91.84
Taylor	70	3305	-0.0589	0.0082	-0.0703	0.0053	-0.0670	-0.0670	93.44
Union	25	1226	-0.1131	0.0142	-0.0657	0.0080	-0.0771	-0.0771	92.50
Volusia	419	158435	-0.0767	0.0027	-0.0415	0.0065	-0.0715	-0.0715	93.02
Wakulla	49	2280	-0.1099	0.0097	-0.0593	0.0050	-0.0700	-0.0698	93.17
Walton	192	25751	-0.0186	0.0045	-0.0105	0.0061	-0.0158	-0.0158	98.35
Washington	58	2829	-0.0808	0.0090	-0.0881	0.0050	-0.0863	-0.0864	91.65