

Estimating 2008 Levels of Ad Valorem Assessment For 67 Florida
Counties: A Report Prepared for the Florida Department of Revenue –
Property Tax Oversight Program

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I. Introduction

As part of the Florida Department of Revenue Property Tax Oversight's 2008 Non-In-Depth and In-Depth Studies, we estimate over 180 econometric models to obtain estimates of levels of ad valorem assessment (LOA) for different property strata within each of the 67 Florida counties. This report describes how the estimated LOAs were obtained, presents the estimated LOAs, and summarizes the diagnostics for the econometric models that were estimated. Before presenting the methodology in full econometric detail, the following paragraphs contain a brief non-technical explanation of the methods used to estimate the LOAs.

The primary objective of this methodology is to construct estimates of the true market value for each property on the tax roll that are accurate as of January 1, 2008. To accomplish this, econometric models are constructed for each county, by Stratum. These simple hedonic regression models use data coming from recent property sales within the county to estimate the relationship between the selling price of the property and several important explanatory variables.¹ Explanatory variables include the just value of the property for the year of the sale (i.e., the previous year's January 1st assessment), a Fourier estimator that accounts for the role of time, and a set of physical characteristics of the property.² By using data from past sales, estimated coefficients are

¹ The Hedonic approach to modeling sale prices essentially assumes that various measurable property characteristics each contribute to final sale price in a piecewise manner. The final sale price is then simply a function of the characteristics the property possesses.

² In cases where they proved to help improve the accuracy of the model, interaction terms between monthly dummy variables and the just value variable were included. This addition to the equation allows the model to even more accurately track the property appreciation rates over time through the flexible Fourier estimators.

obtained for each of the different property characteristics included as explanatory variables.

Having obtained this set of coefficients, it is possible to construct an accurate estimate of the true market value as on January 1, 2008, for properties on the county tax roll by applying those coefficients to the vector of characteristics for each property on the roll. The estimated LOA is then obtained from creating a simple fraction- the numerator being the sum of the implied market values coming from the just values that appear on the tax roll and the denominator being the sum of the estimated true market values that come from the econometric model. The methodology also employs diagnostic tools that indicate the proper specification of the main model as well as providing an indication of the level of confidence one should place in any given estimated LOA. The following section provides a more technical outline of the methodology.

II. Methodology

The estimation of the LOAs involved a two-step process. In the final step, an econometric model is estimated for a particular property stratum within a county in order to obtain predictions of market values of properties on the tax roll. The model estimated can be expressed as:

$$SP_{i,t} = \alpha_0 + \alpha_1 JV_{i,Jan.1} + \alpha_2 X_i + \alpha_3 F(T_j) + \mu_{i,t}^3 \quad (1)$$

³ A additional set of monthly interaction terms with the JV variable can be included in cases where the diagnostics indicate the relationship between sales prices and time is changing in particularly dramatic ways. (i.e., very rapid price appreciation/depreciation) Put simply, this allows the relationship between JV and sales price to have a different estimated coefficient for each of the 12 months in the year.

where $SP_{i,t}$ = the sale price of property i in time period t

$JV_{i,Jan.1}$ = the just value of property i as of January 1 of the sale year

X_i = characteristics of property i

$F(T_j)$ = Fourier estimator

JV is included to account for non-recorded structural and locational characteristics of the property that affect its sale price. X is limited to those few variables found within the N.A.L. File that counties are required to send annually to PTA. These are defined in Table 1 for each property stratum. X is included in (1) because in their estimate of JV, county property appraisers may systematically overestimate or underestimate the contribution of the characteristic to market value. Better predictions of market values are therefore obtained by including X. The Fourier estimator is a method for accounting for time in the estimation of sales price models. It has a number of attractive features including 1) it saves degrees of freedom and provides an efficient estimator even for time periods with few sales, and 2) it imposes the theoretically appealing restriction that prices change smoothly over time and not abruptly as implied by the use of time period dummy variables. The Fourier expansion supplements a simple quadratic function with trigonometric terms:

$$F(T_j) \approx \gamma_1 z_j + \gamma_2 z_j^2 + \sum_{q=0}^Q (\lambda_q \sin(qz_j) + \beta_q (\cos(qz_j) - 1)), \quad (2)$$

Where $z_j = 2 \pi T_j / \max(T)$. In the models used to estimate LOAs, T_j equals 1 for the first sale month and $\max(T)$ equals the number of months of sales price observations included in the sample. For example, if sales data for the years 2003 through 2007 are

used to estimate (1), then for January, 2003 $T_j = 1$ and for December, 2007 $T_j = \max(T) = 48$.

To utilize the Fourier estimator, the length of the expansion (Q) must be chosen. The methodology uses the values of zero to five as the candidates for the optimal value of Q. Because the goal of the estimation is to predict market value as of January 1 of the tax roll year, Q is selected to provide the most accurate prediction for December 2007. By selecting the optimal value of Q, intertemporal movements in property values are tracked with greater precision.

In addition to selecting Q, the number of years used to estimate (1) must be chosen. The available data provide thirteen years of sales price observations for each county, 1995 – 2007. At one extreme, just 2007 sales could be used to estimate (1) and predict market values for December 2007. At the other extreme, all thirteen years of data could be used to estimate (1). Like the value of Q, the number of years is chosen to maximize the accuracy of predicted market values for December 2007. Using more years of data results in more sales price observations and therefore more efficient (i.e., minimum variance) coefficient estimates. On the other hand, biased estimates may result from using multiple years of data to the extent that estimated coefficients are not stable over time. Predictive accuracy is one method for choosing between the efficiency versus bias tradeoff.

To determine predictive accuracy, an auxiliary model is estimated. In this model, sales prices for properties sold during December 2007 are regressed on predicted sales prices (\hat{SP}):⁴

$$SP_i = \alpha + \beta \hat{SP}_i + \varepsilon_i \quad (3)$$

An accurate predictor should have three characteristics:

- The estimated β should not differ significantly from 1
- The estimated α should not differ significantly from 0
- The explanatory power of (3), as measured by R^2 , should be high

The value of Q and the number of years of sale price observations used to estimate (1) are chosen to best satisfy the above three conditions with particular emphasis placed on a joint statistical test of the first two conditions.

A final decision that must be made in estimating (1) is the selection criteria that are used to select the sample of sales price observations. These criteria, which vary across property strata, are designed to delete incomplete and incompatible observations or apparent data errors. Also, only “qualified” sales observations are used in the estimation to minimize the use of sale prices that do not reflect true market values. (The selection criteria used are provided in Table 2).

For some of the rural counties the number of sales price observations in Stratum Six was deemed too small to obtain reliable parameter estimates⁵. In these cases equation (1) was estimated for a region (i.e., combination of counties) that contained the

⁴ If the number of December sales is relatively small, 4th quarter 2007 sales are used to estimate the auxiliary model. If the number of 4th quarter sales is small, all 2007 sales are used to estimate the auxiliary model. See the attached tables for the time periods used to estimate the auxiliary models.

⁵ Because of small sales samples in several counties this year, sales were also pooled for one county in Stratum Four and six counties in Stratum Five. The pooling estimation procedure for these strata is identical to that employed for Stratum Six.

county. The regions used are defined in the Explanatory Key found prior to Tables 1 – 5. These regional equations were specified to allow the coefficients α_0 , α_1 , and α_2 to vary across counties by including county dummy variables and interacting these variables with JV. Estimates of α_3 (the time trend) were assumed to be the same across counties within a particular region.

The second step in estimating the LOA is to sum the predicted market values of all properties on the tax roll that satisfy the same selection criteria as those used in selecting the sample of properties used to estimate (1) (ignoring, however, the criterion that if the property had been sold in the past that the sale be a qualified sale).

Next, the sum of the market values implied by the just values is computed for the same properties used to compute $\sum \hat{S}P$:

$$\sum MV = \sum (JV/.85) \tag{4}$$

where transactions costs are assumed to equal 15% of the true market value of the property.

The LOA is computed as:

$$LOA = \sum MV / \sum \hat{S}P \tag{5}$$

In the tables below the LOA estimates for each county are presented.

III. Results

The estimated LOAs are presented in Tables 1 – 6. Columns 1 and 2 of these tables provide the name of the county and the estimated LOA for that county in the particular stratum in question. Column 3 gives the number of properties on the roll that

were used to calculate the LOA. This number equals the total number of properties on the roll for that stratum minus those that were filtered out by the selection criteria. Column 4 indicates whether equation (1) was estimated using sales for a single county or for a region. The next four columns (columns 5 – 8) describe the main model (i.e., equation (1)). Provided are the R^2 from estimating the model (column 5), the number of observations used to estimate the model (column 6), the number of years of sales used to estimate the model (column 7), and the number of expansion terms used in the Fourier expansion (column 8). The last seven columns (columns 9 – 15) describe the auxiliary model. Column 9 indicates whether the auxiliary model was estimated for December 2007, 4th quarter 2007, or for the entire year of 2007. Column 10 gives the number of observations used to estimate the model. The next two columns report the slope and intercept of the auxiliary model. Column 13 reflects the average predicted selling price for properties while column 14 shows the ration of the intercept to the average predicted price. (12/13) The final column provides the R^2 of the auxiliary model. Recall that the characteristics of a good predictor are that the slope be close to 1.00, the intercept close to 0, and the R^2 relatively high.⁶

To be included in the official DOR estimated LOA for a particular Stratum, the results of the model for a particular county must meet three selection criteria:

1. The auxiliary model slope estimate should fall within the range of 0.95 to 1.05, inclusive. This is true for counties and strata of all sizes. In addition, there is no reason to adjust this range on the basis of whether December sales, 4th quarter sales, or full year sales are being used in the auxiliary regression.

⁶ However, a high R^2 is not necessary for the predicted LOA to be unbiased as we aggregate over large numbers of properties on the tax roll.

2. The size of the intercept in the auxiliary model should be small when compared to the average predicted selling price. A reasonable cutoff is that the ratio between two (in absolute value) must be less than 5%.⁷

3. The criterion concerning R^2 for the auxiliary model and main model should depend upon the number of properties on the tax roll that the LOA is being aggregated across. A sliding scale is most appropriate. When more than 1000 properties are being summed across in the second stage- there should be no cutoff for what the R^2 must be. When less than 1,000 properties are being used, it is appropriate to use a cutoff of .60 for each of the models R^2 . When less than 500 are being used, this can be incremented up to .65. Only in very extreme cases (less than 100) would criteria as high as perhaps .75 or .8 be employed.

For Stratum One, the diagnostics are favorable for the majority of counties – very few of the estimated slope coefficients are significantly different from 1.0, the same is true when looking for intercepts that are significantly different from 0, and R^2 s across the board are all high. Franklin County, Hamilton County and Jefferson County are the only cases for stratum 1 where the model failed to meet all the selection criteria outlined above. For Stratum Two, the diagnostics also look good, and only Monroe failed to satisfy the criteria listed above. While the diagnostics for Stratum Six are not as good overall as those for Strata One and Two, they indicate that for the vast majority of counties predictive accuracy can be claimed. The diagnostics indicate potential problems with the models for several counties, with particular emphasis placed on the fact that Group 1 and Group 2 performed particularly poorly on the diagnostics tests. The only counties eliminated from Stratum Six that did not fall into Group 1 and Group 2 were Citrus, Collier, Putnam, Sarasota, and Sumter. The challenge of Stratum Six

⁷ Note that for many of the counties in Stratum 6 this means the intercept can be fairly large since avg. predicted values can reach very high levels.

comes down to a tradeoff between fairness to the counties and meeting the needs of the statistical model. Placing a county into a group where the average rate of price appreciation is higher for the group than for the individual county can lead to a downward bias to the county's LOA.⁸ However, for a large number of counties, there are simply not enough sales of properties within Stratum Six during a reasonable span of time to get any accurate estimate out of this, or any, econometric model. The strategy for dealing with this tradeoff is something that deserves more attention in the future.

For Stratum Four, a high percentage of counties have strong diagnostics, especially when focusing on the importance of the slope and intercept of the auxiliary model. The diagnostics in Stratum Five are notably weaker this year, possibly due to the fact that the LOA for five out of the fourteen counties in the study must be estimated using pooling groups. The R^2 values for Stratum Four and Stratum Five can, on average, be lower than Stratum One and Two, mostly due to the fact that reliable data describing the properties is more elusive and assessments tend to be less reliably related to market selling prices. Counties generally provide weak measures of lot size, often using a range of measurement techniques rather than one solid method. The statistical models reflect those loose measures and often have lower explanatory power than in other Stratum. However, this is not a problem in most cases since the predicted LOA is generated using such a large number of properties on the tax roll. It is of little importance how close each individual prediction is when summing over a large number of cases. When the slope and intercept of the auxiliary model are near their

⁸ This is why using only sales from within the county itself is obviously ideal.

recommended values, there is reason to believe an accurate LOA assessment is being generated. This is the case for these Strata just as frequently as can be found in other Stratum. Charlotte, De Soto, Gilchrist, Holmes, Lafayette, Madison, Okaloosa and Taylor are eliminated in Stratum Four. Five out of fourteen counties studies in Stratum Five (De Soto, Hardee, Hendry, Holmes and Okeechobee) are eliminated. Of these five eliminated counties, four are included pooling group 3. Also, The R^2 s of the main and auxiliary models could be improved upon if each county accurately reported the square footage of all vacant properties.

The following sections outline the specific variables that were included in the estimation of the main model for each county as well as the filters applied to the data.

Property Characteristics (X vector) Used As Independent Variables

Stratum One (Single-Family Residential):

- total living area in square feet and its square
- age of major improvement and its square
- dummy variables representing improvement quality as rated by the county property appraiser (minimum, below average, average, above average, excellent, superior)
- dummy variables representing improvement construction class (fireproof steel, reinforced concrete, masonry, wood, steel frame)
- dummy variables indicating whether the property is a condominium or mobile home
- dummy variables indicating the unit of measurement used as the basis of assessment of the land (per acre, per square foot, per front foot or per effective front foot, per lot or tract)
- for each unit of measurement a variable that equals the number of units if that unit of measurement is being used and zero otherwise
- a variable indicating the number of sales within the stratum that occurred in the year of the sale within a square mile area containing the property

Stratum Two (Multi-Family Residential):

- total living area in square feet and its square
- age of major improvement and its square
- dummy variables representing improvement quality as rated by the county property appraiser (minimum, below average, average, above average, excellent, superior)
- dummy variables representing improvement construction class (fireproof steel, reinforced concrete, masonry, wood, steel frame)
- dummy variables indicating whether the property is a condominium or mobile home
- dummy variables indicating the unit of measurement used as the basis of assessment of the land (per acre, per square foot, per front foot or per effective front foot, per lot or tract)
- for each unit of measurement a variable that equals the number of units if that unit of measurement is being used and zero otherwise
- a variable indicating the number of sales within the stratum that occurred in the year of the sale within a square mile area containing the property
- a dummy variable indicating whether the property contains 10 residential units or more

Stratum Four (Vacant Residential Land) and Stratum Five (Vacant Commercial/Industrial Land):

- dummy variables indicating the unit of measurement used as the basis of assessment of the land
- for each unit of measurement a variable that equals the number of units if that unit of measurement is being used and zero otherwise
- a variable indicating the number the number of vacant residential land sales within a square mile area containing the property during the year of the sale

Stratum Six:

Stratum Six (Commercial):

- total living area in square feet and its square
- age of major improvement and its square
- dummy variables representing improvement quality as rated by the county property appraiser (minimum, below average, average, above average, excellent, superior)
- dummy variables representing improvement construction class (fireproof steel, reinforced concrete, masonry, wood, steel frame)
- dummy variables indicating whether the property is a condominium or mobile home
- dummy variables indicating the unit of measurement used as the basis of assessment of the land (per acre, per square foot, per front foot or per effective front foot, per lot or tract)
- for each unit of measurement a variable that equals the number of units if that unit of measurement is being used and zero otherwise

- a variable indicating the number of sales within the stratum that occurred in the year of the sale within a square mile area containing the property

Criteria Used In Selecting Sales Price Samples
(only qualified sales used)

Stratum One:

- Living area greater than or equal to 600 square feet but less than or equal to 6000 square feet
- Price per foot greater than or equal to \$20 but less than or equal to \$180
- Year built greater than or equal to 1940
- Sale year greater than year built
- Change in just value from the previous year less than 400 percent

Stratum Two:

- Living area greater than or equal to 1,000 square feet but less than or equal to 120,000 square feet
- Price per foot greater than or equal to \$20 but less than or equal to \$180
- Year built greater than or equal to 1940
- Sale year greater than year built
- Change in just value from the previous year less than 400 percent

Strata Three, Four and Five:

- Sale price greater than or equal to \$1,000 but less than or equal to \$500,000
- Change in just value from the previous year less than 400 percent

Stratum Six:

- Price per foot greater than or equal to \$5 but less than or equal to \$600

- Living area greater than or equal to 500 square feet but less than or equal to 100,000 square feet
- Sales price greater than or equal to \$20,000 but less than or equal to \$6,000,000
- Year built greater than or equal to 1940
- Sale year greater than year built
- Change in just value from the previous year less than 400 percent

Explanatory Key For Tables 1-6
The Columns in Tables 1-5 contain the following information:

1. County Name
2. LOA as calculated by using (5)
3. Number of properties on roll used to calculate the LOA
4. All models constructed using only sales observations from the county itself have a 'C' in this column. For Stratum Six, several counties did not have enough sales over the time period in question and a pooling procedure was used. Five such groups were created:
 - a. Group 1 (GR1): Baker, Bradford, Columbia, Gilchrist, Hamilton, Jefferson, Lafayette, Madison, Suwannee, & Union.
 - b. Group 2 (GR2): Calhoun, Gadsden, Holmes, Jackson, Liberty, & Washington.
 - c. Group 3 (GR3): De Soto, Glades, Hardee, Hendry, & Okeechobee.
 - d. Group 4 (GR4): Dixie, Levy, & Taylor.
 - e. Group 5 (GR5): Gulf, Franklin, & Wakulla.
5. R^2 coming from estimate of (1).
6. Number of sales observations used to estimate main model.
7. Number of years of sales used to estimate the main model.
8. Number of expansion terms (Q) used in the Fourier expansion.
9. Time period used for auxiliary model $sp = f(s^p)$.
10. Number of sales used for auxiliary model.
11. Slope estimate from auxiliary model.
12. Intercept estimate from auxiliary model.
13. The average predicted price for properties that were used from the tax roll.
14. (12) divided by (13).
15. R^2 coming from estimate of auxiliary model

County	Stratum One LOAs										Avg. Price	Int/AvgP	R ²	
	LOA	Obs.	Sample	R ²	Main Model			Auxiliary Model						
	LOA	Obs.	Sample	R ²	Obs.	Years	Terms	Period	Obs.	Slope	Intercept	Avg. Price	Int/AvgP	R ²
Alachua	97.8	49042	C	0.93	3161	1	3	Dec	181	1.00	-1005.6	185174	-0.005	0.91
Baker	101.0	4133	C	0.93	192	1	4	4th Q	34	0.98	2591.678	124960	0.021	0.91
Bay	108.4	43435	C	0.87	2011	1	4	Dec	122	1.02	-4657.6	200334	-0.023	0.90
Bradford	89.3	4248	C	0.90	124	1	4	4th Q	29	0.98	2174.3	110725	0.020	0.73
Brevard	112.0	143427	C	0.93	6030	1	4	Dec	332	1.01	-1941.7	214006	-0.009	0.90
Broward	117.1	303151	C	0.91	10908	1	4	Dec	516	0.99	3750.6	371351	0.010	0.90
Calhoun	97.6	1516	C	0.78	123	2	1	Year	55	0.88	12885.5	96379	0.134	0.84
Charlotte	127.0	55599	C	0.85	2558	1	1	Dec	174	1.00	-323.2	204805	-0.002	0.87
Citrus	112.7	48474	C	0.91	2244	1	2	Dec	150	1.00	-341.5	153603	-0.002	0.90
Clay	103.4	51762	C	0.93	2511	1	0	Dec	130	1.00	288.9	206606	0.001	0.91
Collier	118.0	84812	C	0.88	2736	1	2	Dec	226	1.00	911.0	324510	0.003	0.87
Columbia	96.4	9077	C	0.90	422	1	4	4th Q	93	1.00	217.2	125868	0.002	0.91
Dade	104.0	162195	C	0.85	5637	1	3	Dec	255	0.99	2512.6	354391	0.007	0.87
DeSoto	114.6	5688	C	0.86	178	1	4	4th Q	33	1.01	-914.9	146004	-0.006	0.86
Dixie	94.1	2890	C	0.88	136	1	0	4th Q	23	1.01	-733.0	98198	-0.007	0.85
Duval	106.9	218996	C	0.92	9510	1	3	Dec	510	1.00	-633.2	211370	-0.003	0.93
Escambia	93.1	82119	C	0.91	3296	1	2	Dec	181	0.99	1026.0	136790	0.008	0.90
Flagler	112.4	27624	C	0.86	1342	1	4	Dec	66	1.00	-890.0	238132	-0.004	0.86
Franklin	94.7	2241	C	0.75	160	2	1	Year	77	1.04	-11965.1	191348	-0.063	0.81
Gadsden	82.3	2437	C	0.90	238	2	1	Year	84	1.00	100.2	154577	0.001	0.92
Gilchrist	94.3	2481	C	0.86	227	2	1	Year	107	0.98	2863.7	116830	0.025	0.83
Glades	94.4	3073	C	0.86	240	2	4	Year	101	0.92	8557.5	108116	0.079	0.86
Gulf	84.7	4010	C	0.96	141	1	3	4th Q	27	1.01	-3123.6	163310	-0.019	0.98
Hamilton	80.8	1433	C	0.89	139	2	2	Year	60	0.94	5727.6	87340	0.066	0.87
Hardee	94.6	4015	C	0.92	315	2	1	Year	129	1.00	-370.1	95995	-0.004	0.91
Hendry	99.5	6880	C	0.92	264	1	1	4th Q	47	1.00	-597.8	141368	-0.004	0.94
Hernando	111.7	56537	C	0.87	2526	1	3	Dec	167	1.00	-56.0	167641	0.000	0.90
Highlands	104.2	29031	C	0.90	1325	1	1	Dec	84	0.99	681.1	153831	0.004	0.82
Hillsborough	107.8	291780	C	0.92	8254	1	4	Dec	447	1.00	-261.2	231333	-0.001	0.92
Holmes	82.3	2425	C	0.84	120	2	4	Year	58	1.00	-63.8	77620	-0.001	0.86
Indian River	109.6	40754	C	0.85	2315	1	2	Dec	173	1.00	-1772.8	220456	-0.008	0.88
Jackson	85.4	7252	C	0.96	141	1	4	4th Q	27	0.98	2199.4	87450	0.025	0.96
Jefferson	78.6	2194	C	0.93	186	2	4	Year	78	0.96	6385.8	110980	0.058	0.94
Lafayette	110.3	801	C	0.81	168	4	0	Year	32	1.04	-2533.532	104809	-0.024	0.94

County	Stratum One LOAs				Auxiliary Model							Avg. Price	Int/AvgP	R ²
	LOA	Obs.	Sample	R ²	Obs.	Years	Terms	Period	Obs.	Slope	Intercept			
Lake	100.8	87054	C	0.91	3939	1	2	Dec	232	1.00	120.7	199756	0.001	0.91
Lee	108.9	215124	C	0.88	10420	1	1	Dec	575	0.97	8401.7	233359	0.036	0.87
Leon	100.3	58300	C	0.92	3255	1	3	Dec	175	0.99	1671.1	200746	0.008	0.92
Levy	104.7	9420	C	0.93	444	1	1	4th Q	101	1.01	-545.8	118299	-0.005	0.92
Liberty	119.4	651	C	0.93	68	2	5	Year	24	0.96	3503.2	82494	0.042	0.87
Madison	84.2	1389	C	0.87	476	8	3	Year	51	0.97	3558.1	104494	0.034	0.79
Manatee	123.9	95132	C	0.92	4215	1	2	Dec	277	1.00	82.9	260934	0.000	0.88
Marion	109.8	103938	C	0.90	4661	1	3	Dec	239	1.00	-196.6	168190	-0.001	0.85
Martin	121.5	10225	C	0.91	1725	1	1	Dec	118	1.00	-8.4	328380	0.000	0.87
Monroe	116.8	15932	C	0.91	613	1	2	Dec	35	1.00	-3973.0	611983	-0.006	0.91
Nassau	93.6	16655	C	0.92	753	1	3	4th Q	115	1.00	-451.7	222364	-0.002	0.88
Okaloosa	107.4	52599	C	0.90	2342	1	4	Dec	134	1.00	107.3	214852	0.000	0.89
Okeechobee	103.5	8833	C	0.92	309	1	4	4th Q	63	1.03	-4120.6	142070	-0.029	0.90
Orange	104.5	104814	C	0.91	10257	1	2	Dec	443	1.00	-852.8	299797	-0.003	0.85
Osceola	113.6	73899	C	0.88	3794	1	3	Dec	138	1.00	-12.3	256074	0.000	0.85
Palm Beach	112.2	293723	C	0.92	10167	1	4	Dec	567	1.00	193.4	343638	0.001	0.92
Pasco	117.7	144732	C	0.91	7105	1	2	Dec	409	1.01	-1950.1	190682	-0.010	0.78
Pinellas	108.9	83060	C	0.92	3079	1	1	Dec	245	0.99	456.8	221850	0.002	0.91
Polk	113.9	137115	C	0.85	6820	1	4	Dec	372	0.99	1570.5	184128	0.009	0.86
Putnam	98.3	18325	C	0.88	763	1	3	Dec	50	0.99	1287.3	116899	0.011	0.90
St. Johns	107.0	45171	C	0.93	2190	1	2	Dec	122	0.99	2942.8	325194	0.009	0.93
St. Lucie	121.6	80518	C	0.82	3508	1	1	Dec	185	0.98	3469.1	214735	0.016	0.82
Santa Rosa	98.4	37594	C	0.92	1995	1	2	Dec	108	1.00	36.5	165715	0.000	0.91
Sarasota	121.7	129118	C	0.88	5082	1	2	Dec	294	1.00	-98.4	255866	0.000	0.89
Seminole	104.2	118374	C	0.93	5454	1	2	Dec	272	1.00	122.7	284133	0.000	0.91
Sumter	95.7	30739	C	0.9397	1623	1	3	Dec	69	1.003	-609.5712	199274.5	-0.0031	0.90
Suwannee	96.2	5774	C	0.84	289	1	2	4th Q	61	1.00	-843.2	110948	-0.008	0.84
Taylor	88.0	4286	C	0.91	162	1	3	4th Q	38	1.00	-169.1	96986	-0.002	0.94
Union	101.8	1158	C	0.81	210	4	3	Year	52	0.99	-886.6	87039	-0.010	0.84
Volusia	115.4	128728	C	0.90	4791	1	3	Dec	259	1.00	827.3	217981	0.004	0.89
Wakulla	98.9	5792	C	0.85	287	1	4	4th Q	53	1.00	465.1	133236	0.003	0.86
Walton	98.7	10723	C	0.89	511	1	2	Dec	33	1.00	-540.5	206400	-0.003	0.84
Washington	94.3	3336	C	0.92	212	2	3	Year	99	1.02	-2056.6	82411	-0.025	0.92

County	Stratum Two LOAs				Auxiliary Model							Avg. Price	Int/Avg Price	R ²
	LOA	Obs.	Sample	R ²	Obs.	Years	Terms	Period	Obs.	Slope	Intercept			
Alachua	93.9	1450	C	0.86	507	9	4	Year	44	0.96	10118	219892	0.046	0.89
Broward	100.4	15891	C	0.99	380	1	3	4th Q	53	0.98	7801	451041	0.017	0.95
Dade	104.3	18832	C	0.99	718	1	2	4th Q	102	0.99	2329	549324	0.004	0.95
Duval	100.1	3396	C	0.95	1301	5	1	Year	156	1.02	-5213	334779	-0.016	0.93
Hillsborough	100.0	4664	C	0.97	503	2	1	Year	69	0.99	8828	344064	0.026	0.96
Leon	106.7	1929	C	0.99	64	1	0	Year	64	1.00	0	385356	0.000	0.99
Manatee	97.3	3202	C	0.98	257	2	1	Year	75	0.99	199	235261	0.001	0.99
Monroe	123.0	953	C	0.60	70	2	3	Year	18	0.83	100640	758570	0.133	0.47
Orange	96.7	3038	C	0.98	1584	4	4	Year	149	0.99	227	335058	0.001	0.97
Pinellas	95.2	2881	C	1.00	531	2	4	Year	102	1.00	530	253351	0.002	0.998
Seminole	102.6	1401	C	0.65	43	1	0	Year	43	1.00	-0.007	261968	0.000	0.648
Volusia	106.1	7999	C	0.87	302	1	4	4th Q	74	1.01	-2459	174228	-0.014	0.81

			Stratum 4 LOAs												
County				Main Model				Auxiliary Model							
	LOA	Obs.	Sample	R ²	Obs.	Years	Terms	Period	Obs.	Slope	Intercept	Avg. Price	Int/Avg Price	R ²	
Baker	120.3	1317	C	0.85	120	2	1	Year	52	1.03	-1926	39652	-0.049	0.85	
Bay	110.9	11214	C	0.81	339	1	4	4th Q	63	0.99	1141	70359	0.016	0.83	
Bradford	122.4	2193	C	0.73	326	3	3	Year	48	0.97	665	29065	0.023	0.46	
Brevard	86.5	41848	C	0.89	374	1	0	4th Q	74	1.00	-593	34283	-0.017	0.82	
Calhoun	80.4	1579	C	0.25	92	2	2	Year	18	0.95	-721	15155	-0.048	0.41	
Charlotte	81.3	80618	C	0.41	1799	1	2	Dec	173	0.87	3145	32573	0.097	0.22	
Citrus	78.6	54396	C	0.62	1280	1	2	Dec		1.05	-997	23956	-0.042	0.16	
Collier	117.4	13881	C	0.74	580	2	0	Year	148	0.93	9113	147156	0.062	0.79	
Columbia	102.8	3396	C	0.68	1034	4	3	Year	106	1.02	-1273	38560	-0.033	0.76	
De Soto	88.8	2076	C	0.81	143	2	3	Year	43	0.81	6102	36259	0.168	0.77	
Dixie	127.0	2782	C	0.64	130	1	1	4th Q	27	1.00	206	33666	0.006	0.80	
Escambia	87.6	5560	C	0.98	64	1	0	Year	64	1.00	0	30809	0.000	0.98	
Flagler	96.5	21925	C	0.93	296	1	3	4th Q	45	0.999	347	81809	0.004	0.94	
Franklin	98.2	5037	C	0.46	690	3	2	4th Q	22	0.98	-9366	170145	-0.055	0.62	
Gadsden	74.6	3456	C	0.76	372	5	4	Year	81	0.96	1146	20655	0.055	0.88	
Gilchrist	82.3	2891	C	0.77	787	4	2	Year	81	0.88	4898	33015	0.148	0.76	
Glades	101.8	2208	C	0.96	114	2	0	Year	29	0.99	-385	36222	-0.011	0.99	
Gulf	121.8	4215	C	0.85	262	2	4	Year	130	0.96	4892	138130	0.035	0.88	
Hamilton	90.0	3338	C	0.77	108	1	4	4th Q	21	0.95	1191	23065	0.052	0.91	
Hendry	81.1	16858	C	0.82	214	1	2	4th Q	43	1.00	42	13802	0.003	0.79	
Hernando	93.6	23135	C	0.68	1832	2	4	Year	296	1.00	-70	39061	-0.002	0.48	
Highlands	99.4	46927	C	0.86	629	1	4	4th Q	87	0.99	94	21454	0.004	0.88	
Holmes	87.1	1705	C	0.27	373	6	1	Year	40	0.93	-6185	17140	-0.361	0.53	
Indian River	109.0	10225	C	0.84	213	1	4	4th Q	52	0.98	1371	72758	0.019	0.90	
Jackson	111.4	10570	C	0.94	376	2	3	Year	99	1.00	-198	18443	-0.011	0.97	
Lafayette	103.5	1307	C	0.76	106	2	4	Year	42	0.92	2904.437	26185	0.111	0.74	
Lake	92.7	9637	C	0.94	235	1	4	4th Q	39	1.00	395	76944	0.005	0.75	
Lee	104.7	164860	C	0.86	2306	1	1	Dec	119	1.00	-56	31855	-0.002	0.82	
Levy	117.3	15180	C	0.80	321	1	4	4th Q	66	0.96	1525	30890	0.049	0.89	
Liberty	82.4	536	GR2	0.54	4344	4	1	Year	458	0.99	-85	16077	-0.005	0.80	
Madison	103.3	2610	C	0.81	848	6	0	Year	67	0.93	-2576	25933	-0.099	0.84	
Marion	92.1	86217	C	0.83	1123	1	4	4th Q	179	0.98	845	28694	0.029	0.69	

County	Stratum 4 LOAs (continued)													
	LOA	Obs.	Sample	Main Model				Auxiliary Model				Avg. Price	Int/Avg Price	R ²
				R ²	Obs.	Years	Terms	Period	Obs.	Slope	Intercept			
Monroe	72.1	4704	C	0.47	157	2	1	Year	60	0.99	2745	105044	0.026	0.36
Nassau	114.3	4658	C	0.92	123	1	1	4th Q	26	1.03	-1260	119787	-0.011	0.58
Okaloosa	112.0	8180	C	0.85	477	2	0	Year	197	0.94	4532	71485	0.063	0.84
Okeechobee	86.1	12751	C	0.97	100	1	3	4th Q	26	1.00	-306	21975	-0.014	0.92
Polk	81.4	30917	C	0.76	681	1	1	4th Q	158	1.02	-677	41197	-0.016	0.76
Putnam	106.2	34454	C	0.81	595	1	1	4th Q	121	1.01	-221	14014	-0.016	0.83
St. Johns	93.6	11747	C	0.81	236	1	3	4th Q	53	1.00	622	99310	0.006	0.68
St. Lucie	117.5	27448	C	0.77	662	1	5	Dec	55	1.00	53	48301	0.001	0.72
Santa Rosa	106.8	16582	C	0.95	250	1	4	4th Q	40	1.00	-54	49244	-0.001	0.93
Sarasota	94.8	52440	C	0.85	469	1	3	4th Q	132	0.99	-141	27719	-0.005	0.77
Suwannee	74	7431	C	0.77	323	1	4	4th Q	40	1.00	127	29823	0.004	0.69
Taylor	61.4	3661	C	0.79	364	2	1	4th Q	29	0.99	2680	46962	0.057	0.59
Union	102.2	341	C	0.66	150	7	1	Year	21	0.99	494	39107	0.013	0.16
Volusia	95.9	20741	C	0.89	435	1	4	4th Q	81	1.00	-201	73912	-0.003	0.85
Wakulla	97.6	6050	C	0.65	288	2	4	Year	104	0.99	324.5617	44140	0.007	0.85
Walton	102.3	17226	C	0.86	374	1	3	4th Q	83	1.00	-219.8	116372	-0.002	0.83
Washington	112.6	14827	C	0.89	197	1	2	4th Q	32	1.00	-21	17369	-0.001	0.83

County	Stratum Five LOAs						Auxiliary Model			Avg. Price	Int/Avg Price	R ²	
	LOA	Obs.	Sample	Main Model			Period	Obs.	Slope				Intercept
Bay	98.9	1330	C	0.69	72	2	Year	33	0.98	2718	174435	0.016	0.56
Calhoun	79.4	396	C	0.67	73	3	Year	13	1.01	-11	42719	0.000	0.80
Columbia	88.1	2286	C	0.76	603	4	Year	80	0.99	1293.2	71121	0.018	0.83
De Soto	106	523	GR3	0.47	589	5	Year	39	0.80	4181.4	149145	0.028	0.71
Gulf	92.8	224	GR1	0.68	198	1	4th Q	38	1.03	-2309.4	117502	-0.020	0.66
Hamilton	81.9	142	GR1	0.68	198	1	4th Q	38	1.03	-2309.4	131318	-0.018	0.66
Hardee	105.2	324	GR3	0.47	589	5	Year	39	0.802	4181.385	127476.1	0.033	0.71
Hendry	92.2	505	GR3	0.47	589	5	Year	39	0.80	4181.4	122826.1	0.034	0.71
Hernando	87.9	3325	C	0.62	541	3	Year	75	0.98	4076.8	108582	0.038	0.63
Holmes	69.0	300	GR2	0.60	385	4	Year	62	1.04	-3526.2	95793	-0.037	0.60
Jefferson	64.7	1056	C	0.69	125	2	Year	46	1.03	-2947.8	59205	-0.050	0.81
Madison	70.3	742	GR1	0.68	198	1	4th Q	38	1.03	-2309.4	75205	-0.031	0.66
Okeechobee	91.8	680	GR3	0.47	589	5	Year	39	0.802	4181.385	124774.1	0.034	0.71
Suwannee	84.3	908	GR1	0.68	198	1	4th Q	38	1.03	-2309.4	111341	-0.021	0.66

County	Stratum Six LOAs													
	LOA	Obs.	Sample	R ²	Obs.	Years	Terms	Period	Obs.	Slope	Intercept	Avg. Price	Int/AvgP	R ²
Alachua	62.4	2581	C	0.96	163	2	2	Year	84	1.00	-525.0	554361	-0.001	0.96
Baker	70.5	208	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	318355	-0.028	0.87
Bay	76.4	2619	C	0.96	157	2	4	Year	73	0.99	12585.2	596368	0.021	0.97
Bradford	86.9	282	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	294926	-0.030	0.87
Brevard	80.3	5246	C	0.91	1419	7	3	Year	32	1.01	-15651.6	655393	-0.024	0.93
Broward	92.5	13922	C	0.93	363	1	3	4th Q	74	0.99	1271.0	1341737	0.001	0.92
Calhoun	114.4	170	GR2	0.79	308	6	2	Year	42	1.01	-17781.5	187358	-0.095	0.70
Charlotte	84.8	1110	C	0.91	80	2	2	Year	31	1.01	-9187.4	899949	-0.010	0.96
Citrus	70.9	1772	C	0.84	116	2	3	Year	50	1.10	-39992.5	403441	-0.099	0.81
Clay	92.3	1083	C	0.98	74	2	3	Year	31	0.95	21166.7	529662	0.040	0.85
Collier	95.4	2258	C	0.87	81	2	4	Year	39	0.93	107275.8	1192231	0.090	0.96
Columbia	82.4	582	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	443401	-0.020	0.87
Dade	86.6	12483	C	0.91	409	1	4	4th Q	70	1.00	-998.1	1438144	-0.001	0.91
DeSoto	100.8	282	GR3	0.96	99	2	1	Year	50	1.00	-3061.9	346605	-0.009	0.98
Dixie	58.1	120	GR4	0.92	85	2	1	Year	32	1.03	-504.3	237885	-0.002	0.69
Duval	83.1	10641	C	0.87	752	2	1	4th Q	52	1.03	-45142.1	614388	-0.073	0.88
Escambia	81.3	4320	C	0.97	144	2	0	Year	58	0.99	-5431.7	414999	-0.013	0.99
Flagler	73.7	389	C	0.89	45	3	2	Year	12	0.95	44280.800	855298	0.052	0.86
Gadsden	92.2	424	GR2	0.79	308	6	2	Year	42	1.01	-17781.5	204397	-0.087	0.70
Gilchrist	89.7	115	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	230231	-0.039	0.87
Glades	74.9	110	GR3	0.96	99	2	1	Year	50	1.00	-3061.9	440888	-0.007	0.98
Hamilton	74.7	123	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	191208	-0.046	0.87
Hardee	110.6	275	GR3	0.96	99	2	1	Year	50	1.00	-3061.9	310569	-0.010	0.98
Hendry	72.1	535	GR3	0.96	99	2	1	Year	50	1.00	-3061.9	335742	-0.009	0.98
Hernando	67.5	1112	C	0.90	287	5	3	Year	47	1.02	-30636.2	600319	-0.051	0.96
Highlands	81.0	1240	C	0.94	67	2	4	Year	37	0.99	2471.997	441126	0.006	0.95
Hillsborough	89.7	11462	C	0.94	393	1	2	Dec	32	1.00	-5554.3	844866	-0.007	0.93
Holmes	90.7	182	GR2	0.79	308	6	2	Year	42	1.01	-17781.5	218323	-0.081	0.70
Indian River	68.6	1226	C	0.93	90	2	0	Year	45	1.03	-57522.0	823561	-0.070	0.95
Jackson	102.8	583	GR2	0.79	308	6	2	Year	42	1.01	-17781.5	256481	-0.069	0.70
Jefferson	75.2	192	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	197952	-0.045	0.87
Lafayette	84.3	69	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	142875	-0.062	0.87

County	Stratum Six LOAs													
	LOA	Obs.	Sample	R ²	Main Model			Auxiliary Model				Avg. Price	Int/AvgP	R ²
					Obs.	Years	Terms	Period	Obs.	Slope	Intercept			
Lake	94.8	2585	C	0.95	220	2	4	Year	84	1.01	-10797.1	545834	-0.020	0.96
Lee	81.1	4630	C	0.94	163	1	0	4th Q	48	1.01	-17073.5	1112620	-0.015	0.90
Leon	97.0	2945	C	0.97	124	1	4	4th Q	28	1.04	-37111.3	685210	-0.054	0.95
Levy	62.2	487	GR4	0.92	85	2	1	Year	32	1.03	-504.3	303143	-0.002	0.69
Liberty	89.5	36	GR2	0.79	308	6	0	Year	42	1.02	-29586.1	124265	-0.238	0.70
Madison	81.0	191	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	226358	-0.039	0.87
Manatee	79.2	2957	C	0.96	174	2	1	Year	85	1.02	-21425.1	726529	-0.029	0.96
Marion	93.7	3019	C	0.95	292	2	2	Year	139	0.97	25005.2	630262	0.040	0.96
Martin	97.4	543	C	0.92	94	2	4	Year	47	1.00	-1481.9	829815	-0.002	0.97
Monroe	85.0	783	C	0.96	21	1	0	Year	21	1.00	0.0	1123531	0.000	0.96
Nassau	61.8	818	C	0.98	58	2	2	Year	18	1.02	-17504.5	564496	-0.031	0.99
Okaloosa	89.7	2576	C	0.98	92	2	1	Year	39	0.98	14334.6	566427	0.025	0.98
Okeechobee	100.8	493	GR3	0.96	99	2	1	Year	50	1.00	-3061.9	404701	-0.008	0.98
Orange	72.4	6368	C	0.91	366	1	4	4th Q	75	1.00	-2283.4	1115461	-0.002	0.90
Osceola	93.3	1616	C	0.95	267	7	2	Year	36	0.99	24660.2	799348	0.031	0.88
Palm Beach	85.1	6380	C	0.95	141	1	1	4th Q	32	0.99	-4866.3	1251247	-0.004	0.99
Pasco	90.3	4278	C	0.94	305	2	3	Year	116	1.018	-12744.2	530258.5	-0.024	0.95
Pinellas	89.6	3579	C	0.93	2579	5	3	Year	106	1.03	-14981.120	692084	-0.022	0.97
Polk	107.8	6404	C	0.94	167	1	4	4th Q	38	1.00	-1485.440	503263	-0.003	0.96
Putnam	89.6	828	C	0.97	71	2	2	Year	29	0.94	15460.870	333337	0.046	0.89
St. Johns	81.7	1523	C	0.95	71	2	0	Year	28	0.99	-5579.6	758545	-0.007	0.91
St. Lucie	70.1	1579	C	0.97	119	2	4	Year	55	1.01	-14151.740	894340	-0.016	0.97
Santa Rosa	81.6	1209	C	0.87	67	2	1	Year	30	1.04	-17645.8	391282	-0.045	0.84
Sarasota	93.5	3926	C	0.90	230	2	3	Year	94	1.05	-80288.1	1080579	-0.074	0.91
Seminole	87.4	3799	C	0.93	477	3	2	Year	115	1.01	-5392.713	881625	-0.006	0.91
Sumter	80.5	420	C	0.94	49	2	3	Year	17	0.95	51370.6	541872	0.095	0.85
Suwannee	56.1	356	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	227391	-0.039	0.87
Taylor	79.4	217	GR4	0.92	85	2	1	Year	32	1.03	-504.3	318550	-0.002	0.69
Union	76.2	85	GR1	0.89	159	2	2	Year	66	1.03	-8866.4	136595	-0.065	0.87
Volusia	93.7	4715	C	0.94	271	2	0	Year	102	1.01	-5506.8	748569	-0.007	0.92
Wakulla	96.6	249	GR5	0.49	125	4	0	Year	23	0.98	39412.12	251437	0.157	0.64
Washington	99.3	207	GR2	0.79	308	6	2	Year	42	1.01	-17781.5	187050	-0.095	0.70