A Review of the Quality of the 2016 Blair County Property Reassessment

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Final Ratio Study Results and Conclusions

Executive Summary – Blair County Reassessment Quality Indicators – Preliminary Results

The goal of this project has been to review the proposed new 2016 assessed values developed for properties throughout Blair County with respect to objective tests of the quality of the reassessment. The review is designed specifically to make observations regarding whether the results of the reassessment conform to nationally recognized standards used to test the quality of such programs. The primary materials used are the Standards and Textbooks of the International Association of Assessing Officers (IAAO), the largest and most recognized professional association for assessors in the United States. IAAO Standards are intended to reflect best practices and are a consensus of professional opinion. They do not have the force of law, so if state statutes conflict, state law prevails in terms of providing direction.

The review reflected in this report consists primarily of a comparison between national standards and statistical analysis of the mathematical ratios between assessed values and sale prices for properties sold during the three year period beginning January 1, 2013 and ending December 31, 2015 in Blair County. Ratio studies conducted in this matter are universally used for this purpose when market value is the goal, the achievement of which is to be tested and confirmed. In addition, assessed value changes on both selling and non-selling properties (or those with older sales activity) and other aspects of the underlying property data were reviewed to confirm, to the extent practical, that the ratio study results are representative of the underlying population of all properties in the categories studied. Among other factors, I independently determined time adjustments so that sale prices reflect probable price as of the January 1, 2016 assessment date. In addition to sales noted as valid, sales invalidated by appraisers for reasons related to assessment model building, rather than specific factors related to the sales, were included initially. To avoid potential distortions, and in keeping with IAAO guidance, ratio outlier trimming processes were then employed. I did not personally investigate or attempt to verify any sale, but relied on the data submitted to me by Evaluator Services and Technology, Inc. (EST), the reassessment contractor. This report was requested by and is performed on behalf of Blair County.

In addition to doing ratio studies using the new assessed values, comparative studies were performed using the original 1958 base year assessed values. These are submitted to analyze the equity of assessed values as they existed prior to the reassessment and to determine if the new assessments substantially improve underlying level and uniformity, thereby enhancing taxpayer equity. Similar analytic procedures have been employed and the sales data base is the same, except that a somewhat different set of outliers to be trimmed often was identified because of the different distribution of ratios; this in turn lead to somewhat different numbers of sales in the studies based on original vs. those based on proposed new assessments.

Conclusions

My major conclusion is that, to the extent measurable by ratio studies based on the available assessment and sales information provided to me, the current reassessment meets the goal of establishing current (2016) market value as the level of assessment on an overall basis for properties throughout Blair County. This does not mean that every assessment necessarily is market value, as ratio study results are statistical in nature and provide measurements that apply to groups of properties rather than individual

properties. However, it does mean that the overall quality standards for assessment level, as measured by the available sales, have been achieved. In addition, assessment equity, in terms of disparity between categories has generally been improved, with original assessments showing up to a 9 fold (900%) disparity between median levels of the different categories, while post-reassessment results show no more than 1% difference between category medians. In other words, there are much smaller differences in level of assessment between properties in different categories than was true with the original assessments. The new assessments meet IAAO standards for level of assessment in each category tested and overall.

Uniformity within categories measures the variability between the ratios, with lower variability indicating better uniformity and being preferred. There are two types of uniformity measures – between properties in general (horizontal equity) and between high and low priced properties (vertical equity).

In comparison to uniformity measures using original 1958 base year assessments, at the category level, general (horizontal) uniformity as measured by the Coefficient of Dispersion (COD) is much better for each category. Using 1958 base year assessments, no category meets general uniformity standards. In contrast, each category meets uniformity standards using new assessments.

The second type of uniformity, vertical equity, is also substantially improved given the new assessments, with only the Vacant lots over 10 acres category (V) failing by a slight margin using one statistical measure that is not corroborated with alternate, more precise statistics. Using the original 1958 base year assessments, Commercial / Industrial (C/I), Agricultural (A), Vacant lots over 10 acres (V), and Land (vacant lots under 10 acres) (L) categories all fail vertical equity standards; all but the Agricultural category by large margins.

There are two remaining issues, both of which are related to verifying that ratio analysis on sales is likely to be representative of the underlying population of all properties in the tested categories:

1. Many of the final analysis results on the new assessments show extremely good general uniformity. These extremely good results are called to the analyst's attention by use of the term "questionable" on the statistical reports. This is because the results may indicate admirable performance in terms of the reassessment, but are highly unusual and call for additional tests to determine whether sales samples truly represent underlying populations. One of the main verification tests is to review proposed new assessments on all properties (not just the sales). I did that and am satisfied that adjustments have quite properly been applied broadly.

Additional sales occurring after January 1, 2016 corroborate findings regarding assessment level overall and for each category. However, analysis of just these newer 2016 sales shows slightly worse uniformity. Regardless, even using this more limited sample of newer sales, for all categories except vacant lots under 10 acres (L), uniformity is still well within standard. Even in this category (L), and again, using only the limited sample consisting exclusively of 2016 sales, general uniformity cannot be proven to be out of compliance and is much improved in comparison to uniformity given the original base year assessments. If based exclusively on the small number of available valid post January 1, 2016 sales, vertical equity in category L appears to be below standard, indicating a possibility that low priced properties are somewhat undervalued with respect to high priced properties in this category.

This could also mean that the reassessment process has recognized market trends through December 31, 2015, but that a new trend, at least for this category (L) has emerged since that date. Only limited conclusions are possible, given the short additional time frame and small number of sales. Therefore, I stand by my general conclusion that general uniformity achieved by the reassessment is well within IAAO standards, even if the uniformity in the underlying population of properties being reassessed (not just those with recent valid sales) may not be quite as extremely good as shown by the sales in the main analysis.

2. In reviewing assessed value changes on the three years of sales used in the analysis and on the population of all other properties subject to reassessment, I found that the assessed values on the recent (last three years) sales increased somewhat less than did the assessed values on the general population of all parcels subject to reassessment. The main reason for this review was to determine if adjustments to recent sales exceeded those to the general population. That was not the case, but, had it been, it could have seriously compromised the representativeness of the samples.

A Review of the Quality of the 2016 Blair County Property Reassessment – Preliminary Ratio Study Results

Introduction

The goal of this project is to review the proposed new 2016 assessed values developed for properties throughout Blair County with respect to objective tests of the quality of the reassessment. The review is designed specifically to make observations regarding whether the results of the reassessment conform to nationally recognized standards used to test the quality of such programs. The primary materials used are the Standards and Textbooks of the International Association of Assessing Officers (IAAO), the largest and most recognized professional association for assessors in the United States.

The primary means for establishing the underlying equity in the assessments is by a statistical comparison of assessed values and sale prices. This comparison is known as a ratio study, the basis for which is the mathematical ratio between each assessed value and that property's corresponding sale price, provided timely sales have taken place and provided that the sale is considered an "arm's length transaction" in which the selling price is expected to reflect the market value of the real property. Such studies are the pre-eminent tools of the trade to be used in evaluating the quality and equity achieved by any assessment of large numbers of properties for which adequate and representative sales data is available. For this project, ratio studies were reviewed for several categories of property throughout Blair County.

In order to use ratio studies to evaluate assessment performance, it is important to review and understand the representativeness of the sales used in the study. To the extent that ratio studies are based on arm's length transactions in which physical characteristics have not changed dramatically since the sale, such studies should provide valid indicators of the quality of the reassessment. Representativeness also requires that the appraisal or reassessment methods used are consistent between selling and non-selling parcels. For this reason, a secondary goal is to verify the validity of the ratio study used to test the 2016 assessments by determining whether assessments on selling and non-selling parcels were determined independently or whether possible distortion due to "sales chasing" exists. Finally, to the extent practical, an additional ratio study has been conducted using otherwise valid sales occurring subsequent to the assessment date and not used in developing the appraisal models. Although limited, these sales add a corroborative element to the analysis.

All statistical measures and sales chasing tests used in this study are based on the IAAO 2013 *Standard on Ratio Studies*, the most current edition available at the time of this report. Throughout this report, the terms "reassessment" and "reappraisal" are used interchangeably.

Scope of Project

To accomplish this project, it has been necessary to analyze changes in assessments on selling and non-selling parcels throughout Blair County. In addition to reviewing the new assessments, I reviewed the pre-existing (base year 1958) assessments to determine whether selling and non-selling parcels were treated similarly in the reassessment. I also reviewed ratio studies prepared using the same sales data base, but with statistics based alternately on original (pre-reassessment) assessed values and new (post-reassessment) assessed values. This is an important step in evaluating whether the reassessment

produced better equity and results more in compliance with IAAO standards. Accordingly, the appraisal company provided the following information:

- 1) Real property sales occurring between 2013 and December, 2015 by category for the following categories of property in Blair County:
 - i) (A) Agricultural generally 10 acres or more with residential buildings present;
 - ii) (C / I) Commercial and Industrial;
 - iii) (L) Vacant lots under 10 acres in size;
 - iv) (V) Vacant lots over 10 acres in size;
 - v) (R) Residential.
- 2) Listings of both selling and non-selling property parcels from throughout the county. These listings included the original assessments and post-reassessment proposed market values for 2016. Except as provided in Appendix A3 (January, 2016 through May 31, 2016 sales), assessed values of sales occurring after December 31, 2015 were not used.
- 3) Validity codes, counts, and explanations for the sales considered invalid for ratio study purposes (ie: not arm's length, market value indicators).
- 4) It should be noted that data files that were reviewed have been summarized in various tables and discussions throughout this report. In many cases representative examples of analyses have been reproduced and are provided in appendices for illustration. However, the universe of all actual files that I received has not been included.

In reviewing the data, I discussed information needs with and received data, explanations, and assistance from Tim Barr with EST.

Analysis consisted of the following:

- 1.) Compare assessment changes for non-selling property against changes indicated on selling parcels. This was done to check for sales chasing, a situation in which non-selling parcels have far lower assessment adjustments then selling parcels.
- 2.) Calculate and review ratio study results for valid sales in each category. Results are shown in Appendix A1 using original base year assessments and Appendix A2 using new assessments that reflect January 1, 2016 market value. In addition, sales not clearly invalid, but with alternate, atypical validation codes, were reviewed to help further corroborate results based on sales used directly in developing the reassessment model.
- 3.) Analysis was conducted for each indicated grouping, provided that there were at least 5 usable valid sales following application of trimming procedures. Trimming generally followed the recommendations in the IAAO *Standard on Ratio Studies* and relied on 1.5 or 3 times the interquartile range (IQR). The application of the trim resulted in elimination of more than 10% of the sales sample in only in one case, the Agricultural category (A), in which a very small sample of 15 was available. In this case, two outliers were removed; this amount of adjustment is permitted by the IAAO *Standard* "…in the most extreme cases…" and was considered applicable in this sample.

2

¹ IAAO. Standard on Ratio Studies. Appendix B, Section B.4. April, 2013.

- 4.) Compare results on ratio studies to quality indicators in the IAAO *Standard on Ratio Studies* and other recognized assessment literature and provide a general analysis of assessment conditions as indicated by the ratio studies. Much descriptive and explanatory material on the meaning of ratio study statistics has been extracted from professional sources and is provided in Appendix B to illustrate the principles discussed.
- **5.**) Review before and after results using original 1958 base year, as well as proposed 2016, assessed values. This report is based on proposed new assessments established as of June 22, 2016 and does not purport to reflect any changes subsequent to that date. The author's understanding is that this data reflects the assessed values shown on the notices mailed on or before July 1, 2016.

Inherent Assumptions

To facilitate analysis, I am assuming the following:

- 1.) With the exception of sales eliminated appropriately as invalid or probably non-market value type transactions, all timely sales (1,761 were retained and analyzed in the main study and 247 were analyzed in the post 1/1/2016 study) in the categories being studied have been included as provided by EST, with the following exceptions and notes:
 - 4 sales originally marked valid were eliminated after I requested additional review by EST; this reflected determinations that these sales should have been considered invalid.
 - 108 sales considered invalid by EST in developing its appraisal models, but otherwise meeting validation criteria, were included.
 - Sales with prices of \$1,000 or less were excluded.
 - Sales occurring prior to January 1, 2013 were excluded.
- 2.) The database of non-selling parcels is complete.
- 3.) Valuation information provided are accurate and complete.
- 4.) The goal of the reassessment was to have all properties' assessed values as close to January 1, 2016 market value as possible. No attempt has been made to adjust for or further analyze properties for which market value may not have been sought. (Many states employ use value and other specialized valuation techniques for a variety of property categories, including agricultural and timber land. In these cases, resulting assessed values are not designed to be market value and can not be tested using traditional ratio studies. It is my understanding that this is not a consideration with regard to any of the properties subject to this review.)

Analysis and Findings Background

Pennsylvania is one of only six to eight states without a statutorily specified reappraisal cycle.² A recent Pennsylvania court case found extremely poor equity in terms of large differences between comparisons

² Some discrepancies exist, for instance, some states annually reassess public utilities and railroads at the state level, but have no such requirement for locally assessed properties of the type being reassessed in Blair County. See: Dornfest, Alan S., Steve Van Sant, Rick Anderson, and Ronald Brown. *State and Provincial Property Tax Policies and Administrative*

of assessed values and sale prices on similarly situated properties in 18 of Pennsylvania's 67 counties, none of which had conducted comprehensive reassessments for at least the past 20 years. Similarly, Blair County, Pennsylvania, had not previously reappraised since 1958 and prior values reflected that level of assessment. My understanding is that the goal of this reappraisal is to assess properties at market value as of January 1, 2016.

Determining whether market value has been achieved

The primary tool in use throughout the assessment profession for determining whether groups of properties have been assessed at market value is the ratio study. For such a study, sales of arm's length transactions for which sale prices are deemed to reflect market value are compared with (have sale prices divided into) assessed values. The resulting mathematical ratio is subjected to statistical analysis and the results of that analysis may be compared with national or state standards as an objective means for evaluating the quality of any reappraisal. Because assessments are intended to reflect market value as of a particular date, while sales occur over a period of time, often it is necessary to adjust sale prices to properly reflect what the selling price would have been had the sale taken place on the assessment date. I reviewed the linear relationship between the ratios and time over the three year period from which sales were used for the main analysis and independently determined whether time adjustments were necessary on a case by case (category by category) basis. When linearity appeared to be skewed by unusual concentrations of high or low ratios toward the beginning or end of the sales period, time adjustments were not applied. Separate time adjustments were developed for each analysis, including those based on original assessments. An example of a time adjustment analysis graph is included in Appendix C. Actual time adjustments applied are found on each ratio study reported in Appendix A.

General findings and conclusions

Based on the ratio studies I conducted and the lack of any evidence of sales chasing (see section on representativeness), the current reassessment in Blair County achieved the goal of moving assessments to January 1, 2015 market value, as indicated by measures of assessment level, in every category tested and overall. Specific category results are shown in Table 1. Results also show uniformity statistics that meet IAAO quality standards for horizontal equity (as measured by the Coefficient of Dispersion (COD)). One category, Vacant lots over 10 acres (V), shows results that marginally fail to meet vertical equity standards, indicating the possibility of slightly lower assessments on higher value property in this category. Similarly, although not indicated in the general analysis, analysis of subsequent 2016 sales shows the possibility of slightly lower assessments on lower value property (the opposite case) for the Vacant lots under 10 acres (L) category. Both of these results are indicated by the PRD, an accepted but often distorted measuring statistic, especially suspect given the small sample sizes for both of these studies⁴. The more technical PRB (also found in the IAAO *Standard*...) did not corroborate the existence of vertical inequity. Regardless, results show improved level of assessment and decreased differences in level of assessment between categories. Uniformity statistics are considerably better than those based on original (pre-reappraisal) assessments. Indicators used to develop this determination will

Practices (PTAPP): Compilation and Report. Journal of Property Tax Assessment & Administration. Volume 7, Issue 4, 2010. Pp. 85 – 86.

³ Clifton, James C. et al. v. Allegheny County [2007]; as cited in Chapter 4, Challenging the Conventional Wisdom on the Property Tax, edited by Roy Bahl, Jorge Martinez-Vazquez, and Joan Youngman. 2010. The Lincoln Institute of Land Policy. Cambridge, Massachusetts.

⁴ Note: Part 1, Section 9.2.7 of the IAAO Standard on Ratio Studies comments: "When samples are small...the PRD may not provide an accurate indication of assessment regressivity or progressivity. When relying on the PRD...it is good practice to perform an appropriate statistical test for price-related biases before concluding that they exist...."

be presented throughout this report, which will also provide general information derived from IAAO textbooks and standards to explain the nature and meaning of these indicators.

Conclusion 1: Overall and at the category level, results indicate that the new assessments satisfy the IAAO Standard for level of assessment, requiring level of assessment to be within $\pm 10\%$ of the goal (market value) and requiring each category to be assessed within $\pm 5\%$ of each other category. As recommended in the IAAO *Standard on Ratio Studies*, the median was the primary measure of level used for this determination. Neither of these criteria would be met if the original values were retained.

<u>Conclusion 2:</u> Both overall and at the category level, horizontal equity (general uniformity) standards have been met based on the proposed new assessments. Using original assessed values, no category meets typically recommended horizontal equity standards based on a COD of 20% or less.

Conclusion 3: Vertical equity standards based on the PRD were met everywhere except for the vacant lots over 10 acres (V) category based on a very small number of sales. Although subsequent 2016 sales show a questionable vertical equity result for the L category, this may be an indication of market direction since January 1, 2016 and therefore is not pertinent to a conclusion regarding equity as of January 1, 2016. Regardless, in both cases PRB guidelines were met and this statistic is considered less prone to false positives than the PRD.

<u>Conclusion 4:</u> Assessment equity, in terms of disparity of level of assessment between categories has generally improved, with original assessments showing a 9 fold (900%) disparity between median levels of the different categories, while post-reassessment results show no more than 1% difference between category medians, well within IAAO standards.

Analysis and Specific Results

I developed ratio study statistics for each category based primarily on sales occurring between January 1, 2013 and December 31, 2015, with sale prices time adjusted as necessary to reflect price as of January 1, 2016. Categories studied were:

- 1. (A) Agricultural property, usually with residential buildings;
- 2. (C / I) Commercial and Industrial property;
- 3. (V) Vacant lots over 10 acres;
- 4. (L) Lots under 10 acres;
- 5. (R) Residential property generally with improvements.

In addition, I used sales previously found to be valid, but appraiser trimmed during the development of reassessment models, and performed before and after reassessment ratio studies for all property categories and overall. As indicated previously, level using proposed new assessments is acceptable in each case as is general (horizontal) uniformity. Table 1 shows summary level statistics, while Table 2 shows general uniformity statistics before and after reassessment for each category and overall. For level and uniformity, **bold** indicates results in relation to new assessments that may not be in compliance with IAAO Standards. However, there were no level results out of compliance. In the case of noncompliance based on PRB advisory standards, confidence intervals provided in detailed analysis in the appendices must be reviewed to draw conclusions. Confidence intervals around CODs should also be reviewed before drawing definitive conclusions about compliance with general (horizontal equity)

uniformity standards. However, there were no CODs that were out of compliance based on proposed new assessments, using either point estimates or confidence intervals. Very low CODs often are indicators of sales chasing; however, an examination of assessment changes on all parcels in the county eliminates that possibility, so notations of "questionable" CODs found on detailed statistical analysis reports should be disregarded. That is reflected by the comment "verified ok" found following the "questionable" notation on the statistical analysis pages found in Appendix A.

When PRBs were outside of a \pm .05 range, these results were placed in **bold** to signify point estimates that appeared in questionable ranges. Such designation should be reviewed by observing whether confidence intervals around the PRB also fell outside this range. **Bold** emphasis was not used to designate original assessments that were questionable or did not meet standards, as this was the case for most original assessment based ratio study results.

Detailed statistical results and information about outlier trims used, including specific numbers of sales trimmed using statistical techniques can be found on detailed analysis reports found in Appendix A.

There were insufficient industrial property category sales to analyze this category separately. However, industrial property sales were included in the analysis of the commercial property category, so results are reported under the category heading "Commercial and Industrial" or "C / I."

Table 1 – Level of Assessment Measured by the Sample Median⁵

Category	Area studied	Pre-reassessment	Post- reassessment
		Median (%)	Median (%)
All	All	8.89	100.26
All	All – Post 1/1/2016	8.88	100.57
	sales		
Residential (R)	All	8.95	100.28
Commercial and	All	10.13	99.81
Industrial (C / I)			
Agricultural (A)	All	5.19	99.72
Vacant (V)	All	1.12	99.77
Land (L)	All	3.25	99.47

Table 2 - Uniformity of Assessments

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Category	Area studied	Pre-	Post-	Pre-	Post-			
		reassessment	reassessment	reassessment	reassessment			
		COD (%)	COD (%)	PRD / PRB	PRD/PRB			
All	All	25.39	4.10	1.02/.078	1.01/004			
All	All – Post	24.60	4.90	1.01/.083	1.00/007			
	1/1/2016 sales							
Residential	All	23.63	4.11	1.00/.086	1.00/006			
(R)								

⁵ Note: Although the median confidence interval, not the sample median should be used for determining compliance with standards, sample medians between 90% and 110% will invariably be in compliance. In these cases, the confidence interval is more useful in determining whether any groupings vary by more than 5%.

Table 2 (continued)

Category	Area studied	Pre-	Post-	Pre-	Post-
		reassessment	reassessment	reassessment	reassessment
		COD (%)	COD (%)	PRD / PRB	PRD/PRB
Commercial	All	43.94	2.31	1.12/.061	1.01/.0001
and Industrial					
(C / I)					
Agricultural	All	39.47	6.20	1.04/.183	1.02/026
(A)					
Vacant (V)	All	53.02	7.71	1.12/.172	1.05 /014
Land (L)	All	79.79	7.86	1.12/ .069	1.02/009

Comments on Analytical Techniques

Representativeness

A major concern is developing ratio studies that are representative of the area or category being analyzed. Nominally this is achieved when types of property: "...appear with approximately the same relative frequency in both the sample and the population." 6

This principle is further elaborated in the IAAO Standard on Ratio Studies, which comments:

"A ratio study sample is considered sufficiently representative for direct equalization and mass appraisal performance evaluation when the distribution of ratios of properties in the sample reflects the distribution of ratios of properties in the population."

The Standard further comments:

"...representativeness is improved when the follow occur:

- 1. Appraisal procedures used to value the sample parcels are similar to procedures used to value the corresponding population
- 2. Accuracy of recorded property characteristics data for sold property does not differ substantially from that of unsold property,
- 3. Sample properties are not unduly concentrated in certain areas of types of property whose appraisal levels differ from the general level of appraisal in the population
- 4. Sales have been appropriately screened and validated...."8

While I did not test the representativeness of the ratio study samples or independently validate any of the sales, I was assured that proper validation techniques were used. EST submitted a list of validation codes and numbers of sales found to be invalid under each code. The main reasons for invalidating sales are shown in Table 3 (following page):

⁶ IAAO. Property Appraisal and Assessment Administration. P. 526. Chicago, IL. 1990

⁷ IAAO. Standard on Ratio Studies. Part 2, Section 4.2. April, 2013.

⁸ IAAO. Standard on Ratio Studies. Part 1, Section 4.5. April, 2013

Table 3: Major Reasons for invalidating sales

Reason	Number of Sales Found to be Invalid
Multiple parcel sale	649
Atypical time on market	582
Estate Sale	511
Building or improvement added since sale	440
Forced Sale – adverse pressure	278
Family Transfer	257
Sale involving financial institution	257
Corporate transfer	192
Forced sale such as foreclosure related sale	160
Purchase of adjacent land	118

Similar validation issues and reasons for invalidating sales are addressed in the IAAO Standard on Ratio Studies and the IAAO Standard on Verification and Adjustment of Sales⁹.

I did conduct a review of assessment changes on selling and non-selling parcels to understand whether both groups received similar treatment. If this were not true, it could indicate sales-chasing, a practice in which selling parcels are adjusted to a greater extent, hence distorting representativeness of results. However, I found no indication of any sales-chasing. Instead, I found the following:

- 56,848 parcels with no sale, a sale price of \$1,000 or less, or a sale with a date older than 1/1/2013 had an average assessed value increase of 1,293%.
- 4,391 parcels with sales prices greater than \$1,000, some of which were considered invalid sales, but all of which sold on or after 1/1/2013, had an average assessed value increase of 1,221%.
- The 1,761 valid sales during 2013 2015 used in the main ratio studies had an average assessed value increase of 1,147%.

The goal of any ratio study is to analyze representative samples that, by inference, provide a window into the probable quality of assessments throughout the underlying population of properties; hence, the importance of representativeness in these sales samples. While sales chasing could damage representativeness, it clearly is not a factor with respect to the Blair County reassessment. The additional increases in assessments of parcels other than recent valid sales is unusual, but could be explained if, for example, physical characteristics of selling parcels were reviewed and their assessments updated periodically to reflect remodeling and other physical changes, regardless of the base year used for these values. In that case, lower reassessment increases on recent sales would be expected. Similarly, if such changes have been made, improving the accuracy of property characteristics for recent sales, reassessment models would be more likely to produce low CODs¹⁰, as shown in the studies. In such a case, if older sales and parcels without sales have not been scrutinized to the same degree, there would be some representativeness issues and the probable population uniformity statistics would be somewhat worse than those shown using the 2013 – 2015 sales. Such a likelihood is borne out, to an extent, by the slightly higher COD in the overall ratio study based on sales occurring on or after January 1, 2016. Similar slippage of uniformity statistics is demonstrated when sales deemed invalid by reason of atypical time on market are included in the analysis. Although these additional sales are suspect with respect to being arm's length transactions, they do tend to corroborate these overall findings.

IAAO. Standard on Verification and Adjustment of Sales. Sections 4.8 and 5.3, p.8 and p. 10. 2010.

⁹ IAAO. Standard on Ratio Studies. Appendix A, pp. 47 – 50. 2013.

¹⁰ See additional discussion of low CODs in the section of the report on uniformity of assessments.

Outliers, Trimming, and Data Distributions

Related to the problem of ensuring representativeness of the ratio study samples, is the issue of when to trim samples based on unusual ratios that may be occurring with greater frequency in the sample than their likely frequency in the population. Such outliers may reflect data or reporting errors, mismatch between the property sold and the property appraised, unusual market variability, and other unidentified issues. If retained for analysis, outliers may distort level and uniformity statistics in a disproportionate way. The optimal approach is to use statistical techniques to identify possible outliers. This would be followed by additional review and verification. In the Blair County analysis, I reviewed 10 sales with ratios greater than 260% and 2 sales with ratios less than 20% with EST. Physical changes appeared to be the cause in some of these sales and 5 were deleted prior to completing analysis. Other sales with extremely high ratios were retained for initial analysis. However, trimming techniques outlined in Appendix B of the IAAO *Standard on Ratio Studies*¹¹, based on the interquartile range (IQR), were employed and tended to flag these unusual ratios for trimming.

The IQR method is recommended primarily because it develops trim points without regard to the underlying distribution of the ratios. In other words, many texts report that ratio distributions most likely do not follow a standardized "normal" or bell-shaped distribution. This in turn leads to the conclusion that the most pertinent ratio study statistics are "distribution-free" or "non-parametric" statistics In fact, many of the ratio studies conducted as part of this report do not conform to a normal distribution. This conclusion in no way criticizes the reassessment; it merely guides the user to the most applicable statistical measures. If there were a normal distribution, increased meaning and precision could be ascribed to the mean based statistics, including the standard deviation and coefficient of variation. Median based statistics are recommended by the IAAO *Standard* and, regardless, in any case when the underlying distribution of the data (ie: expected ratios in the population, based on the sample) does not match the normal curve.

The IAAO *Standard* does provide a cautionary note regarding the use of the IQR (and other trimming procedures).

"It is appropriate to set maximum trimming limits. For small samples, no more than 10 percent (20 percent in the most extreme cases) of the ratios should be removed. For larger samples, this threshold can be lowered to 5 to 10 percent depending on the distribution of the ratios and the degree to which sales have been screened or validated. Trim limits should be developed in consideration of the extent of sales verification.¹⁴

I was informed that the sales data for Blair County was reviewed to ensure validity. However, atypical values were often excluded in the process of developing the appraisal model, without necessarily reflecting invalid sales. After discussion with EST, these sales were included for my analysis, but may later have been trimmed, depending on outlier review outcomes. All trimming is noted in the reports in Appendix A. The only case in which the IQR based trim exceeded the 10% guideline was with regard to the very small Agricultural category (A) sample of 15 sales, from which 2 were trimmed using the 3 X IQR procedure. The IQR multiplier used in each case and number of sales trimmed is also reported.

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¹¹ Ibid. Appendix B, p. 53.

¹² See discussion in IAAO. Standard on Ratio Studies. Part 1. Section 5.8. April, 2013

¹³ IAAO. Property Appraisal and Assessment Administration. Appendix 20-7. P. 617. Chicago, IL. 1990

¹⁴ IAAO. Standard on Ratio Studies. Appendix B.5. April, 2013

Comment on trimming, range of ratios in data, and possible effects

After eliminating the 5 questionable sales and those with prices of \$1,000 or less, the remaining data base consisted of 1,761 sales presumed valid. Ratios on these sales, using new assessments, ranged from 71% to 2,395%. On the new assessed value based studies, a maximum of 61 sales (3.5%) were trimmed in the overall combined category study. Had no sales been trimmed, the COD would have changed from 4.10% to 9.22%. Other statistical measures, such as the median, would have been minimally affected. My conclusion is that, while it is possible that some of the very low CODs are a result of trimming, this process does not provide a complete explanation of the low CODs. The main concern with low CODs, however, is that they may be an indication of sales chasing. This possibility has been examined and is not occurring.

Sales Time Period

The main ratio studies included three years of sales. The period began January 2, 2013 and ended with sales occurring as late as December 31, 2015. This period is somewhat longer than is typically recommended in the IAAO *Standard*. However, it is acceptable, provided proper adjustments are made to sales prices for time, if necessary. The use of a longer sales period also helps ensure more representative samples for the categories other than residential, for which limited samples are available due to fewer sales occurring.

I analyzed the ratios in each category and overall to determine whether the change in ratios over time warranted use of a time adjustment. Many times I did use a linear adjustment based on regression analysis of the ratios over time. If it appeared however, that the results were distorted by a few high or low ratios occurring early or late in the period, I rejected the time adjustment. Also, if application of the time adjustment increased the COD, the adjustment was not used.

An additional sales period extended through May 31, 2016 and the results of ratio studies using these additional sales are included in Appendix A3 and labeled accordingly.

Statistical Measurements

In general, all standard ratio study statistical measurements were calculated and are reported in Appendix A for each analysis conducted. These include measurements of level, uniformity, reliability, and normality of the data distribution, as well as general information about the samples, such as average sale price, category studied, number of sales in the study, type of trim used, and number of ratios trimmed.

Level of Assessment

Four measures of level of assessment are calculated and reported. These are:

- Mean
- Median
- Weighted Mean
- Geometric Mean

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¹⁵ Ibid. Part 1. Section 4.4.

For evaluation of appraisal performance (at issue here), the median is recommended. See the following table found in the IAAO *Standard*. ¹⁶

Table 2-2
Preferred Estimators

Median Mean Weighted Mean	Indirect Equalization X*	Direct Equalization X	Monitoring Performance X				
* Caution should be exercised when the sample contains value outliers or indicates value bias based on the PRD							

For demonstrations and illustrations of the other measures of level and general discussion of ratio studies, see Appendix B. (Note that the illustrations and examples provided in Appendix B are generic and do not reflect any analysis using data from Blair County or the reassessment.)

Level of assessment meets IAAO standards when it complies with the following rule:

- 1. For any category of property, the median must be between 90% and 110%, assuming 100% of market value is the goal.
- 2. Each "class" of property should be within $\pm 5\%$ "... of the overall level of appraisal of the jusisdiction..." 17

Using proposed new assessed values, Blair County assessments comport with these standards in every ratio study testing overall and category assessment level.

Uniformity of Assessment

Uniformity statistics measure the variability of the ratios and are important in determining whether similarly situated properties are assessed similarly with respect to market value (or some alternate goal). The IAAO *Standard* comments about measuring uniformity with the Coefficient of Dispersion (COD):

"The most generally useful measure of variability or uniformity is the COD." 18

See the following table found in the IAAO Standard: 19

¹⁶ Ibid. Part 2. Section 6.2. (Note: table is numbered as found in the IAAO *Standard*.)

¹⁷ Ibid. Part 2. Section 11.1.2

¹⁸ Ibid. Part 1. Section 5.4.1.

¹⁹ Adapted from Part 2. Page 34 of the 2013 *Standard on Ratio Studies*. Specifically found as Table 2-3 in the 2007 edition; the only substantive modification in the 2013 edition is to include a cautionary note about using the PRB to verify vertical inequity indications based solely on the PRD. There is further discussion of this table in Appendix B.

Ratio study uniformity standards indicating acceptable general quality*

General Property Class	Jurisdiction Size / Profile / Mark et Activity	COD
Residential improved (single	Very large jurisdictions / densely populated / newer properties / active markets	10.0
family dwellings, condominiums,	Large to mid-sized jurisdictions / older & newer properties / less active markets	15.0
manuf. housing, 2-4 family units)	Rural or small jurisdictions / older properties / depressed market areas	20.0
Income-producing properties	Very large jurisdictions / densely populated / newer properties / active markets	15.0
(commercial, industrial,	Large to mid-sized jurisdictions / older & newer properties / less active markets	20.0
apartments,)	Rural or small jurisdictions / older properties / depres sed market areas	25.0
Residential vacant land		15.0
	Large to mid-sized jurisdictions / slower development / less active markets	20.0
	Rural or small jurisdictions/ little development / depressed markets	25.0
Other (non-agricultural) vacant		20.0
land	Large to mid-sized jurisdictions / slower development / less active markets	25.0
	Rural or small juris dictions/ little development / depressed markets	30.0

These types of property are provided for general guidance only and may not represent jurisdictional requirements.

As a rule of thumb, since I do not have sufficient information to evaluate the homogeneity of the properties being analyzed, I would suggest, and have employed, application of a 20% COD standard for all except vacant lots over 10 acres (V), for which 25% would be acceptable. Lower CODs generally indicate better general uniformity. However, there is a caveat. Although analysis of non-selling properties convinces me that there is no sales chasing or any reassessment process similar to sales chasing, several of the CODs are below 5%, a result that is considered highly unlikely except in:

"...(1) subdivisions in which lot prices are strictly controlled by the developer; (2) extremely homogeneous propert6y groups, such as condominium units all located in the same complex; (3) appraisal ratio studies in which the assessor's values and the independent appraisals reflect the same appraisal manuals and procedures; or (4) appraisals that have been adjusted to match sales prices." ²⁰

The same low COD result can also be attributed to over-trimming. Additional analyses using later sales and sales ruled invalid because of time on market issues show findings of higher CODs, as anticipated given the probable invalid nature of many of these sales.

While the COD is effective in measuring general uniformity, it does not measure whether high and low priced properties are being treated similarly (ie: have similar ratios). For this it is necessary to measure vertical equity, for which there are two measures presented in the IAAO *Standard* and computed in the ratio studies done for this report. These measures are the Price-related Differential (PRD) and the Price-related Bias (PRB). To be considered in compliance with the IAAO *Standard*, the PRD must be

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^{*} The COD performance recommendations are based upon representative and adequate sample sizes, with outliers trimmed and a 95% level of confidence.

^{*} Appraisal level recommendation for each type of property shown should be between 0.90 and 1.10.

^{*} PRD's for each type of property should be between 0.98 and 1.03 to demonstrate vertical equity.

PRD standards are not absolute and may be less meaningful when samples are small or when wide variation in prices exist. In such cases, statistical tests of vertical equity hypotheses should be substituted.

CODs lower than 5.0 may indicate sales chasing or non-representative samples.

²⁰ Gloudemans, Robert J. Mass Appraisal of Real Property. IAAO. Chicago, IL. P. 237.

between 0.98 and 1.03. More typical higher PRDs ostensibly indicate lower ratios (level of assessment) on higher priced properties; however, a caution is indicated based on recent analytical studies. The PRD has been shown to provide a significant number of false "positive" conclusions of non-compliance. It is therefore suggested that such pre-conclusions be confirmed by using the more precise PRB. The advisory guidelines provided with regard to the PRB suggest caution (meaning possible vertical inequity) beyond $\pm .05$ and "unacceptable inequity" beyond $\pm .10$. For reference, a PRB of -0.10 indicates that, as values double, assessment ratios tend to fall by 10%. The opposite is true of positive PRB results, unusual, but noted widely in the ratio studies based on the original 1958 base value assessments. A caution with respect to the PRB is that one should not conclude that there is vertical inequity unless the confidence interval around this statistic fails to include .05 or .10 (or the negative counterparts). For example, in the ratio study of vacant lots under 10 acres (L) category, using sales occurring after January 1, 2016, the PRB was 0.135. However, the confidence interval around this statistic had a lower limit of .0017. This indicates that, although the positive direction (ie: since the first of this year, assessment ratios tend to rise as values rise) holds true, the results are not provably in the IAAO recommended caution range, based on the PRB. Further, due to small sample size for this category, results cannot be corroborated with other statistical tests, such as the Mann-Whitney test that looks for differences between the ranks of ratios of properties above or below the mean sale price.

In many cases, it is possible to corroborate vertical equity issues using the Mann-Whitney test, even though this test does not have an IAAO recognized specified standard. It is a recognized technique for looking for differences between two groups²². In large samples, however, the test recognizes small differences as significant and this significance is noted on statistical analysis reports, such as the overall report based on the new assessments and found in Appendix A2. When, as in that case, the Mann-Whitney result is not supported by vertical inequity findings using either the PRD or the PRB, the Mann-Whitney test conclusion should be disregarded. This has been noted throughout Appendix A on the analysis pages with regard to the overall new assessment statistical analysis and in other appropriate cases.

In the analysis of the new assessments, no category failed standards based on the COD. Only the vacant lots over 10 acres category (V) failed the PRD standard for vertical equity and this result was refuted by the PRB. That means that, while there may be a slight tendency in this category to undervalue higher priced properties, this result cannot be proven and is suspect given the small sample size.

Reliability Measures

Statistics calculated from samples are considered point estimates, meaning that they are presumed accurate for that sample, but are not necessarily indicative of population measurements. Samples have innate error, known as sampling error, which must first be taken into account. For that reason, IAAO standards for level and uniformity are predicated on understanding the likely ranges for level and uniformity of the population. In other words, the standards advise taking into account sampling error. While there are various ways of doing this, statistical analyses accompanying this report include confidence intervals around three of the four measures of level provided and around the COD and PRB. Conclusions of non-compliance should be based on confidence intervals that fail to include the goal. For example, if 100% ±10% is the goal and accepted range for level of assessment, then a sample median of 87% with a confidence interval from 85% to 89% would be considered out of compliance, while a sample with a the same median, but a less reliable result with a wider confidence interval

²¹ Ibid. Part 1. Section 9.2.7.

²² Gloudemans, Robert J., Mass Appraisal of Real Property. IAAO. 1999. p. 295.

extending from 82% to 94% could not be found out of compliance with the indicated level of assessment standard.

Similar tests and results are provided for the COD and PRB, both of which often have large margins of error.

Follow up Analysis

Although there are no known additional valid sales during the period used to develop and then test the initial assessments, sales have occurred subsequent to this period during 2016. Use of these sales to develop an additional ratio study provides good corroboration of results, at least at the overall jurisdiction level and, to an extent, mitigates representativeness concerns related to low CODs. Accordingly, additional sales from January, 2016 through May 31, 2016 were also analyzed to corroborate results based on older sales. Ratio study results based on this additional information are labeled accordingly and included in Appendix A3. Overall, Residential category (R), and Commercial category (C) results show excellent level of assessment and excellent uniformity. The very small additional sample for the vacant lots under 10 acres (L) category shows adequate assessment level with some slippage in general assessment uniformity based on the COD and slightly low, but questionable, PRD, with a slightly high, but not conclusive, PRB.

In analyzing the results of appraisal models, it is important both to review before and after ratio study statistics and to develop additional ratio studies based on sales <u>not</u> included in the appraisal model. IAAO comments:

"Modeling procedures that use sales data will probably produce biased statistics if the sales used in making the measurement were included in the analysis. Many modelers will set aside some sales as a control group, excluding them from the modeling process so they are available as an unbiased measurement of model performance."²³

By including sales originally excluded by appraisers developing the appraisal models, this condition has been partly met with respect to analyzing results of the reassessment. Analysis of just these sales, with alternate validation codes, but no finding of clear invalidity supports the general overall conclusion that the final level of assessment is probably well within standards for assessment level with expected somewhat poorer uniformity. Uniformity measures using these alternate and somewhat questionable sales cannot be viewed in isolation as they are not expected to be an independent representative sample; they were reviewed only to test overall premises about the reassessment and add some independent data to the general database. A similar additional test was conducted by including sales deemed invalid because of atypical time on market. Given widely disparate ratios on some of these sales, inclusion may be more distortive than informative. Nevertheless, larger categories, such as R (residential) and C / I (commercial and industrial) show little change in level or general uniformity. Level and uniformity shown is worse in the other categories, but this reflects the large number of atypical time on market sales added, especially to the L (vacant lots under 10 acres in size) category, where sample size more than doubled due to inclusion of these questionable sales. Such a result should not be taken as refutation of the original results as sample representativeness is in doubt.

Additional testing could have been done, possibly without the previously mentioned outlier effect, had "holdout" samples of clearly valid sales been removed from the database of sales actually used in

14

²³ IAAO. 1990. Property Appraisal and Assessment Administration. P. 553. Chicago, IL

developing the appraisal models. Regardless, I am satisfied that adjustments to assessments of non-selling properties were of similar magnitude to those made with respect to selling properties. Furthermore, the additional samples incorporating some sales previously considered invalid and therefore not used in the appraisal model, serve to strengthen the likelihood that the overall results are representative of the population of properties. I would recommend additional testing as new sales become available (these should be time adjusted backward to January 1, 2016) and I would further recommend that "holdout" samples be considered in future reappraisals. Another IAAO source describes such a procedure as the "...preeminent method employed to review values when sales data are adequate...." "24"

In addition to concerns about the application of the reassessment model to all properties, it is important to recognize that it is difficult in any model based on sales to ensure that the model completely represents all property types and geo-economic influences that affect the value of property throughout any jurisdiction. For this reason, it is important to review cases of unusual magnitude assessed value adjustments resulting from the application of the model. The Quality Control chapter of the IAAO textbook, *Assessment Administration* contains a section entitled "Valuation Review" which includes the following commentary:

"Scanning a list for unusual or unexpected values (outliers) seems to be second nature for assessors. This process first is performed as part of the valuation review by analysts, usually with some initial guidance from appraisers, and is accomplished as a matter of course by using a variety of data. Lists of properties with estimated market values, their addresses, and other identifying information are commonly reviewed. ...Lists that prioritize properties for review by characterizing them as having small, medium, or large changes from prior value estimates, in terms of both percentage changes and dollar changes...are useful as well." ²⁵

Such a step is beyond the direct scope of this project, but worthy of note.

Overall Conclusions

My major conclusion is that, to the extent measurable by ratio studies based on the assessment and sales information provided to me, the reassessment values established for 2016 meet the goal of establishing market value as of January 1, 2016 as the level of assessment on an overall basis for properties throughout Blair County. This does not mean that every assessment necessarily is market value, as ratio study results are statistical in nature and provide measurements that apply to groups of properties rather than individual properties. However, it does mean that the overall industry accepted quality standards for assessment level, as measured by these sales, have been achieved. In addition, assessment equity, in terms of disparity between categories is markedly improved and is far better than if the original 1958 base year assessments were to be retained. IAAO standards for level of assessment have been met for each category tested.

Uniformity within categories measures the variability between the ratios, with lower variability indicating better uniformity and being preferred. There are two types of uniformity measures — between properties in general (horizontal equity) and between high and low priced properties (vertical equity).

²⁴ IAAO. 2003. Assessment Administration. Pp. 343-344. Chicago, IL.

²⁵ IAAO. 2003. Assessment Administration. Pp. 342 – 343.

In comparison to uniformity measures using original 1958 base year assessments, overall and at the category level, general (horizontal) uniformity as measured by the Coefficient of Dispersion (COD) is much better.. Using 1958 base year assessments, no category meets general uniformity standards. In contrast, each category meets uniformity standards using new assessments.

The second type of uniformity, vertical equity, is also substantially improved given the new assessments, with only the Vacant lots over 10 acres category (V) failing by a slight margin using one statistical measure that is not corroborated with alternate, more precise statistics. Using the original assessments, Commercial / Industrial, Agricultural, Vacant lots over 10 acres, and Land (vacant lots under 10 acres) categories all fail vertical equity standards by larger margins.

Caution is advised when interpreting the PRD as an indicator of vertical equity because of a tendency to produce false "positives" (indicating vertical inequity when there is none), particularly when sample sizes are small, as in the Vacant lots over 10 acres category (V).

National standards suggest that ratio studies and similar analyses based on sales used to develop an appraisal model need to be supplemented by additional sales that were not used in developing the assessed values. This provides verification proving to a greater extent that the model is applicable to the non-selling properties, which are the main focus of any reassessment. To the extent that otherewise valid sales not used for the assessment model based on appraiser discretion were included in the analyses developed for this report, this condition has been satisfied. Additional sales from January, 2016 through May 31, 2016 were also analyzed and, at least regarding the final level of assessment, corroborate results based on older sales.

Finally, in comparison to the generally disparate levels of assessment between categories and generally poor to very poor uniformity (both horizontal and vertical) evidenced by the ratio studies conducted using the same sales, but the original 1958 base year assessed values, the reassessment shows results that are vastly better – much less disparate in level, much more uniform, and meeting nearly all IAAO standards for assessment quality.

Appendices

Notes on Interpretation of Comments Found on Statistical Analysis Pages in Appendices

Many of the statistical analysis pages have certain measurements highlighted or have added verbiage commenting on the quality of the calculated results. In many cases, there are numerous statistical measures designed to look at various aspects of level and uniformity. Specific measurements may be more or less applicable to individual category or other results and, when multiple measurements are presented, they must be taken in conjunction with other results. Common examples include:

- Level measurements showing one measure that appears out of line with others
- General uniformity measurements showing the term "questionable"
- Vertical equity measurements showing the term "inequity"

The usefulness of these indicators is in providing cautionary notes to the analyst or reviewer. Each of the above issues is discussed in detail throughout the narrative portion of the report. However, in summary, the following notes apply:

- Although multiple level measurements assist in determining the influence and presence of outliers and other distortions, the median is the most useful measure of assessment level.
- When uniformity is deemed "questionable," this advises that there is a risk of sales chasing or
 other similar processes that call the representativeness of the samples and the applicability of the
 results to the population of properties as a whole in question. This issue is dealt with throughout
 the report and there is no sales chasing. The term does not otherwise comment on the quality of
 the assessments.
- Although several vertical equity measures are calculated, the most widely used are the PRD and the PRB. In a few cases, an alternate test, the Mann-Whitney test, shows possible vertical inequity, with the incumbent label. This result is considered applicable only if it corroborates similar indications by both the PRD and PRB. In addition, the PRD has been shown to be prone to "false positives," in which it indicates vertical inequity that cannot be substantiated.

Appendix A

Ratio Study Reports Related to Evaluation of Original Base Value Assessments and Proposed January 1, 2016
Market Value Reassessments in Blair County

Appendix A1

Before Reassessment

Ratio Studies for Blair County

Overall and by Category

These ratio studies use current "original" 1958 Base assessed values

Sales Period – January 1, 2013 – December 31, 2015

Sales Price is Linear Trend Selected - Mo. rate -0.105%		See Paramete Category				Time Peri	iod Studied
Sales Price is Time Adjusted Sample size (n) 1,683 Total Assessed Value \$25,192,060 Total Adjusted Sales Price \$220,056,0552 Mean Assessed Value \$14,999 Mean Adjusted Sales Price \$220,056,0552 Mean Assessed Value \$14,999 Mean Adjusted Sales Price \$172,048 \$19,403 Standard Deviation AV \$19,403 Standard Deviation AV \$19,403 Standard Deviation AV \$118,200 Median Ratio \$8,87% Median Ratio \$8,87% Weighted Mean Ratio \$8,87% Weighted Mean Ratio \$8,67% Geometric Mean Ratio \$8,67% Geometric Mean Ratio \$8,67% Geometric Mean Ratio \$8,67% Geometric Mean Ratio \$2,24% Coefficient of Dispersion \$25,39% Standard Deviation \$2,28% Coefficient of Variation \$2,24% Coefficie	SIMPLIFIED RATIO	Using Origina	l Assessed	Assessment Da	te:	From:	To:
Sales Price is Time Adjusted Stantaristics Sample size (ii) 1,883 300	STUDY			01/01/2016		01/01/2013	12/31/2015
SAMPLE STATISTICS	,	raid					
SAMPLE STATISTICS Sample size (n) 1.683 Total Assessed Value \$25,192,060 Total Adjaured Sales Price \$290,566,552 Mean Assessed Value \$14,969 Mean Adjusted Sales Price \$172,648 Standard Deviation AV \$19,403 Standard Deviation SP \$271,407 Median Assessed Value \$11,820 Median Sales Price \$1372,648 Standard Deviation SP \$271,407 Median Assessed Value \$11,820 Median Sales Price \$135,652 ASSESSMENT LEVEL Arithmetic Mean Ratio 8,87% Median Deviation 2,88% PRET Score: 9,737 PRB is SIGNIFICANT @ 90% PRD: No Observed Bias Price-Related Differential 1,02 RELIABILITY 90% Confidence Intervals: Lower Upper Around the Median 8,77% 8,98% Ratio PRD: No Observed Bias PRD: No Observed Bias Around the Median 8,78% 8,88% PRB: Some Bias towards Low Priced 200,000 Median 8,74% 8,98% PRB: Some Bias towards Low Priced 200,000 Median 8,74% 8,98% Probability True Mean 09,1-1,1 0,00% No Normal Non-Normal Non-Nor		L	inear Trend S	elected - Mo. rate	-0.105%		
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Coefficient of Dispersion 25.39% Standard Deviation 2.86% Ratio			1	0.009 0.027 0.045 0.06	4 0.082 0.100	0.118 0.136	0.155 0.173 0.191
Standard Deviation 2.86% Coefficient of Variation 32.24% Price Related Bias 0.0783 PRB T Score: 9.737 PRB is SIGNIFICANT @ 90% Price-Related Differential 1.02 RELIABILITY 90% Confidence Intervals: Lower Upper Uniformity: Around the Mean 8.76% 8.99% COD: Poor Around the Median 8.71% 9.01% COV: Poor Around the Weighted Mean 8.50% 8.84% PRD: No Observed Bias Around the PRB 0.0625 0.0941 PRB: Some Bias towards Low Priced 80% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 8.78% 8.96% Inner Quartile Fence: 78 Sale(s) Lost to Trimming Around the Median 8.74% 8.98% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 8.54% 8.80% Probability True Mean 0.9 - 1.1 0.00% Category (ies): All NORMALITY Test Results: Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974			1	0.000 <u>0.018</u> <u>0.036</u> <u>0.055</u>	0.073 0.091	<u>0.109</u> <u>0.127</u> <u>0.146</u>	<u>0.164</u> <u>0.182</u>
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Around the Weighted Mean Around the COD Around the PRB Around the PRB Around the PRB Around the PRB Around the Mean Around the Mean Around the Mean Around the Median Around the Median Around the Weighted Mean Around the Median Aro					COV:	Poor	
Around the COD 24.43% 26.60% Around the PRB 0.0625 0.0941 80% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 8.78% 8.96% Inner Quartile Fence: 78 Sale(s) Lost to Trimming Around the Median 8.74% 8.98% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 8.54% 8.80% Probability True Mean 0.9 - 1.1 0.00% Category (ies): All NORMALITY Test Results: Non-Normal Neighborhoods: All Chi Square Test Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974			_			1 7 7 1	
Around the PRB 0.0625 0.0941 PRB: Some Bias towards Low Priced 80% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 8.78% 8.96% Inner Quartile Fence: 78 Sale(s) Lost to Trimming Around the Median 8.74% 8.98% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 8.54% 8.80% Probability True Mean 0.9 - 1.1 0.00% Category (ies): All NORMALITY Test Results: Non-Normal Neighborhoods: All Chi Square Test Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974	,				TIND.	NO OBSCIVEU BIUS	
80% Confidence Intervals: Lower Upper Around the Mean 8.78% 8.96% Inner Quartile Fence: 78 Sale(s) Lost to Trimming Around the Median 8.74% 8.98% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 8.54% 8.80% Probability True Mean 0.9 - 1.1 0.00% Category (ies): All NORMALITY Test Results: Non-Normal Neighborhoods: All Chi Square Test Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974				PRR-	Some Rias toy	vards I ow Priced	
Around the Mean 8.78% 8.96% Inner Quartile Fence: 78 Sale(s) Lost to Trimming Around the Median 8.74% 8.98% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 8.54% 8.80% Probability True Mean 0.9 - 1.1 0.00% Category (ies): All NORMALITY Test Results: Non-Normal Neighborhoods: All Chi Square Test Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974				T ND.			
Around the Median 8.74% 8.98% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 8.54% 8.80% Category (ies): All NORMALITY Test Results: Non-Normal Chi Square Test Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974				h			
Around the Weighted Mean 8.54% 8.80% Probability True Mean 0.9 - 1.1 0.00% NORMALITY Test Results: Non-Normal Neighborhoods: All Chi Square Test Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974						· ,	
Probability True Mean 0.9 - 1.1 0.00% Category (ies): All NORMALITY Test Results: Non-Normal Chi Square Test Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974				Please enter the cat	egory (ies) and nie	ghborhood(s) used in t	the study.
NORMALITY Test Results: Non-Normal Neighborhoods: All Chi Square Test Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974	,		8.80%				
Chi Square Test Non-Normal Binomial Test N/A Mann-Whitney Test 2.46974	-		J				
Binomial Test N/A Mann-Whitney Test 2.46974				Neighborhoods:		All	
Mann-Whitney Test 2.46974			-				
	Binomiai Test	N/A	-				
	Mann Militer Tt	0.40074	-				
audinicance of value Related Inequity - Strong T			{				
			{				
D'Agostino-Pearson Non-Normal Shapiro-Wilk W N/A			1				
			Accontable				
Kurtosis 2.90 Acceptable 2.50 4.00			Acceptable				
Skew 0.25 Acceptable			Accontable				
-0.50 1.00 Acceptable			Acceptable		-		

	See Paramete Category				Time Peri	iod Studied
SIMPLIFIED RATIO	Using Origina	l Assessed	Assessment Date	9:	From:	To:
STUDY	Value		01/01/2016		01/01/2013	12/31/2015
Sales Price is	7			<u> </u>	0.00.0000	140114
Time Adjusted	L	inear Trend S	Selected - Mo. rate	-0.087%		
SAMPLE STATIST	ice					
Sample size (n)	1,548	250) T			
Total Assessed Value	\$22,176,470	-11			_	
Total Adjsuted Sales Price	\$246,769,996			`		Observed
Mean Assessed Value	\$14,326	- 200) †	208 212		Expected
Mean Adjusted Sales Price	\$159,412			187	94	
Standard Deviation AV	\$9,390			101		
Standard Deviation SP	\$93,804		'†			
Median Assessed Value	\$11,990			2000	— \	
Median Sales Price	\$135,681	1 8	12	21	128	
ASSESSMENT LET		3 100) †			
Arithmetic Mean Ratio	8.99%	1				
Median Ratio	8.95%		81		79	
Weighted Mean Ratio	8.99%	50) †		68	
Geometric Mean Ratio	8.57%		25		43 2	
UNIFORMITY			21 35	7 10 10 1	3	22 1
<extreme> Lowest Ratio</extreme>	2.74%					
Highest Ratio	16.06%	1	<u>0.009</u> <u>0.027</u> <u>0.045</u> <u>0.062</u>	0.080 0.098	<u> 0.116</u> <u>0.134</u> <u>1</u>	<u>0.152</u> <u>0.169</u> <u>0.187</u>
Coefficient of Dispersion	23.63%		0.000 <u>0.018</u> <u>0.036</u> <u>0.054</u>	0.071 0.089	<u>0.107</u> <u>0.125</u> <u>0.143</u>	<u>0.161</u> <u>0.178</u>
Standard Deviation	2.66%			Ratio		
Coefficient of Variation	29.59%					
Price Related Bias	0.0858	PRB T Score:	9.3085	PRB is SIGNIF	FICANT @ 90%	
Price-Related Differential	1.00					
RELIABILITY						
90% Confidence Intervals:	Lower	Upper	<u>Uniformity:</u>			
Around the Mean	8.88%	9.11%		COD:	Somewhat Poor	
Around the Median	8.82%	9.08%		COV:	Somewhat Poor	
Around the Weighted Mean	8.88%	9.09%		PRD:	No Observed Bias	
Around the COD	22.70%	24.64%				
Around the PRB	0.0678	0.1039	PRB:	Some Bias to	wards Low Priced	
80% Confidence Intervals:	Lower	Upper		Outlier Me	thod:	
Around the Mean	8.91%	9.08%	Inner Quartile		le(s) Lost to Trimn	nina
Around the Median	8.85%	9.05%			eghborhood(s) used in t	
Around the Weighted Mean	8.90%	9.07%	i icase enter the cate	gory (103) and file	gilboi ilood(s) used III i	ino Study.
Probability True Mean 0.9 - 1.1	0.00%		Category (ies):		R	
NORMALITY Test Results:	Non-Normal	1	Neighborhoods:		All	
Chi Square Test	Non-Normal		1101911201110003.		All	
Binomial Test	N/A	1				
2		1				
Mann-Whitney Test	3.26230					
Significance of Value Related In						
Significance of Value Related Ir D'Agostino-Pearson	Non-Normal					
	Non-Normal N/A					
D'Agostino-Pearson		Acceptable				
D'Agostino-Pearson Shapiro-Wilk W Kurtosis	N/A	Acceptable				
D'Agostino-Pearson Shapiro-Wilk W	N/A 2.80	Acceptable Acceptable				

	See Paramete Category				Time Peri	od Studied
SIMPLIFIED RATIO	Using Origina	I Assessed	Assessment Date);	From:	To:
STUDY	Value		01/01/2016		01/01/2013	12/31/2015
Sales Price is	Value	-		<u> </u>	0.000.000	1200200
	L	inear Trend S	elected - Mo. rate	0.129%		
Time Adjusted						
SAMPLE STATIST		14	т т			
Sample size (n)						
Total Assessed Value		4 10	13			Observed
Total Adjsuted Sales Price		<u> </u>			_	- Expected
Mean Assessed Value				11		,
Mean Adjusted Sales Price	_	4		10		
Standard Deviation AV		-9	9 9			
Standard Deviation SP			, †			
Median Assessed Value	\$14,600	1 5				
Median Sales Price	· · ·	. Š	7	300		
ASSESSMENT LE		4 ⁻		7		
Arithmetic Mean Ratio	10.85%			200		
Median Ratio	10.13%		4		4 4	
Weighted Mean Ratio	_		3 3		3	
Geometric Mean Ratio	8.76%		等 奶奶 超過二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十	2		_
UNIFORMITY	,				1 1 1	1
<extreme> Lowest Ratio</extreme>	0.10%	,	_ ' ' '		. . ! . . ! .	
Highest Ratio	26.37%		0.015 0.044 0.073 0.103	0.132 0.16	· ·	.249 0.278 0.308
Coefficient of Dispersion	43.94%		0.000 <u>0.029</u> <u>0.059</u> <u>0.088</u>	0.117 0.146	<u>0.176</u> <u>0.205</u> <u>0.234</u>	<u>0.264</u> <u>0.293</u>
Standard Deviation	5.69%	ļ		Ratio		
Coefficient of Variation	52.40%			•		
Price Related Bias	0.0607	PRB T Score:	1.794	PRB is incond	lusive	
Price-Related Differential	1.12					
RELIABILITY						
90% Confidence Intervals:	Lower	Upper	<u>Uniformity:</u>			
Around the Mean	9.89%	11.81%		COD:	Very Poor	
Around the Median	9.27%	11.59%		COV:	Very Poor	
Around the Weighted Mean	7.17%	12.23%		PRD:	Favors High Priced	
Around the COD	35.66%	51.96%				
Around the PRB	-0.0056	0.1271	PRB:	Meets IAAO S	tandard, No Significa	int Bias
80% Confidence Intervals:	Lower	Upper		Outlier Me	ethod:	
Around the Mean		11.60%	Inner Quartile		le(s) Lost to Trimm	ina
Around the Median	10.10% 9.58%	11.80%				
	_	11.67%	riease enter the cate	gory (les) and file	eghborhood(s) used in t	ne stuuy.
Around the Weighted Mean	,	11.57 /0	Cotogo :: /ica):		CII	
Probability True Mean 0.9 - 1.1	0.00%		Category (ies):		C/I	
NORMALITY Test Results:	Non-Normal		Neighborhoods:		All	
Chi Square Test	N/A	-				
Binomial Test	Non-Normal	-				
*i.e., Insufficient evidence of N		-				
Mann-Whitney Test	-2.12289	-				
Significance of Value Related In		-				
D'Agostino-Pearson	Normal	-				
	N/A					
Shapiro-Wilk W	0.04	A				
Kurtosis	2.84	Acceptable				
Kurtosis 2.00	5.00	·				
Kurtosis		Acceptable Acceptable				

	See Paramete Category			-	Time Peri	iod Studied
SIMPLIFIED RATIO	Using Origina	l Assessed	Assessment Date	:	From:	To:
STUDY	Value		01/01/2016		01/01/2013	12/31/2015
Sales Price is				ľ		
Not Time Adjusted		Time Adj.	Not Applied			
SAMPLE STATIST	ics					
Sample size (n)	14	3.5	5 T			
Total Assessed Value	\$229,500				_	Observed
Total Adjsuted Sales Price	\$5,070,449	3	3 †		_	_
Mean Assessed Value	\$16,393			3	-	Expected
Mean Adjusted Sales Price	\$362,175	2.5	5 +			
Standard Deviation AV	\$11,319	1				
Standard Deviation SP	\$245,313	2	2 +			
Median Assessed Value	\$16,050	重		2		
Median Sales Price	\$277,000	tunog 1.5	5 +	7.4	7	
ASSESSMENT LE		ľ				
Arithmetic Mean Ratio	4.69%	1				
Median Ratio	5.19%		1 1 1 1 1 1	600	1 1 1	1
Weighted Mean Ratio	4.53%	0.5	5 +		6 VA VA	
Geometric Mean Ratio	3.78%			10.33		
UNIFORMITY <extreme> Lowest Ratio</extreme>	0.65%					5 765
Highest Ratio	8.81%	`	1	0.044 0.054	0.064 0.073).083 0.093 0.103
Coefficient of Dispersion	39.47%			. — . —	0.059 0.069 0.078	0.088 0.098
Standard Deviation	2.56%			Ratio		
Coefficient of Variation	54.45%			Ratio		
Price Related Bias	0.1831	PRB T Score:	1.2373	PRB is inconcl	usive	
Price-Related Differential	1.04		20.70	. KD to moone.		
RELIABILITY	1.01					
90% Confidence Intervals:	Lower	Upper	Uniformity:			
Around the Mean	3.48%	5.90%	<u> </u>	COD:	Very Poor	
Around the Median	2.71%	6.18%		COV:	Very Poor	
Around the Weighted Mean	2.99%					
Around the COD		6.06%		PRD:		i
	30.89%	6.06% 93.67%		PRD:	Favors High Priced	i
Around the PRB	30.89% -0.1350	6.06% 93.67% 0.5012	PRB:		Favors High Priced	
Around the PRB	-0.1350	93.67% 0.5012	PRB:		Favors High Priced andard, No Significa	
Around the PRB 80% Confidence Intervals:	-0.1350 Lower	93.67% 0.5012 Upper		Meets IAAO St	Favors High Priced andard, No Signification:	ant Bias
Around the PRB 80% Confidence Intervals: Around the Mean	-0.1350 Lower 3.77%	93.67% 0.5012 Upper 5.61%	Inner Quartile	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significathod: e(s) Lost to Trimm	ant Bias ing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median	-0.1350 Lower 3.77% 3.13%	93.67% 0.5012 Upper 5.61% 5.60%	Inner Quartile	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Signification:	ant Bias iing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	-0.1350 Lower 3.77%	93.67% 0.5012 Upper 5.61%	Inner Quartile Please enter the cate	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1	-0.1350 Lower 3.77% 3.13% 3.42% 0.00%	93.67% 0.5012 Upper 5.61% 5.60%	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	-0.1350 Lower 3.77% 3.13% 3.42%	93.67% 0.5012 Upper 5.61% 5.60%	Inner Quartile Please enter the cate	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	-0.1350 Lower 3.77% 3.13% 3.42% 0.00% Normal	93.67% 0.5012 Upper 5.61% 5.60%	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias iing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	-0.1350 Lower 3.77% 3.13% 3.42% 0.00% Normal N/A Non-Normal	93.67% 0.5012 Upper 5.61% 5.60%	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias iing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	-0.1350 Lower 3.77% 3.13% 3.42% 0.00% Normal N/A Non-Normal	93.67% 0.5012 Upper 5.61% 5.60%	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias iing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calcula	-0.1350 Lower 3.77% 3.13% 3.42% 0.00% Normal N/A Non-Normal on-Normality N/A	93.67% 0.5012 Upper 5.61% 5.60%	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias iing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test 'i.e., Insufficient evidence of N Mann-Whitney Test Unable to calcula D'Agostino-Pearson	-0.1350 Lower 3.77% 3.13% 3.42% 0.00% Normal N/A Non-Normal on-Normality N/A te Normal	93.67% 0.5012 Upper 5.61% 5.60%	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias iing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., insufficient evidence of N Mann-Whitney Test Unable to calcula D'Agostino-Pearson Shapiro-Wilk W	-0.1350 Lower 3.77% 3.13% 3.42% 0.00% Normal N/A Non-Normal on-Normality N/A NON-Normal N/A NON-NORMAL NON-NORMAL NORMAL NORMAL NORMAL	93.67% 0.5012 Upper 5.61% 5.60% 5.63%	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias iing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calcula D'Agostino-Pearson Shapiro-Wilk W Kurtosis	-0.1350 Lower 3.77% 3.13% 3.42% 0.00% Normal N/A Non-Normal on-Normality N/A te Normal Normal N/A 1.92	93.67% 0.5012 Upper 5.61% 5.60%	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias iing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis 1.00	-0.1350 Lower 3.77% 3.13% 3.42% 0.00% Normal N/A Non-Normal on-Normality N/A le Normal N/A 1.92 6.00	93.67% 0.5012 Upper 5.61% 5.60% 5.63% Acceptable	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias iing
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test 'i.e., Insufficient evidence of N Mann-Whitney Test Unable to calcula D'Agostino-Pearson Shapiro-Wilk W Kurtosis	-0.1350 Lower 3.77% 3.13% 3.42% 0.00% Normal N/A Non-Normal on-Normality N/A te Normal Normal N/A 1.92	93.67% 0.5012 Upper 5.61% 5.60% 5.63%	Inner Quartile Please enter the cate Category (ies):	Meets IAAO St Outlier Me Fence: 1 Salo	Favors High Priced andard, No Significat thod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias

	See Paramete Category				Time Perio	od Studied
SIMPLIFIED RATIO	Using Origina	I Assessed	Assessment Date	:	From:	To:
STUDY	Value		01/01/2016		01/01/2013	12/31/2015
Sales Price is	-			r		
Not Time Adjusted		Time Adj.	Not Applied			
SAMPLE STATIST	ICS.	r				
Sample size (n)	12	3.5	5 T			
Total Assessed Value	\$26,460	1				
Total Adjsuted Sales Price	\$2,598,901	1 3	3 + 📻		_	Observed
Mean Assessed Value	\$2,205	1	3		\ -	- Expected
Mean Adjusted Sales Price	\$216,575	2.5	5 +			
Standard Deviation AV	\$2,323	1				
Standard Deviation SP	\$160,888	1 2	2 + 🔝 📻			
Median Assessed Value	\$1,475		2	2		
Median Sales Price	\$182,500	Count Count	5 +	100		
ASSESSMENT LE		l °				
Arithmetic Mean Ratio	1.14%] 1	_		_	\
Median Ratio	1.12%] '		1 1	1	1
Weighted Mean Ratio	1.02%	0.5			973	
Geometric Mean Ratio	0.85%	0.5	' T		经 市	
UNIFORMITY						7.5
<extreme> Lowest Ratio</extreme>	0.19%]	_ ' ' ' '			
Highest Ratio	2.58%	ļ	0.001 0.004 0.007 0.010	0.013 0.010		024 0.027 0.030
Coefficient of Dispersion	53.02%	ļ	0.000 <u>0.003</u> <u>0.006</u> <u>0.009</u>	0.011 0.014	<u>0.017</u> <u>0.020</u> <u>0.023</u>	0.026 0.029
Standard Deviation	0.78%	ļ		Ratio		
Coefficient of Variation	68.49%					
Price Related Bias	0.1724	PRB T Score:	0.8233	PRB is incond	lusive	
Price-Related Differential	1.12					
RELIABILITY			110.16.000.16.0			
90% Confidence Intervals:	Lower	Upper	Uniformity:			
90% Confidence Intervals: Around the Mean	0.74%	1.55%	Uniformity:	COD:	Very Poor	
90% Confidence Intervals: Around the Mean Around the Median	0.74% 0.56%	1.55% 1.49%	Uniformity:	COV:	Very Poor	
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	0.74% 0.56% 0.61%	1.55% 1.49% 1.42%	Uniformity:		-	
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD	0.74% 0.56% 0.61% 32.14%	1.55% 1.49% 1.42% 118.84%	_	COV: PRD:	Very Poor Favors High Priced	
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	0.74% 0.56% 0.61%	1.55% 1.49% 1.42%	Uniformity: PRB:	COV: PRD:	Very Poor	nt Bias
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD	0.74% 0.56% 0.61% 32.14%	1.55% 1.49% 1.42% 118.84%	_	COV: PRD:	Very Poor Favors High Priced tandard, No Significan	nt Bias
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB	0.74% 0.56% 0.61% 32.14% -0.2840	1.55% 1.49% 1.42% 118.84% 0.6287	PRB:	COV: PRD: Meets IAAO S Outlier Me	Very Poor Favors High Priced tandard, No Significan	
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals:	0.74% 0.56% 0.61% 32.14% -0.2840 Lower	1.55% 1.49% 1.42% 118.84% 0.6287 <i>Upper</i>	PRB: Inner Quartile	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significat ethod:	ng
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	0.74% 0.56% 0.61% 32.14% -0.2840 <i>Lower</i> 0.83%	1.55% 1.49% 1.42% 118.84% 0.6287 <i>Upper</i> 1.45%	PRB: Inner Quartile	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significal ethod: e(s) Lost to Trimmi	ng
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78%	1.55% 1.49% 1.42% 118.84% 0.6287 <i>Upper</i> 1.45% 1.38%	PRB: Inner Quartile	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significal ethod: e(s) Lost to Trimmi	ng
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78% 0.73%	1.55% 1.49% 1.42% 118.84% 0.6287 <i>Upper</i> 1.45% 1.38%	PRB: Inner Quartile Please enter the cate	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significant thod: le(s) Lost to Trimming thorhood(s) used in the	ng
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78% 0.73%	1.55% 1.49% 1.42% 118.84% 0.6287 <i>Upper</i> 1.45% 1.38%	PRB: Inner Quartile Please enter the cate Category (ies):	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significant thod: e(s) Lost to Trimminghborhood(s) used in the	ng
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90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78% 0.73% 0.00% Normal N/A Non-Normal on-Normality	1.55% 1.49% 1.42% 118.84% 0.6287 <i>Upper</i> 1.45% 1.38%	PRB: Inner Quartile Please enter the cate Category (ies):	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significant thod: e(s) Lost to Trimminghborhood(s) used in the	ng
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78% 0.73% 0.00% Normal N/A Non-Normal on-Normality N/A	1.55% 1.49% 1.42% 118.84% 0.6287 <i>Upper</i> 1.45% 1.38%	PRB: Inner Quartile Please enter the cate Category (ies):	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significant thod: e(s) Lost to Trimminghborhood(s) used in the	ng
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calcular	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78% 0.73% 0.00% Normal N/A Non-Normal on-Normality N/A	1.55% 1.49% 1.42% 118.84% 0.6287 <i>Upper</i> 1.45% 1.38%	PRB: Inner Quartile Please enter the cate Category (ies):	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significant thod: e(s) Lost to Trimminghborhood(s) used in the	ng
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90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78% 0.73% 0.00% Normal N/A Non-Normal on-Normali on-Normali N/A Normal N/A Normal N/A Normal	1.55% 1.49% 1.42% 118.84% 0.6287 Upper 1.45% 1.38% 1.31%	PRB: Inner Quartile Please enter the cate Category (ies):	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significant thod: e(s) Lost to Trimminghborhood(s) used in the	ng
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78% 0.73% 0.00% Normal N/A Non-Normal on-Normality N/A te Normal N/A Normal N/A 100-Normal N/A 100-Normal N/A 200-Normal N/A 200-Normal N/A 200-Normal N/A 200-Normal N/A 200-Normal N/A 200-Normal	1.55% 1.49% 1.42% 118.84% 0.6287 <i>Upper</i> 1.45% 1.38%	PRB: Inner Quartile Please enter the cate Category (ies):	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significant thod: e(s) Lost to Trimminghborhood(s) used in the	ng
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis 1.00	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78% 0.73% 0.00% Normal N/A Non-Normality N/A te Normal N/A 10-Normal N/A 10-Normal N/A 2.39 6.00	1.55% 1.49% 1.42% 118.84% 0.6287 Upper 1.45% 1.38% 1.31% Acceptable	PRB: Inner Quartile Please enter the cate Category (ies):	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significant thod: e(s) Lost to Trimminghborhood(s) used in the	ng
90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis	0.74% 0.56% 0.61% 32.14% -0.2840 Lower 0.83% 0.78% 0.73% 0.00% Normal N/A Non-Normal on-Normality N/A te Normal N/A Normal N/A 100-Normal N/A 100-Normal N/A 200-Normal N/A 200-Normal N/A 200-Normal N/A 200-Normal N/A 200-Normal N/A 200-Normal	1.55% 1.49% 1.42% 118.84% 0.6287 Upper 1.45% 1.38% 1.31%	PRB: Inner Quartile Please enter the cate Category (ies):	Meets IAAO S Outlier Meets Fence: 1 Sa	Very Poor Favors High Priced tandard, No Significant thod: e(s) Lost to Trimminghborhood(s) used in the	ng

Coefficient of Dispersion 79.79% Standard Deviation 3.71% Ratio Ra							
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Sales Price S	SIMPLIFIED RATIO	Using Origina	l Assessed	Assessment Date	:	From:	To:
Sales Price is Not Time Adjusted SaMPLE STATISTICS Sample size (n) 7 Total Assessed Value 546,660 Total Adjusted Sales Price 51,241,535 Mean Adjusted Sales Price 51,241,535 Mean Adjusted Sales Price 53,33,555 Standard Deviation SP 529,031 Median Assessed Value 55,203 Median Sales Price 53,2450 Median Sales Price 53,2450 Median Sales Price 53,2450 Median Sales Price 52,450 Median Ratio 5,2765 Median Ratio 6,2765 Median Ratio 6,2765 Median Ratio 6,2765 Median Ratio 6,2765 Median Ratio 7,2765 Median Ratio	STUDY			01/01/2016		01/01/2013	12/31/2015
Not Time Adjusted					ľ		
SAMPLE STATISTICS			Time Adj	. Not Applied			
Sample size (n) 37 Total Assessed Value 54,660 Total Assessed Value 51,241,535 Mean Adjusted Sales Price 533,555 Standard Deviation AV 51,427 Standard Deviation SP 528,333 Median Assessed Value 53,33 Median Assessed Value 53,33 Median Sales Price 527,450 ASSESSMENT LEVEL 7,400 Arithmetic Mean Ratio 4,21% Median Ratio 4,00% Geometric Mean Ratio 4,21% Median Ratio 4,00% Coefficient of Dispersion 79,79% Standard Deviation 88,10% Price Related Bias 0,0691 Around the Median 2,25% 1,24,11% Around the Median 3,43% 5,00% Around the Median		ICS					
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Mean Adjusted Sales Price \$33,555 Standard Deviation A V \$1,427				5 + —		•	
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Standard Deviation SP	Mean Adjusted Sales Price		ĺ				
Standard Deviation SP \$28,931 Median Assessed Value \$630 Median Assessed Value \$630 Median Assessed Value \$630 Median Ratio \$4,21% Median Ratio \$3,25% Median Ratio \$3,25% Median Ratio \$2,76% Geometric Mean Ratio \$2,76% Geometric Mean Ratio \$2,76% Geometric Mean Ratio \$1,00% Median \$1,00% Median Ratio \$1,00% Median Ratio \$1,00% Median \$1,00% Median Ratio \$1,00% Median Ratio \$1,00% Median \$1,00% Median Ratio \$1,00% Median Ratio	Standard Deviation AV	\$1,427	j '				
Assessment Level	Standard Deviation SP	\$28,931]				
Assessment Level	Median Assessed Value	\$630	<u> </u>	3 +			
Assessment Level	Median Sales Price	\$27,450	Ŗ		3		
## Arithmetic Hear Ratio 4.2.170	ASSESSMENT LE	VEL			7/2		
Weighted Mean Ratio 3.76% Geometric Mean Ratio 2.78% UNIFORMITY	Arithmetic Mean Ratio	4.21%	4				2
Coefficient of Variation Sanow Coefficient of Variation Coefficient of Variation Coefficient of Variation Sanow Coefficient of Variation Coefficient Coefficient of Variation Coefficient of Variation Coeffic		3.25%					_
Coefficient of Dispersion 79,79%					(3.0)		
Coefficient of Dispersion		2.78%	ļ		1	1 1	1
Highest Ratio	_				50 B	92	
Coefficient of Dispersion 79.79% Standard Deviation 3.71% Ratio			,				
Standard Deviation 3.71% Coefficient of Variation 88.10% Price Related Bias 0.0691 PRB T Score: 0.4567 PRB is inconclusive				. — — . — . —			
Coefficient of Variation S8.10% Price-Related Bilas 0.0691 PRBT Score: 0.4567 PRB is inconclusive				0.000 <u>0.016</u> <u>0.031</u> <u>0.047</u> <u>0</u>		0.109 0.12	4 0.140 0.156
Price Related Bias		•	{		Ratio		
Price-Related Differential RELIABILITY			222	0.4507	Inna :		
RELIABILITY 90% Confidence Intervals: Lower Upper			PRB I Score:	0.4567	PRB IS INCONCI	usive	
Down		1.12					
Around the Mean 3.21% 5.22% 3.90% COD: Very Poor		Lower	Unnor	Uniformity:			
Around the Median 2.25% 3.90% Around the Weighted Mean 2.91% 4.61% Around the COD 58.87% 124.01% Around the PRB -0.2276 0.3659 B0% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 3.43% 5.00% Around the Median 2.60% 3.80% Around the Weighted Mean 3.10% 4.42% Probability True Mean 0.9 - 1.1 0.00% NORMALITY Test Results: Non-Normal Chi Square Test NOn-Normal 1.i.e., Insufficient evidence of Non-Normal 1.i.e., Insufficient evidence of Non-Normal Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 1.25% Acceptable 1.240% COV: Very Poor PRD: Favors High Priced PRD: Very Poor				Officiality.	COD	Very Poor	
Around the Weighted Mean Around the COD Around the PRB Around the PRB Around the PRB Around the PRB Around the Mean Around the Mean Around the Mean Around the Mean Around the Median Around the Median Around the Weighted Mean Around the Me						-	
Around the COD 58.87% 124.01% Around the PRB -0.2276 0.3659 80% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 3.43% 5.00% Inner Quartile Fence: 3 Sale(s) Lost to Trimming Around the Median 2.60% 3.80% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 3.10% 4.42% Probability True Mean 0.9 - 1.1 0.00% Category (ies): NORMALITY Test Results: Non-Normal Sinomial Test Non-Normal *i.e., Insufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00						_	
Around the PRB					PRD:	Favors High Price	2 0
80% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 3.43% 5.00% Inner Quartile Fence: 3 Sale(s) Lost to Trimming Around the Median 2.60% 3.80% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 3.10% 4.42% Probability True Mean 0.9 - 1.1 0.00% Category (ies): L NORMALITY Test Results: Non-Normal Chi Square Test N/A Binomial Test Non-Normal *i.e., Insufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00		,		DDD.	Monto IAAO Str	ndard Na Signific	nant Dias
Around the Mean 3.43% 5.00% Inner Quartile Fence: 3 Sale(s) Lost to Trimming Around the Median 2.60% 3.80% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 3.10% 4.42% Probability True Mean 0.9 - 1.1 0.00% Category (ies): L NORMALITY Test Results: Non-Normal Chi Square Test N/A Binomial Test Non-Normal *i.e., hsufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00				PRB:		<u> </u>	Calit Dias
Around the Median 2.60% 3.80% Around the Weighted Mean 3.10% 4.42% Probability True Mean 0.9 - 1.1 0.00% NORMALITY Test Results: Non-Normal Chi Square Test NA Binomial Test Non-Normal *i.e., insufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00							
Around the Weighted Mean 3.10% 4.42% Probability True Mean 0.9 - 1.1 0.00% NORMALITY Test Results: Non-Normal Chi Square Test N/A Binomial Test Non-Normal *i.e., Insufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00						` '	
Probability True Mean 0.9 - 1.1 0.00% Category (ies): L NORMALITY Test Results: Non-Normal Neighborhoods: All Chi Square Test N/A Binomial Test Non-Normal *i.e., hsufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00		,		Please enter the cate	gory (ies) and nieg	hborhood(s) used in	the study.
NORMALITY Test Results: Non-Normal Neighborhoods: All Chi Square Test N/A Binomial Test Non-Normal *i.e., Insufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00			4.42%				
Chi Square Test N/A Binomial Test Non-Normal *i.e., Insufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00	·						
Binomial Test Non-Normal *i.e., hsufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00		_		Neighborhoods:		All	
*i.e., Insufficient evidence of Non-Normality Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00		-					
Mann-Whitney Test -1.85606 Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00							
Significance of Value Related Inequity - Weak D'Agostino-Pearson Non-Normal Shapiro-Wilk W Normal Kurtosis 3.78 Acceptable 2.00 5.00							
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2.00 5.00			Acceptable				
			,				
SNEW 1.31 FUSSIBLE UULIELS	Skew	1.31	Possible Ou	tliers			
-0.50 1.00		•			•		

Appendix A2

After Reassessment

Ratio Studies for Blair County

Overall and by Category

These ratio studies use new proposed assessed values as of June 22, 2016, based on January 1, 2016 market value

Sales Period – January 1, 2013 – December 31, 2015

	See Paramete Category				Time Peri	iod Studied
SIMPLIFIED RATIO	Using Pro	pposed	Assessment D	ate:	From:	To:
STUDY	Assessed		01/01/201		01/01/2013	12/31/2015
Sales Price is	7-0000000	Values	0.70.7201	<u> </u>	0.00.000	12/01/2010
	L	inear Trend S	elected - Mo. rate	-0.128%		
Time Adjusted						
SAMPLE STATIST	-	900) т			
Sample size (n)		-11		A		
Total Assessed Value	\$296,956,300	800) +	— /\		Observed
Total Adjsuted Sales Price	\$295,698,533	700	.	780 750	_	Expected
Mean Assessed Value	\$174,680	-11	' †	753		ZAPOOLOG
Mean Adjusted Sales Price	\$173,940	- 600	, 🕹	600		
Standard Deviation AV	\$281,632	1	`	Park Tolland		
Standard Deviation SP	\$274,816	-) ‡			
Median Assessed Value	\$136,250	Ĕ		138		
Median Sales Price	\$135,641	Jun 400) †	7		
ASSESSMENT LE		-	\mathbf{A}	100		
Arithmetic Mean Ratio	100.95%	300	' T			
Median Ratio	100.26%	200) 			
Weighted Mean Ratio	100.43%				1	
Geometric Mean Ratio	100.79%	100) +		†	
UNIFORMITY		1		3 33	² 13	
Lowest Ratio	76.53%	0) 			
Highest Ratio	125.86%	1	<u>0.100</u> <u>0.300</u> <u>0.500</u> <u>0.7</u>	00 0.900 1.100	<u>1.300</u> <u>1.500</u>	1.700 <u>1.900</u> <u>2.100</u>
Coefficient of Dispersion	4.10%	1	0.000 <u>0.200</u> <u>0.400</u> <u>0.600</u>	0.800 1.000	<u>1.200</u> <u>1.400</u> <u>1.600</u>	<u>1.800</u> <u>2.000</u>
Standard Deviation	5.79%	1		Ratio		
Coefficient of Variation	5.73%	1				
Price Related Bias	-0.0044	PRB T Score:	-3.5601	PRB is SIGNIF	CANT @ 90%	
Price-Related Differential	1.01					
RELIABILITY						
90% Confidence Intervals:	Lower	Upper	Uniformity:			
Around the Mean	100.72%					
Around the Median		101.18%		COD:	Questionable	verified OK
						verified OK
Around the Weighted Mean	100.00%	100.43%		COV:	Excellent	verified OK
Around the Weighted Mean	100.00% 100.09%	100.43% 100.76%				verified OK
Around the COD	100.00% 100.09% 3.91%	100.43% 100.76% 4.30%	DDD.	COV: PRD:	Excellent No Observed Bias	
Around the COD Around the PRB	100.00% 100.09% 3.91% -0.0069	100.43% 100.76% 4.30% -0.0020	PRB:	COV: PRD: Meets IAAO St	Excellent No Observed Bias andard, No Significa	
Around the COD	100.00% 100.09% 3.91% -0.0069 Lower	100.43% 100.76% 4.30% -0.0020 <i>Upper</i>		COV: PRD: Meets IAAO St Outlier Me	Excellent No Observed Bias andard, No Signification	ant Bias
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	100.00% 100.09% 3.91% -0.0069 <i>Lower</i> 100.77%	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13%	Outer Quart	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa	Excellent No Observed Bias andard, No Signification: le(s) Lost to Trimi	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals:	100.00% 100.09% 3.91% -0.0069 Lower	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38%	Outer Quart	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa	Excellent No Observed Bias andard, No Signification	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	100.00% 100.09% 3.91% -0.0069 <i>Lower</i> 100.77%	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13%	Outer Quart	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa	Excellent No Observed Bias andard, No Signification: le(s) Lost to Trimi	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06%	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38%	Outer Quart	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa	Excellent No Observed Bias andard, No Signification: le(s) Lost to Trimi	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	100.00% 100.09% 3.91% -0.0069 <i>Lower</i> 100.77% 100.06% 100.16%	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38%	Outer Quart Please enter the ca	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa	Excellent No Observed Bias andard, No Significathod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100%	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38%	Outer Quart Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100% Non-Normal	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38%	Outer Quart Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100% Non-Normal N/A	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38%	Outer Quart Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100% Non-Normal	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38%	Outer Quart Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100% Non-Normal N/A -4.37250	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38% 100.69%	Outer Quart Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa itegory (ies) and nie	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100% Non-Normal N/A -4.37250	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38% 100.69%	Outer Quart Please enter the ca Category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa itegory (ies) and nie	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100% Non-Normal N/A -4.37250 nequity - Strong	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38% 100.69%	Outer Quart Please enter the ca Category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa itegory (ies) and nie	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100% Non-Normal N/A -4.37250 nequity - Strong Non-Normal	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38% 100.69%	Outer Quart Please enter the ca Category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa itegory (ies) and nie	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100% Non-Normal N/A -4.37250 equity - Strong Non-Normal N/A	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38% 100.69%	Outer Quart Please enter the ca Category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa itegory (ies) and nie	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming
Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W Kurtosis	100.00% 100.09% 3.91% -0.0069 Lower 100.77% 100.06% 100.16% Approx.100% Non-Normal N/A -4.37250 nequity - Strong Non-Normal N/A 5.36	100.43% 100.76% 4.30% -0.0020 <i>Upper</i> 101.13% 100.38% 100.69%	Outer Quart Please enter the ca Category (ies): Neighborhoods: e given other vertical equity indica	COV: PRD: Meets IAAO St Outlier Me ile Fence: 61 Sa itegory (ies) and nie	Excellent No Observed Bias andard, No Signification thod: le(s) Lost to Triminghborhood(s) used in the	ant Bias ming

	See Paramete Category				Time Per	iod Studied
SIMPLIFIED RATIO	Using Pro	posed	A ssessment D	ate:	From:	To:
STUDY	Assessed	•	01/01/201		01/01/2013	12/31/2015
Sales Price is	75555554	values	0.70.720.	<u> </u>	01/01/2010	12/01/2010
	L	inear Trend S	Selected - Mo. rate	-0.129%		
Time Adjusted		Tr				
SAMPLE STATIST		800) T			
Sample size (n)	1,547	-		^		
Total Assessed Value	\$248,394,000	700) †			Observed
Total Adjsuted Sales Price	\$246,822,635	-		⁷⁰⁸ 695	-	Expected
Mean Assessed Value	\$160,565	600) †	12 12		
Mean Adjusted Sales Price	\$159,549			5		
Standard Deviation AV Standard Deviation SP	\$96,989 \$93,874	500	' †			
Median Assessed Value	\$136,700	± 400				
Median Sales Price	\$136,700	Communication	, <u>†</u>			
ASSESSMENT LEV		් යි ₃₀₀	$^{\prime}$	10 155		
Arithmetic Mean Ratio	100.99%	1 300	´			
Median Ratio	100.28%	200) 			
Weighted Mean Ratio	100.20%				1	
Geometric Mean Ratio	100.82%	100) 	//	7	
UNIFORMITY	100.0270			3 29 9	9 13	
Lowest Ratio	76.52%	d) 			-
Highest Ratio	125.86%	1	0.100 0.300 0.500 0.5	700 0.900 1.100	1.300 1.500	1.700 1.900 2.100
Coefficient of Dispersion	4.11%	1	0.000 <u>0.200</u> <u>0.400</u> <u>0.600</u>	<u>0.800</u> <u>1.000</u>	<u>1.200</u> <u>1.400</u> <u>1.600</u>	<u>1.800</u> <u>2.000</u>
Standard Deviation	5.79%	1		Ratio		
Coefficient of Variation	5.73%	1		nuno		
Price Related Bias	-0.0065	PRB T Score:	-4.1767	PRB is SIGNIF	ICANT @ 90%	
Price-Related Differential			-			
i ilve neialeu villelellildi l	1.00					
RELIABILITY	1.00					
	1.00 Lower	Upper	Uniformity:			
RELIABILITY			Uniformity:	COD:	"Questionable	verified OK
RELIABILITY 90% Confidence Intervals:	Lower	Upper	Uniformity:	COD: COV:		verified OK
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median	Lower 100.74% 100.01%	Upper 101.23% 100.46%	Uniformity:	COV:	Questionable	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	Lower 100.74% 100.01% 100.32%	Upper 101.23% 100.46% 100.96%	<u>Uniformity:</u>		Questionable	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD	Lower 100.74% 100.01% 100.32% 3.91%	Upper 101.23% 100.46% 100.96% 4.32%		COV: PRD:	Questionable Excellent No Observed Bias	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB	Lower 100.74% 100.01% 100.32% 3.91% -0.0096	Upper 101.23% 100.46% 100.96% 4.32% -0.0035	Uniformity: PRB:	COV: PRD: Meets IAAO St	[®] Questionable [®] Excellent [®] No Observed Bias andard, No Signific	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals:	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper	PRB:	COV: PRD: Meets IAAO St Outlier Me	Questionable Excellent No Observed Bias andard, No Signific	ant Bias
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80%	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17%	PRB: Outer Quart	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa	Questionable Excellent No Observed Bias andard, No Signific thod: le(s) Lost to Trim	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09%	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42%	PRB: Outer Quart	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa	Questionable Excellent No Observed Bias andard, No Signific	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean Around the Median Around the Weighted Mean	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09%	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17%	PRB: Outer Quart Please enter the ca	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa	⁷ Questionable ⁸ Excellent ⁸ No Observed Bias andard, No Signific thod: le(s) Lost to Triminghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 100.39% Approx.100%	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42%	PRB: Outer Quart Please enter the ca	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa	⁷ Questionable ⁸ Excellent ⁸ No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 100.39% Approx.100% Non-Normal	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42%	PRB: Outer Quart Please enter the ca	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa	⁷ Questionable ⁸ Excellent ⁸ No Observed Bias andard, No Signific thod: le(s) Lost to Triminghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 400.39% Approx.100% Non-Normal Non-Normal	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42%	PRB: Outer Quart Please enter the ca	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa	⁷ Questionable ⁸ Excellent ⁸ No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 100.39% Approx.100% Non-Normal	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42%	PRB: Outer Quart Please enter the ca	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa	⁷ Questionable ⁸ Excellent ⁸ No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 100.39% Approx.100% Non-Normal N/A	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42%	PRB: Outer Quart Please enter the ca	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa	[*] Questionable [*] Excellent [*] No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 100.39% Approx.100% Non-Normal NNA -4.84225	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42% 100.89%	PRB: Outer Quart Please enter the canonic category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa ategory (ies) and nies	[*] Questionable [*] Excellent [*] No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 100.39% Approx.100% Non-Normal N/A -4.84225 equity - Strong	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42% 100.89%	PRB: Outer Quart Please enter the ca	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa ategory (ies) and nies	[*] Questionable [*] Excellent [*] No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 100.39% Approx.100% Non-Normal N/A -4.84225 equity - Strong Non-Normal	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42% 100.89%	PRB: Outer Quart Please enter the canonic category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa ategory (ies) and nies	[*] Questionable [*] Excellent [*] No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 100.39% Approx.100% Non-Normal N/A -4.84225 equity - Strong Non-Normal N/A	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42% 100.89%	PRB: Outer Quart Please enter the ca Category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa ategory (ies) and nies	[*] Questionable [*] Excellent [*] No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W Kurtosis	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.39% Approx.100% Non-Normal N/A -4.84225 equity - Strong Non-Normal N/A 5.45	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42% 100.89%	PRB: Outer Quart Please enter the ca Category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa ategory (ies) and nies	[*] Questionable [*] Excellent [*] No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W	Lower 100.74% 100.01% 100.32% 3.91% -0.0096 Lower 100.80% 100.09% 100.39% Approx.100% Non-Normal N/A -4.84225 equity - Strong Non-Normal N/A	Upper 101.23% 100.46% 100.96% 4.32% -0.0035 Upper 101.17% 100.42% 100.89%	PRB: Outer Quart Please enter the concentration of	COV: PRD: Meets IAAO St Outlier Metile Fence: 49 Sa ategory (ies) and nies	[*] Questionable [*] Excellent [*] No Observed Bias andard, No Signific thod: le(s) Lost to Triming ghborhood(s) used in	ant Bias ming

	See Paramete Category				Time Per	iod Studied
SIMPLIFIED RATIO	Using Pro	nosed	A ssessment D	ate:	From:	To:
STUDY	Assessed	-	01/01/201		01/01/2013	12/31/2015
	Assessed	values	01/01/201	<u> </u>	01/01/2010	12/01/2010
Sales Price is	L	inear Trend S	Selected - Mo. rate	-0.125%		
Time Adjusted						
SAMPLE STATIST	_	60) т			
Sample size (n)	90	ļ				
Total Assessed Value	\$39,762,700			٨		Observed
Total Adjsuted Sales Price	\$39,910,808	50	[,] †	-/\	_	Expected
Mean Assessed Value	\$441,808	Į.		48		
Mean Adjusted Sales Price	\$443,453	40) 			
Standard Deviation AV	\$1,117,561	· · · · · ·		42		
Standard Deviation SP	\$1,090,126	ļ		75.74		
Median Assessed Value	\$166,100	1 1 30) †	188		
Median Sales Price	\$160,589	1 30		135 177		
ASSESSMENT LEV	_	20	, <u>†</u>	F. C. (2)		
Arithmetic Mean Ratio	100.13%	20	' T			
Median Ratio	99.81%	ļ				
Weighted Mean Ratio	99.63%	10) 			
Geometric Mean Ratio	100.08%	ļ		4		
UNIFORMITY						
Lowest Ratio	92.11%	C			1 1 1 1	
Highest Ratio	109.12%	ļ	. — — . — . –	<u>700 0.900 1.100</u>		<u>1.700</u> <u>1.900</u> <u>2.100</u>
Coefficient of Dispersion	2.31%		0.000 <u>0.200</u> <u>0.400</u> <u>0.600</u>	<u>0.800</u> <u>1.000</u>	<u>1.200</u> <u>1.400</u> <u>1.600</u>	<u>1.800</u> <u>2.000</u>
Standard Deviation	3.05%			Ratio		
Coefficient of Variation	3.05%					
Price Related Bias	0.0001	PRB T Score:	0.0632	PRB is inconcl	usive	
Price-Related Differential	1.01					
RELIABILITY						
90% Confidence Intervals:						
	Lower	Upper	Uniformity:			
Around the Mean	99.60%	100.66%	Uniformity:	COD:	Questionable	verified OK
			Uniformity:	COD: COV:	Questionable Questionable	verified OK verified OK
Around the Mean	99.60%	100.66%	<u>Uniformity:</u>			verified OK
Around the Mean Around the Median	99.60% 99.39%	100.66% 100.58%	<u>Uniformity:</u>	COV:	Questionable	verified OK
Around the Mean Around the Median Around the Weighted Mean	99.60% 99.39% 97.96%	100.66% 100.58% 101.30%	Uniformity: PRB:	COV: PRD:	Questionable	verified OK
Around the Mean Around the Median Around the Weighted Mean Around the COD	99.60% 99.39% 97.96% 1.94%	100.66% 100.58% 101.30% 2.79% 0.0038	-	COV: PRD:	Questionable No Observed Bias andard, No Signific	verified OK
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals:	99.60% 99.39% 97.96% 1.94% -0.0035 Lower	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i>	PRB:	COV: PRD: Meets IAAO Sta	Questionable No Observed Bias andard, No Signific thod:	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72%	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54%	PRB: Outer Qual	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44%	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod:	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33%	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54%	PRB: Outer Qual Please enter the c	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100%	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual Please enter the c Category (ies):	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	99.60% 99.39% 97.96% 1.94% -0.0035 <i>Lower</i> 99.72% 99.44% 98.33% Approx.100% Non-Normal	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual Please enter the c	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100% Non-Normal	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual Please enter the c Category (ies):	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100% Non-Normal N/A Non-Normal	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual Please enter the c Category (ies):	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test 'i.e., Insufficient evidence of N	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100% Non-Normal N/A Non-Normal	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual Please enter the c Category (ies):	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of Norman-Whitney Test	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100% Non-Normal N/A Non-Normal on-Normal	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual Please enter the c Category (ies):	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Significance of Value Related In	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100% Non-Normal N/A Non-Normal on-Normality -0.64095 nequity - Weak	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual Please enter the c Category (ies):	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of Norman-Whitney Test Significance of Value Related In D'Agostino-Pearson	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100% Non-Normal N/A Non-Normal on-Normality -0.64095 nequity - Weak Non-Normal	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual Please enter the c Category (ies):	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test 'i.e., Insufficient evidence of Norman-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100% Non-Normal N/A Non-Normal on-Normality -0.64095 nequity - Weak Non-Normal N/A	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38% 100.93%	PRB: Outer Qual Please enter the c Category (ies):	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., hsufficient evidence of Norman-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W Kurtosis	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100% Non-Normal N/A Non-Normal on-Normality -0.64095 nequity - Weak Non-Normal N/A 4.55	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38%	PRB: Outer Qual Please enter the c Category (ies):	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias
Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test 'i.e., Insufficient evidence of Norman-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W	99.60% 99.39% 97.96% 1.94% -0.0035 Lower 99.72% 99.44% 98.33% Approx.100% Non-Normal N/A Non-Normal on-Normality -0.64095 nequity - Weak Non-Normal N/A	100.66% 100.58% 101.30% 2.79% 0.0038 <i>Upper</i> 100.54% 100.38% 100.93%	PRB: Outer Qual Please enter the c Category (ies): Neighborhoods:	COV: PRD: Meets IAAO Str Outlier Met	Questionable No Observed Bias andard, No Signific thod: e(s) Lost to Trimn ghborhood(s) used in	verified OK ant Bias

	See Paramete Category				Time Peri	iod Studied
SIMPLIFIED RATIO	Using Pro	posed	Assessment Date	:	From:	To:
STUDY	Assessed	•	01/01/2016	-	01/01/2013	12/31/2015
,	A335335U	values	0 1/0 1/20 10	r	01/01/2010	12/01/2010
Sales Price is		Time Adj.	. Not Applied			
Not Time Adjusted						
SAMPLE STATIST			7 T			
Sample size (n)	13	-{				
Total Assessed Value	\$4,892,900		s 	_		Observed
Total Adjsuted Sales Price	\$4,931,400	J		6	_	Expected
Mean Assessed Value	\$376,377		5 +			ZAPOOLOG
Mean Adjusted Sales Price	\$379,338	ļ	' T	5		
Standard Deviation AV	\$237,782					
Standard Deviation SP	\$255,488		1			
Median Assessed Value	\$315,100	ĮĘ			1	
Median Sales Price	\$277,000	Count	3 +		1	
ASSESSMENT LE		ľ			1	
Arithmetic Mean Ratio	101.13%		2 🕂		1	
Median Ratio	99.72%	ļ			1	
Weighted Mean Ratio	99.22%		, 1	400	_\	
Geometric Mean Ratio	100.80%] '	'	1/	1	
UNIFORMITY						
Lowest Ratio	83.28%] (
Highest Ratio	114.69%]	0.100 0.300 0.500 0.700	0.900 1.100		1.700 1.900 2.100
Coefficient of Dispersion	6.20%]	0.000 <u>0.200</u> <u>0.400</u> <u>0.600</u> <u>0</u>	<u>1.000</u>	<u>1.200</u> <u>1.400</u> <u>1.600</u>	<u>1.800</u> <u>2.000</u>
Standard Deviation	8.36%]		Ratio		
Coefficient of Variation	8.27%					
Price Related Bias	-0.0255	PRB T Score:	-0.8969	PRB is inconc		
	0.0200	PRB I Score:	0.0000	I KD IS IIICOIIC	lusive	
Price-Related Differential	1.02		0.0000	I KD IS IIICOIIC	Iusive	
Price-Related Differential RELIABILITY				T IO IS IIICOIIC	lusive	
			Uniformity:	I KB IS IIICOIIC	lusive	
RELIABILITY	1.02			COD:	Excellent	
RELIABILITY 90% Confidence Intervals:	1.02 Lower	Upper				
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median	1.02 Lower 97.00% 97.80%	Upper 105.27% 106.72%		COD: COV:	Excellent	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	1.02 Lower 97.00% 97.80% 94.26%	Upper 105.27% 106.72% 104.17%		COD:	Excellent	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median	1.02 Lower 97.00% 97.80% 94.26% 4.00%	Upper 105.27% 106.72% 104.17% 10.77%	Uniformity:	COD: COV: PRD:	Excellent Excellent No Observed Bias	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869	Upper 105.27% 106.72% 104.17% 10.77% 0.0359		COD: COV: PRD:	Excellent Excellent No Observed Bias	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals:	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper	Uniformity: PRB:	COD: COV: PRD: Meets IAAO St	Excellent Excellent No Observed Bias tandard, No Signification	ant Bias
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99%	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28%	Uniformity: PRB: Outer Quartile	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Significathod:	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77%	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65%	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86%	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A Non-Normal	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A Non-Normal on-Normality	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., insufficient evidence of N Mann-Whitney Test	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A Non-Normal on-Normality N/A	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N Mann-Whitney Test	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A Non-Normal on-Normality N/A	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A Non-Normal on-Normality N/A e Normal	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A Non-Normal on-Normality N/A e Normal N/A Normal	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57% 102.78%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A Non-Normal on-Normality N/A e Normal N/A 1 N/A 2 1 N/A 1 N/A 1 N/A 2 1 N/A 2 1 N/A 4 Normal Normal 2.97	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis 1.00	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A Non-Normali on-Normality N/A e Normal N/A Normal N/A e Normal N/A 00-Normality N/A e Normal N/A 00-Normality N/A e	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57% 102.78% Acceptable	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis	1.02 Lower 97.00% 97.80% 94.26% 4.00% -0.0869 Lower 97.99% 98.77% 95.65% 99.86% Normal N/A Non-Normal on-Normality N/A e Normal N/A 1 N/A 2 1 N/A 1 N/A 1 N/A 2 1 N/A 2 1 N/A 4 Normal Normal 2.97	Upper 105.27% 106.72% 104.17% 10.77% 0.0359 Upper 104.28% 105.57% 102.78%	Uniformity: PRB: Outer Quartile Please enter the cate	COD: COV: PRD: Meets IAAO St Outlier Meets Fence: 2 Sal	Excellent Excellent No Observed Bias tandard, No Signification thod: le(s) Lost to Trimn ghborhood(s) used in the	ant Bias ning

	See Paramete Category				Time Peri	od Studied
SIMPLIFIED RATIO	Using Pro	posed	Assessment Da	ate:	From:	То:
STUDY	Assessed		01/01/201		01/01/2013	12/31/2015
Sales Price is	7.2000000	valuee	0.70.1201	7	0.70172010	120112010
,	L	inear Trend S	Selected - Mo. rate	-0.238%		
Time Adjusted	100	ır				
SAMPLE STATIST		1 7	7 T			
Sample size (n)	12 \$2,004,000	1				
Total Assessed Value Total Adjsuted Sales Price	\$2,691,900 \$2,739,875	. 6	s 			Observed
Mean Assessed Value	\$2,739,673	-11		6	_	Expected
Mean Adjusted Sales Price	\$228,323		5 🕂		1	
Standard Deviation AV	\$159,812	41			1	
Standard Deviation SP	\$167,830	1	₁ ↓		1	
Median Assessed Value	\$183,650	41		4	1	
Median Sales Price	\$160,229	1 3	, 1		1	
ASSESSMENT LE		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	° T	100	1	
Arithmetic Mean Ratio	102.91%	1			\	
Median Ratio	99.77%	- 2	′ †			
Weighted Mean Ratio	98.25%	1			2	
Geometric Mean Ratio	102.32%	1	I 			
UNIFORMITY	102.0270	i				
Lowest Ratio	91.36%	•) 			
Highest Ratio	128.09%	1	0.100 0.300 0.500 0.7	00 0.900 1.100	1.300 1.500 1	1.700 1.900 2.100
Coefficient of Dispersion	7.71%	1	0.000 <u>0.200</u> <u>0.400</u> <u>0.600</u>	<u>0.800</u> <u>1.000</u>	<u>1.200</u> <u>1.400</u> <u>1.600</u>	<u>1.800</u> <u>2.000</u>
Standard Deviation	11.98%	1		Ratio		
Coefficient of Variation	11.64%	1		nano		
Price Related Bias	-0.0144	PRB T Score:	-0.8592	PRB is inconc	lusive	
Price-Related Differential						
FIICE-Nelaleu Dilleleliliai	1.05					
RELIABILITY	1.05					
		Upper	Uniformity:			
RELIABILITY	1.05 Lower 96.70%	<i>Upper</i> 109.12%	<u>Uniformity:</u>	COD:	Excellent	
RELIABILITY 90% Confidence Intervals: Around the Mean	Lower 96.70%	109.12%	Uniformity:		_	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median	Lower 96.70% 94.35%	109.12% 103.75%	Uniformity:	COV:	Very Good	1
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	Lower 96.70% 94.35% 94.25%	109.12% 103.75% 102.25%	Uniformity:		_	ı
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD	Lower 96.70% 94.35% 94.25% 4.16%	109.12% 103.75% 102.25% 17.05%	-	COV: PRD:	Very Good Favors High Priced	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB	Lower 96.70% 94.35% 94.25% 4.16% -0.0509	109.12% 103.75% 102.25% 17.05% 0.0221	Uniformity: PRB:	COV: PRD:	Very Good Favors High Priced andard, No Significa	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals:	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower	109.12% 103.75% 102.25% 17.05% 0.0221 Upper	PRB:	COV: PRD: Meets IAAO St Outlier Me	Very Good Favors High Pricec andard, No Significa thod:	ant Bias
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19%	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62%	PRB: Outer Quar	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced andard, No Significat thod: le(s) Lost to Trimm	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57%	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced andard, No Signification:	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean Around the Weighted Mean	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39%	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62%	PRB: Outer Quar Please enter the ca	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58%	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar Please enter the ca	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal N/A	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal N/A Non-Normal	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal N/A Non-Normal	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal N/A Non-Normal	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal N/A Non-Normal	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal N/A Non-Normal on-Normality N/A e Non-Normal	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal N/A Non-Normal on-Normality N/A e Non-Normal N/A Non-Normal	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15% 101.11%	PRB: Outer Quar Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test 'i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal N/A Non-Normal on-Normality N/A e Non-Normal N/A Non-Normal Alea Normal N/A 4.65	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15%	PRB: Outer Quar Please enter the ca Category (ies):	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W	Lower 96.70% 94.35% 94.25% 4.16% -0.0509 Lower 98.19% 95.57% 95.39% 96.58% Non-Normal N/A Non-Normal on-Normality N/A e Non-Normal N/A Non-Normal	109.12% 103.75% 102.25% 17.05% 0.0221 <i>Upper</i> 107.62% 102.15% 101.11%	PRB: Outer Quar Please enter the ca Category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me tile Fence: 1 Sal	Very Good Favors High Priced tandard, No Significat thod: le(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning

	See Parameter Category				Time Peri	iod Studied
SIMPLIFIED RATIO	Using Pro	posed	Assessment Date) <i>:</i>	From:	То:
STUDY	Assessed	Values	01/01/2016		01/01/2013	12/31/2015
Sales Price is			•			
Time Adjusted	L	inear Trend S	Selected - Mo. rate	-0.143%		
SAMPLE STATIST	ilce	ľ				
Sample size (n)	40	25	5 T			
Total Assessed Value	\$1,380,300	ł			_	
Total Adjsuted Sales Price	\$1,367,714	i		\wedge	_	Observed
Mean Assessed Value	\$34,508	20	⁾ †		-	Expected
Mean Adjusted Sales Price	\$34,193	i		20		
Standard Deviation AV	\$29,141	i			\	
Standard Deviation SP	\$28,931	15	5 †		1	
Median Assessed Value	\$29,250	ŧ			1	
Median Sales Price	\$28,219	1 2			1	
ASSESSMENT LE		O 10) †		1	
Arithmetic Mean Ratio	102.51%	ĺ			¬ \	
Median Ratio	99.47%	Ì		8 8	3	
Weighted Mean Ratio	100.92%]	5 🕇			
Geometric Mean Ratio	101.97%	1			1	
UNIFORMITY		1		2	<u></u>	
Lowest Ratio	84.85%	() 			
Highest Ratio	143.02%]	0.100 0.300 0.500 0.700	0.900 1.100		1.700 1.900 2.100
Coefficient of Dispersion	7.86%	ļ	0.000 <u>0.200</u> <u>0.400</u> <u>0.600</u>	0.800 1.000	<u>1.200</u> <u>1.400</u> <u>1.600</u>	<u>1.800</u> <u>2.000</u>
Standard Deviation	11.02%			Ratio		
Coefficient of Variation	10.75%					
Price Related Bias	0 0004		0.070			
	-0.0094	PRB T Score:	-0.876	PRB is inconcl	usive	
Price-Related Differential	-0.0094 1.02	PRB T Score:	-0.876	PRB is inconcl	usive	
RELIABILITY	1.02			PRB is inconcl	usive	
RELIABILITY 90% Confidence Intervals:	1.02 Lower	Upper	-0.876 Uniformity:			
RELIABILITY 90% Confidence Intervals: Around the Mean	1.02 Lower 99.64%	Upper 105.37%		COD:	Excellent Excellent	
RELIABILITY 90% Confidence Intervals:	1.02 Lower	Upper			Excellent Very Good	
RELIABILITY 90% Confidence Intervals: Around the Mean	1.02 Lower 99.64%	Upper 105.37%		COD:	Excellent Excellent	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median	1.02 Lower 99.64% 97.74%	Upper 105.37% 102.59%		COD: COV: PRD:	Excellent Very Good No Observed Bias	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	1.02 Lower 99.64% 97.74% 97.75%	Upper 105.37% 102.59% 104.09%		COD: COV: PRD:	Excellent Very Good	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD	1.02 Lower 99.64% 97.74% 97.75% 5.83%	Upper 105.37% 102.59% 104.09% 10.98%	Uniformity:	COD: COV: PRD:	Excellent Very Good No Observed Bias andard, No Significa	
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303	Upper 105.37% 102.59% 104.09% 10.98% 0.0116	Uniformity: PRB:	COD: COV: PRD: "Meets IAAO St	Excellent Very Good No Observed Bias andard, No Significa	ant Bias
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals:	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper	Uniformity: PRB: Outer Quartil	COD: COV: PRD: "Meets IAAO St Outlier Me e Fence: 0 Sal	Excellent Very Good No Observed Bias andard, No Significa	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27%	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74%	Uniformity: PRB: Outer Quartil	COD: COV: PRD: "Meets IAAO St Outlier Me e Fence: 0 Sal	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05%	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00%	Uniformity: PRB: Outer Quartil	COD: COV: PRD: "Meets IAAO St Outlier Me e Fence: 0 Sal	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45%	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00%	Uniformity: PRB: Outer Quartil	COD: COV: PRD: "Meets IAAO St Outlier Me e Fence: 0 Sal	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100%	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00%	Uniformity: PRB: Outer Quartil Please enter the cate Category (ies):	COD: COV: PRD: "Meets IAAO St Outlier Me e Fence: 0 Sal	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100% Non-Normal	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00%	Uniformity: PRB: Outer Quartil Please enter the cate Category (ies):	COD: COV: PRD: "Meets IAAO St Outlier Me e Fence: 0 Sal	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100% Non-Normal N/A Non-Normal On-Normal	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00%	Uniformity: PRB: Outer Quartil Please enter the cate Category (ies):	COD: COV: PRD: "Meets IAAO St Outlier Me e Fence: 0 Sal	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., insufficient evidence of N Mann-Whitney Test	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100% Non-Normal N/A Non-Normal On-Normal	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00% 103.39%	PRB: Outer Quartil Please enter the cate Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO St Outlier Me e Fence: 0 Sal gory (ies) and nie	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Significance of Value Related In	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100% Non-Normal N/A Non-Normal on-Normal on-Normality -2.05339 equity - Strong	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00% 103.39%	Uniformity: PRB: Outer Quartil Please enter the cate Category (ies):	COD: COV: PRD: Meets IAAO St Outlier Me e Fence: 0 Sal gory (ies) and nie	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N Mann-Whitney Test Significance of Value Related Ir D'Agostino-Pearson	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100% Non-Normal N/A Non-Normal on-Normal	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00% 103.39%	PRB: Outer Quartil Please enter the cate Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO St Outlier Me e Fence: 0 Sal gory (ies) and nie	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N Mann-Whitney Test Significance of Value Related Ir D'Agostino-Pearson Shapiro-Wilk W	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100% Non-Normal N/A Non-Normal on-Normali on-Normali on-Normali on-Normali Non-Normal	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00% 103.39%	PRB: Outer Quartil Please enter the cate Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO St Outlier Me e Fence: 0 Sal gory (ies) and nie	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test "i.e., Insufficient evidence of N Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W Kurtosis	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100% Non-Normal N/A Non-Normal on-Normality -2.05339 equity - Strong Non-Normal Normal Normal Normal Normal Normal S.73	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00% 103.39%	PRB: Outer Quartil Please enter the cate Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO St Outlier Me e Fence: 0 Sal gory (ies) and nie	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Significance of Value Related Ir D'Agostino-Pearson Shapiro-Wilk W Kurtosis 2.00	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100% Non-Normal N/A Non-Normal on-Normality -2.05339 lequity - Strong Non-Normal Non-Normal Non-Normal Non-Normal Strong Normal Strong Strong Normal Strong Strong Normal Strong Strong Normal Strong Strong Strong Normal Strong Strong Normal	Upper 105.37% 102.59% 104.09% 0.0116 Upper 104.74% 102.00% 103.39% Not applicable	PRB: Outer Quartil Please enter the cate Category (ies): Neighborhoods: e based on other indicators of verticed?	COD: COV: PRD: Meets IAAO St Outlier Me e Fence: 0 Sal gory (ies) and nie	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning
RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test 'i.e., Insufficient evidence of N Mann-Whitney Test Significance of Value Related Ir D'Agostino-Pearson Shapiro-Wilk W Kurtosis	1.02 Lower 99.64% 97.74% 97.75% 5.83% -0.0303 Lower 100.27% 98.05% 98.45% Approx.100% Non-Normal N/A Non-Normal on-Normality -2.05339 equity - Strong Non-Normal Normal Normal Normal Normal Normal S.73	Upper 105.37% 102.59% 104.09% 10.98% 0.0116 Upper 104.74% 102.00% 103.39%	PRB: Outer Quartil Please enter the cate Category (ies): Neighborhoods: e based on other indicators of verticed?	COD: COV: PRD: Meets IAAO St Outlier Me e Fence: 0 Sal gory (ies) and nie	Excellent Very Good No Observed Bias andard, No Significathod: e(s) Lost to Trimm ghborhood(s) used in t	ant Bias ning

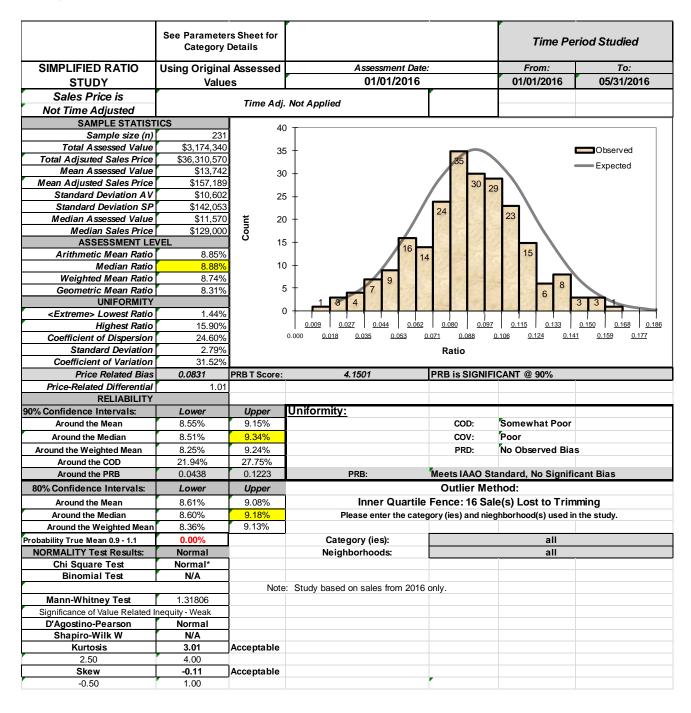
Appendix A3

Before and After Reassessment

Ratio Studies

Recent Sales – January 1, 2016 – May 31, 2016

Original 1958 Base Assessed Values



	See Paramete Category				Time Peri	iod Studied
SIMPLIFIED RATIO	Using Origina	l Assessed	Assessment Date	:	From:	To:
STUDY	Value		01/01/2016		01/01/2016	05/31/2016
Sales Price is		-				
	L	inear Trend S	Selected - Mo. rate	-0.731%		
Time Adjusted	100					
SAMPLE STATIST		35	5 T			
Sample size (n)	197	41				
Total Assessed Value Total Adjsuted Sales Price	\$2,563,650 \$27,551,562	-1 '31) ‡	24		Observed
Mean Assessed Value	\$13,013			31	29	
Mean Adjusted Sales Price	\$139,856		s 	A COLUMN		
Standard Deviation AV	\$7,747	4		26		
Standard Deviation SP	\$73,687	-11	, 🕹	22	\	
Median Assessed Value	\$11,710				20	
Median Sales Price	\$129,049	-1 -	. l			
ASSESSMENT LE		ຽ 'ີ	15			
Arithmetic Mean Ratio	9.32%	1	. 13	3	13	
Median Ratio	9.32%	10) †			
Weighted Mean Ratio	9.30%				8	
Geometric Mean Ratio	8.94%		5 †			
UNIFORMITY			3 2 4		4 3	3 1
<extreme> Lowest Ratio</extreme>	2.91%					
Highest Ratio	16.14%	H	0.009 0.027 0.045 0.063	0.081 0.099	0.117 0.134	0.152 0.170 0.188
Coefficient of Dispersion	21.51%		0.000 <u>0.018</u> <u>0.036</u> <u>0.054</u> <u>0</u>	0.072 0.090	<u>0.108</u> <u>0.126</u> <u>0.143</u>	<u>0.161</u> <u>0.179</u>
Standard Deviation	2.55%			Ratio		
Coefficient of Variation	27.36%	-11				
Price Related Bias	0.0726	PRB T Score:	2.9967	PRB is SIGNIF	FICANT @ 90%	
Price-Related Differential	1.00					
RELIABILITY						
90% Confidence Intervals:	Lower	Upper	Uniformity:			
Around the Mean	9.02%	9.62%		COD:	Somewhat Poor	
Around the Median	8.80%	9.68%		COV:	Somewhat Poor	
Around the Weighted Mean	9.01%	9.60%		PRD:	No Observed Bias	
Around the COD	19.21%	24.71%		1110.	NO OBSSITES BIGS	
Around the PRB	0.0251	0.1201	PRB:	Meets IAAO S	tandard, No Significa	ant Bias
80% Confidence Intervals:	Lower	Upper		Outlier Me		
	9.09%		Innor Quartile		le(s) Lost to Trimm	ina
Around the Mean		9.55%			· ,	
Around the Median	8.93%	9.63% 9.53%	Please enter the cate	gory (ies) and nie	eghborhood(s) used in t	ne study.
Around the Weighted Mean	9.08%	3.33%	Cotogon: (ica):		В	
Probability True Mean 0.9 - 1.1	0.00%	1	Category (ies):		R	
NORMALITY Test Results:	Normal		Neighborhoods:		all	
Chi Square Test	Normal*					
Binomial Test	N/A	Note	: Study based on sales from 2016	only		
Mann-Whitney Test	-0.47059	Note	. Study based on sales from 2016	Offig.		
Significance of Value Related I						
	Normai					
D'Agostino-Pearson	Normal N/Δ					
D'Agostino-Pearson Shapiro-Wilk W	N/A	Accentable				
D'Agostino-Pearson Shapiro-Wilk W Kurtosis	N/A 3.10	Acceptable				
D'Agostino-Pearson Shapiro-Wilk W	N/A	Acceptable Acceptable				

	See Paramete Category				Time Pe	riod Studied
SIMPLIFIED RATIO	Using Origina	l Assessed	Assessment Date:		From:	To:
STUDY	Value		01/01/2016		01/01/2016	05/31/2016
Sales Price is						
Time Adjusted	L	inear Trend S	Selected - Mo. rate	27.792%		
SAMPLE STATIST	ics	<u> </u>				
Sample size (n)	22	3.5	· T			
Total Assessed Value	\$642,090	i			,	Observed
Total Adjsuted Sales Price	\$11,250,602	3	3 †		<u> </u>	
Mean Assessed Value	\$29,186	i		3	3	Expected
Mean Adjusted Sales Price	\$511,391	2.5	5 †	94	7/4	
Standard Deviation AV	\$29,167	1				
Standard Deviation SP	\$306,466] 2				
Median Assessed Value	\$18,415	Ӗ	2 2 2	90	2	2
Median Sales Price	\$377,415	tuno 3.5	5 +		1/2	1/2
ASSESSMENT LE		l ~				
Arithmetic Mean Ratio	5.92%	. 1			35-23	
Median Ratio	5.81%	ļ	1 1	1 1	1	
Weighted Mean Ratio	5.71%	0.5				
Geometric Mean Ratio	5.12%			72 42 42		
UNIFORMITY						
<extreme> Lowest Ratio</extreme>	0.89%	,		0.052	0.070	0.000
Highest Ratio	10.52%	1	0.006 0.018 0.029 0.041 0.000 0.012 0.023 0.035 0	<u>0.053</u>	<u>0.076</u>	0.099 0.111 0.123 4 0.105 0.117
Coefficient of Dispersion	38.91%	}	0.000 <u>0.012 0.023 0.033 0</u>		<u> </u>	<u> </u>
Standard Deviation Coefficient of Variation	2.76% 46.71%	{		Ratio		
Price Related Bias	0.1996	DDD T Carre	1.5083	PRB is inconcl		
Price-Related Differential		PRB T Score:	1.5083	PRB IS INCONCI	usive	
RELIABILITY	1.04					
90% Confidence Intervals:	Lower	Upper	Uniformity:			
Around the Mean	4.90%	6.93%	Officiality:	COD:	Very Poor	
Around the Median	4.36%	7.39%		COV:	Very Poor	
	3.94%	7.48%		PRD:	Favors High Price	. d
Around the Weighted Mean Around the COD	26.57%	65.78%		PKD:	ravors night Frice	;u
Around the PRB	-0.0743	0.4736	PRB:	Moots IAAO St	andard, No Signific	cant Rias
			r ND.			Junt Dias
80% Confidence Intervals:	Lower	Upper		Outlier Met		
Around the Mean	5.14%	6.70%			e(s) Lost to Trim	
Around the Median	4.81%	7.24% 7.03%	Please enter the categ	jory (ies) and niec	gnborhood(s) used in	tne study.
Around the Weighted Mean	4.39%	1.03%	Catamaria (tara)			
Probability True Mean 0.9 - 1.1	0.00%		Category (ies):		C	
NORMALITY Test Results:	Non-Normal		Neighborhoods:		all	
Chi Square Test Binomial Test	N/A Non-Normal	}				
		Note	: Study based on sales from 2016	only		
*i.e., Insufficient evidence of N Mann-Whitney Test	on-Normality N/A	INOLE	: Study based on sales from 2016 No industrial sales available	orny.		
Unable to calculate			140 muustiai sales avallable			
	Non-Normal					
D'Agostino-Pearson		ł				
D'Agostino-Pearson Shapiro-Wilk W	Normal					
Shapiro-Wilk W	Normal 4.06	Acceptable				
Shapiro-Wilk W Kurtosis	4.06	Acceptable				
Shapiro-Wilk W		Acceptable Possible Out	liers			

	See Paramete Category				Time Peri	od Studied
SIMPLIFIED RATIO	Using Origina	I Assessed	Assessment Date	:	From:	To:
STUDY	Value	es	01/01/2016		01/01/2016	05/31/2016
Sales Price is						
Not Time Adjusted		Time Adj.	. Not Applied			
SAMPLE STATIST	ICS					
Sample size (n)	14	3.5	ī T			
Total Assessed Value	\$23,280	i			_	Observed
Total Adjsuted Sales Price	\$625,100		3 †		_	
Mean Assessed Value	\$1,663	i	3		_	Expected
Mean Adjusted Sales Price	\$44,650	2.5	5 +			
Standard Deviation AV	\$1,624	1				
Standard Deviation SP	\$28,032] 2		7		
Median Assessed Value	\$855] [2 2 2	S		
Median Sales Price	\$39,000	tin 3 1.5	5 + 2 2 2			
ASSESSMENT LE	VEL .	l ~				
Arithmetic Mean Ratio	3.72%	. 1	1 + 60 60 60			
Median Ratio	3.66%			1 1 1	1	1
Weighted Mean Ratio	3.72%	0.5	5 +	92 92 9		
Geometric Mean Ratio	2.88%		作品 作品 作品			
UNIFORMITY	0.050/			75 75 7		3 563
<extreme> Lowest Ratio</extreme>	0.85%		0.005 0.015 0.024 0.034	0.044 0.053	0.063 0.073 0	
Highest Ratio	8.70%	{		0.039 0.048	0.058	0.087 0.097
Coefficient of Dispersion	53.68%	{	<u>0.010</u> <u>0.013</u> <u>0.023</u> <u>0</u>		<u>0.000</u> <u>0.011</u>	<u>0.007</u> <u>0.007</u>
Standard Deviation Coefficient of Variation	2.54% 68.40%	{		Ratio		
Price Related Bias	0.1539	PRB T Score:	0.874	PRB is inconc	lucivo	
Price-Related Differential	1.00		0.874	FRB IS IIICOIIC	lusive	
RELIABILITY	1.00					
90% Confidence Intervals:	Lower	Upper	Uniformity:			
Around the Mean	2.52%		Office thinky.		5/am. Daan	
74 cana the mean		4 92%		COD:	very Poor	
Around the Median	1 56%	4.92%		COD:	Very Poor	
Around the Median	1.56%	4.93%		COV:	Very Poor	
Around the Weighted Mean	2.73%	4.93% 4.72%				
Around the Weighted Mean Around the COD	2.73% 32.41%	4.93% 4.72% 126.85%	DDR-	COV: PRD:	Very Poor No Observed Bias	ant Rias
Around the Weighted Mean Around the COD Around the PRB	2.73% 32.41% -0.2246	4.93% 4.72% 126.85% 0.5323	PRB:	COV: PRD:	Very Poor No Observed Bias andard, No Significa	ınt Bias
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals:	2.73% 32.41% -0.2246 Lower	4.93% 4.72% 126.85% 0.5323 <i>Upper</i>		COV: PRD: Meets IAAO St Outlier Me	Very Poor No Observed Bias andard, No Significathod:	unt Bias
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	2.73% 32.41% -0.2246 Lower 2.80%	4.93% 4.72% 126.85% 0.5323 Upper 4.64%	None:	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo	Very Poor No Observed Bias tandard, No Significat thod: ost to Trimming	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median	2.73% 32.41% -0.2246 Lower 2.80% 2.28%	4.93% 4.72% 126.85% 0.5323 <i>Upper</i> 4.64% 4.71%	None:	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo	Very Poor No Observed Bias andard, No Significathod:	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00%	4.93% 4.72% 126.85% 0.5323 Upper 4.64%	None : Please enter the cate	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo	Very Poor No Observed Bias tandard, No Significathod: set to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00 %	4.93% 4.72% 126.85% 0.5323 <i>Upper</i> 4.64% 4.71%	None : Please enter the cate Category (ies):	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00% Normal	4.93% 4.72% 126.85% 0.5323 <i>Upper</i> 4.64% 4.71%	None : l	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo	Very Poor No Observed Bias tandard, No Significathod: set to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00% Normal N/A	4.93% 4.72% 126.85% 0.5323 <i>Upper</i> 4.64% 4.71%	None : Please enter the cate Category (ies):	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00% Normal N/A Non-Normal	4.93% 4.72% 126.85% 0.5323 Upper 4.64% 4.71% 4.44%	None: Please enter the category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo gory (ies) and nie	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00% Normal N/A Non-Normal	4.93% 4.72% 126.85% 0.5323 Upper 4.64% 4.71% 4.44%	None : Please enter the cate Category (ies):	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo gory (ies) and nie	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00% Normal N/A Non-Normal on-Normality N/A	4.93% 4.72% 126.85% 0.5323 Upper 4.64% 4.71% 4.44%	None: Please enter the category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo gory (ies) and nie	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculate	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00% Normal N/A Non-Normal on-Normality N/A	4.93% 4.72% 126.85% 0.5323 Upper 4.64% 4.71% 4.44%	None: Please enter the category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo gory (ies) and nie	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00% Normal N/A Non-Normal on-Normality N/A e Normal	4.93% 4.72% 126.85% 0.5323 Upper 4.64% 4.71% 4.44%	None: Please enter the category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo gory (ies) and nie	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% Normal N/A Non-Normal on-Normality N/A e Normal N/A Normal	4.93% 4.72% 126.85% 0.5323 Upper 4.64% 4.71% 4.44%	None: Please enter the category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo gory (ies) and nie	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00% Normal N/A Non-Normal on-Normality N/A e Normal	4.93% 4.72% 126.85% 0.5323 Upper 4.64% 4.71% 4.44%	None: Please enter the category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo gory (ies) and nie	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	
Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis	2.73% 32.41% -0.2246 Lower 2.80% 2.28% 3.00% 0.00% Normal N/A Non-Normal on-Normality N/A e Normal N/A 1 NORMA NOR	4.93% 4.72% 126.85% 0.5323 Upper 4.64% 4.71% 4.44%	None: Please enter the category (ies): Neighborhoods:	COV: PRD: Meets IAAO St Outlier Me NO Sale(s) Lo gory (ies) and nie	Very Poor No Observed Bias standard, No Significat thod: ost to Trimming ghborhood(s) used in t	

New Proposed January 1, 2016 Assessed Values

	See Paramete Category				Time Period	l Studied
SIMPLIFIED RATIO	Using Pro	posed	Assessment Date:		From:	To:
STUDY	Assessed	-	01/01/2016		01/01/2016	05/30/2016
Sales Price is				ľ		
Time Adjusted	L	inear Trend S	Selected - Mo. rate	-0.562%		
SAMPLE STATIST	ICS.	ı				
		120	T			
Sample size (n) Total Assessed Value	\$36,639,100					
Total Adjsuted Sales Price	\$36,207,740	100	1			oserved
Mean Assessed Value	\$162,840	H		100	— E>	pected
Mean Adjusted Sales Price	\$160,923			93		
Standard Deviation AV	\$145,056	80	+			
Standard Deviation SP	\$144,576	11		15 P.		
Median Assessed Value	\$132,200		1	R. 55		
Median Sales Price	\$132,200 \$132,724	Count 60				
ASSESSMENT LE		ပ				
Arithmetic Mean Ratio	101.69%	40	+	1		
Median Ratio	100.57%					
Weighted Mean Ratio	101.19%	20				
Geometric Mean Ratio	101.44%	20	Ť			
UNIFORMITY	101.1170		9/	14 9	1	
Lowest Ratio	81.90%	0	 		 	
Highest Ratio	127.46%		0.100 0.300 0.500 0.700 0.9	900 1.100 1.	300 1.500 1.700	1.900 <u>2.100</u>
Coefficient of Dispersion	4.90%	0.	000 <u>0.200</u> <u>0.400</u> <u>0.600</u> <u>0.800</u>	<u>1.000</u> <u>1.200</u>	<u>1.400</u> <u>1.600</u> <u>1.8</u>	<u>2.000</u>
Standard Deviation	7.30%		R	latio		
Coefficient of Variation	7.18%		-			
Price Related Bias	-0.0068	PRB T Score:	-1.733	PRB is inco	nclusive	
Price-Related Differential	1.00					
RELIABILITY						
90% Confidence Intervals:	Lower	Upper	Uniformity:			
Around the Mean	100.89%	102.49%		COD:	Questionable	verified ok
Around the Median	99.94%	101.21%		COV:	Excellent	
Around the Weighted Mean	100.36%	102.02%		PRD:	No Observed Bia	S
Around the COD	4.26%	5.69%				
Around the PRB	-0.0145	0.0009	PRB:	Meets IAAO	Standard, No Sig	nificant Bias
80% Confidence Intervals:	Lower	Upper	0	utlier Metho	od:	
Around the Mean	101.06%	102.31%	Outer Quartile Fen			ina
Around the Median	100.03%	100.96%	Please enter the category (•	,	
Around the Weighted Mean	100.54%	101.84%	r lease enter the category (ics) and megnis	omood(3) uscu m u	c study.
	Approx 100%		Category (ies):		ΔΙΙ	
Probability True Mean 0.9 - 1.1	Approx.100%		Category (ies):		All	
Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	Non-Normal		Category (ies): Neighborhoods:		all	
Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	Non-Normal Non-Normal		<u> </u>			
Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	Non-Normal		<u> </u>	s sales from Jar	all	present
Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	Non-Normal Non-Normal		Neighborhoods:	s sales from Jar	all	present
Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	Non-Normal Non-Normal N/A		Neighborhoods:	s sales from Jar	all	present
Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test	Non-Normal Non-Normal N/A		Neighborhoods:	sales from Jar	all	present
Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related I	Non-Normal Non-Normal N/A -1.51693 nequity - Weak		Neighborhoods:	sales from Jar	all	present
Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson	Non-Normal Non-Normal N/A -1.51693 nequity - Weak Non-Normal	Not Trimmed	Neighborhoods: Note: This analysis uses	sales from Jar	all	present
Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W	Non-Normal Non-Normal N/A -1.51693 nequity - Weak Non-Normal N/A	Not Trimmed	Neighborhoods: Note: This analysis uses	sales from Jar	all	present
Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson Shapiro-Wilk W Kurtosis	Non-Normal Non-Normal N/A -1.51693 nequity - Weak Non-Normal N/A 4.64	Not Trimmed	Neighborhoods: Note: This analysis uses	sales from Jar	all	present

SINDLIFIED RATIO Using Proposed Assessment Date: From: To:		See Parameter Category I				Time Period	d Studied
Sales Price is Linear Trend Selected - Mo. rate -0.845%	SIMPLIFIED RATIO	Usina Pro	posed	Assessment Date:		From:	То:
Sales Price S Time Adjusted Sales Time Adjusted Sales Time Sales Time Adjusted Sales Time		_	-				
SAMPLE STATISTICS Sample size (n) 189 70 tal Assessed Value 5145,349 90 90 90 90 90 90 90					<u> </u>	0.70172010	00/00/2010
SAMPLE STATISTICS		L	inear Trend S	elected - Mo. rate	-0.845%		
Sample size (n)		TCC					
Total Assessed Value \$27,471,000 90 80		_	100 -	Γ			
Total Adjusted Sales Price \$27,014,343 Mean Assessed Value \$145,249 Mean Assessed Value \$145,249 Mean Assessed Value \$145,249 Median Assessed Value \$132,200 Median Sales Price \$132,200 Median Sales Price \$132,200 Median Sales Price \$132,200 Median Sales Price \$132,200 Median Ratio 100,85% Median Ratio 100,85% Median Ratio 100,85% Weighted Mean Ratio 100,85% Median Ratio 100,85% 100,85% Me		_	00				
Mean Assessed Value			90 -	Ī			bserved
Mean Adjusted Sales Price \$142,933 70 80 80 80 80 80 80 80	-		80 -	 	88	— Ex	xpected
Standard Deviation AV \$72,148 Standard Deviation SP \$73,331 Median Assessed Value \$132,200 Median Sales Price \$132,552 ASSESSMENT LEVEL Arithmetic Mean Ratio 100,83% Weighted Mean Ratio 100,83% Weighted Mean Ratio 100,13% Weighted Mean Ratio 100,12% Uniformity Lower Ratio 102,12% Uniformity Lower Ratio 102,23% Coefficient of Dispersion 4,75% Standard Deviation 6,33% Coefficient of Uspersion 4,75% Standard Deviation 6,33% Coefficient of Variation 6,37% Price Related Biliss Price Related Differential 1,01 RELIABILITY 103,17% Return the Median 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% 100,23% PRD: No Observed Bias Around the Median 100,23% 101,89% 102,89% Around the Median 101,89% 102,89% Around the Median 101,89% 102,99% Around the Median 100,42% 101,79% Around the Weighted Mean 100,42% 101,79% Around the Weighted Mean 100,42% 101,79% 101,79% Around the Weighted Mean 100,42% 101,79% 101,79% Around the Weighted Mean 100,42% 101,79%					//=		
Standard Deviation SP \$73,331 Median Assessed Value \$132,200 Median Sales Price \$132,200 Median Sales Price \$132,200 Median Ratio 100,85% Median Ratio 100,85% Median Ratio 100,85% Median Ratio 100,85% Median Ratio 101,65% Median Ratio 102,34% Median Ratio 102,34% Median Ratio 102,34% Median Ratio 102,85% Highest Ratio 128,23% Highest Ratio 128,23% Highest Ratio 128,23% Mediant of Dispersion 4,75% Standard Deviation 6,97% Coefficient of Variation 6,77% Price Related Bias -0,0126 PRB T Score: -2,2659 PRB is SIGNIFICANT @ 90% Price-Related Differential 1,01 RELIABILITY Mean 0.1 101,51% 103,17% COD: Questionable verified ok Around the Median 100,23% 101,89% Tourn the Weighted Mean 100,80% 102,58% Around the Weighted Mean 100,80% 102,58% Around the Weighted Mean 100,89% 102,58% Around the Median 100,69% 102,58% Around the Median 100,69% 102,59% 102,59% 102,59% 102,59% 102,59% 102,59% 102,59% 102,59% 102,59% 102,59% 10	-		70 -	† I	70		
Standard Deviation SP \$73,331 Median Assessed Value \$132,200			60 -	_	70		
ASSESSMENT LEVEL					128 30		
ASSESSMENT LEVEL			5 0 -	†			
ASSESSMENT LEVEL			, AO	Į l			
Median Ratio	ASSESSMENT LE	VEL	9 40				
Weighted Mean Ratio 101.69% Geometric Mean Ratio 102.12% 10	Arithmetic Mean Ratio	102.34%	30 -	+			
Geometric Mean Ratio 102.12% 10	Median Ratio	100.85%					
No.	Weighted Mean Ratio	101.69%	20 -	†			
Uniformity	Geometric Mean Ratio	102.12%	10 -	1	18		
Highest Ratio 126.23%	UNIFORMITY			7	0	1	
Coefficient of Dispersion 4.75% Standard Deviation 6.93% Coefficient of Variation 6.77%	Lowest Ratio	82.86%	0 -	 			
Standard Deviation 6.33% Coefficient of Variation 6.77% Price Related Bias -0.0126 PRBT Score: -2.2659 PRB is SIGNIFICANT @ 90% Price-Related Differential 1.01 RELIABILITY 90% Confidence Intervals: Lower Upper Around the Median 100.23% 101.89% Around the Median 100.23% 102.58% PRB: Meets IAAO Standard, No Significant Bias Around the COD 4.09% 5.56% Around the PRB -0.0236 -0.0017 PRB: Meets IAAO Standard, No Significant Bias 80% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 101.69% 102.99% Outer Quartile Fence: 16 Sale(s) Lost to Trimming Around the Median 100.42% 101.79% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Category (ies): R NORMALITY Test Results: Normal Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable Normal Skew 0.08 Acceptable	Highest Ratio	126.23%		0.100 0.300 0.500 0.700 0.9	00 <u>1.100</u> <u>1</u>	.300 <u>1.500</u> <u>1.700</u>	<u>1.900</u> <u>2.100</u>
Standard Deviation Coefficient of Variation Coefficient Coefficient of Variation Coefficient C	Coefficient of Dispersion	4.75%	0.0	000 <u>0.200</u> <u>0.400</u> <u>0.600</u> <u>0.800</u>	<u>1.000</u> <u>1.200</u>	<u>1.400</u> <u>1.600</u> <u>1.</u>	800 <u>2.000</u>
Coefficient of Variation Price Related Bias Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean 100.23% 101.89% Around the Weighted Mean 100.80% 102.58% Around the PRB 4.00236 Around the PRB 4.00236 Around the Mean 101.69% 102.99% Around the Mean 101.69% 102.39% Around the Mean 101.69% Around the Weighted Mean 100.42% 101.79% Around the Weighted Mean 100.42% Around the Weighted Mean 101.69% Around the Weighted Mean 101.69% Around the Weighted Mean 101.69% Around the Mean 101.69% Around the Median 100.42% Around the Weighted Mean 100.42% Around the Median 100.42% Around the Median 100.42% Around the Meighted Mean 100.42% Around the Mean 100.42% Around the Meighted Mean 100.42% Around the Mean 100.42%		6.93%		R	atio		
Price Related Bias Price-Related Differential 1.01 RELIABILITY 90% Confidence Intervals: Lower Around the Mean 101.51% 103.17% 103.17% Around the Median 100.23% 101.89% 102.58% Around the COD 4.09% 5.56% Around the PRB -0.0236 -0.0017 PRB: Meets IAAO Standard, No Significant Bias 80% Confidence Intervals: Lower Upper Outlier Method: Around the Median 101.69% 102.99% Outer Quartile Fence: 16 Sale(s) Lost to Trimming Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Probability True Mean 0.9 - 1.1 Approx.100% NORMALITY Test Results: Normal Chi Square Test Normal Binomial Test NA Normal Significance of Value Related Inequity - Weak D'Agostino-Pearson Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable Na Normal Skew 0.08 Acceptable Na Normal Na	Coefficient of Variation	_					
Price-Related Differential RELIABILITY 90% Confidence Intervals: Lower Upper Around the Mean 101.51% 103.17% COD: Questionable verified ok Around the Median 100.23% 101.89% COV: Excellent PRD: No Observed Bias Around the Weighted Mean Around the COD 4.09% 5.56% Around the PRB -0.0236 -0.0017 PRB: Meets IAAO Standard, No Significant Bias 80% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 101.69% 102.99% Around the Median 100.42% 101.79% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Probability True Mean 0.9 - 1.1 Approx.100% NORMALITY Test Results: Normal Chi Square Test Normal* Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable Skew 0.08 Acceptable							
RELIABILITY 90% Confidence Intervals: Lower Uniformity: Uniformity: COD: Questionable verified ok Around the Median 100.23% 101.89% COV: Excellent COV: Excellent COV: Excellent COV: Excellent COV: Excellent COV: Excellent COV: COV	Price Related Bias		PRB T Score:	-2.2659	PRB is SIGN	NIFICANT @ 90%	
100		-0.0126	PRB T Score:	-2.2659	PRB is SIGN	NIFICANT @ 90%	
Around the Mean	Price-Related Differential	-0.0126	PRB T Score:	-2.2659	PRB is SIGN	NIFICANT @ 90%	
Around the Median 100.23% 101.89% COV: Excellent PRD: No Observed Bias Around the Weighted Mean 100.80% 102.58% PRD: No Observed Bias Around the COD 4.09% 5.56% PRB: Meets IAAO Standard, No Significant Bias 80% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 101.69% 102.99% Outer Quartile Fence: 16 Sale(s) Lost to Trimming Around the Median 100.42% 101.79% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 101.79% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 101.79% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 101.79% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.42% 102.39% Please enter the category (ies) and nieghborhood(s) used in the study. Around the	Price-Related Differential RELIABILITY	-0.0126			PRB is SIGN	NIFICANT @ 90%	
Around the Weighted Mean Around the COD Around the PRB Around the PRB Around the PRB Around the Mean Around the Mean Around the Mean Around the Median Around the Median Around the Weighted Mean Around the Median Around t	Price-Related Differential RELIABILITY 90% Confidence Intervals:	-0.0126 1.01 Lower	Upper				verified ok
Around the COD 4.09% 5.56% Around the PRB -0.0236 -0.0017 BYPE: Meets IAAO Standard, No Significant Bias 80% Confidence Intervals: Lower Upper Outlier Method: Around the Mean 101.69% 102.99% Outer Quartile Fence: 16 Sale(s) Lost to Trimming Around the Median 100.42% 101.79% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Probability True Mean 0.9 - 1.1 Approx.100% Category (ies): R NORMALITY Test Results: Normal Chi Square Test Normal* Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean	-0.0126 1.01 Lower 101.51%	Upper 103.17%		COD:	Questionable	verified ok
Around the PRB	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median	-0.0126 1.01 Lower 101.51% 100.23%	Upper 103.17% 101.89%		COD: COV:	Questionable Excellent	
Around the Mean 101.69% 102.99% Outer Quartile Fence: 16 Sale(s) Lost to Trimming	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	-0.0126 1.01 Lower 101.51% 100.23% 100.80%	Upper 103.17% 101.89% 102.58%		COD: COV:	Questionable Excellent	
Around the Mean 101.69% 102.99% Outer Quartile Fence: 16 Sale(s) Lost to Trimming Around the Median 100.42% 101.79% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Probability True Mean 0.9 - 1.1 Approx.100% Category (ies): R NORMALITY Test Results: Normal Chi Square Test Normal* Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09%	Upper 103.17% 101.89% 102.58% 5.56%	<u>Uniformity:</u>	COD: COV: PRD:	Questionable Excellent No Observed Bia	IS
Around the Median 100.42% 101.79% Please enter the category (ies) and nieghborhood(s) used in the study. Around the Weighted Mean 100.99% 102.39% Category (ies): R Probability True Mean 0.9 - 1.1 Approx.100% Normal Neighborhoods: all Chi Square Test Normal* Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236	Upper 103.17% 101.89% 102.58% 5.56% -0.0017	Uniformity: PRB:	COD: COV: PRD:	Questionable Excellent No Observed Bia Standard, No Sig	IS
Around the Weighted Mean 100.99% 102.39% Probability True Mean 0.9 - 1.1 Approx.100% NORMALITY Test Results: Normal Chi Square Test Normal* Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236	Upper 103.17% 101.89% 102.58% 5.56% -0.0017	Uniformity: PRB:	COD: COV: PRD:	Questionable Excellent No Observed Bia Standard, No Sig	IS
Probability True Mean 0.9 - 1.1 Approx.100% Category (ies): R NORMALITY Test Results: Normal Chi Square Test Normal* Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals:	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper	Uniformity: PRB:	COD: COV: PRD: Meets IAAO	Questionable Excellent No Observed Bia Standard, No Sig	ıs Inificant Bias
NORMALITY Test Results: Normal Chi Square Test Normal* Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69%	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99%	Uniformity: PRB: Outer Quartile Fen	COD: COV: PRD: Meets IAAO utlier Metho	Questionable Excellent No Observed Bia Standard, No Signd: s) Lost to Trimm	ns Inificant Bias
NORMALITY Test Results: Normal Chi Square Test Normal* Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean Around the Mean	-0.0126 1.01 Lower 101.51% 100.23% 100.80% -0.0236 Lower 101.69% 100.42%	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	Uniformity: PRB: Outer Quartile Fen	COD: COV: PRD: Meets IAAO utlier Metho	Questionable Excellent No Observed Bia Standard, No Signd: s) Lost to Trimm	ns Inificant Bias
Chi Square Test Normal* Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean Around the Weighted Mean	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99%	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	Uniformity: PRB: On Outer Quartile Fen Please enter the category (i	COD: COV: PRD: Meets IAAO utlier Metho	Questionable Excellent No Observed Bia Standard, No Signd: s) Lost to Trimmorhood(s) used in the	ns Inificant Bias
Binomial Test N/A Note: This analysis uses sales from January 1, 2016 to the present Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1	-0.0126 1.01 Lower 101.51% 100.23% 100.80% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100%	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	Uniformity: PRB: Outer Quartile Fen Please enter the category (i	COD: COV: PRD: Meets IAAO utlier Metho	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimmorhood(s) used in the	ns Inificant Bias
Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	Uniformity: PRB: Outer Quartile Fen Please enter the category (i	COD: COV: PRD: Meets IAAO utlier Metho	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimmorhood(s) used in the	ns Inificant Bias
Mann-Whitney Test -1.70191 Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal Normal*	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	Uniformity: PRB: Outer Quartile Fen Please enter the category (i	COD: COV: PRD: Meets IAAO utlier Metho	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimmorhood(s) used in the	ns Inificant Bias
Significance of Value Related Inequity - Weak D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal Normal*	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	PRB: Outer Quartile Fen Please enter the category (i Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO utlier Metho ce: 16 Sale(ies) and nieghb	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimm orhood(s) used in th	nificant Bias
D'Agostino-Pearson Normal Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal Normal* N/A	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	PRB: Outer Quartile Fen Please enter the category (i Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO utlier Metho ce: 16 Sale(ies) and nieghb	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimm orhood(s) used in th	nificant Bias
Shapiro-Wilk W N/A Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal Normal* N/A -1.70191	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	PRB: Outer Quartile Fen Please enter the category (i Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO utlier Metho ce: 16 Sale(ies) and nieghb	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimm orhood(s) used in th	nificant Bias
Kurtosis 3.96 Acceptable 2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related I	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal Normal* N/A -1.70191 nequity - Weak	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	PRB: Outer Quartile Fen Please enter the category (i Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO utlier Metho ce: 16 Sale(ies) and nieghb	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimm orhood(s) used in th	nificant Bias
2.50 4.00 Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related In D'Agostino-Pearson	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal Normal* N/A -1.70191 nequity - Weak Normal	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79%	PRB: Outer Quartile Fen Please enter the category (i Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO utlier Metho ce: 16 Sale(ies) and nieghb	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimm orhood(s) used in th	nificant Bias
Skew 0.08 Acceptable	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related I D'Agostino-Pearson Shapiro-Wilk W	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal Normal* N/A -1.70191 nequity - Weak Normal N/A	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79% 102.39%	PRB: Outer Quartile Fen Please enter the category (i Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO utlier Metho ce: 16 Sale(ies) and nieghb	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimm orhood(s) used in th	nificant Bias
·	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related I D'Agostino-Pearson Shapiro-Wilk W Kurtosis	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal Normal* N/A -1.70191 nequity - Weak Normal N/A 3.96	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79% 102.39%	PRB: Outer Quartile Fen Please enter the category (i Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO utlier Metho ce: 16 Sale(ies) and nieghb	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimm orhood(s) used in th	nificant Bias
-0.50 1.00	Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test Mann-Whitney Test Significance of Value Related I D'Agostino-Pearson Shapiro-Wilk W Kurtosis 2.50	-0.0126 1.01 Lower 101.51% 100.23% 100.80% 4.09% -0.0236 Lower 101.69% 100.42% 100.99% Approx.100% Normal Normal* N/A -1.70191 nequity - Weak Normal N/A 3.96 4.00	Upper 103.17% 101.89% 102.58% 5.56% -0.0017 Upper 102.99% 101.79% 102.39% Acceptable	PRB: Outer Quartile Fen Please enter the category (i Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO utlier Metho ce: 16 Sale(ies) and nieghb	Questionable Excellent No Observed Bia Standard, No Sig d: s) Lost to Trimm orhood(s) used in th	nificant Bias

	See Parameter Category				Time Period	d Studied
SIMPLIFIED RATIO	Using Pro	posed	Assessment Date:		From:	To:
STUDY	Assessed	-	01/01/2016		01/01/2016	05/30/2016
Sales Price is	/ 2000000	raiacc	0.70.720.10		0.00.020.0	00/00/2010
	L	inear Trend S	Selected - Mo. rate	-0.090%		
Time Adjusted		r				
SAMPLE STATIST		14 -	Γ			
Sample size (n)	22	1				
Total Assessed Value	\$6,826,400	12 -	+	— A		bserved
Total Adjsuted Sales Price	\$6,897,292			12	— E:	xpected
Mean Assessed Value	\$310,291	10 -	1	<i>5</i> 3		
Mean Adjusted Sales Price	\$313,513			10		
Standard Deviation AV	\$308,865	S		See 18		
Standard Deviation SP	\$315,027	a	Ţ	00		
Median Assessed Value	\$197,900	1 5		100		
Median Sales Price ASSESSMENT LE	\$207,025	Š 6	† 	169		
ASSESSMENT LE	99.31%	1		100		
Median Ratio	99.31%	4 ·	†			
Weighted Mean Ratio	98.97%	ł				
Geometric Mean Ratio	99.26%	2 -	+			
UNIFORMITY	99.20%	ł				
Lowest Ratio	90.84%	0 -	 		 	
Highest Ratio	104.30%	1	0.100 0.300 0.500 0.700 0.90	0 1.100 1.	300 1.500 1.700	1.900 2.100
Coefficient of Dispersion	2.34%	0.0	000 0.200 0.400 0.600 0.800	1.000 1.200		800 2.000
Standard Deviation	3.21%	1		ıtio		
Coefficient of Variation	3.23%	ł	No.	ilio		
Occincient of Variation						
Price Polated Rias		DDR T Score	-0 6816	PRR is inco	nclusive	
Price-Related Differential	-0.0032	PRB T Score:	-0.6816	PRB is inco	nclusive	
Price-Related Differential			-0.6816	PRB is inco	nclusive	
Price-Related Differential RELIABILITY	-0.0032			PRB is inco	nclusive	
Price-Related Differential RELIABILITY 90% Confidence Intervals:	-0.0032 1.00 Lower	Upper	-0.6816 Uniformity:			verified ok
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean	-0.0032 1.00 Lower 98.13%	Upper 100.49%		COD:	Questionable	verified ok
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median	-0.0032 1.00 Lower 98.13% 98.61%	Upper 100.49% 100.55%		COD: COV:	Questionable Questionable	verified ok
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	-0.0032 1.00 Lower 98.13% 98.61% 97.89%	Upper 100.49% 100.55% 100.06%		COD:	Questionable	verified ok
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65%	Upper 100.49% 100.55% 100.06% 3.71%	<u>Uniformity:</u>	COD: COV: PRD:	Questionable Questionable No Observed Bia	verified ok
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128	Upper 100.49% 100.55% 100.06% 3.71% 0.0064	Uniformity: PRB:	COD: COV: PRD:	Questionable Questionable No Observed Bia Standard, No Sig	verified ok
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper	Uniformity: PRB: Ou	COD: COV: PRD: Meets IAAO	Questionable Questionable No Observed Bia Standard, No Sig	verified ok as gnificant Bias
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40%	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21%	Uniformity: PRB: Outer Quartile Fen	COD: COV: PRD: Meets IAAO Itlier Metho ce: 2 Sale(s	Questionable Questionable No Observed Bia Standard, No Sig d:	verified ok as gnificant Bias
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean Around the Mean	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38%	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41%	Uniformity: PRB: Ou	COD: COV: PRD: Meets IAAO Itlier Metho ce: 2 Sale(s	Questionable Questionable No Observed Bia Standard, No Sig d:	verified ok as gnificant Bias
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Mean Around the Weighted Mean	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16%	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21%	Uniformity: PRB: Outer Quartile Fen Please enter the category (ie	COD: COV: PRD: Meets IAAO Itlier Metho ce: 2 Sale(s	Questionable Questionable No Observed Bia Standard, No Sig d:) Lost to Trimm orhood(s) used in the	verified ok as gnificant Bias
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16% Approx.100%	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41%	Uniformity: PRB: Outer Quartile Fen Please enter the category (ie Category (ies):	COD: COV: PRD: Meets IAAO Itlier Metho ce: 2 Sale(s	Questionable Questionable No Observed Bia Standard, No Sig d: Dost to Trimmorhood(s) used in the	verified ok as gnificant Bias
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Mean Around the Weighted Mean	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16% Approx.100% Normal	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41%	Uniformity: PRB: Outer Quartile Fen Please enter the category (ie	COD: COV: PRD: Meets IAAO Itlier Metho ce: 2 Sale(s	Questionable Questionable No Observed Bia Standard, No Sig d:) Lost to Trimm orhood(s) used in the	verified ok as gnificant Bias
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16% Approx.100% Normal	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41%	Uniformity: PRB: Outer Quartile Fen Please enter the category (ie Category (ies):	COD: COV: PRD: Meets IAAO Itlier Metho ce: 2 Sale(s	Questionable Questionable No Observed Bia Standard, No Sig d: Dost to Trimmorhood(s) used in the	verified ok as gnificant Bias
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16% Approx.100% Normal N/A Non-Normal	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41%	Uniformity: PRB: Ou Outer Quartile Fen Please enter the category (ie Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO atlier Metho ce: 2 Sale(ses) and nieghbo	Questionable Questionable No Observed Bia Standard, No Sig d:) Lost to Trimm orhood(s) used in the	verified ok as gnificant Bias ing ne study.
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16% Approx.100% Normal N/A Non-Normal	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41%	Uniformity: PRB: Outer Quartile Fen Please enter the category (ie Category (ies):	COD: COV: PRD: Meets IAAO atlier Metho ce: 2 Sale(ses) and nieghbo	Questionable Questionable No Observed Bia Standard, No Sig d:) Lost to Trimm orhood(s) used in the	verified ok as gnificant Bias ing ne study.
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16% Approx.100% Normal N/A Non-Normal on-Normality N/A	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41%	Uniformity: PRB: Ou Outer Quartile Fen Please enter the category (ie Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO atlier Metho ce: 2 Sale(ses) and nieghbo	Questionable Questionable No Observed Bia Standard, No Sig d:) Lost to Trimm orhood(s) used in the	verified ok as gnificant Bias ing ne study.
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculate	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16% Approx.100% Normal N/A Non-Normal on-Normality N/A	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41%	Uniformity: PRB: Ou Outer Quartile Fen Please enter the category (ie Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO atlier Metho ce: 2 Sale(ses) and nieghbo	Questionable Questionable No Observed Bia Standard, No Sig d:) Lost to Trimm orhood(s) used in the	verified ok as gnificant Bias ing ne study.
Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16% Approx.100% Normal N/A Non-Normal on-Normality N/A e Normal	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41%	Uniformity: PRB: Ou Outer Quartile Fen Please enter the category (ie Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO atlier Metho ce: 2 Sale(ses) and nieghbo	Questionable Questionable No Observed Bia Standard, No Sig d:) Lost to Trimm orhood(s) used in the	verified ok as gnificant Bias ing ne study.
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Price-Related Differential RELIABILITY 90% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Around the COD Around the PRB 80% Confidence Intervals: Around the Median Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of N Mann-Whitney Test Unable to calculat D'Agostino-Pearson Shapiro-Wilk W Kurtosis	-0.0032 1.00 Lower 98.13% 98.61% 97.89% 1.65% -0.0128 Lower 98.40% 99.38% 98.16% Approx.100% Normal N/A Non-Normal on-Normality N/A e Normal N/A Normal N/A Normal N/A Normal N/A Normal N/A	Upper 100.49% 100.55% 100.06% 3.71% 0.0064 Upper 100.21% 100.41% 99.78%	Uniformity: PRB: Ou Outer Quartile Fen Please enter the category (ie Category (ies): Neighborhoods:	COD: COV: PRD: Meets IAAO atlier Metho ce: 2 Sale(ses) and nieghbo	Questionable Questionable No Observed Bia Standard, No Sig d:) Lost to Trimm orhood(s) used in the	verified ok as gnificant Bias ing ne study.

	See Paramete Category				Time Period	Studied
SIMPLIFIED RATIO	Using Pro	posed	Assessment Date:		From:	To:
STUDY	Assessed	-	01/01/2016		01/01/2016	05/30/2016
Sales Price is	A330330u	values	0 1/0 1/20 10		0.70172010	00/00/2010
		Time Adj.	Not Applied			
Not Time Adjusted		ı				
SAMPLE STATISTI	,	4.5	T			
Sample size (n)	14	1 1				
Total Assessed Value	\$574,400	1 1				oserved
Total Adjsuted Sales Price	\$625,100	3.5	4 4		— E>	pected
Mean Assessed Value	\$41,029	0.0				.
Mean Adjusted Sales Price	\$44,650	3 -	+ 🗖 / 🗐	\		
Standard Deviation AV Standard Deviation SP	\$30,627	11	3	\		
Median Assessed Value	\$28,032			\		
Median Sales Price	\$43,000 \$39,000	-		7		
ASSESSMENT LEV		පී ්		2		
Arithmetic Mean Ratio	85.89%	1.5				
Median Ratio	92.67%					
Weighted Mean Ratio	91.89%	1 -				
Geometric Mean Ratio	81.06%	0.5				
UNIFORMITY	01.0070	0.5				
Lowest Ratio	37.50%	0 -				
Highest Ratio	124.75%		0.117 0.352 0.587 0.821 1.05	6 6 <u>1.291</u> <u>1</u>	.526 1.760 1.995	2.230 2.464
Coefficient of Dispersion	22.69%	0.0	000 0.235 0.469 0.704 0.939	1.173 1.408	· ·	112 2.347
Standard Deviation	27.59%		Ba	tio		
Coefficient of Variation	32.12%		Na	illo		
Price Related Bias	0.1354	PRB T Score:	2.1774	PRR is SIG	NIFICANT @ 90%	
Price-Related Differential	0.93	1112 1 00010.	21117		1111071111 @ 0070	
RELIABILITY	0.55					
90% Confidence Intervals:	Lower	Upper	Uniformity:			
Around the Mean	72.83%	98.95%	<u></u>	COD:	Somewhat Poor	
Around the Median	63.96%	103.02%		COV:	Poor	
	,	100.0270		001.		
Around the Weighted Mean		101 600/		DDD.		\
	82.18%	101.60%		PRD:	Favors Low Price	ed
Around the COD	16.90%	36.25%	DDD.		Favors Low Price	
Around the PRB	16.90% 0.0017	36.25% 0.2691	PRB:	Meets IAAC	Favors Low Price Standard, No Sig	
Around the PRB 80% Confidence Intervals:	16.90% 0.0017 Lower	36.25% 0.2691 <i>Upper</i>	Ou	Meets IAAC	Favors Low Price Standard, No Sig	
Around the PRB 80% Confidence Intervals: Around the Mean	16.90% 0.0017 Lower 75.94%	36.25% 0.2691 Upper 95.85%	Ou None: NO Sa	Meets IAAC tilier Metho ale(s) Lost	Favors Low Price Standard, No Sig od: to Trimming	nificant Bias
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median	16.90% 0.0017 Lower 75.94% 82.92%	36.25% 0.2691 Upper 95.85% 100.71%	Ou	Meets IAAC tilier Metho ale(s) Lost	Favors Low Price Standard, No Sig od: to Trimming	nificant Bias
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean	16.90% 0.0017 Lower 75.94% 82.92% 84.86%	36.25% 0.2691 Upper 95.85%	Ou None: NO Sa Please enter the category (ie	Meets IAAC tilier Metho ale(s) Lost	Favors Low Price Standard, No Sig od: to Trimming oorhood(s) used in the	nificant Bias
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04%	36.25% 0.2691 Upper 95.85% 100.71%	Ou None: NO Sa Please enter the category (ie Category (ies):	Meets IAAC tilier Metho ale(s) Lost	Favors Low Price Standard, No Sig od: to Trimming oorhood(s) used in the	nificant Bias
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results:	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04% Normal	36.25% 0.2691 Upper 95.85% 100.71%	Ou None: NO Sa Please enter the category (ie	Meets IAAC tilier Metho ale(s) Lost	Favors Low Price Standard, No Sig od: to Trimming oorhood(s) used in the	nificant Bias
Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04% Normal N/A	36.25% 0.2691 Upper 95.85% 100.71%	Ou None: NO Sa Please enter the category (ie Category (ies):	Meets IAAC tilier Metho ale(s) Lost	Favors Low Price Standard, No Sig od: to Trimming oorhood(s) used in the	nificant Bias
Around the PRB 80% Confidence Intervals: Around the Mean Around the Median Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04% Normal N/A Non-Normal	36.25% 0.2691 Upper 95.85% 100.71%	Ou None: NO Sa Please enter the category (ie Category (ies): Neighborhoods:	Meets IAAC tilier Metho ale(s) Lost s) and nieght	Favors Low Price Standard, No Signot: to Trimming porhood(s) used in the	nificant Bias e study.
Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of No	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04% Normal N/A Non-Normal	36.25% 0.2691 Upper 95.85% 100.71%	Ou None: NO Sa Please enter the category (ie Category (ies):	Meets IAAC tilier Metho ale(s) Lost s) and nieght	Favors Low Price Standard, No Signot: to Trimming porhood(s) used in the	nificant Bias e study.
Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of No Mann-Whitney Test	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04% Normal N/A Non-Normal on-Normality N/A	36.25% 0.2691 Upper 95.85% 100.71%	Ou None: NO Sa Please enter the category (ie Category (ies): Neighborhoods:	Meets IAAC tilier Metho ale(s) Lost s) and nieght	Favors Low Price Standard, No Signot: to Trimming porhood(s) used in the	nificant Bias e study.
Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., insufficient evidence of No Mann-Whitney Test Unable to calculate	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04% Normal N/A Non-Normal on-Normality N/A	36.25% 0.2691 Upper 95.85% 100.71%	Ou None: NO Sa Please enter the category (ie Category (ies): Neighborhoods:	Meets IAAC tilier Metho ale(s) Lost s) and nieght	Favors Low Price Standard, No Signot: to Trimming porhood(s) used in the	nificant Bias e study.
Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of No Mann-Whitney Test Unable to calculate D'Agostino-Pearson	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04% Normal N/A Non-Normal on-Normality N/A e Normal	36.25% 0.2691 Upper 95.85% 100.71%	Ou None: NO Sa Please enter the category (ie Category (ies): Neighborhoods:	Meets IAAC tilier Metho ale(s) Lost s) and nieght	Favors Low Price Standard, No Signot: to Trimming porhood(s) used in the	nificant Bias e study.
Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of No Mann-Whitney Test Unable to calculate D'Agostino-Pearson Shapiro-Wilk W	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04% Normal N/A Non-Normal on-Normality N/A N/A Non-Normal N/A Non-Normal	36.25% 0.2691 Upper 95.85% 100.71% 98.92%	Ou None: NO Sa Please enter the category (ie Category (ies): Neighborhoods:	Meets IAAC tilier Metho ale(s) Lost s) and nieght	Favors Low Price Standard, No Signot: to Trimming porhood(s) used in the	nificant Bias e study.
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Around the PRB 80% Confidence Intervals: Around the Mean Around the Weighted Mean Probability True Mean 0.9 - 1.1 NORMALITY Test Results: Chi Square Test Binomial Test *i.e., Insufficient evidence of No Mann-Whitney Test Unable to calculate D'Agostino-Pearson Shapiro-Wilk W	16.90% 0.0017 Lower 75.94% 82.92% 84.86% 29.04% Normal N/A Non-Normal on-Normality N/A N/A Non-Normal N/A Non-Normal	36.25% 0.2691 Upper 95.85% 100.71% 98.92%	Ou None: NO Sa Please enter the category (ie Category (ies): Neighborhoods:	Meets IAAC tilier Metho ale(s) Lost s) and nieght	Favors Low Price Standard, No Signot: to Trimming porhood(s) used in the	nificant Bias e study.

Appendix B: Evaluating Assessment Systems – The IAAO Perspective

Introduction

The information in this Appendix reflects general IAAO commentary on evaluating the quality of assessment and reassessment systems. Although it reflects upon the principle of frequent reappraisal to better capture current market influences and physical property changes, it is intended to provide perspective and background. As such, both commentary and supportive examples and illustrations are not based on analysis of data within Blair County. Examples are generic and are provided for illustration of principles only.

The IAAO and Reappraisal

The International Association of Assessing Officers (IAAO) is an internationally recognized association of assessment professionals which provides, among other things, educational materials, reference publications and standards that are widely recognized throughout the assessment community. The express mission of the IAAO is to provide leadership in mass appraisal, assessment administration, and property tax policy.

IAAO supports the concept of frequent reappraisal or updating of values. <u>Property Appraisal and</u> Assessment Administration²⁵ states:

"In an ideal system, a reappraisal, an updating of values for all properties in a jurisdiction, would be done annually. Frequent reappraisal, especially where property values are changing rapidly, may be essential to fair distribution of the property tax."

Recognizing that more frequent reappraisals produce better quality assessments, but that jurisdictions generally do not have the resources to permit complete physical inspection and reappraisal each year, the IAAO Standard on the Mass Appraisal of Real Property²⁶ recommends "...physical reviews and individual reappraisals, which are required to correct lack of uniformity within strata." This Standard goes on to state: "...properties should be physically reviewed and individually reappraised at least every four to six years."

In addition, IAAO supports using current market value as a basis for property tax to:

"...maximize fairness and understandability in a property tax system...." 27

Because there is a risk that increases in assessed value will translate directly into increases in property taxes, IAAO further recommends tax systems in which "higher values force rates downward and offset rising assessments." My understanding is that such a system is in place in Pennsylvania during reassessment periods.

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²⁵ IAAO. 1990. Property Appraisal and Assessment Administration. P. 9. Chicago, IL

²⁶ IAAO. 2008. Standard on Mass Appraisal. Section 4.7, p. 10.

²⁷ IAAO. 2010. Standard on Property Tax Policy. Section 4.2, p. 12.

²⁸ Ibid. Section 5.2, p. 16.

The following table illustrates the effect of reassessment on properties given budget based systems that force rates to adjust and rate based systems that do not.²⁹ The dates and information shown are for illustration only and are not intended to reflect actual tax rates in Blair County.

Parcel	2007 Assessed Value (\$)	2008 Assessed Value (\$)	2007 Property Tax (\$)	2008 Property Tax \$— rate-driven	2008 Property Tax \$— budget- driven	Change in property tax \$ related to rate-driven budget system
A	100,000	200,000	1,250	2,500	2,222	+ 278
В	100,000	100,000	1,250	1,250	1,111	+ 139
С	100,000	100,000	1,250	1,250	1,111	+ 139
D	100,000	50,000	1,250	625	556	+ 69
Totals:	400,000	450,000	5,000	5,625	5,000	+ 625

Ratio Studies

One of the most important tools available for evaluating the accuracy of appraisals and assessments is the ratio study. In such a study, sales prices are compared with (appraised or) assessed values, by dividing the assessed value of each selling parcel by its sale price. Provided sales are properly screened to identify arm's length transactions, sale prices are considered to: "...provide the most objective estimates of market values and under normal circumstances should provide good surrogates of market value." "30"

Ratio studies are statistical tests and, as such, rely on sufficient numbers of market value sales to produce meaningful results. "While a single sale may provide an indication of the market value of the property in question, it cannot form the basis for a ratio study, which provides information about the market values of groups of properties."³¹

The ratio study provides information about the level of assessments, by allowing determination of how close to or far from market value a neighborhood or county is on an overall basis. The goal of "market value" is achieved on an overall basis when a representative ratio study indicates a mean or median ratio (these statistics indicate assessment level) of about 100%. The IAAO *Standard on Ratio Studies* suggests that a range of $\pm 10\%$ around this measure should be considered acceptable. This is widely misunderstood as it does <u>not</u> mean that every individual property ratios in a sample may differ from the median by no more than 10%. Instead, the range given is to be applied to the statistical measures of level, such as the median. The occurrence of a small number of ratios that differ significantly from the median is not conclusive, unless these sales represented a particular neighborhood or other stratum under review.

In addition, ratio studies provide valuable information about taxpayer equity within a neighborhood or jurisdiction by providing statistical measures of uniformity or variation. If uniformity is good, few parcels will be found to differ widely from indicated measures of level and taxpayer equity within the tested area will be good. Depending on the homogeneity of properties in a given neighborhood, the

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²⁹Almy, Richard, Alan Dornfest, and Daphne Kenyon, PhD. *Fundamentals of Tax Policy*. IAAO. 2008. Kansas City. Table 6-1, p. 173.

³⁰ IAAO. 2010. Standard on Ratio Studies. Section 2.1, p. 7.

³¹ Ibid.

IAAO *Standard on Ratio Studies* suggests that good uniformity exists when there is a Coefficient of Dispersion (COD) of 10% or less (for the most homogeneous areas), 15% or less (less homogeneous areas), 20% or less (vacant land and most income producing properties), and sometimes higher amounts for unusual properties or market conditions. A further caveat in the Standard notes that CODs less than 5% indicate unexpectedly good uniformity and may not be representative.

Part of measuring uniformity is determining whether high and low priced properties within a given neighborhood or jurisdiction are being treated similarly, with respect to level of assessment. Vertical inequity is said to exist if, for example, \$200,000 homes were assessed at \$150,000 (75%), while \$80,000 homes were assessed at \$80,000 (100%). In this sample case, if \$2,000 in property taxes were levied by a particular taxing district, and these two properties were the only ones within the boundaries of that taxing district, the more expensive home would pay \$1,304 and the less expensive would pay \$696. If both had been assessed at the same ratio with respect to full value (even if it were not 100%), the more expensive one would have paid \$1,428 and the less expensive one \$571. The degree of this type of inequity is measured in ratio studies with a statistic known as the Price Related Differential (PRD). When the PRD is between 0.98 and 1.03 vertical inequity is considered minimal. More recently, the IAAO *Standard* includes guidelines based on the PRB as well as the PRD. The PRB is considered by many researchers to be more precise and less susceptible to producing false "positive" findings of non-compliance, a troublesome feature of the PRD.

Level and uniformity statistics are illustrated by the following hypothetical examples (<u>not</u> derived from or representing any actual data or conditions within Blair County).

Table B1: Level of assessment

Sale #	Assessed Value	Sale Price	Ratio
1	\$ 20,000	\$ 50,000	40.00%
2	30,000	50 , 000	60.00%
3	40,000	50,000	80.00%
4	50,000	50 , 000	100.00%
5	60,000	50 , 000	120.00%
6	70,000	50 , 000	140.00%
7	80,000	50,000	160.00%
Totals:	350,000	350,000	700.00%

MEAN = 100.00% MEDIAN = 100.00% WTD. MEAN = 100.00%

In Table B1, all measures of assessment level equal 100% of market value. This does not require each individual ratio to be 100% or even within any specified range of 100%.

Table B2: Level of assessment may be affected by asymmetrical distribution of ratios.

Sale #	Assessed Value	Sale Price	Ratio
1	\$ 80,000	\$ 50,000	160.00%
2	75 , 000	60,000	125.00%
3	70,000	70,000	100.00%
4	65 , 000	80,000	81.25%
5	60,000	90,000	66.67%
6	55 , 000	100,000	55.00%
7	50,000	110,000	45.45%
Totals:	455,000	560,000	633.37%

MEAN = 90.48% MEDIAN = 81.25% WTD. MEAN = 81.25%

Because it is common for ratio study statistics to be influenced by high ratios to a greater extent than low ratios, the median is considered the most appropriate measure of assessment level for general purposes.

Table B3 provides a ratio study that indicates good level of assessment, but poor uniformity. Table B4 shows similar assessment level with good uniformity and both results are shown graphically in Table B5.

Table B3: Good level, poor uniformity

Sale #	Assessed Value	Sale Price	Ratio
1	\$ 10,000	\$ 25 , 000	40.00%
2	30,000	50,000	60.00%
3	22,500	30,000	75.00%
4	60,000	60,000	100.00%
5	37,500	30,000	125.00%
6	70,000	50 , 000	140.00%
7	40,000	25,000	160.00%
Totals:	270,000	270,000	700.00%

MEAN = 100.00% *

* MEASURES

MEDIAN = 100.00% * OF

* ASSESSMENT

WTD. MEAN = 100.00% * LEVEL

(COD) COEFFICIENT OF DISPERSION = 35.71% * MEASURES

* OF

(COV) COEFFICIENT OF VARIATION = 44.06% * UNIFORMITY

Table B4: Good level, good uniformity

Sale #	Assessed Value	Sale Price	Ratio
1	\$ 21,000	\$ 25 , 000	84.00%
2	44,000	50,000	88.00%
3	28,000	30,000	93.33%
4	60,000	60,000	100.00%
5	32,000	30,000	106.67%
6	56,000	50 , 000	112.00%
7	29,000	25,000	116.00%
Totals:	\$ 270,000	\$ 270,000	700.00%

MEAN = 100.00% *

* MEASURES

MEDIAN = 100.00% * OF

* ASSESSMENT

WTD. MEAN = 100.00% * LEVEL

*

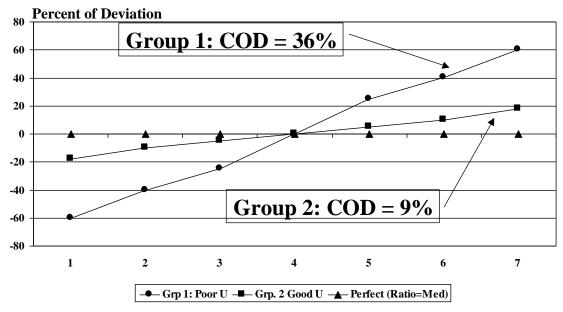
GEOMETRIC MEAN = 99.36% *

(COD) COEFFICIENT OF DISPERSION = 9.90% * MEASURES

* OF

(COV) COEFFICIENT OF VARIATION = 12.17% * UNIFORMITY

Level vs. Uniformity Deviation from Median



Compares 2 groups of 7 sales

If Deviation = 0, uniformity is perfect

Tables B5 and B6 provide examples of good vertical equity (Table B5), in which there is no discernable difference in the ratio of assessment of high and low priced properties, and assessment regressivity, in which high priced properties are under-assessed relative to low priced properties (Table B6).

Table B5: Good vertical equity

Sale #	Assessed Value	Sale Price	Ratio
1	\$ 25 , 000	\$ 20 , 000	125.00%
2	24,000	30,000	80.00%
3	31,000	40,000	77.50%
4	40,000	50,000	80.00%
5	60,000	60,000	100.00%
6	79 , 000	70,000	112.86%
Totals:	259,000	270,000	575.36%

WEIGHTED MEAN = 95.93% MEAN = 95.89% PRD = 1.00*

^{*}DOES NOT FAVOR LOW OR HIGH PRICED

Table B6: Higher ratios on low priced properties

Sale #	Assessed Value	Sale Price	Ratio
1	\$ 30,000	\$ 20,000	150.00%
2	40,000	30,000	133.33%
3	45,000	40,000	112.50%
4	50,000	50 , 000	100.00%
5	40,000	60,000	66.67%
6	45,000	70,000	64.29%
Totals:	250,000	270,000	626.79%

WEIGHTED MEAN = 92.59%
MEAN = 104.46%
PRD = 1.13**

**FAVORS HIGH PRICED

The IAAO *Standard on Ratio Studies* has established varying standards for level and uniformity, depending partly on the type of property. Larger CODs mean worse uniformity, but it is difficult to achieve better uniformity when property is in heterogenous areas or of heterogenous types. General uniformity standards are found in Table 2-3 of the IAAO *Standard on Ratio Studies*³²: This same table also footnotes the IAAO standards for vertical equity (using the PRD) and for appraisal level.

³² IAAO. *Standard on Ratio Studies*. 2013. p. 34. (adapted from)

Ratio study uniformity standards indicating acceptable general quality*

General Property Class	Jurisdiction Size /Profile /Market Activity	COD
Residential improved (single	Very large jurisdictions / densely populated / newer properties / active markets	10.0
family dwellings, condominiums,	Large to mid-sized jurisdictions / older & newer properties / less active markets	15.0
manuf. housing, 2-4 family units)	Rural or small jurisdictions / older properties / depressed market areas	20.0
Income-producing properties	Very large jurisdictions / densely populated / newer properties / active markets	15.0
(commercial, industrial,	Large to mid-sized jurisdictions / older & newer properties / less active markets	20.0
apartments,)	Rural or small jurisdictions / older properties / depressed market areas	25.0
Residential vacant land	Very large jurisdictions / rapid developping / active markets	15.0
	Large to mid-sized jurisdictions / slower development / less active markets	20.0
	Rural or small jurisdictions/ little development / depressed markets	25.0
Other (non-agricultural) vacant	Very large jurisdictions / rapid development / active markets	20.0
land	Large to mid-sized jurisdictions / slower development / less active markets	25.0
	Rural or small jurisdictions/ little development / depressed markets	30.0

These types of property are provided for general guidance only and may not represent jurisdictional requirements.

^{*} The COD performance recommendations are based upon representative and adequate sample sizes, with outliers trimmed and a 95% level of confidence.

^{*} Appraisal level recommendation for each type of property shown should be between 0.90 and 1.10.

^{*} PRD's for each type of property should be between 0.98 and 1.03 to demonstrate vertical equity.

PRD standards are not absolute and may be less meaningful when samples are small or when wide variation in prices exist. In such cases, statistical tests of vertical equity hypotheses should be substituted.

^{*} CODs lower than 5.0 may indicate sales chasing or non-representative samples.

Appendix C Sample Time Adjustment

Example of Linear Time Adjustment based on Blair County Ratio Study Data

The following chart is an example of a time adjustment chart, taken from the Category R ratio study analysis of the reassessment value.

The time adjustment for this sample shows on the analysis page found in Appendix A2 as:

Linear Trend Selected - Mo. rate -0.129%

This reduction in ratios reflects a corresponding increase in sale prices through the period. Sale prices were adjusted accordingly to reflect price as of January 1, 2016 and the ratio study was run on the adjusted sale prices.

