



2018

BROOMFIELD COUNTY PROPERTY ASSESSMENT STUDY



WILDROSE
APPRAISAL, INCORPORATED
Audit Division



September 15, 2018

Mr. Mike Mauer
Director of Research
Colorado Legislative Council
Room 029, State Capitol Building
Denver, Colorado 80203

RE: Final Report for the 2018 Colorado Property Assessment Study

Dear Mr. Mauer:

Wildrose Appraisal Inc.-Audit Division is pleased to submit the Final Reports for the 2018 Colorado Property Assessment Study.

These reports are the result of two analyses: A procedural audit and a statistical audit.

The procedural audit examines all classes of property. It specifically looks at how the assessor develops economic areas, confirms and qualifies sales, develops time adjustments and performs periodic physical property inspections. The audit reviews the procedures for determining subdivision absorption and subdivision discounting. Valuation methodology is examined for residential properties and commercial properties. Procedures are reviewed for producing mines, oil and gas leaseholds and lands producing, producing coal mines, producing earth and stone products, severed mineral interests, and non-producing patented mining claims.

Statistical audits are performed on vacant land, residential properties, commercial/industrial properties and agricultural land. A statistical analysis is performed for personal property compliance on the eleven largest counties: Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer, Mesa, Pueblo and Weld. The remaining counties receive a personal property procedural study.

Wildrose Appraisal Inc. – Audit Division appreciates the opportunity to be of service to the State of Colorado. Please contact us with any questions or concerns.

A handwritten signature in black ink that reads "Harry J. Fuller". The signature is written in a cursive style.

Harry J. Fuller
Project Manager
Wildrose Appraisal Inc. – Audit Division

TABLE OF CONTENTS

Introduction	3
Regional/Historical Sketch of Broomfield County	4
Ratio Analysis.....	6
Time Trending Verification	8
Sold/Unsold Analysis	9
Agricultural Land Study	11
<i>Agricultural Land</i>	11
<i>Agricultural Outbuildings</i>	12
<i>Agricultural Land Under Improvements</i>	13
Sales Verification.....	14
Economic Area Review and Evaluation	16
Natural Resources	17
<i>Producing Oil and Gas</i>	17
Vacant Land.....	18
Possessory Interest Properties	19
Personal Property Audit	20
Wildrose Auditor Staff.....	22
Appendices.....	23

INTRODUCTION



Colorado

The State Board of Equalization (SBOE) reviews assessments for conformance to the Constitution. The SBOE will order revaluations for counties whose valuations do not reflect the proper valuation period level of value.

The statutory basis for the audit is found in C.R.S. 39-1-104 (16)(a)(b) and (c).

The legislative council sets forth two criteria that are the focus of the audit group:

To determine whether each county assessor is applying correctly the constitutional and statutory provisions, compliance requirements of the State Board of Equalization, and the manuals published by the State Property Tax Administrator to arrive at the actual value of each class of property.

To determine if each assessor is applying correctly the provisions of law to the actual values when arriving at valuations for assessment of all locally valued properties subject to the property tax.

The property assessment audit conducts a two-part analysis: A procedural analysis and a statistical analysis.

The procedural analysis includes all classes of property and specifically looks at how the assessor develops economic areas, confirms and qualifies sales, and develops time adjustments. The audit also examines the procedures for adequately discovering, classifying and valuing agricultural outbuildings, discovering subdivision build-out and subdivision discounting procedures. Valuation methodology for vacant land, improved residential properties and commercial properties is examined. Procedures for producing mines, oil and gas leaseholds and lands producing, producing coal mines, producing earth and stone products, severed mineral interests and non-producing patented mining claims are also reviewed.

Statistical analysis is performed on vacant land, residential properties, commercial/industrial properties, agricultural land, and personal property. The statistical study results are compared with State Board of Equalization compliance requirements and the manuals published by the State Property Tax Administrator.

Wildrose Audit has completed the Property Assessment Study for 2018 and is pleased to report its findings for Broomfield County in the following report.

Historical Information

Broomfield County had an estimated population of approximately 66,529 people with 2,014.2 people per square mile, according to the U.S. Census Bureau's 2016 estimated census data. This represents a 19.04 percent change from April 1, 2010 to July 1, 2016.

Broomfield was brought into the United States in 1803 as part of the Louisiana Purchase. The area was successively recognized as part of the Missouri Territory, Nebraska and Kansas until 1861 when the Colorado Territory was created. In 1876, the Broomfield area officially joined the union when Colorado became a state.

The municipality of Broomfield was incorporated in 1961 in the southeastern corner of Boulder County. It received its name from the broomcorn grown in the area. Over the next three decades, the city grew through annexations, many of which crossed the county line into four adjacent counties: Adams, Boulder, Jefferson, and Weld. In the 1990s, city leaders began to push for the creation of a separate county to avoid the inefficiencies of dealing with four separate court districts, four different county seats (each a considerable distance away), and four separate county sales tax bases. It also had longstanding political

differences with Boulder County, which impelled it to separate. Broomfield reasoned that it could provide services more responsively under its own county government, and sought an amendment to the Colorado State Constitution to create a new county. The amendment passed in 1998, after which a three-year transition period followed. On November 15, 2001, Broomfield County became the 64th and the newest and smallest county of Colorado.

Broomfield has an extensive trail system that connects the various lakes and parks. A spectacular trail connects Stearns Lake and Josh's Pond on the west side of town. Broomfield also has a 9/11 memorial containing a piece of the steel beam from one of the towers.

Broomfield is home to many youth sports programs including, Broomfield Blitz Youth Football a non profit 501c organization dedicated to providing great exercise and athletic development. Broomfield also has a skate park with many different and varying features, such as bowls, a large half pipe and several "street" obstacles.

(www.ci.broomfield.co.us; www.wikipedia.org)

RATIO ANALYSIS

Methodology

All significant classes of properties were analyzed. Sales were collected for each property class over the appropriate sale period, which was typically defined as the 18-month period between January 1, 2015 and June 30, 2016. Counties with less than 30 sales typically extended the sale period back up to 5 years prior to June 30, 2016 in 6-month increments. If there were still fewer than 30 sales, supplemental appraisals were performed and treated as proxy sales. Residential sales for all counties using this method totaled at least 30 per county. For commercial sales, the total number analyzed was allowed, in some cases, to fall below 30. There were no sale quantity issues for counties requiring vacant land analysis or condominium analysis. Although it was required that we examine the median and coefficient of dispersion for all counties, we also calculated the weighted mean and price-related differential for each class of property. Counties were not passed or failed by these

latter measures, but were counseled if there were anomalies noted during our analysis. Qualified sales were based on the qualification code used by each county, which were typically coded as either “Q” or “C.” The ratio analysis included all sales. The data was trimmed for counties with obvious outliers using IAAO standards for data analysis. In every case, we examined the loss in data from trimming to ensure that only true outliers were excluded. Any county with a significant portion of sales excluded by this trimming method was examined further. No county was allowed to pass the audit if more than 5% of the sales were “lost” because of trimming. For the largest 11 counties, the residential ratio statistics were broken down by economic area as well.

Conclusions

For this final analysis report, the minimum acceptable statistical standards allowed by the State Board of Equalization are:

ALLOWABLE STANDARDS RATIO GRID		
Property Class	Unweighted Median Ratio	Coefficient of Dispersion
Commercial/Industrial	Between .95-1.05	Less than 20.99
Condominium	Between .95-1.05	Less than 15.99
Single Family	Between .95-1.05	Less than 15.99
Vacant Land	Between .95-1.05	Less than 20.99

The results for Broomfield County are:

Broomfield County Ratio Grid					
Property Class	Number of Qualified Sales	Unweighted Median Ratio	Price Related Differential	Coefficient of Dispersion	Time Trend Analysis
Commercial/Industrial	36	0.956	1.028	12.8	Compliant
Condominium	N/A	N/A	N/A	N/A	N/A
Single Family	3,041	0.982	1.007	5.4	Compliant
Vacant Land	34	0.998	1.245	12.3	Compliant

After applying the above described methodologies, it is concluded from the sales ratios that Broomfield County is in compliance

with SBOE, DPT, and Colorado State Statute valuation guidelines.

Recommendations

None



TIME TRENDING VERIFICATION

Methodology

While we recommend that counties use the inverted ratio regression analysis method to account for market (time) trending, some counties have used other IAAO-approved methods, such as the weighted monthly median approach. We are not auditing the methods used, but rather the results of the methods used. Given this range of methodologies used to account for market trending, we concluded that the best validation method was to examine the sale ratios for each class across the appropriate sale period. To be specific, if a county has considered and adjusted correctly for market trending, then the sale ratios should remain stable (i.e. flat) across the sale period. If a residual market trend is detected, then the county may or may not have addressed market trending adequately, and a further examination

is warranted. This validation method also considers the number of sales and the length of the sale period. Counties with few sales across the sale period were carefully examined to determine if the statistical results were valid.

Conclusions

After verification and analysis, it has been determined that Broomfield County has complied with the statutory requirements to analyze the effects of time on value in their county. Broomfield County has also satisfactorily applied the results of their time trending analysis to arrive at the time adjusted sales price (TASP).

Recommendations

None

SOLD / UNSOLD ANALYSIS

Methodology

Broomfield County was tested for the equal treatment of sold and unsold properties to ensure that “sales chasing” has not occurred. The auditors employed a multi-step process to determine if sold and unsold properties were valued in a consistent manner.

We test the hypothesis that the assessor has valued unsold properties consistent with what is observed with the sold properties based on several units of comparison and tests. The units of comparison include the actual value per square foot and the change in value from the previous base year period to the current base year. The first test compares the actual value per square foot between sold and unsold properties by class. The median and mean value per square foot is compared and tested for any significant difference. This is tested using non-parametric methods, such as the Mann-Whitney test for differences in the distributions or medians between sold and unsold groups. It is also examined graphically and from an appraisal perspective. Data can be stratified based on location and subclass. The second test compares the difference in the median change in value from the previous base year to the current base year between sold and unsold properties by class. The same combination of non-parametric and appraisal testing is used as with the first test. A third test employing a valuation model testing a sold/unsold binary variable while controlling for property attributes such as location, size, age and other attributes. The model determines if the sold/unsold variable is statistically and empirically significant. If all three tests indicate a significant difference between sold and unsold properties for a given class, the Auditor may meet with the county to determine if sale chasing is actually occurring,

or if there are other explanations for the observed difference.

If the unsold properties have a higher median value per square foot than the sold properties, or if the median change in value is greater for the unsold properties than the sold properties, the analysis is stopped and the county is concluded to be in compliance with sold and unsold guidelines. All sold and unsold properties in a given class are first tested, although properties with extreme unit values or percent changes can be trimmed to stabilize the analysis. The median is the primary comparison metric, although the mean can also be used as a comparison metric if the distribution supports that type of measure of central tendency.

The first test (unit value method) is applied to both residential and commercial/industrial sold and unsold properties. The second test is applied to sold and unsold vacant land properties. The second test (change in value method) is also applied to residential or commercial sold and unsold properties if the first test results in a significant difference observed and/or tested between sold and unsold properties. The third test (valuation modeling) is used in instances where the results from the first two tests indicate a significant difference between sold and unsold properties. It can also be used when the number of sold and unsold properties is so large that the non-parametric testing is indicating a false rejection of the hypothesis that there is no difference between the sold and unsold property values.

These tests were supported by both tabular and graphics presentations, along with written documentation explaining the methodology used.

Sold/Unsold Results	
Property Class	Results
Commercial/Industrial	Compliant
Condominium	N/A
Single Family	Compliant
Vacant Land	Compliant

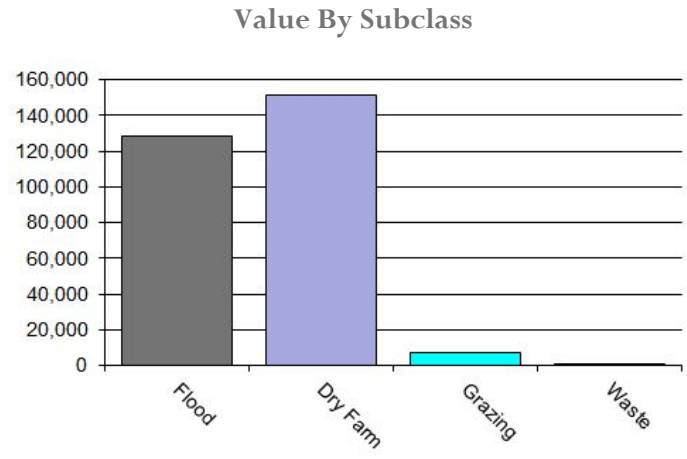
Conclusions

After applying the above described methodologies, it is concluded that Broomfield County is reasonably treating its sold and unsold properties in the same manner.

Recommendations

None

AGRICULTURAL LAND STUDY



Agricultural Land

County records were reviewed to determine major land categories such as irrigated farm, dry farm, meadow hay, grazing and other lands. In addition, county records were reviewed in order to determine if: Aerial photographs are available and are being used; soil conservation guidelines have been used to classify lands based on productivity; crop rotations have been documented; typical commodities and yields have been determined; orchard lands have been properly classified and valued; expenses reflect a ten year average and are typical landlord expenses; grazing lands have been properly classified and valued; the number of acres in each class and subclass have been determined; the capitalization rate was properly applied. Also, documentation was required for the valuation methods used and any locally developed yields, carrying capacities, and expenses. Records were also checked to ensure that the commodity prices and expenses, furnished by the Property Tax Administrator (PTA), were applied properly.

(See Assessor Reference Library Volume 3 Chapter 5.)

Conclusions

An analysis of the agricultural land data indicates an acceptable appraisal of this property type. Directives, commodity prices and expenses provided by the PTA were properly applied. County yields compared favorably to those published by Colorado Agricultural Statistics. Expenses used by the county were allowable expenses and were in an acceptable range. Grazing lands carrying capacities were in an acceptable range. The data analyzed resulted in the following ratios:

Broomfield County Agricultural Land Ratio Grid						
Abstract Code	Land Class	Number Of Acres	County Value Per Acre	County Assessed Total Value	WRA Total Value	Ratio
4117	Flood	445	289.45	128,807	128,807	1.00
4127	Dry Farm	2,995	50.44	151,054	151,054	1.00
4147	Grazing	685	10.37	7,106	7,106	1.00
4167	Waste	30	2.33	70	67	1.05
Total/Avg		4,155	69.08	287,037	287,034	1.00

Recommendations

None

Agricultural Outbuildings

Methodology

Data was collected and reviewed to determine if the guidelines found in the Assessor's Reference Library (ARL) Volume 3, pages 5.74 through 5.77 were being followed.

of Property Taxation for the valuation of agricultural outbuildings.

Recommendations

None

Conclusions

Broomfield County has substantially complied with the procedures provided by the Division

Agricultural Land Under Improvements

Methodology

Data was collected and reviewed to determine if the guidelines found in the Assessor's Reference Library (ARL) Volume 3, pages 5.19 and 5.20 were being followed.

Conclusions

Broomfield County has used the following methods to discover land under a residential improvement on a farm or ranch that is determined to be not integral under 39-1-102, C.R.S.:

- Field Inspections
- Phone Interviews
- In-Person Interviews with Owners/Tenants
- Written Correspondence other than Questionnaire
- Personal Knowledge of Occupants at Assessment Date
- Aerial Photography/Pictometry

Broomfield County has used the following methods to discover the land area under a residential improvement that is determined to be not integral under 39-1-102, C.R.S.:

- Property Record Card Analysis
- Field Inspections
- In-Person Interviews with Owners/Tenants
- Aerial Photography/Pictometry

Broomfield County has substantially complied with the procedures provided by the Division of Property Taxation for the valuation of land under residential improvements that may or may not be integral to an agricultural operation.

Recommendations

None

SALES VERIFICATION

According to Colorado Revised Statutes:

A representative body of sales is required when considering the market approach to appraisal.

(8) In any case in which sales prices of comparable properties within any class or subclass are utilized when considering the market approach to appraisal in the determination of actual value of any taxable property, the following limitations and conditions shall apply:

(a)(I) Use of the market approach shall require a representative body of sales, including sales by a lender or government, sufficient to set a pattern, and appraisals shall reflect due consideration of the degree of comparability of sales, including the extent of similarities and dissimilarities among properties that are compared for assessment purposes. In order to obtain a reasonable sample and to reduce sudden price changes or fluctuations, all sales shall be included in the sample that reasonably reflect a true or typical sales price during the period specified in section 39-1-104 (10.2). Sales of personal property exempt pursuant to the provisions of sections 39-3-102, 39-3-103, and 39-3-119 to 39-3-122 shall not be included in any such sample.

(b) Each such sale included in the sample shall be coded to indicate a typical, negotiated sale, as screened and verified by the assessor. (39-1-103, C.R.S.)

The assessor is required to use sales of real property only in the valuation process.

(8)(f) Such true and typical sales shall include only those sales which have been determined on an individual basis to reflect the selling price of the real property only or which have been adjusted on an individual basis to reflect the selling price of the real property only. (39-1-103, C.R.S.)

Part of the Property Assessment Study is the sales verification analysis. WRA has used the above-cited statutes as a guide in our study of the county's procedures and practices for verifying sales.

WRA reviewed the sales verification procedures in 2018 for Broomfield County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically WRA selected 40 sales listed as unqualified.

All of the sales in the unqualified sales sample had reasons that were clear and supportable.

For residential, commercial, and vacant land sales with considerations over \$500, the contractor has examined and reported the ratio of qualified sales to total sales by class and performed the following analyses of unqualified sales:

The contractor has examined the manner in which sales have been classified as qualified or unqualified, including a listing of each step in the sales verification process, any adjustment procedures, and the county official responsible for making the final decision on qualification.

The contractor has reviewed with the assessor any analysis indicating that sales data are inadequate, fail to reflect typical properties, or have been disqualified for insufficient cause. In addition, the contractor has reviewed the disqualified sales by assigned code. If there appears to be any inconsistency in the coding, the contractor has



conducted further analysis to determine if the sales included in that code have been assigned appropriately.

Conclusions

Broomfield County appears to be doing a good job of verifying their sales. WRA agreed with

the county's reason for disqualifying each of the sales selected in the sample. There are no recommendations or suggestions.

Recommendations

None

ECONOMIC AREA REVIEW AND EVALUATION

Methodology

Broomfield County has submitted a written narrative describing the economic areas that make up the county's market areas. Broomfield County has also submitted a map illustrating these areas. Each of these narratives have been read and analyzed for logic and appraisal sensibility. The maps were also compared to the narrative for consistency between the written description and the map.

Conclusions

After review and analysis, it has been determined that Broomfield County has

adequately identified homogeneous economic areas comprised of smaller neighborhoods. Each economic area defined is equally subject to a set of economic forces that impact the value of the properties within that geographic area and this has been adequately addressed. Each economic area defined adequately delineates an area that will give "similar values for similar properties in similar areas."

Recommendations

None

NATURAL RESOURCES

Producing Oil and Gas

Methodology

Assessors Reference Library (ARL) Volume 3,
Chapter 6: Valuation of Natural Resources

STATUTORY REFERENCES

Section § 39-1-103, C.R.S., specifies that producing oil or gas leaseholds and lands are valued according to article 7 of title 39, C.R.S. Actual value determined - when.

(2) The valuation for assessment of leaseholds and lands producing oil or gas shall be determined as provided in article 7 of this title.

§ 39-1-103, C.R.S.

Article 7 covers the listing, valuation, and assessment of producing oil and gas leaseholds and lands.

Valuation:

Valuation for assessment.

(1) Except as provided in subsection (2) of this section, on the basis of the information contained in such statement, the assessor shall value such oil and gas leaseholds and lands for assessment, as real property, at an amount equal to eighty-seven and one-half percent of:

(a) The selling price of the oil or gas sold there from during the preceding calendar year, after excluding the selling price of all oil or gas delivered to the United States government or any agency thereof, the state of Colorado or any agency thereof, or any political subdivision of the state as royalty during the preceding calendar year;

(b) The selling price of oil or gas sold in the same field area for oil or gas transported from the premises which is not sold during the preceding calendar year, after excluding the selling price of all oil or gas delivered to the United States government or any agency thereof, the state of Colorado or any agency thereof, or any political subdivision of the state as royalty during the preceding calendar year.

§ 39-7-102, C.R.S.

Conclusions

The county applied approved appraisal procedures in the valuation of oil and gas.

Recommendations

None

VACANT LAND

Subdivision Discounting

Subdivisions were reviewed in 2018 in Broomfield County. The review showed that subdivisions were discounted pursuant to the Colorado Revised Statutes in Article 39-1-103 (14) and by applying the recommended methodology in ARL Vol 3, Chap 4. Subdivision Discounting in the intervening year can be accomplished by reducing the absorption period by one year. In instances where the number of sales within an approved plat was less than the absorption rate per year calculated

for the plat, the absorption period was left unchanged.

Conclusions

Broomfield County has implemented proper procedures to adequately estimate absorption periods, discount rates, and lot values for qualifying subdivisions.

Recommendations

None

POSSESSORY INTEREST PROPERTIES

Possessory Interest

Possessory interest property discovery and valuation is described in the Assessor's Reference Library (ARL) Volume 3 section 7 in accordance with the requirements of Chapter 39-1-103 (17)(a) (II) C.R.S. Possessory Interest is defined by the Property Tax Administrator's Publication ARL Volume 3, Chapter 7: A private property interest in government-owned property or the right to the occupancy and use of any benefit in government-owned property that has been granted under lease, permit, license, concession, contract, or other agreement.

Broomfield County has been reviewed for their procedures and adherence to guidelines when

assessing and valuing commercial possessory interest properties. The county has also been queried as to their confidence that the possessory interest properties have been discovered and placed on the tax rolls.

Conclusions

Broomfield County has implemented a discovery process to place possessory interest properties on the roll. They have also correctly and consistently applied the correct procedures and valuation methods in the valuation of possessory interest properties.

Recommendations

None

PERSONAL PROPERTY AUDIT

Broomfield County was studied for its procedural compliance with the personal property assessment outlined in the Assessor's Reference Library (ARL) Volume 5, and in the State Board of Equalization (SBOE) requirements for the assessment of personal property. The SBOE requires that counties use ARL Volume 5, including current discovery, classification, documentation procedures, current economic lives table, cost factor tables, depreciation table, and level of value adjustment factor table.

The personal property audit standards narrative must be in place and current. A listing of businesses that have been audited by the assessor within the twelve-month period reflected in the plan is given to the auditor. The audited businesses must be in conformity with those described in the plan.

Aggregate ratio will be determined solely from the personal property accounts that have been physically inspected. The minimum assessment sample is one percent or ten schedules, whichever is greater, and the maximum assessment audit sample is 100 schedules.

For the counties having over 100,000 population, WRA selected a sample of all personal property schedules to determine whether the assessor is correctly applying the provisions of law and manuals of the Property Tax Administrator in arriving at the assessment levels of such property. This sample was selected from the personal property schedules audited by the assessor. In no event was the sample selected by the contractor less than 30 schedules. The counties to be included in this study are Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer, Mesa, Pueblo, and Weld. All other counties received a procedural study.

Broomfield County is compliant with the guidelines set forth in ARL Volume 5 regarding discovery procedures, using the following methods to discover personal property accounts in the county:

- Public Record Documents
- Local Telephone Directories, Newspapers or Other Local Publications
- Personal Observation, Physical Canvassing or Word of Mouth
- Questionnaires, Letters and/or Phone Calls to Buyer, Seller and/or Realtor
- Internet Searches

The county uses the Division of Property Taxation (DPT) recommended classification and documentation procedures. The DPT's recommended cost factor tables, depreciation tables and level of value adjustment factor tables are also used.

Broomfield County submitted their personal property written audit plan and was current for the 2018 valuation period. The number and listing of businesses audited was also submitted and was in conformance with the written audit plan. The following audit triggers were used by the county to select accounts to be audited:

- New businesses filing for the first time
- Non-filing Accounts - Best Information Available
- Accounts with no Audit History



Conclusions

Broomfield County has employed adequate discovery, classification, documentation, valuation, and auditing procedures for their

personal property assessment and is in statistical compliance with SBOE requirements.

Recommendations

None

WILDROSE AUDITOR STAFF

Harry J. Fuller, *Audit Project Manager*

Suzanne Howard, *Audit Administrative Manager*

Steve Kane, *Audit Statistician*

Carl W. Ross, *Agricultural / Natural Resource Analyst*

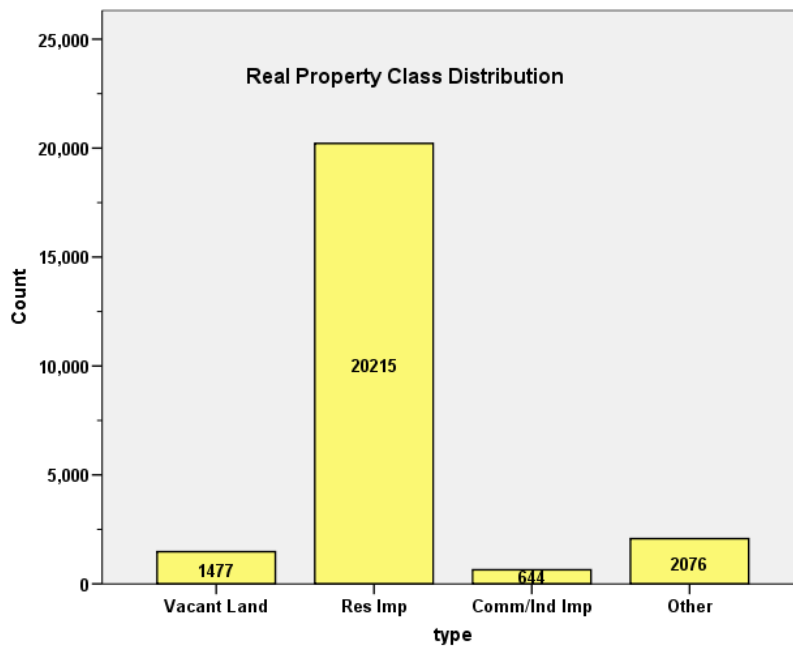
J. Andrew Rodriguez, *Field Analyst*

APPENDICES

STATISTICAL COMPLIANCE REPORT FOR BROOMFIELD COUNTY 2018

I. OVERVIEW

Broomfield County is located in the Denver metropolitan area. The county has a total of 24,412 real property parcels, according to data submitted by the county assessor's office in 2018. The following provides a breakdown of property classes for this county:



The vacant land class of properties was dominated by residential land. Residential lots (coded 100 and 200) accounted for 89.2% of all vacant land parcels.

For residential improved properties, single family properties accounted for 91.2% of all residential properties.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial properties accounted for 2.6% of all such properties in this county.

II. DATA FILES

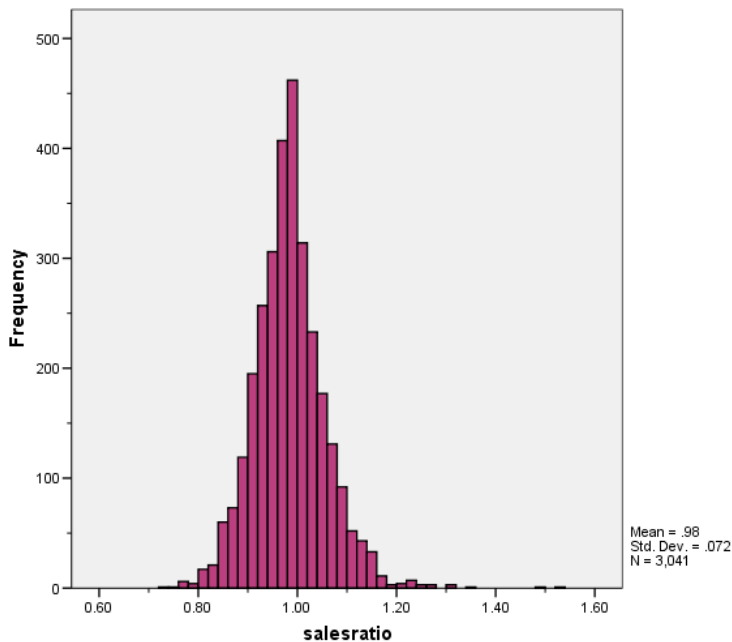
The following sales analyses were based on the requirements of the 2018 Colorado Property Assessment Study. The data included all 5 property record files as specified by the Auditor.

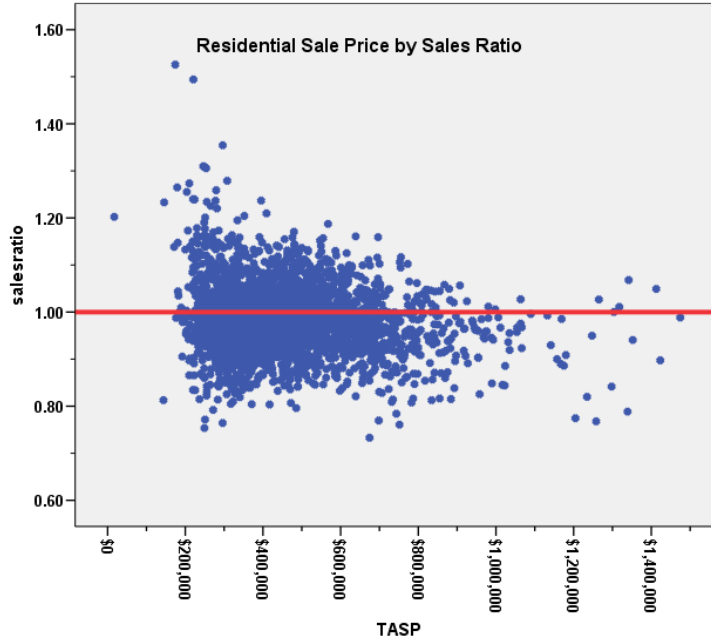
III. RESIDENTIAL SALES RESULTS

There were 3,041 qualified residential sales in the 24 month period ending June 30, 2016. The sales ratio analysis was analyzed as follows:

Median	0.982
Price Related Differential	1.007
Coefficient of Dispersion	5.4

The above ratio statistics were in compliance with the standards set forth by the Colorado State Board of Equalization (SBOE) for the overall residential sales. The following graphs describe further the sales ratio distribution for these properties:





The above graphs indicate that the distribution of the residential sale ratios was within state mandated limits.

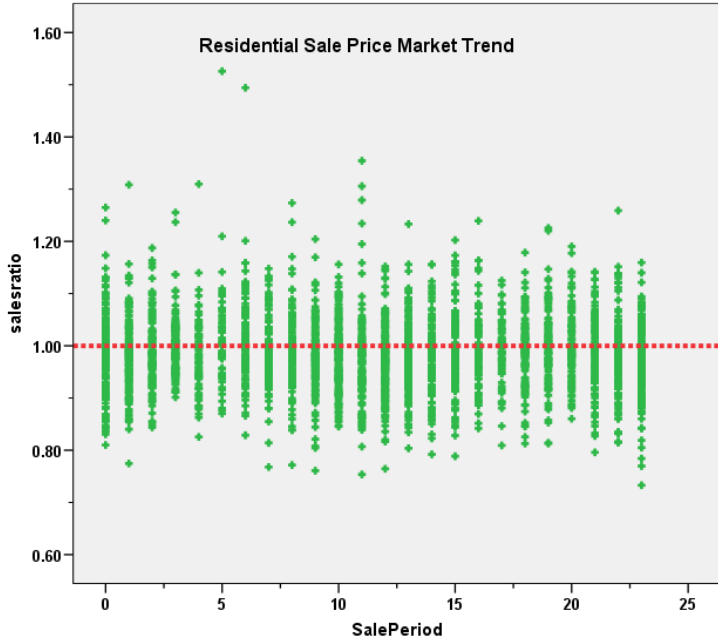
Residential Market Trend Analysis

We next analyzed the residential dataset using the 24-month sale period for any residual market trending, as follows:

Coefficients^a

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	.988	.002		400.420	.000
	SalePeriod	.000	.000	-.032	-1.756	.079

a. Dependent Variable: salesratio



While there was a marginally statistically significant trend, the magnitude of that trend was negligible. We therefore concluded that the assessor has adequately addressed market trending in the valuation of residential properties.

Sold/Unsold Analysis

In terms of the valuation consistency between sold and unsold residential properties, we compared the median actual value per square foot for 2018 between each group, as follows:

Report

VALSF			
sale	N	Median	Mean
UNSOLD	17,111	\$211	\$214
SOLD	3,037	\$218	\$223

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of VALSF is the same across categories of sold.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Given that there was a statistically significant difference using the non-parametric Mann Whitney U test, we next compared the percent change in actual value between taxable years 2016 and 2018 for sold and unsold residential properties, both as a whole and broken down by economic area, as follows:

Report

DIFF			
sold	N	Median	Mean
UNSOLD	16,169	1.22	1.22
SOLD	2,924	1.22	1.24

Report

DIFF			
ECONAREA	sold	N	Median
1	UNSOLD	9,723	1.25
	SOLD	1,359	1.26
2	UNSOLD	5,107	1.15
	SOLD	1,260	1.16

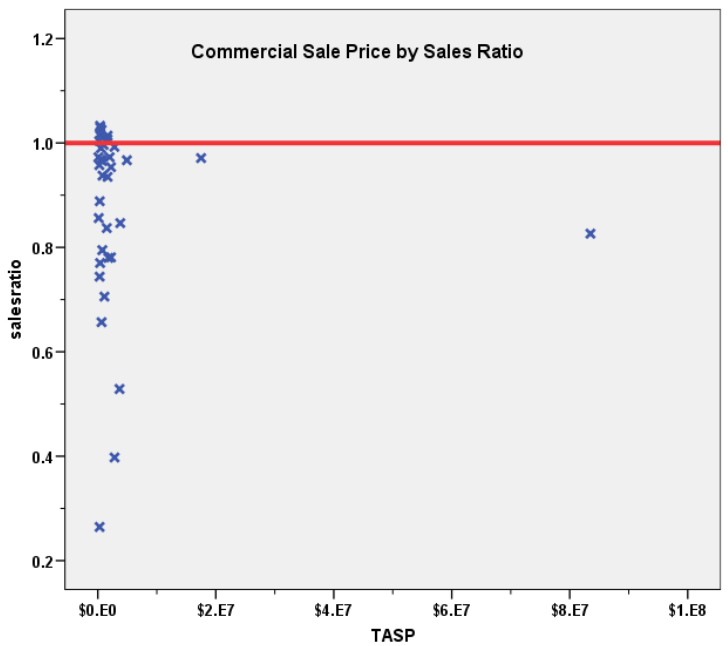
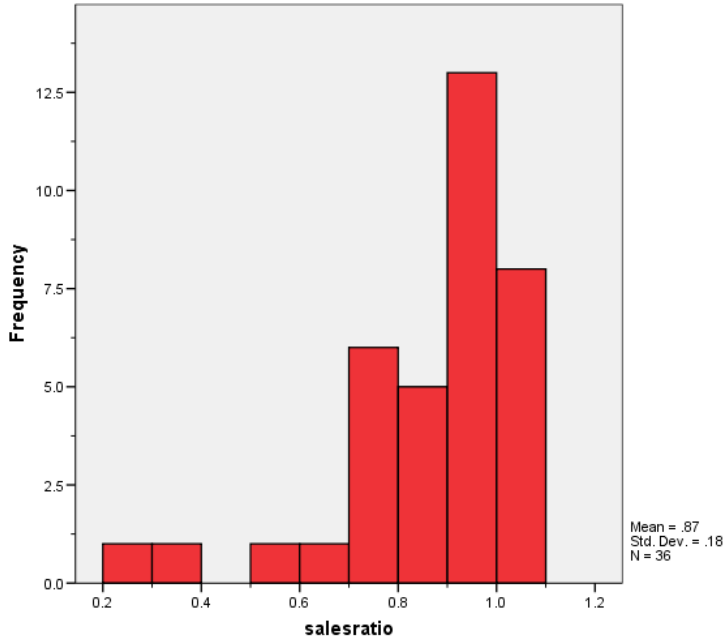
Based on the above results, we concluded that the assessor valued sold and unsold residential properties consistently in 2018.

IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

There were 36 qualified commercial and industrial sales in the 24 month period ending June 30, 2016. The sales ratio analysis was analyzed as follows:

Median	0.956
Price Related Differential	1.028
Coefficient of Dispersion	12.8

The above table indicates that the Broomfield County commercial/industrial sale ratios were in compliance with the SBOE standards. The following histogram and scatter plot describe the sales ratio distribution further:



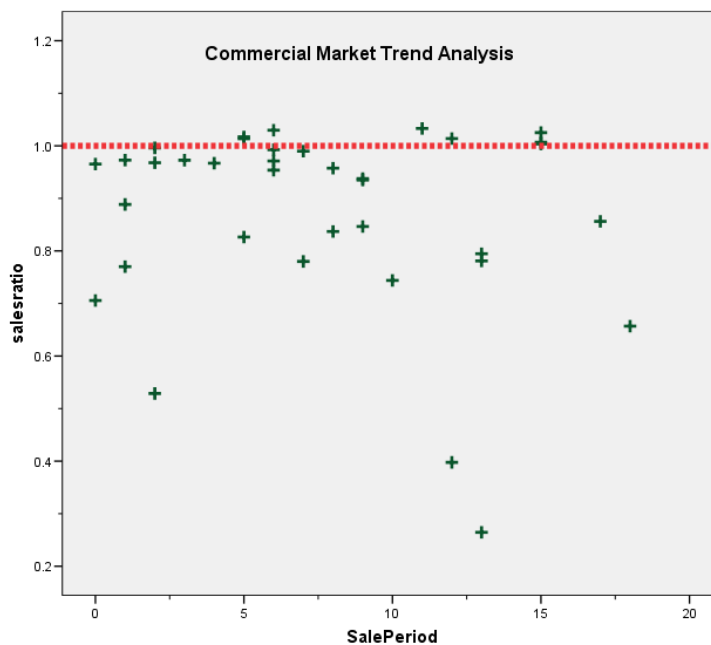
Commercial/Industrial Market Trend Analysis

The 36 commercial/industrial sales were analyzed, examining the sale ratios across the 24 month sale period with the following results:

Coefficients^a

Model		Unstandardized Coefficients	Standardized Coefficients	t	Sig.	
		B	Std. Error	Beta		
1	(Constant)	.919	.055		16.845	.000
	SalePeriod	-.006	.006	-.173	-1.023	.314

a. Dependent Variable: salesratio



There was no residual market trending present in the commercial/industrial sale ratios. We concluded that the assessor has adequately considered market trending adjustments as part of the commercial/industrial valuation.

Sold/Unsold Analysis

We compared the median and mean value per square foot between sold and unsold commercial/industrial properties to determine if they were valued consistently, as follows:

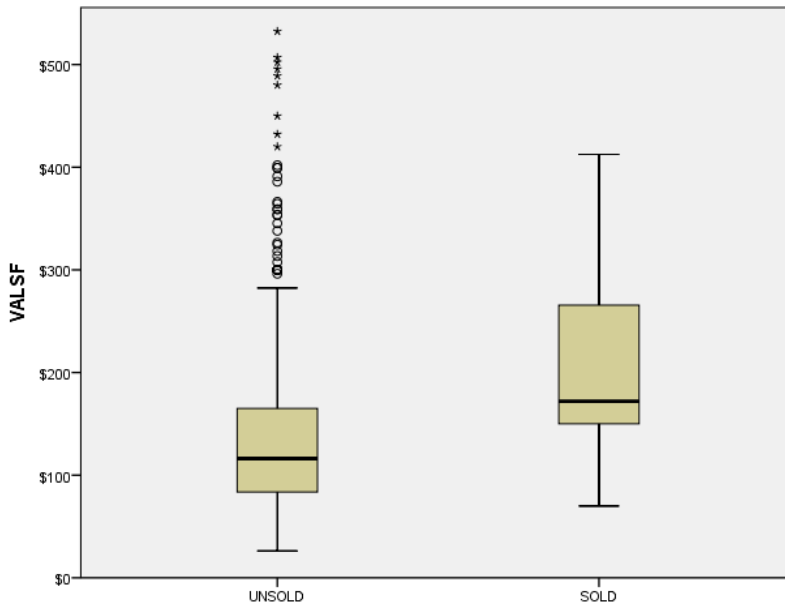
Report

VALSF	N	Median	Mean
UNSOLD	604	\$116	\$341
SOLD	35	\$171	\$270

Report

VALSF

ABSTRIMP	sold	N	Median	Mean
2212	UNSOLD	90	\$131	\$149
	SOLD	7	\$195	\$252
2220	UNSOLD	83	\$116	\$117
	SOLD	2	\$195	\$195
2230	UNSOLD	133	\$183	\$276
	SOLD	9	\$284	\$461
2245	UNSOLD	79	\$150	\$153
	SOLD	10	\$150	\$155
3212	UNSOLD	49	\$75	\$76
	SOLD	1	\$106	\$106
3215	UNSOLD	22	\$52	\$96
	SOLD	1	\$71	\$71
3230	UNSOLD	67	\$90	\$121
	SOLD	3	\$165	\$140



Given the low number of sales, especially when stratified by subclass, we spoke to the Broomfield County Assessor’s Office staff to evaluate the valuation method used by the county to value sold and unsold commercial and industrial properties. The county values all commercial/industrial properties using valuation models developed for specific types of properties. For example, there are 22 models used by the county to value retail properties in the county. The models use available in-county sales and augment these with comparable sales from other counties in the Denver metropolitan area. Some models, such as office property models, also use rental data obtained from previous protest hearings and from surveys to develop income-based models. Unsold properties are valued by the appropriate model based on their physical and location attributes. We concluded that there was no issue with sale chasing under this system. Even though sales can be used in multiple models, the number of the total commercial and industrial sale pool is low, which is clearly reflected in the above sold/unsold analysis

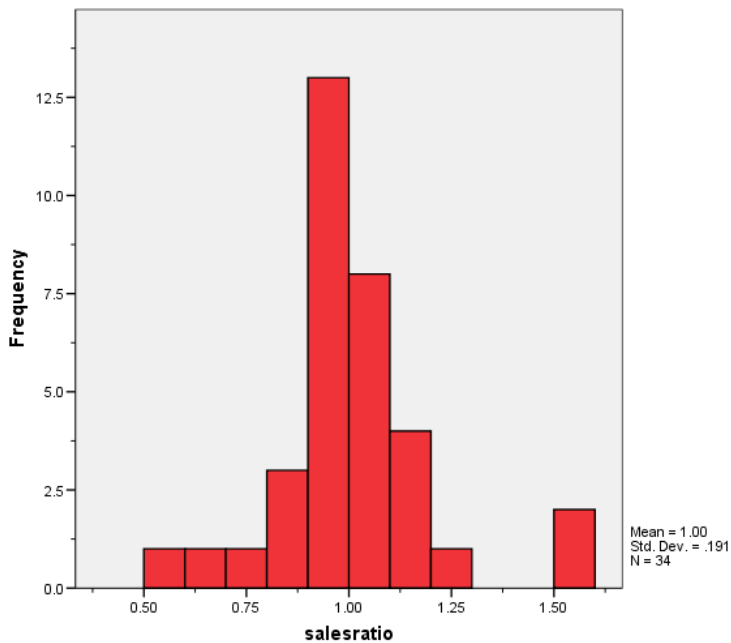
we performed. Unsold properties are valued by models with no systemic bias either for or against specific sales. Sold properties are valued within the same modeling system. They do benefit from the fact that they are valued by the model containing their sale, but given that the unsold properties are also valued under this same system, both groups are effectively treated the same. We therefore concluded that there was no issue regarding commercial sold and unsold values in this county.

V. VACANT LAND SALE RESULTS

There were 34 qualified vacant land sales for the 24 month period ending June 30, 2016. The sales ratio analysis was analyzed as follows:

Median	0.998
Price Related Differential	1.245
Coefficient of Dispersion	12.3

The above ratio statistics were in compliance overall with the standards set forth by the Colorado State Board of Equalization (SBOE) for the overall vacant land sales. The following graphs describe further the sales ratio distribution for all of these properties:





The above histogram indicates that the distribution of the vacant land sale ratios was within state mandated limits, while the above scatter plot indicated that there were no price related differential issues. No sales were trimmed.

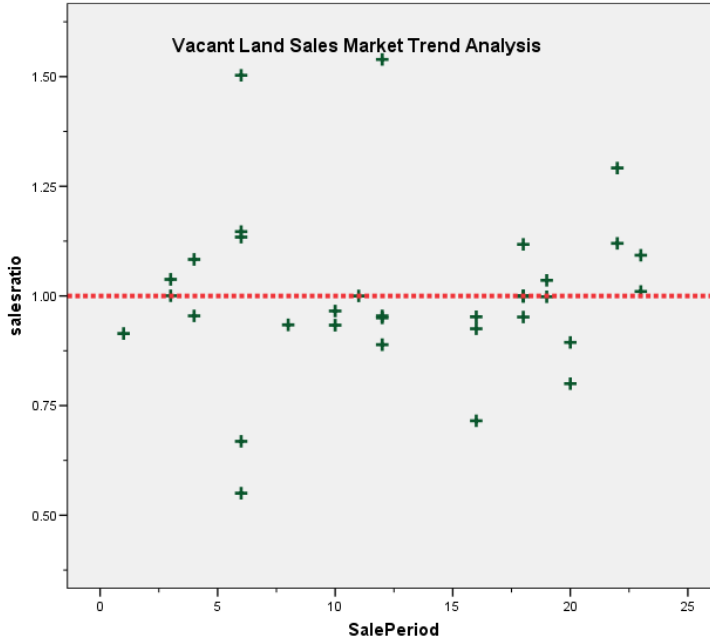
Vacant Land Market Trend Analysis

We next analyzed the vacant land dataset using the 24-month sale period with the following results:

Coefficients^a

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.980	.073		13.464	.000
	SalePeriod	.002	.005	.059	.336	.739

a. Dependent Variable: salesratio



The above analysis indicated that no significant market trending was present in the vacant land sale data. We concluded that the assessor has adequately dealt with market trending for vacant land properties.

Sold/Unsold Analysis

In terms of the valuation consistency between sold and unsold vacant land properties, we compared the median change in actual value for taxable years 2016 and 2018 between each group, as follows:

Report

DIFF	N	Median	Mean
UNSOLD	477	1.00	1.19
SOLD	33	1.10	1.28

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of DIFF is the same across categories of sold.	Independent-Samples Mann-Whitney U Test	.005	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .00.

Overall, we concluded that there was no evidence that the county assessor consistently increased values of sold vacant land properties as compared to unsold vacant land properties.

VI. AGRICULTURAL IMPROVEMENTS ANALYSIS

Based on the parameters of the state audit analysis, this county was exempt from this analysis for 2018.

VII. CONCLUSIONS

Based on this 2018 audit statistical analysis, residential, commercial/industrial and vacant land properties were found to be in compliance with state guidelines.

STATISTICAL ABSTRACT

Residential

Ratio Statistics for CURRTOT / TASP

Mean	95% Confidence Interval for Mean		Median	95% Confidence Interval for Median			Actual Coverage	Weighted Mean	95% Confidence Interval for Weighted Mean		Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Mean Centered
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Lower Bound			Upper Bound				
.984	.982	.987	.982	.980	.984	95.4%	.977	.960	.995	1.007	.054	7.3%	

The confidence interval for the median is constructed without any distribution assumptions. The actual coverage level may be greater than the specified level. Other confidence intervals are constructed by assuming a Normal distribution for the ratios.

Commercial

Ratio Statistics for CURRTOT / TASP

Mean	95% Confidence Interval for Mean		Median	95% Confidence Interval for Median			Actual Coverage	Weighted Mean	95% Confidence Interval for Weighted Mean		Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Mean Centered
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Lower Bound			Upper Bound				
.872	.811	.933	.956	.837	.973	97.1%	.849	.799	.898	1.028	.128	20.6%	

The confidence interval for the median is constructed without any distribution assumptions. The actual coverage level may be greater than the specified level. Other confidence intervals are constructed by assuming a Normal distribution for the ratios.

Vacant Land

Ratio Statistics for CURRLND / TASP

Mean	95% Confidence Interval for Mean		Median	95% Confidence Interval for Median			Actual Coverage	Weighted Mean	95% Confidence Interval for Weighted Mean		Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Mean Centered
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Lower Bound			Upper Bound				
1.002	.935	1.069	.998	.950	1.036	97.6%	.804	.670	.939	1.245	.123	19.1%	

The confidence interval for the median is constructed without any distribution assumptions. The actual coverage level may be greater than the specified level. Other confidence intervals are constructed by assuming a Normal distribution for the ratios.

Residential Median Ratio Stratification

Sale Price

Case Processing Summary

		Count	Percent
SPRec	LT \$25K	1	0.0%
	\$100K to \$150K	2	0.1%
	\$150K to \$200K	16	0.5%
	\$200K to \$300K	540	17.8%
	\$300K to \$500K	1517	49.9%
	\$500K to \$750K	770	25.3%
	\$750K to \$1,000K	148	4.9%
	Over \$1,000K	47	1.5%
Overall		3041	100.0%
Excluded		0	
Total		3041	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT \$25K	1.202	1.000	.000	.
\$100K to \$150K	1.023	.999	.205	29.0%
\$150K to \$200K	1.007	1.003	.091	16.3%
\$200K to \$300K	.993	1.001	.061	8.7%
\$300K to \$500K	.982	.999	.052	6.7%
\$500K to \$750K	.980	1.001	.050	6.5%
\$750K to \$1,000K	.957	1.000	.053	6.9%
Over \$1,000K	.950	.979	.063	8.1%
Overall	.982	1.007	.054	7.3%

Subclass

Case Processing Summary

		Count	Percent
ABSTRIMP	1212	2732	89.8%
	1215	1	0.0%
	1225	3	0.1%
	1230	305	10.0%
Overall		3041	100.0%
Excluded		0	
Total		3041	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1212	.982	1.005	.055	7.3%
1215	.827	1.000	.000	.
1225	.996	1.028	.091	13.7%
1230	.984	1.005	.045	6.8%
Overall	.982	1.007	.054	7.3%

Improvement Age

Case Processing Summary

	Count	Percent
AgeRec	0	1
	50 to 75	97
	25 to 50	604
	5 to 25	1474
	5 or Newer	865
Overall	3041	100.0%
Excluded	0	
Total	3041	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.991	1.000	.000	.
50 to 75	.999	1.009	.090	12.2%
25 to 50	.977	1.004	.061	8.2%
5 to 25	.982	1.005	.050	6.8%
5 or Newer	.984	1.011	.052	6.6%
Overall	.982	1.007	.054	7.3%

Improved Area

Case Processing Summary

	Count	Percent
ImpSFRec	LE 500 sf	4
	500 to 1,000 sf	110
	1,000 to 1,500 sf	729
	1,500 to 2,000 sf	913
	2,000 to 3,000 sf	952
	3,000 sf or Higher	333
Overall	3041	100.0%
Excluded	0	
Total	3041	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LE 500 sf	1.061	1.083	.113	14.5%
500 to 1,000 sf	.943	1.006	.074	9.8%
1,000 to 1,500 sf	.976	1.006	.054	7.4%
1,500 to 2,000 sf	.983	1.006	.053	7.4%
2,000 to 3,000 sf	.987	1.007	.053	6.8%
3,000 sf or Higher	.987	1.009	.051	6.8%
Overall	.982	1.007	.054	7.3%

Improvement Quality

Case Processing Summary

	Count	Percent
QUALITY 2	307	10.1%
3	1006	33.1%
4	1604	52.7%
5	115	3.8%
6	9	0.3%
Overall	3041	100.0%
Excluded	0	
Total	3041	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
2	.982	1.003	.061	8.7%
3	.983	1.003	.057	7.7%
4	.982	1.007	.051	6.8%
5	.976	1.006	.050	6.8%
6	.938	1.012	.054	7.0%
Overall	.982	1.007	.054	7.3%

Improvement Condition

Case Processing Summary

	Count	Percent
CONDITION 1	8	0.3%
2	3	0.1%
3	2207	72.6%
4	823	27.1%
Overall	3041	100.0%
Excluded	0	
Total	3041	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1	1.108	1.002	.082	11.3%
2	.996	1.028	.091	13.7%
3	.982	1.004	.055	7.4%
4	.982	1.007	.052	6.8%
Overall	.982	1.007	.054	7.3%

Economic Area

Case Processing Summary

		Count	Percent
ECONAREA	1	1407	51.4%
	2	1329	48.6%
Overall		2736	100.0%
Excluded		305	
Total		3041	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion
1	.982	1.008	.058
2	.982	1.006	.052
Overall	.982	1.007	.055

Commercial Median Ratio Stratification

Sale Price

Case Processing Summary

		Count	Percent
SPRec	\$50K to \$100K	1	2.8%
	\$100K to \$150K	1	2.8%
	\$200K to \$300K	3	8.3%
	\$300K to \$500K	8	22.2%
	\$500K to \$750K	3	8.3%
	\$750K to \$1,000K	4	11.1%
	Over \$1,000K	16	44.4%
Overall		36	100.0%
Excluded		0	
Total		36	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
\$50K to \$100K	.973	1.000	.000	.
\$100K to \$150K	.856	1.000	.000	.
\$200K to \$300K	.957	1.038	.257	51.3%
\$300K to \$500K	.991	.991	.091	13.5%
\$500K to \$750K	.990	1.006	.124	23.9%
\$750K to \$1,000K	.951	.995	.060	10.0%
Over \$1,000K	.891	1.000	.148	20.6%
Overall	.956	1.028	.128	20.8%

Subclass

Case Processing Summary

	Count	Percent
ABSTRIMP	0	1
	1212	1
	1716	1
	2212	7
	2220	2
	2230	9
	2245	10
	3212	1
	3215	1
	3230	3
Overall	36	100.0%
Excluded	0	
Total	36	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.264	1.000	.000	.
1212	.706	1.000	.000	.
1716	.990	1.000	.000	.
2212	.954	.942	.111	16.9%
2220	.612	.753	.350	49.5%
2230	.846	.976	.134	18.3%
2245	.998	.989	.049	9.1%
3212	.965	1.000	.000	.
3215	.938	1.000	.000	.
3230	.888	.985	.060	10.5%
Overall	.956	1.028	.128	20.8%

Improvement Age

Case Processing Summary

		Count	Percent
AgeRec	0	21	58.3%
	50 to 75	1	2.8%
	25 to 50	6	16.7%
	5 to 25	8	22.2%
Overall		36	100.0%
Excluded		0	
Total		36	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.846	.977	.176	24.6%
50 to 75	.706	1.000	.000	.
25 to 50	.975	.980	.045	6.3%
5 to 25	1.002	.991	.062	10.8%
Overall	.956	1.028	.128	20.8%

Improved Area

Case Processing Summary

		Count	Percent
ImpSFRec	0	1	2.8%
	LE 500 sf	1	2.8%
	500 to 1,000 sf	3	8.3%
	1,000 to 1,500 sf	1	2.8%
	1,500 to 2,000 sf	7	19.4%
	2,000 to 3,000 sf	2	5.6%
	3,000 sf or Higher	21	58.3%
Overall		36	100.0%
Excluded		0	
Total		36	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.264	1.000	.000	.
LE 500 sf	.968	1.000	.000	.
500 to 1,000 sf	.744	1.106	.120	22.0%
1,000 to 1,500 sf	.856	1.000	.000	.
1,500 to 2,000 sf	.957	1.036	.080	10.7%
2,000 to 3,000 sf	1.011	1.004	.021	3.0%
3,000 sf or Higher	.954	1.031	.123	19.8%
Overall	.956	1.028	.128	20.8%

Vacant Land Median Ratio Stratification

Sale Price

Case Processing Summary

		Count	Percent
SPRec	\$25K to \$50K	1	2.9%
	\$100K to \$150K	2	5.9%
	\$150K to \$200K	9	26.5%
	\$200K to \$300K	10	29.4%
	\$300K to \$500K	2	5.9%
	\$500K to \$750K	3	8.8%
	\$750K to \$1,000K	2	5.9%
	Over \$1,000K	5	14.7%
Overall		34	100.0%
Excluded		0	
Total		34	

Ratio Statistics for CURRLND / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
\$25K to \$50K	1.292	1.000	.000	.
\$100K to \$150K	1.073	1.008	.069	9.8%
\$150K to \$200K	1.010	1.007	.104	18.6%
\$200K to \$300K	.953	1.001	.047	7.3%
\$300K to \$500K	.980	1.000	.056	8.0%
\$500K to \$750K	1.000	1.001	.063	9.5%
\$750K to \$1,000K	1.252	.981	.229	32.4%
Over \$1,000K	.715	1.069	.139	19.3%
Overall	.998	1.245	.123	19.2%

Subclass

Case Processing Summary

		Count	Percent
ABSTRLND	100	6	17.6%
	200	3	8.8%
	1112	18	52.9%
	1125	1	2.9%
	2112	2	5.9%
	2115	2	5.9%
	2130	2	5.9%
	Overall		34
Excluded		0	
Total		34	

Ratio Statistics for CURRLND / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
100	1.127	1.033	.074	10.8%
200	1.000	.964	.191	38.2%
1112	.999	1.011	.073	13.6%
1125	.669	1.000	.000	.
2112	.817	1.344	.326	46.2%
2115	.857	.994	.067	9.4%
2130	.805	1.084	.111	15.7%
Overall	.998	1.245	.123	19.2%

Economic Area

Case Processing Summary

	Count	Percent
ECONAREA 1	13	38.2%
2	21	61.8%
Overall	34	100.0%
Excluded	0	
Total	34	

Ratio Statistics for CURRLND / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion
1	.955	1.251	.188
2	1.001	1.014	.081
Overall	.998	1.245	.123