2017
ARAPAHOE COUNTY PROPERTY ASSESSMENT STUDY

WILDROSE
APPRAISAL, INCORPORATED
Audit Division

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APPRAISAL, INCORPORATED
Audit Division

September 15, 2017

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

RE: Final Report for the 2017 Colorado Property Assessment Study

Dear Mr. Mauer:

Wildrose Appraisal Inc.-Audit Division is pleased to submit the Final Reports for the 2017 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.

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

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INTRODUCTION

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 2017 and is pleased to report its findings for Arapahoe County in the following report.

REGIONAL/HISTORICAL SKETCH OF ARAPAHOE COUNTY

Regional Information

Arapahoe County is located in the Front Range region of Colorado. The Colorado Front Range is a colloquial geographic term for the populated areas of the State that are just east of the foothills of the Front Range. It includes Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson, Larimer, Pueblo, and Weld counties.
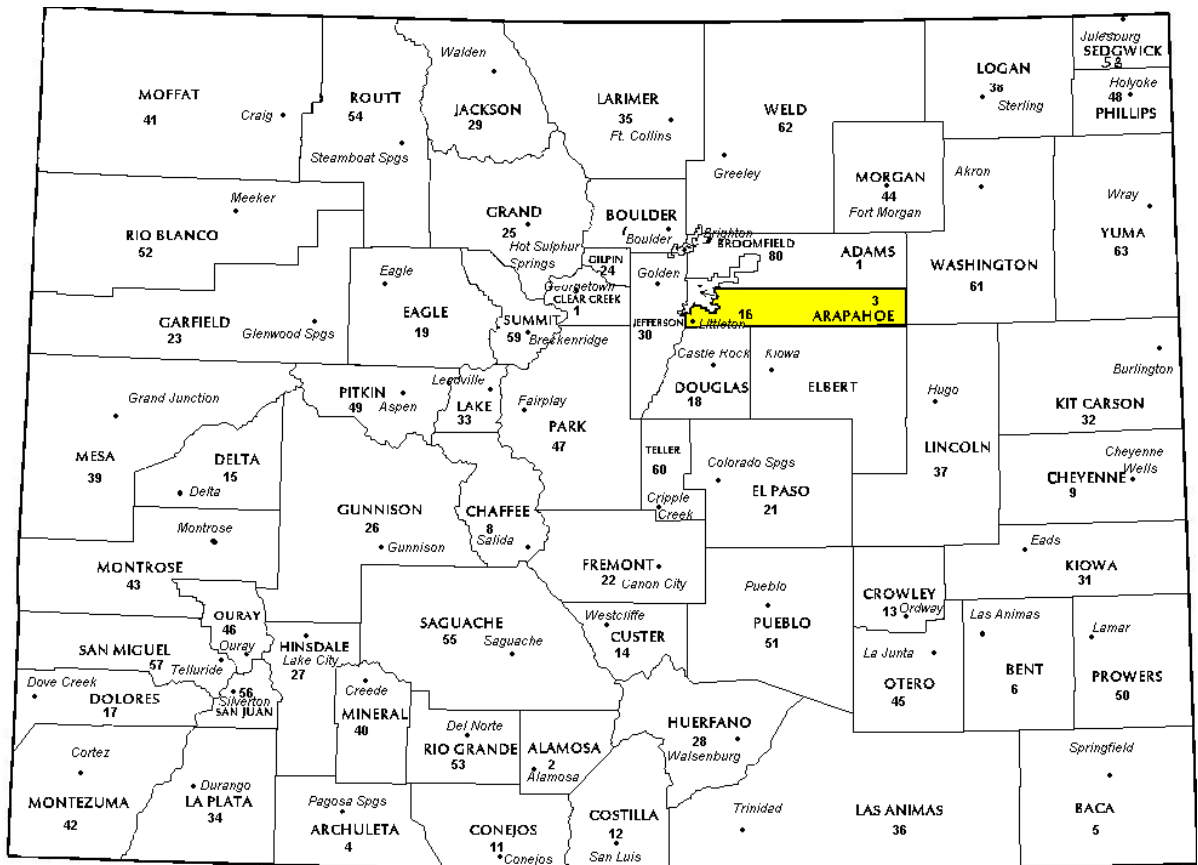
Historical Information

Arapahoe County had an estimated population of approximately 637,068 people with 797.3 people per square mile, according to the U.S. Census Bureau's 2016 estimated census data. This represents a 11.4 percent change from April 1, 2010 to July 1, 2016.

Arapahoe County is the third most populous of the 64 Colorado counties. The county seat is Littleton and the most populous city is Aurora. Arapahoe County is part of the Denver-Aurora Metropolitan Statistical Area and the Denver-Aurora-Boulder Combined Statistical Area. Arapahoe County calls itself "Colorado's First County" since its origins predate the Pike's Peak Gold Rush.

On August 25, 1855, the Kansas Territorial Legislature created a huge Arapahoe County to govern the entire western portion of the Territory of Kansas. The county was named for the Arapaho Nation of Native Americans that lived in the region.

In July 1858, gold was discovered along the South Platte River in Arapahoe County (in present day Englewood). This discovery precipitated the Pike's Peak Gold Rush. Many residents of the mining region felt disconnected from the remote territorial governments of Kansas and Nebraska, so they voted to form their own Territory of Jefferson on October 24, 1859. The following month, the Jefferson Territorial Legislature organized 12 counties for the new territory, including a new Arapahoe County. Denver City served as the county seat of Arapahoe County.

The Jefferson Territory never received federal sanction, but on February 28, 1861, U.S. President James Buchanan signed an act organizing the Territory of Colorado. On November 1, 1861, the Colorado General Assembly organized the 17 original counties of Colorado including a new Arapahoe County. Arapahoe County originally stretched from the line of present-day Sheridan Boulevard 160 miles east to the Kansas state border, and from the line of present-day County Line Road 30 miles north to the Parallel 40° North (168th Avenue). Denver City served as the county seat of Arapahoe County until 1902.

In 1901, the Colorado General Assembly voted to split Arapahoe County into three parts: a new consolidated City and County of Denver, a new Adams County, and the remainder of the Arapahoe County to be renamed South Arapahoe County. A ruling by the Colorado Supreme Court, subsequent legislation, and a referendum delayed the reorganization until November 15, 1902. Governor James Bradley Orman designated Littleton as the temporary county seat of South Arapahoe County. On April 11, 1903, the Colorado General Assembly changed the name of South Arapahoe County back to Arapahoe County. On November 8, 1904, Arapahoe County voters chose Littleton over Englewood by a vote of 1310 to 829 to be the permanent county seat.
(Wikipedia.org)

RATIO ANALYSIS

Methodology

All significant classes of property were analyzed. Sales were collected for each property class over the eighteen month period from January 1, 2015 through June 20, 2016. Property classes with less than thirty sales had the sales period extended in six month increments up to an additional forty-two months. If this extended sales period did not produce the minimum thirty qualified sales, the Audit performed supplemental appraisals to reach the minimum.

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 Arapahoe County are:

Property Class	Number of Qualified Sales	Unweighted Median Ratio	Price Related Differential	Coefficient of Dispersion	Time Trend Analysis
Arapahoe County Ratio Grid					
Commercial/Industrial	374	0.993	1.027	8	Compliant
Condominium	N/A	N/A	N/A	N/A	N/A
Single Family	25,297	1.001	1.009	2.3	Compliant
Vacant Land	135	1.000	1.228	14.5	Compliant

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion
2.00	1.000	1.002	.018
3.00	1.002	1.009	.031
4.00	1.001	1.002	.023
5.00	1.001	1.003	.025
6.00	1.003	1.008	.041
7.00	1.001	1.003	.025
8.00	1.001	1.004	.025
9.00	1.002	1.006	.037
10.00	1.000	1.003	.021
11.00	1.001	1.023	.020
12.00	1.000	1.000	.008
13.00	1.001	1.004	.022
14.00	1.001	1.003	.025
15.00	1.000	1.003	.025
16.00	1.000	1.003	.014
17.00	1.000	1.004	.019
18.00	1.001	1.003	.023
19.00	1.000	1.000	.016
Overall	1.001	1.009	.023

After applying the above described methodologies, it is concluded from the sales ratios that Arapahoe 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 Arapahoe County has complied with the statutory requirements to analyze the effects of time on value in their county. Arapahoe 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

Arapahoe 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 Arapahoe County is reasonably treating its sold and unsold properties in the same manner.

Recommendations

None

AGRICULTURAL LAND STUDY

Acres By Subclass	Value By Subclass

Sprinkler 0.62%
Grazing 44.98%
Dry Farm 54.39%
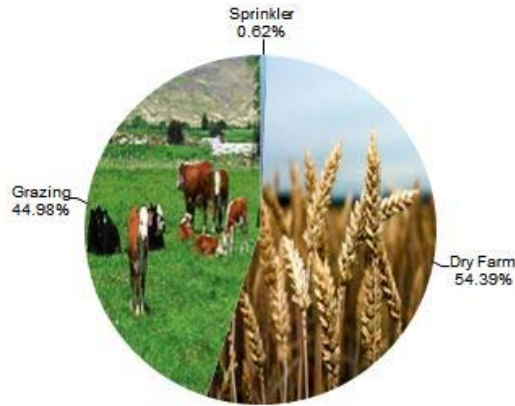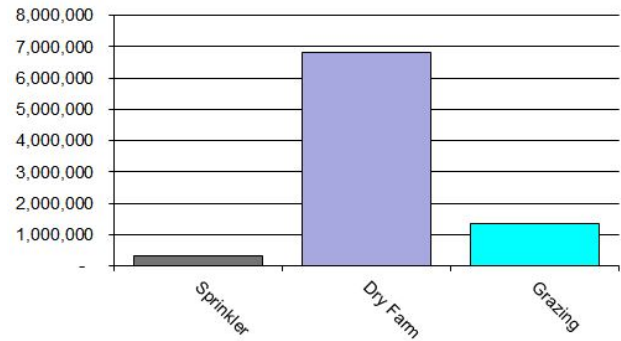
Agricultural Land

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:

Arapahoe County Agricultural Land Ratio Grid						
Abstract Code	Land Class	Number Of Acres	County Value Per Acre	County Assessed Total Value	WRA Total Value	Ratio
4107	Sprinkler	1,924	173.65	334,079	333,772	1.00
4127	Dry Farm	168,315	40.48	6,813,563	6,638,327	1.03
4147	Grazing	139,198	9.83	1,368,638	1,368,638	1.00
Total/Avg		309,436	27.52	8,516,279	8,340,737	1.02

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.

Conclusions

Arapahoe County has substantially complied with the procedures provided by the Division of Property Taxation for the valuation of agricultural outbuildings.

Recommendations

None

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

Arapahoe 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.:

- Questionnaires
- 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

Arapahoe 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
- Questionnaires
- 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

Arapahoe 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

S ALES V ERIFICATION

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 2017 for Arapahoe County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically WRA selected 60 sales listed as unqualified.

All but four of the sales selected in the sample gave reasons that were clear and supportable. Four sales had insufficient reason for disqualification.

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.
>
> When less than 50 percent of sales are qualified in any of the three property classes (residential, commercial, and vacant land), the contractor analyzed the reasons for disqualifying sales in any subclass that constitutes at least 20 percent of the class, either by number

of properties or by value, from the prior year. 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.

If 50 percent or more of the sales are qualified, the contractor has reviewed a statistically significant sample of unqualified sales, excluding sales that were disqualified for obvious reasons.

Arapahoe County did not qualify for in-depth subclass analysis.

Conclusions

Arapahoe County appears to be doing a good job of verifying their sales.

Recommendations

None

ECONOMIC AREA REVIEW AND EVALUATION

Methodology

Arapahoe County has submitted a written narrative describing the economic areas that make up the county's market areas. Arapahoe 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 Arapahoe 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

Earth and Stone Products

Methodology

Under the guidelines of the Assessor's Reference Library (ARL), Volume 3, Natural Resource Valuation Procedures, the income approach was applied to determine value for production of earth and stone products. The number of tons was multiplied by an economic royalty rate determined by the Division of Property Taxation to determine income. The income was multiplied by a recommended Hoskold factor to determine the actual value. The Hoskold factor is determined by the life of the reserves or the lease. Value is based on two variables: life and tonnage. The operator determines these since there is no other means to obtain production data through any state or private agency.

Conclusions

The County has applied the correct formulas and state guidelines to earth and stone production.

Recommendations

None

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 2017 in Arapahoe County. The review showed that subdivisions were discounted pursuant to the Colorado Revised Statutes in Article 39-1-103 (14). Discounting procedures were applied to all subdivisions where less than 80 percent of all sites were sold using the present worth method. The market approach was applied where 80 percent or more of the subdivision sites were sold. An absorption period was estimated for each subdivision that was discounted. An appropriate discount rate was developed using the summation method. Subdivision land with structures was appraised at full market value.

Conclusions

Arapahoe 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.

Arapahoe County has been reviewed for their procedures and adherence to guidelines when assessing and valuing agricultural and 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

Arapahoe 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

Arapahoe 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.

Arapahoe 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
- Chamber of Commerce/Economic Development Contacts
- Personal Observation, Physical Canvassing or Word of Mouth
- Physically verifying all businesses in TIF locations and 1/3 of the county jurisdiction

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.

Arapahoe County submitted their personal property written audit plan and was current for the 2017 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:

- Accounts with obvious discrepancies
- New businesses filing for the first time
- Incomplete or inconsistent declarations
- Businesses with no deletions or additions for 2 or more years
- Non-filing Accounts - Best Information Available
- Accounts protested with substantial disagreement

Arapahoe County's median ratio is 1.00. This is in compliance with the State Board of Equalization (SBOE) compliance requirements which range from .90 to 1.10 with no COD requirements.

Conclusions

Arapahoe 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

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APPENDICES

STATISTICAL COMPLIANCE REPORT
FOR ARAPAHOE COUNTY
2017

I. OVERVIEW

Arapahoe County is an urban county that is part of the Denver metropolitan area. The county has a total of 203,675 real property parcels, according to data submitted by the county assessor's office in 2017. The following provides a breakdown of property classes for this county:
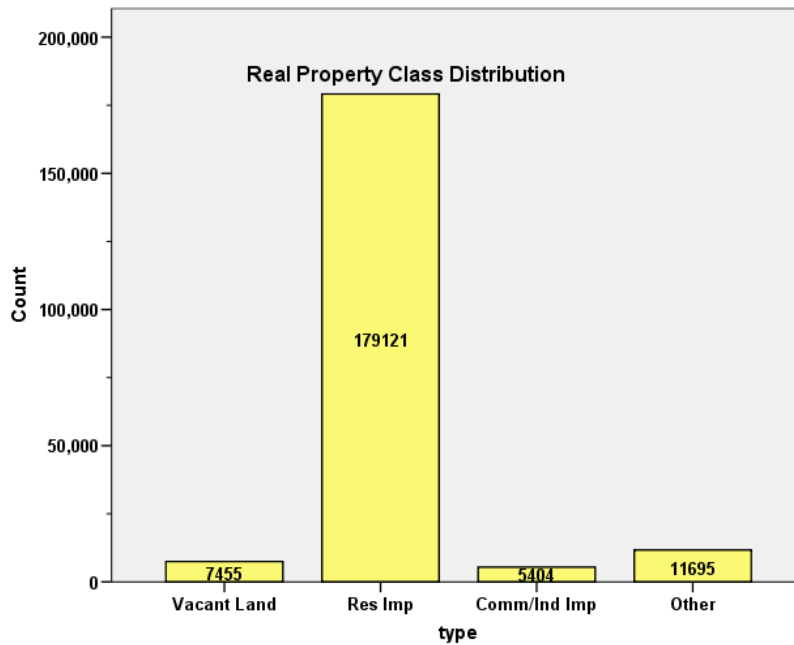
The vacant land class of properties was dominated by residential land. Residential and PUD lots (coded 100 and 400) accounted for 80.6% of all vacant land parcels.

For residential improved properties, single family properties accounted for 84.0% of all residential properties. The next significant subclass of properties was condominiums (coded 1230), which accounted for 15.1% of all properties.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial sales accounted for 2.7% of all such properties in this county.

II. DATA FILES

The following sales analyses were based on the requirements of the 2017 Colorado Property Assessment Study. Information was provided by the Arapahoe Assessor's Office in April 2017. The data included all 5 property record files as specified by the Auditor.

III. RESIDENTIAL SALES RESULTS

There were 25,297 qualified residential sales for the 24-month sale period ending June 30, 2016. The sales ratio analysis was as follows:

Ratio Statistics

Median	1.001
Price Related Differential	1.009
Coefficient of Dispersion	2.3

Case Processing Summary

		Count	Percent
ECONAREA	2.00	82	0.3%
	3.00	942	3.7%
	4.00	564	2.2%
	5.00	1045	4.1%
	6.00	421	1.7%
	7.00	1063	4.2%
	8.00	5022	19.9%
	9.00	360	1.4%
	10.00	2986	11.8%
	11.00	4748	18.8%
	12.00	328	1.3%
	13.00	877	3.5%
	14.00	397	1.6%
	15.00	104	0.4%
	16.00	233	0.9%
	17.00	535	2.1%
	18.00	5406	21.4%
	19.00	184	0.7%
Overall		25297	100.0%
Excluded		0	
Total		25297	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion
2.00	1.000	1.002	.018
3.00	1.002	1.009	.031
4.00	1.001	1.002	.023
5.00	1.001	1.003	.025
6.00	1.003	1.008	.041
7.00	1.001	1.003	.025
8.00	1.001	1.004	.025
9.00	1.002	1.006	.037
10.00	1.000	1.003	.021
11.00	1.001	1.023	.020
12.00	1.000	1.000	.008
13.00	1.001	1.004	.022
14.00	1.001	1.003	.025
15.00	1.000	1.003	.025
16.00	1.000	1.003	.014
17.00	1.000	1.004	.019
18.00	1.001	1.003	.023
19.00	1.000	1.000	.016
Overall	1.001	1.009	.023

The above ratio statistics, stratified by economic area, 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 all of these properties:

Residential Sale Price by Sales Ratio
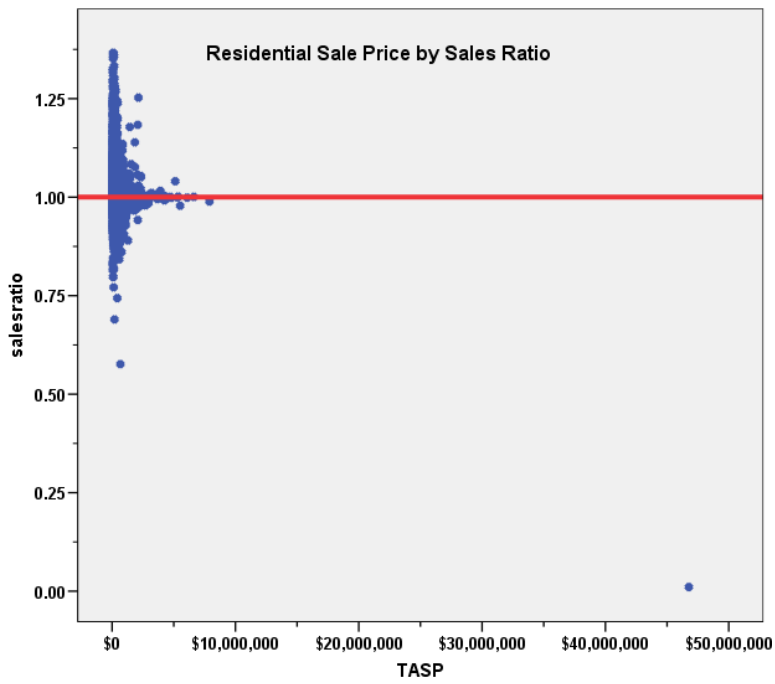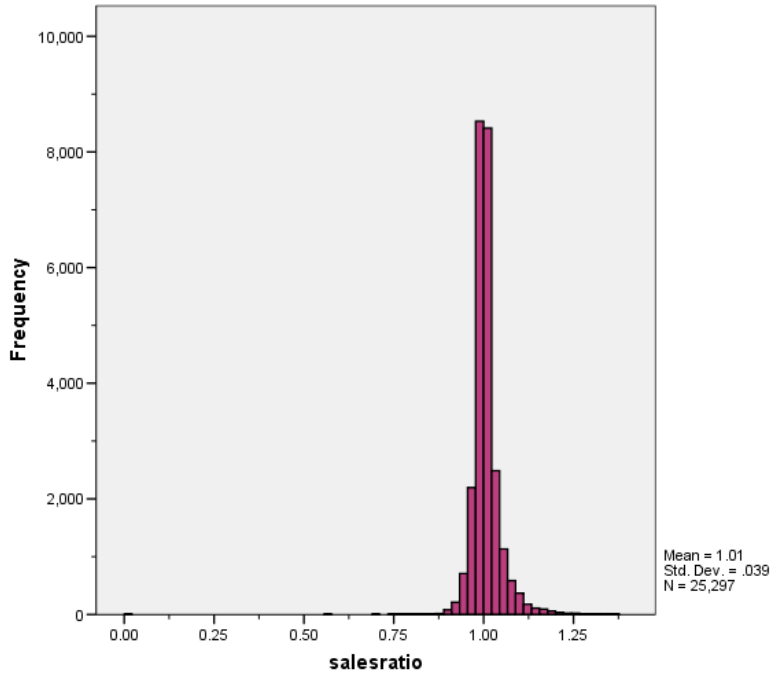
The above histogram indicates that the distribution of the sale ratios was within state mandated limits.

Residential Market Trend Analysis

We next analyzed the residential dataset using the 18-month sale period, with the following results:

Coefficients[a]

ECONAREA	Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
2.00	1	(Constant)	.998	.007		141.987	.000
		SalePeriod	.001	.001	.122	1.102	.274
3.00	1	(Constant)	.989	.003		310.073	.000
		SalePeriod	.002	.000	.261	8.274	.000
4.00	1	(Constant)	1.000	.003		344.994	.000
		SalePeriod	.001	.000	.113	2.691	.007
5.00	1	(Constant)	.990	.002		429.996	.000
		SalePeriod	.002	.000	.278	9.357	.000
6.00	1	(Constant)	.986	.006		164.768	.000
		SalePeriod	.003	.000	.316	6.813	.000
7.00	1	(Constant)	.997	.002		429.963	.000
		SalePeriod	.001	.000	.132	4.349	.000
8.00	1	(Constant)	.996	.001		916.971	.000
		SalePeriod	.001	.000	.181	13.056	.000
9.00	1	(Constant)	.989	.005		193.999	.000
		SalePeriod	.002	.000	.286	5.650	.000
10.00	1	(Constant)	1.000	.001		840.001	.000
		SalePeriod	.000	.000	.100	5.506	.000
11.00	1	(Constant)	1.000	.001		1055.387	.000
		SalePeriod	.000	.000	.088	6.067	.000
12.00	1	(Constant)	1.004	.002		478.074	.000
		SalePeriod	.000	.000	-.041	-.736	.463
13.00	1	(Constant)	.996	.002		433.875	.000
		SalePeriod	.001	.000	.183	5.520	.000
14.00	1	(Constant)	1.000	.004		260.467	.000
		SalePeriod	.000	.000	.076	1.511	.132
15.00	1	(Constant)	.994	.007		139.609	.000
		SalePeriod	.001	.001	.187	1.923	.057
16.00	1	(Constant)	.999	.003		296.920	.000
		SalePeriod	.000	.000	.084	1.277	.203
17.00	1	(Constant)	.999	.002		419.253	.000
		SalePeriod	.001	.000	.179	4.202	.000
18.00	1	(Constant)	.997	.001		1049.945	.000
		SalePeriod	.001	.000	.167	12.432	.000
19.00	1	(Constant)	1.007	.004		241.281	.000
		SalePeriod	.000	.000	-.082	-1.111	.268

a. Dependent Variable: salesratio

The above analysis indicated that no significant residential market trend was present in the sale data within each economic area. Where there was a statistically significant trend within some economic

areas (EA 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 17, 18), the actual trend was insignificant. We concluded that the assessor has adequately dealt with market trending for 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 2017 between each group. The following results present the overall results, as well as by residential subclass, for sold and unsold properties:

Report
VALSF

sold	N	Median	Mean
UNSOLD	153,608	$189	$206
SOLD	25,283	$191	$204

Report
VALSF

ECONAREA	sold	N	Median	Mean
2.00	UNSOLD	974	$253	$254
	SOLD	82	$258	$270
3.00	UNSOLD	4,170	$181	$194
	SOLD	933	$189	$201
4.00	UNSOLD	5,038	$197	$198
	SOLD	564	$204	$208
5.00	UNSOLD	7,810	$165	$174
	SOLD	1,045	$166	$173
6.00	UNSOLD	3,262	$148	$156
	SOLD	421	$147	$151
7.00	UNSOLD	7,163	$162	$167
	SOLD	1,063	$166	$169
8.00	UNSOLD	25,504	$165	$174
	SOLD	5,022	$172	$178
9.00	UNSOLD	2,066	$166	$171
	SOLD	360	$170	$174
10.00	UNSOLD	22,708	$216	$225
	SOLD	2,986	$231	$245
11.00	UNSOLD	24,203	$194	$206
	SOLD	4,748	$194	$206
12.00	UNSOLD	3,460	$367	$397
	SOLD	323	$393	$409
13.00	UNSOLD	5,802	$234	$238
	SOLD	877	$239	$248
14.00	UNSOLD	3,176	$262	$385
	SOLD	397	$267	$268
15.00	UNSOLD	1,077	$256	$245
	SOLD	104	$262	$254
16.00	UNSOLD	2,042	$245	$274
	SOLD	233	$267	$286
17.00	UNSOLD	4,394	$217	$227
	SOLD	535	$227	$232
18.00	UNSOLD	27,695	$178	$186
	SOLD	5,406	$185	$193
19.00	UNSOLD	1,136	$198	$197
	SOLD	184	$169	$183

Based on the above results, we concluded that the assessor has valued sold and unsold residential properties in a similar manner.

IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

There were 374 qualified commercial/industrial sales for the 24-month sale period ending June 30, 2016. The sales ratio analysis was as follows:

Ratio Statistics

Median	0.993
Price Related Differential	1.027
Coefficient of Dispersion	8.0

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

Mean = 1.01
Std. Dev. = .14
N = 374
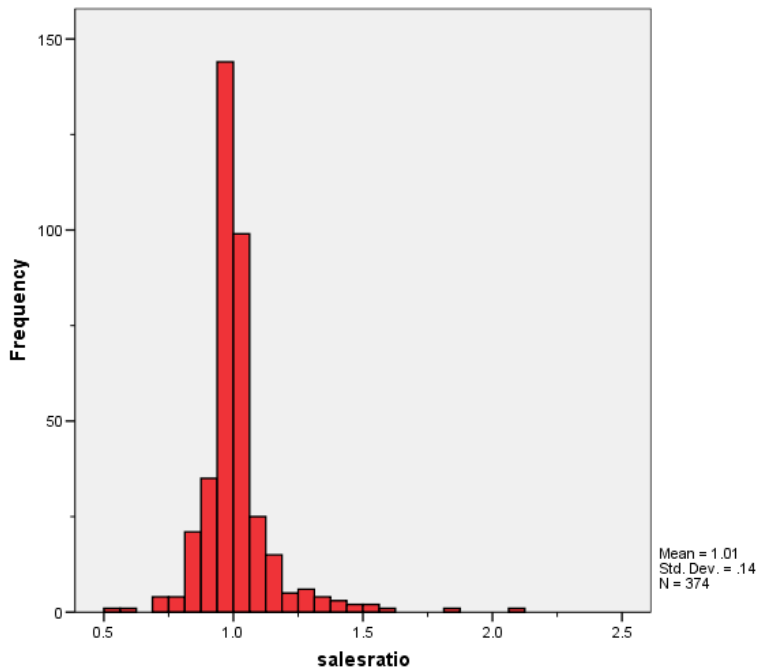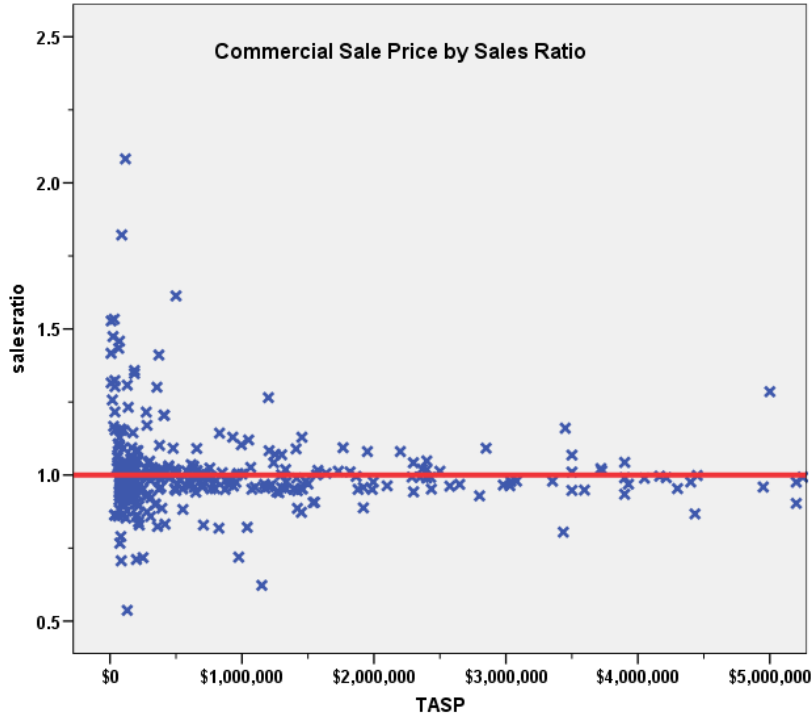
NOTE: SALES TRIMMED TO UNDER $5,000,000 FOR 2ND GRAPH FOR CLARITY

The above histogram indicates that the distribution of the sale ratios was within state mandated limits. No sales were trimmed.

Commercial Market Trend Analysis

We next analyzed the commercial dataset using the 24-month sale period, with the following results:

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.965	.013		74.690	.000
	SalePeriod	.004	.001	.204	4.014	.000

a. Dependent Variable: salesratio

Commercial Market Trend Analysis
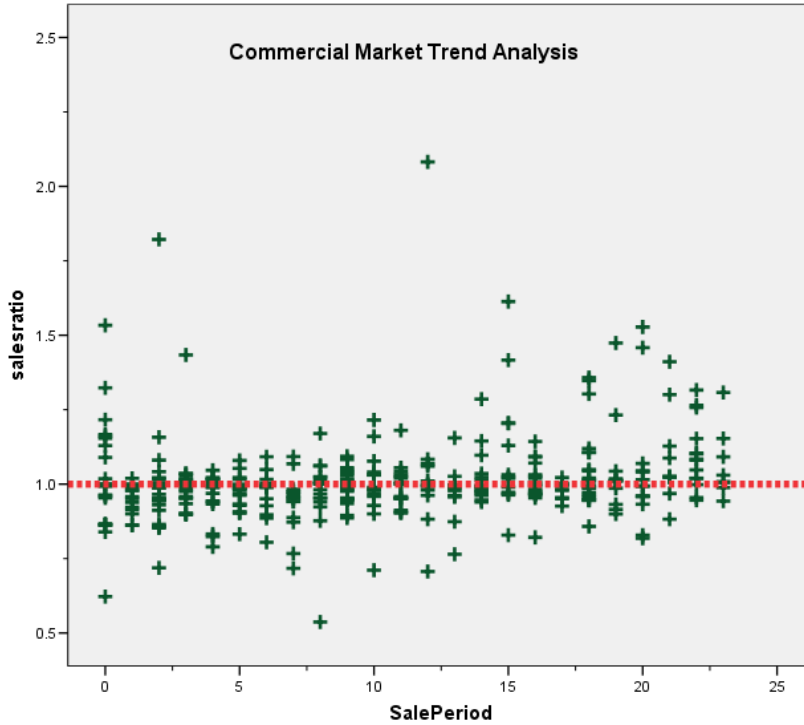
Although there was a statistically significant trend, the magnitude of that trend was not significant. We concluded that the assessor has adequately dealt with market trending for commercial properties.

Sold/Unsold Analysis

In terms of the valuation consistency between sold and unsold commercial properties, we first compared the median value per square foot between sold and unsold commercial properties, as follows:

Report
VALSF

sold	N	Median	Mean
UNSOLD	4,834	$111	$151
SOLD	362	$129	$153
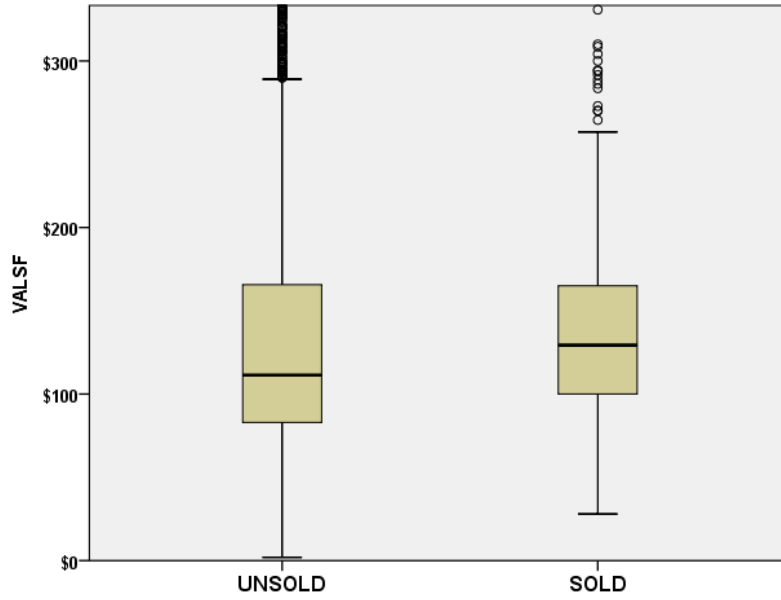
Hypothesis Test Summary

	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.

Although there was clear overlap between sold and unsold commercial values, the results from the Mann-Whitney test indicated that there was a statistically significant difference between each group. We next examined the difference between the change in actual value for taxable years 2016 and 2017 as follows:

Report
DIFF

sold	N	Median	Mean
UNSOLD	4,841	1.13	1.22
SOLD	362	1.16	1.36

We next compared the median change in value by subclass and economic area, as follows:

Report

DIFF

ABSTRIMP	ECONAREA	sold	N	Median	Mean
2212.00	102.00	UNSOLD	44	1.1653	1.2229
		SOLD	1	1.0467	1.0467
	106.00	UNSOLD	38	1.0977	1.2028
		SOLD	2	1.1187	1.1187
	107.00	UNSOLD	76	1.1548	1.2983
		SOLD	4	1.1199	1.2503
	108.00	UNSOLD	60	1.1013	1.1735
		SOLD	2	1.2830	1.2830
	109.00	UNSOLD	120	1.1297	1.1982
		SOLD	6	1.4183	1.5619
	115.00	UNSOLD	258	1.1186	1.2423
		SOLD	15	1.3015	1.3473
	116.00	UNSOLD	13	1.1883	1.2445
		SOLD	2	1.3084	1.3084
	117.00	UNSOLD	65	1.1167	1.1303
		SOLD	3	1.3515	1.4100
2216.00	Total	UNSOLD	1	1.1339	1.1339
		SOLD	1	.9201	.9201
2220.00	102.00	UNSOLD	18	1.0764	1.1326
		SOLD	2	1.0787	1.0787
	104.00	UNSOLD	17	1.1263	1.3892
		SOLD	1	1.1238	1.1238
	107.00	UNSOLD	9	1.1250	1.2251
		SOLD	2	1.3090	1.3090
	109.00	UNSOLD	81	1.0435	1.1150
		SOLD	5	1.1486	1.3643
	110.00	UNSOLD	34	1.2321	1.2911
		SOLD	9	1.3958	1.5350
	112.00	UNSOLD	103	1.1000	1.1988
		SOLD	19	1.5021	1.5067
	113.00	UNSOLD	39	1.1279	1.1920
		SOLD	4	1.5968	1.6634
	114.00	UNSOLD	7	1.1685	1.1393
		SOLD	2	1.7054	1.7054
	115.00	UNSOLD	105	1.0504	1.1405
		SOLD	9	1.4345	1.3297
	116.00	UNSOLD	20	1.0696	1.0975
		SOLD	1	.9310	.9310
	117.00	UNSOLD	80	1.0755	1.2069
		SOLD	8	1.7613	2.0642
	119.00	UNSOLD	2	1.0681	1.0681
		SOLD	1	2.1858	2.1858
2230.00	102.00	UNSOLD	76	1.1796	1.2963
		SOLD	1	1.6029	1.6029
	104.00	UNSOLD	71	1.1507	1.1856
		SOLD	4	1.1972	1.2464
	106.00	UNSOLD	85	1.1524	1.2099
		SOLD	2	2.5107	2.5107
			87	1.1539	1.2398
	107.00	UNSOLD	54	1.1525	1.1847

		SOLD	5	2.0533	2.2347
			59	1.1569	1.2737
	108.00	UNSOLD	66	1.1182	1.1300
		SOLD	1	1.8873	1.8873
			67	1.1185	1.1413
	109.00	UNSOLD	141	1.1527	1.2313
		SOLD	10	1.9697	1.9534
			151	1.1556	1.2791
	110.00	UNSOLD	30	1.1442	1.2007
		SOLD	2	2.1986	2.1986
			32	1.1466	1.2631
	111.00	UNSOLD	5	1.0889	1.1069
		SOLD	1	2.4818	2.4818
	112.00	UNSOLD	26	1.0614	1.3513
		SOLD	2	1.4268	1.4268
	114.00	UNSOLD	14	1.1846	1.3847
		SOLD	1	1.5199	1.5199
	115.00	UNSOLD	333	1.1339	1.2008
		SOLD	15	1.2842	1.3530
	116.00	UNSOLD	15	1.1473	1.1762
		SOLD	4	1.4921	1.4671
	117.00	UNSOLD	96	1.1399	1.1998
		SOLD	1	1.9208	1.9208
2235.00	102.00	UNSOLD	16	1.2085	1.3001
		SOLD	1	1.2661	1.2661
	109.00	UNSOLD	210	1.2086	1.2442
		SOLD	14	1.3140	1.4465
	113.00	UNSOLD	27	1.2903	1.3340
		SOLD	1	1.5884	1.5884
	115.00	UNSOLD	74	1.1570	1.1746
		SOLD	3	1.1611	1.2307
	116.00	UNSOLD	46	1.1572	1.2158
		SOLD	2	1.5737	1.5737
	117.00	UNSOLD	215	1.2485	1.3022
		SOLD	20	1.2478	1.3144
	118.00	SOLD	1	2.1073	2.1073
2245.00	104.00	UNSOLD	25	1.5714	1.4186
		SOLD	3	1.0000	1.1602
	108.00	UNSOLD	15	.9000	.8986
		SOLD	2	.8947	.8947
	109.00	UNSOLD	69	1.0000	1.1013
		SOLD	8	.9091	1.0227
	110.00	UNSOLD	92	1.0256	1.0574
		SOLD	15	1.1538	1.1113
	112.00	UNSOLD	121	.9706	1.0176
		SOLD	11	.9429	1.0315
	113.00	UNSOLD	148	1.0811	1.1539
		SOLD	9	1.0811	1.4520
	114.00	UNSOLD	5	1.0000	.8933
		SOLD	3	1.0000	1.0000
	115.00	UNSOLD	310	1.3496	1.3370
		SOLD	29	1.1600	1.3734
	116.00	UNSOLD	30	1.2618	1.3444
		SOLD	2	1.3963	1.3963
	117.00	UNSOLD	443	1.0375	1.1429

		SOLD	81	1.1538	1.1259
3215.00	109.00	UNSOLD	2	1.1745	1.1745
		SOLD	1	1.2250	1.2250
	Total	UNSOLD	6	1.1617	1.1652
		SOLD	1	1.2250	1.2250

Based on the above results, we concluded that the assessor has valued sold and unsold commercial properties in a similar manner.

V. VACANT LAND SALE RESULTS

There were 135 qualified vacant land sales for the 24-month sale period ending June 30, 2016. The sales ratio analysis was as follows:

Ratio Statistics

Median	1.000
Price Related Differential	1.228
Coefficient of Dispersion	14.5

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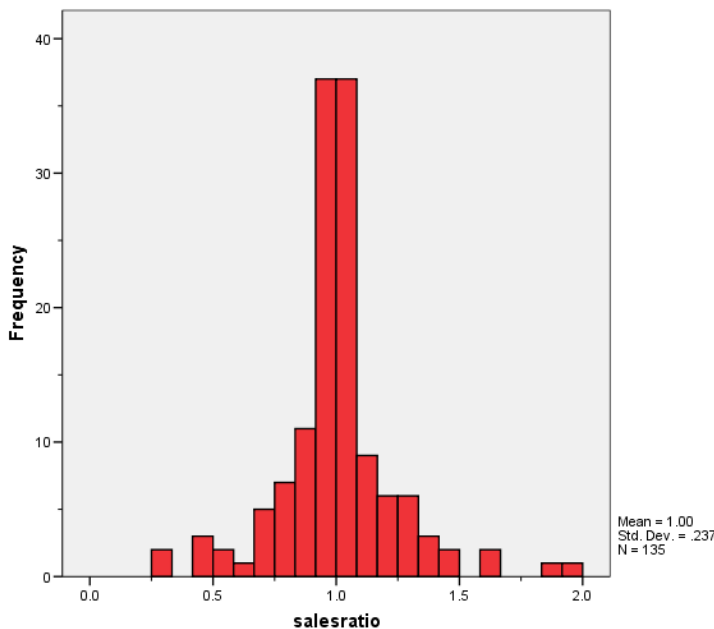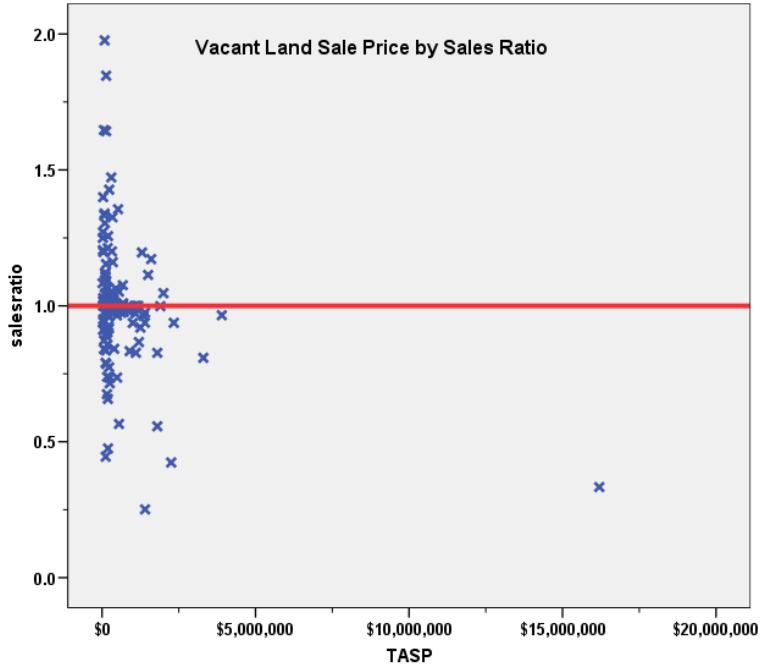
The above histogram indicates that the distribution of the vacant land sale ratios was within state mandated limits, while the above scatter plot indicated that there was no price related differential issues. No sales were trimmed.

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 Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.945	.034		27.590	.000
	SalePeriod	.006	.003	.183	2.143	.034

a. Dependent Variable: salesratio

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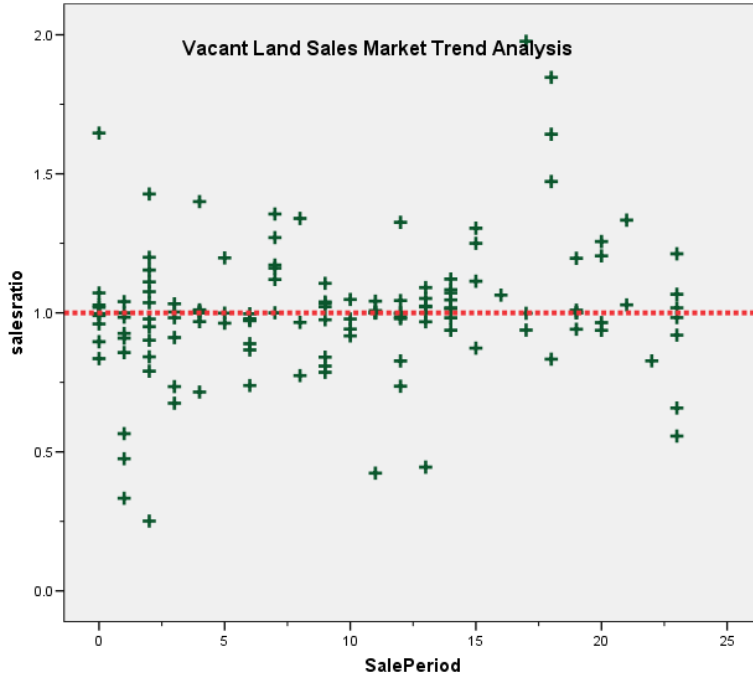
The above analysis indicated that no significant market trending was present in the vacant land sale data. We concluded that the assessor has adequately dealt with market trending for vacant land properties.

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 2017 between each group. The following were the results:

Report
DIFF

sold	N	Median	Mean
UNSOLD	3,361	1.00	1.23
SOLD	116	1.37	1.47

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	.000	Reject the null hypothesis.

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

We next examined the change in value for subdivisions with at least 2 sales:

Report

DIFF

SUBDIVNO	sold	N	Median	Mean
ANTELOPE HILLS 1ST FLG	UNSOLD	62	2.08	2.08
	SOLD	4	1.99	1.99
AURORA CENTRETECH PARK SUB 10TH FLG	UNSOLD	4	1.11	1.11
	SOLD	2	1.11	1.11
BOULEVARD GARDENS ANNEX	UNSOLD	15	2.43	2.02
	SOLD	2	2.64	2.64
CENTENNIAL EAST CORPORATE CENTER 3RD FLG	UNSOLD	2	1.94	1.94
	SOLD	3	1.94	1.94
CHERRY CREEK COUNTRY CLUB SUB 2ND FLG	UNSOLD	17	1.18	1.13
	SOLD	2	1.18	1.18
FLORENCE GARDENS	UNSOLD	2	1.00	1.00
	SOLD	2	2.29	2.29
HIGH PLAINS COUNTRY CLUB SUB 1ST FLG	UNSOLD	21	1.40	1.43
	SOLD	8	1.40	1.42
SADDLE ROCK NORTH SUB 3RD FLG	UNSOLD	5	1.78	1.78
	SOLD	2	1.71	1.71
SCHMITT SUB 1ST FLG	UNSOLD	10	1.63	1.58
	SOLD	3	1.63	1.70
SHERIDAN TOWN OF	UNSOLD	9	1.13	1.32
	SOLD	2	.98	.98
SOUTHFIELD PARK	UNSOLD	22	1.00	1.03
	SOLD	2	1.00	1.00
SPRINGHILL IND PARK SUB 1ST FLG	UNSOLD	6	1.00	1.00
	SOLD	2	1.02	1.02

Based on the comparison between sold and unsold properties at the subdivision level, we concluded that the county assessor valued sold and unsold vacant land properties consistently.

VI. AGRICULTURAL IMPROVEMENTS ANALYSIS

Based on the parameters of the 2017 Colorado Property Assessment Audit, this county was excluded from the Agricultural Improvement portion of the statistical compliance audit.

VII. CONCLUSIONS

Based on this statistical analysis, there were no significant compliance issues concluded for Arapahoe County as of the date of this report.

STATISTICAL ABSTRACT

Residential

		Ratio Statistics for CURRTOT / TASP											
		95% Confidence Interval for Mean			95% Confidence Interval for Median				95% Confidence Interval for Weighted Mean				Coefficient of Variation
ECONAREA	Mean	Lower Bound	Upper Bound	Median	Lower Bound	Upper Bound	Actual Coverage	Weighted Mean	Lower Bound	Upper Bound	Price Related Differential	Coefficient of Dispersion	Mean Centered
2.00	1.004	.997	1.012	1.000	.998	1.002	96.5%	1.002	.994	1.009	1.002	.018	3.3%
3.00	1.012	1.009	1.015	1.002	1.001	1.004	95.3%	1.003	1.000	1.007	1.009	.031	5.2%
4.00	1.006	1.003	1.009	1.001	1.000	1.002	95.2%	1.004	1.001	1.006	1.002	.023	3.7%
5.00	1.009	1.006	1.011	1.001	1.000	1.002	95.2%	1.006	1.004	1.008	1.003	.025	4.1%
6.00	1.021	1.014	1.027	1.003	1.000	1.007	95.9%	1.012	1.008	1.017	1.008	.041	6.5%
7.00	1.005	1.003	1.008	1.001	1.000	1.002	95.0%	1.003	1.001	1.004	1.003	.025	3.9%
8.00	1.008	1.007	1.010	1.001	1.001	1.002	95.0%	1.004	1.003	1.005	1.004	.025	4.1%
9.00	1.013	1.008	1.019	1.002	.999	1.006	96.0%	1.007	1.002	1.012	1.006	.037	5.1%
10.00	1.005	1.004	1.006	1.000	1.000	1.001	95.4%	1.002	1.001	1.003	1.003	.021	3.4%
11.00	1.005	1.004	1.006	1.001	1.000	1.001	95.3%	.982	.943	1.021	1.023	.020	3.5%
12.00	1.003	1.000	1.005	1.000	1.000	1.001	95.9%	1.003	1.000	1.005	1.000	.008	2.1%
13.00	1.007	1.004	1.009	1.001	1.000	1.002	95.7%	1.003	1.001	1.005	1.004	.022	3.7%
14.00	1.005	1.001	1.009	1.001	.999	1.003	95.5%	1.002	.998	1.005	1.003	.025	3.9%
15.00	1.006	.998	1.013	1.000	.996	1.002	96.1%	1.003	.996	1.010	1.003	.025	3.8%
16.00	1.002	.999	1.006	1.000	1.000	1.001	95.1%	.999	.997	1.002	1.003	.014	2.7%
17.00	1.007	1.004	1.010	1.000	1.000	1.001	95.3%	1.003	1.001	1.005	1.004	.019	3.2%
18.00	1.007	1.006	1.008	1.001	1.000	1.001	95.1%	1.004	1.003	1.005	1.003	.023	3.7%
19.00	1.003	.998	1.007	1.000	.999	1.002	95.4%	1.003	.998	1.007	1.000	.016	2.8%

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/Industrial

Ratio Statistics for CURRTOT / TASP

| Mean | 95% Confidence Interval for Mean | | Median | 95% Confidence Interval for Median | | | Weighted Mean | 95% Confidence Interval for Weighted Mean | | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation |
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			Mean Centered
1.009	.994	1.023	.993	.986	.999	95.6%	.982	.945	1.020	1.027	.080	13.9%

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 | | | Weighted Mean | 95% Confidence Interval for Weighted Mean | | Price Related Differential | Coefficient of Dispersion | Coefficient of Variation |
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			Mean Centered
1.004	.964	1.045	1.000	.983	1.010	96.2%	.818	.623	1.013	1.228	.145	23.6%

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.

Residential Median Ratio Stratification

Sale Price

Case Processing Summary

		Count	Percent
SPRec	$25K to $50K	22	0.1%
	$50K to $100K	545	2.2%
	$100K to $150K	1250	4.9%
	$150K to $200K	2444	9.7%
	$200K to $300K	7546	29.8%
	$300K to $500K	10119	40.0%
	$500K to $750K	2293	9.1%
	$750K to $1,000K	537	2.1%
	Over $1,000K	541	2.1%
Overall		25297	100.0%
Excluded		0	
Total		25297	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
$25K to $50K	1.017	1.003	.049	6.6%
$50K to $100K	1.029	1.001	.067	9.3%
$100K to $150K	1.012	1.000	.046	6.5%
$150K to $200K	1.009	1.000	.035	5.3%
$200K to $300K	1.002	1.001	.023	3.5%
$300K to $500K	1.000	1.000	.016	2.6%
$500K to $750K	.999	1.000	.016	2.7%
$750K to $1,000K	.999	1.000	.015	2.5%
Over $1,000K	1.000	1.048	.013	4.9%
Overall	1.001	1.009	.023	3.9%

Subclass

Case Processing Summary

		Count	Percent
ABSTRIMP	1212.00	20052	79.3%
	1215.00	83	0.3%
	1230.00	5162	20.4%
Overall		25297	100.0%
Excluded		0	
Total		25297	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1212.00	1.000	1.008	.020	3.3%
1215.00	1.001	1.002	.015	2.4%
1230.00	1.003	1.007	.037	5.7%
Overall	1.001	1.009	.023	3.9%

Improvement Age

Case Processing Summary

		Count	Percent
AgeRec	Over 100	31	0.1%
	75 to 100	86	0.3%
	50 to 75	2288	9.0%
	25 to 50	11871	46.9%
	5 to 25	8616	34.1%
	5 or Newer	2405	9.5%
Overall		25297	100.0%
Excluded		0	
Total		25297	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
Over 100	1.000	1.002	.013	2.0%
75 to 100	.996	.999	.020	3.1%
50 to 75	1.000	1.002	.020	3.4%
25 to 50	1.001	1.005	.026	4.5%
5 to 25	1.001	1.003	.020	3.3%
5 or Newer	1.000	1.041	.021	3.7%
Overall	1.001	1.009	.023	3.9%

Improved Area

Case Processing Summary

		Count	Percent
ImpSFRec	LE 500 sf	51	0.2%
	500 to 1,000 sf	3265	12.9%
	1,000 to 1,500 sf	8365	33.1%
	1,500 to 2,000 sf	6229	24.6%
	2,000 to 3,000 sf	5600	22.1%
	3,000 sf or Higher	1787	7.1%
Overall		25297	100.0%
Excluded		0	
Total		25297	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LE 500 sf	1.000	.967	.045	7.7%
500 to 1,000 sf	1.003	1.006	.039	6.2%
1,000 to 1,500 sf	1.001	1.003	.026	4.2%
1,500 to 2,000 sf	1.000	1.002	.018	2.9%
2,000 to 3,000 sf	1.000	1.018	.017	3.0%
3,000 sf or Higher	1.000	1.001	.015	2.5%
Overall	1.001	1.009	.023	3.9%

Improvement Quality

Case Processing Summary

		Count	Percent
QUALITY	A	637	2.5%
	A-	1064	4.2%
	A+	466	1.8%
	B	2383	9.4%
	B-	3056	12.1%
	B+	2787	11.0%
	C	8957	35.4%
	C-	462	1.8%
	C+	4388	17.3%
	D	150	0.6%
	D-	87	0.3%
	D+	415	1.6%
	E	16	0.1%
	F	14	0.1%
	R	11	0.0%
	R-	29	0.1%
	R+	11	0.0%
	X	154	0.6%
	X-	139	0.5%
	X+	71	0.3%
Overall		25297	100.0%
Excluded		0	
Total		25297	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
A	.999	1.000	.015	2.4%
A-	.999	1.001	.018	2.8%
A+	1.000	1.000	.015	2.5%
B	1.000	1.002	.019	3.1%
B-	1.001	1.002	.019	2.9%
B+	1.000	1.039	.021	4.0%
C	1.002	1.003	.027	4.3%
C-	1.005	1.007	.040	6.3%
C+	1.001	1.002	.020	3.3%
D	1.010	1.009	.058	8.5%
D-	1.025	1.011	.064	8.7%
D+	1.001	1.007	.051	7.8%
E	1.008	1.003	.034	4.3%
F	1.000	.963	.045	8.4%
R	1.003	1.002	.012	2.0%
R-	1.000	.998	.009	1.4%
R+	.999	1.001	.006	0.9%
X	1.000	1.000	.012	1.8%
X-	1.000	1.001	.013	2.2%
X+	1.000	.998	.014	2.8%
Overall	1.001	1.009	.023	3.9%

Commercial Median Ratio Stratification
Sale Price

Case Processing Summary

		Count	Percent
SPRec	LT $25K	5	1.3%
	$25K to $50K	9	2.4%
	$50K to $100K	49	13.1%
	$100K to $150K	31	8.3%
	$150K to $200K	41	11.0%
	$200K to $300K	24	6.4%
	$300K to $500K	35	9.4%
	$500K to $750K	28	7.5%
	$750K to $1,000K	21	5.6%
	Over $1,000K	131	35.0%
Overall		374	100.0%
Excluded		0	
Total		374	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT $25K	1.417	1.002	.061	8.0%
$25K to $50K	1.167	1.005	.156	20.5%
$50K to $100K	.993	1.002	.102	17.8%
$100K to $150K	.973	1.002	.116	24.5%
$150K to $200K	1.006	1.002	.066	10.6%
$200K to $300K	.993	.996	.083	11.2%
$300K to $500K	1.001	.994	.093	16.0%
$500K to $750K	.989	1.000	.032	4.9%
$750K to $1,000K	.983	1.000	.055	9.3%
Over $1,000K	.990	1.010	.054	8.2%
Overall	.993	1.027	.080	14.2%

Subclass

Case Processing Summary

		Count	Percent
ABSTRIMP	2212.00	39	10.4%
	2215.00	1	0.3%
	2216.00	1	0.3%
	2220.00	63	16.8%
	2230.00	51	13.6%
	2235.00	43	11.5%
	2245.00	175	46.8%
	3215.00	1	0.3%
Overall		374	100.0%
Excluded		0	
Total		374	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
2212.00	.991	.999	.038	6.2%
2215.00	1.285	1.000	.000	.
2216.00	1.049	1.000	.000	.
2220.00	.993	1.012	.050	7.6%
2230.00	.964	1.011	.053	11.5%
2235.00	1.000	1.010	.056	9.1%
2245.00	.999	1.018	.111	18.3%
3215.00	1.091	1.000	.000	.
Overall	.993	1.027	.080	14.2%

Improvement Age

Case Processing Summary

		Count	Percent
AgeRec	Over 100	1	0.3%
	75 to 100	2	0.5%
	50 to 75	27	7.2%
	25 to 50	167	44.7%
	5 to 25	121	32.4%
	5 or Newer	56	15.0%
Overall		374	100.0%
Excluded		0	
Total		374	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
Over 100	1.079	1.000	.000	.
75 to 100	.938	.996	.055	7.7%
50 to 75	.997	1.056	.131	21.6%
25 to 50	.993	.994	.075	13.1%
5 to 25	.995	1.091	.062	9.5%
5 or Newer	.986	1.012	.110	21.0%
Overall	.993	1.027	.080	14.2%

Improved Area

Case Processing Summary

		Count	Percent
ImpSFRec	LE 500 sf	13	3.5%
	500 to 1,000 sf	74	19.8%
	1,000 to 1,500 sf	54	14.4%
	1,500 to 2,000 sf	15	4.0%
	2,000 to 3,000 sf	37	9.9%
	3,000 sf or Higher	181	48.4%
Overall		374	100.0%
Excluded		0	
Total		374	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LE 500 sf	1.167	1.120	.175	20.8%
500 to 1,000 sf	.982	1.018	.103	19.0%
1,000 to 1,500 sf	1.000	1.007	.071	11.3%
1,500 to 2,000 sf	.986	1.041	.111	24.7%
2,000 to 3,000 sf	1.014	1.019	.086	12.5%
3,000 sf or Higher	.992	1.016	.058	9.8%
Overall	.993	1.027	.080	14.2%

Improvement Quality

Case Processing Summary

		Count	Percent
QUALITY	A	4	1.1%
	B	44	11.8%
	C	292	78.1%
	D	34	9.1%
Overall		374	100.0%
Excluded		0	
Total		374	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
A	1.009	1.136	.081	14.7%
B	.993	.986	.061	8.4%
C	.992	1.018	.085	14.8%
D	1.000	1.007	.066	15.9%
Overall	.993	1.027	.080	14.2%

Vacant Land Median Ratio Stratification
Sale Price

Case Processing Summary

		Count	Percent
SPRec	LT $25K	1	0.7%
	$25K to $50K	12	8.9%
	$50K to $100K	14	10.4%
	$100K to $150K	23	17.0%
	$150K to $200K	18	13.3%
	$200K to $300K	14	10.4%
	$300K to $500K	14	10.4%
	$500K to $750K	9	6.7%
	$750K to $1,000K	5	3.7%
	Over $1,000K	25	18.5%
Overall		135	100.0%
Excluded		0	
Total		135	

Ratio Statistics for CURRLND / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT $25K	1.083	1.000	.000	.
$25K to $50K	1.024	1.005	.123	17.2%
$50K to $100K	1.021	1.004	.218	35.0%
$100K to $150K	1.011	.995	.160	27.1%
$150K to $200K	.994	.997	.135	20.5%
$200K to $300K	1.014	.992	.144	21.7%
$300K to $500K	1.015	1.013	.095	14.2%
$500K to $750K	1.005	1.001	.109	20.1%
$750K to $1,000K	.985	1.001	.037	7.8%
Over $1,000K	.963	1.211	.158	26.5%
Overall	1.000	1.228	.145	23.7%

Subclass

Case Processing Summary

		Count	Percent
ABSTRLND	.00	14	10.4%
	100.00	58	43.0%
	200.00	17	12.6%
	300.00	7	5.2%
	400.00	37	27.4%
	1212.00	2	1.5%
Overall		135	100.0%
Excluded		0	
Total		135	

Ratio Statistics for CURRLND / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
.00	.998	.999	.093	15.4%
100.00	1.004	1.072	.134	23.1%
200.00	.978	1.139	.193	29.0%
300.00	.960	.968	.131	20.2%
400.00	1.000	1.478	.157	26.0%
1212.00	1.200	1.131	.167	23.6%
Overall	1.000	1.228	.145	23.7%