



2024

ARAPAHOE COUNTY PROPERTY ASSESSMENT STUDY





September 15, 2024

Ms. Natalie Castle
Director of Research
Colorado Legislative Council
Room 029, State Capitol Building
Denver, Colorado 80203

RE: Final Report for the 2024 Colorado Property Assessment Study

Dear Ms. Castle:

East West Econometrics.-Audit Division is pleased to submit the Final Reports for the 2024 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.

East West Econometrics – 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 with a large, prominent "H" and "F".

Harry J. Fuller
Project Manager
East West Econometrics. – Audit Division

TABLE OF CONTENTS

Introduction	3
Regional/Historical Sketch of Arapahoe 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>Earth and Stone Products</i>	17
<i>Producing Oil and Gas</i>	17
Vacant Land.....	18
Possessory Interest Properties	19
Personal Property Audit	20
East West Econometrics 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.

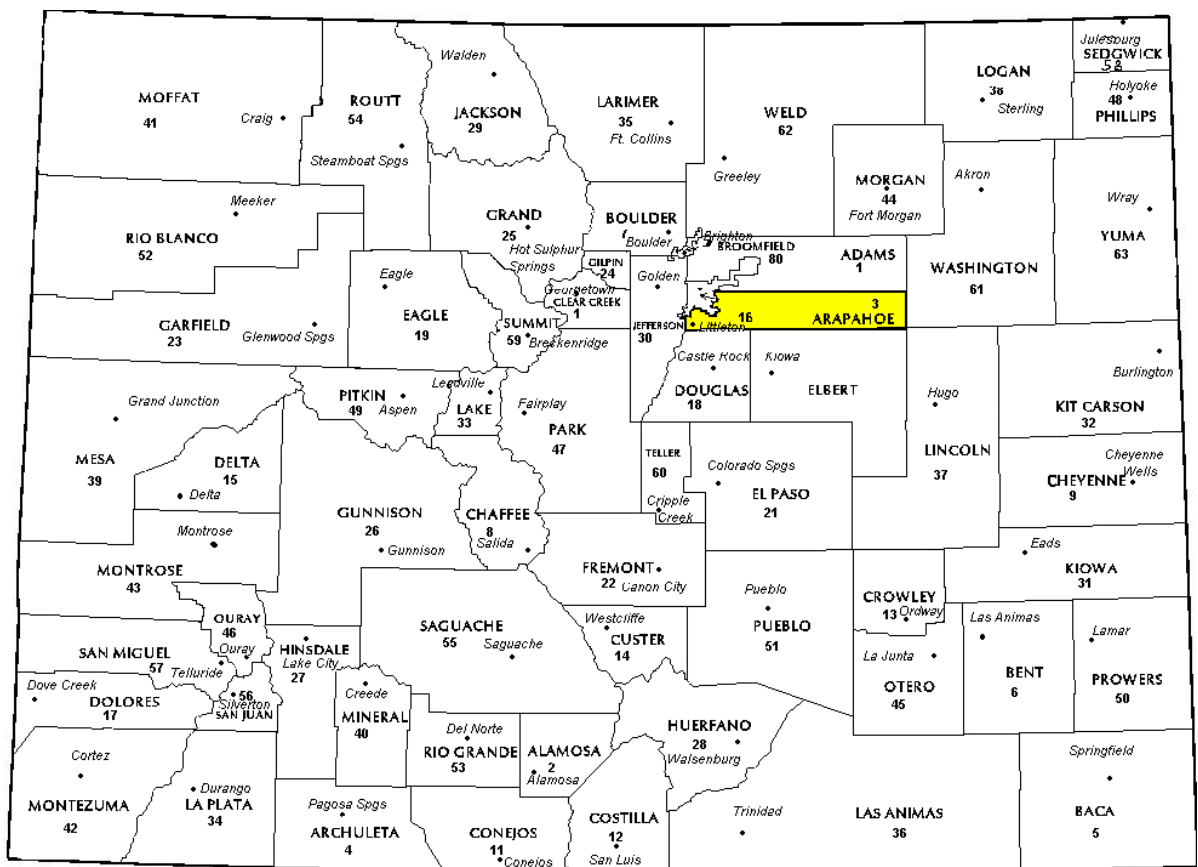
East West Econometrics has completed the Property Assessment Study for 2024 and is pleased to report its findings for Arapahoe County in the following report.

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 has approximately 798.1 square miles and an estimated population of approximately 656,590 people, according to the U.S. Census Bureau's 2020 estimated census data. This represents a 14.8 percent change from April 1, 2010 to July 1, 2019.

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^o 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, 2019 through June 30th, 2020. 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.

All sixty-four counties were examined for compliance on the economic area level. Where there were sufficient sales data, the neighborhood and subdivision levels were tested for compliance. Although counties are determined to be in or out of compliance at the class level, non-compliant economic areas, neighborhoods and subdivisions (where applicable) were discussed with the Assessor.

Data on the individual economic areas, neighborhoods and subdivisions are found in the STATISTICAL APPENDIX.

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:

Arapahoe County Ratio Grid					
Property Class	Number of Qualified Sales	Unweighted Median Ratio	Price Related Differential	Coefficient of Dispersion	Time Trend Analysis
Commercial/Industrial	442	0.978	1.025	9.1	Compliant
Single Family	28,991	1.000	1.008	2.5	Compliant
Vacant Land	211	1.008	1.061	16.1	Compliant

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
Single Family	Compliant
Vacant Land	Compliant

Conclusions

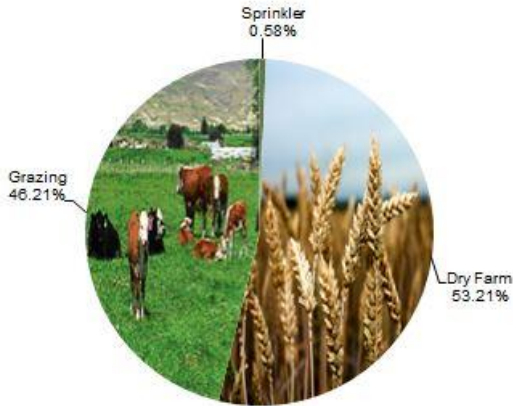
After applying the above described methodologies, it is concluded that Arapahoe County is reasonably treating its sold and unsold properties in the same manner.

Recommendations

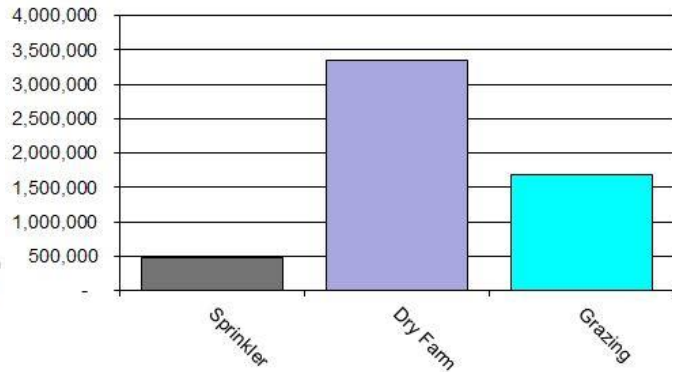
None

AGRICULTURAL LAND STUDY

Acres By Subclass



Value By Subclass



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	1,737	277.11	481,275	476,441	1.01
4127	Dry Farm	159,500	21.06	3,358,711	3,432,455	0.98
4147	Grazing	138,534	12.11	1,677,828	1,677,828	1.00
Total/Avg		299,771	18.41	5,517,814	5,586,725	0.99

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.

Property Taxation for the valuation of agricultural outbuildings.

Recommendations

None

Conclusions

Arapahoe County has complied with the procedures provided by the Division of

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 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.

EWE reviewed the sales verification procedures in 2024 for Arapahoe County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically EWE selected 54 sales listed as unqualified.

All but 1 of the sales selected in the sample gave reasons that were clear and supportable. One sale had insufficient reason for disqualification.

For residential, commercial, and vacant land sales with considerations over \$100,000, 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

Arapahoe County appears to be doing an adequate 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 2024 in Arapahoe 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

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
- Verifying all businesses in 1/3 of the county annually.

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 2024 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
- Accounts with omitted property
- Businesses with no deletions or additions for 2 or more years
- Non-filing Accounts - Best Information Available
- Accounts close to the \$52,000 actual value exemption status
- 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



EAST WEST ECONOMETRICS AUDITOR STAFF

Harry J. Fuller, *Audit Project Manager*

Suzanne Howard, *Audit Administrative Manager*

Steve Kane, *Audit Statistician*

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

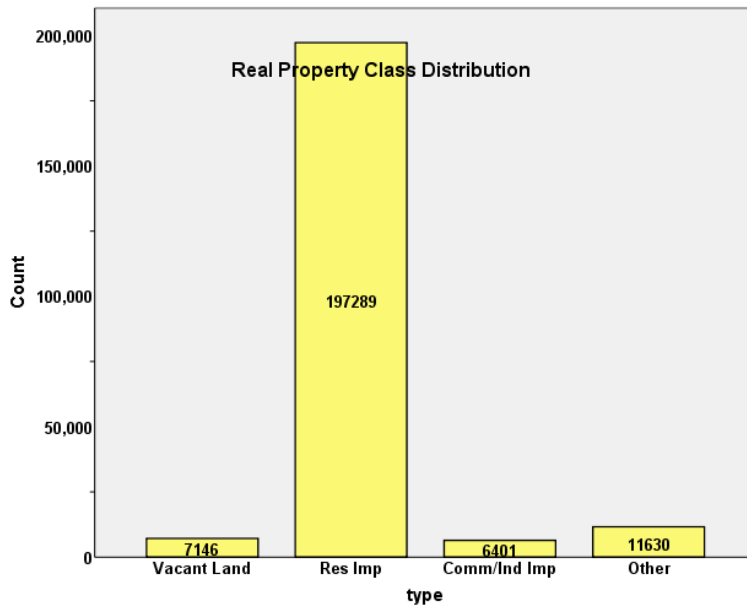
J. Andrew Rodriguez, *Field Analyst*

APPENDICES

**STATISTICAL COMPLIANCE REPORT
FOR ARAPAHOE COUNTY
2024**

I. OVERVIEW

Arapahoe County is an urban county that is part of the Denver metropolitan area. The county has a total of 222,466 real property parcels, according to data submitted by the county assessor’s office in 2024. 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 80.1% of all vacant land parcels.

For residential improved properties, single family properties accounted 84.7% of all residential properties. The next significant subclass of properties was condominiums (coded 1230), which accounted for 14.2% of all properties.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial sales accounted for 2.9% of all such properties in this county.

II. DATA FILES

The following sales analyses were based on the requirements of the 2024 Colorado Property Assessment Study. Information was provided by the Arapahoe Assessor’s Office in April 2024. The data included all 5 property record files as specified by the Auditor.

III. RESIDENTIAL SALES RESULTS

There were 28,991 qualified residential sales for the 24-month sale period ending June 30, 2022. The sales ratio analysis results were as follows:

Ratio Statistics

Median	1.000
Price Related Differential	1.008
Coefficient of Dispersion	2.5

We next stratified the sales ratio analysis by economic area and by neighborhoods, the latter with at least 50 sales:

For the 21 economic areas with at least 30 sales, the median sales ratio and coefficient of dispersion metrics were all in compliance. We next stratified residential sales by neighborhoods with at least 50 sales, as follows:

ECON AREA

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion
1	1.000	1.000	.026
2	1.000	1.001	.015
3	1.000	.971	.069
4	1.000	1.002	.027
5	1.000	1.000	.023
6	1.001	1.004	.033
7	1.000	1.001	.026
8	1.000	1.002	.026
9	1.001	1.003	.039
10	1.000	1.001	.019
11	1.000	1.002	.030
12	1.000	1.010	.039
13	1.000	1.001	.024
14	1.000	1.003	.026
15	1.000	1.006	.034
16	1.000	1.003	.028
17	1.000	1.001	.020
18	1.000	1.002	.023
19	.999	.998	.025
20	1.000	1.008	.025
21	1.000	1.001	.022
104	.964	1.005	.037
Overall	1.000	1.001	.026

Ratio Statistics for CurrTot / TASP

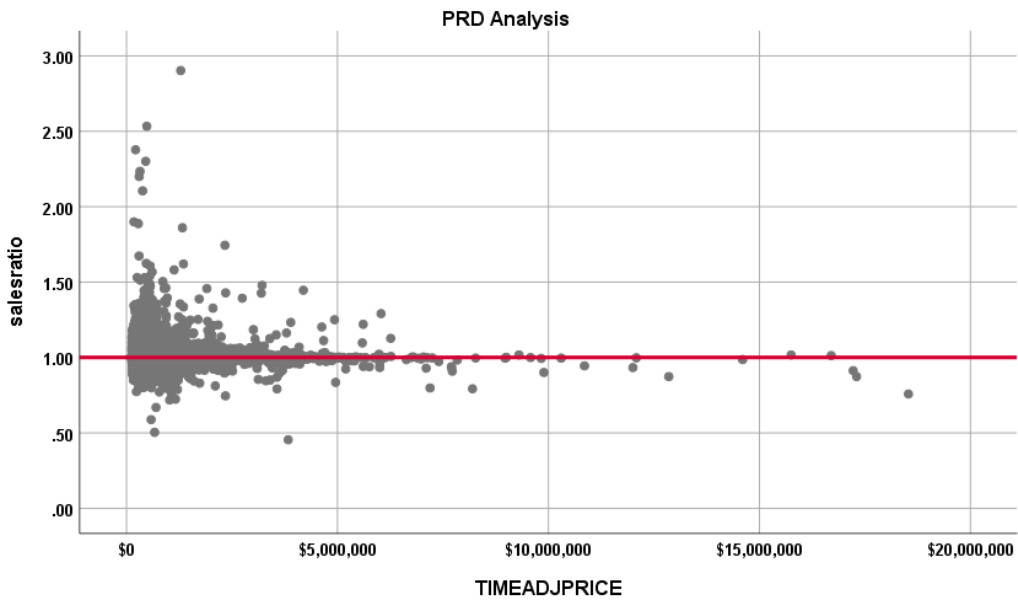
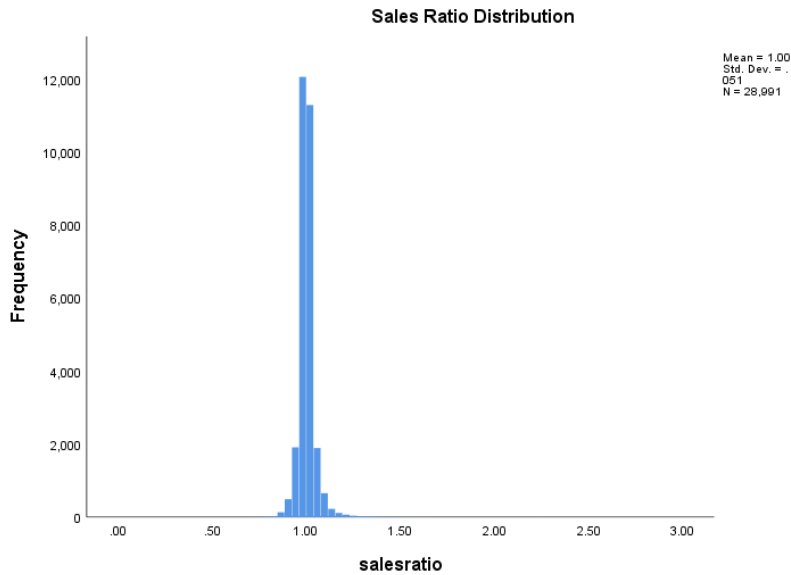
Group	Median	Price Related Differential	Coefficient of Dispersion
2	1.000	1.002	.030
8	1.000	1.004	.028
11	1.000	1.000	.021

22	1.000	1.001	.027
28	1.007	1.005	.046
32	1.000	1.003	.039
36	1.000	1.012	.036
45	1.010	1.005	.047
102	.998	1.001	.023
111	1.000	1.001	.017
112	1.001	1.001	.017
149	1.000	1.001	.013
164	1.000	1.000	.023
174	.999	1.004	.061
183	.997	1.000	.023
218	.999	1.003	.033
226	1.000	1.000	.030
231	1.000	1.005	.045
235	1.000	1.003	.043
247	.999	1.002	.022
248	1.000	1.001	.017
271	1.000	1.002	.017
273	.999	1.001	.028
304	.999	1.002	.025
324	.999	1.001	.021
349	.997	1.000	.017
366	1.000	1.001	.024
374	.998	1.001	.022
380	1.000	1.001	.015
387	1.000	1.001	.012
391	1.001	1.001	.022
423	1.000	1.003	.036
458	1.000	1.001	.016
479	1.012	1.008	.055
481	1.038	1.003	.039
509	1.000	1.003	.025
564	.871	1.000	.552
570	1.001	1.001	.019
593	.993	1.004	.042
596	1.000	1.001	.016
601	1.000	1.001	.018
604	1.000	1.003	.043
606	1.008	1.002	.035
613	1.000	1.001	.015
616	.991	1.002	.040
626	1.001	1.005	.042
628	1.004	1.002	.034
629	1.000	1.000	.017
631	.995	1.002	.035
648	.998	1.001	.018
654	1.000	1.001	.015
655	.997	1.004	.048
682	.987	1.002	.039
683	.995	1.001	.030
704	.998	1.000	.016
718	1.000	1.003	.033
732	.995	1.001	.026
757	1.006	1.002	.039
758	.999	1.001	.026
761	.999	1.001	.021

763	1.000	1.003	.024
844	1.004	1.000	.034
847	1.000	1.001	.014
916	1.005	1.002	.033
917	.986	1.001	.024
1018	1.000	1.001	.014
1021	1.000	1.001	.015
1090	1.002	1.001	.032
1097	1.000	1.001	.030
1172	1.000	1.002	.034
1210	.997	1.001	.023
1324	1.000	1.001	.014
1386	1.000	1.001	.016
1480	1.000	1.003	.041
1482	1.000	1.001	.013
1526	1.001	1.001	.014
1564	.999	1.001	.022
1565	.999	1.001	.021
1566	1.000	1.000	.012
1588	1.000	1.002	.024
1589	.995	1.001	.020
1590	1.001	1.001	.015
1591	1.001	1.001	.018
1659	1.000	1.000	.041
1725	1.000	1.002	.023
1751	1.000	1.000	.009
1763	.998	1.002	.026
1766	.999	1.002	.023
1780	1.001	1.002	.037
1783	1.002	1.025	.090
1808	1.000	1.001	.016
1819	1.010	1.003	.038
1834	1.002	1.001	.050
1860	1.000	1.001	.017
1866	1.000	1.001	.015
1876	1.000	1.000	.024
1903	1.000	1.001	.034
1913	1.000	1.001	.016
1918	1.000	1.002	.071
1923	.999	1.001	.023
1936	1.000	1.001	.014
1937	1.007	1.004	.041
1940	1.000	1.001	.017
1947	.992	1.006	.055
1978	.985	1.002	.023
1982	1.014	1.004	.042
1983	1.001	1.002	.029
1984	1.000	1.002	.040
1987	1.012	1.000	.041
2000	1.002	1.001	.015
2017	1.000	1.002	.020
2022	1.001	1.003	.038
2025	1.008	1.004	.058
2052	1.000	1.001	.023
2060	.999	1.001	.015
2074	1.001	1.002	.023
2082	1.000	1.004	.049

2083	.999	1.001	.026
2085	1.000	1.003	.046
2088	1.002	1.004	.051
2094	.993	1.002	.037
2101	1.000	1.002	.020
2107	1.001	1.001	.015
2110	.994	1.001	.038
2126	1.000	1.001	.017
2131	.999	1.001	.022
2161	.996	1.001	.026
2162	1.000	1.002	.024
2172	.998	1.001	.020
2181	1.001	1.002	.028
2250	1.000	1.000	.016
2270	1.000	1.001	.020
2276	.999	1.001	.020
2313	1.000	1.001	.018
2316	.999	1.002	.024
2317	.999	1.000	.008
2327	.999	1.000	.016
2332	1.000	1.001	.023
2334	.991	1.001	.025
2405	1.000	1.000	.010
2414	1.003	1.003	.035
2448	.993	1.004	.039
2465	1.000	1.002	.029
2473	.996	1.003	.032
2490	.999	1.002	.033
2500	.999	1.003	.023
2516	1.000	1.001	.014
2549	.999	1.002	.019
2613	1.000	1.001	.019
2688	1.000	1.001	.022
2752	.997	1.004	.027
2764	1.000	1.000	.011
2766	1.000	1.001	.018
2779	1.003	1.001	.033
2798	1.000	1.003	.026
2801	1.014	.999	.044
2905	1.000	1.002	.017
2906	1.000	1.001	.014
2939	.998	1.001	.018
Overall	1.000	.999	.031

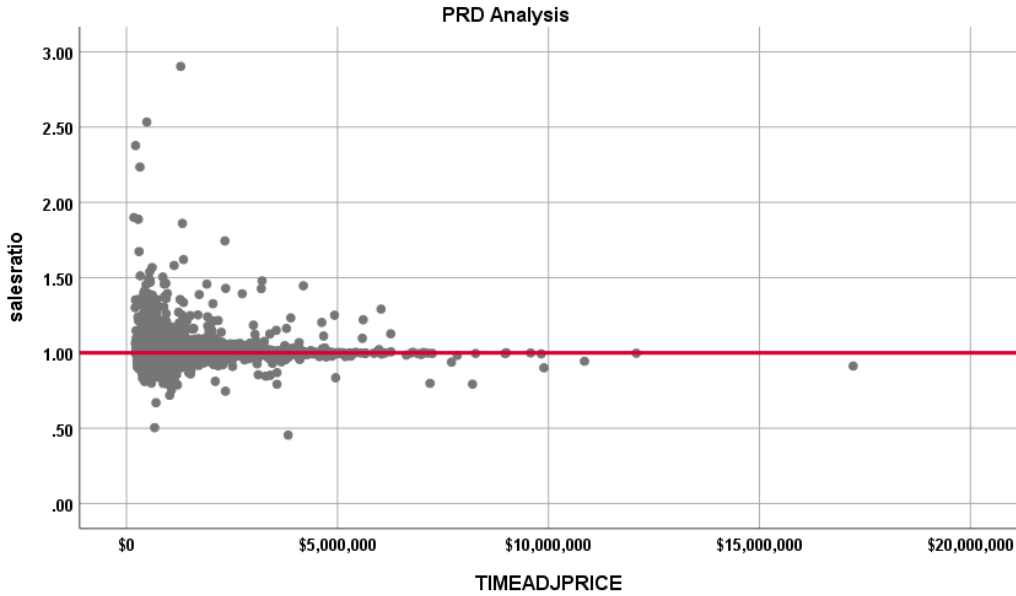
The above ratio statistics, stratified by neighborhoods, were in compliance with the standards set forth by the Colorado State Board of Equalization (SBOE) for the overall residential sales. The following graphs describe further the sales ratio distribution for all of these properties:



SALES LESS THAN \$20,000,000

Subclass 1212 PRD Analysis

We next analyzed residential properties identified as 1212 using the state abstract code system. These include single family residences, town homes and purged manufactured homes. The following indicates the distribution of sales ratios across the sale price spectrum:



The Price-Related Differential (PRD) for 1212 sales is 1.000. This is within the IAAO standards for the PRD. We also performed a regression analysis between the sales ratio and the assessor’s current value to further test for regressivity or progressivity in the residential sales valuation, as follows:

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	.999	.001		1902.775	.000
	CurrTot	.00000000569	.000	.062	9.416	.000

a. Dependent Variable: salesratio

At 0.00000000569, the slope of the line is not significant, which indicates that sales ratios are similar across the entire sale price array. We also stratified the sales ratio analysis by the sale price range, as follows:

Case Processing Summary

		Count	Percent
SPRec	LT \$300K	277	1.2%
	\$300K to \$400K	1110	4.8%
	\$400K to \$500K	3556	15.4%
	\$500K to \$600K	7175	31.0%
	\$600K to \$750K	5955	25.7%
	\$750K to \$1000K	3196	13.8%
	\$1000K to \$2000K	1369	5.9%
	Over \$2000K	505	2.2%
Overall		23143	100.0%
Excluded		0	
Total		23143	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT \$300K	1.005	1.003	.047	13.2%
\$300K to \$400K	1.003	1.000	.032	6.4%
\$400K to \$500K	1.001	1.000	.025	4.9%
\$500K to \$600K	1.000	1.000	.019	3.5%
\$600K to \$750K	1.000	1.000	.019	3.6%
\$750K to \$1000K	.999	1.000	.023	4.3%
\$1000K to \$2000K	.999	.999	.026	7.7%
Over \$2000K	1.000	1.003	.029	7.8%
Overall	1.000	1.000	.022	4.7%

The above table indicates that the sales ratio distribution was more or less consistent across the sale price range for Arapahoe County.

Residential Market Trend Analysis

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

Coefficients^a

ECONAREA	Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
.	1	(Constant)	.994	.011		93.150	.000
		SalePeriod	.001	.001	.173	1.535	.129
0	1	(Constant)	.866	.041		21.381	.000
		SalePeriod	.007	.004	.621	1.939	.101
1	1	(Constant)	1.020	.009		114.324	.000
		SalePeriod	-.002	.001	-.362	-2.929	.005
2	1	(Constant)	1.009	.005		217.306	.000
		SalePeriod	-.001	.000	-.195	-2.061	.042
3	1	(Constant)	1.006	.003		347.473	.000
		SalePeriod	-.001	.000	-.103	-2.853	.004
4	1	(Constant)	1.003	.003		326.324	.000
		SalePeriod	9.020E-5	.000	.014	.386	.700
5	1	(Constant)	.999	.003		368.155	.000
		SalePeriod	.000	.000	.061	2.097	.036
6	1	(Constant)	1.004	.006		158.180	.000
		SalePeriod	.001	.000	.048	1.110	.267
7	1	(Constant)	1.003	.002		407.630	.000
		SalePeriod	.000	.000	-.043	-1.486	.137
8	1	(Constant)	1.001	.001		978.055	.000
		SalePeriod	.000	.000	.023	1.856	.063
9	1	(Constant)	1.009	.006		177.408	.000
		SalePeriod	5.135E-5	.000	.006	.117	.907
10	1	(Constant)	1.005	.002		658.156	.000
		SalePeriod	.000	.000	-.047	-2.432	.015
11	1	(Constant)	1.008	.002		539.070	.000

		SalePeriod	.000	.000	-.036	-1.774	.076
12	1	(Constant)	1.001	.013		79.633	.000
		SalePeriod	.002	.001	.097	2.002	.046
13	1	(Constant)	1.009	.004		250.665	.000
		SalePeriod	-6.954E-5	.000	-.008	-.237	.813
14	1	(Constant)	1.012	.005		213.044	.000
		SalePeriod	.000	.000	-.016	-.606	.545
15	1	(Constant)	1.017	.015		65.745	.000
		SalePeriod	.001	.001	.036	.452	.652
16	1	(Constant)	1.005	.004		277.428	.000
		SalePeriod	4.244E-5	.000	.005	.167	.867
17	1	(Constant)	.999	.002		607.850	.000
		SalePeriod	6.955E-5	.000	.012	.563	.573
18	1	(Constant)	1.001	.001		771.410	.000
		SalePeriod	4.531E-5	.000	.008	.478	.632
19	1	(Constant)	1.002	.005		214.597	.000
		SalePeriod	.000	.000	-.076	-1.299	.195
20	1	(Constant)	1.003	.002		555.729	.000
		SalePeriod	5.929E-5	.000	.011	.452	.651
21	1	(Constant)	1.004	.003		400.153	.000
		SalePeriod	-4.487E-5	.000	-.008	-.244	.808

a. Dependent Variable: salesratio

The above analysis indicated that no significant residential market trend was present in the sale data within each economic area. We concluded that the assessor has adequately adjusted for 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 2024 between each group. The following results present the overall results, as well as by economic area, for sold and unsold properties:

Report

VALSF				
sold	N	Median	Mean	
UNSOLD	168293	\$334	\$361	
SOLD	28986	\$336	\$367	

Report

VALSF				
ECONAREA	sold	N	Median	Mean
1	UNSOLD	271	\$467	\$441
	SOLD	59	\$475	\$462
2	UNSOLD	947	\$444	\$447
	SOLD	110	\$505	\$497
3	UNSOLD	4655	\$324	\$327
	SOLD	755	\$327	\$336
4	UNSOLD	4906	\$378	\$379
	SOLD	734	\$400	\$409
5	UNSOLD	7643	\$310	\$332

	SOLD	1172	\$322	\$345
6	UNSOLD	3111	\$290	\$308
	SOLD	534	\$289	\$307
7	UNSOLD	7118	\$289	\$294
	SOLD	1222	\$303	\$305
8	UNSOLD	28371	\$305	\$320
	SOLD	6563	\$310	\$321
9	UNSOLD	2003	\$257	\$264
	SOLD	423	\$262	\$269
10	UNSOLD	22714	\$357	\$375
	SOLD	2723	\$382	\$403
11	UNSOLD	9663	\$313	\$321
	SOLD	2477	\$312	\$319
12	UNSOLD	3400	\$634	\$666
	SOLD	419	\$680	\$720
13	UNSOLD	5913	\$434	\$443
	SOLD	848	\$441	\$463
14	UNSOLD	8232	\$504	\$519
	SOLD	1433	\$535	\$587
15	UNSOLD	1454	\$444	\$439
	SOLD	163	\$487	\$468
16	UNSOLD	6643	\$377	\$413
	SOLD	952	\$397	\$423
17	UNSOLD	13213	\$332	\$349
	SOLD	2158	\$342	\$358
18	UNSOLD	16295	\$323	\$335
	SOLD	3188	\$330	\$340
19	UNSOLD	1369	\$335	\$341
	SOLD	291	\$295	\$310
20	UNSOLD	11863	\$296	\$308
	SOLD	1646	\$309	\$322
21	UNSOLD	6497	\$395	\$408
	SOLD	926	\$406	\$419

All major economic areas had less than a 10+/- percent difference in the median value per square foot between sold and unsold properties. We also compared the median change in the previous base year and the current base year for sold and unsold properties for these 21 economic areas. This test indicated differences of less than 5 percent. Based on these results, we concluded that there was no significant gap in value between residential sold and unsold properties by economic area for Arapahoe County.

We next compared residential sold and unsold properties for neighborhoods with at least 50 sales using the median value per square foot method. Neighborhoods with more than a 10 percent difference in the median or mean value per square foot test were tested using the mean and median change in value between the previous base year and the current base year; those with more than a 10 percent difference are identified in red, as follows:

VALSF						DIFF					
NBHD		N	Median	Mean	DIFF	NBHD		N	Median	Mean	DIFF
628	0	249	\$261	\$238		628	0	68	1.97	2.02	
	1	195	\$290	\$290	11%		1	189	1.38	1.44	-30%
	Total	444	\$269	\$260	22%		Total	257	1.40	1.59	-29%
1834	0	207	\$205	\$218		1834	0	207	1.22	1.30	
	1	65	\$249	\$243	22%		1	65	1.42	1.44	17%
	Total	272	\$212	\$224	11%		Total	272	1.24	1.33	11%
2465	0	689	\$345	\$348		2465	0	689	1.40	1.39	
	1	52	\$394	\$393	14%		1	52	1.55	1.54	11%
	Total	741	\$348	\$351	13%		Total	741	1.40	1.40	11%

Only three neighborhoods were identified out of a total of 160 residential neighborhoods with more than 50 sales, or 1.9 percent of these larger neighborhoods.

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

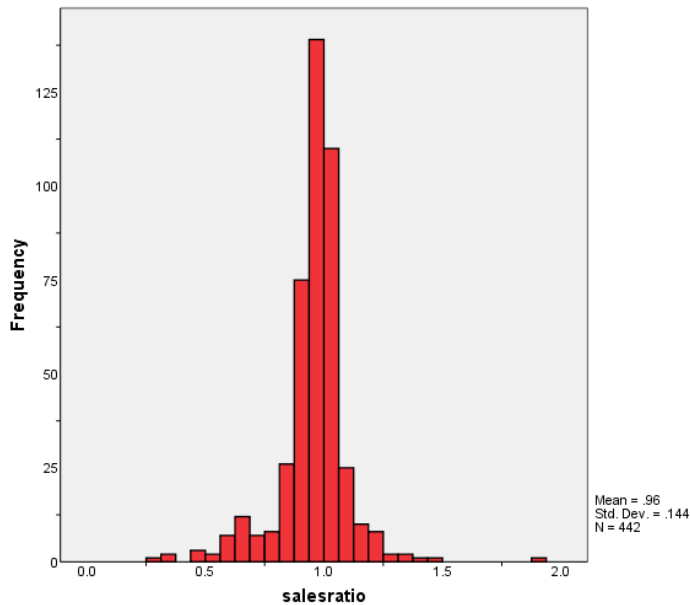
IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

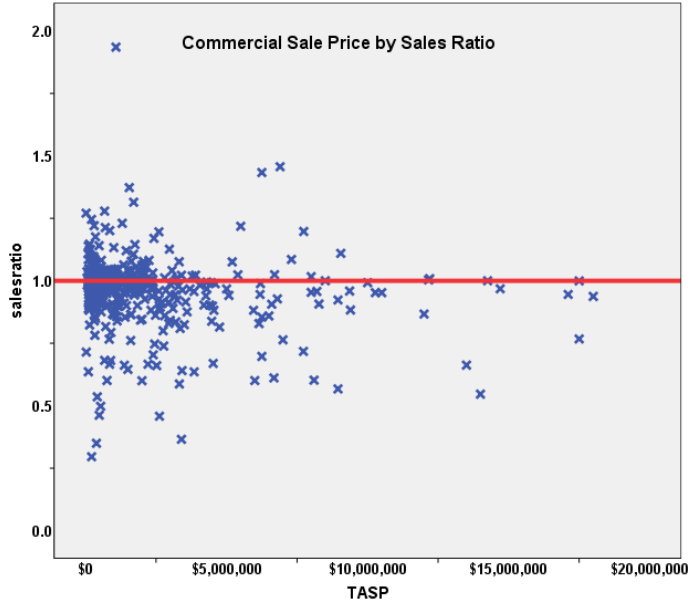
There were 442 qualified commercial/industrial sales for the 24-month sale period ending June 30, 2022. The sales ratio analysis results were as follows:

Ratio Statistics

Median	0.978
Price Related Differential	1.025
Coefficient of Dispersion	9.1

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:





SALES LESS THAN \$20,000,000

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

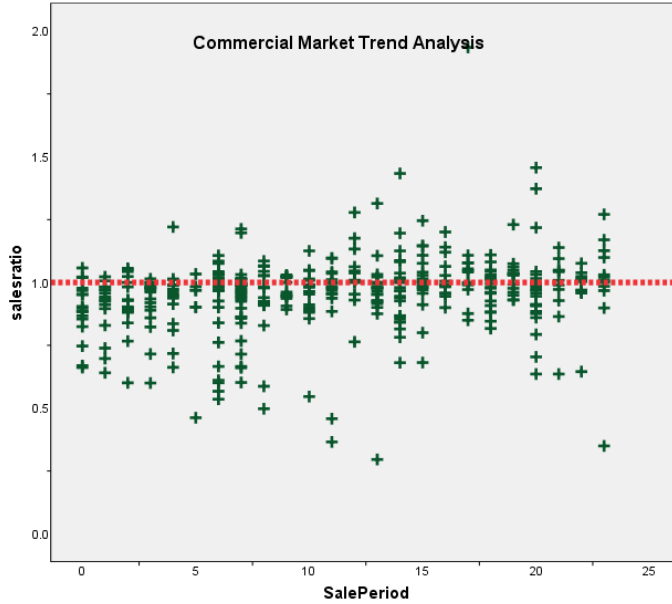
Commercial Market Trend Analysis

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

Coefficients^a

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	.904	.013		69.855	.000
	SalePeriod	.005	.001	.224	4.827	.000

a. Dependent Variable: salesratio



While the class level market trend analysis indicated a significant residual trend in the sales ratio data, when stratified by subclass, there were no significant market trends. Based on these results, 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 2024 median value per square foot between sold and unsold commercial properties, as follows:

Report

VALSF			
	N	Median	Mean
UNSOLD	5941	\$175	\$222
SOLD	441	\$185	\$219

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 .01.

Report

VALSF				
ABSTRIMP	sold	N	Median	Mean
2212.00	UNSOLD	877	\$172	\$198
	SOLD	35	\$228	\$239
2215.00	UNSOLD	73	\$131	\$154
	SOLD	6	\$126	\$121
2220.00	UNSOLD	597	\$128	\$151
	SOLD	56	\$142	\$167
2230.00	UNSOLD	1426	\$257	\$339
	SOLD	87	\$309	\$336
2235.00	UNSOLD	1074	\$147	\$165
	SOLD	85	\$162	\$172
2245.00	UNSOLD	1586	\$185	\$193
	SOLD	160	\$185	\$198

We also compared the median change in actual value for the previous base year and the current base year between each group by subclass. The following were the results:

Report

DIFF				
ABSTRIMP	sold	N	Median	Mean
2212.00	UNSOLD	878	1.12	1.14
	SOLD	35	1.32	1.38
2215.00	UNSOLD	73	1.20	1.25
	SOLD	6	1.30	1.31
2220.00	UNSOLD	598	1.06	1.09
	SOLD	56	1.15	1.27
2230.00	UNSOLD	1443	1.17	1.29
	SOLD	87	1.49	1.52
2235.00	UNSOLD	1075	1.30	1.35
	SOLD	85	1.39	1.50
2245.00	UNSOLD	1586	1.19	1.19
	SOLD	160	1.29	1.25

Based on the above differences for Subclasses 2212 and 2230, we advised the assessment staff to track valuations of sold and unsold properties carefully moving forward.

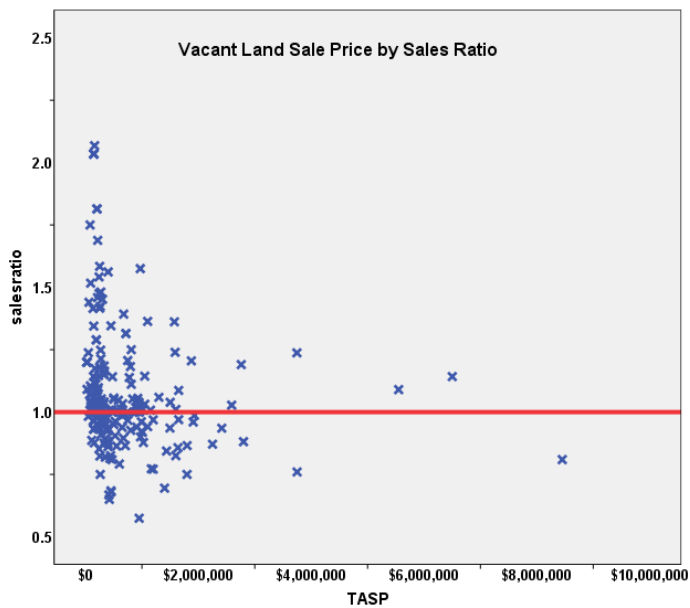
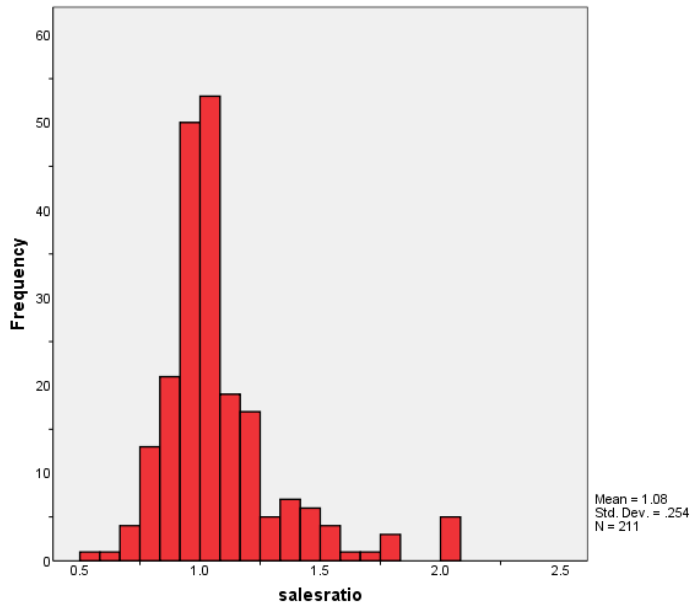
V. VACANT LAND SALE RESULTS

There were 211 qualified vacant land sales for the 24-month sale period ending June 30, 2022. The sales ratio analysis results were as follows:

Ratio Statistics

Median	1.008
Price Related Differential	1.061
Coefficient of Dispersion	16.1

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.

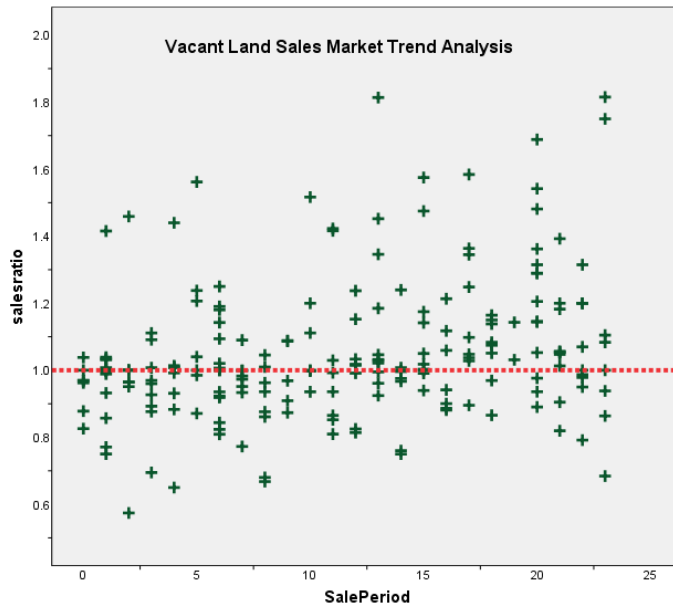
Vacant Land Market Trend Analysis

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

Coefficients^a

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	.957	.026		36.181	.000
	SalePeriod	.008	.002	.284	4.228	.000

a. Dependent Variable: salesratio



The above analysis indicated that a residual market trend was present in the vacant land sale data, although the magnitude as marginal. We have consulted with the assessor regarding this result.

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 the previous base year and the current base year between each group. The following were the results:

Report

DIFF				
	sold	N	Median	Mean
UN SOLD		3744	1.03	1.25
SOLD		183	1.33	1.43

We next examined the change in value for subdivisions with at least 3 sales:

Report

DIFF				
SUBDIVNO	sold	N	Median	Mean
001315	UN SOLD	39	.96	1.00
	SOLD	8	1.01	1.14
007830	UN SOLD	1	1.00	1.00

	SOLD	4	1.11	1.12
008250	UNSOLD	24	1.09	1.12
	SOLD	5	1.00	1.00
017508	UNSOLD	2	1.00	1.00
	SOLD	3	1.89	1.90
022235	UNSOLD	1	1.00	1.00
	SOLD	14	1.53	1.49
022236	UNSOLD	1	1.53	1.53
	SOLD	3	1.38	1.40
033223	UNSOLD	2	1.12	1.12
	SOLD	10	1.89	1.67
061888	UNSOLD	1	1.58	1.58
	SOLD	6	1.07	1.20
065476	UNSOLD	1	1.19	1.19
	SOLD	3	1.01	1.01
066499	UNSOLD	13	1.00	1.00
	SOLD	6	.86	.86
067789	UNSOLD	1	1.90	1.90
	SOLD	5	1.69	1.70

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

VI. 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

ECONAREA	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 Mean Centered
		Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			
.	1.008	.997	1.019	1.000	1.000	1.002	96.9%	.993	.960	1.027	1.014	.022	5.0%
0	.930	.864	.996	.938	.807	1.040	99.2%	.919	.859	.979	1.013	.064	8.5%
1	.998	.988	1.007	1.000	.989	1.008	96.4%	.997	.989	1.006	1.000	.026	3.7%
2	1.001	.996	1.006	1.000	.998	1.001	95.5%	1.000	.995	1.005	1.001	.015	2.7%
3	.999	.996	1.002	1.000	.999	1.001	95.1%	.998	.996	1.001	1.001	.025	4.1%
4	1.004	1.001	1.007	1.000	.999	1.001	95.8%	1.002	.999	1.005	1.002	.027	4.4%
5	1.003	1.001	1.006	1.000	1.000	1.000	95.6%	1.002	1.000	1.005	1.001	.021	4.9%
6	1.010	1.004	1.017	1.001	1.000	1.002	95.8%	1.006	1.002	1.010	1.004	.033	7.6%
7	1.000	.997	1.002	1.000	.999	1.000	95.2%	.998	.996	1.001	1.001	.026	4.5%
8	1.002	1.001	1.003	1.000	1.000	1.000	95.2%	1.000	.999	1.002	1.002	.026	4.2%
9	1.010	1.004	1.016	1.001	1.000	1.004	95.9%	1.007	1.002	1.012	1.003	.039	6.1%
10	1.002	1.000	1.003	1.000	1.000	1.000	95.4%	1.001	.999	1.003	1.001	.019	4.1%
11	1.005	1.003	1.007	1.000	1.000	1.000	95.1%	1.003	1.001	1.005	1.002	.030	4.8%
12	1.023	1.010	1.035	1.000	1.000	1.001	95.4%	1.013	1.003	1.022	1.010	.039	12.9%
13	1.008	1.004	1.012	1.000	1.000	1.000	95.7%	1.007	1.003	1.011	1.001	.024	6.0%
14	1.009	1.005	1.014	1.000	1.000	1.000	95.5%	1.006	1.003	1.010	1.003	.026	8.9%
15	1.023	1.007	1.039	1.000	1.000	1.001	95.9%	1.017	1.005	1.029	1.006	.034	10.3%
16	1.005	1.002	1.009	1.000	1.000	1.000	95.2%	1.002	.997	1.008	1.003	.028	5.5%
17	1.000	.998	1.001	1.000	.999	1.000	95.5%	.998	.997	1.000	1.001	.020	4.0%
18	1.002	1.000	1.003	1.000	1.000	1.000	95.1%	1.000	.999	1.001	1.002	.023	3.7%
19	.997	.992	1.002	.999	.998	1.000	95.4%	.999	.993	1.004	.998	.025	4.4%
20	1.004	1.002	1.006	1.000	1.000	1.000	95.4%	.998	.990	1.006	1.006	.022	3.7%
21	1.004	1.001	1.006	1.000	.999	1.000	95.5%	1.003	1.000	1.006	1.001	.022	3.9%

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 Mean Centered
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			
.957	.944	.971	.978	.969	.984	95.9%	.934	.912	.956	1.025	.091	15.1%

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.

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 Mean Centered
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			
1.076	1.042	1.111	1.008	1.000	1.031	96.1%	1.015	.974	1.055	1.061	.161	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

Subclass

Case Processing Summary

		Count	Percent
ABSTRIMP	.00	1	0.0%
	1212.00	23144	79.8%
	1215.00	137	0.5%
	1220.00	48	0.2%
	1225.00	75	0.3%
	1230.00	5586	19.3%
Overall		28991	100.0%
Excluded		0	
Total		28991	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
.00	.454	1.000	.000	.
1212.00	1.000	1.000	.022	4.7%
1215.00	1.081	1.022	.130	21.4%
1220.00	.957	1.010	.050	6.6%
1225.00	.956	1.019	.047	6.2%
1230.00	1.000	1.002	.031	4.9%
Overall	1.000	1.008	.025	5.1%

Improvement Age

Case Processing Summary

		Count	Percent
AgeRec	0	1	0.0%
	Over 100	143	0.5%
	75 to 100	317	1.1%
	50 to 75	3431	11.8%
	25 to 50	13004	44.9%
	5 to 25	7144	24.6%
	5 or Newer	4951	17.1%
Overall		28991	100.0%
Excluded		0	
Total		28991	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.454	1.000	.000	.
Over 100	1.000	1.009	.037	16.0%
75 to 100	1.000	1.013	.018	4.7%
50 to 75	1.000	1.002	.024	6.2%
25 to 50	1.000	1.006	.023	4.9%
5 to 25	1.000	1.010	.021	3.6%
5 or Newer	1.000	1.011	.034	5.7%
Overall	1.000	1.008	.025	5.1%

Improved Area

Case Processing Summary

	Count	Percent
ImpSFRec	0	0.0%
LE 500 sf	45	0.2%
500 to 1,000 sf	3799	13.1%
1,000 to 1,500 sf	9189	31.7%
1,500 to 2,000 sf	7489	25.8%
2,000 to 3,000 sf	6296	21.7%
3,000 sf or Higher	2172	7.5%
Overall	28991	100.0%
Excluded	0	
Total	28991	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.454	1.000	.000	.
LE 500 sf	1.000	1.030	.029	5.3%
500 to 1,000 sf	1.000	1.002	.029	5.5%
1,000 to 1,500 sf	1.000	1.001	.024	4.5%
1,500 to 2,000 sf	1.000	1.001	.023	4.5%
2,000 to 3,000 sf	1.000	1.001	.023	4.8%
3,000 sf or Higher	1.000	1.028	.032	8.1%
Overall	1.000	1.008	.025	5.1%

Improvement Quality

Case Processing Summary

	Count	Percent
QUALITY	1	0.0%
A	1148	4.0%
B	9977	34.4%
C	17532	60.5%
D	94	0.3%
R	16	0.1%
X	223	0.8%
Overall	28991	100.0%
Excluded	0	
Total	28991	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
	.454	1.000	.000	.
A	1.000	1.000	.026	9.0%
B	1.000	1.012	.023	4.3%
C	1.000	1.006	.026	5.1%
D	.998	1.045	.043	11.5%
R	.997	1.005	.034	6.6%
X	1.000	.998	.031	5.9%
Overall	1.000	1.008	.025	5.1%

Commercial Median Ratio Stratification

Sale Price

Case Processing Summary

	Count	Percent
SPRec		
LT \$25K	2	0.5%
\$50K to \$100K	12	2.7%
\$100K to \$150K	31	7.0%
\$150K to \$200K	23	5.2%
\$200K to \$300K	31	7.0%
\$300K to \$500K	48	10.9%
\$500K to \$750K	32	7.2%
\$750K to \$1,000K	31	7.0%
Over \$1,000K	232	52.5%
Overall	442	100.0%
Excluded	0	
Total	442	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT \$25K	.993	1.032	.280	39.6%
\$50K to \$100K	1.019	1.003	.076	13.0%
\$100K to \$150K	.983	.999	.055	7.5%
\$150K to \$200K	.995	.999	.039	5.0%
\$200K to \$300K	.993	.997	.071	14.7%
\$300K to \$500K	.982	1.003	.095	16.2%
\$500K to \$750K	.969	.998	.083	13.8%
\$750K to \$1,000K	.988	.997	.092	14.0%
Over \$1,000K	.968	1.013	.101	16.3%
Overall	.978	1.025	.091	14.9%

Subclass

Case Processing Summary

	Count	Percent
ABSTRIMP		
.00	1	0.2%
2020.00	1	0.2%
2212.00	36	8.1%
2215.00	6	1.4%
2220.00	56	12.7%
2225.00	1	0.2%
2230.00	89	20.1%
2232.50	1	0.2%
2235.00	85	19.2%
2245.00	160	36.2%
2250.00	2	0.5%
2888.33	1	0.2%
3215.00	1	0.2%
5724.50	1	0.2%
9259.00	1	0.2%
Overall	442	100.0%
Excluded	0	
Total	442	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
.00	.739	1.000	.000	.
2020.00	.366	1.000	.000	.
2212.00	.974	1.007	.037	5.3%
2215.00	.894	.977	.113	16.2%
2220.00	1.000	1.021	.067	9.8%
2225.00	.641	1.000	.000	.
2230.00	.926	1.049	.171	22.6%
2232.50	.937	1.000	.000	.
2235.00	.981	1.048	.086	15.8%
2245.00	.988	1.011	.060	9.0%
2250.00	.922	.948	.094	13.2%
2888.33	.881	1.000	.000	.
3215.00	.882	1.000	.000	.
5724.50	1.023	1.000	.000	.
9259.00	.989	1.000	.000	.
Overall	.978	1.025	.091	14.9%

Improvement Age

Case Processing Summary

		Count	Percent
AgeRec	0	1	0.2%
	Over 100	2	0.5%
	75 to 100	5	1.1%
	50 to 75	50	11.3%
	25 to 50	180	40.7%
	5 to 25	149	33.7%
	5 or Newer	55	12.4%
Overall		442	100.0%
Excluded		0	
Total		442	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.739	1.000	.000	.
Over 100	.931	1.012	.036	5.1%
75 to 100	.983	1.045	.118	17.9%
50 to 75	.971	1.028	.099	18.5%
25 to 50	.988	1.002	.083	13.4%
5 to 25	.976	1.010	.097	16.0%
5 or Newer	.961	1.072	.085	12.7%
Overall	.978	1.025	.091	14.9%

Improved Area

Case Processing Summary

		Count	Percent
ImpSFRec	0	1	0.2%
	LE 500 sf	3	0.7%
	500 to 1,000 sf	61	13.8%
	1,000 to 1,500 sf	53	12.0%
	1,500 to 2,000 sf	31	7.0%
	2,000 to 3,000 sf	43	9.7%
	3,000 sf or Higher	250	56.6%
Overall		442	100.0%
Excluded		0	
Total		442	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.739	1.000	.000	.
LE 500 sf	.887	1.052	.209	33.5%
500 to 1,000 sf	.988	1.002	.048	6.4%
1,000 to 1,500 sf	.989	1.018	.091	16.3%
1,500 to 2,000 sf	.982	1.010	.052	7.3%
2,000 to 3,000 sf	.968	1.049	.129	20.3%
3,000 sf or Higher	.970	1.022	.097	15.6%
Overall	.978	1.025	.091	14.9%

Improvement Quality

Case Processing Summary

	Count	Percent
QUALITY	1	0.2%
A	6	1.4%
B	41	9.3%
C	335	75.8%
D	59	13.3%
Overall	442	100.0%
Excluded	0	
Total	442	

Ratio Statistics for CurrTot / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
	.739	1.000	.000	.
A	.987	.983	.058	8.6%
B	.961	1.003	.093	14.8%
C	.978	1.040	.084	13.6%
D	.983	.971	.127	21.2%
Overall	.978	1.025	.091	14.9%

Vacant Land Median Ratio Stratification

Sale Price

Case Processing Summary

SPRec		Count	Percent
	LT \$25K	5	2.4%
	\$25K to \$50K	3	1.4%
	\$50K to \$100K	9	4.3%
	\$100K to \$150K	20	9.5%
	\$150K to \$200K	14	6.6%
	\$200K to \$300K	40	19.0%
	\$300K to \$500K	40	19.0%
	\$500K to \$750K	19	9.0%
	\$750K to \$1,000K	24	11.4%
	Over \$1,000K	37	17.5%
Overall		211	100.0%
Excluded		0	
Total		211	

Ratio Statistics for CurrLnd / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT \$25K	1.200	1.000	.000	0.0%
\$25K to \$50K	1.091	.998	.078	11.8%
\$50K to \$100K	1.070	1.009	.175	29.7%
\$100K to \$150K	1.011	.991	.274	48.3%
\$150K to \$200K	1.097	1.001	.182	32.2%
\$200K to \$300K	1.029	1.002	.181	27.1%
\$300K to \$500K	.973	1.003	.126	18.1%
\$500K to \$750K	.991	.993	.114	17.1%
\$750K to \$1,000K	1.011	1.003	.093	16.8%
Over \$1,000K	.969	.999	.137	17.5%
Overall	1.008	1.061	.161	26.1%

Subclass

Case Processing Summary

		Count	Percent
ABSTRLND	0	12	5.7%
	100	60	28.4%
	200	8	3.8%
	300	3	1.4%
	400	38	18.0%
	1112	64	30.3%
	1125	5	2.4%
	2120	1	0.5%
	2130	14	6.6%
	2135	6	2.8%
Overall		211	100.0%
Excluded		0	
Total		211	

Ratio Statistics for CurrLnd / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	1.014	1.013	.089	16.7%
100	1.000	1.028	.089	12.7%
200	.965	1.026	.161	26.4%
300	.979	1.104	.118	21.6%
400	1.018	1.036	.109	15.4%
1112	1.145	1.119	.247	32.1%
1125	1.142	1.035	.150	22.7%
2120	1.000	1.000	.000	.
2130	1.007	1.040	.104	18.1%
2135	.958	.994	.108	15.5%
Overall	1.008	1.061	.161	26.1%