



2019

# RIO GRANDE COUNTY PROPERTY ASSESSMENT STUDY

---



**WILDROSE**  
APPRAISAL, INCORPORATED  
**Audit Division**



September 15, 2019

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

**RE: Final Report for the 2019 Colorado Property Assessment Study**

Dear Ms. Mullis:

Wildrose Appraisal Inc.-Audit Division is pleased to submit the Final Reports for the 2019 Colorado Property Assessment Study.

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

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

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

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

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

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

## TABLE OF CONTENTS

Introduction .....	3
Regional/Historical Sketch of Rio Grande 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
Vacant Land.....	18
Possessory Interest Properties .....	19
Personal Property Audit .....	20
Wildrose Auditor Staff.....	22
STATISTICAL APPENDIX .....	23

# INTRODUCTION

---



## Colorado

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

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

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

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

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

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

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

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

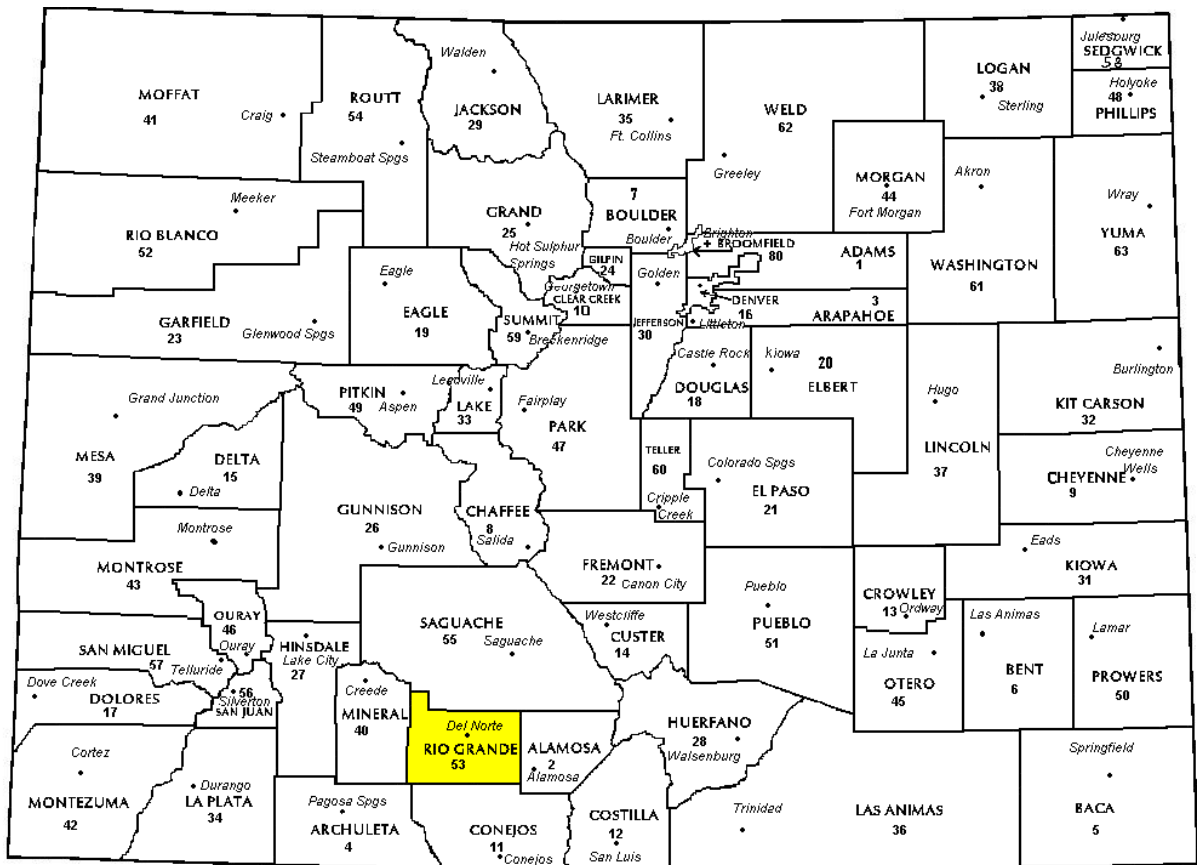
Wildrose Audit has completed the Property Assessment Study for 2019 and is pleased to report its findings for Rio Grande County in the following report.

# REGIONAL/HISTORICAL SKETCH OF RIO GRANDE COUNTY

## Regional Information

Rio Grande County is located in the San Luis Valley region of Colorado. The San Luis Valley is a large, broad, alpine valley in the Rio Grande Basin of south-central Colorado. The valley is drained to the south by the Rio Grande

River which rises in the San Juan Mountains to the west of the valley. The San Luis Valley includes Alamosa, Conejos, Costilla, Mineral, Rio Grande, and Saguache counties.





## Historical Information

Rio Grande County had an estimated population of approximately 11,479 people with 12.6 people per square mile, according to the U.S. Census Bureau's 2016 estimated census data. This represents a -4.2 percent change from April 1, 2010 to July 1, 2016.

The gateway to the San Juan Mountains, Rio Grande County is one of the highlights of the San Luis Valley. The county covers 913 square miles ranging from around 7,000 feet on valley floor to numerous 13,000-foot peaks. The scenic landscape and close community make Rio Grande County a great place to vacation, work and live. There are three municipalities within the county, Monte Vista, Del Norte, and South Fork and all have been historically developed along the rail line that follows the Rio Grande River.

Monte Vista is the county's largest community situated on the valley floor and is the center of the agricultural aspect of the county. There are numerous festivals and events that take place in

and around Monte Vista. The Monte Vista National Wildlife Refuge is a stop for migratory Sand Hill Cranes every year.

Del Norte is a quaint town with a focus on its historic past. It is the county seat, home to the Rio Grande County Museum, and maintains a historic façade on its main street. Home to many small shops and boutiques, it is a beautiful place to shop and also provides recreational activity with climbing, hiking, and fishing close by.

The newest town in Rio Grande County is South Fork. South Fork is surrounded by the Rio Grande National Forest and other public lands and has easy access to Wolf Creek Ski Area. Developed as a logging center, it has become a gem of the Valley with a booming housing market, world class 18 hole golf course, and the distinction of being the Gateway to the Silver Thread scenic byway.  
([www.riograndecounty.org](http://www.riograndecounty.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, 2017 through June 30, 2018. 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 Rio Grande County are:

<b>Rio Grande County Ratio Grid</b>					
<b>Property Class</b>	<b>Number of Qualified Sales</b>	<b>Unweighted Median Ratio</b>	<b>Price Related Differential</b>	<b>Coefficient of Dispersion</b>	<b>Time Trend Analysis</b>
*Commercial/Industrial	22	0.987	1.027	5.7	Compliant
Condominium	N/A	N/A	N/A	N/A	N/A
Single Family	233	0.997	1.041	15.7	Compliant
Vacant Land	58	1.000	1.049	19.4	Compliant

*\*County Sales File augmented by eight supplemental appraisals*

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

Rio Grande 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.

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

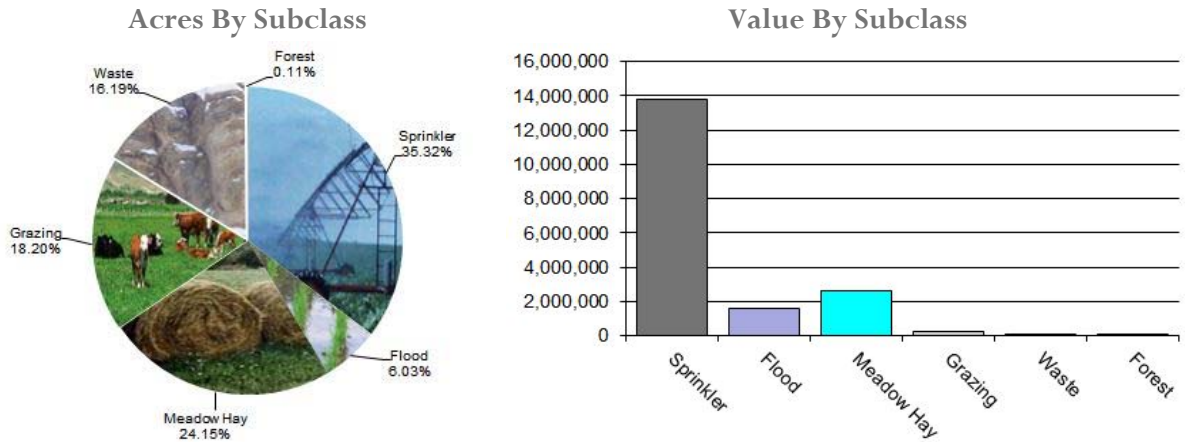
### **Conclusions**

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

### **Recommendations**

None

# AGRICULTURAL LAND STUDY



## Agricultural Land

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

(See Assessor Reference Library Volume 3 Chapter 5.)

### Conclusions

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

<b>Rio Grande County Agricultural Land Ratio Grid</b>						
<b>Abstract Code</b>	<b>Land Class</b>	<b>Number Of Acres</b>	<b>County Value Per Acre</b>	<b>County Assessed Total Value</b>	<b>WRA Total Value</b>	<b>Ratio</b>
4107	Sprinkler	66,981	206.29	13,817,653	13,885,594	1.00
4117	Flood	11,444	142.48	1,630,484	1,646,616	0.99
4137	Meadow Hay	45,799	57.36	2,626,917	2,626,917	1.00
4147	Grazing	34,512	7.67	264,559	264,559	1.00
4177	Forest	204	15.29	3,119	3,119	1.00
4167	Waste	30,697	2.39	73,237	73,237	1.00
<b>Total/Avg</b>		<b>189,637</b>	<b>97.11</b>	<b>18,415,970</b>	<b>18,500,042</b>	<b>1.00</b>

### **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**

Rio Grande 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

Rio Grande 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
- In-Person Interviews with Owners/Tenants
- Personal Knowledge of Occupants at Assessment Date
- Aerial Photography/Pictometry

Rio Grande 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
- In-Person Interviews with Owners/Tenants
- Personal Knowledge of Occupants at Assessment Date
- Aerial Photography/Pictometry

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

### Recommendations

None

## SALES VERIFICATION

According to Colorado Revised Statutes:

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

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

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

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

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

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

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

WRA reviewed the sales verification procedures in 2019 for Rio Grande County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically WRA selected 56 sales listed as unqualified.

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

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

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.

The following subclasses were analyzed for Rio Grande County:

- 0100 Residential Lots
- 2130 Special Purpose
- 2135 Warehouse/Storage
- 3115 Manufacturing/Processing
- 3215 Manufacturing/Processing

### **Conclusions**

Rio Grande County appears to be doing a good job of verifying their sales. WRA agreed with the county's reason for disqualifying each of the sales selected in the sample. There are no recommendations or suggestions.

### **Recommendations**

None



# ECONOMIC AREA REVIEW AND EVALUATION

## **Methodology**

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

## VACANT LAND

### **Subdivision Discounting**

Subdivisions were reviewed in 2019 in Rio Grande 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.

### **Conclusions**

Rio Grande 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.

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

assessing and valuing agricultural 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

Rio Grande 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

Rio Grande 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.

Rio Grande 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
- MLS Listing and/or Sold Books
- Chamber of Commerce/Economic Development Contacts
- Local Telephone Directories, Newspapers or Other Local Publications
- Personal Observation, Physical Canvassing or Word of Mouth
- Questionnaires, Letters and/or Phone Calls to Buyer, Seller and/or Realtor

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.

Rio Grande County submitted their personal property written audit plan and was current for the 2019 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:

- Businesses in a selected area
- 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 \$7,700 actual value exemption status
- Accounts protested with substantial disagreement

### **Conclusions**

Rio Grande County has employed adequate discovery, classification, documentation, valuation, and auditing procedures for their personal property assessment and is in statistical compliance with SBOE requirements.

### **Recommendations**

None

## WILDROSE AUDITOR STAFF

**Harry J. Fuller**, *Audit Project Manager*

**Suzanne Howard**, *Audit Administrative Manager*

**Steve Kane**, *Audit Statistician*

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

**J. Andrew Rodriguez**, *Field Analyst*

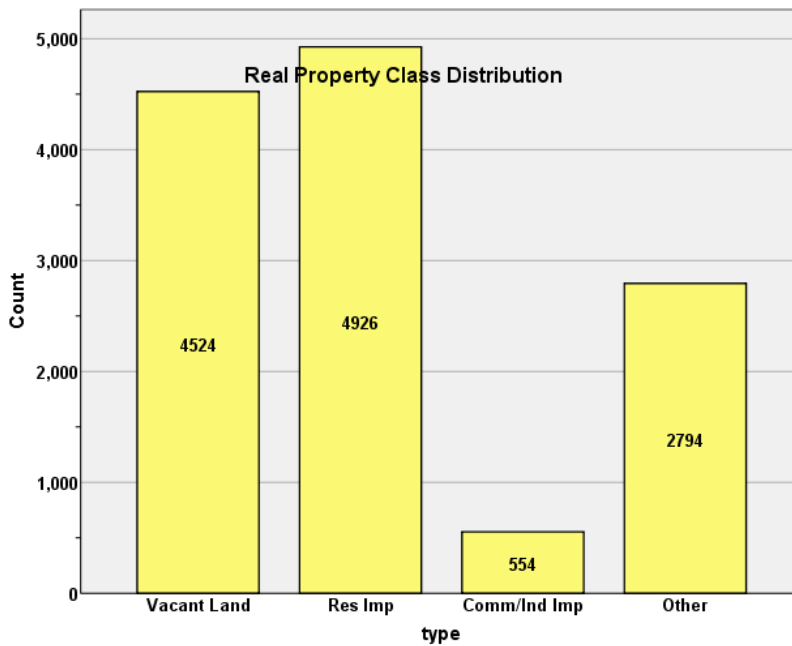
# STATISTICAL APPENDIX



**STATISTICAL COMPLIANCE REPORT  
FOR RIO GRANDE COUNTY  
2019**

**I. OVERVIEW**

Rio Grande County is located in south central Colorado. The county has a total of 12,798 real property parcels, according to data submitted by the county assessor’s office in 2019. The following provides a breakdown of property classes for this county:



The vacant land class of properties was dominated by residential land. Residential lots (coded 100) accounted for 76.3% of all vacant land parcels.

For residential improved properties, single family properties accounted for 95.8% of all residential properties.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial properties accounted for 4.3% of all such properties in this county.

Based on the Audit questionnaire, the following geographic levels were used by the assessor to value residential, commercial and vacant land properties:

Geo Area	Residential	Comm/Ind	Vacant Land
Economic Area	V	V	V
Neighborhood	V	V	V
Subdivision	V	V	V

*Codes*

*V=Valid Geographic Level – used for modeling*

*N = Not used as Geographic Level for modeling*

## II. DATA FILES

The following sales analyses were based on the requirements of the 2019 Colorado Property Assessment Study. Information was provided by the Rio Grande Assessor’s Office in June 2019. The data included all 5 property record files as specified by the Auditor.

## III. RESIDENTIAL SALES RESULTS

There were 233 qualified residential sales for 18 month period ending June 30, 2018. These sales were analyzed as follows:

Median	<b>0.997</b>
Price Related Differential	<b>1.041</b>
Coefficient of Dispersion	<b>15.7</b>

We next stratified the sale ratio analysis by economic area and neighborhoods with at least 10 sales, as follows:

### Economic Area

#### Case Processing Summary

	Count	Percent
ECONAREA		
1.00	95	41.7%
2.00	8	3.5%
3.00	43	18.9%
4.00	78	34.2%
5.00	4	1.8%
Overall	228	100.0%
Excluded	5	
Total	233	

#### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion
1.00	1.018	1.045	.159
2.00	.977	.998	.159
3.00	.997	1.011	.154
4.00	.975	1.037	.156
5.00	.969	.997	.102
Overall	.996	1.041	.159

**Neighborhoods with at least 10 sales  
Case Processing Summary**

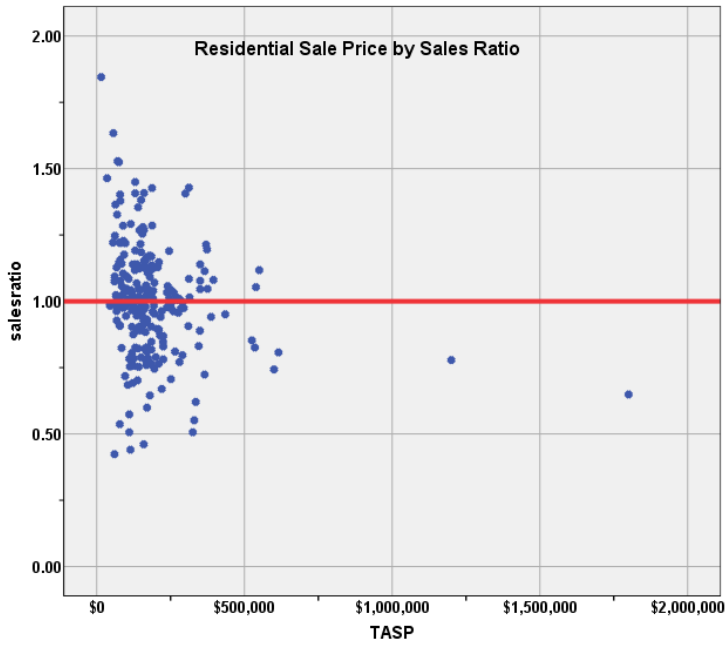
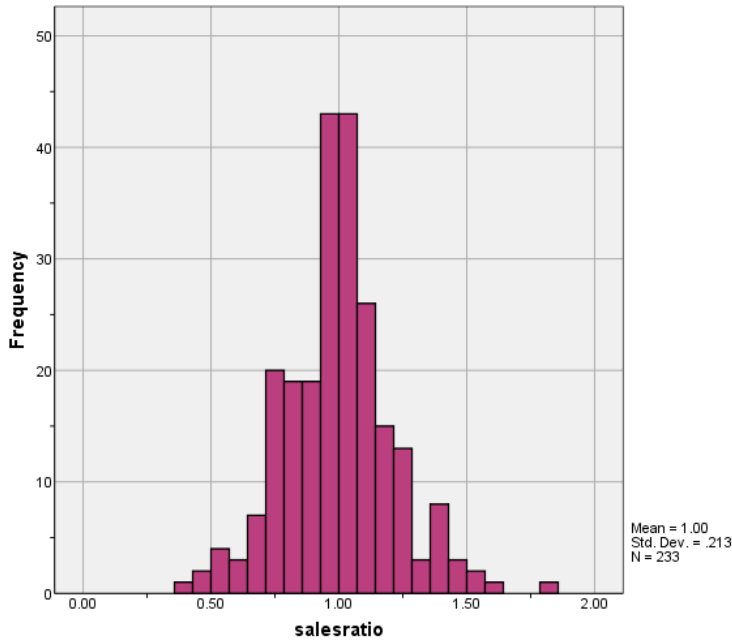
		Count	Percent
NBHD	1100	20	16.0%
	1102	16	12.8%
	1300	13	10.4%
	1600	15	12.0%
	3100	11	8.8%
	4100	12	9.6%
	4300	16	12.8%
	4900	12	9.6%
	5701	10	8.0%
Overall		125	100.0%
Excluded		0	
Total		125	

**Ratio Statistics for CURRTOT / TASP**

Group	Median	Price Related Differential	Coefficient of Dispersion
1100	.993	1.057	.184
1102	1.139	1.057	.150
1300	1.033	1.017	.095
1600	.973	.994	.182
3100	1.128	1.094	.191
4100	.948	1.030	.124
4300	.858	.969	.197
4900	1.017	1.013	.108
5701	1.071	1.028	.153
Overall	.996	1.041	.169

While the sales ratio results were compliant at the class and economic area levels, there were several neighborhoods with sales ratios or CODs out of compliance. We consulted with the assessor concerning these neighborhoods.

The following graphs describe further the sales ratio distribution for these properties:



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

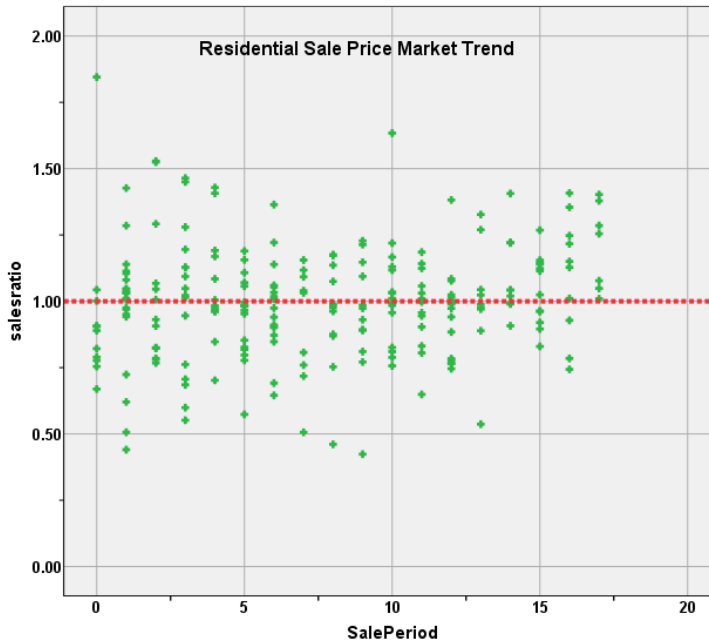
### Residential Market Trend Analysis

We next analyzed the residential dataset using the 18-month sale period for any residual market trending, with the following results:

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.953	.025		37.507	.000
	SalePeriod	.006	.003	.140	2.143	.033

a. Dependent Variable: salesratio



The above analysis indicated that the assessor has adequately addressed market trending in the valuation of residential properties.

### Sold/Unsold Analysis

In terms of the valuation consistency between sold and unsold residential properties, we compared the median change in actual value for taxable years 2018 and 2019 between sold and unsold residential properties, as follows:

Report				
DIFF		N	Median	Mean
UNSOLD		4688	1.08	1.13
SOLD		233	1.08	1.08

### 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	.189	Retain the null hypothesis.

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

We next stratified this analysis by economic area and by neighborhoods with at least 10 sales, as follows:

#### Economic Area

##### Report

DIFF				
ECONAREA	sold	N	Median	Mean
1.00	UNSOLD	2039	1.09	1.13
	SOLD	95	1.09	1.08
2.00	UNSOLD	240	1.13	1.15
	SOLD	8	1.13	1.13
3.00	UNSOLD	877	1.11	1.19
	SOLD	43	1.10	1.12
4.00	UNSOLD	1321	1.03	1.07
	SOLD	78	1.02	1.03
5.00	UNSOLD	98	1.26	1.23
	SOLD	4	1.18	1.19

#### Neighborhoods with at least 10 sales

##### Report

DIFF				
NBHD	sold	N	Median	Mean
1100	UNSOLD	372	1.08	1.08
	SOLD	20	1.09	1.09
1102	UNSOLD	324	1.09	1.09
	SOLD	16	1.10	1.10
1300	UNSOLD	135	1.10	1.10
	SOLD	13	1.10	1.10
1600	UNSOLD	250	1.09	1.10
	SOLD	15	1.08	1.07
3100	UNSOLD	228	1.12	1.16
	SOLD	11	1.13	1.15
4100	UNSOLD	170	1.04	1.16
	SOLD	12	1.08	1.10
4300	UNSOLD	223	1.02	1.01
	SOLD	16	1.02	1.00
4900	UNSOLD	131	1.02	1.05

	SOLD	12	1.02	1.01
5701	UNSOLD	214	1.09	1.45
	SOLD	10	1.09	1.10

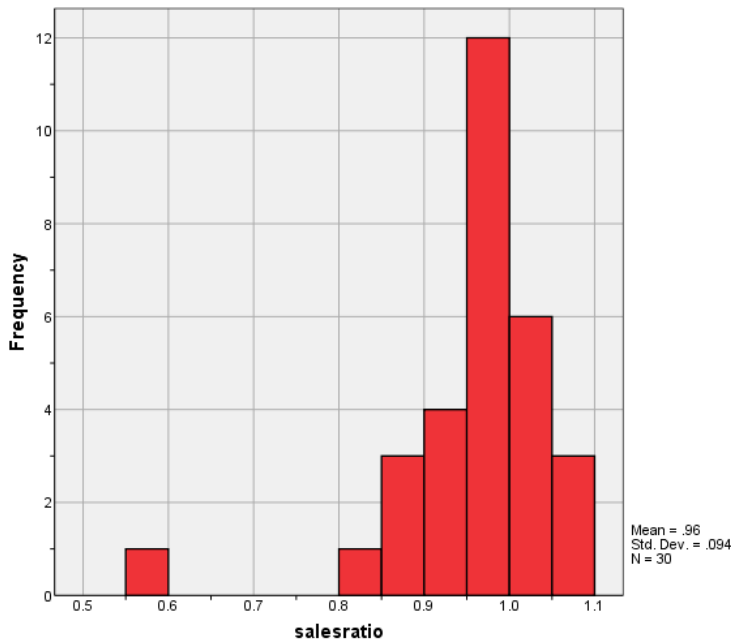
Based on these results, we concluded that the assessor valued sold and unsold residential properties consistently in 2019.

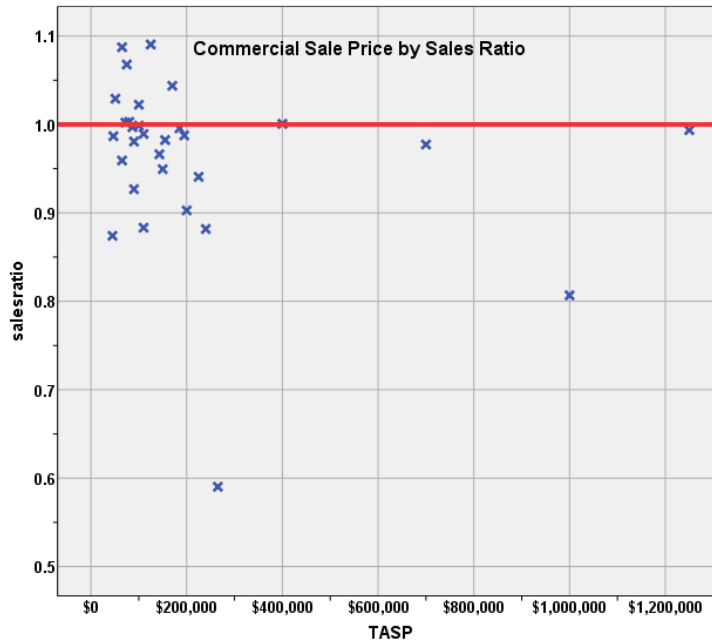
#### IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

There were 22 commercial/industrial qualified sales between July 1, 2013 and June 30, 2018. We augmented these sales with 8 supplemental appraisals, resulting in a total count of 30 commercial properties for this analysis. The 22 sales were used exclusively to analyze market trending and the sold/unsold comparison analysis. The sales ratio analysis results were as follows:

Median	<b>0.987</b>
Price Related Differential	<b>1.027</b>
Coefficient of Dispersion	<b>5.7</b>

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





### Commercial Market Trend Analysis

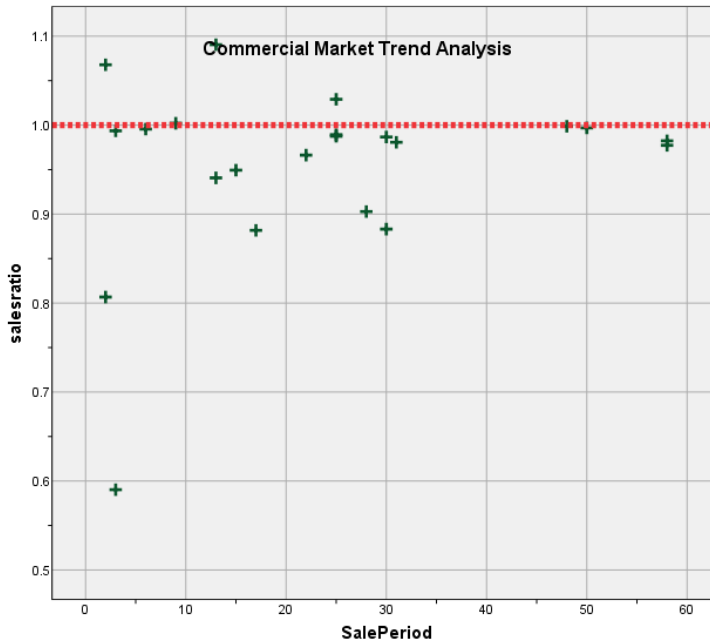
The commercial sales were next analyzed, examining the sale ratios across the 5 year sale period with the following results:

#### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.922	.037		25.202	.000
	SalePeriod	.001	.001	.241		

a. Dependent Variable: salesratio





The above results indicate that there was no significant market trend residual in the commercial/industrial sale ratios.

### Sold/Unsold Analysis

We compared the 2019 median change in value between taxable years 2018 and 2019 for sold and unsold commercial/industrial properties to determine if the assessor was valuing each group consistently. While this is a challenge to prove in this county, given the small number of sales and the overall small number and diversity of commercial/industrial properties in general, the following results indicate that based on the median and mean actual value per square foot, both groups were valued in a consistent manner:

<b>Report</b>			
DIFF			
SOLD	N	Median	Mean
UNSOLD	531	1.03	1.07
SOLD	22	1.02	1.03

### 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	.032	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .01.

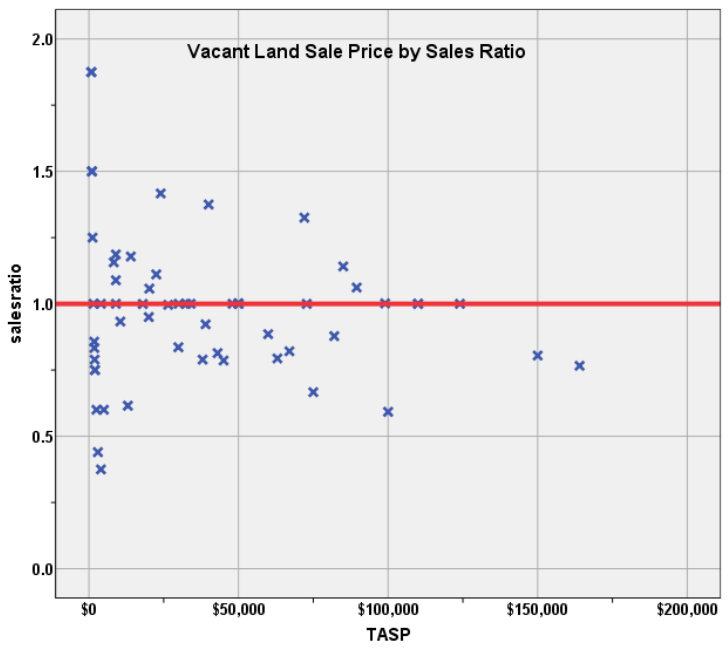
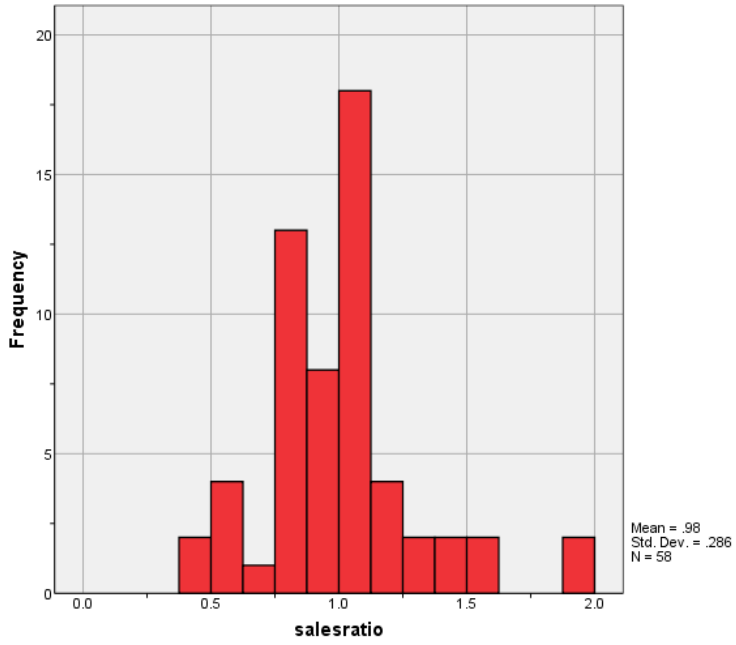
The above results indicated that sold and unsold commercial properties were valued consistently.

### V. VACANT LAND SALE RESULTS

There were 60 qualified vacant land sales for the 18 month period ending June 30, 2018. Two sales were trimmed using IAAO standards, resulting in a final count of 58 qualified sales. These sales were analyzed as follows:

Median	<b>1.000</b>
Price Related Differential	<b>1.049</b>
Coefficient of Dispersion	<b>19.4</b>

The above table indicates that the Rio Grande County vacant land sale ratios were in compliance with the SBOE standards. The following histogram and scatter plot describe the sales ratio distribution further:



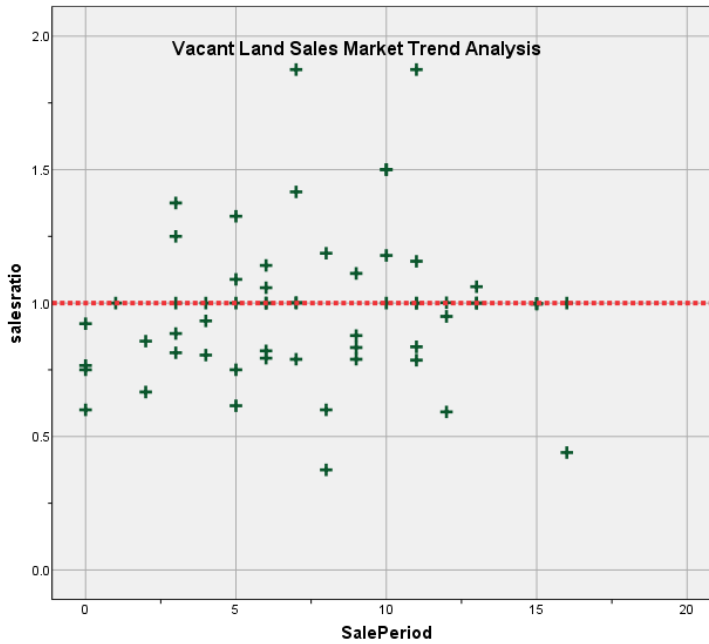
### Vacant Land Market Trend Analysis

The vacant land sales were analyzed, examining the sale ratios across the 18 month sale period with the following results:

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.930	.076		12.166	.000
	SalePeriod	.007	.009	.104	.785	.436

a. Dependent Variable: salesratio



The market trend results indicated no statistically significant trend. We concur that no market trend adjustments were warranted for properties in this class for Rio Grande County.

**Sold/Unsold Analysis**

We compared the median change in actual value between taxable years 2018 and 2019 for vacant land properties to determine if sold and unsold properties were valued consistently, as follows:

**Report**

DIFF	N	Median	Mean
UNSOLD	4465	.92	1.32
SOLD	58	.95	1.12

### 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	.315	Retain the null hypothesis.

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

There were too few sales to analyze sold and unsold vacant land sales by subdivision. The above results indicated that sold and unsold vacant land properties were valued consistently overall.

### V. CONCLUSIONS

The results from the statistical analysis indicate that residential, commercial and vacant land properties in Rio Grande County were compliant with Colorado State Audit guidelines.

## STATISTICAL ABSTRACT

### Residential

#### 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			
.998	.971	1.026	.997	.980	1.018	95.1%	.959	.922	.996	1.041	.157	21.4%

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

### Commercial

#### Ratio Statistics for CURRTOT / TASP

Mean	95% Confidence Interval for Mean		Median	95% Confidence Interval for Median			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			
.964	.929	.999	.987	.959	.999	95.7%	.939	.881	.997	1.027	.057	9.8%

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.

### 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			
.982	.907	1.057	1.000	.886	1.000	95.2%	.936	.874	.999	1.049	.194	29.1%

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



**Residential Median Ratio Stratification**

**Sale Price**

**Case Processing Summary**

		Count	Percent
SPRec	LT \$25K	1	0.4%
	\$25K to \$50K	3	1.3%
	\$50K to \$100K	46	19.7%
	\$100K to \$150K	58	24.9%
	\$150K to \$200K	61	26.2%
	\$200K to \$300K	36	15.5%
	\$300K to \$500K	20	8.6%
	\$500K to \$750K	6	2.6%
	Over \$1,000K	2	0.9%
Overall	233	100.0%	
Excluded	0		
Total	233		

**Ratio Statistics for CURRTOT / TASP**

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT \$25K	1.845	1.000	.000	.
\$25K to \$50K	.989	1.023	.162	34.0%
\$50K to \$100K	1.066	1.006	.156	21.6%
\$100K to \$150K	.980	.993	.162	21.5%
\$150K to \$200K	1.011	1.001	.144	18.8%
\$200K to \$300K	.974	.996	.105	14.8%
\$300K to \$500K	1.030	.997	.169	23.4%
\$500K to \$750K	.839	1.004	.129	19.5%
Over \$1,000K	.714	1.018	.091	12.8%
Overall	.997	1.041	.157	21.4%

**Sub-Class**

**Case Processing Summary**

		Count	Percent
ABSTRIMP	1212.00	228	97.9%
	1230.00	5	2.1%
Overall	233	100.0%	
Excluded	0		
Total	233		

**Ratio Statistics for CURRTOT / TASP**

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1212.00	.996	1.041	.159	21.6%
1230.00	1.031	1.003	.063	9.3%
Overall	.997	1.041	.157	21.4%

## Age

### Case Processing Summary

		Count	Percent
AgeRec	Over 100	28	12.0%
	75 to 100	22	9.4%
	50 to 75	41	17.6%
	25 to 50	51	21.9%
	5 to 25	89	38.2%
	5 or Newer	2	0.9%
Overall		233	100.0%
Excluded		0	
Total		233	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
Over 100	.985	1.063	.197	27.5%
75 to 100	1.081	1.066	.166	20.3%
50 to 75	.997	1.034	.178	24.4%
25 to 50	.996	1.009	.131	18.1%
5 to 25	1.001	1.040	.144	19.8%
5 or Newer	1.073	1.022	.093	13.1%
Overall	.997	1.041	.157	21.4%

## Improved Area

### Case Processing Summary

		Count	Percent
ImpSFRec	LE 500 sf	7	3.0%
	500 to 1,000 sf	28	12.0%
	1,000 to 1,500 sf	71	30.5%
	1,500 to 2,000 sf	66	28.3%
	2,000 to 3,000 sf	51	21.9%
	3,000 sf or Higher	10	4.3%
Overall		233	100.0%
Excluded		0	
Total		233	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LE 500 sf	.984	.992	.211	31.9%
500 to 1,000 sf	.968	1.089	.210	30.2%
1,000 to 1,500 sf	.993	1.034	.132	18.3%
1,500 to 2,000 sf	1.011	1.025	.163	21.8%
2,000 to 3,000 sf	1.015	1.022	.136	17.6%
3,000 sf or Higher	.974	1.163	.186	22.7%
Overall	.997	1.041	.157	21.4%



## Improvement Quality

### Case Processing Summary

		Count	Percent
QUALITY	0 - 0	12	5.2%
	43466	124	53.2%
	43498	84	36.1%
	43527	11	4.7%
	43559	2	0.9%
Overall		233	100.0%
Excluded		0	
Total		233	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0 - 0	.962	1.120	.234	37.9%
43466	.994	1.031	.159	21.5%
43498	1.009	1.025	.143	18.9%
43527	1.053	1.031	.095	13.3%
43559	.714	1.018	.091	12.8%
Overall	.997	1.041	.157	21.4%

### Commercial Median Ratio Stratification

#### Sale Price

### Case Processing Summary

		Count	Percent
SPRec	\$25K to \$50K	2	6.7%
	\$50K to \$100K	11	36.7%
	\$100K to \$150K	5	16.7%
	\$150K to \$200K	5	16.7%
	\$200K to \$300K	3	10.0%
	\$300K to \$500K	1	3.3%
	\$500K to \$750K	1	3.3%
	\$750K to \$1,000K	1	3.3%
	Over \$1,000K	1	3.3%
Overall		30	100.0%
Excluded		0	
Total		30	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
\$25K to \$50K	.930	.999	.060	8.6%
\$50K to \$100K	1.002	1.003	.031	4.5%
\$100K to \$150K	.966	.999	.051	7.9%
\$150K to \$200K	.988	1.002	.031	5.2%
\$200K to \$300K	.882	1.013	.133	23.9%
\$300K to \$500K	1.001	1.000	.000	.
\$500K to \$750K	.977	1.000	.000	.
\$750K to \$1,000K	.807	1.000	.000	.
Over \$1,000K	.994	1.000	.000	.
Overall	.987	1.027	.057	9.9%

### Sub-Class

#### Case Processing Summary

	Count	Percent
ABSTRIMP	2212.00	16
	2215.00	1
	2220.00	6
	2221.00	1
	2230.00	5
	2235.00	1
Overall	30	100.0%
Excluded	0	
Total	30	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
2212.00	.988	1.057	.056	7.7%
2215.00	.994	1.000	.000	.
2220.00	.979	1.001	.015	2.0%
2221.00	.590	1.000	.000	.
2230.00	.988	1.019	.061	8.6%
2235.00	.999	1.000	.000	.
Overall	.987	1.027	.057	9.9%

## Vacant Land Median Ratio Stratification

### Sale Price

#### Case Processing Summary

		Count	Percent
SPRec	LT \$25K	28	48.3%
	\$25K to \$50K	14	24.1%
	\$50K to \$100K	11	19.0%
	\$100K to \$150K	4	6.9%
	\$150K to \$200K	1	1.7%
Overall		58	100.0%
Excluded		0	
Total		58	

#### Ratio Statistics for CURRLND / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT \$25K	1.000	.993	.275	37.4%
\$25K to \$50K	1.000	.999	.088	15.1%
\$50K to \$100K	.886	1.001	.182	24.3%
\$100K to \$150K	1.000	1.011	.049	11.3%
\$150K to \$200K	.766	1.000	.000	.
Overall	1.000	1.049	.194	28.7%

### Subclass

#### Case Processing Summary

		Count	Percent
ABSTRRLND	100.00	47	81.0%
	350.00	3	5.2%
	520.00	1	1.7%
	550.00	3	5.2%
	575.00	1	1.7%
	1112.00	2	3.4%
	2112.00	1	1.7%
Overall		58	100.0%
Excluded		0	
Total		58	

#### Ratio Statistics for CURRLND / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
100.00	1.000	1.053	.184	28.0%
350.00	.786	.857	.205	33.5%
520.00	.789	1.000	.000	.
550.00	1.001	.998	.092	14.0%
575.00	.592	1.000	.000	.
1112.00	.688	.742	.455	64.3%
2112.00	.766	1.000	.000	.
Overall	1.000	1.049	.194	28.7%