

# Department of Revenue

## FORWARD

The Forty-Eighth Annual Report of the Real Estate Assessment-Sales Ratio Study of the State of South Dakota is compiled to meet the requirements of SDCL 10-11-60.

The study is designed to show the relationship of the assessed value to the sale price of the property as was reflected by the assessed value on the legal assessment date prior to the date of the sale. It is important to note that all medians reflected in this study represents the two-year period the study encompasses. It is prepared to show the difference in assessed values of all types of property, rural and urban, ag and non-ag wherever sufficient sales were available.

“Real Estate” as used in this study, includes the land and the improvements thereon, which are assessed as real property.

“Sales” as used in this study, include all bona fide sales as reflected by the actual price paid on the open market, meeting the willing buyer and willing seller concept. (SDCL 10-11-56).

“Assessed Value” as used in this study reflects the full and true value as was determined and used by the assessor and as is recorded in the sixty-six organized counties in the State of South Dakota.

Full instructions for administration of the sales ratio study are covered by the Administrative Rules, Section 65:05:01. All sales are certified to the Secretary of Revenue at the end of each assessment year.

The purpose of this study is to assist local, county and state officials, the Legislature and other interested persons, to bring about a better understanding of the assessment practices in each of the various counties in the state.

This Study is  
Compiled and Arranged by the  
Property & Special Tax Division  
Department of Revenue & Regulation  
State of South Dakota

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## INTRODUCTION

This study is designed to show the relationship of the assessed value (assessors full and true value) and the sale price of real estate. It will show the different levels of assessed values for the many abstract types of property. All property, by its nature, and location will determine whether it is rural or urban property. For this report all property located within the incorporated limits of a municipality will be considered "urban" and all other property will be considered "rural". This is a two year study and reflects the level of assessments and other statistical information for that period. This study is for the current year and one year preceding the current year. (2003 and 2004) Sales have been included for that period and have been verified by the individual county directors of equalization to be arms' length transactions.

The ratio study has many uses. It was started as a report card to show how well the counties were assessing property. It has become the best equalization tool available for county assessors. Taxpayers find it beneficial in determining whether like properties are being treated equally. The courts have long recognized the importance of a good sales ratio and have used it as a measure of value in their decisions.

### STATUTORY PROCEDURES FOR THE ASSESSMENT TO SALES RATIO STUDY

SDCL 10-3-31 reads as follows: *"The director of equalization and his deputies, are required to regularly examine all conveyances of real estate in the county as filed with the register of deeds, and keep a record by description of the considerations as shown thereon."*

10-6-33. BASIS FOR DETERMINING VALUATION FOR TAX PURPOSES -- FORCED SALE VALUE NOT TO BE USED -- COST, MARKET, AND INCOME APPROACHES TO APPRAISAL CONSIDERED. *All property shall be assessed at its true and full value in money. The true and full value is the taxable value of such property upon which the levy shall be made and applied and the taxes computed. In determining the true and full value of property the director of equalization may not adopt a lower or different standard of value because it is to serve as a basis of taxation. The director may not adopt as a criterion of value the price for which the property would sell at a forced sale, or in the aggregate with all the property in the third class municipality or district. The director shall value each article or description by itself and at an amount or price as he believes the property to be fairly worth in money. The true and full value shall be determined by appropriate consideration of the cost approach, the market approach and the income approach to appraisal. The director of equalization shall consider and document all elements of such approaches that are applicable prior to a determination of true and full value.*

The statutory requirements for the study and its publication in their entirety are as follows:

**10-11-54. DIRECTORS OF EQUALIZATION TO REPORT DATA ON ASSESSED VALUATION AND SALES TO STATE DEPARTMENT.** *The secretary of revenue and regulation shall require all county directors of equalization to report to the Department of Revenue and Regulation, data on assessed valuation and sales for such periods and in such form and content the secretary of revenue and regulation may require.*

**10-11-55. ANNUAL STUDIES BY DEPARTMENT OF ASSESSMENT TO SALES RATIOS.** *The secretary of revenue and regulation annually shall prepare and publish comprehensive assessment to sales ratio studies of the average level of assessment, the degree of assessment uniformity, and the overall compliance with assessment requirements for each class of property in each county in the state.*

**10-11-56. ARMS-LENGTH TRANSACTIONS INCLUDED IN DEPARTMENTAL STUDIES.** *Any sale which has been verified to be an arms-length transaction shall be included in the annual study. For purposes of this section, the term, arms-length transaction, means the transfer of property offered on the open market for a reasonable period of time between a willing seller and a willing buyer with no coercion or advantage taken by either party. The director of equalization shall analyze each sale to eliminate factors related to the sale which affect the sale price but which do not reflect the actual value of the real property.*

**10-11-57. ASSESSED VALUATION USED IN APPLICATION OF STUDIES TO AGRICULTURAL LAND.** *In order to determine the ratio for agricultural land assessed pursuant to § 10-6-33.1, the secretary of revenue and regulation shall compare the assessed valuations on properties used for tax purposes in the year sold with the agricultural values of those properties as determined under § § 10-6-33.1 and 10-6-33.2.*

**10-11-58. COMPUTATION OF MEDIAN LEVEL OF ASSESSMENT IN EACH COUNTY.** *In order to determine the average level of assessment in each county the secretary of revenue and regulation shall compute the median ratio. The median ratio is the middle value in the array of ratios of assessed valuations to sales, from the highest to the lowest for the current year and one year preceding the assessment year. If there are fewer than ten sales, medians may, in the case of agricultural land, be determined by bridging sales information from adjoining counties or in the case of nonagricultural land from other municipalities.*

**10-11-59. COMPUTATION OF COEFFICIENT OF DISPERSION FOR EACH COUNTY.** *In order to determine the degree of assessment uniformity and compliance in the assessment of property within each county, the secretary of revenue and regulation shall compute the coefficient of dispersion. The coefficient of dispersion is the percentage which the average of the deviation of the assessment ratio of individual sale properties bears to their median ratio.*

**10-11-60. PUBLICATION OF FINDINGS FROM ASSESSMENT TO SALES RATIO STUDIES.** *The secretary of revenue and regulation shall publish annually the findings of the assessment to sales ratio study along with whatever additional information he shall determine necessary to equalize and evaluate assessment of property in South Dakota.*

To further insure state-wide uniformity, the department of revenue has adopted administrative rules 64:05:01:01 through 64:05:01:07.

There are some arms length transactions which are excluded by statute for use in the sales to assessment ratio study and in the assessment of property. They are sales of agricultural land which sells for more than one-hundred fifty percent of it's agricultural income value (SDCL 10-6-33.23), sales of property that sell for more than one-hundred fifty percent of it's assessed value (SDCL 10-6-74) and sales of agricultural land which sells in increments of seventy acres or less (SDCL 10-6-33.20)

In this report, market value, full and true value, and assessed value have the same meaning and that being the highest price in terms of money, which a property will bring if exposed for sale in the open market, allowing a reasonable time to find a purchaser.

Market price is price paid regardless of pressure, motives, etc. Assessment year and ratio year are the same periods, beginning on November 1, 2003 and ending October 31, 2004 for the year 2004, and beginning November 1, 2004 and ending October 31, 2005 for the year 2005.

All real estate transactions are recorded in the register of deeds office and the statutes provide that all such transfers must be listed and made available to the assessor's office. The form for transmitting this information is known as the "Real Estate Transfer" and is identified as the department of revenue form number PT 55. The PT 55 is a multi-part form. The register of deeds retains two copies and forwards the remainder of the form to the assessor. The assessor will review all transfers for seemingly usable sales. There are two types of sales. Rural sales are all sales outside an incorporated municipality. Urban sales are all sales inside an incorporated municipality. All transfer forms are numbered and coded, by the assessor, for computer use. The assessor sends one copy to the department of revenue and retains the remainder of the form for the assessor's file. All sales must be verified by someone who has knowledge of the sale. The individual or individuals name who has verified the sale will be noted on the ratio card. The card must show the assessed value of the property for the PRECEDING assessment date. Any sale found to be UNUSABLE through the verification process, will be marked as a reject and will be submitted to the department along with the usable sales. Recorded on each card will be the abstract type of property and is so noted by the assessment office.

The department of revenue has been working with the directors of equalization on submitting the sales information electronically.

## RATIO ANALYSIS

Until recent years, most of the sales ratio analysis was being made by large taxpayers and public utility companies. The assessor should be the first one to use this tool. It is of primary importance that tax equalization begins in each local district. When the internal equalization has been obtained, it is then possible to complete the task of equalization between the districts within the county. When the director can use ratios to equalize assessments within his district, an important step will have been taken toward improved assessment procedures.

After the individual ratios have been arrayed in ascending or descending order, find the median and sort into groups to show the amount of variation around the median.

Different types of property should be analyzed separately and later consolidated into overall figures. Farm, residential, commercial and industrial property should be studied to determine what relationships are peculiar to each of these types. Residential property, for example, can be further analyzed by age, district, or addition within the city, value groups or grades as set up by the division of property tax.

Comparison of the ratios for the different value groups could very well reveal over assessment of the poor and under assessment of the better property. When the assessor has a part in the collection of the sales data and its analysis, he will have more confidence in the results, than if the study had been made by some outside agency. He can then proceed to do something about the inequities.

When proper procedures are followed in obtaining and analyzing these ratios they will serve as an important factor in an improved equalized assessment. The ratios have limitations; and if these limitations are recognized, a progressive attack can be made on poor assessments.

## LIMITATIONS OF THE STUDY

**AN ASSESSMENT - SALES RATIO IS NO MORE RELIABLE THAN THE DATA FROM WHICH IT IS COMPUTED.** Sales, as well as assessments are not always perfect. Two properties may sell for different amounts in the same month because of a difference in the knowledge and the bargaining position of the parties to the transaction. Although they must be bona fide sales, the buyers and sellers may arrive at different prices. Because of this variation in sale price a perfect assessment pattern would show variation around the median, representing disagreement among the buyers and sellers.

A sales ratio - unless properly studied and interpreted - could only measure the difference in the bargaining position of buyers and sellers in the market. In some districts where a good assessment has been made, ratios can be used to measure this lack of agreement. Many real estate brokers in the state use assessments as a reliable estimate of sale value.

Efforts to bring assessments up to market value levels by the use of the ratio study alone, may be asking more of the ratios than they can provide. A median can only be as reliable as the information from which it was compiled. If all sales have been carefully screened and verified, it will be an accurate measure of the level of your assessments. If internal equalization is good, it then should reflect to the property owner a reasonable value for the property.

If the real estate market is active and sales plentiful, this approach will yield the best evidence of market value. It can be used to find the value of comparable or nearly comparable properties on which information is not available. The use of this approach is dependent on good record keeping in the assessor's office, which will involve the accumulation of all sales data for ready reference and analysis.

One sale does not make a value, but in the aggregate, many sales will reflect the market value, and courts have held that as so. It is a barometer by which the division of property tax may justify or judge the work of assessment officials, as well as the assessment level of a taxing district. A ratio study will help support the official in the courts of our nation.

The human element of ability may reflect a difference in county sales ratios, because of the ability and knowledge of the individuals gathering and screening the data. As experience and use of the data increase within each county, the assessment sales ratio study will become even more reliable.

#### INDIVIDUAL ASSESSMENT SALES RATIO

The assessment sales ratio for an individual parcel of property sold is simply the relationship, expressed as a percentage, between the assessed value to the sales price. For each parcel of real estate sold, the assessment sales ratio can be found by dividing the assessed value by the selling price.

#### ILLUSTRATION ~

Parcel	Assessed Value	Selling Price	Ratio
1.	\$32,000	\$40,000	80.0%
2.	18,000	20,000	90.0%
3.	36,800	40,000	92.0%
4.	26,880	28,000	96.0%
5.	24,000	25,000	96.0%

## STATISTICAL MEASURES

The statistical information in this publication includes the following measures:

1. Range
2. Median Assessment Ratio
3. Average Deviation
4. Coefficient of Dispersion
5. Sales Based Average Ratio
6. Mean Assessment Ratio
7. Price Related Differential
8. Number of Sales

An explanation and illustration of each measure listed above will be shown.

**TABLE I**

The following table will be used to illustrate all of the measures:

Column 1	Column 2	Column 3	Column 4	Column 5
Property Number	Assessment Value	Selling Price	Assessment Sales Ratio	Deviation from Median
1.	\$59,500	\$85,000	70.0%	-13
2.	56,090	79,000	71.0%	-12
3.	57,600	80,000	72.0%	-11
4.	40,320	56,000	72.0%	-11
5.	48,100	65,000	74.0%	-9
6.	54,600	70,000	78.0%	-5
7.	64,000	80,000	80.0%	-3
8.	59,760	72,000	83.0%	<b>Median</b>
9.	60,030	69,000	87.0%	+4
10.	54,600	60,000	91.0%	+8
11.	41,400	45,000	92.0%	+9
12.	54,720	57,000	96.0%	+13
13.	53,350	55,000	97.0%	+14
14.	45,080	46,000.	98.0%	+15
15.	43,200	40,000	108.0%	+25
<b>TOTAL:</b>	<b>792,350</b>	<b>959,000</b>	<b>1269.0</b>	<b>~152</b>

1. **RANGE** - *the range is merely the difference between the highest term (ratio) and the lowest term (ratio) of a given group of sales. Example of range column 4) highest term (108) - lowest term (70) = Range 38%*

2. **MEDIAN ASSESSMENT RATIO** - *the median is the middle value. It is found by arranging the individual ratios from highest percent to the lowest percent and selecting the middle value in the series. If the series consists of an uneven number as in the case of column 4, the median value (that held by the eighth property) is 83 percent. If the sample contains an even number of entries the median is found by adding the two middle values in the array and dividing by two. If only the first 14 entries were in Table I the median would be 81.5 percent.  $80.0 + 83.0$  divided by 2*
3. **AVERAGE DEVIATION** - *this statistic relates how much, on the average, the ratios for individual properties in the sample differed from the median. To obtain the average deviation the individual deviations are summed and divided by the number of sales. Example of deviation:  $152$  divided by  $15 = 10.1\%$  (column 5 divided by column 1).*
4. **COEFFICIENT OF DISPERSION** - *the coefficient of dispersion is used to measure the uniformity and quality of assessments. The coefficient of dispersion is found by taking the average deviation and dividing by the median. Example of coefficient:  $10.1$  divided by  $83.0 = 12.2\%$  (average deviation  $10.1$  divided by median from column 4).*
5. **SALES BASED AVERAGE RATIO** - *the sales based average ratio is the total assessed value of all properties in the sample (sum of column 2 in Table I) divided by the sum of all sales prices (sum of column 3 in Table I). Example of average ratio:  $\$792,350$  divided by  $\$959,000 = 82.6$ . (Column 2 divided by column 3).*
6. **MEAN ASSESSMENT RATIO** - *is calculated by dividing the total of the individual ratios by the number of sales. In Table I it would be  $1269$  divided by  $15$ , which equals  $84.6\%$*
7. **PRICE RELATED DIFFERENTIAL** - *the price related differential indicates whether higher priced property is assessed at a lower percentage of market value than is lower priced property. It is calculated by dividing the sales based average ratio into the mean assessment ratio. Example of differential:  $84.6$  divided by  $82.6 = 102.4\%$*
8. **NUMBER OF SALES** - *this may be the most important statistic. The more sales you have the more "reliable" the other statistics. Statistics on twenty sales would be a more accurate assessment picture than statistics on two sales.*

Just what do all of these statistical measures mean to the assessor? The best analysis of this information is given by John Rackham, as was presented at the 37th Annual International Conference of Assessment Administration in Boston. The following article is an excerpt from an article entitled "Design and Use of Assessment Ratio Studies by Local Assessors".

## STATISTICAL ANALYSIS

The third phase of an assessment sales ratio study, that of statistically analyzing the data, is accomplished by ordering and calculating the value and price figures toward the development of measures capable of interpretation. Among the measures commonly taken are those which demonstrate central tendency; those which disclose the dispersion around the central tendency; those which reveal assessment bias according to property value range; and those which treat of the adequacy and reliability of the sample itself.

Those which relate to central tendency has been termed "measures of overall assessment". They include aggregate assessment sales ratio, median assessment sales ratio and mean of the individual assessment sales ratios. These measures are variously ascribed as representing the "prevailing level of assessment" of the universe of properties from which the sample has been drawn - either by the incidence of transfer or by some deliberate act of selection. As such an indicator, each of the measure has its own advantages and its own limitations.

The aggregate assessment sales ratio is simply the ratios of the total of assessment values to the total of selling prices of all of the properties in the sample. In the census of government this measure is referred to as the "sales based average assessment ratio". That is rather descriptive jargon because this ratio is weighted absolutely by the selling prices of the properties in the sample. The individual ratio of a property selling for \$100,000 will have ten times the effect on the aggregate ratio as will the individual ratios of a property selling for \$10,000. When the value range distribution in the sample is the same as that of the universe, the aggregate ratio might have direct meaning and use to a central equalization agency. Its use to an assessor is indirect as a component in an equation for testing assessment bias.

The most basic computation in the assessor's study is that of establishing the ratio of assessment value to selling price of each individual property in the sample. The mean or simple mathematical average of these individual ratios is the figure that is normally referred to when officials discuss the "level of the base" or the "countywide ratio". It usually serves as a basis for equalization orders and decisions, and as such it has weaknesses. A relatively few high or low assessments or some bad sales data can sometimes distort the mean ratio. The measure, nevertheless, is vital to the assessor's study.

The median assessment sales ratio is simply the middle of the individual ratios when they are arrayed or ranked by magnitude. This measure is a sound indicator of assessment level - less subject to being affected by anomalies than are the mean and aggregate ratios. It is also the focal point for most rational dispersion analysis. Its identification is essential to the utility of a ratio study.

When these separate measures of central tendency, as taken for a common sample, are systematically compared, much can be learned about the bias of the assessment. For instance, the measure termed, "price related differential", which is calculated by dividing the aggregate ratio into the mean ratio, reveals any tendency that may exist for valuing high priced properties higher or lower, percentage wise, than low priced

properties. Since the aggregate ratio is weighted by price amounts and the mean ratio is not so weighted, a differential of more than 100 indicates differential of more than 100 indicates lower ratios on relatively higher priced properties, a differential of less than 100 indicates lower ratios in the lower priced properties in the sample.

The measures that are most salient to analysis of the assessment product are those which disclose the patterns of inconsistency or dispersion among ratios related to a selected grouping of properties. They deal with the differences between the individual assessment sales ratios and either the mean or median ratio. When these differences, called deviations, are averaged, the assessor has a figure which describes the degree of uniformity that has been attained in the assessment, at least insofar as the selling price of the sample properties are consistent.

If assessment values were perfectly uniform and selling prices were perfectly consistent, the assessment sales ratios in the sample would all be the same and the measure of dispersion would be zero. Some of the most important selling price inconsistencies - those relating to variances in rights transferred to a differences in the terms of transfer - can be reduced or eliminated by the property qualification and sales equation procedures discussed in a prior section of this paper. Other causes of selling price inconsistencies are not separately identifiable or treatable. These include: seasonal variations in supply and demand, differing circumstances surrounding entry into the market, and disparities in acumen, knowledge, and trading skills among market participants. Dispersion, and sometimes significant dispersion, among assessment sales ratios in any possible grouping will result from vagaries of the market.

But dispersion will also result from inaccuracies in the assessment. These inaccuracies may develop from weaknesses in standards; incorrect applications of standards; extended reassessment cycles resulting in out-dated values; and, of course, from assessment appraisal errors of any and every kind. Generally speaking, the more homogeneous, by use and location, the properties represented in a grouping of ratios, the greater will be the proportion of dispersion reflective of assessment inaccuracies as opposed to selling price inconsistencies. But no exact apportionment can be made.

Experience has to be the guide, and experience demonstrates that the more accurate and uniform are the assessments, the lower will be the dispersion. The measure of dispersion should be expressed as a coefficient so that assessment ratio groupings of different levels (as manifested by the mean and/or median) can be compared by degrees of clustering. The coefficient is calculated by dividing the measure of dispersion (average deviation or average quartile deviation) into the measure of central tendency (mean or median). The measure, whether it relates to mean or median is usually termed "coefficient of dispersion". It is sometimes called the "coefficient of deviation". In some eastern seaboard states, the measure is persistently referred to as the "index of assessment inequality" or the "Russell Index".

How high will the coefficient run, if assessments are acceptably uniform? There seems to be some general acceptance of the notion, when all properties in a

jurisdiction are concerned, that 20 percent is the absolutely outside tolerable figure; that 15 percent can be achieved if there is a genuine excellence in the assessment product. It is useful to have some general gauges, and the preceding might do as well as some others. But it is important to recognize that no fixed standard has anything like universal validity, either as a measure of achievement or of effort. Patterns of selling price inconsistencies vary widely from place to place and so do the complexity and heterogeneity of property.

Nevertheless, when measures of dispersion, related to ratio groupings made according to selective property characteristics, are interpreted in the light of other information (i.e., the same measure for differently grouped ratios) they can instruct the assessor regarding what he/she might be doing wrong, and just as importantly, regarding what he/she has been doing right. One good technique is to take the measure successively from ratio groupings representing narrowing universes; for all the properties according to sub-areas; for use types within sub-areas; within sub-areas according to zoning classification. Identification of problem assessment is facilitated by this procedure.

Conventionally, statistical analysis of assessment sales ratios have been confined to single variables. Techniques of statistical inference are applied to inferring single characteristics, such as the arithmetic mean or median (representing prevailing assessment level), to an individual universe (the properties on the roll or some defined portion thereof) as revealed by a sample of that universe (the properties that were sold). Comparisons, so vital to diagnosis of an assessment ailment are effected by the stratification of ratios (each stratum becoming a universe). This kind of analysis, from arrays or frequency distribution of the ratios, is not well suited to the clarification and ordered understanding of some common valuation complexities.

## DEFINITIONS FOR THIS REPORT

When analyzing this report it is important that the following interpretations be noted on the statistical measures shown herein.

**AG** - this includes all property of all types that is classified as agricultural.

**NON-AG** - this includes all property of all types that is not classified as agricultural.

All **"C"** - all property without corporate limits, excluding types **"A"**, **"A+A1"**.

**ALL "D"** - all property within corporate limits.

### ABSTRACT TYPES

<b>A</b>	<b>Agricultural Land</b>
<b>A+A1</b>	<b>Agricultural Land/Structures</b>
<b>C</b>	<b>Lots &amp; Acreages w/o corporate limits</b>
<b>C+C1</b>	<b>Lots &amp; Acreages/structures w/o corporate limits</b>
<b>CC</b>	<b>Lots &amp; Acreages w/o corporate limits under commercial use</b>
<b>CC+C2</b>	<b>Lots &amp; Acreages/ Structures w/o corporate limits under commercial use</b>
<b>D</b>	<b>City &amp; Town Lots &amp; Acreages</b>
<b>D+D1</b>	<b>City &amp; Town Lots &amp; Acreages/ Structures</b>
<b>DC</b>	<b>City &amp; Town Lots &amp; Acreages under commercial use</b>
<b>DC+D2</b>	<b>City &amp; Town Lots &amp; Acreages/ Structures under commercial use</b>

### STATE WIDE RATIOS

#### 2003-2004 Sales and 2004-2005 Sales

2003 – 2004 Sales		2004 – 2005 Sales	
Urban .....	90.2	Urban .....	89.35
Rural .....	87.2	Rural .....	86.44
AG .....	83.4	AG .....	83.43
NON-AG .....	89.8	NON-AG .....	88.91