

Mass Appraisal Explained

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GENERAL INFORMATION

Assessors nationwide use what are commonly referred to as "Mass Appraisal Techniques" in the valuation of property. Mass appraisal is a widely accepted tool for the valuation of property for the purposes of taxation. It differs markedly from appraisal techniques utilized by fee appraisers. who are concerned with the valuation of one specific property only. While both mass appraisal and fee appraisal have techniques available to estimate value utilizing cost, income, and market approaches, Colorado law specifically prohibits the Assessor from utilizing the cost or income approach in the valuation of improved residential property. Colorado Assessors must rely exclusively on the market approach when valuing improved residential property. Inasmuch as the market approach is often the best indicator of value for various other types of property, it is often used for valuation of non-residential property classes, as well.

MASS APPRAISAL HISTORY

The office of the County Assessor was created by the Colorado Constitution adopted in 1876. Property has been assessed for purposes of taxation in Colorado since that time. Since property had to be valued in order to be assessed. mass appraisal techniques were developed to value property. For many years, the state provided cost manuals to the County Assessor that were utilized to value property. All property statewide was valued using the same manuals. The cost system, while fairly efficient and relatively simple, displayed a few glaring deficiencies, particularly relating to real property valuation. (Computerized cost information is still often used in the valuation of non-agricultural business personal property.) The most obvious deficiency of cost valuation is that original or replacement cost that is not adjusted for local influences or market conditions

very often does not reflect the fair market value of property.

The advent of computer systems and software with large data storage and sophisticated analytical capability made possible utilization of sales information, property characteristics, and statistical techniques to estimate the value of individual properties using sales information from many properties. This capability is the basis of the modern Computer Aided Mass Appraisal system (CAMA) employed nearly universally by Assessors nationwide.

BRIEF SUMMARY OF MARKET-BASED COMPUTER AIDED MASS APPRAISAL (CAMA)

The building of a market-based CAMA model involves three basic steps:

- 1. Data gathering. Data is gathered concerning both sold and unsold properties. This includes inventory of property characteristics, location, and other factors that may affect value. Sales information concerning sale date, dollar amounts, non-real property items included in the sale price, financing, unusual circumstances concerning the sale, and other pertinent information is collected. From this information, an accurate inventory of each property, sold and unsold, is derived. Also, a sales list of "valid," meaning arms-length, sales transactions is developed.
- 2. <u>CAMA modeling.</u> The appraiser developing a CAMA model uses various techniques in order to develop an appraisal model that replicates the market in assigning value to the various features of a property. Such techniques may include linear or multiple regression statistical analysis, trend analysis, other statistical techniques, or modification of existing or accepted models. A key part of the modeling process involves continual testing of the model to determine if it is accurately predicting the value of properties. This is generally done by comparing the sale price of properties with the value assigned by the CON'D ON REVERSE

model to the property. The statistical tests that the model must meet are part of Colorado valuation regulations and will be discussed below.

3. <u>Application of the model.</u> Once a CAMA model is developed by the appraiser for a class or subclass of property, it is then applied to all properties, sold and unsold, in that class or subclass. This assures that all properties in the class or subclass are treated equitably; it is also required by Colorado law and property assessment regulations.

STATISTICALLY TESTING THE CAMA MODEL

Not only is testing of the CAMA appraisal model necessary to insure relative accuracy in valuation, statistical compliance is required under Colorado assessment regulation. A model that meets Colorado requirements is presumed to be valid for purposes of assessment for property taxation. There are two statistical tests that the CAMA model must pass to be valid under Colorado regulation. Both tests involve sales ratio analysis under which the CAMA value (also called "Assessor's Actual Value") is compared with the adjusted sales price of a property.

Definitions:

- Assessor's Actual Value. The value calculated for a property by the CAMA model.
- Adjusted Sales Price. The sales price of the real property. Colorado regulation requires the assumption that the sale price for a property reflects the owner's conveyance of fee simple ownership. If significant inflation or deflation has occurred in the market, the sales price may have to be adjusted to the end of the data collection period to account for the inflation or deflation.
- Sales Ratio. Assessor's Actual Value divided by Adjusted Sales Price.
- Data-collection period. Generally, 18months prior to the "appraisal date." (The appraisal date for the current assessment cycle is June 30, 2014.) Assessors may gather information in 6 month increments prior to the 18 month

period if insufficient sales (usually less then 30) are available during the 18 month period for a particular property class or subclass. Information from more than 5 years prior to the appraisal date can never be considered under Colorado regulation.

Statistical Tests:

- 1. Median Sales Ratio., Calculation of median sales ratio is a fairly straightforward technique. First, a Sales Ratio is calculated for each sale in the sales base. This is done by dividing the Assessor's Actual Value by the Adjusted Sales Price (for example, if the Assessor's Actual Value for a property is \$95,000 and the Adjusted Sales Price is \$100,000, the Sales Ratio for that property would be .95). Sales Ratios for all qualified sales in the sales base are then arrayed from lowest ratio to the highest and the Median Sales Ratio is calculated. Colorado assessment regulations require that the Median Sales Ratio for vacant land. commercial property, and improved residential property must fall between .95 and 1.05 for each class of property, within a county..
- Coefficient of Dispersion. 2. The second statistical test that is applied to a sales base is calculation of the Coefficient of Dispersion (often referred to as COD). After the Median Sales Ratio is calculated, it is subtracted from each sold property's Sale Ratio. The result is called the Absolute Deviation (ignoring a positive or negative sign of the sum) for each sold property. For example, if a property's Sales Ratio is 1.05, the Absolute Deviation between it and a Median Sales Ratio of 1.00 would be .05. The Absolute Deviation between a Sales Ratio of .95 and a Median Sales Ratio of 1.00 would also be .05. After all Absolute Deviations are computed, they are added and an Average Absolute Deviation computed. The Average Absolute Deviation is then divided by the Median Sales Ratio. This equals the Coefficient of

Dispersion. Colorado Assessment regulations require that the Coefficient of Dispersion must be less than or- equal to. .1599 (or 15.99%) for the improved residential property class and less than or equal to .2099 (20.99%) for vacant land and commercial property classes within a county.

What does all that mean in English? These two tests are designed to measure two important factors. One is that, to the best means available, the value computed for properties approximates what they sold for in a large number of cases. Second, that the difference between the value computed for properties, and their actual adjusted sales price is minimized in a large number of individual cases. The goal is to achieve assessment equity for the largest number of properties; that is, that a computed value approximates the actual adjusted sales price for the largest number of cases. Such a model can then be applied with confidence to the unsold properties in the county, While these tests are applied countywide to classes of property to insure compliance with state assessment guidelines, they are often also applied to subclasses of property (i.e., neighborhoods, building types, construction gualities, etc.) to test the CAMA model's prediction of value. While this appraisal methodology differs considerably from a market approach fee-type appraisal, it is similar in its intent in that it utilizes market information to estimate value of subject properties.