

Statistical Calculation Definitions for Mass Appraisal

INDIVIDUAL ASSESSMENT SALES RATIO:	Obtained by dividing the total assessed value by the sale price of the individual property.
MEAN RATIO:	Obtained by dividing the total of individual ratios for a class of realty by the number of ratios.
MEDIAN RATIO:	The ratio located midway between the highest ratio and the lowest ratio when individual ratios for a class of realty are ranked in ascending or descending order. The median ratio is most frequently used to determine the level of assessment for a given class of real estate.
WEIGHTED RATIO:	The ratio produced by dividing the total assessed value of all sales in a group by the total consideration of those sales.
STANDARD DEVIATION:	The standard deviation is the degree of difference between the mean and any single data. The standard deviation is arrived at by calculating the mean of a set of data, subtracting each individual data item and squaring the resultant value. The average of these new values (the variance) is divided by the number of values minus 1. The square root of this number is the standard deviation.
COEFFICIENT OF VARIATION (VARIANCE):	Technically defined as the standard deviation divided by the mean, times 100; a high Coefficient of Variance (COV) suggests greater variety in individual ratios. The closer the COV is to 0, the more stable the sales group (provided there are a sufficient number of sales). Whatever the COV percentage is, given a normal distribution, it represents the range within predictability where 68% of the sales lie. For example, if the mean is .80 and the COV is 25.0, then 68% of the ratios will lie between .60 and 1.00 (.80 - [.25 x .80]) The COV can be a good measure of uniformity.
COEFFICIENT OF DISPERSION:	The Coefficient of Dispersion is calculated by first identifying the difference between each individual sales ratio and the median ratio. These differences are added (without reference to negative or positive numbers) and divided by the total number of sales in the group (this is the Average Deviation). Divide the Average Deviation by the Median Ratio and multiply this result by 100. the lower the Coefficient of Dispersion, the more uniform are the assessments. A high Coefficient of Dispersion suggests a lack of equality and uniformity among individual assessments.

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PRICE-RELATED DIFFERENTIAL:

The Price-Related Differential (PRD) is a statistic for measuring the regressivity or progressivity of assessment. It is calculated by dividing the mean ratio by the weighted ratio. Generally, PRDs have an upward bias, as well as the sample mean, with the weighted mean not exhibiting an upward bias except where sample size is small. The upward bias originates from the numerator in the calculation and can exhibit regressivity when the condition of assessment time lags exists. This bias should be offset by a reasonable margin for sampling error in interpretation. Except for small sample size, PRDs should range between .98 and 1.03. Progressivity is indicated by a lower PRD and, conversely, regressivity is indicated by a higher PRD.