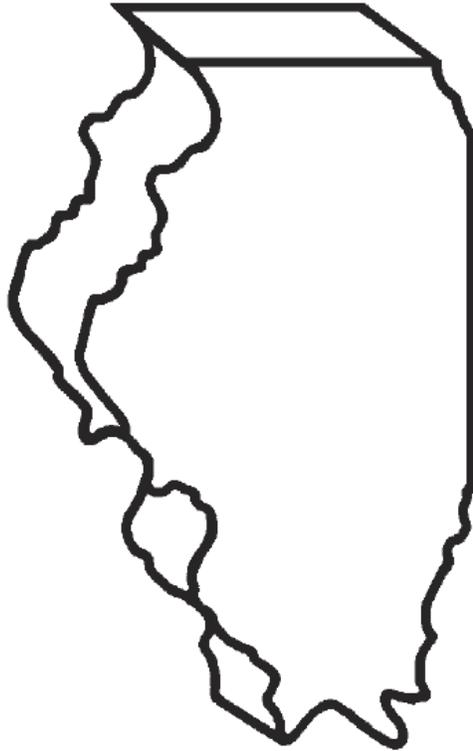


ILLINOIS DEPARTMENT OF REVENUE

*J-E Introduction to
Sales Ratio Studies*



Level : 1

Qualifying for CIAO

Category: Statistics

Continuing Education



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I-E INTRODUCTION TO SALES RATIO STUDIES

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*Exam 50 multiple choice questions

* A score of 70 percent (35 correct answers) is necessary to pass this course.

GLOSSARY OF TERMS

33 ⅓% – Means 33 ⅓% of the actual value of real property as determined by the Department of Revenue's Assessment/Sales Ratio studies for the 3 most recent years preceding the assessment year, adjusted to take into account the implementation of any changes in assessment levels since the data for such studies were calculated

AD VALOREM - according to value

APPRAISAL - opinion of value, supported by evidence

ARM'S LENGTH SALE - a sale between two parties, neither of whom is related to or under abnormal pressure from the other

ASSESSED VALUE (AV) – the value placed upon property after multiplying its market value by the level of assessment

ASSESSMENT - official act of discovering, listing, appraising, and entering a value for property on the assessment rolls for ad valorem tax

ASSESSMENT LEVEL - percentage of full value at which property is being assessed. This may refer to the statutory level (33 ⅓ %) or the actual level as inferred from a sales ratio study

BANK REAL ESTATE OWNED (REO) - the first sale of the property owned by a financial institution as a result of a judgment of foreclosure, transfer pursuant to a deed in lieu of foreclosure, or consent judgment, occurring after the foreclosure proceeding is complete.

BOARD OF REVIEW - an appeal agency in each county, consists of 3 members; in commission counties - county commissioners or members may be appointed; in other counties - members are appointed by the county board or are elected

CLASSIFICATION - the practice of classifying various types of property according to use, and assigning different assessment levels to each class. The purpose is to tax various kinds of property at different effective tax rates though the nominal rate is the same.

COEFFICIENT OF CONCENTRATION (COC) – the percentage of observations falling within 10% of the median level of assessments; a high COC indicates more uniformity

COEFFICIENT OF DISPERSION (COD) - a statistical measure of variation of individual assessment ratios around the median level of assessments. (an average error expressed as a %) (an indicator of assessment uniformity found by dividing the average deviation by the median)

COEFFICIENT OF VARIATION (COV) – a statistical measure of variation of individual assessment ratios around the mean assessment ratio.

DEED: a written, legal instrument that conveys an estate or interest in real property when it is executed and delivered.

- Executor's Deed – a transfer of real estate in which the grantor is the executor
- Master's Deed – used by a condominium developer for recording a condominium development
- Quit Claim Deed – a form of conveyance in which any interest the grantor possesses in the property described in the deed is conveyed to the grantee without warranty of title
- Warranty Deed – a deed that conveys to the grantee title to the property and clear of all encumbrances, except those specifically set forth in the document

EFFECTIVE TAX RATE – ratio of taxes billed to market value. Generally found by multiplying the level of assessment by the local current tax rate. Expressed as a percentage and applied to the full market value (if Level of assessments is 33.33% & if local rate is 6%; Effective Tax Rate = 2%; if Market Value \$90,000, tax = \$1800)

EQUALIZATION – the application of a uniform percent increase or decrease to assessed values of various areas or classes of property to bring assessment levels, on the average, to a uniform level of market value. Intra-county equalization refers to township multipliers issued within the county to equalize the level of assessments within that county. Inter-county equalization refers to the state-issued county multiplier which is used to carry out the statutory responsibility of equalizing the level of assessments among counties.

EQUALIZATION FACTOR – factor applied to assessed valuation of each county that raises or lowers the level of assessments to the mandated level of 33 $\frac{1}{3}$ % of market value. Intra-county factors may be used by a county to bring all property to a uniform level. Factors are sometimes referred to as multipliers. Equalization factors are not applied to farmland, farm buildings, wind turbines with at least a 0.5 MW nameplate capacity, and coal rights.

EQUALIZED ASSESSED VALUE (EAV) – assessed value multiplied by any applicable equalization factor; can form tax base from which tax rate is calculated; for farm acreage, farm buildings, wind turbines with at least a 0.5 MW nameplate capacity, and coal rights, the final assessed value is the equalized value

EXEMPTION – removal of property from the tax base; may be a partial (e.g. a homestead) or complete (e.g. church building used exclusively for religious use)

EXTENSION – the process in which the county clerk determines the tax rate needed to raise the revenue (levy) certified by each taxing district. The actual dollar amount billed to property taxpayers in district

GENERAL ASSESSMENT YEAR – the assessment year that occurs every 4 years in which all property assessments are reviewed, formerly known as quadrennial year

GRANTEE – the person to whom property is transferred (buyer)

GRANTOR – the person who transfers the property to another (seller)

LEVEL OF ASSESSMENTS – ratio of assessed value to the sale price

LEVY – the amount of money a taxing body certifies to be raised from the property tax to meet its operating expenses

MARKET VALUE (Full Value) – the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus.

MEAN – an arithmetic average

MEAN ASSESSMENT RATIO (MAR) – the average of the sales ratios found by dividing the sum of the sales ratios by the number of ratios; used in the calculation of the Price Related Differential

MEDIAN – the middle value of a group of numbers after they have been ranked

MEDIAN ABSOLUTE DEVIATION (MAD) – the median of the absolute deviations from the median expressed as a percentage of the median

MODE – the number that occurs most frequently in a set of numbers

OUTLIER – observations that have unusual values, that is, differ markedly from the median.

OVERLAPPING TAXING DISTRICTS – taxing districts that are located in more than one county

PRICE-RELATED DIFFERENTIAL (PRD) – measures a pattern of inequity in assessments related to the value of property

PROPERTY TAX APPEAL BOARD (PTAB) – the highest state quasi-judicial body which hears appeals from taxpayers and taxing bodies on property tax assessment decisions by the county Board of Review

QUANTILES – the values that divide a set of data into four equal parts (25%, 50%, 75%, 100%) when the data are arrayed in ascending order.

SALES RATIO – the ratio of assessed value to market value found from a property that has sold; ratio equals prior year assessed value (AV) divided by the current year sales price (SP)

SALES RATIO STUDY– an analysis of the percentage relationship of assessed value (AV) to market value; (Minimum of 25 useable sales/appraisals required).

SALES RATIO STUDY YEAR – refers to the year of the sales. The 2014 sales ratio study is based on sales from 2014 and assessed values from 2013.

SHORT SALE – the property was sold for less than the amount owed to the mortgage lender or mortgagor, if the mortgagor has agreed to the sale.

TAX BASE – composed of the Equalized Assessed Value (EAV) of all locally assessed property, less all qualified exemptions, plus the value of any state assessed property

TAX RATE – the amount of tax due stated as a percentage of the tax base, derived by dividing the levy by the EAV. (some districts have a maximum statutory rate; the sum of the fund rates equals the total district rate)

TAX YEAR – refers to the year of assessment; 2014 tax year refers to assessments based on 2014 values; taxes payable in the calendar year 2015

TAXING BODY – a governmental organization that levies a property tax

TAXING DISTRICT – a territorial area under the taxing body's jurisdiction

URBAN WEIGHTED METHOD – non-farm values; used in determining a county's median level of assessment by dividing the county's total assessed value (AV) by the county's total Estimate of Full Value (EFV); this is the preferred method of calculating a county multiplier.

ACRONYM LIST

AV	Assessed Value
BR	Board of Review
CCAO	Chief County Assessment Official
COC	Coefficient of Concentration
COD	Coefficient of Dispersion
DOR	Department of Revenue
EAV	Equalized Assessed Value
ECO	Elected County Officials
EF	Equalization Factor
EFV	Estimate of Full Value
IDOR	Illinois Department of Revenue
IMRF	Illinois Municipal Retirement Fund
MAD	Median Absolute Deviation
MAR	Mean Assessment Ratio
MV	Market Value
PRD	Price Related Differential
PTAB	Property Tax Appeal Board
REIT	Real Estate Investment Trust
REO	Real Estate Owned
RETD	Real Estate Transfer Declaration
SA	Supervisor of Assessments
SBAR	Sales Based Average Ratio
SP	Sales Price
SR	Sales Ratio
TA	Township Assessor

FORMULAS FOR SALES RATIO STUDIES

$$\text{SALES RATIO} = \frac{\text{Prior Year AV}}{\text{Current Year SP}} \times 100 (\%)$$

$$\text{COEFFICIENT OF DISPERSION (COD)} = \frac{\text{Average Deviation}}{\text{Median}} \times 100 (\%)$$

$$\text{MEDIAN ABSOLUTE DEVIATION (MAD)} = \frac{\text{Median Deviation}}{\text{Median of Sales Ratios}} \times 100 (\%)$$

$$\text{COEFFICIENT OF CONCENTRATION (COC)} =$$

$$\frac{\text{Number of Sales Ratios within 10\% of the median}}{\text{Total Number of Sales Ratios}} \times 100 (\%)$$

PRICE-RELATED DIFFERENTIAL (PRD):

$$\text{Sales-Based Average Ratio (SBAR)} = \frac{\text{Sum of AV's}}{\text{Sum of SP's}} \times 100 (\%)$$

$$\text{Mean Assessment Ratio (MAR)} = \frac{\text{Sum of the Sales Ratios}}{\text{Number of Ratios}}$$

$$\text{Price-Related Differential} = \frac{\text{Mean Assessment Ratio}}{\text{Sales-Based Average Ratio}}$$

$$\text{EQUALIZATION FACTOR} = \frac{\text{Desired Level (33.33\%)}}{\text{Prior 3-Year Average Median Level}}$$

Unit 1

An Overview of the Property Tax Cycle

This unit covers the history of property taxation, gives an overview of the property tax system, the property tax cycle, and the role of the Department of Revenue.

The purpose of this unit is to provide a basic understanding of property taxation, the establishment of value for tax purposes, and the two-year property tax cycle, beginning with the creation of the assessment books and concluding with the sale of a lien on real estate due to nonpayment of taxes. This unit focuses on the role of the sales ratio study in the property tax cycle.

LEARNING OBJECTIVES:

After completing the assigned readings, you should be able to:

- outline the flow of the assessment books, from the creation of the books through their use in the preparation of the collector's books
- identify the roles various township and county officials play in the property tax cycle
- recognize the role of the Department of Revenue in the property tax cycle, and
- understand the legal basis for the sales ratio study and equalization

TERMS AND CONCEPTS:

- Chief county assessment officer (CCAO)
- Department of Revenue (DOR)
- Equalization
- Equalized assessed value (EAV)
- Levy
- Market value
- Real Estate Transfer Declarations (RETD)
- Real property
- State-assessed property
- Supervisor of Assessments (SA)
- Uniformity

AN OVERVIEW OF PROPERTY TAX

When Illinois became a state in 1818, the constitution contained a provision for taxing property in direct proportion to the value of the property. From 1818 to 1930, amendments to the constitution provided the state with various powers concerning property taxation. The last year the state levied real estate taxes was 1932. Since then, property taxes have been levied at the local level.

Property tax is governed by the Property Tax Code, 35 ILCS 200/1-1 through 32-20. Property tax is a local tax assessed by the county or township. Revenues from property tax are collected and spent at the local level.

Property can be divided into two classes – real and personal. **Real property** is land and anything permanently attached to the land, e.g. buildings and fixtures permanently or constructively attached to a building. **Personal property** is all property that is not real property. Some examples of personal property include automobiles, livestock, and money.

In Illinois, taxpayers now pay property taxes only on their real property. Property taxes are raised, spent, and distributed locally. Property taxation produces more than three-fourths of the total tax revenue and finances a major part of the services provided by local governmental units which benefit citizens and their property. The largest share of the property tax goes to school districts.

Property tax is a tax that is based on the value of the property owned and is assessed according to its value. For this reason it is often called an **ad valorem** tax. Most real property in Illinois must be assessed based on its value in the open market. **Market Value** is the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Market value may be established through sales data or through independent appraisals.

In Illinois, property is to be viewed, inspected, and revalued once every four years in all counties but Cook, which has a three-year reassessment cycle. The assessment date in Illinois is January 1. On that date, the assessment cycle begins for all real property which must be valued as to its condition at that point in time.

Once market value has been determined, assessors put a value on the property for the tax assessment books. This value should be 33⅓% of the market value, according to the Property Tax Code. For example, if the market value of a property is \$150,000, and the county level of assessments is at the statutory level of 33 ⅓%, the assessed value of the property to be entered in the assessment books would be \$50,000.

There are 102 counties in the state of Illinois. Most counties, referred to as township counties, have a township level of government. There are 17 counties, called commission counties, that do not have the township form of government. In commission counties the supervisor of assessments has the primary assessment responsibility.

In non-commission counties, other than Cook, DuPage, and Lake, township and multi-township assessors should complete their assessments by June 15. Township assessors, Chief County Assessment Officers (CCAO's), and Boards of Review in all counties except Cook have the authority to equalize within the county (intra-county equalization). While both the CCAO and the board of review have the power to equalize, normally only one will do so.

Any assessment change made by the CCAO is entered in his or her column in the assessment books. The CCAO certifies the assessment books to the county board of review by the third Monday in June, and compiles, signs, and sends a tentative abstract of assessments to the Department. The Department uses the information on the abstract to determine if the level of assessments has changed since the data for the Department's sales ratio study was collected. The Department then certifies a tentative inter-county equalization factor, often called a "tentative state multiplier," to the CCAO and county clerk and holds a public hearing on the factor.

After the work of the board of review is completed, the assessment books are given to the county clerk. The county clerk signs and files the Final Abstract of Assessments with the Department. The information on the final abstract is used to determine the final equalization factor that is applied to all property within the county except farmland, farm buildings, wind turbines¹, coal, and certain state-assessed properties.

¹ Wind turbines with at least 0.5 MW nameplate capacity

THE PROPERTY TAX CYCLE

The property tax cycle – from the assessment of property to the collection and distribution of taxes – takes nearly two years for most property. Some steps take place concurrently, but basically it can be divided into six steps.

- | | | | |
|---|--------------|---|-----------------------------|
| 1 | assessment | 4 | levy |
| 2 | review | 5 | extensions |
| 3 | equalization | 6 | collection and distribution |

ASSESSMENT CYCLE

The property tax cycle is a two-year cycle beginning on January 1, the assessment date and ending two years later when liens against unpaid property taxes are sold at an auction. The county clerk begins the assessment cycle by preparing two sets of real estate books and delivers them to the Chief County Assessment Officer (CCAO) by January 1.

The CCAO meets with the township assessors before January 1. At this meeting the CCAO establishes guidelines for the assessments within the county and delivers one set of books to the township assessors.

The township assessor values real estate as of its condition on January 1 and returns the books to the CCAO by June 15. Counties that have populations as specified in the Property Tax Code (35 ILCS 200/Sec 9-230) for other dates for the delivery of the assessment books to the CCAO include Lake county with a delivery date of July 15 and DuPage county whose date is November 15.

The CCAO reviews assessments made by all of the township assessors in the county. After reviewing the assessments, the CCAO makes any changes that he determines are necessary to achieve equity of assessments. All CCAO's, with the exception of the Cook county assessor, may also equalize assessments within the county by class, area, and/or by township in order to assure that the median level of assessments is at 33 $\frac{1}{3}$ % of market value. The CCAO must mail notices of a change in assessments to every taxpayer whose assessment has been changed and must publish these changes in a newspaper of general circulation. When the CCAO's work has been finished, he or she delivers the assessment books to the Board of Review by the third Monday in June. He or she then prepares and signs the tentative abstract of assessment books which is then sent to the Department of Revenue.

The Department of Revenue develops the tentative equalization factor using the information from the tentative abstract sent in by the CCAO and publishes this tentative equalization factor in the newspaper. The Department holds a public hearing on this factor.

The Board of Review performs several functions when the board convenes on the first Monday in June. The three-member board acts on non-homestead exemptions and mails the applications to the Department for final approval. The Board of Review hears complaints and makes assessment changes on any property when deemed necessary. Whenever an assessment change has been made by the board of review, the board must mail change of assessment notices to the taxpayers and make a full and complete list of all changes in assessments made by the Board of Review. A copy of the list must be given to the CCAO and to the county clerk. These lists are a matter of public record and open for public inspection. The board also assesses property that has been omitted from the tax rolls. All boards of review, except in Cook County, have the authority to equalize assessments within the county by class or area, if necessary. If the board equalizes within the county, it must mail a report on equalization to the Department. When the work of the board is completed, the board delivers the assessment books to the county clerk.

When the county clerk receives the assessment books from the board of review, he or she prepares and signs the Final Abstract of Assessments and mails this report to the Department.

The Department of Revenue certifies the final equalization factor based on the information in the final abstract sent by the county clerk and mails this final factor to the county clerk. The Department of Revenue also certifies state assessments and mails these assessments to the county clerk to be included in the tax base.

The county clerk applies the final equalization factor to all local assessments except farmland, farm buildings, coal rights, wind turbines² and state-assessed properties. The value, after this final equalization factor is applied, is known as the equalized assessed value (EAV) of the property.

² wind turbines with at least 0.5 MW nameplate capacity

ASSESSMENT CYCLE

COUNTY CLERK	Prepares two sets of real estate books and delivers to Chief County Assessment Officer by January 1.
CHIEF COUNTY ASSESSMENT OFFICER	Meets with township assessors before January 1 and establishes guidelines. Delivers one set of books to township assessors.
TOWNSHIP ASSESSOR	Values real estate as of January 1 and returns books to Chief County Assessment Officer by June 15 (July 15 for Lake county and November 15 for DuPage county). Can equalize (except in Cook county).
CHIEF COUNTY ASSESSMENT OFFICER	<ol style="list-style-type: none"> 1. Reviews assessments made by township assessors; makes changes. 2. Equalizes assessments within county by class, area, and/or by township. 3. Mails Change of Assessment notice to taxpayer. 4. Publishes changes in newspaper of general circulation. 5. Delivers books to Board of Review by the third Monday in June. 6. Prepares and signs tentative abstract of assessment books; mails to Department of Revenue.
DEPARTMENT OF REVENUE	Develops tentative equalization factor; publishes factor in newspaper; Holds public hearing.

<p style="text-align: center;">BOARD OF REVIEW</p>	<ol style="list-style-type: none"> 1. Assesses omitted property. 2. Acts on non-homestead exemptions and mails to Department for approval. 3. Hears complaints and makes assessment changes on any property when deemed necessary. 4. Mails change of assessment notices to taxpayers. 5. Equalizes assessments within county by class or area, if necessary. (Except Cook county) 6. Delivers books to county clerk. 7. Mails report on equalization to Department. 8. Makes a list of assessment changes and equalization factors and submits a copy to the county clerk and the CCAO.
<p style="text-align: center;">COUNTY CLERK</p>	<p>Prepares and signs Final Abstract of Assessments and mails to Department.</p>
<p style="text-align: center;">DEPARTMENT OF REVENUE</p>	<p>Certifies final equalization factor and mails to county clerk.</p>
<p style="text-align: center;">COUNTY CLERK</p>	<p>Applies equalization factor to all local assessments except farmland, farm buildings, coal rights, wind turbines with at least a 0.5 MW nameplate capacity, and state-assessed properties.</p>
<p style="text-align: center;">DEPARTMENT OF REVENUE</p>	<p>Certifies state assessments and mails to county clerk.</p>

BUDGET AND LEVY CYCLE

The budget and levy cycle begins in the same year as the year of assessment with the taxing body who prepares a tentative budget. The taxing body must publish a notice for a public hearing concerning the tentative budget. This budget must be on display 30 days before the public hearing. After the public hearing is held, the taxing body passes the budget, with any changes, in the form of an ordinance. If it is necessary, the taxing body must make a truth-in-taxation publication and hold a public hearing. When everything is in order, the taxing body submits a certificate of levy to the county clerk by the last Tuesday in December. This certificate is an official document informing the county clerk of the amount of money the taxing district needs to receive from the property taxes in order to meet the budget.

The county clerk receives the certificate of levy from the taxing body and the final assessment books from the board of review. From this information, the county clerk calculates the tax rate for each taxing district and computes the aggregate (total) tax rate for each combination of taxing districts using the formula:

$$\frac{L}{A \times R} \quad \begin{array}{l} L \\ A \\ R \end{array} \quad \begin{array}{l} = \\ = \\ = \end{array} \quad \begin{array}{l} \text{Levy} \\ \text{Total Taxable EAV} \\ \text{Tax Rate} \end{array}$$

The county clerk will then extend, or calculate, the taxes on the total taxable equalized assessed value (EAV) in each taxing district and enter the amounts in the collector's books which he has prepared. The county clerk then delivers the collector's books to the county treasurer by December 31.

The county treasurer, who is also the county collector, prepares and mails the tax bills by May 1*. He or she collects the first installments for real estate by June 1 and distributes the tax money proportionately to the taxing districts as the money is collected. By September 1* the second installment for real estate is collected. After this date the county collector prepares a list of all parcels which are delinquent in the payment of the property tax and sends a notice to the property owner that the county has made an application for judgment on the real estate to the circuit court.

The circuit court pronounces judgment for sale of a lien on real estate due to nonpayment of taxes and rules on tax objections.

Together the county treasurer and clerk administer the sale of the liens on real estate due to nonpayment of property taxes.

*Note: This assumes billing is done in two equal installments. Other payment methods use the accelerated billing method or payment in four equal installments.

BUDGET AND LEVY CYCLE

TAXING BODY	<ol style="list-style-type: none"> 1. Prepares tentative budget. 2. Publishes notice of public hearing; puts tentative budget on display 30 days before public hearing. 3. Holds public hearing. 4. Passes budget with changes in form of ordinance. 5. If necessary, makes truth-in-taxation publication and holds hearing. 6. Gives certificate of levy to county clerk by the last Tuesday in December.
COUNTY CLERK	<ol style="list-style-type: none"> 1. Calculates tax rates and computes aggregate tax rate for each combination of taxing districts. 2. Extends taxes on total EAV in each taxing district and enters the amounts in the collector's books. 3. Prepares and delivers collector's books to county treasurer by December 31.
COUNTY TREASURER (COUNTY COLLECTOR)	<ol style="list-style-type: none"> 1. Prepares and mails tax bills by May 1. 2. Collects first installments for real estate by June 1. 3. Distributes tax money proportionately to taxing districts as money is collected. 4. Collects second installment for real estate by September 1. 5. Prepares delinquent tax list and sends a notice of application for judgment on real estate.
CIRCUIT COURT	<ol style="list-style-type: none"> 1. Pronounces judgment for sale of a lien on real estate due to nonpayment of taxes. 2. Rules on tax objections.
COUNTY CLERK AND TREASURER	Administers sale of lien on real estate due to nonpayment of taxes

ROLE OF DEPARTMENT OF REVENUE (DOR)

Although property tax is a local tax, the State, through the Local Government Services Bureau of the Department of Revenue, has the statutory duty and responsibility to "direct and supervise" the local assessment process.

Technical Assistance

The Department of Revenue publishes appraisal and assessment manuals, such as the cost schedules, the "The Illinois Property Tax System," "Property Tax Extension Limitation Law, Technical Manual," and the "Property Tax Statistics." Training classes for the electives toward the Certified Illinois Assessing Officer designation and for continuing education for assessors are offered throughout the state. Publications may be found on the Department's web site under "Publications" at tax.illinois.gov.

Upon request by the county, the Department will conduct complex commercial and industrial appraisals. The commercial or industrial property must have a market value over \$1 million and be under appeal.

The goal of the Department is to promote assessment uniformity, the guiding principle in the assessment program.

Taxing District Maps

The Department also prepares and maintains taxing district maps for all counties. The county clerk must maintain accurate maps of all taxing districts so that each parcel will be placed in the correct combination of taxing districts. Any changes in the boundaries of a taxing district must be reported to the Department so that accurate maps can be maintained. This is also necessary to assure correct allocations to the various taxing districts.

Tax Exemptions

The Department has final approval of all non-homestead exemptions submitted by County Boards of Review. Homestead exemptions are allowed to properties, occupied as the principal dwelling of the owner, that meet the necessary conditions. Non-homestead exemptions are allowed to properties that meet criteria based on the use of the property. Examples of uses that may qualify for non-homestead exemptions include religious, charitable, federal,

and state properties. The process of qualifying for a non-homestead exemption begins with filing an application with the Board of Review. The board of review considers the application, includes comments by the board, and sends the application on to the Department of Revenue. The final approval for the application will be made by the Department of Revenue.

Local Tax Allocation (Replacement Tax)

Commercial and industrial properties pay a tax, based on the income of the property, that replaces revenue lost to the units of local government when the State eliminated the personal property tax. The Department certifies and allocates each taxing district's share of this replacement revenue collected by the State.

State-Assessed Property

The Department certifies assessments, made by the State, of railroad operating property and pollution control facilities to county officials for inclusion in the local tax base. These properties are already equalized by the State and will not receive state equalization factors certified to the counties.

Farmland Assessments

The Department annually certifies the equalized assessed values (EAV's) for soils whose productivity indices (PI's) are between 82 and 130. There are four parts to a farm: the farm homesite, farm dwelling, farm buildings, and farmland. Although no farm property is considered in the urban sales ratio study, only the farm homesite and farm dwelling are subject to equalization by the state equalization factor.

Equalization & Review

The Department is required by law to provide for each county an equalization factor which will equalize the level of assessments at the statutory level of 33 $\frac{1}{3}$ % of fair market value. The level of assessments to be equalized is the mean, or average, of the urban-weighted medians of the three years immediately preceding the assessment year, after adjustments for assessment changes through the assessment year.

The Department uses information from the Real Estate Transfer Declarations (RETD's) to develop sales ratio studies. The assessed value from the prior year for a property is divided by the current sales price of the same property to determine a sales ratio. The sales ratio study determines the median of all of these individual sales ratios for a township. The median of these sales ratios may then be adjusted, if necessary, to reflect reassessments that have occurred since the sales ratio study was completed.

Assessed values from the prior year's final abstract and the current year's tentative abstract are used in the computation of the tentative multiplier and assessed values from the current year's tentative abstract and the current year's final abstract are used in the computation of the final multiplier.

Equalization - The application of a uniform percentage increase or decrease to assessed values of various areas or classes of property to bring assessment levels, on average, to a uniform level of the market value (**33 ⅓%**).

Equalization is necessary in order to:

1. maintain the statutory assessment level at 33 ⅓% (33.33%)
2. allow an equitable distribution of the tax burden in districts which lie in more than one county (overlapping tax districts).
3. provide a uniform basis for the distribution of state-aid to schools and other grant-in-aid programs.
4. provide a comparable base for the application of maximum tax rates and bonded indebtedness.

Equalization of assessment levels within counties is a necessary condition prior to the State's inter-county equalization program if equity in the distribution of the tax burden is to be achieved.

Equalization factors will not correct assessment inequities between properties within an area or class.

Legal Basis for the Sales Ratio Studies

The legal basis for the sales ratio studies resides in the Property Tax Code. The Property Tax Code is part of the Illinois Compiled Statutes. It can be found in Chapter 35 (Revenue Act) and Act 200 (Property Tax Code) of the Illinois Compiled Statutes. It is referenced as 35 ILCS 200. Assessors should be familiar with the definitions and requirements set forth in the Code as it refers to the sales ratio study and programs that utilize the sales ratio study. Some of these sections are mentioned here. For additional information, please consult the appropriate section in the Property Tax Code.

The Property Tax Code
Act #200 in Chapter 35 of the Illinois Compiled Statutes
35 ILCS 200
(through Public Act 96-0890)

Sec. 1-55 33 $\frac{1}{3}$ % defined - One-third of the fair cash value of property, as determined by Department of Revenue's sales ratio studies.

- A. Use ratio studies for three most recent years preceding the assessment year, adjusted for changes in assessment levels implemented since data was collected.

Sec.17-10 Excludes personal property from the sales price.

Sec. 3-40 Salary of Supervisor of Assessments (S/A):

- A. State will reimburse to the county 50% of S/A salary if median level of assessments is 31 $\frac{1}{3}$ % – 35 $\frac{1}{3}$ %.
- B. This section lists minimum salaries.
 - 1. Sec.110.175 Rules - Median level of assessments is the three-year average based on tentative abstract 280A.

Sec. 4-20 Assessor and Supervisor of Assessments Bonus:

Entitled to \$3000 bonus if assessments in their jurisdiction have both:

- i. Adjusted median level of assessments is 31 $\frac{1}{3}$ %–35 $\frac{1}{3}$ %.
Sec.110.170 (Rules) Based on prior 3-year average.

- ii. Coefficient of Dispersion (COD)
 - 1. Not greater than 15% in counties of less than 3,000,000 but more than 50,000 inhabitants.
 - 2. Not greater than 30% in counties with 50,000 or fewer inhabitants.

Sec. 9- 75 Revisions of Assessments

- A. The chief county assessment officer or township or multi-township assessor may revise or correct an assessment as it appears to be just. Notice of revision shall be given.

Sec. 9-205 Intra-County Equalization:

- A. When deemed necessary to equalize assessments between or within townships or between classes of property, or when deemed necessary to raise or lower assessments within a county or any part thereof to the level prescribed by law, changes in individual assessments may be made by a township assessor or chief county assessment officer by application of a percentage increase or decrease to each assessment.

Sec. 9-210 The chief county assessment officer in a county with less than 3,000,000 inhabitants shall act as an equalizing authority for that county.

- A. Applies to all properties except farm and coal.
- B. Shall equalize the assessments by increasing or decreasing the entire assessment of property in the county or any area therein or of any class of property so that the assessment will be at 33 $\frac{1}{3}$ % of fair cash value.

Sec. 10-615 Wind energy not subject to equalization

Sec. 16- 30 Boards of Review in counties of less than 3,000,000 inhabitants.

- A. Based on a complaint application, or upon its own motion, may revise the entire assessment of any taxpayer or any part of the assessment as appears to it to be just. No increase can be made without an opportunity for a hearing.

Sec. 16-60 Board of Review in counties of less than 3,000,000 inhabitants.

- A. May equalize the assessment in any multi-township or township, or part thereof, or any portion of the county.

Sec. 16-65 Boards of Review - Equalization Process:

- A. Shall act as an equalization authority, if after equalization by the supervisor of assessments, the equalized assessed value of property in the county is not 33 $\frac{1}{3}$ % of the total fair cash value.
- B. Township assessor shall be notified of and participate in deliberations and determinations.
- C. Board shall determine level for each assessment district (based on at least 25 property transfers/appraisals).
- D. 25% increase/decrease limit for aggregate assessment of EAV for any assessment district.
- E. Publish notice required at least 30 days prior to its adjournment declaring whether it intends to equalize.

Sec. 12-40 Public shall be given the opportunity to be heard within 20 days after published proposal.

Sec. 17-5 Inter-County Equalization by Department of Revenue (DOR)

- A. Department shall lower or raise the total assessed value of property in each county (other than property assessed under Sec 10-110 through 10-140 and 10-170 through 10-200) so that such property will be assessed at 33 $\frac{1}{3}$ % of its fair cash value.
- B. Department shall use analysis of property transfers, property appraisals and other reasonable means to calculate equalization factors.

Sec. 17-15 Equalization by Department of Revenue- Publication - Hearing - Revision:

- A. Department calculates and issues a tentative equalization factor based on the Tentative Abstract (280A).

Sec. 17-20

- B. Department publishes tentative equalization factor and holds public hearing.

- C. Department confirms or revises tentative equalization factor

Sec 17-25 Application of Final Equalization Factor.

- A. No factor will be issued if aggregate assessed value is within 99% and 101% of 33 ⅓% of fair cash value.

Sec 17-30 Certification of Final Equalization Factor:

- A. Department certifies the final percentage to be added to or deducted from the listed or assessed valuation. (Factor based on analysis of County Clerk's Final Abstract (260A)).

Sec 17-40

- B. The Department shall publish in each county the Final Equalization factor issued to that county. If Final factor is different from the Tentative, a statement as to the basis for the Final factor shall also be published.

Sec 9-70 & 17-35

- C. The Department shall assess and then certify railroad operating property assessments, low sulfur dioxide emission coal fueled devices and pollution control facilities assessments to county clerk.

Sec16-205 Department of Revenue has NO authority to change individual assessments.

The Illinois Supreme Court has upheld the validity of the state multiplier (equalization factor), the methodology of the Sales Ratio Study, and the Due Process administrative procedures used by the DOR: Methodology - Airey vs DOR (87); Hearing & Admin - Advanced Systems Inc. vs DOR (88)

Unit 1

Summary

The property tax cycle is a two-year cycle beginning on January 1, the assessment date, and ending two years later when liens against unpaid property taxes are sold.

Market Value is the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus.

Market value may be established through sales data or through independent appraisals.

Equalization is the application of a uniform percentage increase or decrease to assessed values of various areas or classes of property to bring assessment levels, on average, to a uniform level of the market value (33 $\frac{1}{3}$ %).

The CCAO reviews assessments made by township assessors and makes changes when deemed necessary. When the CCAO's work is completed, he or she prepares and signs the tentative abstract.

The statutory level of assessments in Illinois is 33 $\frac{1}{3}$ %. The Department of Revenue determines the median level of assessments for each county using the sales ratio studies.

In all counties except Cook, township assessors, CCAO's, and boards of review have the authority to equalize. The state equalization factor, certified by the Department of Revenue, is applied to all property in the county with the exception of farmland, farm buildings, coal, wind turbines, and state-assessed properties. The farm homesite and farm dwelling do receive the state equalization factor.

The Department of Revenue has no authority to change the assessment on an individual property.

Unit 1

REVIEW

- T F 1. A minimum of 20 useable sales/appraisals are needed for a township sales ratio study.
- T F 2. The chairman of the Board of Review signs the final abstract.
- T F 3. Property must be viewed, inspected, and revalued once every 4 years.
- T F 4. To qualify for state reimbursement of a portion of the supervisor of assessment's salary, the COD must not be greater than 15%.

Fill in the blanks.

5. What two types of properties are assessed by the state?

_____ and _____

6. An ad valorem tax is a tax based _____.

7. _____ is land or anything permanently attached to the land.

8. _____ is the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus.

9. _____ – county equalization refers to equalization by officials within the county.

10. The median used in determining the equalization factor is the average of the medians from the prior _____ years.

11. In order to qualify for the assessor bonus award, the assessor must be in a qualified position, have a ____- year average median level of assessments between _____ and _____, and a COD no greater than _____ (assuming that the population of the county is 50,000 or less).

Unit 2

The Sales Ratio Study

This unit covers the uses of the sales ratio study and the calculation of the median level of assessments for a jurisdiction.

The purpose of this unit is to provide a basic understanding of the process of determining a median level of assessment and of the need for that median as it applies to equalization, assessment uniformity, the appeal process, and as a basis for the determination of the assessor bonus award and the partial reimbursement of the supervisor of assessment's salary.

LEARNING OBJECTIVES:

After completing the assigned readings, you should be able to:

- identify several uses for the sales ratio study
- identify criteria for the development of the sales ratio study
- recognize the most representative number in a group of numbers
- calculate sales ratios
- determine the median level of assessments

TERMS AND CONCEPTS:

- Arm's length
- Mean
- Median
- Median level
- Mode
- Rank
- Sales ratio

MOST REPRESENTATIVE NUMBERS

When a researcher makes a statement concerning a group of numbers, he or she chooses a number that is most representative of the group. The three types of numbers that are most often used for this purpose are the **mean**, the **median**, and the **mode**.

The mean, often referred to as the average, is found by adding the numbers and dividing the sum by the amount of numbers in the group. For example, if the numbers are 35, 20, 26, 32, 29, 26 and 27, the mean (average) would be 28, found by adding the numbers (195) and dividing by 7 (numbers).

The median is the middle number of a group of numbers placed in numerical order (ranked). In this course, the answer keys rank numbers from smallest to largest. Using the same set of numbers as the example above, the numbers must first be placed in order: 20, 26, 26, **27**, 29, 32, 35. The middle number (27) is the median.

If there are an even number of numbers, average the two middle numbers. For example, if another “29” is included in the above set of numbers, there will be eight numbers in the group of numbers. In order, the set would become: 20, 26, 26, 27, 29, 29, 32, 35. In this case, there are two “middle” numbers: 27 & 29. Add the two middle numbers together $27 + 29 = 56$. Now divide by 2. $56 \div 2 = 28$. Note that, in this case, the median is not actually one of the numbers in the group.

The mode is the number that occurs most often. Since 26 occurs the most often in the original set of seven numbers (twice), the mode is 26.

It has been determined that, of the three types of numbers – mean, median, and mode, the median is the best statistical measure for sales ratio studies.

THE ASSESSMENT/ SALES RATIO STUDY

The primary tool in conducting the equalization process is the sales ratio study. The Sales Ratio Study provides the Median Level of Assessments for that jurisdiction for the year of the study. This study provides information on the percentage relationship of assessed value to market value for real property in certain categories and geographic areas. Information is also

provided on the variation in assessment levels among and within these categories and geographic areas. The year of the sales ratio study refers to the year in which the sales occurred. So, the 2014 sales ratio study refers to sales from 2014 and the assessed values applied to those same sales from the prior year, 2013.

SALES RATIO STUDIES ARE USED:

In the computation of equalization factors

The formula for an equalization factor is :

$$\text{EQUALIZATION FACTOR} = \frac{\text{Desired Level (33.33\%)}}{\text{Prior 3-Year Average Median Level}}$$

In order to calculate the equalization factor, it is necessary to first determine the medians from the prior three years. Then determine the average of these medians, adjusted for changes due to reassessment. The average of the adjusted medians from the prior three years is the “Prior 3-Year Average Median Level” mentioned in the formula above. The equalization factor is either the state-issued county multiplier, which is used to carry out the statutory responsibility of equalizing the level of assessments among counties (inter-county), or multipliers issued within the county (intra-county) to equalize the level of assessments within that county. Examples of intra-county multipliers that might be used would include township, neighborhood, and class (residential, commercial, industrial, etc.) equalization factors.

1. In the review and appeal of assessments.

The sales ratio studies provide a measure of the average assessment level for a given geographic area or category of property against which assessments of individual parcels may be judged in determining the degree of over or understatement, if any. One of the reasons to appeal an assessment is that the level of assessment on the property is higher than the township or county median level of assessments.

2. As a diagnostic tool to evaluate local assessment practices.

It is the responsibility of local assessing officials to use the assessment/sales ratio study to evaluate their assessment policies and make assessment changes to sales and non-sales when warranted so that the final assessment of all properties in their jurisdictions are at a uniform percentage of value. Certain measures of assessment

uniformity (coefficient of dispersion, coefficient of concentration, median absolute deviation) are based on the median level of assessments.

3. To determine eligibility for the assessor bonus award

In order to qualify for the assessor bonus award, the average of the median levels of assessments of the prior 3 years must be between 31 $\frac{1}{3}$ % and 35 $\frac{1}{3}$ % and the Coefficient of Dispersion (COD) must be below the appropriate COD as determined by the population of the county.

4. In reimbursement to a county of a portion of the Supervisor of Assessment's salary

In order to qualify for the reimbursement to the county, the average of the median levels of assessments of the prior 3 years must be between 31 $\frac{1}{3}$ % and 35 $\frac{1}{3}$ %.

A minimum of 25 useable sales are needed to conduct any sales ratio study. Useable sales must meet the definition of market value and also be an arm's length transaction. An arm's length transaction is one "between unrelated parties or parties not under abnormal pressure from each other"³. This indicates that there should be a distance in the relationship between the buyer and the seller. If the buyer and seller are related, the arm's length criteria would not be met and the sale would not be useable. The relationship may be a family relationship or it may be between companies that are closely related. Randomly selected appraisals or sales trending may also be used for intra-county studies if there are not enough useable sales available.

The Department's emphasis is slightly different from local concerns. The state's concern is developing inter-county equalization and does not focus on inconsistencies that may exist among individual properties.

Local jurisdictions must focus on valuing all property (uniformly and equitably), assuring that all assessed values represent current market values. The assessment/sales ratio study becomes a tool of the county to evaluate assessment policies and make assessment changes when warranted. The final assessments of all properties in the jurisdictions are

³ p. 27, Property Appraisal and Assessment Administration, Joseph Eckert, editor, The International Association of Assessing Officers, Chicago, IL, 1990.

then at a uniform percentage of value to provide an equitable distribution of the property tax burden.

The following are examples of a few types of sales that would **not** be used in a sales ratio study:

- Land and Improvements that are classified as Farm
- Compulsory sales which are court-ordered, sale in lieu of foreclosure, or condemnation. (A short sale and bank REO (real estate owned) sale are included in a sales ratio study.)
- Sales conveying less than full title
- Sales between related parties
- Sales involving government organizations
- Sales in which the assessed value and the sales price are not comparable (splits, partial assessment, destruction or demolition of improvement)

A **Sales Ratio** is the ratio of assessed value to market value, found from a property that has sold. This yields the percent relationship between assessed value and market value. Since the Department uses sales ratios listed as percents, multiply the decimal answer by 100 in order to change it to a percent. For a 2014 sales ratio study, the market value would be determined by the sales in 2014. The assessed values on those same properties would be from the prior year, 2013.

This manual uses the data from the same three townships throughout units 2 and 3: Brown Township #1, Brown Township #2, and Walker Township. Brown Township #2 is the same as Brown Township #1 with 3 additional sales. Consider the effect of these additional sales on the median level of assessments and the various measures of assessment uniformity. Although a sales ratio study must have 25 useable sales for statistical reliability, each of these exercises has been shortened for instructional purposes.

In this unit, the median of the sales ratios will be determined using the sales from the current year and the assessed values from the prior year for those sales that have been determined to be market value transactions. The median is the middle number in a set of numbers that have been ranked (placed in order). If there are an even number of ratios, the median will be the average of the two middle numbers.

$$\text{SALES RATIO} = \frac{\text{Prior Year Assessed Value}}{\text{Current Year Selling Price}} \times 100(\%)$$

For example, if a property assessed at \$38,600 in one year and sold for \$120,000 in the following year, the sales ratio would be 32.17%.

$$\text{Sales Ratio} = \frac{38,600}{120,000} \times 100 (\%) = 32.17\%$$

Steps to calculate a median:

1. Calculate a sales ratio for each sale using the formula above.
2. Rank the sales ratios. The answer keys at the end of the manual rank the ratios from smallest to largest.
3. Determine the median. (Find the middle number.)

Unit 2, Exercise 1: BROWN TOWNSHIP # 1

Refer to Brown Township #1 below. Always show your answer with 2 decimal places. Use normal rounding: if the number in the third decimal place is 5 or more, round the number in the second decimal place up; if the number in the third decimal place is 4 or less, leave the number in the second decimal place as it is. If the number on the calculator does not have 2 decimal places, add final zeroes.

Calculate the sales ratio for the first sale by dividing the assessed value from the prior year (\$26,000) by the sales price from the current year (\$80,000) and multiply by 100 to change the decimal answer to a percent.

$26,000 \div 80,000 = .325 \times 100 = 32.5\%$. Write it with 2 decimal places as 32.50 %.

Calculate the remaining sales ratios for Brown Township # 1. Use normal rounding to round answers to the nearest one-hundredth of a percent. Answers are in the Supplemental section at the back of the manual.

Brown Township # 1 SALES RATIO STUDY

Prior year Assessed Value	Current Year Sale Price	Sales Ratio (%)
\$ 26,000	\$ 80,000	<u>32.50</u>
3,000	7,500	_____
19,200	60,000	_____
4,200	11,400	_____
2,800	6,500	_____
25,000	83,600	_____
17,100	50,000	_____
17,900	59,900	_____
18,400	61,300	_____
3,500	7,600	_____
4,300	9,900	_____
25,800	75,000	_____
16,500	57,400	_____
27,200	92,700	_____
28,500	98,000	_____

BROWN TOWNSHIP #1

Since the median is the middle number when the numbers are listed in order, the numbers must be ranked. Check the list of sales ratios for the smallest ratio. Write the smallest ratio (28.75) first in the ranked column. Place the rest of the ratios in order in the ranked column.

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Ranked (%)
\$ 26,000	\$ 80,000	<u>32.50</u>	<u>28.75</u>
3,000	7,500	<u>40.00</u>	_____
19,200	60,000	<u>32.00</u>	_____
4,200	11,400	<u>36.84</u>	_____
2,800	6,500	<u>43.08</u>	_____
25,000	83,600	<u>29.90</u>	_____
17,100	50,000	<u>34.20</u>	_____
17,900	59,900	<u>29.88</u>	_____
18,400	61,300	<u>30.02</u>	_____
3,500	7,600	<u>46.05</u>	_____
4,300	9,900	<u>43.43</u>	_____
25,800	75,000	<u>34.40</u>	_____
16,500	57,400	<u>28.75</u>	_____
27,200	92,700	<u>29.34</u>	_____
28,500	98,000	<u>29.08</u>	_____

To determine the ratio that is the median ratio, first determine the number of ratios. For Brown Township # 1, there are 15 ratios. Add 1 to this number and divide by 2 to find the middle ratio. Brown Township # 1 has 15 ratios. $15 + 1 = 16$; $16 \div 2 = 8$. The median will be the 8th ratio. Count down the ranked column to the 8th number. This ratio is 32.50%.

This median of 32.50% will be used later to calculate the measures of assessment uniformity for Brown Township # 1 in unit 3.

Unit 2, Exercise 2: BROWN TOWNSHIP # 2

Brown Township #2 has the same data as Brown Township #1 except that 3 sales have been added. Since the sales ratios for all but these three additional sales were previously calculated, the answers are given. Calculate the 3 new sales ratios and place them in the correct order in the ranked column to determine a new median level of assessments. See the next page for calculating the median when there is an even number of ratios (18).

**BROWN TOWNSHIP #2
SALES RATIO STUDY**

Prior year Assessed Value	Current Year Sale Price	Sales Ratio	Ranked
\$ 10,000	86,800	_____	_____
15,600	70,000	_____	_____
20,300	80,000	_____	_____
26,000	80,000	<u>32.50</u>	<u>28.75</u>
3,000	7,500	<u>40.00</u>	<u>29.08</u>
19,200	60,000	<u>32.00</u>	<u>29.34</u>
4,200	11,400	<u>36.84</u>	<u>29.88</u>
2,800	6,500	<u>43.08</u>	<u>29.90</u>
25,000	83,600	<u>29.90</u>	<u>30.02</u>
17,100	50,000	<u>34.20</u>	<u>32.00</u>
17,900	59,900	<u>29.88</u>	<u>32.50</u>
18,400	61,300	<u>30.02</u>	<u>34.20</u>
3,500	7,600	<u>46.05</u>	<u>34.40</u>
4,300	9,900	<u>43.43</u>	<u>36.84</u>
25,800	75,000	<u>34.40</u>	<u>40.00</u>
16,500	57,400	<u>28.75</u>	<u>43.08</u>
27,200	92,700	<u>29.34</u>	<u>43.43</u>
28,500	98,000	<u>29.08</u>	<u>46.05</u>

Median = _____

Since there are 18 ratios for Brown Township #2, the median will be in the 9.5 position ($18 + 1 = 19$; $19 \div 2 = 9.5$). When the answer is not a whole number, there is no number from the list that is exactly in the middle. 9.5 is between 9 and 10. Average the 9th and the 10th ranked ratios to calculate the median. The 9th ratio is 30.02 and the 10th ratio is 32.00.

$$30.02 + 32.00 = 62.02 \div 2 = 31.01 \quad \text{Median} = 31.01$$

When there are an even number of ratios, locate the middle two ratios, after ranking, and average these two ratios.

Since the sales ratios for the three additional sales included in Brown Township #2 were all less than the median for Brown Township #1, the median for Brown Township #2 is a little lower than the median for Brown Township #1.

Unit 2, Exercise 3: Walker Township

Calculate the sales ratios and the median level of assessment for Walker Township.

Sales Ratio Study

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio %	Ranked %
\$ 15,700	\$ 57,900	_____	_____
35,600	98,300	_____	_____
24,800	72,900	_____	_____
16,300	56,100	_____	_____
19,500	68,400	_____	_____
32,100	83,100	_____	_____
14,000	47,500	_____	_____
35,600	93,800	_____	_____

Median _____

Remember to rank the sales ratios before you find the median. The median is the middle number in a group of numbers that have been ranked.

Note: This exercise is for classroom purposes only. There must be 25 useable sales in order to calculate a median level of assessments.

URBAN WEIGHTED MEDIAN RATIO

The Department of Revenue calculates a median level of assessments for every township in each county that has a minimum of 25 useable sales. All of the sales in townships that do not have this minimum number of sales are placed together in an “All Others” category. A median is calculated for this “All Others” category as well. Once the medians have been calculated for each of the townships that have enough sales, and for the “All Others” category, a median is calculated for the county as a whole. This county median is used in the calculation of the state equalization factor for the county.

In order to calculate a county median, it is necessary to know both the total assessed values in the county and the total market value of property in the county.

Total assessed values for each of the townships are reported to the Department of Revenue on the Tentative and Final abstracts sent to the Department from the counties. A method for estimating the total market value (Estimate of Full Value) is necessary. The total market value for a township may be estimated by dividing the total assessed value for the township by the median level of assessments (written as a decimal number). To convert a number from a percent to a decimal, divide the percent by 100. 32.50% = .3250. To find the median for the county, find the total assessed value for the county and divide by the total estimate of full value for the county. Multiply by 100 to change the number to a percent.

$$\text{Estimate of Full Value} = \frac{\text{Assessed Value}}{\text{Median}}$$

$$\text{Estimate of Full Value} = \frac{\text{Assessed Value}}{\text{Median}}$$

**EXAMPLE OF URBAN WEIGHTED METHOD USED
IN DETERMINING THE MEDIAN LEVEL OF ASSESSMENTS
FOR A COUNTY**

	Assessed Value (000's)	÷	Median Ratio (%)	=	Estimated Full Value (000's)
Township 1	3,648	÷	32.50	=	11,225
Township 2	10,450		33.10		31,571
Township 3	6,279		31.62		19,858
All other townships	<u>30,560</u>		<u>32.20</u>		<u>94,907</u>
Total	50,937				157,561
Urban weighted ratio: $\frac{50,937}{157,561} = 32.33\%$ (County's median level of assessments)					

Unit 2: The Sales Ratio Study

Summary

The Sales Ratio Study provides the Median Level of Assessments for that jurisdiction for the year of the study. The year of the sales ratio study is the year from which the sales occurred.

The median sales ratio is used:

1. In the computation of equalization factors.
2. In the review and appeal of assessments.
3. As a diagnostic tool to evaluate local assessment practices.
4. To determine eligibility for the assessor bonus award.
5. To determine eligibility for the reimbursement to the county of a portion of the salary of the Supervisor of Assessments.

Sales that do not meet the market value – arm's length transaction criteria are excluded from the sales ratio study.

Unit 2: The Sales Ratio Study

Review

1. If a house assessed at \$74,250 recently sold for \$198,000, the sales ratio is _____ : the house was (over, statutorily, or under) assessed.
2. The sales ratio study provides the _____.
3. If there are 33 ratios, the median would be the _____ ratio.
4. If there are 50 ratios, the median would be the average of the _____ and the _____ ratios.
5. The 2014 study would use sales from _____ and assessed values for these same properties from _____.

Unit 3

Assessment Uniformity Indicators

This unit covers the four measures of assessment uniformity – the Coefficient of Dispersion (COD), the Median Absolute Deviation (MAD), the Price-Related Differential (PRD), and the Coefficient of Concentration (COC)– with a particular emphasis on the Coefficient of Dispersion as the most commonly used measure of assessment uniformity. The coefficient of variation is mentioned as a measure of uniformity that may be used under certain conditions.

The purpose of this unit is to provide a basic understanding of the measures of uniformity, each of which considers uniformity from a different perspective. Taking all of these measures into consideration together yields a more complete picture of uniformity than would be possible with one measure alone.

LEARNING OBJECTIVES:

After completing the assigned readings, you should be able to:

- determine which measure of uniformity to use
- utilize the median in calculating the measures of uniformity
- calculate the COD, the MAD, the COC, and the PRD
- interpret the degree of assessment uniformity as indicated by the measures of uniformity

TERMS AND CONCEPTS:

- Coefficient of Concentration (COC)
- Coefficient of Dispersion (COD)
- concentration
- differential
- Mean Assessment Ratio (MAR)
- Median Absolute Deviation (MAD)
- Price-Related Differential (PRD)
- Sales-Based Average Ratio (SBAR)

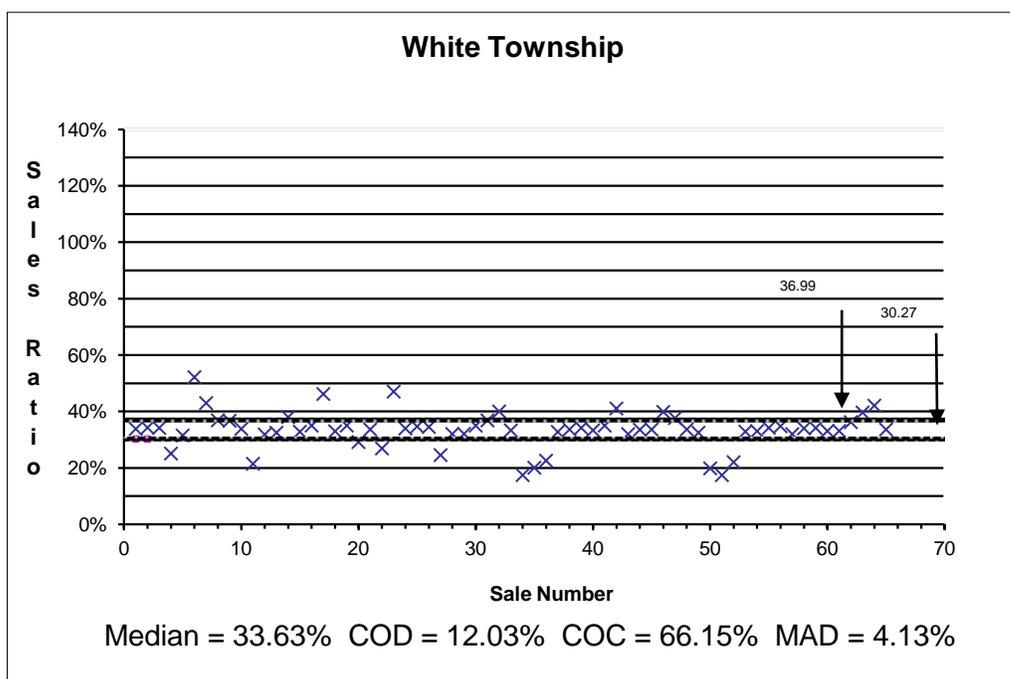
ASSESSMENT UNIFORMITY INDICATORS

Coefficient of Dispersion (COD)

The most commonly used statistical measure of uniformity is the **Coefficient of Dispersion (COD)**. The COD provides a measure of the variation of individual assessment ratios around the median level of assessment. It can be considered as the average error expressed as a percentage.

The word “dispersion” refers to scattering. The word “coefficient” refers to the number that describes the degree of scattering. In the chart of White Township in example 1 below, the sales ratios are grouped closely about the median of 33.63%. If individual ratios are found to be grouped closely around the median, the COD will be low (12.03% in Example 1) and assessments are relatively uniform.

EXAMPLE 1

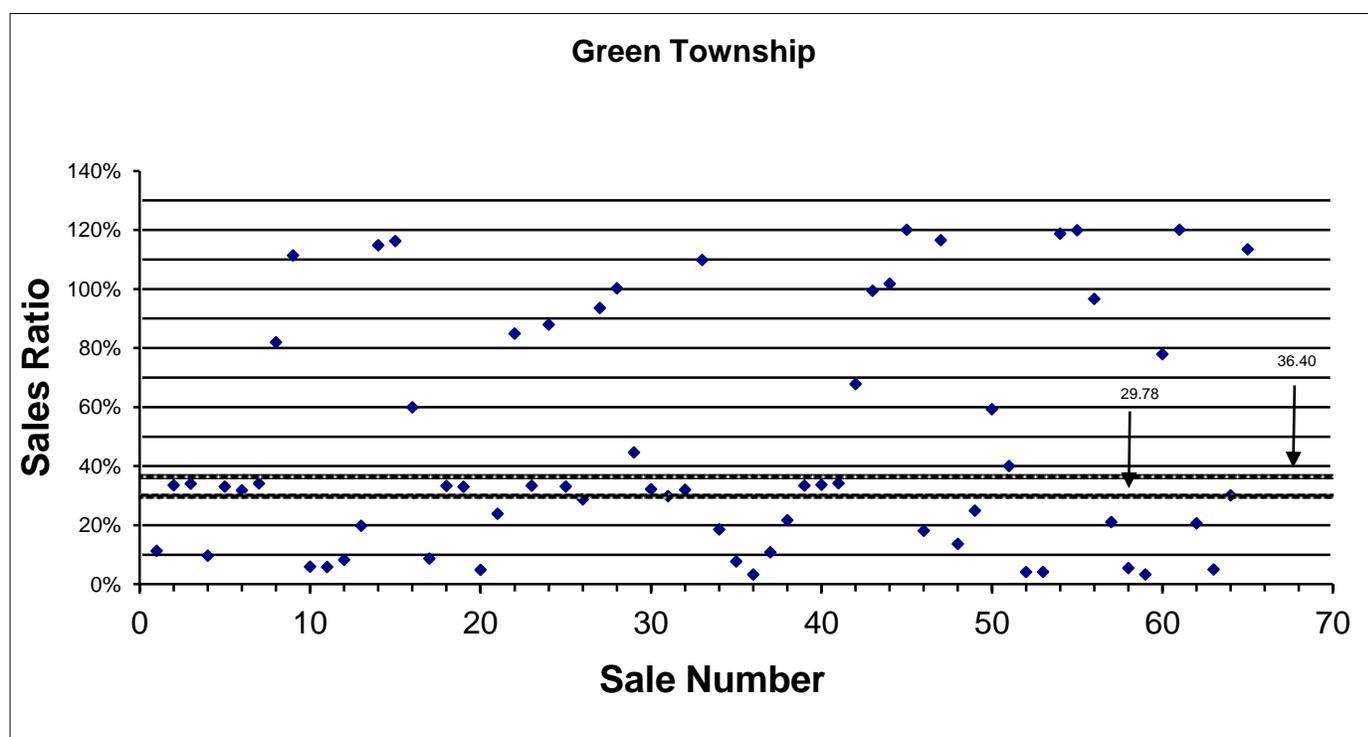


Higher CODs indicate that individual ratios vary widely from the median, and that properties are not uniformly assessed. This also indicates that the property tax burden is not fairly distributed among taxpayers in that particular region or jurisdiction. See Example 2 on the next page for an example of a township with a high COD which indicates that assessment of properties are not uniform.

EXAMPLE 2

In the table below are the sales ratios for Green Township. These ratios are graphed below. The median is 33.09% and the COD is 92.80%.

1	11.27	11	5.81	21	23.86	30	32.17	39	33.38	48	13.64	57	21.04
2	33.51	12	8.22	22	84.90	31	29.83	40	33.67	49	24.89	58	5.44
3	34.02	13	19.76	23	33.36	32	31.98	41	34.18	50	59.27	59	3.29
4	9.63	14	114.83	24	87.94	33	109.84	42	67.82	51	40.02	60	77.92
5	33.04	15	116.27	25	33.09	34	18.52	43	99.40	52	4.11	61	120.09
6	31.79	16	59.92	26	28.71	35	7.69	44	101.78	53	4.13	62	20.60
7	34.10	17	8.66	27	93.57	36	3.25	45	120.06	54	118.76	63	4.97
8	81.96	18	33.29	28	100.24	37	10.79	46	18.09	55	119.91	64	30.08
9	111.38	19	33.00	29	44.63	38	21.65	47	116.55	56	96.65	65	113.46
10	5.90	20	4.83										



Notice that these ratios are scattered widely. The median is located between the two gray lines. Ratios vary from 3.25% to 120.09%. The COD for this data is 92.80%. Remember that a high COD indicates non-uniformity of assessments. A low COD would indicate better assessment uniformity.

Assume that a township has a median level of assessment at 30% and a COD of 40%. The assessment levels of individual properties on the average can be expected to deviate from the median level by plus or minus 40% of the median (.40 x .30 = .12 = 12%). In other words, the assessed value is just as likely to be at 18% (30% – 12%) as at 42% (30% + 12%) as at the county-wide average of 30%. Now assume that 2 similar properties had a market value of \$90,000, but one is assessed at 42% and the other at 18%. The tax rate is 6%, but the tax burden is not shared equitably.

$$\begin{aligned} \$90,000 \times 18\% &= \text{AV } \$16,200 \times 6\% = \$ 972 \\ \$90,000 \times 42\% &= \text{AV } \$37,800 \times 6\% = \$2268 \end{aligned}$$

FORMULA FOR ARRIVING AT THE COD

Step 1: Determine the **Sales Ratio** for each useable sale

$$\text{SR} = \frac{\text{Prior Year AV}}{\text{Current Year SP}} \times 100\%$$

Step 2: Rank the Ratios; then determine the Median level of assessments.

Step 3: Calculate the Absolute Deviation for each ratio.

$$\text{Absolute Deviation} = \text{Sales Ratio} - \text{Median} \quad (\text{ignore the minus sign})$$

A deviation is a difference. Subtract the median from the sales ratio. Ignoring the minus sign makes the deviation an absolute deviation. The absolute value of a number is the positive counterpart of the number. The absolute value of 7 is 7. The absolute value of –12 is 12.

Step 4: Calculate the **Average Deviation**.

$$\text{Average Deviation} = \frac{\text{Sum of Deviations}}{\text{Number of Sales}}$$

Step 5: Calculate the **Coefficient Of Dispersion** by dividing the average deviation by the median. Multiply by 100 to change the answer to a percent.

$$\text{COD} = \frac{\text{Average Deviation}}{\text{Median}} \times 100\%$$

The first two steps are used to calculate the median. Since the medians for Brown Township #1 and # 2 and Walker Township have been calculated previously, the sales ratios and medians are carried over from the exercises in Unit 2.

Unit 3, Exercise 1: Calculate the Coefficient Of Dispersion

Brown Township #1.

Steps 1 & 2 are used to calculate the median.

The median (32.50%) was calculated in Unit 2 on page 40.

Step 3: Calculate the Absolute Deviation for each ratio:

Deviation = Sales Ratio – Median (ignore any minus sign in the answer).

The next step is to calculate the deviations, or differences, between the sales ratio and the median. Subtract the median from each sales ratio. For the first ratio, the deviation is the sales ratio (32.50) – median (32.50) = 0.00. For the second ratio, the deviation is 40.00 – 32.50 = 7.50. Notice that the calculator reads 7.5. Add final zeros so that the answer has 2 decimal places. If the answer is negative, ignore the minus sign. Ignoring the minus sign makes the answer an absolute deviation. The third deviation is 32.00 – 32.50 = –.5 but write the answer as .50 without the minus sign. Always write the deviation with 2 decimal places. If the calculator shows the answer as a whole number or with one decimal place, fill in with final zeros to maintain 2 decimal places.

$$32.50 - 32.50 = 0.00$$

$$40.00 - 32.50 = 7.50$$

$$32.00 - 32.50 = -.50 \text{ The absolute value of } -.50 \text{ is } .50 . \text{ Write } .50$$

Remember that the median for Brown Township #1 is always 32.50%. Complete the table on the next page.

Answers are in the Answer Key section at the back of this manual.

**BROWN TOWNSHIP # 1
COEFFICIENT OF DISPERSION**

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Median (%)	Absolute Deviation
\$ 26,000	\$ 80,000	<u>32.50</u>	<u>32.50</u>	<u>0.00</u>
3,000	7,500	<u>40.00</u>	<u>32.50</u>	<u>7.50</u>
19,200	60,000	<u>32.00</u>	<u>32.50</u>	<u>.50</u>
4,200	11,400	<u>36.84</u>	<u>32.50</u>	
2,800	6,500	<u>43.08</u>	<u>32.50</u>	
25,000	83,600	<u>29.90</u>	<u>32.50</u>	
17,100	50,000	<u>34.20</u>	<u>32.50</u>	
17,900	59,900	<u>29.88</u>	<u>32.50</u>	
18,400	61,300	<u>30.02</u>	<u>32.50</u>	
3,500	7,600	<u>46.05</u>	<u>32.50</u>	
4,300	9,900	<u>43.43</u>	<u>32.50</u>	
25,800	75,000	<u>34.40</u>	<u>32.50</u>	
16,500	57,400	<u>28.75</u>	<u>32.50</u>	
27,200	92,700	<u>29.34</u>	<u>32.50</u>	
28,500	98,000	<u>29.08</u>	<u>32.50</u>	

Sum of Deviations: _____

4. Average Deviation = $\frac{\text{Sum of Deviations}}{\text{Number of Sales}} = \frac{\quad}{15} = \quad\% \text{ (Round to 2 decimal places)}$

5. Now divide the average deviation (4.60%) by the median (32.50%). Multiply the answer by 100 to change it to a percent.

COD = $\frac{\text{Average Deviation}}{\text{Median}} \times 100\% = \frac{4.60}{32.50} \times 100 (\%) = 14.15 \%$

Since Brown Township # 2 had a different median than Brown Township # 1, the deviations will also be different. Subtract the median calculated in Unit 2 from each of the ratios for Brown Township # 2.

Unit 3, Exercise 2: Find the COD for Brown Township #2.

COEFFICIENT OF DISPERSION

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Median (%)	Absolute Deviation
\$ 10,000	\$ 86,800	<u>11.52</u>	_____	_____
15,600	70,000	<u>22.29</u>	_____	_____
20,300	80,000	<u>25.38</u>	_____	_____
26,000	80,000	<u>32.50</u>	_____	_____
3,000	7,500	<u>40.00</u>	_____	_____
19,200	60,000	<u>32.00</u>	_____	_____
4,200	11,400	<u>36.84</u>	_____	_____
2,800	6,500	<u>43.08</u>	_____	_____
25,000	83,600	<u>29.90</u>	_____	_____
17,100	50,000	<u>34.20</u>	_____	_____
17,900	59,900	<u>29.88</u>	_____	_____
18,400	61,300	<u>30.02</u>	_____	_____
3,500	7,600	<u>46.05</u>	_____	_____
4,300	9,900	<u>43.43</u>	_____	_____
25,800	75,000	<u>34.40</u>	_____	_____
16,500	57,400	<u>28.75</u>	_____	_____
27,200	92,700	<u>29.34</u>	_____	_____
28,500	98,000	<u>29.08</u>	_____	_____
Sum of Deviations:				_____

1. Median : 31.01%
2. Total Deviations: _____
3. Average Deviation = _____
4. COD = $\frac{\text{Average Deviation}}{\text{Median}} \times 100\% = \underline{\hspace{2cm}}$

Unit 3, Exercise 3: Find the COD for Walker township

WALKER TOWNSHIP

Prior Year AV	Current Year Sale Price	Sales Ratio %
\$ 15,700	\$ 57,900	<u>27.12</u>
35,600	98,300	<u>36.22</u>
24,800	72,900	<u>34.02</u>
16,300	56,100	<u>29.06</u>
19,500	68,400	<u>28.51</u>
32,100	83,100	<u>38.63</u>
14,000	47,500	<u>29.47</u>
35,600	93,800	<u>37.95</u>

COD = _____

ASSESSMENT UNIFORMITY INDICATORS

Median Absolute Deviation (MAD)

Another measure of assessment uniformity is the **Median Absolute Deviation (MAD)**. Like the COD, the MAD also provides a measure of the variation of individual assessment ratios around the median level of assessment. The MAD uses the **median** of the deviations, rather than the mean of the deviations (as in the COD), so it is not sensitive to very high or very low values. This characteristic makes it of particular value to smaller jurisdictions.

A small MAD would indicate that at least half of the assessment ratios are clustered near the median. Since the MAD is an absolute deviation, the MAD will never be below 0. A large MAD would imply that there are a significant number of assessment ratios that differ widely from the median. A typical MAD would be around 12 – 18% with 15% being most usual.

FORMULA FOR ARRIVING AT THE MAD

Step 1: Determine the Sales Ratio for each useable sale $SR = \frac{\text{Prior Year AV}}{\text{Current Year SP}} \times 100\%$

Step 2: Determine the median level of assessments

Step 3: Calculate Absolute Deviation for each ratio Sales Ratio – Median (ignore the minus sign)

Step 4: Determine the **median of the deviations**

Step 5: **Median Absolute Deviation** = $\frac{\text{Median Deviation}}{\text{Median of Sales Ratios}} \times 100\%$

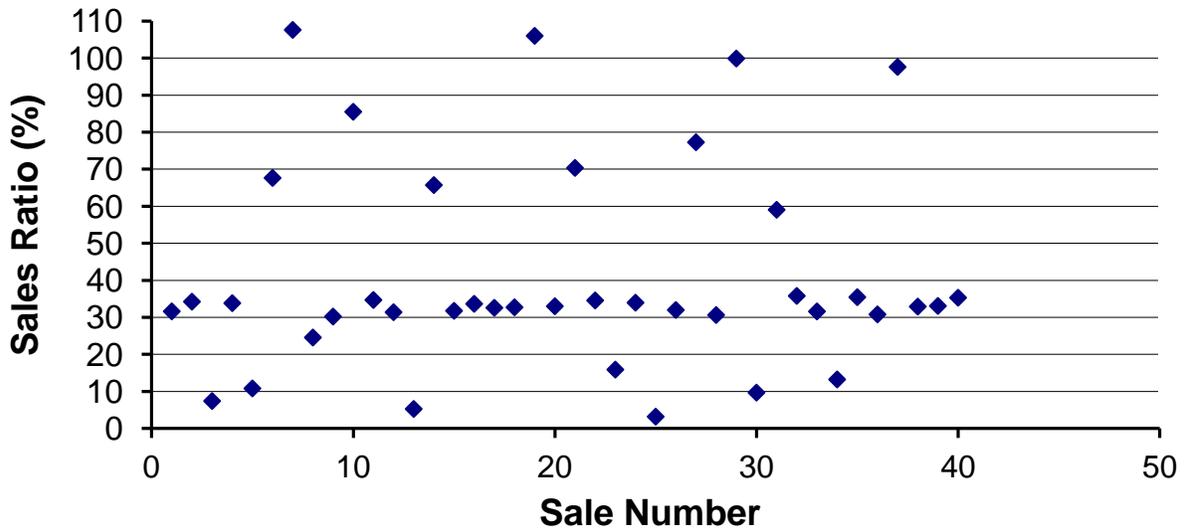
When calculating the COD, the mean (or average) of the deviations is computed. When calculating the MAD, the process is exactly the same except that the median of the deviations is computed instead of the mean of the deviations.

Since the deviations were calculated for computing the COD, the deviations are already shown on the table for calculations for the MAD. Remember that the numbers (in this case, the deviations) must be ranked before a median

may be calculated. The table for the MAD has an additional column for ranking the deviations.

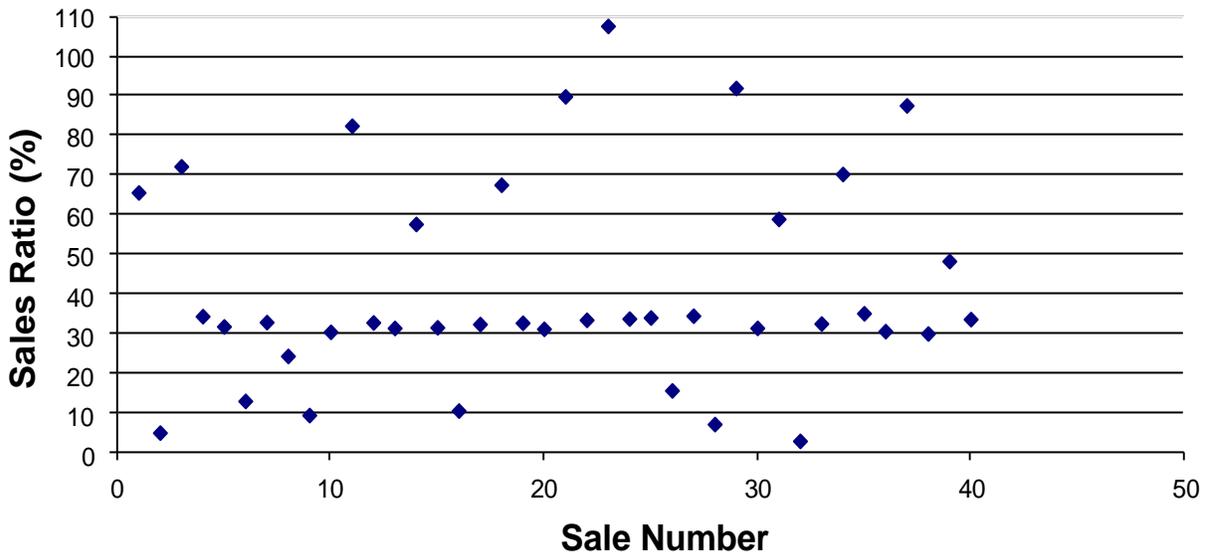
The graphs for Roosevelt and Kennedy counties on the following page may seem similar. It is important to actually calculate the numbers to see what is happening with the sales ratios and, therefore, assessment uniformity. The COD's are relatively close; however, the MAD's are quite different. The MAD's indicate that in Kennedy county half of the ratios are closer to the median than in Roosevelt county.

ROOSEVELT COUNTY



COD 63% MAD 44%

KENNEDY COUNTY



COD 53% MAD 17%

Unit 3, Exercise 4 : Calculate the MAD for Brown township #1.

The deviations were already calculated for the COD.
For the MAD, rank the deviations and find the median of the deviations.

MEDIAN ABSOLUTE DEVIATION

M A D

	Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Median (%)	Deviation	Ranked Deviation
\$	26,000	\$ 80,000	<u>32.50</u>	<u>32.50</u>	<u>0.00</u>	_____
	3,000	7,500	<u>40.00</u>	<u>32.50</u>	<u>7.50</u>	_____
	19,200	60,000	<u>32.00</u>	<u>32.50</u>	<u>0.50</u>	_____
	4,200	11,400	<u>36.84</u>	<u>32.50</u>	<u>4.34</u>	_____
	2,800	6,500	<u>43.08</u>	<u>32.50</u>	<u>10.58</u>	_____
	25,000	83,600	<u>29.90</u>	<u>32.50</u>	<u>2.60</u>	_____
	17,100	50,000	<u>34.20</u>	<u>32.50</u>	<u>1.70</u>	_____
	17,900	59,900	<u>29.88</u>	<u>32.50</u>	<u>2.62</u>	_____
	18,400	61,300	<u>30.02</u>	<u>32.50</u>	<u>2.48</u>	_____
	3,500	7,600	<u>46.05</u>	<u>32.50</u>	<u>13.55</u>	_____
	4,300	9,900	<u>43.43</u>	<u>32.50</u>	<u>10.93</u>	_____
	25,800	75,000	<u>34.40</u>	<u>32.50</u>	<u>1.90</u>	_____
	16,500	57,400	<u>28.75</u>	<u>32.50</u>	<u>3.75</u>	_____
	27,200	92,700	<u>29.34</u>	<u>32.50</u>	<u>3.16</u>	_____
	28,500	98,000	<u>29.08</u>	<u>32.50</u>	<u>3.42</u>	_____

4. Determine the Median of the Deviations Median Deviation = _____

5. Divide the median deviation by the median x 100% MAD = _____

Median Deviation = 3.16 (Round to 2 decimal places.)

$$\text{MAD} = \frac{\text{Median Deviation}}{\text{Median Sales Ratio}} \times 100 (\%) = \frac{3.16}{32.50} \times 100 (\%) = 9.72 \%$$

Unit 3, Exercise 5: Calculate the MAD for Brown Township #2.

**BROWN TOWNSHIP # 2
MEDIAN ABSOLUTE DEVIATION
M A D**

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Median (%)	Deviation	Ranked Deviation
\$ 10,000	\$ 86,800	<u>11.52</u>	<u>31.01</u>	<u>19.49</u>	_____
15,600	70,000	<u>22.29</u>	<u>31.01</u>	<u>8.72</u>	_____
20,300	80,000	<u>25.38</u>	<u>31.01</u>	<u>5.63</u>	_____
26,000	80,000	<u>32.50</u>	<u>31.01</u>	<u>1.49</u>	_____
3,000	7,500	<u>40.00</u>	<u>31.01</u>	<u>8.99</u>	_____
19,200	60,000	<u>32.00</u>	<u>31.01</u>	<u>0.99</u>	_____
4,200	11,400	<u>36.84</u>	<u>31.01</u>	<u>5.83</u>	_____
2,800	6,500	<u>43.08</u>	<u>31.01</u>	<u>12.07</u>	_____
25,000	83,600	<u>29.90</u>	<u>31.01</u>	<u>1.11</u>	_____
17,100	50,000	<u>34.20</u>	<u>31.01</u>	<u>3.19</u>	_____
17,900	59,900	<u>29.88</u>	<u>31.01</u>	<u>1.13</u>	_____
18,400	61,300	<u>30.02</u>	<u>31.01</u>	<u>0.99</u>	_____
3,500	7,600	<u>46.05</u>	<u>31.01</u>	<u>15.04</u>	_____
4,300	9,900	<u>43.43</u>	<u>31.01</u>	<u>12.42</u>	_____
25,800	75,000	<u>34.40</u>	<u>31.01</u>	<u>3.39</u>	_____
16,500	57,400	<u>28.75</u>	<u>31.01</u>	<u>2.26</u>	_____
27,200	92,700	<u>29.34</u>	<u>31.01</u>	<u>1.67</u>	_____
28,500	98,000	<u>29.08</u>	<u>31.01</u>	<u>1.93</u>	_____

1. Rank the Absolute Deviations.
2. Determine the Median of the Absolute Deviations _____
3. Divide the median deviation by the median sales ratio and multiply by 100%

MAD = _____

Unit 3, Exercise 6: Calculate the MAD for Walker Township.

**WALKER TOWNSHIP
MEDIAN ABSOLUTE DEVIATION
M A D**

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Deviations (%)
\$ 15,700	\$ 57,900	<u>27.12</u>	<u>4.63</u>
35,600	98,300	<u>36.22</u>	<u>4.47</u>
24,800	72,900	<u>34.02</u>	<u>2.27</u>
16,300	56,100	<u>29.06</u>	<u>2.69</u>
19,500	68,400	<u>28.51</u>	<u>3.24</u>
32,100	83,100	<u>38.63</u>	<u>6.88</u>
14,000	47,500	<u>29.47</u>	<u>2.28</u>
35,600	93,800	<u>37.95</u>	<u>6.20</u>

Median = 31.75%

MAD = _____

NOTE: This exercise has been shortened for classroom purposes. A minimum of 25 useable sales would be necessary for Brown Township to have its own sales ratio study.

ASSESSMENT UNIFORMITY INDICATORS

COEFFICIENT OF CONCENTRATION (COC)

The **Coefficient of Concentration (COC)** measures assessment uniformity in a different way. The COC measures the percent of the ratios within a specific percentage range of the median. In many instances, a significant COC will measure the percent of ratios within 10% of the median ratio. The Department of Revenue uses a 10% range. If ratios are grouped closely (within 10%) of the median, the concentration of sales ratios will be large. A high COC indicates greater assessment uniformity than a low COC.

The COD calculates how far the average deviation is from the median. The MAD calculates how far half of the ratios are from the median. With the COC the distance from the median is pre-determined at 10%. The COC yields the proportion of the ratios that fall within this range.

The COC will be a number between 0% and 100%. A COC of 100% would indicate that all of the sales ratios are within 10% of the median.

STEPS FOR CALCULATING THE COC:

- Step 1. Find the median sales ratio.

- Step 2. Find the number which is 10% below the median by multiplying the median ratio by .9.
(100% - 10% = 90% = .90 = .9)

- Step 3. Find the number which is 10% above the median by multiplying the median ratio by 1.1.
(100% + 10% = 110% = 1.10 = 1.1)

- Step 4. Count the number of ratios between the high and low values computed in steps 2 and 3.

- Step 5. Divide the number of ratios from step 4 by the total number of sales ratios and multiply by 100%.

Unit 3, Exercise 7: Calculate the COC for Brown Township # 1.

See the following page for a filled-in copy of the calculations of the median from Unit 2. This page also has the sales ratios in ranked order.

Step 1: Find the median sales ratio. _____

Step 2: Find the number which is 10% below the median by multiplying the median ratio by .9. _____

Step 3: Find the number which is 10% above the median by multiplying the median ratio by 1.1. _____

Step 4: Count the number of ratios between the high and low values computed in steps 2 and 3. _____

On the following page, look at the ranked sales ratio column. Note that the number from step 2 (29.25) is between 29.08 and 29.34. Draw a line between 29.08 and 29.34. Now find the two numbers that 35.75 falls between. 35.75 is between 34.40 and 36.84. Draw a line between these two numbers. Use the ranked column of sales ratios to determine the number of ratios that lie between the low and high boundary values.

If the ranked column is not available, rank the sales ratios and follow the procedure above. Another method is to consider each ratio in the unranked column to determine whether the ratio falls between the low and the high boundary numbers or not. Count the ratios that fall in the necessary range.

Step 5: Divide the number of ratios from step 4 by the total number of sales ratios and multiply by 100 (%). _____

Unlike the COD, the COC has the advantage of not being affected by very high or very low ratios. The COC indicates only how concentrated the ratios are near the median ratio, but says nothing about the ratios outside the percentage range. Unlike the COD, a **higher COC** is an indicator of **better** assessment equity.

Method 1: Using the ranked column of sales ratios to determine the number of ratios that fall within 10% of the median.

**BROWN TOWNSHIP # 1
COEFFICIENT OF CONCENTRATION (COC)**

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Ranked (%)	
\$ 26,000	\$ 80,000	32.50	28.75	
3,000	7,500	40.00	29.08	29.25
19,200	60,000	32.00	29.34	
4,200	11,400	36.84	29.88	
2,800	6,500	43.08	29.90	
25,000	83,600	29.90	30.02	
17,100	50,000	34.20	32.00	
17,900	59,900	29.88	32.50	
18,400	61,300	30.02	34.20	
3,500	7,600	46.05	34.40	35.75
4,300	9,900	43.43	36.84	
25,800	75,000	34.40	40.00	
16,500	57,400	28.75	43.08	
27,200	92,700	29.34	43.43	
28,500	98,000	29.08	46.05	
Median	<u>32.50%</u>			

Method 2: Determining whether an individual ratio falls within the range.
 Count the number of “yes” responses.

**BROWN TOWNSHIP # 1
 COEFFICIENT OF CONCENTRATION (COC)**

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Between 29.25 and 35.75
\$ 26,000	\$ 80,000	32.50	Yes
3,000	7,500	40.00	No
19,200	60,000	32.00	_____
4,200	11,400	36.84	_____
2,800	6,500	43.08	_____
25,000	83,600	29.90	_____
17,100	50,000	34.20	_____
17,900	59,900	29.88	_____
18,400	61,300	30.02	_____
3,500	7,600	46.05	_____
4,300	9,900	43.43	_____
25,800	75,000	34.40	_____
16,500	57,400	28.75	_____
27,200	92,700	29.34	_____
28,500	98,000	29.08	_____

These are two methods that may be used to determine the number of ratios that fall within 10% of the median. It is usually helpful to decide which method is best for the individual to use and use that one method consistently.

Unit 3, Exercise 8: Calculate the COC for Brown Township #2.

COEFFICIENT OF CONCENTRATION (COC)

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio %	Ranked
\$ 10,000	86,800	11.52	11.52
15,600	70,000	22.29	22.29
20,300	80,000	25.38	25.38
26,000	80,000	32.50	28.75
3,000	7,500	40.00	29.08
19,200	60,000	32.00	29.34
4,200	11,400	36.84	29.88
2,800	6,500	43.08	29.90
25,000	83,600	29.90	30.02
17,100	50,000	34.20	32.00
17,900	59,900	29.88	32.50
18,400	61,300	30.02	34.20
3,500	7,600	46.05	34.40
4,300	9,900	43.43	36.84
25,800	75,000	34.40	40.00
16,500	57,400	28.75	43.08
27,200	92,700	29.34	43.43
28,500	98,000	29.08	46.05

1. Determine the Median – See Brown Township #2 from Unit 2 _____
2. Low boundary sales ratio (0.9 x median): _____
3. High boundary sales ratio (1.1 x median): _____
4. Number of sales between the low and the high ratios: _____
 Check the ranked column or determine individually
5. Coefficient of Concentration = $\frac{\text{Count from \#4}}{\text{Number of sales}} \times 100\% =$ _____

Note that there were the same number of ratios within 10% of the median in Brown township #1 and # 2 but the COC in the prior exercise was smaller because there were more ratios in Brown township # 2.

Unit 3, Exercise 9 : Calculate the COC for Walker township

COEFFICIENT OF CONCENTRATION

COC

Assessed Value	Sale Price	Sales Ratio (%)
\$ 15,700	\$ 57,900	27.12
35,600	98,300	36.22
24,800	72,900	34.02
16,300	56,100	29.06
19,500	68,400	28.51
32,100	83,100	38.63
14,000	47,500	29.47
35,600	93,800	37.95

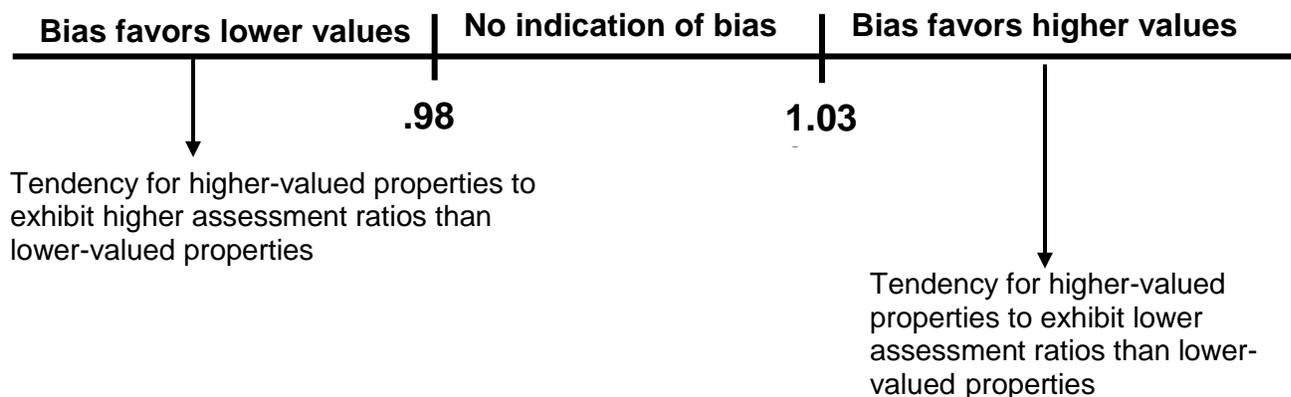
Coefficient of Concentration = _____

ASSESSMENT UNIFORMITY INDICATORS PRICE - RELATED DIFFERENTIAL (PRD)

The **Price-Related Differential** is another measure of assessment uniformity. The PRD measures a pattern of inequity in assessments that has a correlation with the value of the property (a measurement of assessment bias in relation to value). **The PRD has an inherent tendency towards higher numbers. Therefore, always consider the PRD in conjunction with other measures of uniformity.** Differentials greater than 1.03 or less than .98 are indicative of inequity in assessments.

A differential less than .98 indicates a tendency for higher-valued properties to exhibit higher assessment ratios than lower-valued properties (over-assessing the higher-valued property). This indicates a possible bias in favor of lower-valued properties.

A differential greater than 1.03 indicates a tendency for higher-valued properties to exhibit lower assessment ratios than lower-valued properties (under-assessing the higher-valued property). That is, there is an indication of a possible bias in favor of higher-valued properties.



The sales ratio study is used to develop this differential. The emphasis is placed on total values.

Steps for the Price-Related Differential

- Step 1. Determine the Sum of the Assessed Values.
Step 2. Determine the Sum of the Sales Prices.
Step 3. Determine the **Sales-Based Average Ratio** by dividing the sum of the Assessed Values by the sum of the Sales Prices.

$$\text{Sales-Based Average Ratio} = \frac{\text{Sum of AV's}}{\text{Sum of SP's}} \times 100\%$$

- Step 4. Determine the Sum of the Sale Ratios.
Step 5. Determine the **Mean Assessment Ratio** by dividing the sum of the Sales Ratios by the number of Sales Ratios.

$$\text{Mean Assessment Ratio} = \frac{\text{Sum of the Sales Ratios}}{\text{Number of Ratios}}$$

- Step 6. Determine the **Price-Related Differential** by dividing the Mean Assessment Ratio by the Sales-Based Average Ratio.

Remembering that “m” comes before “s” in the alphabet may help to remember that the **Mean Assessment Ratio** (MAR) goes in the numerator of the fraction and the **Sales-Based Average Ratio** (SBAR) goes in the denominator. So, divide MAR by SBAR. Do not change to a percent. Calculate the PRD to 2 decimal places.

$$\text{Price-Related Differential} = \frac{\text{Mean Assessment Ratio}}{\text{Sales-Based Average Ratio}}$$

Unit 3, Exercise 10: Calculate the PRD for Brown Township # 1.

Steps 1, 2, & 4: Add up assessed values, sale prices, and sales ratios.

PRICE-RELATED DIFFERENTIAL (PRD)

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio	
\$ 26,000	\$ 80,000	32.50	
3,000	7,500	40.00	
19,200	60,000	32.00	
4,200	11,400	36.84	
2,800	6,500	43.08	
25,000	83,600	29.90	
17,100	50,000	34.20	
17,900	59,900	29.88	
18,400	61,300	30.02	
3,500	7,600	46.05	
4,300	9,900	43.43	
25,800	75,000	34.40	
16,500	57,400	28.75	
27,200	92,700	29.34	
28,500	SBAR 98,000	29.08	MAR
Total: _____		÷	_____ ÷ 15

Step 3: **Sales-Based Average Ratio** = $\frac{\text{Sum of AV}}{\text{Sum of SP}} \times 100\% = \underline{\hspace{2cm}}$

Step 4: Determine the Sum of the Sale Ratios.

Step 5: **Mean Assessment Ratio** = $\frac{\text{Sum of Sales Ratio}}{\text{Number of Sales}} = \underline{\hspace{2cm}}$

Step 6: **Price -Related Differential** = $\frac{\text{Mean Assessment Ratio}}{\text{Sales Based Average Ratio}} = \underline{\hspace{2cm}}$

Does this indicate a possible bias based on the value of the property? _____

Unit 3, Exercise 12: Calculate the PRD for Walker township.

PRICE RELATED DIFFERENTIAL (PRD)

Prior Year Assessed Value	Current Year Sale Price	Current Sales Ratio
\$15,700	\$57,900	27.12
35,600	98,300	36.22
24,800	72,900	34.02
16,300	56,100	29.06
19,500	68,400	28.51
32,100	83,100	38.63
14,000	47,500	29.47
35,600	93,800	37.95
_____	_____	_____

Sales-Based Average Ratio _____

Mean Assessment Ratio _____

Price-Related Differential _____

Does this indicate a possible bias based on the value of the property? _____

ASSESSMENT UNIFORMITY INDICATORS

Coefficient of Variation

C O V

The **Coefficient Of Variation (COV)** is a measure of uniformity based on the **mean** rather than the median. The mean may be used in place of the median as a measure of central tendency when the distribution is a normal distribution. If the distribution cannot be determined to be normal, the COV may **not** be used as a measure of uniformity. The Department of Revenue determines whether the distribution for a district is normal using certain statistical tests. These tests seldom indicate that the distribution of sales ratios is normally distributed. Therefore, the COV is seldom an appropriate measure of uniformity.

Since the COV is generally not an appropriate measure of assessment uniformity, the student will not be responsible for any knowledge regarding the COV.

Unit 3, Exercise 13: Complete the sales ratio study for Lawrence township.

**LAWRENCE TOWNSHIP
SALES RATIO STUDY**

Using the chart below, find:

- Median Level of Assessment _____
- Coefficient of Dispersion (COD) _____
- Median Absolute Deviation (MAD) _____
- Coefficient Of Concentration (COC) _____
- Price-Related Differential (PRD) _____

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Ranked	Deviation	Ranked
\$ 22,097	\$ 124,000	_____	_____	_____	_____
36,098	117,500	_____	_____	_____	_____
28,064	62,900	_____	_____	_____	_____
10,475	24,600	_____	_____	_____	_____
18,931	72,400	_____	_____	_____	_____
22,258	58,200	_____	_____	_____	_____
5,210	12,800	_____	_____	_____	_____
31,845	113,000	_____	_____	_____	_____
27,407	82,900	_____	_____	_____	_____
7,319	18,700	_____	_____	_____	_____
20,744	69,500	_____	_____	_____	_____
31,548	92,300	_____	_____	_____	_____

An additional exercise, Lawrence township # 2, which has more sales, is included in the supplemental section.

Unit 3

Summary

There are four measures of assessment uniformity: the Coefficient of Dispersion (COD), the Median Absolute Deviation (MAD), the Coefficient of Concentration (COC), and the Price-Related Differential (PRD). The COD is the most commonly used measure of assessment uniformity.

For measures of uniformity, the township is most uniform if:

1. the COD is low
2. the MAD is low
3. the COC is high
4. the PRD is in the middle (between .98 and 1.03)

A Price Related Differential less than .98 indicates that there is a tendency for higher-valued properties to exhibit higher assessment ratios than lower-valued properties.

A PRD greater than 1.03 indicates that there is a tendency for higher-valued properties to exhibit lower assessment ratios than lower-valued properties.

The COD measures how far the average deviation is from the median.
The MAD measures how far the median deviation is from the median.
The COC measures the proportion of ratios that are within 10% of the median.
The PRD measures assessment bias in relation to the value of the property.

Unit 3

Review

- T F 1. Individual sales ratios that are clustered closely around the mean level of assessments would indicate a low COD.
- T F 2. A Price-Related Differential of .96 would indicate a possible bias in favor of higher-priced homes.
- T F 3. A MAD of 30% indicates greater uniformity than a MAD of 50%.
4. The _____ can be found by dividing the mean assessment ratio by the sales-based average ratio.

5. Calculate the median level of assessment, the COD, the MAD, the COC, and the PRD.

Assessed Value	Sales Price	Sales Ratio	Ranked	Median	Deviation	Ranked Deviation
\$4,000	16,000	25.00	21.15			
2,000	7,600	26.32	22.22			
13,000	32,000	40.63	24.82			
8,000	29,500					
5,000	18,800		26.32			
3,500	14,100					
14,700	35,800	41.06	26.60			
2,200	10,400	21.15	26.67			
8,000	30,000	26.67				
2,200	9,900					
19,400	54,000		30.51			
8,700	31,000	28.06	31.09			
8,300	26,700	31.09				
3,600	11,800					
19,500	47,300	41.23	40.31			
9,700	23,200		40.63			
3,100	7,500		41.06			
18,500	45,900	40.31	41.23			
12,000	25,000	48.00				
20,000	52,700	37.95				
4,100	8,000		48.00			
25,200	51,700		48.08			
5,000	10,400	48.08	48.74			
13,300	50,000	26.60				

1. Median Level of Assessment

2. Coefficient of Dispersion (COD)

3. Median Absolute Deviation (MAD)

4. Price Related Differential (PRD)

Mean Assessment Ratio _____

Sales-Based Average Ratio _____

5. Coefficient of Concentration (COC)

Unit 4

Equalization

This unit covers various aspects of equalization including the definition of equalization, the three-year average median levels of assessments, and the effect of equalization. Also included is a brief mention of reassessment factors and their impact on the median levels of assessment used in calculating the equalization factor.

The purpose of this unit is to provide a basic understanding of the equalization process and the correct uses for the equalization factors. The focus is on the procedures involved in the calculation of the equalization factor.

LEARNING OBJECTIVES:

After completing the assigned readings, you should be able to:

- determine whether an objective is being met by the use of an equalization factor
- calculate the three-year average median level of assessments
- calculate the appropriate equalization factor using the three-year average median
- meet the statutory conditions to determine the equalization factor
- apply the equalization factor to individual properties

TERMS AND CONCEPTS:

- Average medians
- Equalized Assessed Value (EAV)
- Equalization
- Reassessment factors
- Township Assessor (TA)

Equalization is the application of a uniform percentage increase or decrease to assessed values of various geographic areas or classes of property to bring assessments, on the average, to a uniform level of market value.

Uniform percent means that an equalization factor is applied uniformly to all properties (except farm land, farm buildings, wind turbines*, coal, and state-assessed properties).

The factor will increase the assessed values if the factor is greater than one or decrease the assessed values if the factor is less than one.

The factor is applied to the assessed valuation for each individual property.

Various geographic areas– An equalization factor may be applied to a geographic area as a township, or neighborhood, or the county at large

Various classes of property – An equalization factor may be applied to a class of property such as residential, or commercial, or industrial properties.

On the average – The equalization factor is found by taking the average of the medians for the three years prior to the year of the equalization factor. For the 2014 equalization factor, the average of the medians from 2011, 2012, and 2013 will be used in the calculation.

Uniform level of market value – The equalization factor will increase or decrease the three-year average of the median levels of assessments to the statutory level of 33.33%.

The equalization factor is applied to the assessed values for the current year. A 2014 equalization factor is applied to 2014 assessments, taxes payable in 2015.

The formula for calculating the equalization factor is:

$$\text{Equalization Factor} = \frac{\text{Desired Level (33.33\%)}}{\text{Prior 3-Year Average Median Level}}$$

* wind turbines with at least 0.5 MW nameplate capacity

Example of the effect of equalization:

In this example, the median level of assessments for:

County A = 33.33%.

County B = 28.00%

County C = 38.00%

Also, there is in each county a property whose fair market value is \$90,000. These three properties are in the same taxing district that overlaps all three counties. The assessor in each county determined an assessed value, for the tax rolls, for the properties by multiplying the fair market value by the county's median level of assessment.

COUNTY A	COUNTY B	COUNTY C
\$90,000	\$90,000	\$90,000
33.33%	28.00%	38.00%

Assessed Values for the properties:

County A: $\$90,000 \times 33.33\% = \$29,997$

County B: $\$90,000 \times 28.00\% = \$25,200$

County C: $\$90,000 \times 38.00\% = \$34,200$

If the tax rate for the taxing district is 3%, the property owners will be paying to the community college:

Property in County A: $\$29,997 \times 3\% = \$ 899.91$

Property in County B: $\$25,200 \times 3\% = \$ 756.00$

Property in County C: $\$34,200 \times 3\% = \1026.00

Although these properties have the same market value and are all located in the same taxing district, the amount of property tax paid to the district varies widely due to the different assessment levels placed on the properties.

Each of the counties decides to apply an equalization factor. This factor is found by dividing 33.33% (the statutory level) by the average of the median levels of assessments for the prior 3 years.

$$\text{EQUALIZATION FACTOR} = \frac{\text{Desired Level (33.33\%)}}{\text{Prior 3-Year Average Median Level}}$$

If the medians were the same for each of the prior three years as for the current year, the equalization factors would be:

$$\text{County A: } \frac{33.33\%}{33.33\%} = 1.0000$$

$$\text{County B: } \frac{33.33\%}{28.00\%} = 1.1904$$

$$\text{County C: } \frac{33.33\%}{38.00\%} = .8771$$

Each county applies its equalization factor to all property in the county, except farm, coal, wind turbines over .5 MW capacity, and state-assessed properties. The equalized assessed value for the properties in the example will be:

$$\text{County A: } \$29,997 \times 1.0000 = \$29,997$$

$$\text{County B: } \$25,200 \times 1.1904 = \$29,998$$

$$\text{County C: } \$34,200 \times .8771 = \$29,997$$

When the tax rate is applied to each of these three properties that were assessed at the median level of assessments and then equalized, the taxes owed will be the same.

Note: This example makes some special assumptions in order to illustrate the purpose of equalization. The example assumes 1) that the market values of the three properties were known to be the same, 2) that each of these properties were assessed at the median level of assessments for the county, and 3) that the medians for each of the counties were the same for the current year as for the prior 3 years.

Unit 4, Exercise 1: Calculate the 3-year averages and the equalization factors.

For each of the counties listed below, calculate the average of the medians for the prior three years. The result will be written as a percent to two decimal places. After the three-year average is calculated, use the average to calculate the equalization factor necessary to bring assessments to the statutory level.

$$\text{Equalization Factor} = \frac{\text{Desired Level (33.33\%)}}{\text{Prior 3-Year Average Median Level}}$$

For county "A," the medians for the prior three years are: 32.09, 31.81, and 30.61. The total of these medians is 94.51. Divide 94.51 by 3 to find the three-year average of 31.50.

Now divide the statutory level of 33.33% by the 3-year average of 31.50%

$$\frac{33.33\%}{31.50\%} = 1.0581 \quad \text{Always write the answer rounded to four decimal places.}$$

COUNTY	3 YEARS PRIOR	2 YEARS PRIOR	PREVIOUS YEAR	3-YEAR AVERAGE	CURRENT MULTIPLIER
"A"	32.09	31.81	30.61	<u>31.50</u>	<u>1.0581</u>
"B"	34.25	33.33	33.78	_____	_____
"C"	30.19	29.16	30.78	_____	_____
"D"	33.26	33.98	32.75	_____	_____
"E"	31.18	31.95	31.19	_____	_____
"F"	30.60	30.23	31.27	_____	_____
"G"	34.15	32.62	34.09	_____	_____

In order to calculate the equalization factor for 2015, an assessor would need the median levels of assessments for the following years:

There are times when significant reassessment has occurred within the county. When the county determines that changes in total assessed value for a township, or the county as a whole, is solely due to reassessment, a reassessment adjustment may be determined to adjust the medians for the significant reassessment. A reassessment factor is applied to the medians to adjust them

for the reassessment. Once a reassessment factor is determined, it is applied to the median for the year calculated and all previous years.

Since the equalization factor uses the medians only for the prior three years, it is not usually necessary to carry the reassessment factor back beyond the three years.

The reassessment factor is noted as a percent increase or decrease (denoted by a + or – sign). To find the actual factor to be applied, add or subtract the factor from 100% and change to a decimal number. Then multiply the median by all of the factors through all of the Supervisor of Assessments and Board of Review changes. If a factor is 0.00%, multiply by 1.

Unit 4, Exercise 2: Adjust medians for changes due to reassessment

An assessor wants to find the prior 3-year average median level of assessments for a 2014 equalization factor. In 2012 the CCAO (S/A) determined that it was necessary to adjust the median level of assessments by a reassessment factor. This factor will apply to 2012 and all years previous to 2012.

Adjust the median level of assessment by multiplying the given median for the appropriate years by a + 6.60% .

$$100\% + 6.6\% = 106.6\% = 1.066$$

Use the adjusted medians to determine a 3-year average median level of assessment. Then find the equalization factor.

YR	MEDIAN	'11 S/A Changes	'11 B/R Changes	'12 S/A Changes	'12 B/R Changes	'13 S/A Changes	'13 B/R Changes	'14 TA Changes	Adjusted Median
2011	29.65	0.0%	0.0%	+6.6%	0.0%	0.0%	0.0%	0.0%	_____
2012	28.54	0.0%	0.0%	+6.6%*	0.0%	0.0%	0.0%	0.0%	_____
2013	32.07	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	_____

For the 2011 median of 29.65,

$$29.65 \times 1.000 \times 1.000 \times 1.066 \times 1.000 \times 1.000 \times 1.000 \times 1.000 \times 1.000 = 31.61\%$$

'11 S/A
'11 B/R
'12 S/A
'12 B/R
'13 S/A
'13 B/R
'14 TA

The 3-year average median level of assessments for this township is: _____

The equalization factor is: _____

*Percent of Reassessment made by the S/A in 2012

Unit 4, Exercise 3: For the data listed below, calculate the median and the COD.

Assessed Value	Sales Price	Sales Ratio	Ranked Ratio	Deviation
42,630	110,000	38.75	24.67	1.45
46,100	120,000	38.42	28.54	1.12
44,400	117,000	37.95	29.63	.65
41,600	106,200	39.17	31.88	1.87
38,800	103,800	37.38	32.85	.08
42,140	109,400	38.52	33.35	1.22
39,360	99,300	39.64	33.78	2.34
37,620	98,200	38.31	33.78	1.01
38,710	100,500	38.52	34.58	1.22
40,580	101,700	39.90	34.59	2.60
39,550	106,300	37.21	35.93	.09
41,710	107,900	38.66	36.27	1.36
36,920	110,700	33.35	37.21	3.95
37,770	109,200	34.59	37.38	2.71
40,080	110,500	36.27	37.95	1.03
47,140	118,300	39.85	38.31	2.55
36,900	106,700	34.58	38.42	2.72
36,000	100,200	35.93	38.52	1.37
24,320	98,600	24.67	38.52	12.63
27,770	97,300	28.54	38.63	8.76
28,770	97,100	29.63	38.66	7.67
30,600	96,000	31.88	38.75	5.42
31,400	95,600	32.85	39.17	4.45
30,400	90,000	33.78	39.64	3.52
38,630	100,000	38.63	39.85	1.33
37,160	110,000	33.78	39.90	3.52

1. Median _____
2. COD _____

Assuming that the median was exactly the same for each of the prior three years – so that the median just calculated is also the three-year average, calculate the equalization factor required to bring the three-year average median level of assessments to 33.33%.

3. If the median level of assessments has been the same as the current level for the past 3 years, calculate the equalization factor. _____

Unit 4, Exercise 4: Apply the equalization factor.

Now apply the equalization factor that you just calculated to each of the assessed values to achieve an equalized assessed value for each property on the chart on the next page. Then calculate new sales ratios, a new median, and a new COD.

In the prior exercise, the median was 37.30% and the equalization factor was .8936. Multiply the assessed value for the first sale (\$42,630) by .8936. The result is an equalized assessed value of \$38,094. The sales ratio for this sale would become 34.63 ($38,094 \div 110,000$).

Multiply each of the assessed values by the equalization factor of .8936 to find the equalized assessed value (EAV). Then calculate the sales ratio by dividing the EAV by the sales price.

Unit 4, Exercise 4 (continued) See note on the back of this page

A V	EAV	Sales Price	S R	Ranked	Dev
42,630		110,000		<u>22.04</u>	
46,100		120,000		<u>25.50</u>	
44,400		117,000		<u>26.48</u>	
41,600		106,200		<u>28.48</u>	
38,800		103,800		<u>29.35</u>	
42,140		109,400			
39,360		99,300		<u>30.18</u>	
37,620		98,200		<u>30.19</u>	
38,710		100,500		<u>30.90</u>	
40,580		101,700			
39,550		106,300		<u>32.11</u>	
41,710		107,900			
36,920		110,700			
37,770		109,200			
40,080		110,500			
47,140	42,124	118,300	<u>35.61</u>		<u>2.28</u>
36,900	32,974	106,700	<u>30.90</u>		<u>2.43</u>
36,000	32,170	100,200	<u>32.11</u>		<u>1.22</u>
24,320	21,732	98,600	<u>22.04</u>		<u>11.29</u>
27,770	24,815	97,300	<u>25.50</u>	<u>34.52</u>	<u>7.83</u>
28,770	25,709	97,100	<u>26.48</u>		<u>6.85</u>
30,600	27,344	96,000	<u>28.48</u>		<u>4.85</u>
31,400	28,059	95,600	<u>29.35</u>		<u>3.98</u>
30,400	27,165	90,000	<u>30.18</u>		<u>3.15</u>
38,630	34,520	100,000	<u>34.52</u>	<u>35.61</u>	<u>1.19</u>
37,160	33,206	110,000	<u>30.19</u>		<u>3.14</u>

1. Multiply each of the assessed values by the equalization factor.
2. Calculate the new median _____
3. Calculate the COD _____

* * * *

These are special conditions, for instructional purposes:

The median level remained constant, and the equalization factor was only applied to the assessed values of the properties that have sold. Here the median, after equalization, was at the statutory level of 33.33%. However, equalization had no effect on the COD which measures assessment uniformity.

Equalization does **not** have an impact on assessment uniformity. In order to correct assessment inequity, **reassess**.

Unit 4: Equalization

Summary

Equalization is the application of a uniform percentage increase or decrease to assessed values of various geographic areas or classes of property to bring assessments, on the average, to a uniform level of market value.

In Illinois, the statutory level of assessments is 33 ⅓% of market value.

Equalization factors (sometimes referred to as multipliers) adjust the three-year average median level of assessments to the statutory level.

The calculation of the equalization factor uses the average of the medians from the prior 3 years.

The formula for calculating the equalization factor is:

$$\text{Equalization Factor} = \frac{\text{Desired Level (33.33\%)}}{\text{Prior 3-Year Average Median Level}}$$

The equalization factor is applied to the assessed values for the current year. A 2014 equalization factor is applied to 2014 assessments, taxes payable in 2015.

Unit 4: Equalization

Review

1. An _____ factor will uniformly increase or decrease assessed values of all properties in the county except for _____, _____, _____, _____, and _____ – _____ properties.

2. The Lincoln township assessor is calculating a township multiplier for this year.

Median Level of Assessment for 3 years ago	32.79
Median Level of Assessment for 2 years ago	31.92
Median Level of Assessment for last year	31.58

a. The prior 3-year average median level of assessments for this township is: _____

b. The Lincoln township equalization factor will be: _____.

3. A Washington township assessor is calculating a township multiplier for this year.

Median Level of Assessment for 3 years ago:	32.45
Median Level of Assessment for 2 years ago:	31.09
Median Level of Assessment for last year:	30.36

a. The prior 3-year average median level of assessments for Washington township is: _____

b. The Washington township equalization factor will be: _____

Unit 5

Assessor Bonus Award

This unit covers the qualifications and application procedure for the Assessor Bonus Award. This award is based on performance, using criteria with respect to the median level of assessments and uniformity of assessments as determined by the Coefficient of Dispersion.

The purpose of this unit is to inform township assessors and supervisors of assessments of the availability of the Assessor Bonus award, highlighting the application process and eligibility.

LEARNING OBJECTIVES:

After completing the assigned readings, you should be able to:

- realize that the bonus award is available to assessors
- correctly complete an application for the bonus award
- know which criteria applies to the assessor's jurisdiction
- determine whether eligibility criteria has been met for a given year

TERMS AND CONCEPTS:

- decennial census
- Elected County Official (ECO)
- Illinois Municipal Retirement Fund (IMRF)
- tentative equalization factor

ASSESSOR BONUS AWARD

Any assessor, in counties other than Cook or the St. Clair County Assessor, may petition the Department of Revenue to receive additional compensation based on performance.

In order to receive the assessor bonus award, you must:

1. be in a qualifying position
2. have a three-year average median within the correct range
3. determine whether your jurisdiction is within a small or large county
4. have a COD less than the boundary number for your county
5. file a completed application within the correct time frame

35 ILCS 200 Sec 4-20:

“As used in this Section, ‘assessor’ means any township or multi-township assessor, or supervisor of assessments.”

Positions that qualify for the bonus award are:

1. any **elected or appointed** township or multi-township assessor or
2. supervisor of assessments.

Positions that do **not** qualify for the bonus award include:

1. township assessors in Cook county.
2. county assessors in Cook and St. Clair counties
3. an individual who has contracted to complete the assessments
4. a deputy assessor

County assessors in Cook and St. Clair counties do not meet the condition of being in a qualified position since the requirement is for an individual to hold the title of a “supervisor of assessments.”

An individual who has contracted to complete the assessments does not meet the condition as he or she does not hold the position of township assessor.

A copy of the “Illinois County Populations Based on the 2010 Decennial Census Counts” from the US Department of Commerce, Bureau of the Census is included in the supplemental materials in order for an assessor to determine

whether the assessor's county is a small county (50,000 or fewer) or a large county (over 50,000).

In order to qualify for the bonus award, a person must meet the requirements listed below.

For counties with 50,000 or fewer inhabitants, the requirements are:

- a three-year average level of assessments between 31 $\frac{1}{3}$ % and 35 $\frac{1}{3}$ % of the fair cash value for the assessment jurisdiction and
- a coefficient of dispersion (COD) no greater than 30 percent.

For counties with more than 50,000 inhabitants, the requirements are:

- a three-year average level of assessments between 31 $\frac{1}{3}$ % and 35 $\frac{1}{3}$ % of the fair cash value for the assessment jurisdiction and
- a coefficient of dispersion (COD) no greater than 15 percent.

Assessors may use the Department's sales ratio data or the assessor's own data with proper documentation. If the township does not have enough sales to have its own study done by the Department of Revenue, the township assessor may use independent appraisals and/or trending to establish the median level of assessments and the COD.

File Form PTAX-205, Assessor's Application for Additional Compensation, for 2014, after you have signed your assessment books, but no later than 60 days after your county's tentative equalization factor hearing for 2014. Do not submit Form PTAX-205 before your assessment books are given to the chief county assessment officer (CCAO) or board of review, as appropriate.

Trending is a process whereby the sales from one year are combined with the sales from a prior or a following year in order to have enough sales (25) to complete a sales ratio study. By combining sales from 2 or 3 years, many townships will have enough sales to determine the median level of assessments. Trending may be used for intra-county equalization factors or for the assessor bonus award.

Unit 5, Exercise 1: Eligibility for the Assessor’s Bonus

To determine whether the assessors would receive their bonuses this year, first, find the average of the medians from the prior three years by adding the medians and dividing by 3 (years).

For the first line on the chart below, $29.07 + 33.59 + 27.63 = 90.29$. $90.29 \div 3 = 30.09666$. Rounded to two decimal places, the three-year average would be 30.10%. Determine whether this 3-year average is within the acceptable range [$31 \frac{1}{3}\% - 35 \frac{1}{3}\%$]. If it is not, the assessor would not qualify for the assessor bonus award. In this case, 30.10% is too low, so the assessor would not receive his bonus. Write “No” in the “Yes/No” column. It is not necessary to check the COD if the assessor’s average median is not in the acceptable range.

If the three-year average is acceptable, the assessor would then need to determine whether the COD is within the acceptable range. For the COD, the acceptable range depends on the population of the county. In the case of the first line on the chart below, the population is 66,241. Any county over 50,000 in population must not have a COD over 15. Remember that, for the COD, smaller numbers indicate greater assessment uniformity. Since the population on the first line of the chart is greater than 50,000, an acceptable COD would have to be less than 15. The “COD” column shows a COD for the township to be 16.4 which is greater than 15. The COD is not in the acceptable range. So this assessor would not receive the assessor bonus award because the COD was too large, considering the population of the county.

Now complete the rest of the chart

Population	3 Years Ago	2 Years Ago	Last Year	3-year average	COD	Yes/No
66,241	29.07 %	33.59 %	27.63 %	<u>30.10 %</u>	16.4	<u>No</u>
39,582	37.38	31.72	36.24	_____	27.3	_____
81,769	32.85	33.57	36.48	_____	11.5	_____
47,391	29.63	31.02	33.58	_____	34.8	_____
52,089	32.55	34.60	33.72	_____	18.6	_____
107,464	36.82	31.09	35.98	_____	14.3	_____
183,697	29.75	28.04	32.56	_____	9.4	_____
28,434	31.99	32.48	35.79	_____	16.7	_____

The filing time frame for submitting the PTAX-205 20__ Assessor's Application for Additional Compensation (Fill in the __ with this year.) shall begin after the assessor signs the assessment books and continue until 60 days after the original hearing date in the county for the tentative equalization factor.

An assessor may obtain a PTAX-205 form from the Supervisor of Assessments

See the next page for the 2013 Application.

Instructions for completing the PTAX 205 Assessor's Application for Additional Compensation

1. Be sure to check whether you contribute to the Illinois Municipal Retirement Fund (IMRF). If the answer is "Yes," check whether it is "Regular" or "ECO." "ECO" refers to Elected County Officials. However, check with the township or county office to determine which of these options applies to your office.
2. On line 6a, mark whether you are "elected," "appointed," or "on contract."
3. Be sure to sign the form at the bottom of the front page.
4. File the application within the correct time frame:
"after you have signed your assessment books, but no later than **60 days after** your county's tentative equalization factor hearing for (the year of the application)."

If your jurisdiction does not have a minimum of 25 useable sales for any one, or more, of the three years, you may supplement the actual sales with independent appraisals or use a process for combining sales, from prior or subsequent years, called trending.

Use your mouse or Tab key to move through the fields. Use your mouse or space bar to enable check boxes.



Illinois Department of Revenue

PTAX-205 2014 Assessor's Application for Additional Compensation

Step 1: Complete your information - Please type or print

1 6
 First name Initial Last name Assessment jurisdiction (township, multi-township, or county)

2
 Mailing address

IL 7 County:
 City State ZIP

3 Daytime telephone: () - 8
 Township supervisor, multi-township treasurer, or county treasurer

4 Social Security number: - - 9
 (The complete SSN# of 9 digits is required.) Supervisor or treasurer's mailing address

5 Do you contribute to IMRF? Yes No
 If "Yes", check the applicable box: Reg. IMRF ECO IMRF 10 IL
 City State ZIP

Step 2: Complete the following information

11 Estimated three-year average level of assessment:

12 Estimated coefficient of dispersion (COD):

13 Check the approach you are using to apply this monetary bonus award:

a Department's 2013 assessment/sales ratio study

b Applicant's sales ratio data (specify all years included)
 Assessment year Year of sales

c Independent appraisals

d Other: Explain:

Step 3: Complete the 2014 Abstract of Assessments

14 Name of township or multi-township:

	1 2013 locally assessed value after B/R equalization action	2 2014 locally assessed value after township/multi-township assessor's action	3 Property assessed for the first time	4 Lost assessed value	5 Total no. of parcels in 2014
15 Residential	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
16 Commercial	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
17 Industrial	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
18 Farm (A) Section 10-145	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
19 Farm (B) Section 10-110	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
20 Other land, minerals and locally assessed RR	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
21 Total - all locally assessed	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

22 Amount of assessed value reclassified from the prior year B/R values:
 Res. Comm. Ind. Farm Sec. 10-30 Other

23 To current year assessor's values:
 Res. Comm. Ind. Farm Sec. 10-30 Other

Step 4: Sign below

I state that to the best of my knowledge, the information contained on this application is true, correct, and complete.

Signature Date / / Email address

This form is authorized as outlined under the tax or fee Act imposing the tax or fee for which this form is filed. Disclosure of this information is required. Failure to provide information may result in this form not being processed and may result in a penalty.

PTAX-205 (R-09/14)

[Reset](#) [Print](#)

General Information

What is the assessor's additional compensation?

(35 ILCS 200/4-20)

Assessors who achieve a median level of assessment between 31 1/3 percent and 35 1/3 percent of the fair cash value may qualify for an additional monetary bonus award. In addition to the median level of assessment, counties with

- **more than 50,000 inhabitants** — an assessor must also have a coefficient of dispersion (COD) no greater than 15 percent in 2014.
- **fewer than 50,000 inhabitants** — an assessor must also have a COD no greater than 30 percent in 2014.

When is Form PTAX-205 due?

(Chapter 86, Illinois Administrative Code, Section 110.170)

File Form PTAX-205, Assessor's Application for Additional Compensation, after you have signed your assessment books, but no later than 60 days after your county's tentative equalization factor hearing for 2014. **Do not** submit Form PTAX-205 before your assessment books are given to the chief county assessment officer (CCAO) or board of review, as appropriate.

How do I know if I qualify for the bonus award?

(Chapter 86, Illinois Administrative Code, Section 110.170)

We will evaluate the information you submit, as well as any other assessment records pertinent to the application. In addition, we may audit the data you submit and the assessment records. We will notify you in writing of our determination.

Should I obtain appraisal guidelines?

If you are using an independent appraisals approach, you should obtain our appraisals guidelines before you make adjustments. To obtain the guidelines, visit our Website at tax.illinois.gov or call us weekdays between 8 am and 4 pm at 217 785-6619.

How do I file Form PTAX-205?

Mail your completed Form PTAX-205 and **all** supporting documentation to:



EQUALIZATION AND REVIEW SECTION
ILLINOIS DEPARTMENT OF REVENUE
PO BOX 19033
SPRINGFIELD IL 62794-9033

Specific Instructions

Step 1: Follow instructions.

Step 2: Complete the following information

Lines 11-12: Follow the instructions on the form.

Line 13: Mark the approach you are using - **choose only one**

a Our sales ratio data

We determine the assessment level using an average of the median levels of assessment for three years preceding the assessment year, adjusted by consideration of any changes made by the assessor since the time the data was collected.

The following options require supporting documentation that must be included with your application. No application will be processed without the required supporting documentation.

b Your sales ratio data

- Attach copies of the real estate transfer declarations;
- Indicate editing procedure used. (You may use our procedure 02);
- Adjust the sale price for seller-related financing. You must use our procedure 17 if required under 35 ILCS 200/17-10;
- Show your calculation of the median; and,
- Show tab numbers for each sale in question if you are disputing or commenting on the sales used in the department's study.

Current year sales may be used to confirm an estimated COD. You must submit the current year sales ratio data through the most recently available month of sale and indicate the COD. We cannot process Form PTAX-205 until our current year sales ratio study is completed. However, Form PTAX-205 and the documents must be submitted, no later than 60 days after your county's tentative equalization factor hearing.

c Independent appraisals

- Demonstrate subject properties to be appraised were selected in a random and representative manner;
- Ensure valuations are made by a qualified appraiser who has no interest in the properties or in the outcome of the appraisals;
- Show you do not have any interest in the appraisal firm used to conduct the appraisals;
- Be certain that the assessments applied to the appraised properties are for the year preceding the appraisal; and,

- Document the adjustment factors for time, cost, neighborhood, depreciation, etc. Contact us for "Appraisal Guidelines" before making any adjustment for time. You must document the method used to calculate the adjustment factor and indicate the assessment level and COD.

d Other

You must explain the approach you are using and attach supporting documents.

Step 3: Complete the 2014 Abstract of Assessments

Only a township or multi-township assessor is required to complete this information.

Lines 15 through 20 — Follow the instructions for each column below. Write your figures on the appropriate lines.

Line 18, "Farm (A)" includes the assessment of the farm homesite, farm residence, and the appurtenant structures because they are subject to the state equalization factor under Section 10-145.

Line 19, "Farm (B)" includes the assessment of farm buildings and farmland assessed under Sections 10-110 through 10-140.

Column 1: Final assessed 2013 values certified to us by the county clerk on Form PTAX-260-A, Final Abstract of 2013 Assessments.

Column 2: Assessed values for 2014 after your action and before the CCAO's action, including equalization. The assessed values that were on the assessment books when you certified those books are reported by the CCAO in Column 2 of Form PTAX-204-S/A, 2014 Report on Equalization of Local Assessment by Chief County Assessment Officer (CCAO).

Column 3: Value of property assessed for the first time before any CCAO's action and/or any township multipliers.

Column 4: Assessed value lost by class of property only if the assessed value has been "lost" due to physical destruction or exemption since this value was certified to us by the county clerk on Form PTAX-260-A, Final Abstract of 2013 Assessments.

Lines 22 through 23 — **Only complete** these lines if you, as the township, multi-township assessor, reclassified the property. Write the reclassification amounts by property class.

PTAX-205 (R-09/14)

Unit 5 Assessor Bonus Award

Summary

The assessor bonus award is based on the performance of the assessor. Township and multi-township assessors and supervisors of assessments from all counties except Cook or the St Clair County Assessor may qualify for the bonus award.

Assessors must file an application for the bonus award after the assessment books are signed and within 60 days of the hearing date in their counties for the tentative multiplier.

If the jurisdiction does not have a minimum of 25 useable sales for any one, or more, of the three years, you may supplement the actual sales with independent appraisals or use trending.

NOTES:

Unit 5 Assessor Bonus Award

Review

1. The Lincoln township assessor is applying for the bonus award for this year. The COD is 15.92%.

Median Level of Assessment for 3 years ago	32.79
Median Level of Assessment for 2 years ago	31.92
Median Level of Assessment for last year	31.58

- a. If the population of the county is less than 50,000, will the assessor receive his or her bonus? _____
- b. If the population of the county is greater than 50,000, will the assessor receive his or her bonus? _____
2. A Washington township assessor is applying for the bonus award for this year. The COD is 14.80%.

Median Level of Assessment for 3 years ago:	32.45
Median Level of Assessment for 2 years ago:	31.09
Median Level of Assessment for last year:	30.36

- a. If the population of the county is less than 50,000, will the assessor receive his or her bonus? _____
- b. If the population of the county is greater than 50,000, will the assessor receive his or her bonus? _____
3. In order to qualify for the assessor bonus award, the assessor must be in a _____, have a _____-year average median level of assessments between _____ and _____, and a COD no greater than _____ (assuming that the population of the county is 50,000 or less).

Unit 6

Trending

This unit covers the process of trending to combine sales from two or more years when there were not enough sales from a given year to conduct a sales ratio study. The trending process adjusts the values of the sales from one year to current market conditions for the year that did not have enough sales to achieve a sales ratio study. The trended sales from one (or more) year(s) are then combined with the actual market sales from the year of the sales ratio study. Using the combined sales, a sales ratio may then be completed.

The purpose of this unit is to familiarize the student with the appropriate circumstances when trending may be used and the procedures necessary to the calculations.

LEARNING OBJECTIVES:

After completing the assigned readings, you should be able to:

- know what trending will accomplish
- be familiar with the appropriate occasions when trending may or may not be used
- be able to calculate a trending factor
- use the trending factor in adjusting sales for current market values
- complete a sales ratio study with the adjusted sales combined with current sales

TERMS AND CONCEPTS:

- adjusted sales prices
- trending
- trending factor

NEED FOR TRENDED MEDIANS:

The prior 3-year average median level of assessments (adjusted for change, if applicable) is used in the:

- A. Process of determining equalization factor $\frac{33.33\%}{\text{Prior 3-year average median}}$
- B. State's reimbursement to the county of 50% of a Supervisor of Assessment's salary. The average of the medians from the prior three years must be between 31 $\frac{1}{3}$ % and 35 $\frac{1}{3}$ %.
- C. Qualifications for the Assessor's Bonus Award.
The average of the medians from the prior three years must be between 31 $\frac{1}{3}$ % and 35 $\frac{1}{3}$ %.
(Note: The COD must also be in the correct range.)

Before a three-year average median level of assessments can be established, there must be enough useable sales within a jurisdiction to establish a median level of assessments for each of the years being used in the calculation.

For example, if a 2015 township multiplier is being calculated, a median level for 2012, 2013, and 2014 are used to determine the prior 3-year average median level of assessments for the assessment year of 2015.

In order to calculate the 2015 township multiplier, the following information must be available:

Median Sales Ratio for	2012	34.50
Median Sales Ratio for	2013	33.90
Median Sales Ratio for	2014	<u>34.00</u>
		$102.40 \div 3 = 34.13\%$

There must be a minimum of 25 useable sales and/or appraisals before an assessment district can implement a Sales Ratio Study. If an assessment district does not have 25 useable sales in a particular year, appraisals can be used to supplement this study. Properties must be randomly selected, and the appraisals performed by an independent appraiser.

Counties may find the burden of hiring independent appraisers cumbersome and costly. An alternative to using independent appraisals is the process called trending.

Trending may be used to determine a median level of assessments in the calculation of:

1. Intra-County Equalization
2. Reimbursement of 50% of the Supervisor of Assessment's salary
3. Assessor Bonus Award

Trending is not used in the calculation of the state equalization factor.

TRENDING is a method that may be used to determine a median level of assessments when one, or more than one, of the 3 years involved in finding the prior 3-year median level of assessments for the purposes listed above does not have 25 useable sales.

In the technique of trending, the sales that pass the editing for a sales ratio study can be adjusted back in time or they may be adjusted forward in time. The new ratios are combined with the existing sales ratios of that year. A median level of assessments for the year in question can be established from the combined ratios.

When trending, trend back first, if possible, since the sales are more current. If the median that is being established is from the most current of the 3 years, it will be necessary to trend forward.

If the Supervisor of Assessments wanted to apply a township equalization factor for 2015, he would need the township medians for 2012, 2013, and 2014. If the township did not have enough sales to find a township median for 2014, he could trend the 2013 sales forward and calculate sales ratios using the adjusted market values (now 2014 market value) and the assessed values from 2013 to find 2014 sales ratios. Combine these ratios with the ratios found from the actual sales in 2014 to find a median for the township for 2014.

Always use the assessed valuation for the year prior to the year of the sales ratio study. For a 2014 sales ratio study, the assessed values on the same properties that sold must come from 2013.

Example 1: The Supervisor of Assessments plans to determine an equalization factor for the townships for 2013. He will need the medians for 2010, 2011, and 2012 in order to calculate the prior 3-year average median level of assessments.

2010 median	=	29.78
2011 median	=	30.07
2012 median	=	_____

The **2011** sales would be adjusted by a trending factor to 2012 values. The 2011 sales are trended forward to become 2012 sales. New sales ratios would be calculated for the 2011 sales adjusted to 2012 market value. The sales ratios would be found by dividing the **2011 assessed value** from the properties that sold by the **adjusted 2012** market value of those same properties.

Example 2: The Board of Review plans to determine an equalization factor for the townships for 2013. They will need the medians for 2010, 2011, and 2012 in order to calculate the prior 3-year average median level of assessments.

2010 median	=	_____
2011 median	=	32.59
2012 median	=	33.80

Since the missing median is the first of the three years, the **2011** sales would be trended backward. The **2011** sales would be adjusted by a trending factor to 2010 market values. The 2011 sales are trended backward to become 2010 sales. New sales ratios would be calculated for the 2011 sales adjusted to 2010 market value.

Sales ratios are found by dividing the prior year assessed value by the current year selling price. A 2010 sales ratio is found by dividing the 2009 assessed value by the 2010 sales price. So, the sales ratios would be found by dividing the **2009 assessed value** from the properties that sold (in 2011 adjusted backward to 2010 market value) by the **adjusted 2010** market value of those same properties.

Example 3: The Board of Review plans to determine an equalization factor for the townships for 2015. They will need the medians for 2012, 2013, and 2014 in order to calculate the prior 3-year average median level of assessments. In 2013 there were less than 25 sales.

2012 median	=	28.72
2013 median	=	_____
2014 median	=	31.25

Since the missing median is the middle of the three years, the **2012** sales may be trended forward or the **2014** sales may be trended backward. If there is a choice, trend backward. In this case the **2014** sales would be adjusted by a trending factor to 2013 market values. The 2014 sales are trended backward to become 2013 sales. New sales ratios would be calculated for the 2014 sales adjusted to 2013 market value.

A 2013 sales ratio is found by dividing the 2012 assessed value by the 2013 sales price. So, the sales ratios would be found by dividing the **2012 assessed value** from the properties that sold (in 2014 adjusted backward to 2013 market value) by the **adjusted 2013** market value of those same properties.

If two or more years are missing, it may be necessary to trend one year forward and another year back or two years forward (backward) to achieve the 25 useable sales.

The **trending factor** is the number that will be used to adjust the sales price (market value) of a property either forward to a later year or backward to an estimate of market value for a year previous to the actual year of sale.

The trending factor depends on the **county's** medians to adjust the value from the value at the year of sale to an estimate of the value for the year that did not have enough sales.

$$\text{Trending Factor} = \frac{\text{County Median} - \text{Trended From Year}}{\text{County Median} - \text{Trended To Year}}$$

Unit 6, Exercise 1 Calculate Trending Factors

Calculate the trending factors (to 4 decimal places) if a county's urban-weighted medians are:

2012	2013	2014
31.57	30.48	32.95

1. Trend 2012 forward to 2013 Trending Factor = _____
2. Trend 2014 back to 2013 Trending Factor = _____
3. Trend 2013 back to 2012 Trending Factor = _____
4. Trend 2013 forward to 2014 Trending Factor = _____

Unit 6, Exercise 2 Assessed Values

Using the information from Unit 6, Exercise 1, determine from what year the assessed values would come.

1. Trend 2012 forward to 2013 Assessed Values from _____
2. Trend 2014 back to 2013 Assessed Values from _____
3. Trend 2013 back to 2012 Assessed Values from _____
4. Trend 2013 forward to 2014 Assessed Values from _____

TRENDING PROCEDURE:

1. Determine the trending factor

$$\text{Trending Factor} = \frac{\text{County Median — Trended From Year}}{\text{County Median — Trended To Year}}$$

2. Multiply each of the sale prices by the trending factor. This is now the “Adjusted Sale Price” for the year of the sales ratio study.
3. Find the assessed value for each of the properties for the year prior to the year of the sales ratio study. These will be given in the problems.
4. Find the sales ratios by dividing the assessed value for each property by its adjusted sale price. Multiply by 100 to change it to a percent.
5. Combine these new ratios with the existing sales ratios.
6. Now rank all (existing ratios and trended ratios) of the ratios and establish a median level of assessments.

NOTE: A median level of assessments that has been established by a sales ratio study may be adjusted for changes (for example – township reassessment, equalization) implemented since the data for the study was collected.

Unit 6, Exercise 3: Calculate a township equalization factor for 2015.

Township Medians:

2012	28.32
2013	27.40
2014	_____

County Medians:

2012	30.68
2013	31.15
2014	29.54

Existing sales Ratios from 2014:

11.67	23.87	24.87	25.21	26.40	27.12	29.53
22.95	24.50	24.95	25.69	26.73	29.33	

(Calculated from _____ sales and the AV of those sales from _____.)

Trend _____ (year) sales forward to be combined with _____ sales.

Trending factor = _____ (4 decimal places)

Fill in the correct years in the blank lines in the headings.

Multiply the sales price by the trending factor to find the adjusted market value.

Sale #	Sales Price	Trending Factor	ADJ _____ Market Value	_____ AV	2014 Sales Ratio
1	\$ 250,000	1.0545	263,625	\$ 55,299	20.98
2	489,500	_____	_____	109,607	_____
3	386,000	_____	_____	89,017	_____
4	335,000	_____	_____	84,071	_____
5	1,300,000	_____	_____	349,802	_____
6	272,000	_____	_____	73,473	_____
7	169,900	_____	_____	46,735	_____
8	267,500	_____	_____	76,321	_____
9	222,000	_____	_____	63,687	_____
10	840,200	_____	_____	254,365	_____
11	388,000	_____	_____	127,540	_____
12	287,000	_____	_____	100,797	_____

The sales ratios as calculated from the actual 2014 sales are listed in the table below. Complete the table by ranking the trended 2014 (trended from 2013) sales ratios in the table.

11.67		25.21	26.40	
	23.87		26.73	29.33
	24.50			29.53
	24.87	25.69	27.12	
22.95	24.95			

2014 Median = _____ 2015 Twp Equalization Factor = _____

All 2014 sales would be used, except those properties whose sale price and assessed value are no longer comparable.

For example, 1) if the 2012 AV was based on unimproved land but there was an improvement on the property in 2014 ; 2) splits, 2012 AV was based on 1 acre but 2014 sales price was for ½ acre; 3) reclassified property where the 2012 AV was residential but the property was sold in 2014 as commercial property. The student will not be required to edit sales for exclusion as part of the trending process in this class.

Unit 6, Exercise 4 Trend Backward

The Board of Review is applying township equalization factors for the 2015 assessment year. In order to calculate a 3-year average median level of assessments for a 2015 equalization factor, the Board will need the medians for Hoover Township for 2012, 2013, and 2014. Hoover Township's median level of assessments for 2013 was 32.94 and for 2014 was 33.24. However, there were not enough sales in 2012 to determine a median level for 2012.

Hoover Township's medians are:

2012 =	_____
2013 =	32.94
2014 =	33.24

County medians are:

2012 =	35.00
2013 =	34.00

The Board has decided to use trending to calculate the median for 2012.

Existing ratios for 2012 sales: (18 sales)

13.50	28.10	31.20	38.20	49.40
15.30	29.30	33.50	38.30	64.40
22.60	29.70	35.80	39.20	
26.00	31.20	37.20	39.30	

In this exercise, the Board of Review is combining the 2013 sales with the 2012 sales by trending the 2013 sales back to 2012 (Adjusting the 2013 selling prices back to the 2012 selling prices by using a trending factor), and then developing 2012 sales ratios by using 2011 assessed values of those properties along with the 2012 adjusted sales prices found by the trended sales.

Trending Factor = _____ (see data on the prior page)

Multiply the Selling Prices by the trending factor.

Find the new 2012 sales ratios

Sale #	2013 SP	Trending Factor	2012 Adjusted SP	2011 AV	2012 Ratios
1	58,400	_____	_____	11,914	_____
2	29,000	_____	_____	6,198	_____
3	34,100	_____	_____	7,288	_____
4	14,200	_____	_____	3,311	_____
5	44,500	_____	<u>43,227</u>	10,807	<u>25.00</u>
6	4,000	_____	_____	972	_____
7	40,000	_____	_____	10,103	_____
8	33,000	_____	<u>32,056</u>	8,335	<u>26.00</u>
9	24,500	_____	_____	6,426	_____
10	19,500	_____	_____	5,115	_____
11	18,000	_____	_____	5,071	_____
12	59,900	_____	<u>58,187</u>	17,457	<u>30.00</u>
13	32,900	_____	<u>31,959</u>	10,227	<u>32.00</u>
14	23,000	_____	_____	7,150	_____
15	26,000	_____	_____	8,335	_____
16	10,000	_____	_____	3,497	_____
17	13,500	_____	<u>13,114</u>	4,721	<u>36.00</u>
18	13,800	_____	_____	4,826	_____
19	15,000	_____	_____	5,537	_____
20	22,000	_____	_____	9,190	_____
21	56,500	_____	<u>54,884</u>	27,443	<u>50.00</u>
22	6,500	_____	_____	3,346	_____
23	9,000	_____	<u>8,743</u>	5,421	<u>62.00</u>
24	9,800	_____	<u>9,520</u>	6,188	<u>65.00</u>
25	3,500	_____	_____	2,312	_____
26	1,500	_____	_____	1,501	_____
27	3,000	_____	<u>2,914</u>	3,409	<u>116.99</u>
28	2,000	_____	_____	2,506	_____

Unit 6, Exercise 4 Trending Backward (continued)

1. Calculate the trended sales ratios.
2. Combine the new trended ratios with the original ratios from 2012.
Find the median using all of the ratios. (Ratios are ranked in columns)

13.50				33.50		49.40	
15.30			31.20	35.80	38.20		
		28.10	31.20		38.30		
	26.00				39.20		
		29.30			39.30	64.40	
22.60		29.70		37.20			

Hoover Township's medians are:

2012 = _____
 2013 = 32.94
 2014 = 33.24

The township equalization factor would be: _____

Note: For additional practice a supplemental trending exercise may be found in the Supplemental Section at the end of the manual.

Unit 6 Trending

Summary

Trending is a method that may be used to determine a median level of assessments when one, or more than one, of the 3 years involved in finding the prior 3-year median level of assessments for the purposes listed above does not have 25 useable sales.

Trending may be used for intra-county sales ratio studies and equalization, the assessor bonus award, and the reimbursement of 50 % of the supervisor of assessment's salary when there are less than 25 useable sales in a given year.

Sales ratios found by adjusting sales (forward or backward) to the year with an insufficient number of sales are combined with all existing sales ratios to determine the median level of assessments.

Trending is not used in the calculation of the state equalization factor.

Review

1. What would the trending factor be if the 2009 sales were trended back to 2008? _____

county medians	township medians
2007 median = 28.72	2007 median = 32.51
2008 median = 31.69	2008 median = _____
2009 median = 30.48	2009 median = 29.86

2. If an assessor were trending sales from 2012 to 2013, the assessed values on those properties would be from _____ (year).
3. In order to trend 2011 sales back to 2010, multiply the _____ sales by the trending factor. Then divide the _____ assessed values by the _____ sales trended back to _____ market value. (Insert years.)

Unit 7

Illinois Real Estate Transfer Declarations

This unit covers the Illinois Real Estate Transfer Declarations, focusing on the information gathered on these documents and appropriate editing procedures to determine whether a sale meets the criteria for arm's length and market value definitions. Sales that do not meet these criteria are excluded from the sales ratio study.

The purpose of this unit is to familiarize township assessors and supervisors of assessments with appropriate editing techniques for the Real Estate Transfer Declarations. If the Department of Revenue and local officials use the same sales data and apply the same methods to sales ratio studies, the results will be the same.

LEARNING OBJECTIVES:

After completing the assigned readings, you should be able to:

- know what information is on the Real Estate Transfer Declaration
- correctly complete a Real Estate Transfer Declaration
- understand the purpose for gathering this information
- determine whether the sale will be useable for sales ratio studies
- calculate the sales ratio on the Real Estate Transfer Declaration

TERMS AND CONCEPTS:

- Bank REO
- Electronic Transfers
- Executor Deed
- Quit Claim Deed
- Real Estate Transfer Declaration (RETD)
- Sheriff's Deed
- Short Sale
- Special assessments
- Trustee Deed
- Warranty Deed



PTAX-203

Illinois Real Estate Transfer Declaration

Please read the instructions before completing this form.
This form can be completed electronically at tax.illinois.gov/retd.

Step 1: Identify the property and sale information.

1 _____
Street address of property (or 911 address, if available)

_____ City or village _____ ZIP _____

_____ Township

2 Write the total number of parcels to be transferred. _____

3 Write the parcel identifying numbers and lot sizes or acreage.

Property index number (PIN) Lot size or acreage

a _____
b _____
c _____
d _____

Write additional property index numbers, lot sizes or acreage in Step 3.

4 Date of instrument: _____ / _____
Month Year

5 Type of instrument (Mark with an "X."): _____ Warranty deed
_____ Quit claim deed _____ Executor deed _____ Trustee deed
_____ Beneficial interest _____ Other (specify): _____

6 _____ Yes _____ No Will the property be the buyer's principal residence?

7 _____ Yes _____ No Was the property advertised for sale?
(i.e., media, sign, newspaper, realtor)

8 Identify the property's current and intended primary use.
Current Intended (Mark **only one item per column** with an "X.")

a _____ Land/lot only
b _____ Residence (single-family, condominium, townhome, or duplex)
c _____ Mobile home residence
d _____ Apartment building (6 units or less) No. of units: _____
e _____ Apartment building (over 6 units) No. of units: _____
f _____ Office
g _____ Retail establishment
h _____ Commercial building (specify): _____
i _____ Industrial building
j _____ Farm
k _____ Other (specify): _____

Do not write in this area.
County Recorder's Office use.

County: _____

Date: _____

Doc. No.: _____

Vol.: _____

Page: _____

Received by: _____

9 Identify any significant physical changes in the property since January 1 of the previous year and **write the date of the change**.
Date of significant change: _____ / _____
Month Year

(Mark with an "X.")

_____ Demolition/damage _____ Additions _____ Major remodeling

_____ New construction _____ Other (specify): _____

10 Identify only the items that apply to this sale. (Mark with an "X.")

a _____ Fulfillment of installment contract —
year contract initiated : _____

b _____ Sale between related individuals or corporate affiliates

c _____ Transfer of less than 100 percent interest

d _____ Court-ordered sale

e _____ Sale in lieu of foreclosure

f _____ Condemnation

g _____ Short sale

h _____ Bank REO (real estate owned)

i _____ Auction sale

j _____ Seller/buyer is a relocation company

k _____ Seller/buyer is a financial institution or government agency

l _____ Buyer is a real estate investment trust

m _____ Buyer is a pension fund

n _____ Buyer is an adjacent property owner

o _____ Buyer is exercising an option to purchase

p _____ Trade of property (simultaneous)

q _____ Sale-leaseback

r _____ Other (specify): _____

s _____ Homestead exemptions on most recent tax bill:

1 General/Alternative \$ _____

2 Senior Citizens \$ _____

3 Senior Citizens Assessment Freeze \$ _____

Step 2: Calculate the amount of transfer tax due.

Note: Round Lines 11 through 18 to the next highest whole dollar. If the amount on Line 11 is over \$1 million and the property's current use on Line 8 above is marked "e," "f," "g," "h," "i," or "k," complete Form PTAX-203-A, Illinois Real Estate Transfer Declaration Supplemental Form A. If you are recording a beneficial interest transfer, do not complete this step. Complete Form PTAX-203-B, Illinois Real Estate Transfer Declaration Supplemental Form B.

11 Full actual consideration	11 \$ _____
12a Amount of personal property included in the purchase	12a \$ _____
12b Was the value of a mobile home included on Line 12a?	12b _____ Yes _____ No
13 Subtract Line 12a from Line 11. This is the net consideration for real property.	13 \$ _____
14 Amount for other real property transferred to the seller (in a simultaneous exchange) as part of the full actual consideration on Line 11	14 \$ _____
15 Outstanding mortgage amount to which the transferred real property remains subject	15 \$ _____
16 If this transfer is exempt, use an "X" to identify the provision.	16 _____ b _____ k _____ m
17 Subtract Lines 14 and 15 from Line 13. This is the net consideration subject to transfer tax.	17 \$ _____
18 Divide Line 17 by 500. Round the result to the next highest whole number (e.g., 61.002 rounds to 62).	18 _____
19 Illinois tax stamps — multiply Line 18 by 0.50.	19 \$ _____
20 County tax stamps — multiply Line 18 by 0.25.	20 \$ _____
21 Add Lines 19 and 20. This is the total amount of transfer tax due.	21 \$ _____

Step 3: Write the legal description from the deed. Write, type (minimum 10-point font required), or attach the legal description from the deed. If you prefer, submit an 8 1/2" x 11" copy of the extended legal description with this form. You may also use the space below to write additional property index numbers, lots sizes or acreage from Step 1, Line 3.

Step 4: Complete the requested information.

The buyer and seller (or their agents) hereby verify that to the best of their knowledge and belief, the full actual consideration and facts stated in this declaration are true and correct. If this transaction involves any real estate located in Cook County, the buyer and seller (or their agents) hereby verify that to the best of their knowledge, the name of the buyer shown on the deed or assignment of beneficial interest in a land trust is either a natural person, an Illinois corporation or foreign corporation authorized to do business or acquire and hold title to real estate in Illinois, a partnership authorized to do business or acquire and hold title to real estate in Illinois, or other entity recognized as a person and authorized to do business or acquire and hold title to real estate under the laws of the State of Illinois. Any person who willfully falsifies or omits any information required in this declaration shall be guilty of a Class B misdemeanor for the first offense and a Class A misdemeanor for subsequent offenses. Any person who knowingly submits a false statement concerning the identity of a grantee shall be guilty of a Class C misdemeanor for the first offense and of a Class A misdemeanor for subsequent offenses.

Seller Information (Please print.)

Seller's or trustee's name	Seller's trust number (if applicable - not an SSN or FEIN)
Street address (after sale)	City State ZIP ()
Seller's or agent's signature	Seller's daytime phone

Buyer Information (Please print.)

Buyer's or trustee's name	Buyer's trust number (if applicable - not an SSN or FEIN)
Street address (after sale)	City State ZIP ()
Buyer's or agent's signature	Buyer's daytime phone

Mail tax bill to:

Name or company	Street address	City	State	ZIP
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Preparer Information (Please print.)

Preparer's and company's name	Preparer's file number (if applicable)
Street address	City State ZIP ()
Preparer's signature	Preparer's daytime phone

Preparer's e-mail address (if available) _____

Identify any required documents submitted with this form. (Mark with an "X.") Extended legal description Form PTAX-203-A
 Itemized list of personal property Form PTAX-203-B

To be completed by the Chief County Assessment Officer

<p>1 County _____ Township _____ Class _____ Cook-Minor _____ Code 1 _____ Code 2 _____</p> <p>2 Board of Review's final assessed value for the assessment year prior to the year of sale.</p> <p>Land _____, _____, _____, _____</p> <p>Buildings _____, _____, _____, _____</p> <p>Total _____, _____, _____, _____</p>	<p>3 Year prior to sale _____</p> <p>4 Does the sale involve a mobile home assessed as real estate? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>5 Comments _____</p>
---	---

Illinois Department of Revenue Use	Tab number
---	-------------------

Instructions for Form PTAX-203, Illinois Real Estate Transfer Declaration

General Information

The information requested on this form is required by the Real Estate Transfer Tax Law (35 ILCS 200/31-1 *et seq.*). All parties involved in the transaction must answer each question completely and truthfully.

What is the purpose of this form?

County offices and the Illinois Department of Revenue use this form to collect sales data and to determine if a sale can be used in assessment ratio studies. This information is used to compute equalization factors. Equalization factors are used to help achieve a state-wide uniform valuation of properties based on their fair market value.

Must I file Form PTAX-203?

You must file either (1) Form PTAX-203 and any required documents with the deed or trust document or (2) an exemption notation on the original deed or trust document at the County Recorder's office within the county where the property is located. File Form PTAX-203 for all real estate transfers except those qualifying for exempt status under (a), (c), (d), (e), (f), (g), (h), (i), (j), or (l) listed below.

Which property transfers are exempt from real estate transfer tax?

The following transactions are exempt from the transfer tax under 35 ILCS 200/31-45.

- (a) Deeds representing real estate transfers made before January 1, 1968, but recorded after that date and trust documents executed before January 1, 1986, but recorded after that date.
- (b) Deeds to or trust documents relating to (1) property acquired by any governmental body or from any governmental body, (2) property or interests transferred between governmental bodies, or (3) property acquired by or from any corporation, society, association, foundation or institution organized and operated exclusively for charitable, religious or educational purposes. However, deeds or trust documents, other than those in which the Administrator of Veterans' Affairs of the United States is the grantee pursuant to a foreclosure proceeding, shall not be exempt from filing the declaration.
- (c) Deeds or trust documents that secure debt or other obligation.
- (d) Deeds or trust documents that, without additional consideration, confirm, correct, modify, or supplement a deed or trust document previously recorded.
- (e) Deeds or trust documents where the actual consideration is less than \$100.
- (f) Tax deeds.
- (g) Deeds or trust documents that release property that is security for a debt or other obligation.
- (h) Deeds of partition.
- (i) Deeds or trust documents made pursuant to mergers, consolidations or transfers or sales of substantially all of the assets of corporations under plans of reorganization under the Federal Internal Revenue Code (26 USC 368) or Title 11 of the Federal Bankruptcy Act.
- (j) Deeds or trust documents made by a subsidiary corporation to its parent corporation for no consideration other than the cancellation or surrender of the subsidiary's stock.
- (k) Deeds when there is an actual exchange of real estate and trust documents when there is an actual exchange of beneficial interests, except that that money difference or money's worth paid from one to the other is not exempt from the tax. These deeds or trust documents, however, shall not be exempt from filing the declaration.
- (l) Deeds issued to a holder of a mortgage, as defined in Section 15-103 (now Section 15-1207) of the Code of Civil Procedure, pursuant to a mortgage foreclosure proceeding or pursuant to a transfer in lieu of foreclosure.
- (m) A deed or trust document related to the purchase of a principal residence by a participant in the program authorized by the Home Ownership Made Easy Act, except that those deeds and trust documents shall not be exempt from filing the declaration.

Can criminal penalties be imposed?

Anyone who willfully falsifies or omits any required information on Form PTAX-203 is guilty of a Class B misdemeanor for the first offense and a Class A misdemeanor for subsequent offenses. Anyone who knowingly submits a false statement concerning the identity of a grantee of property in Cook County is guilty of a Class C misdemeanor for the first offense and a Class A misdemeanor for subsequent offenses. The penalties that could be imposed for each type of misdemeanor are listed below (35 ILCS 200/31-50 and 730 ILCS 5/5-8-3 and 5/5-9-1).

Misdemeanor	Prison Term	Maximum Fines
Class A	less than 1 year	\$2,500
Class B	not more than 6 months	\$1,500
Class C	not more than 30 days	\$1,500

Line-by-line Instructions

The sellers and buyers or their agents must complete Steps 1 through 4 of this form. For transfers of a beneficial interest of a land trust, complete the form substituting the words "assignor" for "seller" and "assignee" for "buyer."

Step 1: Identify the property and sale information.

Line 1 — Write the property's street address (or 911 address, if available), city or village, zip code, and township in which the property is located.

Line 3 — Write all the parcel identifying numbers and the properties' lot sizes (e.g., 80' x 100') or acreage. If only the combined lot size or acreage is available for multiple parcels, write the total on Line 3a under the "lot size or acreage" column. If transferring only a part of the parcel, write the letters "PT" before the parcel identifying number and write the lot size or acreage of the split parcel. If transferring a condominium, write the parcel identifying number and the square feet of the condominium unit. If surface rights are not being transferred, indicate the rights being transferred (e.g., "minerals only"). If transferring right-of-way (ROW) property that does not have a parcel identifying number, write "ROW only." If five or more parcels are involved, use the space provided on Page 2, Step 3. The parcel identifying number is printed on the real estate tax bill and assessment notice. The chief county assessment officer can assist you with this information.

Line 4 — Write the month and year from the instrument.

Line 5 — Use an "X" to identify the type of instrument (i.e., deed, trust document, or facsimile) to be recorded with this form. For a deed-in-trust, limited warranty, special warranty, trust deed, or other deed types not listed on this form, select "Other" and write the deed type. "Joint tenancy" and "tenants-in-common" identify ownership rights and **cannot** be used as a deed type.

Line 6 — Select "Yes" if the property will be used as the buyer's principal dwelling place and legal residence.

Line 7 — Select "Yes" if the property was sold using a real estate agent or advertised for sale by newspaper, trade publication, radio/electronic media, or sign.

Line 8 — Use an "X" to select **one** item under each of the column headings "Current" and "Intended." "Current" identifies the current or most recent use of the property. "Intended" identifies the intended or expected use of the property after the sale. If the property has more than one use, identify the **primary** use only.

Line 8h, Commercial building — Write the type of business (bank, hotel/motel, parking garage, gas station, theater, golf course, bowling alley, supermarket, shopping center, etc.).

Line 8k, Other — Choose this item only if the primary use is not listed and write the primary use of the property.

Note: For Lines 8h and 8k, if the current and intended categories are the same but the specific use will change, (i.e., from bank to theater), write the **current** use on the line provided and write the **intended** use **directly below** the line provided.

Line 9 — Use an “X” to identify any significant physical changes in the property since January 1 of the previous year. Write the date the change was completed or the property was damaged.

Line 10 — Select only the items that apply to this sale. A definition is provided below for all items marked with an asterisk.

Line 10a, Fulfillment of installment contract — The installment contract for deed is initiated in a calendar year prior to the calendar year in which the deed is recorded. Write the year the contract was initiated between the seller and buyer. Do **not** select this item if the installment contract for deed was initiated and the property was transferred within the same calendar year.

Line 10c, Transfer of less than 100 percent interest — The seller transfers a portion of the total interest in the property. Other owners will keep an interest in the property. Do **not** consider severed mineral rights when answering this question.

Line 10d, Court-ordered sale — The property’s sale was ordered by a court (e.g., bankruptcy, foreclosure, probate).

Line 10g, Short sale — The property was sold for less than the amount owed to the mortgage lender or mortgagor, if the mortgagor has agreed to the sale.

Line 10h, Bank REO (real estate owned) — The first sale of the property owned by a financial institution as a result of a judgment of foreclosure, transfer pursuant to a deed in lieu of foreclosure, or consent judgment occurring after the foreclosure proceeding is complete.

Line 10k, Seller/buyer is a financial institution — “Financial institution” includes a bank, savings and loan, credit union, Resolution Trust Company, and any entity with “mortgage company” or “mortgage corporation” as part of the business name.

Line 10o, Buyer is exercising an option to purchase — The sale price was predicated upon the exercise of an option to purchase at a predetermined price.

Line 10p, Trade of property (simultaneous) — Buyer trades or exchanges with the seller one or more items of real estate for part or all of the full actual consideration (sale price) on Line 11.

Line 10r, Other — Explain any special facts or circumstances involving this transaction that may have affected the sale price or sale agreement or forced the sale of the property. This includes property that is subject to an existing lease or property that is part of an IRC §1031 Exchange.

Line 10s, Homestead exemptions on most recent tax bill — Write the dollar amount for any homestead exemption reflected on the most recent annual tax bill.

Step 2: Calculate the amount of transfer tax due.

Round Lines 11 through 18 to the next highest whole dollar.

Note: File PTAX-203-B, Illinois Real Estate Transfer Declaration Supplemental Form B, when filing instruments other than deeds, or trust documents. (Do **not** complete Step 2, of the PTAX-203 when filing the PTAX-203-B).

Line 11 — Write the full actual consideration (sale price). Full actual consideration is the amount actually paid, excluding any amount credited against the purchase price or refunded to the buyer for improvements or repairs to the property. Include the amount for other real estate transferred in a simultaneous exchange from the buyer to the seller, even if the transfer involves an even exchange. Also include the amount of outstanding mortgages to which the property remains subject at the time of the transfer.

Note: File PTAX-203-A, Illinois Real Estate Transfer Declaration Supplemental Form A, if the amount on Line 11 is over \$1 million and the property’s current use on Line 8 is marked “Apartment building (over 6 units),” “Office,” “Retail establishment,” “Commercial building,” “Industrial building,” or “Other.”

Line 12a — Write the amount of personal property items included in the sale price on Line 11. Do **not** include the value of a beneficial interest of a land trust. Personal property items are generally listed on the “bill of sale.” If you are uncertain as to whether an item is real estate or personal property, consult your attorney, tax advisor, or the chief county assessment officer.

On 8½” x 11” paper, submit an itemized list of personal property (include values) transferred from the seller to the buyer if this sale meets either of the following conditions:

- residential property — if the amount of personal property (not including the value of a mobile home) on Line 12a is greater than 5 percent of the sale price on Line 11, **or**
- non-residential property — if the amount of personal property on Line 12a is greater than 25 percent of the sale price on Line 11.

Residential personal property — Generally, “personal property” includes items that are **not** attached (built-in) to the home and that are normally removed by the seller when vacating the property. Examples include artwork, automobiles and boats, draperies, furniture, free-standing appliances (e.g., refrigerators, stoves, washers and dryers, but **not** built-in appliances), lawn mowers, tractors, snow blowers, rugs (excludes wall-to-wall carpets), and window air-conditioners (excludes central air). Include the value of a mobile home as personal property on Line 12a if it meets **all** of the following conditions:

- The value of the mobile home was included on Line 11.
- The value of the mobile home was not included on the real estate tax bill.

Commercial/industrial personal property — Generally, “personal property” is any item that is **not** a permanent improvement to the land and includes, but is not limited to, intangibles such as goodwill, licenses, patents, franchises, business or enterprise values; and certain tangibles such as inventories, cash registers and shopping carts, free-standing shelving and displays, furniture, office equipment and supplies, vehicles, and machinery and equipment not assessed as real estate.

Generally, “personal property” does **not** include building components (e.g., wiring and lighting, heating, air-conditioning, plumbing, fire protection); foundations, pits and other building components for specialized or heavy machinery; permanent fixtures including, but not limited to, machinery and equipment and cranes assessed as real estate, cranes, and non-portable tanks; and site improvements such as paving and fencing.

Line 14 — Write the amount of other real estate transferred from the buyer to the seller that was included in the sale price on Line 11. This value only applies to a **simultaneous** exchange between the parties involved in this transaction. Do **not** include the value of property involved in a deferred exchange under IRC §1031.

Line 15 — Write an amount **only** if the deed or trust document states that the transferred property remains subject to a mortgage at the time of the transfer.

Line 16 — Use an “X” to identify the letter of the provision for the exemption from the transfer tax (i.e., (b), (k), or (m)) that applies to this transfer. See “Which property transfers are exempt from real estate transfer tax?” in these instructions.

Step 3: Write the legal description from the deed.

Write the legal description from the deed. Use a minimum 10-point font if the legal description is typed. If the legal description will **not** fit in the space provided, submit an 8½” x 11” copy of the extended legal description from the deed with this form.

Step 4: Complete the requested information.

Write the requested information for the seller, buyer, and preparer. Write the addresses and daytime phone numbers where the seller and buyer can be contacted **after** the sale.

The seller and buyer (or their agents) and preparer **must** sign this form. By signing the form, the parties involved in the real estate transfer verify that

- they have examined the completed Form PTAX-203,
- the information provided on this form is true and correct, and
- they are aware of the criminal penalties of law associated with falsifying or omitting any information on this form.

Use an “X” to identify any required documents submitted with this form.

ILLINOIS REAL ESTATE TRANSFER DECLARATION, Form PTAX-203

Each deed and assignment of beneficial interest of a land trust recorded must be accompanied by Form PTAX 203 Illinois Real Estate Transfer Declaration, unless specifically exempted under Section 31-45 of the Property Tax Code. The PTAX-203 contains information from the buyer and seller and from the Chief County Assessing Officer (S/A) that is analyzed and used by the Department in their annual assessment/sales ratio study for each county. If the property has a sale price over \$1 million and has a current use of “Apartment building (over 6 units),” “Office,” “Retail establishment,” “Commercial building,” “Industrial building,” or “Other,” a Form PTAX-203-A, Illinois Real Estate Transfer Declaration, Supplemental Form A must also be filed.

This study is conducted by the Department’s Property Tax Division, Equalization and Review Section, and provides the basis of computation for equalization factors in support of the Department's statutory responsibility to equalize the level of assessments among the counties in the state. (Inter-county equalization)

Note: The Department has the option of supplementing data with appraisals or other methods of determining assessment levels.

Form PTAX 203, Illinois Real Estate Transfer Declaration, is commonly referred to as the RETD, and is the primary source of information used by the Department and by any assessing official when conducting a sales ratio study.

The purpose of this unit is to introduce basic sales analysis used by the Department to determine the sales that will be included in the sales ratio study. If both the assessing officials and the Department use the same editing processes and methodology, a sales ratio study conducted by both groups should produce the same results. Any questions concerning the sales ratio study should be addressed to the Equalization and Review Section at the Department of Revenue.

MARKET VALUE

MARKET VALUE¹ means the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus.

Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. buyer and seller are typically motivated;
2. both parties are well informed or well advised, and acting in what they consider their best interests;
3. a reasonable time is allowed for exposure in the open market;
4. payment is made in terms of cash in United States dollars or in terms of financial arrangements comparable thereto; and
5. the price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

The sale must also be an arm's length transaction which is one "between unrelated parties or parties not under abnormal pressure from each other"². Therefore sales between related parties are excluded from the sales ratio study.

¹ *Uniform Standards of Professional Appraisal Practice*, 2006 ed. (Washington, D.C.: Appraisal Foundation 2006), p. 194.

² p. 27, *Property Appraisal and Assessment Administration*, Joseph Eckert, editor, The International Association of Assessing Officers, Chicago, IL, 1990.

In general there are three major areas of concern that would cause a sale to be excluded from the sales ratio study:

1. The sale did not meet the definition of fair market value (fair cash value).
The following reasons are examples of exclusions from the sales ratio study.
 - a. "Competitive and open market"
 - Not advertised for sale
 - Family (same surname) Transfer
 - b. "Not affected by undue stimulus"
 - Transfer to a bank, credit union, or savings and loan
 - Sale in lieu of a foreclosure
 - Sheriff's Deed
 - Court Officer's Deed
 - Transfers to Government Unit
2. The assessed value and the sales price are not comparable.
 - a. There is a new improvement.
 - If the property was vacant in the year of assessment and it sold in the following year with a new house, the property that was assessed and the property that sold was not the same physical property.
 - b. Property was demolished.
 - If the property was assessed with a house in one year and that following year the house was demolished and sold as vacant land.
 - c. Partial or pro-rated assessment.
3. The sale involved exempt or specially-assessed property.
 - a. Cemetery lots (exempt)
 - b. Farmland/farm buildings
 - c. Governmental agencies
 - d. Historic homes
 - e. Hospitals
 - f. Low income housing
 - g. Model homes
 - h. Mortgage Corporations
 - i. Veteran's organization
 - j. Others

Deed types or circumstances that indicate that the sale may not meet the market value definition may cause the sale to be excluded from the sales ratio study.

DEED TYPES OR CIRCUMSTANCES THAT WILL EXCLUDE A SALE FROM THE URBAN SALES RATIO STUDY

Limited Warranty Deed	Special Warranty Deed
Deed in Trust	Quit Claim Deed
Court Officer's Deed	Master's Deed
Special Commissioner Deed	Administrator's Deed
Guardian's Deed	Conservator's Deed
Trust Deed (Mortgage)	Cemetery Lots (Exempt)
Family (same surname) Transfer	Re-Recording of Document
Sheriff's Deed	Timber Rights-Mineral Rights
Transfers to Government Unit	Transfer to a Hospital
Transfers to/from Charitable Organizations	
Auction Sales	
Supplemental Deed Given to Correct an Error in Previous Deed	
Conveyance of Less than Full Interest Transfers	
Assignments of Beneficial Interest of a Land Trust	
Sale that includes exchange of real estate	

ADDITIONAL EXCLUSIONS:

Note: The following list includes additional examples of reasons for exclusion from the sales ratio study.

Partial Assessment	RETD filed in wrong county
Prorated Assessment	Multiple county sale
Exempt Properties	Option to Purchase
State-assessed properties	

Executor Deeds are excluded from the non-farm (urban) study, but are acceptable for the farm study. Sales are also excluded where the seller is an executor or administrator.

If the sale involves land that is located in more than one township, the sale is excluded from the urban study.

Warranty deeds are acceptable if not rejected for some other reason. Trustee deeds are acceptable for the study if they pass all the edits. Corporate Warranty deeds are useable if the companies involved are not related.

GENERAL INFORMATION
FOR FILING/EDITING
REAL ESTATE TRANSFER DECLARATIONS (RETD)

Illinois statutes require every real property transfer (sale) to be accompanied with a Illinois Real Estate Transfer Declaration form unless exempt by statute. This form is prepared by the buyer/seller or a preparer (attorney, title company, *etc*). The form may be prepared in several ways:

1. Manually – by filing a paper RETD
To print a blank form:
<http://tax.illinois.gov/LocalGovernment/PropertyTax/rett.htm>
Click on the link “PTAX-203 & Instructions”
2. Internet: <http://tax.illinois.gov/LocalGovernment/PropertyTax/rett.htm>
Click on the link “Prepare your PTAX 203 online”
This will generate a secure document.

Complete the RETD on the screen and print a completed copy to take to the recorder. If the form is not fully completed, it will not print. The program will list the type of missing information needed.

3. MyDec is a new program designed to provide a free and easy electronic method for preparing and filing your real estate transfer declaration. The pilot program for MyDec began with Cook county. Other counties will be added when the initial phase is completed.

The final document will be a paper document that is filed with the County Recorder. The County Recorder will complete the applicable sections and send the document on to the CCAO. The CCAO will then complete his or her applicable sections and then send the RETD to the Department. The CCAO should not send in the RETD until the Board of Review has adjourned for the prior year. Some counties currently transfer the RETD to the Department electronically, followed by the paper RETD. This electronic process involves entry of the information from the RETD while verifying the information for completeness and accuracy. The same application runs certain checks to determine whether the sale is potentially useable.

For those counties that do not send an electronic version, the Department of Revenue applies a similar process. Sales that have been identified as non-useable are then carefully screened by examiners to determine whether the difficulties with the RETD may be resolved.

Once all of the declarations are received and edited, the Department will conduct a sales ratio study with all of the useable sales.

Certain Line Instructions for RETD's

Line 5 – Mark with an “x” the type of instrument (deed).

The following deed types are the only deed types that are included in the sales ratio studies. All other deed types would exclude the sale from the study.

- Warranty deeds
- Trustee deeds

Line 7– Answer “Yes” or “No” if the property was advertised for sale.

Sale meets the “advertised for sale” if it was open to the general public for sale through avenues such as advertised by newspaper, trade publication, radio/electronic media, a sign, word of mouth, or through a real estate agent.

If the property was not available to the public, exclude the sale.

Line 8– Identify the property’s current use and intended primary use.

Used to determine changes in use.

Line 8c–Be sure to review this line because if the mobile home is personal property, the amount should be included in the value of personal property on line 12a. Subtract this amount from the full actual consideration on line 11 to arrive at the net consideration on line 13. If the mobile home is real estate, do not include the amount in the value of personal property.

Line 9: Identify any significant physical changes in the property since January 1 of the previous year and write the date of the change.

Used to determine changes in AV due to changes in construction. Physicals changes must have been done since January 1 of the previous year and before the sales date.

Line 10: Identify only the items that apply to this sale.

Examples of other reasons to exclude a sale from the study:

Fulfillment of installment contract	Sale-leaseback
Sale between related individuals	Governmental Agency
Transfer of less than 100% interest	Court-ordered sale
Charitable organization transfer	Condemnation
Option to Purchase	
Auction Sales	
Same surname transfer	

Note: The following properties will be used in the sales ratio study:

- Real Estate Investment Trust (REIT)
- Pension Fund
- Adjacent Property Owner
- Relocation Company
- Trade of property

Line 11: Full actual consideration – actual money paid for the property.

Line 12: Amount of personal property included in the sale price.

Line 13: Net consideration –the full actual consideration minus personal property

Comments by the CCAO may be made by code numbers. If the information on the PTAX-203 is not believed to be correct, the CCAO should use the appropriate code to inform the Department.

To calculate a sales ratio:

1. Determine the assessed value of the property from the prior year from the final board of review values.

For the 2014 sales ratio study, the assessed value would come from 2013 and the sales would be from 2014.

The year of the sales ratio study is the same as the year of the sales.

2. Determine the net consideration for the sale from line 13 of the PTAX 203.

If the sale involves a mobile home, be careful to determine whether the mobile home was assessed as personal property (which should be subtracted from the full consideration) or as real property (which will not be subtracted from the full consideration).

3. Divide the assessed value by the net consideration and multiply by 100 to change the number to a percent.

Unit 7: Real Estate Transfer Declarations

Summary

Each deed and assignment of beneficial interest of a land trust recorded must be accompanied by Form PTAX-203, Illinois Real Estate Transfer Declaration, unless specifically exempted under Section 31-45 of the Property Tax Code. The RETD is the primary source of information for conducting a sales ratio study.

If the sale involves land that is located in more than one township, the sale is excluded from the urban study.

Warranty deeds are acceptable if not rejected for some other reason. Trustee deeds are acceptable for the study if they pass all the edits. Corporate Warranty deeds are useable if the companies involved are not related.

When calculating the sales ratio, use the assessed value after the books are closed at the board of review divided by the net consideration from the sale price.

Unit 7: Real Estate Transfer Declarations

Review

1. List two deed types that would be included in the sale the sales ratio study:

2. List five uses of property that would exclude a sale from the sales ratio study:

3. List two other reasons why a sale would be excluded from the sales ratio study.

Unit 8

The Sales Ratio Study: Table 1

This unit covers Table 1 from the Sales Ratio Study. The “I-E Class Sales Ratio Study” is found in the Supplemental section at the back of the packet. This unit focuses on the understanding and interpretation of the sales ratio studies.

The purpose of this unit is to familiarize township assessors and supervisors of assessments with the sales ratio study and the information that can be gathered from it. Particular emphasis is on the median level of assessments, measures of assessment uniformity, and equalization.

The “I-E Class Sales Ratio Study” has fictitious counties and townships. Its purpose is to become familiar with the information and format of the sales ratio study.

LEARNING OBJECTIVES:

After completing the assigned readings, you should be able to:

- find the median level of assessments for a county or township
- locate the measures of assessment uniformity for a jurisdiction
- determine whether a jurisdiction is assessing uniformly
- analyze what types of properties are most in need of reassessment

Table 1: Assessment Ratios

Turn to the “I-E Class Sales Ratio Study” in the supplemental section at the back of the manual.⁶

Columns in Table 1 of the sales ratio study:

1. **Geographic Area:** name of the county or township.
2. **Urban** when all of the useable sales are included; “Imp” if the study only includes improved properties, or “Unimp” if the study includes only unimproved properties
3. **Adjusted Median** found by adjusting the calculated median for changes due to reassessment. The adjusted median is the median used in the calculation of the equalization factors.
4. **Median** as calculated from the sales ratio study
5. **COD**
6. **Sales:** number of sales used in the sales ratio study.
7. **1st Quartile:** ratio such that 25% ($\frac{1}{4}$) of the ratios are smaller than the number listed and 75% ($\frac{3}{4}$) of the ratios are larger than the ratio listed.
8. **3rd Quartile:** ratio such that 75% ($\frac{3}{4}$) of the ratios are smaller than the number listed and 25% ($\frac{1}{4}$) of the ratios are larger than the ratio listed
9. **Ratio Range:** the difference between the largest sales ratio and the smallest sales ratio
10. **PRD**
11. **95% Confidence Interval:** the ratio range such that there is a 95% assurance that the true median of all properties falls within this range
12. **COC**

Note that the MAD is not yet incorporated into the Table 1 due to space constraints.

Look at the first county on the list : Arthur county. All of the townships have “Urban” in the second column. “Urban” refers to studies that exclude farm sales.

Now look at “Baker County.” Apple River township has “Urban” directly to the right of the township name. “Urban” refers to the total number of useable non-farm sales in the county or township. Below “Urban” is “Imp” which stands for improved properties and “Unimp” which stands for unimproved properties. For all counties other than Cook, the Department calculates median assessment levels

⁶ This table is for illustrative purposes only. The table is similar in form to the actual Table 1 Assessment Ratios published by the Department of Revenue..

for both “improved” and “unimproved” urban property when there are 25 or more useable sales in each of these subcategories. This information helps local assessing officials identify the presence or absence of a systematic bias toward higher or lower assessment levels on unimproved property. Look at the 6th column whose heading is “Sales.” For Apple River township there were a total of 141 useable sales. Of these 31 were improved properties and 110 were unimproved.

The heading for the fourth column is “Median.” This is the median as calculated from the sales ratio study before any adjustments are made. For Brown Township #1, found on p.(39), the median was calculated to be 32.50%. For Ferrari township in Autobahn county, the median as calculated is 28.62%. The heading of the third column is “Adjusted Median.” This is the calculated median from the fourth column after adjustments for changes due to reassessment or equalization by the CCAO or the board of review. In Duke county, Water Well township has a (raw) median of 32.41%. Notice that the adjusted median for Water Well township has a “–“ in the adjusted median column. This indicates that the adjusted median is the same as the (raw) median of 32.41%.

There are 11 counties in this classroom sales ratio study. Looking at the “Total County” row and the “Adjusted Median” column, find the county whose adjusted median is closest to 33.33%. _____

Find the county with the median of 29.57% _____.

Refer to Table 1 in the “I-E Class Sales Ratio Study” found at the back of the supplemental section.

Unit 8, Exercise 1: Find the adjusted median level of assessments.

- Jaguar Township, Autobahn County _____
- Big Valley Township, Duke County _____
- Carnation Township, Floral County _____
- Wyoming Township, Hayes County _____
- Aspen Township, Lincoln County _____

Unit 8, Exercise 2: Find the COD.

Pole Cat Township, Duke County _____
Hidden Valley Township, Grant County _____
Abilene Township, Harrison County _____
Red Maple Township, Lincoln County _____
Tennyson Township, Roosevelt County _____

Best COD _____ Township

Unit 8, Exercise 3: Find the PRD.

Yugo Township, Autobahn County _____
Tennyson Township, Roosevelt County _____
Mulberry Pie Township, Baker County _____
Water Well Township, Duke County _____
Holly Township, Lincoln County _____

Best PRD _____ Township

Unit 8, Exercise 4: Find the COC.

Lamborghini Township, Autobahn County _____
Abilene Township, Harrison County _____
Peach Cobbler Township, Baker County _____
Daisy Township, Duke County _____
Walnut Grove Township, Lincoln County _____

Best COC _____ Township

Unit 8, Exercise 5: Assessment Ratios for Lincoln County.

The Supervisor of Assessments wants to determine whether there is a difference in uniformity between improved and unimproved properties. Several townships have enough sales to have sales ratio studies done by these sub-categories. He or she decides to look at all of the available measures of uniformity listed in the sales ratio study book. (The MAD is not yet printed on Table I due to space constrictions.) By comparing the unimproved properties to the improved properties for the townships that had enough sales to conduct sales ratio studies for the sub-categories of “Improved” and “Unimproved”, determine which type of property was most uniformly assessed for each of the measures of uniformity listed.

a. For the **COD**:

	Improved	Unimproved
Blue Spruce	_____	_____
Cherry	_____	_____
Cottonwood	_____	_____
Hawthorn	_____	_____

Most uniform (COD) is (unimproved, improved) _____

b. For the **COC**:

	Improved	Unimproved
Blue Spruce	_____	_____
Cherry	_____	_____
Cottonwood	_____	_____
Hawthorn	_____	_____

Most uniform (COC) is (unimproved, improved) _____

c. For the **PRD**:

	Improved	Unimproved
Blue Spruce	_____	_____
Cherry	_____	_____
Cottonwood	_____	_____
Hawthorn	_____	_____

Most uniform (PRD) is (unimproved, improved) _____

Overall, which type of property should she concentrate on for reassessment?

Unit 8, Exercise 6: My County

“Table 1 – Assessment Ratios” may be accessed on our website at tax.illinois.gov/AboutIdor/TaxStats/index.htm . Look for “Table 1, Assessment Ratio Levels.”

What was the assessment level for your county? _____

Were you assessing uniformly throughout the county? _____

What was the number associated with your uniformity indicator? _____

Which of the townships in your county were assessing most uniformly? _____

Which of the townships in your county were assessing least uniformly? _____

Unit 8: Sales Ratio Study

Summary

The sales ratio study as performed by the Department of Revenue provides multiple tools for a more complete grasp of assessment uniformity within the county.

The sales ratio study, as it appears in “Table 1 Assessment Ratios”, provides the assessor with information necessary to determine what townships would be most helped by reassessment. The assessor, using the calculations of the median, the COD, the MAD, the PRD, and the COC, may make a better determination on how to most effectively utilize limited time and resources to improve assessment uniformity.

Unit 8: Sales Ratio Study

Review

Assessment Ratios for FLORAL COUNTY

Refer to the “I-E Class Sales Ratio Study” in the supplemental section.

1. What was the median assessment ratio for Carnation township? _____
2. Begonia township was under-assessed, statutorily assessed, or over-assessed? _____
3. Which township was assessing closest to the statutory level? _____
4. Considering only the COD, name the township that was:
 - a. least uniformly assessed. _____
 - b. most uniformly assessed. _____

Supplemental Section

Supplemental Exercise

Unit 3, Exercise 14: LAWRENCE TOWNSHIP #2 SALES RATIO STUDY

Av	Sale Price	Sales Ratio (%)	Ranked	Deviation	Ranked
\$ 22,097	\$ 124,000	_____	_____	_____	_____
36,098	117,500	_____	_____	_____	_____
37,474	98,000	_____	_____	_____	_____
31,520	105,000	_____	_____	_____	_____
28,064	62,900	_____	_____	_____	_____
10,475	24,600	_____	_____	_____	_____
24,522	79,000	_____	_____	_____	_____
37,475	138,700	_____	_____	_____	_____
35,176	85,000	_____	_____	_____	_____
18,931	72,400	_____	_____	_____	_____
22,258	58,200	_____	_____	_____	_____
5,210	12,800	_____	_____	_____	_____
28,285	87,300	_____	_____	_____	_____
31,845	113,000	_____	_____	_____	_____
27,407	82,900	_____	_____	_____	_____
7,319	18,700	_____	_____	_____	_____
20,744	69,500	_____	_____	_____	_____
31,548	92,300	_____	_____	_____	_____

Median Level of Assessment _____

Coefficient of Dispersion (COD) _____

Median Absolute Deviation (MAD) _____

Coefficient Of Concentration (COC) _____

Price Related Differential (PRD) _____

Supplemental Exercise

Unit 3, Exercise 14 LAWRENCE TOWNSHIP #2 SALES RATIO STUDY

Assessed Value	Sale Price	Sales Ratio (%)	Ranked	Dev	Ranked
\$ 22,097	\$ 124,000	17.82	17.82	14.91	.33
36,098	117,500	30.72	26.15	2.01	.33
37,474	98,000	38.24	27.02	5.51	1.45
31,520	105,000	30.02	28.18	2.71	1.69
28,064	62,900	44.62	29.85	11.89	2.01
10,475	24,600	42.58	30.02	9.85	2.71
24,522	79,000	31.04	30.72	1.69	2.88
37,475	138,700	27.02	31.04	5.71	4.55
35,176	85,000	41.38	32.40	8.65	5.51
18,931	72,400	26.15	33.06	6.58	5.51
22,258	58,200	38.24	34.18	5.51	5.71
5,210	12,800	40.70	38.24	7.97	6.41
28,285	87,300	32.40	38.24	.33	6.58
31,845	113,000	28.18	39.14	4.55	7.97
27,407	82,900	33.06	40.70	.33	8.65
7,319	18,700	39.14	41.38	6.41	9.85
20,744	69,500	29.85	42.58	2.88	11.89
31,548	92,300	34.18	44.62	1.45	14.91
456,448	1,441,800	605.34		98.94	

Median Level of Assessment	32.73 %
Coefficient of Dispersion (COD)	16.80 %
Median Absolute Deviation (MAD)	16.83 %
Coefficient Of Concentration (COC)	38.89 %
Price Related Differential (PRD)	1.06

Supplemental Exercise

Unit 6, Exercise 5: Trend forward and backward

You will find the charts and tables on the following pages.

A township assessor is applying for the 2014 assessor's bonus. She needs to determine whether her 3-year average median level of assessments is between _____ % and _____ %. She also needs to know her COD to see if it is in the right range. The population of her county is 62,793.

The township did not have 25 useable sales for any of the 3 years needed for the 2014 assessor bonus award. Therefore the assessor will have to use trending to calculate the township medians for each of the 3 years (2011, 2012, and 2013).

The **county** medians are:

2011 Urban Weighted Median	=	34.01
2012 Urban Weighted Median	=	31.53
2013 Urban Weighted Median	=	30.65

OVERVIEW:

Exercise 5 A: Trend backward

Determine 2011 median level – trend 2012 to 2011

Exercise 5 B: Trend backward

Determine 2012 median level – trend 2013 to 2012

Exercise 5 C: Trend forward

Determine 2013 median level - trend 2012 to 2013

Exercise 5 D: Calculate 3–year average median level of assessments

Exercise 5 E: Calculate the COD for 2013

Values for the 2011 Sales

The 2011 Sales will **not** be used to trend either forward or backward. The only information needed is the 2011 ratios as calculated from the 2011 sales and the corresponding 2010 AV's in order to calculate the 2011 median.

2011 Ratios

26.34	26.81	27.13	28.38	29.30
30.74	33.23	36.67	42.78	43.20

Values for the 2012 Sales

The 2012 sales 1) will be trended backward to be combined with the existing 2011 sales to determine a 2011 median and 2) will also be trended forward to be combined with existing 2013 sales ratios to determine a 2013 median.

After applying the trending factor to the 2012 sales price to determine an adjusted sales price for the year, the assessed value for those same sales for the prior year is needed.

- 1) 2010 assessed values for the 2012 sales adjusted to 2011 are needed to determine the 2011 trended sales ratios.
- 2) 2012 assessed value for the 2012 sales adjusted to 2013 is needed to determine the 2013 trended sales ratios.
- 3) 2012 sales ratios using 2011 AV and 2012 SP have been calculated in the table below.

<u>2010 AV</u>	<u>2011 AV</u>	<u>2012 AV</u>	<u>2012 SP</u>	<u>2012 SR</u>
\$ 5,120	\$ 5,120	\$ 8,510	\$ 25,000	20.48
9,360	9,360	13,150	40,000	23.40
14,990	15,228	21,990	60,000	25.38
10,210	10,209	13,550	39,800	25.65
16,920	16,920	21,110	65,000	26.03
15,700	15,702	20,390	60,000	26.17
26,470	28,558	35,580	109,000	26.20
2,160	2,160	2,380	8,000	27.00
5,560	5,560	6,940	20,000	27.80
13,270	13,270	15,670	46,500	28.54
36,570	36,576	41,900	127,000	28.80
29,660	29,664	33,340	101,000	29.37
19,600	19,598	22,430	65,000	30.15
21,390	21,393	22,330	68,000	31.46
11,210	11,209	11,430	32,500	34.49
15,140	15,141	15,010	43,875	34.51

Values for the 2013 Sales

The 2013 sales will be trended backward to be combined with the existing 2012 sales to determine a 2012 median

After applying the trending factor to the 2013 sales price to determine an adjusted sales price for the year, the assessed value for those same sales for 2011 is necessary.

2013 sales ratios using 2012 AV and the actual 2013 SP have already been calculated and are shown as the 2013 existing ratios.

2013 Existing Ratios

22.31	25.29	25.40	27.83	27.94
29.33	29.60	30.52	30.91	32.85
37.54	43.58	124.14		

2011 AV 2013 SP

\$ 14,380	\$ 67,500
3,740	15,500
6,430	26,500
27,900	105,000
17,610	66,000
7,920	27,000
11,310	40,000
9,040	31,000
4,870	16,500
13,330	42,500
10,040	28,000
4,990	12,000
8,300	7,000

Exercise 5 A: Determine 2011 median level
 – trend 2012 back to 2011

RANK

**Note: Not all of the existing ratios are already in the
 Ranked column**

$$\text{Trending Factor} = \frac{\text{County Median - Trended From Year}}{\text{County Median - Trended To Year}} = \underline{\hspace{2cm}}$$

26.34

26.81

27.13

2012 SP	Trending Factor	2011 Adjusted SP	2010 AV	2011 Ratios	
\$ 25,000	_____	23,178	5,120	22.09	_____
40,000	_____	37,084	9,360	25.24	_____
60,000	_____	_____	14,990	_____	28.38
39,800	_____	_____	10,210	_____	_____
65,000	_____	_____	16,920	_____	29.30
60,000	_____	_____	15,700	_____	_____
109,000	_____	_____	26,470	_____	_____
8,000	_____	_____	2,160	_____	_____
20,000	_____	_____	5,560	_____	_____
46,500	_____	_____	13,270	_____	_____
127,000	_____	_____	36,570	_____	_____
101,000	_____	_____	29,660	_____	_____
65,000	_____	_____	19,600	_____	_____
68,000	_____	_____	21,390	_____	_____
32,500	_____	_____	11,210	_____	_____
43,875	_____	_____	15,140	_____	_____

2011 Median Level of Assessments: _____

Exercise 5 B: Determine 2012 median level – trend 2013 to 2012

Trending Factor = _____

2013 \$ SP	Trending Factor	2012 Adjusted SP	2011 AV	2012 Ratios	
					20.48
					23.40
67,500	_____	_____	14,380	_____	
					25.38
15,500	_____	_____	3,740	_____	
					25.65
26,500	_____	_____	6,430	_____	
					26.03
					26.17
					26.20
105,000	_____	_____	27,900	_____	
					27.00
66,000	_____	_____	17,610	_____	
					27.80
27,000	_____	_____	7,920	_____	
					28.54
					28.80
40,000	_____	_____	11,310	_____	
					29.37
31,000	_____	_____	9,040	_____	
					30.15
16,500	_____	_____	4,870	_____	
					31.46
42,500	_____	_____	13,330	_____	
					31.46
28,000	_____	_____	10,040	_____	
					34.49
					34.51
12,000	_____	_____	4,990	_____	
7,000	_____	_____	8,300	_____	

Existing 2012 Sales Ratios: (These are ranked in rows)

20.48 23.40 25.38 25.65 26.03 26.17 26.20 27.00
 27.80 28.54 28.80 29.37 30.15 31.46 34.49 34.51

2012 Median Level of Assessments: _____

**Exercise 5 C: Determine 2013 median
– trend 2012 to 2013**

Ranked

22.31

25.29

Trending Factor: _____

25.40

27.83

27.94

2012 SP	Trending Factor	2013 Adjusted SP	2012 AV	2013 Ratios	
\$ 25,000	_____	_____	8,510	_____	_____
40,000	_____	_____	13,150	_____	_____
60,000	_____	_____	21,990	_____	_____
39,800	_____	_____	13,550	_____	_____
65,000	_____	_____	21,110	_____	_____
60,000	_____	_____	20,390	_____	_____
109,000	_____	_____	35,580	_____	_____
8,000	_____	_____	2,380	_____	_____
20,000	_____	_____	6,940	_____	_____
46,500	_____	_____	15,670	_____	_____
127,000	_____	_____	41,900	_____	_____
101,000	_____	_____	33,340	_____	_____
65,000	_____	_____	22,430	_____	_____
68,000	_____	_____	22,330	_____	_____
32,500	_____	_____	11,430	_____	_____
43,875	_____	_____	15,010	_____	_____

2013 Median Level of Assessments: _____

**Exercise 5 D: Determine the 3-year average median
level of assessments** _____

Exercise 5 E: Determine the 2013 COD:

2013 SR's 2013 Median Deviation

22.31	32.07	_____
25.29	32.07	_____
25.40		_____
27.83		_____
27.94		_____
28.92		_____
29.33		_____
29.60		_____
30.52		_____
30.91		_____
31.57		_____
31.73		_____
31.92		_____
31.96		_____
32.07		_____
32.09		_____
32.76		_____
32.85		_____
33.04		_____
33.09		_____
33.10		_____
33.26		_____
33.54		_____
33.73		_____
34.19		_____
35.63		_____
37.54		_____
43.58		_____
124.14		_____

COD = _____

Will the assessor receive the Assessor Bonus Award? _____

ANSWERS TO SUPPLEMENTAL EXERCISE

Unit 6, Exercise 5

Exercise 5 A: Determine 2011 median level – trend 2012 back to 2011

Trending Factor = <u>.9271</u>					RANK
26.34	26.81	27.13	28.38	29.30	
30.74	33.23	36.67	42.78	43.20	22.09
					25.24
					26.19
2012 SP	Trending Factor	2011 Adjusted SP	2010 AV	2011 Ratios	
\$ 25,000	.9271	23,178	5,120	22.09	26.34
40,000	.9271	37,084	9,360	25.24	26.81
60,000	.9271	55,626	14,990	26.95	26.95
39,800	.9271	36,899	10,210	27.67	27.13
65,000	.9271	60,262	16,920	28.08	27.67
60,000	.9271	55,626	15,700	28.22	28.08
109,000	.9271	101,054	26,470	26.19	28.22
8,000	.9271	7,417	2,160	29.12	28.38
20,000	.9271	18,542	5,560	29.99	29.12
46,500	.9271	43,110	13,270	30.78	29.30
127,000	.9271	117,742	36,570	31.06	29.99
101,000	.9271	93,637	29,660	31.68	30.74
65,000	.9271	60,262	19,600	32.52	30.78
68,000	.9271	63,043	21,390	33.93	31.06
32,500	.9271	30,131	11,210	37.20	31.68
43,875	.9271	40,677	15,140	37.22	32.52
					33.23
					33.93
					36.67
					37.20
					37.22
					42.78
					43.20

2011 Median Level of Assessments: 29.65 %

Exercise 5 B: Determine 2012 median level – trend 2013 to 2012

Trending Factor = .9721

2013 \$ SP	Trending Factor	2012 Adjusted SP	2011 AV	2012 Ratios	
					20.48
					21.92
					23.40
					24.82
67,500	<u>.9721</u>	65,617	14,380	21.92	24.96
					25.38
15,500	<u>.9721</u>	15,068	3,740	24.82	25.65
					26.03
26,500	<u>.9721</u>	25,761	6,430	24.96	26.17
					26.20
105,000	<u>.9721</u>	102,071	27,900	27.33	27.00
					27.33
66,000	<u>.9721</u>	64,159	17,610	27.45	27.45
					27.80
27,000	<u>.9721</u>	26,247	7,920	30.17	28.54
					28.80
40,000	<u>.9721</u>	38,884	11,310	29.09	29.09
					29.37
31,000	<u>.9721</u>	30,135	9,040	30.00	30.00
					30.15
16,500	<u>.9721</u>	16,040	4,870	30.36	30.17
					30.36
42,500	<u>.9721</u>	41,314	13,330	32.27	31.46
					32.27
28,000	<u>.9721</u>	27,219	10,040	36.89	34.49
					34.51
12,000	<u>.9721</u>	11,665	4,990	42.78	36.89
					42.78
7,000	<u>.9721</u>	6,805	8,300	121.97	121.97

2012 Median Level of Assessments: 28.54 %

Exercise 5 C: Determine 2013 median level
Trend 2012 to 2013

Ranked
22.31

25.29

Trending Factor 1.0287

25.40

27.83

27.94

28.92

2012 SP	Trending Factor	2013 Adjusted SP	2012 AV	2013 Ratios	Ranked
					<u>29.33</u>
					<u>29.60</u>
					<u>30.52</u>

\$ 25,000	<u>1.0287</u>	<u>25,718</u>	8,510	<u>33.09</u>	<u>30.91</u>
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40,000	<u>1.0287</u>	<u>41,148</u>	13,150	<u>31.96</u>	<u>31.57</u>
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60,000	<u>1.0287</u>	<u>61,722</u>	21,990	<u>35.63</u>	<u>31.73</u>
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39,800	<u>1.0287</u>	<u>40,942</u>	13,550	<u>33.10</u>	<u>31.92</u>
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65,000	<u>1.0287</u>	<u>61,722</u>	21,110	<u>31.57</u>	<u>31.96</u>
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60,000	<u>1.0287</u>	<u>40,942</u>	20,390	<u>33.04</u>	<u>32.07</u>
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109,000	<u>1.0287</u>	<u>66,866</u>	35,580	<u>31.73</u>	<u>32.09</u>
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8,000	<u>1.0287</u>	<u>61,722</u>	2,380	<u>28.92</u>	<u>32.76</u>
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20,000	<u>1.0287</u>	<u>112,128</u>	6,940	<u>33.73</u>	<u>32.85</u>
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46,500	<u>1.0287</u>	<u>8,230</u>	15,670	<u>32.76</u>	<u>33.04</u>
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127,000	<u>1.0287</u>	<u>130,645</u>	41,900	<u>32.07</u>	<u>33.09</u>
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101,000	<u>1.0287</u>	<u>103,899</u>	33,340	<u>32.09</u>	<u>33.10</u>
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65,000	<u>1.0287</u>	<u>66,866</u>	22,430	<u>33.54</u>	<u>33.26</u>
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68,000	<u>1.0287</u>	<u>69,952</u>	22,330	<u>31.92</u>	<u>33.54</u>
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32,500	<u>1.0287</u>	<u>33,433</u>	11,430	<u>34.19</u>	<u>33.73</u>
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43,875	<u>1.0287</u>	<u>45,134</u>	15,010	<u>33.26</u>	<u>34.19</u>
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35.63

2013 Median Level of Assessments: 32.07 %

37.54

Exercise 5 D: Determine the 3-year average median

43.58

level of assessments 30.09 %

124.14

Exercise 5 E: Determine the 2013 COD:

<u>2013 SR's</u>	<u>2013 Median</u>	<u>Deviation</u>	
22.31	32.07	9.76	
25.29	32.07	6.78	
25.40		6.67	
27.83		4.24	
27.94		4.13	
28.92		3.15	
29.33		2.74	
29.60		2.47	
30.52		1.55	
30.91		1.16	
31.57		.50	
31.73		.34	
31.92		.15	
31.96		.11	
32.07		0	
32.09		.02	
32.76		.69	
32.85		.78	
33.04		.97	
33.09		1.02	
33.10		1.03	
33.26		1.19	
33.54		1.47	
33.73		1.66	
34.19		2.12	
35.63		3.56	
37.54		5.47	
43.58		11.51	COD = <u>18 %</u>
124.14		92.07	

Will the assessor receive the Assessor Bonus Award? NO

Answer Key

Section

Unit 1: Overview of the Property Tax Cycle

REVIEW

- T F 1. A minimum of 20 useable sales/appraisals are needed for a township sales ratio study.
- T F 2. The chairman of the Board of Review signs the final abstract.
- T F 3. Property must be viewed, inspected, and revalued once every 4 years.
- T F 4. To qualify for state reimbursement of a portion of the supervisor of assessment's salary, the COD must not be greater than 15.

Fill in the blanks.

5. What two types of properties are assessed by the state?
 railroad and pollution control
6. An ad valorem tax is a tax based on value .
7. Real property is land or anything permanently attached to the land.
8. Market Value is the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus.
9. Intra – county equalization refers to equalization by officials within the county.
10. The median used in determining the equalization factor is the average of the medians from the prior three years.
11. In order to qualify for the assessor bonus award, the assessor must be in a qualified position, have a 3 - year average median level of assessments between 31 1/3% and 35 1/3% , and a COD no greater than 30% (assuming that the population of the county is 50,000 or less).

Unit 2: The Sales Ratio Study

Exercises

Unit 2, Exercise 1

BROWN TOWNSHIP # 1 SALES RATIO STUDY

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Ranked (%)
\$ 26,000	\$ 80,000	<u>32.50</u>	<u>28.75</u>
3,000	7,500	<u>40.00</u>	<u>29.08</u>
19,200	60,000	<u>32.00</u>	<u>29.34</u>
4,200	11,400	<u>36.84</u>	<u>29.88</u>
2,800	6,500	<u>43.08</u>	<u>29.90</u>
25,000	83,600	<u>29.90</u>	<u>30.02</u>
17,100	50,000	<u>34.20</u>	<u>32.00</u>
17,900	59,900	<u>29.88</u>	<u>32.50</u>
18,400	61,300	<u>30.02</u>	<u>34.20</u>
3,500	7,600	<u>46.05</u>	<u>34.40</u>
4,300	9,900	<u>43.43</u>	<u>36.84</u>
25,800	75,000	<u>34.40</u>	<u>40.00</u>
16,500	57,400	<u>28.75</u>	<u>43.08</u>
27,200	92,700	<u>29.34</u>	<u>43.43</u>
28,500	98,000	<u>29.08</u>	<u>46.05</u>

Median 32.50%

Note: This exercise is for classroom purposes only. There must be 25 useable sales in order to calculate a median level of assessments.

Unit 2, Exercise 2:

BROWN TOWNSHIP # 2

SALES RATIO STUDY

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio %	Ranked
\$ 10,000	86,800	<u>11.52</u>	<u>11.52</u>
15,600	70,000	<u>22.29</u>	<u>22.29</u>
20,300	80,000	<u>25.38</u>	<u>25.38</u>
26,000	80,000	<u>32.50</u>	<u>28.75</u>
3,000	7,500	<u>40.00</u>	<u>29.08</u>
19,200	60,000	<u>32.00</u>	<u>29.34</u>
4,200	11,400	<u>36.84</u>	<u>29.88</u>
2,800	6,500	<u>43.08</u>	<u>29.90</u>
25,000	83,600	<u>29.90</u>	<u>30.02</u>
17,100	50,000	<u>34.20</u>	<u>32.00</u>
17,900	59,900	<u>29.88</u>	<u>32.50</u>
18,400	61,300	<u>30.02</u>	<u>34.20</u>
3,500	7,600	<u>46.05</u>	<u>34.40</u>
4,300	9,900	<u>43.43</u>	<u>36.84</u>
25,800	75,000	<u>34.40</u>	<u>40.00</u>
16,500	57,400	<u>28.75</u>	<u>43.08</u>
27,200	92,700	<u>29.34</u>	<u>43.43</u>
28,500	98,000	<u>29.08</u>	<u>46.05</u>

Median = **31.01%**

$$30.02 + 32.00 = 62.02 \div 2 = 31.01$$

Unit 2, Exercise 3: Walker Township

Calculate the sales ratios and median level of assessment for Walker Township.

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio	Ranked
\$ 15,700	\$ 57,900	<u>27.12</u>	<u>27.12</u>
35,600	98,300	<u>36.22</u>	<u>28.51</u>
24,800	72,900	<u>34.02</u>	<u>29.06</u>
16,300	56,100	<u>29.06</u>	<u>29.47</u>
19,500	68,400	<u>28.51</u>	<u>34.02</u>
32,100	83,100	<u>38.63</u>	<u>36.22</u>
14,000	47,500	<u>29.47</u>	<u>37.95</u>
35,600	93,800	<u>37.95</u>	<u>38.63</u>

Median 31.75%

Note: This exercise is for classroom purposes only. There must be 25 useable sales in order to calculate a median level of assessments.

Unit 2: The Sales Ratio Study

Review

1. If a house assessed at \$74,250 recently sold for \$198,000, the sales ratio is 37.50%: the house was (over) statutorily, or under) assessed.
2. The sales ratio study provides the median.
3. If there are 33 ratios, the median would be the 17th ratio.
4. If there are 50 ratios, the median would be the average of the 25th and the 26th ratios.
5. The 2014 study would use sales from 2014 and assessed values for these same properties from 2013.

Unit 3: Assessment Uniformity Indicators

EXERCISES:

Unit 3, Exercise 1: BROWN TOWNSHIP # 1 COEFFICIENT OF DISPERSION

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Median (%)	Deviation
\$ 26,000	\$ 80,000	<u>32.50</u>	<u>32.50</u>	<u>0.00</u>
3,000	7,500	<u>40.00</u>	<u>32.50</u>	<u>7.50</u>
19,200	60,000	<u>32.00</u>	<u>32.50</u>	<u>0.50</u>
4,200	11,400	<u>36.84</u>	<u>32.50</u>	<u>4.34</u>
2,800	6,500	<u>43.08</u>	<u>32.50</u>	<u>10.58</u>
25,000	83,600	<u>29.90</u>	<u>32.50</u>	<u>2.60</u>
17,100	50,000	<u>34.20</u>	<u>32.50</u>	<u>1.70</u>
17,900	59,900	<u>29.88</u>	<u>32.50</u>	<u>2.62</u>
18,400	61,300	<u>30.02</u>	<u>32.50</u>	<u>2.48</u>
3,500	7,600	<u>46.05</u>	<u>32.50</u>	<u>13.55</u>
4,300	9,900	<u>43.43</u>	<u>32.50</u>	<u>10.93</u>
25,800	75,000	<u>34.40</u>	<u>32.50</u>	<u>1.90</u>
16,500	57,400	<u>28.75</u>	<u>32.50</u>	<u>3.75</u>
27,200	92,700	<u>29.34</u>	<u>32.50</u>	<u>3.16</u>
28,500	98,000	<u>29.08</u>	<u>32.50</u>	<u>3.42</u>
Total Deviations:				<u>69.03</u>

$$\text{Average Deviation} = \frac{\text{Sum of Deviations}}{\text{Number of Sales}} = \frac{69.03}{15} = 4.60\%$$

$$\text{COD} = \frac{\text{Average Deviation}}{\text{Median}} \times 100\% = \frac{4.60}{32.50} \times 100 (\%) = 14.15\%$$

Unit 3, Exercise 3: Find the COD for Walker township

WALKER TOWNSHIP

Prior Year AV	Current Year Sale Price	Sales Ratio	Deviations
\$ 15,700	\$ 57,900	<u>27.12</u>	4.63
35,600	98,300	<u>36.22</u>	4.47
24,800	72,900	<u>34.02</u>	2.27
16,300	56,100	<u>29.06</u>	2.69
19,500	68,400	<u>28.51</u>	3.24
32,100	83,100	<u>38.63</u>	6.88
14,000	47,500	<u>29.47</u>	2.28
35,600	93,800	<u>37.95</u>	6.20

Median = 31.75

$$\text{Average Deviation} = \frac{\text{Sum of Deviations}}{\text{Number of Sales}} = \frac{32.66\%}{8} = 4.08\%$$

$$\text{COD} = \frac{\text{Average Deviation}}{\text{Median}} \times 100(\%) = \frac{4.08}{31.75} \times 100(\%) = 12.85\%$$

Unit 3, Exercise 4 : Calculate the MAD for Brown township #1.

**MEDIAN ABSOLUTE DEVIATION
M A D**

	Prior Year Assessed Value	Current Year Sale Price	Sales Ratio(%)	Median (%)	Ranked Deviation	Deviation
\$	26,000	\$ 80,000	<u>32.50</u>	<u>32.50</u>	<u>0.00</u>	<u>0.00</u>
	3,000	7,500	<u>40.00</u>	<u>32.50</u>	<u>7.50</u>	<u>0.50</u>
	19,200	60,000	<u>32.00</u>	<u>32.50</u>	<u>0.50</u>	<u>1.70</u>
	4,200	11,400	<u>36.84</u>	<u>32.50</u>	<u>4.34</u>	<u>1.90</u>
	2,800	6,500	<u>43.08</u>	<u>32.50</u>	<u>10.58</u>	<u>2.48</u>
	25,000	83,600	<u>29.90</u>	<u>32.50</u>	<u>2.60</u>	<u>2.60</u>
	17,100	50,000	<u>34.20</u>	<u>32.50</u>	<u>1.70</u>	<u>2.62</u>
	17,900	59,900	<u>29.88</u>	<u>32.50</u>	<u>2.62</u>	<u>3.16</u>
	18,400	61,300	<u>30.02</u>	<u>32.50</u>	<u>2.48</u>	<u>3.42</u>
	3,500	7,600	<u>46.05</u>	<u>32.50</u>	<u>13.55</u>	<u>3.75</u>
	4,300	9,900	<u>43.43</u>	<u>32.50</u>	<u>10.93</u>	<u>4.34</u>
	25,800	75,000	<u>34.40</u>	<u>32.50</u>	<u>1.90</u>	<u>7.50</u>
	16,500	57,400	<u>28.75</u>	<u>32.50</u>	<u>3.75</u>	<u>10.58</u>
	27,200	92,700	<u>29.34</u>	<u>32.50</u>	<u>3.16</u>	<u>10.93</u>
	28,500	98,000	<u>29.08</u>	<u>32.50</u>	<u>3.42</u>	<u>13.55</u>

4. Determine the Median of the Deviations Median Deviation = 3.16%

5. Divide the median deviation by the median x 100% MAD = 9.72%

Median Deviation = 3.16 (Round to 2 decimal places.)

$$\text{MAD} = \frac{\text{Median Deviation}}{\text{Median Sales Ratio}} \times 100 (\%) = \frac{3.16}{32.50} \times 100 (\%) = 9.72\%$$

Unit 3, Exercise 5: Calculate the MAD for Brown Township #2.

**MEDIAN ABSOLUTE DEVIATION
M A D**

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Median (%)	Deviation	Ranked Deviation
\$ 10,000	\$ 86,800	<u>11.52</u>	<u>31.01</u>	<u>19.49</u>	<u>0.99</u>
15,600	70,000	<u>22.29</u>	<u>31.01</u>	<u>8.72</u>	<u>0.99</u>
26,000	80,000	<u>32.50</u>	<u>31.01</u>	<u>1.49</u>	<u>1.11</u>
20,300	80,000	<u>25.38</u>	<u>31.01</u>	<u>5.63</u>	<u>1.13</u>
3,000	7,500	<u>40.00</u>	<u>31.01</u>	<u>8.99</u>	<u>1.49</u>
19,200	60,000	<u>32.00</u>	<u>31.01</u>	<u>0.99</u>	<u>1.67</u>
4,200	11,400	<u>36.84</u>	<u>31.01</u>	<u>5.83</u>	<u>1.93</u>
2,800	6,500	<u>43.08</u>	<u>31.01</u>	<u>12.07</u>	<u>2.26</u>
25,000	83,600	<u>29.90</u>	<u>31.01</u>	<u>1.11</u>	<u>3.19</u>
17,100	50,000	<u>34.20</u>	<u>31.01</u>	<u>3.19</u>	<u>3.39</u>
17,900	59,900	<u>29.88</u>	<u>31.01</u>	<u>1.13</u>	<u>5.63</u>
18,400	61,300	<u>30.02</u>	<u>31.01</u>	<u>0.99</u>	<u>5.83</u>
3,500	7,600	<u>46.05</u>	<u>31.01</u>	<u>15.04</u>	<u>8.72</u>
4,300	9,900	<u>43.43</u>	<u>31.01</u>	<u>12.42</u>	<u>8.99</u>
25,800	75,000	<u>34.40</u>	<u>31.01</u>	<u>3.39</u>	<u>12.07</u>
16,500	57,400	<u>28.75</u>	<u>31.01</u>	<u>2.26</u>	<u>12.42</u>
27,200	92,700	<u>29.34</u>	<u>31.01</u>	<u>1.67</u>	<u>15.04</u>
28,500	98,000	<u>29.08</u>	<u>31.01</u>	<u>1.93</u>	<u>19.49</u>

4. Rank the Absolute Deviations.

5. Determine the Median of the Absolute Deviations $(3.19+3.39) \div 2$ 3.29%

6. Divide the median deviation by the median sales ratio and multiply by 100%

$$\text{MAD} = \frac{3.29}{31.01} \times 100\% = \underline{10.61\%}$$

Unit 3, Exercise 6: Calculate the MAD for Walker Township.

MEDIAN ABSOLUTE DEVIATION

M A D

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Deviations (%)	Ranked Deviations
\$ 15,700	\$ 57,900	<u>27.12</u>	<u>4.63</u>	<u>2.27</u>
35,600	98,300	<u>36.22</u>	<u>4.47</u>	<u>2.28</u>
24,800	72,900	<u>34.02</u>	<u>2.27</u>	<u>2.69</u>
16,300	56,100	<u>29.06</u>	<u>2.69</u>	<u>3.24</u>
19,500	68,400	<u>28.51</u>	<u>3.24</u>	<u>4.47</u>
32,100	83,100	<u>38.63</u>	<u>6.88</u>	<u>4.63</u>
14,000	47,500	<u>29.47</u>	<u>2.28</u>	<u>6.20</u>
35,600	93,800	<u>37.95</u>	<u>6.20</u>	<u>6.88</u>

Median = 31.75%

MAD = 12.16%

Median Deviation = $(3.24+4.47) \div 2 = 7.71 \div 2 = 3.86$

MAD = $\frac{\text{Median Deviation}}{\text{Median}} = \frac{3.86}{31.75} \times 100(\%) = 12.16\%$

NOTE: This exercise has been shortened for classroom purposes. A minimum of 25 useable sales would be necessary for Brown Township to have its own sales ratio study

Unit 3, Exercise 7: Calculate the COC for Brown Township # 1.

- Step 1. Find the median sales ratio. 32.50%
- Step 2. Find the number which is 10% below the median by multiplying the median ratio by .9. $32.50 \times .9 = 29.25$ 29.25%
- Step 3. Find the number which is 10% above the median by multiplying the median ratio by 1.1. $32.50 \times 1.1 = 35.75$ 35.75%
- Step 4. Count the number of ratios between the high and low values computed in steps 2 and 3. 8
- Step 5. Step 5: Divide the number of ratios from step 4 by the total number of sales ratios. and multiply by 100%.
 $8 \div 15 = .5333 = 53.33\%$ 53.33%

Method 1: Rank the sales ratios

From the Brown Township # 1 Sales Ratio Study

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Ranked %
\$ 26,000	\$ 80,000	32.50	28.75
3,000	7,500	40.00	<u>29.08</u>
19,200	60,000	32.00	29.34
4,200	11,400	36.84	29.88
2,800	6,500	43.08	29.90
25,000	83,600	29.90	30.02
17,100	50,000	34.20	32.00
17,900	59,900	29.88	32.50
18,400	61,300	30.02	34.20
3,500	7,600	46.05	<u>34.40</u>
4,300	9,900	43.43	36.84
25,800	75,000	34.40	40.00
16,500	57,400	28.75	43.08
27,200	92,700	29.34	43.43
28,500	98,000	29.08	46.05
Median	<u>32.50%</u>		

8

Ratios

Method 2: Determine for each individual sales ratio

**BROWN TOWNSHIP # 1
SALES RATIO STUDY**

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio (%)	Between 29.25 and 35.75
\$ 26,000	\$ 80,000	32.50	Yes
3,000	7,500	40.00	No
19,200	60,000	32.00	Yes
4,200	11,400	36.84	No
2,800	6,500	43.08	No
25,000	83,600	29.90	Yes
17,100	50,000	34.20	Yes
17,900	59,900	29.88	Yes
18,400	61,300	30.02	Yes
3,500	7,600	46.05	No
4,300	9,900	43.43	No
25,800	75,000	34.40	Yes
16,500	57,400	28.75	No
27,200	92,700	29.34	Yes
28,500	98,000	29.08	No

There are **8** “Yes” answers, indicating that 8 ratios are within 10% of the median.

Unit 3, Exercise 8: Calculate the COC for Brown Township #2.

COEFFICIENT OF CONCENTRATION

C O C

Prior Year Assessed Value	Current Year Sale Price	Sales Ratio %	Ranked
\$ 10,000	86,800	11.52	11.52
15,600	70,000	22.29	22.29
20,300	80,000	25.38	25.38
26,000	80,000	32.50	28.75
3,000	7,500	40.00	29.08
19,200	60,000	32.00	29.34
4,200	11,400	36.84	29.88
2,800	6,500	43.08	29.90
25,000	83,600	29.90	30.02
17,100	50,000	34.20	32.00
17,900	59,900	29.88	32.50
18,400	61,300	30.02	34.20
3,500	7,600	46.05	34.40
4,300	9,900	43.43	36.84
25,800	75,000	34.40	40.00
16,500	57,400	28.75	43.08
27,200	92,700	29.34	43.43
28,500	98,000	29.08	46.05

8 Ratios

1. Determine the Median – See Unit 2 31.01
2. Low boundary sales ratio (0.9 x median): 27.91
3. High boundary sales ratio (1.1 x median): 34.11
4. Number of sales between the low and the high ratios: 8

Check the ranked column for Brown Township # 2 in Unit 2

$$5. \text{COC} = \frac{\text{Count from \#4}}{\text{Number of sales}} \times 100\% = \frac{8}{18} = \underline{44.44\%}$$

Unit 3, Exercise 10 : Calculate the PRD for Brown township # 1.

PRICE RELATED DIFFERENTIAL

P R D

Prior Year Assessed Value		Current Year Sale Price	Sales Ratio
\$ 26,000		\$ 80,000	32.50
3,000		7,500	40.00
19,200		60,000	32.00
4,200		11,400	36.84
2,800		6,500	43.08
25,000		83,600	29.90
17,100		50,000	34.20
17,900		59,900	29.88
18,400		61,300	30.02
3,500		7,600	46.05
4,300		9,900	43.43
25,800		75,000	34.40
16,500		57,400	28.75
27,200		92,700	29.34
28,500		98,000	29.08
<hr/>			
Total: 239,400	÷	760,800	519.47 ÷ 15
			34.63
	SBAR		MAR

Price -Related Differential = $\frac{\text{Mean Assessment Ratio}}{\text{Sales Based Average Ratio}} = \frac{1.10}{1.03} = 1.10$

Does this indicate a possible bias based on the value of the property? Yes
 [1.10 > 1.03 indicating a possible bias.]

Unit 3, Exercise 11: Calculate the PRD for Brown township #2.

PRICE-RELATED DIFFERENTIAL

P R D

Assessed Value	Sale Price	Sales Ratio
\$ 26,000	\$80,000	32.50
3,000	7,500	40.00
19,200	60,000	32.00
4,200	11,400	36.84
2,800	6,500	43.08
25,000	83,600	29.90
17,100	50,000	34.20
17,900	59,900	29.88
18,400	61,300	30.02
3,500	7,600	46.05
4,300	9,900	43.43
25,800	75,000	34.40
16,500	57,400	28.75
27,200	92,700	29.34
28,500	98,000	29.08
20,300	80,000	25.38
15,600	70,000	22.29
10,000	86,800	11.52
Totals: 285,300	997,600	578.66 ÷ 18 = 32.15
	28.60	

Price -Related Differential = $\frac{32.15}{28.60} = 1.12$

Does this indicate a possible bias based on the value of the property? Yes

Unit 3, Exercise 12: Calculate the PRD for Walker township.

**WALKER TOWNSHIP
PRICE RELATED DIFFERENTIAL
P R D**

Prior Year Assessed Value	Current Year Sale Price	Current Sales Ratio
\$ 15,700	\$ 57,900	27.12
35,600	98,300	36.22
24,800	72,900	34.02
16,300	56,100	29.06
19,500	68,400	28.51
32,100	83,100	38.63
14,000	47,500	29.47
35,600	93,800	37.95
193,600	578,000	260.98
Sales-Based Average Ratio		33.49
Mean Assessment Ratio		32.62
Price-Related Differential		.97

Does this indicate a possible bias based on the value of the property? Yes
 Note that .97 is just below the range beginning at .98.

Unit 3, Exercise 13: Complete the sales ratio study for Lawrence township.

**LAWRENCE TOWNSHIP
SALES RATIO STUDY**

Using the chart below, find:

Median Level of Assessment	<u>33.62%</u>
Coefficient of Dispersion (COD)	<u>18.26%</u>
Median Absolute Deviation (MAD)	<u>16.30%</u>
Coefficient Of Concentration (COC)	<u>25.00%</u>
Price Related Differential (PRD)	<u>1.09</u>

Av	SP	Sales Ratio (%)	Ranked	Deviation	Ranked
\$ 22,097	\$124,000	<u>17.82</u>	<u>17.82</u>	<u>15.80</u>	<u>.56</u>
36,098	117,500	<u>30.72</u>	<u>26.15</u>	<u>2.90</u>	<u>.56</u>
28,064	62,900	<u>44.62</u>	<u>28.18</u>	<u>11.00</u>	<u>2.90</u>
10,475	24,600	<u>42.58</u>	<u>29.85</u>	<u>8.96</u>	<u>3.77</u>
18,931	72,400	<u>26.15</u>	<u>30.72</u>	<u>7.47</u>	<u>4.62</u>
22,258	58,200	<u>38.24</u>	<u>33.06</u>	<u>4.62</u>	<u>5.44</u>
5,210	12,800	<u>40.70</u>	<u>34.18</u>	<u>7.08</u>	<u>5.52</u>
31,845	113,000	<u>28.18</u>	<u>38.24</u>	<u>5.44</u>	<u>7.08</u>
27,407	82,900	<u>33.06</u>	<u>39.14</u>	<u>.56</u>	<u>7.47</u>
7,319	18,700	<u>39.14</u>	<u>40.70</u>	<u>5.52</u>	<u>8.96</u>
20,744	69,500	<u>29.85</u>	<u>42.58</u>	<u>3.77</u>	<u>11.00</u>
31,548	92,300	<u>34.18</u>	<u>44.62</u>	<u>.56</u>	<u>15.80</u>
<hr/>					
261,996	848,800	405.24		73.68	

Unit 3: Assessment Uniformity Indicators

Review

- T F 1. Individual sales ratios that are clustered closely around the mean level of assessments would indicate a low COD.
- T F 2. A Price-Related Differential of .96 would indicate a possible bias in favor of higher-priced homes.
- T F 3. A MAD of 30% indicates greater uniformity than a MAD of 50%.
4. The Price-Related Differential can be found by dividing the mean assessment ratio by the sales-based average ratio.

5. Calculate the median level of assessment, the COD, the MAD, the PRD, and the COC (10% range of median).

<u>ASSESSED VALUE</u>	<u>SALES PRICE</u>	<u>SALES RATIO</u>	<u>RANKED</u>	<u>MEDIAN</u>	<u>DEVIATION</u>	<u>RANKED DEVIATION</u>
\$4,000	16,000	<u>25.00</u>	<u>21.15</u>	<u>33.51</u>	<u>8.51</u>	<u>2.42</u>
2,000	7,600	<u>26.32</u>	<u>22.22</u>	<u>33.51</u>	<u>7.19</u>	<u>2.42</u>
13,000	32,000	<u>40.63</u>	<u>24.82</u>	<u>33.51</u>	<u>7.12</u>	<u>3.00</u>
8,000	29,500	<u>27.12</u>	<u>25.00</u>	<u>33.51</u>	<u>6.39</u>	<u>4.44</u>
5,000	18,800	<u>26.60</u>	<u>26.32</u>	<u>33.51</u>	<u>6.91</u>	<u>5.45</u>
3,500	14,100	<u>24.82</u>	<u>26.60</u>	<u>33.51</u>	<u>8.69</u>	<u>6.39</u>
14,700	35,800	<u>41.06</u>	<u>26.60</u>	<u>33.51</u>	<u>7.55</u>	<u>6.80</u>
2,200	10,400	<u>21.15</u>	<u>26.67</u>	<u>33.51</u>	<u>12.36</u>	<u>6.84</u>
8,000	30,000	<u>26.67</u>	<u>27.12</u>	<u>33.51</u>	<u>6.84</u>	<u>6.91</u>
2,200	9,900	<u>22.22</u>	<u>28.06</u>	<u>33.51</u>	<u>11.29</u>	<u>6.91</u>
19,400	54,000	<u>35.93</u>	<u>30.51</u>	<u>33.51</u>	<u>2.42</u>	<u>7.12</u>
8,700	31,000	<u>28.06</u>	<u>31.09</u>	<u>33.51</u>	<u>5.45</u>	<u>7.19</u>
8,300	26,700	<u>31.09</u>	<u>35.93</u>	<u>33.51</u>	<u>2.42</u>	<u>7.55</u>
3,600	11,800	<u>30.51</u>	<u>37.95</u>	<u>33.51</u>	<u>3.00</u>	<u>7.72</u>
19,500	47,300	<u>41.23</u>	<u>40.31</u>	<u>33.51</u>	<u>7.72</u>	<u>7.82</u>
9,700	23,200	<u>41.81</u>	<u>40.63</u>	<u>33.51</u>	<u>8.30</u>	<u>8.30</u>
3,100	7,500	<u>41.33</u>	<u>41.06</u>	<u>33.51</u>	<u>7.82</u>	<u>8.51</u>
18,500	45,900	<u>40.31</u>	<u>41.23</u>	<u>33.51</u>	<u>6.80</u>	<u>8.69</u>
12,000	25,000	<u>48.00</u>	<u>41.33</u>	<u>33.51</u>	<u>14.49</u>	<u>11.29</u>
20,000	52,700	<u>37.95</u>	<u>41.81</u>	<u>33.51</u>	<u>4.44</u>	<u>12.36</u>
4,100	8,000	<u>51.25</u>	<u>48.00</u>	<u>33.51</u>	<u>17.74</u>	<u>14.49</u>
25,200	51,700	<u>48.74</u>	<u>48.08</u>	<u>33.51</u>	<u>15.23</u>	<u>14.57</u>
5,000	10,400	<u>48.08</u>	<u>48.74</u>	<u>33.51</u>	<u>14.57</u>	<u>15.23</u>
13,300	50,000	<u>26.60</u>	<u>51.25</u>	<u>33.51</u>	<u>6.91</u>	<u>17.74</u>
<hr/>	<hr/>	<hr/>			<hr/>	
233,000	649,300	832.48			200.16	

1. Median Level of Assessment 33.51%

2. Coefficient of Dispersion (COD) 24.89%

Sum of Deviations = 200.16

Average Deviation = $\frac{200.16}{24} = 8.34$

COD = $\frac{\text{Average Deviation}}{\text{Median}} \times 100\% = \frac{8.34}{33.51} = .2489 \times 100(\%)$

3. Median Absolute Deviation (MAD) 21.99%

Median Deviation = $\frac{7.19 + 7.55}{2} = 7.37$

Median Absolute Deviation = $\frac{\text{Median Deviation}}{\text{Median}} \times 100(\%)$
 $= \frac{7.37}{33.51} \times 100(\%) = 21.99\%$

4. Price Related Differential (PRD) .97

Sales-Based Average Ratio = $\frac{\text{Sum of AV}}{\text{Sum of SP}} = \frac{233,000}{649,300} \times 100(\%) = 35.88$

Mean Assessment Ratio = Average S R = $\frac{\text{Sum of S R}}{\# \text{ of Ratios}} = \frac{832.48}{24} = 34.69$

PRD = $\frac{\text{Mean Assessment Ratio}}{\text{Sales-Based Average Ratio}} = \frac{34.69}{35.88} = .9668$

5. Coefficient of Concentration (COC) 12.5%

Unit 4: Equalization

Exercises

Unit 4, Exercise 1: Calculate Equalization Factors

COUNTY	3 YEARS PRIOR	2 YEARS PRIOR	PREVIOUS YEAR	3-YEAR AVERAGE	CURRENT MULTIPLIER
"A"	32.09	31.81	30.61	<u>31.50</u>	<u>1.0581</u>
"B"	34.25	33.33	33.78	<u>33.79</u>	<u>.9864</u>
"C"	30.19	29.16	30.78	<u>30.04</u>	<u>1.1095</u>
"D"	33.26	33.98	32.75	<u>33.33</u>	<u>1.0000</u>
"E"	31.18	31.95	31.19	<u>31.44</u>	<u>1.0601</u>
"F"	30.60	30.23	31.27	<u>30.70</u>	<u>1.0857</u>
"G"	34.15	32.62	34.09	<u>33.62</u>	<u>.9914*</u>

*Note: According to 35 ILCS 200/17-25, no factor will be issued if aggregate assessed value is within 99% and 101% of 33 1/3% of fair cash value. The factor for county "G" would be 1.0000.

In order to calculate the equalization factor for 2015, an assessor would need the median levels of assessments for the following years:

2012 2013 2014

Unit 4, Exercise 2: Adjust medians for changes due to reassessment

YR	MEDIAN	'10 S/A Changes	'10 B/R Changes	'12 S/A Changes	'12 B/R Changes	'13 S/A Changes	'13 B/R Changes	'14 TA Changes	Adjusted Median
2011	29.65	0.0%	0.0%	+6.6%	0.0%	0.0%	0.0%	0.0%	<u>31.61</u>
2012	28.54	0.0%	0.0%	+6.6%*	0.0%	0.0%	0.0%	0.0%	<u>30.42</u>
2013	32.07	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	<u>32.07</u>

The 3-year average median level for this township is: 31.37 %.

The equalization factor is: 1.0625

Unit 4, Exercise 3: For the data listed, calculate the median and the COD.

<u>ASSESSED VALUE</u>	<u>SALES PRICE</u>	<u>SALES RATIO</u>	<u>RANKED RATIO</u>	<u>DEVIATION</u>
42,630	110,000	38.75	24.67	1.45
46,100	120,000	38.42	28.54	1.12
44,400	117,000	37.95	29.63	.65
41,600	106,200	39.17	31.88	1.87
38,800	103,800	37.38	32.85	.08
42,140	109,400	38.52	33.35	1.22
39,360	99,300	39.64	33.78	2.34
37,620	98,200	38.31	33.78	1.01
38,710	100,500	38.52	34.58	1.22
40,580	101,700	39.90	34.59	2.60
39,550	106,300	37.21	35.93	.09
41,710	107,900	38.66	36.27	1.36
36,920	110,700	33.35	37.21	3.95
37,770	109,200	34.59	37.38	2.71
40,080	110,500	36.27	37.95	1.03
47,140	118,300	39.85	38.31	2.55
36,900	106,700	34.58	38.42	2.72
36,000	100,200	35.93	38.52	1.37
24,320	98,600	24.67	38.52	12.63
27,770	97,300	28.54	38.63	8.76
28,770	97,100	29.63	38.66	7.67
30,600	96,000	31.88	38.75	5.42
31,400	95,600	32.85	39.17	4.45
30,400	90,000	33.78	39.64	3.52
38,630	100,000	38.63	39.85	1.33
37,160	110,000	33.78	39.90	3.52

1. Median **37.30**
2. COD **7.91**
3. If the median level of assessments has been the same as the current level for the past 3 years, calculate the equalization factor. **.8936**

Unit 4, Exercise 4: Apply the equalization factor.

A V	EAV	SALES PRICE	S R	RANKED	DEV
42,630	38,094	110,000	<u>34.63</u>	<u>22.04</u>	<u>1.30</u>
46,100	41,195	120,000	<u>34.33</u>	<u>25.50</u>	<u>1.00</u>
44,400	39,676	117,000	<u>33.91</u>	<u>26.48</u>	<u>.58</u>
41,600	37,174	106,200	<u>35.00</u>	<u>28.48</u>	<u>1.67</u>
38,800	34,672	103,800	<u>33.40</u>	<u>29.35</u>	<u>.07</u>
42,140	37,656	109,400	<u>34.42</u>	<u>29.80</u>	<u>1.09</u>
39,360	35,172	99,300	<u>35.42</u>	<u>30.18</u>	<u>2.09</u>
37,620	33,617	98,200	<u>34.23</u>	<u>30.19</u>	<u>0.90</u>
38,710	34,591	100,500	<u>34.42</u>	<u>30.90</u>	<u>1.09</u>
40,580	36,262	101,700	<u>35.66</u>	<u>30.91</u>	<u>2.33</u>
39,550	35,342	106,300	<u>33.25</u>	<u>32.11</u>	<u>.08</u>
41,710	37,272	107,900	<u>34.54</u>	<u>32.41</u>	<u>1.21</u>
36,920	32,992	110,700	<u>29.80</u>	<u>33.25</u>	<u>3.53</u>
37,770	33,751	109,200	<u>30.91</u>	<u>33.40</u>	<u>2.42</u>
40,080	35,815	110,500	<u>32.41</u>	<u>33.91</u>	<u>.92</u>
47,140	42,124	118,300	<u>35.61</u>	<u>34.23</u>	<u>2.28</u>
36,900	32,974	106,700	<u>30.90</u>	<u>34.33</u>	<u>2.43</u>
36,000	32,170	100,200	<u>32.11</u>	<u>34.42</u>	<u>1.22</u>
24,320	21,732	98,600	<u>22.04</u>	<u>34.42</u>	<u>11.29</u>
27,770	24,815	97,300	<u>25.50</u>	<u>34.52</u>	<u>7.83</u>
28,770	25,709	97,100	<u>26.48</u>	<u>34.54</u>	<u>6.85</u>
30,600	27,344	96,000	<u>28.48</u>	<u>34.63</u>	<u>4.85</u>
31,400	28,059	95,600	<u>29.35</u>	<u>35.00</u>	<u>3.98</u>
30,400	27,165	90,000	<u>30.18</u>	<u>35.42</u>	<u>3.15</u>
38,630	34,520	100,000	<u>34.52</u>	<u>35.61</u>	<u>1.19</u>
37,160	33,206	110,000	<u>30.19</u>	<u>35.66</u>	<u>3.14</u>

1. Multiply each of the assessed values by the equalization factor.
2. Calculate the new median 33.33%
3. Calculate the COD 7.89%

Unit 4: Equalization

Review

1. An **equalization** factor will uniformly increase or decrease assessed values of all properties in the county except for **farmland** , **farm buildings** , **wind turbines** , **coal** , and **state – assessed** properties.

2. The Lincoln township assessor is calculating a township multiplier for this year.

Median Level of Assessment for 3 years ago	32.79
Median Level of Assessment for 2 years ago	31.92
Median Level of Assessment for last year	31.58

a. The prior 3-year average median level of assessments for this township is: **32.10%**

b. The Lincoln township equalization factor will be: **1.0383**

3. A Washington township assessor is calculating a township multiplier for this year.

Median Level of Assessment for 3 years ago:	32.45
Median Level of Assessment for 2 years ago:	31.09
Median Level of Assessment for last year:	30.36

a. The prior 3-year average median level of assessments for Washington township is: **31.30%**

b. The Washington township equalization factor will be: **1.0649**

Unit 5: The Assessor Bonus Award

Exercises

Unit 5, Exercise 1: Eligibility for the Assessor's Bonus

<u>Population</u>	<u>3 Years Ago</u>	<u>2 Years Ago</u>	<u>Last Year</u>	<u>3-year average</u>	<u>COD</u>	<u>Y / N</u>
66,241	29.07 %	33.59 %	27.63 %	30.10 %	16.4 %	No
39,582	37.38	31.72	36.24	35.11	27.3	Yes
81,769	32.85	33.57	36.48	34.30	11.5	Yes
47,391	29.63	31.02	33.58	31.41	34.8	No
52,089	32.55	34.60	33.72	33.62	18.6	No
107,464	36.82	31.09	35.98	34.63	14.3	Yes
183,697	29.75	28.04	32.56	30.12	9.4	No
28,434	31.99	32.48	35.79	33.42	16.7	Yes

Unit 5: The Assessor Bonus Award

Review

- The Lincoln township assessor is applying for the bonus for this year. The COD is 15.92%.

Median Level of Assessment for 3 years ago	32.79
Median Level of Assessment for 2 years ago	31.92
Median Level of Assessment for last year	31.58

- If the population of the county is less than 50,000, will the assessor receive his or her bonus? Yes
- If the population of the county is greater than 50,000, will the assessor receive his or her bonus? No

2. A Washington township assessor is applying for the bonus for this year. The COD is 14.80%.

Median Level of Assessment for 3 years ago:	32.45
Median Level of Assessment for 2 years ago:	31.09
Median Level of Assessment for last year:	30.36

a. If the population of the county is less than 50,000, will the assessor receive his or her bonus? **No**

b. If the population of the county is greater than 50,000, will the assessor receive his or her bonus? **No**

3. In order to qualify for the assessor bonus award, the assessor must be in a **qualified position** , have a **three** - year average median level of assessments between **31 1/3%** and **35 1/3%** , and a COD no greater than **30%** (assuming that the population of the county is 50,000 or less).

Unit 6

Unit 6, Exercise 1 Calculate Trending Factors

Calculate the trending factors (to 4 decimal places) if a county's urban-weighted medians are:

2012	2013	2014
31.57	30.48	32.95

- | | | | |
|-------------------------------|-----------------|---|---------------|
| 1. Trend 2012 forward to 2013 | Trending Factor | = | <u>1.0358</u> |
| 2. Trend 2014 back to 2013 | Trending Factor | = | <u>1.0810</u> |
| 3. Trend 2013 back to 2012 | Trending Factor | = | <u>0.9655</u> |
| 4. Trend 2013 forward to 2014 | Trending Factor | = | <u>0.9250</u> |

Unit 6, Exercise 2 Assessed Values

Using the information from Exercise 1, determine from what year the assessed values would come.

- | | | |
|-------------------------------|----------------------|-------------|
| 1. Trend 2012 forward to 2013 | Assessed Values from | <u>2012</u> |
| 2. Trend 2014 back to 2013 | Assessed Values from | <u>2012</u> |
| 3. Trend 2013 back to 2012 | Assessed Values from | <u>2011</u> |
| 4. Trend 2013 forward to 2014 | Assessed Values from | <u>2013</u> |

Unit 6, Exercise 3: Calculate a township equalization factor for 2015.

Sales Ratios from 2014:

11.67	22.95	23.87	24.50	24.87	24.95	25.21
25.69	26.40	26.73	27.12	29.33	29.53	

(Calculated from 2014 sales and the AV of those sales from 2013 .)

Trend 2013 (year) sales forward to be combined with 2014 sales.

Trending factor = 1.0545 (4 decimal places)

2013

2014

Sale #	Sales Price	Trending Factor	ADJ _2014 Market Value	<u>2013 AV</u>	Sales Ratio
1	\$ 250,000	1.0545	263,625	\$ 55,299	20.98
2	489,500	1.0545	516,178	109,607	21.23
3	386,000	1.0545	407,037	89,017	21.87
4	335,000	1.0545	353,258	84,071	23.80
5	1,300,000	1.0545	1,370,850	349,802	25.52
6	272,000	1.0545	286,824	73,473	25.62
7	169,900	1.0545	179,160	46,735	26.09
8	267,500	1.0545	282,079	76,321	27.06
9	222,000	1.0545	234,099	63,687	27.21
10	840,200	1.0545	885,991	254,365	28.71
11	388,000	1.0545	409,146	127,540	31.17
12	287,000	1.0545	302,642	100,797	33.31

11.67	23.80	25.21	26.40	28.71
20.98	23.87	25.52	26.73	29.33
21.23	24.50	25.62	27.06	29.53
21.87	24.87	25.69	27.12	31.17
22.95	24.95	26.09	27.21	33.31

2014 Township Median = 25.62

2015 Township Equalization Factor = 1.2294

Unit 6, Exercise 4 : Trending Backward

Ratios for 2012 sales: (18 sales)

13.50	28.10	31.20	38.20	49.40
15.30	29.30	33.50	38.30	64.40
22.60	29.70	35.80	39.20	
26.00	31.20	37.20	39.30	

Trending Factor = **.9714**

Find the new 2012 sales ratios

Sale #	2013 SP	Trending Factor	2012 Adjusted SP	2011 AV	2012 Ratios
1	58,400	.9714	56,730	11,914	21.00
2	29,000	.9714	28,171	6,198	22.00
3	34,100	.9714	33,125	7,288	22.00
4	14,200	.9714	13,794	3,311	24.00
5	44,500	.9714	43,227	10,807	25.00
6	4,000	.9714	3,886	972	25.01
7	40,000	.9714	38,856	10,103	26.00
8	33,000	.9714	32,056	8,335	26.00
9	24,500	.9714	23,799	6,426	27.00
10	19,500	.9714	18,942	5,115	27.00
11	18,000	.9714	17,485	5,071	29.00
12	59,900	.9714	58,187	17,457	30.00
13	32,900	.9714	31,959	10,227	32.00
14	23,000	.9714	22,342	7,150	32.00
15	26,000	.9714	25,256	8,335	33.00
16	10,000	.9714	9,714	3,497	36.00
17	13,500	.9714	13,114	4,721	36.00
18	13,800	.9714	13,405	4,826	36.00
19	15,000	.9714	14,571	5,537	38.00
20	22,000	.9714	21,371	9,190	43.00
21	56,500	.9714	54,884	27,443	50.00
22	6,500	.9714	6,314	3,346	52.99
23	9,000	.9714	8,743	5,421	62.00
24	9,800	.9714	9,520	6,188	65.00
25	3,500	.9714	3,400	2,312	68.00
26	1,500	.9714	1,457	1,501	103.02
27	3,000	.9714	2,914	3,409	116.99
28	2,000	.9714	1,943	2,506	128.98

Find the median using all of the ratios.

13.50	24.00	27.00	30.00	33.50	38.00	49.40	68.00
15.30	25.00	27.00	31.20	35.80	38.20	50.00	103.02
21.00	25.01	28.10	31.20	36.00	38.30	52.99	116.99
22.00	26.00	29.00	32.00	36.00	39.20	62.00	128.98
22.00	26.00	29.30	32.00	36.00	39.30	64.40	
22.60	26.00	29.70	33.00	37.20	43.00	65.00	

The 2012 median (**32.50**) is the average of the 23rd and the 24th ratios.

Hoover Township's medians are:

2012 =	32.50
2013 =	32.94
2014 =	33.24

The township equalization factor would be: 1.0134

Unit 6 Review

1. What would the trending factor be if the 2009 sales were trended back to 2008? .9618

county medians	township medians
2007 median = 28.72	2007 median = 32.51
2008 median = 31.69	2008 median = _____
2009 median = 30.48	2009 median = 29.86
2. If an assessor were trending sales from 2012 to 2013, the assessed values on those properties would be from 2012.
3. In order to trend 2011 sales back to 2010, multiply the 2011 sales by the trending factor. Then divide the 2009 assessed values by the 2011 sales trended back to 2010 market value. (Insert years.)

Unit 7 Review

1. List two deed types that would be included in the sale the sales ratio study:
Warranty deed, trustee deed
2. List five uses of property that would exclude a sale from the sales ratio study:
governmental, charitable, railroad, model home, historic home, farm, developer's use, veteran's organization, fraternal organization, etc. (Answers may vary.)
3. List two other reasons why a sale would be excluded from the sales ratio study.
Recorded in the wrong county, overlaps townships, physical property as assessed and property that sold are not comparable, etc. (Answers may vary)

Unit 8: The Sales Ratio Study Table

Exercises

There are 11 counties in this classroom sales ratio study. Looking at the "Total County" row and the "Adjusted Median" column, find the county whose calculated median is closest to 33.33%. Harrison (32.00)

Find the county with the median of 29.57% Grant.

Unit 8, Exercise 1: Table 1 Assessment Ratios

Find the adjusted median level of assessments for :

Jaguar Township, Autobahn County	<u>29.72</u>
Big Valley Township, Duke County	<u>29.20</u>
Carnation Township, Floral County	<u>31.13</u>
Wyoming Township, Hayes County	<u>32.02</u>
Aspen Township, Lincoln County	<u>29.67</u>

Unit 8, Exercise 2: Find the COD for:

Pole Cat Township, Duke County	<u>22.18</u>
Hidden Valley Township, Grant County	<u>30.54</u>
Abilene Township, Harrison County	<u>13.90</u>
Red Maple Township, Lincoln County	<u>8.45</u>
Tennyson Township, Roosevelt County	<u>21.13</u>
Best COD	<u>Red Maple Township</u>

Unit 8, Exercise 3: Find the PRD for:

Yugo Township, Autobahn County	<u>1.16</u>
Tennyson Township, Roosevelt County	<u>1.03</u>
Mulberry Pie Township, Baker County	<u>1.03</u>
Water Well Township, Duke County	<u>.97</u>
Holly Township, Lincoln County	<u>1.00</u>
Best PRD	<u>Holly Township</u>

Unit 8, Exercise 4: Find the COC for:

Lamborghini Township, Autobahn County	<u>30.00</u>
Abilene Township, Harrison County	<u>45.28</u>
Peach Cobbler Township, Baker County	<u>52.00</u>
Daisy Township, Duke County	<u>31.91</u>
Walnut Grove Township, Lincoln County	<u>71.93</u>
Best COC	<u>Walnut Grove Township</u>

Unit 8, Exercise 5: Assessment Ratios for Lincoln County.

Township		COD	Sales	Ratio Range	PRD	COC
Blue Spruce	Urban					
	Imp	18.50	96	45.21	1.04	41.67
	Unimp	43.11	46	64.23	1.26	10.87
Cherry	Urban					
	Imp	9.60	512	46.47	1.01	66.41
	Unimp	23.84	25	32.92	1.10	40.00
Cottonwood	Urban					
	Imp	8.97	332	22.45	1.00	65.36
	Unimp	25.82	28	45.25	1.26	35.71
Hawthorn	Urban					
	Imp	8.47	1223	26.70	1.00	68.27
	Unimp	133.81	33	23.74	1.12	6.06

a. For the **COD**:

	Improved	Unimproved
Blue Spruce	<u>18.50</u>	<u>43.11</u>
Cherry	<u>9.60</u>	<u>23.84</u>
Cottonwood	<u>8.97</u>	<u>25.82</u>
Hawthorn	<u>8.47</u>	<u>133.81</u>

Most uniform (COD) is (unimproved, improved) improved

b. For the **COC**:

	Improved	Unimproved
Blue Spruce	<u>41.67</u>	<u>10.87</u>
Cherry	<u>66.41</u>	<u>40.00</u>
Cottonwood	<u>65.36</u>	<u>35.71</u>
Hawthorn	<u>68.27</u>	<u>6.06</u>

Most uniform (COC) is (unimproved, improved) improved

c. For the PRD:	Improved	Unimproved
Blue Spruce	<u>1.04</u>	<u>1.26</u>
Cherry	<u>1.01</u>	<u>1.10</u>
Cottonwood	<u>1.00</u>	<u>1.26</u>
Hawthorn	<u>1.00</u>	<u>1.12</u>

Most uniform (PRD) is (unimproved, improved) improved

Overall, which type of property should she concentrate on for reassessment?

unimproved

Highlighted numbers indicate greater assessment uniformity between each pair of improved and unimproved properties.

When the improved category is compared to the unimproved category (for each of the townships which had enough sales to have a improved/unimproved study done) using the three measures of assessment uniformity that are displayed on the chart, the numbers exhibited greater assessment uniformity for the Improved category, in every case.

Unit 8, Exercise 6: My County

Answers will vary depending on your county.

Unit 8: Sales Ratio Study

Review

Assessment Ratios for FLORAL COUNTY

1. What was the median assessment ratio for Carnation township? 30.17
2. Begonia township was under-assessed, statutorily assessed, or over-assessed? under-assessed
3. Which township was assessing closest to the statutory level? Phlox (32.21)
4. Considering only the COD, name the township that was:
 - a. least uniformly assessed. Briar

Township	COD	Township	COD
Azalea	13.04	Azalea	13.04
Begonia	16.13	Begonia	16.13
Briar	22.68	Briar	22.68
Carnation	13.78	Carnation	13.78
Daisy	15.60	Daisy	15.60
Holly	9.01	Holly	9.01
Iris	16.31	Iris	16.31
Peony	17.45	Peony	17.45
Phlox	12.07	Phlox	12.07
Rose	13.57	Rose	13.57
Wisteria	15.01	Wisteria	15.01
All Others	15.38	All Others	15.38

The COD for Briar is the highest for any of the townships, including “All Others”. This indicates the greatest variation in assessment ratios.

- b. most uniformly assessed Holly
The COD for Holly township is the smallest, indicating the most uniformly assessed considering only the COD.

I-E Class Sales Ratio Study

Table 1

Assessment Ratios

GEOGRAPHIC AREA	ADJ	COEF		QUANTILES		RATIO		95% CONFIDENCE INTERVAL		COEF CONC	
		MEDIAN	OF DISP	SALES	1st	3rd	RANGE	PRD			
Arthur County											
Total County	Urban	*-	31.66	18.82	708	28.17	35.81	89.32	1.05	31.17 - 32.27	44.21
Townships											
Rabbit Trail	Urban	32.55	32.44	19.13	113	28.84	36.20	65.04	1.06	31.62 - 33.78	44.25
Deer Lick	Urban	31.72	31.35	20.80	79	26.93	35.26	74.36	1.04	29.63 - 33.26	36.71
Little Creek	Urban	30.78	31.12	21.47	26	26.72	35.19	48.22	1.03	28.54 - 33.22	42.31
Stag Hollow	Urban	33.60	32.90	17.01	71	29.53	38.02	54.19	1.04	31.19 - 34.34	46.48
Raccoon Lodge	Urban	32.07	31.18	17.81	33	28.46	35.41	39.51	1.02	28.73 - 33.18	51.52
Snake in the Grass	Urban	32.26	31.29	16.02	268	28.42	35.18	61.13	1.03	30.78 - 32.00	47.39
All Others	Urban	31.63	31.08	23.87	118	25.85	36.56	84.14	1.09	30.05 - 32.90	35.59
Autobahn County											
Total County	Urban	-	29.14	33.17	307	21.93	34.48	110.94	1.09	27.90 - 30.05	28.99
Townships											
Ferrari	Urban	30.11	28.62	24.28	31	20.31	31.12	51.76	1.10	25.18 - 30.59	45.16
Jaguar	Urban	29.72	28.62	47.42	36	17.74	36.14	89.80	1.23	24.69 - 34.47	16.67
Lamborghini	Urban	29.83	29.24	24.59	70	21.30	34.02	33.28	1.03	25.89 - 30.97	30.00
Porsche	Urban	30.56	30.49	23.75	67	26.54	35.63	58.45	1.06	28.78 - 31.76	41.79
Yugo	Urban	28.38	27.50	35.52	32	20.01	33.50	76.42	1.16	21.53 - 32.40	15.62
All Others	Urban	29.60	28.20	47.34	71	20.20	36.61	108.39	1.14	24.52 - 30.85	23.94
Baker County											
Total County	Urban	-	30.59	21.97	543	24.49	34.76	69.57	0.99	29.95 - 30.91	32.78
Townships											
Apple River	Urban	24.81	23.61	26.43	141	18.37	29.50	68.57	1.03	22.17 - 25.81	22.70
	Imp	-	25.81	13.74	31	22.49	30.20	15.32	1.03	23.13 - 28.04	35.48
	Unimp	-	22.95	29.75	110	16.89	28.92	68.57	1.27	20.03 - 25.50	16.36
Orange Grove	Urban	32.94	32.94	18.62	168	27.58	36.83	46.95	1.01	31.60 - 33.73	39.88
	Imp	-	33.28	10.23	80	30.83	36.25	18.60	1.02	32.55 - 34.23	58.75
	Unimp	-	31.60	27.04	88	23.33	38.70	46.95	1.09	27.77 - 33.44	26.14
Peach Cobbler	Urban	33.72	31.66	22.32	25	28.50	35.46	64.79	1.06	28.50 - 33.67	52.00
Pear Tart	Urban	31.18	31.18	18.10	54	28.03	36.25	42.41	1.04	30.06 - 33.86	42.59
Cherry Pit	Urban	31.05	30.68	15.61	28	24.47	33.72	21.78	1.04	24.61 - 33.42	35.71
Persimmon	Urban	31.15	31.15	18.61	28	25.73	36.08	51.64	1.06	26.49 - 35.51	39.29
Mulberry Pie	Urban	32.61	31.42	15.41	49	27.66	36.24	28.15	1.03	29.48 - 33.64	38.78
All Others	Urban	31.72	30.98	22.74	50	26.69	35.56	54.16	0.97	28.35 - 33.79	36.00
Cleveland County											
Total	Urban	31.65	30.72	34.57	49	25.57	41.52	114.20	1.07	27.75 - 38.08	24.49

I-E Class Sales Ratio Study

Table 1

Assessment Ratios

GEOGRAPHIC AREA	ADJ	COEF		SALES	QUARTILES		RATIO RANGE	PRD	95% CONFIDENCE INTERVAL		COEF CONC	
		MEDIAN	OF DISP		1st	3rd						
Duke County												
Total County	Urban	-	29.65	25.23	211	24.20	34.22	100.33	1.07	28.74 - 30.34	32.23	
Townships												
Big Valley	Urban	-	29.20	30.48	56	21.55	34.12	88.99	1.14	24.46 - 30.34	33.93	
Daisy	Urban	-	28.74	19.26	47	24.47	33.06	40.63	1.03	26.07 - 31.72	31.91	
Pole Cat	Urban	-	29.81	22.18	33	25.98	36.24	54.65	1.08	27.67 - 33.37	36.36	
Water Well	Urban	-	32.41	23.71	44	24.21	35.52	50.60	0.97	29.16 - 33.72	43.18	
All Others	Urban	-	29.43	27.54	31	24.20	35.81	53.40	1.12	24.59 - 30.56	32.26	
* No adjustments were necessary because there were no significant assessment changes												
Floral County												
Total County	Urban	-	30.38	16.18	2486	27.43	33.43	72.68	1.06	30.13 - 30.53	50.16	
Townships												
Azalea	Urban	31.57	30.75	13.04	93	27.70	32.94	48.76	0.99	29.82 - 31.50	58.06	
Begonia	Urban	29.15	28.28	16.13	28	26.22	33.89	20.77	1.01	26.24 - 32.43	42.86	
Briar	Urban	30.16	28.75	22.68	57	25.98	32.94	65.88	1.14	27.26 - 31.30	43.86	
Carnation	Urban	31.13	30.17	13.78	233	27.60	33.41	54.64	1.01	29.47 - 30.88	53.65	
Daisy	Urban	31.64	31.43	15.60	45	26.51	33.94	42.12	1.00	28.85 - 32.40	51.11	
Holly	Urban	31.18	30.48	9.01	150	28.19	32.02	36.38	1.01	29.63 - 30.88	68.67	
Iris	Urban	31.08	30.57	16.31	91	27.64	34.12	58.40	1.05	28.89 - 31.71	47.25	
Peony	Urban	31.50	30.45	17.45	1550	27.43	33.96	69.20	1.07	30.23 - 30.73	48.26	
Phlox	Urban	32.21	31.59	12.07	25	28.42	33.32	27.45	1.01	28.88 - 33.06	64.00	
Rose	Urban	30.96	29.72	13.57	106	27.61	33.12	39.38	1.03	29.12 - 31.03	55.66	
Wisteria	Urban	31.43	30.59	15.01	29	26.06	33.89	21.79	1.00	26.74 - 32.79	41.38	
All Others	Urban	29.63	28.74	15.38	79	26.16	32.18	40.91	1.01	27.54 - 29.69	46.84	
Grant County												
Total County	Urban	-	29.57	22.02	548	24.72	34.06	94.14	0.99	28.87 - 30.53	33.39	
Townships												
Hidden Valley	Urban	28.79	26.17	30.54	152	18.32	31.52	94.14	1.04	23.78 - 27.47	23.68	
Homers Pass	Urban											
Mountain Home	Urban	31.64	31.64	18.92	179	27.78	35.42	53.94	1.00	30.65 - 32.64	39.66	
	Imp	-	32.44	11.78	104	29.22	35.44	29.33	1.01	31.28 - 33.41	54.81	
	Unimp	-	29.21	29.63	75	24.25	35.19	53.94	1.07	26.80 - 31.75	25.33	
Pleasant Hills	Urban	31.12	29.64	21.59	34	26.00	35.14	54.76	1.03	27.28 - 31.79	41.18	
Sunset View	Urban	34.48	34.48	14.49	43	28.45	37.78	28.03	1.05	30.63 - 35.36	39.53	
Sleepy Hollow	Urban	29.44	29.44	13.18	56	25.33	31.89	24.89	1.01	26.26 - 30.95	42.86	
All Others	Urban	29.86	28.74	18.21	84	24.89	33.31	33.22	1.04	27.16 - 30.56	30.95	

I-E Class Sales Ratio Study

Table 1 Assessment Ratios

GEOGRAPHIC AREA	ADJ	COEF				QUARTILES		RATIO		95% CONFIDENCE		COEF CONC
		MEDIAN	MEDIAN	DISP	SALES	1st	3rd	RANGE	PRD	INTERVAL		
Harrison County												
Total County	Urban	-	32.00	17.71	740	28.12	36.20	89.27	1.03	31.42 - 32.47	41.49	
Townships												
Abilene	Urban	30.47	30.79	13.90	53	26.76	34.55	26.21	1.01	28.44 - 32.47	45.28	
Mount Villa	Urban	32.43	32.43	16.67	539	29.06	36.36	62.50	1.02	31.90 - 32.88	43.97	
All Others	Urban	30.57	29.76	22.82	148	25.22	35.75	89.27	1.05	28.70 - 31.49	31.76	
* No adjustments were necessary because there were no significant assessment changes												
Hayes County												
Total County	Urban	-	30.95	16.56	187	27.23	33.90	58.15	1.01	29.64 - 31.74	47.06	
Townships												
Arizona	Urban	29.43	28.57	22.65	27	22.93	36.11	33.69	1.03	23.03 - 33.18	25.93	
Colorado	Urban	30.27	29.39	19.57	32	24.64	33.90	47.22	1.04	25.19 - 31.32	31.25	
New Mexico	Urban	31.72	31.72	9.21	69	29.48	33.56	24.81	1.01	30.69 - 32.59	66.67	
Wyoming	Urban	32.02	31.39	19.15	25	27.36	35.15	33.01	1.08	27.76 - 35.05	40.00	
All Others	Urban	31.15	29.86	22.06	34	25.62	33.33	45.80	1.00	26.07 - 32.45	38.24	
Lincoln County												
Total County	Urban	-	28.37	11.55	6906	26.02	30.62	66.76	1.03	28.26 - 28.45	59.30	
Townships												
Ash	Urban	30.86	29.67	15.37	153	26.36	32.79	52.65	1.03	28.43 - 30.93	42.48	
Aspen	Urban	29.67	29.34	5.86	26	28.12	30.95	8.72	1.00	28.27 - 30.88	76.92	
Blue Spruce	Urban	29.84	28.26	25.61	142	22.44	32.80	64.23	1.04	26.49 - 30.11	29.58	
	Imp	-	29.90	18.50	96	25.54	32.78	45.21	1.04	28.13 - 30.63	41.67	
	Unimp	-	22.52	43.11	46	16.79	35.27	64.23	1.26	18.37 - 27.71	10.87	
Buckeye	Urban	30.39	29.18	9.10	97	27.45	30.80	34.52	1.02	28.50 - 30.02	71.13	
Burr Oak	Urban	28.48	25.96	7.86	815	24.35	27.53	26.68	1.02	25.75 - 26.18	70.18	
Cherry	Urban	30.46	29.07	10.28	537	27.01	31.12	52.02	1.01	28.70 - 29.46	66.29	
	Imp	-	29.17	9.60	512	27.13	31.15	46.47	1.01	28.76 - 29.49	66.41	
	Unimp	-	27.78	23.84	25	17.44	30.20	32.92	1.10	17.55 - 29.46	40.00	
Cottonwood	Urban	29.48	28.69	10.31	360	26.51	30.81	45.25	1.00	28.27 - 29.19	62.78	
	Imp	-	28.88	8.97	332	26.65	30.80	22.45	1.00	28.37 - 29.26	65.36	
	Unimp	-	27.44	25.82	28	24.26	31.79	45.25	1.26	24.40 - 28.69	35.71	
Evergreen	Urban	32.38	30.97	13.08	65	27.30	32.64	36.54	1.02	29.21 - 31.88	52.31	
Hawthorn	Urban	29.36	27.56	9.73	1256	25.77	29.78	40.23	1.01	27.38 - 27.83	65.61	
	Imp	-	27.71	8.47	1223	25.89	29.83	26.70	1.00	27.47 - 27.91	68.27	
	Unimp	-	6.00	133.81	33	4.49	20.92	23.74	1.12	4.55 - 20.45	6.06	
Holly	Urban	32.57	32.57	13.27	30	29.50	35.97	24.68	1.00	29.98 - 35.03	50.00	
Mount Olive	Urban	31.67	29.40	9.24	516	27.70	31.31	43.83	1.03	29.10 - 29.70	72.67	

I-E Class Sales Ratio Study

Table 1

Assessment Ratios

GEOGRAPHIC AREA	ADJ	COEF				QUARTILES		RATIO		95% CONFIDENCE INTERVAL		COEF CONC
		MEDIAN	MEDIAN	DISP	SALES	1st	3rd	RANGE	PRD			
Pin Oak	Urban	29.99	28.34	8.48	822	26.33	30.06	44.64	1.01	28.06 - 28.57	70.07	
Red Maple	Urban	29.86	29.03	8.45	397	27.35	30.67	35.14	1.01	28.73 - 29.20	70.28	
Sassafras	Urban	31.26	31.26	15.56	26	27.84	34.80	35.24	1.01	28.44 - 33.75	53.85	
Silver Maple	Urban	29.98	29.07	16.64	924	25.80	32.42	64.98	1.03	28.69 - 29.46	44.70	
Sycamore	Urban	31.17	30.18	12.80	244	26.93	33.52	42.41	1.01	29.38 - 30.63	46.31	
Walnut Grove	Urban	30.31	29.62	8.27	57	28.29	31.12	26.00	1.01	28.62 - 30.17	71.93	
White Pine	Urban	29.72	28.89	7.67	371	27.10	30.45	28.01	1.06	28.45 - 29.22	74.93	
Willow	Urban	30.91	30.18	9.90	28	28.08	32.54	17.25	1.00	28.22 - 31.10	64.29	
All Others	Urban	28.78	27.66	29.28	40	20.86	31.65	44.00	0.97	22.54 - 29.12	37.50	

* No adjustments were necessary because there were no significant assessment changes

Roosevelt County

Total County	Urban	-	30.58	24.39	113	25.77	35.42	56.85	1.06	29.14 - 31.98	33.63
Townships											
Tennyson	Urban	31.57	31.54	21.13	75	27.11	36.53	49.80	1.03	30.35 - 33.40	36.00
All Others	Urban	28.91	28.19	29.83	38	21.26	33.16	56.85	1.06	22.41 - 31.41	28.95

Illinois County Populations
Based on the 2010 Decennial Census Counts*
Illinois 12,830,632

County	Population	County	Population	County	Population
Adams	67,103	Hardin	4,320	Morgan	35,547
Alexander	8,238	Henderson	7,331	Moultrie	14,846
Bond	17,768	Henry	50,486	Ogle	53,497
Boone	54,165	Iroquois	29,718	Peoria	186,494
Brown	6,937	Jackson	60,218	Perry	22,350
Bureau	34,978	Jasper	9,698	Piatt	16,729
Calhoun	5,089	Jefferson	38,827	Pike	16,430
Carroll	15,387	Jersey	22,985	Pope	4,470
Cass	13,642	Jo Daviess	22,678	Pulaski	6,161
Champaign	201,081	Johnson	12,582	Putnam	6,006
Christian	34,800	Kane	515,269	Randolph	33,476
Clark	16,335	Kankakee	113,449	Richland	16,233
Clay	13,815	Kendall	114,736	Rock Island	147,546
Clinton	37,762	Knox	52,919	St. Clair	270,056
Coles	53,873	Lake	703,462	Saline	24,913
Cook	5,194,675	LaSalle	113,924	Sangamon	197,465
Crawford	19,817	Lawrence	16,833	Schuyler	7,544
Cumberland	11,048	Lee	36,031	Scott	5,355
DeKalb	105,160	Livingston	38,950	Shelby	22,363
De Witt	16,561	Logan	30,305	Stark	5,994
Douglas	19,980	McDonough	32,612	Stephenson	47,711
DuPage	916,924	McHenry	308,760	Tazewell	135,394
Edgar	18,576	McLean	169,572	Union	17,808
Edwards	6,721	Macon	110,768	Vermilion	81,625
Effingham	34,242	Macoupin	47,765	Wabash	11,947
Fayette	22,140	Madison	269,282	Warren	17,707
Ford	14,081	Marion	39,437	Washington	14,716
Franklin	39,561	Marshall	12,640	Wayne	16,760
Fulton	37,069	Mason	14,666	White	14,665
Gallatin	5,589	Massac	15,429	Whiteside	58,498
Greene	13,886	Menard	12,705	Will	677,560
Grundy	50,063	Mercer	16,434	Williamson	66,357
Hamilton	8,457	Monroe	32,957	Winnebago	295,266
Hancock	19,104	Montgomery	30,104	Woodford	38,664

* Source: U.S. Census Bureau, 2010 Census.
2010 Census Redistricting Data (Public Law 94-171) Summary File, Tables P1 and H1