Maine Association of Assessing Officers
Fall Conference
September 10-15, 2020

Topics:

Conducting a Reappraisal
Evaluation of a Real Property Appraisal
Commercial Land Valuation
The Assessment Process – Fairness & Equity

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Conducting a Reappraisal

Nearly every municipality requires that assessors perform periodic reappraisals. The purpose of the reappraisal includes the opportunity to evaluate current processes and procedures to ensure that all property subject to taxation is assessed in a fair and equitable manner. A reappraisal differs from a reassessment in that every property is subject to review. Normally, the reassessment process includes properties that have obtained a building permit to construct, alter and/or modify the improvements on land.

Assessing Officers rely on Mass Appraisal techniques to conduct a reappraisal. Mass Appraisal is defined by the International Association of Assessing Officers (IAAO), *Property Assessment Valuation, 3rd Edition*, (IAAO, 2010, Page 403) as,

“...The systematic appraisal of groups of properties, as of a given date, using standardized procedures and statistical testing.”

The following topics are necessary and critical elements of the reappraisal process:

Statutory Provisions
Sales Ratio Studies (Statistical Performance Testing)
Budget
Internal Controls
Organizational Chart & Responsibilities
Develop and Monitor Reappraisal Plan
Safety Concerns
Software – Computer Assisted Mass Appraisal (CAMA)
Valuation Data
Public Relations

Statutory Provisions

Tax Laws in the State of Maine provide for the assessment of real and personal property. There are several provisions for exemptions, abatements, and other tax incentive programs. However, the assessment officer must properly identify and list all property and determine the assessment of the property that is subject to taxation.
Sales Ratio Studies (Statistical Performance Testing)

The determination as to whether to conduct a reappraisal can be statutory, or based on the needs to the municipality. Initially, it is common practice to conduct a sales ratio study and related statistical performance testing for each economic neighborhood that exists within a community. The assessing officer should evaluate the current market value of properties to determine pre-reappraisal equity and consistency with market data. If the results of the sales ratio study and performance testing yield inconsistent data, the need for a reappraisal is increased.

Budget

Local government budgets are impacted by inequitable assessments. Initially, there is a cost to defend assessments when property owners appeal. Even if valuation disputes are resolved, the resolution may not create fairness and equity for all property owners. The amount of staff time invested to defend assessment is often increased when assessments do not properly reflect market value. These resources could be directed to other assessment administration functions.

Another impact on local budgets include the approval of the millage, or tax rates. Low assessments may lead to increased millage rates, or a reduction in services. High assessments may lead to refunds and higher legal fees. Reserves for reimbursement of property taxes should be established in the local municipality budget document.

Internal Controls

It is important to develop high quality internal controls. The controls should be placed in writing and cover topics including the quality of construction, development of effective age, measuring real property (below and above grade), estimating amenities when access to the property is not permitted, data entry and all other aspects of assessment administration.

Once developed, the internal controls should be monitored. Discrepancies should be resolved, and clarification on the process should be provided to all team members.
Organizational Chart & Responsibilities

Supervisors, Technical Team members, Administrative Support Team members, Consultants, Appraisers, and other support staff may all have a role in the reappraisal process. Each team member should have a clear understanding of their role. The process for resolving questions and/or disputes should be formalized so that all team members are knowledgeable as to the current processes and procedures.

The assessing officer should evaluate available resources. Consider training programs and work experience that is necessary for team members to expand their skill set with the goal of each team participant becoming more skilled and proficient.

Develop and Monitor Reappraisal Plan

There are three primary components of a Mass Appraisal System. They are:

1. **Administration** – Assessment Notices, Tax Bills, etc.
3. **Analysis & Valuation System** – Consideration of Sales, Income & Cost Data.

Specific steps in the Administration of Mass Appraisal includes:

1. **Identifying properties** to be appraised. (Discovery).

   Ensure that all parcels of land in the municipality are legally described. Evaluation of those subject to taxation and those that are exempt.
2. **Inventory** property characteristics (Listing)

The typical data collection process involves visiting each location and conducting a physical inspection of the property. The physical characteristics of the property are listed on an appraisal record card. Another method of data collection is the use of Remote Data Verification.

Remote Data Verification uses technology to capture physical characteristics of the property. Using Street Front Imagery, the appraiser is able to measure the footprint of the improvements, measure lot size, develop a property sketch, and validate the address and street name.

The benefits of Remote Data Verification include:

- Ability to verify property attributes without sending an appraiser to the field
- Time Saving
- Less Labor
- Less Cost
- Higher Productivity

Weaknesses of Remote Data Verification include:

- Lack of Interior Inspection
- Outdated Images
- Changes from last Image Update
- Still requires field work
3. The process of valuing a universe of properties. (Valuation)

The availability and collection of market data should be reviewed to determine the most reliable Approach to Value (Sales Comparison, Income, Cost). For any item to have “value”, it must possess the following characteristics:

a. Desirability
b. Utility
c. Scarcity
d. Transferability

The valuation for the reappraisal is as of a specific date as established by statute. The valuation process includes the modeling of land valuation and the development of improvement costing tables. Improvement costing tables can be developed internally, or acquired by a national costing service company. The improvement costing tables develop a model based in part on:

1. Quality of Construction,
2. Total Square Footage,
3. Effective Age, and
4. Economic Neighborhood, etc.

4. Defining Market Area of consistent behavior that applies to properties.

Inconsistent sales ratio studies calculated by using existing neighborhoods, may be an indication that the economic neighborhood is not properly defined. The IAAO Glossary for Property Appraisal and Assessment, (IAAO 1997, page, 881), defines a neighborhood as:

“(1) the environment of a subject property that has a direct and immediate effect on value, (2) A geographic area (in which there are typically fewer than several thousand properties) defined for some useful purpose, such as to ensure...that the properties are homogeneous and share important characteristics.”
An assessing officer may consider the following attributes when defining a neighborhood:

1. Complimentary Land Uses,
2. Similar Influences of Economic Factors,
3. Value Transformations between Neighborhoods,
4. Neighborhood Changes (Growth, Stability, Decline and Rebirth), and
5. Boundaries (Political, Man-Made and Natural).

5. Identifying characteristics (supply and demand) that affect the creation of value in that market area.

Once the valuation process has been preliminarily established, the Assessing Officer should develop a projection for completion of the various duties. Consideration should be given to the amount of work necessary for each task, and the available resources for the completion of the reappraisal to develop a meaningful work plan.
Preparing a Gantt Chart that identifies each reappraisal task, along with the projected start and end dates of each task can be a valuable tool in the administration of the reappraisal. It is important to factor in vacation time, holidays, sick leave, education days, and all other tasks not directly related to the reappraisal, to have an effective estimate of the time necessary to complete each task. The Gantt Chart to be reviewed frequently to monitor performance, and to make amendments to the plan as needed and necessary. A sample Gantt Chart is as follows:

Safety Concerns

Procedures should be established to ensure the safety of the appraisers in the field and concerns from property owners. The public should be advised that a reappraisal is taking place and that appraisers will be in the field. In some communities, it may be appropriate to have two appraisers work together. Having the vehicle prominently labeled with the municipalities name is often helpful. The appraiser should carry a cell phone in the event of an emergency, or to contact a supervisor if needed. It may also be helpful to advise the Police Department, that appraisers are actively working in the field.
Software – Computer Assisted Mass Appraisal (CAMA)

Across the United States, there are:

- Over 10,000 Assessment Jurisdictions in the USA.
- Over 40,000 assessors/appraisers directly employed by municipalities.
- Most municipalities use Computer Assisted Mass Appraisal (CAMA).
- Public has more knowledgeable of CAMA than previous years.
- Increased scrutiny of Assessments.
- Demand for higher level of accuracy.
- Integration of Assessment Database information with mapping information.
- Mapping functionality integrated with databases.
- Mapping data available from within PC applications.

CAMA systems may be customized for a specific municipality. Often customized software systems become challenging to maintain. There is a trend for national software development with custom features for unique local unit requirements.

The software is helpful for the development and creation of Appraisal Record Cards. The appraisal record cards must reflect the assessment placed on the assessment roll. It is advised that the Appraisal Record Card be developed in such a way that property owners are able to understand the data related to their property. A sample is as follows:
Valuation Data

The Uniform Standards of Professional Appraisal Practice (USPAP) STANDARD 5 and 6 requires the appraiser, “In developing a mass appraisal, an appraiser must be aware of, understand, and correctly employ those recognized methods and techniques necessary to produce and communicate mass appraisals.

Standards 5 and 6 applies to all Mass Appraisals, and is directed toward the substantive aspects of developing and communicating competent analyses, opinions, and conclusions in the mass appraisal of properties, whether real property or personal property. Mass Appraisals can be prepared with or without computer assistance. The reporting and jurisdictional exceptions applicable to public mass appraisals prepared for purposes of ad valorem taxation do not apply to appraisals for other purposes.”

The Assessing Officer relies on modeling to determine assessments for a reappraisal. The purpose of modeling in mass appraisal is to estimate the most likely selling price of properties using real estate data. The model should account for the operation of supply and demand.

The model should “consider” the 3 approaches to value including:

- Sales Data
- Cost Data
- Income Data

Modeling should include a process for land valuation. Land valuation is typically determined based on sales. The sales are evaluated using:

- 1. Square Foot
- 2. Front Foot
- 3. Acreage
- 4. Lake Front property
- 5. Depth Factors
- 6. Economic Neighborhoods - Site
- 7. Size Adjustments – Economies of Scale
- 8. Land Tables

Modeling should also include a process for building valuation. Replacement Cost New (RCN) is typically estimated using costing estimates from National Cost Services and is adjusted for:

- 1. Local economics
- 2. Quality of Construction
- 3. Condition
- 4. Effective Age
Adjustments to costing models are generally based on “Paired Sales Analysis” of similarly situated properties. Sales must be validated for inclusion in the reappraisal process. Typical validation processes exclude the following from validated sales for assessment administration purposes:

1. Outliers
2. $1 Deeds
3. Sales between Related Parties
4. Payoffs of Land Contracts

The validated sales are used to develop factors based on economic conditions as of the date of valuation. The following format represents the calculation of Economic Condition Factors:

<table>
<thead>
<tr>
<th>Parcel</th>
<th>Sale Price</th>
<th>Sale Price of Improvements (SP – land)</th>
<th>RCNLD Indicated ECF</th>
</tr>
</thead>
<tbody>
<tr>
<td>12345</td>
<td>$240,000</td>
<td>$165,000</td>
<td>$153,500</td>
</tr>
<tr>
<td>67890</td>
<td>$200,000</td>
<td>$125,000</td>
<td>$115,000</td>
</tr>
</tbody>
</table>

All Validated Sales in Neighborhood (list continues – totals below)

| Totals | $2,500,000 | $2,300,000 | 1.087 |

The application of Mass Appraisal Depreciation is generally estimated by use of a Depreciation Table. A depreciation table represents typical loss in value for structures for various effective ages. They primarily recognize physical deterioration, and adjustments may be needed for Abnormal Physical deterioration, functional obsolescence and external obsolescence.

During the valuation process the assessing officer should routinely conduct statistical performance testing on the preliminary data. In addition, certain queries should be performed on the database to ensure that:

1. All improved properties have a structure with value.
2. Each neighborhood has consistent effective ages.
3. Each neighborhood have consistent quality of construction.
4. Each neighborhood has similar values based on a “value per square foot”.
5. Appropriate land rates are used for each neighborhood and property type.
6. Property Tax Exemptions have been validated and recognized.
An example of Performance Testing is as follows:

<table>
<thead>
<tr>
<th>Style</th>
<th>Parcel Count</th>
<th>Mean</th>
<th>Median</th>
<th>Weighted Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranch</td>
<td>235</td>
<td>.969</td>
<td>.959</td>
<td>.964</td>
</tr>
<tr>
<td>Colonial</td>
<td>168</td>
<td>1.112</td>
<td>1.088</td>
<td>1.106</td>
</tr>
</tbody>
</table>

Colonial homes are over-valued relative to Ranch style homes.

Significant efforts should be made to keep property owners well advised as to the reappraisal process. Property owners should be advised of the duration of the plan, the details of the plan, when notification of assessments are expected and the appeal process.

The appeal process should include an information review process with assessing department team members. If necessary, the property owner should be advised as to further appeal options.

In conclusion, the assessing officer should determine the need for a reappraisal. Once determined, the reappraisal process requires significant planning and evaluation in order for it to be successful.
Review Questions:

1. Mass Appraisal is defined as:

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

2. Three types of boundaries used to delineate neighborhoods are:

   1. ______________________________________________________________
   2. ______________________________________________________________
   3. ______________________________________________________________

3. What are the 4 components that must exist in order for a property to have value?

   1. ______________________________________________________________
   2. ______________________________________________________________
   3. ______________________________________________________________
   4. ______________________________________________________________

4. A ________________ may be defined as an area of complimentary land uses.

5. Given the following, what is the land value for the subject property?

   Parcel A   Land Value $50,000
              Property Value $200,000
   Parcel B   Land Value $100,000
              Property Value $400,000
   Subject    Property Value $300,000
6. Given the following, what is the indicated land value?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling Price</td>
<td>$200,000</td>
</tr>
<tr>
<td>RCN</td>
<td>$250,000</td>
</tr>
<tr>
<td>Depreciation</td>
<td>$80,000</td>
</tr>
</tbody>
</table>

7. List 3 benefits of using Remote Data Verification:

1. _____________________________________________________________
2. _____________________________________________________________
3. _____________________________________________________________

8. List 2 limitations of using Remote Data Verification:

1. _____________________________________________________________
2. _____________________________________________________________


10. Low assessments may lead to _________________ millage rates. High assessments may lead to ___________ and higher _______ ___________.

Suggested Answers to Review Questions:

Review Questions:

1. Mass Appraisal is defined as:

   “...The systematic appraisal of groups of properties, as of a given date, using standardized procedures and statistical testing.”


2. Three types of boundaries used to delineate neighborhoods are:

   1. Political
   2. Man-Made
   3. Natural

3. What are the 4 components that must exist in order for a property to have value?

   1. Desirability
   2. Utility
   3. Scarcity
   4. Transferability

4. A neighborhood may be defined as an area of complimentary land uses.

5. Given the following, what is the land value for the subject property?

   | Parcel A          | Land Value $50,000 | Property Value $200,000 | Land = 25% of property value |
   |                   |                   |                         |                              |
   | Parcel B          | Land Value $100,000| Property Value $400,000  | Land = 25% of property Value  |
   |                   |                   |                         |                              |
   | Subject           | Property Value $300,000 |                   | $300,000 x 25% = $75,000    |
6. Given the following, what is the indicated land value?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Depreciation</td>
<td>$80,000</td>
</tr>
</tbody>
</table>

$250,000 (RCN) – $80,000 (Depreciation) = $170,000 (Building Value)
$200,000 (Selling Price) – $170,000 (Building Value) = $30,000 (Land Value)

7. List 3 benefits of using Remote Data Verification: (more than 3 possible)

1. Verify property attributes without sending an appraiser to the field
2. Time Saving
3. Less Labor
4. Less Cost
5. Higher Productivity

8. List 2 limitations of using Remote Data Verification: (more than 2 possible)

1. Lack of Interior Inspection
2. Outdated Images
3. Changes from last Image Update
4. Still requires field work


10. Low assessments may lead to increased millage rates. High assessments may lead to refunds and higher legal fees.
Evaluation of a Real Property Appraisal

Appraisal Defined / Process

An Appraisal is defined in the Uniform Standards of Professional Appraisal Practice (USPAP 2020-2021, page 3), as, “(noun) the act or process of developing an opinion of value; an opinion of value (adjective) of or pertaining to appraising and related function such as appraisal practice or appraisal services.”

Assessing offices regularly receive appraisals related to the valuation of a particular parcel or group of parcels. The appraisals are often related to a valuation appeal for ad valorem tax purposes. The process for development of an appraisal includes seven steps. They are:

1) Define the Appraisal Problem
2) Identify the Scope of Work
3) Conduct Preliminary Survey and Planning
4) Data Collection and Analysis
5) Highest and Best Use Analysis
6) Application of the Data and the Three Approaches to Value
7) Correlation and Reconciliation of Indicated Values and Estimate Final Value

1) Define the Appraisal Problem

The initial evaluation of an appraisal by the assessing officer should include ensuring the identification of the property being appraised. This is accomplished by validating the parcel identification number and legal description. A review of the property location on the assessor’s map may also be of assistance to the appraiser. The assessor’s map should identify neighboring properties, roadways, wetlands and other relevant information.
Once the subject property is validated, the second evaluation is to determine that the property rights being appraised are appropriate. Most ad valorem assessments appraise property based on the concept of fee simple ownership. Fee simple ownership is the highest degree of ownership, including all rights, except those provided for taxation, eminent domain, police power and escheat. The assessing officer should ensure that the appraisal submitted for their consideration is based on a fee simple ownership, and not a fractional interest, leasehold interest, or other form of ownership.

The third step is to determine the purpose of the appraisal. The purpose of the appraisal should be for ad valorem tax purposes, and should conform with the requirements set forth in statutes and established rules related to property assessments. When the appraisal submitted by the property owner is for a different purpose, the basis of the valuation may differ. For example, the sales study period for determining assessment may be 1 year, 2 years, or even longer. However, if the purpose of the appraisal is for mortgage lending purposes, the lender or underwriter may require that the appraiser only consider sales within a 3-month, or six-month period. The inclusion or exclusion of certain sales or market data information could significantly modify the final conclusions of value by the appraiser.

The forth step is to ensure that the date of appraisal coincides with the assessment date. The effective date of the appraisal is relevant as market conditions routinely change over time.

The fifth step in “Defining the appraisal problem” is ensuring that the definition of value is consistent with statute. Generally, assessing officers rely on market value, as defined in the International Association of Assessing Officers (IAAO) text titled, Property Assessment Valuation, 3rd Edition, 2010, page 15, as,

*Market value 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:

- Buyer and seller are typically motivated;
- Both parties are well informed or well advised, and acting in what they consider their best interests;
- A reasonable time is allowed for exposure in the open market;
- Payment is made in terms of cash in United States dollars or in terms of financial arrangements comparable thereto; and
- The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with sale. (IAAO 1997, page 85)*
The sixth and last component in “Determining the appraisal problem” may include language titled “Assumptions and Limiting Conditions.” This section may include standard text, such as the appraiser has no knowledge of any environmental conditions that would affect the final valuation conclusions of the appraisal. However, there could be language that limited the scope of work for the appraiser that may impact the final valuation conclusion, such as that the property was not inspected, and is assumed to be in poor condition. This assumption and limiting condition statement may lead to adjustments in the application of the three approaches to value. The assessing officer may have information or evidence to the contrary that may modify the final conclusion of value in the appraisal report.

2) Identify the Scope of Work

USPAP, 2018-2019, page 5, defines the “Scope of Work” as, “the type and extent of research and analysis in an appraisal or appraisal review assignment.” The assessing officer should ensure that the work performed for the appraisal is fair and equitable, and consistent with the requirements for ad valorem taxation.

3) Conduct Preliminary Survey and Planning

This section of an appraisal may include discussion related to the final value estimates, the Highest and Best Use of the property and the type of data that was collected for analysis within the development of the three approaches to value.

4) Data Collection and Analysis

The data that is collected and analyzed is generally divided into three categories. They are, 1) General Data, 2) Specific Data, and 3) Comparative Data.

General Data includes national, or regional valuation trends. Also included are relevant market influences related to the Four Forces of Value which are, 1) Physical Factors (external factors), 2) Economic Factors, 3) Governmental Factors, and 4) Social Factors.

Specific Data includes specific site and improvement data of the subject property. A site inspection by the assessing officer along with the property owner or their representative may be necessary if there are discrepancies related to specific site and/or improvement components.
Comparative Data consists of market information related to the Cost Approach, Sales Comparison Approach and Income Approach. Comparative Data is routinely gathered within assessing offices through deeds, sales studies, real property statements, cost manuals, etc. The assessing officer should review comparative data in their offices. The review should compare market data collected in the assessor’s office with the market data used within the appraisal report. If there are discrepancies, the assessing officer should inquire from the appraiser about the use of the information. It is possible that the appraiser was not aware of certain sales information, or other data, and such knowledge could lead to different valuation conclusions.

5) Highest and Best Use Analysis

The IAAO “Glossary for Property Appraisal and Assessment”, 1997, defines Highest and Best Use as,

*A principle of appraisal and assessment requiring that each property be appraised as though it were being put to its most profitable use (highest possible present net worth), given probable legal, physical, and financial constraints. The principle entails first identifying the most appropriate market, and, second, the most profitable use within the market. The concept is most commonly discussed in connection with underutilized land.*

There are four recognized tests to consider in determining the Highest and Best Use of a property. They are, 1) physically possible, 2) legally permissible, 3) financially feasible, and 4) maximally productive.

In the first test, the appraiser considers the uses that could physically exist on the property. The second test considers what uses are legally permissible, pursuant to law, ordinances, and zoning restrictions. The third test requires consideration of the return on investment as it relates to the type of improvement on the property, and whether is it a financially feasible investment. The forth test, requires the appraiser to determine which use will return the highest return on the investment to the property.
Other considerations affecting a properties Highest and Best Use include determining whether there is sufficient market demand for the property, and if the demand is backed with sufficient purchasing power. Highest and Best Use of a property must be a complimentary use, and not a competitive use.

Many appraisals consider the current use to be the Highest and Best Use. When this occurs and the assessing officer is not aware of economic forces likely to change the Highest and Best Use, then, the current use is appropriate. However, the Highest and Best Use section of an appraisal is of significant importance particularly when the current use is an underutilization of the property. Such is the case when agricultural land is located in an economically developing area and its Highest and Best Use may be as residential, commercial or industrial improvements. Many states have passed legislation requiring that assessments be based on the current use, rather than the Highest and Best Use.

Interim Uses for an improved property indicates that the current use is not the Highest and Best Use. For example, a golf course may not provide the economic return on the property that could be achieved from another use, such as residential or commercial. It is possible that the value of the improved gold course may be less than the value of the land as though vacant when the costs of demolition, land preparation and property taxes are considered.

6) Application of the Data and the Three Approaches to Value

There are three generally accepted approaches to measure market value. They are the 1) Cost Approach, 2) Sales Comparison Approach and 3) Income Approach. Appraisal theory requires the appraiser to consider all three approaches to value. Consideration of the approach does not mean that the approach is required to be developed, only that the appraiser considers the applicability of the approach to value as it relates to the subject property.
The steps in the valuation process for the Cost Approach are as follows:

1) Estimate the land as if vacant and available for improvements at its Highest and Best Use.

2) Estimate the Replacement/Reproduction Cost New (RCN) of the improvements. Compare the quality of construction, property type, square footage and other components identified in the appraisal report with the assessment records. Any discrepancies should be resolved based on a physical inspection of the property and conversation between the assessing officer and appraiser.

3) Estimate the amount of depreciation. Depreciation is the loss in value from physical deterioration, functional obsolescence and external obsolescence. The measure of depreciation is likely the most challenging component of the Cost Approach to value. The assessing officer should give particular consideration to the effective age of the property for the calculation of normal physical deterioration. The identification of any abnormal physical deterioration, functional obsolescence and external obsolescence within the appraisal report should be well documented and supported by market evidence.

4) Subtract the total amount of depreciation from the RCN to determine the depreciated cost of the improvements.

5) Estimate the RCN of any other site or building improvements and deduct appropriate depreciation. Add this depreciated cost of the other site or building improvements to the depreciated cost of the primary improvements.

6) Add the value of the land to the depreciated cost of all site and building improvements.
The steps in the valuation process for the Sales Comparison Approach are as follows:

1) Define the appraisal process.

2) Collect and analyze the data.

   *The sales information collected should reflect the same Highest and Best Use as the subject property.

   *Compare the sales used in the appraisal with the sales information within the assessor’s office. Confirm that the amount of the sale and the date of sale are as reflected on the deed, or other market evidence. Determine if there were sales that occurred during the relevant timeframe that were not considered in the appraisal. Comparable sales that occurred during the relevant timeframe and that were not used in the appraisal report may impact the final determination of value. Conversely, determine if there were sales used in the appraisal report that were invalidated by the assessing department, such as sales between related parties, or sales of a fractional interest in a parcel, as those sales may also impact the final value estimate.

   *Ensure that the property characteristics in the appraisal report are the same as those identified on the assessment records. Discrepancies may be resolved with a detailed inspection of the property by the assessing officer and the appraiser.

3) Select the appropriate unit of comparison

   * Units of comparison include rate per square foot, rate per acre, rate per number of guest rooms, rate per number of bowling lanes, etc.

4) Make reasonable adjustment based on market data.

   *Comparable sales should be adjusted to reflect the property characteristics of the subject property. The adjustments should be well supported by market evidence.

   *The assessing officer should pay particular attention to any sales that were used as comparable in the appraisal report that require significant adjustments, as they may not be the best available comparable properties for use in the Sales Comparison Approach.
5) Apply the adjusted market data to the subject property.

The steps in the valuation process for the Income Approach are as follows:

1) Estimate the potential gross income (PGI) for the property.

*Gross income estimates are based on annual market rents, even when contract rent differs either upwards or downwards.

*PGI includes the maximum that could be collected if the property were rented or leased at full capacity for the entire year.

*No deductions or provisions are made for owner or property manager, occupied space.

2) Deduct for vacancy and collection loss.

*Vacancy and collection loss is based on normal market conditions, for comparable properties.

*Comparable properties should be evaluated based on location, capacity, effective age, and other physical attributes. For example, the vacancy rate for older apartment complexes may differ from vacancy rates for new and more modern properties.

3) Add miscellaneous income to the PGI less vacancy and collection loss calculation. This result is the Effective Gross Income (EGI) for the property.

4) Estimate the Operating Expenses. Allowable operating expenses include charges for:

1) Management
2) Wages and Salaries
3) Utilities
4) Supplies
5) Repairs and Maintenance
6) Reserves for Replacement
7) Insurance
8) Insurance
9) Professional Fees
10) Miscellaneous
Improper operating expenses include charges for:

1) Depreciation - Depreciation is accurately reflected in the Recapture Rate in the Overall Capitalization Rate in the capitalization process.
2) Debt Service - Debt service includes principal and interest payments on loans attached to the real property.
3) Income Taxes
4) Capital Improvements - Capital Improvements are normally deducted as Reserves for Replacement on an annual basis rather than as an expense for the entire improvement in a single year.
5) Personal expenses of the owner.
6) Property Taxes - For assessment purposes, the Effective Tax Rate is included in the Overall Cap Rate in the capitalization process.

5) Deduct the comparable and stabilized operating expenses from the EGI to determine Net Operating Income (NOI).

6) Calculate the Overall Capitalization Rate. If utilizing a market derived capitalization rate, it is necessary to ensure that properties subject to gross leases, single net leases, double net leases and triple net leases, are evaluated separately to calculate an overall capitalization rate.

A gross lease typically requires the tenant to pay a single flat fee for use of the space. The landlord is required to pay all expenses, including taxes, insurance and repairs.

A single-net lease typically requires the tenant to pay the property taxes in addition to the fee required for use of the space.
A double-net lease typically requires the tenant to pay property taxes and building insurance in addition to the fee required for use of the space.

A triple-net lease typically requires the tenant to pay the property taxes, insurance, and property maintenance expenses in addition to the fee required for the use of the space.

It is important that market derived capitalization rates are calculated for each lease type separately. It is likely that the overall capitalization rate for triple net leases is lower than market derived capitalization rates for gross leases, single-net leases, or double-net leases. For example, a property with an NOI of $100,000 using a triple-net market derived capitalization rate of 10% has a value of approximately $1,000,000 ($100,000/10%). The same property using a gross lease market derived capitalization rate of 12%, has a market value of approximately $833,300 ($100,000/12%) (Rounded).

7) Use the appropriate capitalization procedure.

*Direct Capitalization
*Yield Capitalization
*Discounted Cash Flow Analysis
*Gross Rent Multiplier Analysis could be utilized.

8) Capitalize the NOI into the estimate of market value.

7) Correlation and Reconciliation of Indicated Values and Estimate Final Value

Correlation and Reconciliation is the component of the appraisal process that requires the appraiser to review the quality and quantity of the market data. The appraiser should consider the strengths and weakness of each approach to value that was developed. For example, the appraiser may decide not to rely on the application of the Cost Approach to value an older industrial building, as the estimate of depreciation may be unreliable. Similarly, the appraiser may decide not to rely on the Sales Comparison Approach as sales information is limited. The most reliable method, with the greatest number of strengths is the value on which the estimated final value is determined.
Conclusion

The appraiser should give careful consideration to an appraisal submitted on behalf of a property owner for ad valorem purposes. IAAO has several courses and workshops related to the appraisal process, the application of the three approaches to value and the evaluation of an appraisal that may be of considerable benefit to the assessing officer. USPAP is a required course for continuing education requirements for professional designees. All of these courses and workshops contribute to the assessing officer’s skill set, along with training and experience.
Review Questions:

1. USPAP Defines an appraisal as:

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

2. The 4 recognized tests to consider in determining the Highest and Best Use of a property are:

1. _____________________________________________________________________
2. _______________________________________________________________
3. _____________________________________________________________________
4. _____________________________________________________________________

3. Data Collection and Analysis is generally divided into these 3 categories:

1. _____________________________________________________________________
2. _____________________________________________________________________
3. _____________________________________________________________________

4. Which of the following is not a recognized approach to value:

1. Cost Approach
2. CAMA Approach
3. Income Approach
4. Sales Comparison Approach

5. The lease that typically requires the tenant to pay the property taxes, insurance, and property maintenance expenses in addition to the fee required for use of the space is:

1. Gross Lease
2. Single-Net Lease
3. Double-Net Lease
4. Triple-Net Lease
Suggested Answers to Review Questions:

Review Questions:

1. USPAP Defines an appraisal as:

   An Appraisal is defined in the Uniform Standards of Professional Appraisal Practice (USPAP 2018-2019, page 3), as, “(noun) the act or process of developing an opinion of value; an opinion of value (adjective) of or pertaining to appraising and related function such as appraisal practice or appraisal services.”

2. The 4 recognized test to consider in determining the Highest and Best Use of a property are:

   1. Physically Possible
   2. Legally Permissible,
   3. Financially Feasible, and

3. Data Collection and Analysis is generally divided into these 3 categories:

   1. General Data,
   2. Specific Data, and
   3. Comparative Data.

4. Which of the following is not a recognized approach to value:

   1. Cost Approach
   2. CAMA Approach
   3. Income Approach
   4. Sales Comparison Approach

5. The lease that typically requires the tenant to pay the property taxes, insurance, and property maintenance expenses in addition to the fee required for use of the space is:

   1. Gross Lease
   2. Single-Net Lease
   3. Double-Net Lease
   4. Triple-Net Lease
Commercial Land Valuation

Introduction to Neighborhoods

An effective method for the valuation of commercial land begins with a preliminary identification of the economic neighborhood. An economic neighborhood is a geographic area influenced by the same or similar economic conditions. The economic conditions are based on four primary factors influencing value, frequently referred to as the Four Forces of Value. Those factors are:

1) Physical
2) Economic
3) Governmental, and
4) Social

1) Physical Factors for commercial property may include natural barriers such as waterways or terrain. They may also include man-made barriers such as major streets, school district lines, street patterns, and traffic flow.

Topography, land area, and soil conditions are a component of the physical factors influencing commercial property valuation. The topography and size of the land impacts the type of property that can be constructed on the site. Soil conditions, specifically any environmental hazards may impact the property’s value.

2) Economic Factors related to the tenants ability to generate sufficient income to support the cost of ownership of the property. Economic Factors include the ability for the property to generate income, maintain the property, pay property taxes, cover debt service costs, insurance costs and other necessary expenses.

Other Economic Factors include employment rates, occupancy rates, rental rates, and population changes.
3) Governmental Factors include local ordinances, zoning requirements, state and federal laws, and property taxes.

Other Governmental Factors may include police and fire protection, crime rates and statistics, garbage collection, condition of roadways and availability of public transportation.

4) Social Factors include population changes, gender and age of residents, crime rates and desirability of certain areas based on popularity and culture.

Based on the *Four Forces of Value* the appraiser can outline specific proposed economic neighborhoods within the geographic boundaries of their county or local municipality. The boundaries are tentative until sufficient market evidence is studied to validate whether specific components within the *Four Forces of Value* impact the value of the land. The proposed geographic areas can be color coded similar to this example:

![Map Example]

It is helpful to the appraiser to create a list of the parcels within each proposed neighborhood. The list should contain the parcel number, the type of zoning, the total area of the parcel and the amount of frontage each parcel contains. Consideration should be given to merging proposed economic neighborhoods containing few parcels with other neighborhoods. The merging of the parcel could occur in the preliminary phase or during the final valuation process.
Valuation Data

There are six generally recognized methods of land valuation. They are:

1) Sales Comparison Approach
2) Allocation Method
3) Abstraction Method
4) Anticipation Method
5) Capitalization of Ground Rent Method
6) Land Residual Technique

1) The Sales Comparison Approach is generally considered to be the most reliable method of land valuation as it is based on actual transactions. The initial step is for the appraiser is to query the database for sales of commercial vacant land. The sales should be validated to ensure consistency with the definition of market value. The International Association of Assessing Officers (IAAO) text titled, *Property Assessment Valuation, 3rd Edition, 2010, page 15*, defines market value as,

...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:
- **Buyer and seller are typically motivated;**
- **Both parties are well informed or well advised, and acting in what they consider their best interests;**
- **A reasonable time is allowed for exposure in the open market;**
- **Payment is made in terms of cash in United States dollars or in terms of financial arrangements comparable thereto; and**
- **The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with sale. (IAAO 1997)**

The sales may require adjustments for financing, market condition (time), and other circumstances or conditions to be reflective of the parcels within the proposed economic neighborhood. The appraiser must determine if there are sufficient validated adjusted-sales within each proposed economic neighborhood to proceed in the development of the Sales Comparison Approach. If the appraiser determines that there are sufficient sales, the sales should be analyzed based on a unit of comparison. Typical units of comparison for commercial property include:

1. Square Feet,
2. Front Foot,
3. Acreage, and
4. Per site

The appraiser should consider the economies of scale concept when developing units of comparison. For example, the value per square foot, per front foot, per acre or per site, is often less for larger parcels. If sufficient sales exist the price per square foot can be arrayed to determine if economies of scale exist. If so the rate per square foot may vary within the proposed economic neighborhood based on the size of each individual property.

If the size of the parcel creates excess land, the parcel should be examined to determine if the lot can be legally divided into multiple parcels for the purpose of valuation. If the land can be divided, adjustments for economies of scale may not be necessary. When the property cannot be divided, the portion of the parcel identified as excess land may have a value less than the standard unit of comparison.

Using the validated adjusted-sales, the appraiser can apply the proposed unit of comparison rate to each parcel within the proposed economic neighborhoods. Particular attention should be given to corner lots as in certain markets the frontage could be considered both streets that intersect at the location of the subject property.
Another consideration when applying the unit of comparison in the Sales Comparison Approach is to analyze the parcels located within a proposed economic neighborhoods that are contiguous with another proposed economic neighborhoods. The parcels that are neighboring, or even within a small geographic area of parcels in another geographic neighborhood, may require specific adjustments, known as feathering. Feathering creates a blend of the two economic neighborhoods to soften the specific lines of a neighborhood.

For example, the appropriate unit of comparison for proposed economic neighborhood A is $15.00 per square foot. The appropriate unit of comparison for proposed economic neighborhood B is $12.00 per square foot. Proposed economic neighborhoods A and B include several streets in an area containing office space, retail space, restaurants, and other complimentary type properties. The proposed line for the economic neighborhoods A and B is drawn down the middle of the Main Street. The parcels on the north side of the street (neighborhood A) are valued at $15.00 per square foot. The parcels on the south side of the street (neighborhood B) are valued at $12.00 per square foot. The specific properties located on Main Street may require adjustment to reflect the influence of their respective proposed economic neighborhoods. The adjustments may reduce the value per square foot for properties on Main Street for neighborhood A, and increase the value per square foot for neighborhood B. The appraiser may value the parcels on Main Street at approximately $13.50 per square foot to feather the valuation differences.

2) The Allocation Method may be helpful when there are insufficient vacant land sales to apply the Sales Comparison Approach for all of the proposed economic neighborhoods. The Allocation Method attributes a portion of the total property value assigned to the land. Specifically, the process requires the appraiser to develop a ratio between the property value (sales price of the improved property) and the land value derived from the Sales Comparison Approach in economic neighborhoods where sufficient sales exist.

For example, assume the land in Neighborhood A was established based on vacant land sales and there were three sales of improved properties. Neighborhood C does not have any vacant land sales. The vacant land sales in Neighborhood A were used to develop a unit of comparison based on square footage. Using those proposed land values, along with the sales prices of the improved properties permits the development of a relationship (ratio) between land value and sales price. The following chart provides the analysis:
Neighborhood A

<table>
<thead>
<tr>
<th>Sale #</th>
<th>Land Value</th>
<th>Total Value</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$50,000</td>
<td>$250,000</td>
<td>.20 ($50,000/$250,000)</td>
</tr>
<tr>
<td>2</td>
<td>$70,000</td>
<td>$330,000</td>
<td>.21 ($70,000/$330,000)</td>
</tr>
<tr>
<td>3</td>
<td>$58,000</td>
<td>$293,000</td>
<td>.198 ($58,000/$293,000)</td>
</tr>
</tbody>
</table>

Using the sales information in the chart above the appraiser may conclude that approximately 20% of the sales prices is attributed to the land value. Therefore, 20% of the improved commercial sales in Neighborhood C could be used as land value. Those land values can be used to develop an appropriate unit of comparison for Neighborhood C.

3) The Abstraction Method estimates land value by subtracting the depreciated cost of the improvements from the selling price. The land values established by the Abstraction Method can be used to develop the appropriate unit of comparison for neighborhoods that do not have sufficient sales to develop the Sales Comparison Approach. An example of the analysis is as follows:

Selling Price of Commercial Property: $300,000
Estimated Replacement Cost New of Improvements: $340,000
Total Accrued Depreciation: $90,000
Estimated Value of Improvements: $250,000
Indicated Land Value of sold property: $50,000

The appraiser must evaluate whether there are sufficient validated sales that exist to utilize the Abstraction Method. The land values of the sold properties can be used to develop units of comparison for all of the properties in the proposed economic neighborhood.

4) The Anticipation Method of land valuation is predominately used for land when the property is not at its Highest and Best Use, or when the land is in a tentative use. Such may be the case when property is currently used as agricultural land, but the Highest and Best Use of the land is commercial. In this case, the appraiser may estimate the number of parcels that could be contained within the acreage of the agricultural land. The estimated lot size of the commercial properties should be consistent with zoning requirements and competing properties.
The estimated land values for commercial properties using the Anticipation Method generally require that all development costs for the properties be deducted from the proposed commercial values. For example, the land value of an agricultural property is $1,000,000, based on a Highest and Best Use as commercial. Development costs including, grading, soil erosion, streets, lighting, water & sewer are estimated to be $750,000. The indicated value of the raw land is estimated to be $250,000.

The Anticipation Method is not commonly used for two primary reasons. First, the number of estimates and assumptions tends to discredit the method, and secondly, many States have enacted laws requiring the assessing officer to value land as though it’s Highest and Best Use is the current use. Most often this applies to agricultural land.

5) The Capitalization of Ground Rent Method uses the Income Approach to value the land. This approach can be used when there are not sufficient vacant land sales to develop the Sales Comparison Approach. Land may command rent in the marketplace as a parking lot, or for tentative outdoor activities requiring leased or rented vacant land, such as fairs, hobby shows, etc.

To use the Capitalization of Ground Rent Method, the appraiser must determine the market rent of the land available for lease or rent. Assume that the market supports a capitalization rate of 10%, including property taxes, and the annual market rent for three vacant lots is as follows:

<table>
<thead>
<tr>
<th>Lot</th>
<th>Lot Size</th>
<th>Annual Rent</th>
<th>Capitalization Rate</th>
<th>Indicated Land Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23,000 SF</td>
<td>$23,000</td>
<td>10%</td>
<td>$230,000</td>
</tr>
<tr>
<td>2</td>
<td>26,000 SF</td>
<td>$25,000</td>
<td>10%</td>
<td>$250,000</td>
</tr>
<tr>
<td>3</td>
<td>15,000 SF</td>
<td>$17,000</td>
<td>10%</td>
<td>$170,000</td>
</tr>
</tbody>
</table>

The rate per square foot would for each comparable would be as follows:

<table>
<thead>
<tr>
<th>Lot</th>
<th>Lot Size</th>
<th>Indicated Land Value</th>
<th>Value per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23,000 SF</td>
<td>$230,000</td>
<td>$10</td>
</tr>
<tr>
<td>2</td>
<td>26,000 SF</td>
<td>$250,000</td>
<td>$9.62</td>
</tr>
<tr>
<td>3</td>
<td>15,000 SF</td>
<td>$170,000</td>
<td>$11.33</td>
</tr>
</tbody>
</table>

The appraiser may select the median of $10 per square foot for the commercial land valuation for this economic neighborhood.
6) The Land Residual Technique is applicable to improved income producing property. The appraiser must determine the Net Operating Income for the property and separate capitalization rates for building and land.

For example, assume that a property has a Net Operating Income of $500,000. The value of the improvements is estimated to be $3,000,000 and the capitalization rate is 14%. The components of the capitalization rate are:

<table>
<thead>
<tr>
<th>Discount Rate (Interest)</th>
<th>9.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recapture Rate</td>
<td>2%</td>
</tr>
<tr>
<td>Effective Tax Rate</td>
<td>2.5%</td>
</tr>
<tr>
<td>Total Capitalization Rate</td>
<td>14%</td>
</tr>
</tbody>
</table>

The total capitalization rate is multiplied by the improvement value, which equals $420,000 ($3,000,000 x 14%), leaving $80,000 ($500,000 - $420,000) income to the land. The capitalization rate for the land is 12%, as land is not subject to recapture. The residential land income of $80,000 is divided by the land capitalization rate of 12%, equaling $660,000 (rounded).

The chart below demonstrates this concept:

<table>
<thead>
<tr>
<th></th>
<th>Income</th>
<th>Rate</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building</td>
<td>$420,000</td>
<td>14%</td>
<td>$3,000,000</td>
</tr>
<tr>
<td>Land</td>
<td>$80,000</td>
<td>12%</td>
<td>$660,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$500,000</td>
<td></td>
<td><strong>$3,660,000</strong></td>
</tr>
</tbody>
</table>

Based on this analysis, the land value is estimated to be $660,000. Assume a land size of 6 acres. The value per acre equals $110,000. The value per acre could be converted to develop a unit of comparison based on square foot, front foot or per site. Provisions for economies of scale should be included in the analysis.
Revision to Proposed Neighborhood Map

After the commercial land values have been estimated based on the various appraisal approaches that may be employed, the appraiser should compare the results with the proposed economic neighborhoods. Often, the Four Forces of Value; 1) Physical, 2) Economic, 3) Governmental, and 4) Social, may reveal that those forces have little, if any, impact on the estimated land value. When this occurs, it may be possible to merge some of the proposed economic neighborhoods together, reducing the number of commercial neighborhoods.

It may be helpful to the appraiser to map sales, and the units of comparison on a map for a visual presentation of the appraisal data. Further adjustments may be necessary after statistical testing has been performed on the new appraised valuations.

Statistical Testing

After proposed commercial values have been estimated, the appraiser should conduct a performance analysis. A performance analysis determines whether the value are equitable and represent market value. The development of the units of comparison are applied to the commercial properties based on a model specification. Model specifications are either additive linear, multiplicative, or hybrid.

Model calibration is the adjustment process to the specification for property variables, such as the example of Neighborhood A and Neighborhood B, where certain parcels are contiguous and may require further adjustment. Multiple Regression Analysis is the appraiser technique for calibrating valuation models.

Performing a sales ratio study at the beginning of the land valuation project and at the end of the project is a powerful tool in determining whether the overall commercial values accurately represent market value. Sales ratio studies can be used to measure appraisal uniformity of individual properties and uniformity within delineated neighborhoods.
Conclusion

An effective method for the valuation of commercial land begins with a preliminary identification of the economic neighborhood. The Sales Comparison Approach is often most relied upon with the appraisal of Commercial land, however, various methods of land valuation exist when there are insufficient sales.

Validated sales, and or other methods of land values should be analyzed based on units of comparison. The appraiser should select the most reliable unit of comparison to apply to each parcel within the proposed economic neighborhoods.

After application of the unit of comparison value to each parcel, the data should be studied to determine if it is equitable and uniform. The model may need to be adjusted. Visual examination of the data on a map may assist in studying outliers, or other unusual circumstances. The model, units of comparison, and/or the proposed economic neighborhoods may require modification before completing the final statistical test processes.

IAAO has several courses and workshops related to the appraisal process, land valuation, the application of the three approaches to value and statistical analysis that may be of considerable benefit to the assessing officer.
Review Questions:

1. The four primary factors influencing value are:
   1. ____________________________________________________________
   2. ____________________________________________________________
   3. ____________________________________________________________
   4. ____________________________________________________________

2. Name 3 generally recognized methods of land valuation:
   1. ____________________________________________________________
   2. ____________________________________________________________
   3. ____________________________________________________________

3. ___________________________ is the adjustment process to the specification of property variables.
   1. Model Calibration
   2. Model Specification
   3. Market Value
   4. Sales Comparison

4. Four typical units of comparison for commercial land valuation are:
   1. ____________________________________________________________
   2. ____________________________________________________________
   3. ____________________________________________________________
   4. ____________________________________________________________

5. Feathering is best described as:
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
Suggested Answers to Review Questions:

Review Questions:

1. The four primary factors influencing value are:

   1. Physical
   2. Economic
   3. Governmental, and
   4. Social

2. Name 3 generally recognized methods of land valuation: (more than 3 possible)

   1. Sales Comparison Approach
   2. Allocation Method
   3. Abstraction Method
   4. Anticipation Method
   5. Capitalization of Ground Rent Method
   6. Land Residual Technique

3. _____________________________ is the adjustment process to the specification of property variables.

   1. Model Calibration
   2. Model Specification
   3. Market Value
   4. Sales Comparison

4. Four typical units of comparison for commercial land valuation are:

   1. Square Foot
   2. Front Foot
   3. Acreage
   4. Per Site

5. Feathering is best described as:

   The parcels that are neighboring, or even within a small geographic area of parcels in another geographic neighborhood, may require specific adjustments, known as feathering. Feathering creates a blend of the two economic neighborhoods to soften the specific lines of a neighborhood.
The Assessment Process – Fairness & Equity

Brief History of the Property Tax

Ancient civilizations collected taxes as the funds were needed. The most significant historical event was the census ordered by Caesar Augustus, in which the entire Empire was appraised. Over time, a stable and re-occurring need for revenue was necessary and the process of property tax administration began.

The property tax is an important part of any well-balanced revenue system for a community. Property taxes are used to pay for government services and provide for funding reserves for future needs. The amount of tax is generally based on the market value of real and personal property subject to taxation and is referred to as Ad-Valorem taxes which means “according to value”. The ability to pay is measured by your property wealth. The market value of the property is determined by employing the use of Mass Appraisal. Mass Appraisal is “The systematic appraisal of groups of properties as of a given date using standardized procedures, and statistical testing” (Property Assessment Valuation, 3rd Edition, International Association of Assessing Officers, pg. 403). The role of mass appraisal is to automate valuation techniques and to increase accuracy, efficiency, and consistency. The Appraisal Foundation’s Uniform Standard of Professional Appraisal Practice (USPAP 2020-2021, page 34) states the following:

A mass appraisal includes:

1. Identifying properties to be appraised;
2. Defining market area of consistent behavior that applies to properties;
3. Identifying characteristics (supply and demand) that affect the creation of value in that market area;
4. Developing a model structure that reflects the relationship among the characteristics affecting value in the market area;
5. Calibrating the model structure to determine the contribution of the individual characteristics affecting value;
6. Applying the conclusions reflected in the model to the characteristics of the property(ies) being appraised; and
7. Reviewing the mass appraisal results.

Mass Appraisal is the development of a valuation model used over a large geographic area. The assessing officer develops market-based, standardized adjustments within the model for property considering quality of construction, geographic area, effective age, size and other market value influences. Mass appraisal models can be applied to small economic neighborhoods and to geographic areas including hundreds and thousands of properties.

In contrast, a single property appraisal or a fee appraisal is the valuation of a specific property as of a specific date. The market analysis performed for a single property appraisal relates solely to the subject property.

Mass appraisal is used to establish a value basis for a political subdivision’s tax burden (USPAP Advisory Opinion 32, Advisory Opinions 2018-2019 Edition, The Appraisal Foundation, pg. 159). Property taxes routinely fund police and fire protection, schools, local government services such as trash hauling, public roads, library services, park and recreation programs and facilities, and general governmental administration.

State legislatures generally have the authority to enact statutes that provide for certain specific exemptions from property taxation. These exemptions may include churches, synagogues, schools, colleges, universities, government properties, non-profit hospitals, non-profit scientific institutions, certain non-profit organizations, and other real and personal property as may be deemed appropriate for their public contributions. Other exemptions may be enacted to spur commercial and industrial economic growth. Some property tax exemptions limit property tax increases by the rate of inflation even if market value increases by a greater rate. Such is the case with Proposition 13 in California and Proposal A in Michigan.

**Economic Concepts and Valuation Principles**

The valuation process for the assessing officer and single property appraiser are similar. However, the application of the analysis and certain quality control requirements of the data elements may differ. The process begins with the property identification of the subject real and personal property.

Real property consists of the interests, benefits and rights inherent in the ownership of land, building and improvements permanently attached to the land or building. Personal property consists generally of movable items or more permanent improvements that provide for the installation of personal property, such as a concrete foundation for a manufacturing press.
For any item to have value it most possess four characteristics:

1) Desirability; a potential purchaser’s wish for an item,
2) Utility; the satisfaction of a need or desire,
3) Scarcity; the commodity must be rare, or have limited supply, and
4) Transferability; the ability to participate in a market to acquire or sell goods and/or services.

Suppose that the appraisal assignment is to value a bottle of water in a meeting room in a DC hotel. Water may be desirable to satisfy thirst, and has utility as it is necessary for humans to be hydrated. The bottle of water is transferable as there is an ample market for the sale and purchase of water. However, the scarcity component of value is missing leaving the value of water in this scenario non-existent.

However, if the location of the appraisal assignment was changed to the middle of the dessert, with no available water source for a stranded traveler, the bottle of water would possess desirability, utility, scarcity and transferability, rendering the value of a bottle of water significant.

The example of the value of a bottle of water demonstrates the importance of location, location, location, in the valuation of property. Another example is the value of a waterfront home and a similar property that is located off-water.

Continuing with the example of the value of a bottle of water; the thirsty traveler comes upon a vendor willing to sell bottled water for $20. As no other options are available, a market price is established at $20 per bottle of water. The supply of water is limited, and the demand for water is high, increasing the market value of the bottle of water. This is the economic concept of Supply and Demand.
Others will likely enter the market place when bottles of water are selling for $20. Competition in the market place is created by the potential for profits, which attracts new sellers and buyers. The *Principle of Competition* states that when the amount of a property of a certain type offered for sale is small in relation to demand, prices will increase. When competition increases, prices will tend to decline.

When other bottled water vendors enter the market place and reduce the price to $15, the weary traveler will select the lower priced bottle, provided that the quality and quantity of the water is deemed by the purchaser to be the same. The *Principle of Substitution* states that a property’s market value tends to be set by the cost of acquiring an equally desirable and valuable substitute property, assuming that no costly delay is encountered.

Economic concepts and valuation principles are the study of how businesses, consumers, and the government use resources to elements of supply and demand, and shifts in supply and demand.

**Introduction to the Three Approaches to Value**

The economic concepts and valuation principles create the basis for the development of three approaches to value that are used by single property fee appraisers and assessing officers. The three approaches to value are:

1) The Cost Approach  
2) The Sales Comparison Approach  
3) The Income Approach
The Cost Approach begins with the estimate of land value. Land value can be estimated using sales of comparable properties or by the use of a residual technique whereby the building and other improvements value is subtracted from the purchase price of the property with the remaining purchase price reflecting the value of the land.

The next steps require the appraiser to determine the cost new of the improvements. The amount of depreciation attributable to physical deterioration, and any functional and external obsolescence is subtracted from the cost new of the improvements. The estimated cost new of the improvements, less all forms of depreciation, plus the estimate of land value provides an estimate of value using the Cost Approach.

The Sales Comparison Approach compares the subject property being appraised with similar properties that have recently sold. The characteristics of the sold properties are adjusted for their similarity to those of the subject property. The analysis and application of reasonable adjustments provides an estimate of value using the Sales Comparison Approach.

The Income Approach is often used for the valuation of rental or leased property. The appraiser analyzes the market based on income and expense data from the rental of real property and uses a Capitalization Rate to estimate the market value of property. The Capitalization Rate includes 1) a provision for a return or gain on the investment, 2) a recapture of the investment due to age and a decline in the utility of the property and 3) payment of property taxes. The Income Approach may also be used for certain types of personal property.

The single property appraiser and assessor shall consider all three approaches to value and correlate them into a single estimate of market value. However, consideration of the approach to value does not dictate that the appraiser or assessor calculate all three approaches to value if the quality or quantity of the data is limited.

The most distinct difference between a single property appraiser and an assessing officer is that the single property appraiser is responsible for the valuation of a specific property as of a given date, while the Assessing Officer is responsible for the systematic appraisal of groups of properties, as of a given date, using standardized procedures and statistical testing.

The market data collected by the assessing officer is used to develop models for the valuation of all property subject to taxation. The models assist with the valuation of the land and the building. Land models may provide valuation rates using a value per square foot, per front foot or per acre. Building models may provide valuation tools based on quality of construction, square footage of the improvement, effective age of the improvement and the economic neighborhood, or locational factor.
Statutory Requirements

Assessing Officers are responsible for the administration of the property tax system. Their primary responsibility is to develop and implement policies and procedures that ensure equitable valuations for all properties subject to taxation.

The specific duties of an assessing officer typically include:

1) Locate and identify all property in the governmental jurisdiction;
2) List physical characteristics of all real and personal property subject to taxation using aerial photography for remote data verification and physical inspections;
3) Evaluate eligibility for claims of property tax exemption;
4) Estimate the market value of each taxable property using the three approaches to value and compliance with state laws and regulations;
5) Calculate the taxable value, which may be a fraction of the market value, of each property subject to taxation;
6) Notify property owners of their assessed value and taxable value, and provide information on the process to appeal the valuations;
7) During the appeal process the assessing officer defends value estimates and valuation methods, and corrects mistakes of fact or clerical errors; and
8) Prepares and certifies the assessment roll for the entire governmental jurisdiction.
Planning Phase of Mass Appraisal for Property Tax

The planning phase of Mass Appraisal includes:

1. A comprehensive review and specific knowledge of the statutory provision of property tax in the governmental jurisdiction being appraised. Extensive training of staff is a necessary component;
2. The collection of cost, sales and income data;
3. The development of a Sales Ratio Study whereby a ratio is developed between sales transactions and assessment to measure accuracy of the assessment to market value;
4. Internal controls for all aspects of the assessment process, including data collection and database management using computer assisted mass appraisal software;
5. Development of organizational charts and assignment of duties and responsibilities;
6. Development of procedures to monitor the appraisal plan;
7. Ensuring the safety of field staff; and

The development and use of a Gantt chart will provide assistance for the tasks to be performed and the duration of the activity. As assessing officers are required to complete tasks as of a specific date, the Gantt chart is intended to illustrate start and finish dates with each element of the appraisal project.
Evaluation of the Assessment Process

The accuracy of the estimated market value of each property is measured using performance testing. It is implicit in mass appraisal that, even when properly specified and calibrated mass appraisal models are used, some individual value conclusions will not meet standards of reasonableness, consistency, and accuracy. However, appraisers engaged in mass appraisal have a professional responsibility to ensure that, on an overall basis, models produce value conclusions that meet attainable standards of accuracy. This responsibility requires appraisers to evaluate the performance of models using techniques that may include but are not limited to, goodness-of-fit statistics, and model performance statistics such as appraisal-to-sale ratio studies, evaluation of hold-out samples, or analysis of residuals (2020-2021 Uniform Standards of Professional Appraisal Practice (USPAP), pg. 39).

Additional performance testing is accomplished by using performance standards such as:

1. Overall deviation from market value,
2. Measuring uniformity of value estimates using Coefficient of Dispersion,
3. Measuring the Price Related Differential (PRD), and

Introduction to Automated Valuation Models (AVMs)

An Automated Valuation Model (AVM) is a mathematically based computer software program that market analysts use to produce an estimate of market value based on market analysis of location, market conditions, and real estate characteristics from information that was previously and separately collected. The distinguishing feature of an AVM is that it is a market appraisal produced through mathematical modeling. Credibility of an AVM is dependent on the data used and the skills of the modeler producing the AVM (IAAO Standard on Automated Valuation Models, pg.20).
AVMs are mathematical algorithms that measure the associated relationship between certain characteristics (e.g. size, quality, location) and a value (e.g. price, rent, and gross rent multiplier).

Appraisers recognize that there are many things that impact value. AVMs provide a tool to isolate the value component of the entire property or a specific physical characteristic. The model that is developed is dependent on the quality of the data. Models are only as good as the data that is fed in to the mathematical equation, and may not be appropriate for rare or unique properties. The purpose of a model is to replicate how a process works and predict outcome or values for property.

**Strengths of AVMs**

The strengths of using an AVM include:

1) The power to isolate many simultaneous contributors to value, such as size, condition and location; and each characteristic’s impact on value, either as a monetary adjustment or a percentage adjustment;
2) Incorporate many ‘comparable sales’ which increases reliability and decreases subjectivity in the valuation process;
3) Estimation of market values using multiple simultaneous adjustments;
4) The ability to estimate value with greater precision using diagnostics that are inherent to the process; and
5) Significant financial benefits over other valuation methods.

**Weaknesses of AVMs**

The weaknesses of using an AVM include:

1) An AVM is only as good as the data that is fed into the model;
2) If the quality of the data is suboptimal, the value estimates will be inaccurate; and
3) AVMs are not appropriate for rare or unique properties.

The development of AVMs is an iterative process that merges the human element of the appraisal process with model specification and model calibration. The iterative process for estimating market value of property is the result of repeating rounds of market analysis with the objective to refine and improve estimates of market value. With each repetition the model is subject to further specification and calibration.
**Developing and Applying an AVM**

Appraisal principles and techniques are used to develop AVMs. For a market area, data are assembled and analyzed to develop a model that can be applied to the population of properties in that market area. Model specification and model calibration are the two major components of valuation modeling. In the model specification process, the market analyst determines the type of model structure to be employed and specifies the variables (property characteristics) to be used in the model and how they are related. The model calibration process determines the coefficients (rates, adjustments, or multipliers) for the variables previously specified as well as which variables should be retained or removed due to statistical significance.

The basic steps involved in the development of an AVM are:

- Creation of a scope of work
- Identification and acquisition of property data
- Exploratory data analysis
- Stratification
- Determination of data representativeness
- Model specification
- Model calibration
- Quality assurance
- Model application and value review

Model specification, calibration, and quality assurance are iterative processes that are repeated until statistical diagnostics are satisfactory. The International Association of Assessing Officers (IAAO), Standard on Automated Valuation Models, (pages 8-9) identify the model development steps to be followed. They are:

1. Specify the model
2. Calibrate the model
3. Test the model
4. Make adjustments to model specification
5. Recalibrate the model
6. Test the model
7. Repeat the process until model quality tests are met
The use of a properly developed AVM, along with the valuation skills of the appraiser and assessing officers optimize the accuracy of the assessment, fairness of the assessment and defense of the assessment. Ultimately, the AVM promotes public acceptance and participation in property tax process. The AVM process reduces costs associated with appeals as the time and labor spent on the appeal process, along with the associated legal fees will be substantially reduced.

The IAAO AVM Standard creates data standardization, which reduces subjectivity of the appraisal process.

Conclusion/Discussion

Assessing Officers have the responsibility of the valuation of all properties subject to taxation of a specific date. Fairness and equity in the process are the foundation of the property tax assessment administration system. Training, education and experience are essential job requirements for the assessing officer to successfully employ a reliable mass appraisal model. The use of a properly developed valuation model in the mass appraisal system enables a jurisdiction to produce accurate and equitable market values in a cost-effective manner.
Review Questions:

1. Mass Appraisal is:
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

2. Single Property Appraisal is:
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

3. An Automated Valuation Model is:
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

4. Which of the following is not a strength of an AVM?
   a. AVM’s have significant financial benefits over other valuation models.
   b. AVM’s estimate value with greater precision using diagnostics that are inherent to the process.
   c. AVM’s are not appropriate for rare or unique properties.
   d. Decreases subjectivity in the valuation process.

5. Which of the following is not a characteristic of value:
   a. Desirability
   b. Original Cost
   c. Scarcity
   d. Utility
Suggested Answers to Review Questions:

Review Questions:

1. Mass Appraisal is:

   Mass Appraisal is “The systematic appraisal of groups of properties as of a given date using standardized procedures, and statistical testing”. *(Property Assessment Valuation, 3rd Edition, International Association of Assessing Officers, pg. 403)*.

2. Single Property Appraisal is:

   A single property appraisal or a fee appraisal is the valuation of a specific property as of a specific date. The market analysis performed for a single property appraisal relates solely to the subject property.

3. An Automated Valuation Model is:

   A mathematically based computer software program that market analysts use to produce an estimate of market value based on market analysis of location, market conditions, and real estate characteristics from information that was previously and separately collected. The distinguishing feature of an AVM is that it is a market appraisal produced through mathematical modeling. Credibility of an AVM is dependent on the data used and the skills of the modeler producing the AVM *(IAAO Standard on Automated Valuation Models, pg.20)*.

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