Mass Appraisal Analysis and Benchmarks
• Introduction of instructor & workshop

• Provide guidelines and suggestions on mass appraisal

• Everything from USPAP to trending
USPAP

• What is USPAP?

• Why USPAP was developed

• The Appraisal Foundation

• Who must comply with USPAP
USPAP

• Rules
  o Ethics
    ❖ Conduct
    ❖ Management
    ❖ Confidentiality

• Record Keeping
USPAP

• Rules – continued
  o Competency

• Jurisdictional Exception

• Ten Standards
USPAP

• Standard 6 – Mass Appraisal Development and Reporting
  o Some of the ‘musts’ when developing a report
  o Credible assignment results
USPAP

• Standard 6 – Mass Appraisal Development and Reporting

  o Developing an appraisal

  o Credible assignment results and in applying a calibrated model
USPAP

• Standard 6 – Mass Appraisal Development and Reporting
  o Reconciling a mass appraisal
  o Written report
  o Signed certification
Scope of Work

• Type and extent of research

• Inclusions

• Work acceptability

• Sample in Appendix 2
Scope of Work

• Planning first
  o Taking inventory
  o Gantt chart
Mass Appraisal

• Mass appraisal definition
• Additional description
• Data quality and quantity
• Subjective data
Mass Appraisal

- Quality control
- Possible queries
- QC as an intricate part of appraisal practices
- Establishing consistency
Market Value

• Definition

• Emphasis on the definition will be discussed in several sections.
Highest & Best Use

• Type of property could play a major role

• Highest net return to the property over a reasonable period of time

• Unique or non-conforming, may mean the current use is not the highest and best use
Highest & Best Use

• Four tests for highest and best use
  o Legally permissible
  o Physically possible
  o Financially feasible
  o Maximum productivity
Highest & Best Use

• Historical properties
  o Federal and state restrictions
  o International Valuation Standards Committee
Highest & Best Use

• Some considerations for historic properties
  o Specific governmental restrictions
  o Market acceptance, architectural styles and recycling
  o Rehabilitation programs
Highest & Best Use

• Some considerations for historic properties - continued
  o Normal maintenance may mean current use
  o Unique and non-conforming
  o Local landmark ordinances
Highest & Best Use

• Some considerations for historic properties – continued
  
  o Current use not highest and best use
  
  o Comparable sales
  
  o How adaptable to the most economic use
Highest & Best Use

- Adaptive use
- Potential changes
Neighborhood Analysis

• Neighborhood definition

• Tendency for too many neighborhoods

• Neighborhood profiles

• Use of GIS and example of use
Neighborhood Analysis

• Assignment of neighborhoods and cluster for valuation models

• Groupings can help establish adjustments and benchmarks
Neighborhood Analysis

- Gentrification
  - Various definitions
  - Typical participants
  - A large number of cities are experiencing this
Neighborhood Analysis

• Gentrification
  • Market issues
  • Kansas City
  • Minneapolis
  • Various Texas cities
Neighborhood Analysis

• Gentrification

  • Kootenai County, Idaho

  • Background
  • The Fort Grounds
  • Realtor comments
  • Period of transition
  • Stratification of sales is a key
Neighborhood Analysis

• Gentrification
  • Kootenai County, Idaho
    • Adjustments by water proximity
    • Sales data plotted
    • Documentation
Benchmarks

• Benchmark definition

• Various uses of benchmarks

• Various examples
Benchmarks

• Example #1 – Effective Age
  o Definition of effective age
  o When it is considered
  o Steps in estimating the total depreciation
  o Using depreciation schedule for effective age
Benchmarks

- Quick Ref#: 5176    Sale Amount: $45,000
- Sale Date: March 2014
- Indicated NBHD Depreciation Assignment: AV+
- Year Built: 1910
Benchmarks
### Benchmarks

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sale amount</td>
<td>$45,000</td>
</tr>
<tr>
<td>Less: Land value</td>
<td>- $5,420</td>
</tr>
<tr>
<td>Less: Other improvements</td>
<td>- $570</td>
</tr>
<tr>
<td>House value</td>
<td>$40,150</td>
</tr>
<tr>
<td>RCN</td>
<td>$68,920</td>
</tr>
<tr>
<td>% Good</td>
<td>0.58 = 58%</td>
</tr>
<tr>
<td>Indicated effective year built</td>
<td>1987</td>
</tr>
</tbody>
</table>
Benchmarks

• Example #2 – Market Conditions

  o Use of the median ratio for a series of sales can help measure market conditions (time trends).
Benchmarks

• Median sales ratio for 2011 = 104.67
• Median sales ratio for 2012 = 100.58
• Median sales ratio for 2013 = 97.83
• Trends in the market or neighborhood can be established
Benchmarks

• Median sales ratio for 2011 = $\frac{104.67}{100.58} = 1.0407 = 4.07\%$ trend

• Median sales ratio for 2012 = $\frac{100.58}{97.83} = 1.0281 = 2.81\%$ trend

• Median sales ratio for 2013 = 97.83
Benchmarks

- Information from one jurisdiction that TEAM conducted an analysis indicates market increases per quarter of the year.
### Benchmarks

<table>
<thead>
<tr>
<th>Statistic</th>
<th>All 2012 Sales</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Qtr. 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Median</strong></td>
<td>96.55</td>
<td>94.36</td>
</tr>
<tr>
<td><strong>COD</strong></td>
<td>13.62%</td>
<td>15.51%</td>
</tr>
<tr>
<td><strong>PRD</strong></td>
<td>1.04</td>
<td>1.04</td>
</tr>
</tbody>
</table>
## Benchmarks

<table>
<thead>
<tr>
<th>Statistic</th>
<th>2(^{nd}) Qtr. 2013</th>
<th>3(^{rd}) Qtr. 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>92.50</td>
<td>92.26</td>
</tr>
<tr>
<td>COD</td>
<td>16.17%</td>
<td>16.45%</td>
</tr>
<tr>
<td>PRD</td>
<td>1.05</td>
<td>1.06</td>
</tr>
</tbody>
</table>
Benchmarks

• Example #3 – Sale price to asking price ratios

• Check against market trends and a check for setting values

• Crucial that you always use original asking price for consistency
Benchmarks

• The example is for high-end homes

• Market data that disproved the jurisdiction’s belief the market was going down for the higher valued homes
Benchmarks

• Example #4 – Keeping RCN current

• Commercial service

• Actual cost
Benchmarks

- Additional TEAM extracted benchmarks
  - Represents a recap of indicated value loss
Benchmarks

• Additional TEAM extracted benchmarks - continued
  
  o Others will be shown later in the workshop relating to obsolescence
  
  o Remember: benchmarks are a guide and you still have to function as an appraiser and apply judgment
Sales Validation

• Starts with good written procedures

• Make responding as easy as possible for the public

• It is typical that this is one of the most misunderstood processes in the assessment office.
Sales Validation

• Often bad ratio indications are the results of poor sales validation process

• The author’s of this workshop believe in on-site inspection of all apparently valid sales

• A sample is provided in Appendix 3
Sales Ratio Analysis

• Sales ratio studies are perhaps the best tool we have in our tool box and we do not use them often enough and effectively

• Definition of key terms
Sales Ratio Analysis

- **Section 9 - Mass Appraisal Statistics – continued**

  - **Price Related Bias – PRB**

    - A new statistical measure of vertical inequity that is being included in sales ratio study analysis is the Price Related Bias (PRB).
Sales Ratio Analysis

• Section 9 - Mass Appraisal Statistics – continued

  o Price Related Bias – PRB

    o This new statistic measures the percentage increase (decrease) in assessment ratios in relation to the percentage increase (decrease) to property values
Sales Ratio Analysis

• Section 9 - Mass Appraisal Statistics – continued

  o Price Related Bias – PRB

    o In several states this new statistic measure of vertical inequity is replacing the Price Related Differential (PRD).
Sales Ratio Analysis

- **Section 9 - Mass Appraisal Statistics** – continued

  - **Price Related Bias – PRB**

    - All ratios can be above or below one; it is how they compare with each other that matters. Unlike the PRD, the PRB determines if inequity exists, as well as quantifies the extent of vertical inequity.
Sales Ratio Analysis

• Section 9 - Mass Appraisal Statistics – continued
  
  o Price Related Bias – PRB
    
    o The PRB asks the question, “What happens to ratios when property values double, or are cut in half?”
    o The PRB is calculated after removing extreme ratios.
Sales Ratio Analysis

• Section 9 - Mass Appraisal Statistics – continued

  o Price Related Bias – PRB
    o Simple linear regression analysis is used to calculate the PRB.
    o The PRB can be interpreted as the expected change in ratios as property values double or are halved. If ratios increase as property values increase, the resulting PRB will be positive.
Sales Ratio Analysis

- **Section 9 - Mass Appraisal Statistics – continued**
  
  - **Price Related Bias – PRB**
    - A PRB greater or less than 3% may indicate a bias. A PRB greater or less than 5% is cause for further inspection.
Sales Ratio Analysis

• Example #1
  
  o Several examples are shown from the same neighborhood
  
  o Quick check for sale chasing
Sales Ratio Analysis

Scatter Diagram of Sales Ratios

- Ratios vs. Sales Price
- Best Fit line

- Ratios range from 0.00 to 4.00
- Sales Price range from $0 to $150,000

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Sales Ratio Analysis

• A quick review of the scatter diagram shows some very high ratios from approximately $50,000 and under.

• The PRD would probably be well over 1.00 and thus regressive as the sales over $50,000 seem to be good but this means the lower sales are over-appraised.
## Sales Ratio Analysis

<table>
<thead>
<tr>
<th>Statistical Measure</th>
<th>Appraised Value</th>
<th>Cost Approach Value</th>
<th>Sales Approach Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>103.21</td>
<td>134.80</td>
<td>101.06</td>
</tr>
<tr>
<td>COD</td>
<td>41.49</td>
<td>36.86</td>
<td>29.45</td>
</tr>
<tr>
<td>PRD</td>
<td>1.17</td>
<td>1.15</td>
<td>1.15</td>
</tr>
<tr>
<td># of Valid Sales</td>
<td>45</td>
<td>45</td>
<td>44</td>
</tr>
<tr>
<td># of Trimmed Sales</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td># of Outliers</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
Sales Ratio Analysis

• Overall ratio does not paint a true picture

• Actual ratio showed 1.00 median and low COD

• All approaches to value should generate approximately the same value

• One problem was the person verifying the sales
Sales Ratio Analysis

• What do we check in the ratios to see why the cost approach values are so bad?

• Results of the review

• On-site checks for data errors and/or negative influences

• Example of recognizing negative influences
Sales Ratio Analysis

• Process used to establish adjustments
• Recap of adjustments
Sales Ratio Analysis

• Example #2
  o Working with limited sales
  o Start with the big picture
    ❖ Ratio results
    ❖ Scatter diagram
Sales Ratio Analysis

• Example #2 – continued
  
  o Breaking down the ratios
    
    ❖ Neighborhood

    ❖ House style
Sales Ratio Analysis

• Example #3
  o Using ratios to confirm or disprove observations
  o The market is the boss
Sales Chasing

- Do not sale chase
- Definition of sales chasing
- Again, a tendency to create too many neighborhoods
Sales Chasing

• Test is sales ratio

• Corrections are not necessarily sales chasing

• One method to prevent bias and sales chasing
Trending

- Definition of trending
- When it can be used
- Example and formula for calculating a trend
Mass Appraisal Template & Conclusions

• Template in Appendix 5

• Conclusion - Application is more difficult than establishing a mass appraisal plan