

Missouri State Assessors' Association  
September 6, 2012

# Ratio Studies – Think Positive!

# MO Ratio Study Results

Most counties PASS the ratio study test!

Year	Compliance Orders	Res	Comm
2005 (Equiv. Ratio)	13 (*1)	n/a	n/a
2007	31 in 29 counties	12 (5**)	19
2009	43 in 38 counties	22 (11**)	21

\* One county was certified below 33.3%

\*\* (number of sales studies)

- So far, 2011 ratio study results are looking better than 2007 and 2009.

# STC Decision Making Policies

## Ratio Study Statistics

- Median 90% - 110%
- Median 85% - 89.99%

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- Median 80% - 84.99%
- Median below 80%

## Ratio Study Result

In compliance

Letter of Concern

Compliance Order  
*No withholding*

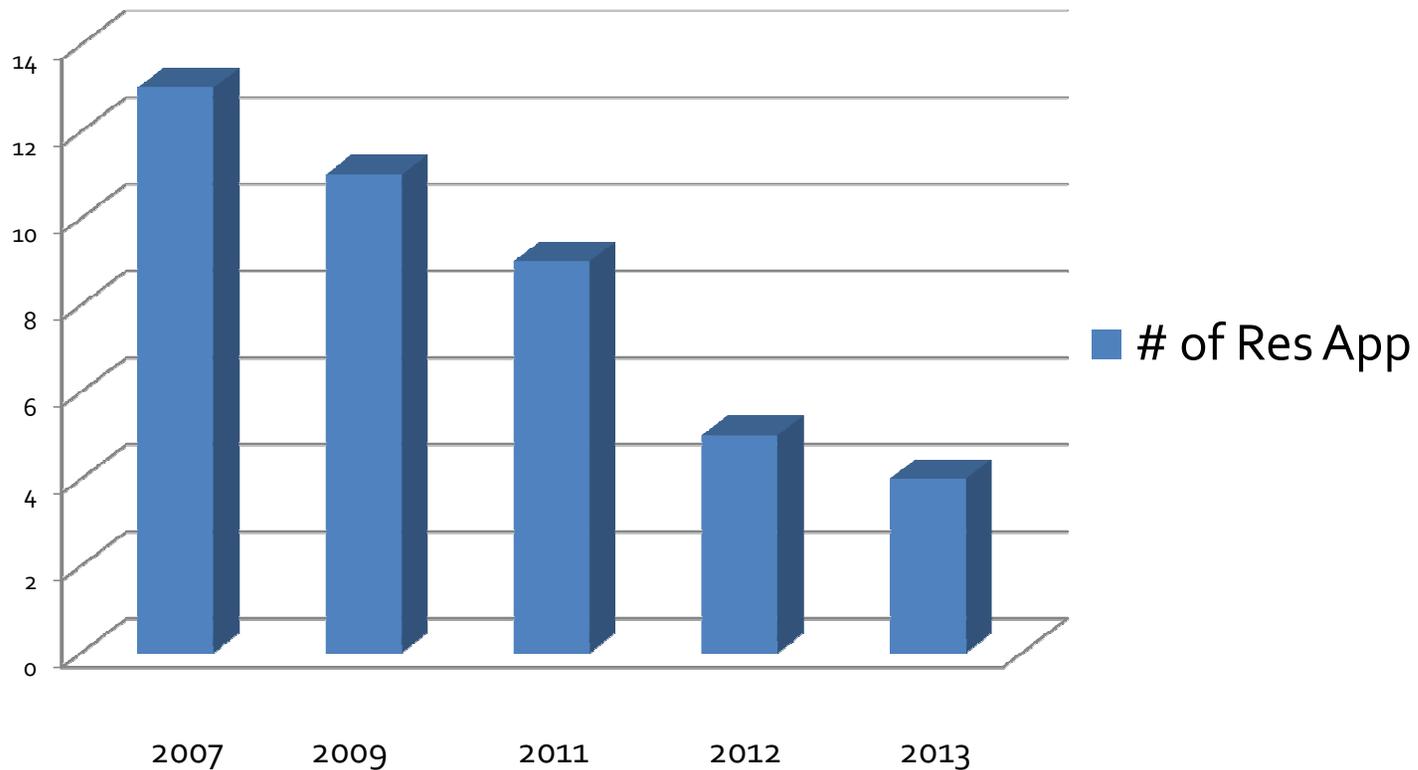
Compliance Order  
*Withholding*

# Residential Sales Studies Implementation

- 2007 Cycle (39 counties attempted)
  - 20 Sales Studies
  - 6 Hybrid Studies
- 2009 Cycle (78 counties attempted)
  - 46 Sales Studies
  - 2 Hybrid Studies
- 2011 Cycle (115 counties attempted)
  - 75 Sales Studies estimated

# Why Focus on Residential Sales Studies?

# of Residential Appraisers by Ratio Cycle



# IAAO Guidance for Assessors

## IAAO Standard on Ratio Studies

### Section 2.3 - Uses of Ratio Studies (p.7)

- Measurement and evaluation of the level and uniformity of mass appraisal models
- Internal quality assurance and identification of appraisal priorities
- Determination of whether administrative or statutory standards have been met
- Determination of time trends
- Adjustment of appraised values between reappraisals

# Applicability of Ratio Studies for Assessors

- IAAO Standard on Ratio Studies  
Section 2.4 Applicability (p. 8)  
“Local jurisdictions should use ratio studies as a primary appraisal testing procedure and ***their most important performance analysis tool.***”  
(Emphasis added)
- It is commonly accepted that one of the first steps to be performed in a reassessment cycle is a ratio study.

# IAAO Guidance for Oversight Agencies

## IAAO Standard on Ratio Studies

### Section 2. Oversight Ratio Studies (p. 21)

- Monitoring of Appraisal Performance
- Equalization (Direct and indirect)

# Positives about Sales Ratio Studies

- Sales ratio studies provide ability to stratify results
- IAAO states stratification facilitates a more complete and detailed picture of appraisal performance
- Provide more meaningful results to assessors
- MO Ratio Study Technical Advisory Group
- More cooperative process between Assessors, Technical Assistance and Ratio

# Residential Sales Stratification

- The STC stratifies residential sales by:
  - Improved and vacant
  - Assessed value
  - Year Built
  - Location (school district is the default variable)

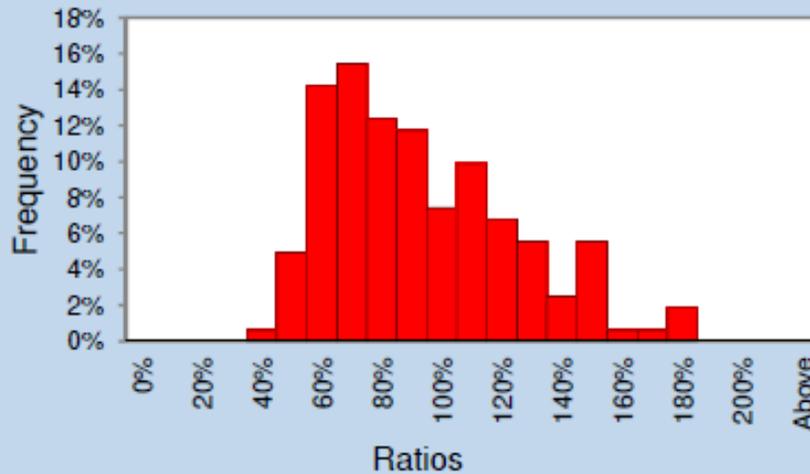
# Residential Sales Stratification

## Large County Example

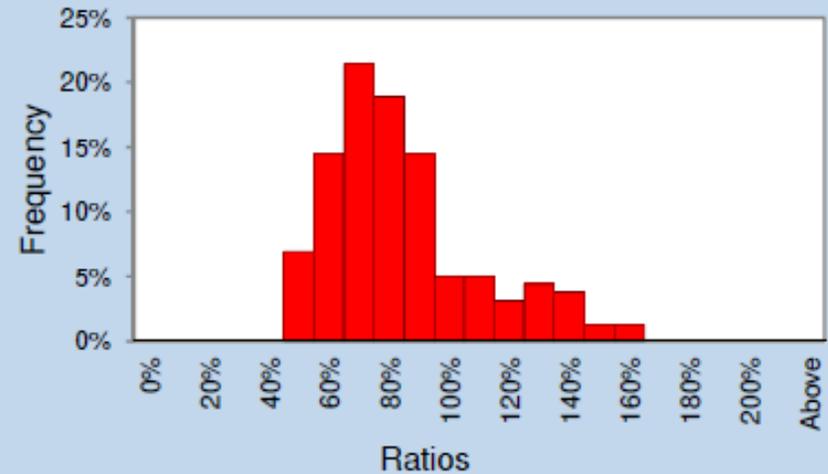
Stratification by Year Built				
Year Built	1919 – 1968	1969 – 1988	1989 – 2000	2001 - 2009
Sample Size	162	159	166	170
Median	91.1%	83.6%	85.7%	96.1%
Mean	97.7%	89.5%	90.1%	99.5%
Weighted Mean	86.5%	83.5%	86.5%	95.6%
Coefficient of Dispersion	27.7%	22.4%	17.3%	14.7%
Price Related Differential	113.0%	107.1%	104.2%	104.1%

# Year Built Graphs (Histograms)

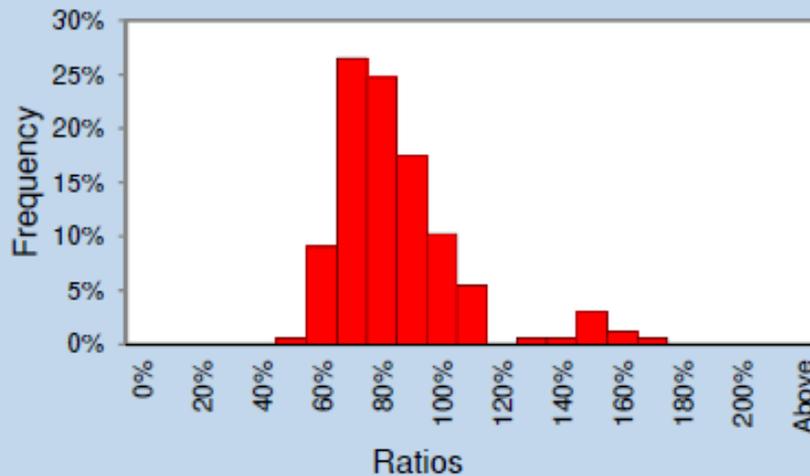
1919-1968 Year Built



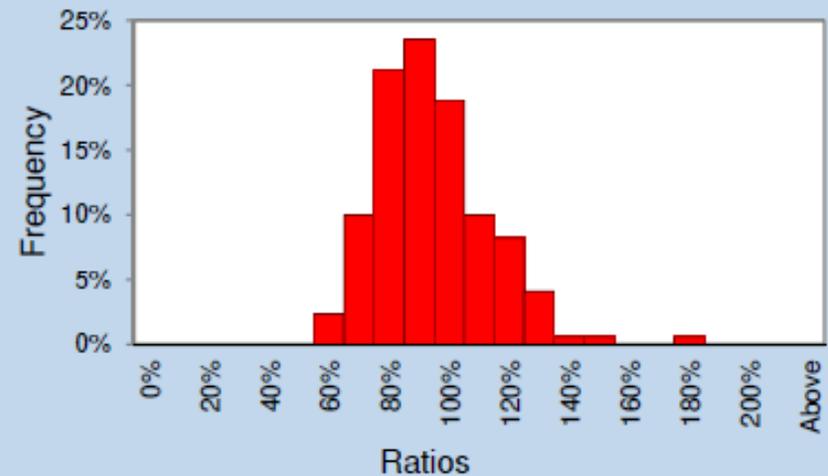
1969-1988 Year Built



1989-2000 Year Built



2001-2009 Year Built

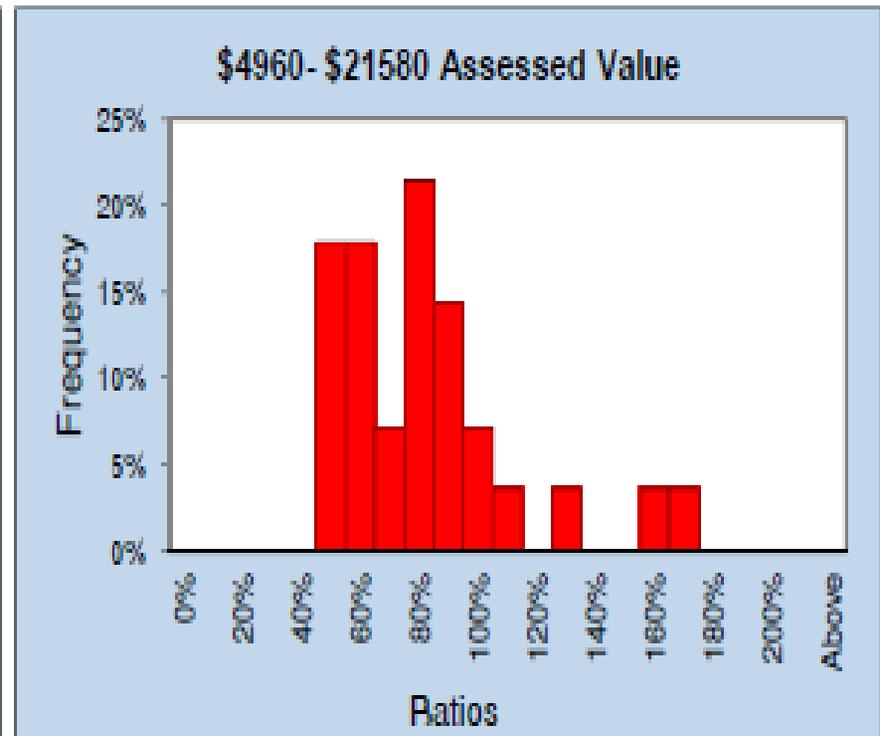
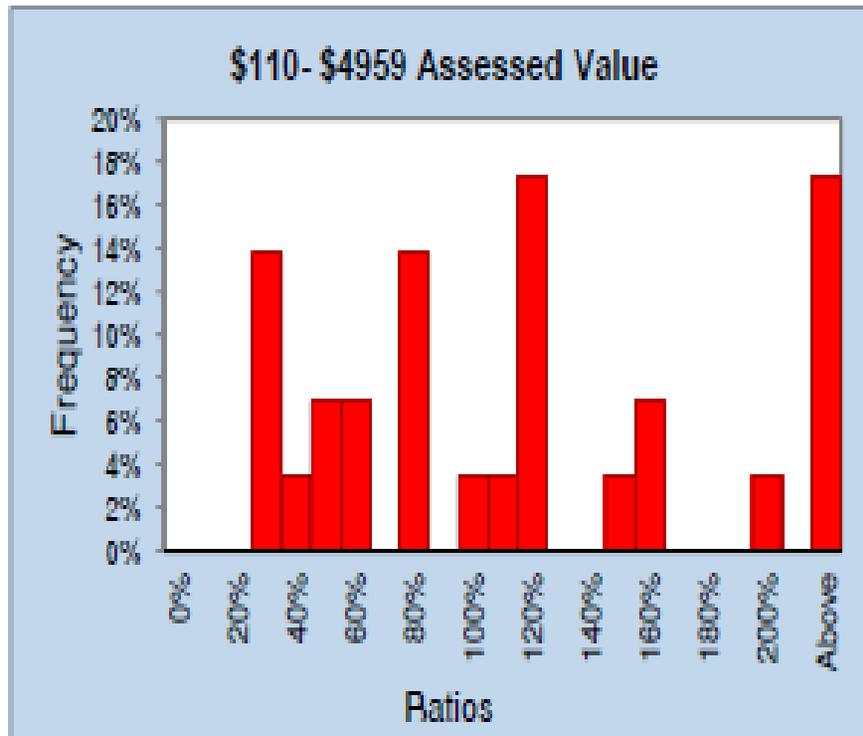


# Residential Sales Stratification

## Small County Example

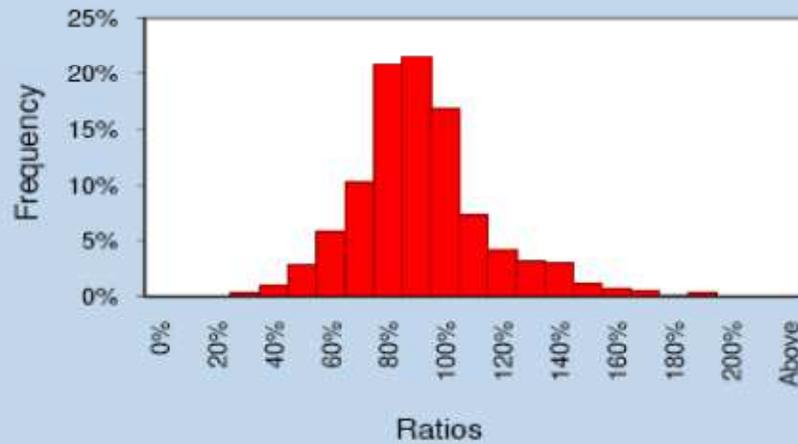
Stratification by Assessed Value		
Assessed Value	\$110 - \$4959	\$4960 - \$21,580
Sample Size	29	30
Median	116.5%	81.8%
Mean	129.6%	87.3%
Weighted Mean	94.8%	81.1%
Coefficient of Dispersion	55.6%	26.2%
Price Related Differential	136.7%	107.6%

# Assessed Value Graphs (Histograms)

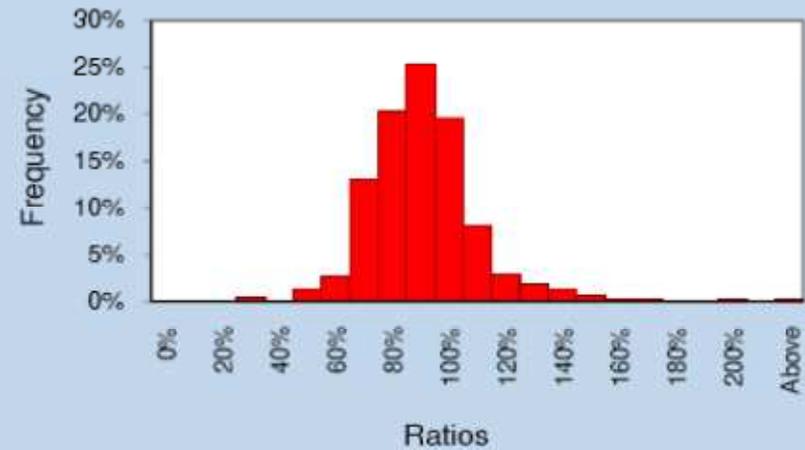


# Sales Distributions (Typical - Normal)

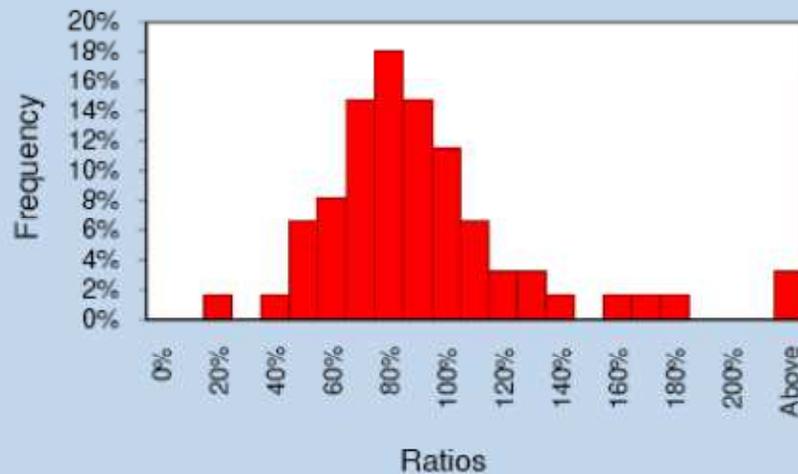
Histogram of Ratios (After Trimming)



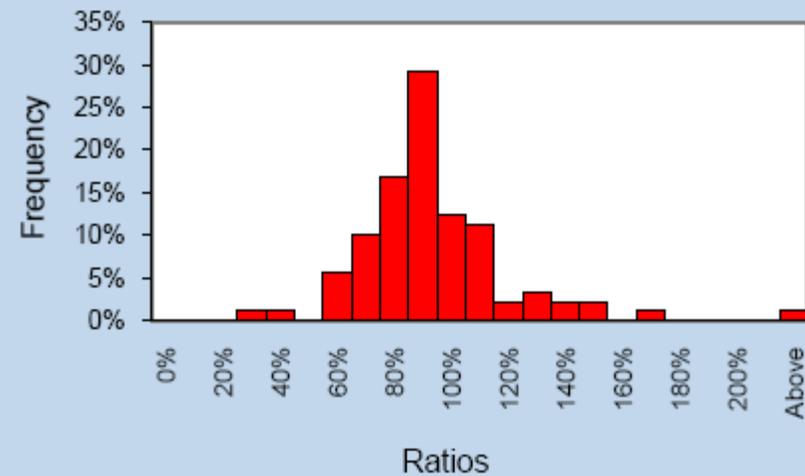
Histogram of Ratios (Prior to Trimming)



Histogram of Ratios (Prior to Trimming)

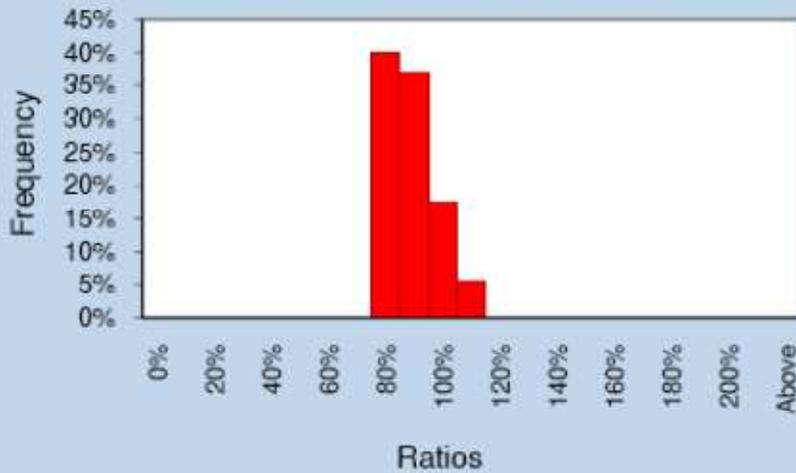


Histogram of Ratios (After Trimming)

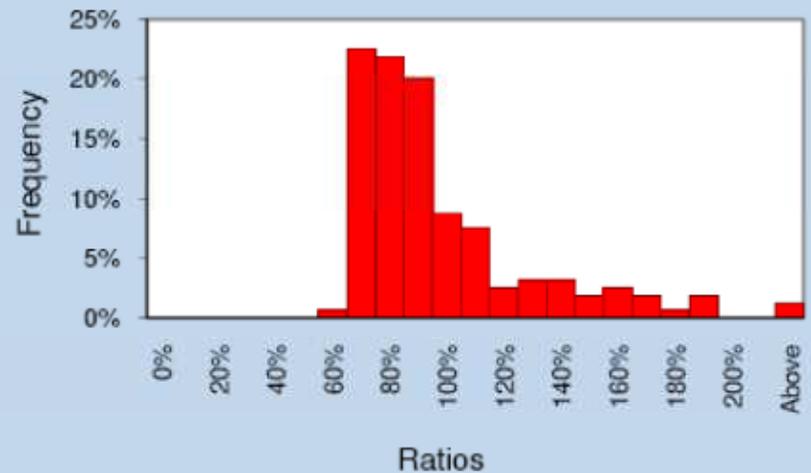


# Sales Distributions (Questionable - Atypical)

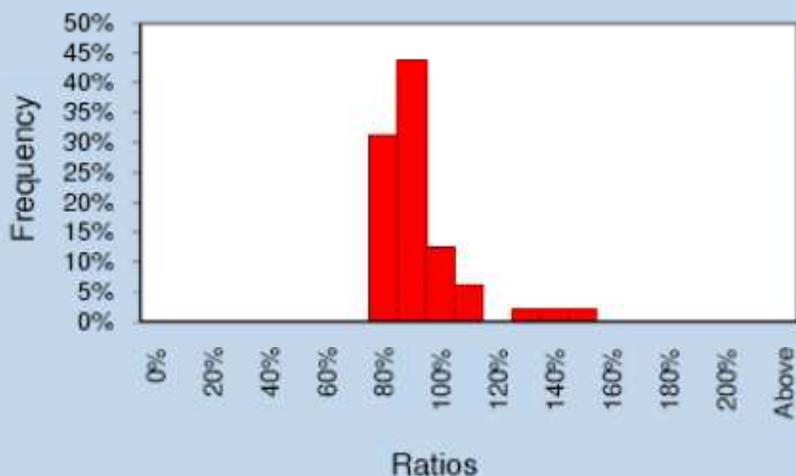
Histogram of Ratios (Prior to Trimming)



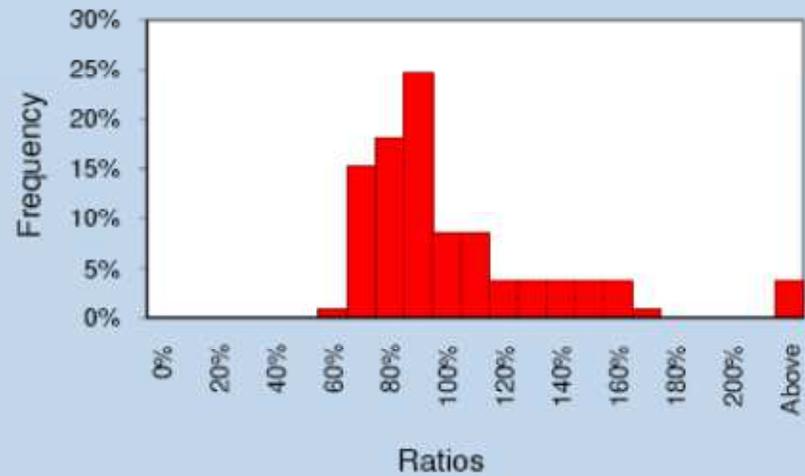
Histogram of Ratios (After Trimming)



Histogram of Ratios (After Trimming)



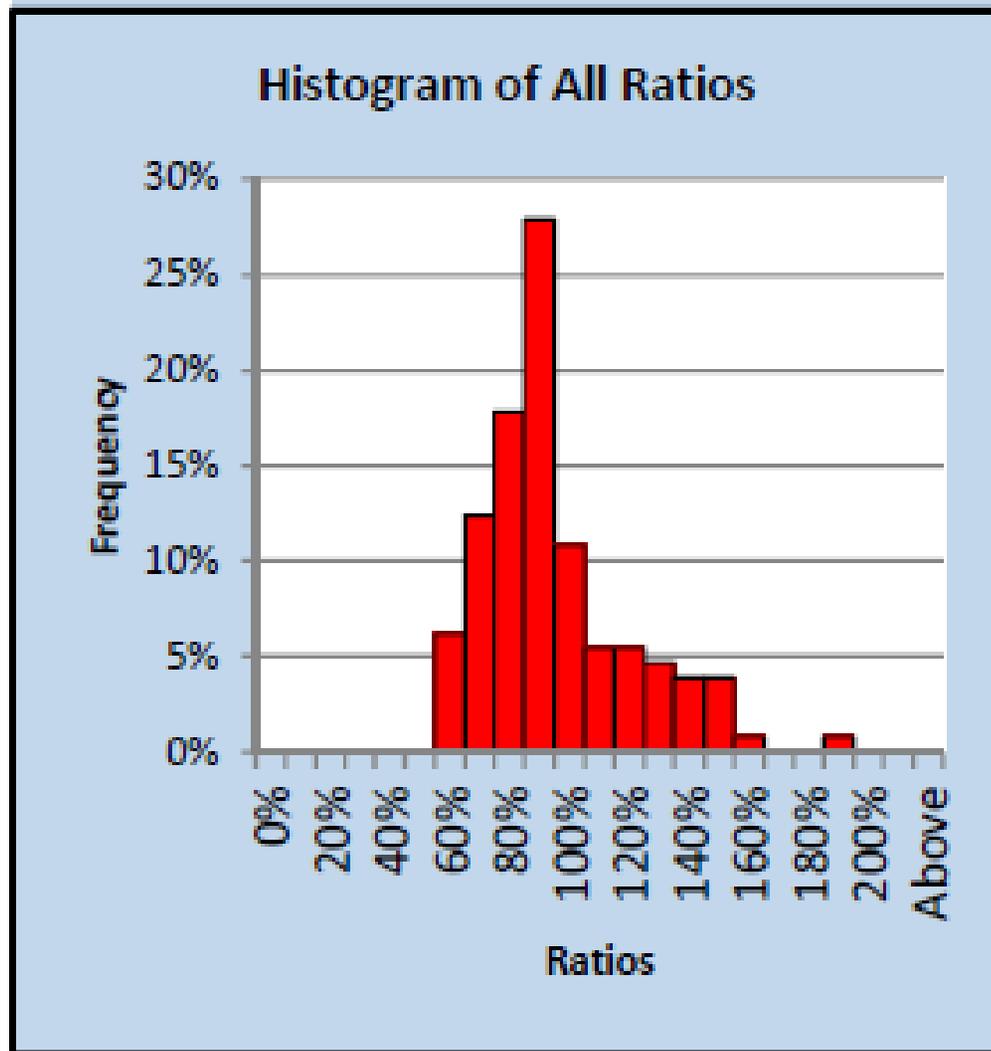
Histogram of Ratios (After Trimming)



# How To Treat Low and High Ratios

- All valid sales should be included
- Having a low or high ratio is not, in and of itself, a valid reason for deleting a sale
- If the sale is truly an outlier, it will be trimmed
- Counties should not pre-trim their sales
- Some counties put arbitrary limits for low and high ratios considered valid (e.g. 50% to 150%) THIS IS NOT CORRECT.
- The median is not likely to change substantially from using all sales vs. using pre-trimmed sales.

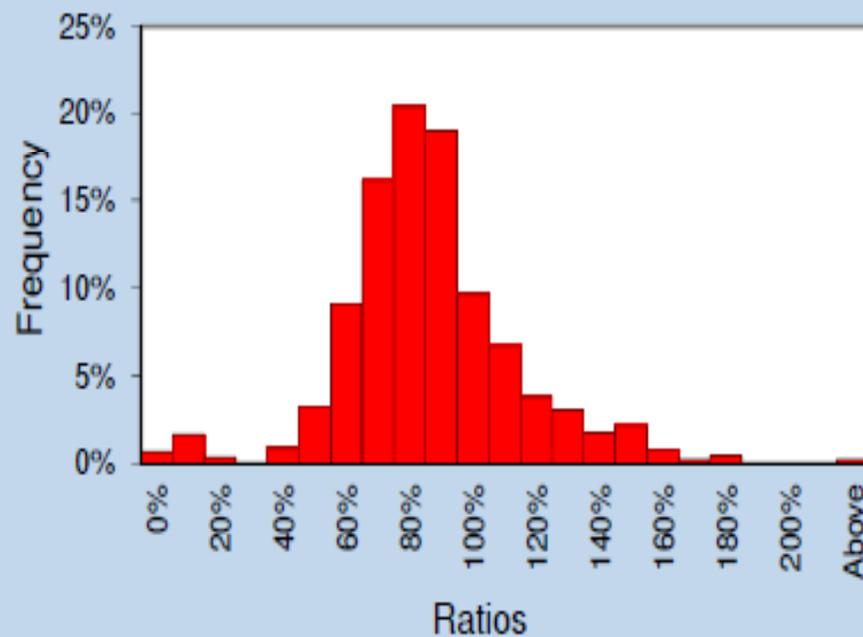
# Do Not Fear Low or High Ratios



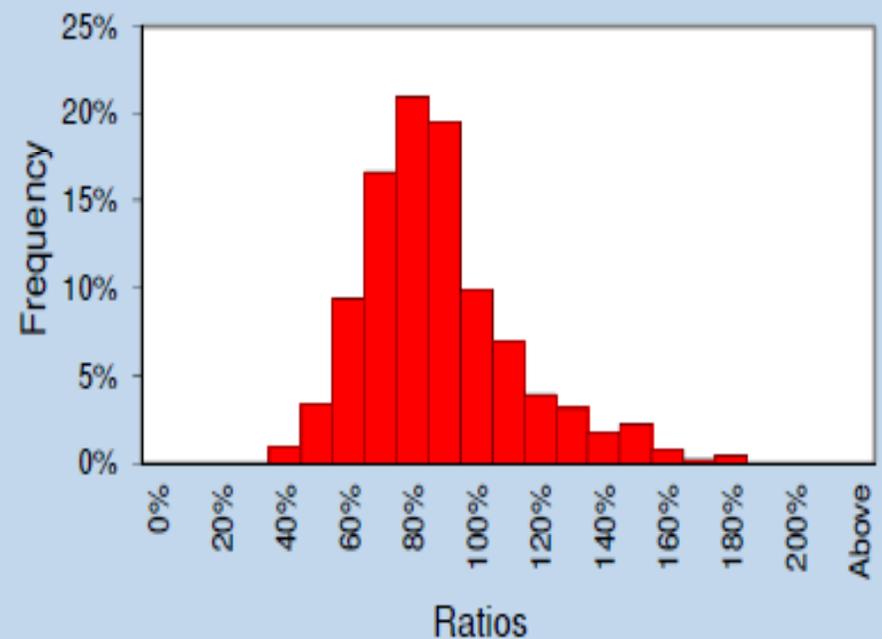
- Before trimming
  - Some low/high ratios are normal
  - 132 Total sales
  - No ratios below 60%
  - The median is 94.5%
- 
- Fictitiously added 20 sales (not on the graph) with ratios between 5% and 50%.
  - Median changed to 91%

# Trimming Graph (Histogram)

Histogram of Ratios (Prior to Trimming)



Histogram of Ratios (After Trimming)



# Trimming Example

	Pre – Trim	Post – Trim
Sample Size	923	897
Median	88.67%	89.30%
Mean	91.61%	93.04%
Weighted Mean	84.46%	83.90%
Coefficient of Dispersion	22.28%	19.82%
Price Related Differential	108.46%	110.90%

# STC Assistance Available to Assessors

- PILOT sales study program (TA program)
- Uniform sales letter template
- Sales collected by Ratio staff appraisers are provided to Assessors
- Additional stratifications (upon request)
  - (e.g. Quality; Manufactured homes; condos, etc.)
- Advice on use of Foreclosure Related Sales
- Comparable sales for specific types of properties

# Appraisal Program Improvements

- Commission adopted USPAP in 2007
- Training and Continuing Education
  - STC teaches appraisal courses approved by the Missouri Real Estate Appraisers Commission
- In 2007 cycle, 6 out of 24 appraisers were licensed/certified
- In 2011 cycle (current), 9 out of 16 appraisers are licensed/certified
  - 2 more are in process of obtaining certification
- Implemented Stratified Random Sampling for appraisal studies in 2011 cycle

# Ratio Studies in Public Relations

- STC Ratio Study results can be used to help in public relations efforts
  - Budgetary process with County Commission
  - Outside verification of a county's assessment program for the local press
  - Demonstrate and/or confirm the need to make adjustments

**Thank You!**