



Department of Local Government Finance

Ratio Study Problems and Answers

2026 Level I Tutorials



Ratio Study Problem and Answer Review

- Now we are going to review the various ratio study calculations we have gone over in the Ratio Study Power Point. At the end of the review, please work problems 1 – 4.





Assessment Ratio Review

- An assessment ratio is calculated using the following formula: True Tax Value divided by Market Value in Use (Sales Price) = Ratio

True Tax Value / Sale Price = Ratio

Sale #	True Tax Value	Sale Price	Sales Ratio
1	\$45,800	\$49,800	0.920
2	\$48,200	\$52,400	0.920
3	\$42,200	\$40,000	1.055
4	\$57,150	\$58,125	0.983
5	\$55,300	\$51,450	1.075





Mean Calculation Review

- Measures of Central Tendency
- Mean (arithmetic average) – The result of adding all the individual ratios and dividing by the number of ratios.
- Mean = sum of ratios ÷ number of ratios

True Tax Value / Sale Price = Ratio			
Sale #	True Tax Value	Sale Price	Sales Ratio
1	\$45,800	\$49,800	0.920
2	\$48,200	\$52,400	0.920
3	\$42,200	\$40,000	1.055
4	\$57,150	\$58,125	0.983
5	\$55,300	\$51,450	1.075
	TOTAL OF SALES RATIOS		4.9530
	TOTAL NUMBER OF RATIOS		5
	MEAN		99.1%





Weighted Mean Calculation Review

- Measures of Central Tendency
- Weighted Mean – the total of the TTV's for all sales divided by the total of the sales prices for all sales
- Weighted Mean = Sum of the TTV's ÷ Sum of the Sales

Sale #	True Tax Value	Sale Price
1	\$45,800	\$49,800
2	\$48,200	\$52,400
3	\$42,200	\$40,000
4	\$57,150	\$58,125
5	\$55,300	\$51,450
	\$248,650	Divided by
		\$251,775
	Weighted Mean	98.8%





Median Calculation Review

- Measures of Central Tendency
- Median – The middle ratio in a rank order of ratios. A rank order lists the ratios in ascending or descending order.
- Location of the Median in a rank order = $(\text{Number of ratios} + 1) \div 2$

Sales Ratio	Sales Ratios Ranked
0.9200	0.9200
0.9200	0.9200
1.0550	0.9830
0.9830	1.0550
1.0750	1.0750
Median	98.3%





Average Absolute Deviation Calculation Review

- Measures of Uniformity
- Average Absolute Deviation – The arithmetic average of the absolute deviations of the individual ratios from the median.

Sale #	True Tax Value	Sale Price	Sales Ratio	Median	ABS DEV
1	\$45,800	\$49,800	0.920	0.983	0.063
2	\$48,200	\$52,400	0.920	0.983	0.063
3	\$42,200	\$40,000	1.055	0.983	0.072
4	\$57,150	\$58,125	0.983	0.983	0.000
5	\$55,300	\$51,450	1.075	0.983	0.092
	\$248,650	\$251,775	Total Absolute Deviation		0.290
			Average Absolute Deviation		0.058





COD Calculation Review

- Measures of Uniformity
- Coefficient of Dispersion (COD)= Ave. Abs. Deviation ÷ Median

Sale #	True Tax Value	Sale Price	Sales Ratio	Median	ABS DEV
1	\$45,800	\$49,800	0.9200	0.9830	0.063
2	\$48,200	\$52,400	0.9200	0.9830	0.063
3	\$42,200	\$40,000	1.0550	0.9830	0.072
4	\$57,150	\$58,125	0.9830	0.9830	0.000
5	\$55,300	\$51,450	1.0750	0.9830	0.092
	\$248,650	\$251,775	Total Absolute Deviation		0.290
			Average Absolute Deviation		0.058
			Median		0.983
			COD		5.9%





PRD Calculation Review

- Measures of Regressivity/Progressivity
- Price-Related Differential (PRD) – The mean ratio divided by the weighted mean ratio.
- $PRD = \text{Mean} \div \text{Wtd. Mean}$

Mean percentage from Slide 16:		99.1%
Divided by		
Weighted Mean % from Slide 17:		98.8%
Equals a PRD of		100.30%



1.)	Please find the Median in the following set of Sales Ratios: 0.8990 1.0980 0.9430 0.9570 0.9890 1.2000 0.9190	
2.)	A township within any class must have a median assessment ratio between what two percentages?	
3.)	The Price Related Differential (PRD) must be between what two percentages?	
4.)	In order to calculate a COD, you need divide the Average Absolute Deviation by the _____.	



1.)	<p>Please find the Median in the following set of Sales Ratios:</p> <table border="1"> <tr> <td>0.8990</td><td>1.0980</td><td>0.9430</td><td>0.9570</td><td>0.9890</td><td>1.2000</td><td>0.9190</td></tr> </table> <p>Rank the above ratios in order and select the middle ratio</p> <p>Answer: 0.8990 0.9190 0.9430 <u>0.9570</u> 0.9890 1.0980 1.2000</p>	0.8990	1.0980	0.9430	0.9570	0.9890	1.2000	0.9190
0.8990	1.0980	0.9430	0.9570	0.9890	1.2000	0.9190		
2.)	A township within any class must have a median assessment ratio between what two percentages according to IAAO standards?							
Answer:	The median assessment ratio must be between 90% and 110%							
3.)	The Price Related Differential (PRD) must be between what two percentages according to IAAO standards?							
Answer:	The PRD must be between 98% and 103%							
4.)	In order to calculate a COD, you need divide the Average Absolute Deviation by the _____.							
Answer:	<u>Median</u>							





Ratio Study Problems and Answers

- Refer back to slide 29 of the Ratio Study presentation.



Ratio Study Problems and Answers

- This concludes the ratio study problems and answers packet and is a reminder that should you have questions you can email these questions to the Department.
- Please send emails to Level1@dlgf.in.gov

