

RE 614 – Real Estate Appraisal
Fall 2008
 Midterm Exam #2

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TTh 9:30-10:45

- 1) You are reviewing an appraisal which in part includes the following sequence of adjustments to arrive at the adjusted price of a comparable sale:

Transaction price	\$2,300,000
Location	<u>+ 30,000</u>
Location adjusted price	\$2,330,000
Time (6%, based on date of sale)	<u>+ 139,800</u>
Time adjusted price	\$2,469,800
Financing (based on today's market rate)	– 145,000
Physical characteristics	<u>+ 275,000</u>
Adjusted selling price	\$2,599,800

Critique this adjustment process.

The following factors should be discussed in your answer.

- The financing should be factored in first to derive the normal sale price. Note that this adjustment should be based on the prevailing market rate at the time of sale, not today's rate.
- Time adjustments should be next to get the market adjusted normal sale price.
- Location and physical characteristics should be factored in only after these adjustments to get the final adjusted sale price.

- 2) Consider the following information on a subject property and three comparables:

<u>Characteristic</u>	<u>Subject</u>	<u>Comp 1</u>	<u>Comp 2</u>	<u>Comp 3</u>
Sale price		\$135,000	\$110,000	\$162,000
Condition	Good	Good	Good	Good
Location	Good	Good	Excellent	Excellent
Age	15 years	22 years	12 years	4 years
Design	Ranch	Ranch	Ranch	Bi-level
Time since sale		12 months	9 months	2 weeks
Living area (sf)	2,200	2,250	2,000	2,300
Bedrooms	4	4	4	4
Baths	2	2½	2	3
Construction	Brick	Brick	Wood	Brick
Air conditioning	Yes	Yes	No	Yes
Garage	1-car	2-car	1-car	2-car
Financing	Market	Market	Special rate	Market
Lot size (sf)	23,000	Similar	Similar	Similar

Based on prior analysis, you have determined the following adjustments for certain property attributes of interest:

Square feet of living area	\$75 per square foot
Bedrooms	\$1,200 per bedroom
Bathrooms	\$2,900 per full bath \$1,800 per half bath
Excellent location compared to good	\$9,000
Wood frame exterior compared to brick	(\$5,500)
Aluminum siding compared to brick	(\$5,000)
Air conditioning	\$3,000
Garage (per car)	\$12,000
Bi-level design compared to ranch	(\$3,500)
Time since sale	4% per year
Age of house	(\$750) per year

Note: Only age differences of 4 or more years typically matter.

In addition, you have calculated the effect of the special-rate financing on Comparable #2 as being worth \$3,000 compared to market-rate financing.

Using this information, building an adjustment grid on the next page and calculate the final adjusted sale price of each comparable property. What is your estimate of the subject's market value?

<u>Characteristic</u>	<u>Comp 1</u>	<u>Comp 2</u>	<u>Comp 3</u>
Sale price	\$135,000	\$110,000	\$162,000
Financing		- 3,000	
Normal sale price	\$135,000	\$107,000	\$162,000
Time since sale	+ 5,400	+ 3,210	
Market adjusted normal sale price	\$140,400	\$110,210	\$162,000
Condition			
Location		- 9,000	- 9,000
Age	+ 5,250		- 8,250
Design			+ 3,500
Living area (sf)	- 3,750	+ 15,000	- 7,500
Bedrooms			
Baths	- 1,800		- 2,900
Construction		+ 5,500	
Air conditioning		+ 3,000	
Lot size			
Garage	- 12,000		- 12,000
Final adjusted sale price	\$128,100	\$124,710	\$125,850

A few comments on the adjustments above are worth mentioning. First, remember that you must adjust each comparable to make it more like the subject. For example, if Comp 2 had a brick exterior rather than wood frame, it would have sold for \$5,500 more.

Second, note that you first adjust for financing at the time of sale. Next you adjust for any market appreciation based on the time of the sale. Only after you get the market adjusted normal sale price do you do location and physical condition adjustments.

Third, note that there is no age adjustment for Comp 2 because it only differs from the subject by 3 years. Similarly, Comp 3 shows no time since sale adjustment because the sales were only a few weeks apart.

Finally, I chose to adjust Comp 2 by 3 percent for the time since sale. This was simply $\frac{3}{4}$ of the 4 percent annual appreciation rate. Alternatively, I could have adjusted it by $(1 + 0.04)^{(3/4)} - 1 = 2.99$ percent to be more precisely accurate with compounding. Although there would be a slight numerical difference (a \$3,194 adjustment rather than \$3,210), it would not have resulted in a meaningful difference in my final value estimate.

The range of value estimates is between \$124,710 and \$128,100. They are all acceptable comps, so I will use the average of the three as the indicated value of my subject = \$126,220 or \$126,000, rounded.

3) The following is a regression showing how different factors impact the sale price of a single-family home in a particular neighborhood.

<i>Regression Statistics</i>	
Multiple R	0.7923
R Square	0.6278
Adjusted R Square	0.6076
Standard Error	8838.731292
Observations	312

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	16	38866457803	2429153613	31.0939	0.0000
Residual	295	23046335401	78123170.85		
Total	311	61912793204			

	<i>Coefficients</i>	<i>Std. Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	28047.25	13044.15	2.1502	0.0324	2375.87	53718.62
Total SF	55.89	18.39	3.0387	0.0026	19.69	92.09
Total SF Squared	-0.01	0.01	-0.9537	0.3410	-0.02	0.01
Basement SF	-25.80	10.73	-2.4038	0.0168	-46.92	-4.68
Basement Squared	0.00	0.01	0.1382	0.8902	-0.03	0.03
Lot SF	1.47	0.99	1.4906	0.1371	-0.47	3.41
Lot SF Squared	-0.00002	0.00004	-0.4753	0.6349	-0.00010	0.00006
Age	271.39	409.86	0.6622	0.5084	-535.22	1078.01
Age Squared	-24.65	13.21	-1.8660	0.0630	-50.64	1.35
Bedrooms	1390.14	1107.56	1.2551	0.2104	-789.59	3569.86
Full Baths	3748.22	983.29	3.8119	0.0002	1813.07	5683.37
Half Baths	-1343.05	2219.11	-0.6052	0.5455	-5710.34	3024.25
Added Fixtures	3577.53	1009.73	3.5431	0.0005	1590.35	5564.71
Ranch	3568.72	1812.55	1.9689	0.0499	1.56	7135.88
Waterview Lot	-2507.29	1607.18	-1.5601	0.1198	-5670.28	655.69
Cul-de-sac Lot	-318.93	1501.04	-0.2125	0.8319	-3273.03	2635.16
Time	1269.63	221.74	5.7257	0.0000	833.23	1706.03

Using this output, answer the following questions:

- a) Circle the names of all the variables that are significant at the five percent level (or better).
- Intercept
 - Total SF
 - Basement SF
 - Full Baths
 - Added Fixtures
 - Ranch
 - Time

- b) Why were the “squared” variables included in this regression? For example, how does the inclusion of **Total SF Squared** in the regression affect your interpretation of the impact of building size on price? Based on the results in this regression, should these terms be included? Explain your answer. (Hint: A graph might help.)

The quadratic term allows the impact of Total SF, Basement SF, and Age to vary based on the magnitude of these variables. For example, in these regression results, price rises with Total SF, but at a decreasing rate because of the negative quadratic term. This is intuitively appealing, because an additional SF of space should have less and less of an impact on the price of a home as its size gets bigger.

- c) Are there any variables that you think should NOT be included in this regression? Explain your answer.

Any reasonable answer is acceptable here. Key is to consider intuition/theory, the significance of the resulting estimates, and the sign of the coefficient.

- d) Are there other variables (from our regression data) that you think SHOULD be included that have not been. Explain why.

Any reasonable answer accepted here (with clear reasoning).

- e) How do you interpret the “Time” coefficient?

It represents appreciation per unit of time.

- f) Give any other insights you observe from this regression output.

Any other factors not discussed above may be discussed here.

- 4) Discuss the issues you would consider when selecting comparables to use when valuing an income property.