HW6 Answer Sheet

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I worked on this assignment with DYON TANG.

1. Average price of homes in SFHA sold within one year before the flood was $440,640.50.
2. Average price of homes in SFHA sold within one year after the flood was $455,173.90.
3. Average home prices inside the SFHA appear to have INCREASED after the flood.
4. Average price of homes outside the SFHA sold within one year before the flood was $394,428.80.
5. Average price of homes outside the SFHA sold within one year after the flood was $410,915.40.
6. Average home prices outside the SFHA appear to have INCREASED after the flood.
7. Based on my answers above, I would say that it appears the flood had a slight impact on housing prices. The prices of homes both inside and outside the SFHA increased by about the same amount (roughly $15,000) between the year before the flood and the year afterwards. However, percentage-wise, homes inside the flood zone increased by about 3.3%, whereas homes outside the flood zone increased by a little over 4%. The 0.7% greater appreciation in home prices outside the flood zone could be a sign that the flood has impacted prices of homes inside the zone.
8. My answer to #7 would not change if market interest rates were higher after the flood, since that would affect al properties equally. Even if that were the case, there is still that 0.7% difference in the increase of properties’ prices in the flood zone vs outside the flood zone.
9. Home prices in the SFHA increased by an average of $14,533.40 following the flood.
10. Home prices outside the SFHA increased by an average of $16,486.60 following the flood.
11. 14533.4 – 16486.6 = -1953.2
12. Insert Regression Table Below

|  |  |
| --- | --- |
|  | (1) |
| VARIABLES | price |
|  |  |
| Post | 16,487\*\*\* |
|  | (4,295) |
| SFHA | 46,212\*\* |
|  | (21,439) |
| SFHA\_Post | -1,953 |
|  | (32,024) |
| Constant | 394,429\*\*\* |
|  | (2,981) |
|  |  |
| Observations | 7,876 |
| R-squared | 0.003 |
| Standard errors in parentheses | |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 | |

As you can see in the table above, my estimate for B3 (SFHA\_Post) is -1,953, which happens to be the same as my answer to question 11.

1. Add Table (Q13) Below

|  |  |  |  |
| --- | --- | --- | --- |
| TABLE (Q13) | | | |
|  | (1) | (2) | (3) |
| VARIABLES | price | price | price |
|  |  |  |  |
| elevation | 2,293\*\*\* | 2,824\*\*\* | 2,740\*\*\* |
|  | (28.91) | (20.35) | (18.26) |
| elevation\_squared | -0.557\*\*\* | -0.685\*\*\* | -0.664\*\*\* |
|  | (0.00723) | (0.00509) | (0.00457) |
| year\_sale |  | -580,158\*\*\* | -551,958\*\*\* |
|  |  | (9,225) | (8,277) |
| year\_of\_sale\_squared |  | 148.3\*\*\* | 141.2\*\*\* |
|  |  | (2.313) | (2.075) |
| age\_of\_home |  | -1,570\*\*\* | -1,278\*\*\* |
|  |  | (40.54) | (36.44) |
| age\_squared |  | 16.88\*\*\* | 14.35\*\*\* |
|  |  | (0.566) | (0.508) |
| mainfloorsf |  |  | 119.4\*\*\* |
|  |  |  | (2.681) |
| mainfloorsf\_squared |  |  | -0.000801 |
|  |  |  | (0.000950) |
| Constant | -2.020e+06\*\*\* | 5.648e+08\*\*\* | 5.367e+08\*\*\* |
|  | (27,806) | (9.198e+06) | (8.253e+06) |
|  |  |  |  |
| Observations | 158,198 | 158,198 | 158,198 |
| R-squared | 0.042 | 0.529 | 0.621 |
| Standard errors in parentheses | |  |  |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 | |  |  |

1. Include your non-parametric plot below



1. The graphical evidence suggest that the blue line creates a price decrease in properties above the blue line (1750 meters). There is a mostly steady upward trend that can be observed in the price as elevation increases from 1250 to 1750 meters. Then, at the 1750 meter mark, there is a sudden, steep drop in price, followed by a much flatter slope increase up to about 2000 meters, then prices fall beyond that elevation.
2. The difference in average price between the two intervals [1750m, 2250m] and [1250m, 1750m] is $82,490.10. This number is statistically significant as it is the exact same number as the coefficient for the treat\_1750\_2250 variable generated in the next question.
3. Add Table Below

|  |  |
| --- | --- |
|  | (1) |
| VARIABLES | price |
|  |  |
| treat\_1750\_2250 | 82,490\*\*\* |
|  | (3,125) |
| Constant | 220,733\*\*\* |
|  | (430.9) |
|  |  |
| Observations | 153,894 |
| R-squared | 0.005 |
| Standard errors in parentheses | |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 | |

1. Add Table Below

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | (1) | (2) |
| VARIABLES | price | price |
|  |  |  |
| treat\_1750\_2250 | 82,490\*\*\* | -88,926\*\*\* |
|  | (3,125) | (24,574) |
| elev\_m\_1750 |  | 1,776\*\*\* |
|  |  | (30.85) |
| treat\_x\_elev\_m\_1750 |  | -1,918\*\*\* |
|  |  | (96.63) |
| Constant | 220,733\*\*\* | 683,125\*\*\* |
|  | (430.9) | (5,226) |
|  |  |  |
| Observations | 153,894 | 7,622 |
| R-squared | 0.005 | 0.313 |
| Standard errors in parentheses | |  |
| \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 | |  |

Including the additional covariates shown in column 2 (elev\_m\_1750, treat\_x\_elev\_m\_1750) changed the estimate of B1 from 82,490 to -88,926. This means that when we fix elevation at 1750 in our estimate, we would expect the price of homes above that threshold (i.e., homes above the “Blue Line”) to be, on average, $88,926 less than homes below the Blue Line.

19) The estimates provided in questions 17 and 18 do concur with the visual evidence on the graph in question 14. That graph shows a clear drop off in home prices right at the Blue Line (1750m), and that is what we expect to see based on the estimates. However, I do agree somewhat with the researcher’s argument that temperature could play a factor in homes prices and should be considered. Although I do not believe that effect would be as significant as the effect of the Blue Line itself. Additionally, the differences in temperature would not be a factor in the homes immediately on each side of the Blue Line (for example, homes at 1740m and 1760m are not going to have significant temperature differences). But certainly temperature could have an effect as you get higher up, like towards 1800m and above.