Assignment 1: Housing values

Assignment

Objectives

- Are there differences in the Market Values of Occupied versus Vacant housing units?
- Is there a pattern in these differences over the period 2005 through 2013?

Deliverables

- Summarize the data for the VALUE and STATUS variables
- Test for differences in the VALUE between ‘occupied’ and ‘vacant’ housing units
- Do the above analysis separately for all five years, 2005 through 2013
- Prepare a brief summary report, which includes the above information

Data Prep

- Delete rows with a VALUE < $1000

Analysis - 2005

	Occupied	Unoccupied	All
Count	29,440	1,074	30,514
Mean	$247,131	$229,324	$246,504
Median	$160,000	$150,000	$160,000
Mode	$200,000	$1,540,794	$200,000
Std Dev	$281,860	$264,371	$281,278

We can use a difference in means test to determine if there is a difference in the market value for occupied houses versus unoccupied houses:

H_0: $\mu_{occ} - \mu_{unocc} = 0$ t-stat = 2.0379 t-Cutoff = + / - 1.9600

We ***can reject*** the null hypothesis, meaning that our data shows there is a statistical difference in market value for occupied houses and unoccupied houses.

Analysis - 2007

	Occupied	Unoccupied	All
Count	26,466	1,319	27,785
Mean	$278,9617	$289,004	$279,438
Median	$190,000	$200,000	$190,000
Mode	$200,000	$1,829,479	$200,000
Std Dev	$317,163	$306,204	$316,653

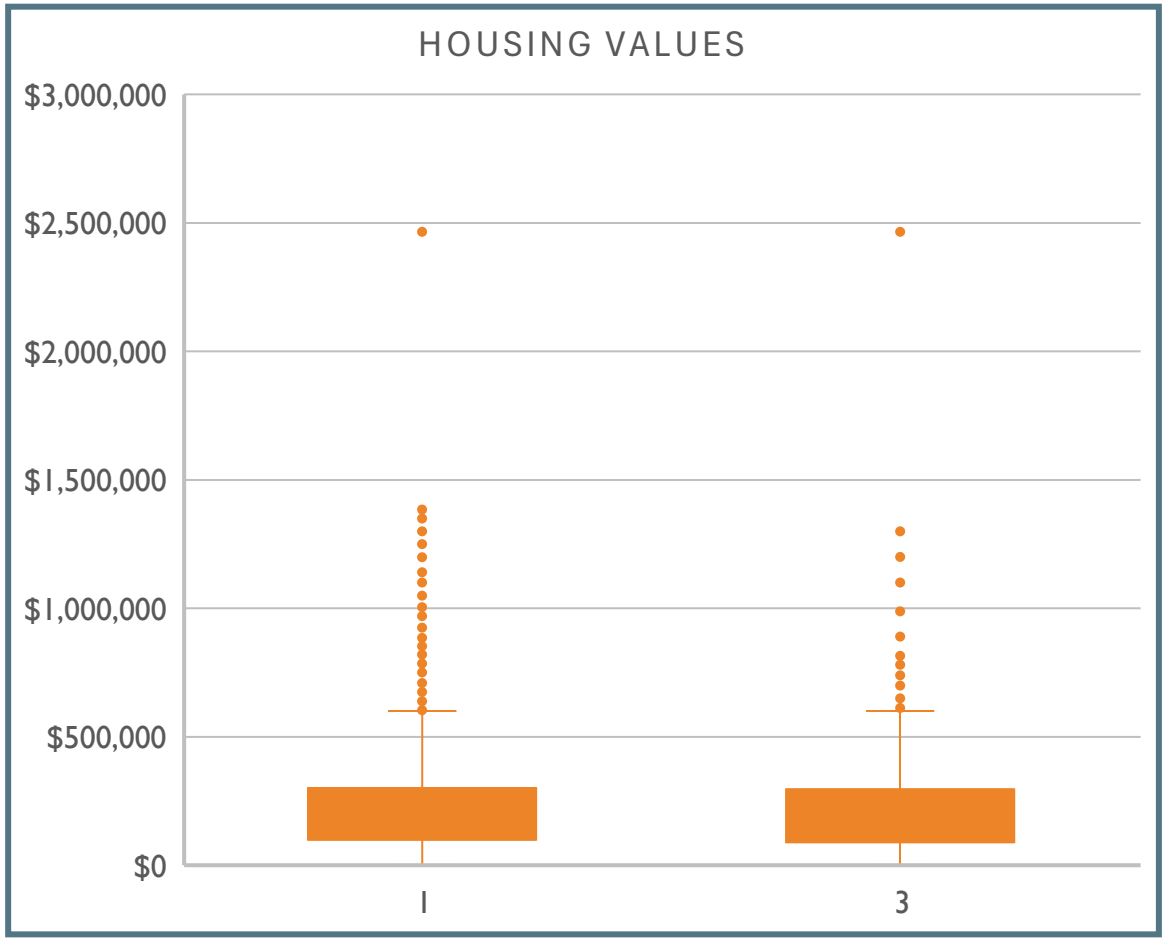
We can use a difference in means test to determine if there is a difference in the market value for occupied houses versus unoccupied houses:

H_0: $\mu_{occ} - \mu_{unocc} = 0$ t-stat = -1.1243 t-Cutoff = + / - 1.9600

We ***cannot reject*** the null hypothesis, meaning that our data does not show a statistical difference in market value for occupied houses and unoccupied houses.

Analysis – 2009

	Occupied	Unoccupied	All
Count	30,081	1,236	31,317
Mean	$247,682	$249,230	$247,743
Median	$179,000	$165,000	$176,900
Mode	$200,000	$200,000	$200,000
Std Dev	$273,626	$318,105	$275,512



We can use a difference in means test to determine if there is a difference in the market value for occupied houses versus unoccupied houses:

H_0: $\mu_{occ} - \mu_{unocc} = 0$ t-stat = -0.1936 t-Cutoff = + / - 1.9600

We ***cannot reject*** the null hypothesis, meaning that our data does not show a statistical difference in market value for occupied houses and unoccupied houses.

Analysis – 2011

	Occupied	Unoccupied	All
Count	82,078	2,972	85,050
Mean	$258,136	$222,117	$256,878
Median	$177,000	$144,450	$175,000
Mode	$200,000	$200,000	$200,000
Std Dev	$301,002	$316,337	$301,621

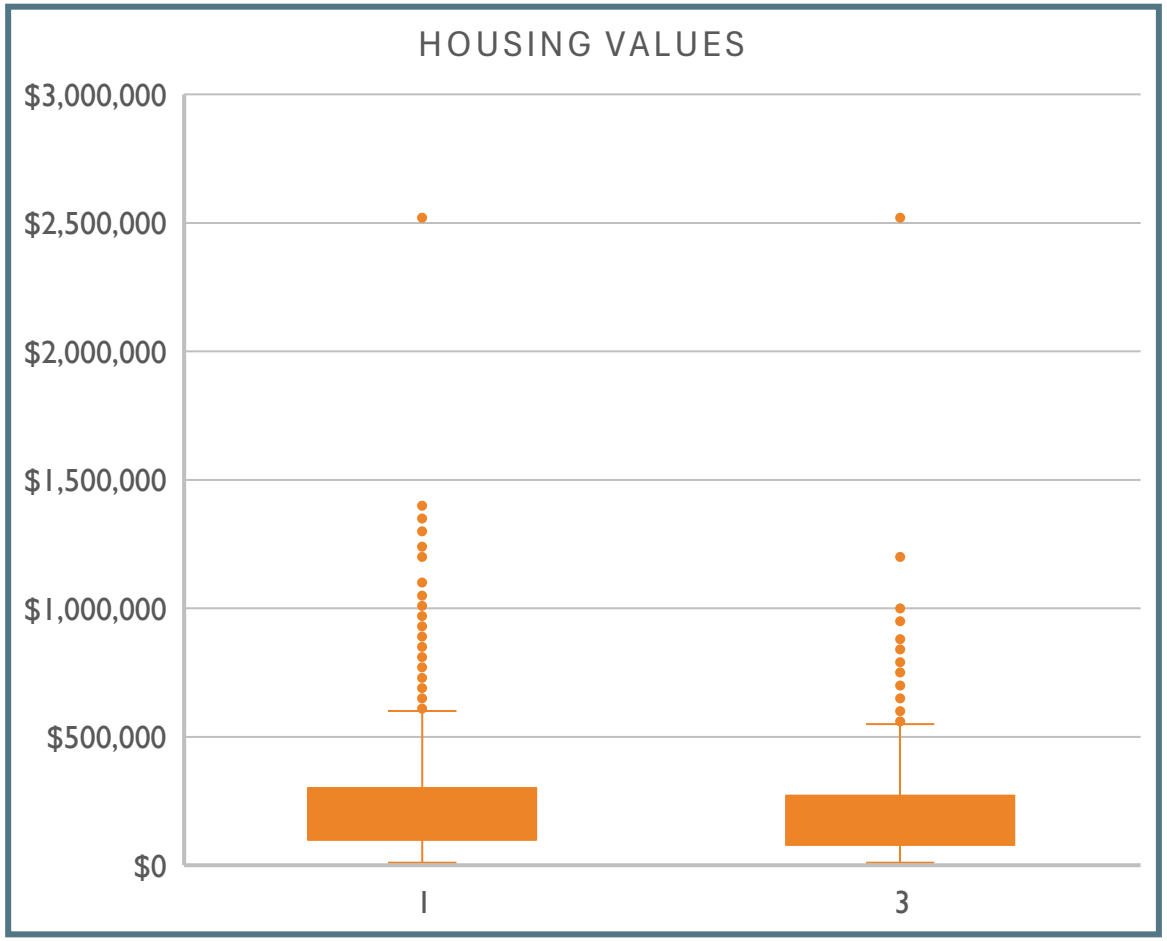
We can use a difference in means test to determine if there is a difference in the market value for occupied houses versus unoccupied houses:

H_0: $\mu_{occ} - \mu_{unocc} = 0$ t-stat = 6.3970 t-Cutoff = + / - 1.9600

We ***can reject*** the null hypothesis, meaning that our data shows there is a statistical difference in market value for occupied houses and unoccupied houses.

Analysis – 2013

	Occupied	Unoccupied	All
Count	35,418	1,257	36,675
Mean	$249,859	$251,997	$249,932
Median	$180,000	$150,000	$180,000
Mode	$150,000	$150,000	$150,000
Std Dev	$282,291	$389,653	$286,630



We can use a difference in means test to determine if there is a difference in the market value for occupied houses versus unoccupied houses:

H_0: $\mu_{occ} - \mu_{unocc} = 0$ t-stat = -0.2600 t-Cutoff = + / - 1.9600

We ***cannot reject*** the null hypothesis, meaning that our data does not show a statistical difference in market value for occupied houses and unoccupied houses.

Summary

Is there a difference in the market value between occupied and unoccupied houses?

- The sample data for 2005 and 2011 shows a difference in market value in occupied and unoccupied houses.
- The sample data for 2007, 2009, and 2013 do not allow us to reject the hypothesis that there is a difference in market values for occupied and unoccupied houses.