Final Project

2022-08-20

# MIS503 – Final Project Part 1A & 1B

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### Zillow Home Value Index Analysis

### R Setup

knitr::opts\_chunk$set(echo = TRUE)  
library(tidyverse)  
library(readr)  
SingleFamilyResidenceRental <- read\_csv("SingleFamilyResidenceRental.csv") # copy original file  
SingleFamilyResidenceSales <- read\_csv("SingleFamilyResidenceSales.csv") # copy original file

The link to Zillow Methodology was old. The newer link is <https://www.zillow.com/research/why-zillow-home-value-index-better-17742/>.

### Wake County Home Sales

#### In considering a move to the Raleigh area and one is interested in understanding trends in home values.

##### a.What have been the overall trends in Wake County Home Values?

Overall, the trends have been to increase. Even during the last recession (2007-2009), the Home Values decreased slightly for a few years but then increased almost $100,000. Until recently, Cary home values were the highest in the area, but Raleigh surged ahead in 2018.

Wake County is the center of NC government, connected to the specially protected Research Triangle Park where the property tax is only 10 centes per $100, and the home to at least 7 colleges or universities. In July 2022, WakeGov.com boasted that the median home prices hit a new high at $470,000!

##### b.There were dips in home values in the past 20 years. What years did these occur?

Between 1996 and 2018, there were two financial crisis. The 1st one was the late 199O’s reaction to the Asian Financial Crisis which started in Thailand and stretched across Eastern Asia. It affected worldwide financial centers and raised fears of worldwide economic meltdowns. According to Wikipedia, the second financial crisis (2007-2009) occurred because of real estate bubbles bursting, US Housing policies, and Limited financial regulation.

##### c1.Based on the analysis, where would be the least expensive area to purchase home?

The least expensive homes would be in Willow Spring and Zebulon. In 2022, that has changed due to the I-540 Outer Loop being constructed to connect those areas to RTP.

##### c2.Most expensive area?

In 2018, the most expensive place would be in Raleigh, but between 1996 and 2017, it would have been Cary or Apex.

##### d.Are any area home values trending down? Is there one area that stands out compared to others?

Garner has been trending down. That is due in part to their imbalance of tax receipts with regard to commercial versus residential properties. They let too many residential Certificates of Occupancy be given and not enough Commercial Ones. That led to a lapse in infrastructure (water allocation, utilities and public services) and they paused to reasses and reboot in the recent years.

#### Trends in home values in Wake County, North Carolina

# create a new dataset that will be used for all commands after the pipe sign  
WakeCountySales <- SingleFamilyResidenceSales %>% select (RegionName,   
 State,   
 CountyName,   
 Metro,   
 ends\_with("-05"))   
  
# Modify the variables names by taking off the suffix "-05" and removing NA's  
WakeCountySales <- WakeCountySales %>% # piping reduces redundant commands   
 filter(!is.na(RegionName)) %>% # don't use the na observations  
 filter(!is.na(State)) %>% # don't use the na observations  
 filter(!is.na(CountyName)) %>% # don't use the na observations  
 filter(!is.na(Metro)) %>% # don't use the na observations  
 rename\_at(vars(matches("-05")), ~str\_remove(., "-05")) %>%  
 # remove suffix from Variables  
 pivot\_longer(c('1996':"2018"),names\_to='YR',values\_to='ZHVI')%>%   
 # rewrite columns to rows  
 filter(!is.na(YR))%>% # don't use the na observations  
 filter(!is.na(ZHVI)) # don't use the na observations

# For whatever reason, the graphs initially printed with color but then after   
# that 1st time, they took way too much memory and RStudio locked up.   
# However, the non-colored versions work fine.  
  
# scatter plot of the Wake County info  
ggplot(WakeCountySales,mapping=aes(YR,ZHVI, # x axis = YR, y axis = ZHVI  
 #color = RegionName  
 )) +   
 geom\_point() +   
 labs(title = "Zillow Year vs ZHVI value 2016-2018", x = "Year",   
 y="Home Values (in $)")+ # Graph Labels  
 # changes x-axis labels to display vertical values  
 theme(axis.text.x = element\_text(angle = 90, vjust=0.5))+   
 scale\_y\_continuous(labels = scales::comma) # labels get comma values

