Gentrification & Policing

A Case Study of Austin, TX

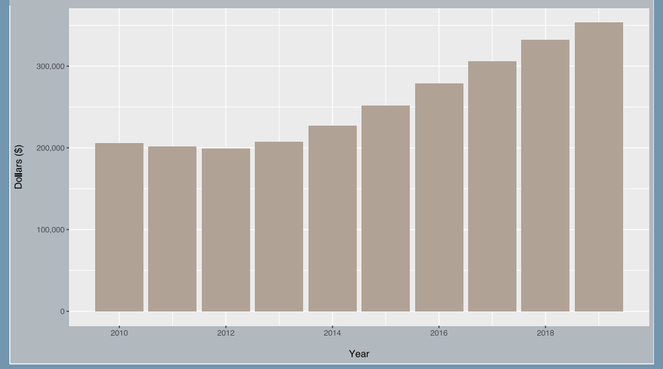
Introduction

Gentrification, or the transformation of a neighborhood through an influx of more affluent residents and businesses, is a critical topic within urban planning. Although gentrification often leads to economic growth, critics point towards its significant detrimental impacts such as displacing residents and destroying neighborhood culture. ***But how does gentrification affect policing and crime?*** Does gentrification decrease crime? Does neighborhood gentrification lead to decreased use of force by police? Such questions are critical to fully understanding the impacts of this phenomenon on changing cities.

This project tracks home values and crime metrics from 2003 to 2020 in Austin, TX, a city that has recently undergone massive transformations. Data was taken from the City of Austin's public records, giving insight into housing and policing trends. A Python script was used to scrape through the 2.3 million crime reports filed with the Austin Police Department between 2003 and 2020 to obtain meaningful features from the raw data. R and ggplot were used to visualize the resulting data.

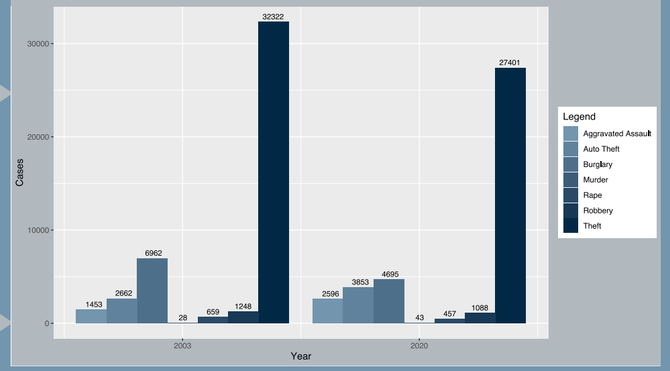
Before delving into crime distributions, it's first important to see what gentrification actually looks like. It's important to note that ***gentrification doesn't necessarily have to happen on a city-wide level.*** Plenty of cities have neighborhoods that suddenly become valuable overnight. The above graph shows the median home value within the city of Austin for the years 2010-2019. The median assessed home value skyrockets from ***$205,553 in 2010 to $353,265 in 2019***, an increase of ***71.9%***, far below the cumulative inflation rate of ***17.2%*** at the time. Given that the chosen metric, the median home value, is resistant to outliers, it can be confidently concluded that home values across the city of Austin are rapidly increasing, not just in specific neighborhoods.

Median Home Value, 2010-2019

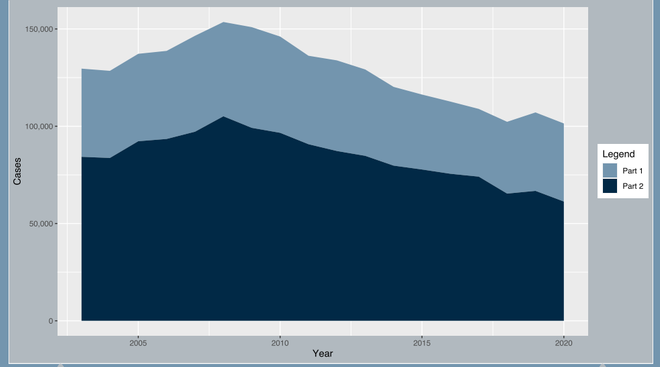


Distribution of Part 1 Crimes, 2003 vs 2020

Looking specifically at Part 1 offenses, the left figure shows that the relative distribution of offenses **remains relatively consistent in both 2003 and 2020**, suggesting whatever effect the rise of home prices had on crime frequencies didn't carry over to Part 1 offenses. Further note that the frequencies of **only two types of Part 1 of crimes increased** — aggravated assault and auto theft, while all other Part 1 crimes decreased in frequency.



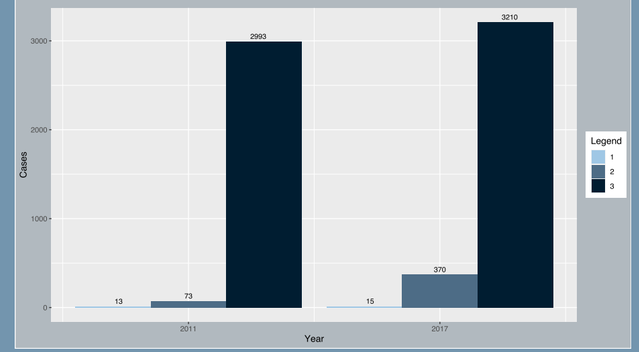
Frequency of Part 1 vs Part 2 Crimes, 2003-2020



Now the frequency of crimes in the city of Austin across this period can be studied. For their Uniform Crime Reporting standards, the FBI defines two classes of crimes, **Part 1** and **Part 2**. Part 1 crimes are defined as particularly serious offenses: aggravated assault, auto theft, burglary, murder, rape, robbery, and theft. All other offenses are categorized as Part 2 crimes. The below graph shows the frequency of Part 1 and Part 2 crimes over time in Austin. Over the 2010-2019 interval, where home values consistently rose, frequencies of both Part 1 and Part 2 crimes fell by **11.5%** and **27.3%** respectively. Thus, while crime overall decreased, the frequency of less severe crimes decreased more than that of more serious offenses.

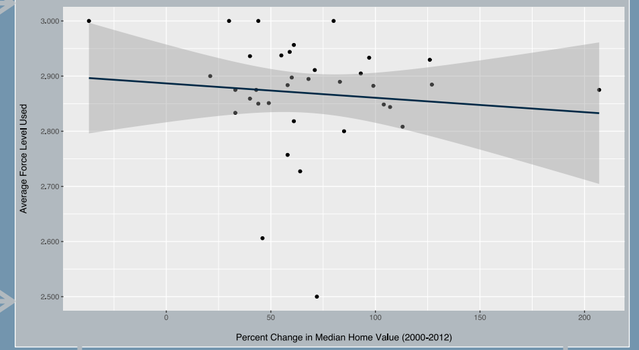
Now, the evolution of use of force was studied. Curiously, **the frequency of force usage has remained relatively consistent**, between 2011 and 2017, with only an increase in Level 2 force usage (moderate use of force). Note that by APD definitions, lower force level corresponds to more severe use of force, with Level 1 being use of a firearm.

Distributions of Use of Force 2011 vs 2017



Finally, the figure on the left shows a scatterplot of zip codes correlating the percent change in median home value on the x-axis and the average force level on the y-axis. The resulting linear regression line suggests a **slight negative correlation between an rapid rise in home value and the force level.** However, the correlation coefficient is not very strong (R=-.165). This makes sense, given that use of force is an incredibly complex measure with many confounding factors.

Home Value Rise vs Average Use of Force by Zip Code



Conclusion

Overall, this study of the city of Austin's housing values and crime rates highlights that gentrification **has a highly mixed effect on crime and policing**. While **crime overall decreases** as home values rise, this trend appears not to hold true for **more severe crimes**. This project additionally finds that **police use of force increases as home values rise**, a surprising finding given that crime overall decreases. Given how complex crime rates are, more research is necessary to fully unpack the effect of gentrification on crime, particularly on a neighborhood-by-neighborhood basis. In particular, police departments should try gathering more localized crime data to better understand the impact of gentrification on crime.