Perceptions vs. Reality: School Climate in Miami-Dade County

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Abstract

This study looks at a sample of Miami-Dade public middle and high schools. The aim is to see if school incidents and perceived safety can be predicted by school-level diversity and other school characteristics. At first, it is found that higher diversity is associated with higher incidents and lower perceived safety. Then, looking at differences over time, it is found that diversity is no longer statistically significant. Instead, increases in school population and free/reduced price lunch over time is significantly associated with an increase in incidents. However, only an increase in the school population is associated with a decrease in perceived safety scores.

JEL Classification: I2, I20

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I. Introduction

Miami-Dade County, the fourth largest public school district in the nation, is a prime example of desegregation difficulties. The district's efforts in the 50's and 60's were met with considerable resistance. As a result of the failures in the earlier decades, the 70s and 80s were marked by attempts to desegregate schools in a variety of ways. Some of the policies implemented included race-based busing, majority-to-minority programs (programs that allowed a student to leave a school where his/her race was the majority and go to a school where his/her race was the minority), and magnet programs. These policies had minimal success, and often they put the burden on minority students which was unfair considering both parents and students wanted to avoid the adversities of leaving their communities (Moore 292).

Considering the district of Miami-Dade, James Moore used a Dissimilarity Index to measure the degree of segregation of students across schools (non-Hispanic White, Hispanics, and blacks) in the year 2000. The percentages, ranging from 0 to 100, represented the amount of Black, White or Hispanic students that would have to be moved across schools in order to achieve perfect racial/ethnic balance. Values between 0 and 30 indicated low levels of segregation, 31-59 indicated moderate and above 60 indicated high levels. The researcher found that levels of segregation across races across schools were relatively high: White/Black = 73, White/Hispanic = 45, Black/Hispanic = 66 (Moore 294). As a result, the researcher recommended that further action be taken to promote diversity across schools.

Almost two decades after this study was done, desegregation is still an issue. Now other methods have been put in place that impact segregated schools such as school attendance zones - boundaries created to assign students to specific schools. They have the power to shape diversity

of schools; however, in the case of many urban school districts, attendance zones can actually exacerbate segregation.

Today, Miami-Dade is one of the largest minority-majority school districts and research considering the effects of lack of diversity is relevant. The changing of school demographics, whether promoting diversity or hindering it, can have many effects on student and overall school outcomes. In our own research, we examine how the degree of diversity in schools impacts school level safety outcomes in terms of perceived safety and reported incidents. First the paper provides background on the current literature and its relation to our research. Next, the data section gives an overview of demographic information, incident rates, and the nature of the boundary changes. Following that, we highlight the Simpson Index, which is similar to the Dissimilarity Index noted above, as the primary measure of diversity for schools in our study as well as in the district in general. The methodology section explains how a simple Ordinary Least Squares model and differenced regressions are used to study the association between perceived safety/incidents and school characteristics where diversity is the main variable of interest. Along with the differenced regressions, an event study analysis was conducted for the change in diversity and changes in perceived safety and incidents over time. The ordinary least squares showed that higher diversity was associated with more incidents as well as lower perceived safety ratings for both middle and high schools. This effect was both economically and statistically significant. The differenced regressions no longer found a statistically significant relationship between diversity and incidents or diversity and perceived safety. However, it was found that total school population as well as percentage of students on free/reduced lunch did have an impact. The event study following the differences regression confirmed these results,

and the graphical examples showed how noisy Simpson Index variations are and why they are difficult to tie to any specific fluctuations in incidents or perceived safety

II. Literature Review

The research analyzed in this section first considers the role of diversity in perceptions of safety, then school characteristics that are determinant of school incidents of crime, and finally how school zone boundaries affect the diversity of school populations.

Perceptions of school safety are the focus of a study done by Lee Shumow and Richard G. Lomax (2001). The researchers surveyed students and their families from the entire continental United States from 1990 to 1994. The focus was how school safety perceptions varied by age, gender, race, socioeconomic status, and between the students and parents. Most relevant to our research, Shumow and Lomax found that surprisingly, gender had no effect. Furthermore, there were significant differences between how different races of students interpreted school climate and school safety. This may have been because the sample of minority students was drawn from neighborhoods that were targeted by school desegregation plans. These neighborhoods generally also had lower socioeconomic status and higher rates of neighborhood violence. Delving deeper into a single race, the researchers found that modelling the Hispanic perceptions of safety was the most difficult and that their models did not have very high predictive value. Shumow and Lomax attributed this to the fact that within the Hispanic community there is even further differentiation of experiences as some families are recent immigrants and non-English speakers, while other families have been in the United States for many generations. Overall, the researchers found that beyond student behavior within the school setting, individual demographics, student-teacher relationships, student-parent relationships, and

neighborhood quality all played a significant role in predicting perceptions of school safety. Within our research, the focus is on student diversity within a school as well as student behaviors, but it is important to note that there are other factors that play a significant role.

Sandra Graham, Jaana Juvonen, and Adrienne Nishina (2006) also investigated how racial/ethnic diversity affected perceptions of safety in middle school students. The researchers analyzed 99 6th grade classrooms and 11 middle schools in Los Angeles with a focus on Hispanic and Black students since those were the majority groups. This study, like our research, used the Simpson's index to calculate ethnic diversity across five racial groups. Then, perceptions of school safety were based on a survey given to all sixth grade students. The researchers found that measures of perceived safety increased with diversity. This was true for both Black and Hispanic students, and this was true for both the classroom and school level.

Graham et al's research again confirms that racial diversity is an important factor in perceptions of school safety. Furthermore, we learn that using school level data should be just as telling as using classroom level data. The results of this research suggest that we should expect that higher levels of diversity in a school will be associated with higher perceptions of safety. However, since Graham et al conducted research in Los Angeles, the same results may not necessarily generalize to Miami-Dade County and there may be inherent differences between the two school districts that cause different results in our research.

Moreover, another key part of our study is actual school crime and misconduct. Many studies have examined how student-level demographics impact school level of crime. For example, Welsh examines the relationship between individual student characteristics and school disorder. The researcher analyzed survey responses from middle students in Philadelphia. He distinguished between offending (more serious behavior such as assault and robbery) from

misconduct (less serious violations such as disrespect toward teachers, violation of school rules such as dress code, and truancy). The results found that nonwhite students reported higher levels of both offending and misconduct.

Nevertheless, few studies examine the relationship between levels of crime and school diversity as a whole. Rather than look at individual racial/ethnic categories, we are interested in how incidents at schools can be attributed to the school itself as a setting which can promote misconduct. Perhaps the school as a diverse setting can cause more racial tension or cultural clashes which increases disorder, or maybe lack of diversity increases disorder because a majority group holds more "power" and instigates situations over minority groups.

In addition to diversity, there are other aspects of school climate/structure that predict school crime. Greg Chen utilized the 2000 School Survey on Crime and Safety provided by the National Center for Education Research to examine how school climate and student characteristics impact the level of crime in a school. The focus of his research was secondary schools, and he included a sample of 712 in the study. The researcher's school crime model is an extension of Welsh's school disorder model with the inclusion of school security programs serious penalties. Chen hypothesized that school size affects level of crime but did not predict the direction; theoretically larger schools could foster environments that lead to misbehavior but they could also provide more resources and programming that adapt to the needs of students more than smaller schools. He also predicted that student socioeconomic status was negatively associated with crime. In this study, student socioeconomic status was constructed from two indicators: poverty (measured by the percentage of students eligible for free/reduced price lunch) and racial/ethnic composition (measured by percentage of minority students). The research found that lower student socioeconomic status did predict higher crime rates, but this effect was not

statistically significant. On the other hand, larger schools predicted higher levels of crime and was statistically significant at the 1% level. In our study, we are also examining the effects of school size and socioeconomic status; however, our measure of socioeconomic status does not account for race/ethnicity.

Last, diversity can vary for schools due to the way school boundaries are gerrymandered. Meredith P. Richards (2014) studied boundary changes as a geospatial analysis, to consider the gerrymandering and the relation to segregation in public schools. In this study, she created "Voronoi" attendance zones that were optimized on distance. Essentially, each school was given a zone where each household in the zone was closest to that school. Then, she calculated Black-White, Hispanic-White, and Asian-White diversity for each optimized and actual school zone, using again the Simpson Index. Overall, Richards found that generally the Voronoi-optimized school zones allowed for more diversity than the gerrymandered school zones. The effect was not very large for individual schools, but when compiled over entire school districts, the decrease in diversity was very significant. She also found that the effect was largest for segregation between minorities and between White-Asian populations. This research does signify that schools in general may be more segregated than would naturally occur if zones were based on proximity and brings up the consideration how this segregation will affect perceptions of safety. Thus, this study will investigate if schools that experience a boundary change are inherently different than those that do not. Furthermore, in this study we will investigate if boundary changes are appropriate to use as an instrumental variable. This will be the case if boundary change years can be associated with a significant and clean change in demographics. However, if the boundary change is minor or the data is inherently noisy, this may likely be not possible. Regardless, Richard's research confirms that school zone boundary changes are expected to

cause some fluctuations for the diversity of a school, based on if the boundary becomes closer or further to a Voronoi-optimized. This implies that school demographics are an important consideration of school districts and their effects on perceptions of safety and actual incidents are worth investigating.

III. Data

To provide some background, the Miami-Dade school district is the fourth largest district in the United States, and the largest in Florida. Considering the county of Miami-Dade itself is ethnically diverse, so are the schools within the district. Specifically, the proportion of students with Hispanic origin is particularly high, as can be seen in Table 1 below. In fact, Miami-Dade is one of the largest minority-majority public school systems in the country. In terms of student placement, students are assigned to schools based off of attendance zones constructed/modified by the school board. There is a school choice plan in place where students can apply to magnet schools through a lottery system. The schools that are exclusively magnet are not included in the study because these schools are not affected by attendance zones.

Table 1 Racial Breakdown of Schools in Miami-Dade

School Category	Race	Mean	Std. Dev	Min	Max	Observations
Elementary	White	7.69612	10.395	0	66.2	1864
	Black	29.7927	34.0212	0	100	1881
	Hispanic	61.5172	32.0655	1.8	100	1920
Middle Schools not in study	White	7.94763	8.09823	0	38.9	279
	Black	27.0009	30.4864	0	96.8	289
	Hispanic	65.0526	27.996	2.7	100	299
Middle Schools in study	White	6.21861	8.42811	0	43	272
	Black	29.7606	33.1021	0	95.8	270
	Hispanic	62.7585	32.0788	3.2	98.2	272
High Schools not in study	White	10.44	9.69097	0	50	516
	Black	33.6132	27.7836	0	100	541
	Hispanic	57.9936	26.6163	0	100	577
High Schools in study	White	7.10477	8.22108	0	41	225
	Black	30.5963	32.2298	0.7	95.5	226
	Hispanic	60.9043	30.4745	3.8	97.2	226
District Total	White		9%			
	Black		25%			343380
	Hispanic		63%			

All of the data is publicly available through the Florida Department of Education or the Miami-Dade school district. As such, the focus is on school-level data, since student-level data is out of reach. More specifically, the focus is on middle and high schools because there is more variation related to incidents and surveys, as compared to elementary schools. There is a total of 39 middle schools and 32 high schools. The study spans seven years, from 2009-2015, where 2009 refers to the spring of the 2008-2009 school year. This timeframe was chosen mainly due to data availability.

One of the key pieces of the dataset is school-level incident data which comes from the Florida Department of Education, shown in Appendix A. The incidences are separated into three major categories: crimes against people, crimes against property and crimes involving drugs. Crimes against people (CAPE) is the aggregate of crimes categorized as battery, bullying,

fighting, harassment, hazing, homicide, kidnapping, physical attack, sexual assault, sexual battery, sexual harassment, sex offenses, or threat intimidation. Crimes against property (CAPY) is the aggregate of crimes categorized as arson, breaking and entering burglary, larceny or theft of motor vehicles, robbery, trespassing, or vandalism. Crimes involving drugs (DRUG) is the aggregate of crimes categorized as alcohol, drug sales except alcohol, or drug possession except alcohol, and tobacco.

Table 2 below shows that overall, for both middle and high schools, the most frequent incidents are crimes against people. The average crimes against people is slightly lower for high schools but that is likely due to the outlier maximum in middle schools. The crimes against property and drug related incidents are much lower for middle schools than high schools.

Table 2 Incident Statistics for Middle and High School

Incident Statistics for Middle and High Schools						
	Middle School			High School		
	CAPE	CAPY	DRUG	CAPE	CAPY	DRUG
Mean	61.37729	7.080586	5.575092	56.57143	23.11607	23.29018
Standard Dev	39.78666	5.28115	4.478179	32.68952	11.82856	15.1338
Min	0	0	0	7	2	0
Max	213	38	26	181	63	76
Observations	273	273	273	224	224	224

Another part of the data that is school climate survey data which is supplied by the Miami-Dade school district, as shown in Appendix B. The survey questions included in this study are responses from students on perceived safety. Students are asked to what degree they agree with certain statements and can choose from strongly agree, agree, undecided/unknown, disagree, or strongly disagree. There are also surveys with responses from parents and staff. The former results were not used because the responder rate is very low and inconsistent. The latter

were omitted because the teacher response rate was also low. Moreover, it is also unclear to what extent teacher sorting may be endogenous.

In quantifying the survey results, a higher assigned score indicates higher perceptions of safety. Four questions were used as indicators of perceived safety:

Question 1 - "I feel safe at my school."

Question 16 - "Violence is a problem at my school."

Question 17 - "Gangs are a problem at my school."

Question 18 - "Student drug and alcohol use are problems at my school."

For question 1, values [2, 1, 0, -1, -2] were assigned as follows to the possible responses: strongly agree, agree, undecided/unknown, disagree, strongly disagree. For questions 16-18 values [-2, -1, 0, 1, 2] were assigned to the same possible responses. The latter scale is flipped because the first question is a positive affirmation and the latter three are negative affirmations. Using these scales, the maximum score for question 1 was 200 – if 100% of respondents answered "strongly agree." Similarly, the maximum score for questions 16-18 was also 200 – if 100% of respondents answered "strongly disagree." For each school, an average score was found for the four questions. Thus, a final score in the range [-200,200] was assigned as an aggregate perceived safety rating, where a higher score indicates higher levels of perceived safety.

Table 3 Perceived Safety Score Statistics for Middle and High Schools

Perceived Safety Score Statistics for Middle and High Schools		
	Middle School	High School
Mean	34.91941	40.39063
Standard Dev	37.6827	39.75969
Min	-66.75	-75.25
Max	128.75	120.75
Observations	273	224

The statistics observed in Table 3 between middle and high schools are very similar, which is interesting considering that incident rates were fairly different, especially for crimes against property and drug related incidents. This signifies that it is likely that the incidents that are most relevant to perceived safety are crimes against people, since these were similar between middle and high schools. Overall, the middle school correlation between perceived safety and total incidents was -0.6328, and -0.5878 for high schools, as can be seen later in Table 7. The correlation is high, and as expected - negative; this signifies that an increase in incidents is associated with a decrease in perceived safety scores and vice versa.

Some major limitations in the relationship between the incident data and survey results is that the survey does not capture student responses to incidents that occur after January as the survey is conducted each year in January while incidents occur throughout the entire semester. It also may be the case that survey responses are affected by the proximity of an incident, where an event that occurred just a few days prior to the survey distribution may skew perceptions to feel less safe than may otherwise be perceived. Furthermore, it may also be the case that incident reports do not entirely capture the number of incidents that occur as some schools prefer to deal with situations internally.

The school demographic data includes a breakdown by ethnicity, gender, free-reduced price lunch, students with disabilities, gifted students and total school population, as seen in Appendix C. The demographic reports have been completed in the fall (October). The school climate surveys are conducted in the spring (January).

The last piece of data is school attendance zone boundaries available from the Miami-Dade school district (Appendix D). Out of the 39 middle schools, there are 24 boundary changes across 18 schools within the timeframe of the study with ten schools affected in 2009, four in

2010, seven in 2012, and three in 2013. Furthermore, out of the 32 high schools, there are 6 boundary changes across six schools within the timeframe with three occurring in 2009 and three occurring in 2010. The main purpose of this data is to determine whether a boundary change indicator can be used as an instrumental variable for a two-stage least squares regression, as explained in the methodology.

IV. Theoretical Framework

Rather than examine how shares of specific racial/ethnic groups affect perceived safety or actual incidences, we are examining the mix of these groups because in this way we are defining majority/minority groups by size within the schools. This is of particular interest for the Miami-Dade district because it is one of the largest districts where the majority of students are non-White, so there is more variation of ethnic minorities. To measure this diversity, the study implements the Simpson Index. The index measures the probability that any two students chosen at random from a specific school would be from different racial/ethnic groups. Values range from 0 to 1 where 0 represents no diversity and 1 represents perfect diversity. Although higher levels of diversity have been linked to positive outcomes such as higher perceived safety (Graham et al, 2006), this may or may not be the case for this study.

The index was created using this formula:

$$Simpson_{yt} = 1 - \sum_{i=1}^{n} p_{iyt}^2$$

where p_i = proportion of students who belong to ethnic group i,

n = number of racial groups,

y = school and

t = year.

Below is Table 4 - summary statistics of the Simpson Index for schools in the entire district to compare the schools within and outside of our study. As mentioned previously in the data section, elementary schools are not examined in this study and a number of middle and high schools were omitted due to being full magnet/specialty schools or simply missing data. The Simpson Index values range from 0 to 1 (in this case the values have been transformed to a fit a scale from 0 to 10 for easier interpretation). Since there are three major racial/ethnic categories, the observed upper bound is 7 (a school with complete equal representation). The observed lower bound should be .3 for a school with all one race/ethnicity; however, there are observed minimum 0s as some schools in the district do not report their demographic information. Overall, the averages throughout the different categories is fairly uniform. It is expected for the middle schools to have lower indices than high schools because middle schools are typically smaller in size and have less room to vary in diversity than high schools. The index for elementary schools is even lower than for total middle schools in the district as there are many more elementary schools than middle schools and the population is even smaller. Furthermore, there is some difference between the sampled middle and high schools, and the total population. The sampled middle schools are about 0.3 points less diverse than the total population, and the sampled high schools are about 0.6 points less diverse. There is no obvious reason why this is the case but it may suggest that sampled schools are somehow slightly different and therefore findings are not entirely generalizable to the entire Miami-Dade district.

Table 4 Distribution of Simpson Index Throughout Miami-Dade

	Mean	Std. Dev	Min	Max	Observations
District	3.247818	1.889902	0	6.946	3357
Elementary	3.029981	1.885903	0	6.946	1922
Middle Schools not in study	3.267197	1.707544	0	6.79954	299
Middle Schools in study	2.963822	1.907087	.35496	6.899	272
High Schools not in study	3.97691	1.82412	0	6.89559	578
High Schools in study	3.278542	1.808601	.5489898	6.805	226

A change in the Simpson cannot solely be interpreted by a change in race components. In the hypothetical example in Table 5, all three rows represent changing racial compositions within a hypothetical sample school. However, Option 1 and 2 are roughly the same, meaning if a school's racial composition changed from Option 1 to 2 (or vice versa), the index would still be calculated the same. Rather, a unit change in the Simpson is associated with a 10% change in the chance of two students chosen at random being of different races.

Table 5 Theoretical Racial Composition and Simpson Index

	% Hispanic	% Black	% White	Simpson Index
Original Case	25	25	50	6.25
Option 1	25	12	63	5.26
Option 2	2.6	47.5	50	5.24

Table 6 below is an example in the data where the Simpson index has changed significantly between two years. As the Hispanic share increases by 15 percentage points and the Black share decreases by 12 percentage points, the Simpson decreases by 2 units which makes sense considering the Hispanic share is changing as an even larger majority than before and both the Black and White shares are changing as an even smaller minority. In 2010, it's 20% less likely that two students chosen at random would be of different races. However, this example cannot be generalized as the only method that the index changes by 2 units. As seen in the hypothetical example, it is difficult to pinpoint a precise racial breakdown. Rather, it is better to

think of the Simpson Index in terms of diversity - the probability that two students are a different race.

Table 6 North Miami High School Racial Composition and Simpson Index

	% Hispanic	% Black	% White	Simpson Index
2009	69	22	4	4.739
2010	84	14	1	2.747

It should also be noted that changes in the Simpson index can occur from changes in percentages with a constant school population, or it could be that as the school population changes the shares of different racial groups naturally shift. This makes the Simpson Index even more difficult to analyze in terms of racial categories as it is not immediately obvious if a change in the Simpson Index occurred with a constant school population or not.

Although it appears that the Simpson Index has many limitations, such as difficulty interpreting a change in the index as a change in the component parts, it fits the needs of this research. As we are working under the assumption that the different racial groups do not inherently perceive safety differently, trying to interpret the component parts of the Simpson Index becomes unnecessary. This assumption is backed by previous findings by Shumow and Lomax, and Graham et al. Thus, because our variable of interest is the diversity of a school, the Simpson Index is a very convenient variable. It is easy to interpret a unit increase in the Simpson Index as a 10% increase in the probability that two random students are of the same race. This interpretation is fairly intuitive and does offer some insight into what the student body looks like, even if the specific racial breakdown is unknown.

When examining the Simpson index at the district level versus the school level, segregation in schools becomes revealed. If the Simpson index was created for averages for each race percentage for middle and high schools, the indices would be 6.08875 and 5.3041146, respectively. These values represent what the Simpson index would be if all the schools in the district were aggregated into one big entity, separately for middle and high schools. However, when looking at the average of the indices across schools, the results are much lower: 2.963822 for middle schools and 3.278542 for high schools. This is an example of how segregated some schools are. When we look at the district as a whole as compared to when the district is divided up into many schools, the Simpson index drops significantly. Thus overall, while Miami-Dade district as a whole is fairly diverse, we can see that there are schools that are very segregated and these schools pull down the average of the Simpsons Indices.

As the Simpson index will be the main independent variable of interest, the Table 7 aims to connect it to the dependent variables mentioned in the Data section.

Table 7 Correlations Between Simpson's Index, perceived Safety Scores, Incident Totals for Middle and High Schools

Correlations Between Simpson's Index, Perceived Safety, Incident Totals		
	MS	HS
Simpson/Safety	-0.2266	-0.3101
Simpson/Incidents	0.1894	0.2282
Safety/Incidents	-0.6328	-0.5878

The signs in Table 7 are all very intuitive in relation to each other. There is a negative relationship between the Simpson Index and perceived safety, meaning that higher diversity is associated with lower levels of perceived safety. Then there is a positive relationship between the Simpson Index and incidents, meaning higher diversity is associated with increased level of incidents. As expected, the relationship between perceived safety scores and incidents is negative which implies that perceptions match reality.

Along with the Simpson Index, the Dissimilarity Index is another demographic measure which calculates how evenly racial groups are spread across components of a sample group that is part of a larger population. The reason that both the Simpson and Dissimilarity Indices are included is because they supplement each other. While the Simpson Index allows conclusions to be drawn about the district as a whole and to look at individual schools, the Dissimilarity Index is best used for comparing groups of schools to one another. The reason that an average Simpsons Index was not used as a descriptive measure for a group is because it can be misleading. An average number does not capture how much variation occurs within the group. More specifically, it was found that the average Simpsons Index is much higher than the Simpsons Index of the average racial composition for all of the sample schools (Appendix E). What this means is that for both middle and high schools, White and Black percentages are generally much lower than Hispanic percentages, but there are a few outlier schools that are majority black. Taking the average of all of the Simpsons Indices shows that in general schools are very segregated, but it does not show that the district is diverse and that there are different ways in which schools are segregated. The Dissimilarity Index allows us to analyze how different schools are from one another in a group and how different groups are to one another.

The formula for the Dissimilarity Index is indicated below:

$$D_g = \frac{1}{2} * \sum_{i=1}^{n} \left| \frac{Hispanic_{ig}}{Total\ Hispanic_g} - \frac{NonHispanic_{ig}}{Total\ NonHispanic_g} \right|$$

i = school
g = group g, which is based on boundary changes
n = number of schools.

In this study, the race of interest was Hispanic as this is the most common majority group. The schools were then grouped by the year(s) they experienced a boundary change. The exact list of schools in each group is included in Appendix D.

One of the reasons this index was implemented was to uncover how the groups may differ from one another and over time. Beyond differences between groups, we were looking to see if the year that a group experiences a boundary change is associated with a clean increase/decrease in the dissimilarity index while non-boundary change years remain level. This would indicate that boundary changes are a good instrumental variable for a two stage least squares analysis. The benefit of considering the Dissimilarity Index is that it allows comparisons to be made across groups and it is another good measure of diversity. However, the major limitation is that schools within a certain group cannot be compared to one another, and for that reason other measures of diversity, such as the Simpson Index, supplement this analysis. The results of the dissimilarity analysis are shown in Tables 8 and 9 below.

Table 8 Middle School Dissimilarity

Year	Schools that switch in 2009	Schools that switch in 2010	Schools that switch in 2012	Schools that switch in 2013	All Schools that Switch	Schools that never switch
2009	0.791245	0.712215	0.640259	0.572222	0.695151	0.467264
2010	0.8184	0.753353	0.644582	0.557652	0.722115	0.475005
2011	0.830742	0.776289	0.68264	0.55732	0.745326	0.48171
2012	0.839095	0.795041	0.664065	0.579861	0.753143	0.488677
2013	0.812215	0.7771	0.655822	0.559189	0.739427	0.496469
2014	0.821279	0.791763	0.63956	0.565375	0.740682	0.494651
2015	0.816735	0.800205	0.629343	0.559852	0.730121	0.486083

Table 9 High School Dissimilarity

Year	Schools that switch in 2009	Schools that switch in 2010	All Schools that Switch	Schools that never switch
2009	0.244044	0.252657	0.474536	0.518755
2010	0.287573	0.240945	0.523598	0.510678
2011	0.341104	0.241862	0.566	0.514547
2012	0.367053	0.256913	0.587017	0.517892
2013	0.389302	0.249163	0.609018	0.535376
2014	0.410748	0.267265	0.618304	0.536268
2015	0.422972	0.252907	0.614638	0.535325

Overall, very few clear patterns emerge. In the middle school Table 9, there is a clear increase in the dissimilarity index for the 2012 and 2013 boundary change groups in the year before their respective boundary changes, 2011 and 2012. However, similar patterns do not exist for the other middle school boundary change, or for the high school data.

There are two clear trends that emerge for both middle and high schools. First, there is an increase in the dissimilarity index for all groups over time. This means that schools become more dissimilar to one another. This most likely occurs if extremes become more extreme; for example, majority Hispanic schools lean even more towards that majority while majority Black schools lean even more towards that majority. The other trend that emerges when looking at *All Schools that Switch* versus *Schools that Never Switch* is that boundary change schools have a higher dissimilarity index than non-boundary change schools. Again, this means that boundary change schools are more dissimilar to one another than non-boundary change schools. This does indicate that schools that experience a boundary change are more likely to have one race that is a large majority rather than a more-equal spread of all of the races. However, this is not enough to uncover precisely what motivates the school district to instill a boundary change.

Unfortunately, there are no clear increases or decreases in the dissimilarity index that correspond to the boundary change years. The results show that the data is noisy; small fluctuations in the dissimilarity index occur every year for every group. These fluctuations can be caused by natural school population changes as new classes enter and old classes graduate, residential sorting, or the boundary changes. The linear trends are mapped in Appendix F; none of the graphs are linear with a clear break on the boundary change year. Thus, it is not possible for the scope of this study to disentangle the shifts that occur solely due to the boundary changes; thus, they should not be used as an instrumental variable. Furthermore, the amount of schools within each group is not consistent and most boundary change groups are a small sample, making it even more difficult to find clear patterns in the data. This indicates that a two stage least squares approach is not feasible, and instead the necessary path to take is a focus on ordinary least squares and least squares with differences over time to try to pin how much of a change in school diversity can be associated with a change in perceptions of safety as well as safety outcomes.

V. Methodology: Empirical Framework

The empirical model consists of three parts: ordinary least squares, differenced panel data regressions, and an event study. First the ordinary least squares model provides a general picture of trends in the Miami-Dade district. Then the differences model looks at trends over time, and the event study builds off of this to consider to what extent the magnitude of a change in the variable of interest plays a role. Then, each section is further broken down for two main dependent variables - perceived safety scores and incident rates by category, as detailed previously. Using the same analysis, middle school and high school dependent variables are considered separately. In all the cases, the independent variable of interest is the Simpson Index.

The index was calculated by summing the shares of Black, White, and Hispanic students across schools and for each year, using the formula below. The index was multiplied by 10 to transform the scale from 0 to 1 to 0 to 10 for easier interpretation of the coefficients of the regression.

$$Simpson_{it} = 10 * \{1 - [(BlackPct_{it})^2 + (HispanicPct_{it})^2 + (WhitePct_{it})^2]\}$$

Where i = school and t = year

a. Ordinary Least Squares

The first part of the methodology involves an OLS regression in which the dependent variables are regressed against a number of school demographic variables. The goal of these regressions is to gain a general understanding of what trends exist in the Miami-Dade school district. More specifically, the purpose is to find the general association between the variable of interest - Simpson Index as a measure of school diversity and the outcomes of survey results and incident rates for each middle and high school. Furthermore, this is the approach most common in other similar research and thus provides a good basis for comparison to other studies. The first dependent variable is the three incident categories, individually regressed on the Simpson Index for a specific year and school, a vector of school characteristics, yearly fixed effects, and an error term. The second dependent variable in this analysis is the aggregate perceived safety score regressed on the same equation. The primary independent variable of interest is the Simpson Index. Comparing results of incidents and results of perceived safety will allow us to understand to what extent perceptions match the reality. It is expected that if perceptions do match reality, that the coefficients on the variables in the perceived safety analysis will be the inverse of coefficients on variables in the incident analysis.

Regression 1:

$$y_{it} = \alpha_0 + \alpha_1 simpson_{it} + \alpha_2 v_{1it} + fe_t + \varepsilon_{it}$$

where y = survey score or incident category

i = school

t = year

$simpson$ = Simpson Index

v_1 = vector of school characteristics

fe_t = time fixed effects

ε = error term

The vector of school characteristics includes demographic data detailing percentage of students with free-reduced price lunch, percent gifted, perfect with disabilities, percent English language learners, percent male, and total school enrollment.

b. Differences Regression Model

While the first OLS regressions consider a static model where a unit increase in the Simpson Index is associated with a unit increase in the dependent variable, the second step is regressing the changes in perceived safety score as well as the changes in each of the incident categories on the change in Simpson Index and the change in vector of school characteristics. The purpose of this is to understand how the trends in incidents and perceptions of safety change over time, and to what extent these changes can be predicted by changes in the independent variables.

Regression 2:

$$\Delta y_{it} = \alpha_0 + \alpha_1 \Delta simpson + \alpha_2 \Delta v_{1it} + fe_t + \varepsilon_{it}$$

where Δy = change in survey score or incident category

$\Delta simpson$ = change in Simpson Index

Δv_1 = change in the vector of school characteristics

fe_t = time fixed effects

ε = error term

In this analysis, it may be the case that the variable of interest, Simpson Index, is correlated with the error term and thus is not accurately measured. While a two-stage least squares model with an instrumental variable could have potentially disentangled some of this endogeneity, we saw in the discussion of the Dissimilarity Index previously that the data is noisier than expected. The most natural instrumental variable of choice was the indicator of a boundary change. However after examining the data, it is not feasible within the scope of this research to disentangle which population/demographic changes occur due to the boundary change and which occur due to residential sorting and natural year-to-year student population variation. Thus a major limitation of this research is that we cannot entirely identify to what extent endogeneity is an issue, and thus we are not able to address it adequately. Since a two stage least squares approach has been identified as inexecutable, the focus is the ordinary least squares and difference analyses mentioned earlier.

c. Event Study

Similar to the differences methodology, for the event study the focus is on assessing the impact of the change in the Simpson Index. However, here we are taking a deeper look at these changes by defining what is considered a significant jump and analyzing their impacts. Significant jumps were categorized as changes in the Simpson index that were greater than one standard deviation of the variable. The standard deviation for both middle and high schools was approximately .222. This was further broken down by including indicator variables that separate positive changes (increased diversity) from negative changes (decreased diversity). In the data, there were 61 instances of Simpson index jumps for middle schools and 17 instances for high

schools. It makes sense that high schools experience less jumps than middle schools because high schools tend to be larger, thus it would be harder for the Simpson index to have a standard deviation change. In the following regression, middle school and high school data was combined primarily because the number of observed jumps for conducting these analyses separately is too low. Similar to the differences regression, changes in incident categories and perceived safety were regressed on the modified variable of interest - the Simpson indicators - as well as changes in control variables.

Regression 3:

$$\Delta y_{it} = \alpha_0 + \alpha_1 \text{Pos}\Delta SimpsonIndicator_{it} + \alpha_2 \text{Neg}\Delta SimpsonIndicator_{it} + \alpha_3 \Delta v_{it} + \varepsilon_{it}$$

where Δy = change in survey score or incident category
$Pos\Delta SimpsonIndicator$ = variable that indicates whether a change in Simpson index is greater than 1 positive standard deviation
$Neg\Delta SimpsonIndicator$ = variable that indicates whether a change in Simpson index is greater than 1 negative standard deviation
Δv_1 = change in the vector of school characteristics
fe_t = time fixed effects
ε = error term

Furthermore, following the event study regressions, an idiosyncratic event study was conducted by graphing the changes in the Simpson Index, incident rates, and perceived safety scores for all schools over time. With this exercise, the goal was to better see the relationship between jumps in these different categories. More specifically, try to understand how the changes look, if it is possible to pinpoint an increase in Simpson Index between two years as a corresponding increase/decrease in incidents and perceived safety. While this does not imply that

the Simpson index has causal influence over school outcomes, any relationship may still hold descriptive significance at the school level.

VI. Results and Discussion

a. Ordinary Least Squares

The following results were obtained from running *Regression 1* related to the first part of our methodology: ordinary least squares regressions. The results have been broken down for high schools and middle schools. Within each group, two tables were generated. The first table includes the dependent variables related to incidences which are separated into three categories: Crimes against people (CAPE), crimes against property (CAPY) and crimes involving drugs (DRUG). In the second table, perceived safety score (AVERAGESCORE) is the dependent variable.

Table 10 Regressing Grouped Incidences for Middle and High Schools

	Middle School Regressions			High School Regressions		
VARIABLES	MS CAPE	MS CAPY	MS DRUG	HS CAPE	HS CAPY	HS DRUG
Simpson Index	9.078***	0.820***	0.641***	3.094**	0.924**	0.594
	(1.226)	(0.176)	(0.170)	(1.275)	(0.437)	(0.548)
% Male	0.0505	-0.00503	0.00678	-0.799	0.320	0.990**
	(0.0414)	(0.00594)	(0.00575)	(0.997)	(0.342)	(0.428)
% English Learners	-0.995***	0.0241	0.106**	-1.738***	-0.301**	-0.355**
	(0.312)	(0.0447)	(0.0433)	(0.387)	(0.132)	(0.166)
% With Disabilities	-1.958***	-0.234***	-0.0341	1.178	-0.0305	0.688**
	(0.500)	(0.0717)	(0.0694)	(0.728)	(0.249)	(0.312)
% Gifted	-1.000**	0.0542	-0.176***	-2.279***	-0.218	-0.593**
	(0.454)	(0.0650)	(0.0629)	(0.646)	(0.221)	(0.277)
% Free/Reduced	1.553***	0.179***	-0.0666*	0.431*	0.152*	-0.182*
	(0.283)	(0.0406)	(0.0393)	(0.240)	(0.0823)	(0.103)
Total School Pop	0.0175**	0.00319***	0.00119	0.0117***	0.00503***	0.0123***
	(0.00692)	(0.000992)	(0.000960)	(0.00325)	(0.00111)	(0.00139)
Constant	-60.28*	-10.85**	8.691*	57.56	-13.00	-43.86*
	(33.38)	(4.786)	(4.633)	(53.50)	(18.33)	(22.97)
Observations	273	273	273	224	224	224
R-squared	0.381	0.193	0.106	0.340	0.163	0.455
Number of Year	7	7	7	7	7	7

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The middle school coefficients on the *Simpson Index* are positive and significant at one percent for all of incident models. A positive coefficient signifies that as a school moves towards more racial diversity, it is expected to have more incidents of crime. Specifically, for the crimes against people, for middle school Model 1, a one-unit increase in the *Simpson Index* is associated with nine more crimes against people. As discussed previously, the average Simpson value across schools in our sample is 2.98775 with a standard deviation of 0.925477. Thus, a one-unit increase is very probable. Furthermore, the average amount of crimes against people is 61.37729 with a standard deviation of 39.78666. Nine extra incidents are economically significant.

The positive coefficients for the *Simpson Index* across all models was neither expected nor unexpected. It could have been the case that within a more segregated school, having a small minority group would lead to bullying and tensions. In more diverse schools, there may be more disruption or chaos between the students. How this translates to perceived safety in Miami-Dade is investigated further in the research. However, we must be careful when interpreting diversity within a school as leading to more incidents of crime. It may also be the case that more diverse schools simply deal with incidents differently compared to more segregated schools. It may be that the latter deal with incidents more internally while the former chose to report and document more frequently.

For the middle schools, the patterns in the coefficients for other school variables are sometimes surprising. For example, the coefficient for *% English Learners* was negative for the crimes against people. This is surprising because considering that English language learner status is often closely related to race, this variable could be another indicator for level of diversity. While the results may appear slightly conflicting, research by Shumow and Lomax confirms these findings. Within the Hispanic population, perceptions of safety and correlation to incidents, was difficult to predict as there were both recent immigrants as well as a native population; the different groups may have competing effects that should be considered separately. Thus overall, while for *Simpson Index* more diversity was associated with more instances of crime, a higher percent of English language learner status is associated with less instances of crimes against people. *% English Learners is* positive for crimes against property and drug incidents, as was expected while looking at the *Simpson Index* coefficients, but the magnitude is very small.

For the middle school variable *% With Disabilities,* the coefficients were always negative and as such, a larger percentage of students with disabilities is associated with less incidents of

crime. This can likely be explained in a few different ways. The first is that schools with higher amounts of students with disabilities work harder to ensure environments that are conducive for these students. The other way is a higher level of selectivity amongst parents whose children have disabilities. These parents are more likely to move and seek out a school with a safer and friendlier environment for their children. The variable was most economically significant for crimes against people. A ten percentage point increase was associated with 19 less incidents. Since the average percentage of students with disabilities is 12.65385 with a standard deviation of 4.737692, this is very economically significant.

For the middle school variable of *% Gifted*, the coefficients were negative for crimes against people and drug incidents but positive for crimes against property. Furthermore, the coefficient was fairly economically significant for the crimes against people. More specifically, a one percent increase in *% Gifted* students is associated a one-unit decrease in crimes against people. Thus a ten percentage point increase is associated with 10 less incidents. Since the average percentage of gifted is students is 12.81502, with a standard deviation of 8.855986, a ten percentage point increase is likely.

The *% Free/Reduced* variable for the middle school regressions showed results that were predicted. This variable is often used as a proxy for socioeconomic status and can be tied to unobservable factors that are obstacles in an educational environment – potentially stressful home environment, negative neighborhood characteristics, low availability of opportunities outside of school, and thus crime incidents. In such a case the sign of the coefficient would be positive. This hypothesis is supported by previous research – Chen, in the School Survey on Crime and Safety, found that socioeconomic status was negatively associated with crime. Thus a higher socioeconomic status is predicted to be associated with less crime. Or in our case the

alternative is true, higher rates of free/reduced lunch students are predicted to be associated with more incidents in the school. The results found in Table 10 show that in middle schools, a ten percentage point increase of students with free/reduced lunch is associated with 15 more crimes against people, and the variable is statistically significant as well. Since the average percentage of students on free/reduced lunch is 80.63115 percent with a standard deviation of 15.3457, again a ten percentage point increase is very probable. However, for the *DRUG* models, the sign on the coefficient is negative and it is not as strongly statistically significant (only 10 percent), as partially predicted by Chen. Intuitively, as *%Free/Reduced* is a proxy for lower income, it is probable that students receiving the free or reduced lunch do not have the economic means for drugs. Thus schools with higher *%Free/Reduced* are likely to have lower drug incidents.

In the first model of the high school data, most of the coefficients (except *% Male* and *Total School Pop*) are higher in magnitude than for the other two models. A one-unit increase in the *Simpson Index* variable for high schools is associated with an increase of approximately three crimes against people, which has a considerably higher economic significance than the other two models. Furthermore, in the first two high school models, the *Simpson Index* variable is significant at the 5 percent level while in the *DRUG* model, the coefficient of is not significant and much smaller in magnitude. The *% Free/Reduced* variable is significant at the 10 percent level in all of the high school models; however as mentioned before, it is the only negative for the *DRUG* model.

There are many patterns in the high school data across the models. Similar to the middle schools, the coefficient of the *Simpson Index* is positive for all categories which signifies that as the Simpson index increases (higher levels of diversity), occurrences of all crimes are expected to increase. However, for high schools, in the *DRUG* model, the coefficient is not statistically

significant, indicating that diversity is not the most important predictor of drug incidents within a school. Also, *% English Learners* was always significant and negative for high schools, meaning increases in the shares of English Language Learners were expected to decrease the occurrences of all categories of incidences. Likewise, the sign of the coefficient for the *% Gifted* variable for high schools is negative across which implies that an increase in the share of gifted students is associated with lower levels of all three crimes. This makes some intuitive sense considering that the academic environment can impact discipline. *Total School Population* was significant at the 1 percent level for all high school models and positive, which implies that larger schools seem to have more problems. This is consistent with the findings from research done by Greg Chen, where it was also found that school size was significant at the 1 percent level for student crime.

Across both types of schools, the R squared value is smaller for high schools for the *CAPE* and *CAPY* models, but higher for *DRUG*. This is likely because drug related incidents are generally much less common in middle than high schools. Since thy are less common, the incidents can likely be attributed to just a few students in each middle school and thus more random and difficult to predict. On the other hand, the drug incident rate for high schools is much higher and therefore a model has more room to predict what factors the incidents are associated with.

While Table 10 shows the relationship between incidents and the Simpson Index of a school along with other characteristics, Table 11 looks at the relationship between the perceived safety and the Simpson Index and other characteristics. We expected the results for these two tables to be closely related as incidents influence perceived safety and both are dependent on the variables of interest. The results discussed below support this hypothesis.

Table 11 Regressing Perceived Safety Score for Middle and High Schools

	Perceptions of Safety	
VARIABLES	MS	HS
Simpson Index	-9.912***	-4.210***
	(1.134)	(1.569)
% Male	-0.0205	0.496
	(0.0383)	(1.227)
% English Learners	0.628**	2.505***
	(0.289)	(0.476)
% With Disabilities	0.599	-1.248
	(0.462)	(0.895)
% Gifted	1.711***	1.791**
	(0.419)	(0.795)
% Free/Reduced	-0.860***	-0.276
	(0.262)	(0.296)
Total School Pop	0.0133**	0.00319
	(0.00640)	(0.00400)
Constant	83.50***	8.008
	(30.87)	(65.83)
Observations	273	224
Number of Year	7	7
R-squared	0.445	0.367

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In Table 11, the coefficient on the S*impson Index* variable is negative for both middle and high schools. In this case, the negative interpretation signifies that with more diversity there is lower perceived safety scores. This was expected once the positive coefficients were seen in the Table 8. Since more diversity is associated with more incidents, it is expected that it is also associated with lower perceived safety. Again these findings do not follow what Graham et al predicted - that perceptions of safety increase with diversity within the school; however, since these results are almost a mirror image of the previous table, we have confidence that there is internal validity. Looking at the previous results, these were expected.

The trends for other school characteristics for middle schools, in general, closely

followed the *CAPE* model in the previous table. For this table, coefficients were expected to have the opposite sign as similar magnitude as the previous table. This was true except for *% Male* and *Total School Pop* but these variables were not found to be statistically significant. Overall, it is likely that crimes against people has the most influence on perceived safety scores, as opposed to crimes against property or drug incidents, especially for middle schools. This can be inferred for how closely the coefficients for the perceived safety mirror the coefficients for crimes against people, especially in the middle school model. Furthermore, crimes against people are the most common type of incidents in both middle and high school and thus again likely to have more weight on perceived safety. The R squared value for middle schools in this table is higher than any of the R-squared values in Table 10. This may signify that the variables chosen, including *Simpson Index,* have more explanatory power for perceived safety than actual incidents.

For high schools, like middle schools, the sign of the *Simpson Index* is negative and statistically significant at the 1 percent level. While it is statistically significant, a one-unit increase in the *Simpson Index* is associated with around a 4.2-point decrease in the perceived safety score which does not seem economically significant. Likewise, the sign on *% English Learners* is positive like the middle schools, however is larger in magnitude. This coefficient indicates that a 10 percentage point increase in the share of English language learner students is expected to increase the perceived safety score by approximately 25 points which seems to be economically significant. Furthermore, the *% Gifted* variable is close in value to middle schools. The *% Free/Reduced* variable is negative as it is in the middle school regression; however, it is not statistically significant and is smaller in magnitude. *% Male* and *% With Disabilities* are the only variables where the signs between the regressions do not match, however they are not

statistically significant across the regressions. In a similar fashion, the *Total School Pop* variable shares the same sign but again is not statistically significant and is smaller in magnitude. This is interesting as it was generally significant in the previous table, related to actual incidents, and as predicted from research done by Greg Chen.

An interesting difference between the middle school and high school data occurs in both the survey and the incident table. The coefficient on the *% English Learners* variable is much larger for high schools. The large economic significance of this variable in the *CAPE* models in Table 10 and then in Table 11 signifies that schools with a higher percentage of English language learners have a climate that is both perceived as more safe and generally has less incidents. Why this may be the case is not entirely clear since English learner status could also be used as a measure of diversity. Lastly, in the survey table, the R squared is slightly smaller for high schools than middle schools. This was also the case in the incident table, besides the *DRUG* model. In general, the regressions have marginally less predictive powers for high schools than middle schools.

b. Differences Regressions

While the ordinary least squares model studies how incidents and perceived safety are associated with the Simpson Index and school characteristics, the difference model considers how a change in the Simpson Index or any of the characteristics may lead to a change in the incident level or perceived safety. This difference model is considered in Tables 12 and 13, where a change is calculated as previous year subtracting from current, using *Regression 2*.

In Table 12, all of the coefficients for the Simpson Index are statistically insignificant, and most are negative. This signifies that a change in the Simpson Index between any two years is not statistically associated with a change in incidents. Compared to the general ordinary least

squares model, before we saw that for any given year and school, diversity was associated with higher levels of incidents.

Table 12 Regressing Change in Grouped Incidences for Middle and High Schools

	Middle School Regressions			High School Regressions		
Variables	MS ΔCAPY	MS ΔCAPE	MS ΔDRUG	HS ΔCAPE	HS ΔCAPY	HS ΔDRUG
ΔSimpsons	-0.999	-6.939	-1.118	-5.000	2.408	1.703
	(1.178)	(5.316)	(1.145)	(15.77)	(3.772)	(4.066)
Δ% Male	-0.00738***	0.0558***	0.00350***	0.980	-0.886	1.353*
	(0.000312)	(0.00133)	(0.000275)	(1.873)	(0.937)	(0.799)
Δ% English Learners	0.0966	-0.176	0.155	0.204	-0.997	-0.613
	(0.132)	(0.598)	(0.129)	(1.509)	(0.651)	(0.476)
Δ% With Disabilities	0.170	1.168	0.0647	-3.511	-0.321	-0.569
	(0.298)	(2.139)	(0.315)	(3.424)	(1.172)	(1.129)
Δ% Gifted	0.0545	0.646	-0.0950	-2.589*	-0.191	-0.741
	(0.188)	(1.069)	(0.197)	(1.495)	(0.558)	(0.542)
ΔTotal School Pop	0.00865**	0.0582**	0.00445***	0.0346***	0.0164***	0.00892
	(0.00441)	(0.0253)	(0.00171)	(0.00963)	(0.00549)	(0.00556)
Δ% Free/Reduced	0.0935	2.943***	-0.104	2.338***	0.352	0.222
	(0.129)	(0.648)	(0.124)	(0.592)	(0.258)	(0.255)
Constant	-1.219***	-5.491**	-0.0205	-8.092***	-3.275***	0.967
	(0.366)	(2.324)	(0.416)	(2.329)	(0.673)	(0.903)
Observations	234	234	234	190	190	190
Number of School	39	39	39	32	32	32

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In this analysis, the variable Δ*Total School Pop* is positive and statistically significant in almost all of the regressions, as it was in the previous tables. This makes intuitive sense. An increase in the school population is associated with an increase in incidents due to increased chaos. Furthermore, this can be tied to the discussion of Simpson Index changes on page 9, Tables 2 and 3. A change in the school population can drive changes in the Simpson Index, and while these results show that changes in the Simpson Index are not associated with changes incidents, that may be because they are being driven by a change in the school size.

An interesting note is that Δ*% Free/Reduced* is significant and positive for the Δ*CAPE* model for both middle and high schools. A one percentage point increase in students with free or reduced lunch is associated with 2.948 more incidents against people for middle schools and 2.338 incidences against people for high schools. Not only is this statistically significant, it is also very economically significant. A standard deviation for change in Δ*%Free/Reduced* is 2.940733 for middle schools and 4.207128 for high schools. Thus, while a one percentage point increase is about a third and a fourth of a standard deviation, it is still probable.

The constant in Table 12 is negative and significant for most models, besides the Δ*DRUG* model for high schools which was positive and insignificant. This signifies that each year, if all of the changes are zero, there is still an expected decrease in incidents. This could have several interpretations. It may be the case that over time schools are becoming more equipped at controlling incidents and are working hard at decreasing them. It may also be the case that over time schools are becoming less likely to report all of the incidents and deal more with them internally. Or on the other hand, a decrease in incidents over time could be because students become more acclimated to changes in the school population.

Table 13 Regressing Change in Perceived Safety Score for Middle and High Schools

	Change in Perceptions of Safety	
Variables	MS	HS
ΔSimpsons	16.61***	-3.987
	(5.751)	(10.42)
Δ% Male	-0.000609	0.706
	(0.00145)	(1.556)
Δ% English Learners	1.297	1.276
	(0.814)	(1.604)
Δ% With Disabilities	-3.572**	2.569
	(1.486)	(3.153)
Δ% Gifted	2.268***	2.306
	(0.816)	(1.638)
ΔTotal School Pop	-0.0297*	-0.00274
	(0.0178)	(0.00880)
Δ% Free/Reduced	-0.0817	0.814
	(0.515)	(0.498)
Constant	-1.007	-1.567
	(1.942)	(2.197)
Observations	234	190
Number of School	39	32

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Looking at changes in perceived safety in Table 13 above, the coefficient for the middle school change in Simpson Index is positive and both statistically and economically significant. Again, the sign on the Simpson Index coefficient for perceptions of safety is the opposite as for the Simpson Index in the incident analysis. This makes sense, if an increase in diversity is associated with a decrease in incidents, we expect it to also be associated with an increase in perceived safety. Previously, diversity was associated with lower perceived safety. It is unclear why the difference interpretation states the opposite.

For high schools, the coefficient on the Simpson Index is negative but not statistically significant. The sign is what we could expect based on the fact that Δ*CAPE* and Δ*DRUG* models are positive in Table 12. The sign is also consistent with what was observed in the general

ordinary least squares model. There is clearly a significant difference in the results between middle school and high school, but there is no simple explanation.

While in the previous table, Table 12, Δ*Total School Pop* was statistically significant and positive, in the perceived safety model this variable is only significant at the 10% level for middle schools, and not at all for high schools. This indicates that while a change in total school population is associated with an increase in incidents, it is not statistically associated with changes in perception of safety. Overall, these results signify that changes in perception of safety are not closely tied to changes in incident levels, while in the ordinary least squares model the perceptions of safety closely modeled the results for the Δ*CAPE* incidents.

The constants in Table 13 are negative but insignificant. This means that if between two years, the changes in all of the variables are zero, there is no statistically significant expected change in perceptions of safety. This is interesting, while incidents are decreasing, that does not necessarily mean that perceptions of safety are increasing.

Overall, while the ordinary least squares model told the same story between incident and perceived safety analysis, the same is not true for the differences model. For the ordinary least squares, higher diversity was associated with more incidents and lower perceived safety. The main conclusions that can be drawn from the differences model is that over time incidents are decreasing, an increase in the school population is associated with an increase in incidents and a drop in perceived safety, and an increase in students on free/reduced lunch is associated with an increase in incidents against people but no change in perceived safety.

c. Event study

The following results were obtained from running *Regression 3* related to the last part of our methodology: the event study.

Table 14 Regressing Changes in Incidents and Perceived Safety on Indicators of a One Standard Deviation Increase or Decrease in the Simpson Index and Change in Vector of Characteristics

		Incidences		Perceived Safety
Variables	ΔCAPE	ΔCAPY	ΔDRUG	ΔAverageScore
Pos ΔSimpson Indicator	-0.403	1.355	-1.041	5.810
	(3.567)	(1.477)	(1.388)	(4.781)
Neg ΔSimpson Indicator	4.825	1.772*	0.00532	-1.350
	(3.488)	(1.000)	(0.971)	(3.756)
Δ% Male	0.0560***	-0.00706***	0.00408***	-0.00307***
	(0.00145)	(0.000488)	(0.000351)	(0.00116)
Δ% English Learners	0.0394	0.0343	-0.0240	1.336**
	(0.521)	(0.164)	(0.133)	(0.627)
Δ% With Disabilities	-0.373	0.0678	0.126	-1.625
	(1.759)	(0.362)	(0.322)	(1.301)
Δ% Gifted	-0.737	0.368	-0.241	2.230***
	(0.880)	(0.373)	(0.223)	(0.697)
ΔTotal School Pop	0.0418***	0.0128***	0.00770**	-0.0114
	(0.0119)	(0.00385)	(0.00353)	(0.00896)
Δ%Free/Reduced Lunch	2.322***	0.215	0.0999	0.570
	(0.411)	(0.181)	(0.153)	(0.370)
Constant	-1.555	-1.084	0.572	-3.120
	(3.319)	(1.022)	(1.048)	(3.593)
Observations	426	426	426	426
Number of School2	71	71	71	71

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results in Table 14 appear to generally support the results found in Tables 12 and 13. Here, the main variables in interest are indicator variables for a positive and negative change in the Simpson Index that is greater than one standard deviation. The coefficients on these variables were not significant in any of the models, which supports what was found previously with the difference regressions. Thus, it can be concluded that overall a change in the Simpson Index, minor or greater than a standard deviation, is not statistically associated with either a change in incidents or a change in perceived safety score.

The only time one of the Simpson Indicators became significant was in the *ΔCAPY*

model. The coefficient for a decrease in the Simpson Index was positive and significant at 10%. This implies that a decrease in the Simpson Index/diversity by one standard deviation, is associated with 1.772 increase in incidents against property. Even if this is statistically significant, it is not very economically significant since a one standard deviation change between two years is infrequent. Furthermore, a standard deviation of *ΔCAPY* is 8.51, so a 1.772 change between two years is very small.

In 14, *ΔTotal School Pop* is significant for all of the incident models. This variable was also significant in Tables 12 and 13; however, in this case it is even more economically significant for the *CAPE* and *DRUG* models than previously. An increase in total student population is associated with an increase of incidents, and a decrease in perceived safety, even if the latter coefficient is not statistically significant. The reason behind the increase in economic significant between the event study and the difference variables is not entirely clear.

Δ%Free/Reduced Lunch is also statistically significant at the 1% level and very significant economically in the *ΔCAPE* model. A one percentage point increase between two years is associated with 2.322 extra incidents against people. A standard deviation for the *Δ%Free/Reduced Lunch* variable is 3.5929 so a 1 or 2 percentage point increase is very probable. This variable was also significant before in the differences regressions for both middle and high schools, again this shows that the models are consistent.

Δ% Male is statistically significant across all of the models in Table 14 where an increase in the male population is associated with an increase in incidents for *CAPE* and *DRUG* and a decrease in perceived safety score. However, this is not economically significant because it is very unlikely for any school to skew heavily towards a majority male population, and a small percentage increase is only expected to have a minor change on the incidents.

Lastly, again the coefficients for the incidents are negative and significant, meaning that over time the incidences are expected to decrease.

After looking at Table 14, it can be concluded that it is in general consistent with the differences regressions. However, it is still interesting to consider why the Simpson Indicator variables are not significant statistically. This can be investigated in Figures1-6 on the following page that feature Hialeah Middle School which had significant positive increases in the Simpson Index in 2012, 2013, 2015 as well as Miami East High School which had positive jumps in 2011, 2012, 2013, 2014. The conclusions drawn from these examples can be applied to many of the other schools in the sample and all of the graphs are listed in Appendix F.

Figures 1-3 look at Miami East High School. Clearly, jumps in the Simpson Index do not follow changes in *CAPE* or any of the other incident categories. Clearly incidents have a lot more fluctuation than just a linear increase. However, *CAPE* seems to loosely follow *Average Score* trends. This happens in a lot of other schools also, listed in Appendix F. However this is not a total generalization. For some, *CAPE* follows the *Average Score* and for some they are an inverse, and for a third group there is no clear pattern (as showcased in the next example). Thus, overall it is easy to see why the indicator variables are not conclusive.

Figures 4-6 show Hialeah Middle School. Again, the Simpson Index does not visually follow any trend in relation to the other figures. However in this example, *CAPE* and *Average Score* also do not appear to have any obvious trend. This demonstrates why in the regressions, it is very hard to offer any sort of relationship between a change in the Simpson Index, even if it is a change that is greater than one standard deviation.

Figure 1 Miami East High School Simpson Index Over Time

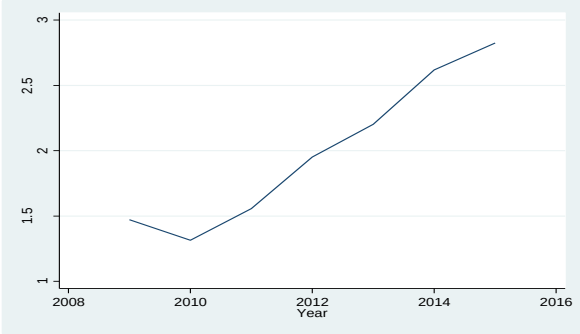


Figure 2 Miami East High School Incidents Over Time

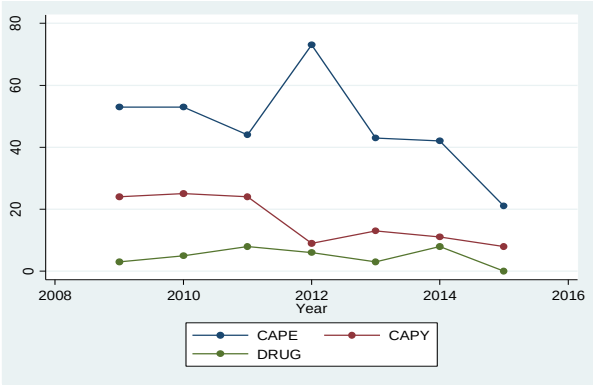


Figure 3 Miami East High School Average Score Over Time

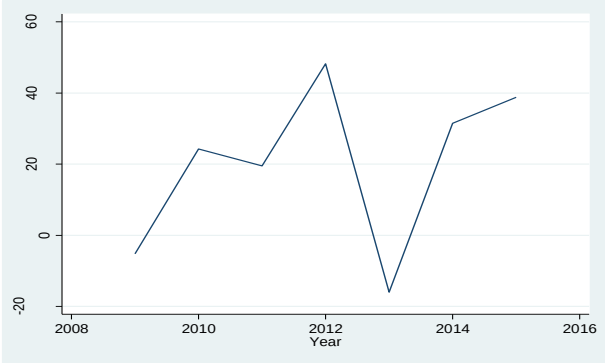


Figure 4 Hialeah Middle School Simpson Index Over Time

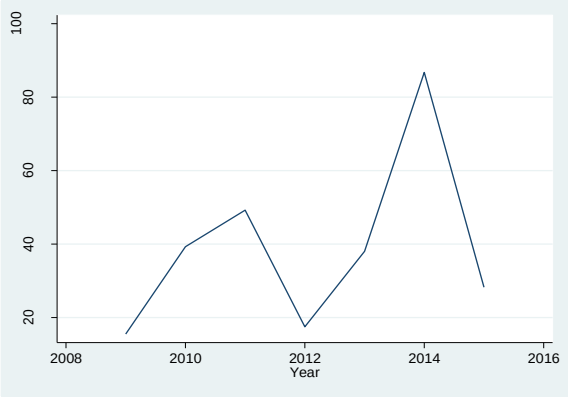


Figure 5 Hialeah Middle School Incidents Over Time

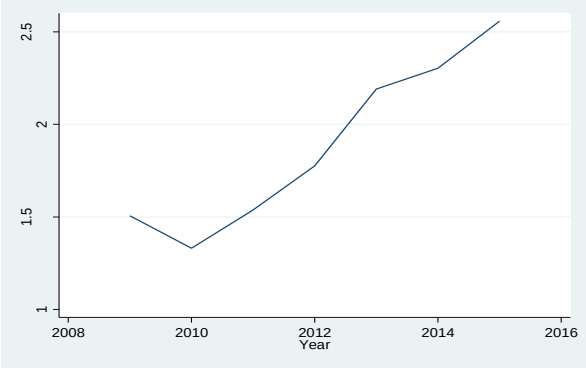
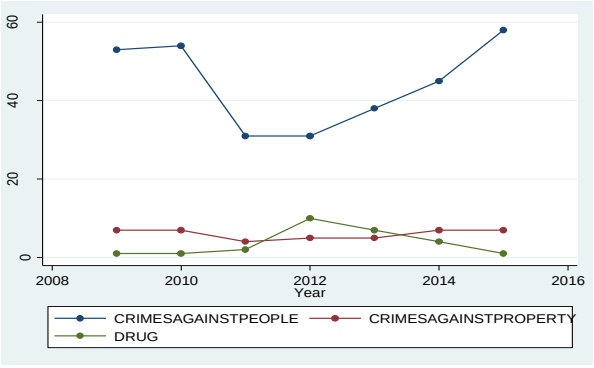


Figure 6 Hialeah Middle School Average Score Over Time



VII. Conclusion and Further Discussion

Although the different models offer some conflicting results, we are still able to find some overarching conclusions that have significant policy implications and offer ideas for further research.

The major inference that can be drawn from the ordinary least squares analysis is that higher levels of diversity are associated with more incidents and lower perceived safety. This finding contrasts previous literature by Graham et al. The researchers found that in a sample of middle schools in Los Angeles which were also majority Latino, increased diversity led to increased perceived safety at both the school and classroom level. In this study, the researchers carefully selected the 11 middle schools based on low-income communities that were eligible for Title 1 compensatory funding. Thus, the difference in results may be influenced by the sampling method. In our research, all schools that had consistent survey and incident data were included. However, we can also still conclude that school districts are unique and researchers must be careful when extending their results outside the district where the research it was conducted. Furthermore, the way school districts handle diversity can have a huge impact. In Los Angeles, schools were following a mandated desegregation movement, backed by increased funding and staffing. In Miami-Dade, on the other hand, any increased diversity that occurs appears to be a unique case-by-case situation, and it may be the case that schools and teachers are not equipped with the consequences of the diversification. As discussed in our paper, Miami-Dade schools are largely segregated, with one majority-minority racial group per school. In such a setting, teachers and staff are probably acclimated to the setting, and thus any disruption of the norm can lead to increased chaos and thus be associated with higher incident rates and lower perceived safety.

While the ordinary least squares model offers the most firm conclusions, in the end we do not believe that this model is necessarily the most representative or the most important when considering policy questions. If anything, the differences model and the event study show how complicated understanding the relationship between incidents and perceived safety can be, and how difficult it is to model what factors affect both over time. In the differences model, the change in Simpson Index coefficients were statistically insignificant, meaning that from one year to the next, an increase in diversity was not associated with a change in incidents. Still, we are still able to draw some general conclusions from the differences model, and these were also supported by both the event study and previous research.

The first and most significant conclusion that can be drawn from the differences regressions and the event study is that increasing school size is associated with increasing incidents. This is statistically significant at either 1 or 5 percent for both middle and high schools, for all incidents except high school drugs. Higher school population was also associated with higher incidents for all models in the ordinary least squares model. Furthermore, this was supported by previous research conducted by Chen who found that larger schools are statistically associated with more crime. This finding states that an increase in school population is strongly associated with an increase in disruptions and chaos that leads to incidents over time. Furthermore, school size, while not strongly statistically significant, is also associated with a decrease in perceived safety over time. Thus, it is important for school districts to always be conscious of school size and population. There needs to be a push for more educators, more school staff, and for training on how to work with and handle the growing student populations. Funding for education is very important in order to be able to support all of this growth and open and staff new schools when necessary.

Besides school population, we also saw that an increase in students with free or reduced lunch was associated with a statistically and economically significant increase in incidents against people. Again, this was supported by the ordinary least squares model where we saw that higher percentage of students on free/reduced lunch were associated with higher incidents against people and property but lower incidents of crime. Research conducted by Chen also saw that an increase in students with lower socioeconomic status was positively associated with more crime, but his effect was not statistically significant. However, the method by which Chen defined socioeconomic status was a combination of students on free and reduced lunch as well as the percentage of minority students. Thus, he predicted that both a simultaneous increase in free and reduced lunch and minority students was associated with more crime. The reason he found the effect statistically insignificant may be due to the fact that he combined the two variables; as we saw, diversity was not significant while free/reduced lunch alone was. Furthermore, in our research, an increase in students receiving free or reduced lunch was not associated with any significant change in perceptions of safety. This could be the case that in general, in Miami-Dade public schools, most students receive free or reduced lunch. In such a case, we wouldn't expect much influence on perceptions of safety since this is the normal environment. Furthermore, as schools tend to draw students from similar neighborhoods around the schools, it is likely that these neighborhoods also have similar income brackets, and students are more comfortable in an environment where they fit in. The reason behind such a strong association with an increase in incidents is because free and reduced lunch is a proxy for lower income, and lower income status is often correlated with other unobservable factors that could lead to an increase in incidents. Looking at these results on free and reduced lunch students, policymakers should put in effort to understand what other factors that are correlated with free and reduced lunch are also tied to the

increase in crime and how these underlying factors can be mitigated, maybe through afterschool programs, increased effort for teachers to work with parents, or simply through increased staffing of public schools.

A secondary conclusion that can be drawn from the differences model is from the percentage of gifted students variable. It can be seen that an increase in percentage of gifted students is associated with an increase in perceived safety, and a decrease for high school incidents against people. While this effect isn't as consistent as the school population effects, it is still worth investigating further. In the ordinary least squares model, higher percentages of gifted students were associated with lower incidents against people and lower drug related incidents for both middle and high schools. Furthermore, higher percentages of gifted students were associated with higher perceived safety. Combined with the differences model results, this shows that it is not only that schools with higher percentages of gifted students are inherently different, but schools that experience an increase in gifted students also experience an increase in perceived safety and a decrease in incidents. Thus, one conclusion that can be drawn is that placing magnet programs or advanced placement programs within schools can have a positive effect on the school environment and perceptions of safety, even if in reality only a minor effect on incidents. Perceptions, however, can still be important in playing a factor in how comfortable students are in a learning environment and how willing they are to engage.

While it is noteworthy that different schools and school districts may respond to increased diversity differently, it is important to consider that even if the initial response to diversity is increased incidents and chaos, there may be long term benefits to diversity. The ordinary least squares model for Miami-Dade has shown us that higher levels of diversity are associated with higher incidents and lower perceived safety, we also saw that when we looked at

the changes over times and at specific school-by-school events, the results were a lot less conclusive. This can indicate that the initial increased chaos from diversity is not a long-lived effect and that there may be benefits to students in the long run. Thus, school districts should not shy away from working towards desegregated schools. Instead, they should work to be prepared for these changes as the schools in Los Angeles, and consider the possible benefits to students down the line.

Some considerations with this research is that this study made the assumption that different racial groups do not inherently perceive safety differently, and this may not be the case. While the variable of interest in this research was the Simpson Index as a measure of diversity, it may be significant to conduct similar analysis using the separate racial categories. However, with the ever-shifting demographics in our communities, this type of research must always be careful to not draw incomplete conclusions while it is also important to study how interactions and perceptions of these interactions unfold in our social settings.

While this research has attempted to tackle some of the perception versus reality question at the school level, there is much more that can be done moving forward. For one, it would be beneficial to consider the school in the context of the neighborhood. When a boundary change occurs, which specific part of the feeder neighborhood changes? What are the demographics of that neighborhood, what patterns can be uncovered? This sort of analysis would allow researchers to study how perceptions of safety may be influenced not just by which students attend the school, but by which neighborhoods are part of the school zone. The perceptions could then be linked to actual crime statistics in the neighborhoods, et cetera.

In a different direction, similar research could also be conducted at the classroom level. In this case, a single student change could have massive implications for both behavior and the

perceptions of safety. A major difference between our work and the research done by Graham et al is that the latter also had classroom level data. This allowed the researchers to look at more nuanced changes. Since the majority of student interactions are at the classroom level, it is important to note how changes at this level affect students' perceptions of their environment. Furthermore, different measures of success could be implemented beyond just incident rates. This research could also help uncover more specific drivers for perceptions of safety. It would also be interesting to conduct this research in conjunction with analysis on academic outcomes. Do incident rates affect academic success? Are changes in perception of safety tied to changes in academic outcomes? How does diversity in the classroom affect academic success?

Thus overall, while our research has only begun to breach the surface of many complicated and interconnected questions in education, it definitely suggests that it is important for educators to be trained on working with diversity and growing student populations in schools.

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Appendix A

Andover Middle School: Incident Data

	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
ALCOHOL	0	0	0	0	0	0	0
ARSON	0	0	0	0	0	0	0
BATTERY	1	4	2	9	3	3	2
BREAKING AND ENTERING/BURGLARY	4	1	0	2	0	0	0
BULLYING/HARASSMENT	0	4	4	18	1	5	3
DISRUPTION ON CAMPUS DRUG	0	1	1	2	1	0	0
ALCOHOL	0	0	0	0	0	0	0
DRUG USE/POSSESS, EXCEPT ALCOHOL	0	1	4	1	0	1	1
FIGHTING	40	71	89	145	56	102	56
HARASSMENT			0	0	0	0	0
HAZING							0
HOMICIDE	0	0	0	0	0	0	0
KIDNAPPING	0	0	0	0	0	0	0
LARCENY/THEFT/MO VEHICLE	1	1	0	7	3	6	2
OTHER MAJOR OFFENSES	0	0	0	0	0	0	0
PHYSICAL ATTACK							0
ROBBERY	0	0	0	2	0	1	0
SEXUAL ASSAULT							0
SEXUAL BATTERY	0	0	0	0	0	0	0
SEXUAL	0	3	0	0	3	1	1
SEX OFFENSES	0	0	0	0	0	0	0
THREAT/INTIMIDATI	0	2	5	1	1	0	0
TOBACCO	1	5	6	5	3	2	5
TRESPASSING	0	1	0	1	0	1	0
VANDALISM	0	2	2	1	1	0	0
WEAPONS POSSESSION	1	2	0	0	0	1	0
SCHOOL TOTALS	48	98	113	194	72	123	70

Appendix B

SCHOOL CLIMATE SURVEY
REPORT FOR THE 2012-13 ADMINISTRATION
STUDENT FORM

SA = Strongly Agree
A = Agree
U/U = Undecided/Unknown
D = Disagree
SD = Strongly Disagree

6023-ANDOVER MIDDLE SCHOOL *Region Center: NC*

	PERCENT RESPONDING IN EACH CATEGORY									
	YOUR SCHOOL					ALL MIDDLE SCHOOLS				
	SA	A	U/U	D	SD	SA	A	U/U	D	SD
1. I feel safe at my school.	24	45	15	8	8	23	50	16	8	4
2. My school building is kept clean and in good condition.	12	25	18	24	21	11	38	19	21	12
3. Students in my school usually follow school rules.	2	20	14	33	32	4	23	28	27	18
4. There are too many students in my classroom and that affects how much I learn.	9	9	10	38	34	6	11	14	41	28
5. My teachers require that I work very hard for the grades I get.	56	31	8	1	4	45	40	10	3	2
6. My school has enough books and equipment to help me learn..	40	33	11	11	5	28	41	16	10	6
7. Food served for lunch at my school looks good and tastes good.	2	13	17	17	51	5	15	20	21	38
8. I like the choice of classes I have at this school.	22	30	14	20	13	23	37	17	14	10
My teachers: (Items 9 - 15)										
9. ... are friendly and easy to talk to.	15	41	21	16	8	22	42	21	10	6
10. ... make learning fun and interesting.	21	30	30	11	9	18	37	23	15	7
11. ... make me want to learn.	28	37	19	11	5	21	40	22	11	6
12. ... know a lot about the subjects they teach.	42	47	8	1	2	40	43	11	4	2
13. ... give me meaningful homework that helps me learn.	23	42	23	9	4	20	41	21	11	8
14. ... are interested in how I do in the future.	32	31	22	8	8	29	36	22	8	6
15. ... let me know how I am doing on my school work.	35	39	13	7	6	29	44	15	8	4
16. Violence is a problem at my school.	23	25	22	19	11	14	18	22	26	20
17. Gangs are a problem at my school.	14	12	27	18	29	8	9	20	24	39
18. Student drug and alcohol use are problems at my school.	11	13	24	19	33	9	11	21	21	38
19. My principal does a good job running the school.	35	29	23	5	7	37	34	16	6	7
20. The assistant principals are available when needed.	28	30	24	12	5	25	34	26	8	7
21. My guidance counselor helps me with school and personal problems.	24	19	41	7	9	26	28	31	7	7
22. Adults at my school care about me as an individual.	23	33	23	11	10	18	34	30	10	8
23. Adults at my school help me when I need it.	26	41	20	5	8	22	43	22	8	5
24. I like coming to my school.	21	26	27	5	22	19	35	20	11	15
25. I am getting a good education at my school.	23	53	12	5	6	29	46	16	5	3
26. The overall climate or feeling at my school is positive and helps me learn.	13	26	39	11	10	17	39	27	10	7
27. I ride a Miami-Dade County Public School bus to school and I like it.	21	12	28	18	21	11	12	44	11	21
28. The driver of my Miami-Dade County Public School bus is friendly to me.	18	10	41	11	20	12	11	50	8	19
29. Students get grades A, B, C, D, or F for the quality of their school work. What overall grade would you give to your school?	Average Grade: C+					Average Grade: B-				

Appendix C

SCHOOL	WHITE CNT	% WHITE	BLACK CNT	% BLACK	HISPANIC CNT	% HISPANIC	ASIAN CNT	% ASIAN	INDIAN CNT	% INDIAN	ISLANDER CNT	% ISLANDER	MULTI CNT	% MULTI	MALE CNT	% MALE	FEMALE CNT	% FEMALE	LEP CNT	% LEP	SWD CNT	% SWD	GIFTED CNT	% GIFTED	FREE&REDUCED CNT	% FREE&REDUCED	TOTAL MEMB
0161 AVOCADO ELEMENTARY	91	14	100	15	465	70	8	1	.	.	.	.	2	0	347	52	319	48	274	41	62	9	61	9	572	86	666
0201 BANYAN ELEMENTARY	17	4	5	1	379	94	1	0	.	.	.	.	.	.	230	57	172	43	164	41	69	17	99	25	321	80	402
0211 DR. MANUEL C. BARREIRO EL.	58	7	17	2	761	85	35	4	.	.	.	.	21	2	455	51	437	49	270	30	79	9	96	11	549	62	892
0215 LAWRENCE ACD. EL. CHARTER S	3	2	51	41	69	56	.	.	.	.	.	.	.	.	64	52	59	48	43	35	10	8	1	1	117	95	123
0231 AVENTURA WATERWAYS K-8 CNTR	511	31	344	21	755	45	42	3	3	0	1	0	7	0	861	52	802	48	305	18	121	7	187	11	795	48	1663
0241 R.K. BROAD/BAY HARBOR K-8	444	39	52	5	626	54	24	2	.	.	.	.	3	0	596	52	553	48	139	12	90	8	249	22	474	41	1149
0251 ETHEL KOGER BECKHAM EL.	19	3	1	0	706	95	14	2	1	0	.	.	.	.	373	50	368	50	206	28	89	12	136	18	544	73	741
0261 BEL-AIRE ELEMENTARY	29	6	240	48	210	42	17	3	2	0	2	0	1	0	253	50	248	50	86	17	57	11	15	3	467	93	501
0271 BENT TREE ELEMENTARY	26	5	9	2	521	90	6	1	.	.	.	.	14	2	308	53	268	47	217	38	97	17	91	16	446	77	576
0311 GOULDS ELEMENTARY SCHOOL	4	1	330	62	151	28	6	1	.	.	.	.	41	8	284	53	248	47	66	12	68	13	18	3	507	95	532
0312 MATER GARDENS ACADEMY	30	7	10	2	386	90	5	1	.	.	.	.	.	.	218	51	213	49	97	23	19	4	.	.	240	56	431
0321 BISCAYNE ELEMENTARY	71	8	55	6	727	83	15	2	.	.	.	.	3	0	453	52	418	48	338	39	108	12	97	11	785	90	871
0332 SOMERSET ACADEMY (SILVER PA	61	6	78	7	888	85	9	1	2	0	.	.	12	1	527	50	523	50	184	18	37	4	3	0	835	80	1050
0339 SOMERSET ACADEMY CHARTER EL	49	18	31	12	181	68	5	2	.	.	.	.	2	1	139	52	129	48	56	21	4	1	1	0	164	61	268
0341 ARCH CREEK ELEMENTARY SCH.	9	1	555	89	54	9	.	.	1	0	.	.	2	0	325	52	296	48	246	40	35	6	21	3	586	94	621
0342 PINECREST ACADEMY (SO. CMP)	60	6	3	0	917	92	16	2	.	.	.	.	.	.	508	51	488	49	176	18	30	3	.	.	512	51	996

Appendix D

Boundary Changes in Middle Schools

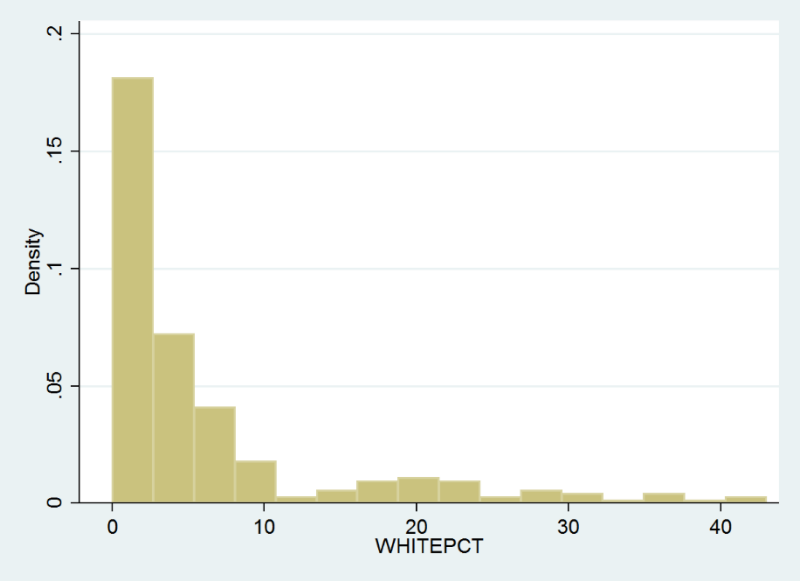
Year	School
2009	Andover
2009	Henry H. Filer
2009	Hialeah
2009	Hialeah Gardens
2009	Lamar Louise Curry
2009	Norland
2009	North Miami
2009	Palm Springs
2009	Paul W. Bell
2009	W. R. Thomas
2010	Andover
2010	Canosa
2010	Norland
2010	W. R. Thomas
2012	Dario
2012	Thomas Jefferson
2012	Lamar Louise Curry
2012	Miami Lakes
2012	North Dade
2012	Palm Springs
2012	Redland
2013	Carol City
2013	Jose Diego
2013	Norland

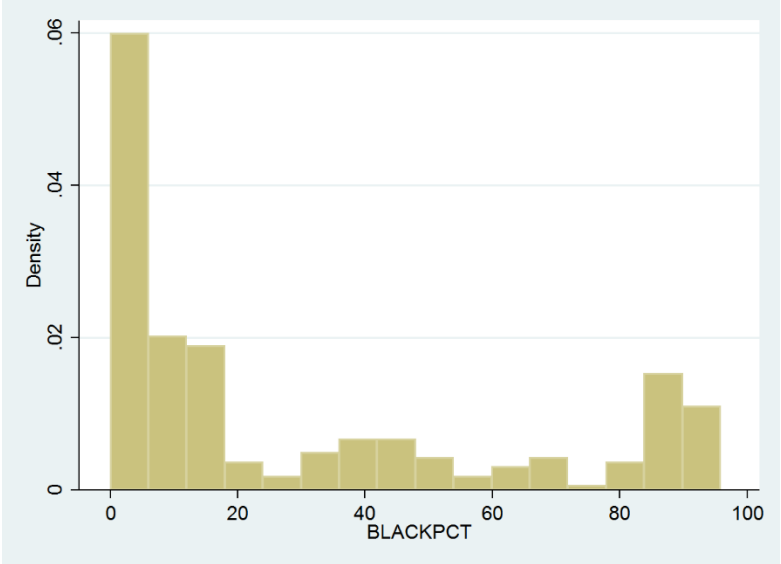
Boundary Changes in High Schools

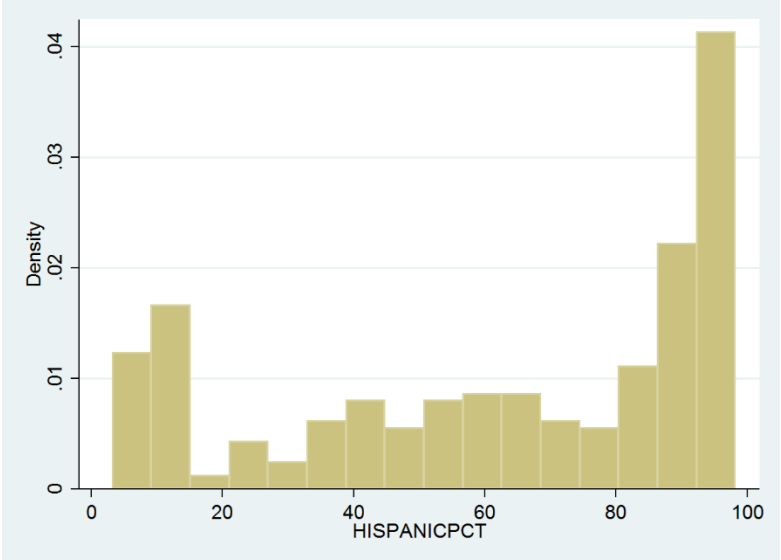
Year	School
2009	American
2009	Hialeah Gardens
2009	Miami Springs
2010	Dr. Michael M. Krop
2010	North Miami
2010	North Miami Beach

Appendix E

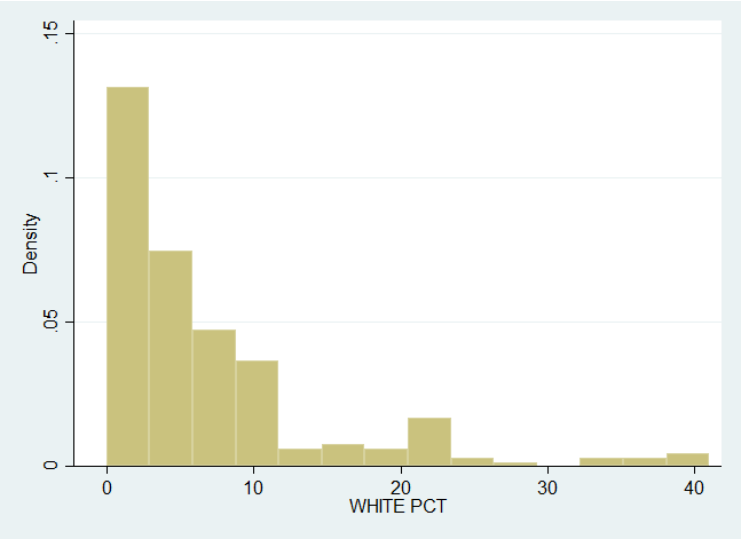
Middle Schools

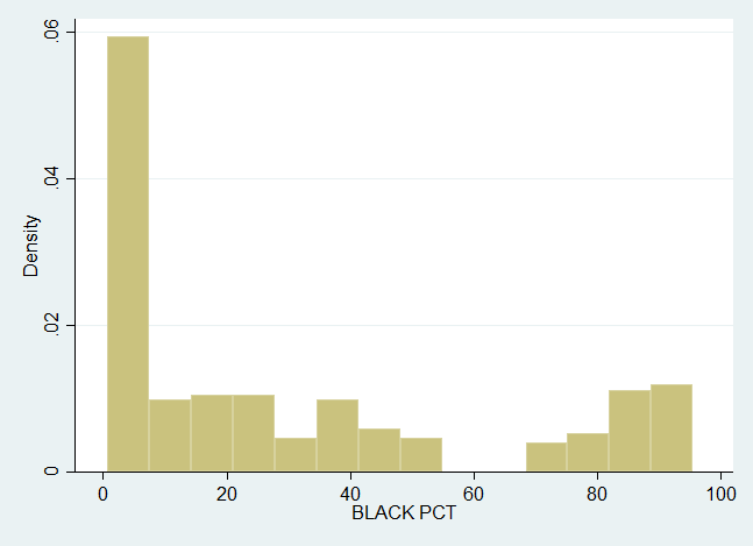


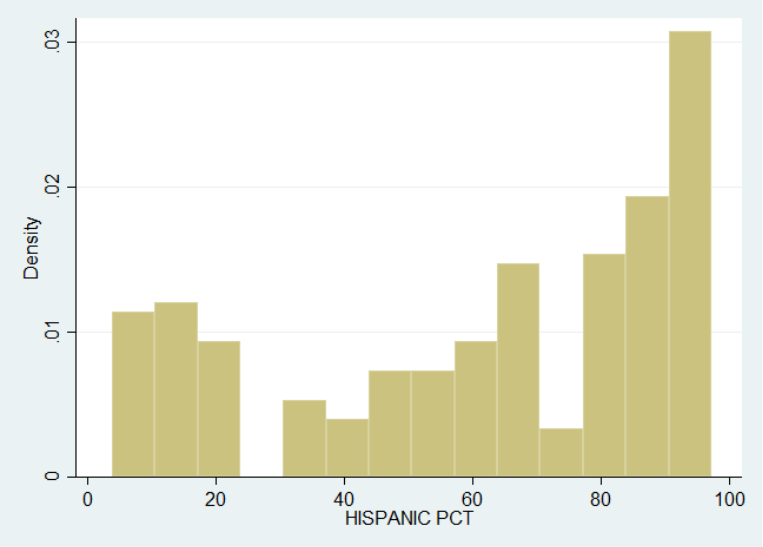




High Schools

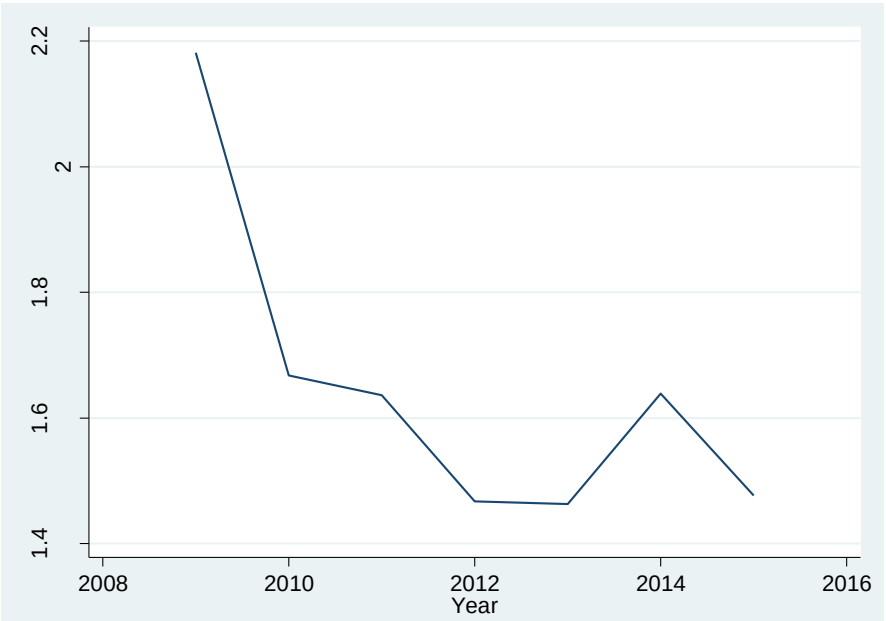


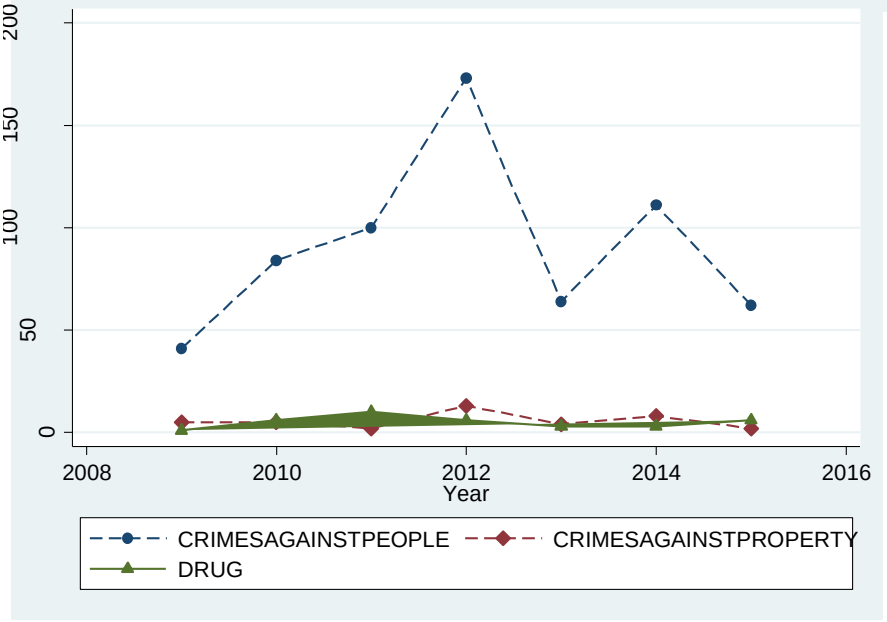


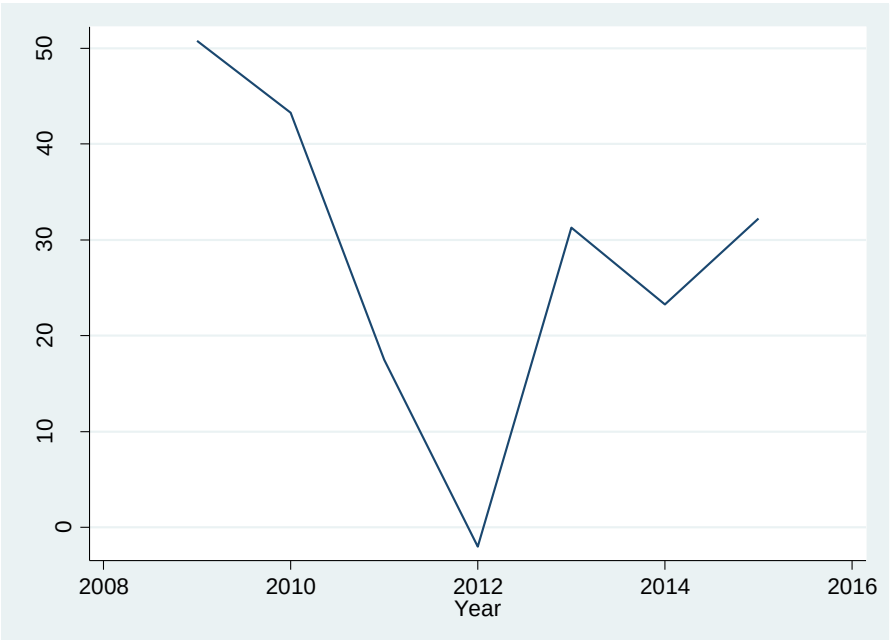


Appendix F: Middle Schools

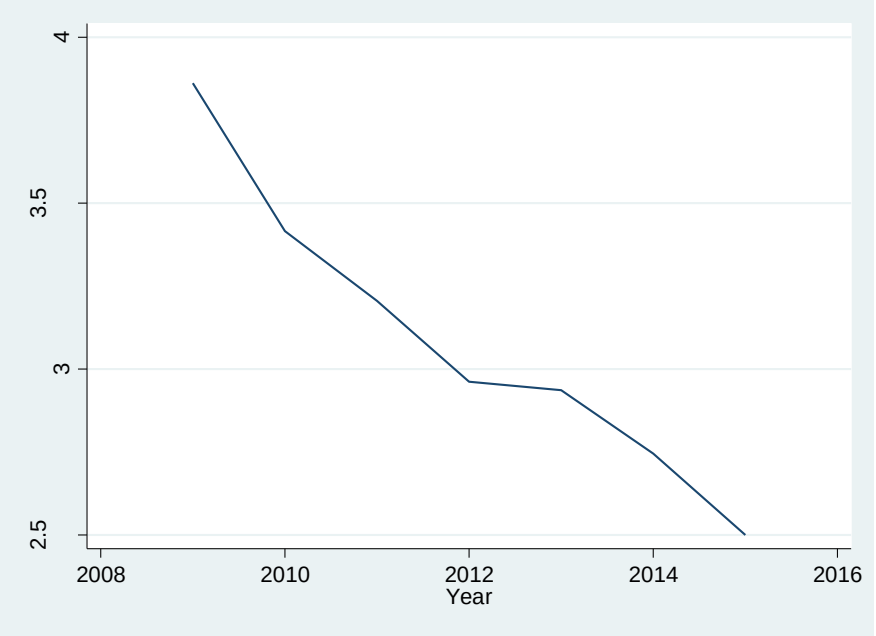
Andover

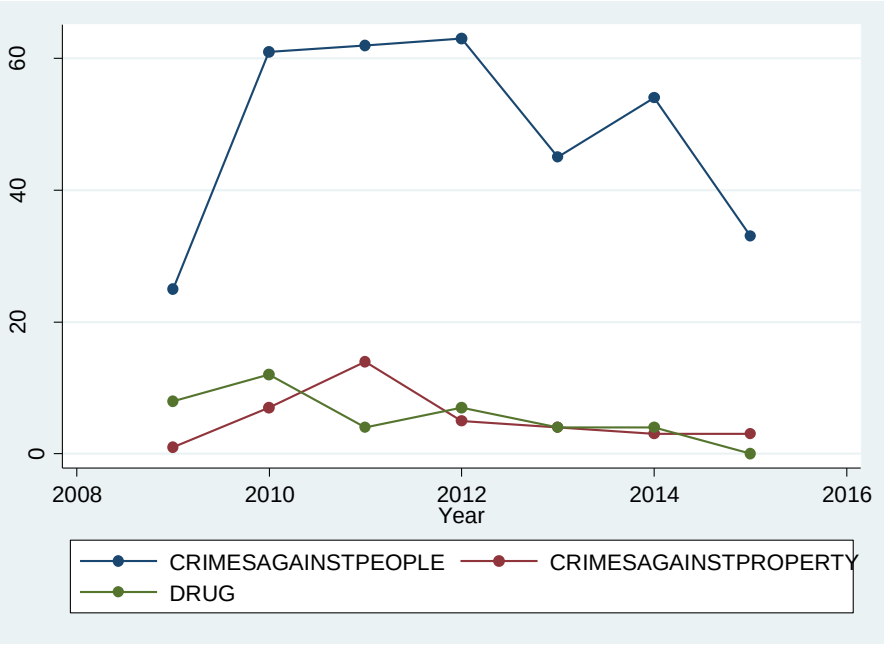


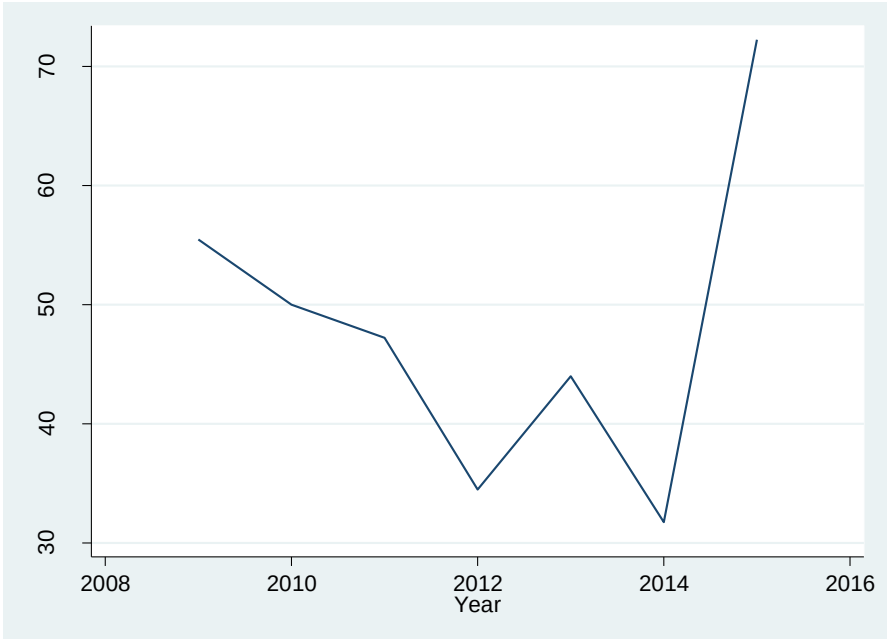




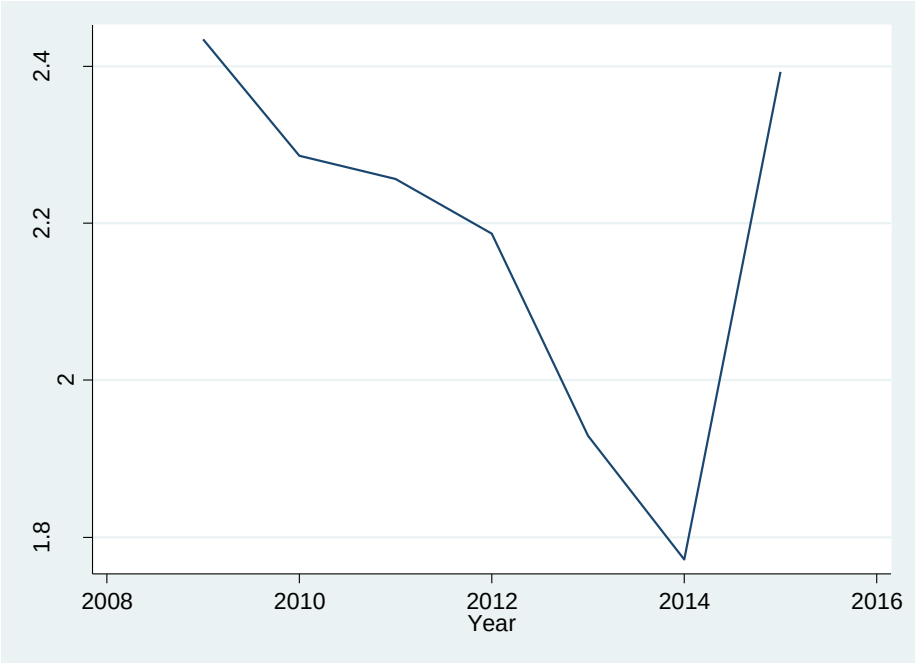
Jorge Mas Canosa







Carol City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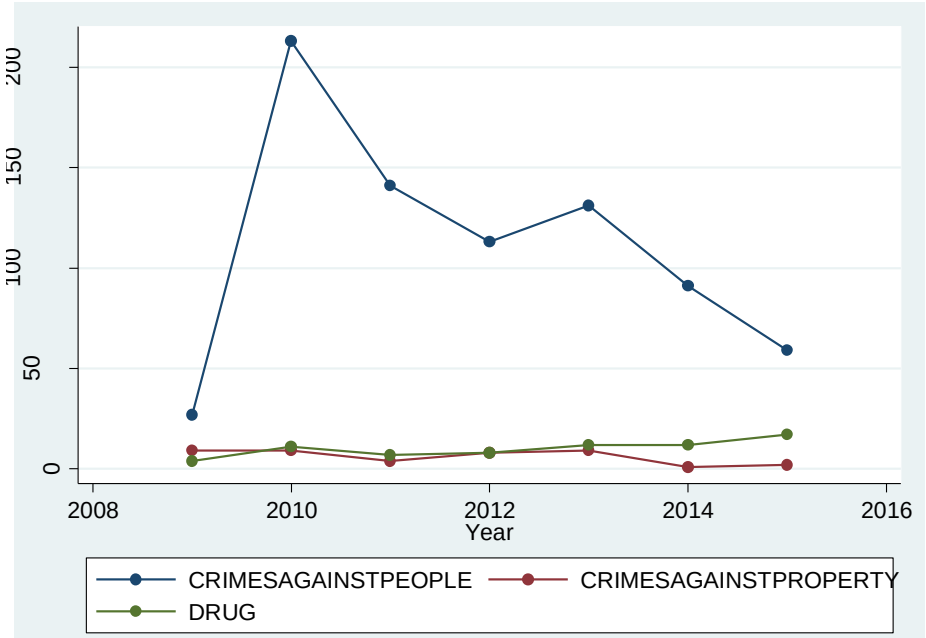
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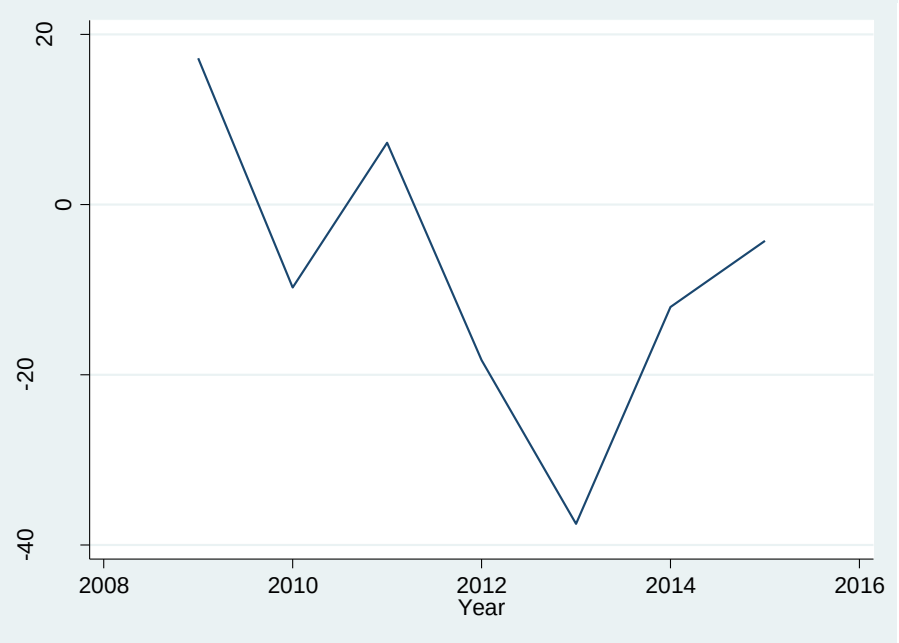
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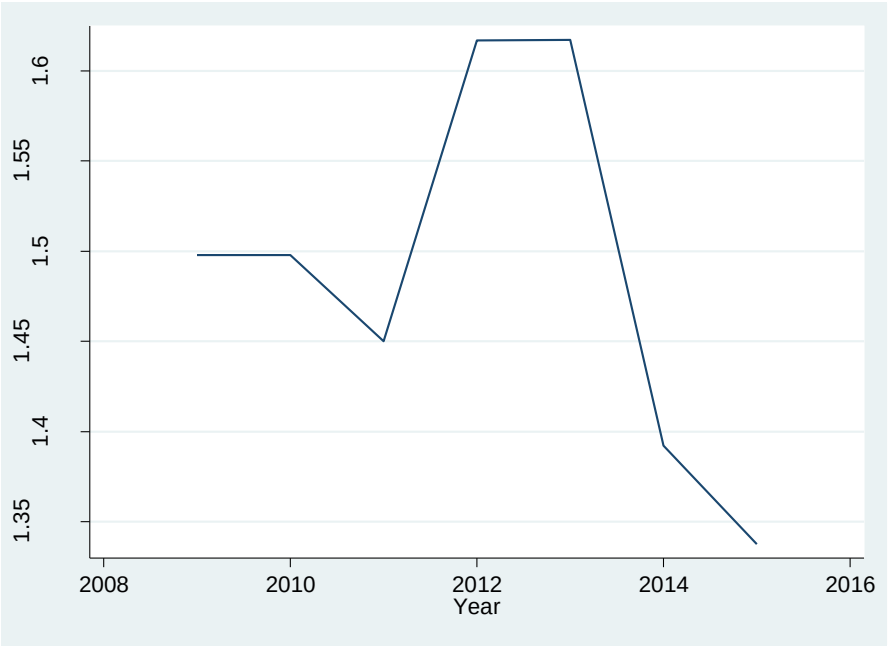
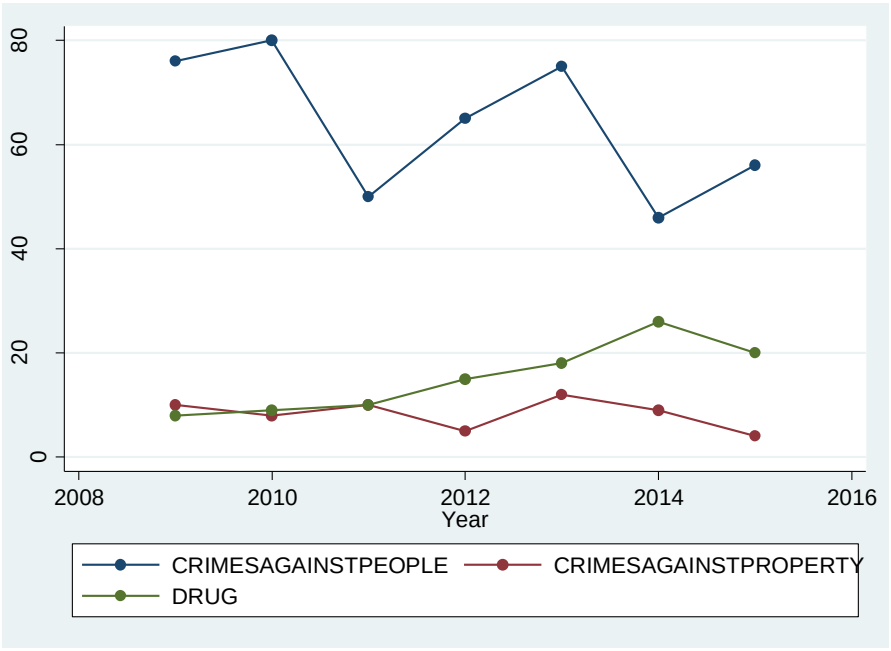
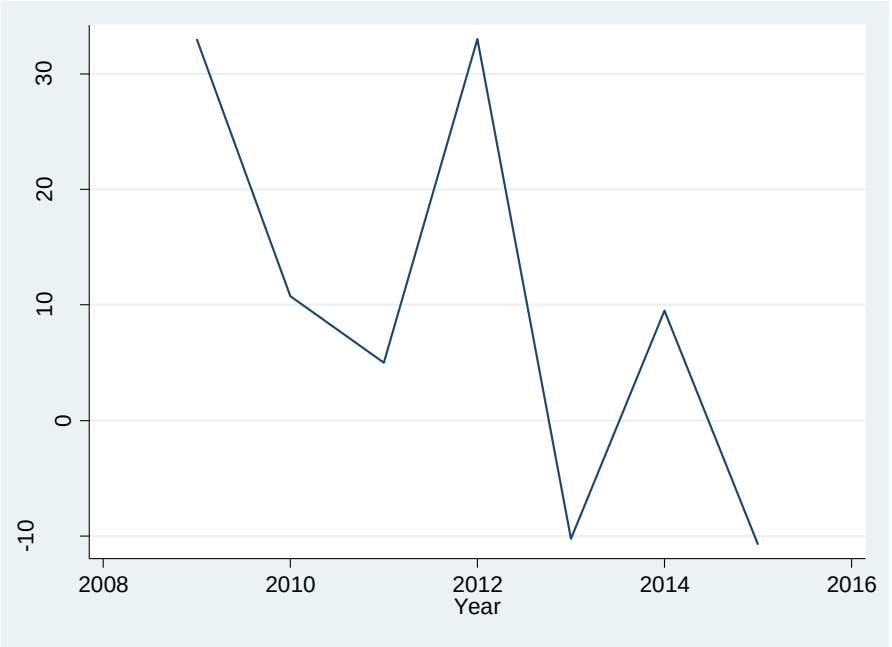
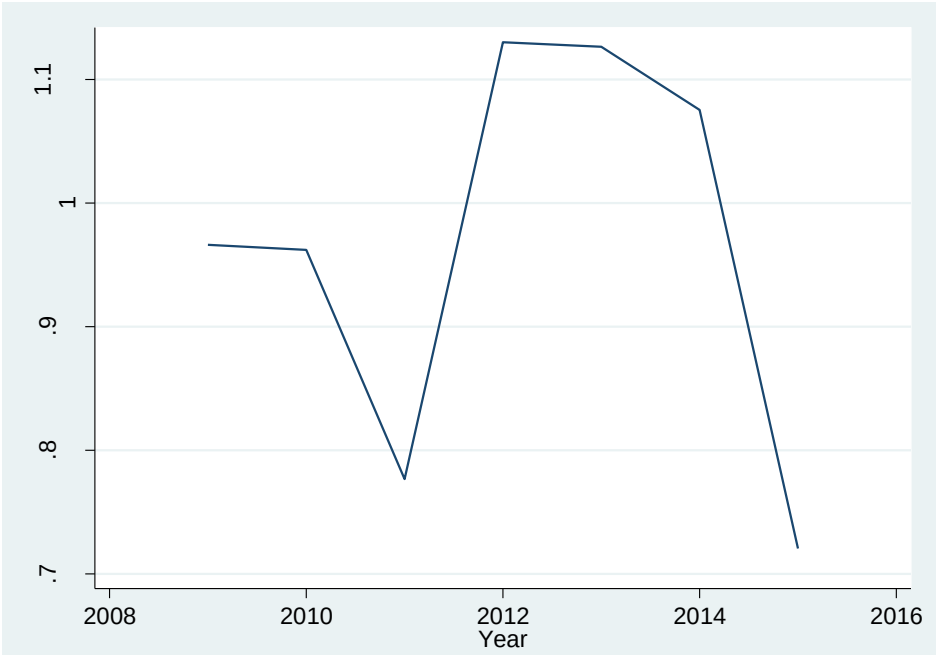






Ruben Dario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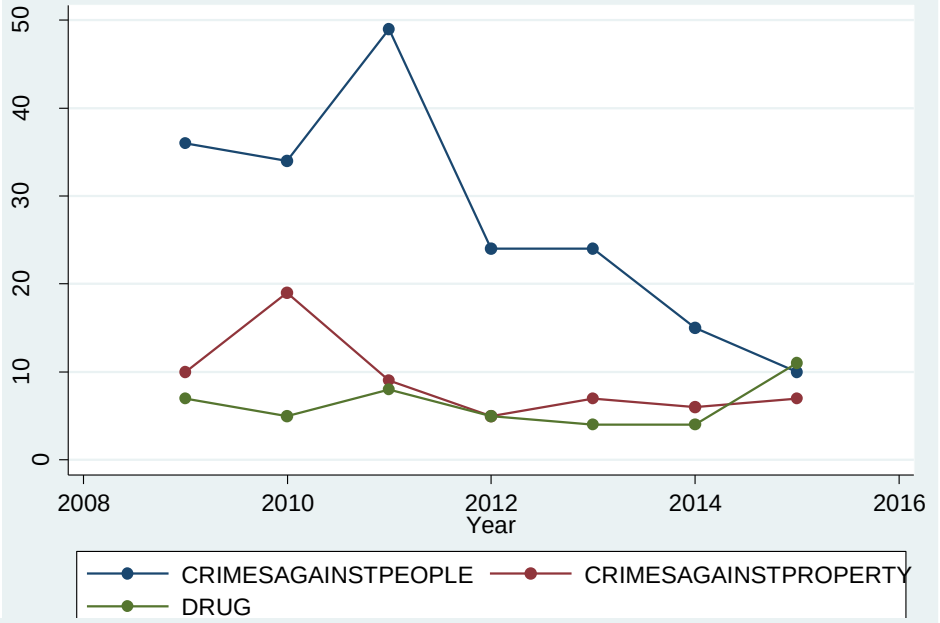
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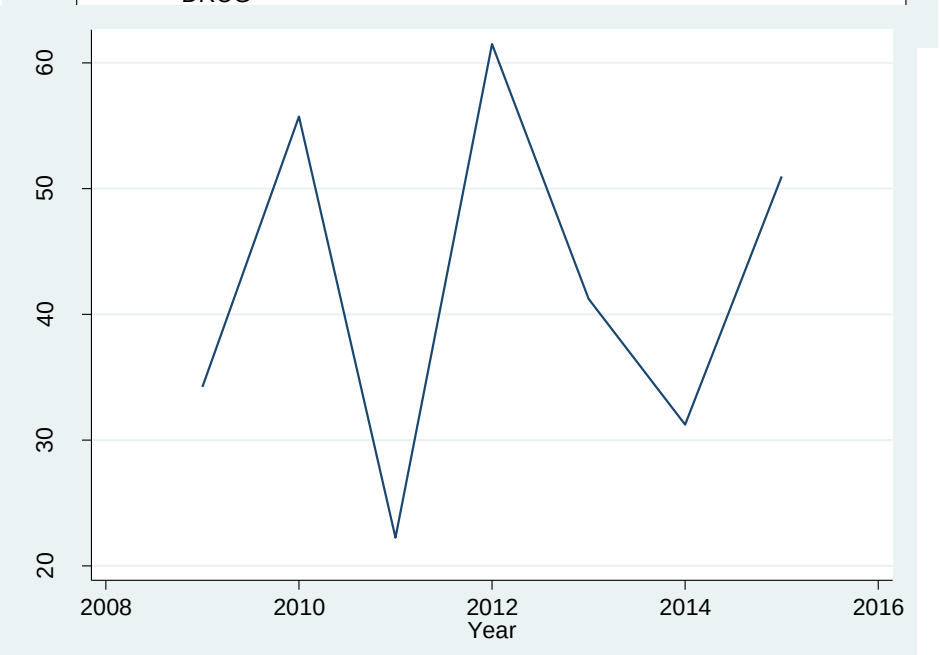
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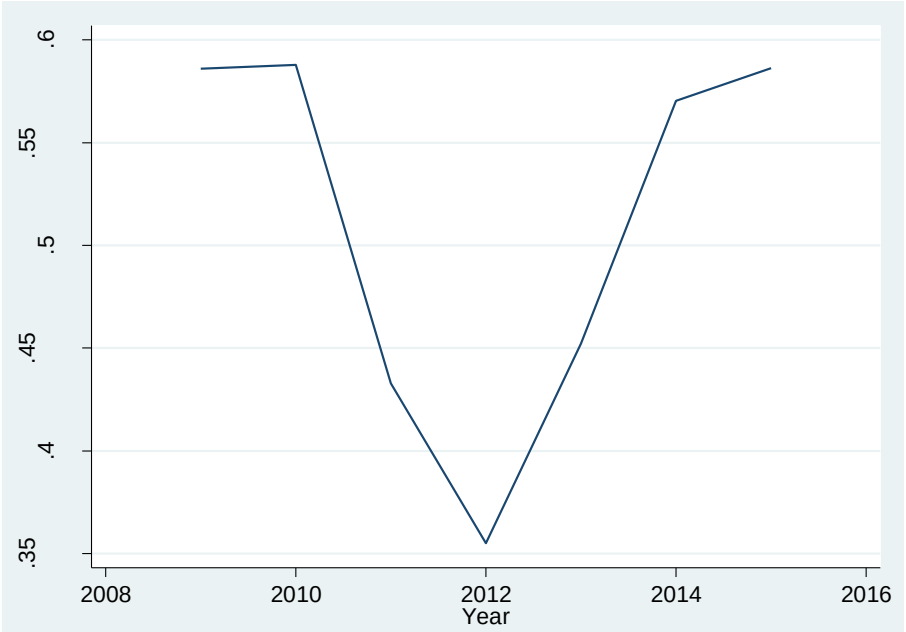
Henry Filer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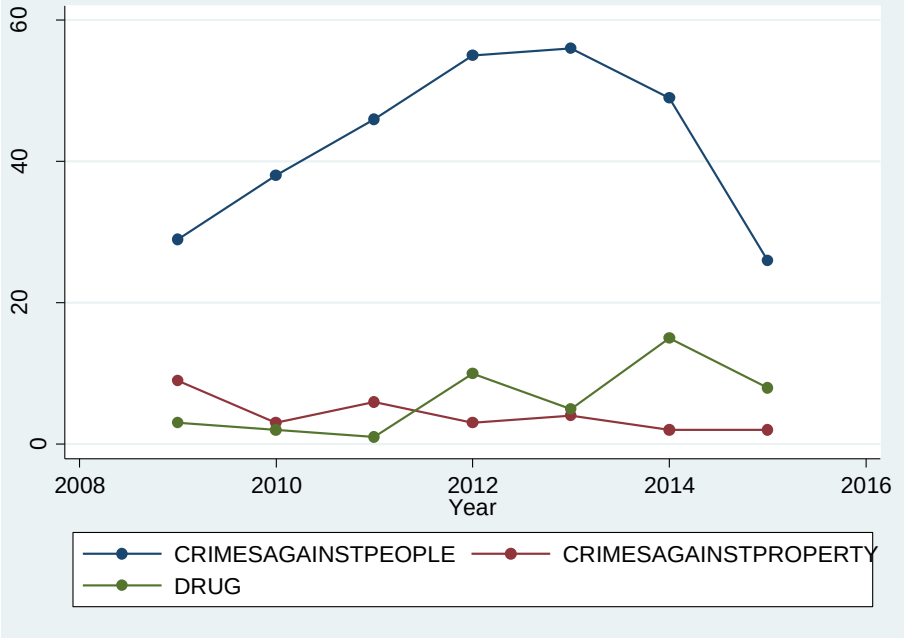
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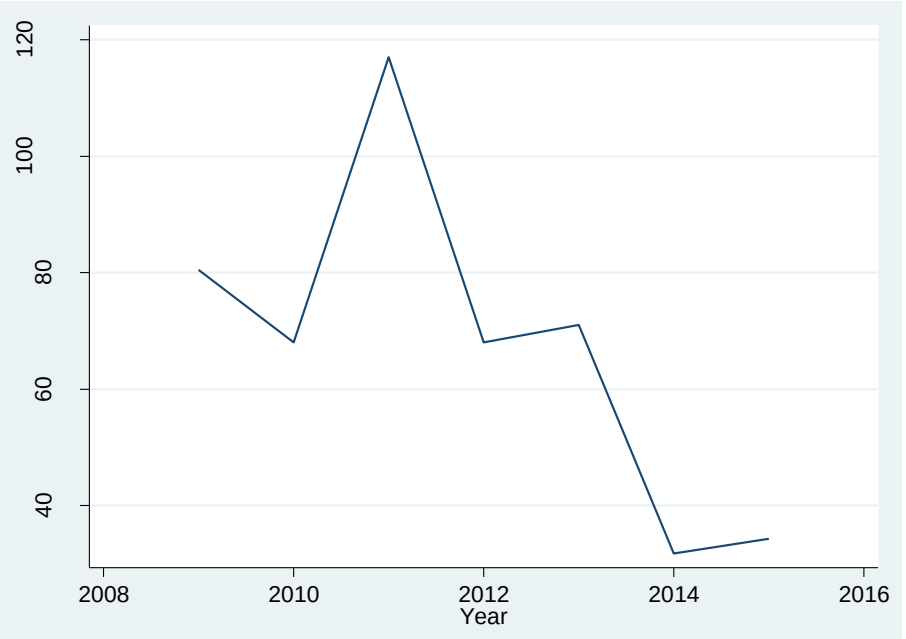
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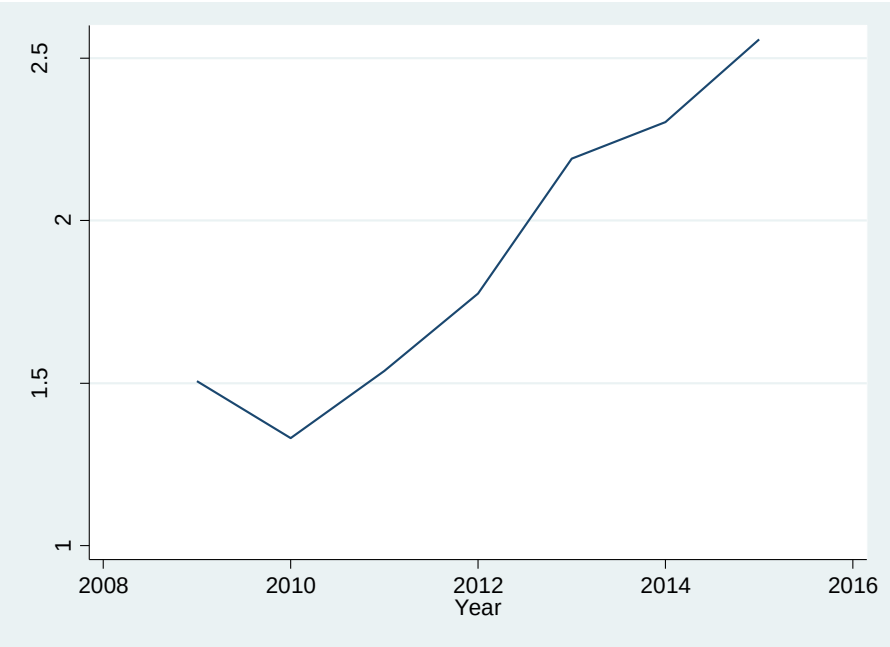
Hialeah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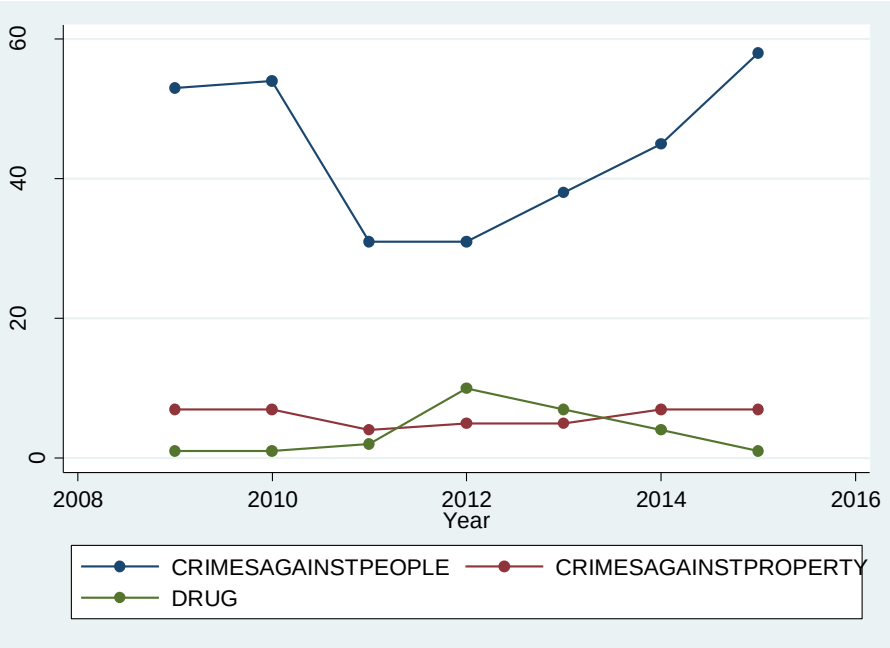
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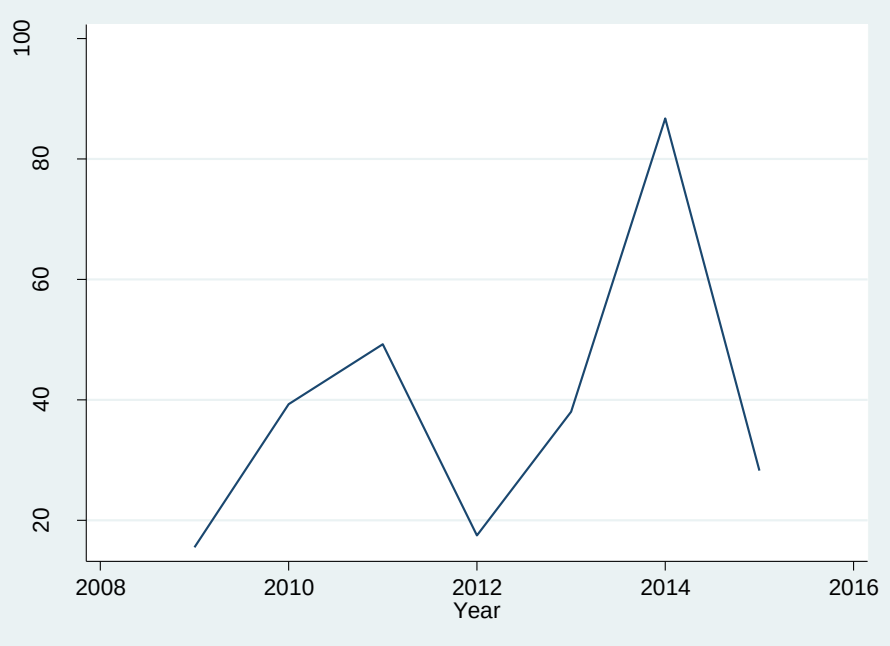
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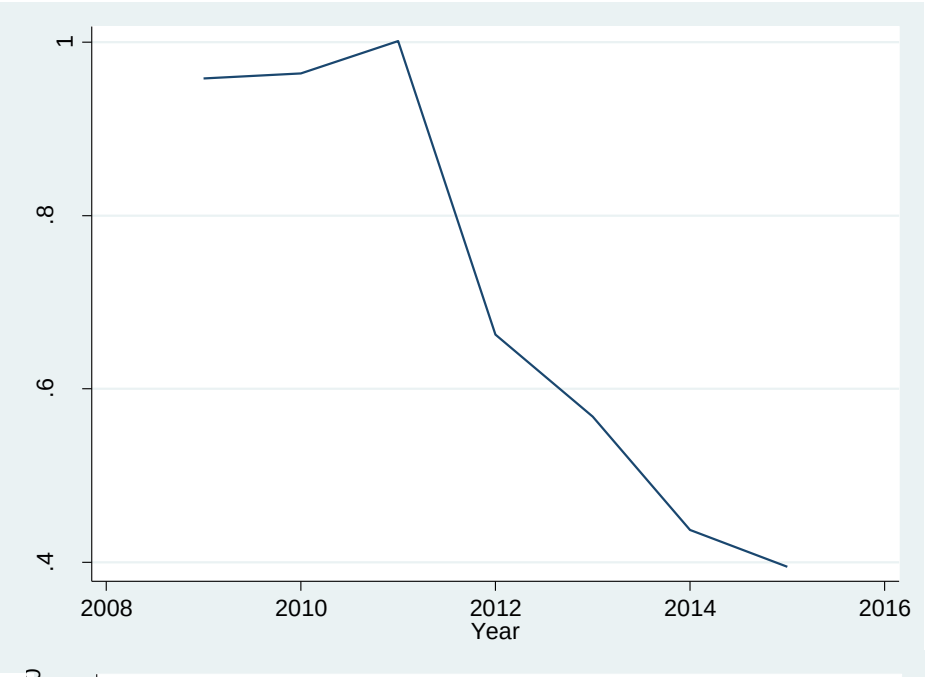
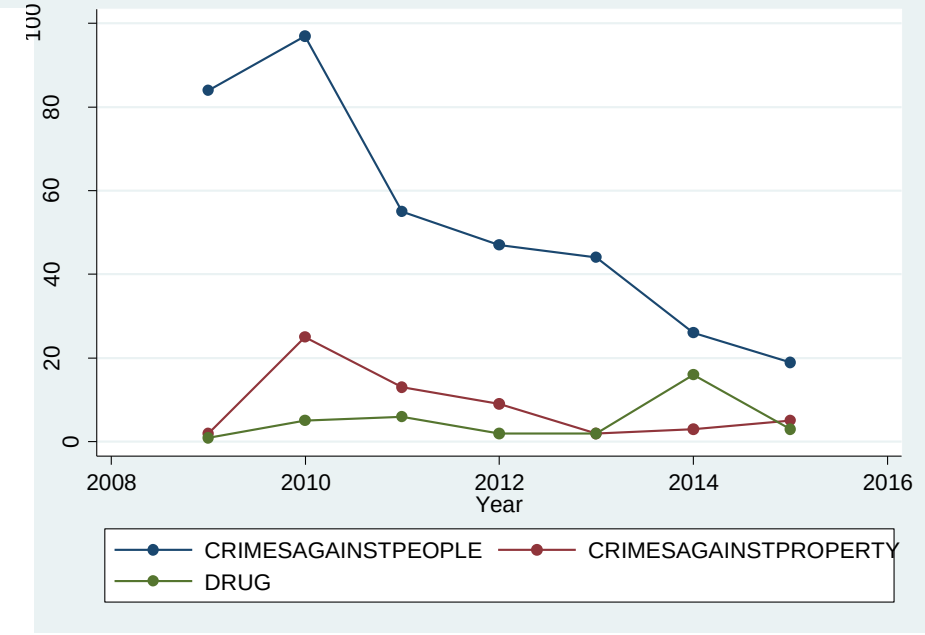
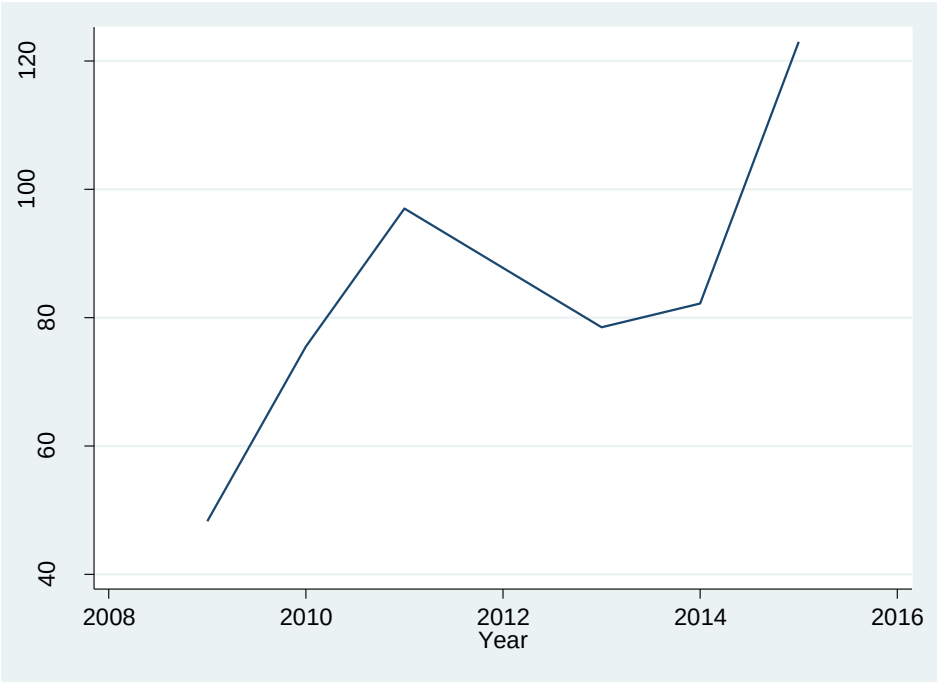
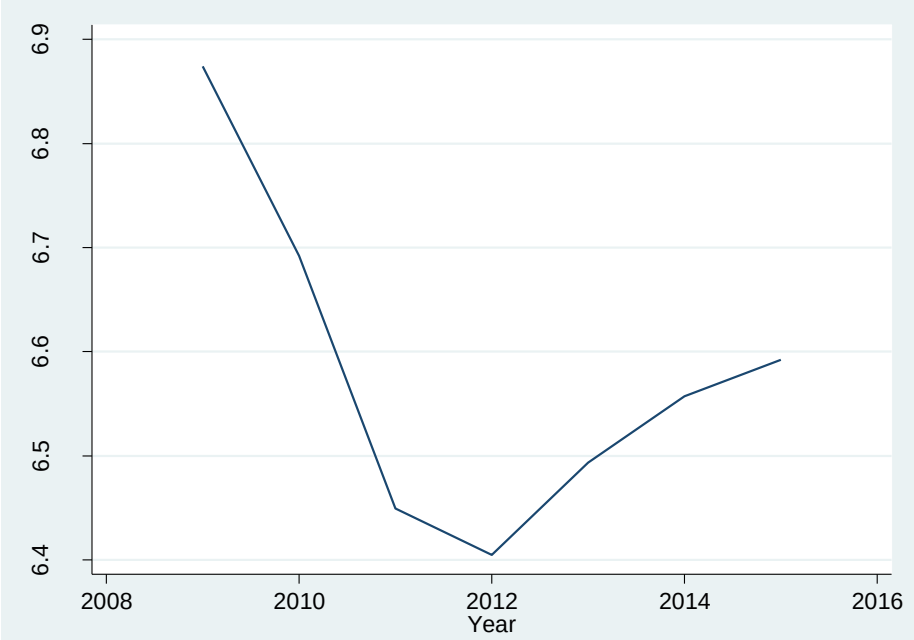
Hialeah Gardens







Highland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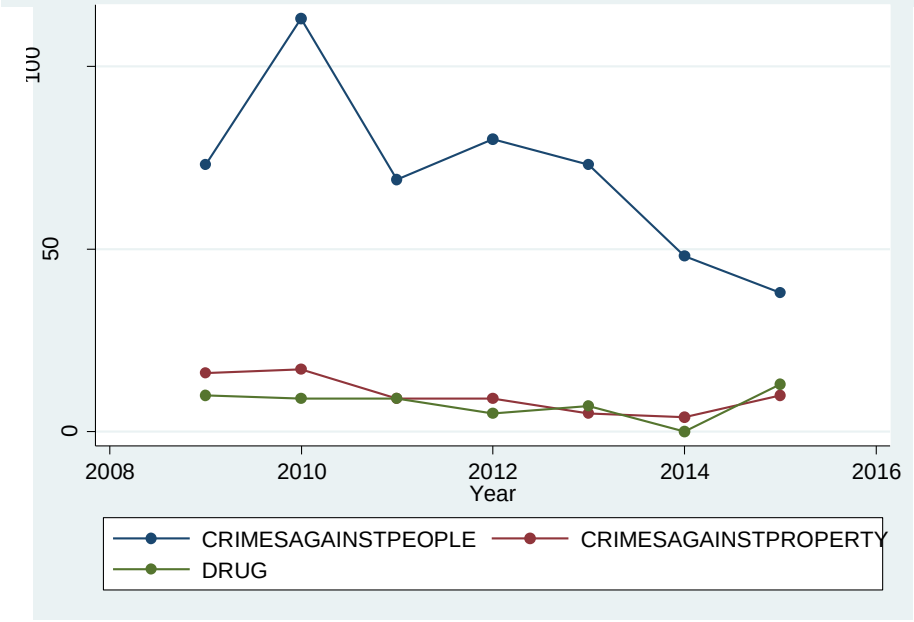
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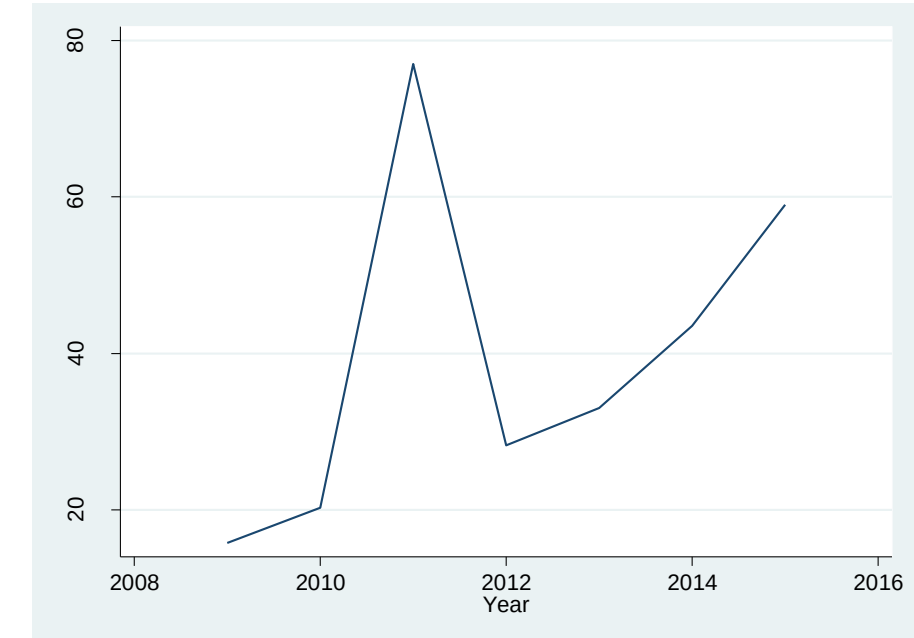
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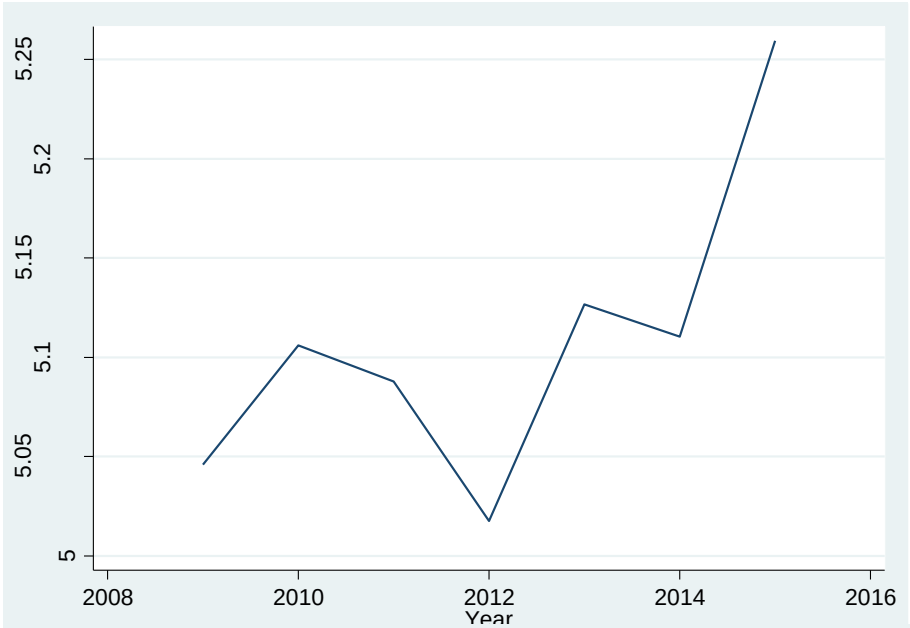
Homestead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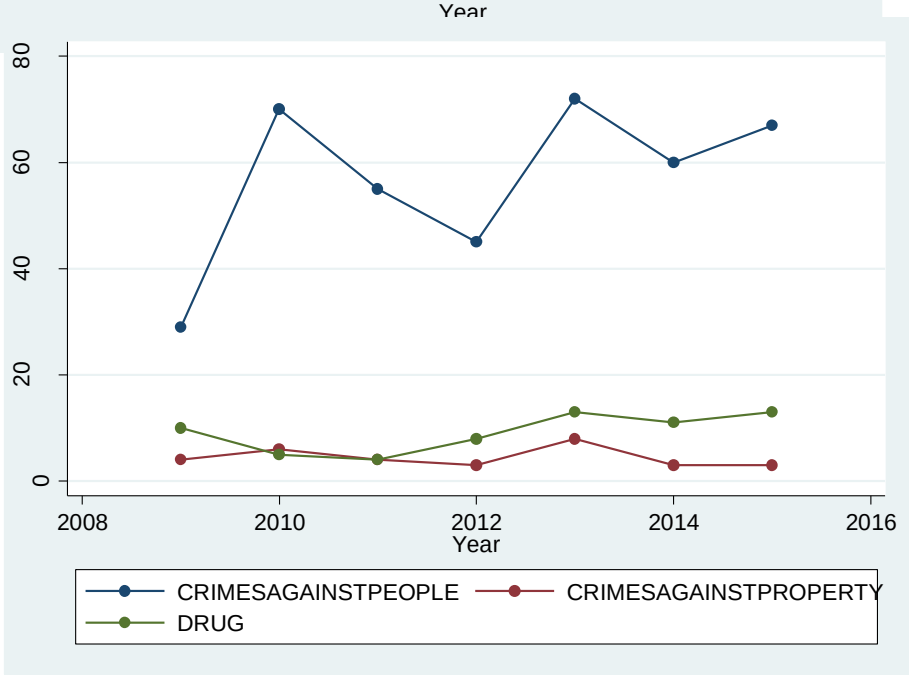
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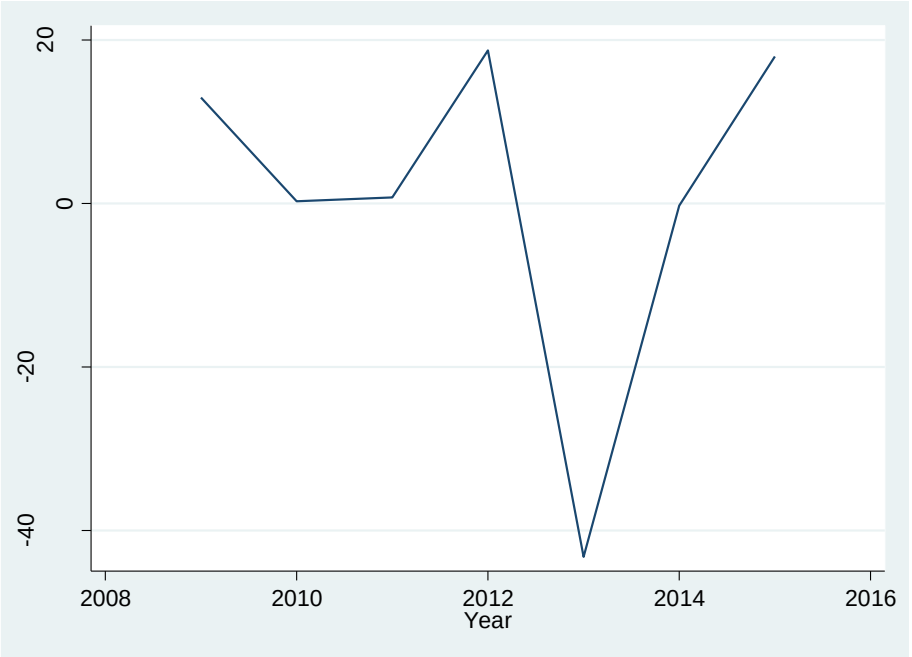
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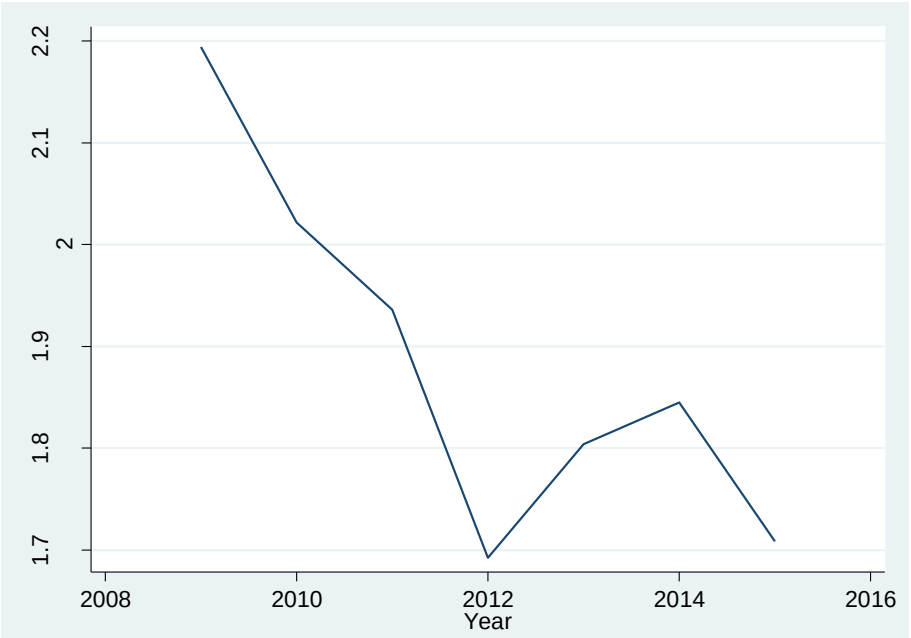
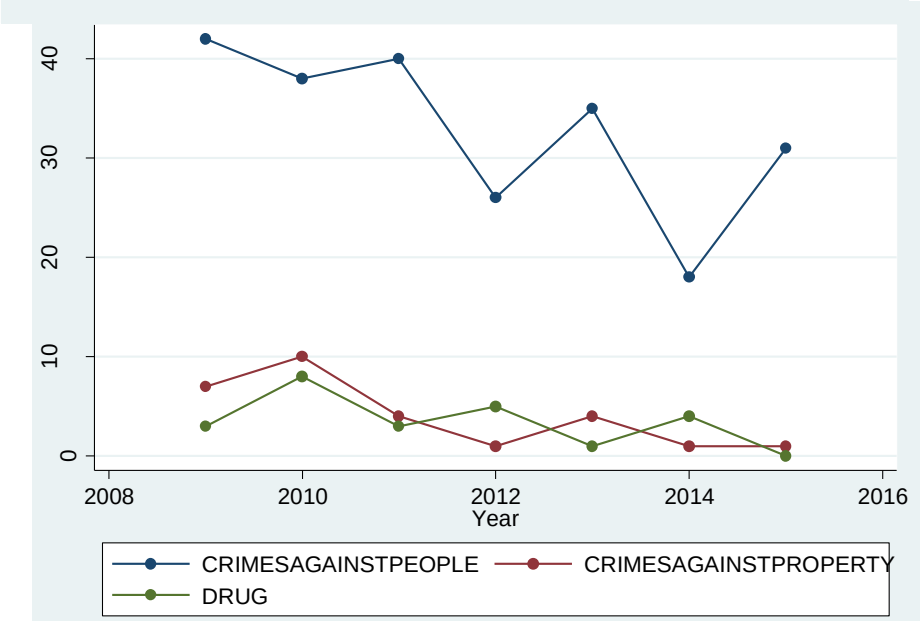
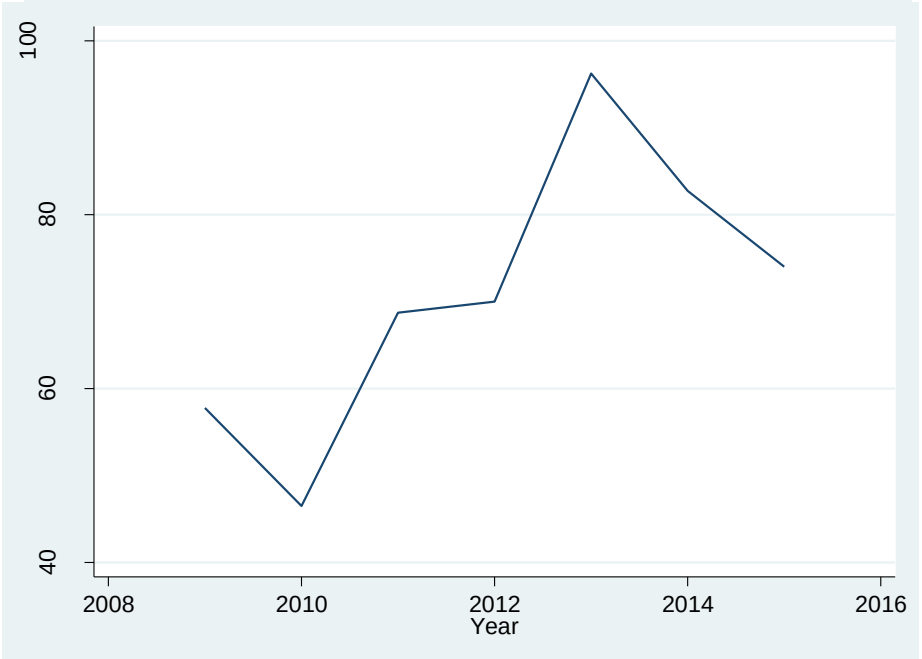
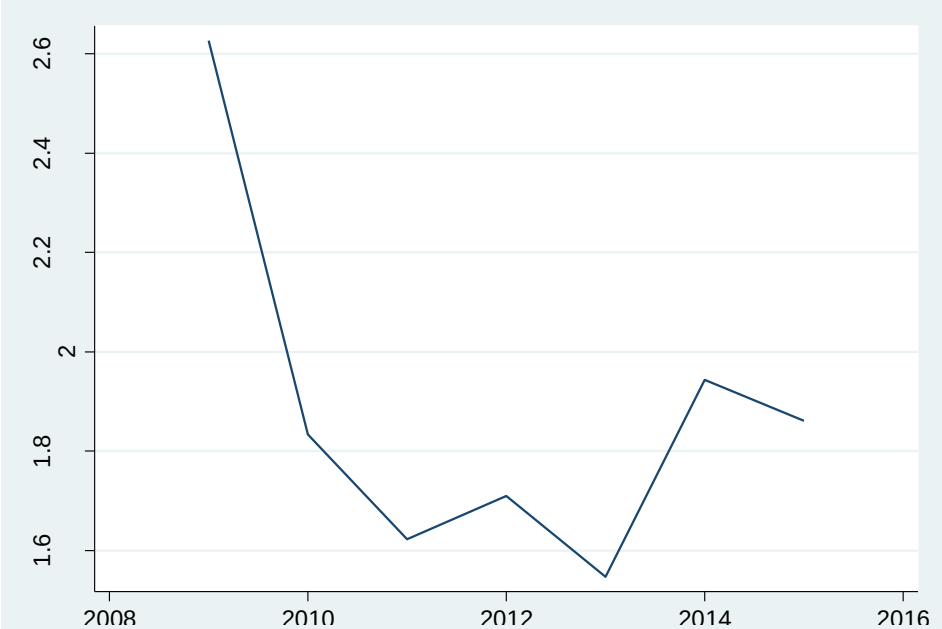
Howard D. McMillan

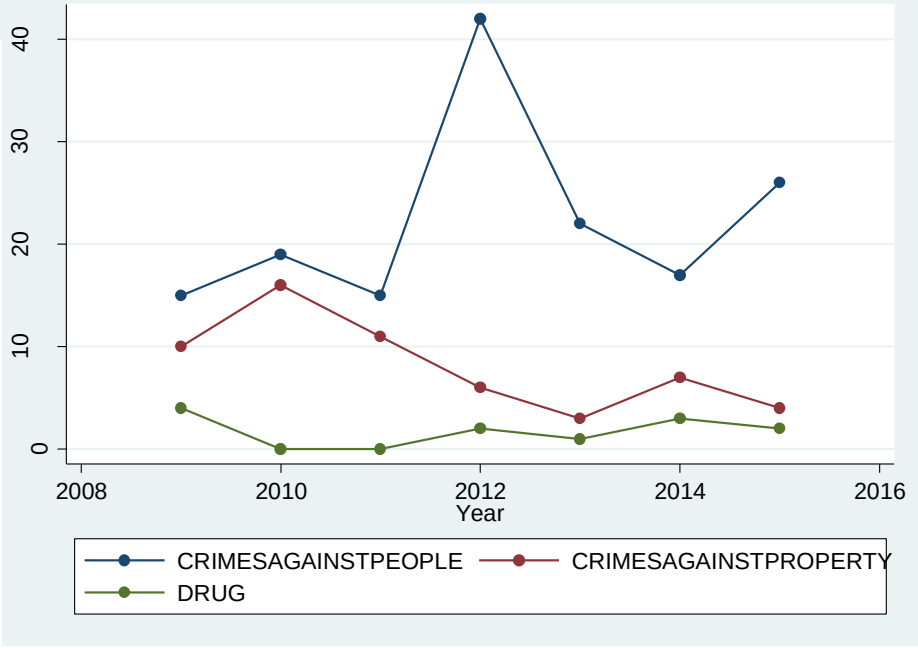


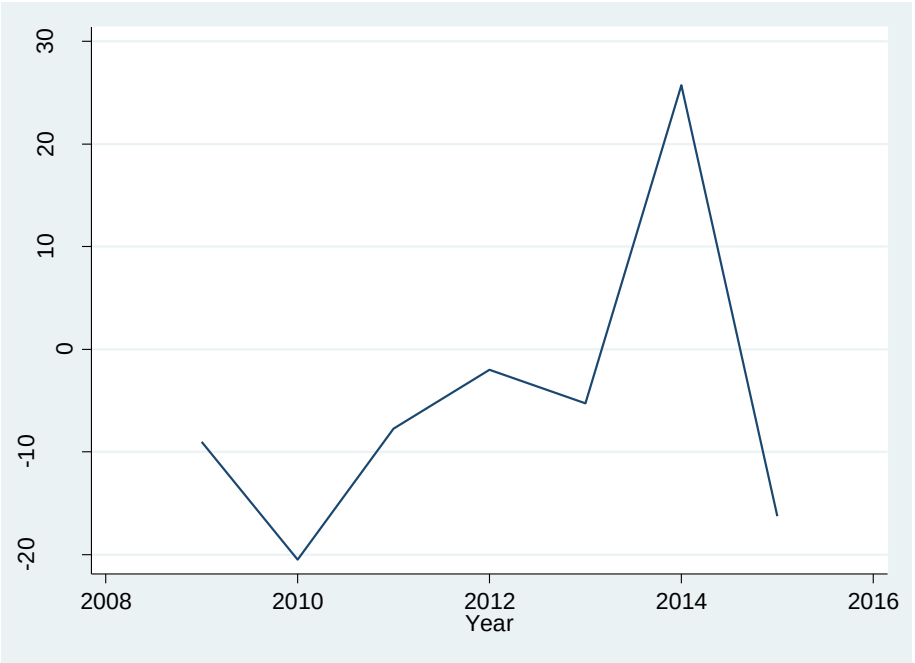




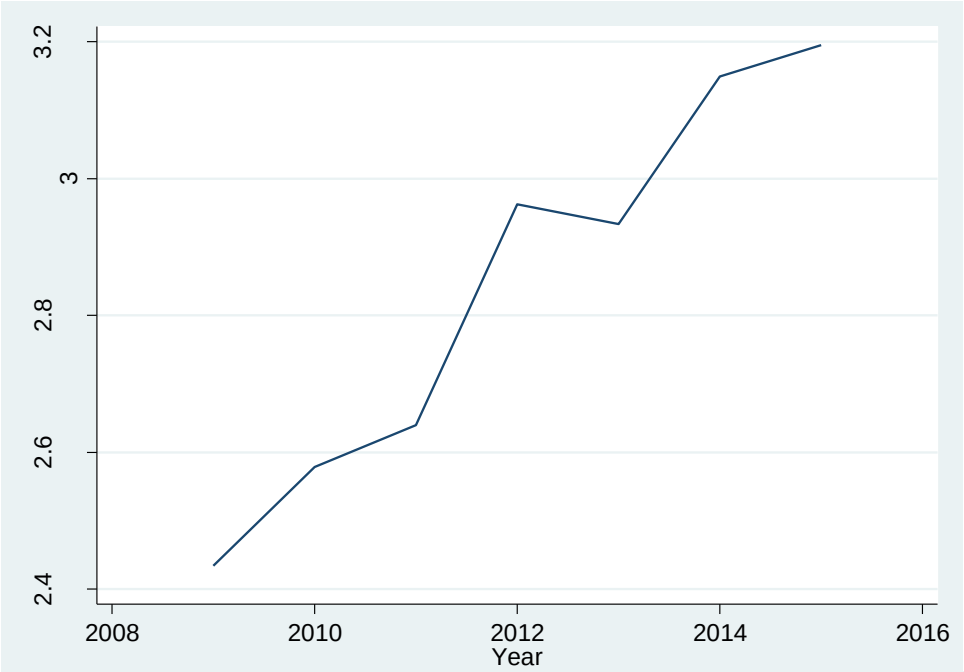
Thomas Jefferson







Horace Mann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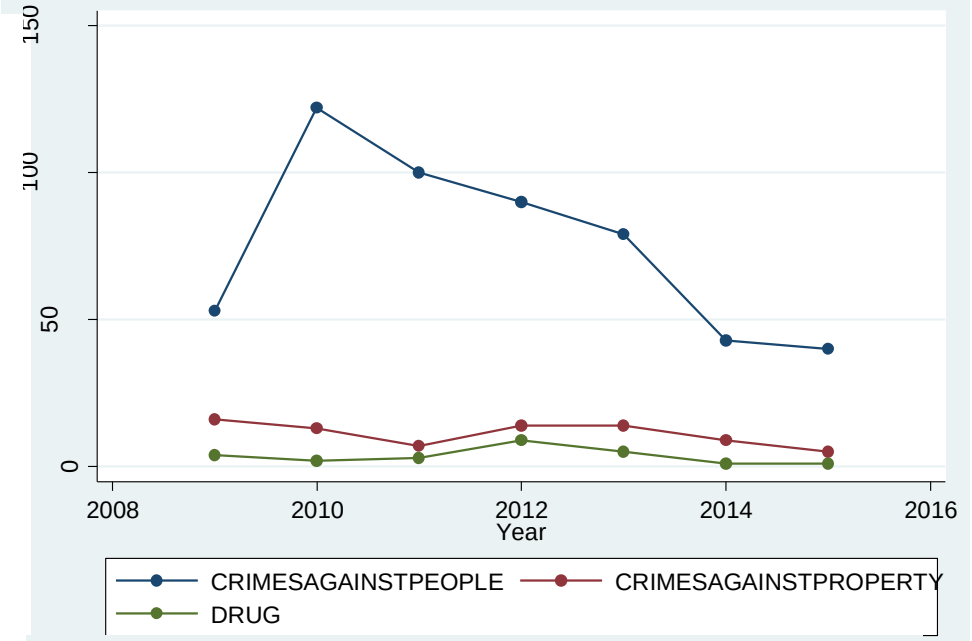
Year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2016
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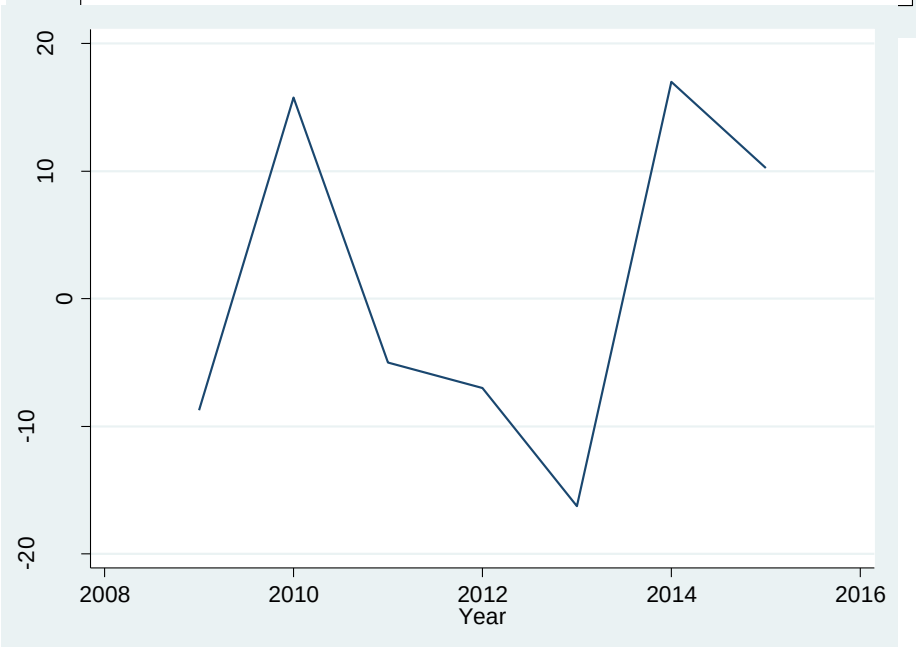
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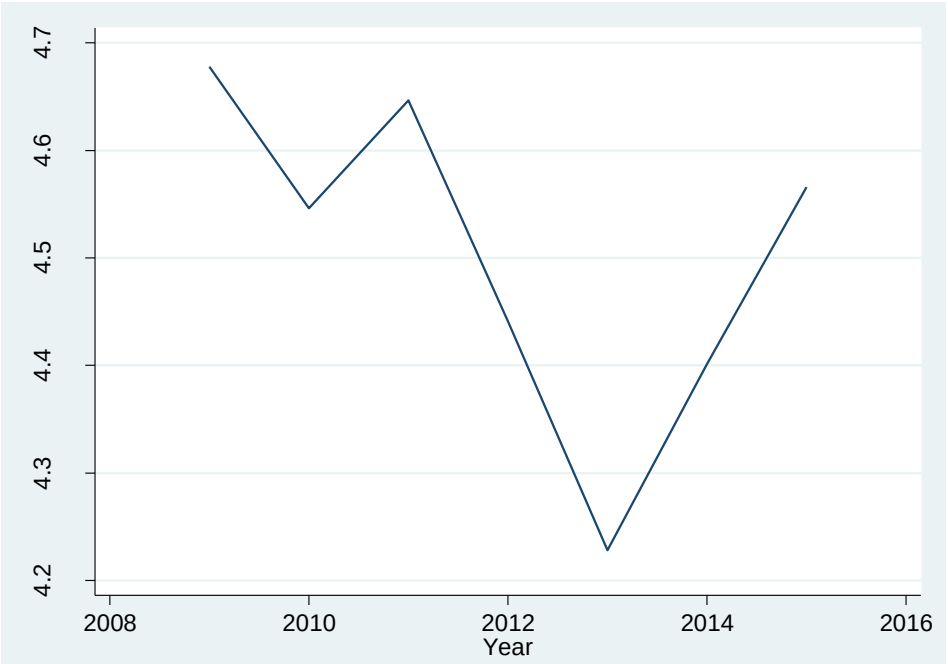
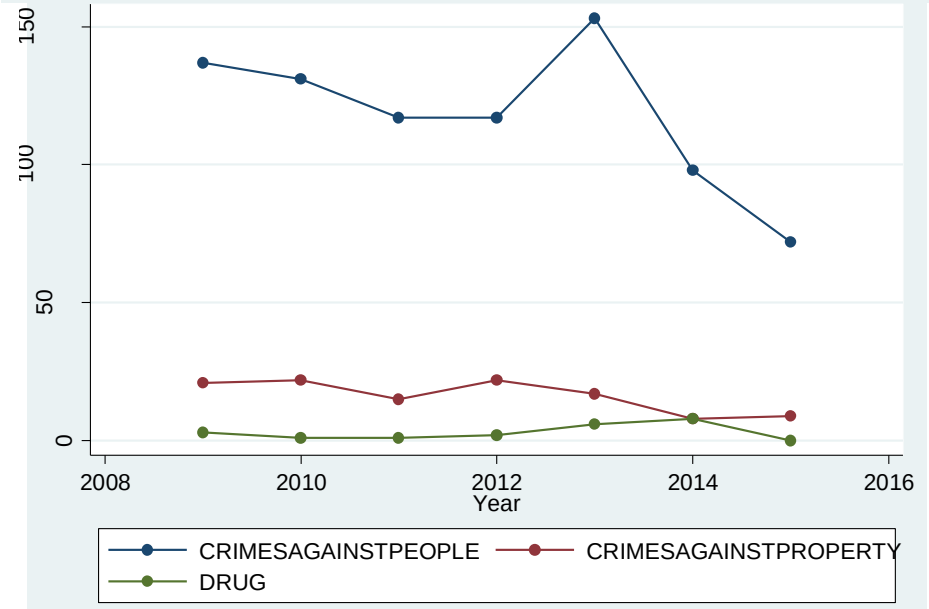
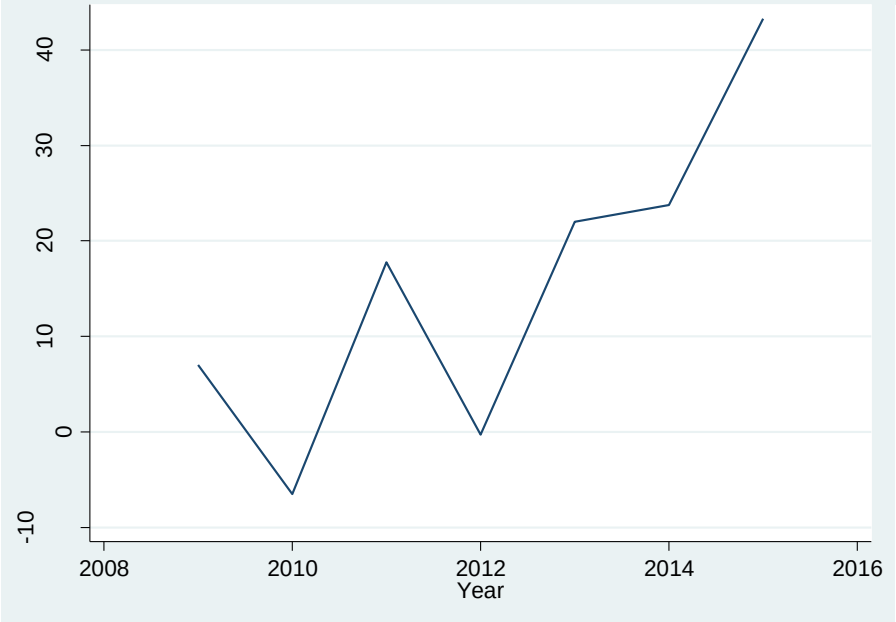
2016
Year

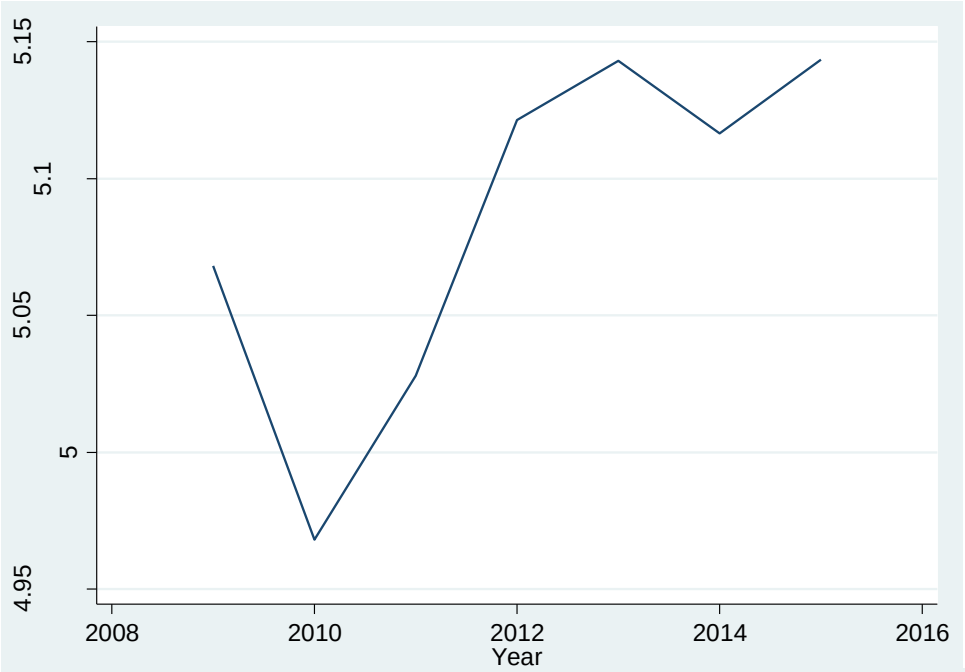
John F. Kennedy

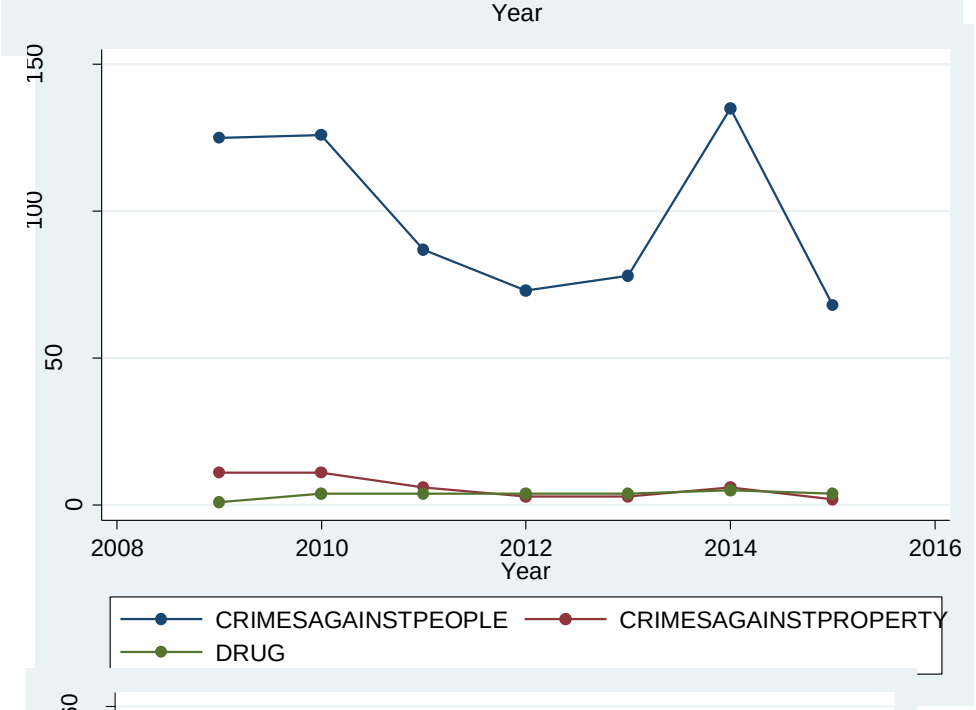


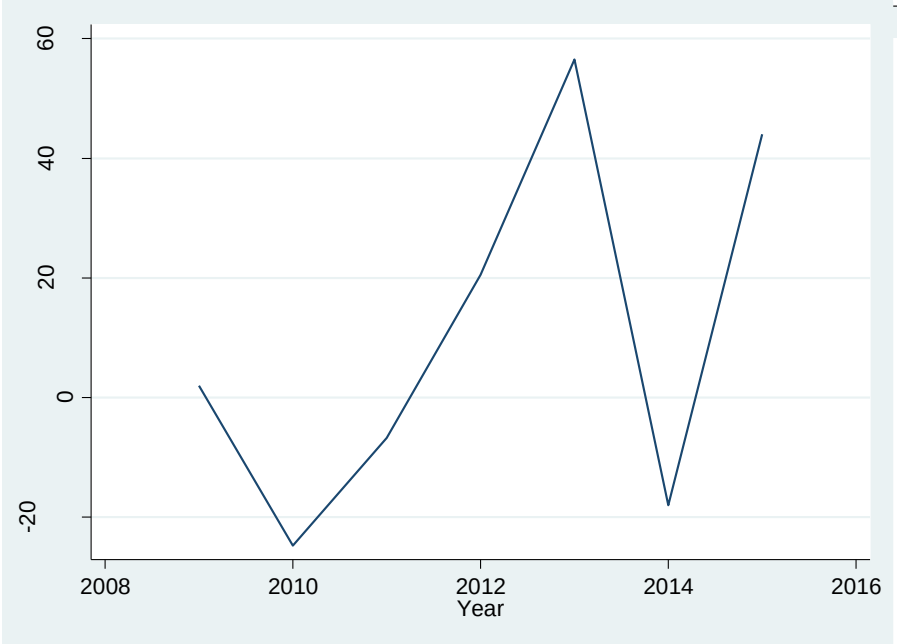




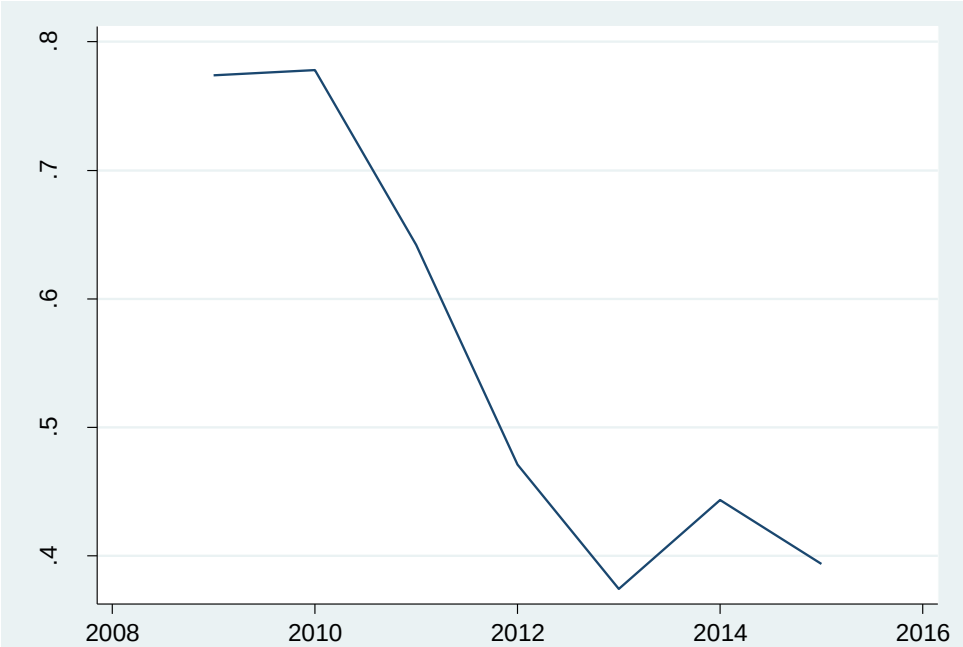
Jose de Diego

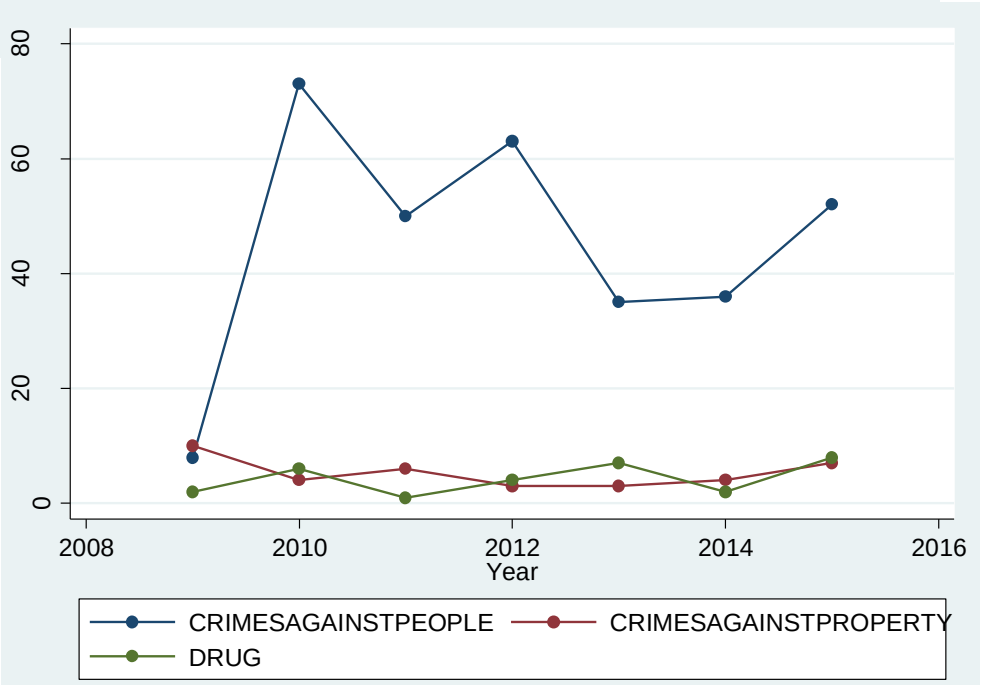


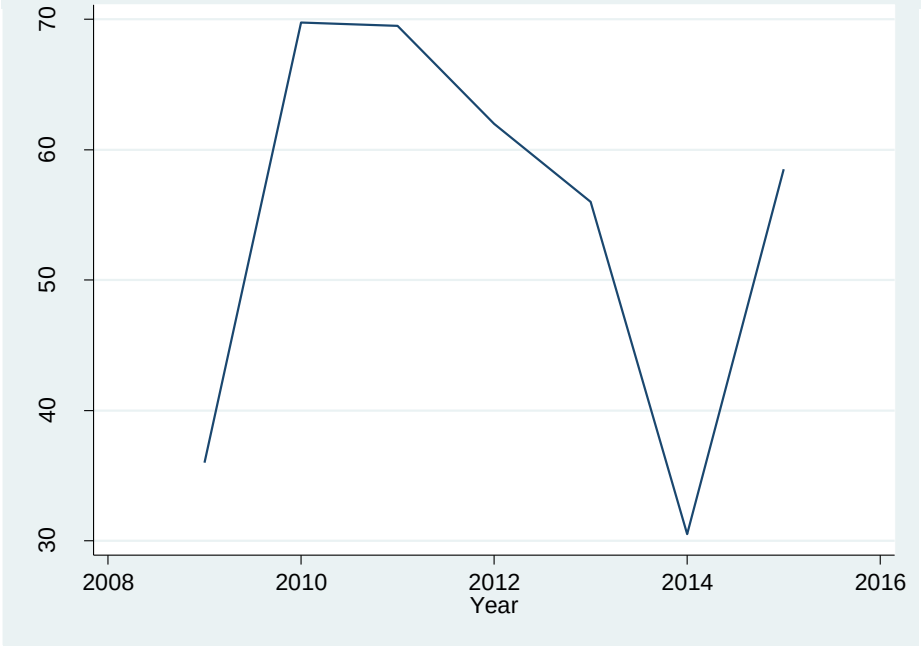




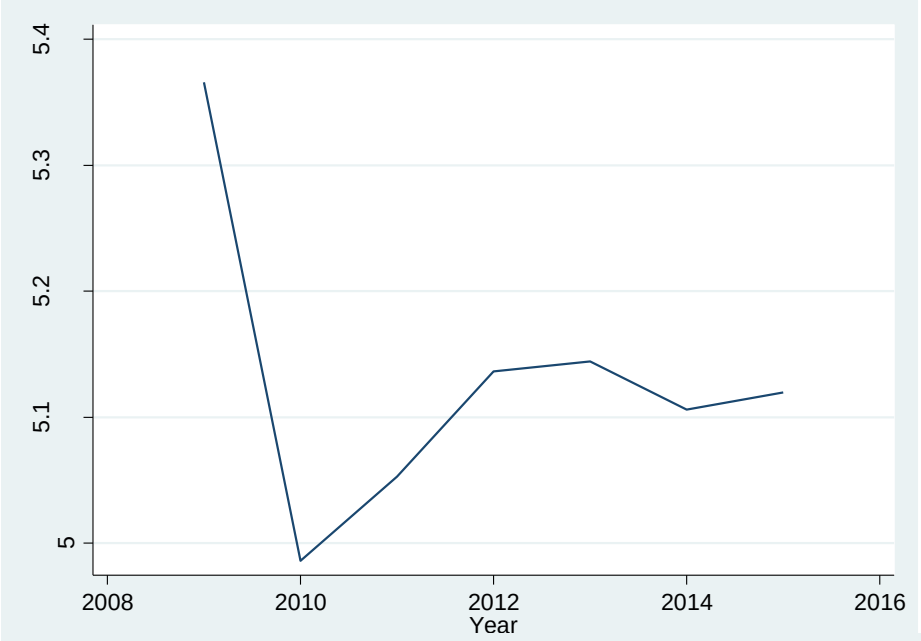
Kinloch Park

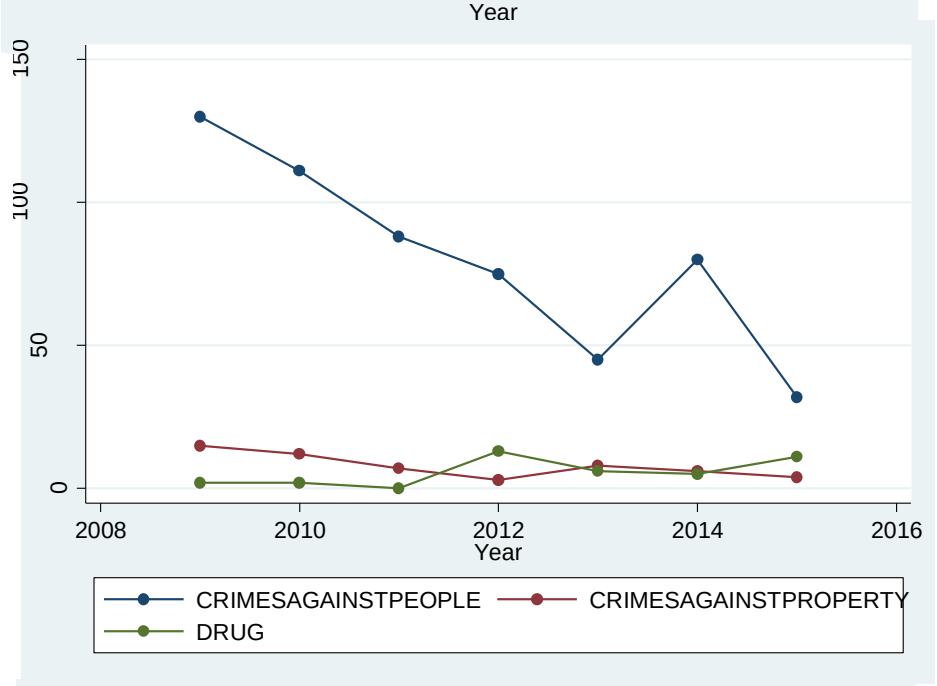


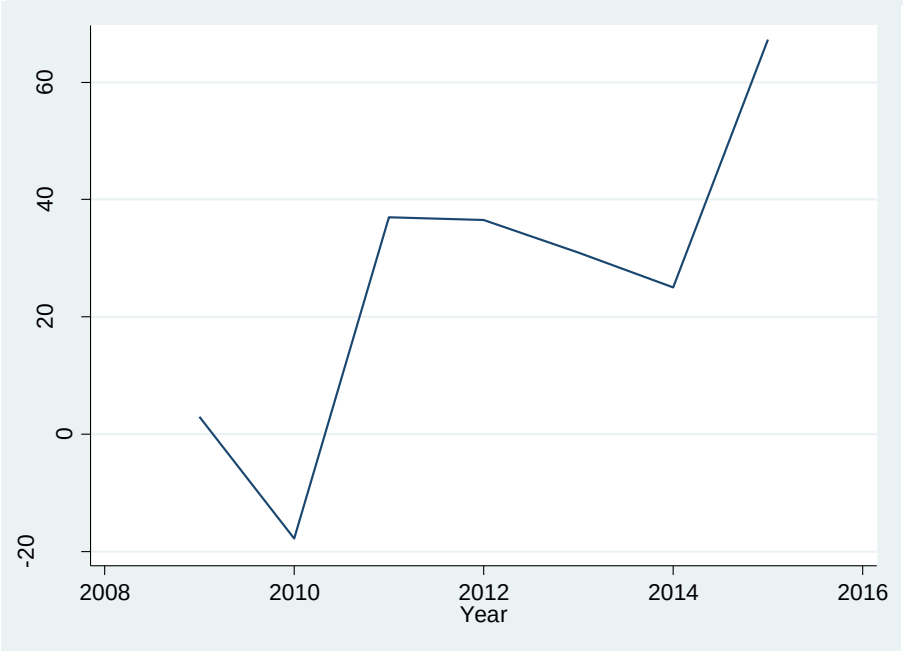




Lake Stevens







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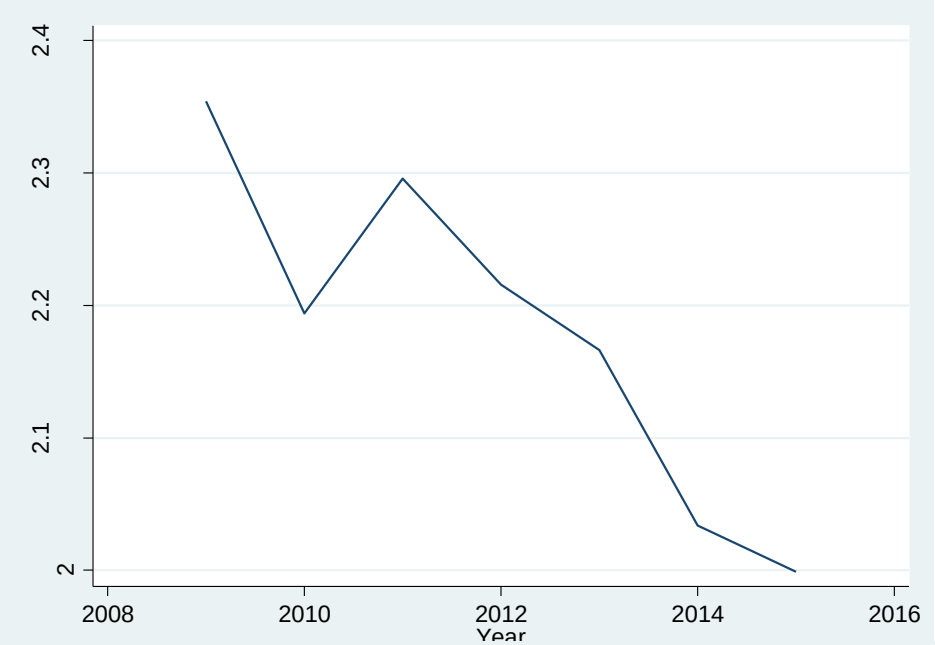

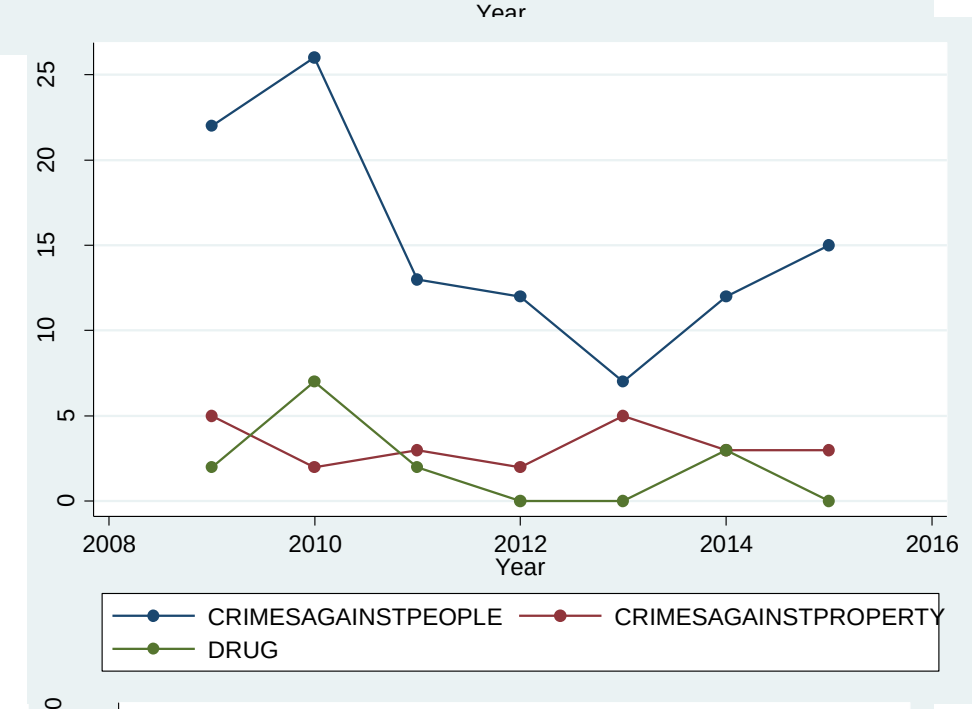

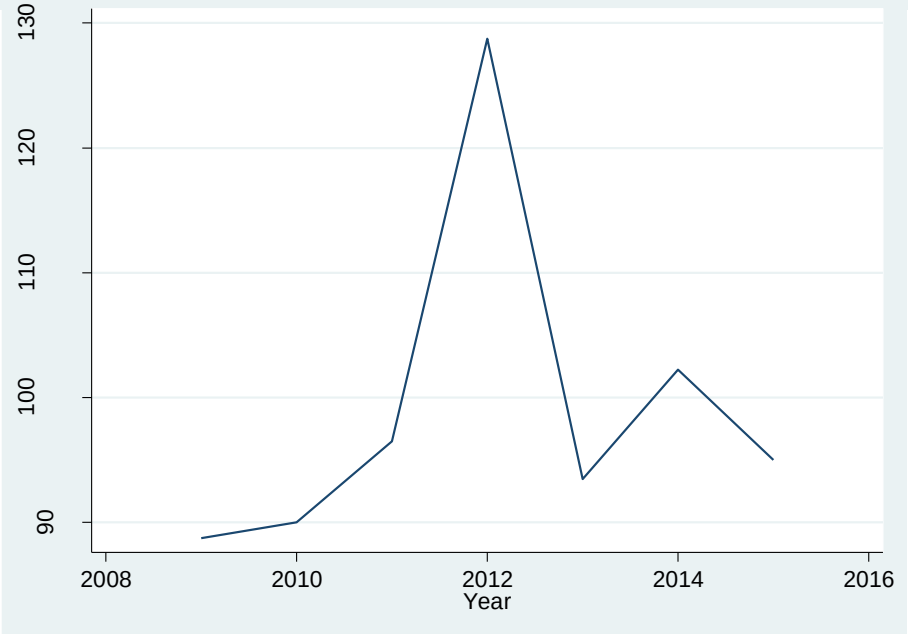

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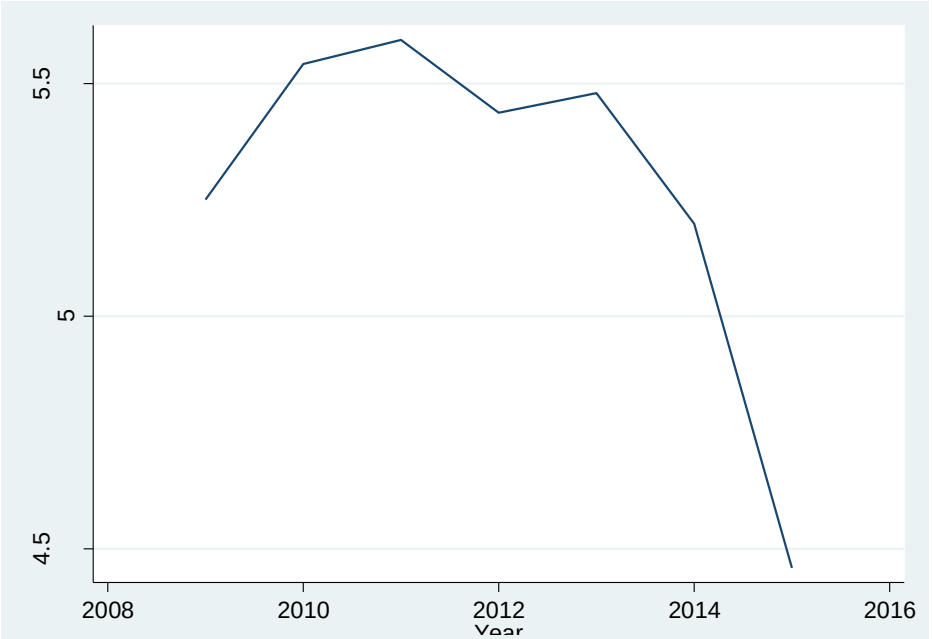

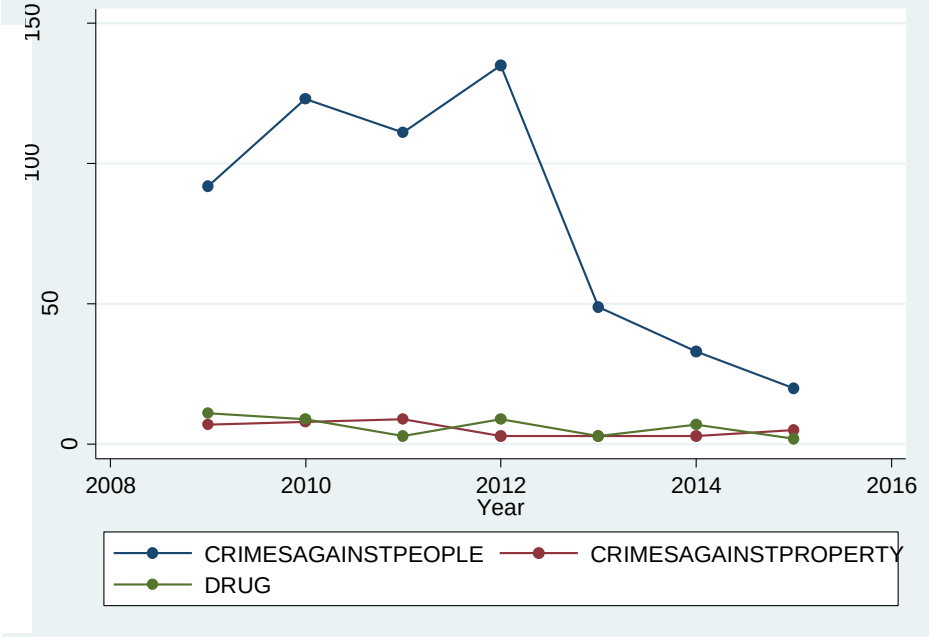

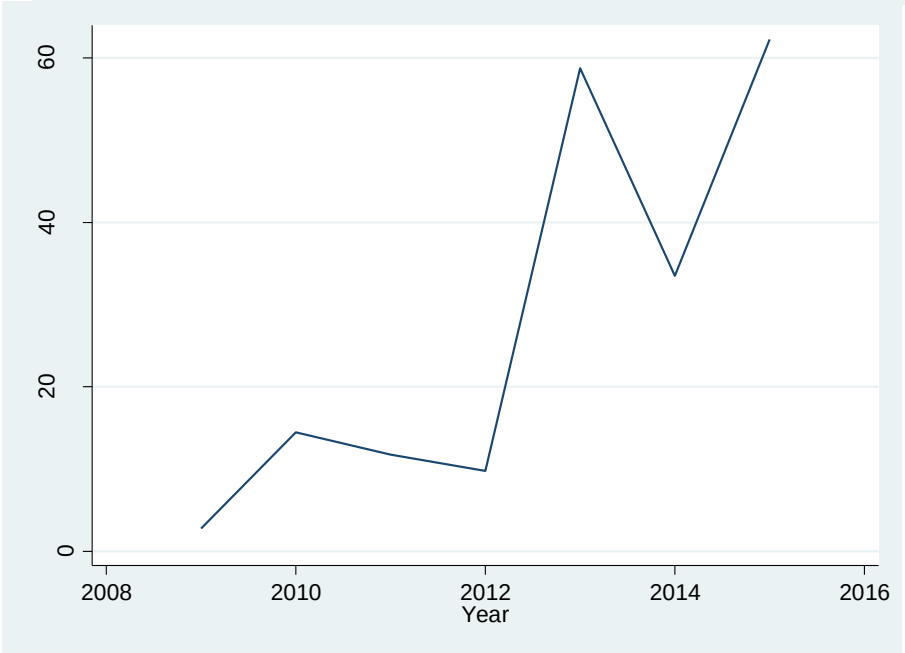

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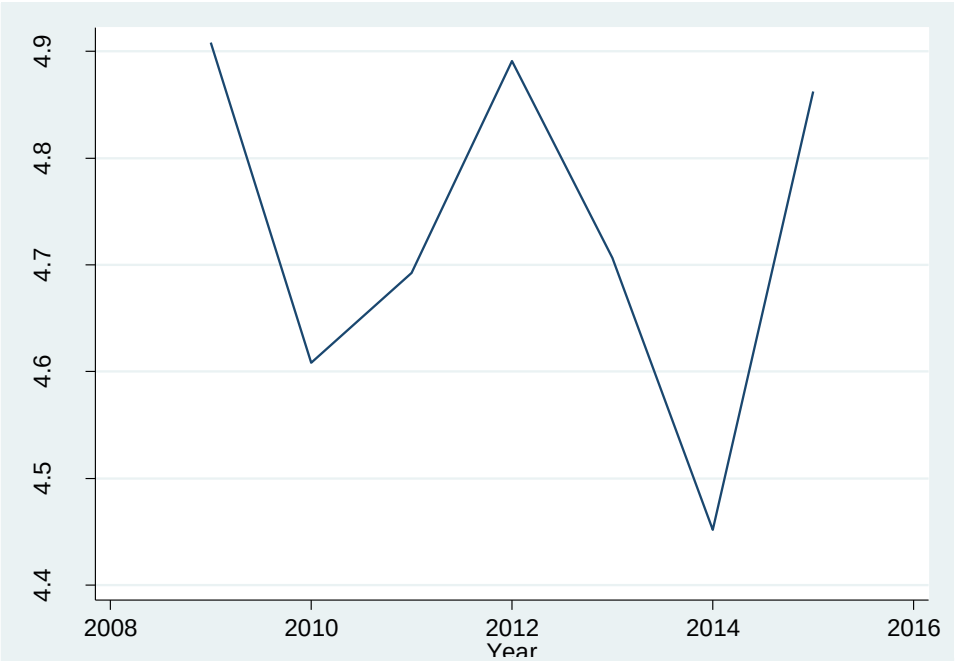
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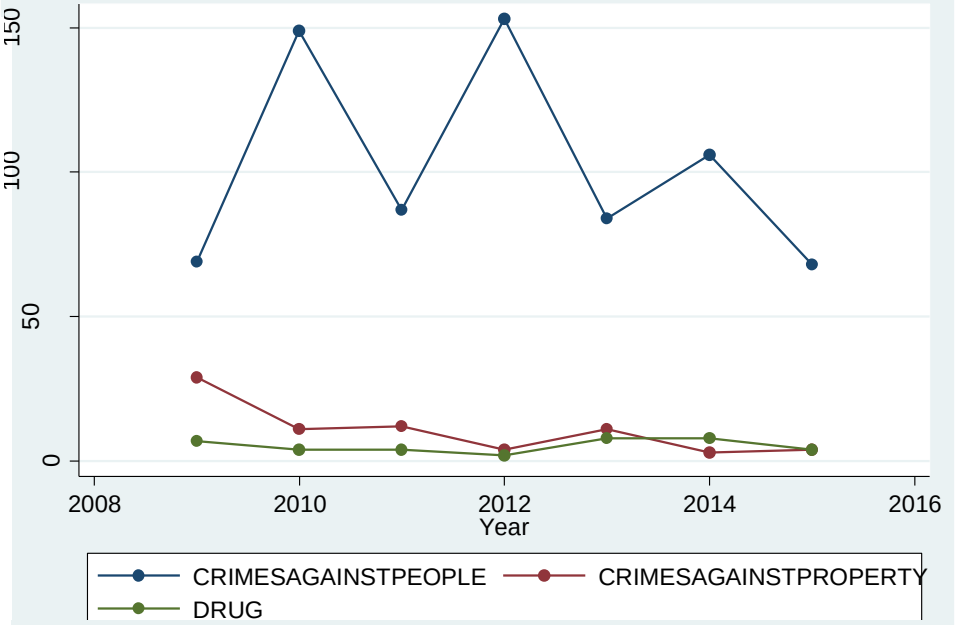
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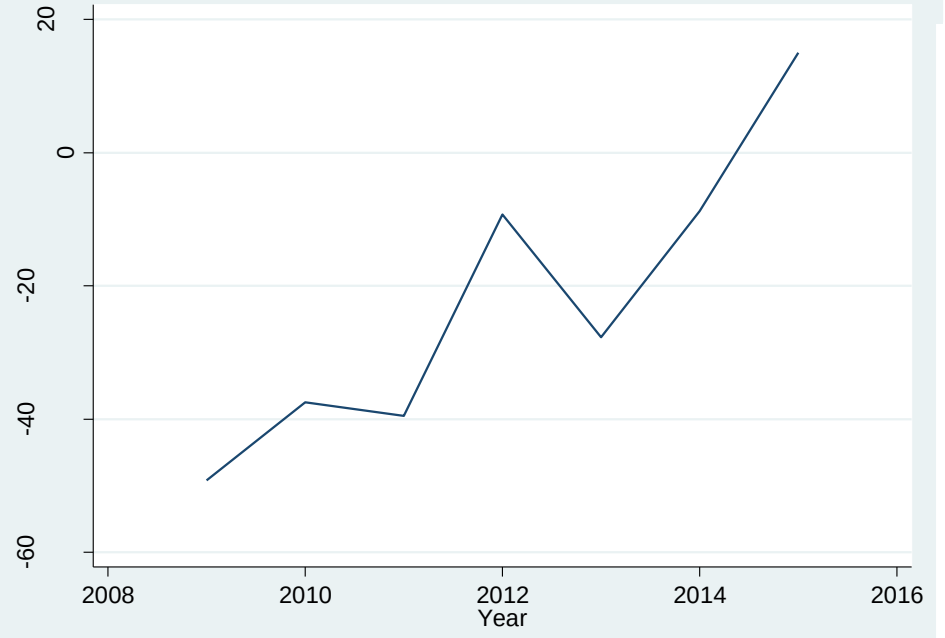
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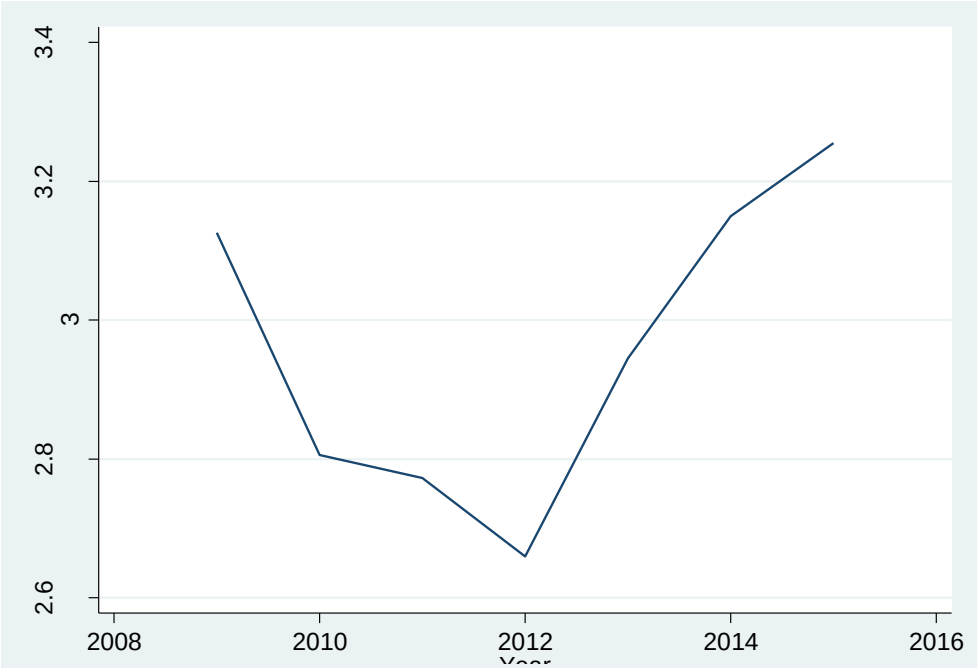
Miami Lakes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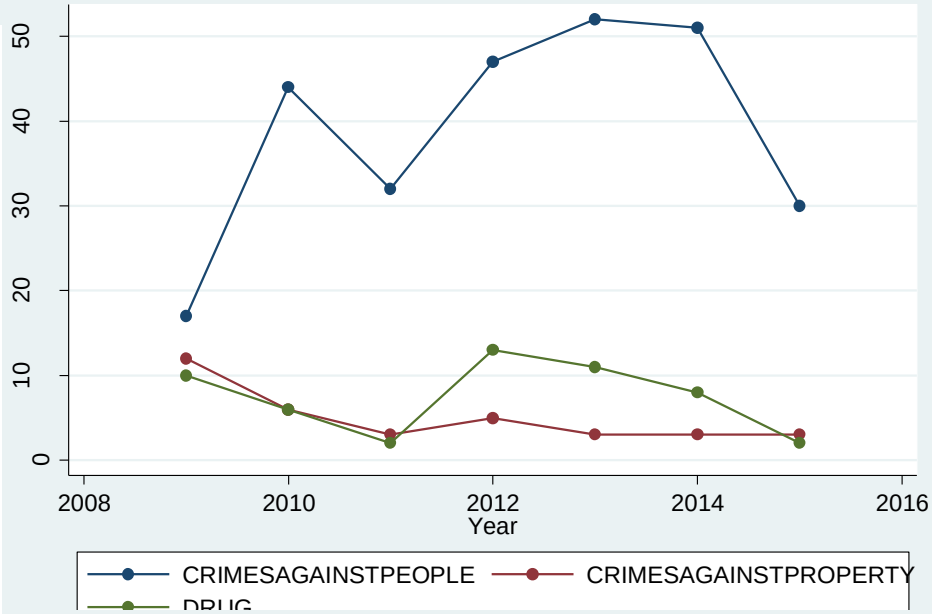
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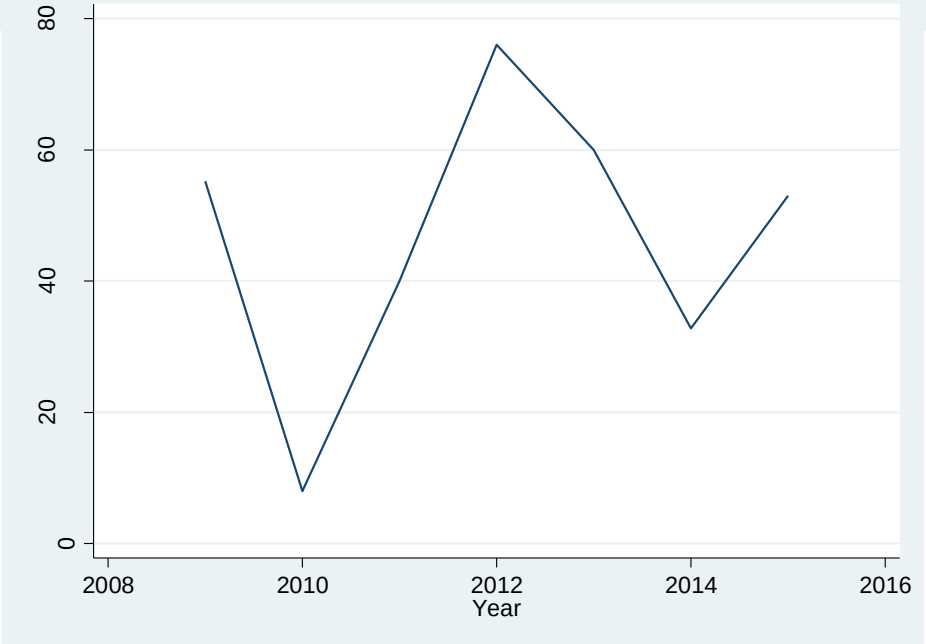
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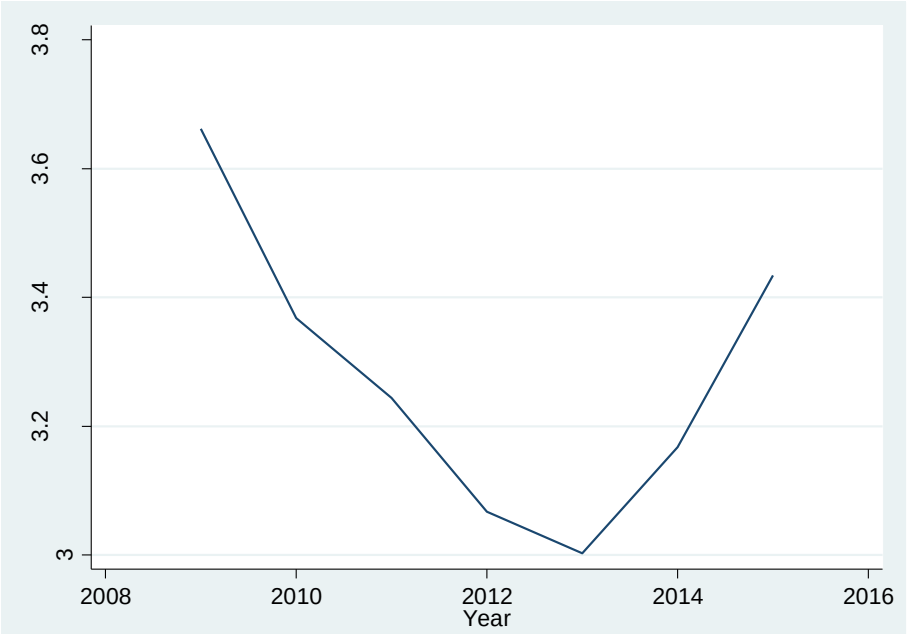
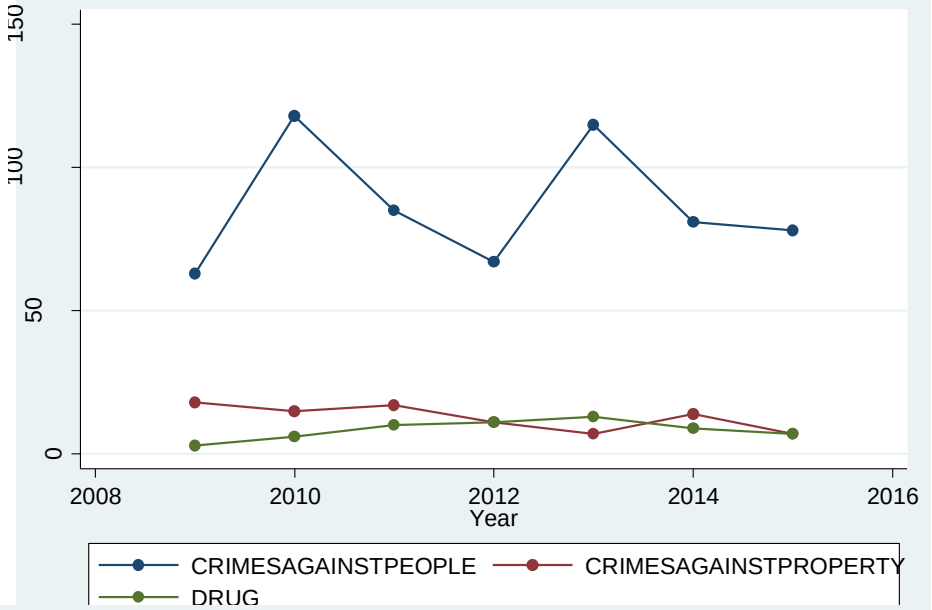
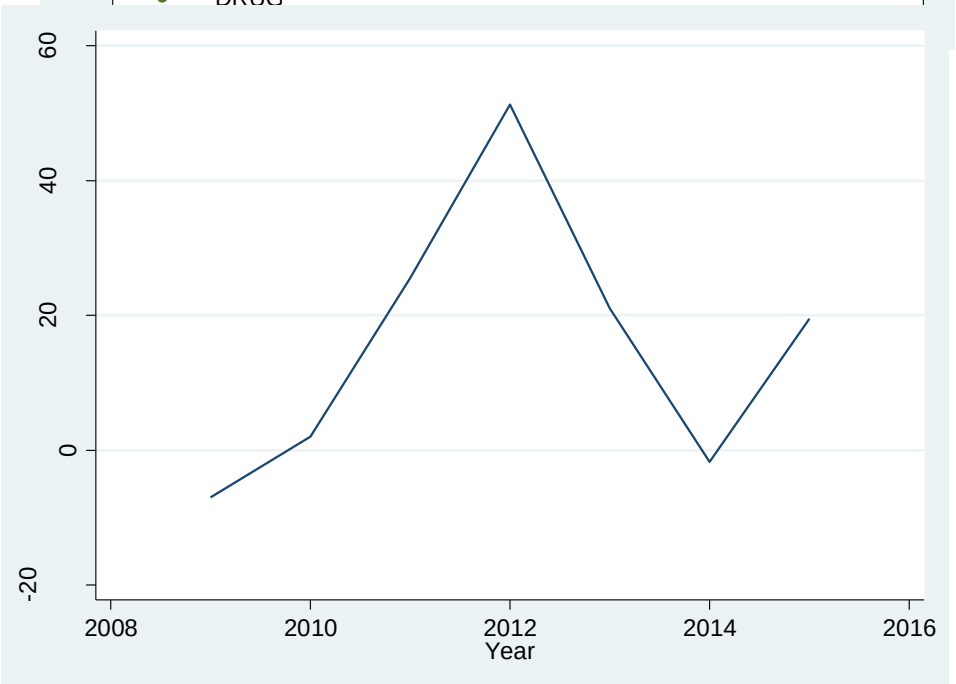
Miami Springs







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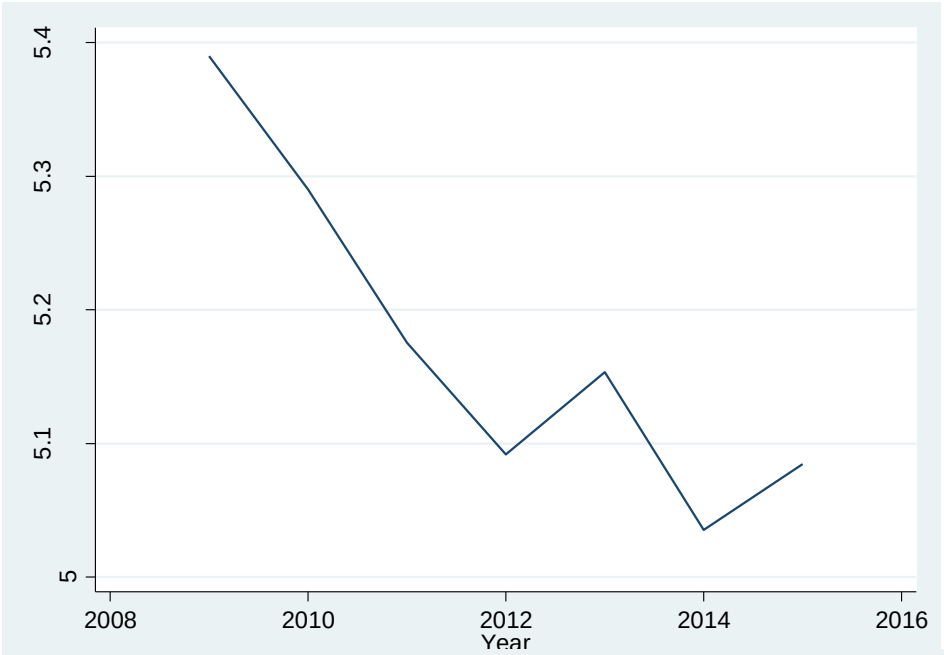
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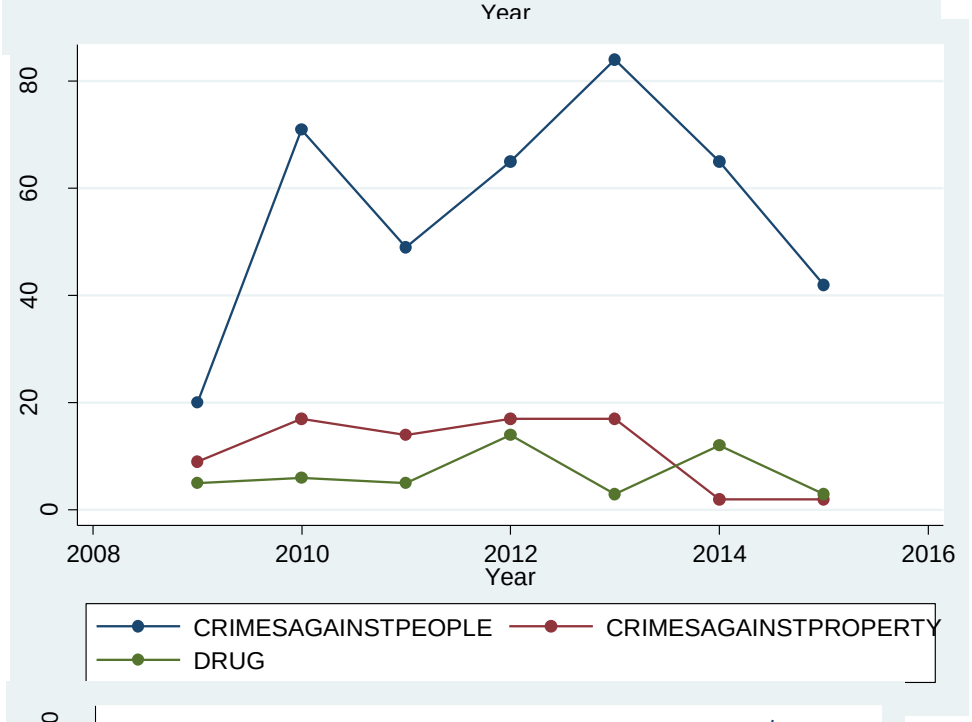
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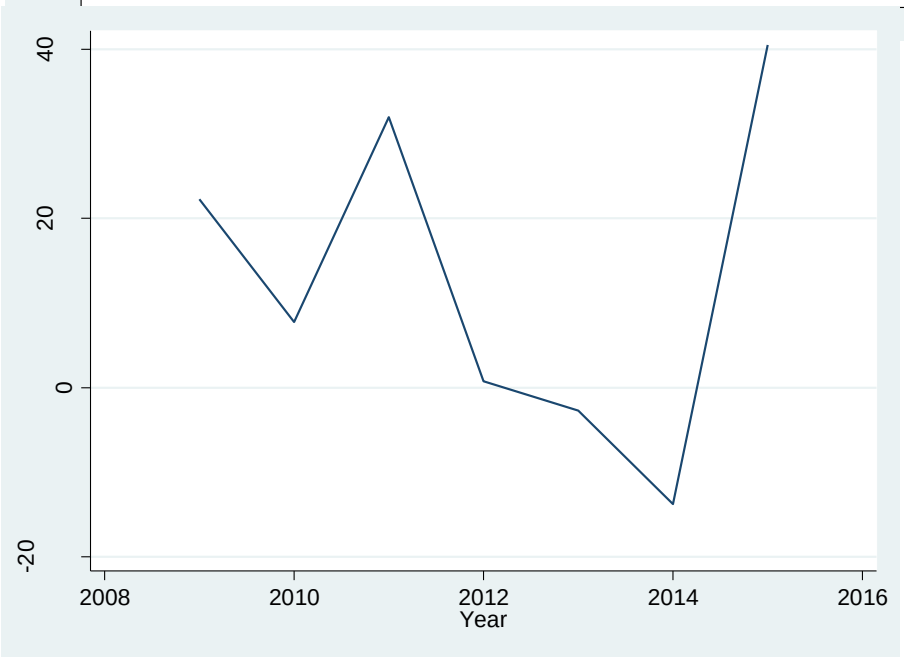
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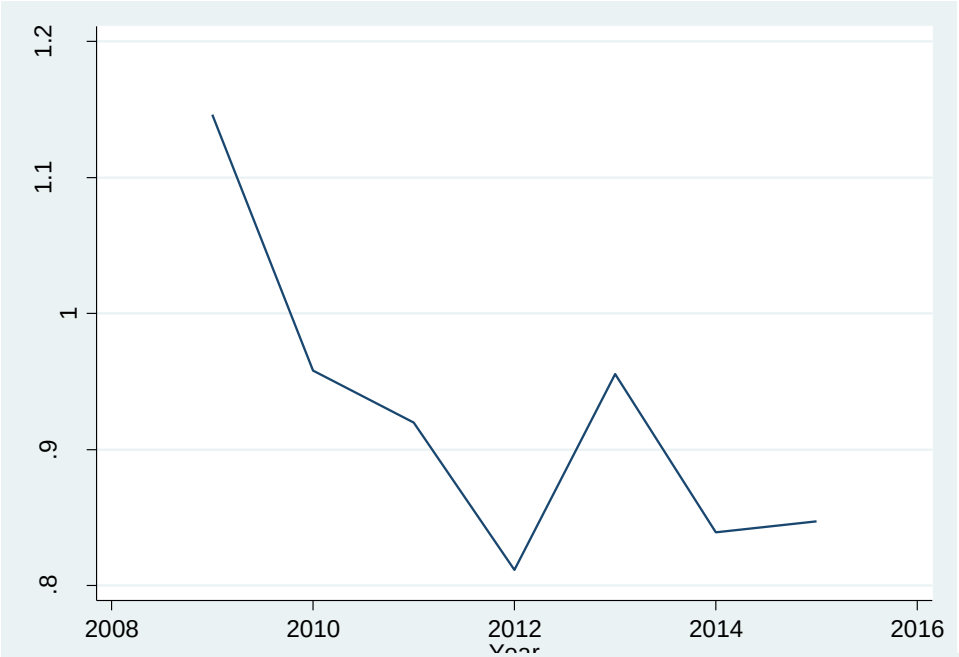
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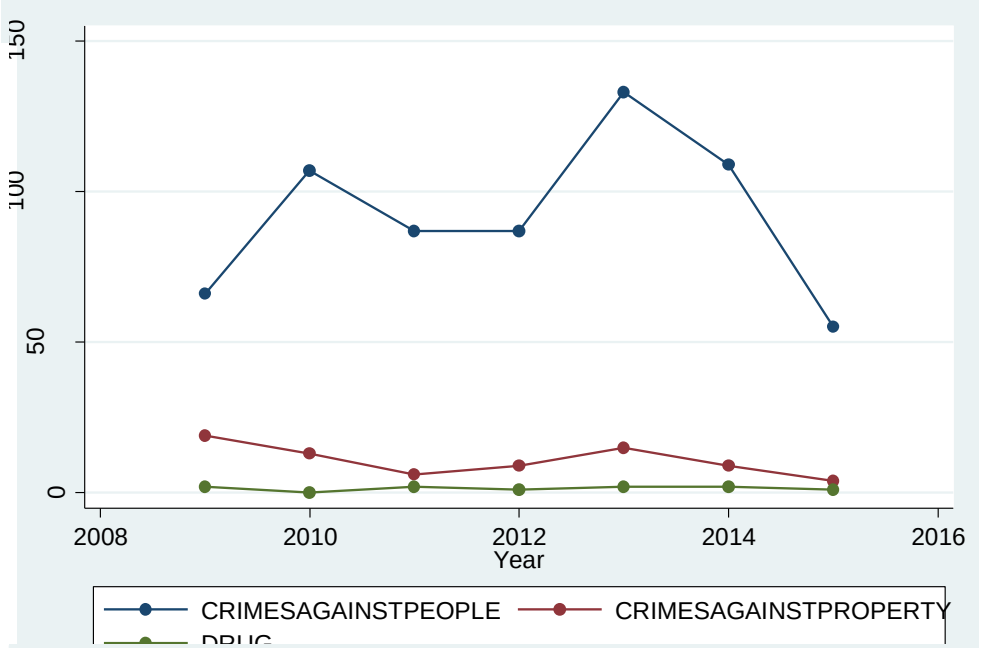
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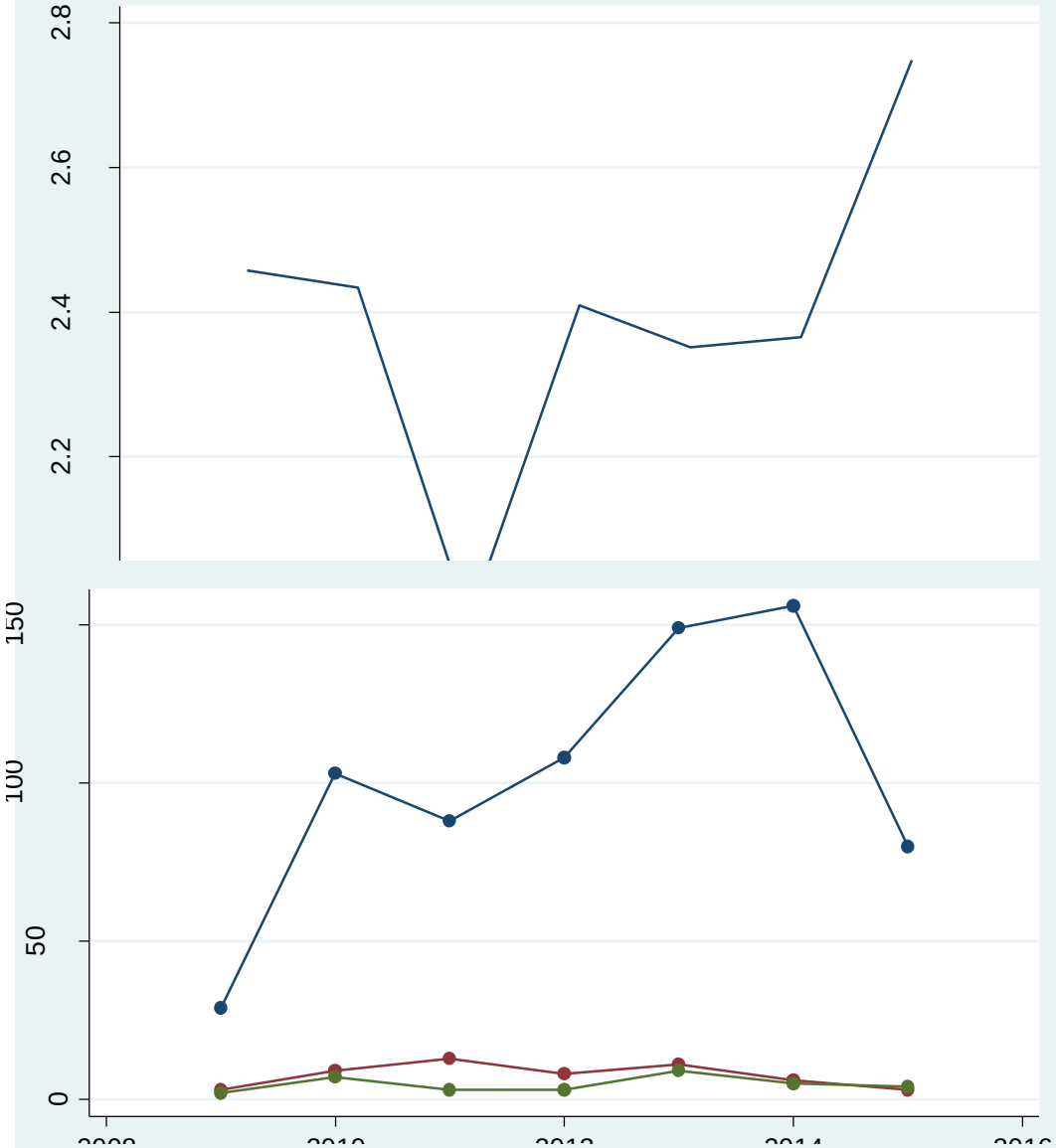
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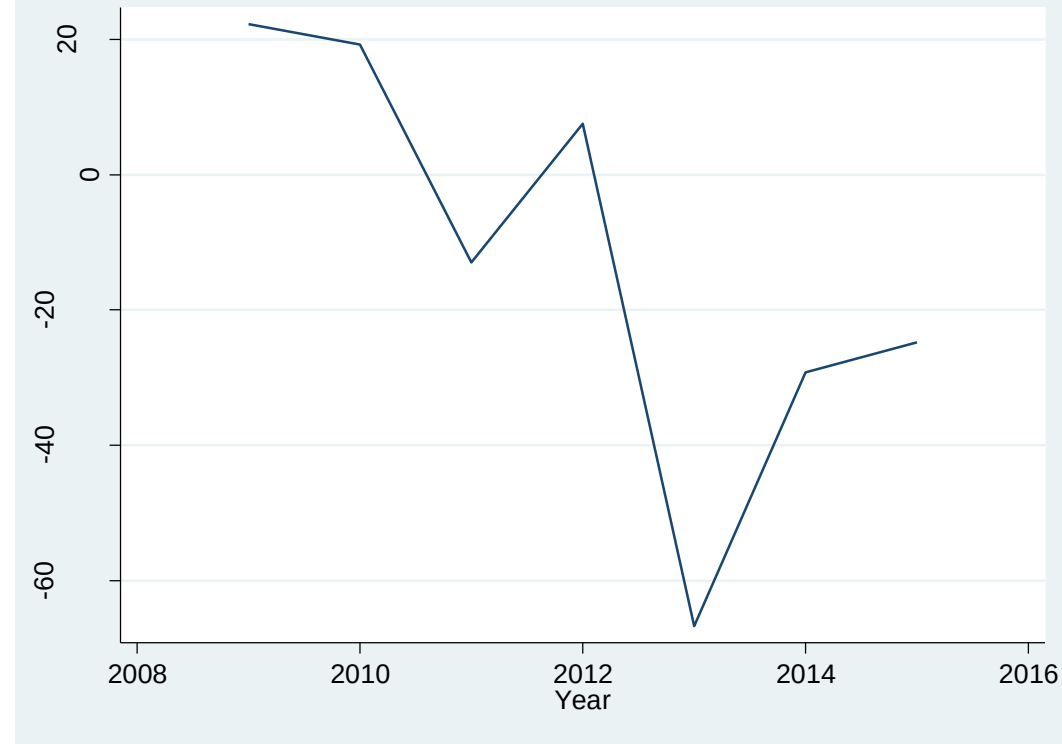
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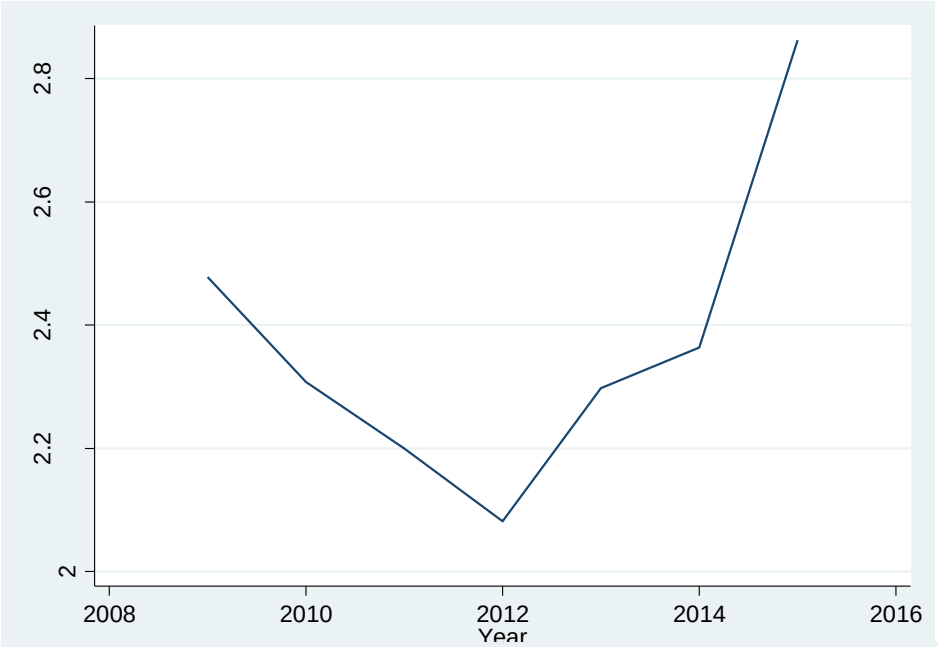
North Miami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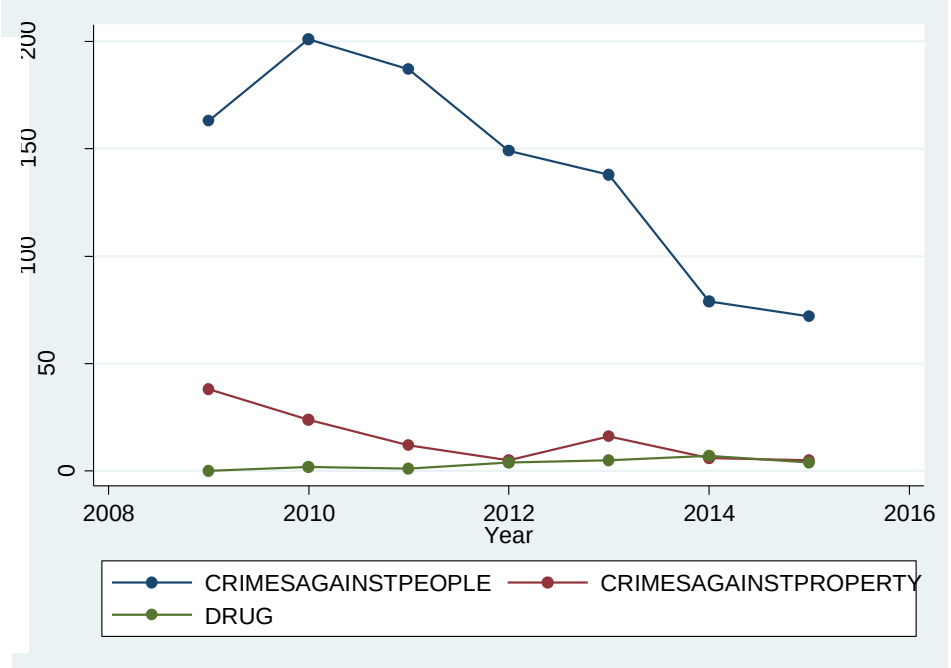
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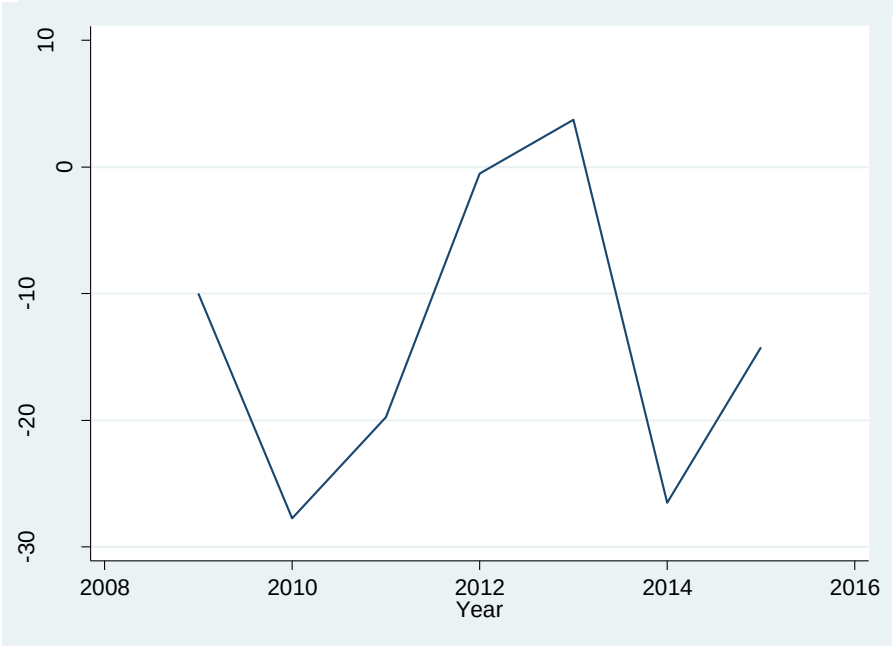
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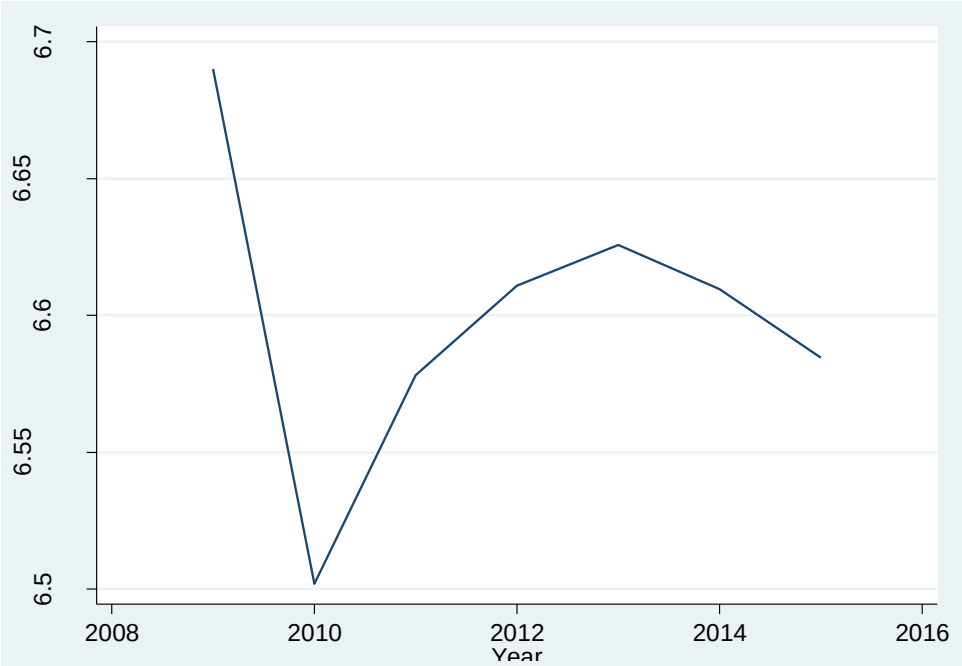
Palmetto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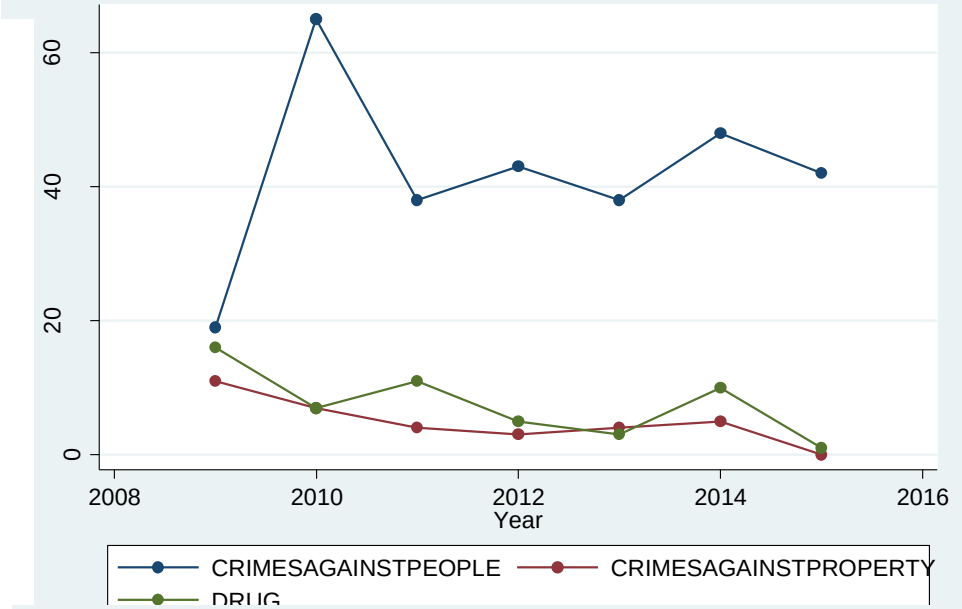
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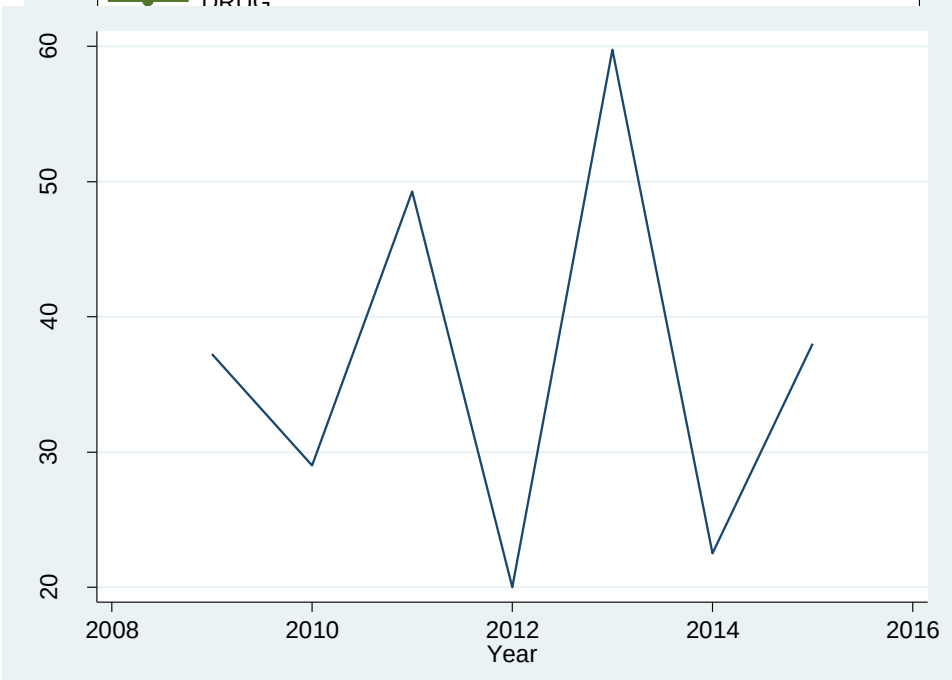
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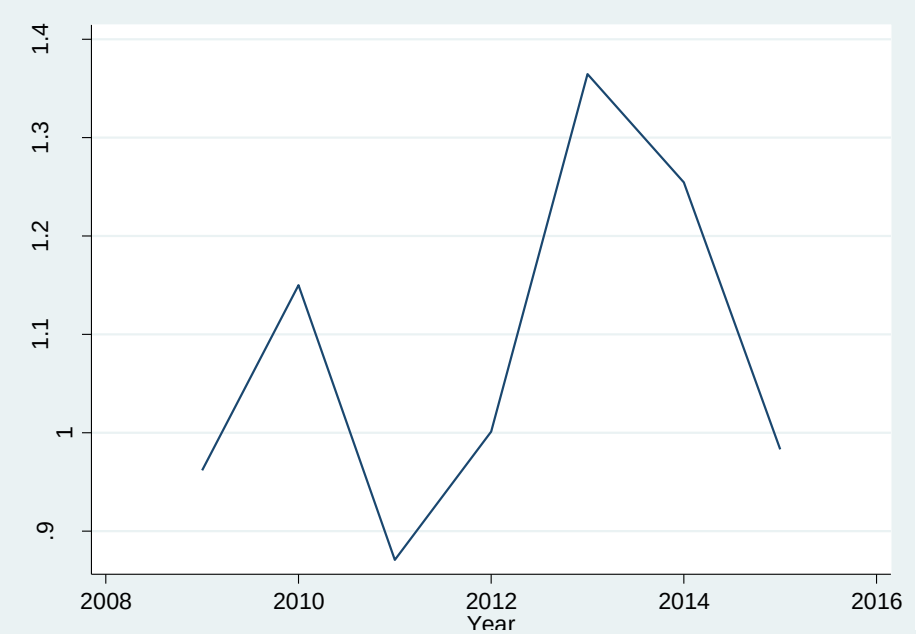
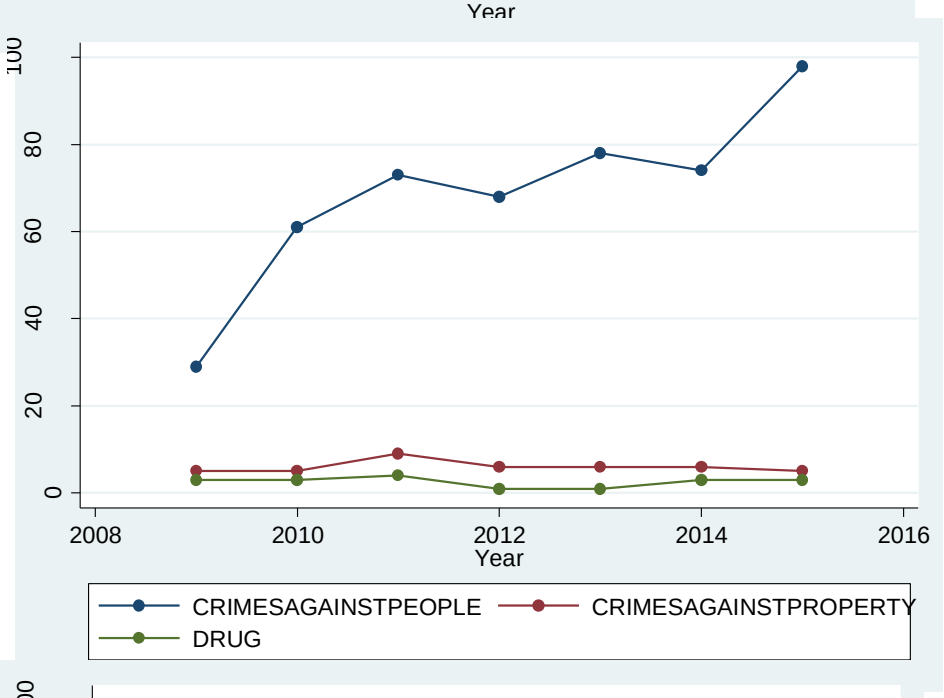
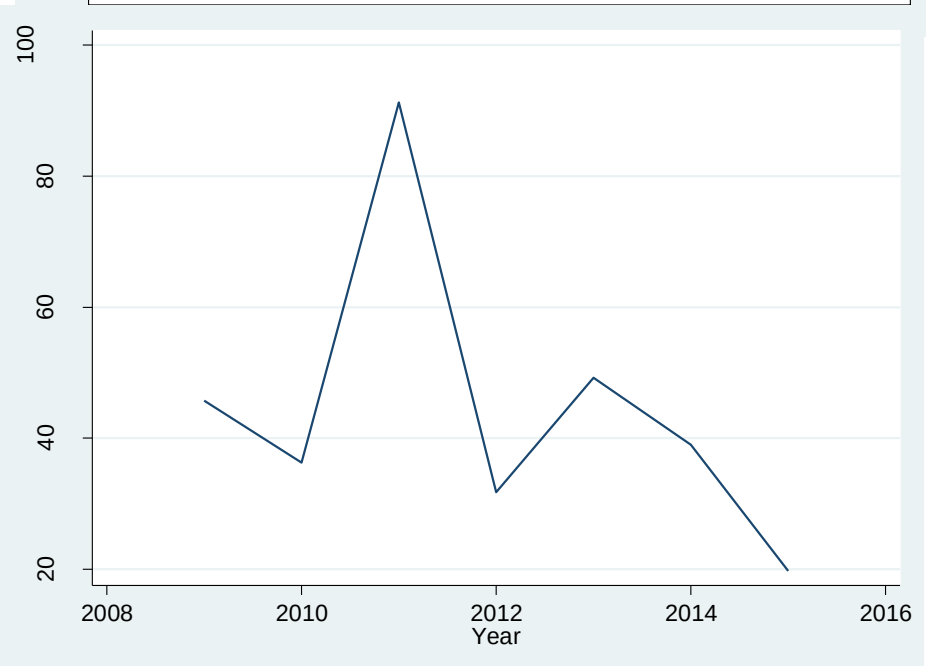
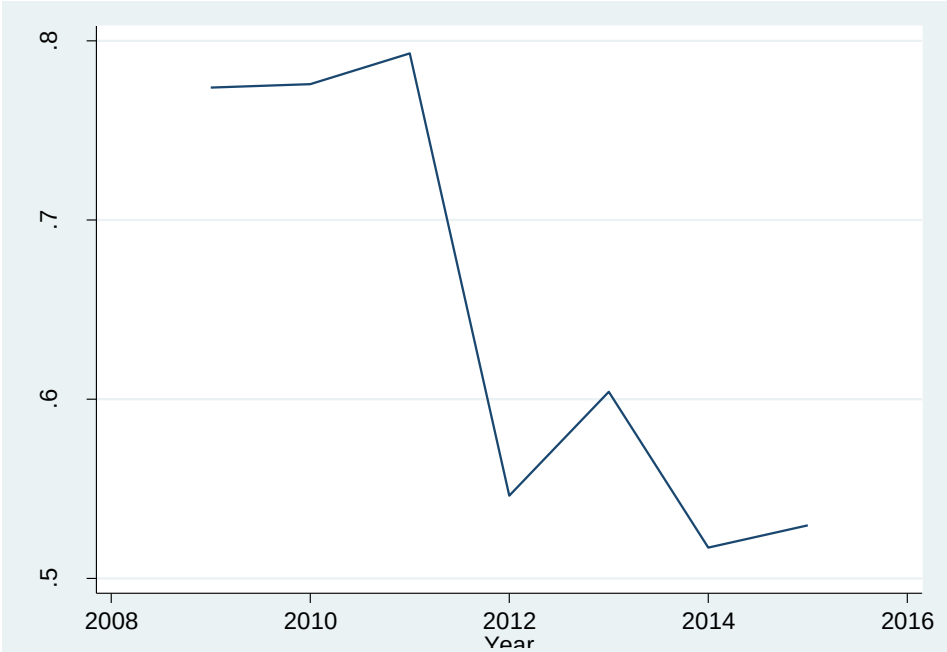
Palm Springs







Paul W. Bell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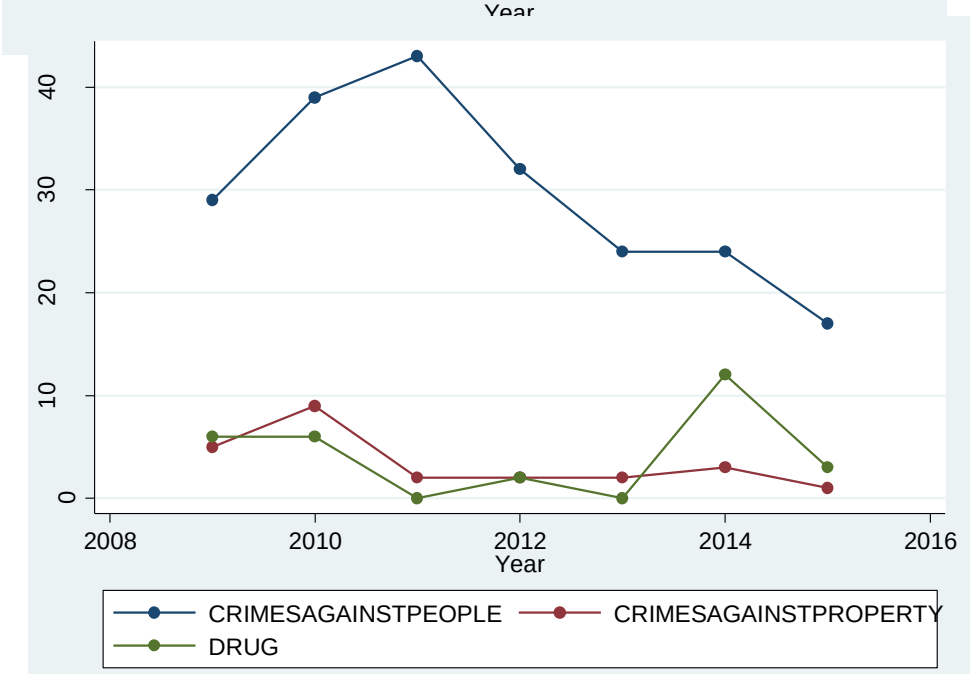
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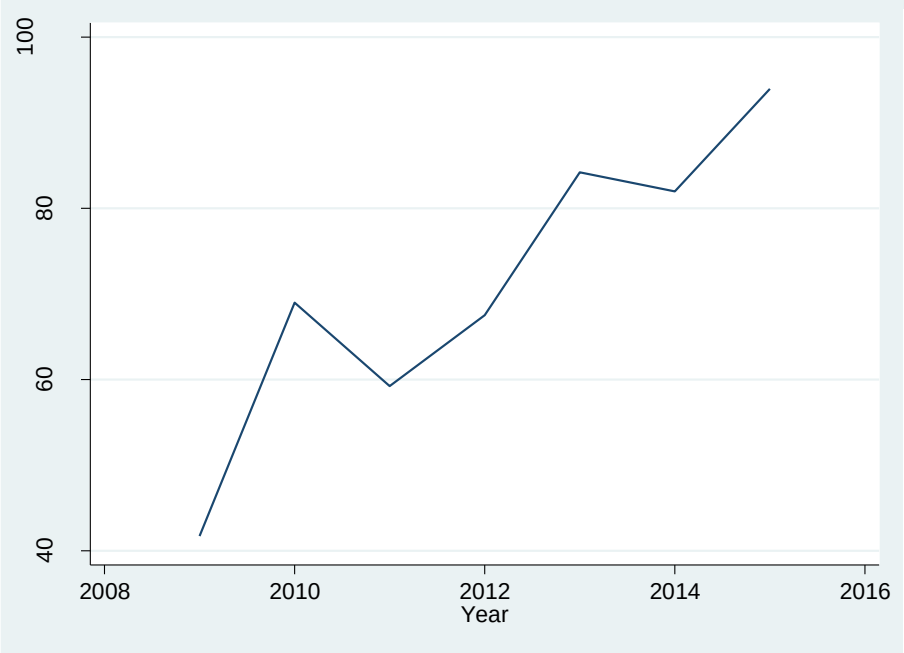
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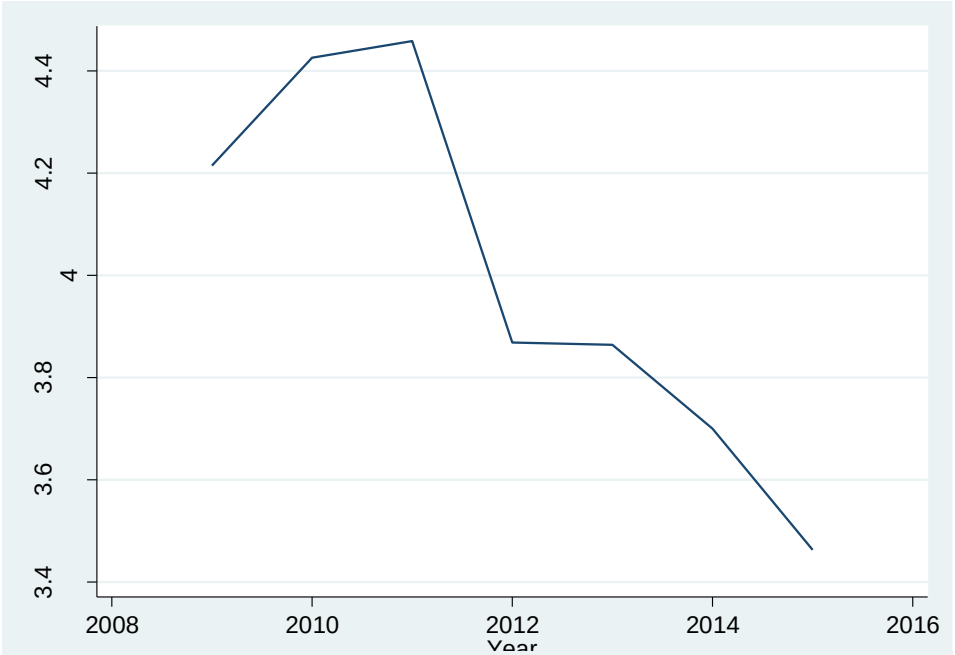
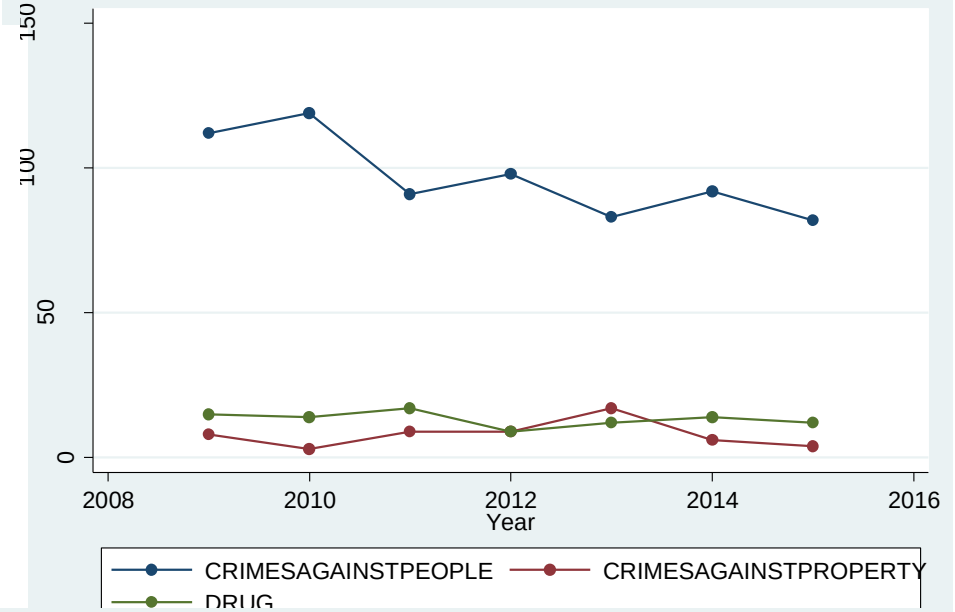
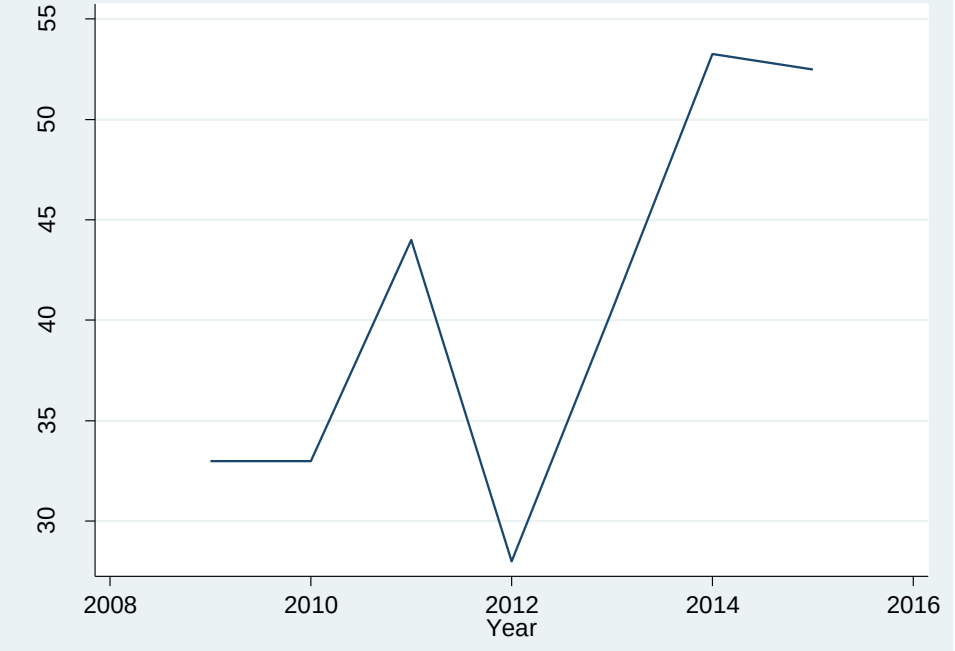
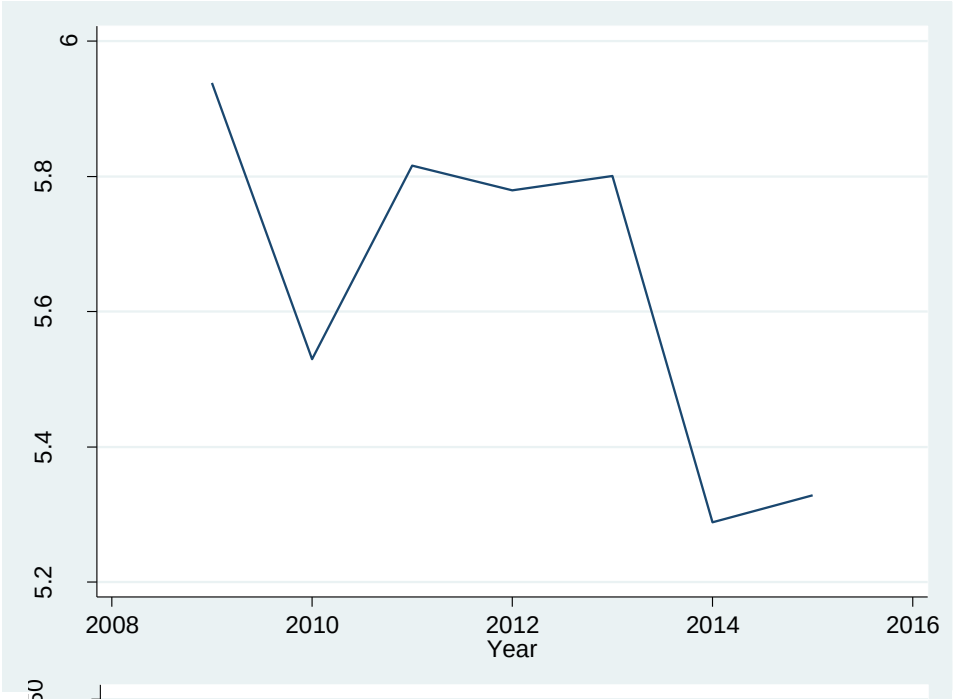
Ponce de Leon







Redland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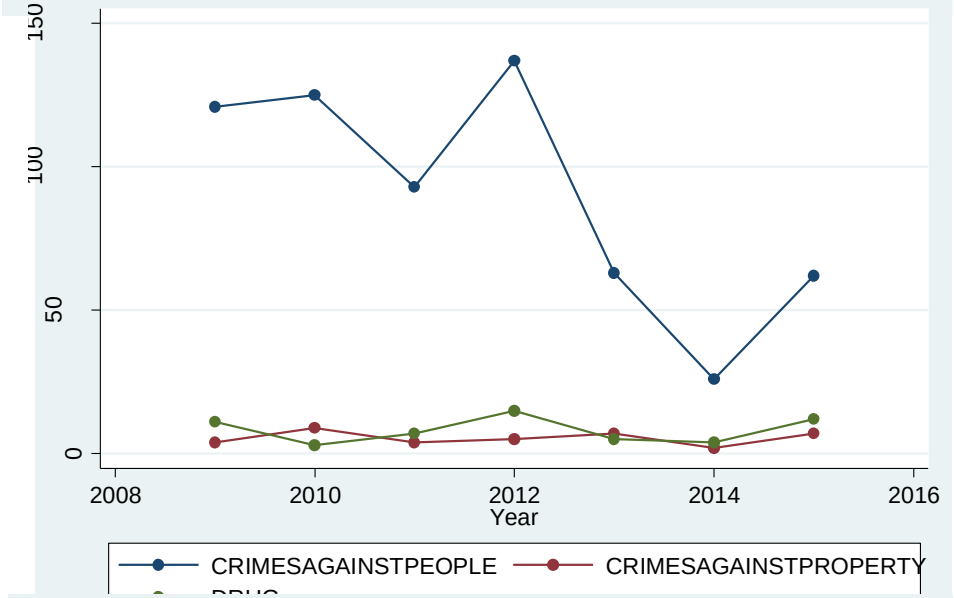
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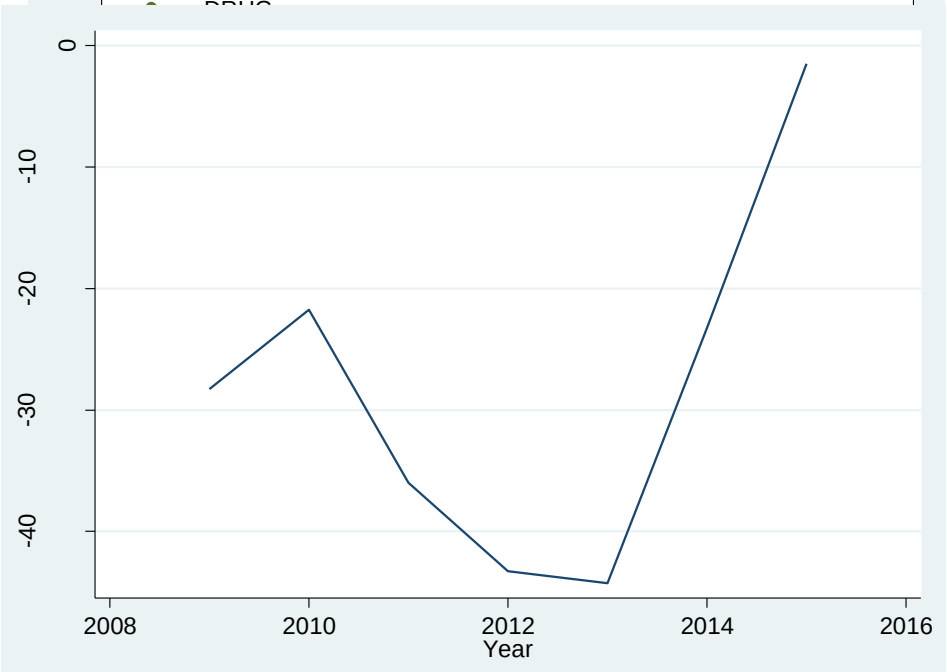
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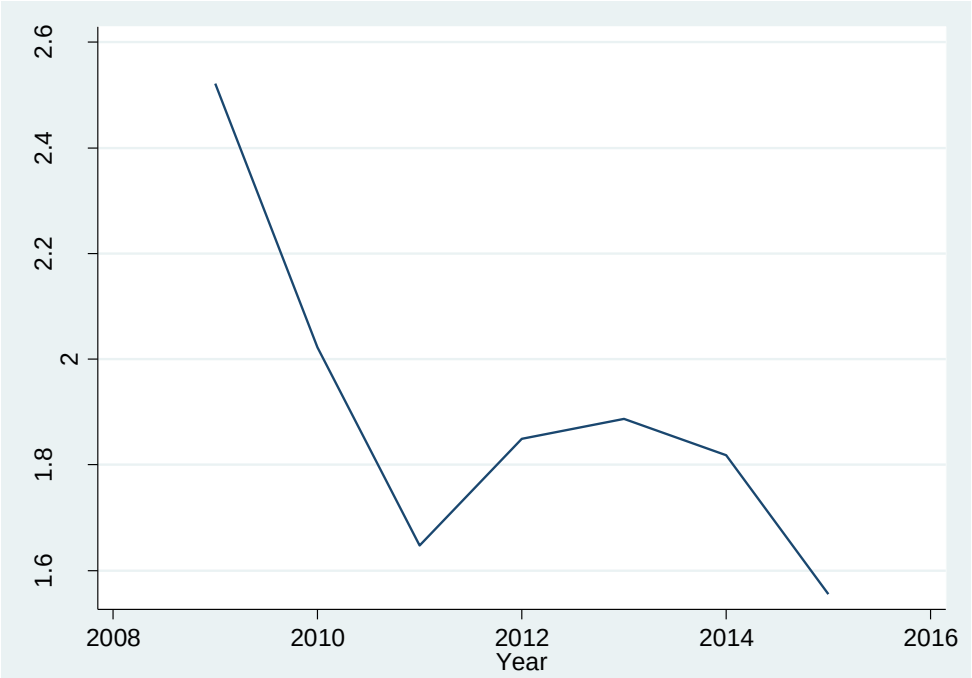
Riviera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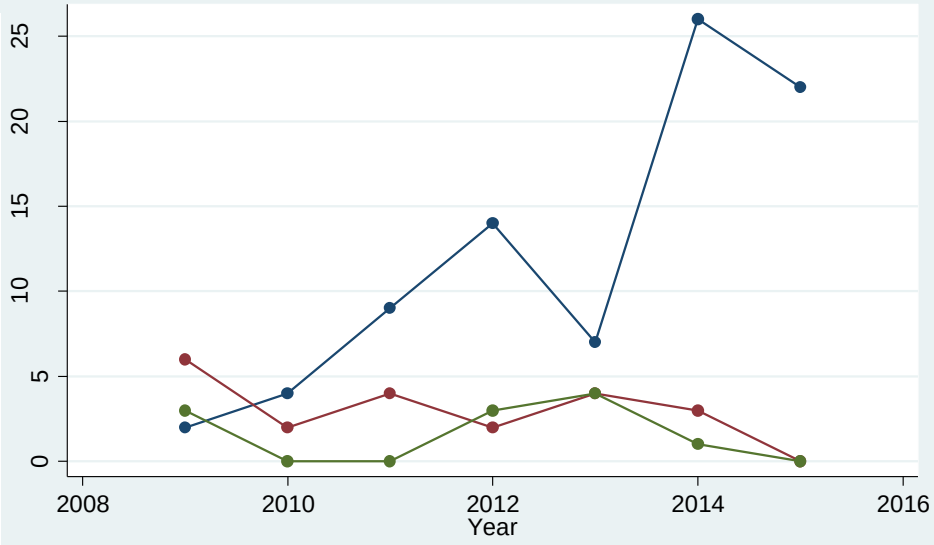
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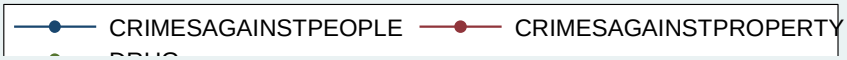
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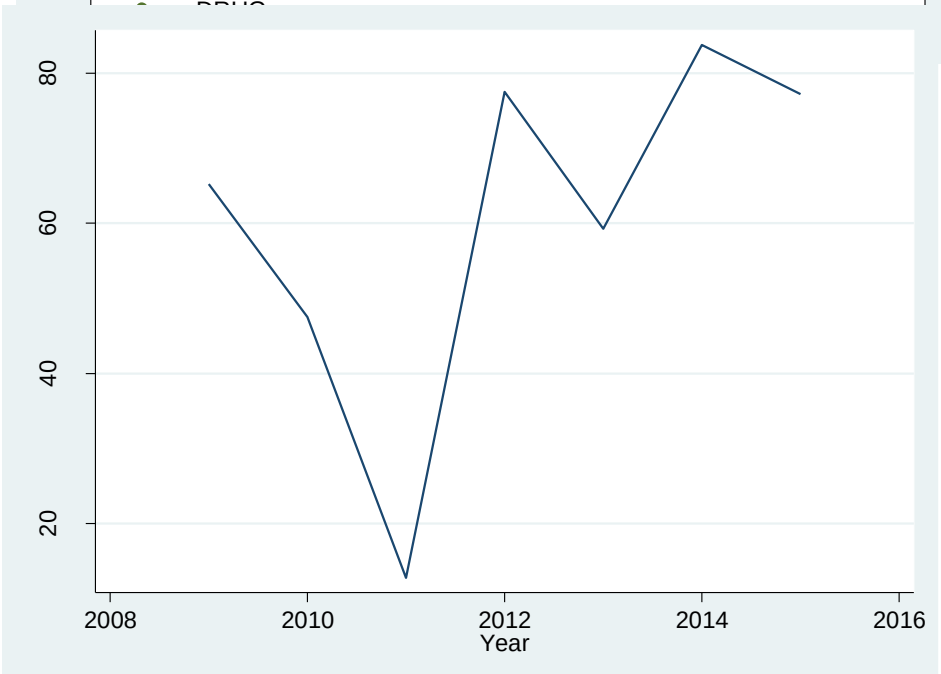
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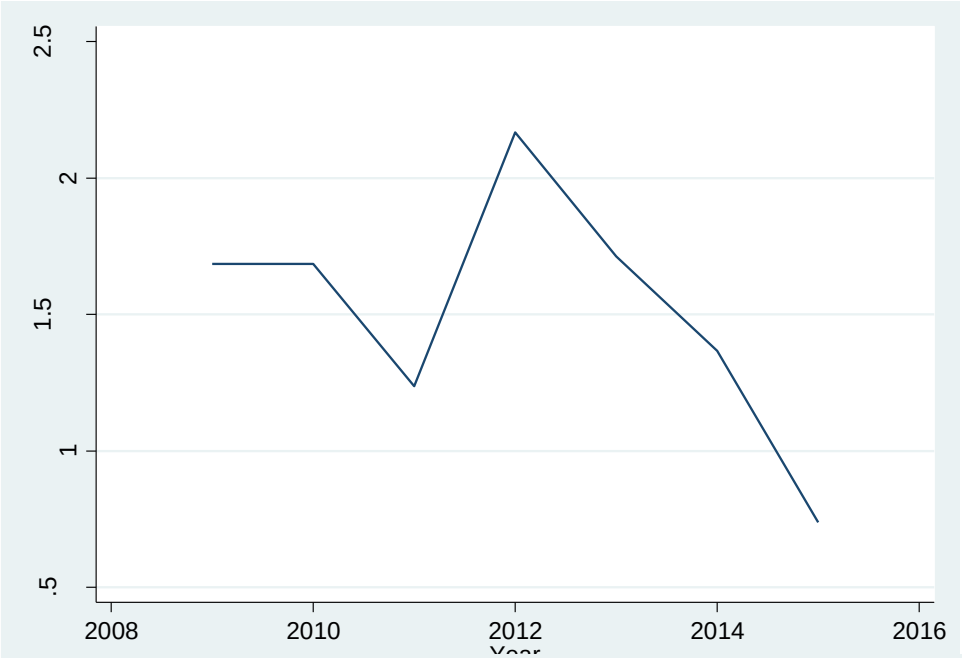
Rockway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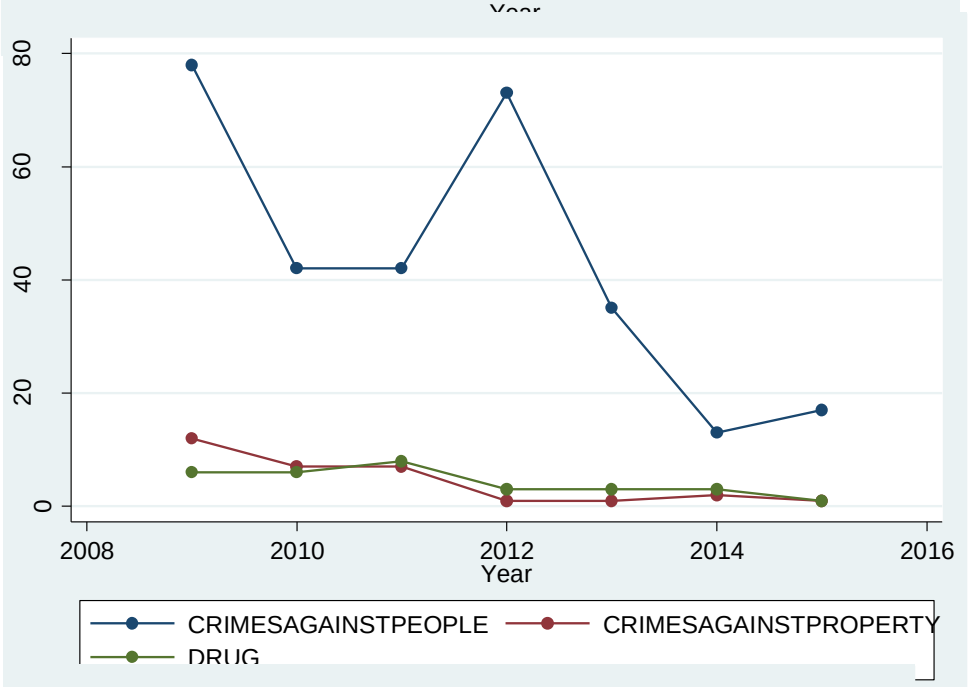
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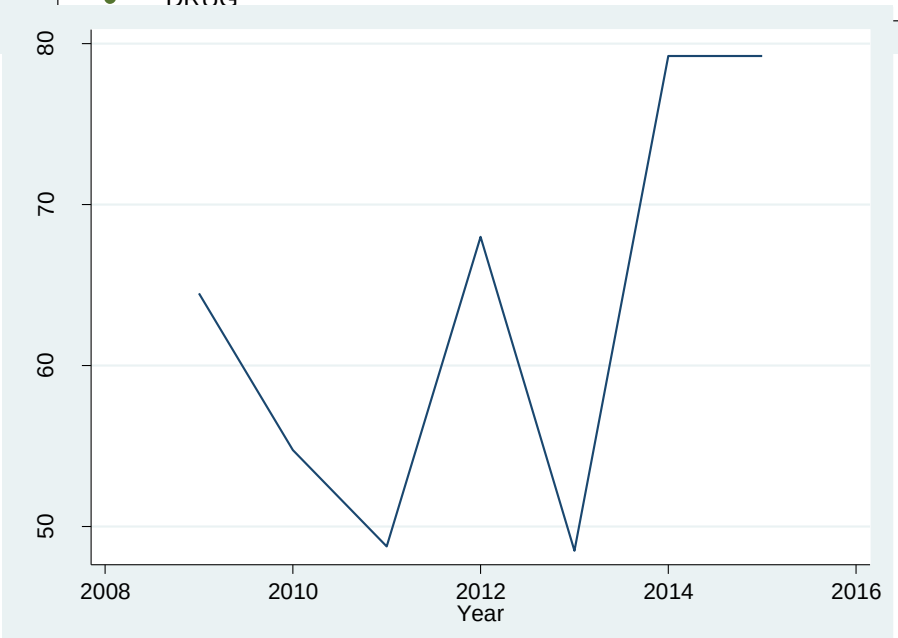
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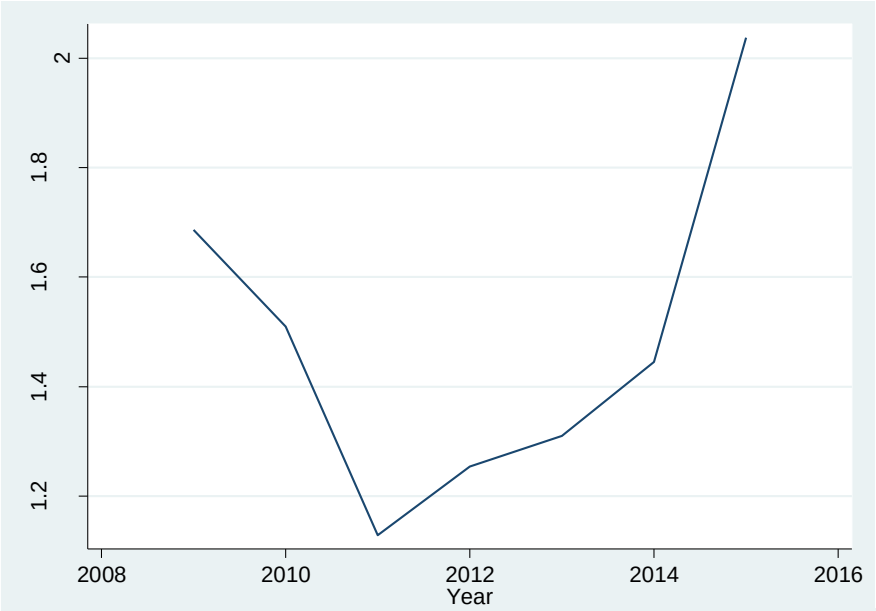
Shenandoah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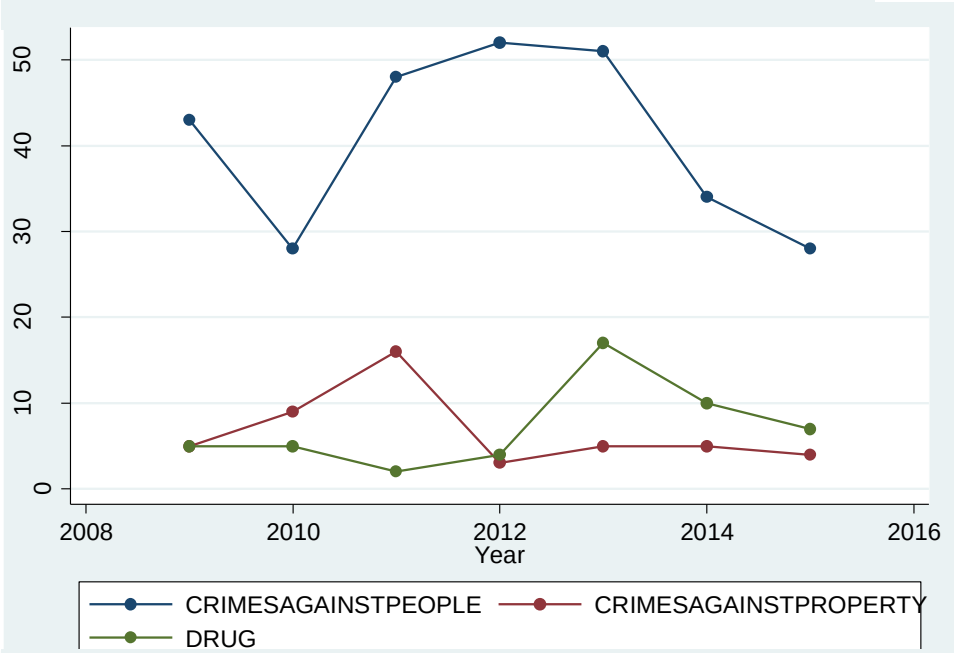
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CRIMESAGAINSTPROPERTY
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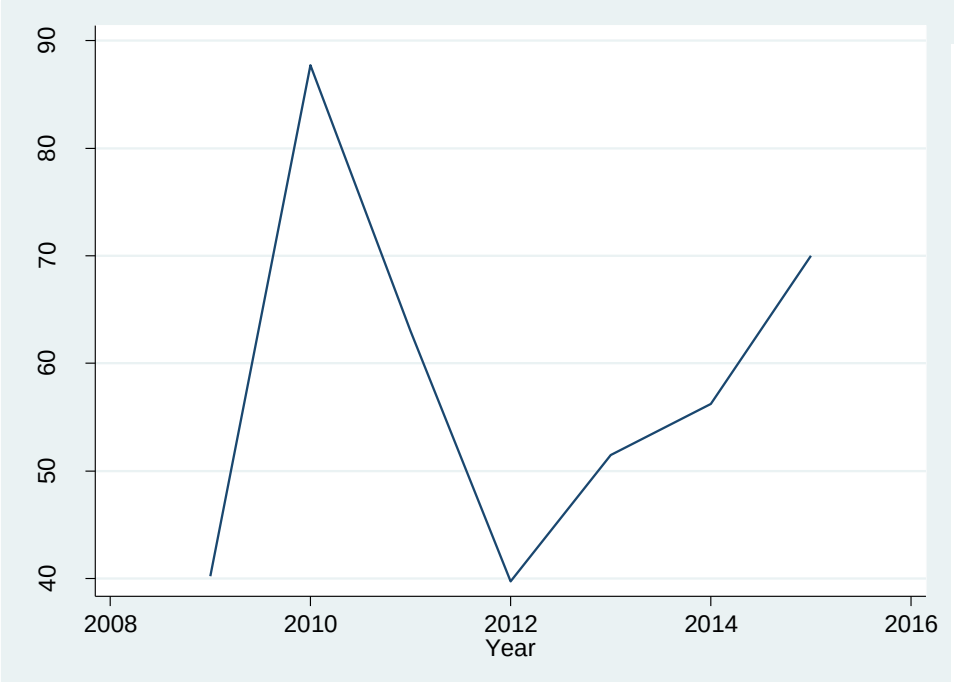
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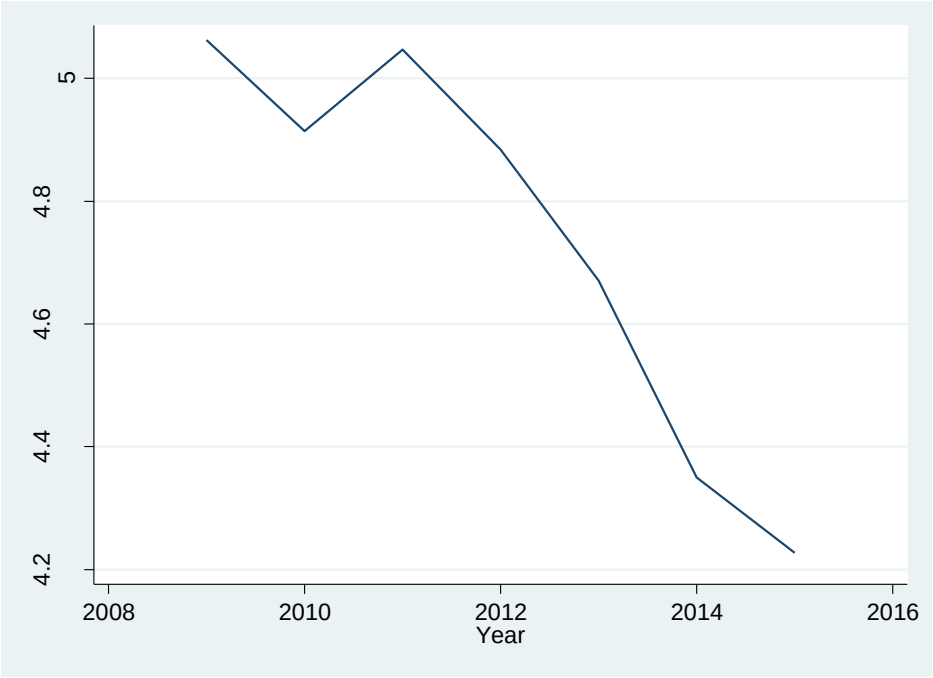
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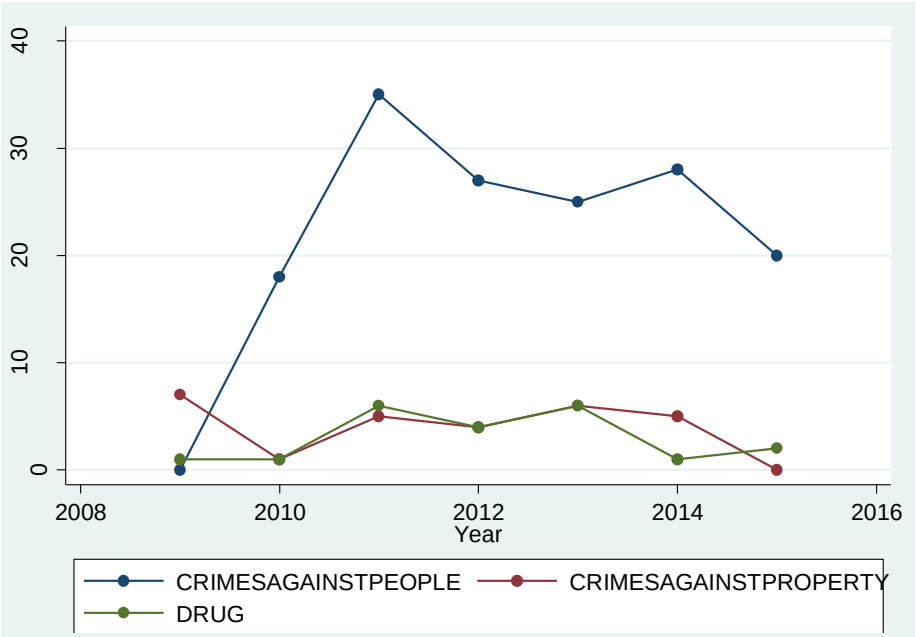
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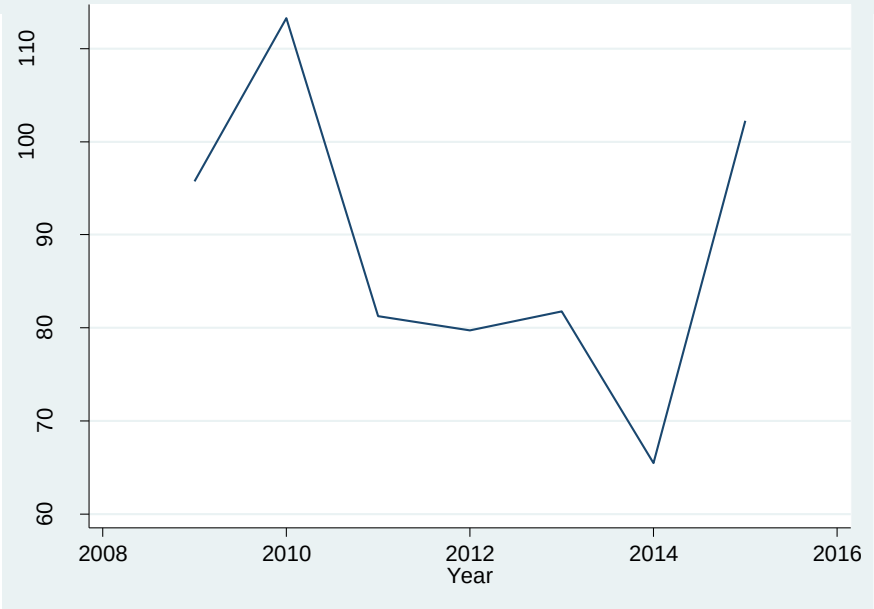
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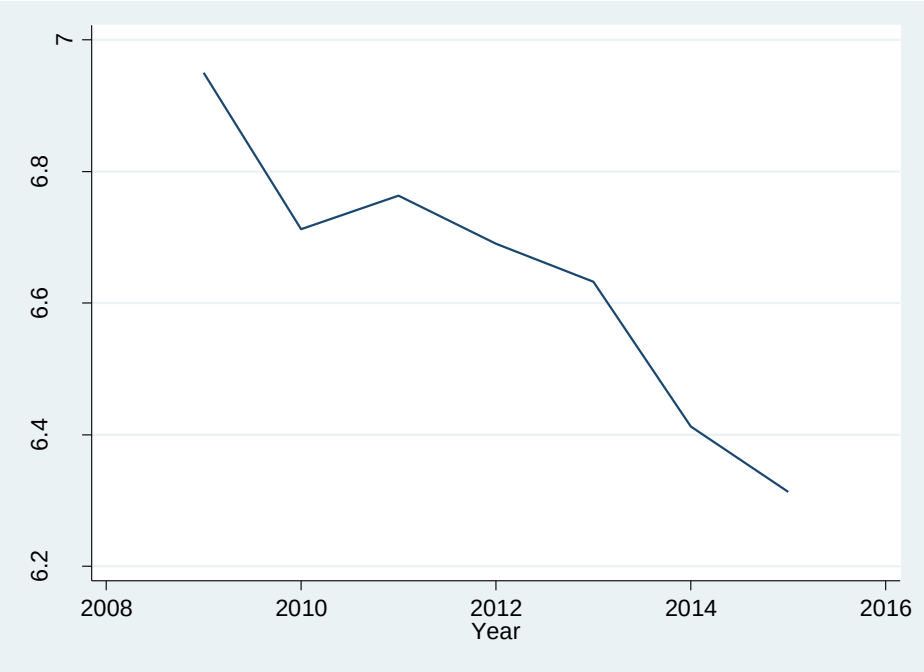
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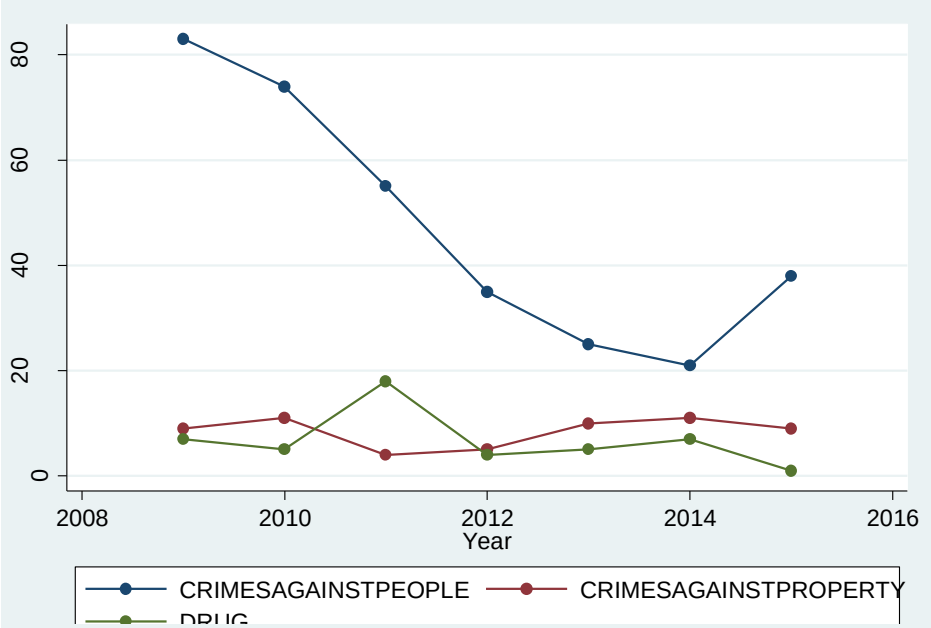
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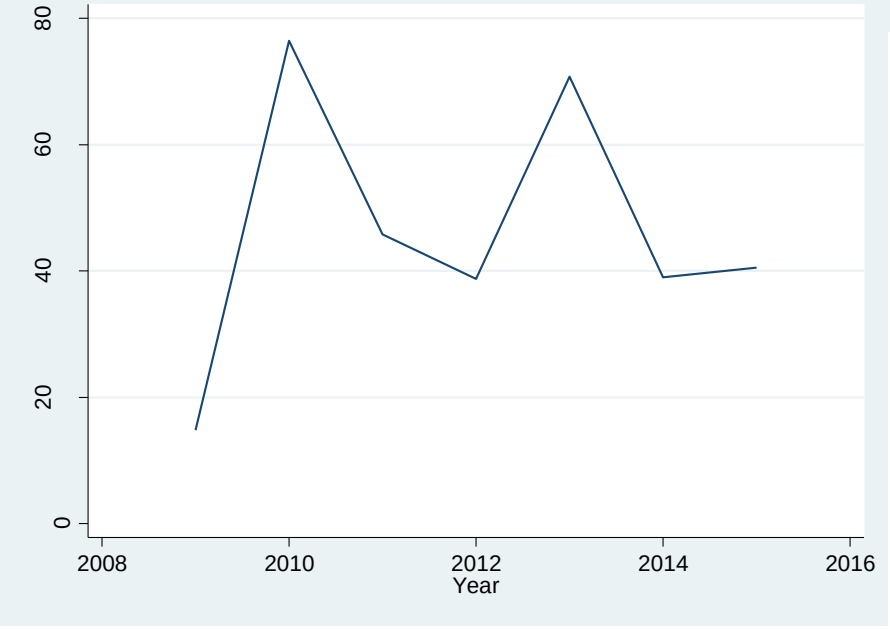
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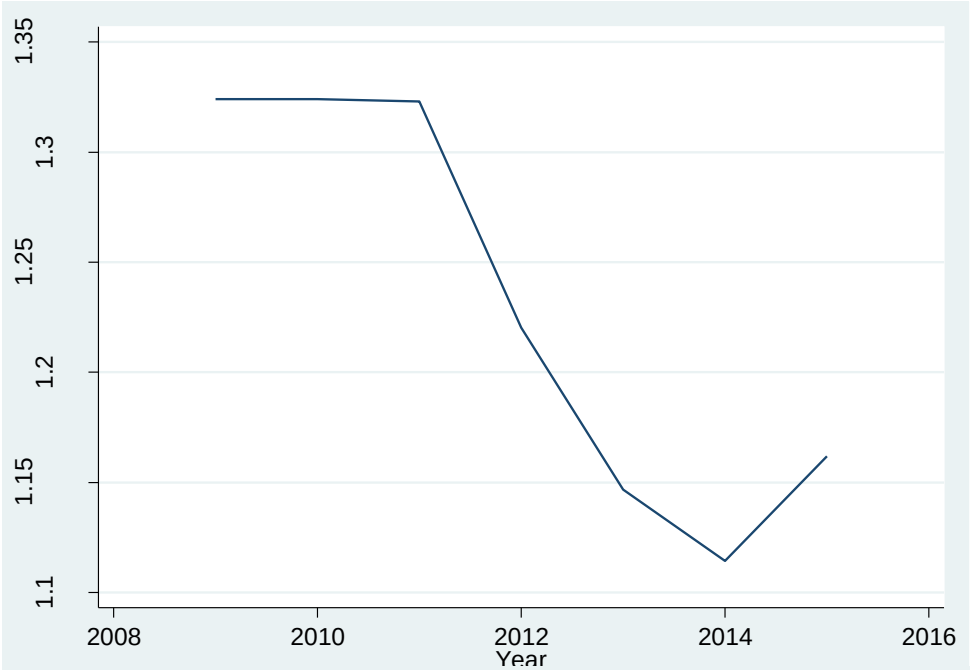
W. R. Thomas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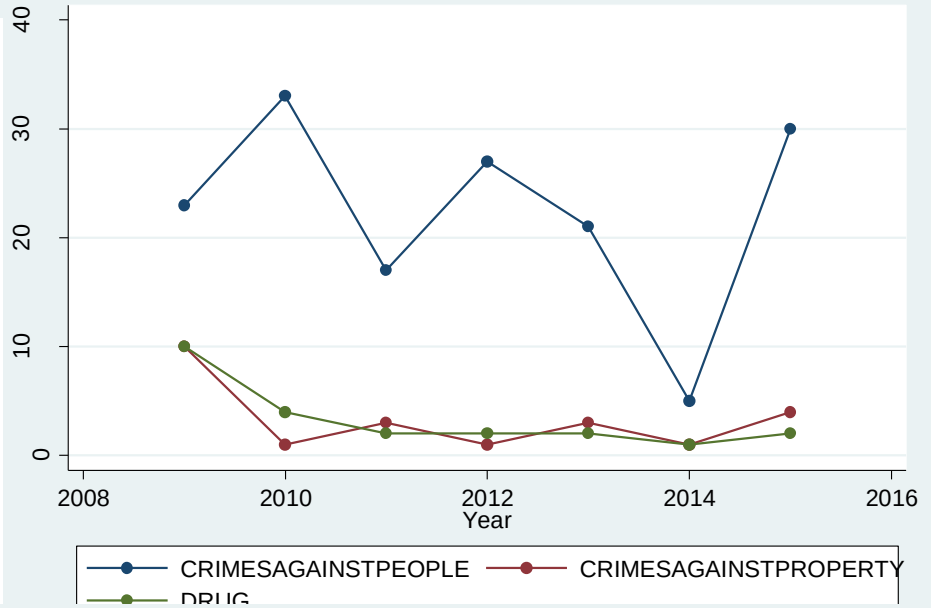
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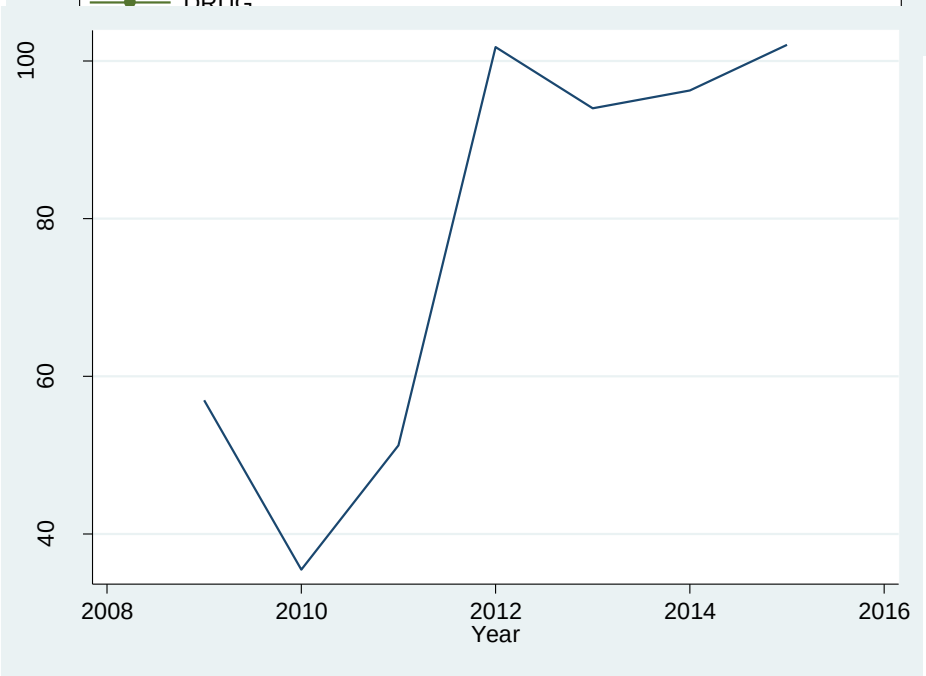
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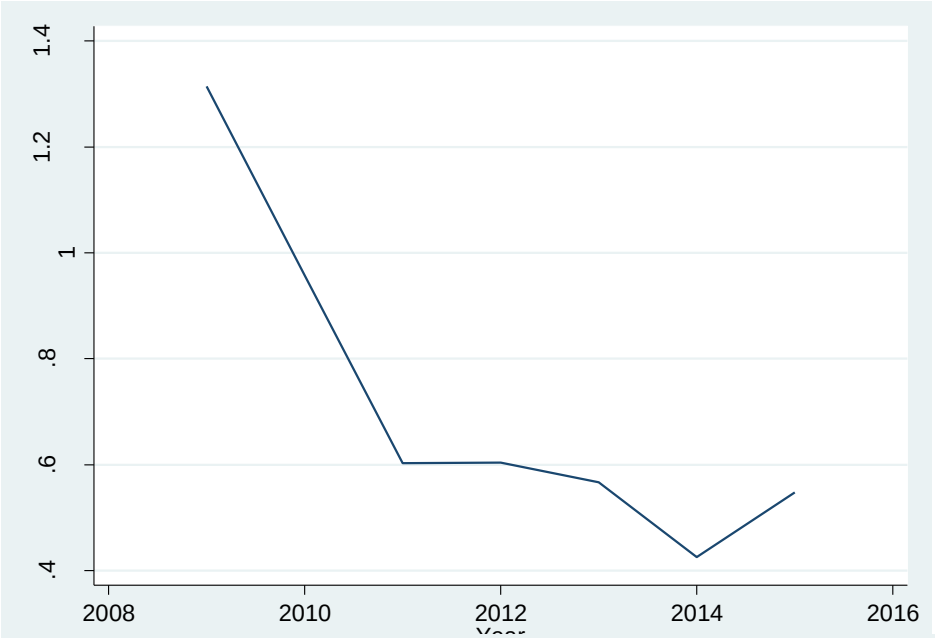
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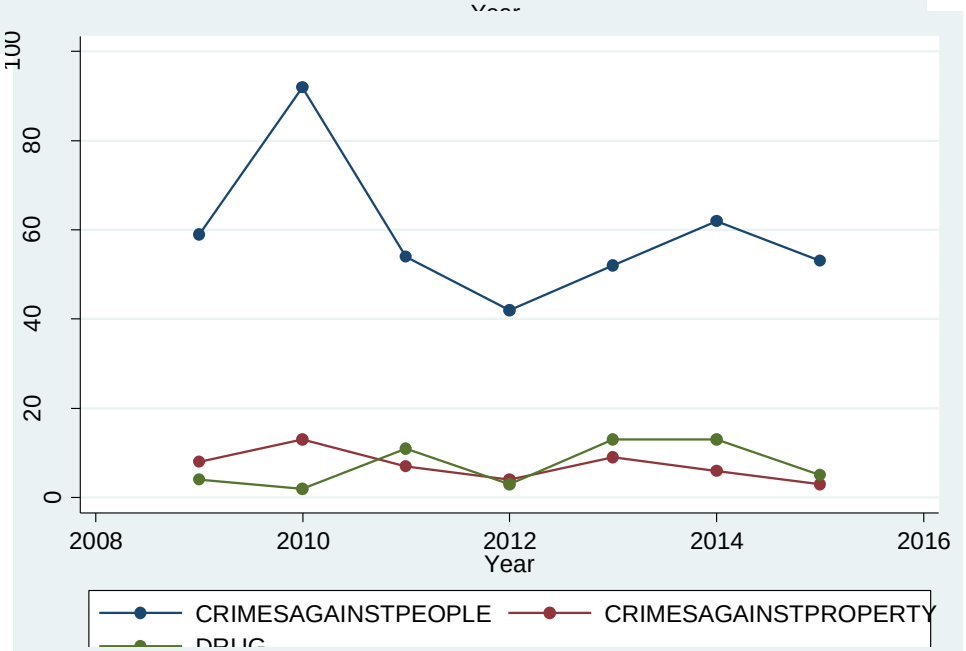
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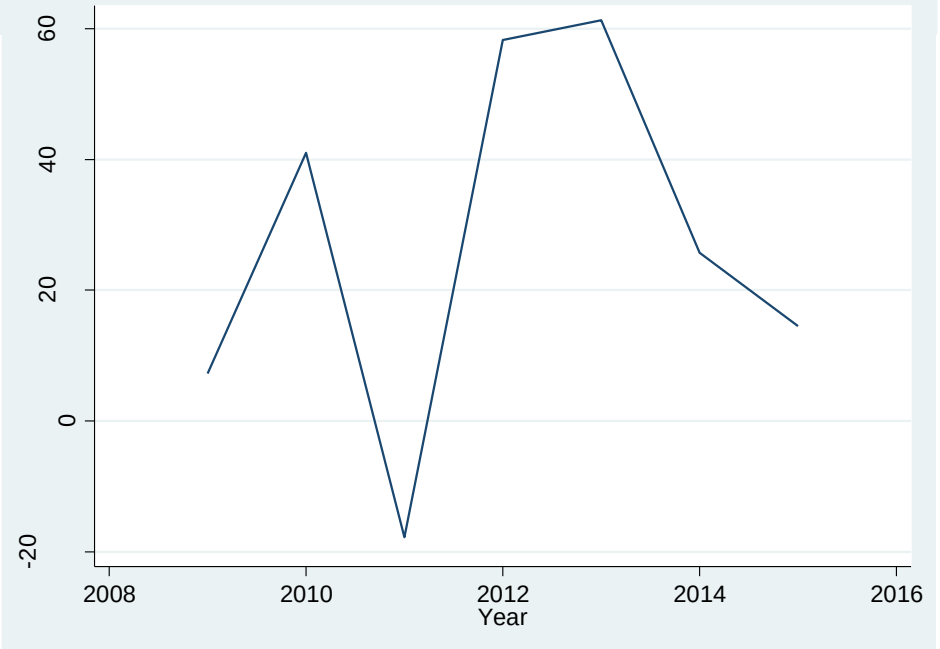
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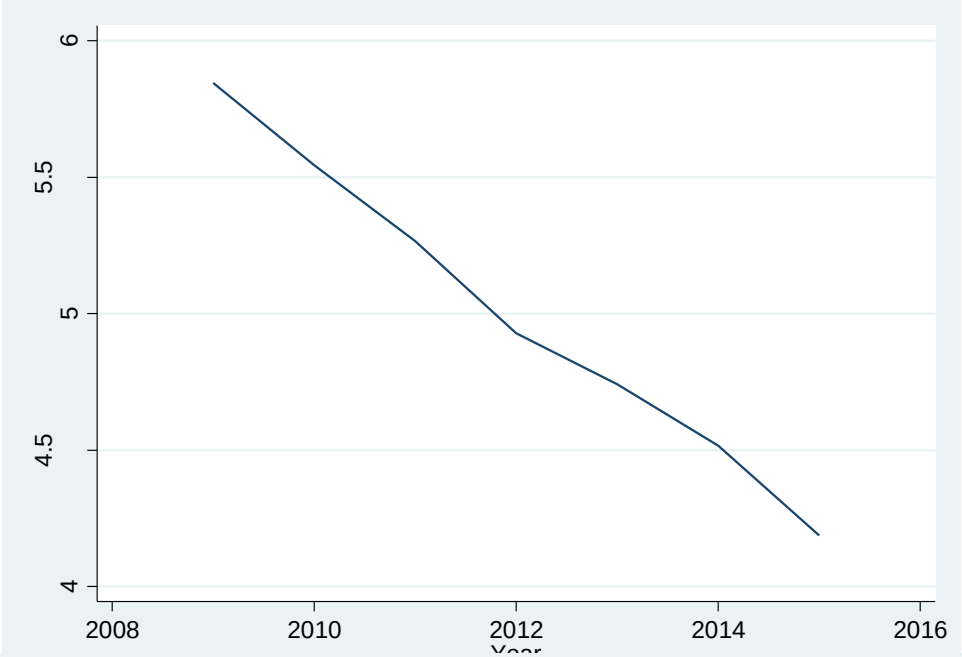
Year

Arvida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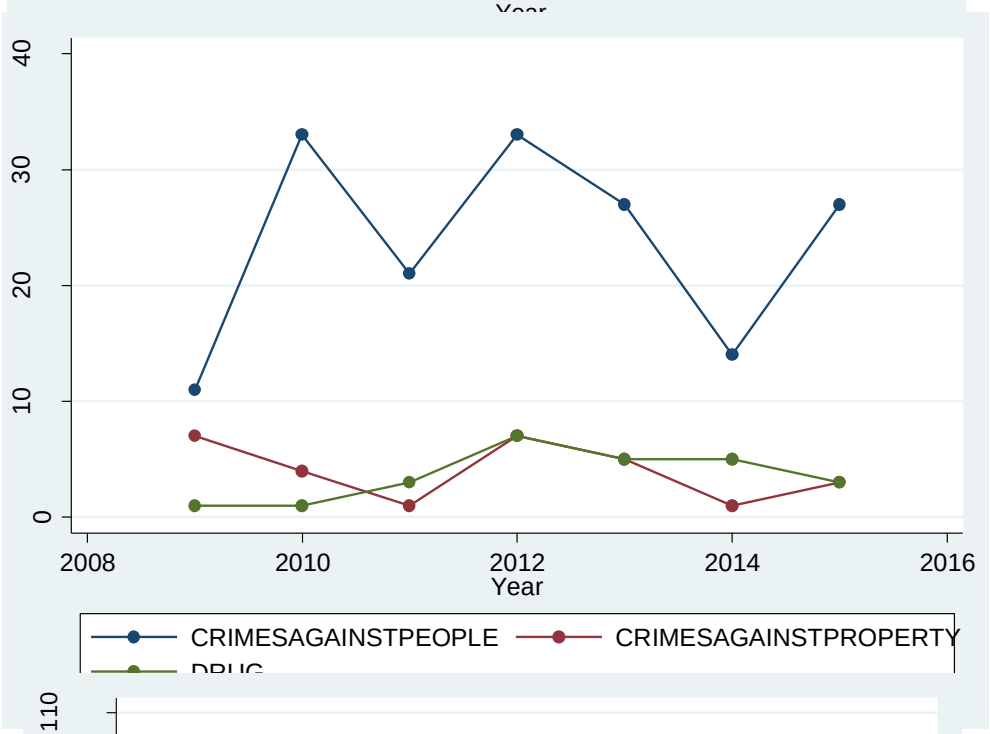
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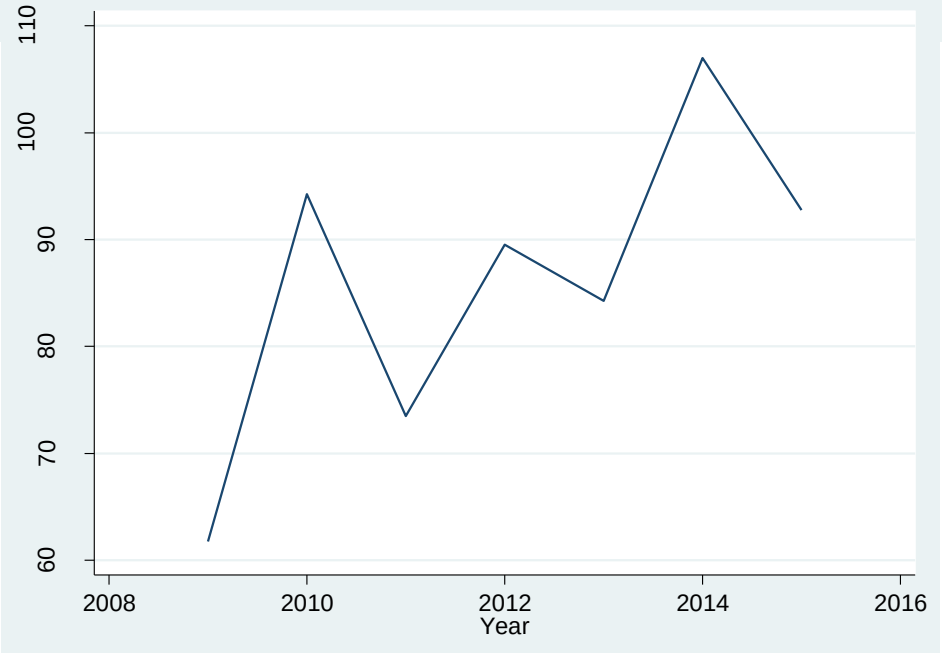
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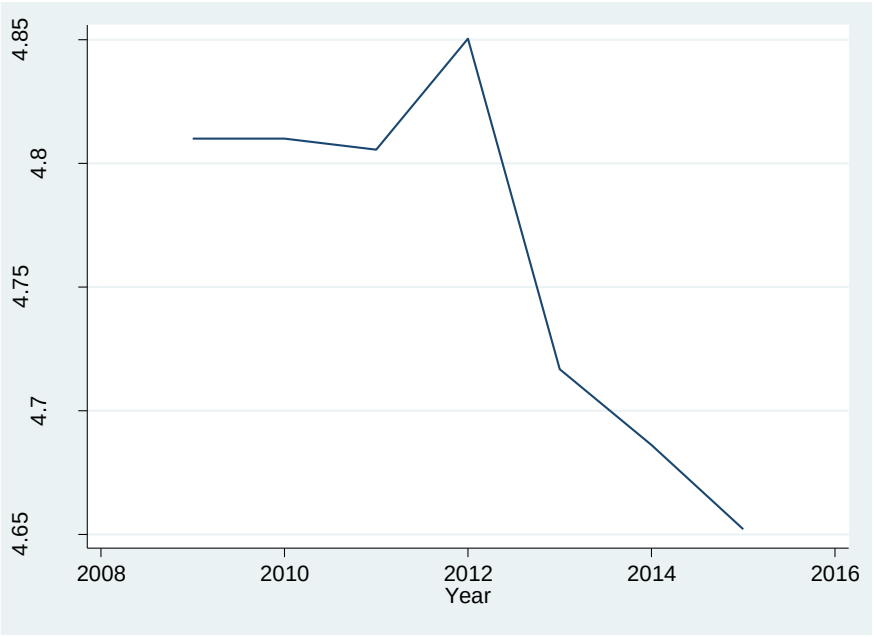
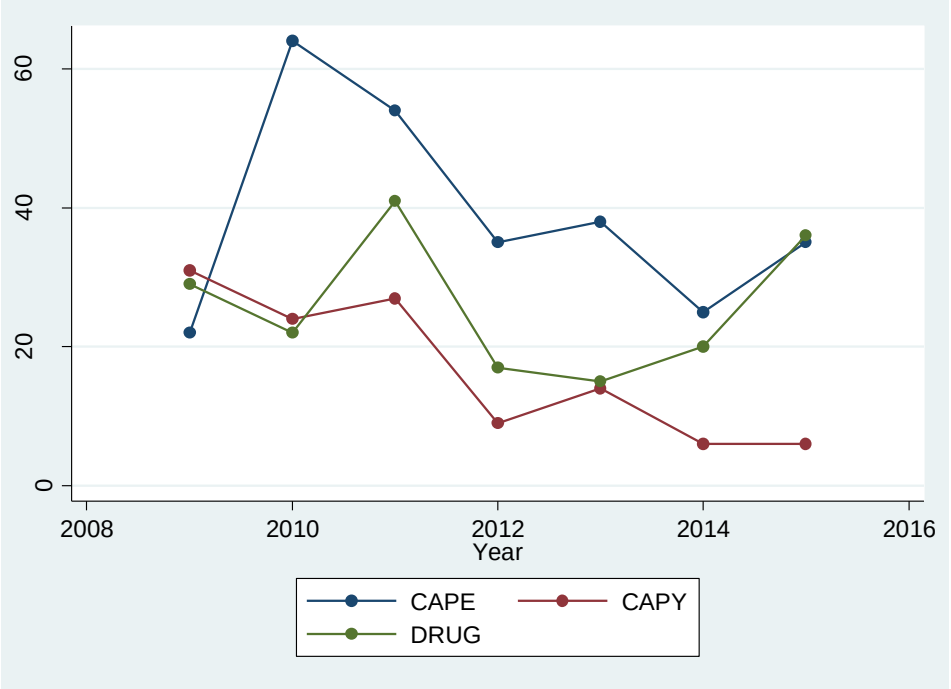
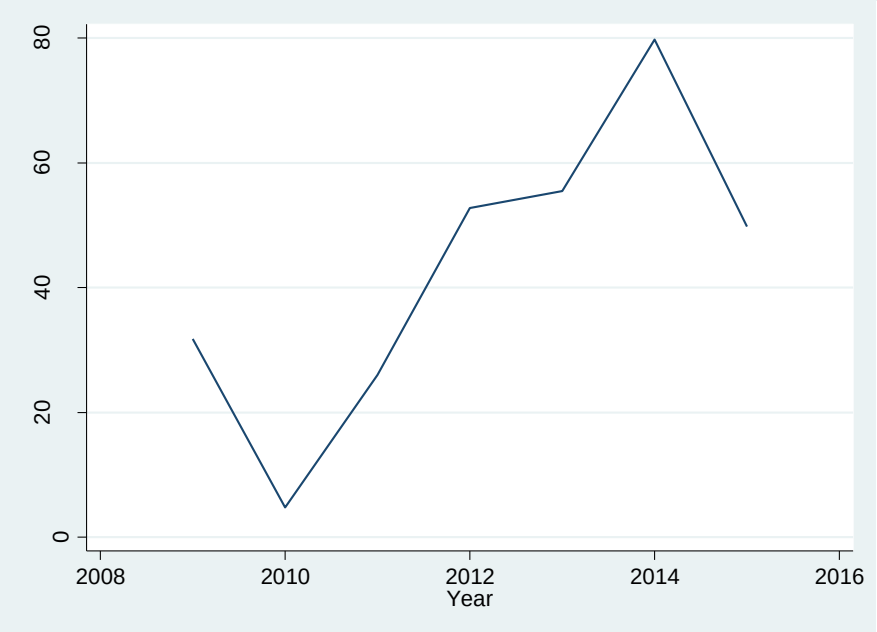
2016
Year

Appendix F: High Schools

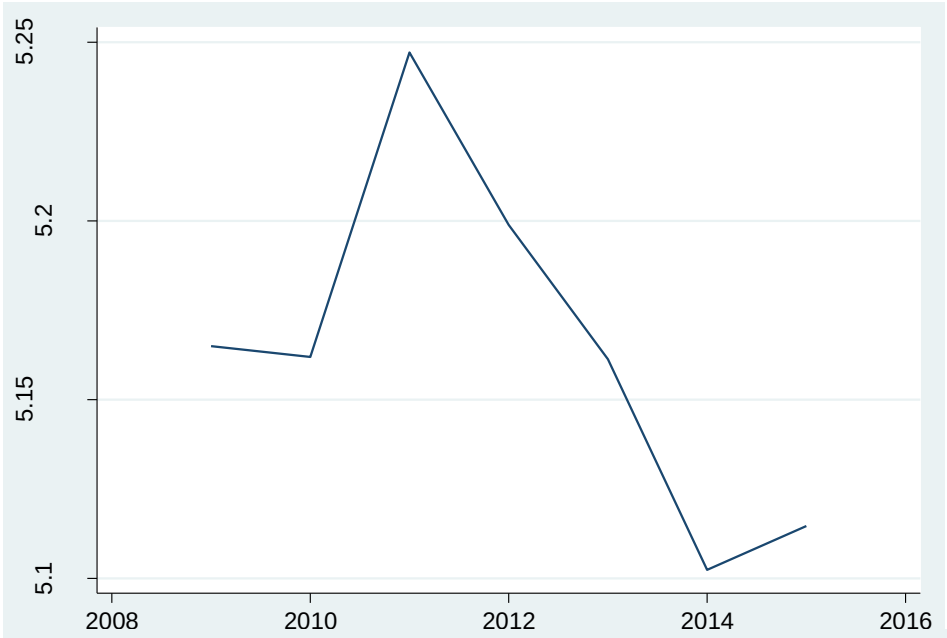
American

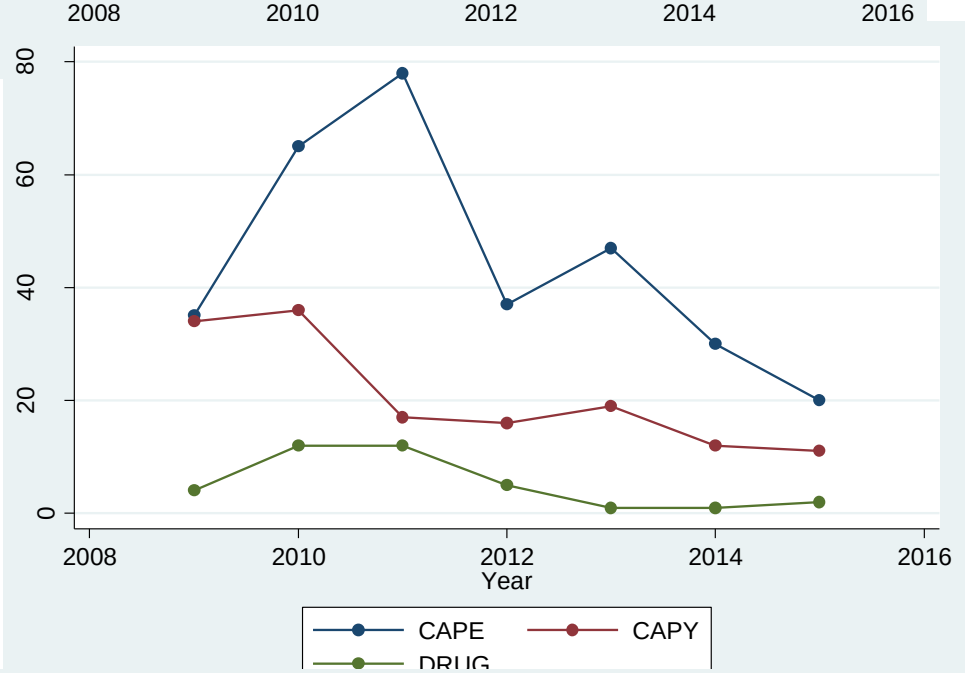




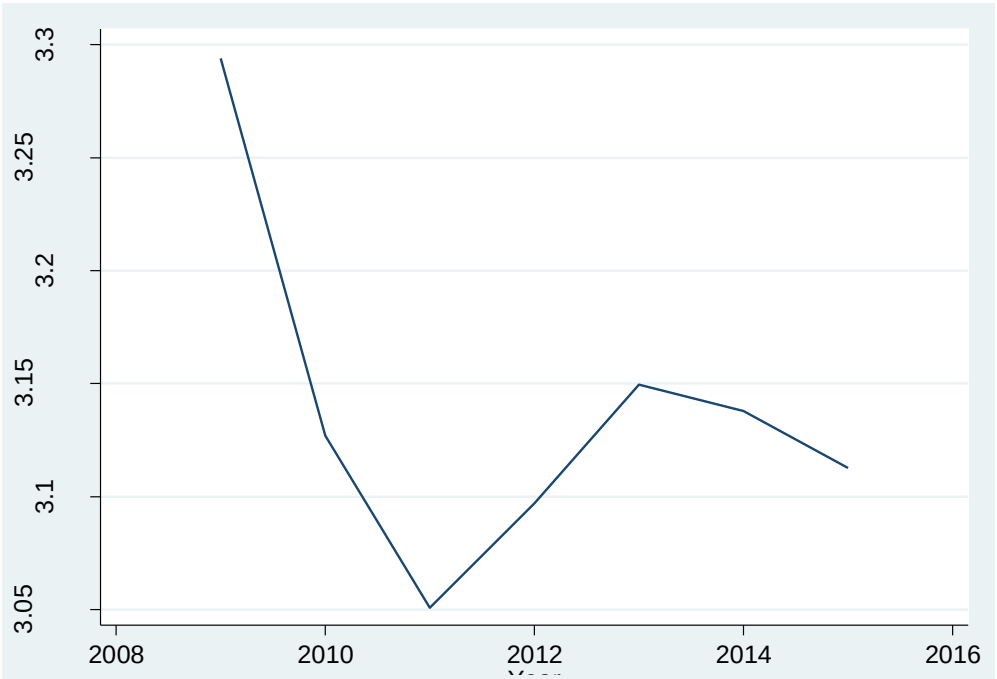


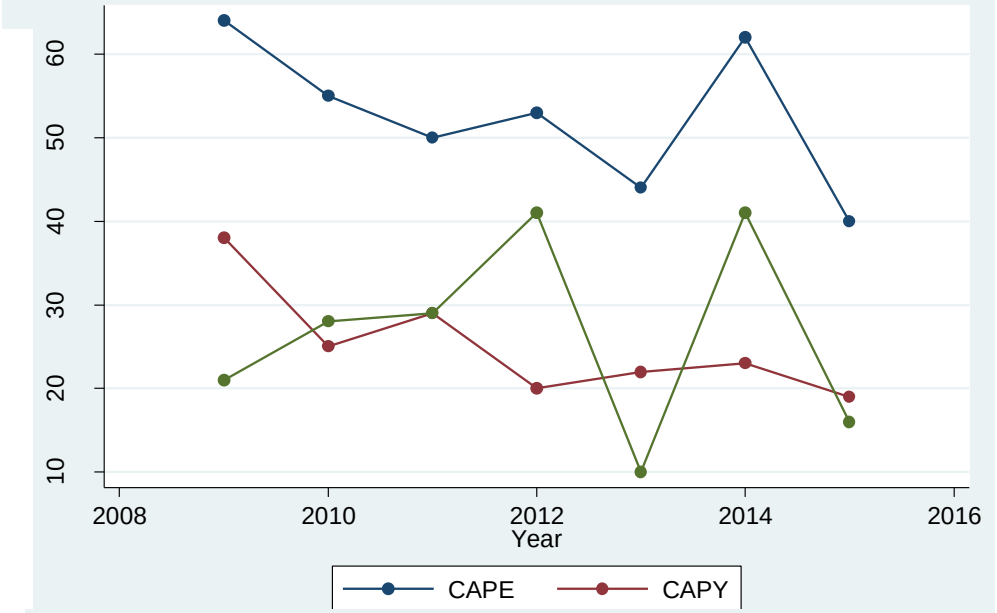
Booker T. Washington

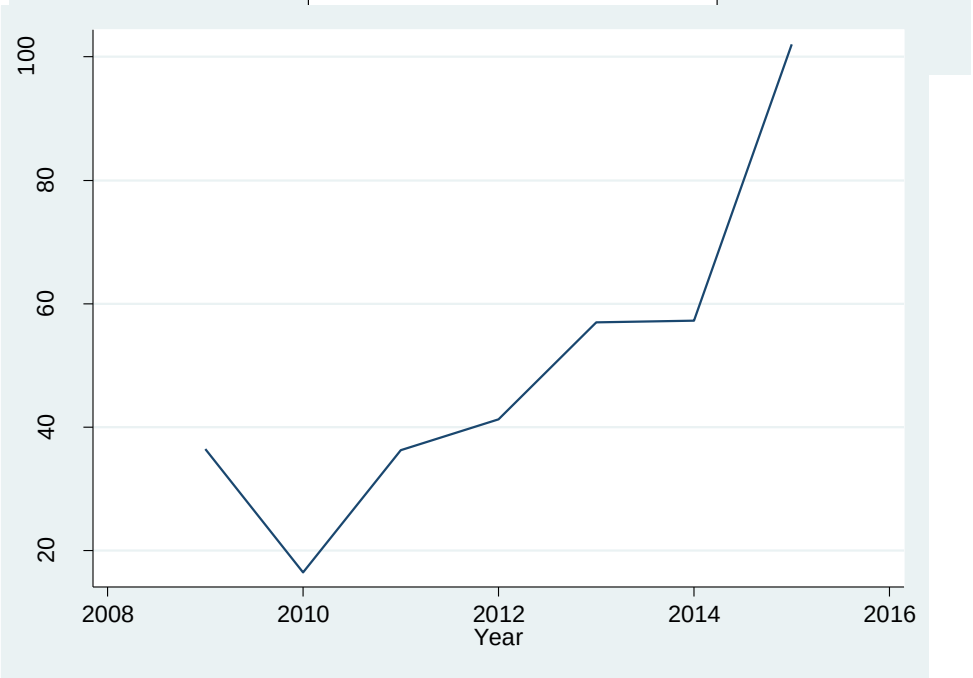




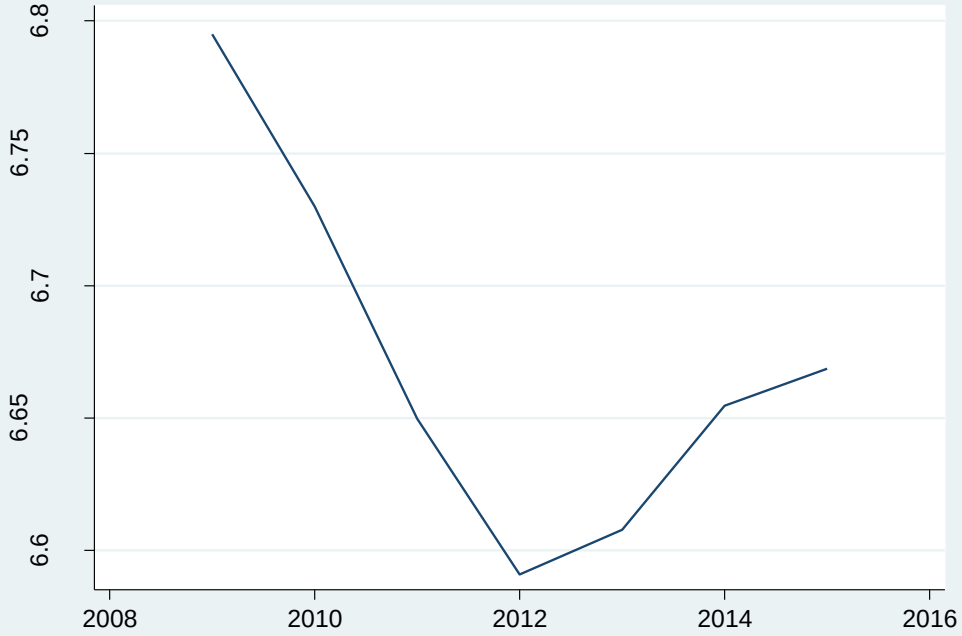
Coral Gables

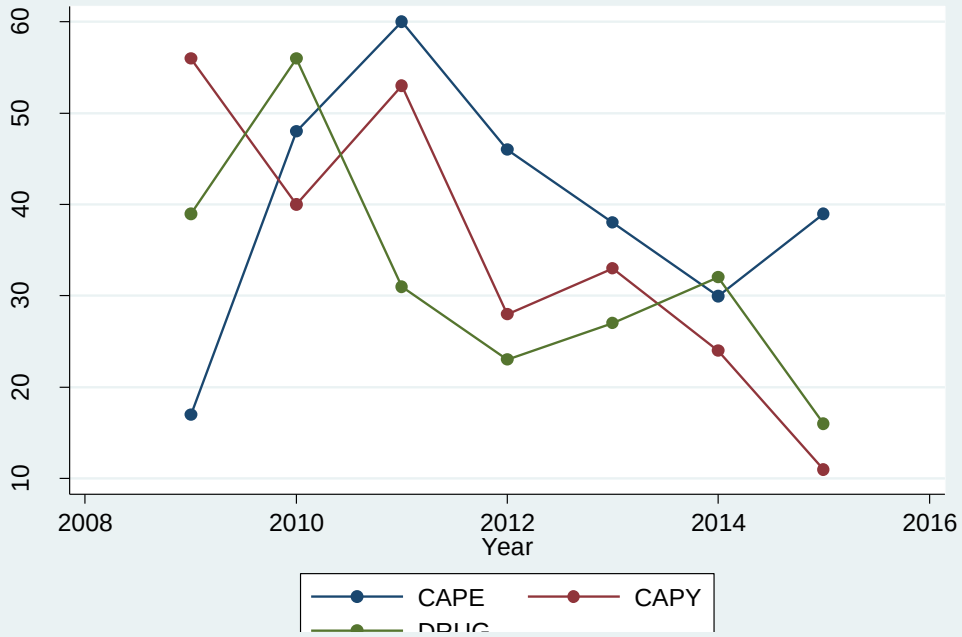


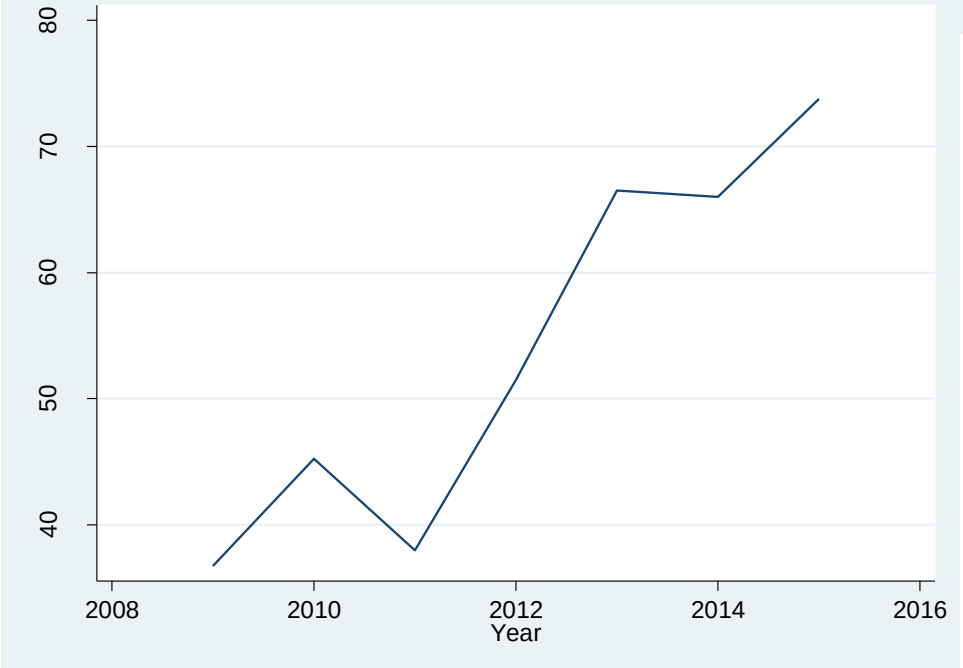




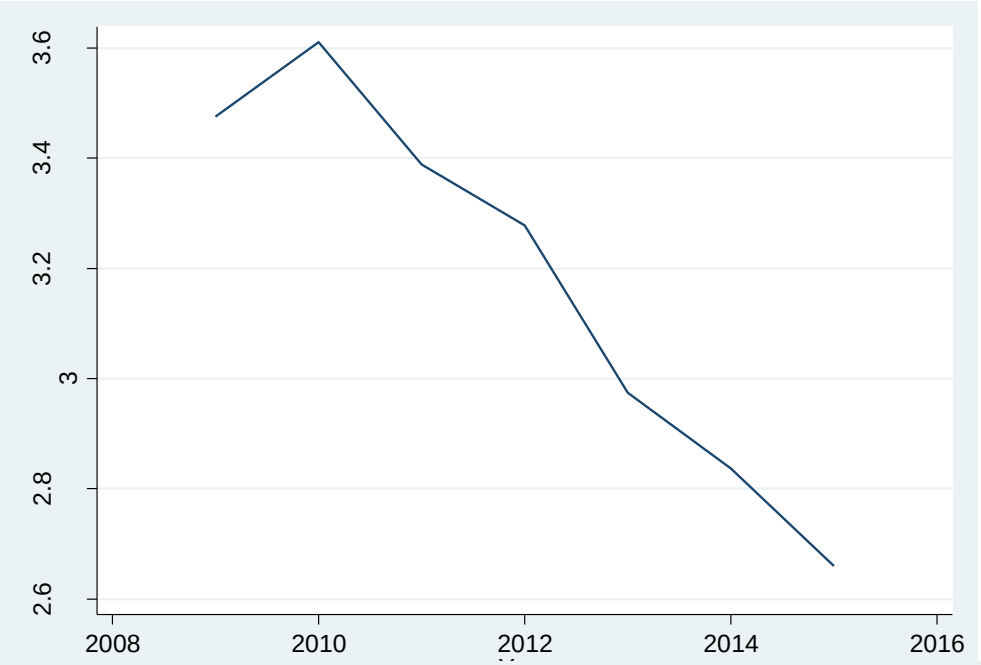
Dr. Michael M. Krop







Felix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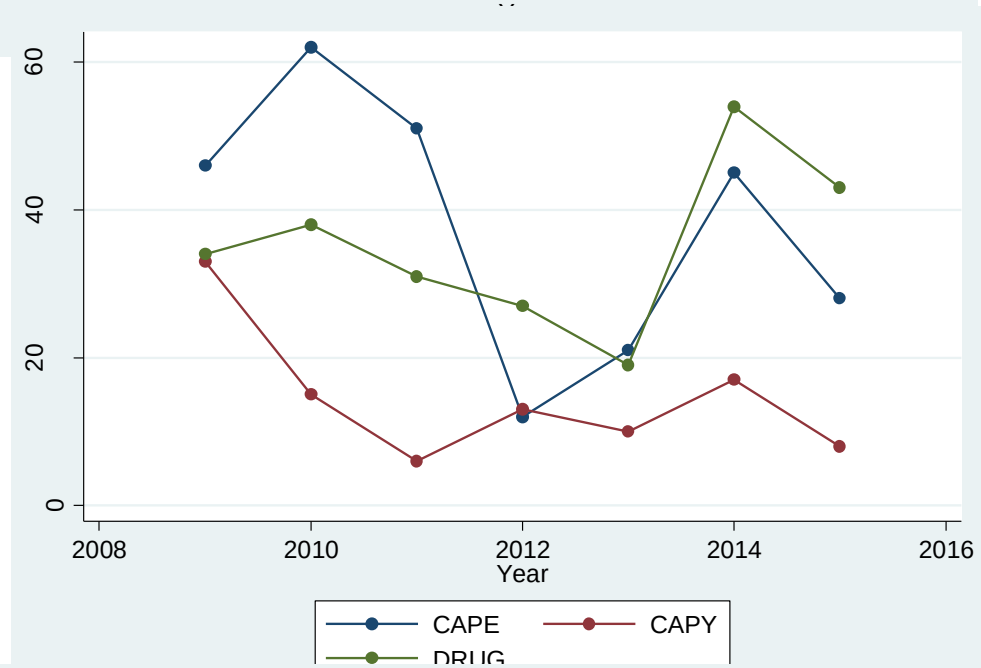
2012
2014
2016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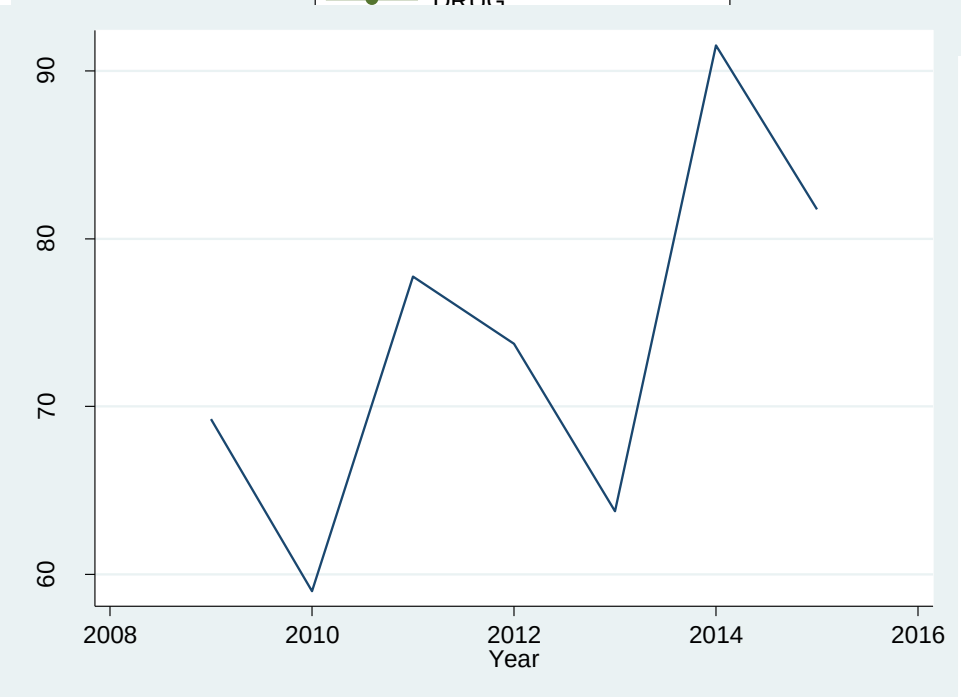
CAPE
CAPY
DRUG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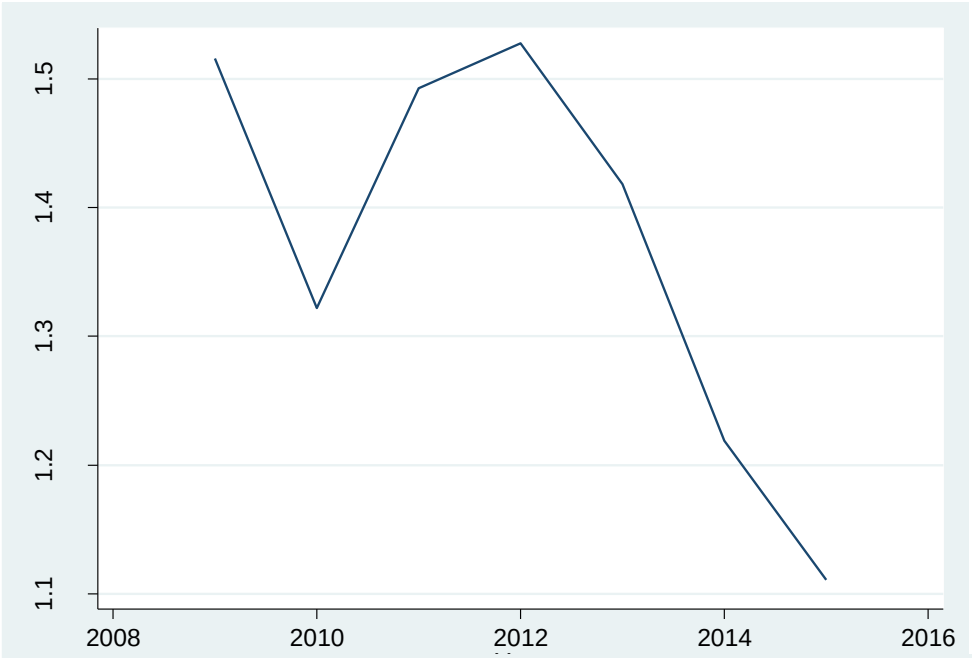
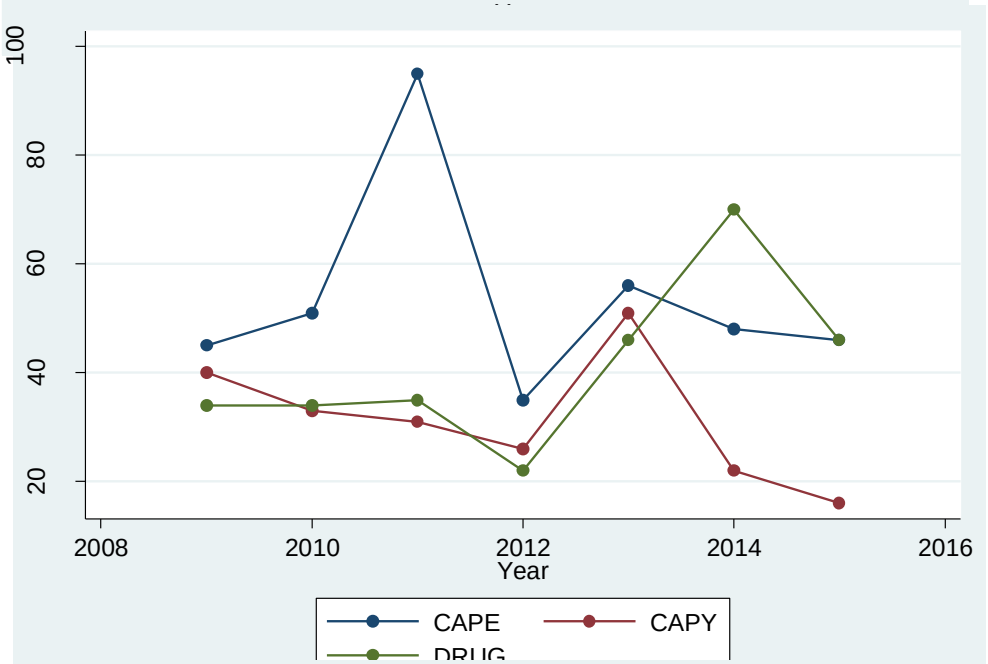
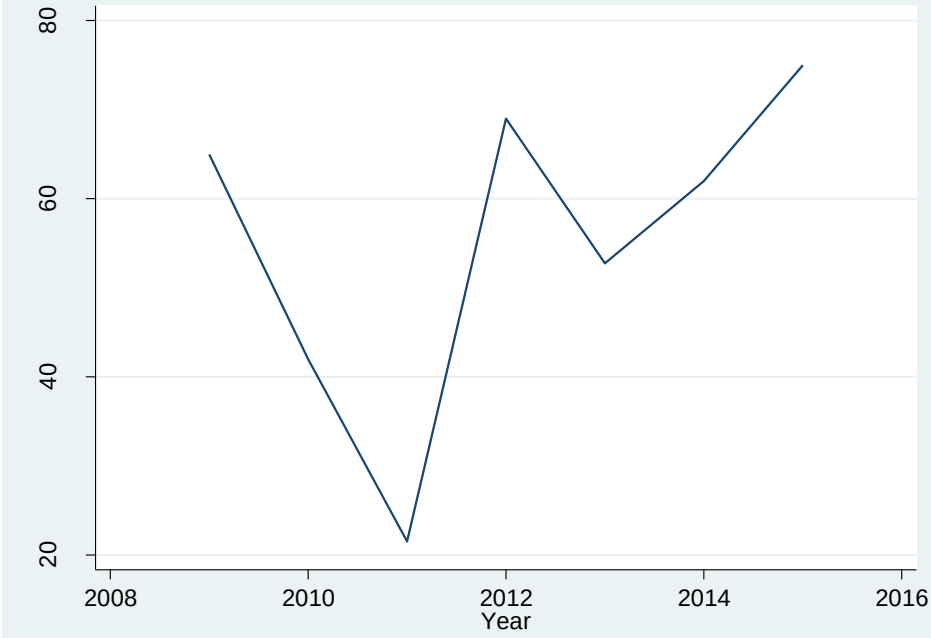
Year

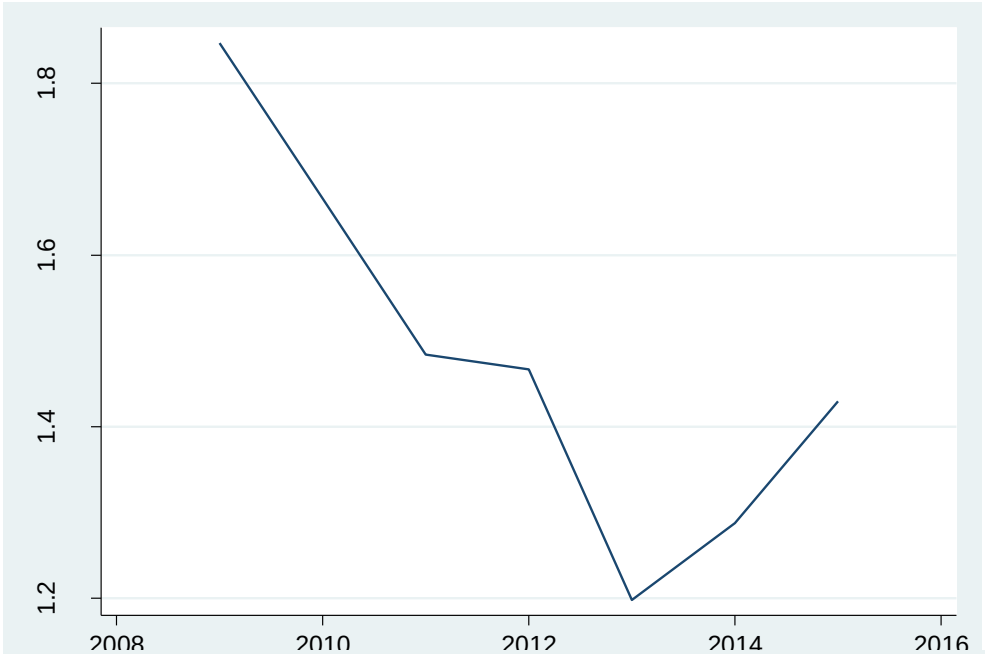
G. Holmes Braddock







Hialeah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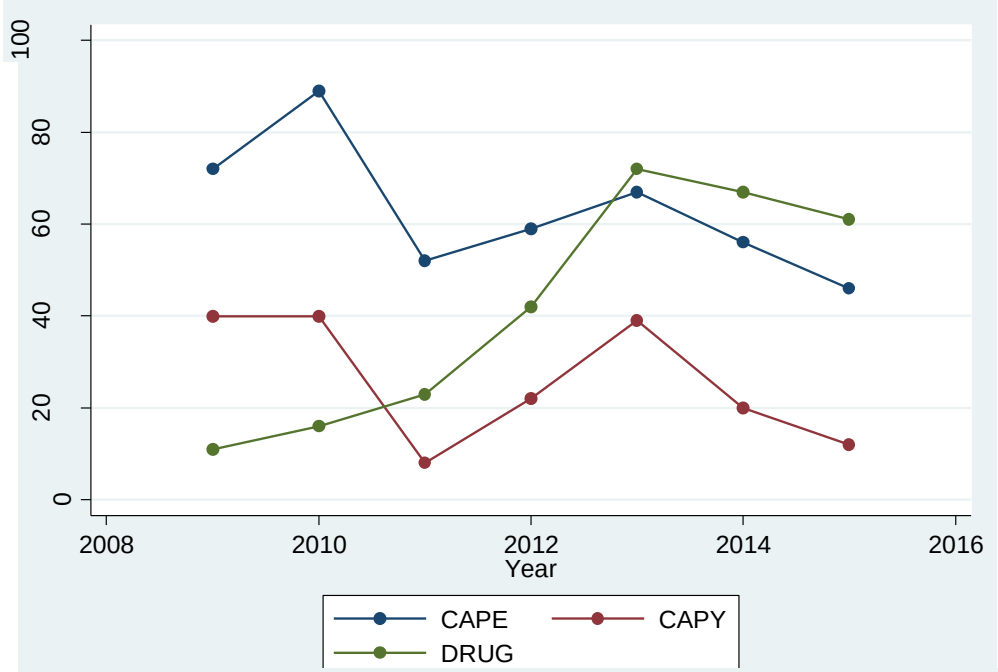
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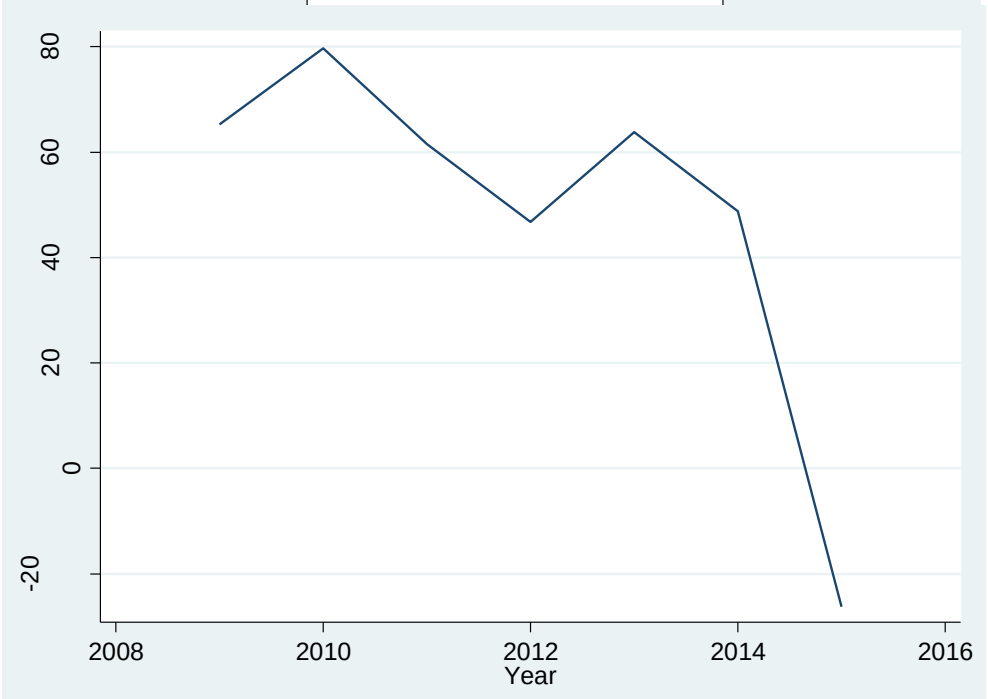
CAPY
DRUG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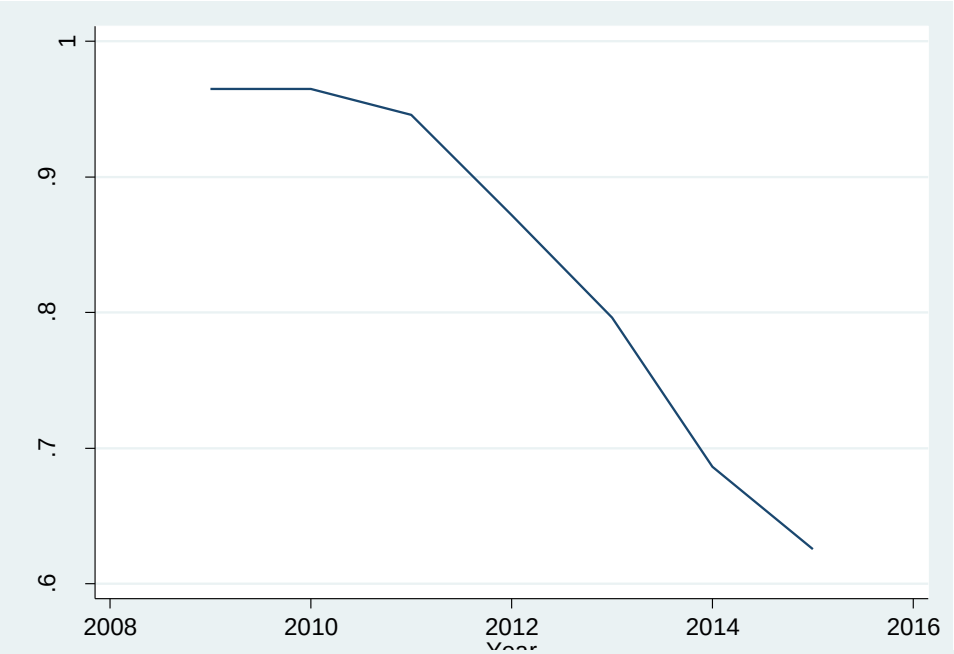
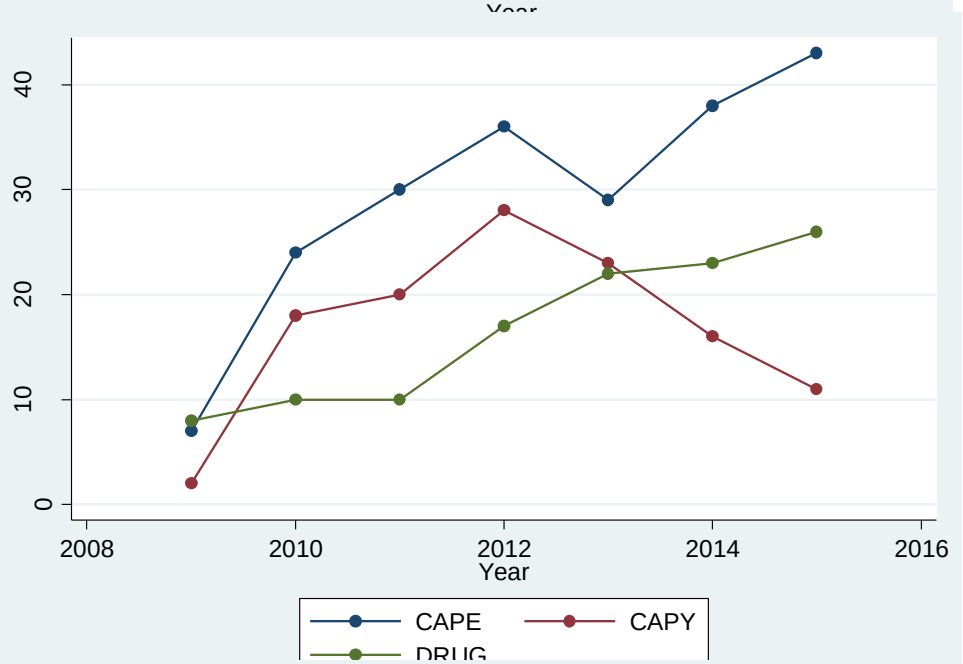
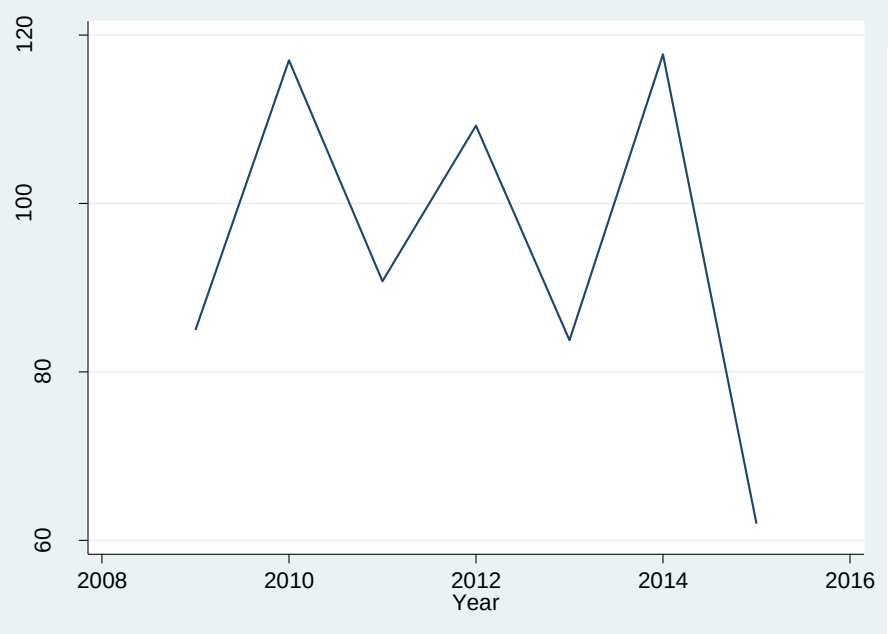
Year

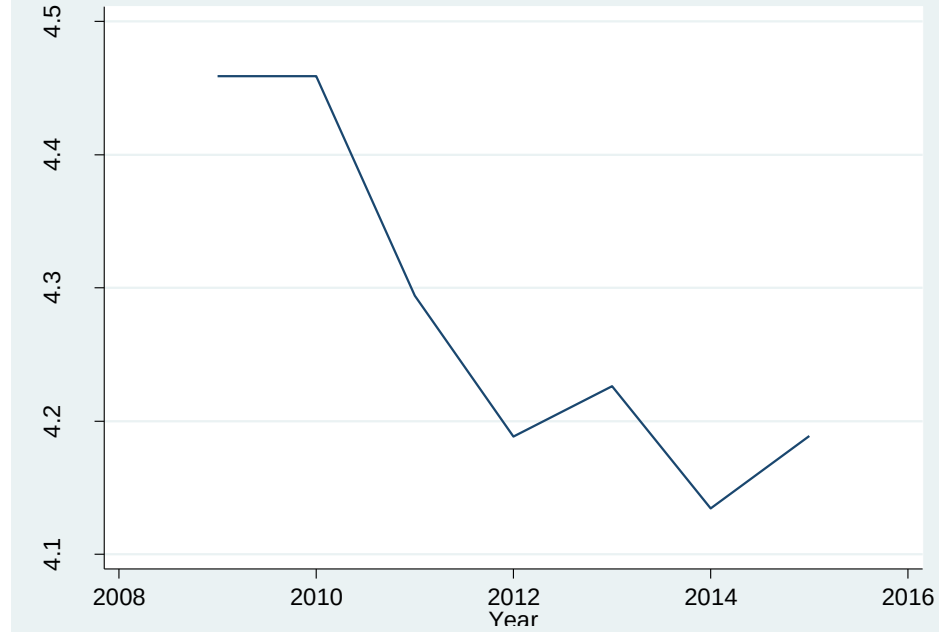
Hialeah Gardens

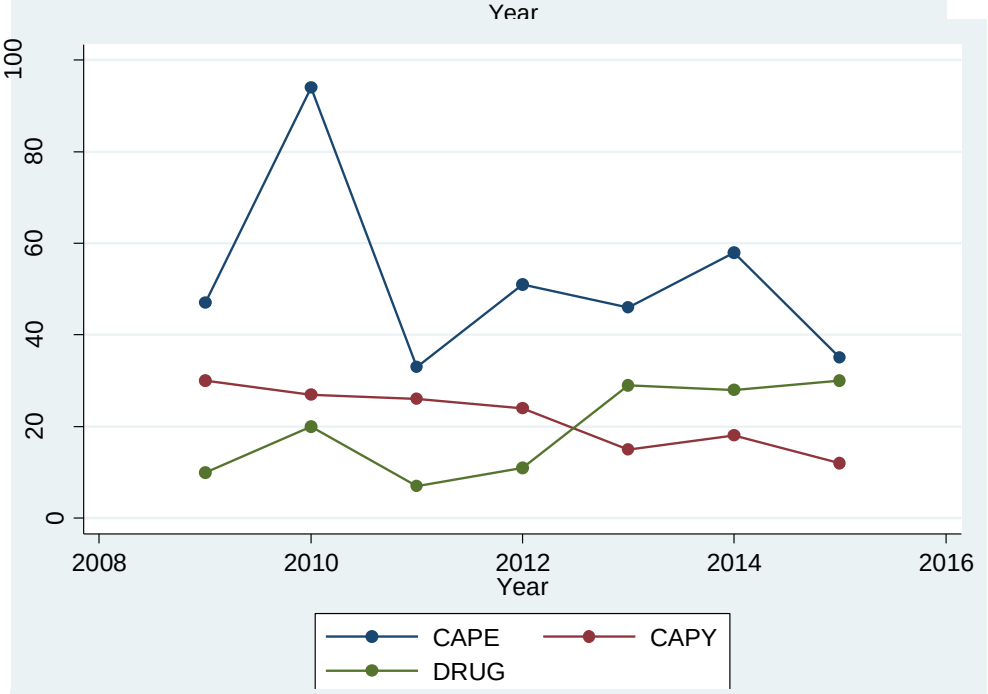


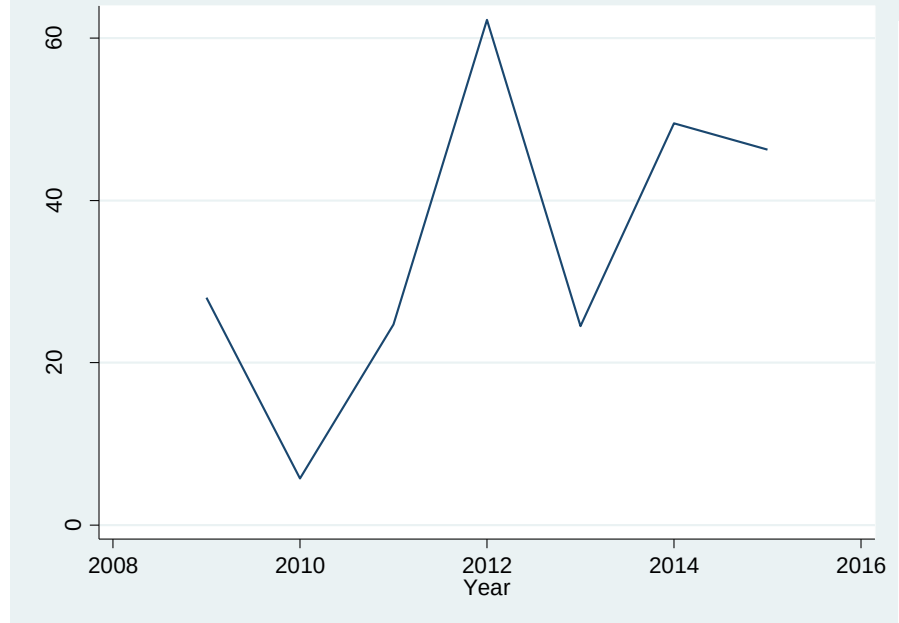




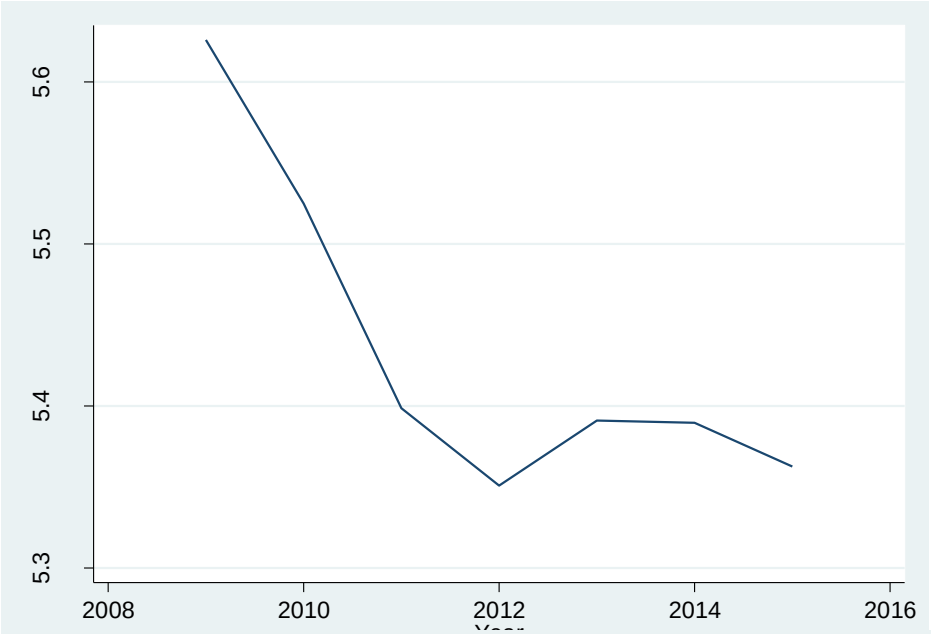
Hialeah Miami Lakes







Homestead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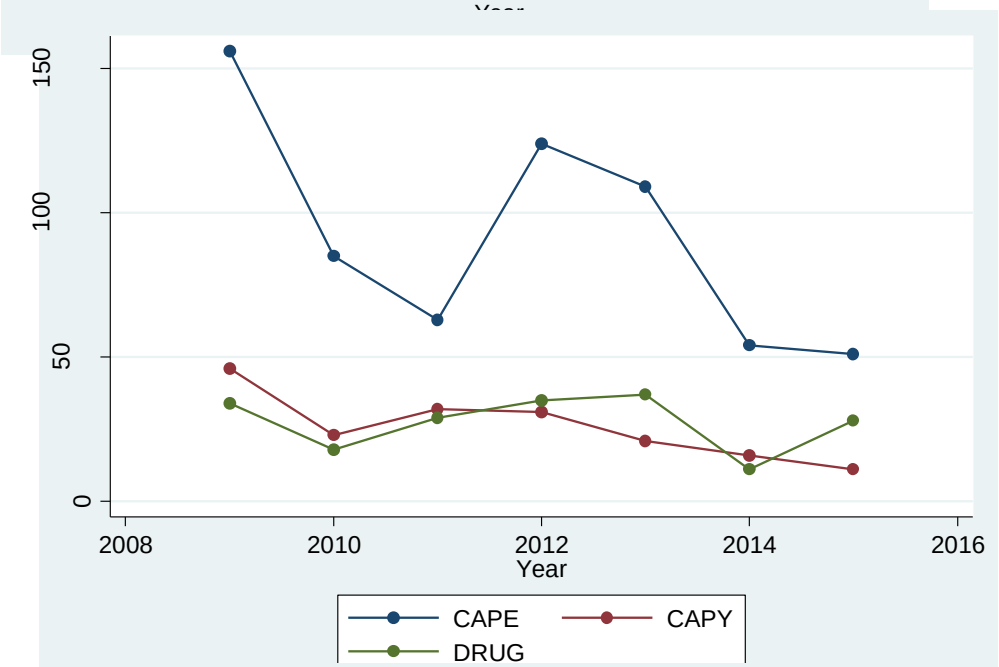
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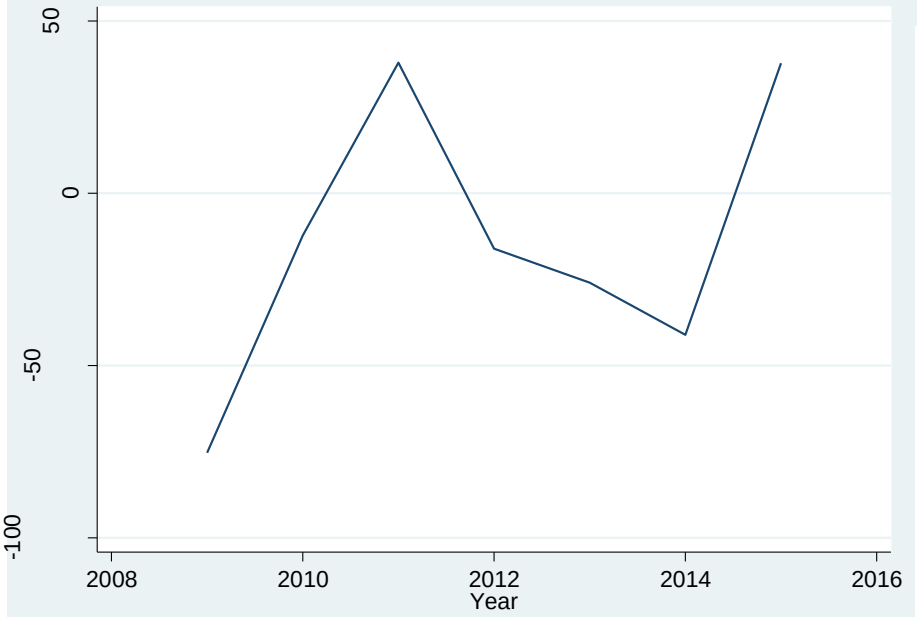
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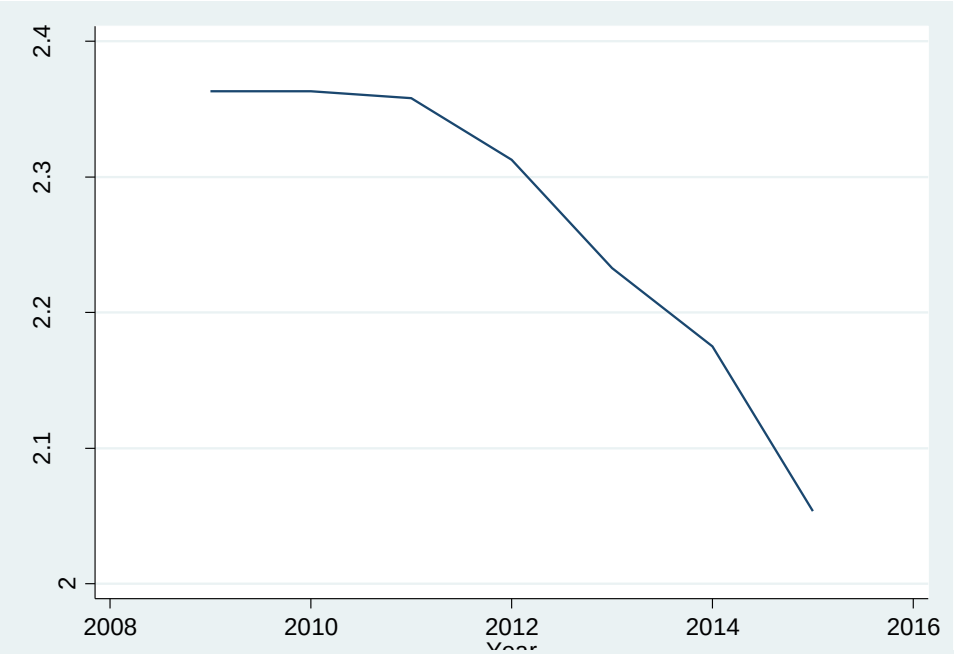
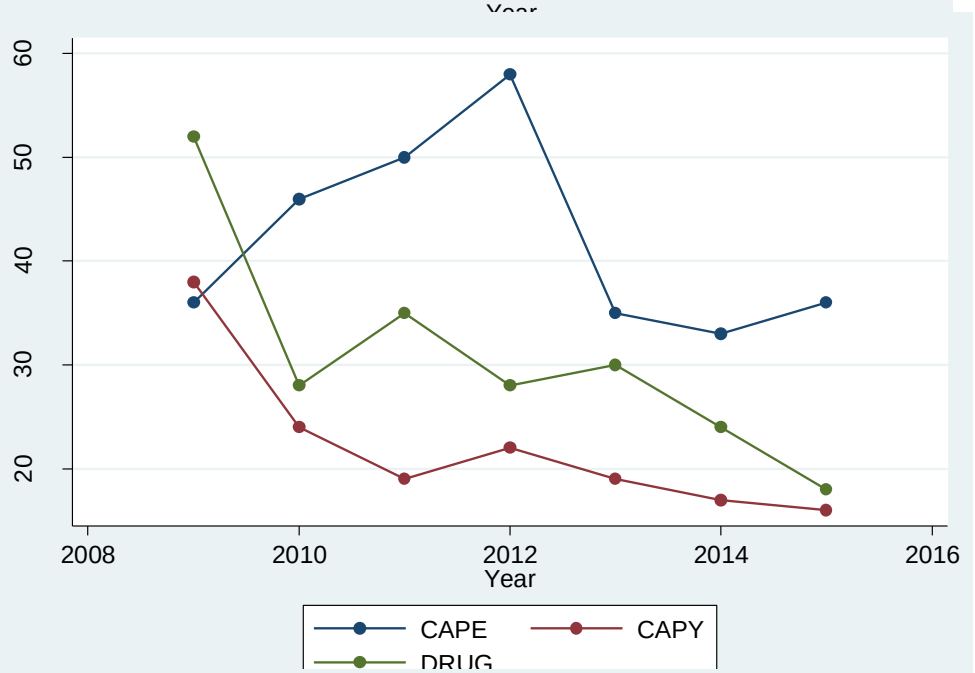
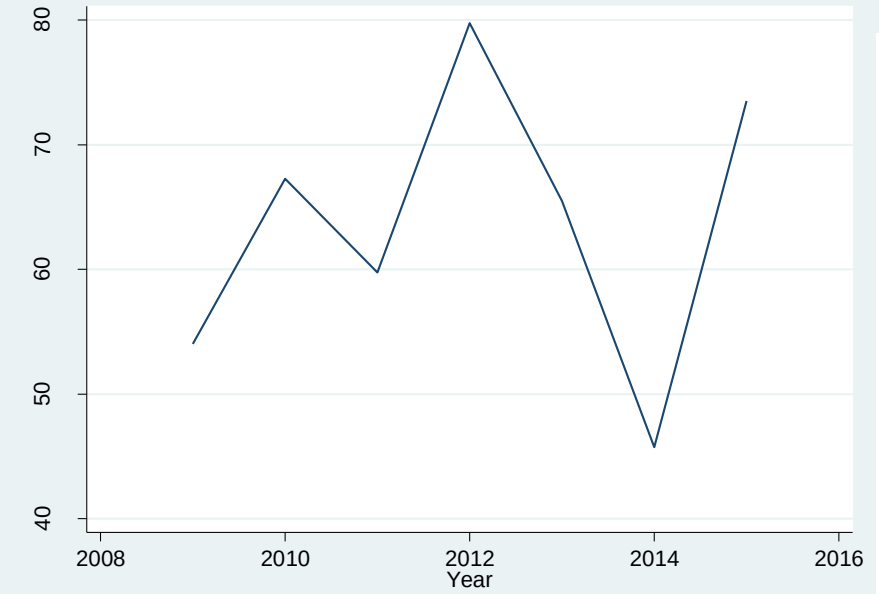
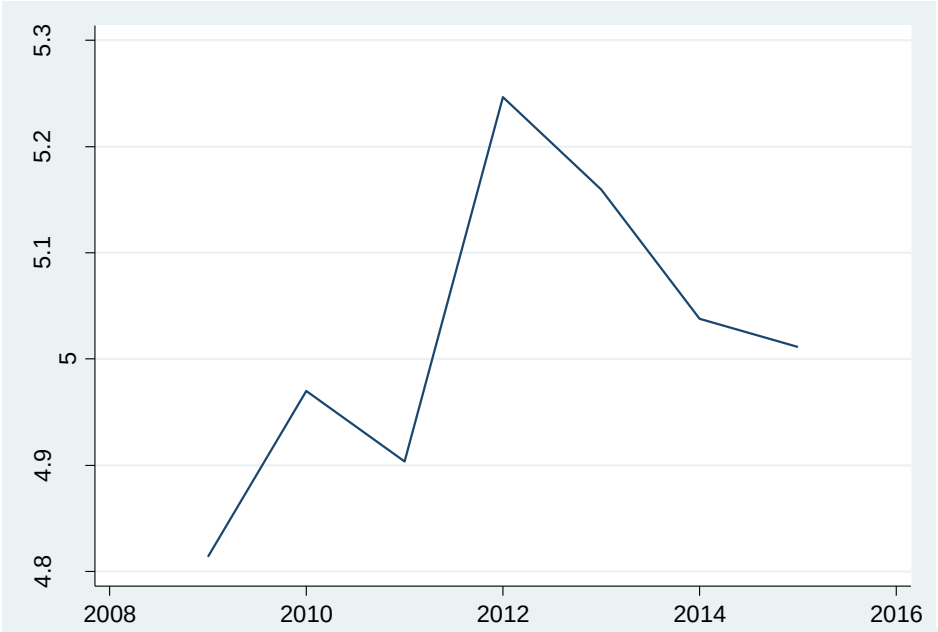
John A Ferguson







Miami Beach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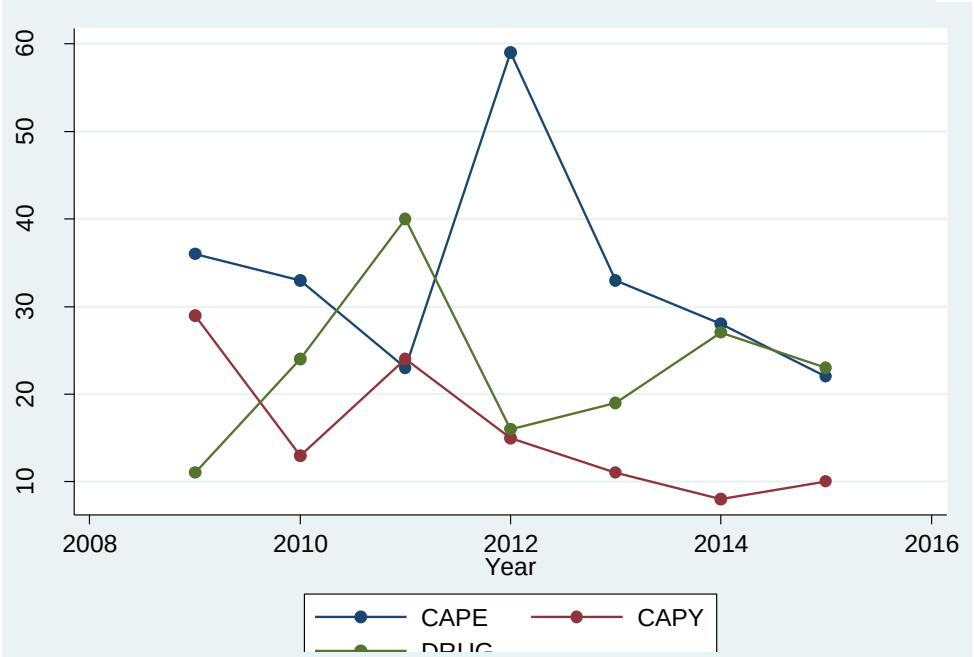
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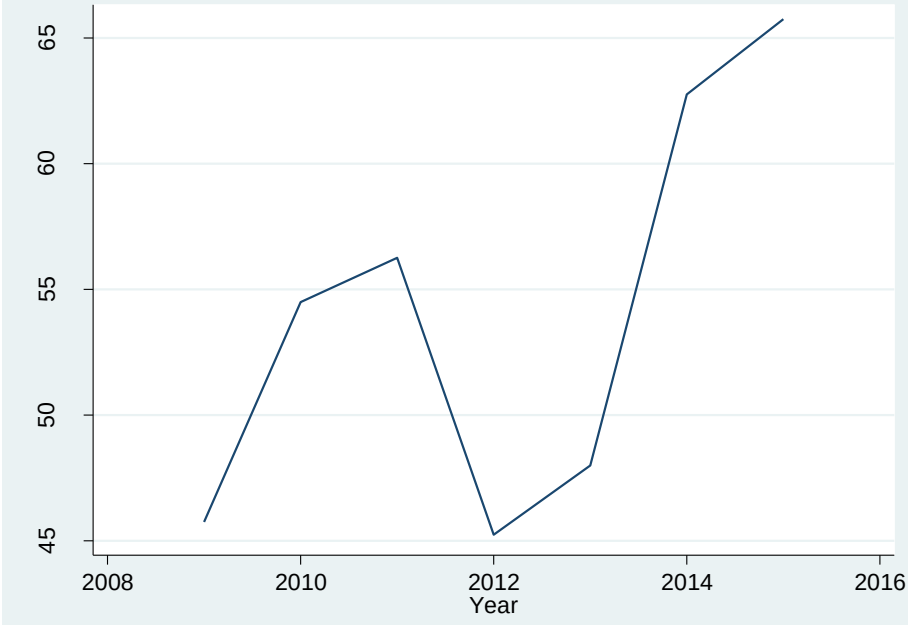
CAPY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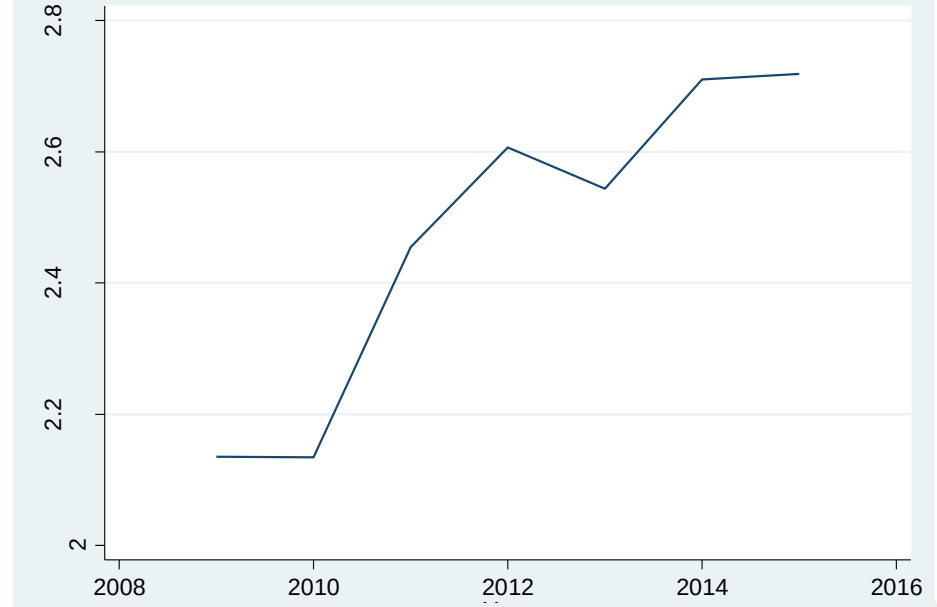
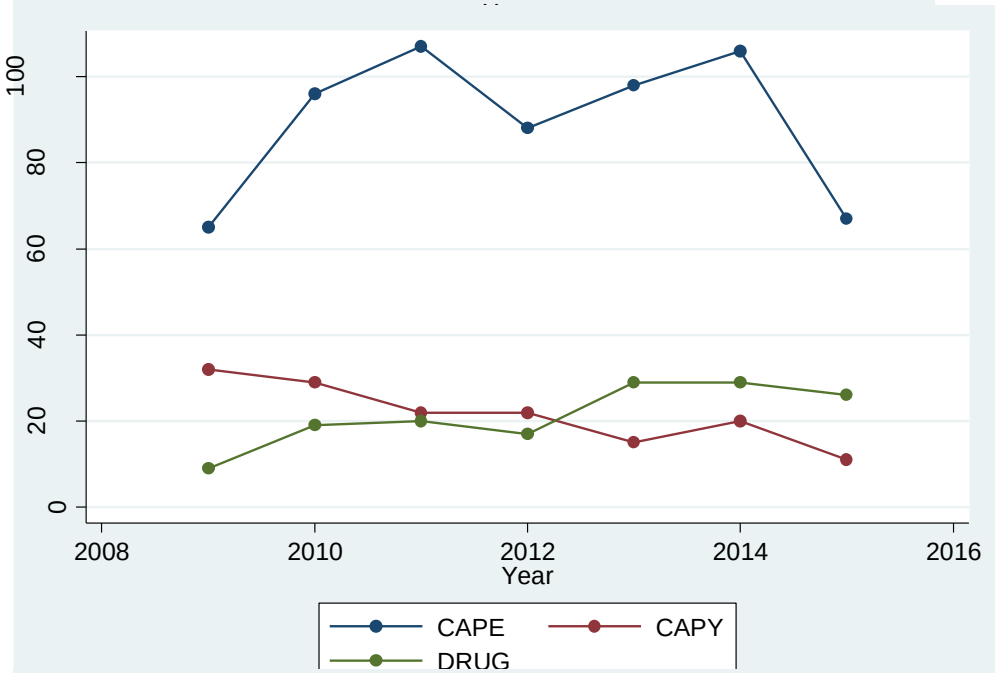
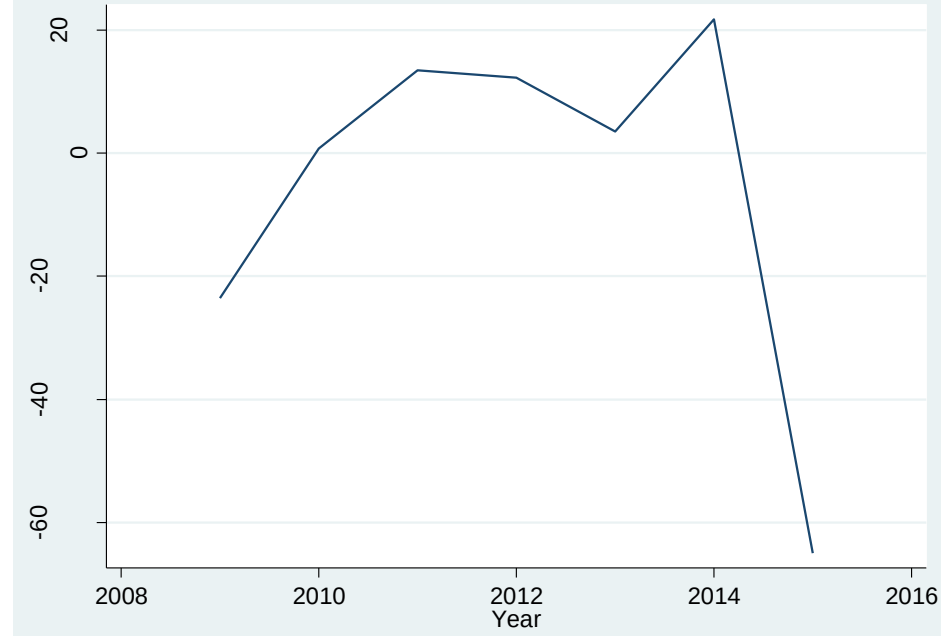
Year

Miami Carol City







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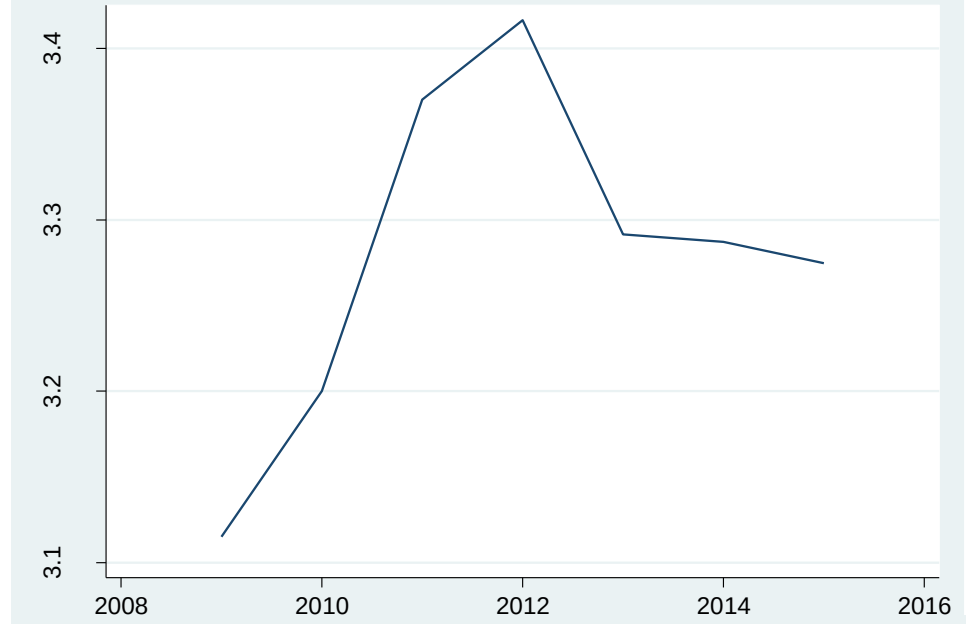
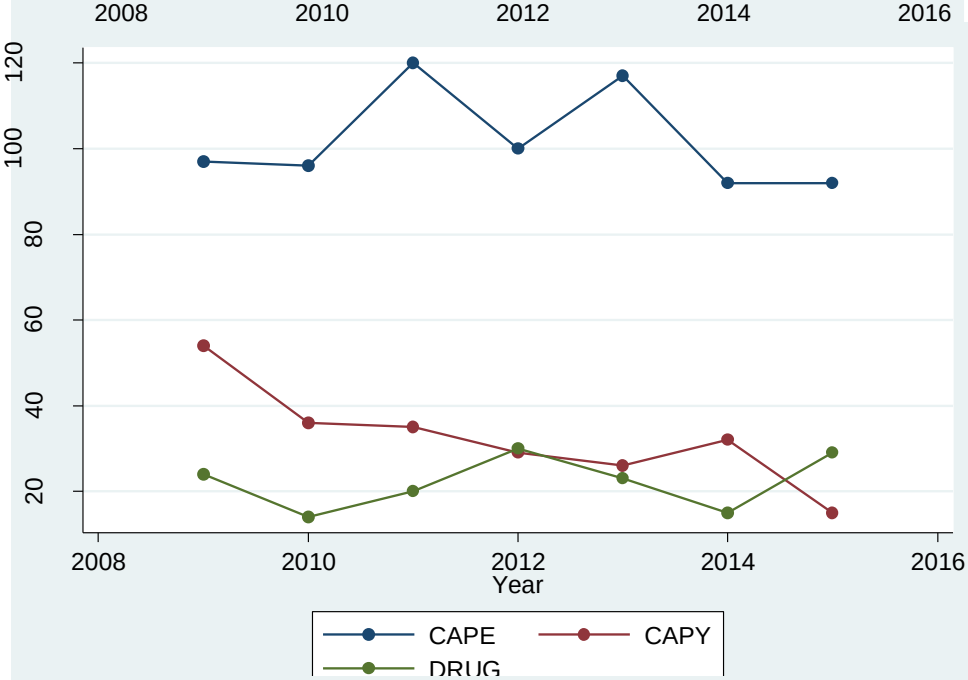
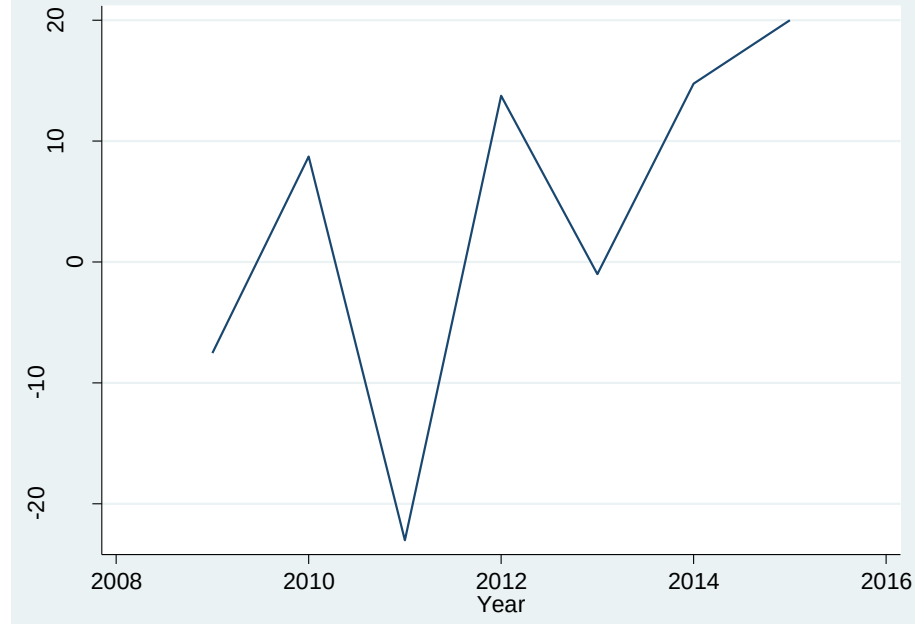
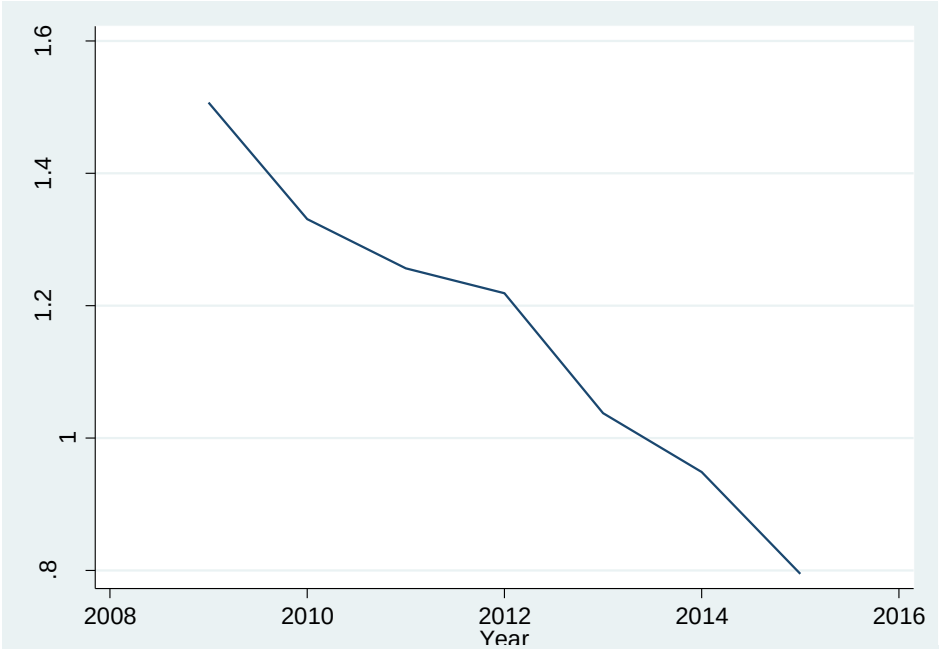
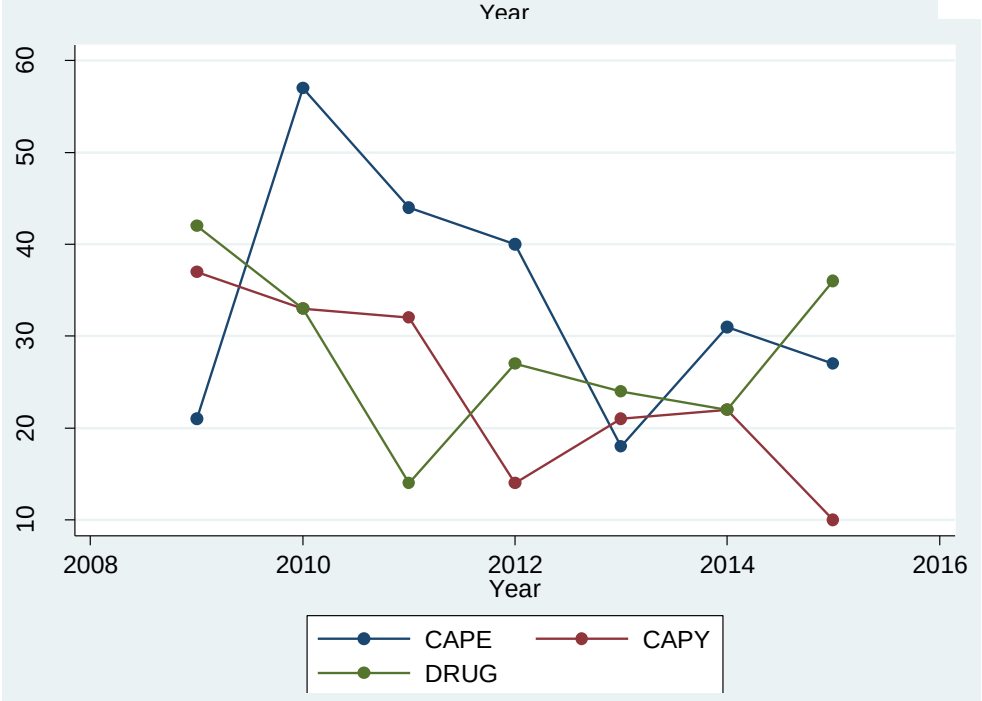


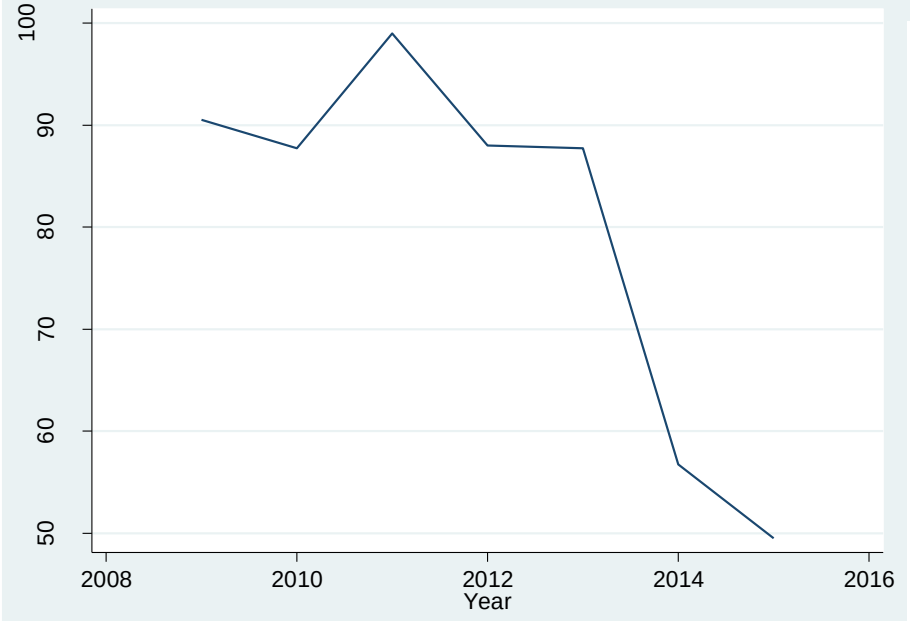




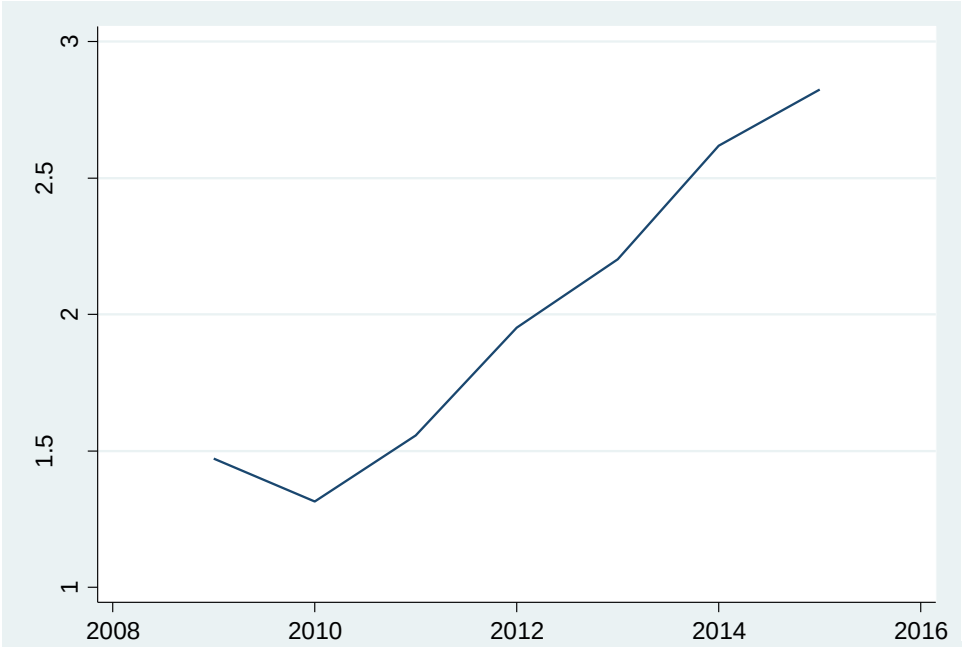
Miami Coral Park

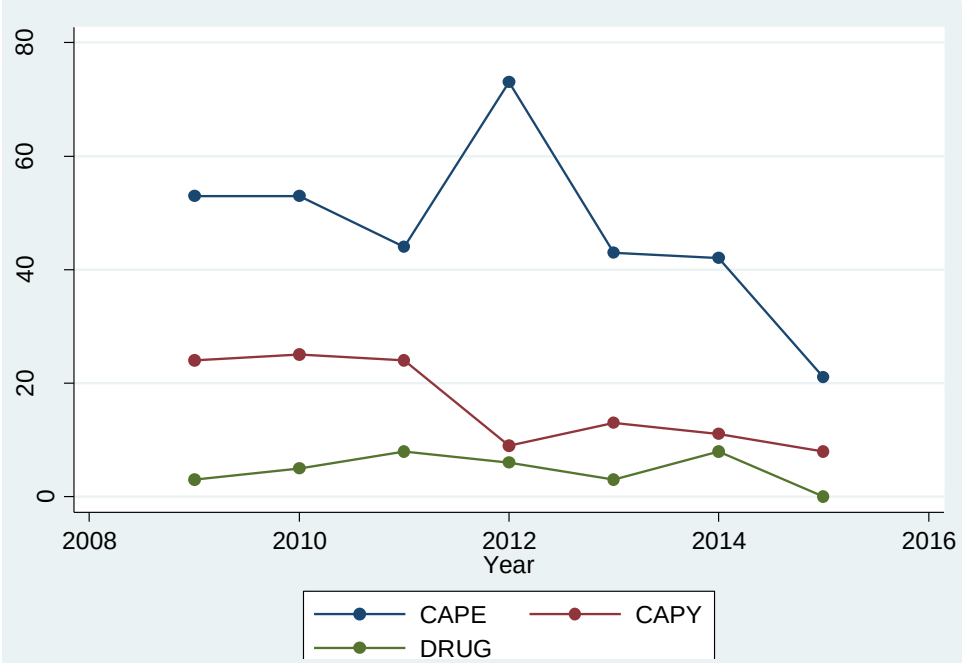


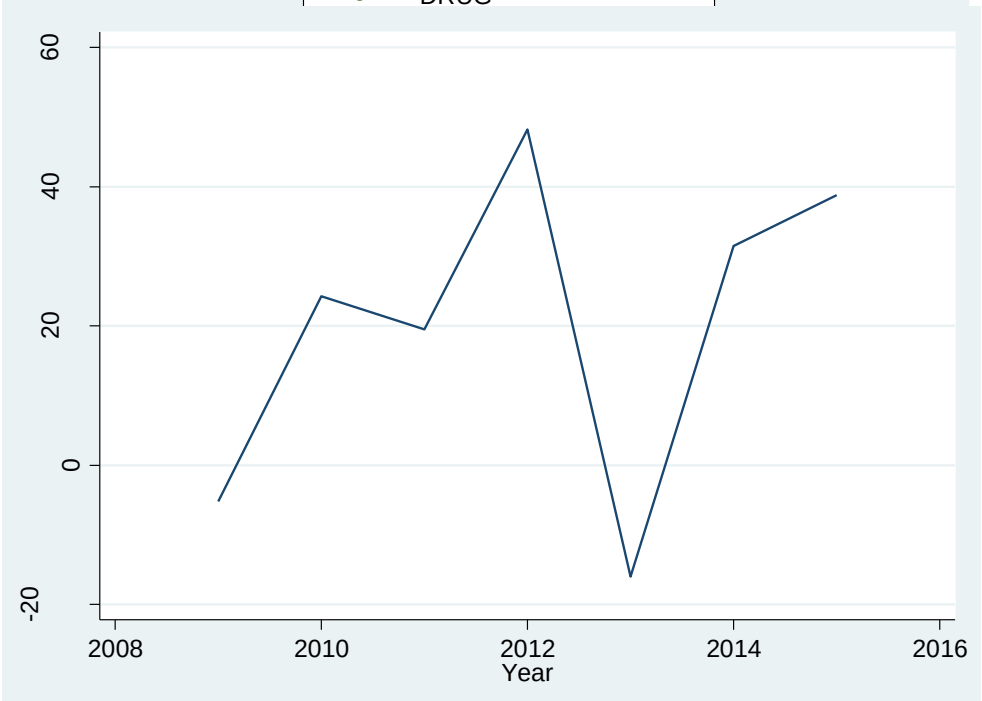




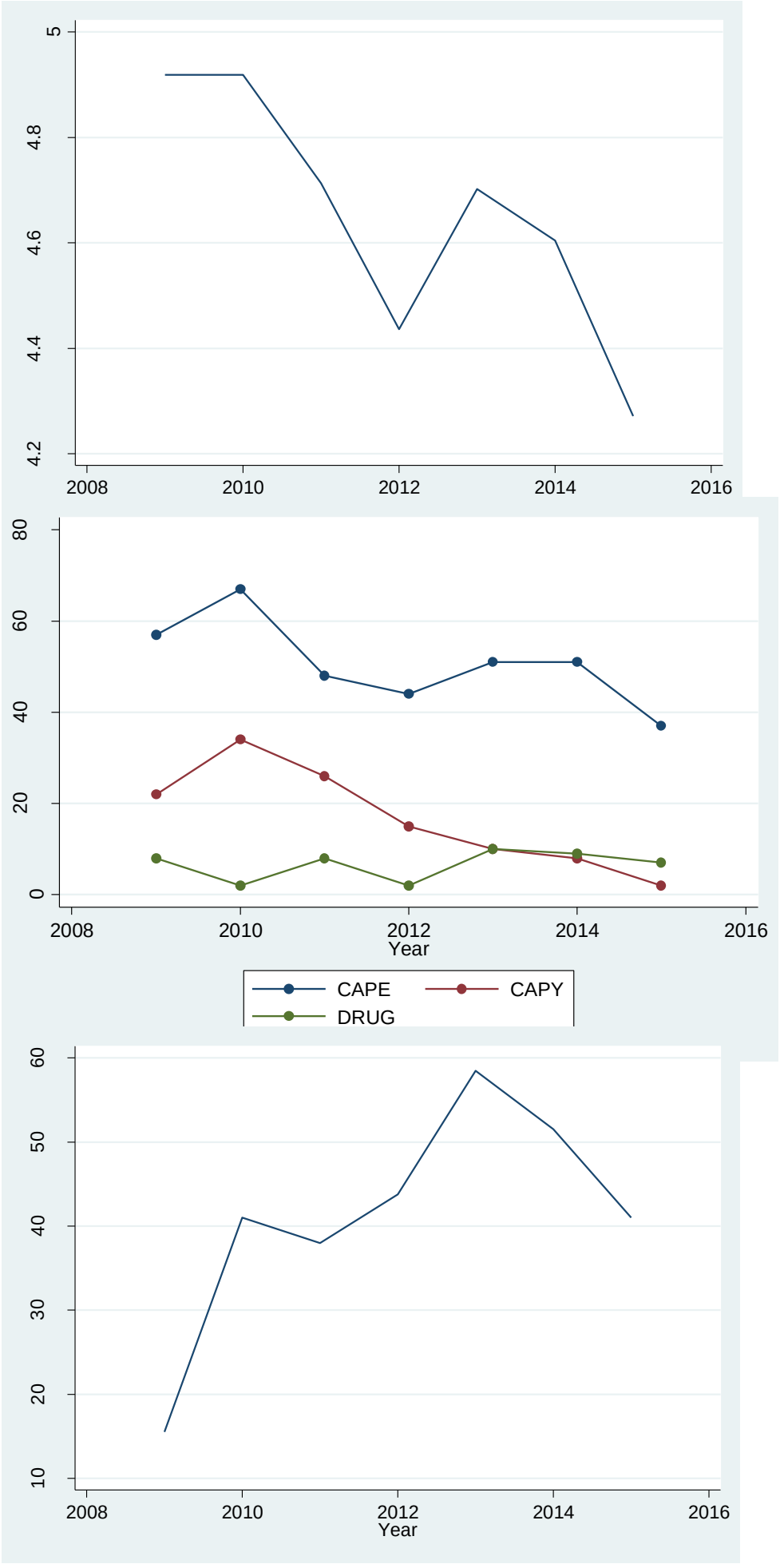
Miami Edison



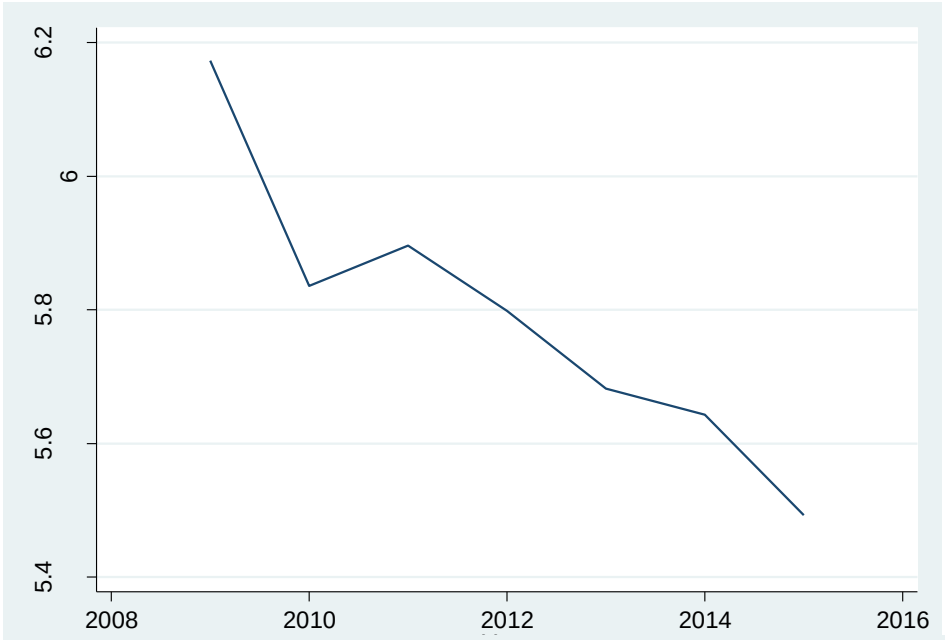


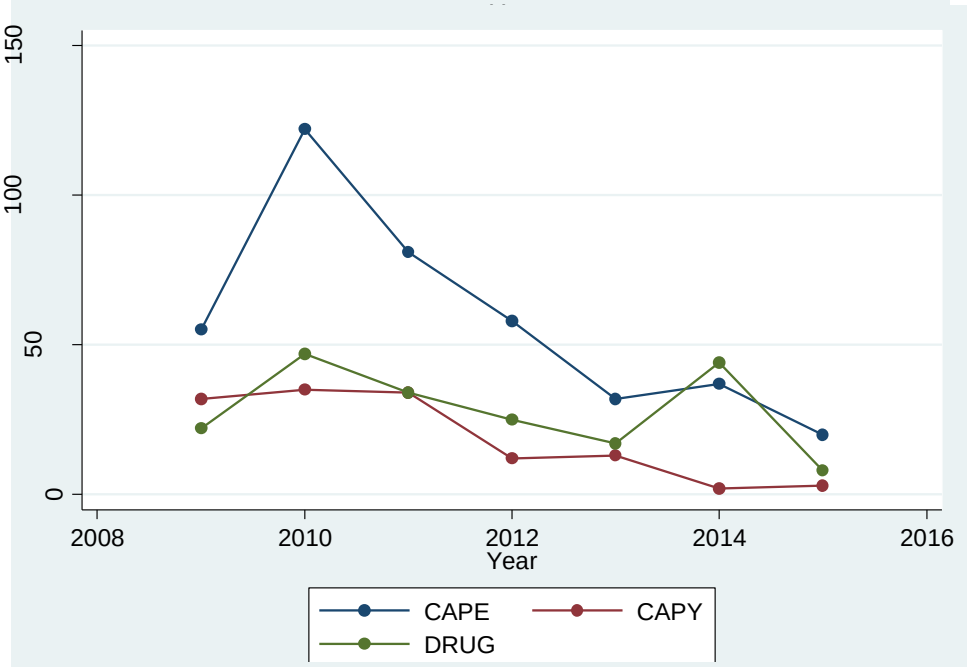


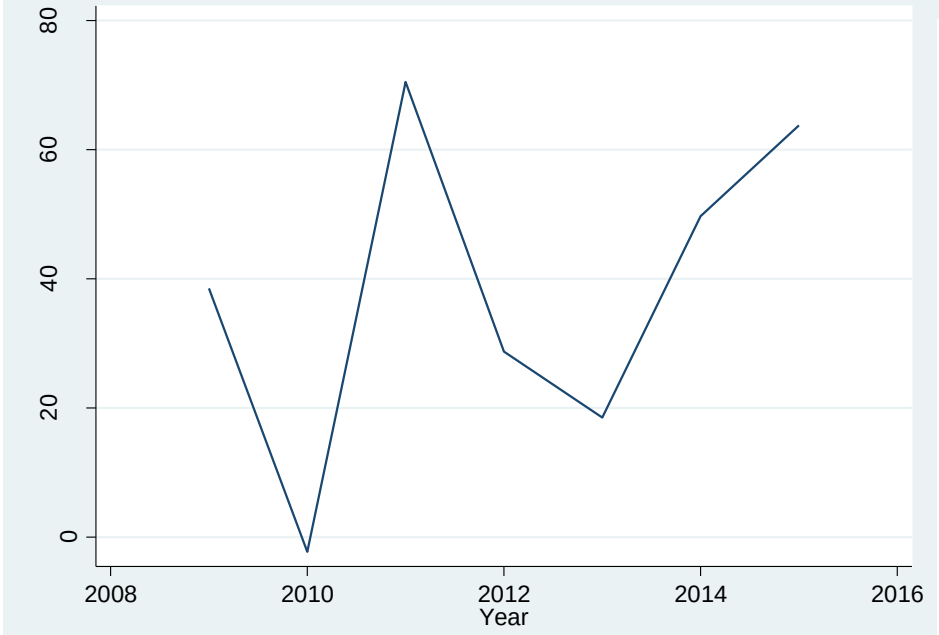
Miami Jackson



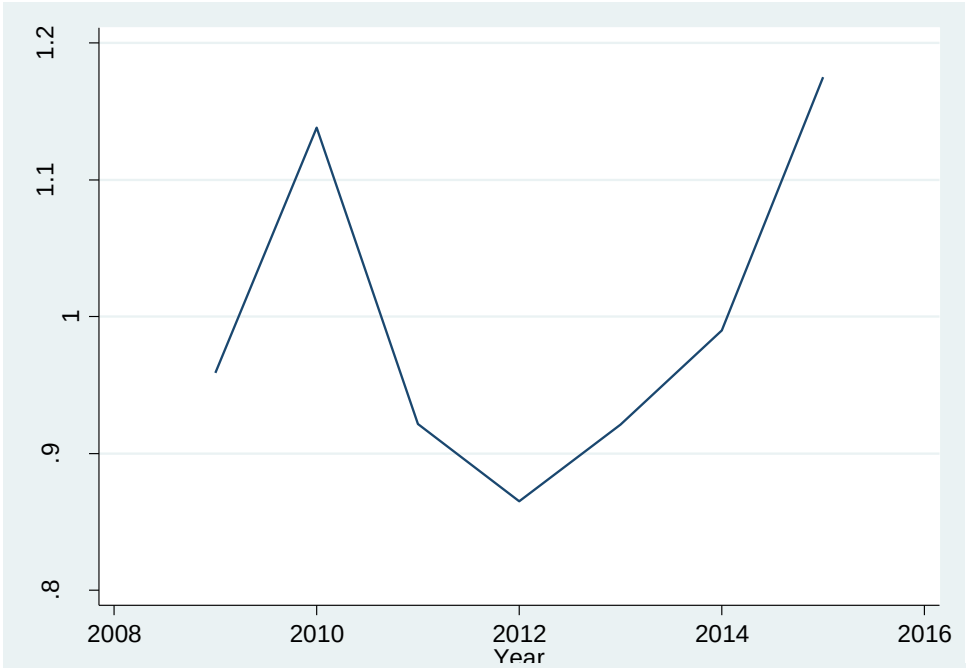
Miami Killian

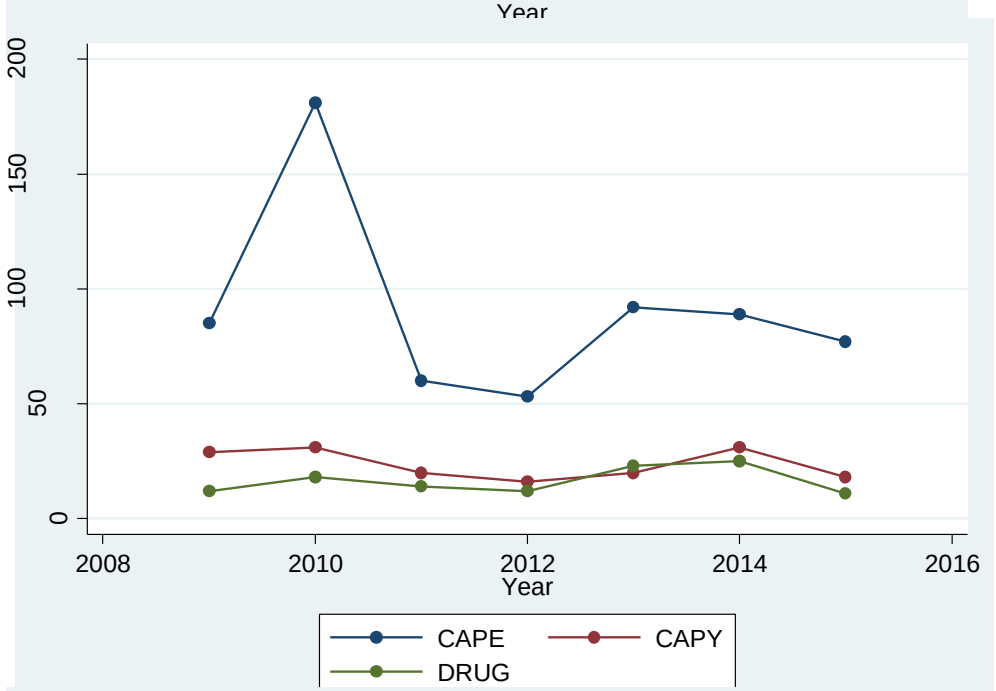


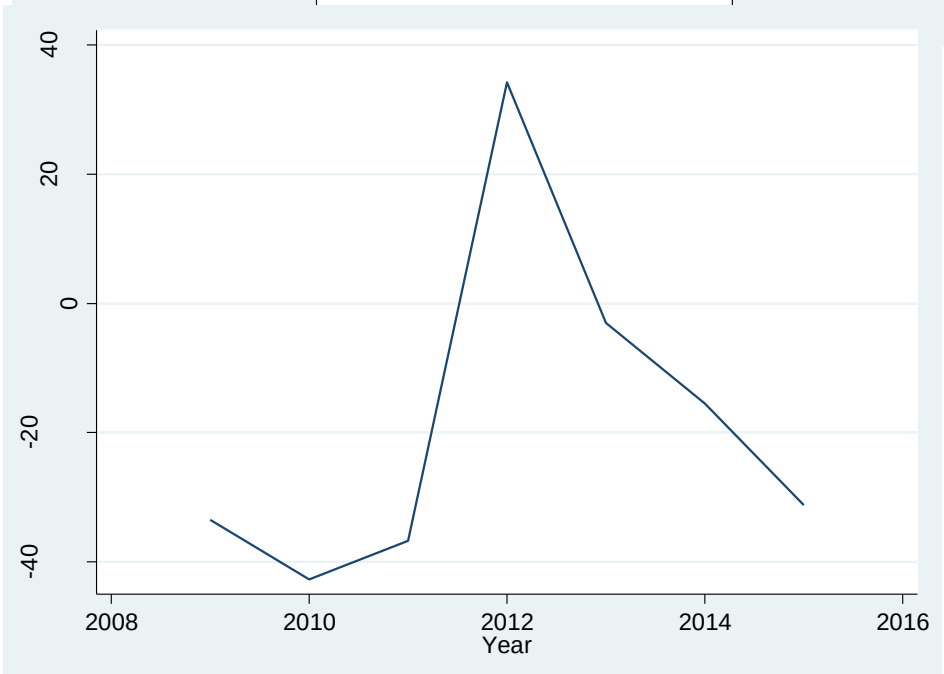




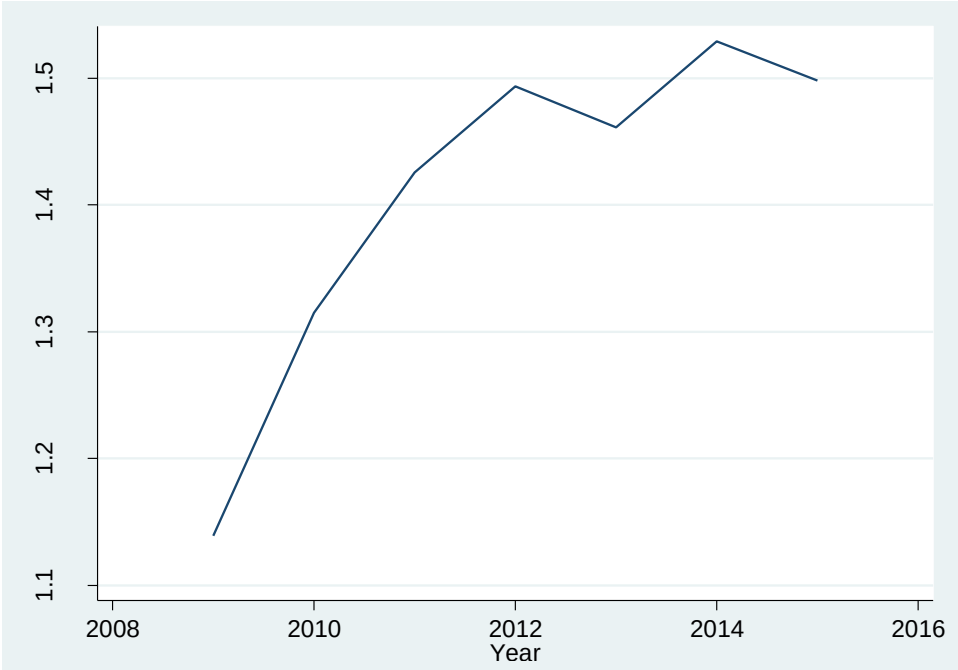
Miami Norland

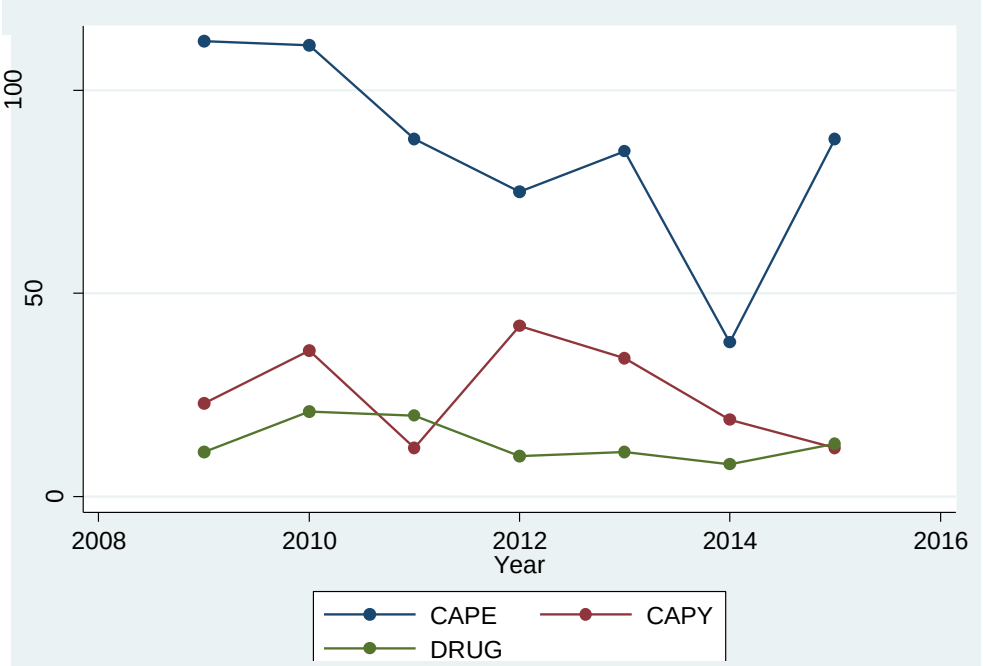


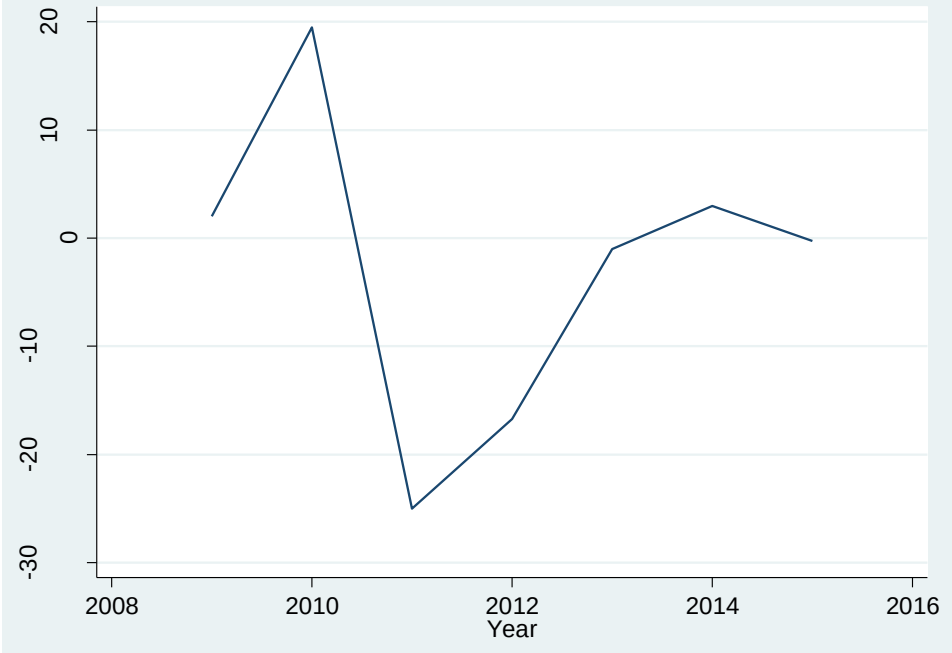




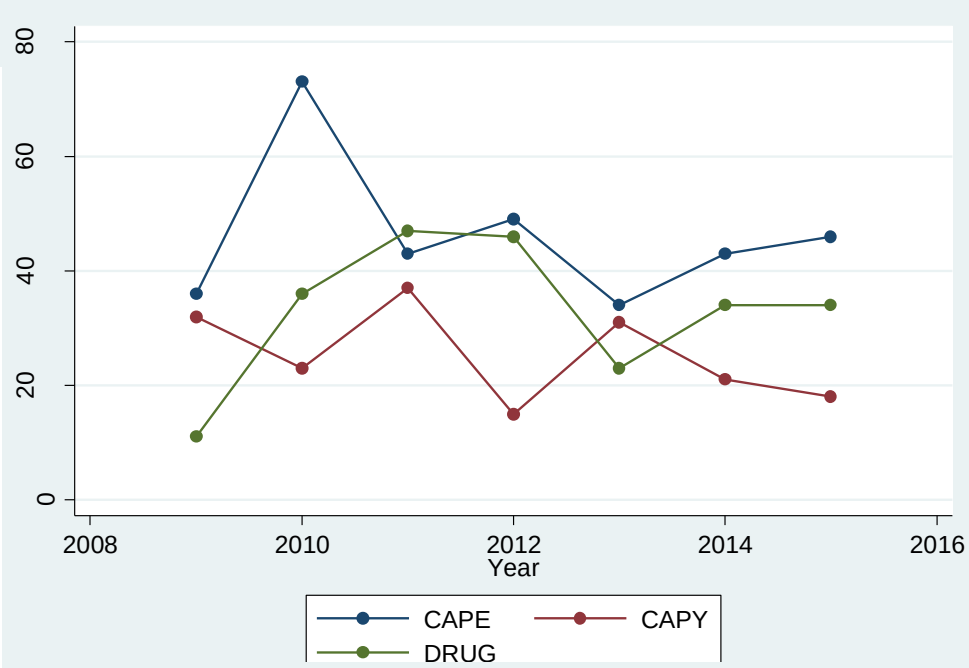
Miami Northwestern

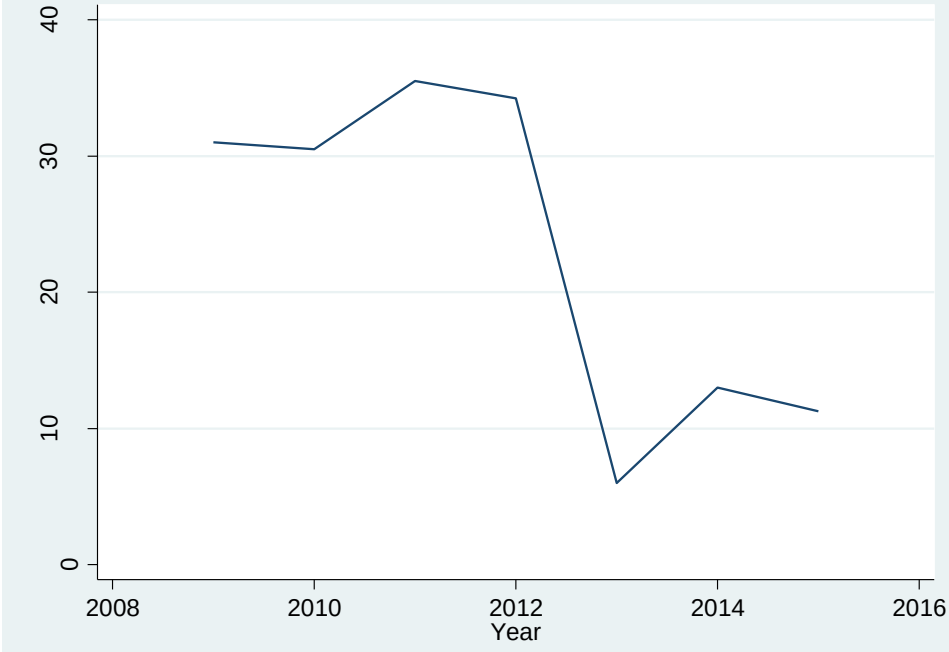




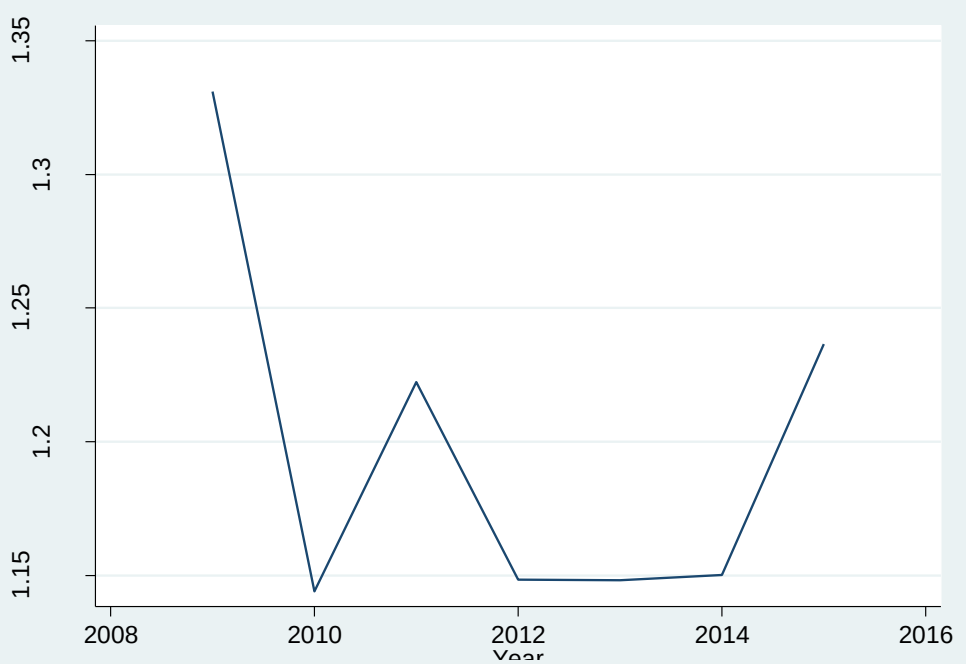


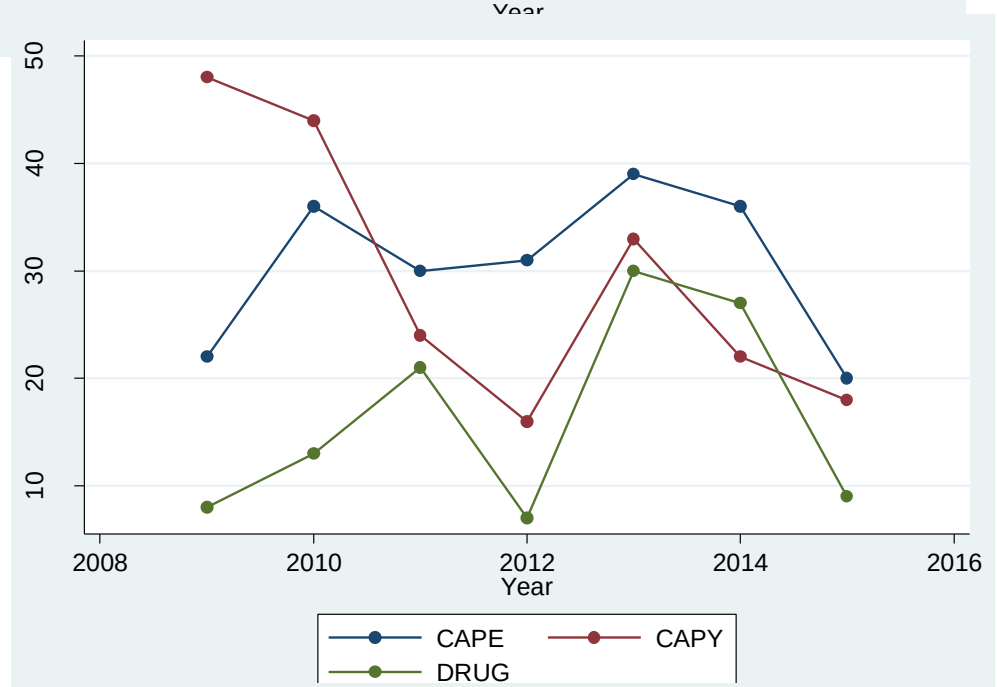
Miami Palmetto

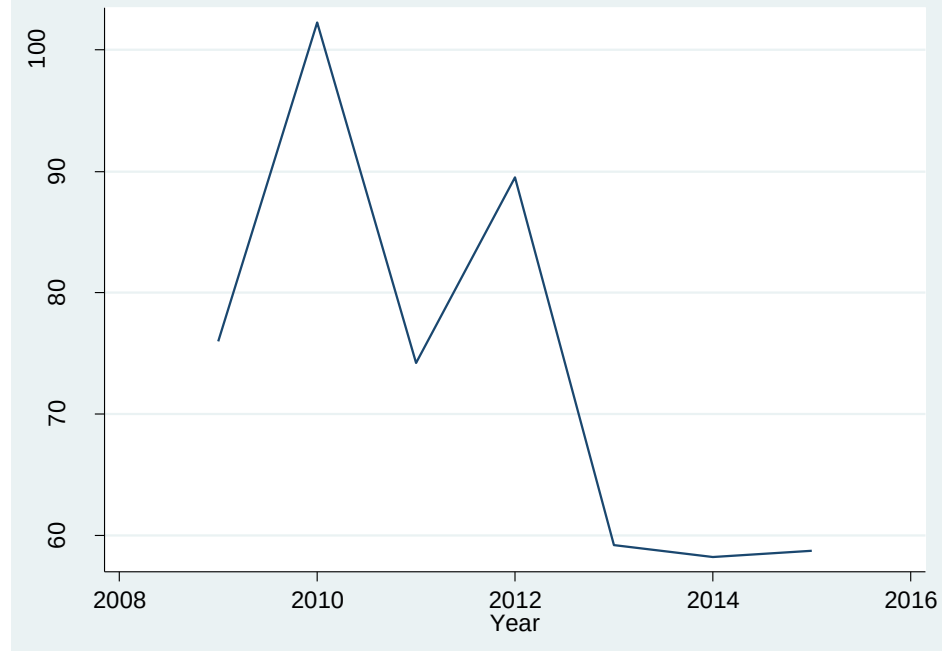




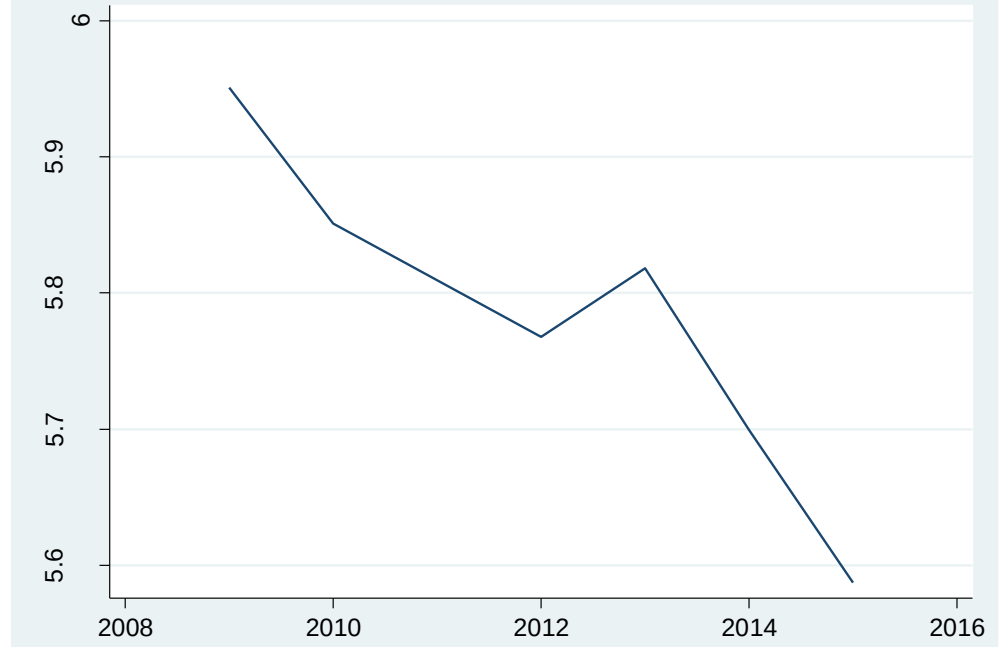
Miami Senior

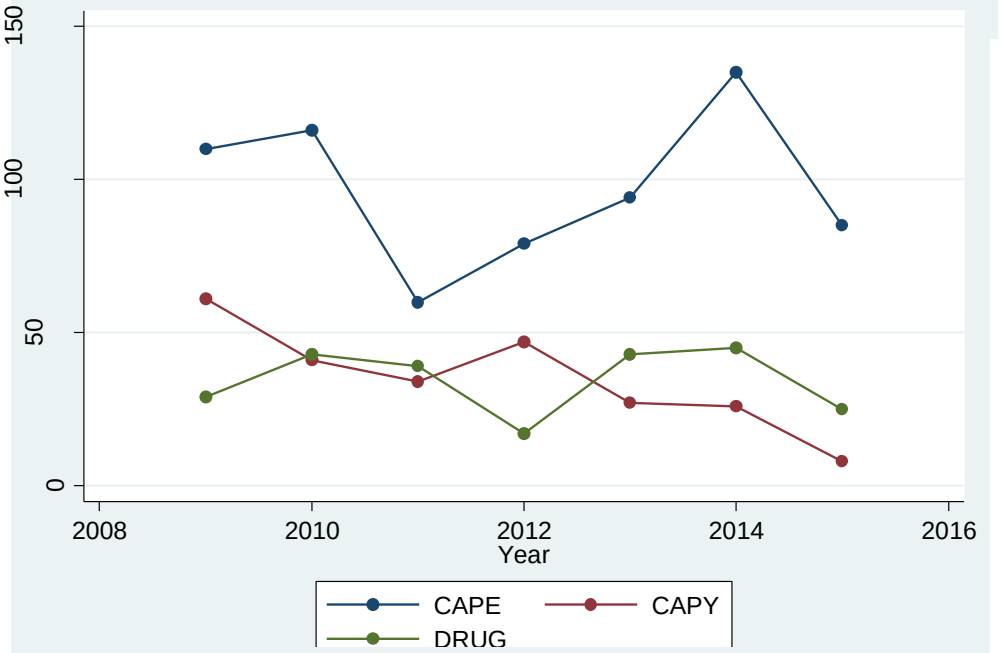


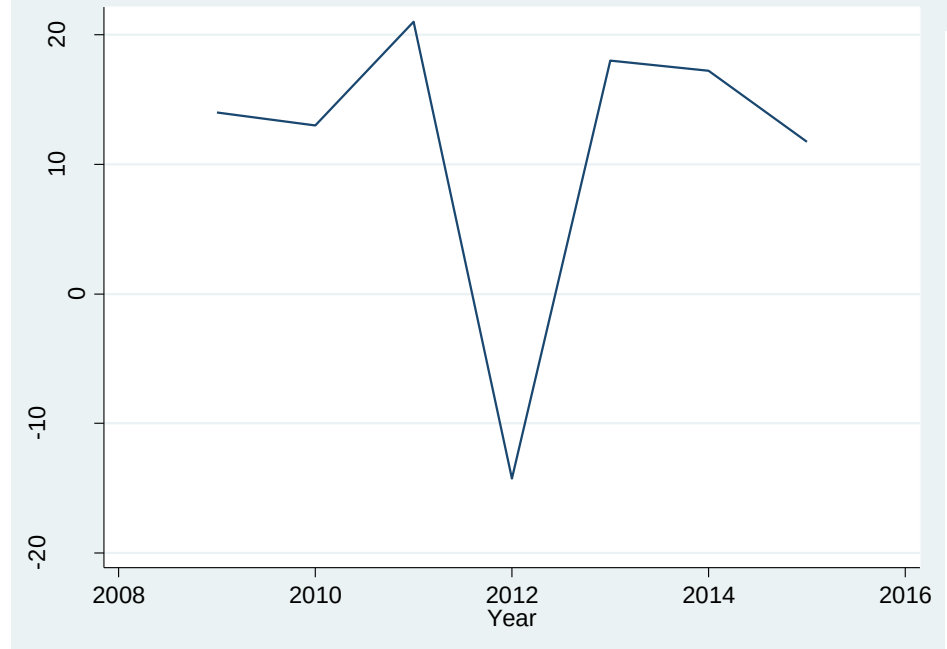




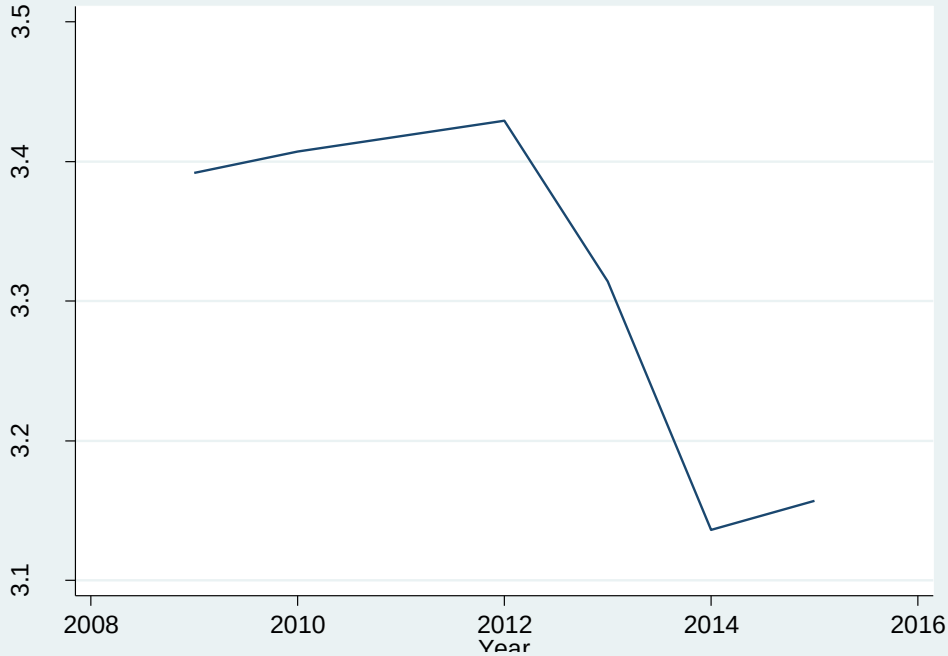
Miami Southridge

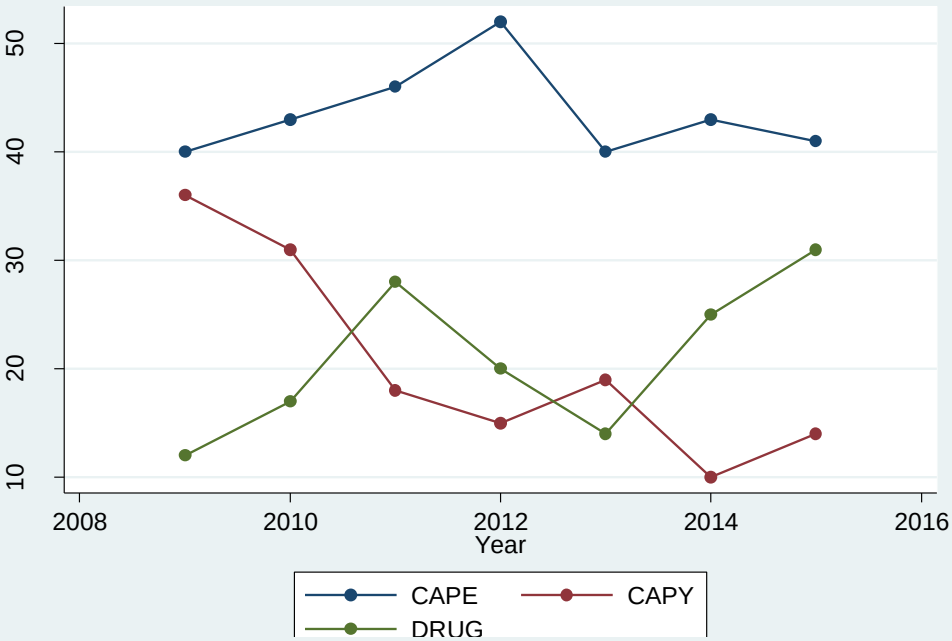


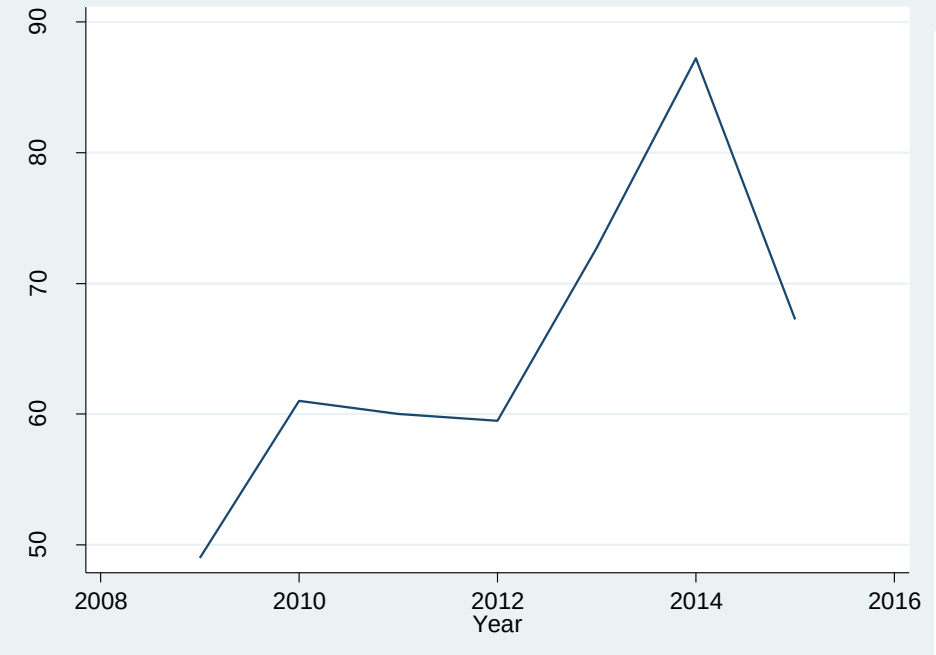




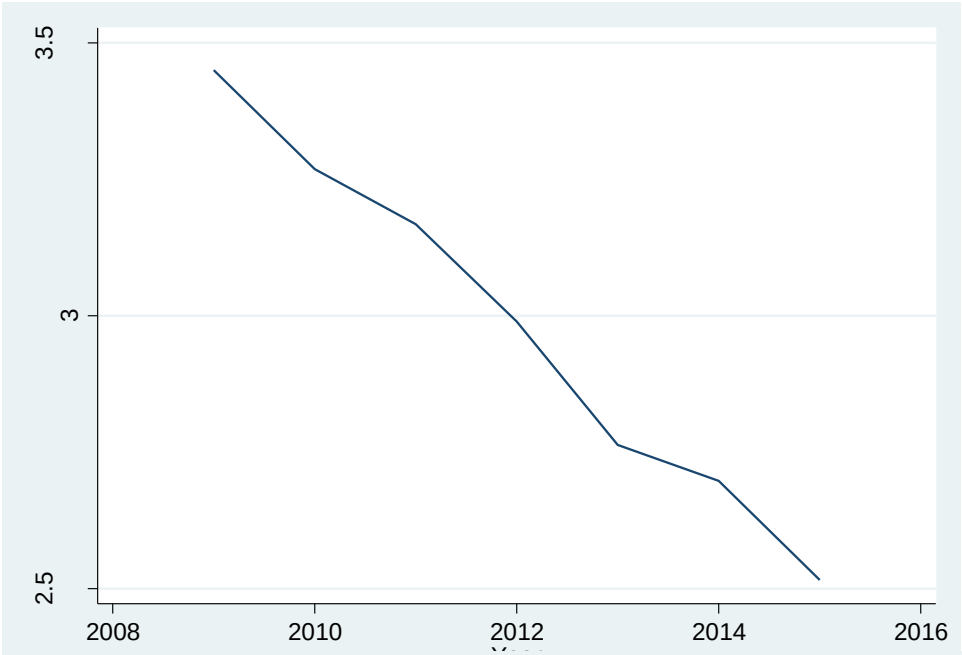
Miami Springs

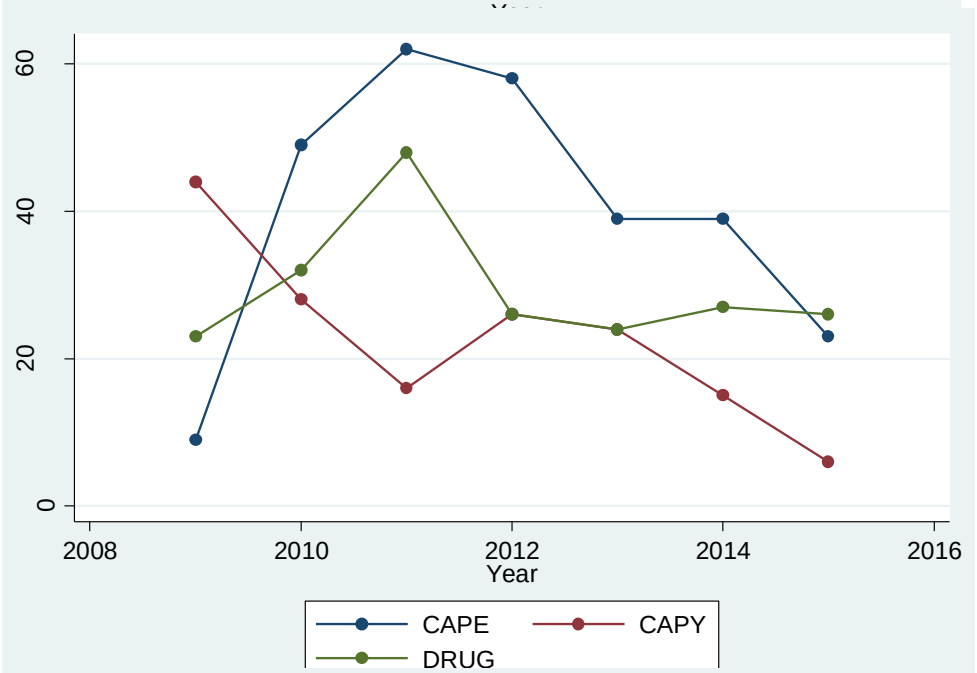


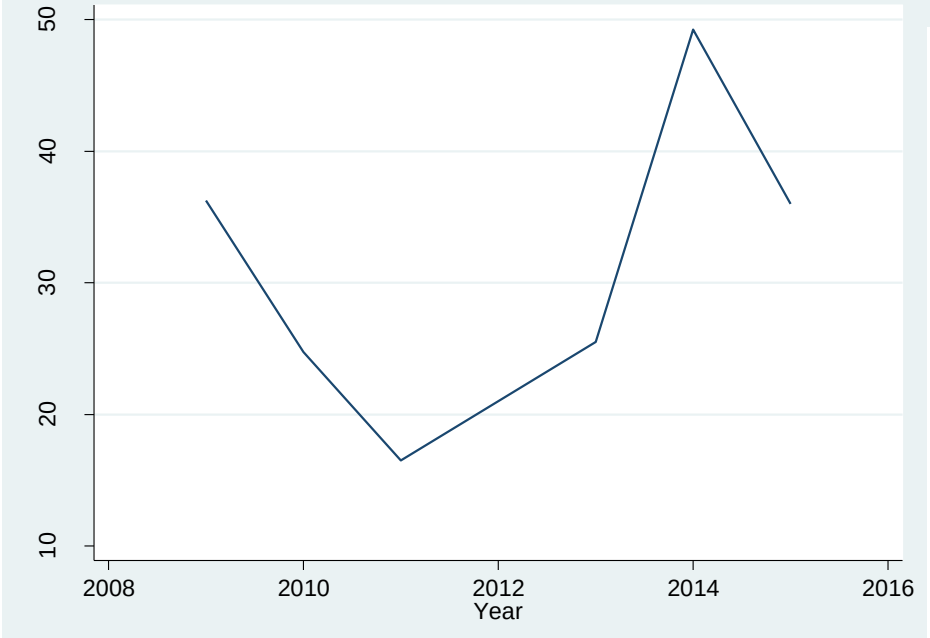




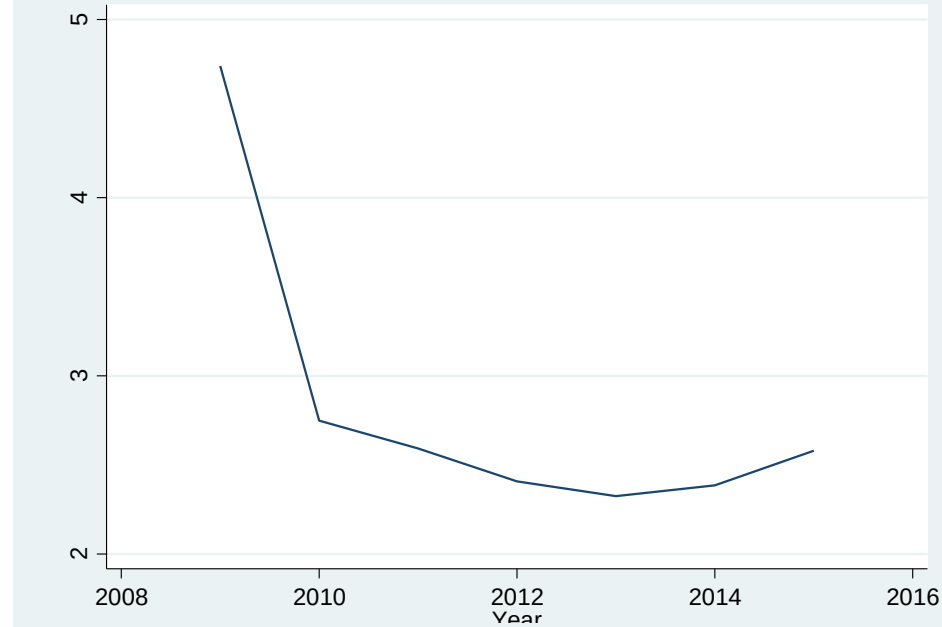
Miami Sunset







North Miami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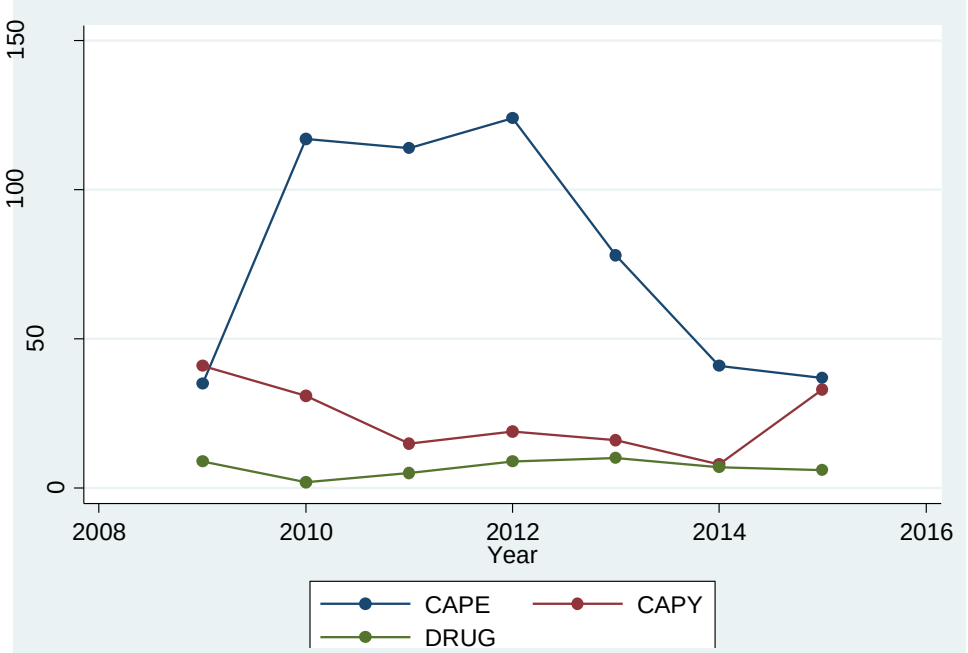
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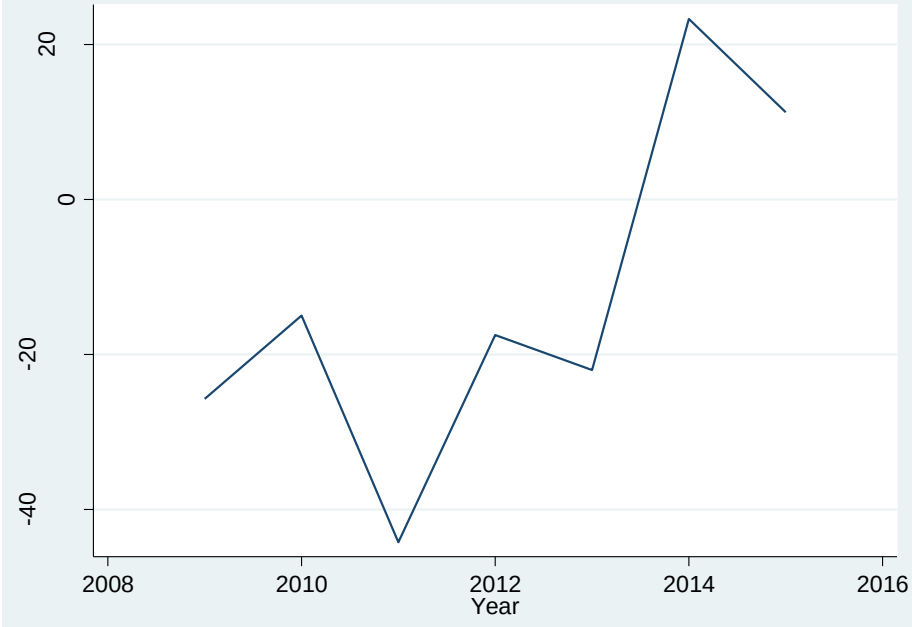
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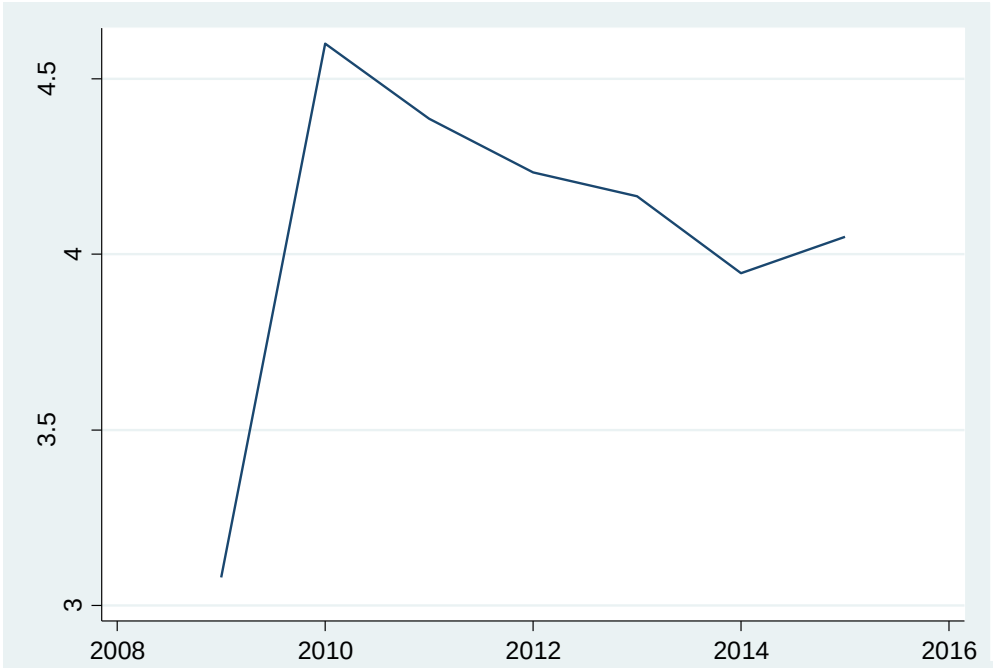
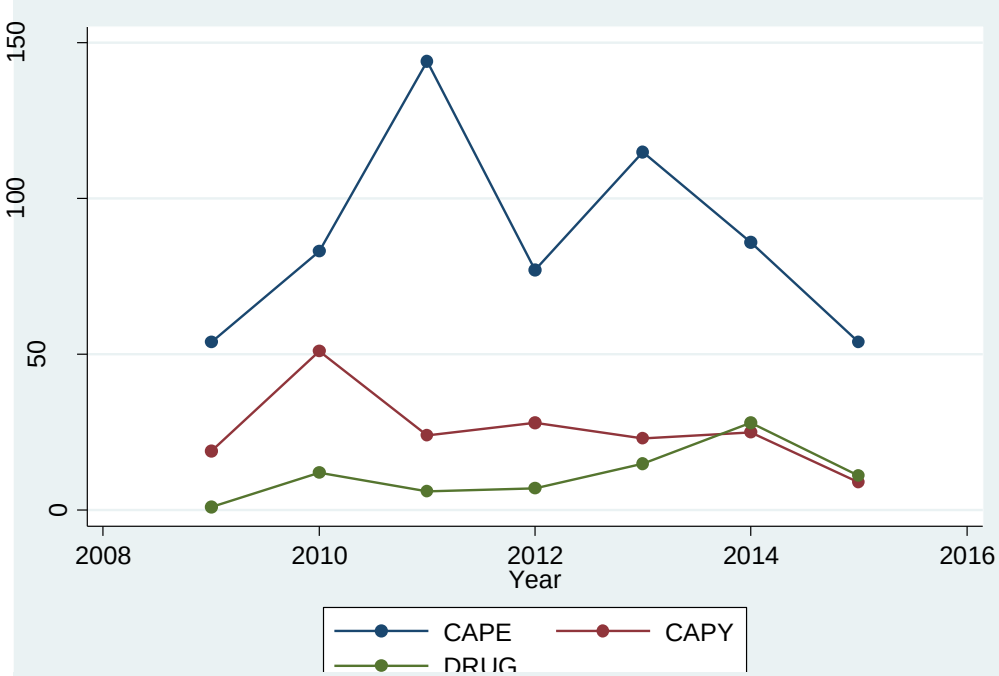
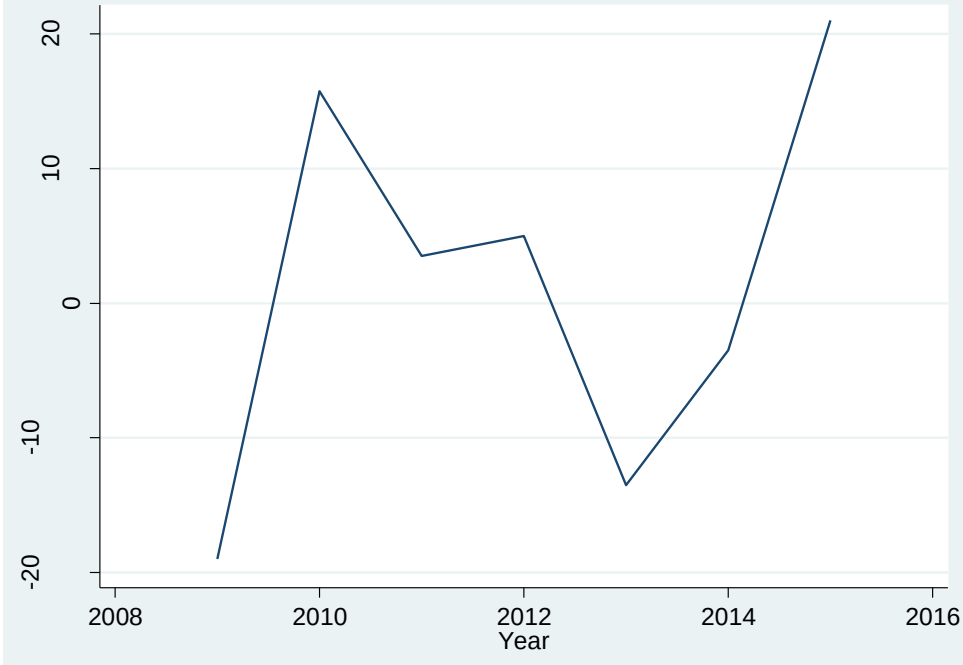
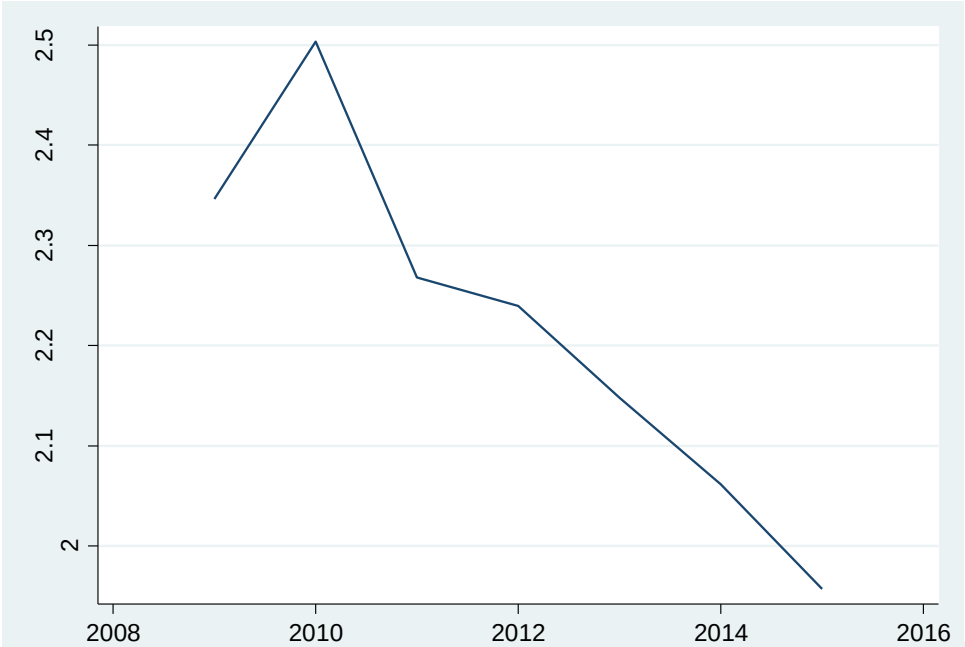
North Miami Beach

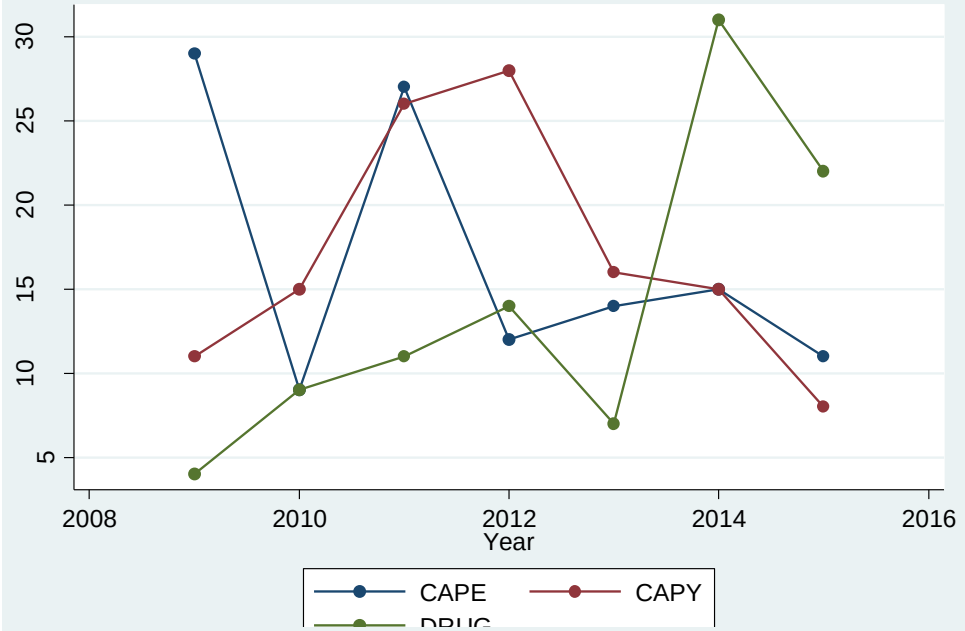


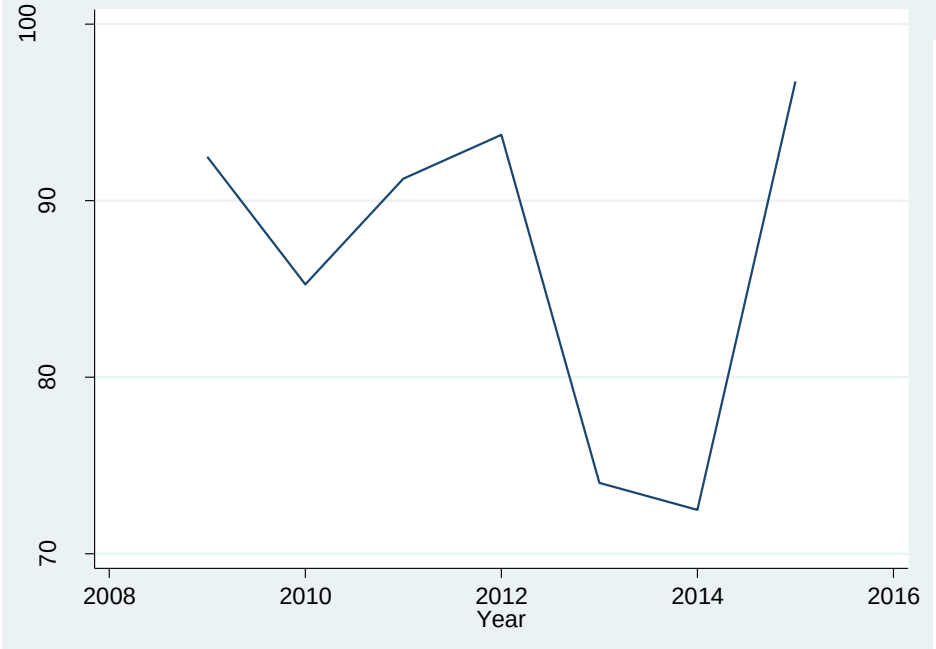




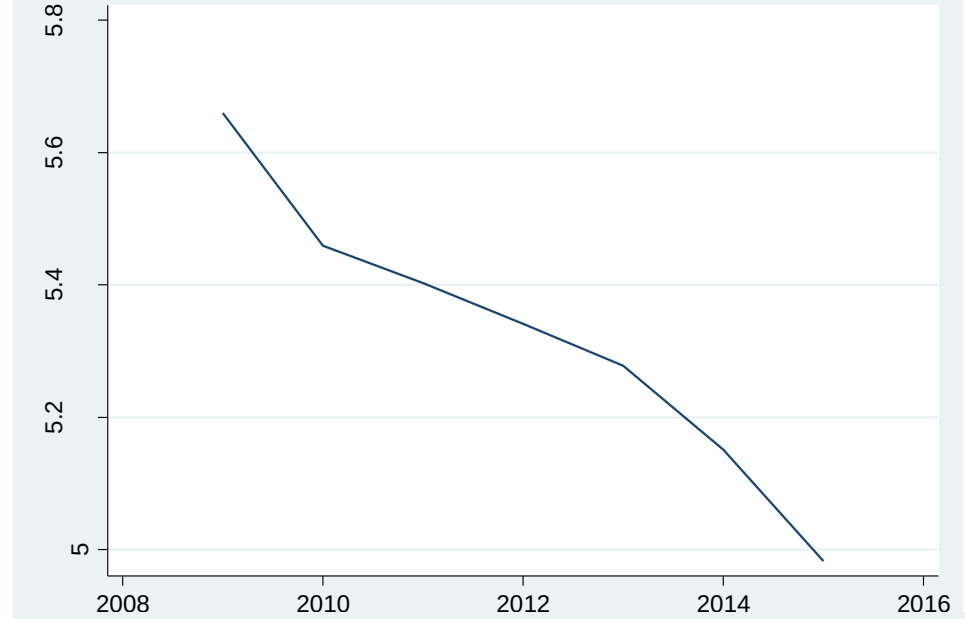
Ronald W. Reagan







South Dade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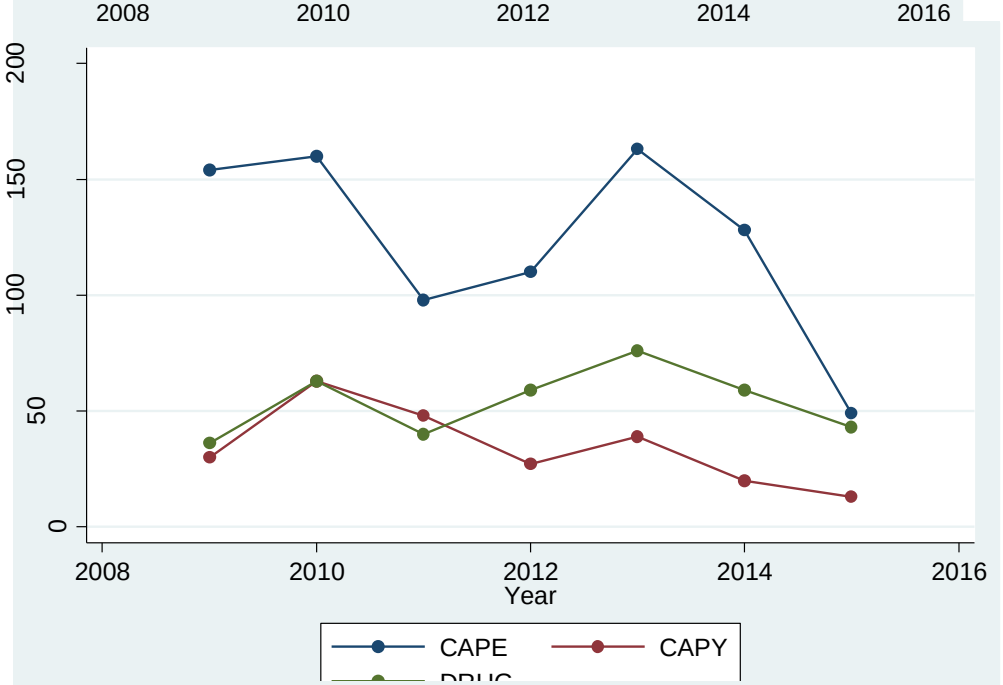
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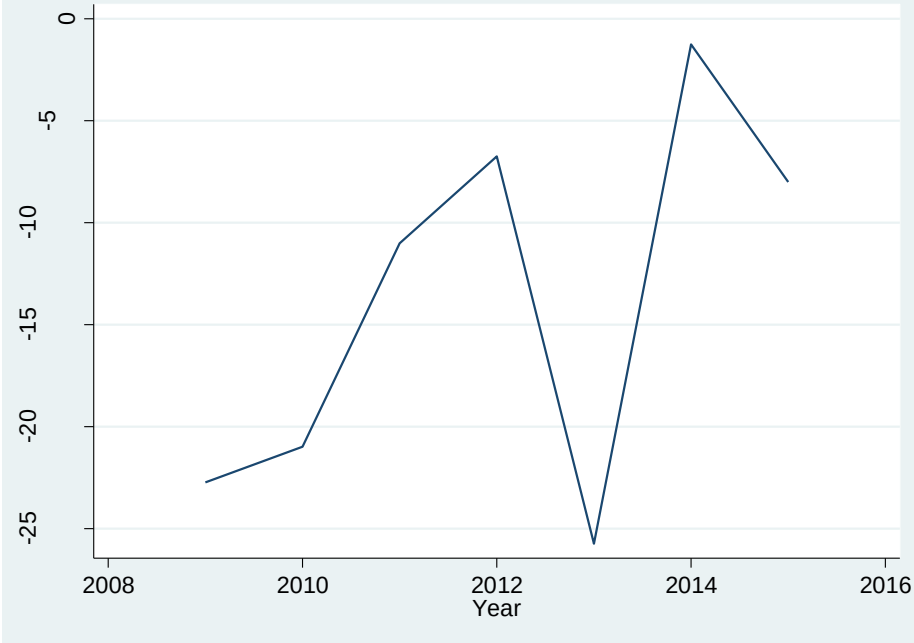
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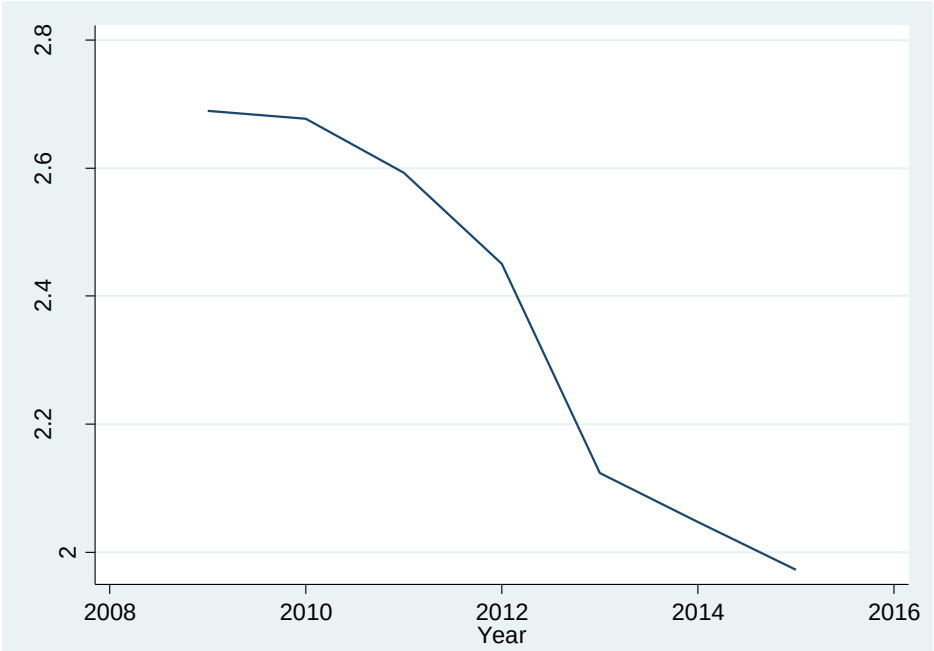
South Miami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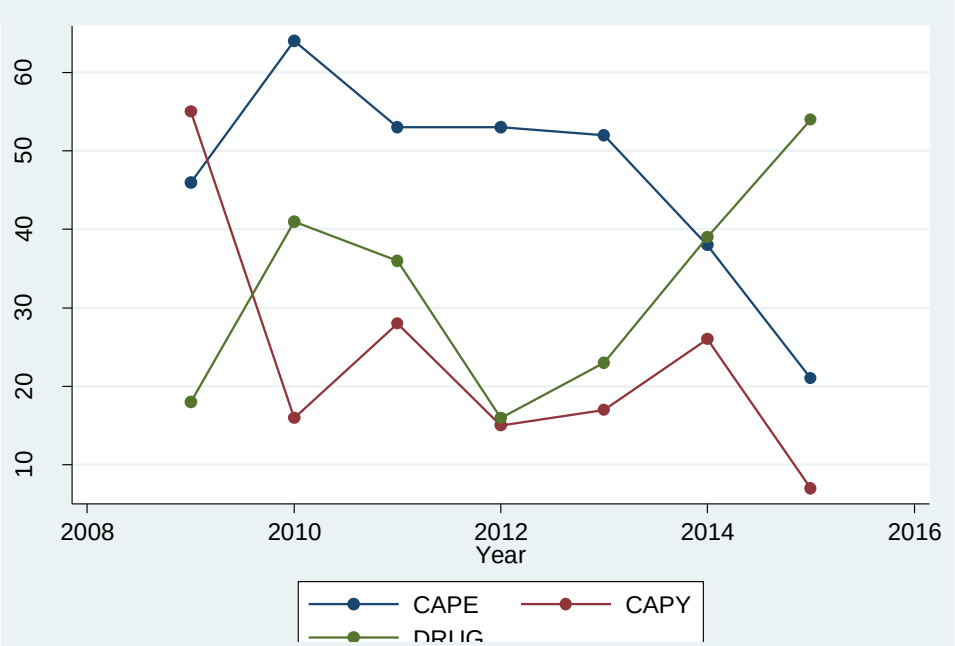
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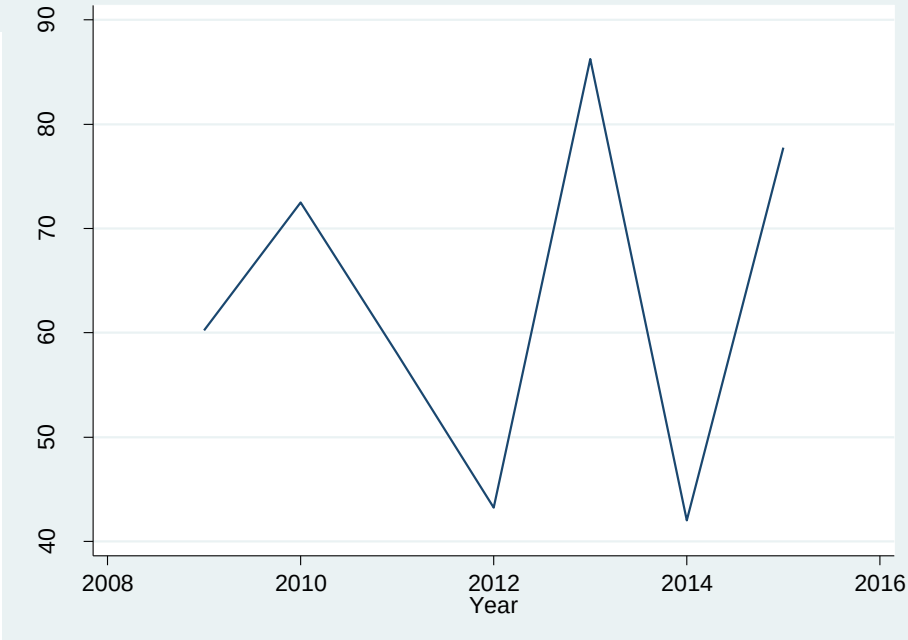
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2016
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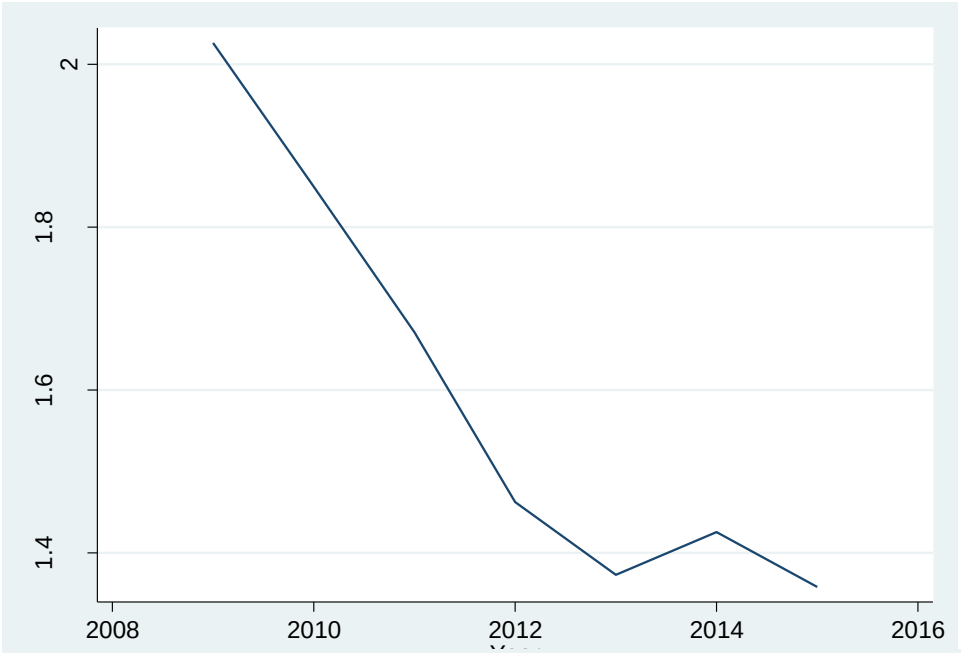
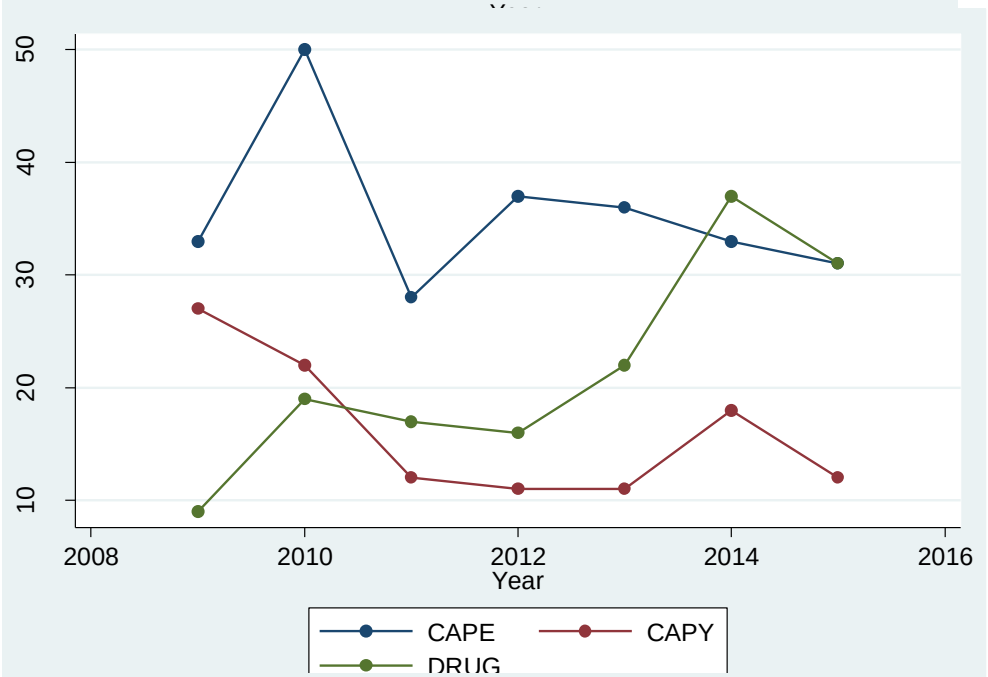
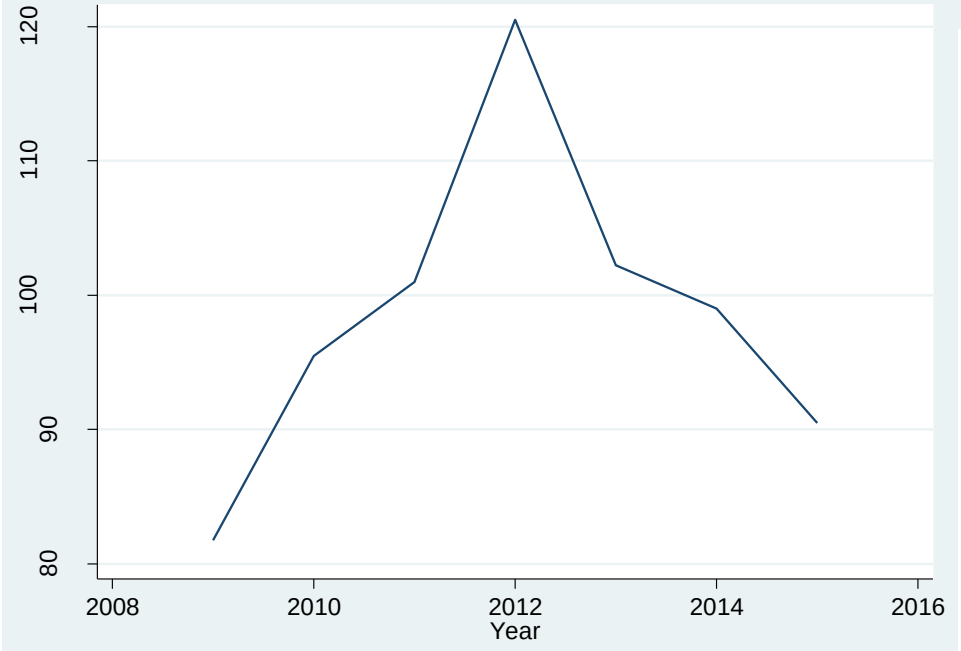
Southwest Miami







Westland Hialeah