

Crime, Unemployment and Wage

An Exploratory Data Visualization

Crime, Unemployment, Wage

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Data Collection/Processing

- Crime by state
 - Uniform Crime Reporting
- Unemployment rates by state
 - Source: <http://www.icip.iastate.edu/tables/employment/unemployment-states>
- Wage by state
 - Source: <http://www.bls.gov/cew/datatoc.htm>
 - 1990 - 2015: CSV file, By Area, Average_annual_pay, Total covered
 - 1980 - 1989: CSV file, By Industry, Average_annual_pay, Total covered
 - By Area data not directly available, so these 9 years data has been sorted into wage by state
 - Or maybe use “annual average weekly wage” instead of average annual pay?

Notes

- All average annual pay data are adjusted by CPI to represent the buying power as of in 2016.
 - Calculated using the [CPI Inflation Calculator](#) provided by Bureau of Labor Statistics
 - If not adjusted, plot average annual pay versus crime rate will be meaningless, because wage increases every year, and crime rate decreases across all states over the time. So regardless of crime or state, crime rates will have a strong negative “correlation” with average annual pay.
- Population density is calculated by population divided by land area for each state.

Thoughts and findings

- Region is not a very effective statistic when we attempt to look at crime, unemployment and wage. As the plots show, patterns do differ by region, but they are by no means easily decipherable ones.
- Thus, I attempted to sort states by population density, which is a crude measure of how urbanized/developed a state is. The plots then have a clearer pattern of clusters. Namely, people in more populated states are paid more and have more violent crimes(surprise...). Not necessarily higher unemployment rates or property crimes, though.
- Also, both violent and property crime rate are more sensitive to wage changes in more populated states. Namely, lower wage, higher crime. The pattern is less clear in less populated states.
- Unemployment rate, however, does not seem to have a clearly observable relationship with crime, violent or property.

Next steps?

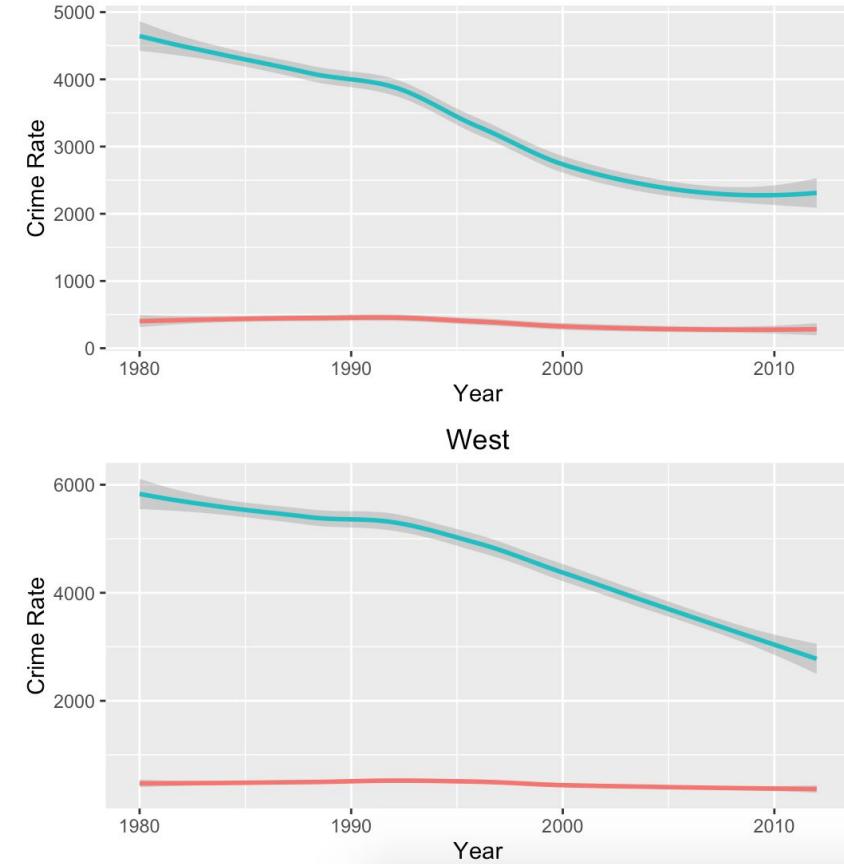
- Specifically look at each crime category in states classified into different population density percentiles
- Look at trend of crime rates versus population density changes
- Do we want a more accurate parameter for urbanization?
- Do we want more layers for crime?
 - Like the Ohio State study, do we want to look at crime in less educated minority males?

Trend of Crime

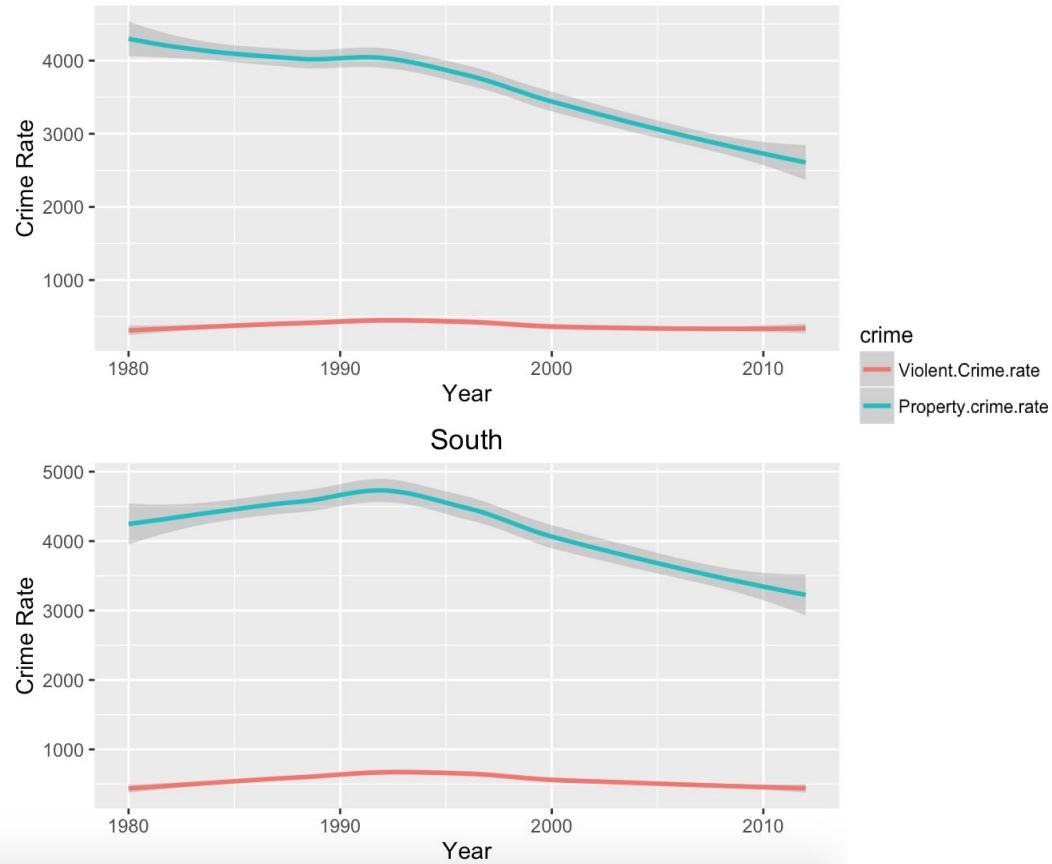
Violent Crime and Property Crime, by Region

Trend: Crime by Region

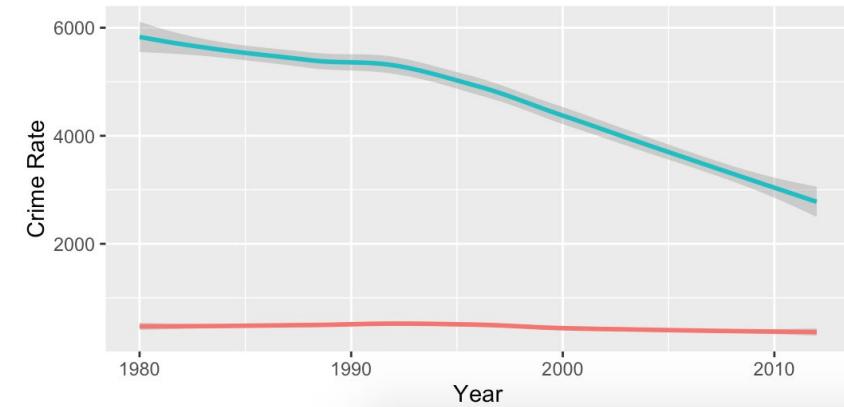
Northeast



Midwest

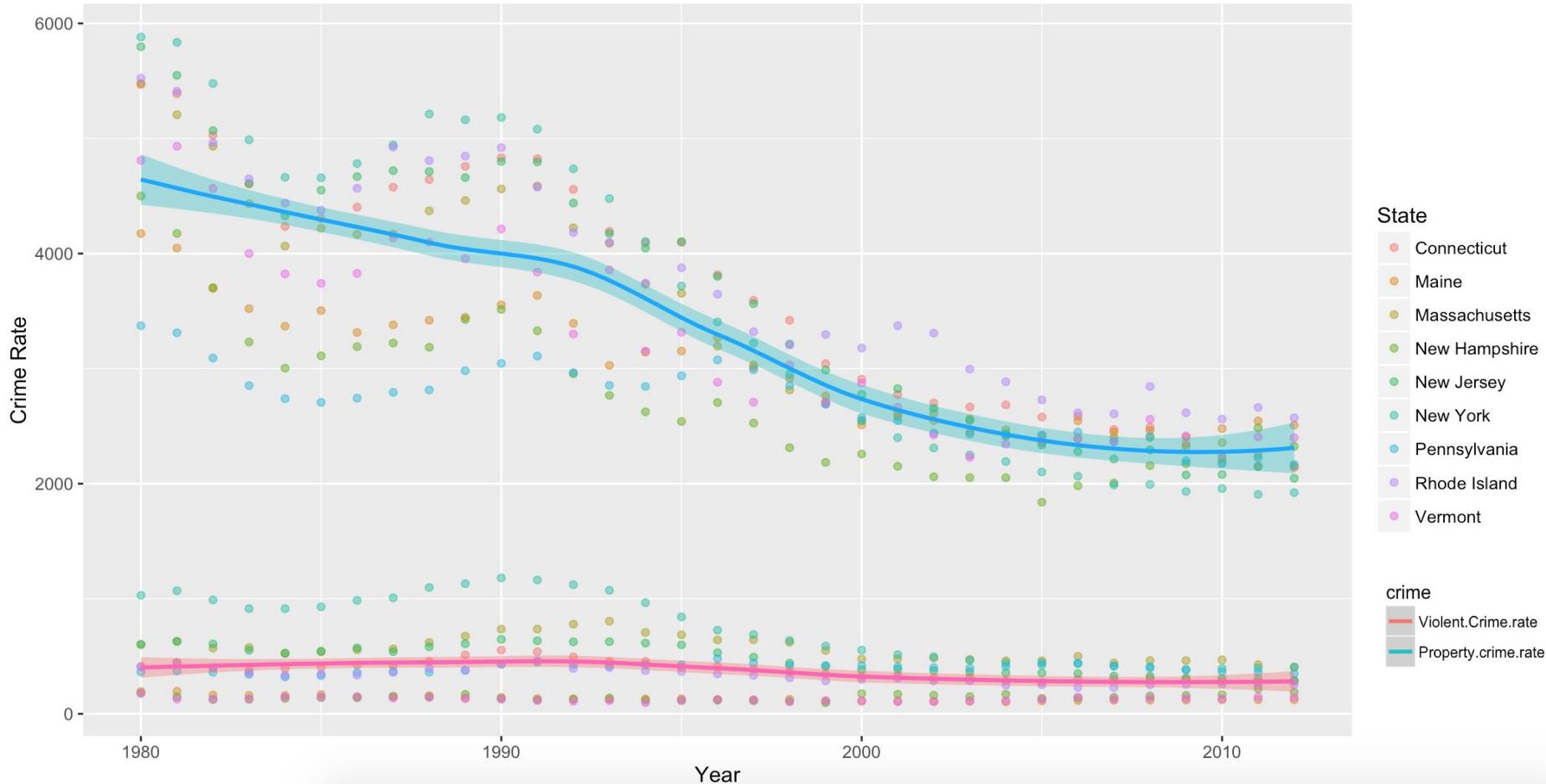


West

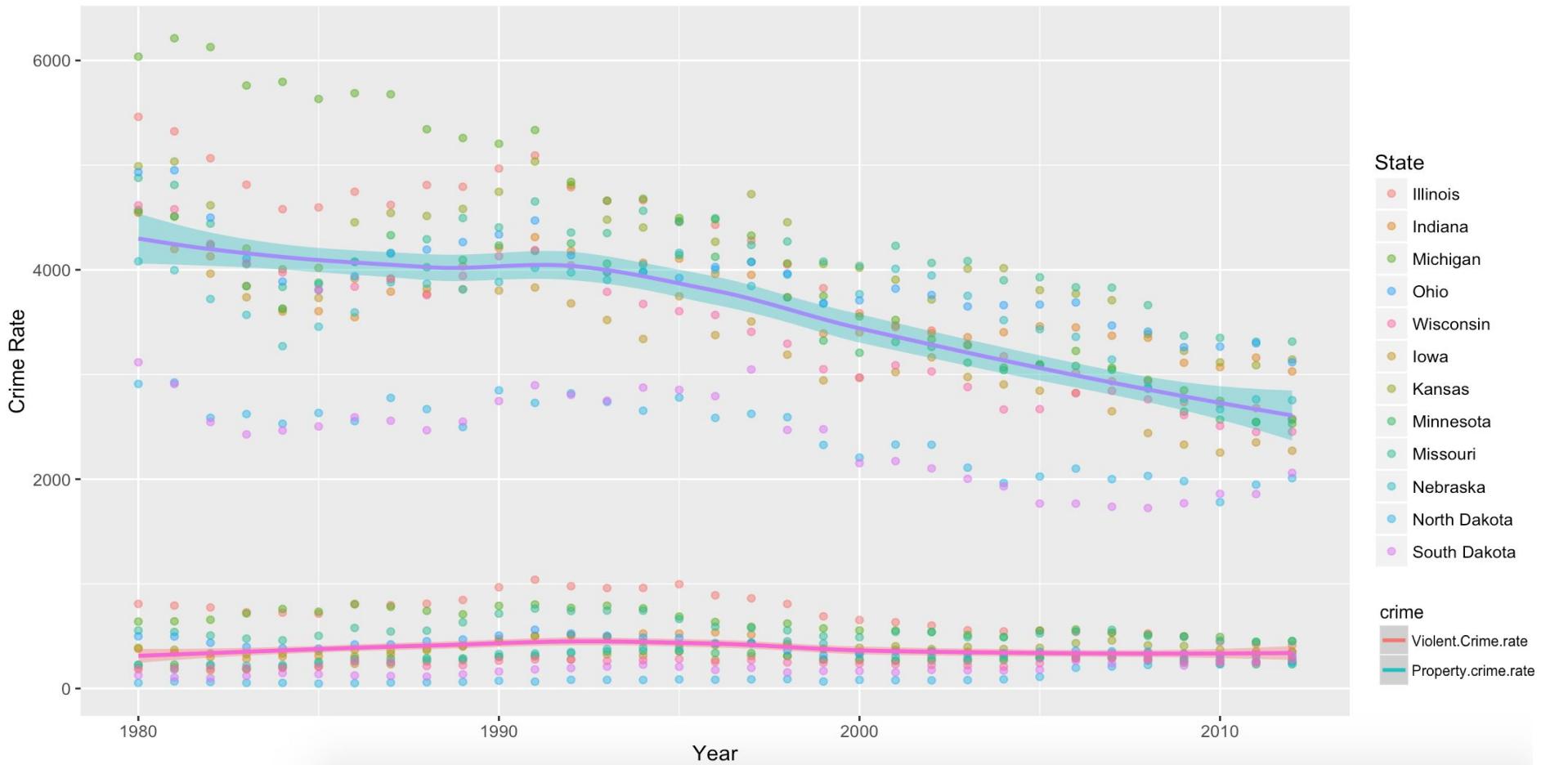


South

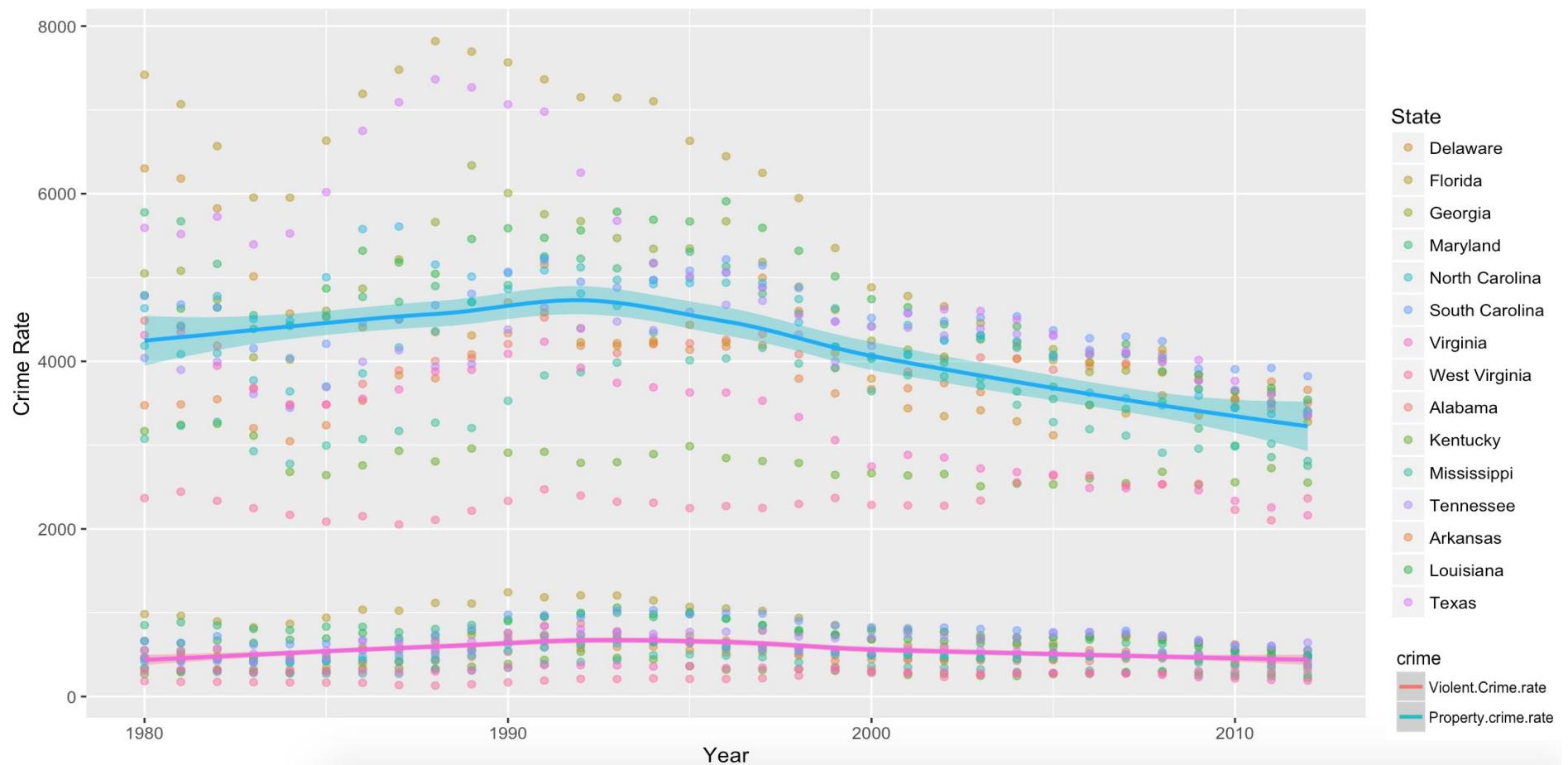
Trend: Northeast



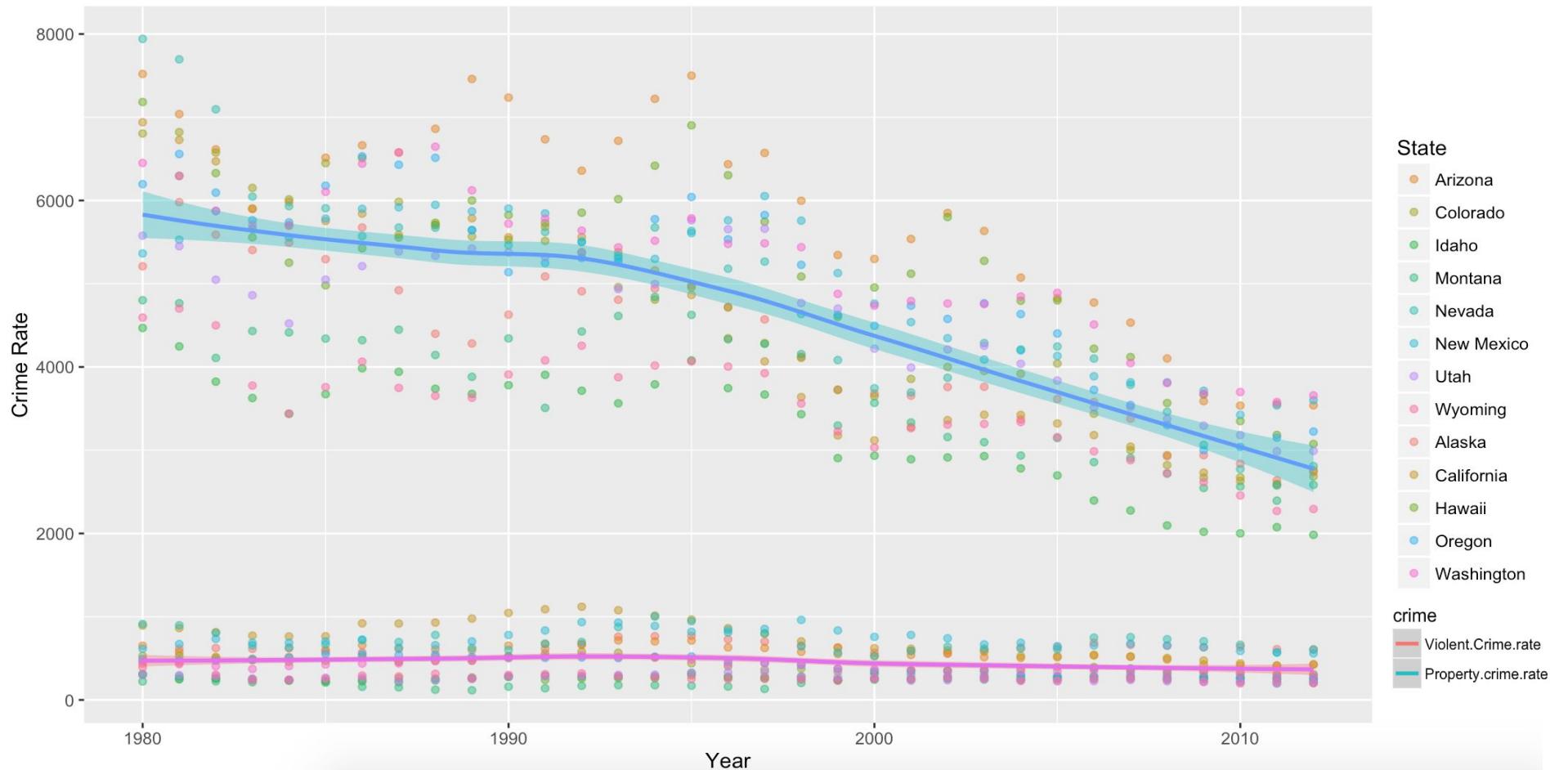
Trend: Midwest



Trend: South



Trend: West



Crime ~ Unemployment

Crime ~ Wage

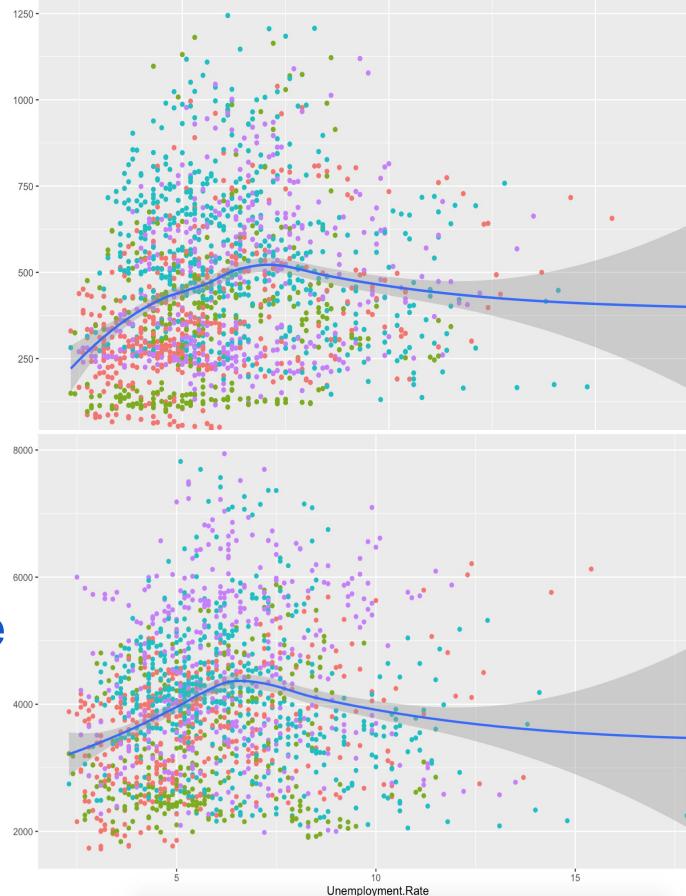
By Region

*All wage data are adjusted by CPI as of 2016

region • Midwest • Northeast • South • West

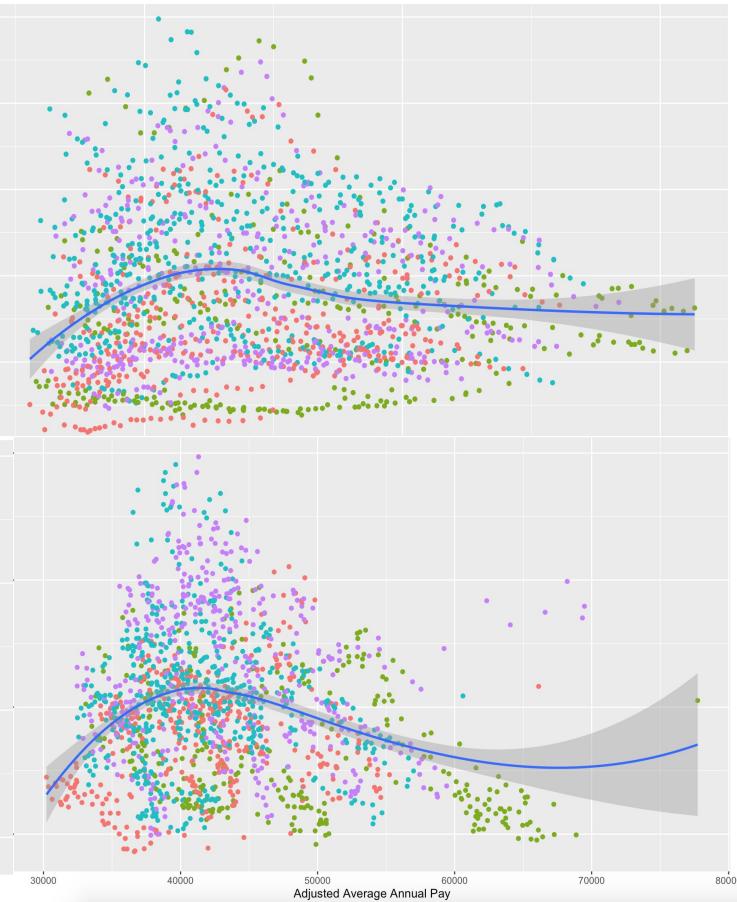
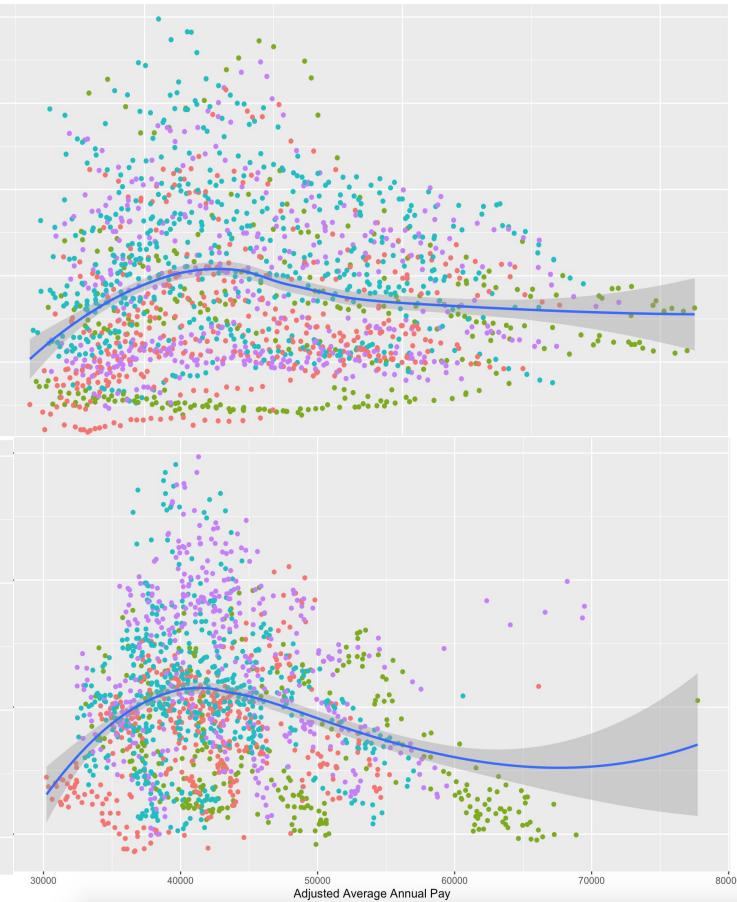
Violent Crime

Unemployment Rate

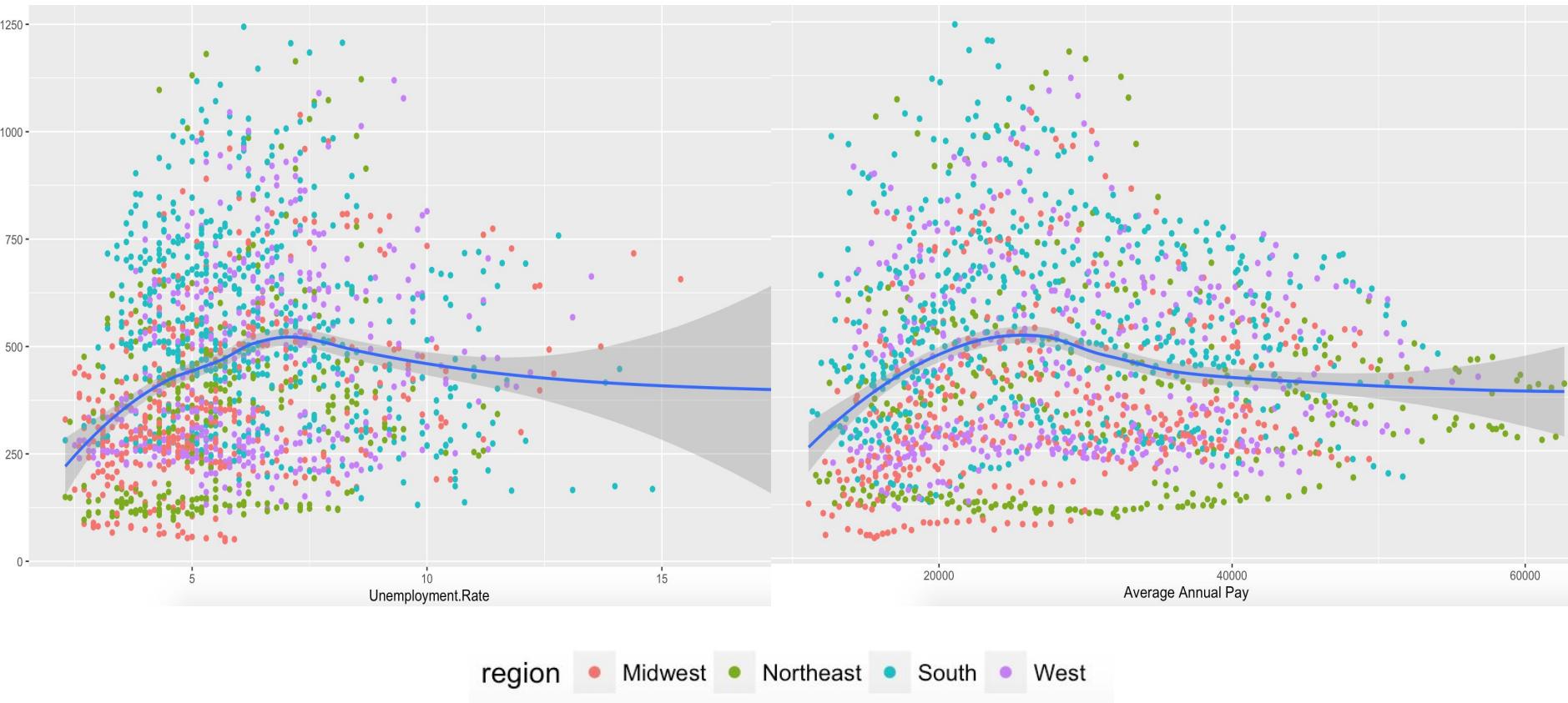


Property Crime

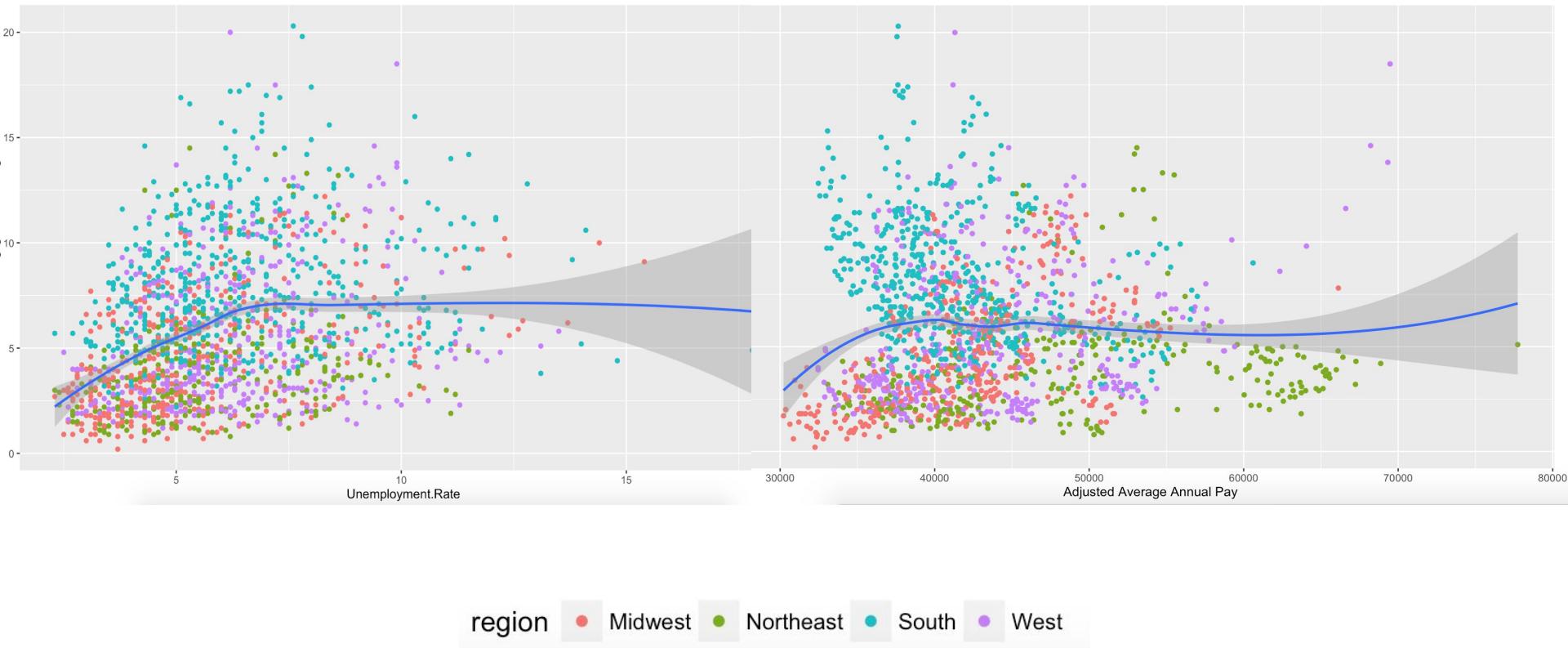
Adjusted Average Annual Pay



Violent Crime



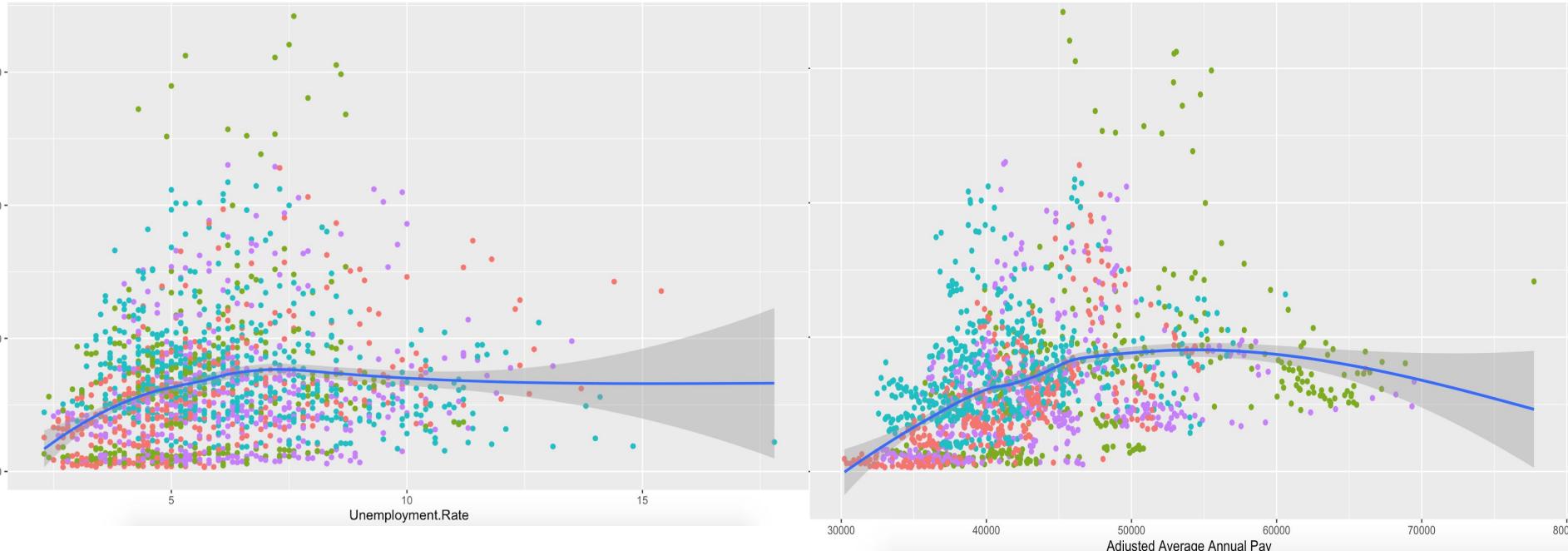
Murder and Nonnegligent Manslaughter Rate



Aggravated Assault

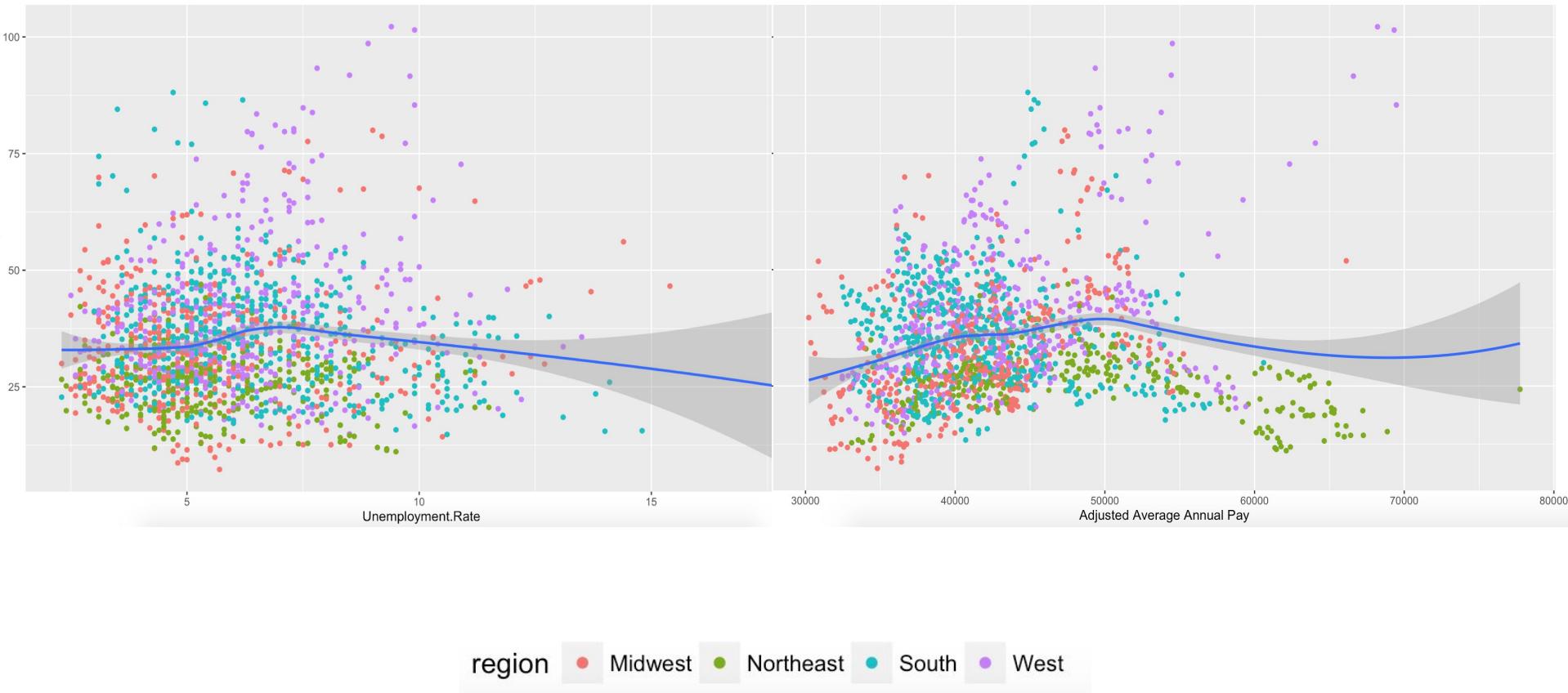


Robbery

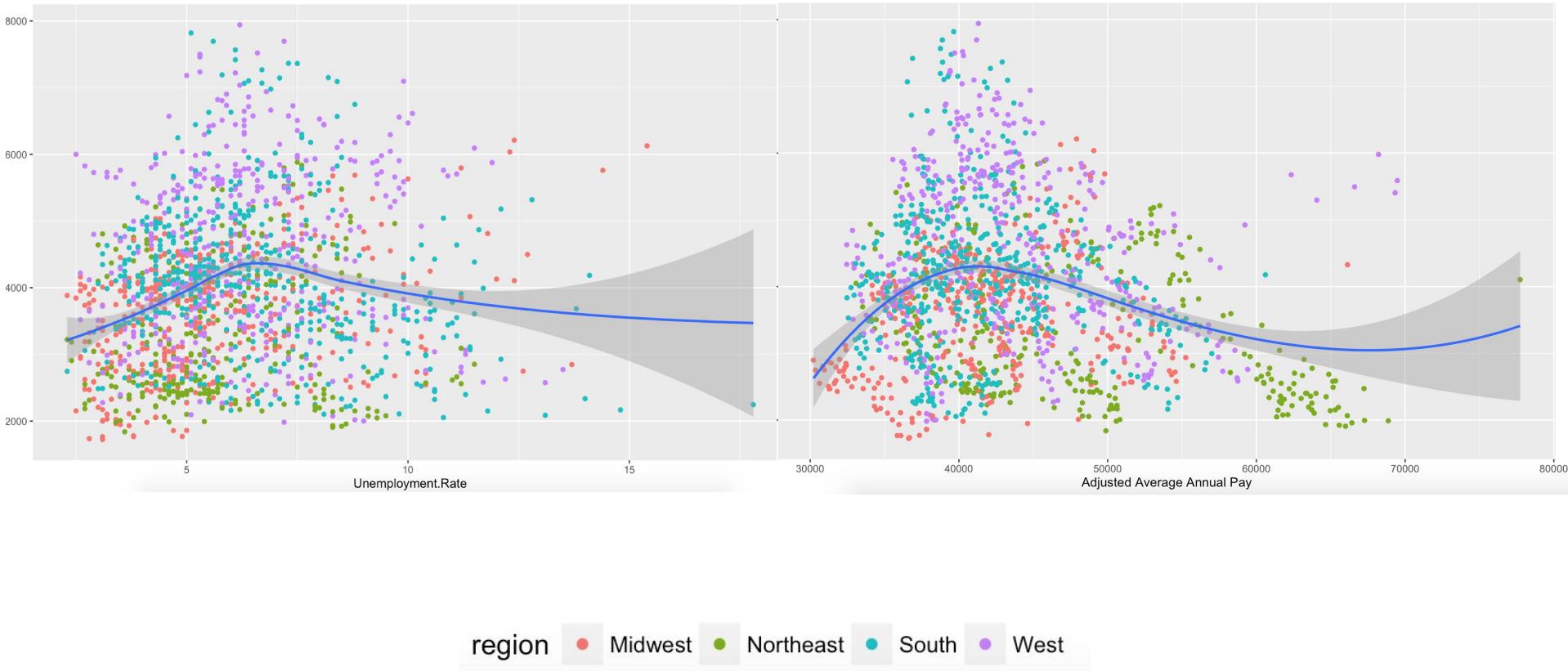


region ● Midwest ● Northeast ● South ● West

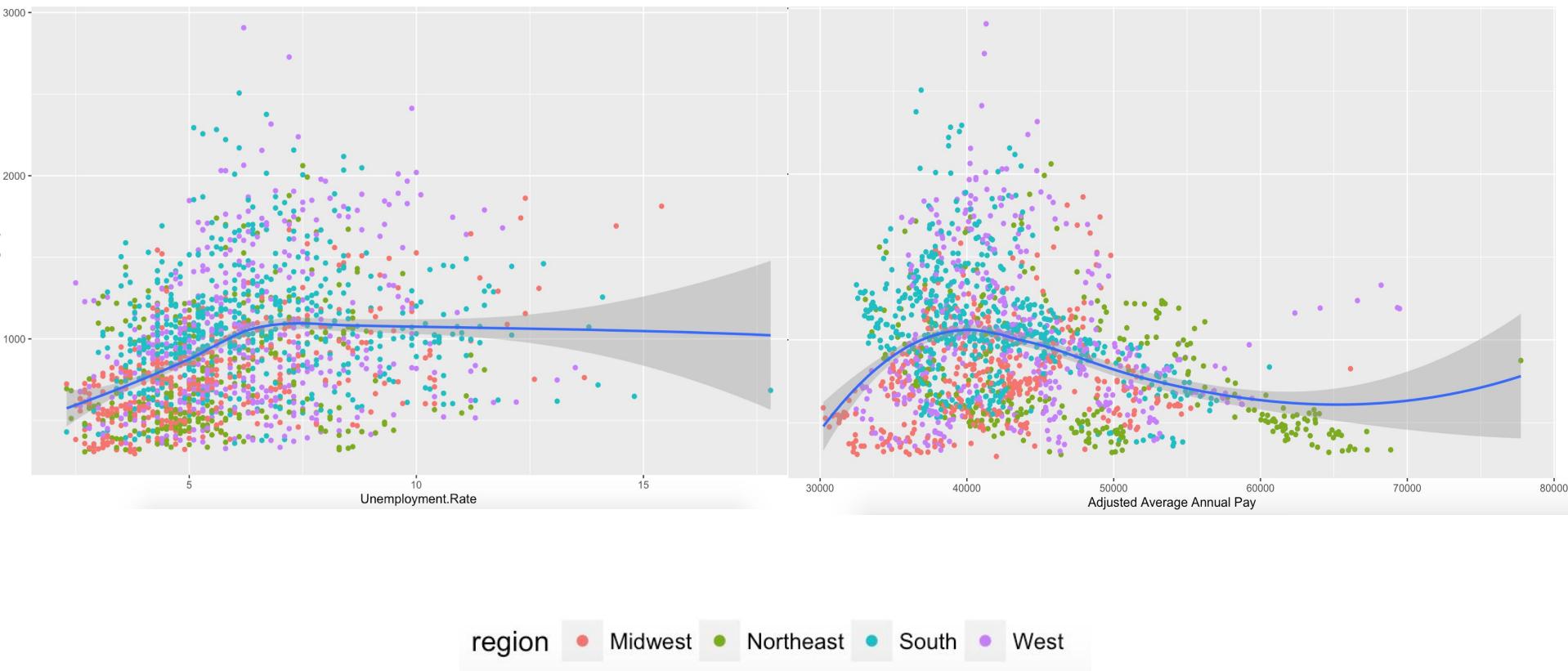
Forcible Rape



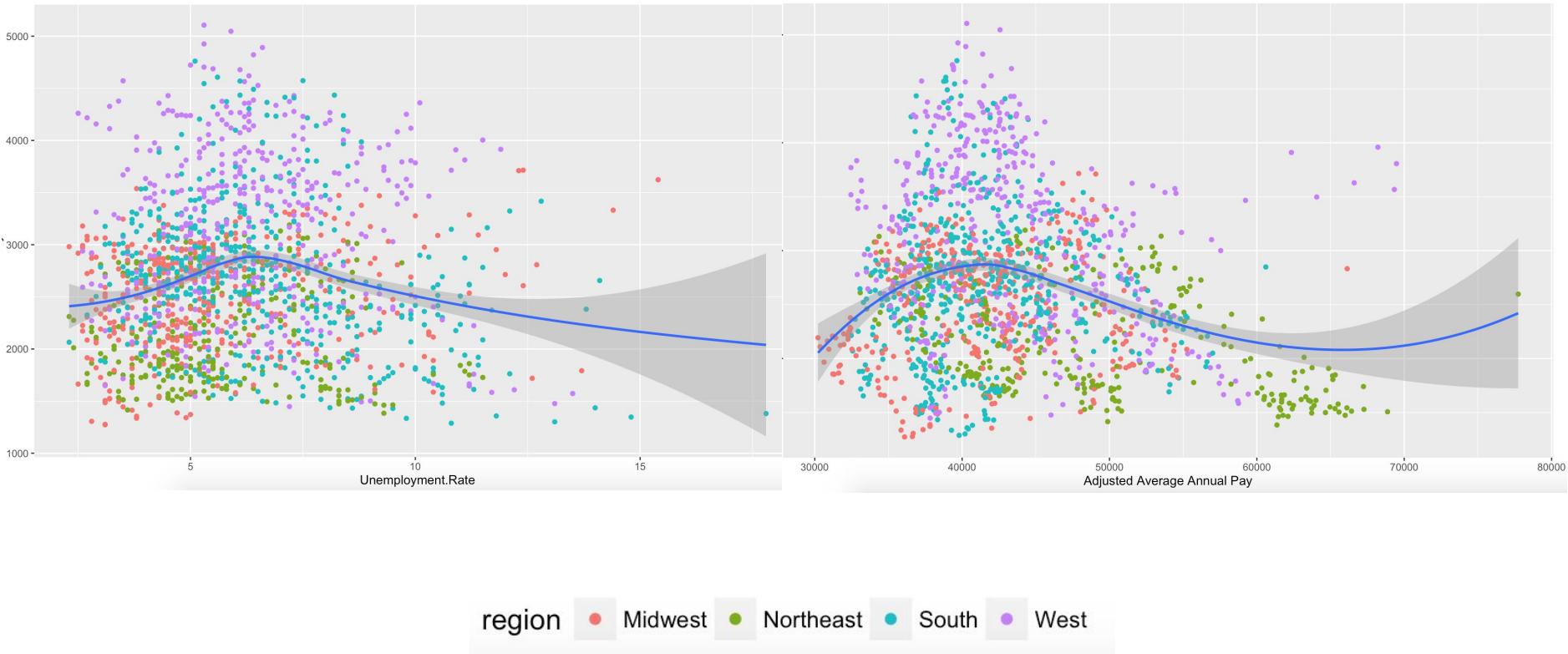
Property Crime



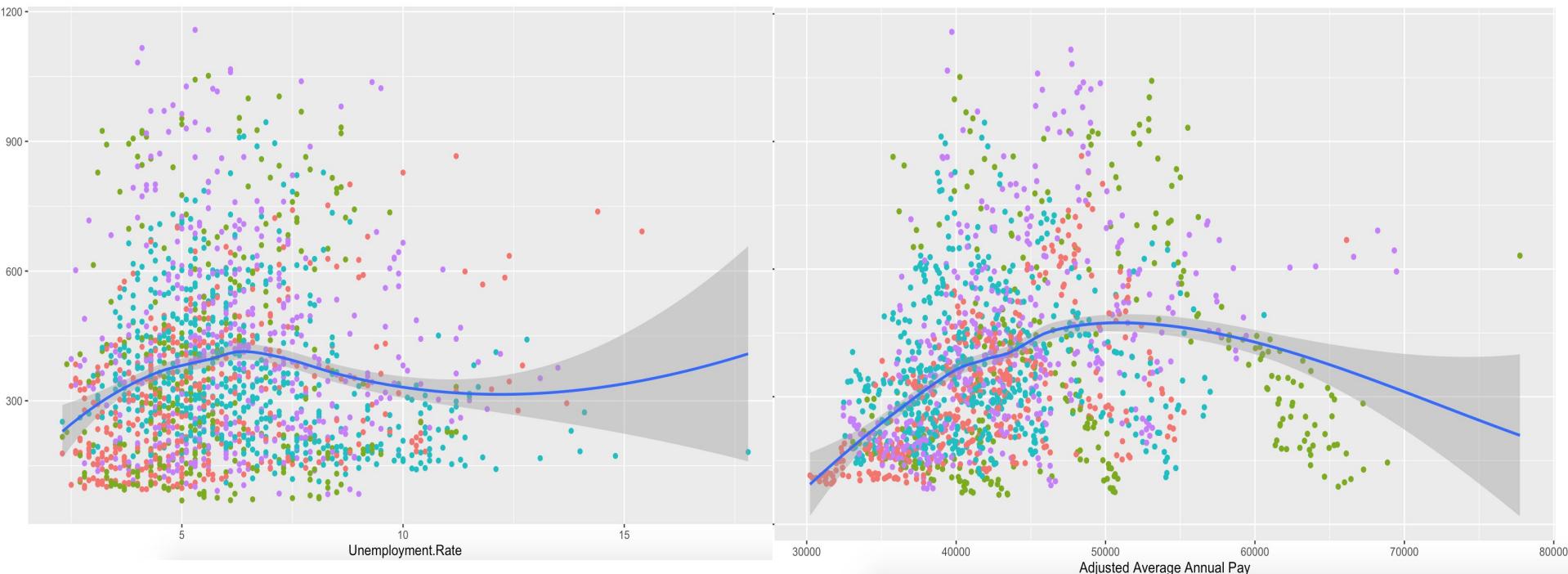
Bulgary



Larceny Theft



Motor Vehicle Theft



region ● Midwest ● Northeast ● South ● West

Crime ~ Unemployment

By Population Density Percentile

Crime ~ Wage

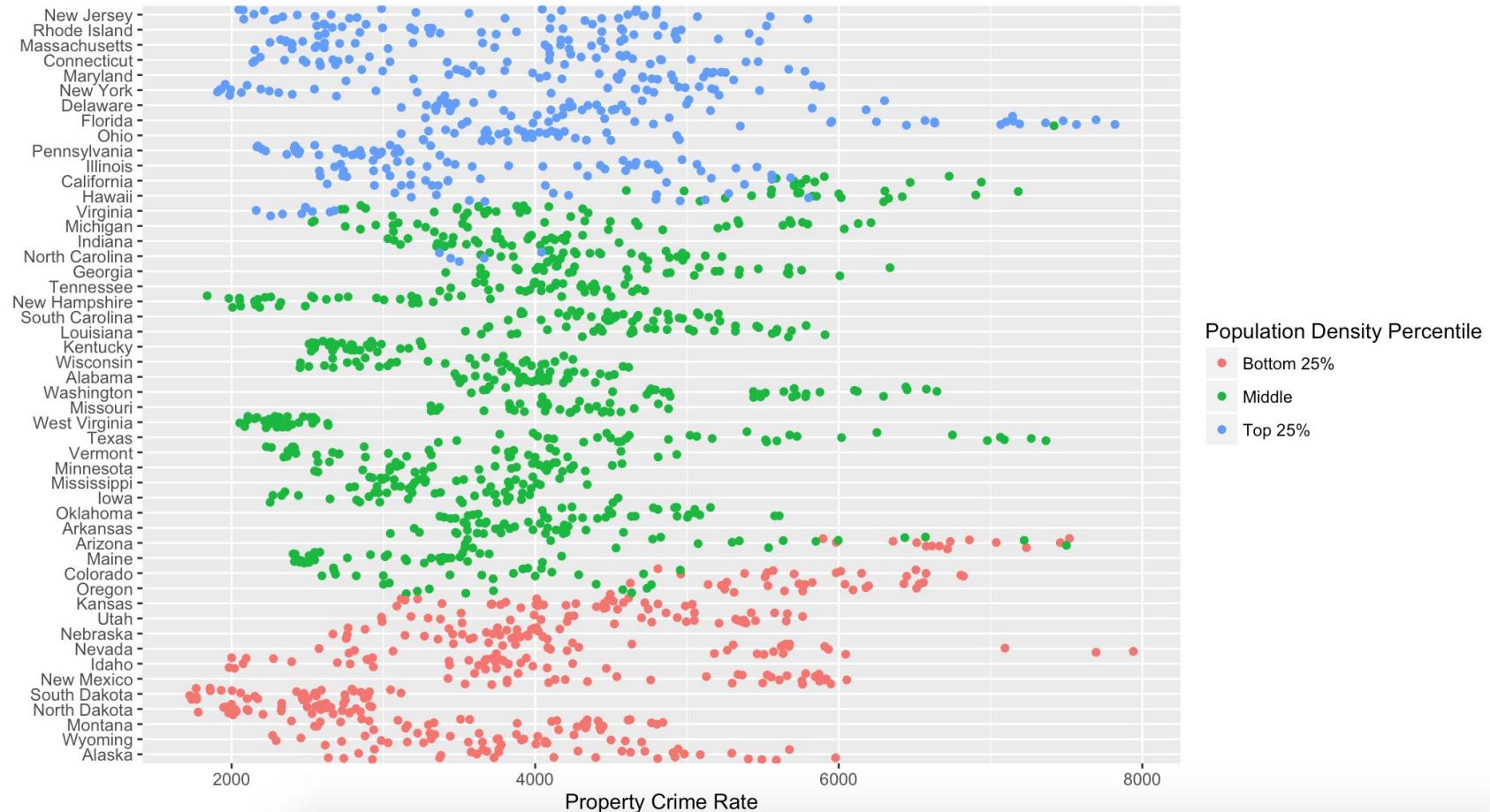
*Population density is calculated by population/land area(square mile).

Violent vs Property Crime, by Population Density

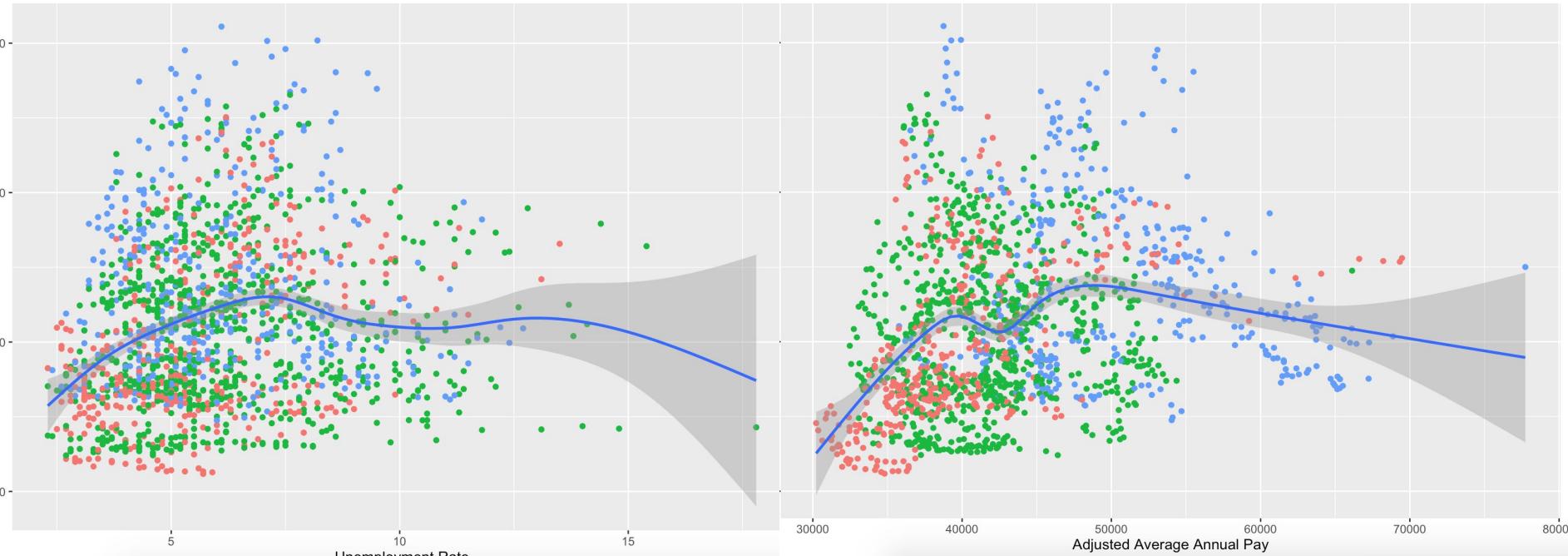
Violent Crime Rate by State, sorted by Population Density



Property Crime Rate by State, sorted by Population Density



Violent Crime



Population Density Percentile



Bottom 25%



Middle



Top 25%

Murder and Nonnegligent Manslaughter Rate



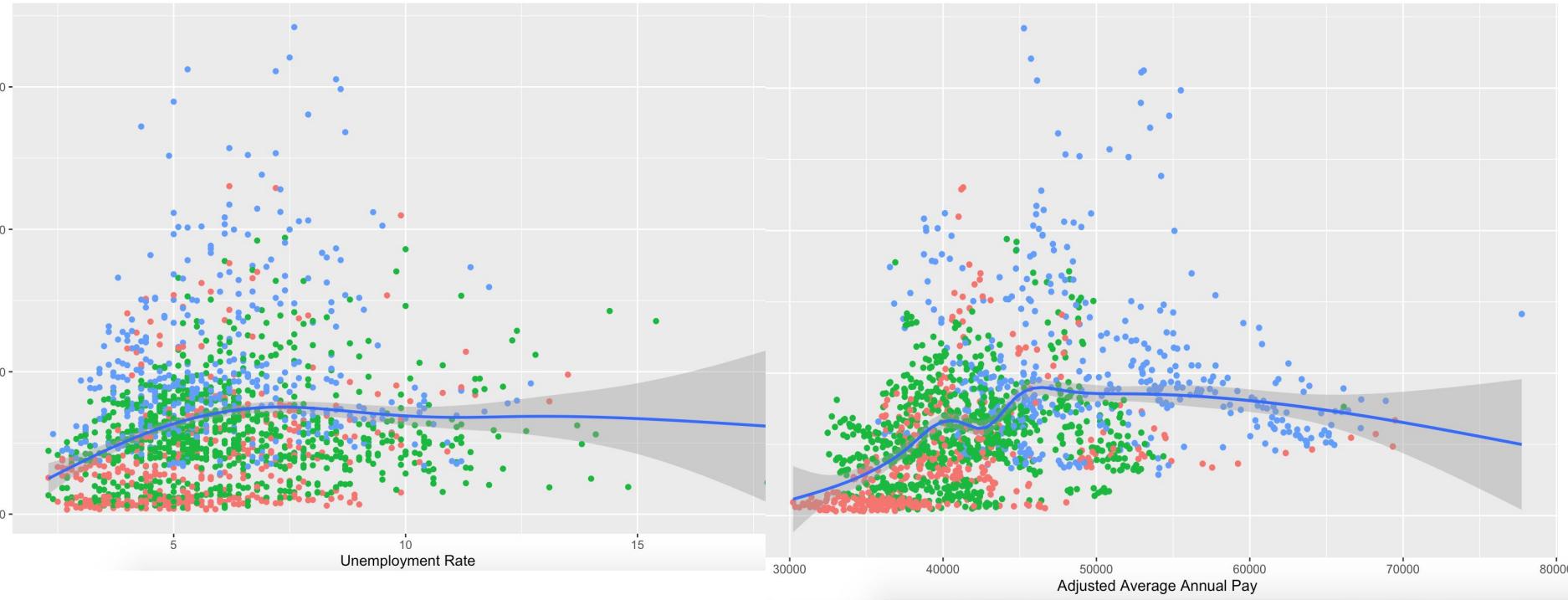
Forcible Rape



Population Density Percentile

Bottom 25% Middle Top 25%

Robbery



Population Density Percentile



Bottom 25%

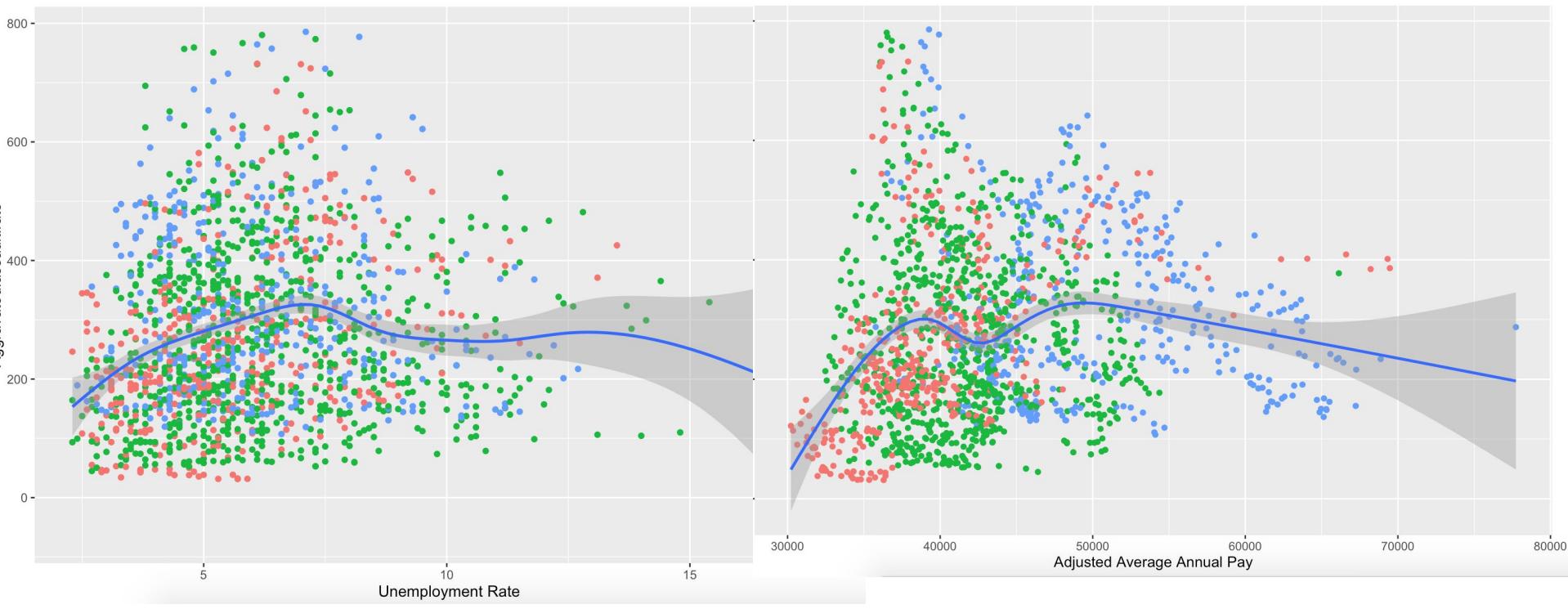


Middle



Top 25%

Aggravated Assault



Population Density Percentile



Bottom 25%

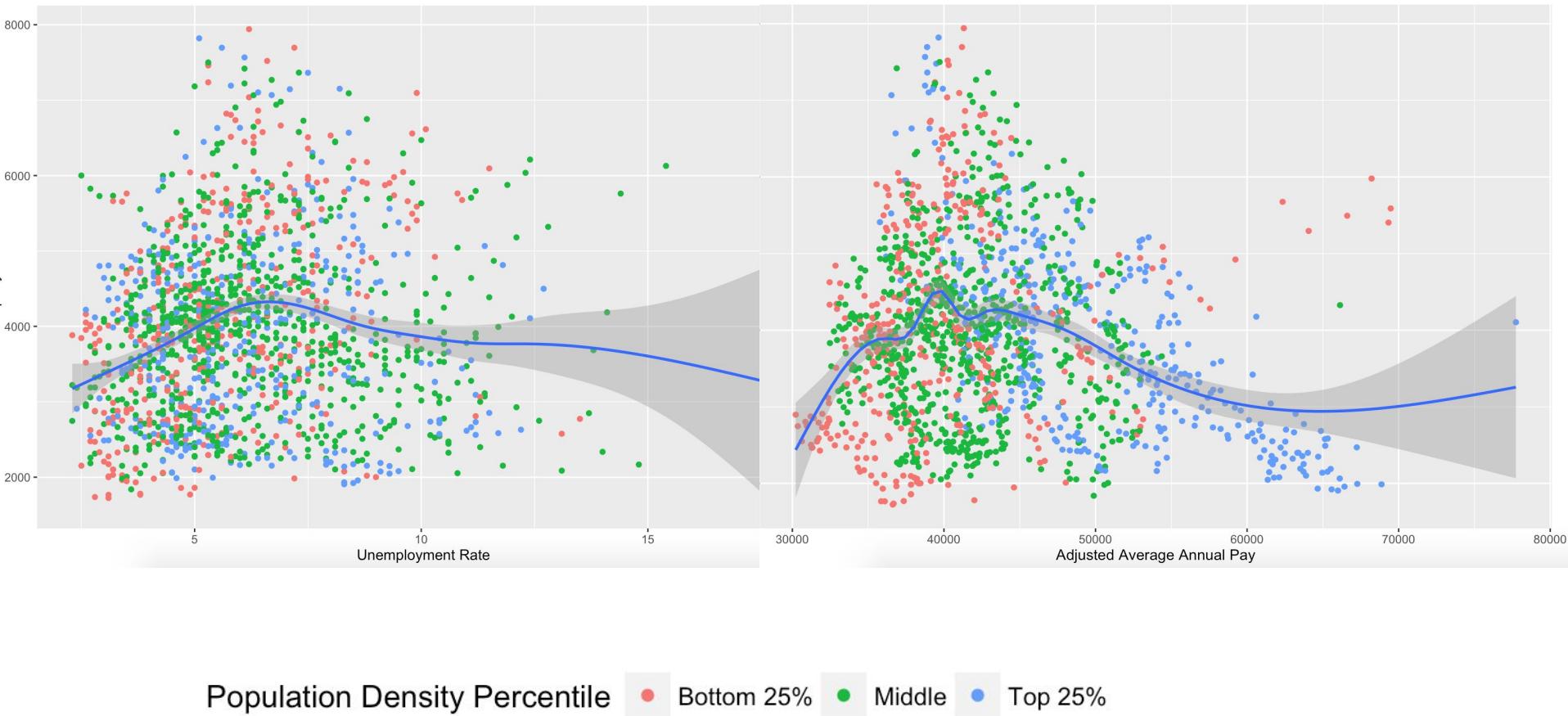


Middle



Top 25%

Property Crime



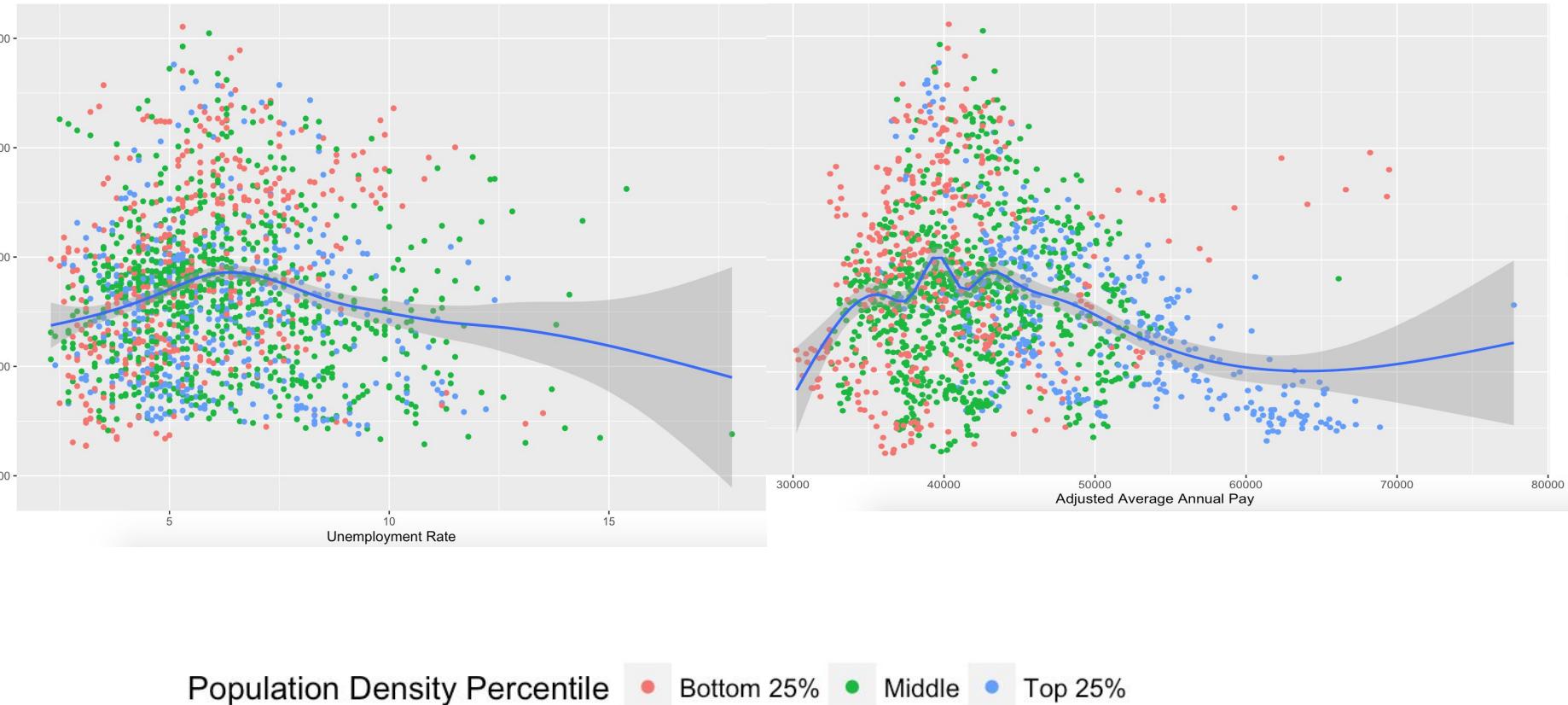
Bulgary



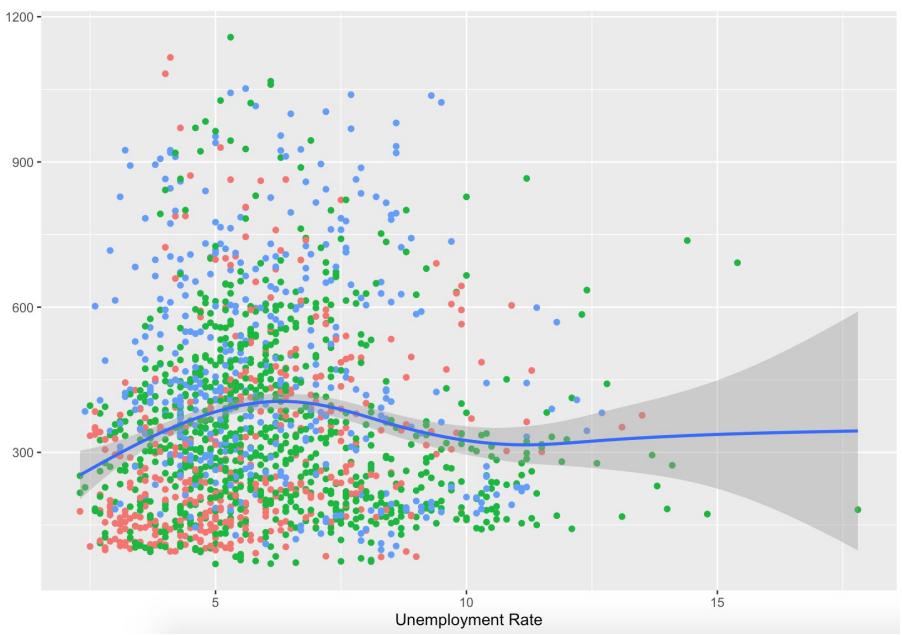
Population Density Percentile

Bottom 25% Middle Top 25%

Larceny



Motor Vehicle Theft



Population Density Percentile



Bottom 25%



Middle



Top 25%