Who stays out of trouble?

A statistical analysis on violation of parole

Preet Khowaja

Parole is conditional freedom for a prison inmate if deemed capable of integration into society

Eligibility varies by the crime committed and the state law

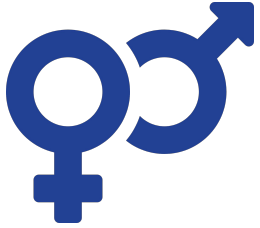Parole violation could lead to stricter terms or landing back in prison

A note on paroles

Does inmate age affect whether or not they will violate parole?

Does state affect how likely a parolee is to violate the terms of their parole?

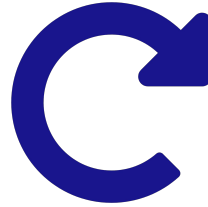**Does the effect of age vary by crime?**

Predictors

Sex

Race

Multiple Offenses

Age

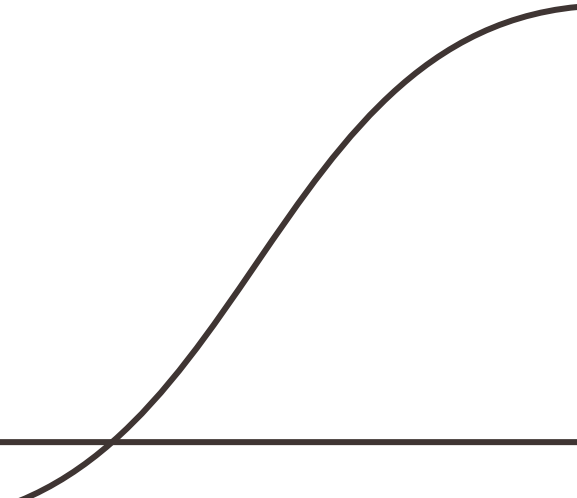State

Time served in months
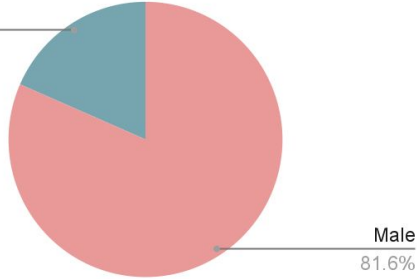
Maximum sentence In months

Crime

Data

- ➜ National Archive of Criminal Justice Data
- ➜ Analysis limited to parolees who served 6 months or less and maximum sentence did not exceed 18 months
- ➜ States focused on are Kentucky, Louisiana and Virginia
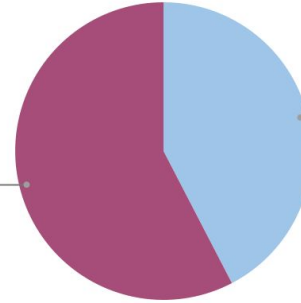
Quick data statistics

Sex Distribution

Female
18.4%

Male
81.6%

Race

White
42.4%

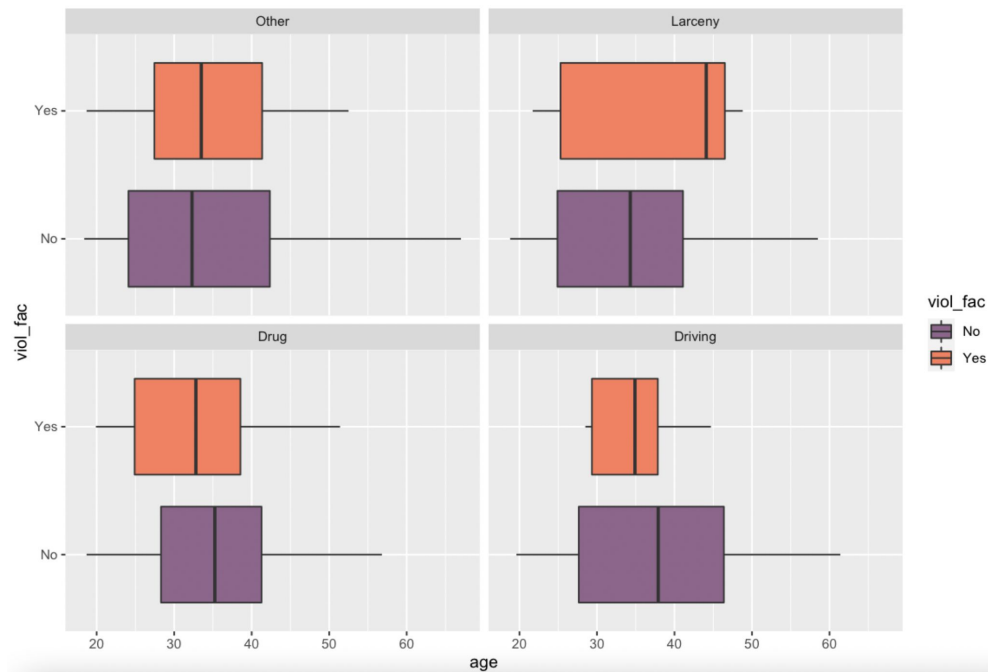Other
57.6%

4.19 months

Mean time served

35 years

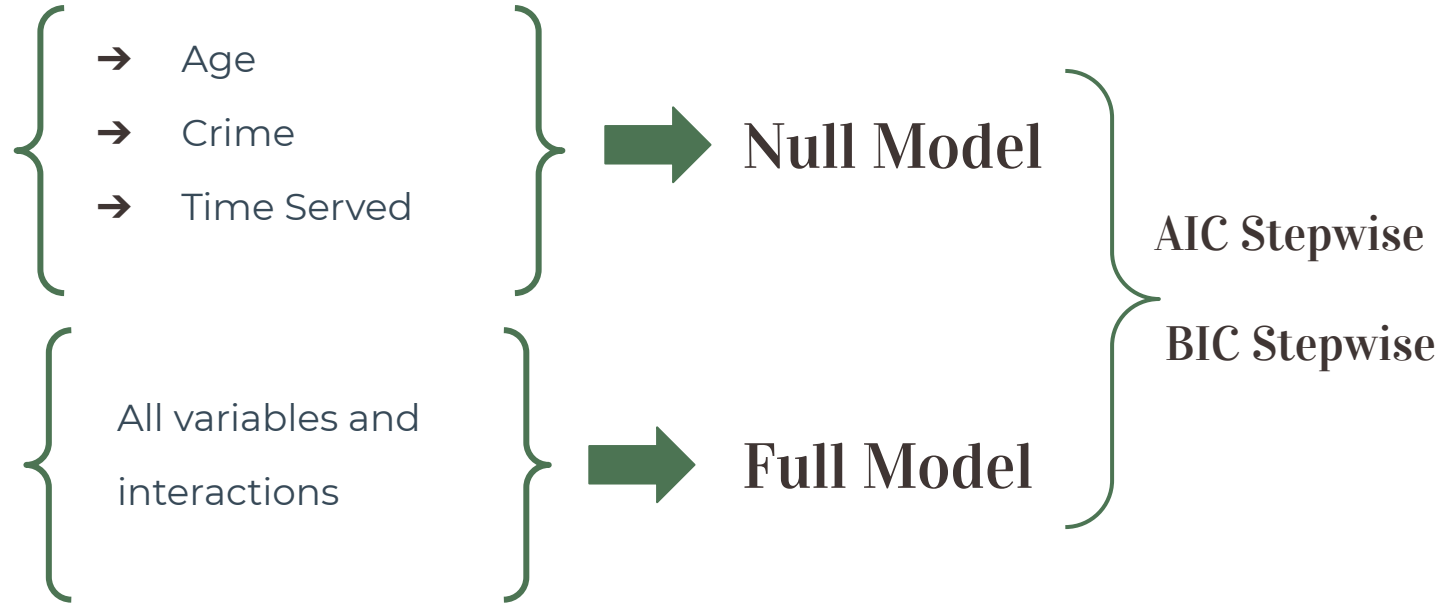Mean age

Some Interesting EDA

Interaction between Age and Crime:

➜ Interesting shift of trends in Larceny as compared to Drug and Driving related crime

➜ Median age for those who did not violate parole is lower than for those who did violate for inmates convicted of larceny

➜ For drug and driving related crimes, the opposite is true

Model Selection

Definitely want:

→ Age
→ Crime
→ Time Served

⟶ **Null Model**

All variables and interactions

⟶ **Full Model**

AIC Stepwise

BIC Stepwise

Model Selection

AIC Stepwise

→ Age

→ Crime

→ Time served

→ State

→ **Race**

→ **Age:Crime**

→ Significant!!

BIC Stepwise

→ Age

→ Crime

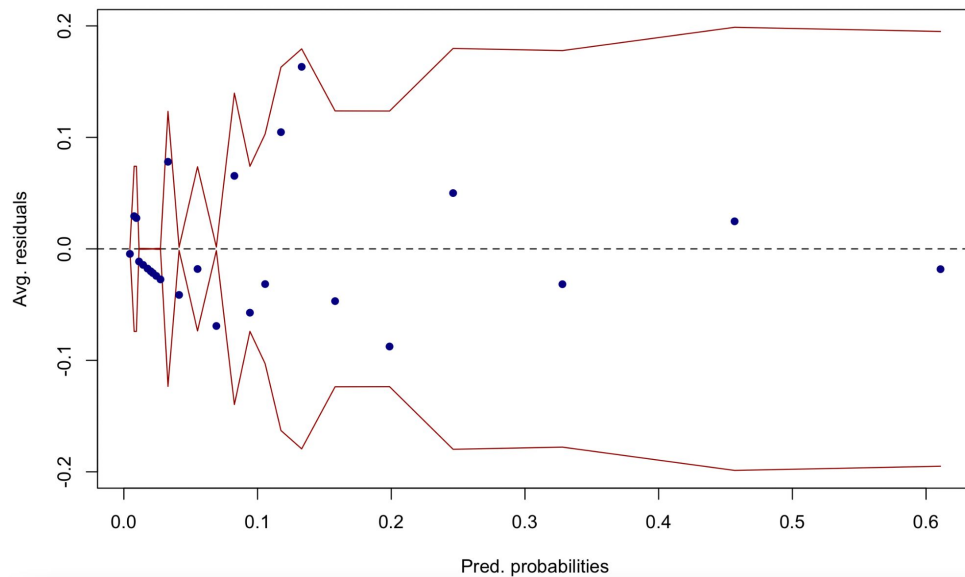→ Time served

→ State

One Eternity Later
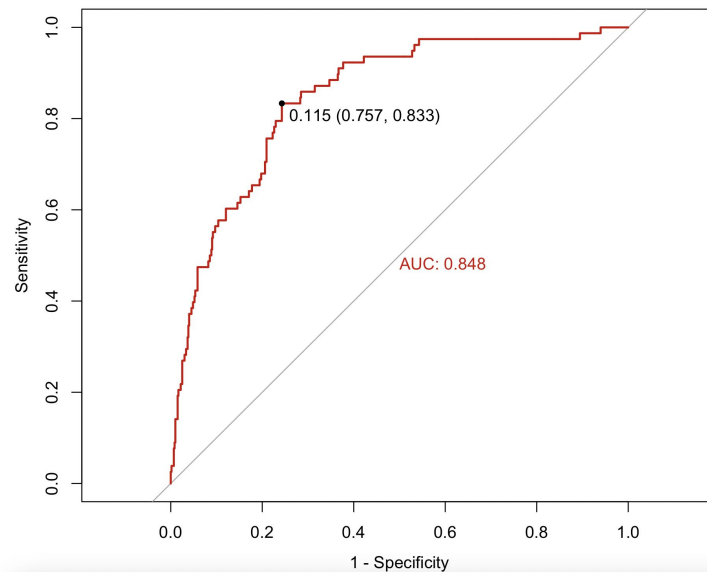
Model Selection

Final Model

➜ Age

➜ Crime

➜ Time served

➜ State

➜ Race

➜ Age:Crime

Model Assessment

Binned Residual Plot

ROC Curve

Findings

With everything else held constant, if you were a parolee in Virginia you are less likely to violate parole

With everything else held constant, if you were a parolee in Louisiana you are 3 times more likely to violate parole

A white parolee, holding other predictors constant is twice as likely to violate as compared to a non-white parolee

As you increase age, parolees are less likely to violate

Limitations

- Many confounding factors that are not included in the dataset, for example employment status upon release, terms of parole
- Data limited to 2004, too specific for a wider analysis