Recidivism Analysis: Understand the Factors that Contribute to Reoffending

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INTRODUCTION:

Recidivism is the tendency of formerly incarcerated individuals to reoffend and return back to prison. This has been a major issue within the criminal justice system for years, and exploring the contributing factors is important when considering why this issue is still prevalent today. Using data from the National Institute of Justice, this report aims to investigate recidivism rates in the first three years post-release in the state of Georgia.

DATASET OVERVIEW:

The dataset was extracted as a csv from the National Institute of Justice, and it was provided by Georgia Department of Community Supervision and the Georgia Crime Information Center. THe data was last updated July 15th, 2021. It contains approximately 25.8K records and 54 columns of detailed cases on individuals who were released from prison. Some of the key variables included are: Race, Gender, Prior Arrests, Convictions, Offenses, Length of Sentence, Program Attendance, and Supervision Conditions. The columns are extensive and touch on topics ranging from demographics to prison experience to post-release factors. When completing the analysis, the following steps were taken: 1) Data cleaning and preprocessing 2) Exploratory Data Analysis through visualizations to identify patterns and trends 3) Focusing on specific variables such as education level, prison sentence length, program attendance and more to assess their impact on recidivism.

VISUALIZATIONS:

Program Attendance and Recidivism by Supervision Risk Score:
This visualization explores the relationship between program attendance and recidivism, segmented by supervision risk scores. Supervision risk scores: numerical values assigned by either probation or parole officers to assess the likelihood that someone will reoffend or violate the terms of their supervision. A heatmap was created to examine how the supervision risk score interacts with program attendance to influence recidivism rates.

Typically, individuals with higher supervision risk scores face greater challenges when they are reintegrating into society. The heatmap shows whether rehabilitation program attendance, which has been a crucial aspect of making this reintegration smoother, can actually help mitigate the risk of recidivism for individuals with different levels of supervision risk.

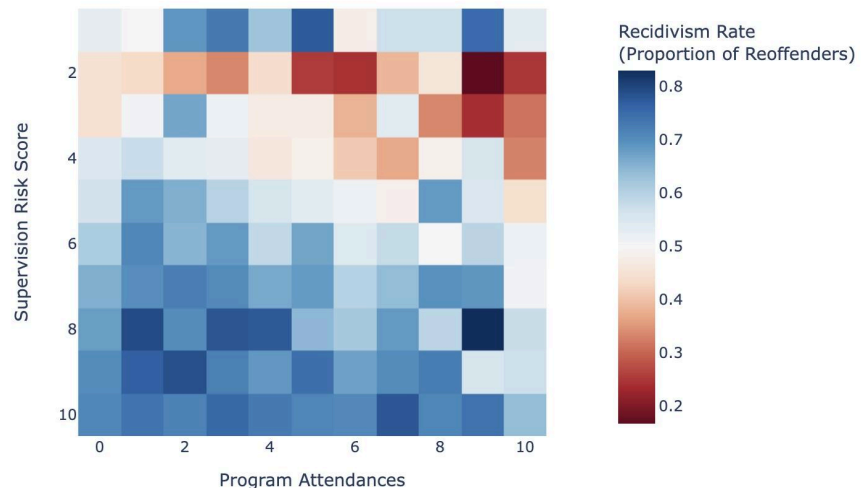Program Attendance vs Recidivism by Supervision Risk Score

Figure 1 : Program Attendance vs Recidivism by Supervision Risk Score

As shown in the figure above, there are certain clusters that reveal underlying trends in the data. With individuals that have low attendances to rehabilitation programs and high supervision risk scores tend to have pretty high recidivism rates. The lower left quadrant of the heatmap showcases this trend, all the cells are shades of blue which ranges from 55-80% on the scale. Alternatively, in the upper right corner of the heatmap, there is a small cluster of low recidivism rates. It seems like individuals who attend 8 or more program meetings and have low supervision risk scores tend to not have a high proportion of reoffenders. Also when looking at the distribution of the map, it seems like supervised risk scores seem to have more of an impact on the recidivism rates compared to program attendance. The heatmap shows that when isolating these two variables, if an offender has a higher risk score, they are almost guaranteed to have higher recidivism rates regardless of their program attendance. On the contrary, high program attendance doesn't always guarantee low recidivism rates because there's a mix. All of these trends conceptually make sense and suggest that offenders that are higher-risk may require more intensive or tailored interventions beyond basic program attendance to effectively reduce recidivism.

Recidivism by Education Level, Race, and Gender
This visualization is a normalized histogram that was created to examine how recidivism rates vary by demographic data. Conversations surrounding the criminal justice system and rehabilitation post-prison tend always include opinions around patterns present with different demographics so this visualization aims to explore these claims.

Education level, along with race and gender are all explored in this histogram. Education is often seen as a protective factor against recidivism, and this visualization assesses whether higher education correlates with lower recidivism rates.
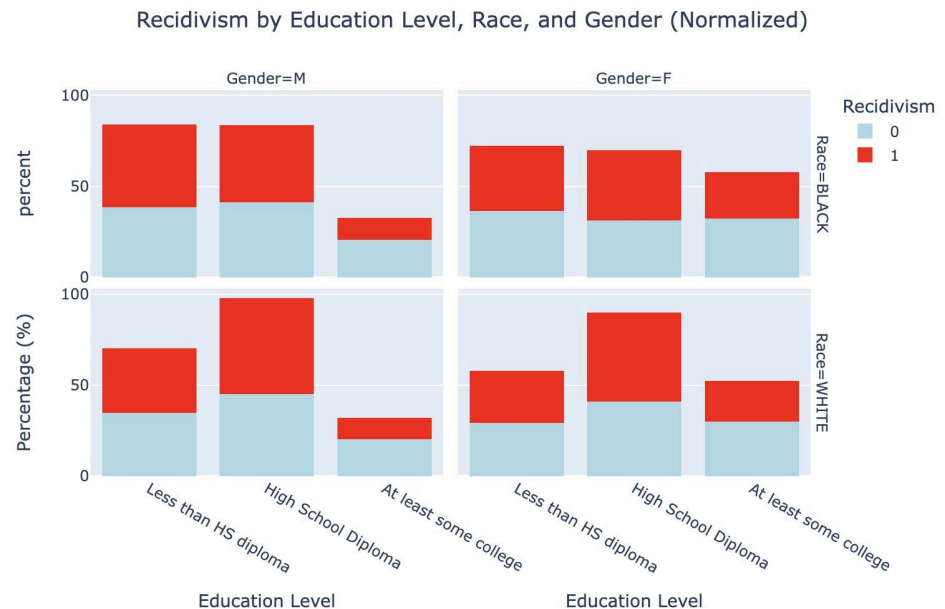

Figure 2: Recidivism by Education Level, Race, and Gender (Normalized)

The data was normalized for this specific visualization because of the unbalanced nature of the data when looking at males vs females. To better showcase the female data, normalization allowed for a clearer visualization. As shown in Figure X, for both males and females, recidivism rates are highest for those with less than a high school diploma, around 90%. As education level increases, recidivism rates decline steadily for both genders. Also, for those with a high school diploma, recidivism rates are around 65-70% and for those with at least some college, recidivism rates drop to around 50-55%. In terms of gender, at every education level, males have higher recidivism rates compared to females. The gender gap is most pronounced at the lower education levels, with a difference of around 10-15 percentage points between males and females. Overall, as education increases, the gender gap narrows, but males still maintain a slightly higher recidivism rate even at the highest education level. In terms of race, at every education level, the recidivism rates are higher for Black individuals compared to White individuals. Conceptually, the narrative that emerges is that higher educational attainment is associated with lower recidivism rates for both genders. Providing greater educational opportunities and support could help reduce recidivism, particularly among the least educated individuals and males.

Recidivism Rates by Prison Years
This visualization is a grouped bar chart that showcases recidivism rates for inmates based on the number of years they spent in prison. Year 1 Recidivism rate is the likelihood of an individual going back to prison after year 1 of their post-prison life. Same logic follows for Year 3. This dataset only represents up to 3 years.

As shown in Figure 3, for inmates who spent less than one year in prison, the overall recidivism rate (shown in blue) is very high sitting at approximately 65%. The higher the number of prison years, the overall recidivism rate slightly decreases which indicates that the longer an individual spends incarcerated, the less likely they will be to return. The same pattern exists for

Figure 3: Recidivism Rates vs Prison Years

going back to prison in the first year of post-prison life. The key narrative here is that longer prison sentences appear to be associated with lower recidivism rates. Consequently, inmates who serve longer sentences, especially more than 3 years, are less likely to reoffend upon release compared to those with shorter sentences. These individuals have been through an extended period of rehabilitation and deterrence from social influences which allows for programs to be more effective in ways that shorter sentences cannot.
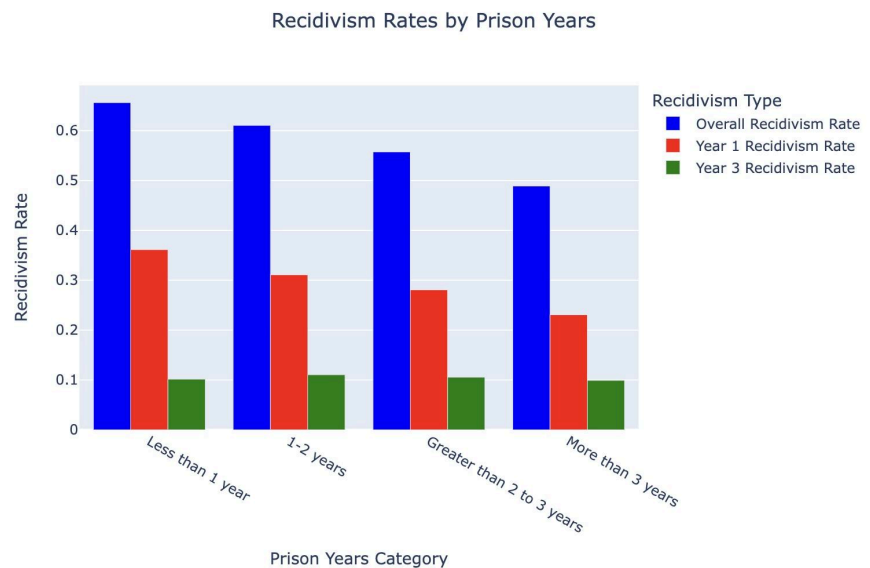
CONCLUSION:

This analysis offers valuable insights into the factors influencing recidivism. The findings suggest that early intervention programs, especially those targeting individuals with lower education levels and higher supervision risk scores, are critical to reducing reoffending. Additionally, educational programs should be prioritized as they have significant impact on reducing recidivism. Finally, rehabilitation during incarceration, combined with post-release support, is likely more effective than simply extending prison terms. Policymakers and criminal justice professionals can use these insights to design more effective targeted programs that reduce recidivism and improve reintegration of formerly incarcerated individuals into society.

REFERENCES:

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