COMPAS RECIDIVISM DATA SET PROJECT

Jack, Aidan, Gia

CORRECTIONAL OFFENDER MANAGEMENT PROFILING FOR ALTERNATIVE SANCTIONS (COMPAS)

- Our data set is sampled from 10,000 defendants in the COMPAS system from

  Broward County, Florida

- The COMPAS system assigns people recidivism risk scores

- These scores are calculated using a form filled out mostly by the defendant

  (more on the survey later)

DENOTATIVE READING

- The COMPAS scores are used by judges as a tool to help make sentencing and parole decisions.

- The reasoning given for the viability of using COMPAS in court is that it can help negate human bias and is more neutral.

- This denotative reading will define the variables and how they are used by judges to help make decisions

RISK SCORES; RECIDIVISM AND VIOLENCE

- The literal definition of recidivism is someone being arrested for another crime within two years of being released.

- The score only predicts the likelihood of another arrest, not conviction or guilt.

- The definition of violent recidivism is someone being arrested for a violent crime.

- The current offense is not included in the calculations for the violence score.

WHAT DOES IT LOOK LIKE?

- This is a sample of 5 people, every three rows is one person

- Each person gets three scores for each metric

- The raw score is the purely numerical value derived from the formula we will talk about later

DisplayText	RawScore	DecileScore	ScoreText
Risk of Violence	-2.08	4	Low
Risk of Recidivism	-1.06	2	Low
Risk of Failure to A	15	1	Low
Risk of Violence	-2.84	2	Low
Risk of Recidivism	-1.5	1	Low
Risk of Failure to A	19	3	Low
Risk of Violence	-1.2	8	High
Risk of Recidivism	0.18	8	High
Risk of Failure to A	13	1	Low
Risk of Violence	-1.29	7	Medium
Risk of Recidivism	-0.53	6	Medium
Risk of Failure to A	11	1	Low
Risk of Violence	-2.9	2	Low
Risk of Recidivism	-1.55	2	Low
Risk of Failure to A	16	2	Low

DECILE SCORES

- To calculate the decile score, the raw scores are separated into 10 groups labeled 1-10

- The decile score is your rank relative to other raw scores in the database

- A decile score of one means you are in the bottom 10% of raw scores

- The next variable is text value of either low medium or high based on raw score

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HOW ARE THESE FACTORS CALCULATED?

- The COMPAS algorithm is calculated based off a survey (Core Risk and Need Assessment) completed by the individual as well as a court official, who fills out the first few questions. These answers are derived of the official's knowledge of the defendant from a judicial standpoint, such as previous criminal charges. On this model, after the 30th question the recipient of the survey answers. These questions are under several categories in relation to the person in question's livelihood, including what they do in leisure and their level of social isolation.

FORMAT ANATOMIES: MICRO-LEVEL

- Since COMPAS data is taken from answers to the Core Risk and Needs questionnaire, we examined it on a micro-level for the Format Anatomies aspect.

- The underlying ethical implications of the questions asked in this survey arise when inspecting the harsh vagueness. The questions in the survey regarding crime are incredibly one-dimensional, leaving considerable room for assumption. When asked about criminal history (family, peers, etc), the person being surveyed is only asked about overall criminality and arrests. This allows for the data to skew due to the fact that the type of crime is not specified, in addition to the overall innocent/guilty ruling.

- Since the system is already flawed, and certain groups are more likely to be profiled or arrested, these factors and generalizations are fed into the artificial intelligence system, which is made to reflect and reinforce its users' biases.

RISK OF VIOLENCE

- Risk of violence is calculated by the following variables: violence recidivism risk score, current age, history of violence, vocational education score, and age of first arrest. All these variables are acquired from the COMPAS survey that the subject had to take. Depending on the way the subject answers these questions can determine the way they are scored.

- These variables may be inaccurate as the subject or the person representing the subject can enter inaccurate information into the COMPAS survey. With this inaccurate information, the subject's risk of violence score can be assessed different than what is accurate, leading to incorrect decisions by the justice system.

- Age and race in this study were the two most influential variables for what determined the subjects score.

$$s = a(-w) + a_{\text{first}}(-w) + h_{\text{violence}}\,w + v_{\text{edu}}\,w + h_{\text{nc}}\,w$$

RISK OF RECIDIVISM

- The risk of recidivism model uses a similar model to risk of violence. The variables are gathered from the COMPAS survey and then the subject is given a score of low, medium, or high.

- In the study, age was found to be the most influential variable in these assessments. As typically, ages younger than 25 were most likely to commit an act of recidivism compared to older ages. Additionally, age was also seen to be incorrect for many subjects (DOB being incorrect in 3.75% of the data) leading to inaccuracies in the data and for the subject.

Risk of General Recidivism Logistic Model

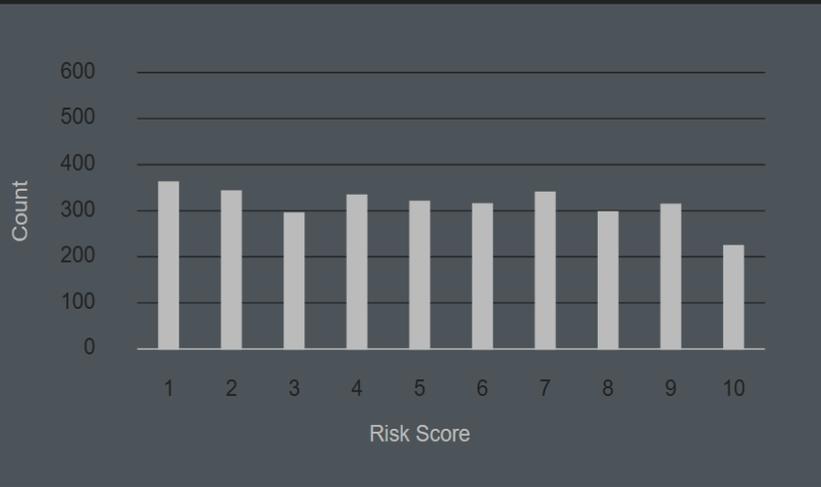*Dependent variable:*

Score (Low vs Medium and High)

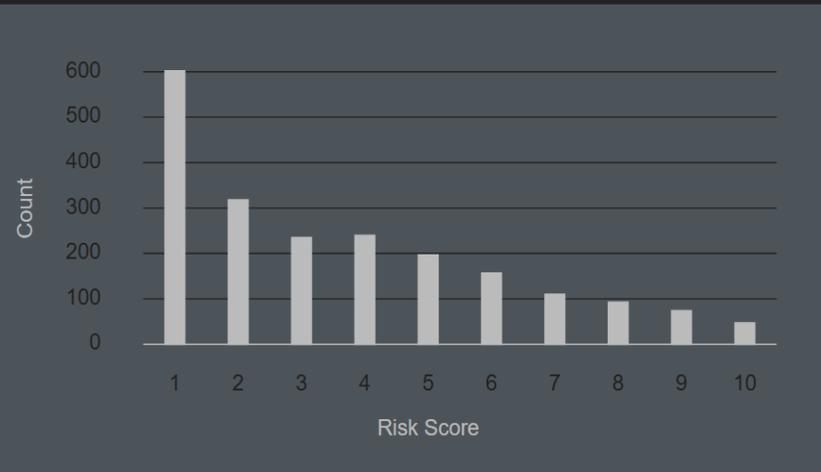|	
Female	0.221*** (0.080)
Age: Greater than 45	-1.356*** (0.099)
Age: Less than 25	1.308*** (0.076)
	***

WHY DO THESE QUESTIONS MATTER?

- These questions were developed based off several risk factors that may influence or expose an individual to criminal activity. The ethical issues with this basis of such an algorithm stem from pre-existing biases within the justice system, in addition to a bleak overgeneralization which perpetuates these stereotypes. Labeling an individual as "more likely" to commit a crime based on the factors within the Core Needs & Risk Assessment not only reveals that the system is flawed and targets certain demographics; it also influences recidivism. The "labeling theory" commonly used in Criminology suggests that when an individual is given a deviant label by officials (media, courts, police, etc), they have increased led into a self-fulfilling prophecy.

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BIAS AND DISCRIMINATION

Black Defendants' Risk Scores

White Defendants' Risk Scores

- Researchers for ProPublica published a study finding racial discrimination in risk scores

- The algorithm was only right 60% of the time and disproportionately gives black defendants higher risk scores.

- If the point of the algorithm is to negate bias, why is the algorith biased?