Unlocking Opportunities: A Blueprint for Implementing a Recidivism-Reducing Algorithm in Job-Training Selection for Ex-Offenders.

Key Takeaways:

* We recommend the implementation of our new algorithm as an equitable way to decide which ex-offenders will be allocated job-training resources from the city.
* The city decided to allocate job-training resources for ex-offenders as a solution to prison overcrowding, but currently has no system in place to decide who receives these resources.
* Upon analysis of the economic and social costs at both the individual and societal level, we found that the benefits outweigh the potential costs of implementing this algorithm.

Background:

Ever since the War on Crimes, War on Drugs and other tough-on-crime strategies were implemented, incarceration rates in the US have skyrocketed ([Vera](https://www.vera.org/ending-mass-incarceration/causes-of-mass-incarceration#:~:text=From%20President%20Lyndon%20Johnson's%20%E2%80%9CWar,rise%20in%20harsher%20drug%20laws%2C)). As a result, prisons all over the country face the consequences of overcrowding. The shortage of already little resources that prisons can provide incarcerated individuals are exasperated by this, stripping people in custody of any chance to gain the skills necessary to reenter mainstream society and avoid recidivating.

Our city introduced the idea of creating a job-training programs for ex-offenders to combat this by reducing the number of ex-offenders going to prison and instead, offering them tools to prevent recidivating. This begs the question, what is the most equitable way to decide who can access these services? How do we ensure that we enroll the people who are most receptive and have the highest likelihood of successfully completing the job-training program? We propose our algorithm as a solution.

The Algorithm:

Data for the algorithm comes from COMPAS, including information from 6,162 ex-offenders with features such as demographics like age, sex, and race in addition to details about their crime and time in prison. This algorithm takes these and other features of an individual as input and gives us a simple output: a “yes” or “no” to the question, “Is this person very likely to recidivate?”

This model was first constructed by figuring out the combination of features that provided the highest level of prediction accuracy. The algorithm is based on a model which helps us figure out the likelihood of something happening by using an S-shaped curve. The S-shaped curve begins flat at a zero value, rises steeply in the middle, and settles at a value of one (with zero being “no” and one being “yes” for the question above). The model predicts everyone to be on some part of this line, so the final decision we needed to make about the model is where to mark the threshold, or decision boundary on this S-curve for which all the points above it would be categorized as “yes”, and the rest are categorized as “no”.

Cost-Benefit Analysis:

Though we care about the algorithm’s accuracy, we argue that it’s more important for it to accurately predict the people who don’t recidivate because those are the people we will be providing job-training resources to. If the model predicted that someone will not recidivate but they actually do, that would not only mean that the city resources we spent for this person would go to waste (about $5,000 per person), but also that we would be paying more to keep this person in prison now (). On the other hand, if the model had predicted that someone was likely to recidivate, but it turns out that this person wouldn’t have, we would again be spending money on keeping this person incarcerated, but the greater social cost is that this individual will now lose years of their life in prison and have a much more difficult time reentering society, altering their whole course of life.

[use [this](https://docs.iza.org/dp14078.pdf) for estimating costs]

Recommendations:

We recommend the use of this algorithm to decide which ex-offenders are offered job-training resources from the city. Using an algorithm provides a data driven approach to sort ex-offenders into those that are likely to recidivate or not – a decision that humans cannot make without worrying about the biases that they might have against certain qualities of people and crimes.

A good algorithm must be accurate and generalizable. We tweaked and tested the model repeatedly until we found a combination of features that predicted whether an ex-offender recidivated or not with the highest accuracy. Given the disparate impact of the model, this model can be improved on its generalizability, or ability of a model to [something]. we [recommend a person to review model results].

Conclusion:

Employing this algorithm will [greater impact]. [inspire immediate action]