

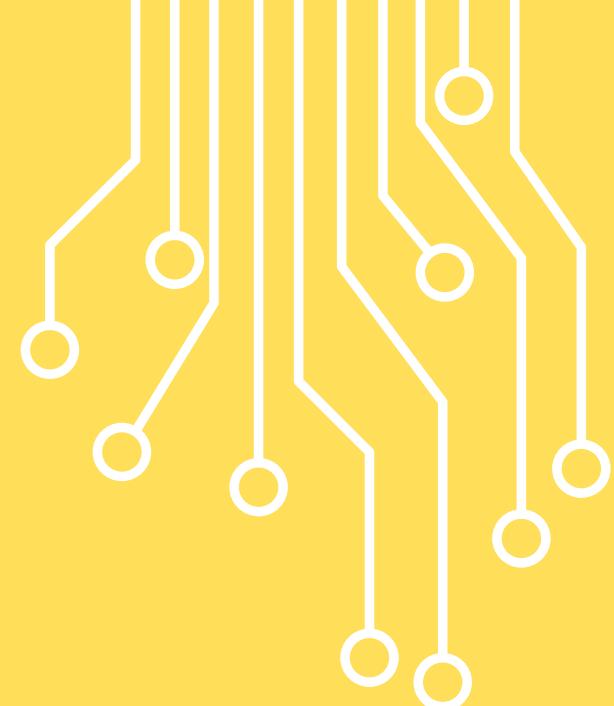
May 11, 2022

BREAKING THE "PATTERN"

Recommendations for addressing racial bias in
federal risk assessment algorithms

Presentation to National Artificial Intelligence Advisory Committee (NAIAC) members, U.S. Commerce Secretary Gina Raimondo (Chair), and Attorney General Merrick Garland

Policy Analysis Presented by 7 Strategies:
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AGENDA

Problem Statement
Causes & Underlying Factors
Target Population
Harms & Costs of Inaction
Market & Government Failures
Legal & Regulatory Framework
Criteria/Alternative Matrix
Recommendations

The Problem

47%

black men falsely categorized
as high risk vs. 26% of white men.
(DOJ, 2021; Grawert, 2019; Stimson, 2020)

Racially-biased federal post-sentencing risk assessment algorithms, such as PATTERN, disproportionately predict that Black men will recidivate, resulting in extended prison terms, undermining the policy goals of rehabilitation and reinforcing the cycle of racially biased incarceration that leads to broader social inequities and government failure.

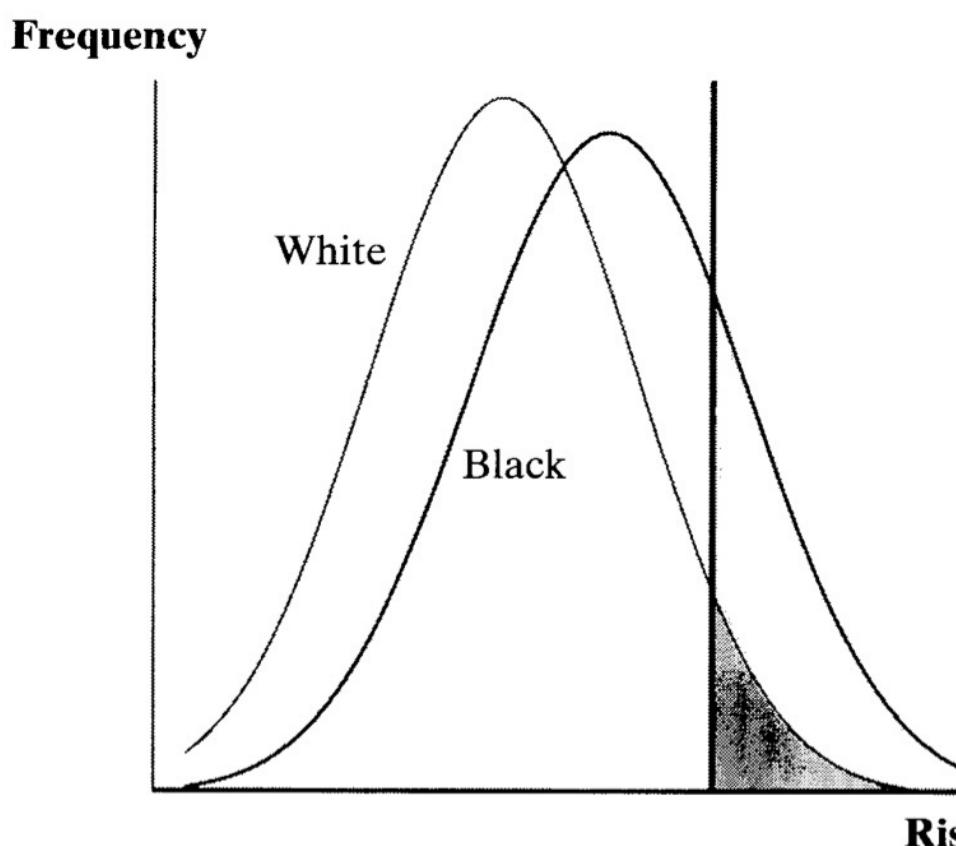


SOCIAL JUSTICE ISSUES WITH RISK ALGORITHMS

Post-sentencing risk assessment algorithms score prisoners on their recidivism likelihood, which informs early release (Hamilton et al., 2021).

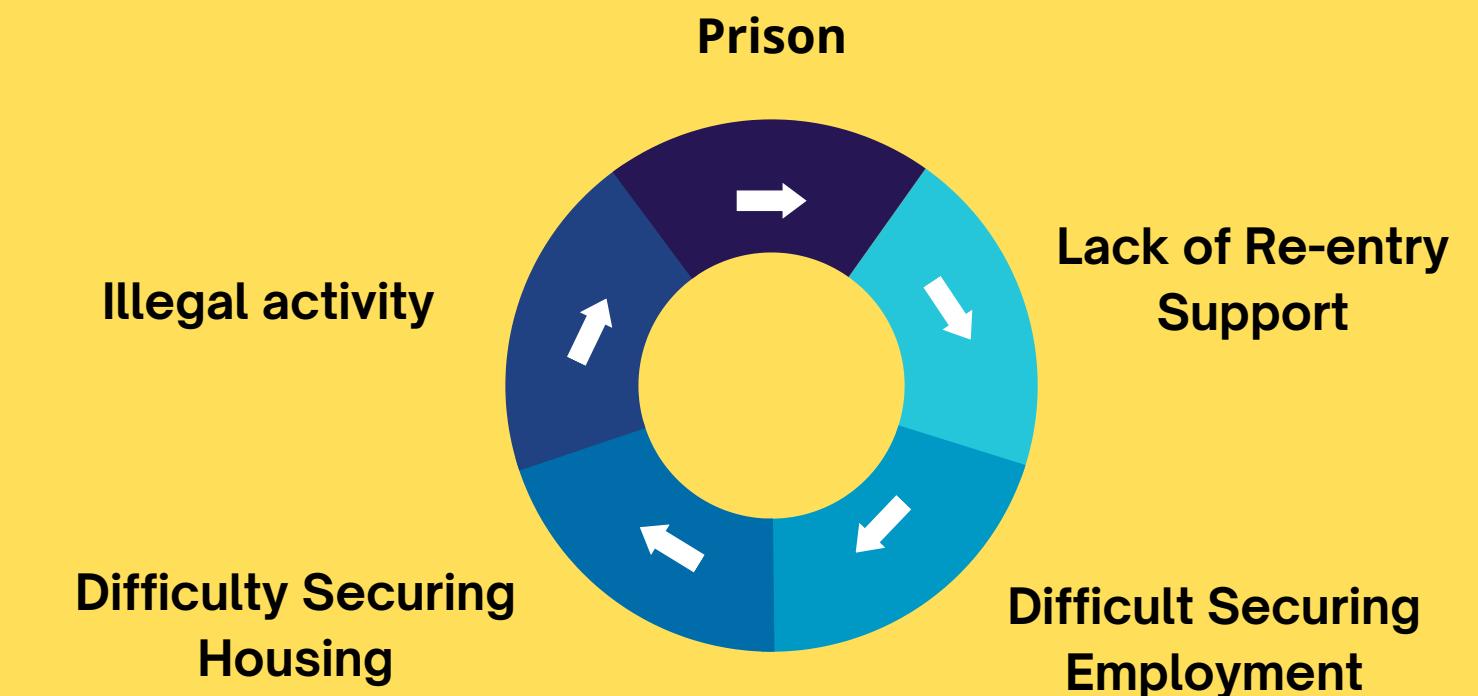
Hypothetical Probabilities for Risks Based on Race

(Yang & Dobbie, 2020)



Cycle of Incarceration and Injustice

(Barkow, 2019)



(Demeter Foundation, 2020)

HARMS AND COSTS OF INACTION



Baseline Societal Cost
\$14,043,875,438.70

SCOPE OF COSTS

Individual
Average Federal Prison Sentence
is ~14 years

Societal
FY2021 BOP Budget
\$7.85 billion

Communities

Cripples Economic
Development

Weakens Social
Connections

Family

Loss of Income
Median income of
\$21,440 in 2021

Prison
Expenditures
\$14,819 in Fees & Fines

Healthcare

Social Welfare

Education

Housing

Individual
Expenditures
2021 Pop. 155,826

Support &
Healthcare

Rehabilitation

Administration

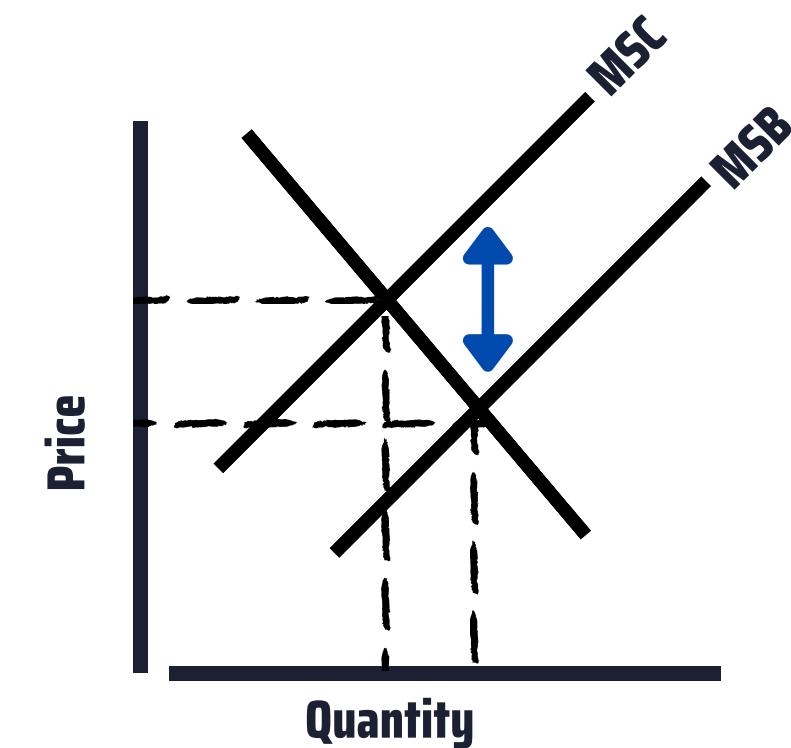
FSA Implementation
\$75 million/year
through FY 2023

Unemployment
35% unemployment rate

GOVERNMENT AND MARKET FAILURES

Government Failure: Current Risk Assessment Policy Undermines Rehabilitation Goals

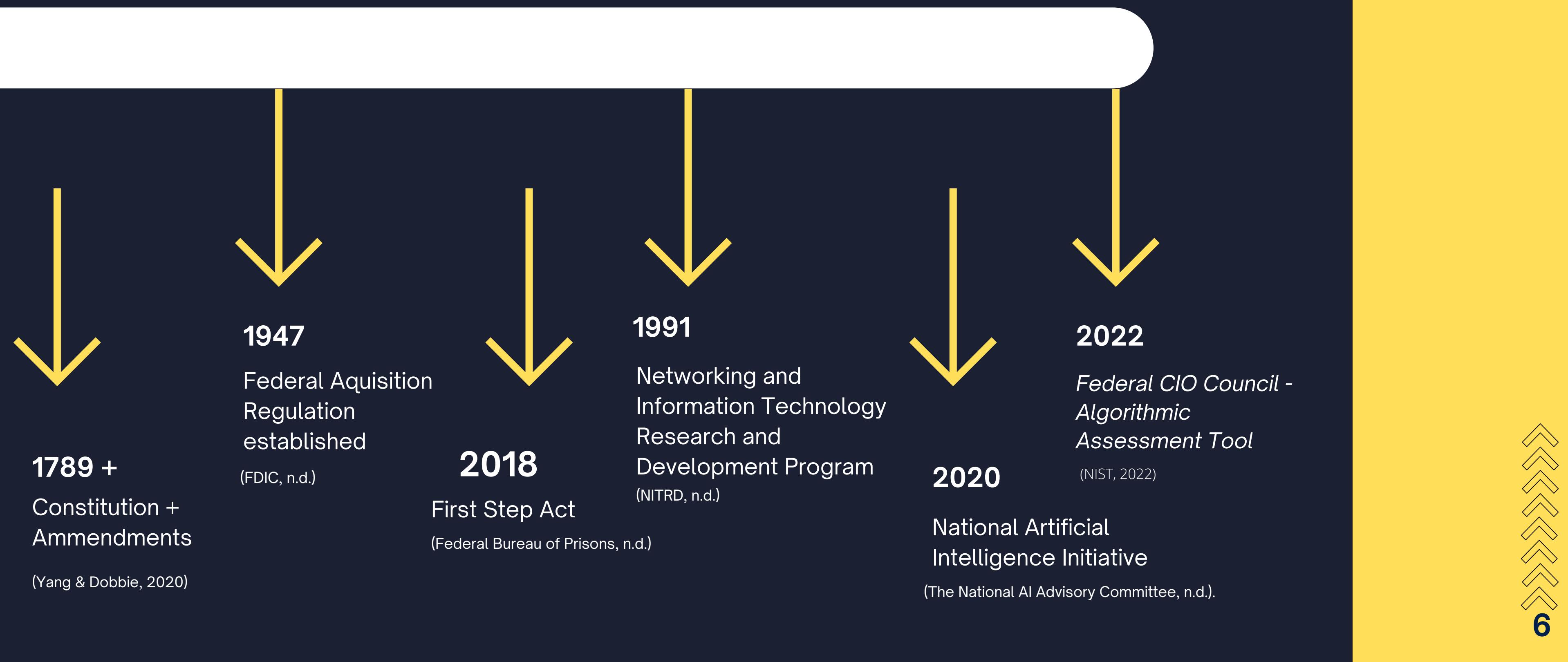
While the government is focusing on equity in criminal justice, the failed policies have continued the racial disparities in prison, keeping the incarceration levels and recidivism high (Subramanian et al., 2020).



Market Failure: Negative Externality

PATTERN's false positive leads to higher marginal societal costs than marginal societal benefits, leading to negative externality (Krugman & Wells, 2018)

LEGAL FRAMEWORK: A TIMELINE



Criteria Alternatives Matrix

Four Alternatives:

1. Status Quo
2. Algorithmic Reform: Reweighting factors
3. Human Oversight: Review Board
4. Acquisition Reform: Bias Mitigation & Open Source Requirement

Equity

- Reduce racial disparities in risk scoring
- Social Welfare

Economic Development

- Economic Growth
- Government Costs/Savings

Political Feasibility

- Level of Institutional Support
- Legal Authority

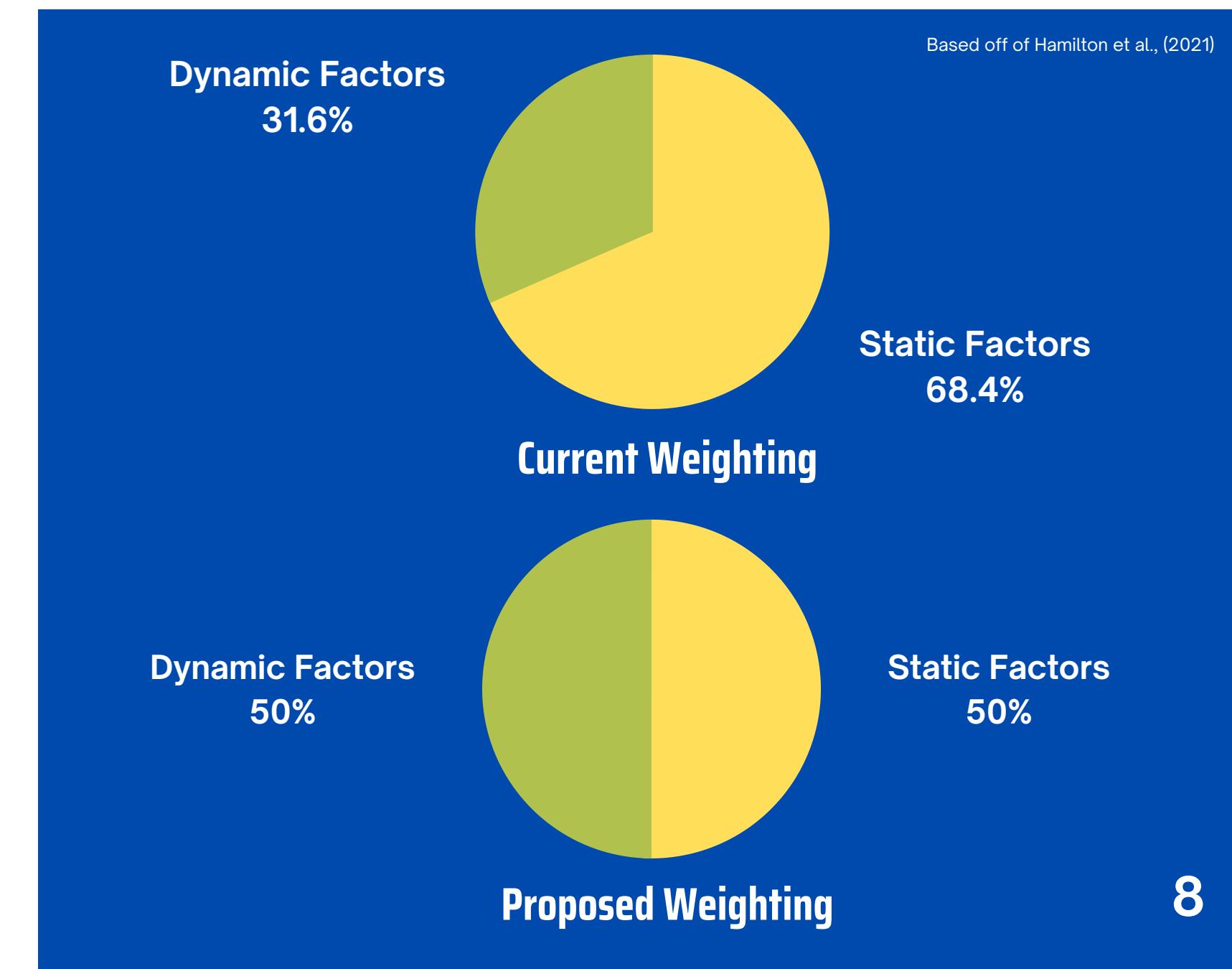
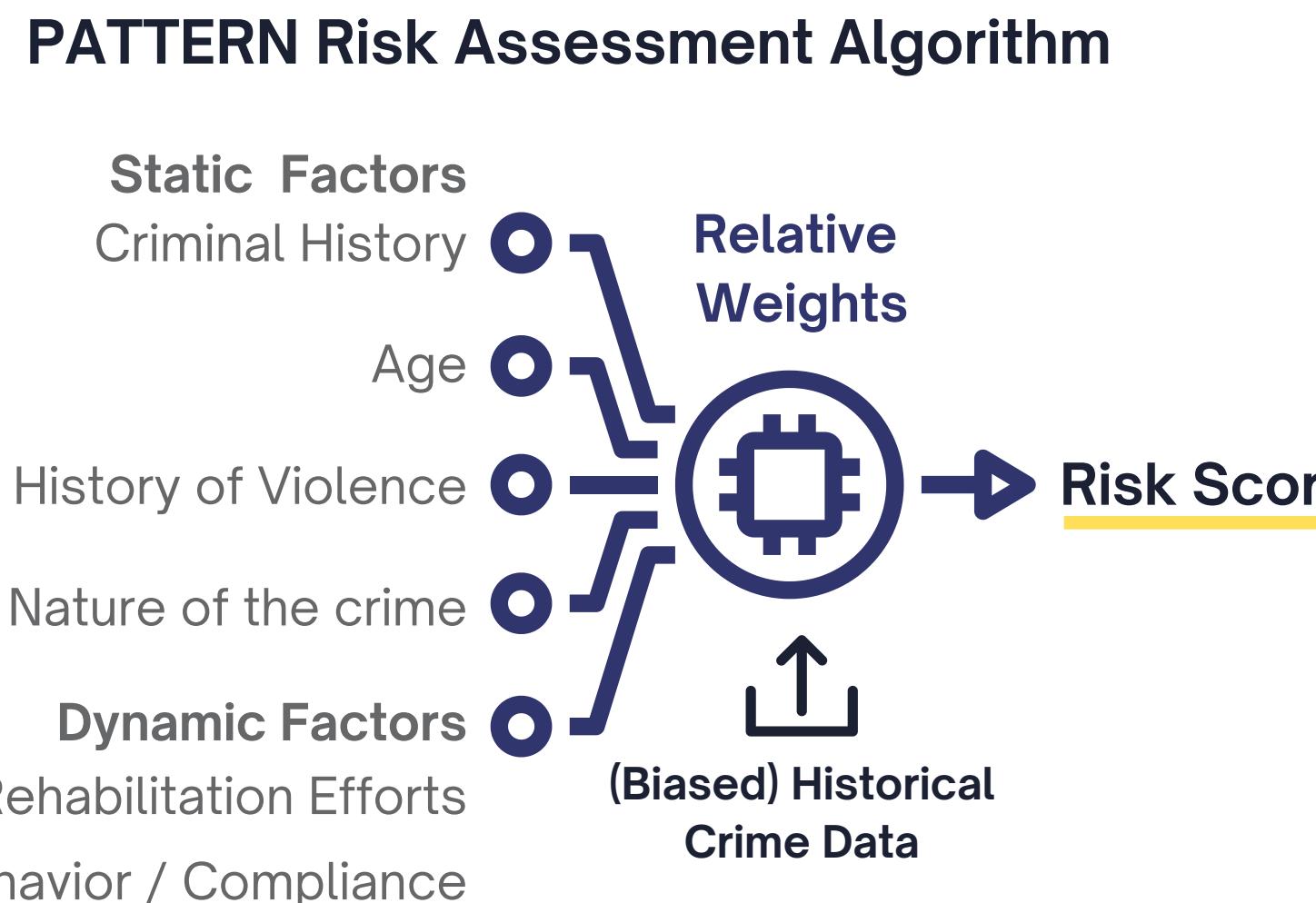
Sustainability

- Ongoing Funding
- Ongoing Accountability

ALTERNATIVE #1

ALGORITHMIC REFORM: REWEIGHING FACTORS

Increase the relative weight of dynamic factors to encourage rehabilitation, and decrease the weight of static factors, specifically criminal history, to correct for historical bias (Cyphert, 2020).



ALTERNATIVE #2: HUMAN OVERSIGHT: PRISONER APPEAL PROCESS



Risk Assessment Review Task Force, to review case by case



Analysis of nuances that assessments miss



Training for individuals tasked with review

(Cholas-Wood, 2020)

“

The current plan appears to simply apply the current prisoner grievance system.

This is insufficient and inapplicable, algorithmic risk assessment practices require their own process to challenge.

- Professor Melissa Hamilton,
lead creator of PATTERN



ACQUISITION REFORM: REQUIRE OPEN SOURCE & OPEN DATA

Given the high-stakes nature of DOJ systems, the department should set the bar for equitable and accountable algorithms by updating acquisition rules to require open source, open data, bias mitigation, and accountability (Hawn Nelson et al., 2020; Bloch-Wehba, 2021).

The screenshot shows the homepage of the Sharing America's Code website. At the top, there's a dark header with 'AGENCIES' and 'GUIDANCE' dropdown menus. Below it, a teal banner reads 'Sharing America's Code' and 'Unlock the tremendous potential of the Federal Government's software.' A large yellow vertical bar on the left contains the DOJ seal and the text 'Department of Justice'. To the right, there's a section titled 'Agency policy is consistent with the Federal Source Code Policy.' followed by three items: 'Agency has not updated acquisition language.' and 'Agency has not completed inventory.' each with a red square icon.

Work with the CIO Council and GSA to update DOJ's acquisition rules & the **Federal Acquisition Regulation (FAR)** (*Federal Bureau of Prisons, 2020*)

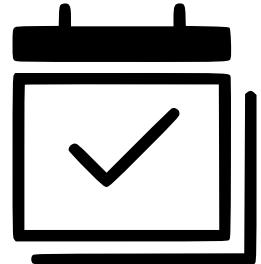
Require bias mitigation, open source, and open data in new algorithms (*Osoba et al., 2019; Lee et al., 2019*)

Mandate for regular independent audits of all systems (*Ng, 2021*)

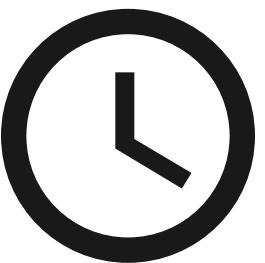
Criteria Alternatives Matrix

		Status Quo	Algorithm Change	Appeal Process	Acquisition Reform	Weight
		2 2	5 4	2.5 4	2 2	40%
Equity	<ul style="list-style-type: none"> • Disparity Reduction • Social welfare 	2 2	●	●	●	●
Economic Development	<ul style="list-style-type: none"> • Economic Growth • Government Costs/Savings 	1 1	●	●	●	●
Political Feasibility	<ul style="list-style-type: none"> • Institutional support • Legal Authority 	5 5	●	●	●	●
Sustainability	<ul style="list-style-type: none"> • Funding • Accountability 	3 4	●	●	●	●
Total	(out of 10)	4.9	7.7	6.3	5.5	100%

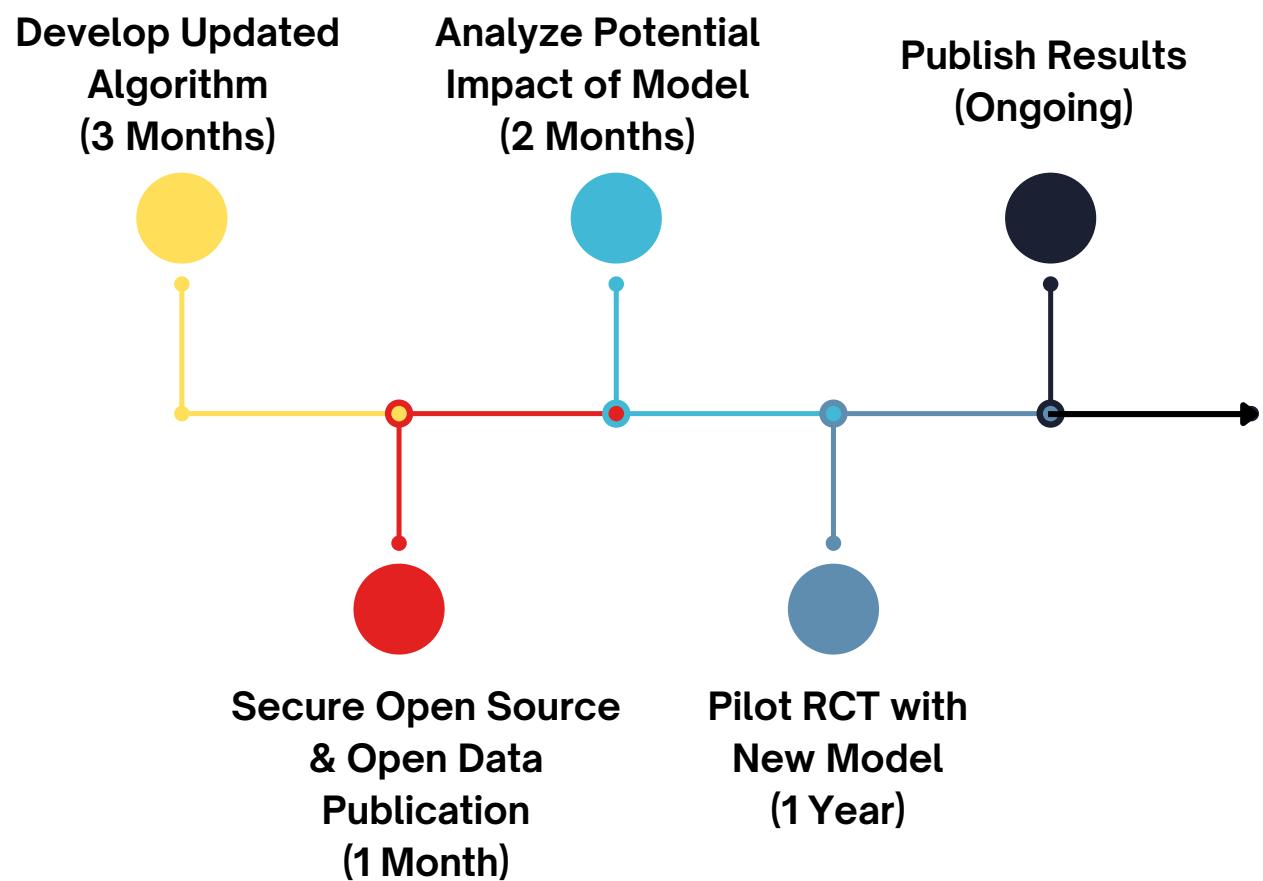
RECOMMENDATION & NEXT STEPS



Plan



Timeline



PROJECTED OUTCOMES

Current Benchmarks

- 47% False Positive for Black Men vs. 26% for White Men (NIJ, 2022)
- 1.42:1 Ratio White Men to Black Men Categorized as "Low Risk" and eligible for early release. (NIJ, 2022)

Performance Metrics

- # of False Positives for Black Men
- # of Prisoners Participating in Rehab Programs
- Change in risk scores in aggregate for Black men

Outcomes

- Fewer disparities in access to re-entry programs for Black Men
- New benchmarks for assessing racial disparities
- Model for new algorithm development

Appendix

7

STRATEGIES



Appendix A

Logic Model

INPUTS

- First Step Act of 2018 Requirements (James, 2019)
- Risk Assessment Algorithm best practices (Hamilton et al., 2021)
- \$375 million over five fiscal years (James, 2019)

ACTIVITIES (HAMILTON ET AL., 2021)

- NIJ Listening Sessions
- PATTERN Development

OUTPUTS (HAMILTON ET AL., 2021; JAMES, 2019)

- PATTERN Algorithm
- Risk levels assigned to federal inmates
- More intelligent decision-making capabilities
- Appropriate allocation of federal resources to reduce recidivism

OUTCOMES (JAMES, 2019)

- Reduced recidivism among federal inmates
- Reduced federal prison populations
- Reduced federal prison expenditures

IMPACT

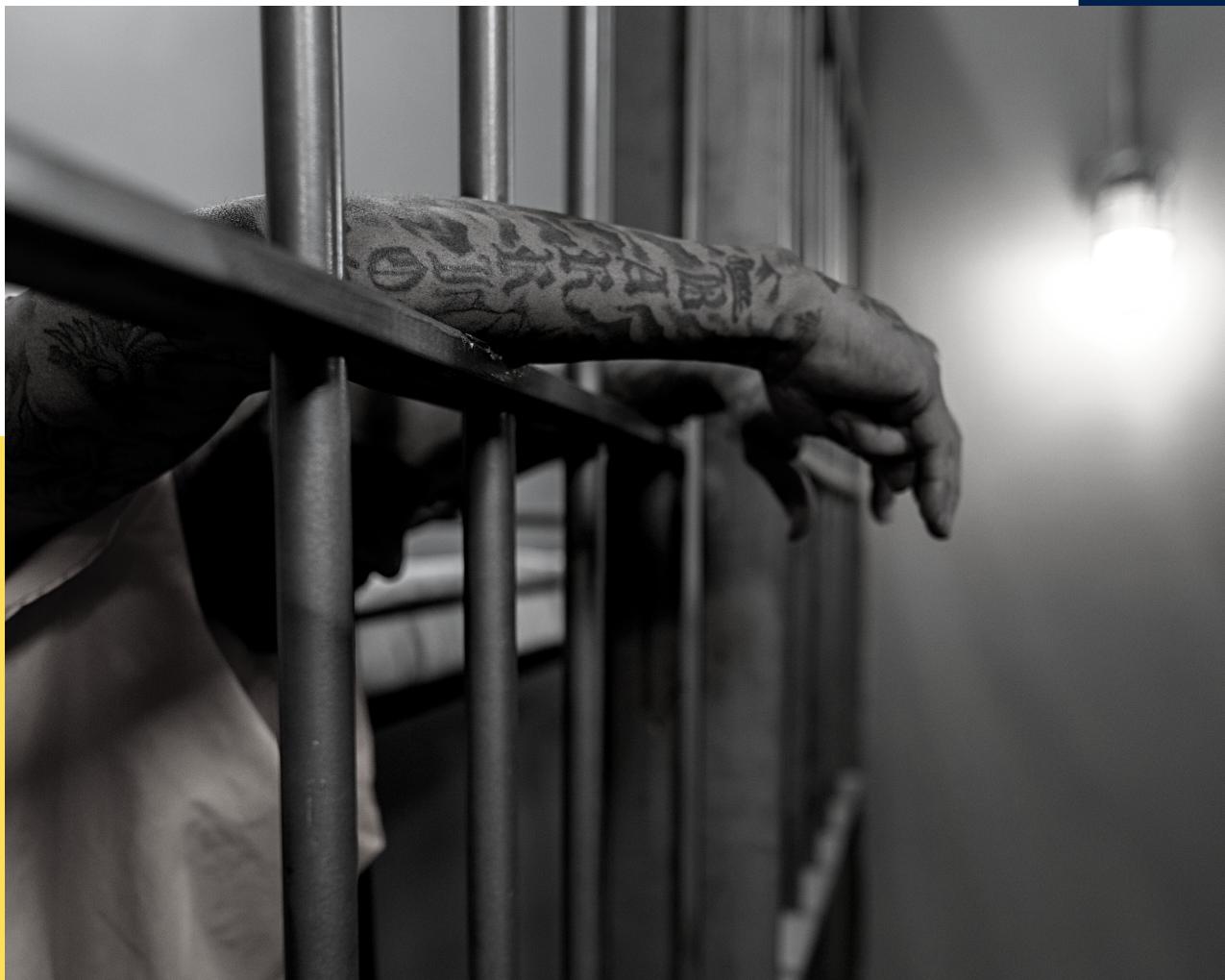
- Improved mental health
- Increased and strengthened familial ties
- Improved communities

Appendix B

LONG TERM COSTS OF INACTION

	Cost of Excess Prisoners	Loss of Black Male Householder Income	Baseline Long-Term Societal Costs
Future Value	\$ 14,791,400,301.70	\$ 911,582,008.65	\$ 15,702,982,310.34
NPV	\$9,464,534,255.02	\$4,579,341,183.68	\$ 14,043,875,438.70
Discount Rate	3.23%		

Note: Extrapolated from federal racial disparity in sentencing data from Rehavi and Starr (2014) showing there are 8,000 additional Black male federal prisoners per year, Black male householder median income data from the U.S. Census Bureau (n.d.), the cost of incarcerating one person from the Bureau of Prisons (2021), and the Black male lifetime earnings loss from being incarcerated detailed in Gordon & Neelakantan (2021). Link to spreadsheet: https://uscedu-my.sharepoint.com/:x/g/personal/bdjacob_usc_edu/EXsFCD4_T-hNji7TDXBBi_sBXIYg8VVerGhA6mFTjNQtxA?e=IDg8km



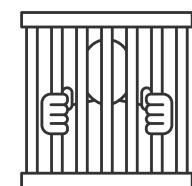
WHY IS IT A BIG DEAL?



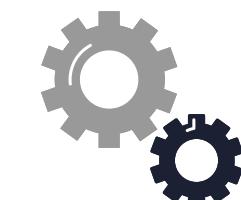
Black men are about 13 percent of the male population, but about 35 percent of those incarcerated (Hinton, 2018)



Black males are incarcerated five times more than White males (Jones, 2020)



1,501 black prisoners for every 100,000 black adults (Gramlich, 2020)



By the age of 35, 50% of unemployed Black males have been arrested, and 25% have been incarcerated (Bushway et al., 2022)



7% of Black people classified as a minimum level risk compared to 21% of white people (Johnson, 2022)

Appendix C

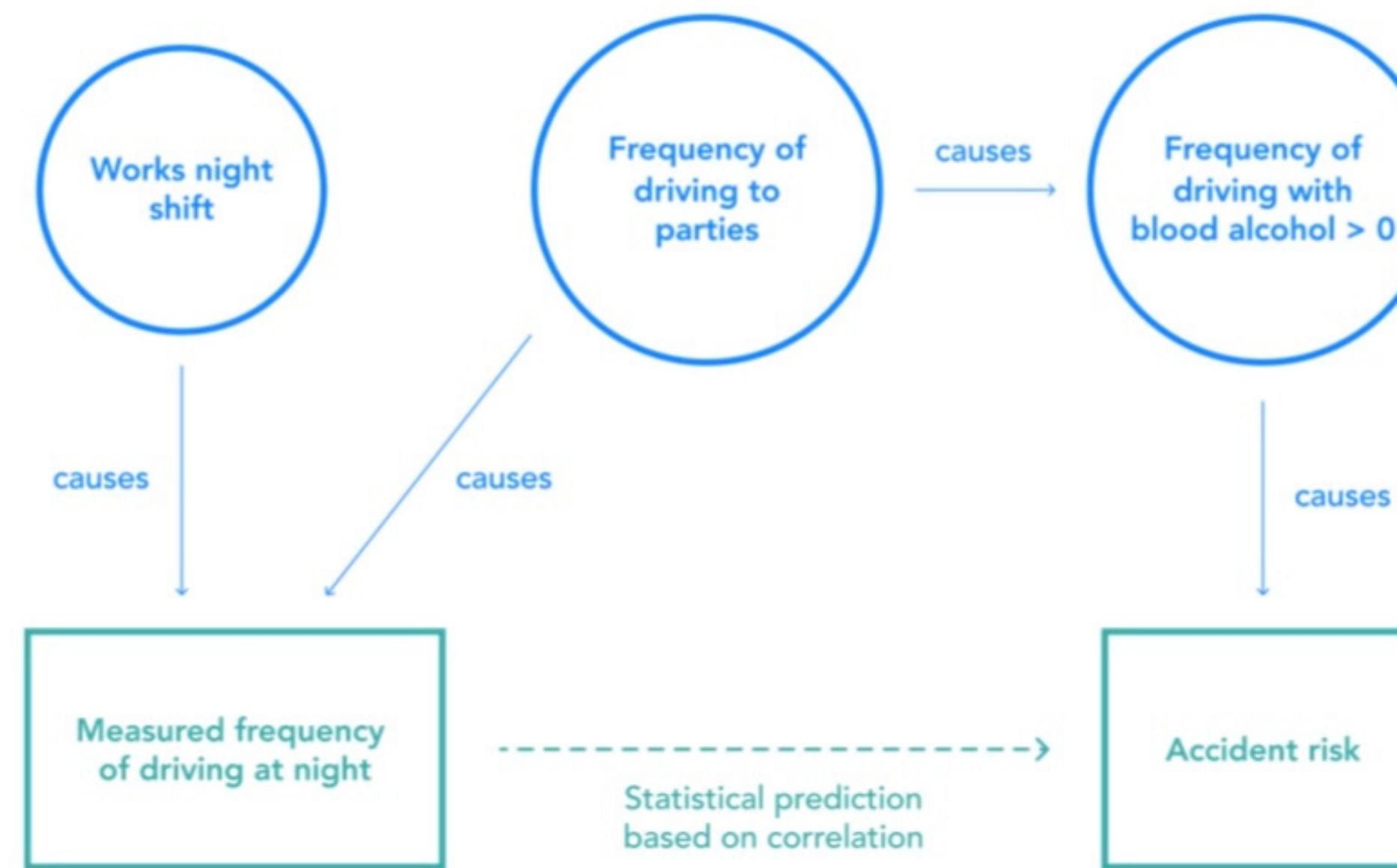
WHO IS AFFECTED? TARGET POPULATION

Appendix D

“The Missing Variable Problem”

(Partnership for AI, 2019)

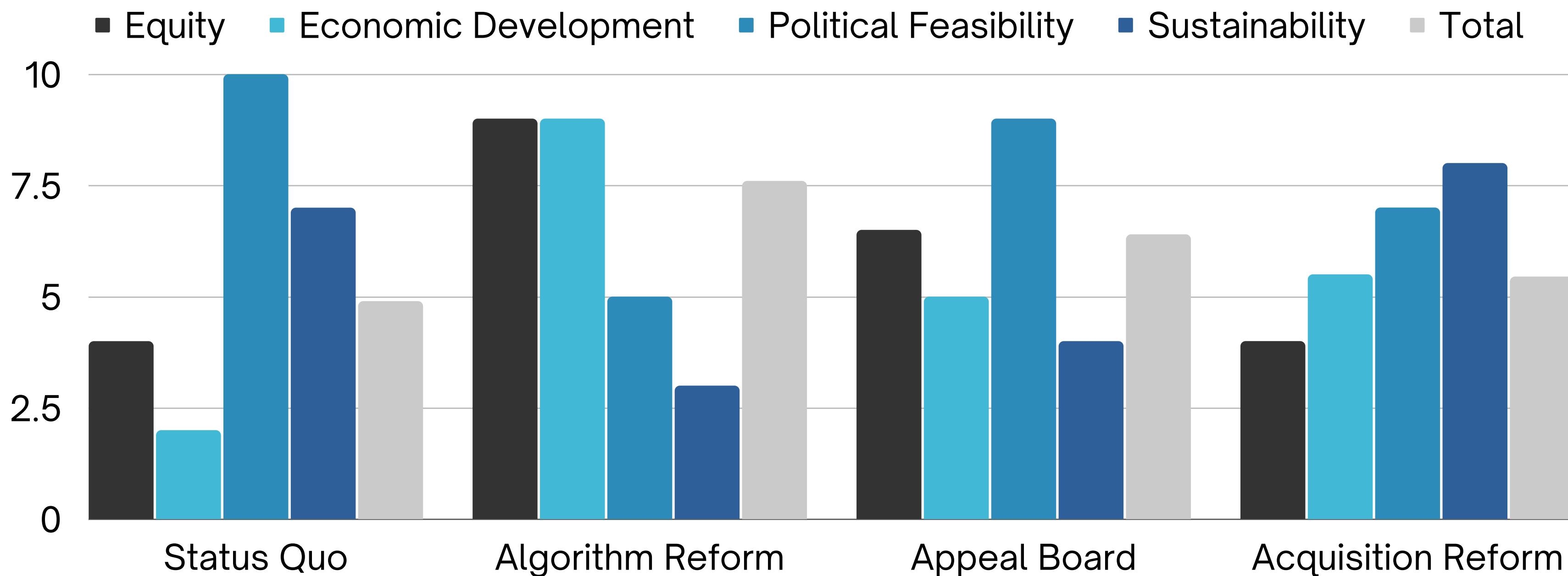
Figure 4: Omitted Variable Bias in a Simple Insurance Model



Solid lines indicate causal variables, boxes indicate variables that are measured in the training dataset, ellipses indicate variables that were not measured, and the dotted line indicates the prediction that is made by the final trained model.

Appendix E

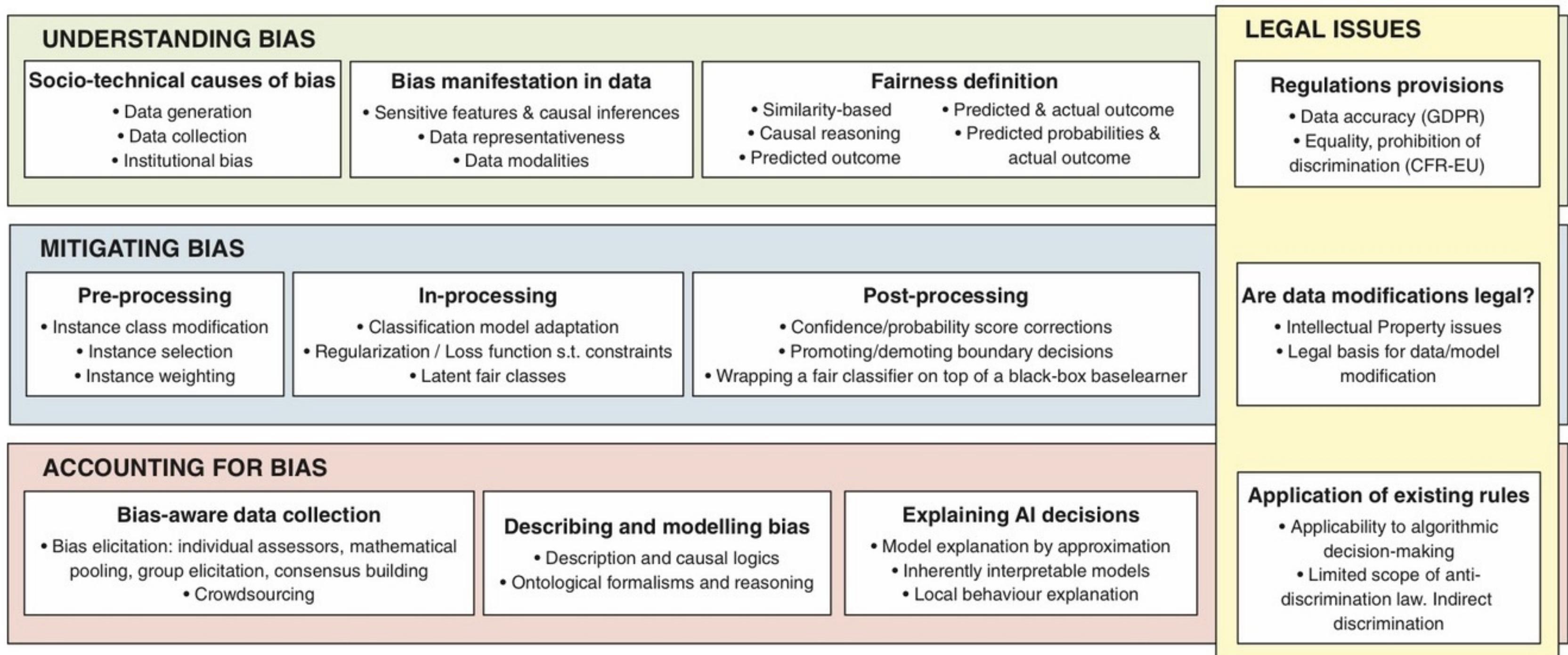
CRITERIA / ALTERNATIVES FINDINGS



Appendix F

Bias Management Framework

(Ntoutsi et al., 2020)



Appendix G Indicator Key

Criteria	Indicator	Scale
Equity	Reduce racial disparities in risk scoring	low score would be 30/1 high score would be 1/1
	Social Welfare	low score - no benefit to society, continued disparity in society. high score would be maximum benefit to society, no disparities in society
Economic Development	Economic Growth	low score - harms economic growth and high score, contributes greatly.
	Government Costs/Savings	low score - higher costs than savings, high score - make money, significant savings
Political Feasibility	Level of institutional support	low score - not sticky, High score sticky
	Legal Authority	low score - no legal authority, requires external approvals, high score - full executive discretion
Sustainability	Funding	low score - no budget currently and/or high budget required. high score - budget exists or low budget required
	Accountability	low score - opaque/closed private. high score open source, totally transparent process

Appendix H

CAM Support

Status Quo

Equity	Economic Development	Political Feasibility	Sustainability
<p>Equal ratio of recidivism classifications in black vs. white men Social Welfare</p>	<p>Economic Growth Government Costs/Savings</p>	<p>Level of institutional support Legal authority</p>	<p>Funding Accountability</p>
<p>The DOJ's 2021 report reviewing and revalidating the tool demonstrated large disparities for people of color. Specifically, it overpredicted the general recidivism rate for Black American men at higher rates than for White American men. Moreover, it's estimated that at least 14,000 people were categorized incorrectly by the tool (NIJ, 2021; Johnson, 2022).</p>	<p>Even if one were to exclude the cost of jail, the aggregate burden of incarceration would still exceed \$500 billion annually (McLaughlin et al., 2016).</p> <p>In 2020, WH sought nearly \$300 million to fund improvements related to the law, of which only \$23 million was earmarked for programming. (Cyphert, 2020; Grawert, 2020).</p>	<p>The First Step Act (FSA) was signed into law on December 21, 2018. On July 20, 2019, 210 days after the passing of the FSA, PATTERN was implemented in Federal prisons. Since the FSA's implementation of the new system, 3,100 people have been released, 3,000 have been resentenced to shorter terms and 2,800 may become eligible for early release once "good time" credits are applied (Grawert, 2020; Benner, 2022). Additionally, BOP has admitted it's concerned about the racial and ethnic differences that affect PATTERN's predictions of risk for recidivism and researchers echo their sentiments (NIJ, 2021; Cyphert, 2020; Santos, 2022; Hamilton et al., 2021). Because it continues to present flaws the DOJ plans another overhaul of the tool and is working with consultants to make the tool fairer (Johnson, 2022).</p>	<p>Specific costs related to the creation of PATTERN are unavailable. It's understood that the FSA authorized \$75 million a fiscal year for the first five years. 80% to be directed to BOP for implementation of the initiatives (Grawert, 2020). BOP needed to find the first \$75 million from the budget until the Consolidation Appropriations Act's passage in 2019 which included full funding of FSA through the current fiscal year. These funds may not be enough. A member of the Independent Review Committee (committee mandated by the FSA) believes full implementation of FSA may take closer to \$300 million.</p>
<p>The average cost of federal incarceration per inmate in federal prison (2020): \$39,158 (\$120.59 per day). The average annual COIF for a Federal inmate in a Residential Reentry Center for FY 2020 was \$35,663 (\$97.44 per day) (BOP, 2021).</p>	<p>For every dollar in corrections costs, incarceration generates an additional ten dollars in social costs. More than half of the costs are borne by families, children, and community members who have committed no crime (McLaughlin et al., 2016).</p>		<p>FSA mandated an Independent Review Committee as part of the system. The committee consists of outside experts to advise and assist the government with implementing the law and to develop and publicly release a risk and needs assessment system. PATTERN is reviewed and revalidated by an IRC annually. The cost of the review is unknown (DOJ, 2020).</p>
<p>As of May 5, 2022, there were 156,558 total federal inmates (BOP, 2022).</p>			

Appendix I

CAM Support

Alternative 1- Algorithm Change: Reweighting Factors

#1- Rewrite Algorithm	Criteria	Score	Rationale
Equity	Reduce racial disparities in	5	Since criminal histories and age can be proxies for race, by rebalanced towards non-static, dynamic, rehabilitatory factors, fewer Black men should be automatically classified as higher risk (or not low risk) (Hamilton et al., 2022; Brennan Center; 2020)
	Social Welfare	4	Lower risk and a more "productive" scoring system should reduce time spent in prison, bettering the individual and the protected class' social welfare. But there also a risk of increased crime — this is the "trade-off" that undermines the social welfare outcomes. (Cyphert, 2021; NIST, 2022)
Accountability	Economic Growth	4	Research shows that successfully reintegrated felons can contribute to the economy, but current assessment mechanisms do not track income (O'Neil, 2016).
	Government Costs/Savings	3	Post-release expenses are similar to incarceration expenses, suggesting a limited cost savings. Moreover, effective risk assessments and programming to match may require additional resources for rehabilitation (Barkow, 2019).
Economic Development	Level of institutional support	3	The administration and Congress have signaled a commitment to reducing bias in algorithms, but Congressional action has been limited (Winters, 2022)
	Legal Authority	2	Explicitly using race within an algorithm faces political and constitutional challenges, as seen in the move away from affirmative action in college admissions, suggesting this change swiftly demand a court case. That said, given the use of weights for *all persons* not just Black may avoid some issues due to equal treatment (Harcourt, 2015).
Sustainability	Funding	5	Additional funding for the PATTERN 2.0 model would be minimal (~\$1M) (Grawert, 2019).
	Accountability	5	Regular audits are already part of the system, and an CIO Council approved acquisition should support further accountability (CIO Council, 2022)
Total		7.7	

Appendix J

CAM Support

Alternative 2 - Risk Assessment Review Task Force

Equity	Reduce racial disparities in risk scoring	2.5	Implementing a process to challenge the outcome could introduce bias from the task force. It could also give an opportunity to reward cooperation and potential (Santos, 2021).
	Social Welfare	4	Beneficial for society to improve social welfare, families do better when they are not in prison, though they continue to have challenges, being in prison is most challenging (Comfort, 2016).
Economic Development	Economic Growth	3	Helps economic growth slightly to release prisoners, as they can contribute to society. increased economic output for target populations, and greater fairness in the range of government services utilizing AI (House Committee on the Budget, 2020).
	Government Costs/Savings	2	Slightly higher costs to keep someone incarcerated than to rehabilitate. (Annual Determination of Average Cost of Incarceration Fee, 2021)
Political Feasibility	Level of institutional support	4	First Step Act was a bipartisan bill, any updates to PATTERN should be widely accepted. (Cyphert, 2021)
	Legal Authority	5	First Step Act authorized creation of PATTERN (Cyphert, 2021)
Sustainability	Funding	3	Could not find funding, and would need funding for task force to pay for 20 staff members to manage the backlog of 14K challenges, 2 million, which shouldn't be hard to find, insignificant in comparison to overall budgets.
	Accountability	2	The process should be transparent, as far as how to challenge, and open records, but when discretion comes into play, that's when the transparency becomes a little cloudy. No established standards (Tonry, 2014).
			COSTS: Each employee can process 2 prisoners a day. 7,000 - days worth 20 people - \$100K salary

Appendix K

CAM Support

Alternative 3 - Acquisition Reform

Equity	Reduce racial disparities in risk scoring	2	Reforming acquisitions to include open-source can help with future algorithms, but not for PATTERN (Department of Justice, 2021).
	Social Welfare	2	Beneficial for society as more equity and trust in the algorithm for future algorithms (Department of Justice, 2020).
Economic Development	Economic Growth	2	The addition of extra layers of requirements may cost additional charges or stop conducting business with the government as they can provide other services to other companies, leaving no competition (Kang, n.d.).
	Government Costs/Savings	3.5	Higher cost to the government to purchase open code, but also savings to have an in-house development (Manuel, 2011)
Political Feasibility	Level of institutional support	4	The AG office is focusing on equity and lowering recidivism rates through the justice department (Department of Justice, 2021).
	Legal Authority	3	The AG's office has discretion on BOP; there are many authorities for updates on Federal Acquisition Regulation (FAR, n.d.; BOP, 2016).
Sustainability	Funding	3	While there is no budget requirement, there may be other costs associated that are unknown at the time (BOP, 2016)
	Accountability	5	The requirement of open source will allow accountability in reforming algorithms (Jenkins, 2021)
		5.5	Changes to acquisition will not lead to any cost

Appendix L

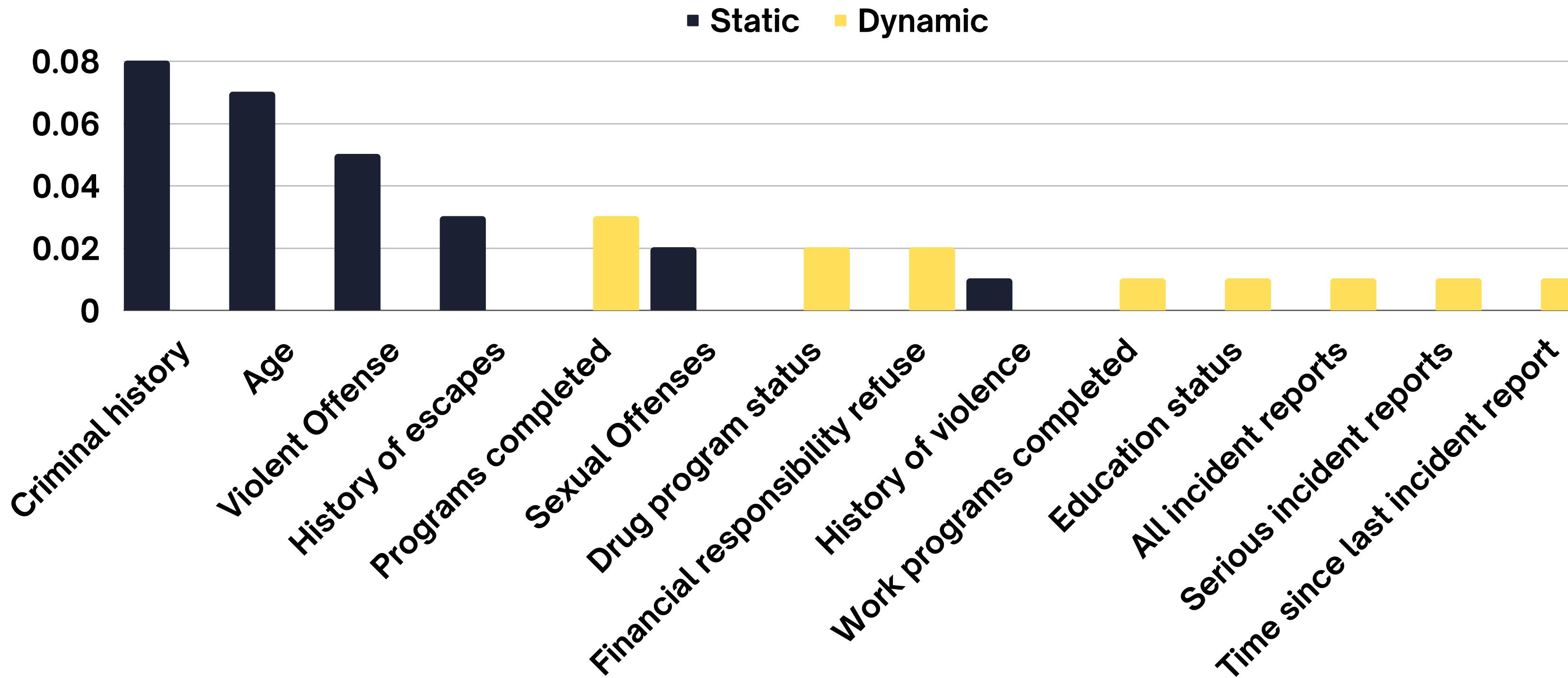
CIO Council Algorithmic Assessment Tool (CIO Council, n.d.)

<p>Questions and Answers</p> <p>Section 1 - Project Objective</p> <p>Please clearly describe the project use case and problem statement, as well as the current process the system is replacing or supplementing.</p> <p>The First Step Act (FSA) of 2018 was the culmination of a bipartisan effort to improve criminal justice outcomes, as well as to reduce the size of the federal prison population while also creating mechanisms to maintain public safety.</p> <p>Please explain what are the goals and outcomes desired of this use case and how these goals and outcomes relate to you statutorily, your organizational values and objectives, and the principles for the use of AI in the Federal Government described in the Executive Order on Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government.</p> <p>The First Step Act requires the Attorney General to develop a risk and needs assessment system to be used by BOP to assess the recidivism risk and criminogenic needs of all federal prisoners and to place prisoners in recidivism reducing programs and productive activities to address their needs and reduce this risk. Under the act, the system provides guidance on the type, amount, and intensity of recidivism reduction programming and productive activities to which each prisoner is assigned, including information on which programs prisoners should participate in based on their criminogenic needs. The system also provides guidance on how to group, to the extent practicable, prisoners with similar risk levels together in recidivism reduction programming and housing assignments.</p> <p>Please outline potential impacts or risks you are currently anticipating in regard to this project. (For example, privacy, civil rights, civil liberties.)</p> <p>PrivacyCivil RightsInequities</p> <p>Section 2 - System Authority</p> <p>Please describe the level of autonomy of the system and whether the system will be used to assist or replace human decision making.</p> <p>The BOP calculates a prisoner's PATTERN score as 2 separate scores: a person's general risk of re-offending, and their risk of re-offending with an act of violence, replacing human decision making.</p> <p>Are individuals empowered to review and override decisions of the system?</p> <p>No</p> <p>Do overwritten decisions feed back into the system to help calibrate it in the future?</p> <p>No</p> <p>Section 3 - Vendor Details</p> <p>Is the system designed, developed, deployed or maintained by other vendors or third parties? (If yes, please answer the following questions)</p>	<p>Section 4 - Data Privacy and Security</p> <p>Please describe the highest security classification (if any) of the input and training data used by the system.</p> <p>PATTERN was developed and validated using a dataset of inmates released from BOP custody to the community between Fiscal Year (FY) 2009 and FY 2015. The dataset included rearrest data collected during a three-year follow-up period. The initial dataset omitted inmates who were transferred to jail or Immigrant and Customs Enforcement (ICE) custody for deportation upon release. Because PATTERN sought to incorporate several items from the Bureau Risk and Verification Observation (BRAVO) classification instrument, the development team further excluded inmates who did not have an initial and subsequent BRAVO assessment under the most recent version of the instrument. The final sample included 149,269 individuals in the training dataset who were released between FY 2009 and FY 2013, and 73,701 individuals in the validation sample who were released between FY 2014 and 2015.</p> <p>For the training data, if consent is necessary, how will consent be obtained and how will notification be provided when data is used for training?</p> <p>N/A</p> <p>Are there domestic, international, foreign, or other restrictions limiting the release of data?</p> <p>No</p> <p>Do any sectoral data protection norms apply to this system? Is the ADS in compliance with such norms?</p> <p>Yes</p> <p>Does the data require additional hosting capacity, a different hosting technology, or will it be transferred across secure networks?</p> <p>No</p> <p>Section 5 - Data Type and Data Source</p> <p>Who is the primary data owner and who is responsible for controlling, managing and maintaining the data?</p> <ul style="list-style-type: none">Another level of government <p>Was the input data created using the same methodology as the training data?</p> <p>Yes</p> <p>If the system uses data from multiple different sources, have you identified these sources?</p> <p>No</p> <p>Does the data contain data dictionary or metainformation about the data elements? (definitions for the data within the dataset that ensure understanding of the data)</p> <p>No</p> <p>Does the system require the analysis of unstructured data to render a recommendation or a decision? Please check all that apply:</p>	<p>Section 6 - Data Quality</p> <p>Please describe how often the data is released, collected, and updated? (For example, is it a continuous process, milestone-based, or completion-based?)</p> <p>Continuous process</p> <p>Please describe how often data is verified and validated? (For example, is it a continuous process, milestone-based, or completion-based?)</p> <p>Continuous process</p> <p>Please describe what data quality and validation processes have been established and followed, as well as the data's usability lifespan?</p> <p>As documented in prior Departmental reports,⁷ PATTERN was developed and validated using a dataset of inmates released from BOP custody to the community between Fiscal Year (FY) 2009 and FY 2015. The dataset included rearrest data collected during a three-year follow-up period. The initial dataset omitted inmates who were transferred to jail or Immigrant and Customs Enforcement (ICE) custody for deportation upon release. Because PATTERN sought to incorporate several items from the Bureau Risk and Verification Observation (BRAVO) classification instrument, the development team further excluded inmates who did not have an initial and subsequent BRAVO assessment under the most recent version of the instrument. The final sample included 149,269 individuals in the training dataset who were released between FY 2009 and FY 2013, and 73,701 individuals in the validation sample who were released between FY 2014 and 2015.</p> <p>Section 7 - About the Algorithm and/or Computation Method</p> <p>Please list the name of the models' architecture used in the system. (For example, machine learning techniques)</p> <p>Boosted regression with a k-fold validation procedure</p> <p>Is the algorithmic process difficult to interpret or explain?</p> <p>No</p> <p>Is there a lack of transparency when it comes to the functioning and logic of the algorithm? Please check all that apply: the function of the algorithm (for example, deep learning models), trade secrecy laws, other barriers to access (please explain)</p> <ul style="list-style-type: none">Deep learning models.Trade secrecy laws. <p>Are you comparing the false positive and false negative rates while validating the system?</p>	<p>Section 8 - System Impact Assessment and Risk Profile</p> <p>Please describe the various groups that may be impacted (directly and indirectly) by the system and the degree of risk and potential harmful consequences to these groups as a result of any errors or opacity in the system.</p> <p>Black men</p> <p>Do those potentially directly/proportionately impacted by the system belong to a protected category or otherwise vulnerable social group?</p> <p>Yes</p> <p>Does the system make a decision or take an action that may have an impact on children under the age of 18?</p> <p>No</p> <p>What is the adaptability/scalability of the system for future changes? (For example, if the social context within which it's being deployed changes, if the law or policy governing its use changes, if the workforce interacting with the system shifts drastically, if the vendor closes down production of the system) Please describe what measures will be in place to prevent disturbance or disruption of public services in the instance of such future changes.</p> <p>One source of implicit bias comes from the nature of algorithms: they learn from historical data (Okern, 2020). Overall, the available data overrepresents Black men because of law enforcement's history of disparate treatment (Turner Lee, 2018; O'Brien, 2021). The algorithm uses that data to create its relative weights for criteria (i.e., proxies), meaning the history of disparate treatment is locked into the model (Hamilton et al., 2021). Accordingly, the scoring system of PATTERN prioritizes "static" past factors (e.g., criminal history) over dynamic, rehabilitatory actions (e.g., job training or drug treatment). Not only does this approach undermine the rehabilitation goals of the First Step Act, it also disproportionately scores Black men as high risk (DOJ, 2021; Gravert, 2019; Simson, 2020).</p> <p>Are there currently barriers for your agency to be able to educate and explain the logic and basis of decision-making (or audit its validity) to those using and impacted by the system?</p> <p>No</p> <p>Will there be measures in place to ensure that decisions can be contested and reversed without significant hardship to the individual/group that has been negatively impacted?</p> <p>Yes</p> <p>How long will impacts from the decision last?</p> <p>Most impacts are perpetual</p> <p>What level of impacts the decision will have on the rights or freedoms of directly impacted groups? Please describe.</p>
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<p>Very high impact</p> <p>What level of impacts the decision will have on the economic interests of directly impacted groups? Please describe.</p> <p>Very high impact</p> <p>What level of impacts the decision will have on the health, well-being, or healthcare of individuals? Please describe.</p> <p>Very high impact</p> <p>What level of impacts the decision will have on the ongoing sustainability of an environmental ecosystem? Please describe.</p> <p>Very high impact</p> <p>Section 9 - De-Risking and Mitigation Measures - Stakeholders Engagement</p> <p>Have you engaged with any of the following groups? Internal Stakeholders including Strategic policy and planning, Data Governance, Program Policy, etc. External Stakeholders including Civil Society, Academia, Industry, Any directly affected groups or their representatives and unions, Any group from the protected classes (sex, race, age, disability, color, creed, national origin, religion, or genetic information)</p> <p>No</p> <p>Will there be a process in place to engage the internal or external stakeholders who wish to provide feedback on the system?</p> <p>Yes</p> <p>Section 10 - De-Risking and Mitigation Measures - Data Quality</p> <p>Is there a strategy to identify and mitigate potential sources of bias in data?</p> <p>Yes</p> <p>Are commercial tools used in identifying dataset bias?</p> <p>Yes</p> <p>Are the data management procedures documented? (For example, documented process about how data quality issues were resolved during the design and development process, documented the primary data sources, and documented data owners)</p> <p>Yes</p> <p>Is a process in place for collecting public feedback on the data?</p>	<p>Yes</p> <p>Are there any processes that monitor the distribution across a variety of parameters in the system? (For example, by age, geography, ethnicity, race, gender, etc.)</p> <p>Yes</p> <p>Is the data used for this system available online publicly for use by independent software developers and/or researchers?</p> <p>Yes</p> <p>Section 11 - De-Risking and Mitigation Measures - Privacy</p> <p>Is there a system in place to ensure the secure transfer of data across multiple networks?</p> <p>Yes</p> <p>Do you need to undertake a Privacy Impact Assessment, or revise an existing one?</p> <p>No</p> <p>Does your system reflect privacy by design principles?</p> <p>Yes</p> <p>Section 12 - De-Risking and Mitigation Measures - System</p> <p>Could the system produce reasons for its decisions or recommendations when required?</p> <p>No</p> <p>Do you maintain a log detailing of all the changes made to the model and the system? (including updates to devices, OS updates, infrastructure changes, software changes, etc. All of these could impact data creation, UX, and other functionality)</p> <p>Yes</p> <p>Is there internal talent available to accomplish the selected technology and tools for the system implementation?</p> <p>Yes</p> <p>Will the necessary individuals among your Agency staff receive training regarding use of the system?</p> <p>Yes</p> <p>Are key decision points within the system's logic be linked to relevant legislation or policy?</p>	<p>Yes</p> <p>Is there a process in place to ensure ongoing monitoring, auditing, and evaluation of the system's performance in terms of accuracy and discriminatory/disparate impact, and all the recommendations or decisions? (e.g. Audit Trail)</p> <p>Yes</p> <p>Is there a process in place to revoke access permission to the system?</p> <p>Yes</p> <p>Are all the key decision points identifiable in audit trail?</p> <p>Yes</p> <p>Does the audit trail show who the authorized decision-maker is?</p> <p>Yes</p> <p>Could the audit trail generate notifications ensuring that your agency staff are notified whenever there is an abnormal change or anomaly to the outputs?</p> <p>Yes</p> <p>Does the audit trail identify precisely which version of the system was used for each decision it supports?</p> <p>Yes</p>
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Appendix M

Top Criteria Weights in PATTERN (Hamilton et al., 2021)



Appendix N

PATTERN Risk Assessment Tool (Federal BOP, 2021)

MALE PATTERN RISK SCORING								
Register Number: Inmate Name:			Date:					
MALE RISK ITEM SCORING	CATEGORY	GENERAL SCORE	Enter Score	VIOLENT SCORE	Enter Score			
1. Current Age	> 60	0		0				
	51-60	7		4				
	41-50	14		8				
	30-40	21		12				
	26-29	28		16				
	< 26	35		20				
2. Walsh w/Conviction	No	0		0				
	Yes	1		0				
3. Violent Offense (PATTERN)	No	0		0				
	Yes	5		5				
4. Criminal History Points	0 - 1 Points	0		0				
	2 - 3 Points	8		4				
	4 - 6 Points	16		8				
	7 - 9 Points	24		12				
	10 - 12 Points	32		16				
5. History of Escapes	> 12 Points	40		20				
	None	0		0				
	> 10 Years Minor	2		1				
	5 - 10 Years Minor	4		2				
6. History of Violence	< 5 Years Minor/Any Serious	6		3				
	None	0		0				
	> 10 Years Minor	1		1				
	> 15 Years Serious	2		2				
	5 - 10 Years Minor	3		3				
	10 - 15 Years Serious	4		4				
	< 5 Years Minor	5		5				
7. Education Score	5 - 10 Years Serious	6		6				
	< 5 Years Serious	7		7				
	Not Enrolled	0		0				
	Enrolled in GED	-2		-1				
8. Drug Program Status	HS Degree / GED	-4		-2				
	No DAP Completed	0		0				
	NRDAP Complete	-3		-1				
	RDAP Complete	-6		-2				
9. All Incident Reports (120 months)	No Need	-9		-3				
	0	0		0				
	1	1		1				
	2	2		2				
10. Serious Incident Reports (120 months)	> 2	3		3				
	0	0		0				
	1	2		2				
	2	4		4				
11. Time Since Last Incident Report	> 2	6		6				
	12+ months or no incidents	0		0				
	7-12 months	2		1				
	3-6 months	4		2				
12. Time Since Last Serious Incident Report	<3	6		3				
	12+ months or no incidents	0		0				
	7-12 months	1		1				
	3-6 months	2		2				
13. FRP Refuse	<3	3		3				
	NO	0		0				
14. Programs Completed	YES	1		1				
	0	0		0				
15. Work Programs	1	-2		-1				
	2 - 3	-4		-2				
	4 - 10	-6		-3				
	> 10	-8		-4				
Total Score (Sum of Columns)		General:	Violent:					
General/Violent Risk Levels		General:	Violent:					
OVERALL MALE PATTERN RISK LEVEL								
Male Cut Points								
General		Violent						
Minimum = 8 or less		Minimum = 6 or less						
Low = 9 - 30		Low = 7 - 24						
Medium = 31 - 43		Medium = 25 - 30						
High = 44+		High = 31+						

Relevant Constitutional Amendments

The **Due Process Clause** of the **Fourteenth Amendment** is exactly like a similar provision in the **Fifth Amendment**, which only restricts the federal government. It states that no person shall be “deprived of life, liberty, or property without due process of law.” Usually, “due process” refers to fair procedures.

The **Sixth Amendment** guarantees the rights of criminal defendants, including the right to a public trial without unnecessary delay, the right to a lawyer, the right to an impartial jury, and the right to know who your accusers are and the nature of the charges and evidence against you.

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