Racial Disparity in Federal Pretrial Detention Recommendations: Trends Over Two Decades and Association with Risk Assessment Implementation¹

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PRETRIAL REFORM HAS become an urgent matter in the U.S. Jails have become a "modern epicenter of incarceration" in this country, largely because of stunning growth in the population of unconvicted people who are held in jail while awaiting their trial (Garrett, 2022). The federal pretrial detention rate has grown at a steady but staggering pace over the past several decades-so that over two-thirds of all federal defendants are now detained (Administrative Office of the U.S. Courts, 2024; Rowland, 2018). As Judge Carr (2017) observed, pretrial detention "really matters" in the federal system because the pretrial period is uniquely lengthy, often lasting twelve months or more. There is evidence that pretrial detention causes worse outcomes for defendants and society, including higher chances of a guilty plea, a carceral sentence, future unemployment, and future offending (Dobbie et al., 2018; Gupta et al., 2016; Koppel et al., 2022; Lowenkamp, 2022). These

¹ Note: Views expressed in this article are those of the authors alone and do not reflect the official position of the Administrative Office of the U.S. Courts.

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Role of Risk Assessment in Pretrial Reform

Over recent years, the federal judiciary has undertaken efforts "to ensure that defendants are not unnecessarily detained" (Administrative Office of the U.S. Courts, 2024). These efforts include greater use of risk assessment instruments (RAIs) in pretrial decision-making, to prioritize lower risk defendants for release. RAIs are data-based tools that assign scores to risk factors like age and criminal history to estimate the likelihood that the defendant will (re)offend or abscond before their case disposition. In the federal system, an RAI called the Pretrial Risk Assessment (PTRA; Lowenkamp & Whetzel, 2009) was developed for probation and pretrial officers to use when making recommendations about pretrial detention to magistrate judges. Whether magistrate judges consider the PTRA or not, they must evaluate the defendant's threat to public safety and chances of returning to court, because these are fundamental components of the pretrial decision (18 U.S. Code § 3142). Given substantial evidence that RAIs predict these outcomes more accurately than unaided human judgment (Goel et al., 2018), some scholars have argued that careful implementation of RAIs is key to achieving the elusive goal of reducing pretrial

detention without compromising public safety (Desmarais et al., 2021; Reitz, 2020).

Concern that Risk Assessment Worsens Racial Disparities

However, there has been resistance to using RAIs as a foundation for pretrial reform. Some stakeholders oppose RAIs entirely, largely based on fears that they will worsen racial disparities in incarceration. The Pretrial Justice Institute (2020) even called for the abolition of all pretrial RAIs, arguing that they "are derived from data reflecting structural racism and institutional inequity" and that their use further "deepens the inequity."

Research has increasingly addressed this important concern, and produced no compelling evidence that using RAIs in pretrial decision-making would increase racial disparities in detention-particularly compared to the status quo of relying on unaided human judgment. Under the status quo, racial disparities in federal officers' decision-making are well-documented and strongly associated with practitioners' heavy reliance on criminal history (Skeem et al., 2023). Moreover, the results of a recent policy simulation suggest that replacing status quo federal pretrial decision-making with a PTRA-based release policy would substantially improve outcomes, particularly for Black defendants-who would experience a 39 percent reduction in detention, compared to 27.3 percent for White defendants (Montoya et al., 2024). Results of these federal studies are consistent with the conclusions that Lawson et al. (2024) reached, based on their systematic review of 21 studies of the association between using RAIs and disparate impact by race or ethnicity. Although more rigorous research is needed, they said, the weight of the evidence indicated that using RAIs "can contribute to reductions in disparities" (p. 1).

Open Questions and Study Aims

RAIs like the PTRA continue to be widely used, even if they are controversial and officers or judges may "freely ignore" them when making pretrial decisions (Reitz, 2020). According to one advocacy group, 60 percent of the U.S. population lives in a jurisdiction that has adopted a pretrial RAI (Movement Alliance Project, 2024). Alongside wide use of RAIs in a variety of criminal justice contexts, evidence has begun to emerge that disparities in imprisonment between Black and White people have been *decreasing* over time—falling by an estimated 40 percent over the past two decades (Sabol & Johnson, 2022).

This raises important questions that can be addressed through analysis of federal pretrial data. How have racial disparities in pretrial decision-making changed over the past two decades? How has the implementation of the PTRA—which was first introduced in 2009 affected those trends in racial disparities over time? In the present study, we address such questions. We focus on federal pretrial and probation officers, who are responsible for implementing the PTRA and recommending that magistrate judges detain or release defendants. Officers' detention recommendations for detention strongly predict judicial detention decisions, with 87 percent rates of agreement (Skeem et al., 2022). Our study has two major aims:

- 1. To estimate the extent to which racial disparities in officers' pretrial detention recommendations decreased from 2004 to 2024.
- 2. To explore the extent to which two PTRA implementation events were associated with changes in the level and trend of racial disparities in officers' detention recommendations from 2004 to 2024. The implementation events were in (a) 2011, when the systemwide rate of completing PTRAs *before* defendant's hearings first surpassed 50 percent, and (b) 2014, when a new policy made PTRA completion part of officers' official workload credits and annual reporting.

This study is meant to characterize how racial bias in pretrial decision-making has shifted over time—and how those shifts relate to the use of an RAI. Does PTRA implementation "bake in bias," selectively worsening outcomes for Black defendants, as those who reject risk assessment claim? Or does PTRA implementation reduce bias, perhaps by structuring human decision-making, as advocates of risk assessment claim?

Method

Sample

The sample for this study comprises pretrial criminal case activations in the United States federal court system from fiscal year 2005 through the first half of fiscal year 2024. To permit comparison with prior results in this series (Montoya et al., 2024; Skeem et al., 2022, 2023), the dataset is restricted to non-Hispanic White and Black defendants. Observations were included only when a recommendation by pretrial services was present. These inclusion criteria yield a total of 653,643 observations. Data were aggregated based on the month of case activation to generate the requisite variables for further analyses.

Measures

Defendants' race was drawn from the Probation and Pretrial Services Automated Case Tracking System (PACTS), which combines official records and the defendant's self-report to record race. The official records include but are not limited to what is recorded in criminal history records provided by law enforcement agencies. When defendants reported a race that differed from official records, officers entered the defendant's selfreported race (see Skeem et al., 2023). For this study, race is categorized as non-Hispanic Black or non-Hispanic White.

The pretrial officer's recommendation for pretrial release or detention was also extracted from PACTS. Officers' recommendations are recorded in PACTS as "detain," "release," or "release with conditions." The two options for release were collapsed into one category, creating a binary variable with a release (with or without conditions) coded as 0 and detention coded as 1.

Additional data drawn from PACTS for supplemental analyses included binary variables that indicated whether the defendant was charged with a violent, firearms, or property offense, whether charges included a presumptive detention offense or possible presumptive detention offense, and whether

Relative Risk Ratios

To operationalize racial disparities in pretrial detention recommendations, we calculated relative risk ratios-which are easily interpretable, with a value of 1.0 indicating parity in recommendation rates across racial groups, values less than 1.0 indicating that Black defendants are less likely than White defendants to be recommended for detention, and values greater than 1.0 indicating that Black defendants are more likely to be recommended for detention than their White counterparts. These ratios were calculated by dividing the proportion of Black defendants recommended for detention by the proportion of White defendants recommended for detention. After aggregating the data series at monthly intervals, risk ratios were generated for 234 total monthly observations. The average number of observations within months is 2793.34 (SD = 500.45, range 777-4024).

PTRA Implementation Events

The PTRA was first introduced in the federal system in 2009. We modeled two PTRA implementation events or "interventions"-one that marked the attainment of full pre-hearing implementation of the PTRA, and one that indicated when PTRA completion became part of officers' official workload. The first intervention was in October 2011, when rates of PTRA completion before a defendant's initial or detention hearing first exceeded 50 percent system-wide. We chose this benchmark based on the National Implementation Research Network's (2015) suggestion that a marker that full implementation has been achieved is when 50 percent or more of the staff use an innovation with fidelity. Because data on the proportion of staff reliably using the PTRA over time are unavailable, we used the rate at which the instrument was being administered before a defendant's initial or detention hearing. The proxy is reasonable, as it indicates the PTRA was available as a basis for pretrial decision-making at the defendant's hearing.

The second intervention we modeled was in July 2014, when administration of the PTRA became an official component of officers' workload reporting systemwide. Specifically, officers were instructed to begin reporting the time they spent completing the PTRA as part of their workload credits, starting in July 2014 to calculate proper workload estimates for 2015. Officers have been recording their time and efforts spent in completing the PTRA annually since then.

Analytic Strategy

To estimate the historical trend of racial disparities in officers' pretrial detention recommendations (Aim 1), we employed a regression model, adjusting for autocorrelation using Newey-West standard errors, where the dependent variable was the bivariate risk ratio and the independent variable was time. To address Aim 2, we used interrupted time series analysis (ITSA). ITSA, a quasiexperimental research design, is particularly appropriate in cases where the effective sample size is one (N=1) and sufficient pre- and post-event or "intervention" observations are available (Linden, 2015). Our ITSA analyses included both PTRA implementation events or "interventions."

Results

Descriptive Statistics The final dataset includes 653,643

TABLE 1.

Estimated Monthly Decrease in Racial Disparities in Officers' Pretrial Detention Recommendations, FY 2005-2024

Risk Ratio	Coefficient	Newey West standard error	t	Þ	95% Cl Lower limit Upper limit		
Time	-0.0022	0.0002	-9.8200	0.0000	-0.0026	-0.0017	
Constant	1.6844	0.0376	44.7800	0.0000	1.6103	1.7585	

FIGURE 1.

Monthly Changes in Racial Disparities in Officers' Pretrial Detention Recommendations, FY 2005-2024



observations spread across 93 federal districts and almost 20 full years (from October 2004 through March 2024). Forty-eight percent of the sample is Black (n = 315,334), while the balance (52 percent or n = 338,309) is White. Defendants' average age is 37.61 years (SD = 12.08). Males comprise just over 82 percent of the sample and females just under 18 percent (n = 538,420 and 115,223, respectively). The sample's average PTRA score is 7.09 (SD = 2.79; data were available to compute these scores as early as 2004, even though PTRA was introduced in 2009). About 6 percent of the sample (n = 40,063) had charges where the charge could have been eligible for presumption detention.⁵ Of the sample's current offenses, 24.0 percent, 18.6 percent, and 6.4 percent included property, firearms, or violent charges, respectively. The average risk ratio

⁵ We used the percentage of cases that were possibly eligible for presumptive detention based on charge type. Austin (2017) refers to these cases as "wobblers," as the exact presumption status is unknown based on the charge alone. Further, Skeem et al. (2022) found that the percentage of "wobbler" cases was related to disparity while the percentage of confirmed presumption cases was unrelated to disparity. over the nearly two-decade study period was 1.43 (SD = 0.17).

Aim 1: To What Extent Have Racial Disparities in Pretrial Detention Recommendations Decreased Over the Past Two Decades?

In Figure 1, monthly risk ratios are plotted across the observation period from 2004 to 2024. As shown there, racial disparities in officers' pretrial detention recommendations generally decreased.

To characterize this historical trend, we regressed time on risk ratios (see Analyses, above). As shown in Table 1, the starting point for the risk ratio in October 2004 is 1.68. This indicates that, in 2004, the probability of a detention recommendation was 68 percent higher for Black defendants than White defendants. Over the next two decades, the risk ratio decreased at an estimated rate of -0.002 per month. This translates to an estimated drop in the risk ratio of 0.026 (or 3.85 percent) per year and 0.5148 (or 75 percent) over the nearly two-decades-long series. By the end of the series in 2024, the estimated risk ratio was 1.17, or roughly one-quarter the size of the observed risk ratio in 2004.

As shown in Figure 1, the trend of racial disparities in officers' detention recommendations seems to shift around the middle of the time series—a period in which the PTRA was introduced to U.S. Probation and Pretrial Services. This leads to the next study aim, which focuses on the association between trends in racial disparities and PTRA implementation events.

Aim 2: To What Extent Are PTRA Implementation Events Associated with Changes in the Level and Trend of Racial Disparities in Officers' Detention Recommendations?

To address Aim 2, we completed an Interrupted Time Series Analysis (ITSA; see Analyses above). Table 2 reports the coefficients from the ITSA model investigating the impact of PTRA implementation events in (1) October 2011, when the system reached a 50 percent pre-hearing PTRA completion rate, and (2) July 2014, when the PTRA became part of the pretrial workload formula.

The model in Table 2 specifies an estimated starting risk ratio of 1.56. This indicates that at the beginning of the series in 2004, the probability of a detention recommendation was 56 percent higher for Black defendants than White defendants. The coefficient for Time indicates that risk ratios slightly increased from the start of the series through the first PTRA implementation event.

The coefficient labeled "Impact at 2011m10" indicates there was a sizeable (-0.079) and statistically significant (p<.05) reduction in disparity at the first implementation event in October 2011, when PTRA completion prior to defendants' hearings reached 50 percent. After that event, the risk ratio continues to drop at the statistically significant rate of -0.005 per month (coefficient "Time after 2011m10").

The coefficient labeled "Impact at 2014m7" indicates that there was no significant additional reduction in disparity at the second implementation event in July 2014, when PTRA became part of officers' official reportable workload. The coefficient in the last row of Table 2 indicates that, after the second event, there is no significant additional monthly reduction in disparity.

These results are shown visually in Figure 2, which presents the observed or "actual" risk ratio values (dots) and the estimated or "predicted" risk ratios based on the ITSA analyses (solid black lines). Time is plotted by month and year along the x-axis, while racial disparity or the value of the risk ratio is plotted on the y-axis. The two vertical dashed lines mark the dates of the two PTRA implementation events (in 2011 and 2014).

Again, the estimated risk ratio is 1.56 at the beginning of our series. The solid black line from the beginning of the series to the first vertical dashed line represents the increase in disparity during this period that corresponds to the positive coefficient for "Time." The break between the first and second solid black line represents the first intervention's coefficient, "Impact at 2011m10" (-0.079). The second segment of the solid black line between the first and second vertical dashed lines represents the decrease in disparity between 2011 and 2014 associated with the coefficient "Time after 2011m10" (-0.005). The third segment of the solid black line from the second vertical dashed line to the end of the series represents the second intervention's nonsignificant drop in disparity and nonsignificant slope after that event.

In summary, ITSA results suggest that the first PTRA Implementation event in 2011 was associated with both a significant drop in racial disparities in officers' detention recommendations—and a significant rate of decrease in disparity through the second PTRA implementation event in 2014, when no additional significant changes were observed.

Supplemental Analyses

To ensure that ITSA results were robust, we analyzed the data using alternative models. First, we estimated an additional ITSA model that controlled for potential confounds, including the detention rate (which is inversely associated with racial disparities; see Skeem et al., 2023) and the proportion of cases with a violent charge, a firearms charge, a presumptive detention charge, and a possible presumptive detention charge. Although this adjusted model showed a slightly better fit to the data (AIC difference = 5.833), the parameter estimates for the variables of interest were substantively similar to those in the original model, and there were no differences between the two models in terms of statistical significance for implementation event coefficients.

Second, we estimated causal ARIMA models using the CausalArima library in R (see Menchetti, Cipollini, & Meali, 2021). Because the CausalArima library does not allow for multiple "interventions," we analyzed each of the two implementation events separately (one model used October 2011; the other used July 2014 instead). Before analyzing the second implementation event in 2014, we truncated the dataset to include only those data points after the first intervention event in 2011. While estimating ARIMA models, we controlled for the detention rate and the proportion of cases charged with each of the four charges listed above.

Results for the first implementation event in October 2011, i.e., reaching a 50 percent pre-hearing PTRA completion rate, yielded a temporal average association of -0.303 (SE =0.007; p < 0.05). This effect is generally consistent with the total reduction in estimated starting and ending risk ratios from the ITSA model (1.562 to 1.177; total reduction 0.385). Results for this second event, i.e., making the

TABLE 2.

Estimated Impact of PTRA Implementation Events in 2011 and 2014 on Trends in Racial Disparities in Officers' Pretrial Detention Recommendations, FY 2005-2024

Risk Ratio	Coefficient	Newey West standard error	z	р	95% CI Lower limit Upper limit	
Time	0.001	0.000	2.570	0.010	0.000	0.002
Impact at 2011m10	-0.079	0.040	-2.010	0.045	-0.157	-0.002
Time after 2011m10	-0.005	0.002	-2.900	0.004	-0.009	-0.002
Impact at 2014m7	-0.027	0.034	-0.770	0.442	-0.094	0.041
Time after 2014m7	0.002	0.002	1.300	0.193	-0.001	0.006
Constant	1.563	0.018	87.930	0.000	1.528	1.597

FIGURE 2.





PTRA part of officers' workload, indicated that there was no significant effect at the time of that event (July 2014), but there was a significant temporal average decrease of -0.163 (SE = 0.009; p < 0.05) during the 2011-2014 observation period. Together, this set of supplemental analyses lend confidence in the main set of results for Aim 2 presented earlier.

Discussion

Pretrial reform is crucial, given the human and fiscal cost of holding an enormous number of unconvicted people in jail while they await trial. Reform is particularly essential in the federal system, where over two-thirds of defendants are detained and the average length of pretrial detention is just short of one year (Administrative Office of the U.S. Courts, 2023). Although risk assessment instruments like the PTRA can help reduce unnecessary detention by prioritizing lowerrisk defendants for release, policymakers and practitioners often perceive them as biased and fear their use will exacerbate racial disparities in incarceration. In the present study, we used federal data on over 650,000 cases to examine changes in racial disparities in pretrial detention recommendations from 2004 to 2024-focusing on the potential impact of key PTRA implementation events in 2011 and 2014.

Our findings may be organized into two major points. First, racial disparities in officers' detention recommendations have decreased significantly over the past two decades, i.e., by 75 percent. It is important to recognize that the magnitude of racial disparities varies substantially, from district to district (Skeem et al., 2022). Nevertheless, system-wide, the relative risk ratio dropped from 1.68 in 2004, to 1.17 in 2024. Today, the overall probability of a detention recommendation is 17 percent (not 68 percent) higher for Black defendants than White defendants. This finding is consistent with results of the Council on Criminal Justice's recent analyses (Sabol & Johnson, 2022), which indicate that the disparity between Black and White state imprisonment rates fell by 40 percent between 2000 and 2020. The overall imprisonment disparity ratio decreased from 8.2 to 4.9, while the prison admission disparity decreased from 7.4 to 3.2 (Sabol & Johnson, 2022). Although racial disparity remains a concern, these decreases over recent decades are welcome news.

Second, we found that PTRA implementation predicted a significant decrease in the level and trend of racial disparities in officers' detention recommendations over time. The PTRA reached a marker of full pre-hearing implementation in 2011, and then became part of officers' official reported workload in 2014. As shown in Figure 2, the marker of full pre-hearing PTRA implementation in 2011 was associated with a significant drop in the level of racial disparities in officers' detention recommendations, followed by an accelerated rate of decrease after that drop. The estimated risk ratio in the month prior to October, 2011, was 1.643 and dropped by 12 percent to 1.561 the following month. The accelerated rate of decrease across the span of the time series ended with a risk ratio of 1.176, a decrease of roughly 68 percent from the risk ratio in October 2011 (1.561). There were no additional significant changes in the level or slope of racial disparities when the PTRA became part of officers' workload reporting in 2014.

The association between the marker for achieving full pre-hearing PTRA implementation and the subsequent drop in racial disparities was robust across supplemental analyses that controlled for potential confounds like detention rates. Detention rates have increased over time in the federal system and are inversely associated with racial disparities in detention (see Skeem et al., 2023). Nevertheless, after controlling for detention rates and other key variables like "presumptive detention" offenses, the PTRA full implementation marker was meaningfully associated with a reduction in the level and slope of racial disparities.

Although this association is robust across analytic approaches, it should not be taken as evidence that PTRA implementation caused racial disparities in officers' detention recommendations to drop. The association might signal a causal effect: perhaps PTRA implementation reduced racial disparities in officers' detention recommendations by structuring their decision-making in a manner that reduced heavy reliance on criminal history and the influence of implicit bias (see Skeem et al., 2023). But we cannot draw causal inferences from this study. Racial disparities in detention are determined both by decisionmaking biases throughout the criminal justice system (differential selection), and by differential participation in criminal behavior (see Sabol & Johnson, 2022). Although we controlled for offense characteristics in our supplemental analyses, this study focuses on a single decision-point and is observational. Because the PTRA was rolled out system-wide, there is no control group. We could not identify districts that matched one another well enough to compare "PTRA high implementation" versus "PTRA low implementation" groups, so we cannot draw conclusions about the causal effect of PTRA implementation on racial disparities in officers' detention recommendations.

Nevertheless, this study indicates that a marker of achieving full pre-hearing PTRA implementation in October 2011 robustly predicted both a drop in racial disparities in detention recommendations and a subsequent decrease over time. This finding is broadly consistent with results of our recent policy simulation, which suggested that replacing status quo pretrial detention decisions with a PTRA-based release policy would improve outcomes, particularly for Black defendants (Montova et al., 2024). But the present study's results are grounded in practice-they indicate that PTRA implementation was associated with reduced bias in status quo human decision-making, or greater racial parity in officers' detention recommendations over time. Given that officers and magistrate judges make pretrial decisions (not the PTRA), these results are encouraging.

These results are also consistent with the results of most other studies that have examined whether risk assessment instruments (RAIs) increase disparate impact by comparing outcomes before and after RAIs have been adopted (Lawson et al., 2024). The consistency of this finding across jurisdictions and across methodological approaches should mitigate concerns about relying on risk assessment as a foundation for pretrial reform.

Over the past two decades, racial disparity in officers' detention recommendations has been decreasing. But intensified efforts are needed to slow the ever-increasing rate of pretrial detention in the federal system. The PTRA can help prioritize low-risk defendants for release, so detention rates can be decreased without compromising community safety.

References

- 18 U.S. Code § 3142—Release or detention of a defendant pending trial. (n.d.). LII / Legal Information Institute. Retrieved January 18, 2024, from https://www.law.cornell.edu/ uscode/text/18/3142
- Administrative Office of the U.S. Courts. (2023). Table H9 - Pretrial Services Detention Summary. https://www.uscourts.gov/sites/default/ files/data_tables/jb_h9a_0930.2023.pdf.
- Administrative Office of the U.S. Courts. (2024). Pretrial Release and Detention in the Federal

Judiciary | United States Courts. https:// www.uscourts.gov/services-forms/probation-and-pretrial-services/pretrial-services/ pretrial-release-and-detention

- Carr, J. G. (2017). Why pretrial release really matters. *Federal Sentencing Reporter*, 29(4), 217–220.
- Desmarais, S. L., Monahan, J., & Austin, J. (2021). The empirical case for pretrial risk assessment instruments. *Criminal Justice and Behavior*, 009385482110416. https:// doi.org/10.1177/00938548211041651
- Dobbie, W., Goldin, J., & Yang, C. S. (2018). The effects of pretrial detention on conviction, future crime, and employment: Evidence from randomly assigned judges. *American Economic Review*, *108*(2), 201–240. https:// doi.org/10.1257/aer.20161503
- Garrett, B. L. (2022). Models of bail reform. *Fla. L. Rev.*, *74*, 879.
- Goel, S., Shroff, R., Skeem, J. L., & Slobogin, C. (2018). The accuracy, equity, and jurisprudence of criminal risk assessment (SSRN Scholarly Paper 3306723). https://doi. org/10.2139/ssrn.3306723
- Grossman, J., Nyarko, J., & Goel, S. (2022). Racial bias as a multi-stage, multi-actor problem: An analysis of pretrial detention (SSRN Scholarly Paper ID 4049370). Social Science Research Network. https://papers. ssrn.com/abstract=4049370
- Gupta, A., Hansman, C., & Frenchman, E. (2016). The heavy costs of high bail: Evidence from judge randomization. *The*

Journal of Legal Studies, 45(2), 471–505. https://doi.org/10.1086/688907

- Koppel, S., Bergin, T., Ropac, R., Randolph, I., & Joseph, H. (2022). Examining the causal effect of pretrial detention on case outcomes: A judge fixed effect instrumental variable approach. *Journal of Experimental Criminology*. https://doi.org/10.1007/s11292-022-09542-w
- Lawson, S. G., Narkewicz, E. L., & Vincent, G. M. (2024). Disparate impact of risk assessment instruments: A systematic review. *Law and Human Behavior*. https://doi. org/10.1037/lhb0000582
- Linden, A. (2015). Conducting interrupted time-series analysis for single and multiple group comparisons. *The Stata Journal, 15,* 480-500.
- Lowenkamp, C. (2022). *The hidden costs of pretrial detention revisited*. Arnold Ventures. https://craftmediabucket.s3.amazonaws. com/uploads/HiddenCosts.pdf
- Lowenkamp, C. T., & Whetzel, J. (2009). The development of an actuarial risk assessment instrument for U.S. pretrial services. *Federal Probation*, 73(2), 33–36.
- Menchetti, F., Cipollini, F., & Meali, F. (2021). Estimating the causal effect of an intervention in a time series setting: the C-ARIMA approach. University of Florence.
- Montoya, L., Skeem, J., & Lowenkamp, C. (2024). A pretrial release policy based on risk assessment would reduce unnecessary incarceration, increase racial fairness, and

save money. Unpublished manuscript in preparation.

- Movement Alliance Project. (2024). Where are risk assessments being used? *Mapping Pretrial Risk*. https://pretrialrisk.com/nationallandscape/where-are-prai-being-used/
- Pretrial Justice Institute. (2020). Updated position on pretrial risk assessment tools | resources | Pretrial Justice Institute. https:// www.pretrial.org/resources/updated-position-on-pretrial-risk-assessment-tools
- Reitz, K. R. (2020). The compelling case for lowviolence-risk preclusion in American prison policy. *Behavioral Sciences & the Law*, 38(3), 207–217. https://doi.org/10.1002/bsl.2461
- Rowland, M. G. (2018). The rising federal pretrial detention rate, in context special issue on pretrial services: Front-end justice. *Federal Probation*, 82(2), 13–22.
- Sabol, W., & Johnson, T. (2022). Justice system disparities: Black-white national imprisonment trends, 2000-2020. Council on Criminal Justice. https://counciloncj.foleon.com/ reports/racial-disparities/national-trends
- Skeem, J., Montoya, L., & Lowenkamp, C. (2022). Place matters: Racial disparities in pretrial detention recommendations across the US. *Federal Probation*, 86, 5.
- Skeem, J., Montoya, L., & Lowenkamp, C. (2023). Understanding racial disparities in pretrial detention recommendations to shape policy reform. *Criminology & Public Policy*, 22(2), 233–262. https://doi. org/10.1111/1745-9133.12620