

Evaluation of the King County's Pretrial Risk Assessment: The Personal Recognizance Interview & Needs Screen (PRINS)

Research Brief

In 2010, the King County Council adopted legislation (ordinance #16953) that required the county to develop a pretrial risk assessment (PRA). The legislation was passed, in part, as a response to concerns by stakeholders regarding the number of individuals being detained pretrial or were required to post bail/bond. In 2017, the Personal Recognizance Interview & Needs Screen (PRINS) was developed for King County DAJD. The PRINS is administered prior to a defendant's first appearance and combines data collected from court records and information gathered from a semi-structured interview with Personal Recognizance (PR) investigator. The PRINS was implemented in 2019, and in 2021, King County DAJD contracted with the Nebraska Center for Justice Research (NCJR) to evaluate the PRINS and create version 2.0. In doing so, items and weights were optimized from the original PRINS, using data collected following implementation. The current brief provides a summary of the evaluation findings.

PRAs

PRAs are administered prior to a defendant's initial hearing and attempt to identify individuals who are at risk of failing to appear (FTA) for their next court date or recidivate prior to their case disposition. As a result, PRAs help to reduce the use of pretrial detention, better allocate correctional resources, and reduce reliance on the cash bail/bond system (Coopridner, 2009; Desmarais & Singh, 2013).

Summary

Responding to growing concerns of bias and overuse of cash bail, King County Department of Adult and Juvenile Detention (DAJD) contracted the development of a pretrial risk assessment (PRA). Utilizing locally collected data, they sought to improve upon the performance and reduce biases identified in contemporary tools. In 2019, they implemented the Personal Recognizance Interview & Needs Screen (PRINS). In 2021, DAJD contracted with the Nebraska Center for Justice Research (NCJR) to evaluate the PRINS and create an updated version, calibrated to provide additional improvements.

Evaluation findings indicate the PRINS provides moderate-to-strong predictive accuracy, exceeding findings of contemporary PRAs. Further, near equitable levels of prediction are identified across race/ethnicity and gender, and positive findings are anticipated to be the result of the inclusion of items beyond criminal history indicators. Further, the NCJR updated PRINS 2.0 models demonstrated exceptional performance. Compared to the Public Safety Assessment (PSA) and the Virginia Pretrial Risk Assessment Instrument (VPRAI), the PRINS demonstrated superior performance, increasing predictive accuracy by 8% and 9%, respectively.

Finally, because judges and investigators were precluded from using the PRINS results prior to our evaluation, the current study conducted a natural experiment. Findings indicate that, if used to guide release decisions, the PRINS would have recommended release of 87% of those required to post bail/bond, while simultaneously reducing Failure to Appear and recidivism.

The usage of PRAs has expanded greatly. Yet, there are two primary concerns of PRAs – accuracy and bias. Notably, assessment developers seek to maximize accuracy of FTA and recidivism prediction. However, many of the items identified to have the greatest prediction strength – criminal history indicators – may also demonstrate bias across gender and race/ethnicity subgroups (Angwin et al., 2016; Hamilton, 2019). Unfortunately, most assessments have been developed with majority White populations, potentially creating overclassification and bias. Specifically, overclassification impacts female and minority populations, disproportionately classifying these populations as higher risk (Miller, 2019).

Common PRAs include the Virginia Pretrial Risk Assessment Instrument (VPRAI) and the Public Safety Assessment (PSA), which were developed in Virginia and Kentucky and adopted by courts nationally. However, recent research has indicated that tools built using locally collected data, rather than adopted off-the-shelf from another source, provide more accurate prediction and, if tools include items beyond criminal history indicators, bias and overclassifications are reduced (Butler et al., 2022; Hamilton, Kigerl, & Kowalski, 2021; Mei et al., 2023).

Development of the PRINS

In 2017, DAJD contracted with Washington State University (WSU) to develop the PRINS. Given recent findings, when creating the PRINS, DAJD's desired to use data collected on their own defendants. Thus, a pilot study was conducted, where PR investigators interviewed 9,104 defendants. Items collected by PR investigators were linked with items from individuals' court records and criminal history indicators to create a development sample (see

Appendix). Risk models predicting FTA and 'Any' Recidivism were developed, and more specific models were created to predict Felony, Violent, Property, Drug, and Domestic Violence recidivism. Each model weighted items separately for males and females to reduce bias. Three levels of FTA and recidivism risk were established – Low, Moderate, and High.

Following the development of the PRINS, PR investigators were further trained, and data collection began. However, PR resources limited the number of assessments that were completed, and King County judges and prosecutors were precluded from using of the tool; thus, creating a natural experiment that allowed for a comparison of the tool's effectiveness to judicial pretrial release decisions. Further, two contemporary PRAs – the PSA and VPRAI – have items and responses that are measured by the PRINS or available via DAJD records, which allowed for predictive performance comparisons to the PRINS. The current study brief describes validation efforts and provides recommendations for extended development of the PRINS.

Methods

To evaluate the PRINS, a set of analyses were completed. First, the predictive validity and equity of the PRINS was assessed. The tool was evaluated on an array of predictive metrics to assess both accuracy and potential sources of bias. Next, as the assessment was designed to categorize defendants and recommend release decisions, where Low-Risk defendants are recommended to be released by PR investigators, Moderate Risk released with release conditions, and High Risk released to by bail/bond or detained, we compared the rate of FTAs and recidivism predicted by the PRINS to King County judicial release decisions.

The PRINS 2.0 was created through selecting and weighting items separately for males and females, and each outcome type using data that was collected since the initial PRINS implementation. For brevity, we only provide FTA and Any recidivism risk results here. This updated tool was further assessed for accuracy and potential sources of bias. Finally, the PSA and VPRAI risk scores were computed, and predictive performance was compared.

Analyses

Several predictive industry standard performance metrics were used to evaluate the PRINS. Predictive accuracy was measured using area under the curve (AUC), where values range from 0.5 to 1.0¹. Two metrics of overclassification/bias were included. The False Positive Rate (FPR) identifies the likelihood that a person classified as ‘higher risk’ did not recidivate. Generally, FPRs should be low and relatively equal across gender and race/ethnicity groups. In contrast, Positive Predictive Values (PPVs), assess the proportion of higher risk persons that committed an FTA or recidivated, values should be high and relatively equal across groups.

Findings

PRINS Predictive Accuracy

Overall, the PRINS demonstrated moderate predictive accuracy for FTA and recidivism (AUC = .65 & .68, respectively). Regrading gender, females possessed larger AUCs than males (4% & 1%, respectively). The comparison of

overclassification statistics (FPR & PPV), also indicated minor variations (1-2%), indicating negligible differences. Consistent findings were identified when comparing predictive accuracy across race/ethnicity, where groups differed minimally and, aside from a 3% reduction in recidivism prediction between Black defendants, all other comparisons demonstrated similar or increased predictive accuracy compared to White defendants. When examining overclassification, Black defendants identified a 4% greater FPR and an equal PPV, indicating only negligible levels of overclassification compared to White defendants. Notably, the other two groups processed reduced levels of overclassification by comparison to White defendants.

Table 1. FTA and Recidivism Performance by Gender & Race/Ethnicity

Model	Total	Male	Female	White	Black	Hispanic	Other
FTA							
AUC	0.65	0.64	0.68	0.64	0.64	0.70	0.68
FPR	0.40	0.39	0.41	0.40	0.44	0.24	0.39
PPV	0.32	0.32	0.32	0.32	0.32	0.34	0.35
Recid.							
AUC	0.68	0.68	0.69	0.68	0.65	0.71	0.71
FPR	0.40	0.39	0.41	0.40	0.44	0.19	0.37
PPV	0.39	0.39	0.38	0.39	0.39	0.37	0.41

Risk Level & Prediction

Next, PRINS risk levels were examined, where the tool was designed to identify Low-Risk to be released by PR investigators, Moderate by Conditional Court Release, and High-Risk released by bail/bond². As mentioned, judges and PR investigators were precluded from using the PRINS, allowing for a performance comparison. Of those assessed, 18% scored as Low-Risk, representing a potential 15% increased

¹ AUC values above 0.55 indicate small effect, 0.63 a moderate effect, and .71 a large effect (Rice & Harries, 2005).

² We note that certain cases (i.e., capital murder) detention is required and said case types were removed from the analyses.



release rate compared to the King County Court (3%). However, had this additional 15% been released, a similar rate of FTA and recidivism would have been observed. For Moderate-Risk, 17% more defendants are released by the court on conditional release. Yet, our comparison indicates that the same rate of recidivism (25%) and a slightly reduced level of recidivism (13%) would have been observed via the PRINS classification. However, the High-Risk classification identifies an additional 2% of defendants to be provided bail/bond by comparison to King County releases, where the PRINS identified 11% more defendants recidivating and committing FTAs.

Overall, this comparison indicates that the PRINS would have released more individuals earlier in the process, with fewer conditions, and is better at predicting pretrial outcomes and the use of bail/bond. Further, the 20% rate of FTA and 8% rate of bail/bond recidivism is lower than that of conditional court releases, suggesting that King County is not being using this release type for the highest risk cases and is less effective in preventing pretrial outcomes.

Table 2. PRINS Risk Level by Court Release Type

PRINS RLC	Pop. %	FTA%	Recid. %
<i>Low</i>	18	4	2
<i>Moderate</i>	56	25	13
<i>High</i>	26	31	19
Court Release Type	Pop. %	FTA%	Recid. %
<i>PR</i>	3	3	2
<i>Conditional Court</i>	73	25	15
<i>Bail/Bond</i>	24	20	8

Release Decisions & PRINS Risk Levels

To further examine the comparison between release types and PRINS risk levels, we compared each category via cross-tabulation

(see Table 3). Regarding Low-Risk, 85% agreement in PR Investigator releases is observed, yet 15% of Moderate and High-risk defendants were still provided PR release, representing under-classification and a potential threat to public safety.

Regarding conditional court release, there was a 58% concurrence observed with the PRINS. However, 15% of Low-Risk defendants were held longer, and given conditional court release, and 27% of High-Risk were released. This incongruence represents a misalignment of resources and potential under and overclassification of defendants.

Finally, only 13% concurrence is found for High-Risk and bail/bond releases, where 83% bail/bond releases were identified as Moderate and Low Risk to commit and FTA or recidivate via the PRINS.

Given the positive performance of the PRINS and the minimal bias in predicting FTAs and recidivism, had the King County Court adopted the PRINS in 2019 to guide release decisions, a greater proportion of individuals would have been released, more defendants released earlier, and less pretrial outcomes (FTA & recidivism) observed.

Table 3. PRINS Risk Level by Release Type

RLC	PR	Court Release	Bail/Bond
Low	85	15	29
Moderate	14	58	58
High	1	27	13

PRINS 2.0 & Comparative Findings

Next, we developed an updated version of the PRINS, recalibrating and adding items to create an improved prediction of FTA and recidivism. Here we present all 7 prediction models, including FTA, Any, Felony, Violent, Property, Drug, and Domestic Violence



recidivism. Overall, the PRINS 2.0 demonstrated ‘exceptionally strong’ performance, where AUC predictive accuracy values ranged from 0.73 to 0.81, with the average of 0.75. When compared to the PRINS 1.0 (see Table 1), the 2.0 accuracy findings represent a substantial improvement. While advancements were anticipated following the optimization procedure, the presented improvements are substantial, and exceeded NCJR’s expectations.

Further we computed and compared the risk of FTA, Any, and Violent recidivism risk scores for the PSA and VPRAI tools³. Findings provided in Table 4 demonstrate consistent and substantial improvement of the PRINS 2.0, where AUC enhancements ranged from 3% to 18% by comparisons to the PSA and VPRAI. Further, the average model improvement of the PRINS 2.0, compared to the PSA and VPRAI, was 8% and 9% (respectively), representing more than an effect size upgrade. We are confident that the noted improvements in predictive accuracy provided by the PRINS 2.0 are a result of the structured interview component, local data collection, and statistical weighting, not provided by other contemporary tools.

Table 4. Comparing AUCs of PRINS 2.0, PSA, & VPRAI

Model	PRINS 2.0	PSA	VPRAI
FTA	.73	.70	.67
Any	.73	.67	.68
<i>Felony</i>	.73	.68	.70
<i>Violent</i>	.73	.69	.69
<i>Property</i>	.75	.65	.68
<i>Drug</i>	.75	.65	.63
<i>DV</i>	.81	.74	.63
Average	.75	.67	.66

³ We note that the VPRAI produces a single composite score to predict FTA and recidivism risk. The PSA also produces a composite score for FTA, Any recidivism, and Violent recidivism. Thus, for the PSA we used the tool’s

Conclusions & Recommendations

The extended use of cash bail/bond has been critiqued and argued to create foundational and interconnected issues of justice system involvement, poverty, gender, and race/ethnicity. Pretrial risk assessments have been developed to assist judges and practitioners, using FTA and recidivism prediction to guide release decisions and pretrial supervision. In 2017, the DAJD of King County sought to develop a homegrown assessment. Using court records and a large sample of semi-structured interviews, the PRINS was developed and implemented in 2019.

The current brief described the key findings of PRINS validation efforts. Study results indicate the current tool provides moderate-to-strong prediction of both FTA and recidivism. If used to guide release decisions, the PRINS is estimated to increase non-bail/bond release decisions and likely reduce King County FTA and recidivism rates. Further, the PRINS provides near parity of prediction across gender and race/ethnicity sub-groups. Finally, an updated version of the tool – PRINS 2.0 – would substantially improve predictive accuracy and demonstrate consistently superior performance for defendants over other contemporary assessments and current King County release decisions.

As a result, NCJR provides three recommendations.

non-violent recidivism model to predict Any, Felony, Property, and Drug recidivism, and the violence risk score to predict Violent and DV recidivism.

First, given the strong and positive results demonstrated, policies regarding the use of PRINS to help guide release decisions should be developed.

Specifically, if defendants assessed to be Low-Risk should be released by PR investigators, Moderate-Risk provided conditional court release, and High-Risk individuals defendants detained and/or provided bail/bond release. These changes would result in fewer FTA and recidivism events for King County defendants, increasing the effectiveness of court processing and public safety.

Second, alternatives to release conditions (e.g., electronic monitoring, home confinement) should be developed/expanded to decrease the use of bail/bond.

Cash bail/bond should be used sparingly, as it is largely, ineffective in its current use and places an unnecessary burden on those struggling with poverty, that are disproportionately female and people of color. Creating a greater array of alternatives for detention provides an opportunity for defendants to await trial in the community, saving the court and defendants money and provides a more humane investment of court resources.

Third, PR investigative resources should be expanded to increase the number of defendants assessed to provide more efficient releases.

While notably better for a defendant's well-being to await pretrial in the community, more frequent and quicker releases will reduce court

costs and outweigh the initial investment in PR investigators.

Collectively, the PRINS and the provided recommendations have the potential to reduce justice processing times and detentions, create net savings for King County tax payers, reduce gender and race/ethnicity inequities, and improve defendants' lives and community safety.

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