JEFFERSON COUNTY: IRAS-PAT VALIDATION

FINAL REPORT

Evan Lowder

Spencer G. Lawson

Chelsea Foudray

Eric Grommon

Brad Ray

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INTRODUCTION

Pretrial decision-making involves timely choices by judges with limited information and variable input from members of the courtroom workgroup (DeMichele et al., 2018). It is well established that the decisions made at this phase of justice system processing have implications for subsequent outcomes. Defendants incarcerated pending trial are more likely to plead guilty, receive lengthier sentences, and subsequently recidivate more often in relation to defendants released prior to court disposition (Stevenson & Mayson, 2017). Incarceration can also stigmatize and disrupt housing, employment, family relationships, and ties to the community (Stevenson & Mayson, 2017). Pretrial risk assessments have emerged as one strategy to structure and improve decision-making. The integration of assessment tools also comes at a time when reforms on the use of monetary bond schedules are being advanced across the country (Stevenson, 2018).

Pretrial risk assessment tools are not without controversy. The primary set of criticisms about these tools concern whether they are able to predict pretrial misconduct, differentiate the likelihood or frequency of misconduct by risk level, and minimize the potential effect of racial, ethnic, and gender biases while maintaining comparable rates or reducing the risk of pretrial misconduct. Much of the evidence for or against the utility of pretrial risk assessment tools is based on theoretical claims; research evaluations have not kept pace with the volume of local implementations and the most prominent research studies have been produced by entities that have designed a tool (Stevenson, 2018). Although studies have demonstrated the predictive validity of specific pretrial risk assessment tools (e.g., Austin, Bhati, Jones, & Ocker, 2010; Austin, Ocker, & Bhati, 2010; Cadigan & Lowenkamp, 2011; Latessa, Lemke, Makarios, Smith, & Lowenkamp, 2010), questions remain about tools that have not been subject to validity tests, tools that have been constructed in one jurisdiction and integrated in another, the items used to score tools, the capacity to administer the tools, how the perceptions of courtroom workgroup professionals can influence the adoption of tools (DeMichele et al., 2018), and the effect of instrument adoption on rates of incarceration and pretrial misconduct (Stevenson, 2018).

Previously, researchers from the Indiana University Public Policy Institute, Center for Criminal Justice Research (CCJR) conducted a process evaluation of pilot counties to understand how the Indiana Risk Assessment System – Pretrial Assessment Tool (IRAS-PAT) was adopted by participating pilot counties. This foundational study also identified barriers and facilitators to implementation and explored relationships between IRAS-PAT items, risk categories, and bond or order for release outcomes (Grommon, Ray, Sapp, & Thelin, 2017). The current inquiry moves to the second stage of research on the IRAS-PAT pilot program. This phase offers a county-by-county validation of the IRAS-PAT.

To date, the IRAS-PAT has not been subject to a formal validation. Other assessment tools in the IRAS suite – Community Supervision Tool (CST), Community Supervision Screening Tool, and Prison Reentry Tool (PRT) – were assessed in a sole Indiana validation study (Latessa, Lovins, & Makorios, 2013). Overall, the findings confirmed that the IRAS-CST, IRAS-CSST, and IRAS-PRT are able to predict recidivism and the relative risk of recidivism varies by risk level. The predictive validity of the IRAS-PAT could not be assessed in this study due to the lack of requisite data (Latessa et al., 2013, p. 9).

Insights about the predictive validity of the IRAS-PAT can be deduced from IRAS's predecessor, the Ohio Risk Assessment System (ORAS) and its Pretrial Assessment Tool (PAT). The ORAS-PAT consists of seven items across four domains: criminal history (three items), employment (one item), residential stability (one item), and substance abuse (two items). ORAS-PAT assessments were validated in a sample of 452 defendants from seven Ohio counties and an average follow-up of 12 months (Latessa, Smith, Lemke, Makarios, & Lowenkamp, 2009). Overall, 16% of defendants failed to appear or were rearrested. Risk score was positively and moderately associated with recidivism (r=0.23). Risk levels also followed a stepwise progression as 5% of low risk defendants recidivated, while 18% of moderate risk and 30% of high risk defendants recidivated. Similar stepwise patterns were observed within ORAS-PAT domains (although the associations between domains and recidivism outcomes were not as strong as those established in the test of relationship between risk score and recidivism, ranging in value from r=0.05 to r=0.19).

The initial validation of the ORAS-PAT offers promising results, but it is not clear if these findings are or are not consistent with the IRAS-PAT or samples of defendants from Indiana. Beyond generalizability concerns, researchers leading the initial ORAS-PAT validation note that findings may be influenced by measurement error as data were generated from detailed structured interviews with defendants. This suggests that the data used to validate the tool were not generated in the same manner used by local jurisdictions to administer the tool and identify risk levels.

To better understand the predictive validity of the IRAS-PAT, we report IRAS-PAT validation findings from Jefferson County. Prior to presenting the results, we describe the methods, procedures, and assumptions. The study will conclude with a discussion of key findings and directions for future research.

METHODS

Study Context

Mirroring national trends, the state of Indiana reported the highest local incarceration rate of all midwestern states (330 per 100,000 residents) in 2013, representing a 15% increase over 1999 rates. Indiana's local jail capacity was among the highest for midwestern jurisdictions at year-end 2013 (83.2% capacity), second only to Ohio (Minton et al., 2015). Responding to these trends, the Indiana Supreme Court founded the Committee to Study Evidence-Based Pretrial Release to develop and evaluate evidence-based pretrial release practices. In 2014, the Committee developed a pilot program to examine implementation of the IRAS-PAT in 11 Indiana counties: Allen, Bartholomew, Grant, Hamilton, Hendricks, Jefferson, Monroe, Porter, St. Joseph, Starke, and Tipton. The purpose of the pilot project was to validate and evaluate the implementation of the IRAS-PAT in the 11 pilot counties, including the extent of its use and feasibility for use in other Indiana jurisdictions. The pilot program began between January 2016 and March 2017 in participating counties and is ongoing.

Data for this investigation were drawn from Jefferson County, which is located in the

southeastern portion of Indiana and has a population of 32,089 (2017 estimate). Community corrections staff, including the pretrial services coordinator and pretrial case manager, administered the IRAS-PAT following booking but prior to an initial court appearance to all pretrial defendants. The pilot program began October 1st, 2016 and is ongoing; however, we defined the validation period for the pilot program as January 1st, 2017 through December 31st, 2017. This period was selected to align with concurrent investigations and reduce repeated data requests to county agencies. The follow-up period for each defendant was defined by the pretrial processing period (i.e., the date of index jail release to the date of court disposition).

Data Sources

We received county-level administrative data records from Jefferson County Court Services. We received internally maintained records from Pretrial Services on risk assessments conducted between January 1st, 2017 through December 31st, 2017. Data included local jail records containing booking dates, length of stay, and offenses at the time of arrest from January 1st, 2017 through December 31st, 2018, to allow a minimum 1-year period for court case disposition. Court records were procured through the local county database system, which included all case-related information including, but not limited to charge information, FTAs, and case outcomes over the same 2-year period.

Data Cleaning

We linked all assessments conducted between January 1st, 2017 and December 31st, 2017 to jail records using a combination of first name, last name, and date of birth. Arrest dates recorded in the assessment file were linked to exact booking dates or booking dates that occurred up to one day before and up to three days after an arrest date. Internally recorded court case numbers were used to link relevant court case information (e.g., FTAs, disposition dates) to jail and assessment records.

Overall, we identified 843 unique assessments conducted during the 1-year study period. Of these, most (833) could be matched to a unique jail record. Of these 833 assessments, 144 represented the same individuals who were booked into the jail and assessed more than once. As such, these were removed to include only the first assessment for each unique defendant during the 1-year period. Of 689 remaining assessments, 626 had a linked court case based on internal records. However, only 495 were released prior to a court case disposition, and, of those who were released, only 398 had a court case disposition prior to the end of the follow-up period (December 31st, 2018). As a result, the final sample represented 398 unique defendants who were booked into jail and released prior to a court case disposition in the community.

Sample

The sample consisted of 398 pretrial defendants who were an average age of 32.40 (*SD* = 10.20, Range: 18 to 75). Defendants were primarily male (*n* = 276, 69.3%) and Caucasian (*n* = 366, 92.0%). Smaller proportions of defendants identified as African American (*n* = 17, 4.3%), Hispanic or Latino (*n* = 11, 2.8%), or some other race (*n* = 4, 1.0%). One out of every two defendants was booked on misdemeanor charges only (*n* = 200, 50.2%). Similarly, about one-half of pretrial defendants were booked on at least one felony charge (*n* = 198, 49.7%). Across all offenses for which defendants were booked into jail, offense categories included drug-related crimes (*n* = 135, 33.9%), motor vehicle offense (*n* = 70, 17.6%), assault (*n* = 64, 16.1%), disorderly conduct (*n* = 51, 12.8%), theft (*n* = 50, 12.6%), or driving under the influence (*n* = 49, 12.3%) offenses. Importantly, these categories are not mutually exclusive because a detainee can be booked on more than one offense.

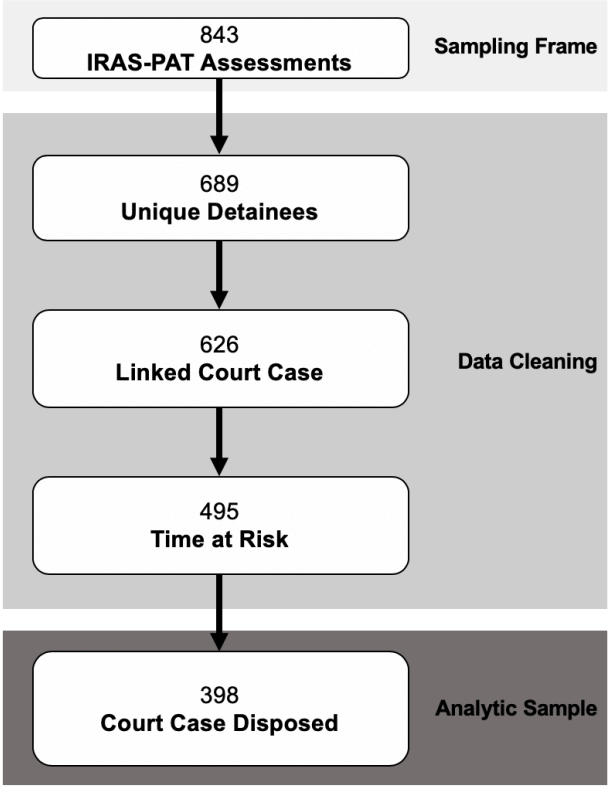

Figure 1. Sample Flow Chart

Variables

IRAS-PAT. The IRAS-PAT is an actuarial assessment designed to predict risk of arrest and FTA during the pretrial period. The IRAS-PAT is a 7-item instrument measuring 1) age at first arrest, 2) number of FTA warrants in the past 24 months, 3) three or more prior jail incarcerations, 4) employment at the time of arrest, 5) residential stability, 6) illegal drug use in the past six months, and 7) a severe drug use problem. Items 1, 3, 5, 6, and 7 are scored dichotomously (i.e., 0 or 1) and items 2 and 4 are scored on a 0-2 point scale, producing a maximum total score of 9. Total scores classify defendants into three risk bins: Low (0-2), Moderate (3-5), and High (6+). Our investigation used IRAS-PAT *total scores*, *risk estimates*, and *items.*

Case outcomes. Case outcomes were measured in the period between a defendant's release date and case disposition date. We measured three primary outcomes. *Any arrest* measured a new booking occurring during the pretrial period. *Any new arrest* measured a new booking occurring during the pretrial period in which a detainee was booked on at least one offense for a new crime. Bookings that were not associated with a new offense (e.g., other offenses such as a violation of probation or parole, an outstanding warrant, supervision violation, etc.) were excluded from this measure. *Any FTA* measured failure to appear at any court appearance during case processing. Additionally, we report descriptively on *any pretrial misconduct* during the

pretrial period, indicated as either a new arrest (or any arrest) or FTA occurring during this period. Multivariable models additionally controlled for *time at risk*, defined as the number of days in the community, excluding jail time, between the release date and case disposition date. On average, defendants were at risk for 172.13 days (SD = 141.73, Range: 1 to 663).

Analytic Strategy

We first conducted descriptive statistics on all study variables to assess response distributions. Then, we conducted crosstabulations of risk levels with case outcomes to examine rates of pretrial misconduct at each risk classification. Significant associations were tested using a chi-squared test of independence and effect size measured using Cramer's V. Cramer's V values of .10, .30, and .50 indicate small, medium, and large effect sizes, respectively (Cohen, 1988). Among defendants with arrests or any pretrial failure during the case processing period, we examined survival days (i.e., days from release to date of arrest or FTA) by risk classification.

To examine the predictive validity of IRAS-PAT assessments, we used a multi-pronged approach. First, we examined the Area Under the Curve (AUC) of the Receiver Operating Characteristic (ROC) curve statistics. AUC values are commonly used to evaluate the predictive accuracy of risk assessment total scores. AUC values range from .50 to 1, with .50 indicating chance levels of classification and 1 suggesting perfect classification. AUC values below .54 are typically considered poor, .55 to .63 fair, .64 to .70 good, and .71 and above excellent. These conventions have been documented in reports adopted by the Bureau of Justice Assistance, National Institute of Justice, and National Institute of Corrections and represent the benchmarks for predictive accuracy in the field of risk assessment (Desmarais & Singh, 2013). Second, we conducted a series of logistic regression analyses to examine the predictive validity of IRAS-PAT assessments for each pretrial misconduct outcome, controlling for time at risk. For reference, odds ratios of 1.50, 3.00, and 5.00 indicate small, medium, and large effect sizes, respectively (Chen, Cohen, & Chen, 2010).

Third, we conducted survival analyses using cox proportional hazard models to examine predictive accuracy as a function of time to a specific outcome. Hazard models are useful for examining not only whether or not an event occurred (e.g., whether someone had a new arrest or not) but also the length of time that someone is at risk in the community (i.e., survival time). These models are especially useful when the length of follow-up time differs across participants. Cox regression models a hazard function, which is expressed as the probability of a participant experiencing the outcome (i.e., yes; no) at a given time (i.e., the participant's survival time in the community). Cox regression models produce hazard ratios (HR), which are numerical expressions of the difference in the rate of an outcome occurring between two conditions. For inferential statistics, we used a $p<.05$ criterion to determine statistical significance.

RESULTS

Descriptives

IRAS-PAT. IRAS-PAT scores averaged 3.62 (*SD* = 1.96, Range: 0 to 9) across defendants, corresponding to a moderate risk classification. The frequency distribution of IRAS-PAT scores is presented in Figure 2. As shown, defendants were relatively low to moderate risk, with about one-half of IRAS-PAT scores falling below 4 (48.5%).

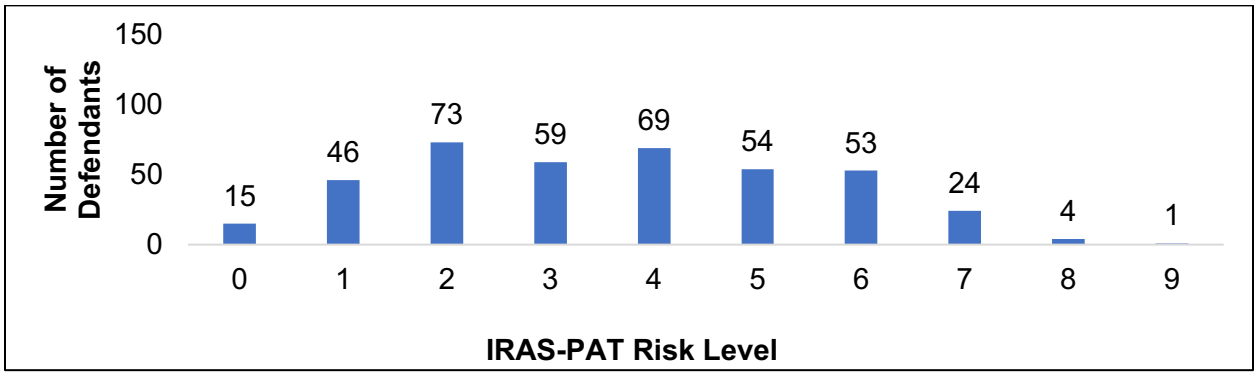

Figure 2. Frequency of IRAS-PAT Total Scores

The high proportion of defendants with moderate risk classifications (*n* = 182) is also depicted in Figure 3. As shown, fewer defendants were classified at low risk (*n* = 134), and one out of every five defendants was at high risk (*n* = 82).

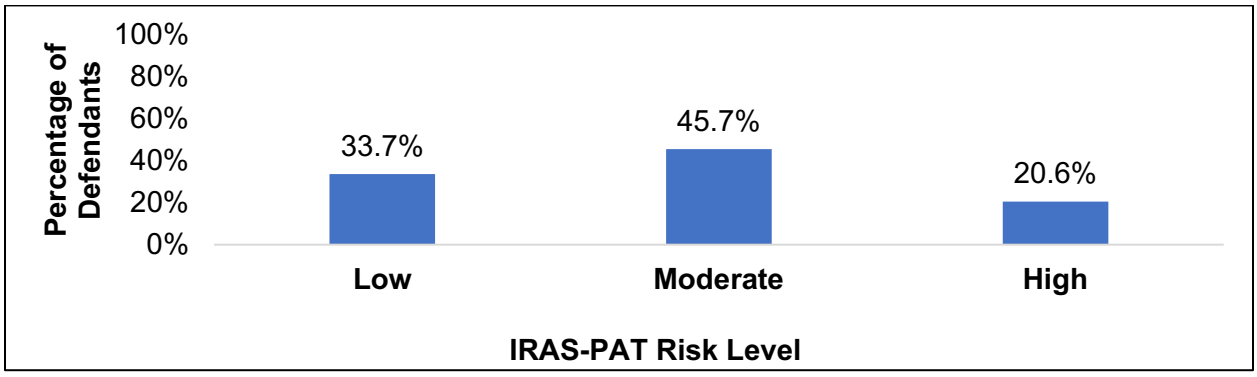

Figure 3. Frequency of IRAS-PAT Risk Estimates

Case Outcomes. Following jail release, but prior to case disposition, 16.8% of defendants had a failure to appear for any court hearing (*n* = 67) and 30.4% had at least one new arrest (*n* = 121). About two-fifths of the sample had any pretrial misconduct (with any new arrest) prior to case disposition (*n* = 163, 41.0%).

Crosstabulations of Risk Level and Outcomes

Table 1 presents risk classifications crosstabulated with outcome variables. As predicted, rates of pretrial misconduct were lowest for defendants classified at low risk and highest for defendants classified at high risk. On average, rates of pretrial misconduct were three times greater for high risk defendants relative to low risk defendants. Slightly more than half of all pretrial defendants classified at high risk and released into the community prior to case disposition had some form of pretrial misconduct. For defendants who had any failure to appear prior to case disposition, moderate risk defendants failed to appear for a court appearance (M = 83.56 days, SD = 72.68) sooner than low (M = 134.50 days, SD = 97.36) and high (M = 145.78 days, SD = 114.02) risk defendants. Among defendants who were arrested for a new offense prior to case disposition, high risk defendants were arrested more quickly (M = 77.93 days, SD = 77.23) relative to moderate (M = 95.47 days, SD = 88.00) and low (M = 130.14 days, SD = 156.95) risk defendants. Among all defendants, the length of time between pretrial release and case disposition was positively associated with any FTA (r[398] = .31, p < .001), any new arrest (r[398] = .16, p = .002), and any arrest (r[398] = .21, p < .001).

Case Outcomes	Risk Level						Comparison	
	Low		Moderate		High			
	n	%	*n*	%	*n*	%	X^2 (df)	Cramer's V
Any FTA	10	7.5	34	18.7	23	28.0	16.22*** (2)	.20
Any New Arrest	21	15.7	59	32.4	41	50.0	28.98*** (2)	.27
Any Arrest	29	21.6	76	41.8	48	58.5	30.82*** (2)	.28
Any Pretrial Misconduct (with Any New Arrest)	29	21.6	83	45.6	51	62.2	37.59*** (2)	.31
Any Pretrial Misconduct (with Any Arrest)	33	24.6	85	46.7	51	62.2	31.86*** (2)	.28

Note. ***p < .001

Table 1. Crosstabulations of Risk Classification and Pretrial Outcomes

Predictive Validity Analyses

AUC of the ROC. AUC values were 0.67 (SE = .03, 95% CI: 0.60 - 0.73) for any FTA, 0.68 (SE = .03, 95% CI: 0.62 - 0.74) for any new arrest, and 0.68 (SE = .02, 95% CI: 0.63 - 0.73) for any arrest. These values correspond to good levels of predictive accuracy for any FTA, any new arrest, and any arrest risk.

Logistic Regression Models. Table 2 present results of a series of logistic regression analyses modeling case outcomes while controlling for time at risk. The results showed strong predictive validity of IRAS-PAT assessments for all outcomes prior to case disposition. In particular, each 1-point increase in IRAS-PAT total scores was associated with a 1.48, 1.41, and 1.41 times increase in the likelihood of any FTA, any new arrest, and any arrest, respectively. Risk estimates produced good levels of predictive validity for all outcomes, with effect sizes suggesting strong predictive accuracy. For likelihood of a new arrest, defendants classified at high risk were 5.37 times more likely to be arrested for a new offense relative to low-risk defendants. Defendants classified at moderate risk were 2.58 times more likely to be arrested for a new offense relative to low-risk defendants. For FTA, defendants classified at high risk were 6.97 times more likely to FTA during the pretrial period relative to low-risk defendants. Defendants classified at moderate risk were 3.51 times more likely to FTA relative to low-risk defendants.

Predictor	Case Outcomes														
	Any FTA *N* = 398					Any New Arrest *N* = 398					Any Arrest *N* = 398				
	B	*SE*	Wald X^2	OR	95% CI	*B*	*SE*	Wald X^2	OR	95% CI	*B*	*SE*	Wald X^2	OR	95% CI
Total Score															
IRAS-PAT	0.39	0.08	23.21***	1.48	[1.26, 1.74]	0.34	0.06	30.64***	1.41	[1.25, 1.59]	0.35	0.06	34.35***	1.41	[1.26, 1.59]
Time at Risk	0.01	<0.01	31.27***	1.01	[1.00, 1.01]	<0.01	<0.01	0.00	1.00	[1.00, 1.00]	<0.01	<0.01	1.62	1.00	[1.00, 1.00]
Risk Estimate															
High (Low)	1.94	0.44	19.50***	6.97	[2.95, 16.52]	1.68	0.33	26.62***	5.37	[2.84, 10.16]	1.67	0.31	29.04***	5.31	[2.89, 9.74]
Moderate (Low)	1.25	0.40	9.86**	3.51	[1.60, 7.67]	0.95	0.29	10.96**	2.58	[1.47, 4.51]	0.98	0.26	14.13***	2.65	[1.60, 4.41]
Time at Risk	0.01	<0.01	29.82***	1.01	[1.00, 1.01]	-7.79e-5	<0.01	0.01	1.00	[1.00, 1.00]	<0.01	<0.01	1.37	1.00	[1.00, 1.00]

Note. *p < .05. **p < .01. ***p < .001

Table 2. Logistic Regression Models of IRAS-PAT Total Scores and Risk Estimates Predicting Case Outcomes

Survival Models. Survival model results are presented in Table 3. As shown, each 1-point gain in the IRAS-PAT total score was associated with a 1.34, 1.36, and 1.34 times greater hazard of any FTA, any new arrest, and any arrest, respectively. Across outcomes, risk levels were slightly more discriminating in predicting the hazard of any FTA versus any new arrest or any arrest. The hazard rates for defendants assessed at moderate risk were on average twice as high for all outcomes relative to those for defendants assessed at low risk. However, hazard rates for defendants assessed at high risk were on average four times higher than those for defendants assessed at low risk, depending on the outcome. Survival curves by IRAS-PAT risk level and outcome are presented in Figure 4.

Predictor	Case Outcomes														
	Any FTA *N* = 398					Any New Arrest *N* = 398					Any Arrest *N* = 398				
	B	*SE*	Wald X^2	HR	95% CI	*B*	*SE*	Wald X^2	HR	95% CI	*B*	*SE*	Wald X^2	HR	95% CI
Total Score															
IRAS-PAT	0.29	0.07	19.54***	1.34	[1.18, 1.52]	0.31	0.05	37.72***	1.36	[1.23, 1.50]	0.29	0.05	42.63***	1.34	[1.23, 1.46]
Risk Level															
Moderate (Low)	1.03	0.36	8.16**	2.80	[1.38, 5.66]	0.82	0.25	10.29**	2.26	[1.37, 3.72]	0.75	0.22	11.91**	2.13	[1.39, 3.26]
High (Low)	1.52	0.38	15.92***	4.56	[2.16, 9.60]	1.45	0.27	28.96***	4.25	[2.51, 7.20]	1.36	0.24	33.00***	3.88	[2.44, 6.16]

Note. ‡p < .10.*p < .05. **p < .01. ***p < .001. HR = hazard ratio.

Table 3. Cox Regression Survival Models of IRAS-PAT Total Scores and Risk Levels Predicting Case Outcomes

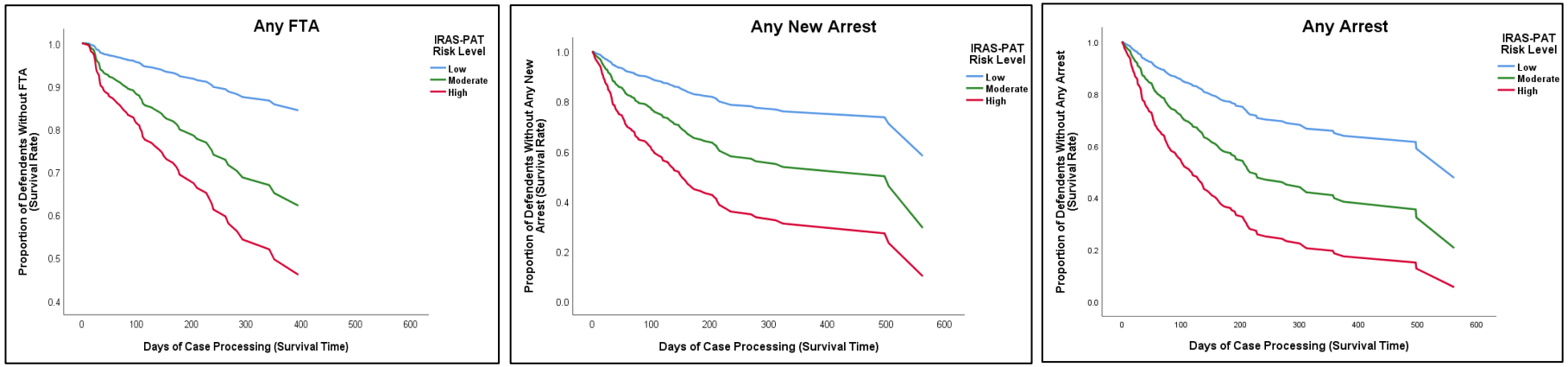

Figure 4. Survival Curves by IRAS-PAT Risk Level and Case Outcome

Item-Level Analysis

In Table 4, we present results of logistic regression models of IRAS-PAT items predicting case outcomes. There were no consistent item-level predictors across all outcomes. For FTA, significant item-level predictors included three or more prior incarcerations (Item 3) and unemployment (relative to full-time employment; Item 4). Importantly, these item-level effects reflect the unique contribution of each item to the predictive accuracy of the IRAS-PAT, above and beyond all other items. That is, some items may show predictive utility on their own, but not contribute uniquely to the prediction of pretrial outcomes after controlling for other items. For any new arrest, part-time employment (relative to full-time employment; Item 4) and a recent history of illegal drug use (Item 6) were significant item-level predictors. Lastly, for any arrest, significant item-level predictors included residential instability (Item 5) and having a severe drug use problem (Item 7). Age at first arrest (Item 1) and number of FTAs (Item 2) did not contribute uniquely to the prediction of any of the three assessed pretrial misconduct outcomes.

Predictor	Case Outcomes														
	FTA *N* = 396[a]					Any New Arrest *N* = 396[a]					Any Arrest *N* = 396[a]				
	B	SE	Wald X^2	OR	95% CI	B	SE	Wald X^2	OR	95% CI	B	SE	Wald X^2	OR	95% CI
Age at first arrest – (33+)	1.69	1.07	2.49	5.43	[0.66, 44.42]	-0.35	0.49	0.52	0.70	[0.27, 1.84]	0.13	0.48	0.07	1.14	[0.44, 2.92]
Number of FTAs – 1 (None)	0.66	0.44	2.29	1.94	[0.82, 4.56]	0.24	0.41	0.34	1.27	[0.57, 2.85]	0.32	0.40	0.63	1.37	[0.63, 2.99]
Number of FTAs – 2+ (None)	1.10	0.75	2.15	3.01	[0.69, 13.17]	0.45	0.67	0.45	1.57	[0.42, 5.83]	0.14	0.67	0.05	1.15	[0.31, 4.26]
Three+ Prior Incarcerations (No)	0.58	0.31	3.36‡	1.78	[0.96, 3.28]	0.28	0.25	1.31	1.33	[0.82, 2.14]	0.29	0.23	1.61	1.34	[0.85, 2.10]
Employed – Part time (Full-Time)	-0.49	0.70	0.49	0.61	[0.16, 2.43]	0.88	0.47	3.48‡	2.42	[0.96, 6.11]	0.60	0.46	1.71	1.83	[0.74, 4.51]
Employed – Not Employed (Full-Time)	0.65	0.32	4.18*	1.92	[1.03, 3.57]	0.26	0.25	1.01	1.29	[0.78, 2.13]	0.32	0.24	1.74	1.37	[0.86, 2.19]
Residential Stability (In Residence 6 Mo)	0.21	0.31	0.46	1.24	[0.67, 2.27]	0.36	0.25	2.06	1.43	[0.88, 2.33]	0.48	0.24	4.09*	1.61	[1.02, 2.57]
Illegal Drug Use 6 Months (No)	0.54	0.39	1.93	1.71	[0.80, 3.66]	0.78	0.30	6.83**	2.18	[1.22, 3.92]	0.38	0.28	1.89	1.46	[0.85, 2.52]
Severe Drug Use Problem (No)	0.17	0.38	0.20	1.19	[0.57, 2.48]	0.52	0.29	3.20‡	1.68	[0.95, 2.97]	0.66	0.28	5.75*	1.94	[1.13, 3.34]
Time at Risk	0.01	<0.01	29.38***	1.01	[1.00, 1.01]	<0.01	<0.01	<0.01	1.00	[1.00, 1.00]	0.01	<0.01	1.53	1.00	[1.00, 1.00]

Note. ‡$p < .10$.*$p < .05$. **$p < .01$. ***$p < .001$

[a]Item-level data were missing for some defendants thus two cases with these missing values were dropped in the analyses.

Table 4. Logistic Regression Models of IRAS-PAT Items Predicting Case Outcomes

SUMMARY OF FINDINGS

Overall, several promising findings emerge from the present investigation:

- Both IRAS-PAT risk estimates and total scores were strong predictors of pretrial misconduct outcomes.
- IRAS-PAT assessments predicted FTA and new arrest risk with similar accuracy.
- IRAS-PAT items assessing employment (Item 4), residential stability (Item 5), recent drug use (Item 6), and a severe drug use problem (Item 7) contributed most uniquely to the prediction of pretrial misconduct items. However, we found no consistent item-level predictors across outcomes. These findings do not suggest that other items lack predictive accuracy or fail to contribute to the prediction of pretrial outcomes in combination with other items.
- Fairly high proportions of defendants classified at moderate (45.6%) and high (62.2%) risk levels experience misconduct prior to case disposition (defined as an FTA or new arrest during the pretrial processing period).

CONCLUSION

The purpose of this investigation was to examine the predictive accuracy of IRAS-PAT assessments on key pretrial outcomes in Jefferson County, Indiana. Overall, we found strong support for predictive accuracy of IRAS-PAT total scores and the more commonly used risk estimates. The performance of IRAS-PAT assessments met or exceeded conventional standards for the performance of risk assessments administered in correctional settings (Desmarais & Singh, 2013). Additionally, the predictive validity of assessments was comparable across assessed outcomes (i.e., any FTA, any new arrest, any arrest).

More specifically, IRAS-PAT risk estimates successfully discriminated between individuals at low, moderate, and high risk of pretrial misconduct. As expected, defendants assessed at low risk had the lowest rates of pretrial misconduct (ranging from a 7.5% FTA rate to a 21.6% re-arrest rate). Defendants assessed at moderate risk were two-to-three times more likely to engage in pretrial misconduct relative to low risk defendants. Although fewer defendants were assessed at high risk overall, those assessed at high risk were five-to-seven times more likely to engage in pretrial misconduct relative to low risk defendants. Over half of high-risk defendants engaged in some sort of pretrial misconduct during the case processing period.

At the item-level, we found limited evidence that specific IRAS-PAT items uniquely and consistently contributed to the prediction of pretrial misconduct outcomes. Instead, full time employment (Item 4) emerged as a unique predictor of any FTA and illegal drug use in the past six months (Item 6) emerged as a unique predictor of any new arrest. Two separate items (residential stability, Item 5; severe drug use problem, Item 7) contributed uniquely to the prediction of any arrest. However, the relatively small sample size in this investigation may have hindered our ability to detect significant effects of item-level predictors across multiple outcomes. Importantly, the inability of an item to uniquely predict pretrial outcomes, controlling for other item-level predictors, does not mean that an item does not contribute to the predictive accuracy of the assessment. Future investigations of the IRAS-PAT will focus on addressing the

performance of specific items using data pooled across sites. We anticipate these investigations will provide a suitably large sample size to test fully the unique performance of specific items.

Despite the strong performance of IRAS-PAT assessments in this investigation, some limitations should be noted. Primarily, there is broader concern about the ability of risk assessment tools to predict pretrial outcomes comparably across racial groups, between male and female defendants, and as a function of age; particularly in pretrial settings (VanNostrand, 2007). In Appendix I, we report descriptively on rates of pretrial misconduct by risk level and various demographic characteristics. As shown, the sample was fairly representative with respect to race (92% Caucasian). Roughly 95% of the Jefferson County population identifies as Caucasian (U.S. Census Bureau, 2019). However, consistent with prior investigations of demographic characteristics of correctional populations (e.g., Zeng, 2019), men were overrepresented in the present sample. Larger sample sizes will be necessary to conduct a high-powered test of differences in IRAS-PAT predictive accuracy as a function of these characteristics. This is a direction for future research.

We also note that defendants who were unable to post bond and receive pretrial release were excluded from the sample. This is not uncommon in pretrial risk assessment research (e.g., Baglivio et al., 2019; Barno et al., 2019). Because IRAS-PAT assessments were validated as part of routine practice, higher risk defendants with more serious charges may have been detained and excluded from this sample. Consequently, the predictive accuracy may be slightly attenuated (i.e., lower than it would be overwise) for the sample and for high-risk defendants, in particular.

Finally, although we undertook multiple steps to increase the sample size, not all assessments could be included in this investigation. Specifically, of 843 assessments, only 398 were included. This rate has been consistent across pretrial pilot counties, where we find no more than half of all available assessments can be linked to a new court case filing and are associated with time at risk in the community. However, it is still possible eligible defendants were excluded due to our use of retrospective, administrative records. Despite this limitation, our use of existing county-level data sources was consistent with the purpose of the tool to inform local decision-making.

Overall, this investigation found strong support for the predictive accuracy of IRAS-PAT assessments administered in Jefferson County. Importantly, this investigation is part of a series of validations by an outside research partner that was not involved with the development of the initial IRAS-PAT. Findings provide strong support for the ability of IRAS-PAT assessments to identify defendants at heightened risk of engaging in pretrial misconduct in this jurisdiction.

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Appendix I: Risk Distribution by Race, Sex, Age, and Charge Level

Supplemental analyses were conducted to examine the distribution of risk classifications and pretrial outcomes by demographic characteristics of defendants as well as highest charge level. Because there were few participants classified at high risk in specific demographic subgroups (i.e., Black defendants and female defendants), we present these breakdowns for descriptive purposes only.

Results

Race. Overall, there were few Black defendants classified at high risk who were on pretrial release during the study period (n = 2). However, on average, Black defendants classified at high risk had lower levels of pretrial misconduct relative to White defendants, with the exception of any FTA. Moreover, Black defendants classified at moderate and low risk had lower rates of pretrial misconduct relative to White defendants at moderate and low risk. See Table 5.

Case Outcomes	Risk Level					
	Low		Moderate		High	
	Black	White	Black	White	Black	White
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Any FTA	0 (0.0)	9 (7.7)	0 (0.0)	34 (19.9)	1 (50.0)	21 (26.9)
Any New Arrest	0 (0.0)	19 (16.2)	2 (25.0)	57 (33.3)	0 (0.0)	40 (51.3)
Any Arrest	0 (0.0)	27 (23.1)	2 (25.0)	74 (43.3)	0 (0.0)	47 (60.3)

Table 5. Crosstabulations of Risk Classifications and Pretrial Outcomes by Race

Sex. As shown in Table 6, male and female defendants had similar rates of pretrial misconduct at each risk level, with the exception of the rate of any new arrest and any arrest for defendants classified at high risk. As shown, female defendants classified at high risk had a lower proportion of any new arrest and any arrest relative to male defendants classified at high risk.

Case Outcomes	Risk Level					
	Low		Moderate		High	
	Male	Female	Male	Female	Male	Female
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Any FTA	8 (7.8)	2 (6.5)	25 (20.2)	9 (15.5)	13 (26.5)	10 (30.3)
Any New Arrest	17 (16.5)	4 (12.9)	43 (34.7)	16 (27.6)	30 (61.2)	11 (33.3)
Any Arrest	23 (22.3)	6 (19.4)	56 (45.2)	20 (34.5)	33 (67.3)	15 (45.5)

Table 6. Crosstabulations of Risk Classifications and Pretrial Outcomes by Sex

Age. For the purposes of comparison, we grouped defendants ages 18-35 as well as defendants who were 36 and older. As shown in Table 7, adults ages 18-35 at each risk level had higher rates of pretrial misconduct across all outcomes relative to adults ages 36 and older, with the exception of the rate of any new arrest and any arrest for defendants classified at low risk. As shown, adults ages 18-35 classified at low risk had lower rates of any new arrest and any arrest relative to relative to adults ages 36 and older classified at low risk.

Case Outcomes	Risk Level					
	Low		Moderate		High	
	18-35	36+	18-35	36+	18-35	36+
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Any FTA	6 (8.5)	4 (6.3)	29 (22.5)	5 (9.4)	20 (31.3)	3 (16.7)
Any New Arrest	8 (11.3)	13 (20.6)	45 (34.9)	14 (26.4)	34 (53.1)	7 (38.9)
Any Arrest	14 (19.7)	15 (23.8)	57 (44.2)	19 (35.8)	39 (60.9)	9 (50.0)

Table 7. Crosstabulations of Risk Classifications and Pretrial Outcomes by Age

Charge level. Charge level was coded based on the highest charge at booking (misdemeanor or felony). As shown in Table 8, rates of pretrial misconduct were comparable between felony and misdemeanor defendants at moderate and high risk levels, with the exception of the rate of any FTA for defendants classified at high risk. As shown, misdemeanor defendants classified at high risk had a lower proportion of FTA relative to felony defendants classified at high risk. Moreover, misdemeanor defendants classified at low risk, depending on the outcome, had lower rates of pretrial misconduct.

Case Outcomes	Risk Level					
	Low		Moderate		High	
	Misdemeanor	Felony	Misdemeanor	Felony	Misdemeanor	Felony
Any FTA	7 (7.8)	3 (6.8)	17 (19.8)	17 (17.7)	3 (12.5)	20 (34.5)
Any New Arrest	19 (4.5)	19 (17.8)	44 (19.4)	31 (17.7)	16 (42.1)	20 (31.1)
Any Arrest	14 (15.6)	15 (34.1)	33 (38.4)	43 (44.8)	14 (58.3)	34 (58.6)

Table 8. Crosstabulations of Risk Classifications and Pretrial Outcomes by Charge Level