BARTHOLOMEW COUNTY: IRAS-PAT VALIDATION

FINAL REPORT

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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 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 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 pretrial decision-making. The integration of these assessment tools also comes at a time when reforms to reduce 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. Although studies have demonstrated the predictive validity of specific pretrial risk assessment tools (e.g., Austin, Bhati, et al., 2010; Austin, Ocker, et al., 2010; Cadigan & Lowenkamp, 2011; Latessa et al., 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 et al., 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 et al., 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 the IRAS' 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 et al., 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 Bartholomew County. Prior to presenting the results, we describe the methods, procedures, and assumptions. The study will conclude with a discussion of key findings.

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 Bartholomew County, which is located in southwest Indiana, with Columbus its county seat. Bartholomew County has a population of 82,213 residents (2017 estimate). Bartholomew County's pilot program began in September 2016 and is ongoing. Bartholomew County has a unique pretrial process in that it uses a two-staged risk

assessment strategy. All arrestees who are booked into the local jail on new charges are assessed using the Hawaii Proxy, a 3-item instrument to assess risk of general offending. At this stage, individuals may qualify for early release from incarceration prior to filing of charges and typically within a few hours of booking. Among those who do not receive early release and eventually have charges filed, the jurisdiction uses the IRAS-PAT to inform pretrial release and supervision decisions. The IRAS-PAT is also used on individuals who receive early release, have charges filed, FTA for an initial court hearing, and are subsequently re-booked into jail on an FTA warrant. Thus, the population of individuals assessed on the IRAS-PAT in Bartholomew County is markedly different from that of other pilot counties.

For the purposes of this validation, we defined the study period as October 1st, 2016 through December 31st, 2018. We selected a longer study period to increase the sample size for analyses, due to the overall low number of IRAS-PAT assessments conducted relative to other jurisdictions. 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), but all defendants had a court case disposition by March 31st, 2020.

Data Sources

We received administrative data from several databases. Bartholomew County staff provided internal pretrial services data containing assessment information linked to jail booking and court case records during the study period (October 1st, 2016 through December 31st, 2018). We additionally received jail records containing information on jail bookings, length of stay, and associated charges between October 1st, 2016 and March 31st, 2020. From INcite, we received pretrial records containing information on IRAS-PAT assessments, including date of administration and item-level data, for the study period. Finally, we received court records through the statewide Odyssey Case Management System (Odyssey), which included all case-related information such as FTAs, filing and disposition dates, and case outcomes between October 1st, 2016 and March 31st, 2020.

Data Cleaning

Due to the unique pretrial population targeted for IRAS-PAT assessments in Bartholomew County, County staff provided linked booking and court case information for each assessment conducted during the study period. Because records were linked by the jurisdiction, we verified court case information and booking and release rates using administrative court and jail records. The sample creation process is depicted in Figure 1. Overall, we received records on 614 assessments conducted during the study period. We were able to verify administrative court and jail records for 581 assessments due to court case IDs and/or jail booking and release dates that could not be verified for 33

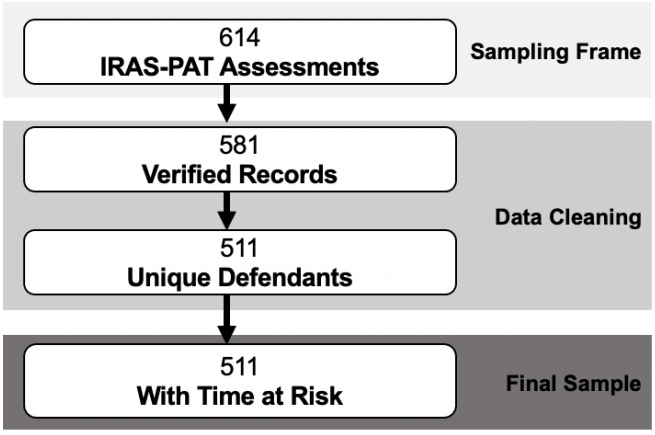

Figure 1. Sample Data Cleaning

assessments. Among remaining assessments, 70 assessments were removed from individuals who were assessed more than once during the study period, retaining only the first assessment for each individual. The final sample included 511 unique defendants who were booked into jail and released into the community prior to a court case disposition.

Sample

The sample consisted of 511 pretrial defendants who were an average age of 33.2 years old (*SD* = 9.95, Range: 18 to 72). Defendants were primarily male (*n* = 364, 71.2%) and Caucasian (*n* = 466, 91.2%). Smaller proportions of defendants identified as African American (*n* = 44, 8.6%) and Asian (*n* = 1, 0.2%). Over one-half of defendants were charged with a misdemeanor-level offense (*n* = 286, 56.0%). About two out of every five defendants were charged with a felony-level offense (*n* = 225, 44.0%). Among highest charge levels filed in court, offense categories included drug-related crime (*n* = 148, 29.0%), embezzlement (*n* = 91, 17.8%), motor vehicle offense (*n* = 69, 13.5%), and assault (*n* = 51, 10.0%).

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 levels: Low (0-2), Moderate (3-5), and High (6+). Our investigation used IRAS-PAT *total scores*, *risk levels*, and *items.* Note, 23 individuals did not have item-level data and were excluded from these analyses.

Pretrial misconduct outcomes. Pretrial misconduct outcomes were measured in the period between a defendant's release date and case disposition date. We measured three primary outcomes. *Any arrest* measured any 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 any new offense charge. *Any FTA* measured failure to appear at any court appearance during case processing. Because few FTAs were recorded with accompanying event dates in court records, we captured FTAs using triangulated jail booking and court warrant records. Specifically, we matched booking dates where an FTA charge was indicated to service dates for a warrant record in court records. This process allowed us to establish an issued date for the FTA warrant and link it to a specific court case. We also included any warrant that was specifically labeled an FTA warrant. In addition to these outcomes, we report descriptively on *any pretrial misconduct*, measured in two ways. First, we measured pretrial misconduct according to any arrest or FTA occurring during this period. Second, we measured pretrial misconduct according to any new 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 in the community for 192.95 days (*SD* = 160.20, Range: 1 to 856).

Analytic Strategy

We first conducted descriptive statistics on all study variables to assess response distributions. Then, we conducted crosstabulations of risk levels with pretrial misconduct outcomes to examine rates of misconduct at each risk level. 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 level.

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 Receiving 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 et al., 2010). Third, we conducted survival analyses using cox proportional hazard models to examine predictive accuracy as a function of time to a specific outcome. Resulting hazard ratios (HR) produced by cox regression models are a numerical expression of a 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

Sample Descriptives

IRAS-PAT. IRAS-PAT scores averaged 4.92 (*SD* = 1.86, Range: 0 to 9) across defendants, corresponding to a Moderate risk level. The frequency distribution of IRAS-PAT scores is presented in Figure 2. As shown, defendants were relatively Moderate risk, with one-half of IRAS-PAT scores falling between 3 to 5 (49.9%).

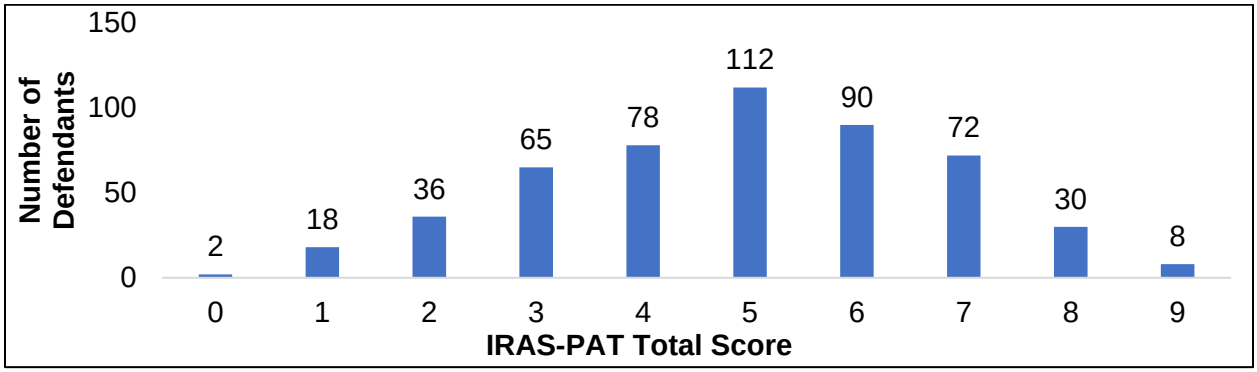

Figure 2. Frequency of IRAS-PAT Total Scores

The high proportion of defendants with Moderate risk (*n* = 255) is also depicted in Figure 3. As shown, two out of every five defendants were classified as High risk (*n* = 200) with fewer defendants being classified as Low risk (*n* = 121).

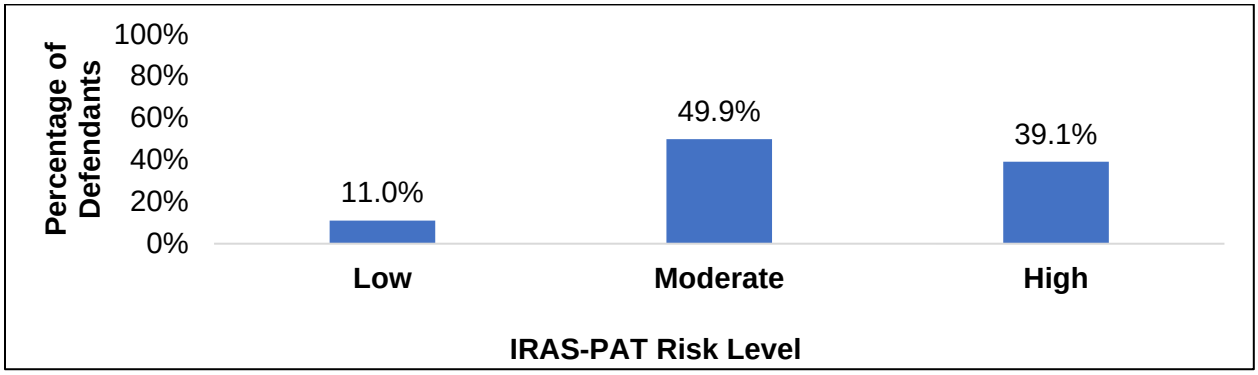

Figure 3. Frequency of IRAS-PAT Risk Level

Pretrial Misconduct Outcomes. Following jail release, but prior to case disposition, 12.9% of defendants had any failure to appear for any court hearing (*n* = 66), and 27.0% had at least one new arrest (*n* = 138). One-third of the sample had any pretrial misconduct (with any new arrest) prior to case disposition (*n* = 170, 33.3%).

Crosstabulations of Risk Level and Pretrial Misconduct Outcomes

Table 1 presents risk level crosstabulated with pretrial misconduct outcome variables. As predicted, rates of pretrial misconduct were lowest for defendants classified as Low risk and highest for defendants at High risk level. Rates of pretrial misconduct were, on average, two times greater for High risk defendants relative to Low risk defendants. However, there were few differences between defendants categorized at Moderate and High risk. Over one-half of all pretrial defendants classified as High risk and released into the community prior to case disposition had some form of pretrial misconduct (with any arrest). For defendants who had any FTA prior to case disposition, Low risk defendants failed to appear for a court appearance sooner (*M* = 73.20 days, *SD* = 43.60) than High (*M* = 88.63 days, *SD* = 52.52) and Moderate (*M* = 148.85 days, *SD* = 127.23) risk defendants. Among defendants who were arrested for a new offense prior to case disposition, High risk defendants were arrested more quickly (*M* = 102.79 days, *SD* = 108.90) relative to Moderate (*M* = 133.52 days, *SD* = 142.53) and Low (*M* = 183.83 days, *SD* = 98.57) risk defendants. Among all defendants, the length of time between pretrial release and case disposition was positively associated with any FTA (*r*[511] = .25, *p* < .001), any new arrest (*r*[511] = .29, *p* < .001), and any arrest (*r*[511] = .39, *p* < .001).

Pretrial Misconduct Outcomes	Risk Level						Comparison	
	Low		Moderate		High			
	n	%	*n*	%	*n*	%	X^2 (df)	Cramer's V
Any FTA	5	8.9	34	13.3	27	13.5	0.89 (2)	.04
Any New Arrest	6	10.7	69	27.1	63	31.5	9.59** (2)	.14
Any Arrest	16	28.6	128	50.2	111	55.5	12.71** (2)	.16
Any Pretrial Misconduct (with Any New Arrest)	10	17.9	87	34.1	73	36.5	7.01* (2)	.12
Any Pretrial Misconduct (with Any Arrest)	16	28.6	129	50.6	112	56.0	13.18** (2)	.16

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

Table 1. Crosstabulations of Risk Levels and Pretrial Misconduct Outcomes

Predictive Validity Analyses

AUC of the ROC. AUC values were 0.51 (*SE* = 0.04, 95% CI: 0.44 - 0.58) for any FTA, 0.57 (*SE* = 0.03, 95% CI: 0.51 - 0.62) for any new arrest, and 0.57 (*SE* = 0.03, 95% CI: 0.53 - 0.62) for any arrest. These values correspond to a poor level of predictive accuracy for any FTA risk, and a fair level of predictive accuracy for risk of any arrest and any new arrest.

Logistic Regression Models. Table 2 presents results of a series of logistic regression analyses modeling pretrial misconduct outcomes while controlling for time at risk. The results showed fair predictive validity of IRAS-PAT assessments across any new arrest and any arrest. In particular, each 1-point increase in IRAS-PAT total scores was associated with a 1.16 times increase in the likelihood of any new arrest, and a 1.20 times increase in the likelihood of any arrest. IRAS-PAT risk levels showed similar ability to discriminate in the prediction of rearrest. High risk level was most discriminating relative to Low risk level in the prediction of any new arrest (OR = 4.36), followed by any arrest (OR = 4.21). Moderate risk defendants were 3.46 times more likely to be rearrested (any new arrest) relative to Low risk defendants.

Predictor	Pretrial Misconduct Outcomes														
	Any FTA					Any New Arrest					Any Arrest				
	Estimate	*SE*	Wald X^2	OR	95% CI	Estimate	*SE*	Wald X^2	OR	95% CI	Estimate	*SE*	Wald X^2	OR	95% CI
Total Score															
IRAS-PAT	0.05	0.07	0.42	1.05	[0.91, 1.21]	0.15	0.06	7.38**	1.16	[1.04, 1.30]	0.19	0.05	13.24***	1.20	[1.09, 1.33]
Time at Risk	<0.01	<0.01	21.55***	1.00	[1.00, 1.01]	<0.01	<0.01	11.25**	1.00	[1.00, 1.00]	<0.01	<0.01	30.29***	1.00	[1.00, 1.01]
Risk Level															
High (Low)	0.63	0.52	1.46	1.88	[0.68, 5.24]	1.47	0.46	10.08**	4.36	[1.76, 10.81]	1.44	0.35	16.99***	4.21	[2.12, 8.33]
Moderate (Low)	0.61	0.51	1.43	1.85	[0.68, 5.06]	1.24	0.46	7.31**	3.46	[1.41, 8.51]	1.18	0.34	12.05**	3.24	[1.67, 6.31]
Time at Risk	<0.01	<0.01	21.98***	1.00	[1.00, 1.01]	<0.01	<0.01	11.66**	1.00	[1.00, 1.00]	<0.01	<0.01	30.89***	1.00	[1.00, 1.01]

Note. **p < .01. ***p < .001. OR = odds ratio. *N = 511*.

Table 2. Logistic Regression Models of IRAS-PAT Total Scores and Risk Level Predicting Pretrial Misconduct Outcomes

Survival Models. Survival model results for the full sample (N = 511) are presented in Table 4. As shown, each 1-point gain in the IRAS-PAT total score was associated with a 1.05, 1.17, and 1.16 times greater hazard of any FTA, any new arrest, and any arrest, respectively. Across pretrial misconduct outcomes, risk levels were more discriminating in predicting the hazard of the rearrest outcomes (HR range: 2.37-4.30) versus any FTA (HR range: 1.56-1.71). Similar to the above logistic regression models, High risk level estimates had a greater magnitude relative to Moderate risk level estimates in predicting the hazard of pretrial misconduct outcomes. Survival curves by IRAS-PAT risk level and outcome are presented in Figure 4.

Predictor	Pretrial Misconduct Outcomes														
	Any FTA					Any New Arrest					Any Arrest				
	Estimate	*SE*	Wald X^2	HR	95% CI	Estimate	*SE*	Wald X^2	HR	95% CI	Estimate	*SE*	Wald X^2	HR	95% CI
Total Score															
IRAS-PAT	0.05	0.07	0.46	1.05	[0.92, 1.19]	0.16	0.05	11.78**	1.17	[1.07, 1.29]	0.15	0.03	19.20***	1.16	[1.09, 1.24]
Risk Level															
High (Low)	0.53	0.49	1.20	1.71	[0.66, 4.43]	1.46	0.43	11.60**	4.30	[1.86, 9.94]	1.13	0.27	17.83***	3.10	[1.83, 5.24]
Moderate (Low)	0.45	0.48	0.87	1.56	[0.61, 4.00]	1.17	0.43	7.47**	3.21	[1.39, 7.39]	0.87	0.27	10.58**	2.37	[1.41, 4.00]

Note. **p < .01. ***p < .001. HR = hazard ratio. N = 511.

Table 4. Cox Regression Survival Models of IRAS-PAT Total Scores and Risk Levels Predicting Pretrial Misconduct Outcomes

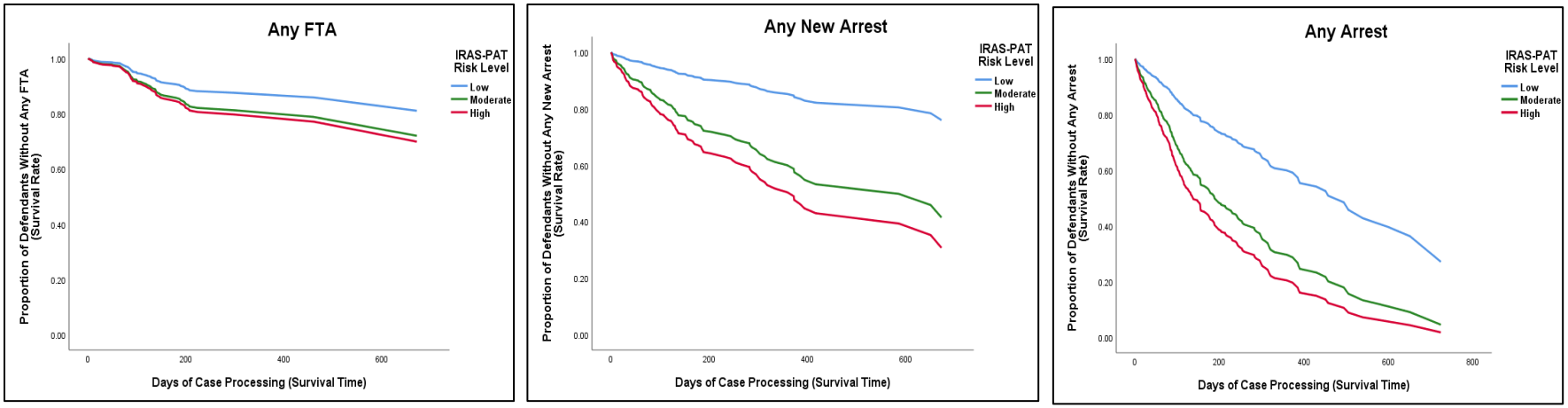

Figure 4. Survival Curves by IRAS-PAT Risk Level and Pretrial Misconduct Outcome

Item-Level Analysis

In Table 5, we present results of logistic regression models of IRAS-PAT items predicting pretrial misconduct outcomes. For any FTA, a history of FTAs in the past 24 months (Item 2, OR range = 4.59-5.30) and residential stability (Item 5, OR = 0.55) were the strongest unique predictors. IRAS-PAT items were weaker predictors of rearrest outcomes. Indeed, unemployment (Item 4, OR =1.92) was the only significant item-level predictor of any arrest. No single IRAS-PAT item uniquely contributed to the prediction of all three outcomes. Age at first arrest (Item 1), three or more prior incarcerations (Item 3), part-time employment (Item 4), illegal drug use in the past 6 months (Item 6), and a severe drug use problem (Item 7) did not contribute uniquely to the prediction of any of the three assessed pretrial misconduct outcomes.

Predictor	Pretrial Misconduct Outcomes														
	FTA					Any New Arrest					Any Arrest				
	Estimate	*SE*	Wald X^2	OR	95% CI	Estimate	*SE*	Wald X^2	OR	95% CI	Estimate	*SE*	Wald X^2	OR	95% CI
Age at first arrest – (33+)	-0.98	0.60	2.60	0.38	[0.12, 1.23]	0.10	0.55	0.03	1.11	[0.38, 3.26]	-0.81	0.52	2.45	0.44	[0.16, 1.23]
Number of FTAs – 1 (None)	1.67	0.52	10.42**	5.30	[1.92, 14.57]	-0.03	0.28	0.01	0.97	[0.57, 1.67]	0.26	0.25	1.11	1.30	[0.80, 2.12]
Number of FTAs – 2+ (None)	1.52	0.53	8.26**	4.59	[1.62, 12.97]	0.28	0.28	1.02	1.32	[0.77, 2.26]	0.34	0.25	1.78	1.40	[0.85, 2.31]
Three+ Prior Incarcerations (No)	0.28	0.33	0.71	1.32	[0.70, 2.50]	0.30	0.23	1.64	1.35	[0.85, 2.14]	0.37	0.22	2.71	1.45	[0.93, 2.24]
Employed – Part time (Full-Time)	-0.78	0.66	1.40	0.46	[0.13, 1.67]	0.03	0.39	0.01	1.03	[0.48, 2.20]	0.05	0.34	0.02	1.05	[0.54, 2.02]
Employed – Not Employed (Full-Time)	-0.20	0.33	0.38	0.82	[0.43, 1.55]	0.37	0.25	2.28	1.45	[0.90, 2.34]	0.65	0.22	8.50**	1.92	[1.24, 2.97]
Residential Stability (In Residence 6 Mo)	-0.60	0.31	3.80‡	0.55	[0.30, 1.00]	-0.15	0.21	0.49	0.86	[0.57, 1.31]	-0.01	0.19	0.01	0.99	[0.67, 1.44]
Illegal Drug Use 6 Months (No)	-0.07	0.36	0.03	0.94	[0.47, 1.88]	0.09	0.25	0.14	1.10	[0.68, 1.78]	0.08	0.23	0.13	1.09	[0.70, 1.69]
Severe Drug Use Problem (No)	0.17	0.38	0.19	1.18	[0.56, 2.50]	0.20	0.26	0.58	1.22	[0.73, 2.03]	0.23	0.24	0.91	1.26	[0.78, 2.02]
Time at Risk	<0.01	<0.01	10.84***	1.00	[1.00, 1.00]	<0.01	<0.01	11.94**	1.00	[1.00, 1.00]	<0.01	<0.01	27.17***	1.00	[1.00, 1.01]

Note. ‡$p < .10$. **$p < .01$. ***$p < .001$. OR = odds ratio. $N = 489$ (Item-level data were missing for 22 defendants thus 22 cases with these missing values were dropped in the analyses).

Table 5. Logistic Regression Models of IRAS-PAT Items Predicting Pretrial Misconduct Outcomes

Subsample Predictive Validity Analyses

One trend that could be contributing to lower predictive validity estimates for Bartholomew County is the variable amount of case processing time in the community for which defendants are assessed for misconduct. For example, many defendants included in the study sample were booked into jail and charged with an offense months before the IRAS-PAT was administered. This is due to the County's use of the IRAS-PAT for defendants re-booked into the jail on FTA arrest warrants. Because of this, the overall proportion of time defendants were assessed for outcomes in the community (i.e., out of the entire case processing period from filing date to disposition date) in Bartholomew County is notably less (66%) than that of other local jurisdictions (91-97% in Allen, Hamilton, Hendricks, Jefferson, and Monroe). To partially correct for this disparity, we removed defendants from the sample who were at risk in the community for less than 66% of their total case processing time, for a final subsample of 314 defendants.

AUC of the ROC. AUC values were 0.56 (*SE* = 0.04, 95% CI: 0.47 - 0.64) for any FTA, 0.62 (*SE* = 0.03, 95% CI: 0.56 - 0.69) for any new arrest, and 0.61 (*SE* = 0.03, 95% CI: 0.55 - 0.68) for any arrest. These values correspond to a fair level of predictive accuracy for any FTA risk, risk of any arrest and any new arrest.

Logistic Regression Models. Table 3 presents results of logistic regression analyses modeling pretrial misconduct outcomes while controlling for time at risk. The results showed evidence of the predictive validity of IRAS-PAT total scores for any new arrest and any arrest. Each 1-point increase in IRAS-PAT total scores was associated with a 1.28 times increase in the likelihood of any new arrest and a 1.25 times increase in the likelihood of any arrest. IRAS-PAT risk levels showed similar ability to discriminate in the prediction of re-arrest. High risk level was most discriminating relative to Low risk level in the prediction of any new arrest (OR = 6.68) and any arrest (OR = 3.95). Moderate risk defendants were 3.71 times more likely to be rearrested (any new arrest) relative to Low risk defendants. There was no evidence of predictive accuracy of IRAS-PAT total scores or risk estimates for any FTA.

Predictor	Pretrial Misconduct Outcomes														
	Any FTA					Any New Arrest					Any Arrest				
	Estimate	*SE*	Wald X^2	OR	95% CI	Estimate	*SE*	Wald X^2	OR	95% CI	Estimate	*SE*	Wald X^2	OR	95% CI
Total Score															
IRAS-PAT	0.10	0.08	0.42	1.11	[0.94, 1.30]	0.24	0.07	13.17***	1.28	[1.12, 1.46]	0.22	0.06	12.07***	1.25	[1.10, 1.42]
Time at Risk	<0.01	<0.01	8.05**	1.00	[1.00, 1.00]	<0.01	<0.01	0.04	1.00	[1.00, 1.00]	<0.01	<0.01	1.85	1.00	[1.00, 1.00]
Risk Level															
High (Low)	0.79	0.54	2.17	2.21	[0.77, 6.34]	1.90	0.52	13.59***	6.68	[2.43, 18.32]	1.37	0.38	12.84***	3.95	[1.86, 8.36]
Moderate (Low)	0.48	0.53	0.82	1.61	[0.58, 4.51]	1.31	0.50	6.79**	3.71	[1.38, 9.96]	1.14	0.36	10.06**	3.11	[1.54, 6.27]
Time at Risk	<0.01	<0.01	7.98**	1.00	[1.00, 1.00]	<0.01	<0.01	0.04	1.00	[1.00,1.00]	<0.01	<0.01	2.11	1.00	[1.00, 1.00]

Note. **p < .01. ***p < .001. OR = odds ratio. *N = 314*

Table 3. Subsample Logistic Regression Models of IRAS-PAT Total Scores and Risk Level Predicting Pretrial Misconduct

SUMMARY OF FINDINGS

Overall, several findings emerged from the present investigation:

- IRAS-PAT assessments were poor predictors of FTA risk, but fair predictors of any arrest and any new arrest risk.
- IRAS-PAT risk levels successfully discriminated between Low risk defendants and those classified at Moderate or High risk in the prediction of re-arrest outcomes.
- There were few differences in misconduct rates between defendants assessed at Moderate versus High risk.
- Restricting the sample to defendants who spent a longer proportion of case processing time in the community resulted in slightly higher predictive validity estimates.
- Few IRAS-PAT items predicted pretrial misconduct outcomes, and there were no consistent item-level predictors across outcomes.
- Roughly half of defendants classified as Moderate or High risk experienced some type of misconduct prior to the end of case disposition, relative to 3 in 10 Low risk defendants.

DISCUSSION

The purpose of this investigation was to examine the predictive accuracy of IRAS-PAT assessments with respect to several pretrial misconduct outcomes in Bartholomew County, Indiana. Overall, findings showed poor to fair predictive validity of IRAS-PAT assessments across outcomes, largely driven by similar rates of misconduct between Moderate and High risk defendants. Despite this, there were meaningful differences in rates of pretrial misconduct between Low and either Moderate or High risk defendants, suggesting IRAS-PAT assessments showed some evidence of predictive utility. Additionally, predictive validity estimates were slightly higher in a sub-sample of defendants who had more time at risk in the community to assess for pretrial misconduct.

IRAS-PAT assessments were poor predictors of any FTA, in particular. In subsample analyses, IRAS-PAT total scores produced fair estimates of predictive validity for FTA, but all other estimates showed poor levels of predictive validity. We note that the overall rate of FTA was comparable to that of other jurisdictions; however, the low predictive accuracy likely reflects the unique population under investigation in this jurisdiction. In particular, a considerable number of defendants were booked on FTA warrants resulting from an ongoing court case and were already on pretrial release in the community. As a result, regardless of risk level, the sample may have been predisposed to be at high risk of FTA, thereby reducing the utility of the IRAS-PAT in predicting FTA risk. Additionally, these individuals had a limited follow-up period to assess for pretrial misconduct outcomes. Overall, we were able to capture about 66% of the sample's entire pretrial processing period to assess for pretrial misconduct. Finally, many defendants in this sample likely received intervention following release into the community (e.g., pretrial supervision), which may have biased measurement of pretrial misconduct outcomes, particularly FTA. Together, these considerations may have undermined the generalizability of the sample to the pretrial population in Bartholomew County and introduced error into the measurement of FTA itself, thus reducing predictive accuracy estimates.

In contrast to FTA, we found some, but limited, evidence of the predictive accuracy of IRAS-PAT assessments for any arrest and any new arrest. Predictive accuracy estimates were primarily driven by differences in misconduct rates between Low and Moderate or High risk defendants. That is, there were few differences in pretrial misconduct outcomes between Moderate and High risk defendants, suggesting these groups were at similar risk of misconduct despite being assessed at different risk levels. These findings likely reflect the unrepresentativeness of the Bartholomew County validation sample to the entire pretrial population. Also, we note that there were few individuals overall (11% of the sample) assessed as Low risk, potentially introducing issues of range restriction into predictive validity estimates.

At the item-level, there were no IRAS-PAT items that showed consistent predictive utility across all outcomes. Instead, Item 2 (prior FTAs) was a significant predictor of any FTA and Item 4 (unemployment) significantly predicted any arrest. However, no other item-level predictors emerged as significant, reflecting the overall low levels of predictive validity in this sample. In Appendix I, we present descriptive trends by IRAS-PAT risk levels and demographic groups. Whether pretrial risk assessments predict outcomes with similar accuracy across racial, ethnic, and gender groups is an ongoing concern in researcher and practitioner communities (VanNostrand, 2007). Although we could not produce a sample large enough for meaningful statistical comparisons by groups, we present these comparisons for descriptive purposes only.

Several features of pretrial processing in Bartholomew County limit the inferences that can be drawn from these data. Primarily, we were unable to apply strict inclusion criteria to assessments because of the atypical use of the IRAS-PAT in Bartholomew County. Rather, court case information was linked to jail booking and assessment information by Bartholomew County staff. Thus, the sample did not reflect prototypical pretrial processing whereby a defendant is booked into jail on a new offense, receives an IRAS-PAT assessment prior to release, and is subsequently released. Instead, 75% of the sample had charges filed prior to jail booking, and the average time from booking to filing for the entire sample was -92 days (i.e., three months prior to jail booking). As a result, we could not assess defendants for pretrial misconduct during the entire case processing period. Additionally, although Bartholomew County uses a separate risk assessment (the Hawaii Proxy) to inform pretrial release decisions at initial booking, this assessment was not validated as part of this investigation. Finally, the IRAS-PAT was primarily administered on individuals who were booked into the jail on an FTA warrant, thus increasing the overall risk of the sample for FTA and limiting our ability to assess for any FTA outcome.

The present study provides limited support for the predictive utility of IRAS-PAT assessments in Bartholomew County. However, we note that low predictive validity estimates are likely due to the unique pretrial population targeted by Bartholomew County and its use of a two-staged assessment process. Given these unique features, we do not consider this validation to be a robust test of the predictive accuracy of IRAS-PAT assessments in Bartholomew County.

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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 levels 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), we present these breakdowns for descriptive purposes only.

Results

Race. On average, Black and White defendants across risk levels had similar levels of pretrial misconduct. However, Black defendants classified as High risk had higher rates of pretrial misconduct relative to White defendants at High risk level. In contrast, Black defendants classified as Low risk had slightly lower rates of pretrial misconduct relative to White defendants at Low risk level. See Table 6.

Pretrial Misconduct Outcomes	Risk Level					
	Low		Moderate		High	
	Black	White	Black	White	Black	White
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Any FTA	0 (0.0)	5 (10.6)	3 (11.5)	31 (13.6)	2 (22.2)	25 (13.1)
Any New Arrest	0 (0)	6 (12.8)	3 (11.5)	66 (28.9)	4 (44.4)	59 (30.9)
Any Arrest	2 (22.2)	14 (29.8)	11 (42.3)	116 (50.9)	8 (88.9)	103 (53.9)

Table 6. Crosstabulations of Risk Levels and Pretrial Misconduct Outcomes by Race

Sex. As shown in Table 7, male and female defendants had, on average, similar rates of pretrial misconduct at each risk level, with the exception of the rate of any new arrest for defendants classified as Moderate risk. As shown, female defendants classified as Moderate risk had a lower proportion of any new arrest relative to male defendants at Moderate risk level. Similarly, female defendants classified as High risk had a lower proportion of any arrest relative to male defendants at High risk level.

Pretrial Misconduct Outcomes	Risk Level					
	Low		Moderate		High	
	Male	Female	Male	Female	Male	Female
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Any FTA	5 (10.9)	0 (0.0)	25 (14.4)	9 (11.1)	21 (14.6)	6 (10.7)
Any New Arrest	5 (10.9)	1 (10.0)	56 (32.2)	13 (16.0)	50 (34.7)	13 (23.2)
Any Arrest	13 (28.3)	3 (30.0)	95 (54.6)	33 (40.7)	86 (59.7)	25 (44.6)

Table 7. Crosstabulations of Risk Levels and Pretrial Misconduct 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 8, adults ages 18-35 and 36 and older had, on average, similar rates of pretrial misconduct at each risk level. Both groups had higher proportions of any arrest at each risk level relative to other pretrial misconduct outcomes.

Pretrial Misconduct Outcomes	Risk Level					
	Low		Moderate		High	
	18-35	36+	18-35	36+	18-35	36+
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Any FTA	2 (6.9)	3 (11.1)	21 (12.6)	13 (14.8)	19 (13.9)	8 (12.7)
Any New Arrest	3 (10.3)	3 (11.1)	48 (28.7)	21 (23.9)	41 (29.9)	22 (34.9)
Any Arrest	7 (24.1)	9 (33.3)	85 (50.9)	43 (48.9)	77 (56.2)	34 (54.0)

Table 8. Crosstabulations of Risk Levels and Pretrial Misconduct Outcomes by Age

Charge level. Charge level was coded based on the highest charge at booking (misdemeanor or felony). As shown in Table 9, misdemeanor defendants had, on average, higher rates of misconduct across all outcomes at each risk level in relation to felony defendants, with the exception of the rates of rearrest for defendants classified as Moderate risk.

Pretrial Misconduct Outcomes	Risk Level					
	Low		Moderate		High	
	Misdemeanor	Felony	Misdemeanor	Felony	Misdemeanor	Felony
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Any FTA	5 (22.7)	0 (0.0)	26 (17.9)	8 (7.3)	17 (14.3)	10 (12.3)
Any New Arrest	4 (18.2)	2 (5.9)	37 (25.5)	32 (29.1)	42 (35.3)	21 (25.9)
Any Arrest	9 (40.9)	7 (20.6)	67 (46.2)	61 (55.5)	69 (58.0)	42 (51.9)

Table 9. Crosstabulations of Risk Levels and Pretrial Misconduct Outcomes by Charge Level