VIGO 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.

Other assessment tools in the IRAS suite – Community Supervision Tool (CST), Community Supervision Screening Tool (CSST), 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 $r=0.19$).

Preliminary predictive validity findings of IRAS-PAT assessments conducted in five Indiana counties were published in a prior report (Lowder et al., 2020). This study found the IRAS-PAT assessments produced good-to-excellent levels of predictive validity (AUCs = 0.67-0.72) for any FTA, any new arrest, and any arrest pretrial misconduct outcomes. In this pooled investigation, 4.3% of Low risk defendants, 12.9% of Moderate risk defendants, and 24.8% of High risk defendants had any FTA. Rates of any new arrest were 8.8%, 19.3%, and 31.9% for Low, Moderate, and High risk defendants, respectively. Findings overall showed strong levels of predictive validity for IRAS-PAT assessments conducted in practice.

To better understand the predictive validity of the IRAS-PAT, we report IRAS-PAT validation findings from **Vigo County**. Prior to presenting the results, we describe the methods, procedures, and assumptions and 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.

Data came from Vigo County, located on the Western border of Indiana. The county seat is in Terre Haute, and the County has a population of 107,038 (2019 estimate). Vigo County began implementing the IRAS-PAT in January 2020. Vigo County, however, was not originally part of the Indiana pretrial pilot project. In Vigo County, IRAS-PAT assessments are conducted on individuals who are arrested for a new offense. Individuals can be assessed in jail or at the time

of an initial hearing, most typically within 72 hours after arrest.

The Vigo County study period for this validation ran from January 1st, 2020 through December 31st, 2020. The follow up period was defined by each defendant's pretrial processing period, which runs from jail release date to court disposition date. However, all defendants were required to have their case disposed by December 31st, 2021, which was the final date for follow-up data collection.

Data Sources

Data for this validation came from several databases. Vigo County staff provided jail records with information on booking and release dates for individuals who were arrested during the study and follow up periods. We received pretrial data containing assessment information such as risk level, risk score, and item-level data from an Indiana statewide database, INcite. Finally, the statewide Odyssey Case Management System provided us with case-related information such as charge information, FTAs, filing dates, disposition dates, and case outcomes between January 2020 and December 2021.

Data Cleaning

Our data cleaning and linking was done primarily through R and RStudio (R Core Team, 2017). First, we created a unique ID based on identifiable information to link a Vigo County assessment to a jail booking record. Individuals included in this step were assessed between booking date and up to three days post-release. After identifying a booking record for each assessment, we linked these matched records to court case records to ensure we could track case outcomes. We matched court case records with initial hearing dates occurring up to three days post-booking and filing dates occurring between three days prior to booking and three days after booking. We
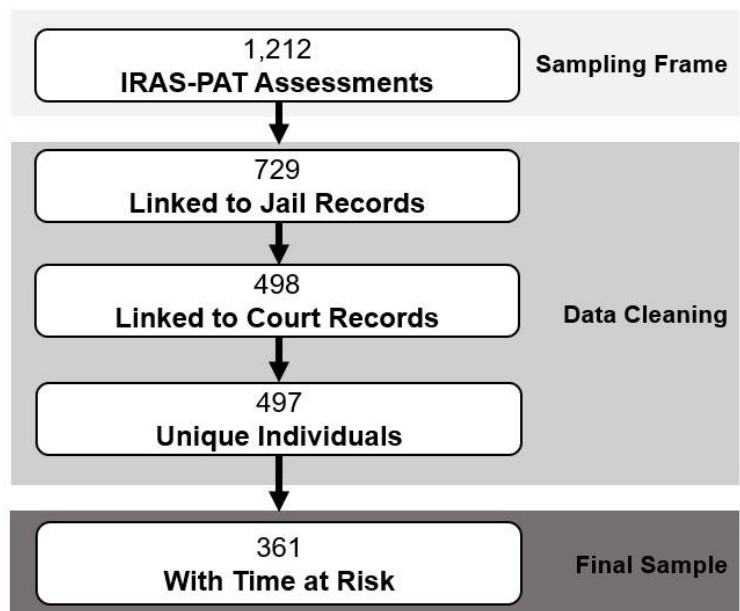

Figure 1. Data Cleaning Flowchart

present the sample creation process in Figure 1. We identified 1,212 IRAS-PAT assessments conducted in Vigo County between January 1st, 2020 and December 31st, 2020. We were able to match these assessments to 729 unique jail bookings. Of these 729 jail bookings, 498 cases were linked to a court case record based on criteria established above. Of these cases, 1 represented multiple cases for the same individual. After removing repeated admissions by the same individual, we additionally removed 136 individuals who either had no disposition date or had no time in the community prior to case disposition. The final sample included 361 unique

4

defendants who were booked into jail and assessed during the study period and released into the community prior to court case disposition.

Sample

The final sample for Vigo County consisted of 361 defendants on pretrial release with time at risk in the community. The average age at booking was 35.98 years old (SD = 12.85, Range: 18 to 77). Defendants were mostly male (n = 251, 69.53%; female: n = 110, 30.47%) and White (n = 285, 79.95%; Black: n = 62, 17.17%; Other: n = 14, 3.88%). On average, defendants were booked into jail on a charge level of 6.48, which corresponds to a Felony level 6. The most frequently occurring booking charge was for a DUI (n = 165, 45.71%), followed by Assault (n = 116, 32.13%) and Drug (n = 73, 20.22%) related offenses. Because individuals could be booked on multiple charges, these charges are not mutually exclusive. Finally, defendants spent an average of 234.58 days in the community between release and case disposition (SD = 156.32, Range: 1 to 696).

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*.

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. However, in this sample, there were no differences between any arrests and any new arrests. For the purposes of this validation, we report only the any new arrest outcome. *Any FTA* measured Failure to Appear at any court appearance during case processing. We determined FTAs by comparing FTA warrants recorded in Odyssey with public records on Indiana My Case using individual case numbers. We recorded number of FTAs that occurred in between release and disposition dates, along with the date for the first FTA. In doing so, we noticed not all FTA warrants recorded in Odyssey were indicated as an FTA warrant. However, all FTA warrants recorded in Odyssey were also found in the manual look-up of MyCase records. As such, we combined the manual look up and internal FTA warrants file to record any FTA. 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 225.01 days (*SD* = 154.71, Range: 1 to 696).

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.

Sample Descriptives

IRAS-PAT. IRAS-PAT scores averaged 2.36 (SD = 1.64, Range: 0 to 8) across defendants. This corresponds to a Low risk level. We present the frequency distribution of risk scores in Figure 2. As shown, the defendants were assessed at a relatively Low risk, with over half of the risk scores falling between a score of 0 and 2 (59.28%).
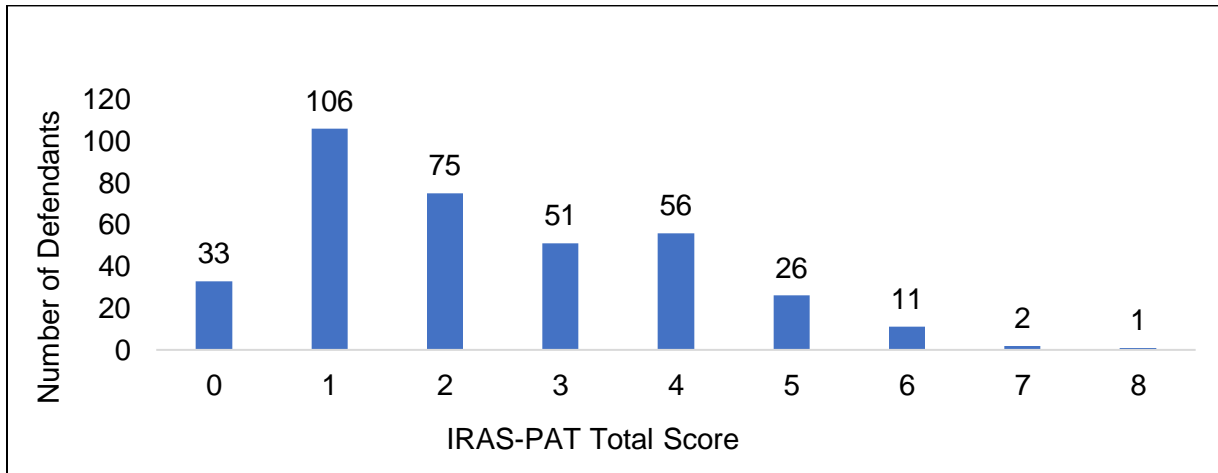

Figure 2. Frequency of IRAS-PAT Total Score

The distribution of defendants across risk levels is presented below in Figure 3. As shown, the majority of defendants were at Low risk (n = 214, 59.28%), followed by Moderate risk (n = 133, 36.84%) and High risk (n = 14, 3.88%).
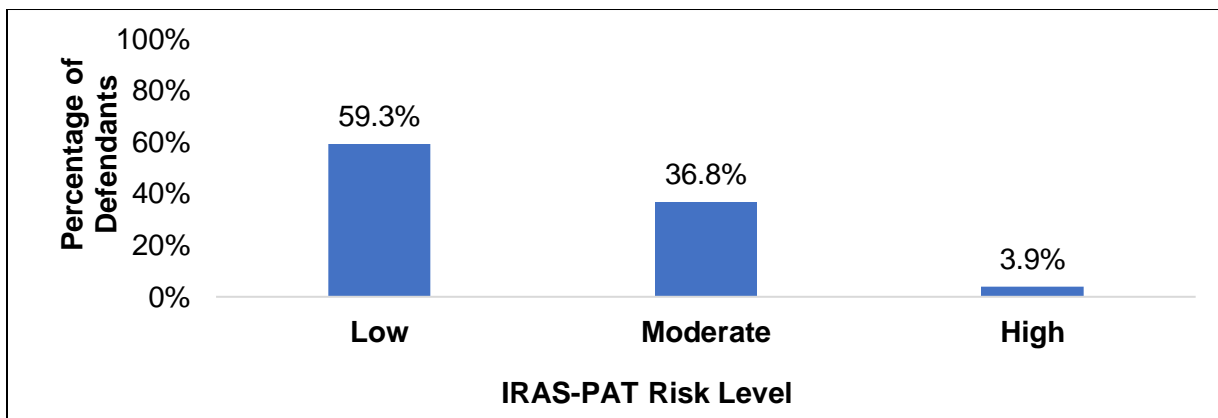
Figure 3. Frequency of IRAS-PAT Risk Level

Pretrial Misconduct Outcomes. Approximately 6.93% of the defendants (n = 25) failed to appear for any court hearing following release from jail but prior to case disposition. Additionally, about 19.94% of the defendants (n = 71) were arrested on a new charge between jail release and case disposition. A little under one-fifth of the sample had any pretrial misconduct (including any new arrest), with approximately 19.94% of the defendants being booked into jail for any reason (n = 72).

Crosstabulations of Risk Level and Pretrial Misconduct Outcomes

Table 1 presents a crosstabulation of risk level with pretrial misconduct outcomes. Rates of pretrial misconduct were lowest for Low risk defendants, and highest for defendants at High risk, across all pretrial outcomes. For individuals who had an FTA for any court hearing, Low risk defendants who were released into the community on average failed to appear sooner ($M = 61.38$ days, $SD = 149.26$) than High ($M = 106.00$ days, $SD = 0$)[1] or Moderate risk defendants ($M = 168.75$ days, $SD = 159.08$). Among defendants booked into jail on a new offense between release and disposition, High risk defendants were booked sooner ($M = 57.33$ days, $SD = 35.95$) than Low risk defendants ($M = 87.04$ days, $SD = 80.39$) and Moderate risk defendants ($M = 145.33$ days, $SD = 139.05$). Among all defendants, the length of time between pretrial release and case disposition was positively associated with any FTA ($r[359] = .15$, $p < .05$) and any new arrest ($r[359] = .15$, $p < .05$).

Pretrial Misconduct Outcomes	Risk Level						Comparison	
	Low		Moderate		High			
	n	%	n	%	n	%	X^2 (df)	Cramer's V
Any FTA	8	3.73	16	12.03	1	7.14	8.75 (2)	0.16*
Any New Arrest	26	12.15	40	30.08	6	42.86	21.30 (2)	0.24***
Any Pretrial Misconduct (with Any New Arrest)	29	13.55	42	31.58	6	42.86	19.91 (2)	0.23***

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

Table 1. Crosstabulations of Risk Levels and Pretrial Misconduct Outcomes

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[1] The SD has a value of 0 because the estimate is based on an $n = 1$.

Predictive Validity Analyses

AUC of the ROC. AUC values were 0.66 (SE = 0.06, 95% CI: 0.55 – 0.77) for any FTA and 0.66 (SE = 0.04, 95% CI: 0.59 – 0.73) for any new arrest. These values correspond to a good level of predictive accuracy for risk of any FTA and any new arrest.

Logistic Regression Models. We present the results of a series of logistic regression analyses modeling pretrial misconduct outcomes while controlling for time at risk in Table 2. The results showed a good predictive validity of IRAS-PAT risk assessments across any FTA and any new arrest. Specifically, each 1-point increase in risk score was associated with a 1.36 times greater likelihood of any FTA, and a 1.43 times greater likelihood of any new arrest. IRAS-PAT risk levels were able to differentiate between the likelihood of FTA for Moderate risk defendants compared to Low risk defendants (OR = 3.26). In the detection of any new arrest, defendants at High risk compared to Low risk were 4.95 times more likely to be arrested on any new offense, and defendants at Moderate risk compared to Low risk were 2.98 times more likely to be arrested on any new offense.

Predictor	Pretrial Misconduct Outcomes									
	Any FTA					Any New Arrest				
	Estimate	SE	Wald X^2	OR	95% CI	Estimate	SE	Wald X^2	OR	95% CI
Total Score										
IRAS-PAT	0.30	0.12	6.25*	1.36	1.07, 1.72	0.35	0.08	18.62***	1.43	1.21, 1.67
Time at Risk	0.00	0.00	5.90*	1.00	1.00, 1.00	0.00	0.00	5.09*	1.00	1.00, 1.00
Risk Level										
Moderate (Low)	1.18	0.45	6.82**	3.26	1.34, 7.92	1.09	0.28	14.71***	2.98	1.70, 5.20
High (Low)	0.42	1.13	0.14	1.52	0.17, 13.84	1.60	0.59	7.35**	4.95	1.56, 15.74
Time at Risk	0.00	0.00	6.55*	1.00	1.00, 1.01	0.00	0.00	5.58*	1.00	1.00, 1.00

Note. *p < .05 **p < .01. ***p < .001. OR = odds ratio. N = 361.

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

Survival Models. We show the survival model results in Table 3. As shown, each 1-point increase in IRAS-PAT score was associated with a 1.31 and 1.29 times higher hazard of any FTA and any new arrest, respectively. Across pretrial misconduct outcomes, risk levels were more discriminating in predicting the hazard of new arrest outcomes (HR range: 2.34 – 3.51) versus FTA outcomes (HR range: 1.58 – 3.09). For FTA outcomes, Moderate risk level estimates were stronger in predicting the hazard for pretrial misconduct relative to Low risk level outcomes compared to High risk level estimates relative to Low risk outcomes. However, for new arrest outcomes, High risk level estimates were stronger in predicting the hazard of pretrial misconduct relative to Low risk level outcomes compared to Moderate risk level estimates relative to Low risk outcomes.

Predictor	Pretrial Misconduct Outcomes									
	Any FTA					Any New Arrest				
	Estimate	*SE*	Wald X^2	HR	95% CI	Estimate	*SE*	Wald X^2	HR	95% CI
Total Score										
IRAS-PAT	0.27	0.11	6.08*	1.31	1.06, 1.63	0.26	0.07	14.76***	1.29	1.13, 1.47
Risk Level										
Moderate (Low)	1.13	0.43	6.80**	3.09	1.32, 7.24	0.85	0.25	11.38***	2.34	1.43, 3.84
High (Low)	0.46	1.06	0.19	1.58	0.20, 12.68	1.26	0.47	7.29**	3.51	1.41, 8.74

Note. *p* < .05 **p* < .01. ***p* < .001. HR = hazard ratio. *N* = 361.

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

We present the survival curves by IRAS-PAT risk level and outcome in Figure 4. Each line represents the proportion of defendants who did not experience that outcome for each day of case processing time in the community. Typically, we would like to see good separation in each line to suggest that each risk level is associated with a different hazard of pretrial misconduct across the case processing period. As shown, there is little difference in survival curves between risk levels for FTA. However, there is good separation between risk levels for the new arrest outcomes, providing evidence of predictive validity of risk levels even with different amounts of exposure time in the community.
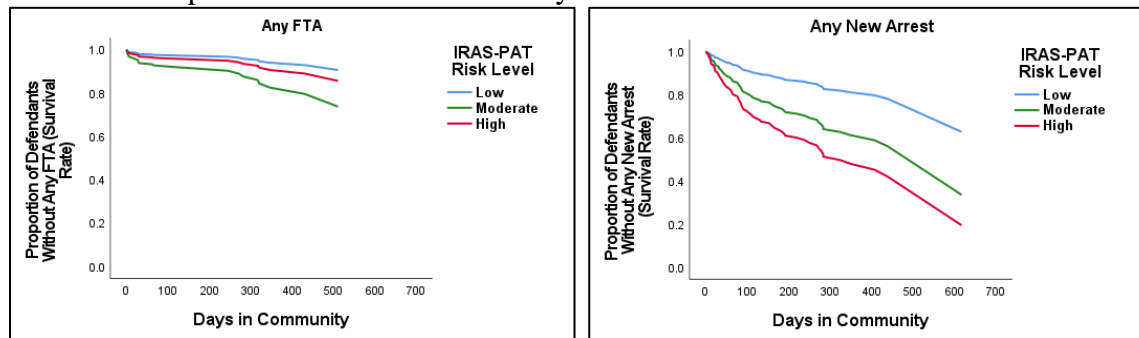

Figure 4. Survival Curves for Pretrial Misconduct Outcomes

10

Item-Level Analysis

We present the results of logistic regression models of IRAS-PAT items predicting pretrial misconduct outcomes in Table 4. No individual IRAS-PAT items significantly contributed to the prediction of FTA. However, Item 2 (2+ Prior FTAs) and Item 4 (Unemployment only) significantly predicted any new arrest. For these items, individuals who had two or more prior FTAs (OR = 18.84, p = .022) and individuals who were not employed (OR = 2.52, p = .003) reported higher odds of any new arrest compared to individuals with no prior FTAs and individuals with full-time employment. Item 1 (Age at First Arrest), Item 2 (One Prior FTA), Item 3 (3 or more Prior Incarcerations), Item 4 (Part-Time Employment), Item 5 (Residential Stability), Item 6 (Illegal Drug Use in Past 6 Months), and Item 7 (Severe Drug Use Problem) did not uniquely contribute to the prediction of any of the assessed pretrial misconduct outcomes.

Predictor	Pretrial Misconduct Outcomes									
	FTA					Any New Arrest				
	Estimate	SE	Wald X^2	OR	95% CI	Estimate	SE	Wald X^2	OR	95% CI
Age at first arrest – (33+)	1.26	1.05	1.43	3.53	0.45, 27.75	0.78	0.51	2.35	2.18	0.80, 5.88
One prior FTA (None)	0.48	0.72	0.44	1.61	0.39, 6.63	0.65	0.53	1.53	1.92	0.68, 5.38
Two or more prior FTAs (None)	1.30	1.35	0.93	3.68	0.26, 51.73	2.94	1.29	5.21*	18.84	1.51, 234.55
Three+ Prior Incarcerations (No)	0.15	0.57	0.07	1.17	0.38, 3.56	-0.53	0.44	1.43	0.59	0.25, 1.40
Employed – Part-Time (Full-Time)	-0.30	0.83	0.13	0.74	0.15, 3.76	-0.16	0.55	0.08	0.86	0.29, 2.51
Employed – Not Employed (Full-Time)	0.14	0.48	0.09	1.15	0.45, 2.92	0.92	0.31	8.89**	2.52	1.37, 4.61
Residential Stability (In Residence 6 Mo)	0.13	0.48	0.08	1.14	0.45, 2.92	-0.17	0.33	0.28	0.84	0.44, 1.60
Illegal Drug Use 6 Months (No)	0.78	0.46	2.85	2.19	0.88, 5.44	0.55	0.30	3.25	1.73	0.95, 3.15
Severe Drug Use Problem (No)	0.19	0.71	0.07	1.21	0.30, 4.90	0.35	0.51	0.46	1.42	0.52, 3.89
Time at Risk	0.00	0.00	5.75*	1.00	1.00, 1.01	0.00	0.00	6.05*	1.00	1.00, 1.00

Note. *p < .05 **p < .01. ***p < .001. OR = odds ratio. N = 361.

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

Figure 5 presents the rates of pretrial misconduct separately by outcome and IRAS-PAT item response. Thus, the reader can compare how the rate of any FTA, for example (dark gray bar), differs across individuals who were 33+ (i.e., a score of 0 on the item) or under 33 (i.e., a score of 1 on the item). The difference between rates of a given outcome across scoring categories for a single outcome provides an indication of how discriminating that item is in predicting misconduct (i.e., how much greater is the rate of misconduct for an individual who has a "1" coded response on that item versus a "0" response). A discriminating item successfully distinguishes between individuals who do or do not go on to commit misconduct. As shown in Figure 5, Item 2 (FTAs Within the Last 24 Months) was the most discriminating IRAS-PAT items for FTA and rearrest outcomes. Item 5 (Residential Stability) was the least discriminating overall item.
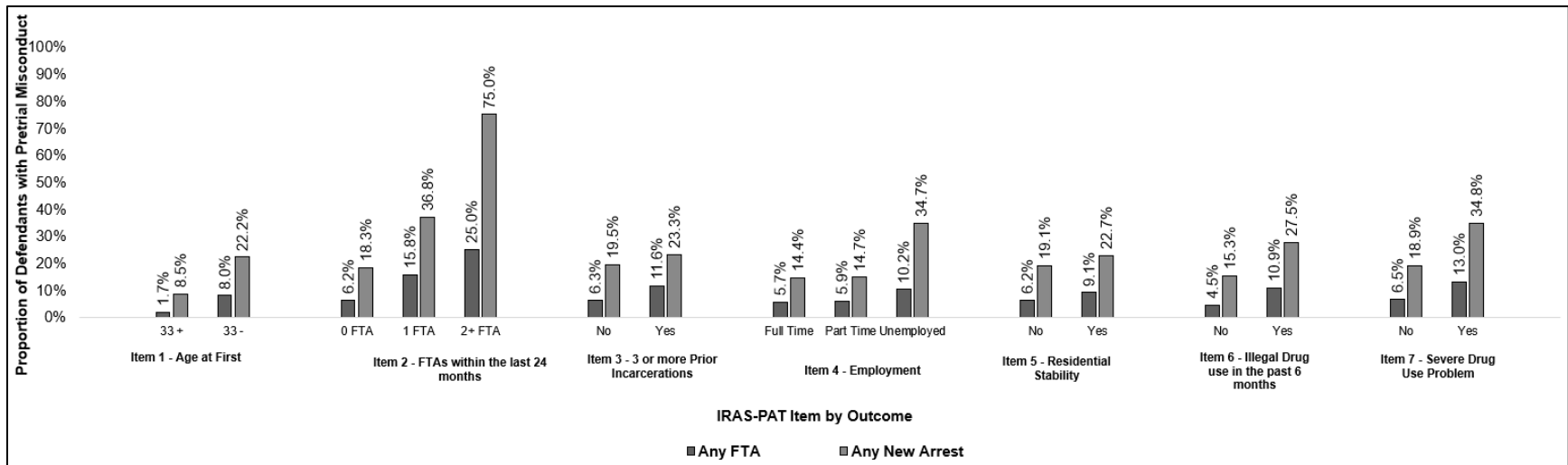
Figure 5. Rates of Pretrial Misconduct by IRAS-PAT Item Response and Outcome

SUMMARY OF FINDINGS

Overall, several findings emerged from the present investigation:

- IRAS-PAT total scores predicted any FTA and any new arrest risk with good levels of accuracy.
- IRAS-PAT risk levels successfully differentiated between defendants at Low and Moderate risk of pretrial misconduct for all outcomes.
- There were few High risk defendants in the sample, lowering the overall predictive accuracy of IRAS-PAT assessments.
- Due to the small sample size, few IRAS-PAT items uniquely predicted pretrial misconduct outcomes. Only Item 2 (Two or More Prior FTAs only) and Item 4 (Unemployed only) significantly predicted any of the assessed pretrial misconduct outcomes.
- Having 2+ prior FTAs (Item 2) was the strongest predictors of pretrial misconduct outcomes.
- Nearly half of defendants classified as High risk experienced some type of misconduct prior to the end of case disposition, relative to nearly one-third of Moderate risk and one in ten Low risk defendants.

DISCUSSION

The purpose of this investigation was to examine the predictive validity of IRAS-PAT assessments conducted in practice on pretrial misconduct outcomes in Vigo County, Indiana. In a sample of 361 defendants, we found IRAS-PAT assessments showed good evidence of predictive accuracy. Predictive validity was similar for the assessment of any FTA risk and for arrest outcomes. Only two IRAS-PAT items uniquely predicted pretrial misconduct: Item 2 (2+ Prior FTAs) and Item 4 (Unemployment). Below we discuss these findings in greater detail.

Overall, findings showed good predictive validity for both any FTA and any new arrest outcomes. For any FTA specifically, we found lower rates of any FTA for High risk individuals relative to Moderate risk individuals, likely owing to the small number of individuals assessed at High risk ($n = 11$). For this reason, predictions for any new arrest were more stable overall relative to any FTA. However, for both outcomes, IRAS-PAT assessments successfully distinguished between individuals assessed at Low and Moderate risk, groups that composed the vast majority of the sample. Moderate risk individuals, in particular, were nearly three times more likely to have either any new arrest or any FTA relative to low risk individuals. Finally, as detailed earlier in the report, there was no difference in any new arrest and any arrest outcomes, meaning that all individuals booked into the jail during the follow-up period had at least one new offense tied to their booking. This finding could reflect jail record keeping or changes in legal system practices during COVID-19. Researchers have found that the post-COVID-19 period was associated with fewer arrest warrants in other jurisdictions (Hrdinova et al., 2020), a pattern we have found in other IRAS-PAT validations conducted during the COVID-19 period.

The most notable feature of the Vigo County IRAS-PAT sample and broader assessed population is that they are both predominantly Low risk, especially relative to other local validations in Indiana. The average IRAS-PAT total score for the validation sample was 2.36 ($SD = 1.64$), corresponding to a Low-to-Moderate risk classification. The average IRAS-PAT total score for the population of assessments conducted in Vigo County was 3.07 ($SD = 1.81$), which was

slightly higher than the validation sample. However, in both groups of assessments, less than five percent of assessments were scored at High risk, suggesting the sample still broadly captures the Low risk nature of the population. The few individuals classified at High risk could reflect overall crime rates in the community. For example, among cities with a population size above 50,000 residents, Terre Haute has one of the lowest violent crime rates in the State of Indiana, second only to Carmel and Fishers (FBI, 2016). The low proportion of High risk individuals assessed in the sample is especially notable given efforts during COVID-19 to prevent unnecessary detention, which may have reduced further the number of lower-risk individuals in detention.

Due to the fairly small sample size, we were unable to conduct a robust analysis of item-level predictors of pretrial misconduct outcomes. Indeed, we only identified two IRAS-PAT items that uniquely predicted any misconduct outcome: Item 2 (2+ Prior FTAs) and Item 4 (Unemployment). Both of these items represent risk factors commonly measured across pretrial risk assessment tools (Desmarais et al., 2021). Items related to criminal history or substance use did not appear to uniquely predict pretrial misconduct outcomes, perhaps owing to the lower-risk nature of the sample. Instead, descriptive analyses (i.e., Figure 5) suggested that Item 1 (Age at First Arrest), Item 6 (Illegal Drug Use), and Item 7 (Severe Drug Use Problem) showed the ability to differentiate between individuals who did and did not have misconduct, but likely jointly contributed to predicting misconduct.

Findings from the validation should be considered together with multiple limitations. First, the sample size for this investigation was fairly small. The small sample size likely reflected that the study period (January 1st-December 31st, 2020) considerably overlapped with the initial COVID-19 period. Many court proceedings were likely disrupted during COVID-19, which hindered our ability to link assessments to an index arrest and court case filing or initial hearing. The small sample size also limited our ability to conduct a robust analysis of item-level performance of IRAS-PAT assessments and decreased the stability of our estimates. Second, the sample overall was fairly Low risk, and there were few individuals assessed at High risk in the sample. The limited number of High risk individuals was not atypical for the Vigo County assessed population, but likely decreased the strength of predictive validity estimates. Finally, as mentioned above, the assessment period and most of the follow-up period occurred post-COVID-19. Recent studies have reported that the post-COVID-19 period was associated not only with reductions in local jail populations (Minton et al., 2021) but also broader disruptions to court proceedings and standard judicial practices (Baldwin et al., 2020; Hrdinova et al., 2020). Together, these changes may have impacted the individuals included in the validation sample and rates of misconduct in the community.

Overall, this investigation provides support for the predictive validity of IRAS-PAT assessments conducted in Vigo County. Assessments were particularly successful in distinguishing between Low and Moderate risk defendants, who composed the majority of the sample and assessed population.

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

We conducted supplemental analyses to examine the distribution of risk levels and pretrial outcomes by demographic characteristics of defendants and highest charge level. Because there were few defendants classified in specific demographic subgroups (i.e., Black defendants), we present these breakdowns for descriptive purposes only. These results should be interpreted with caution.

Results

Race. As shown in Table 5, Low risk Black defendants had higher rates of pretrial misconduct for any FTA compared to White defendants. However, for any new arrest, Low risk Black defendants recorded higher rates. Moderate risk White defendants recorded higher rates of any new arrest compared to Black defendants. High risk Black defendants had fewer instances of all pretrial misconduct outcomes compared to White defendants.

Pretrial Misconduct Outcomes	Risk Level					
	Low		Moderate		High	
	Black	White	Black	White	Black	White
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Any FTA	2 (6.7)	6 (3.5)	1 (3.3)	15 (14.7)	0 (0.0)	1 (8.3)
Any New Arrest	6 (20.0)	20 (11.7)	8 (26.7)	32 (31.4)	0 (0.0)	6 (50.0)

Table 5. Crosstabulations of Risk Levels and Pretrial Misconduct Outcomes by Race

Sex. As shown in Table 6, Low risk male defendants had comparable rates of pretrial misconduct for all pretrial outcomes relative to female Low risk defendants. At Moderate risk, female defendants had higher rates of pretrial misconduct for any FTA, but lower rates of any new arrest and any arrest. High risk male defendants had higher rates of any FTA compared to High risk female defendants. For any new arrest, however, female defendants recorded higher rates.

Pretrial Misconduct Outcomes	Risk Level					
	Low		Moderate		High	
	Male	Female	Male	Female	Male	Female
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Any FTA	6 (4.0)	2 (3.1)	9 (10.0)	7 (16.3)	1 (9.1)	0 (0.0)
Any New Arrest	20 (13.3)	6 (9.4)	28 (31.1)	12 (27.9)	4 (36.4)	2 (66.7)

Table 6. 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 7, the younger age group had lower rates of all pretrial outcomes for Low and Moderate risk levels across all misconduct outcomes. In contrast, older defendants assessed at High risk had lower rates of pretrial misconduct across all 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	3 (2.6)	5 (5.1)	8 (9.4)	8 (16.7)	1 (16.7)	0 (0.0)
Any New Arrest	12 (10.4)	14 (14.1)	25 (29.4)	15 (31.2)	5 (83.3)	1 (12.5)

Table 7. 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 8, felony level defendants had higher rates of pretrial misconduct for any FTA across all risk levels. Felony defendants had higher rates of new arrest at Low and Moderate risk, but not at High risk.

Pretrial Misconduct Outcomes	Risk Level					
	Low		Moderate		High	
	Misdemeanor	Felony	Misdemeanor	Felony	Misdemeanor	Felony
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Any FTA	3 (2.3)	5 (5.8)	2 (4.8)	14 (15.4)	0 (0.0)	1 (9.1)
Any New Arrest	7 (5.5)	19 (22.1)	7 (16.7)	33 (36.3)	2 (66.7)	4 (36.4)

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