ALLEN COUNTY: IRAS-PAT VALIDATION

FINAL REPORT

Evan Lowder

Spencer G. Lawson

Liam Hanninen

Eric Grommon

Brad Ray

March 2020

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 pretrial 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 Allen 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 Allen County, which is located in the northeast

region of Indiana and has a population of 372,877 people (2017 estimate). Allen County is Indiana's third most populous county.

Allen County's pilot program began on March 15th, 2016 and is ongoing. Allen County's pretrial pilot program was designed to maximize pretrial release of non-violent, felony-level (F5/F6) arrestees. Thus, the pretrial pilot population consisted specifically of non-violent, felony-level (F5 or F6), warrantless arrestees who had a prior felony conviction as well as felony-level habitual traffic offenders. Violent offenses were generally defined as the carrying, possession, or use of a firearm or deadly weapon; death or bodily injury to any person; use of force or threat of use of force against a person; and rape, criminal deviate conduct, child molesting or burglary. Other exclusionary criteria included a current probation, parole, or other community supervision case; current pretrial release status; a dealing offense charge; or a felony-level OWI charge. For the purposes of the pilot program, pretrial services officers in Allen County administered IRAS-PAT assessments within 24 hours of arrest, with the exception of weekends and holidays. Due to the specific eligibility criteria for Allen County's pilot program, only 81 pilot-eligible assessments were completed during this time period. Not all of these defendants ultimately had formal felony-level charges filed by the prosecutor or had time at risk in the community prior to the resolution of their case.

During this pilot period, Allen County additionally used the IRAS-PAT to inform pretrial supervision recommendations for defendants who had posted bond. Thus, these defendants were not pilot-eligible because the IRAS-PAT was not used to inform the pretrial release decision. However, the IRAS-PAT was conducted during the initial period of pretrial detention in most cases for defendants who had formal charges filed with the court and who were released into the community on pretrial supervision. Due to the small number of pilot-eligible cases, we expanded our investigation to include IRAS-PAT assessments that were conducted broadly during the pretrial processing stage. More information on this process is included in the data cleaning process below.

For the purposes of this validation, we defined the 1-year study period as March 15th, 2016 through March 14th, 2017. 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 administrative data from several databases. Jail records from the Allen County Sheriff's Department provided information on booking dates and length of stay as well as offenses at the time of arrest over a roughly 2.5-year study period (March 15th, 2016 to December 31st, 2018). From INcite, we received pretrial records containing information on IRAS-PAT assessments, including date of administration, for the study period. Court records were procured through the statewide Odyssey Case Management System (Odyssey), which included all case-related information including, but not limited to FTAs and case outcomes over the same period.

Data Cleaning

Due to the small number of pilot-eligible defendants, we opted to widen inclusion criteria for the purposes of this validation and included any pretrial defendant who received an IRAS-PAT assessment during the 1-year pretrial pilot period. Specifically, defendants had to have received an IRAS-PAT assessment during an initial episode of incarceration and to have had formal charges filed in court up to three days before the jail booking date to up to five days after the booking date. Finally, defendants had to have been released into the community prior to their court disposition date.

We identified 1,930 IRAS-PAT assessments conducted between March 15th, 2016 and March 14th, 2017. We linked assessment records to jail bookings using the first three letters of a person's first name, the first three letters of the last name, and year of birth if the assessment date occurred between the booking date and release date. Of 1,930 assessments, 1,247 matched to a jail booking using these criteria. We then linked these booking-matched assessments to a new court case filing date occurring up to three days before a booking date to up to five days following a booking date. Again, defendant-level matching criteria included the first three letters of a first name, the first three letters of a last name, and year of birth. Of 1,247 assessments, 868 matched to a court case record using these criteria. Of these 868 assessments, 835 had time at risk in the community to evaluate outcomes (i.e., the court disposition date occurred after the jail release date). One additional person was identified as a duplicate, which resulted in a final sample of 834. Of these cases, 30 were included in Allen County's original pilot-eligible sample.

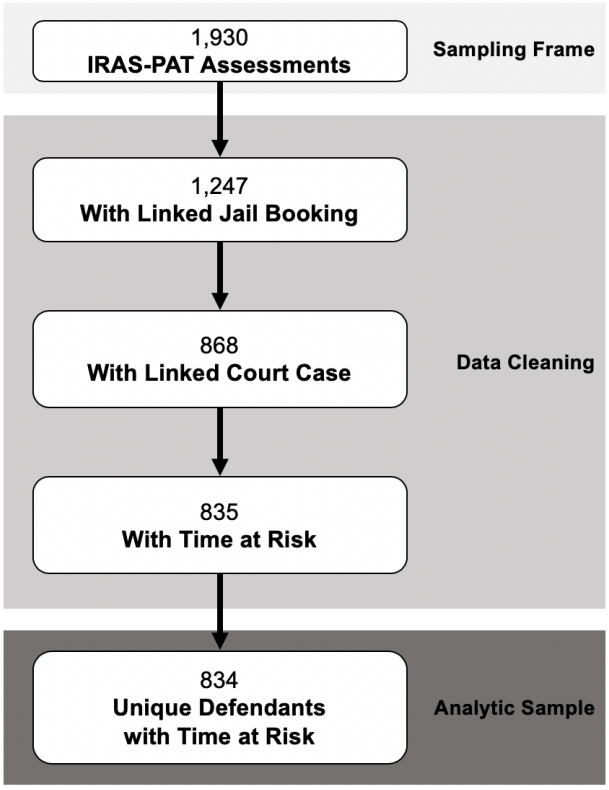

Figure 1. Sample Flow Chart

Together, the sample included 834 pretrial defendants who received an IRAS-PAT assessment after a custodial arrest which resulted in charges filed in court. See Figure 1 for the sample flow chart. Due to the small number of pilot-eligible participants in the final sample (n = 30), we are unable to provide a validation for assessments completed on pilot-eligible defendants only. However, for comparison purposes, below we provide a description of the distribution of IRAS-PAT total scores, risk estimates, and outcomes for pilot sample participants.

Pilot Sample Descriptives

IRAS-PAT. As shown in Figure 2, pilot participants were, on average, assessed at higher risk than the full sample. The average IRAS-PAT score was 4.23 (SD = 1.78, Range: 1 to 7).

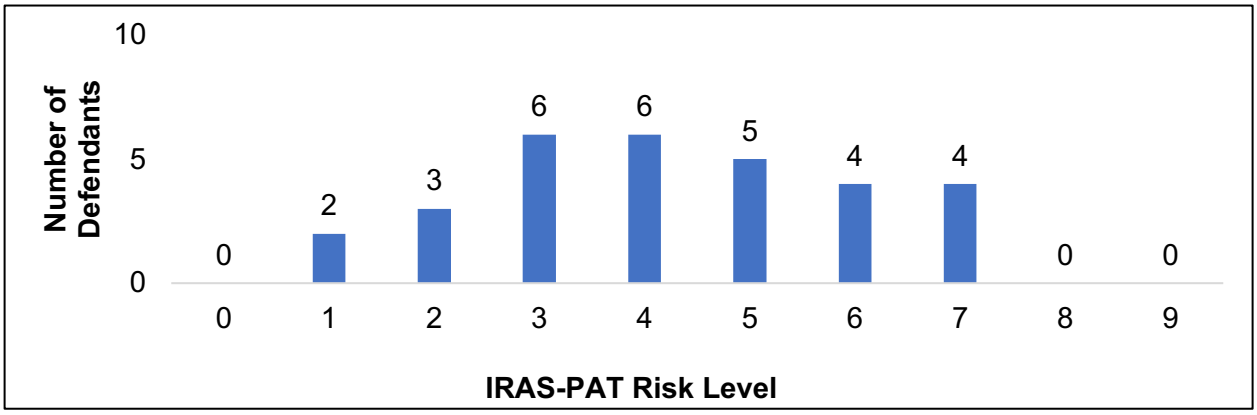

Figure 2. Frequency of IRAS-PAT Total Scores in Pilot Participants

As shown in Figure 3, much higher proportions of pilot-eligible participants were assessed at moderate (*n* = 17) and high risk (*n* = 8), with fewer assessed at low risk (*n* = 8).

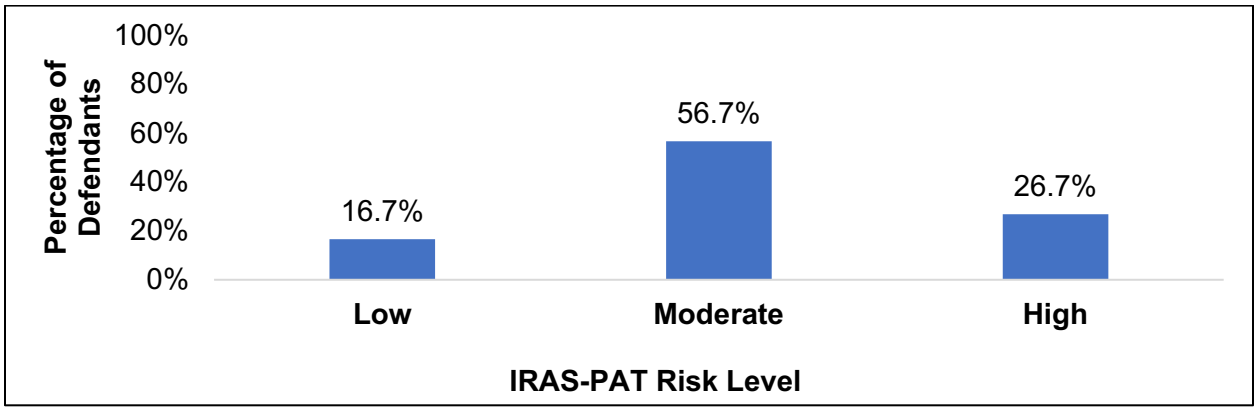

Figure 3. Frequency of IRAS-PAT Risk Estimates

Case Outcomes. Consistent with the higher risk nature of pilot-eligible participants, this sub-sample had higher rates of any new arrest (*n* = 13, 43.3%) and any pretrial misconduct (with any new arrest) prior to case disposition (*n* = 14, 46.7%). Pilot-eligible participants had a similar rate of failure to appear (*n* = 2, 6.7%) relative to the entire sample.

Validation Sample

The sample consisted of 834 pretrial defendants who were an average age of 33.92 (*SD* = 11.98, Range: 17 to 82). Defendants were primarily male (*n* = 596, 71.5%) and Caucasian (*n* = 478, 57.3%). Smaller proportions of defendants identified as African American (*n* = 285, 34.2%). Racial or ethnic identification was unavailable for a small proportion of defendants (*n* = 71, 8.5%). Defendants were primarily booked on misdemeanor charges only (*n* = 465, 55.8%). About two out of every five defendants were booked on at least one felony charge (*n* = 369, 44.2%). Across all offenses for which defendants were booked into jail, offense categories included driving under the influence (*n* = 283, 33.9%), assault (*n* = 226, 27.1%), motor vehicle offense (*n* = 170, 20.4%), drug-related crime (*n* = 143, 17.1%), and disorderly conduct (*n* = 58, 7.0%). Importantly, these categories are not mutually exclusive because a detainee can be booked on more than one offense.

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 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 all new offenses (i.e., new crimes). Bookings that reported any "other" offense (e.g., 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,* 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 for 114.51 days (SD = 95.98, Range: 1 to 832).

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 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, 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. 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 2.66 (*SD* = 1.62, Range: 0 to 8) across defendants, corresponding to a low risk classification. The frequency distribution of IRAS-PAT scores is presented in Figure 4. As shown, defendants were relatively low risk, with about half of IRAS-PAT scores falling below 3 (51.8%).

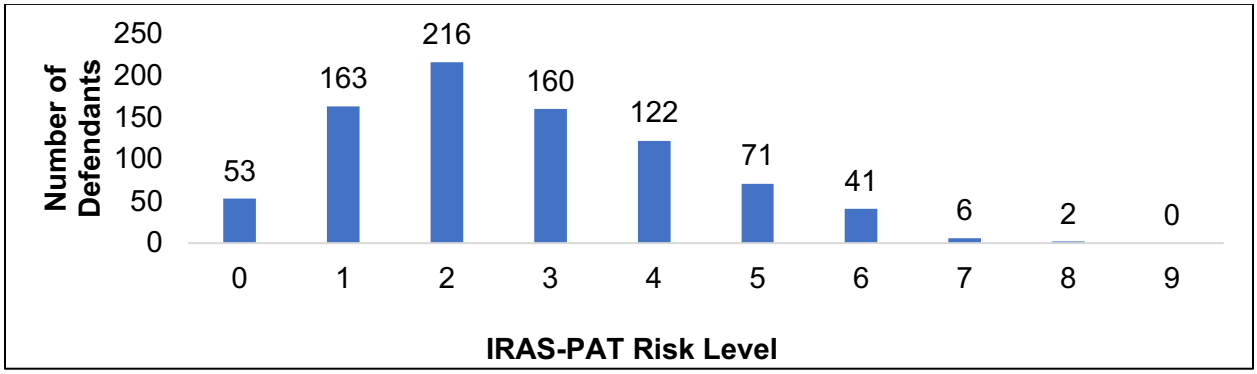

Figure 4. Frequency of IRAS-PAT Total Scores

The high proportion of defendants with low risk (*n* = 432) is also depicted in Figure 5. As shown, about two out of every five defendants were classified at moderate risk (*n* = 353) with fewer defendants being classified at high risk (*n* = 49).

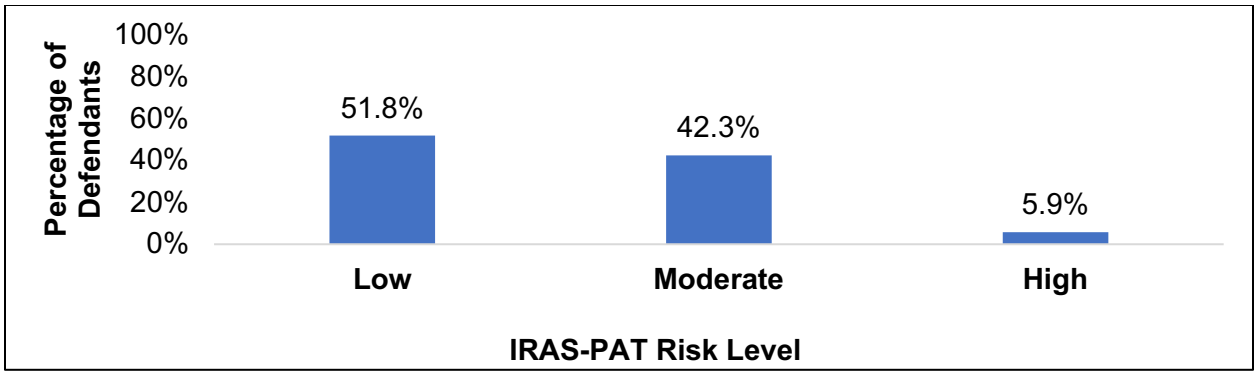

Figure 5. Frequency of IRAS-PAT Risk Estimates

Case Outcomes. Following jail release, but prior to case disposition, 5.5% of defendants had a failure to appear for any court hearing (n = 46) and 21.6% had at least one new arrest (n = 180). About one-quarter of the sample had any pretrial misconduct (with any new arrest) prior to case disposition (n = 199, 23.9%).

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, on average, highest for defendants classified at high risk. Rates of pretrial misconduct were about two times greater for high risk defendants relative to low risk defendants. Almost one-half of all pretrial defendants classified at 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 (M = 57.67 days, SD = 10.02) sooner than moderate (M = 58.96 days, SD = 9.52) and high (M = 95.33 days, SD = 29.95) risk defendants. Among defendants who were arrested for a new offense prior to case disposition, low risk defendants were arrested more quickly (M = 91.82 days, SD = 18.71) relative to moderate (M = 99.22 days, SD = 11.30), but not high risk (M = 81.57 days, SD = 17.96), defendants. Among all defendants, the length of time between pretrial release and case disposition was positively associated with any FTA (r[834] = .10, p = .004), any new arrest (r[834] = .20, p < .001), and any arrest (r[834] = .24, p < .001).

Case Outcomes	Risk Level						Comparison	
	Low		Moderate		High			
	n	%	*n*	%	*n*	%	X^2 (df)	Cramer's V
Any FTA	15	3.5	28	7.9	3	6.1	7.45* (2)	.10
Any New Arrest	56	13.0	110	31.2	14	28.6	39.52*** (2)	.22
Any Arrest	72	16.7	140	39.7	23	46.9	59.80*** (2)	.27
Any Pretrial Misconduct (with Any New Arrest)	64	14.8	119	33.7	16	32.7	40.40*** (2)	.22
Any Pretrial Misconduct (with Any Arrest)	77	17.8	144	40.8	24	49.0	59.04*** (2)	.27

Note. *p < .05; ***p < .001

Table 1. Crosstabulations of Risk Classification and Pretrial Outcomes

Predictive Validity Analyses

AUC of the ROC. AUC values were 0.65 (SE = .04, 95% CI: 0.57 - 0.73) for any FTA, 0.66 (SE = .02, 95% CI: 0.62 - 0.71) for any new arrest, and 0.69 (SE = .02, 95% CI: 0.65 - 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 presents 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 across all outcomes. In particular, each 1-point increase in IRAS-PAT total scores was associated with a 1.33 times increase in the likelihood of FTA, a 1.40 times increase in the likelihood of any new arrest, and a 1.52 times increase in the likelihood of any arrest. On average, risk estimates showed good levels of predictive accuracy for moderate risk classifications relative to low risk classification. In the prediction of any FTA and any new arrest, high risk classification was a weaker predictor of outcomes relative to moderate risk classification. With respect to any arrest, the performance of risk estimates was stronger overall. High risk defendants were 4.44 times more likely to be rearrested relative to low risk defendants. Moderate risk defendants were 3.29 times more likely to be rearrested relative to low risk defendants.

Predictor	Case Outcomes														
	Any FTA *N* = 834					Any New Arrest *N* = 834					Any Arrest *N* = 834				
	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	0.28	0.09	9.81**	1.33	[1.11, 1.58]	0.33	0.05	39.04***	1.40	[1.26, 1.55]	0.42	0.05	66.54***	1.52	[1.38, 1.68]
Time at Risk	<0.01	<0.01	4.90*	1.00	[1.00, 1.01]	<0.01	<0.01	8.93**	1.00	[1.00, 1.00]	<0.01	<0.01	6.68*	1.00	[1.00, 1.00]
Risk Estimate															
High (Low)	0.58	0.65	0.79	1.79	[0.50, 6.44]	0.99	0.35	7.97**	2.68	[1.35, 5.32]	1.49	0.32	22.32***	4.44	[2.39, 8.25]
Moderate (Low)	0.86	0.33	6.82**	2.37	[1.24, 4.51]	1.11	0.18	36.21***	3.04	[2.12, 4.36]	1.19	0.17	49.27***	3.29	[2.36, 4.59]
Time at Risk	<0.01	<0.01	4.96*	1.00	[1.00, 1.01]	<0.01	<0.01	9.05**	1.00	[1.00, 1.00]	<0.01	<0.01	6.86**	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 1.29, 1.25, and 1.31 times greater hazard of any FTA, any new arrest, and any arrest, respectively. Across outcomes, risk levels were more discriminating in predicting the hazard of any arrest versus any FTA or any new arrest. Similar to the above logistic regression models, moderate risk classifications showed stronger predictive accuracy relative to high risk classifications in the prediction of any FTA and any new arrest. Survival curves by IRAS-PAT risk level and outcome are presented in Figure 6.

Predictor	Case Outcomes														
	Any FTA *N* = 834					Any New Arrest *N* = 834					Any Arrest *N* = 834				
	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	0.25	0.09	8.71**	1.29	[1.09, 1.52]	0.23	0.04	26.98***	1.25	[1.15, 1.36]	0.27	0.04	50.34***	1.31	[1.21, 1.41]
Risk Level															
Moderate (Low)	0.80	0.32	6.24*	2.22	[1.19, 4.17]	0.84	0.17	25.70***	2.31	[1.67, 3.19]	0.88	0.15	36.27***	2.41	[1.81, 3.21]
High (Low)	0.51	0.63	0.64	1.66	[0.48, 5.73]	0.71	0.30	5.55*	2.02	[1.13, 3.64]	1.04	0.24	18.71***	2.83	[1.77, 4.53]

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

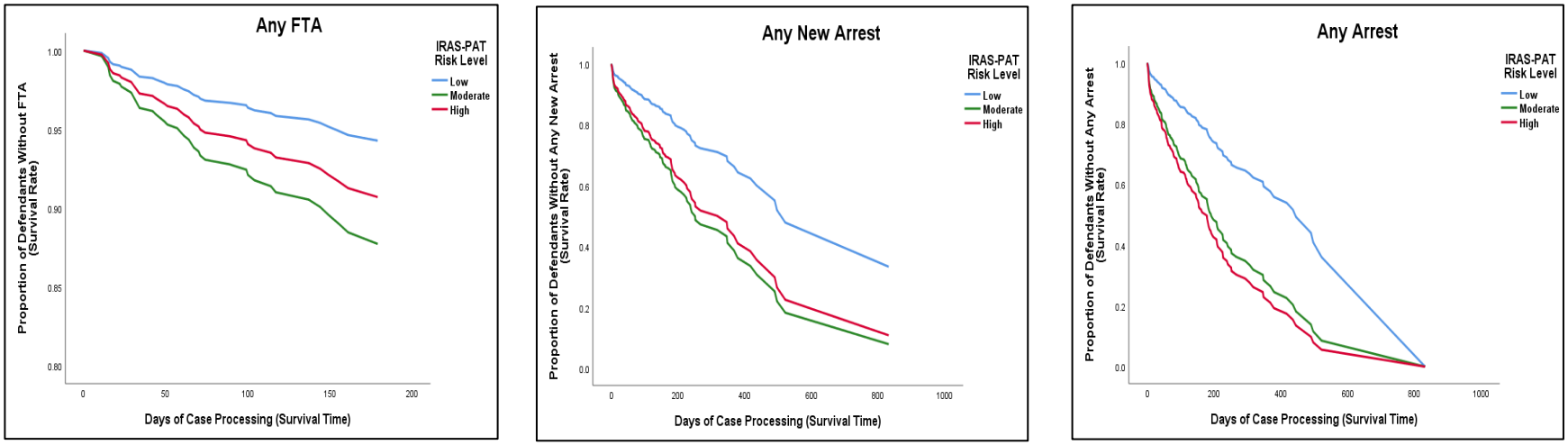

Figure 6. Survival Curves by IRAS-PAT Risk Level and Case Outcome

Item-Level Analysis

In Table 4, we present results of logistic regression models of IRAS-PAT items predicting case outcomes. Across outcomes, the strongest and, on average, most consistent item-level predictors included three or more prior incarcerations (Item 3), unemployment (relative to full-time employment; Item 4), and illegal drug use in the past six months (Item 6). 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. A recent history of at least one FTA (relative to no FTA; Item 2) and severe drug use problem (Item 7) did not contribute uniquely to the prediction of any of the three assessed pretrial misconduct outcomes.

Predictor	Case Outcomes													
	FTA *N* = 834					Any New Arrest *N* = 834					Any Arrest *N* = 834				
	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+)	0.26	0.63	0.17	1.30	[0.38, 4.50]	0.97	0.44	4.79*	2.64	[1.11, 6.30]	0.68	0.36	3.56‡	1.97	[0.97, 3.99]
Number of FTAs – 1 (None)[a]	0.22	0.56	0.15	1.24	[0.41, 3.76]	0.19	0.36	0.29	1.21	[0.60, 2.45]	0.11	0.34	0.11	1.12	[0.57, 2.20]
Number of FTAs – 2+ (None)	-	-	-	-	-	0.06	0.91	0.01	1.07	[0.18, 6.33]	1.10	0.94	1.38	3.00	[0.48, 18.76]
Three+ Prior Incarcerations (No)	0.41	0.34	1.45	1.50	[0.78, 2.90]	0.70	0.19	13.14***	2.01	[1.38, 2.92]	0.89	0.18	24.05***	2.44	[1.71, 3.48]
Employed – Part time (Full-Time)	0.81	0.48	2.88‡	2.24	[0.88, 5.69]	0.30	0.27	1.26	1.35	[0.80, 2.26]	0.48	0.25	3.79‡	1.61	[1.00, 2.61]
Employed – Not Employed (Full-Time)	1.23	0.35	12.18***	3.42	[1.72, 6.84]	0.26	0.20	1.70	1.30	[0.88, 1.92]	0.53	0.19	8.22**	1.70	[1.18, 2.45]
Residential Stability (In Residence 6 Mo)	0.10	0.33	0.08	1.10	[0.57, 2.11]	0.31	0.19	2.78‡	1.36	[0.95, 1.96]	0.35	0.17	4.02*	1.42	[1.01, 1.99]
Illegal Drug Use 6 Months (No)	0.19	0.32	0.33	1.20	[0.64, 2.27]	0.56	0.19	8.78**	1.74	[1.21, 2.52]	0.50	0.18	8.01**	1.64	[1.17, 2.31]
Severe Drug Use Problem (No)	-1.82	1.04	3.06‡	0.16	[0.02, 1.25]	0.23	0.31	0.55	1.26	[0.68, 2.32]	0.44	0.30	2.16	1.56	[0.86, 2.80]
Time at Risk	<0.01	<0.01	4.29*	1.00	[1.00, 1.01]	<0.01	<0.01	8.86**	1.00	[1.00, 1.00]	<0.01	<0.01	5.84*	1.00	[1.00, 1.00]

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

a. The rate for Number of FTAs – 2+ was low which caused the estimate to be unstable. As such, this IRAS-PAT item was dichotomized as Number of FTAs – 1+ (None) for the FTA outcome only.

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

SUMMARY OF FINDINGS

Overall, several findings emerge from the present investigation:

- IRAS-PAT total scores show consistently good levels of predictive validity for any arrest, new arrest, and FTA.
- IRAS-PAT risk estimates were strong predictors of any arrest, in particular.
- In the prediction of new arrest and FTA, high and moderate risk classifications showed similar predictive accuracy (i.e., the rates of failure were comparable). However, there were few defendants classified at high risk overall.
- Unique item-level predictors included Item 3 (prior incarcerations), Item 4 (employment), and Item 6 (illegal drug use).
- One-third of defendants classified at moderate and high risk levels experienced misconduct prior to case disposition (defined as an FTA or new arrest during the pretrial processing period).

CONCLUSION

The purpose of this report was to examine the ability of the IRAS-PAT to predict pretrial misconduct in Allen County across a two and a half year period of pretrial operations. As noted, the IRAS-PAT accurately predicts pretrial outcomes in Allen County and meets or exceeds conventional performance standards for tools designed to assess risk of supervision violation and new offense (Desmarais & Singh, 2013). The IRAS-PAT was able to identify, differentiate, and place Allen County's pretrial population into appropriate risk classifications based on the population's likelihood for any arrest, in particular. Defendants classified as high risk were most likely to be arrested and were followed, in descending order, by defendants classified as moderate and low risk. For FTA and new arrest, failure rates were similar among defendants classified at moderate and high risk. IRAS-PAT items corresponding to employment, drug use, and prior misconduct were significant drivers to the overall predictive accuracy of assessments.

We found slightly lower predictive accuracy for IRAS-PAT risk classifications on FTA outcome. Specifically, there were no substantial differences between the defendants classified as high risk and moderate risk with respect to FTA rates. However, the number of cases classified as high risk is small for statistical estimation purposes and may be unstable. Additionally, the overall rate of FTA was lower in this study relative to other county-level validations from Indiana. The low rate of FTA could reflect that the IRAS-PAT was being used to assess defendants for pretrial supervision recommendations. Presumably, defendants who were assessed at high risk may have been more likely to have received more intense supervision, thereby decreasing the rate of FTA in this risk strata. Additionally, despite the specific target population for Allen County's pretrial pilot program (i.e., F5 or F5 warrantless arrestees), most defendants in this sample were booked on misdemeanor-level charges. As a result, this sample may have been lower risk overall, which may have resulted in a lower FTA rate and few defendants classified at high risk. Unfortunately, both of these issues highlight an inherent limitation of validating risk assessments as part of routine practice. The application of eligibility criteria to decide who receives an assessment as well as the use of a tool to inform subsequent intervention—particularly for defendants classified at high risk—may alter the predictive accuracy of the assessments.

The overall results must be interpreted with additional considerations. One of the concerns of the administration of pretrial risk assessment tools is their ability to classify defendants regardless of race, ethnicity, or sex (VanNostrand, 2007). To examine whether the IRAS-PAT produces similar predictive results among Allen County's demographic subgroups requires years of ongoing IRAS-PAT data collections and disproportionate sampling techniques to generate adequate samples. Our research design is unable to produce sufficient subsamples that would allow us to replicate each of the statistical analysis reported here by demographic subgroup and draw sound conclusions about the predictive validity of the IRAS-PAT across subgroups.

Congruent with other studies of pretrial risk assessment tools (see, for instance, Baglivio et al., 2019; Barno et al., 2019), defendants who were unable to satisfy bond conditions and secure release from jail were not included in the sample. This pool of defendants were likely classified at higher levels of risk than the sample, faced more serious felony charges, and plausibly would have contributed to pretrial misconduct outcomes if released to the community prior to court disposition. Since the pretrial behaviors of these defendants cannot be observed, it is possible that the performance of the IRAS-PAT in Allen County is conservatively estimated in general and specifically for high risk defendants.

Relatedly, we were unable to explore the mechanisms that released defendants from jail (i.e., release on own recognizance, release to local bond schedule [surety and cash], or release to specific pretrial supervision conditions) and how these decisions shaped pretrial misconduct outcomes. For instance, Barno et al. (2019) found that defendants ordered to non-monetary pretrial supervision were less likely to FTA in relation to defendants who posted cash bail and opted-out of the pretrial supervision option. Allen County's pretrial operations may have tempered or amplified the predictive validity of IRAS-PAT. This is particularly relevant given our inclusion of defendants who received the IRAS-PAT not as part of pretrial release decision-making, but as part of pretrial supervision planning following entry into the community.

Our ability to link relevant Allen County pretrial services, court, jail, and risk assessment records was bound by the variables or fields captured across three different record management systems. While we are confident in the matched records we produced for this analysis, we are unable to speak to the generalizability of the sample to the population of Allen County's pretrial defendants released from jail and are awaiting court disposition. It is likely that some defendants who were eligible to be part of the validation sample were excluded due to unavailable records or information that was not recorded in a manner that would facilitate cross-system merging of records.

Despite these limitations, the current study demonstrates that the IRAS-PAT is a valid tool for predicting new arrests in Allen County and provides preliminary support for the prediction of FTA and new arrest outcomes. The findings begin to establish a critical IRAS-PAT performance baseline for Indiana practitioners as this study is one of the first formal validations of the IRAS-PAT using a sample of defendants from Indiana, assessment scores generated from actual IRAS-PAT assessments, and a third-party research partner who was not involved in the design or development of the IRAS suite.

REFERENCES

Austin, J., Bhati, A., Jones, M., & Ocker, R. (2010). *Florida Pretrial Risk Assessment Instrument* (p. 17). Denver, CO: The JFA Institute.

Austin, J., Ocker, R., & Bhati, A. (2010). *Kentucky Pretrial Risk Assessment Instrument validation*. Denver, CO: The JFA Institute.

Baglivio, M., Wolff, K. T., & Jackowski, K. (2019). The usefulness of the general risk assessment, the static risk assessment, in predicting pretrial failure: Examining predictive ability acorss gender and race. *Justice Evaluation Journal*. DOI: 10.1080/24751979.2019.1668242

Barno, M., Nevarez Martinez, D., & Williams, K. R. (2019). Exploring alternatives to cash bail: An evaluation of Orange County's pretrial assessment and release supervision program. *American Journal of Criminal Justice*. DOI: 10.1007/s12103-019-09506-3.

Cadigan, T. P., & Lowenkamp, C. T. (2011). Implementing risk assessment in the federal pretrial services system. *Federal Probation*, *75*, 30.

DeMichele, M., Baumgartner, P., Barrick, K., Comfort, M., Scaggs, S., & Misra, S. (2018). *What do criminal justice professionals think about risk assessment at pretrial?* (SSRN Scholarly Paper No. ID 3168490). Rochester, NY: Social Science Research Network. Retrieved from https://papers.ssrn.com/abstract=3168490

Desmarais, S. L. & Singh, J. P. (2013). *Risk assessment instruments validated and implemented in correctional settings in the United States*. Lexington, KY: Council of State Governments.

Grommon, E., Ray, R., Sapp, D., & Thelin, R. (2017). *Process evaluation of the IRAS-PAT pilot program implementation*. Indianapolis, IN: Center for Criminal Justice Research, Public Policy Institute, Indiana University.

Latessa, E. J., Lemke, R., Makarios, M., Smith, p., & Lowenkamp, C. T. (2010). The creation and validation of the Ohio Risk Assessment System (ORAS). *Federal Probation*, *74*(1), 16.

Latessa, E. J., Smith, P., Lemke, R., Makarios, M., & Lowenkamp, C. T. (2009). *Creation and validation of the Ohio Risk Assessment Sytem: Final report*. Cincinnati, OH: Center for Criminal Justice Research, School of Criminal Justice, University of Cincinnati. Retrieved from http://www.uc.edu/content/dam/uc/ccjr/docs/reports/project_reports/ORAS_Final_Report.pdf

Latessa, E., Lovins, B., & Makorios, M. (2013). *Validation of the Indiana Risk Assessment System: Final report*. Cincinnati, OH: Center for Criminal Justice Research, School of Criminal Justice, University of Cincinnati.

Minton, T. D., Ginder, S., Brumbaugh, S. M., Smiley-McDonald, H., & Rohloff, H. (2015). *Census of jails: Population changes, 1999-2013* (No. NCJ 248627) (p. 22). Washington, D.C.: Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice.

Stevenson, M. T. (2018). *Assessing risk assessment in action* (SSRN Scholarly Paper No. ID 3016088). Rochester, NY: Social Science Research Network. Retrieved from https://papers.ssrn.com/abstract=3016088

Stevenson, M. T., & Mayson, S. G. (2017). *Bail reform: New directions for pretrial detention and release* (SSRN Scholarly Paper No. ID 2939273). Rochester, NY: Social Science Research Network. Retrieved from https://papers.ssrn.com/abstract=2939273

VanNostrand, M. (2007). Legal and evidence-based practices: Applications for legal principles, laws, and research to the field of pretrial services. Washington, DC: National Institute of Corrections.

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. On average, Black and White defendants classified at high risk had similar levels of pretrial misconduct. However, Black defendants classified at moderate and low risk had slightly higher 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	8 (6.7)	6 (2.3)	14 (10.2)	13 (6.7)	2 (6.9)	1 (5.0)
Any New Arrest	22 (18.5)	30 (11.3)	45 (32.8)	64 (33.2)	9 (31.0)	5 (25.0)
Any Arrest	31 (26.1)	37 (14.0)	62 (45.3)	74 (38.3)	13 (44.8)	10 (50.0)

Note. 7.5% of defendants (n = 77) identified with other racial or ethnic groups or had racial identities that were unknown.

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

Sex. As shown in Table 6, male defendants, relative to female defendants, had higher rates of pretrial misconduct at each risk level, with the exception of the rate of any new arrest for defendants classified at low risk. As shown, female defendants classified at high risk had a lower proportion of pretrial misconduct 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	11 (3.8)	4 (2.8)	24 (9.0)	4 (4.6)	3 (7.3)	0 (0.0)
Any New Arrest	35 (12.1)	21 (14.7)	87 (32.7)	23 (26.4)	13 (31.7)	1 (12.5)
Any Arrest	49 (17.0)	23 (16.1)	113 (42.5)	27 (31.0)	20 (48.8)	3 (37.5)

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

Age. For the purposes of comparison, we grouped defendants ages 17-35 as well as defendants who were 36 and older. As shown in Table 7, adults ages 17-35 at low and moderate risk levels had higher rates of pretrial misconduct across all outcomes relative to adults ages 36 and older, However, adults ages 36 and older classified at high risk had higher rates of pretrial misconduct across all outcomes relative to adults ages 17-35 classified at high risk.

Case Outcomes	Risk Level					
	Low		Moderate		High	
	17-35	36+	17-35	36+	17-35	36+
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Any FTA	9 (3.8)	6 (3.1)	21 (8.5)	7 (6.5)	1 (3.3)	2 (10.5)
Any New Arrest	36 (15.3)	20 (10.2)	79 (32.1)	31 (29.0)	7 (23.3)	7 (36.8)
Any Arrest	42 (17.8)	30 (15.3)	98 (39.8)	42 (39.3)	11 (36.7)	12 (63.2)

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, felony defendants at each risk level had, on average, higher rates of pretrial misconduct across arrest outcomes relative to misdemeanor defendants, with the exception of the rate of any new arrest for defendants classified at high risk. However, misdemeanor defendants at each risk level had higher rates of FTAs relative to felony defendants.

Case Outcomes	Risk Level					
	Low		Moderate		High	
	Misdemeanor	Felony	Misdemeanor	Felony	Misdemeanor	Felony
Any FTA	15 (5.3)	0 (0.0)	27 (16.5)	1 (0.5)	3 (18.8)	0 (0.0)
Any New Arrest	35 (12.3)	21 (14.3)	36 (22.0)	74 (39.2)	5 (31.3)	9 (27.3)
Any Arrest	40 (14.0)	32 (21.8)	45 (27.4)	95 (50.3)	6 (37.5)	17 (51.5)

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