# GRANT 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 the 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 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, 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 **Grant 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

In accordance with national trends, the state of Indiana reported the highest local incarceration rate of all midwestern states in 2013 (330 per 100,000 residents), representing a 15% increase over incarceration rates recorded in 1999. Indiana's local jail capacity (83.2% capacity) was second to only Ohio for midwestern jurisdictions at year-end 2013 (Minton et al., 2015). In response to these trends, the Indiana Supreme Court founded the Committee to Study Evidence-Based Pretrial Release. This Committee was charged with developing and evaluating evidence-based pretrial release practices, and 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 was drawn from Grant County, located in central Indiana. The county seat is located in Marion. Grant County has a population of 65,769 (2019 estimate). Grant County began its pilot program in August 2017. Individuals who are arrested and booked into jail are assessed within 24 to 48 hours. Grant County initially targeted its pilot program to new arrestees who were booked and charged with a maximum felony level 6 offense. However, in March 2019, the

County expanded eligibility to include other felony cases and misdemeanor cases. All assessments occur prior to initial court appearance. The study period for this validation ran from August 1st, 2017 through March 31st, 2019. The follow-up period for Grant County was defined by each defendant's pretrial processing period, from date of jail release to court disposition. However, all defendants were required to have their case disposed by March 31st, 2020.

**Data Sources**

Data for this validation came from several administrative data sources. Grant County staff provided internal assessment records conducted during an initial episode of incarceration. This file included IRAS-PAT total scores, risk levels, item-level scores, cause numbers, and arrest dates. We received additional jail records with information on booking dates, release dates, and charges for the study and follow-up period (i.e., August 1st, 2017 through March 31st, 2020). We received court case information from INcite, containing case records and FTA data. Particularly for FTAs, we manually consulted case notes in Indiana's MyCase (Office of Judicial Administration, 2020) for all defendants where information could not be located in administrative files.

**Data Cleaning**

First, we created unique identifiers based on an individual's name, year of birth, and arrest date. This unique identifier was used to link Grant County assessment records to a jail booking record. Using arrest dates recorded in internal pretrial data (INcite), we linked assessments to jail data based on jail booking dates occurring the day before or up to three days following arrest. The reason for this interval was to allow for data entry irregularities. For a significant portion of assessments, we were unable to identify a corresponding jail record. As a result, Grant County staff assisted in reviewing arrest and assessment dates to identify assessments that were conducted but deviated from pilot protocols for assessment (see exclusion notes below). Once we identified a booking record for each assessment, we used the court cause number to link to administrative Odyssey court case records.

The sample creation process is detailed in Figure 1. Grant County initially provided us with 994 assessments conducted between August 1st, 2017 and March 31st, 2019. However, because the County was piloting its pretrial practices during 2017 and part of 2018, there were assessments that were conducted inconsistent with internal procedures. These included 60 assessments for whom the individual was not eligible for the pilot, 48 assessments where the individual was assessed at a later date because pretrial services did not exist at the time of initial arrest, and 35 assessments that were conducted more than 9 days prior to or following an initial arrest. Upon recommendation from pretrial staff, we removed these assessments from the sampling frame. Following these exclusions, we had a sampling frame of 851 assessments conducted between

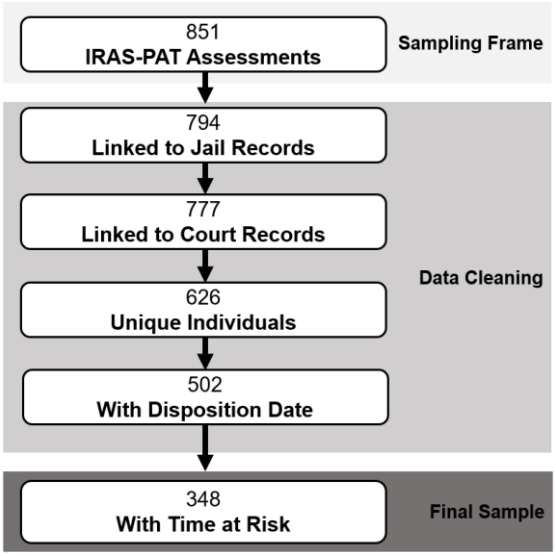


**Figure 1. Sample Creation Process**

August 1st, 2017 and March 31st, 2019. Of these assessments, we were able to identify a jail booking for 794 assessments. We linked 777 assessments to court case records contained in administrative Odyssey data. Of these 777 cases, 151 were removed due to being duplicate assessments, ensuring we maintained the first assessment for each individual only. We removed an additional 124 individuals from the sample due to no disposition date by the end of the study period. We manually triaged all of these cases by examining case notes on Indiana's MyCase; the vast majority of these individuals were participating in a diversion program while in the community and thus had a longer case processing time. Of the remaining 502 individuals, we removed 154 whose cases were disposed during the initial period of detention (i.e., the defendant had no time at risk in the community). The final sample included 348 unique defendants who were booked into jail, assessed during the study period, and released into the community prior to court case disposition.

**Sample**

The final validation sample for Grant County consisted of 348 defendants who were on pretrial release in the community. The average age at booking was 33.79 years old (*SD* = 10.21, Range: 18 to 67). Defendants were mostly male (*n* = 234, 67.2%; female: *n* = 114, 32.8%) and White (*n* = 278, 79.9%; Black: *n* = 57, 16.4%; Hispanic: *n* = 12, 3.5%; Other: *n* = 1, 0.3%). The average charge level associated with arrests was 5.83, which corresponds to a Level 6 felony. The average time defendants spent in the community between release and case disposition was 208.16 days (*SD* = 165.83, Range: 3 to 891).

**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.* All defendants had item-level data available.

**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 triangulated FTA records using internal pretrial statistics collected from INcite/SRS as well as public case records on Indiana MyCase using individual case numbers. We recorded the number of FTAs resulting in a warrant that occurred in between release and disposition dates, along with the date for the first 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 due to re-arrest, between the release date and case disposition date. On average, defendants were at risk in the community for 164.05 days (*SD* = 148.49, Range: 1 to 852).

**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.** Defendants on average scored 4.48 (*SD* = 1.86, Range: 0 to 9) on the IRAS-PAT. This corresponds to a Moderate risk level. The frequency distribution of risk scores is displayed in Figure 2. Defendants were assessed at a relatively Moderate risk, with slightly over half of the risk scores falling between 3 and 5 (52.3%).

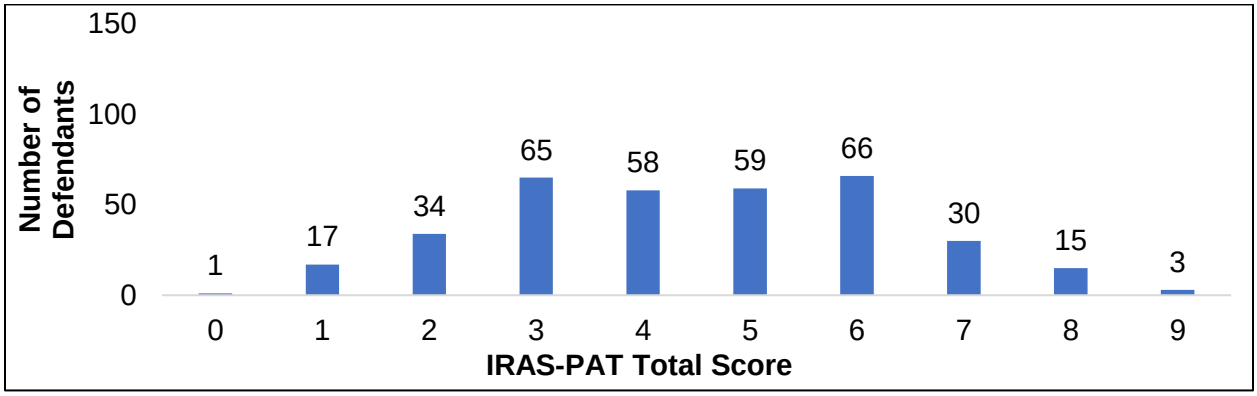


**Figure 2. Frequency of IRAS-PAT Total Scores**

We present the distribution of defendants across risk levels in Figure 3. As shown, the majority of the defendants were at Moderate risk (*n* = 182, 52.3%), followed by High risk (*n* = 114, 32.8%), and Low risk (*n* = 52, 14.9%).

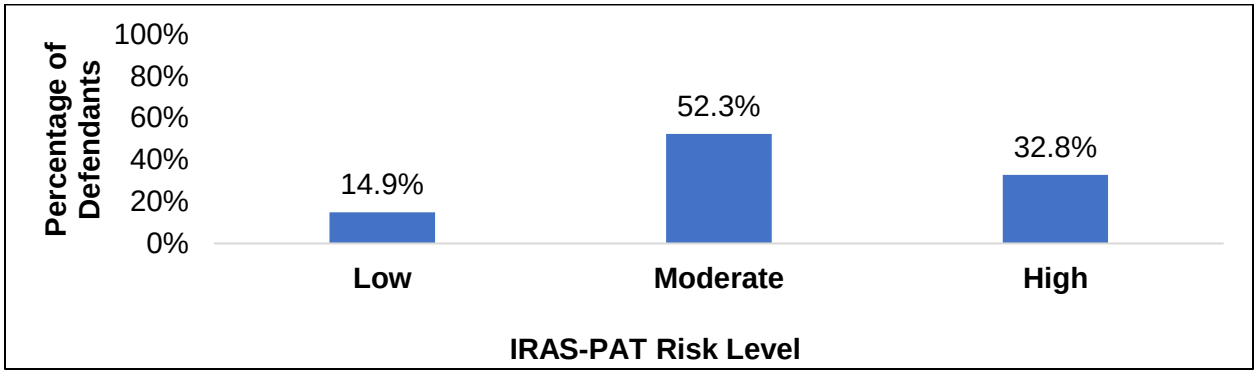


**Figure 3. Frequency of IRAS-PAT Risk Level**

**Pretrial Misconduct Outcomes.** Approximately 15.2% (*n* = 53) of the defendants failed to appear for any court hearing following jail release but prior to case disposition. Additionally, approximately, 36.5% (*n* = 127) of the defendants were arrested on a new charge between jail release and case disposition. Almost half of the defendants were arrested on any pretrial misconduct however (including any new arrest), with 46.3% (*n* = 161) of defendants being booked into jail for any offense.

## Crosstabulations of Risk Level and Pretrial Misconduct Outcomes

We present a crosstabulation of risk level with pretrial misconduct outcomes in Table 1. Overall, rates of pretrial misconduct were lowest for individual assessed at Low risk. Rates of rearrest (both any new arrest and any arrest) were highest for individuals assessed at High risk. However, rates of any FTA were highest for individuals at Moderate risk. For defendants who had an FTA for any court hearing, Moderate risk defendants who were released into the community on average failed to appear sooner ($M$ = 109.00 days, $SD$ = 89.54) than High ($M$ = 113.11 days, $SD$ = 134.80) and Low risk defendants ($M$ = 124.83 days, $SD$ = 112.13). Similarly, defendants assessed at High risk were rearrested on a new offense between initial release and court case disposition quicker ($M$ = 104.40 days, $SD$ = 122.96) than defendants assessed at Moderate ($M$ = 111.46 days, $SD$ = 103.75) and Low risk ($M$ = 137.50 days, $SD$ = 93.26). Among defendants arrested on any pretrial misconduct, High risk defendants were booked soonest ($M$ = 88.89 days, $SD$ = 91.74). However, Low risk defendants were booked on any pretrial misconduct sooner ($M$ = 128.40 days, $SD$ = 85.34) than Moderate risk defendants ($M$ = 135.14 days, $SD$ = 142.03). Among all defendants, the length of time between pretrial release and case disposition was positively associated with any FTA ($r$[346] = .14, $p < .05$) and any arrest ($r$[346] = .12, $p < .05$), but not for any new arrest.

| Pretrial Misconduct Outcomes | Risk Level | | | | | | Comparison | |
|---|---|---|---|---|---|---|---|---|
| | Low | | Moderate | | High | | | |
| | *n* | % | *n* | % | *n* | % | $X^2$ (df) | Cramer's V |
| Any FTA | 6 | 11.5 | 28 | 15.4 | 19 | 16.7 | 0.73 (2) | 0.05 |
| Any New Arrest | 8 | 15.4 | 65 | 35.7 | 54 | 47.4 | 15.86*** (2) | 0.21 |
| Any Arrest | 10 | 19.2 | 81 | 44.5 | 70 | 61.4 | 26.02*** (2) | 0.27 |
| Any Pretrial Misconduct (with Any New Arrest) | 11 | 21.2 | 80 | 44.0 | 62 | 54.4 | 16.01*** (2) | 0.21 |
| Any Pretrial Misconduct (with Any Arrest) | 12 | 23.1 | 85 | 46.7 | 72 | 63.2 | 23.50*** (2) | 0.26 |

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

**Table 1. Crosstabulations of Risk Levels and Pretrial Misconduct Outcomes**

## Predictive Validity Analyses

**AUC of the ROC.** AUC values were 0.56 (*SE* = 0.04, 95% CI: 0.48 – 0.64) for any FTA, 0.65 (*SE* = 0.03, 95% CI: 0.59 – 0.70) for any new arrest, and 0.66 (*SE* = 0.03, 95% CI: 0.61 – 0.72) for any arrest. These values correspond to a fair, but non-significant, level of predictive validity for any FTA and good levels of predictive accuracy for any new arrest and any 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. Each 1-point increase in IRAS-PAT risk score was associated with a 1.33 times increase in the likelihood of any new arrest and a 1.41 times increase in the likelihood of any arrest. However, IRAS-PAT total scores did not significantly predict any FTA. Similarly, IRAS-PAT risk levels were unable to differentiate between the likelihood of FTA for Low, Moderate, or High risk defendants. In the detection of any new arrest, defendants at Moderate and High risk were more likely to be arrested relative to defendants at Low risk. More specifically, defendants at Moderate risk were 3.06 times more likely to be arrested on a new offense, and defendants at High risk were 4.95 times more likely to be arrested on a new offense compared to defendants at Low risk. Similarly, the IRAS-PAT risk levels were able to better differentiate the likelihood of any arrest for High risk defendants relative to Low risk defendants (OR = 7.07) than for Moderate risk defendants compared to Low risk defendants (OR = 3.31).

| 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 | 0.14 | 0.09 | 2.74 | 1.15 | [0.97, 1.36] | 0.28 | 0.06 | 19.15*** | 1.33 | [1.17, 1.51] | 0.34 | 0.07 | 27.70*** | 1.41 | [1.24, 1.61] |
| Time at Risk | <0.01 | <0.01 | 13.22** | 1.00 | [1.00, 1.00] | <0.01 | <0.01 | 0.06 | 1.00 | [1.00, 1.00] | <0.01 | <0.01 | 7.66** | 1.00 | [1.00, 1.00] |
| Risk Level | | | | | | | | | | | | | | | |
| High (Low) | 0.49 | 0.51 | 0.93 | 1.64 | [0.60, 4.47] | 1.60 | 0.43 | 13.98*** | 4.95 | [2.14, 11.45] | 1.96 | 0.41 | 23.20*** | 7.07 | [3.19, 15.69] |
| Moderate (Low) | 0.28 | 0.49 | 0.32 | 1.32 | [0.59, 3.46] | 1.12 | 0.41 | 7.26** | 3.06 | [1.36, 6.89] | 1.20 | 0.39 | 9.64** | 3.31 | [1.56, 7.06] |
| Time at Risk | <0.01 | <0.01 | 12.44*** | 1.00 | [1.00, 1.00] | <0.01 | <0.01 | <0.01 | 1.00 | [1.00, 1.00] | <0.01 | <0.01 | 6.50* | 1.00 | [1.00, 1.00] |

*Note*. *$p$ < .05 **$p$ < .01. ***$p$ < .001. OR = odds ratio. $N$ = 348.

**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. Each 1-point increase in the IRAS-PAT was associated with a 1.25 increase in the hazard of any new arrest and a 1.29 increase in the hazard of any arrest. Risk levels successfully predicted the hazard of both arrest outcomes (HR range: 2.24 – 4.32), but neither total scores nor risk levels significantly predicted the hazard of any FTA.

| 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 | 0.08 | 0.08 | 0.34 | 1.08 | [0.93, 1.26] | 0.22 | 0.05 | 20.01*** | 1.25 | [1.13, 1.38] | 0.25 | 0.04 | 32.84*** | 1.30 | [1.18, 1.41] |
| Risk Level | | | | | | | | | | | | | | | |
| High (Low) | 0.18 | 0.47 | 0.15 | 1.20 | [0.48, 3.03] | 1.21 | 0.38 | 10.13** | 3.34 | [1.59, 7.02] | 1.46 | 0.34 | 18.64*** | 4.32 | [2.22, 8.40] |
| Moderate (Low) | 0.12 | 0.45 | 0.07 | 1.13 | [0.47, 2.73] | 0.80 | 0.37 | 4.61* | 2.24 | [1.07, 4.66] | 0.81 | 0.34 | 5.77* | 2.24 | [1.16, 4.32] |

*Note*. *$p$ < .05 **$p$ < .01. ***$p$ < .001. HR = hazard ratio. $N$ = 347.

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

Figure 4 shows the survival curves by IRAS-PAT risk level and outcome. 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 was little to no difference in survival curves across risk levels for any FTA. However, survival curves showed good separation for any new arrest and any arrest, providing evidence of predictive validity of risk levels.

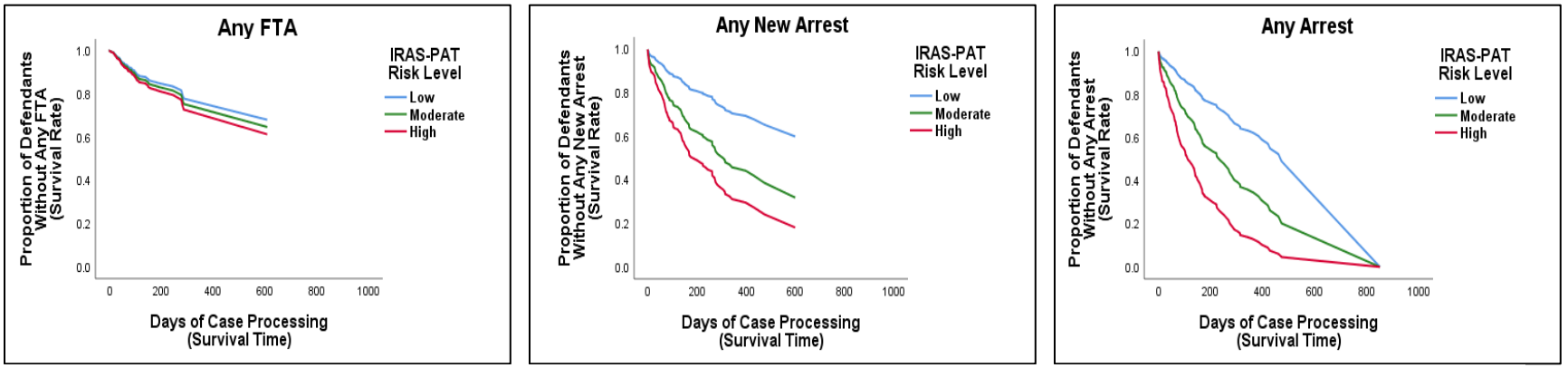


**Figure 4. Survival Curves by IRAS-PAT Risk Level and Pretrial Misconduct Outcome**

## Item-Level Analysis

We present the results of logistic regression models of IRAS-PAT items predicting pretrial misconduct outcomes in Table 4. As shown, no single IRAS-PAT item contributed to the prediction of FTAs. However, Item 3 (3+ prior incarcerations) contributed to the prediction of any new arrest. For the prediction of any arrest, Item 7 (severe drug use problem) was a significant and unique predictor. However, these findings may reflect the relatively small number of defendants included in the sample, as well as the charge levels of defendants included in the sample. As a result, we conducted additional descriptive statistics, presented in Figure 5.

## Item-Level Analysis

| 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+) | 0.37 | 0.79 | 0.21 | 1.44 | [0.31, 6.80] | 0.49 | 0.60 | 0.67 | 1.64 | [0.50, 5.35] | 0.96 | 0.61 | 2.49 | 2.61 | [0.79, 8.59] |
| Number of FTAs – 1 (None) | 0.47 | 0.40 | 1.39 | 1.60 | [0.73, 3.49] | 0.34 | 0.31 | 1.16 | 1.40 | [0.76, 2.59] | 0.44 | 0.32 | 1.86 | 1.55 | [0.83, 2.89] |
| Number of FTAs – 2+ (None) | 0.57 | 0.52 | 1.19 | 0.77 | [0.63, 4.94] | -0.05 | 0.41 | 0.02 | 0.95 | [0.42, 2.11] | 0.13 | 0.41 | 0.11 | 1.14 | [0.51, 2.54] |
| Three+ Prior Incarcerations (No) | -0.31 | 0.33 | 0.86 | 0.73 | [0.38, 1.41] | 0.54 | 0.25 | 4.68* | 1.71 | [1.05, 2.78] | 0.48 | 0.25 | 3.81 | 1.61 | [1.00, 2.61] |
| Employed – Part time (Full-Time) | -0.23 | 0.62 | 0.14 | 0.80 | [0.24, 2.67] | 0.24 | 0.41 | 0.34 | 1.27 | [0.57, 2.81] | 0.16 | 0.40 | 0.16 | 1.17 | [0.54, 2.57] |
| Employed – Not Employed (Full-Time) | 0.38 | 0.37 | 1.04 | 1.46 | [0.71, 3.02] | 0.34 | 0.28 | 1.52 | 1.40 | [0.82, 2.41] | 0.38 | 0.27 | 2.03 | 1.46 | [0.87, 2.48] |
| Residential Stability (In Residence 6 Mo) | -0.49 | 0.34 | 2.11 | 0.61 | [0.31, 1.19] | 0.13 | 0.24 | 0.27 | 1.13 | [0.71, 1.82] | 0.05 | 0.24 | 0.04 | 1.05 | [0.66, 1.67] |
| Illegal Drug Use 6 Months (No) | 0.25 | 0.42 | 0.29 | 1.28 | [0.52, 3.19] | 0.31 | 0.35 | 0.82 | 1.37 | [0.69, 2.69] | 0.36 | 0.33 | 1.20 | 1.43 | [0.75, 2.72] |
| Severe Drug Use Problem (No) | 0.16 | 0.42 | 0.14 | 1.17 | [0.51, 2.66] | 0.60 | 0.31 | 3.62 | 1.82 | [0.98, 3.37] | 0.77 | 0.30 | 6.40* | 2.16 | [1.19, 3.92] |
| Time at Risk | <0.01 | <0.01 | 11.20*** | 1.00 | [1.00, 1.00] | <0.01 | <0.01 | 0.01 | 1.00 | [1.00, 1.00] | <0.01 | <0.01 | 6.23* | 1.00 | [1.00, 1.00] |

*Note*. *$p$ < .05 **$p$ < .01. ***$p$ < .001. OR = odds ratio. $N$ = 348..

**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 (white 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) at their first arrest. 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" or "2" 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 1 (age at first arrest), Item 6 (illegal drug use in the past 6 months), and Item 7 (severe drug use problem) were among the most discriminating IRAS-PAT items for all outcomes. Item 5 (residential stability) was the least discriminating item for all outcomes, but particularly for any FTA, where it predicted higher rates of misconduct for those who had been stably housed in the recent 6-month period. Item 1 (age at first arrest) and Item 5 both contributed to lower predictive accuracy for any FTA. Item 2 (number of prior FTAs), which is ordinally scored, was also less discriminating for all outcomes.

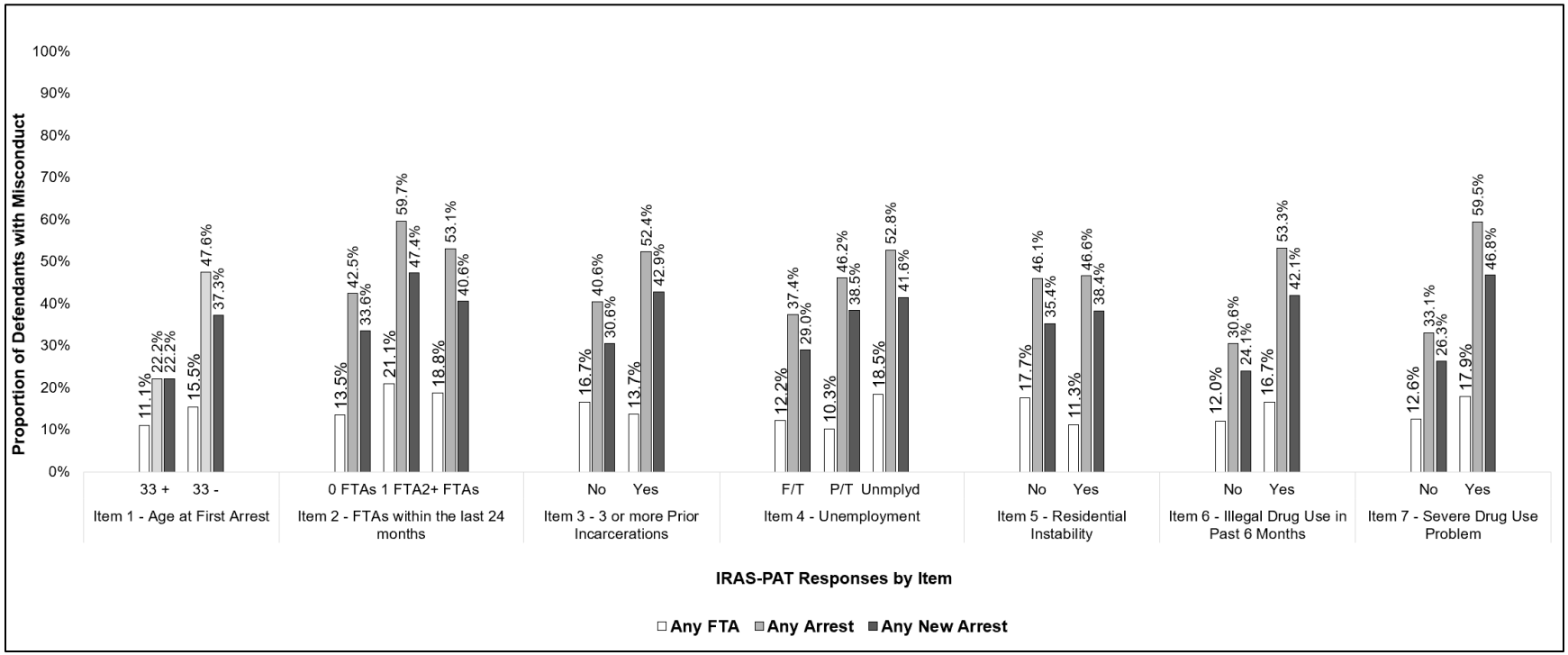


**Figure 5. Rates of Pretrial Misconduct by IRAS-PAT Item Response and Outcome**

## SUMMARY OF FINDINGS

**Overall, several findings emerged from the present investigation:**

- IRAS-PAT assessments were good predictors of any arrest or any new arrest.
- IRAS-PAT assessments did not successfully predict any FTA.
- IRAS-PAT risk levels successfully differentiated between defendants at Low, Moderate, and High risk of pretrial misconduct for arrest outcomes.
- There was little difference in FTA rates between defendants assessed at Moderate versus High risk of pretrial misconduct.
- Item 3 (3+ prior incarcerations) and Item 7 (severe drug use problem) uniquely predicted arrest outcomes. Item-level models overall may have been underpowered to detect significant effects given the sample size ($n$ = 348).
- Roughly two-thirds High risk defendants and half of Moderate risk defendants experienced some type of misconduct prior to the end of case disposition, relative to one-fourth of Low risk defendants.

## DISCUSSION

The purpose of this report was to examine the predictive validity of IRAS-PAT assessments conducted in Grant County, Indiana. Overall, IRAS-PAT assessments—both risk levels and total scores—showed good levels of predictive validity for arrest outcomes. However, there was limited evidence of the predictive validity of IRAS-PAT assessments for any FTA. This could be attributable to the small sample size and limited inclusion of low-risk individuals in the sample. We found some evidence that Item 3 (3+ prior incarcerations) and Item 7 (severe drug use problem) uniquely predicted arrest outcomes; however, the small overall sample size limited conclusions about item-level performance. Descriptive item-level trends suggested Item 1 (age at first arrest), Item 6 (illegal drug use), and Item 7 (severe drug use problem) were best able to differentiate between those who did and did not go on to commit misconduct. Below we discuss findings in further detail.

IRAS-PAT assessments were good predictors of any arrest and any new arrest. Rates of these outcomes were slightly higher than other pilot counties, likely attributable to the felony level 6 target population during the initial pilot phase. However, despite these higher rates, IRAS-PAT risk levels and total scores successfully differentiated between individuals at higher and lower risk of re-arrest. Importantly, IRAS-PAT assessments were fairly comparable predictors of both any arrest and any new arrest, whereas validation findings in other Indiana counties have shown IRAS-PAT assessments to produce slightly weaker predictions of any new arrest relative to any arrest (Lowder et al., 2020).

Despite good performance in predicting re-arrest, IRAS-PAT assessments did not significantly predict likelihood of any FTA. These findings were consistent for both total scores and risk levels. Descriptive findings showed that low predictive validity for any FTA was driven by similar rates of FTA failure among Moderate (15.4%) and High risk (16.7%) defendants. Furthermore, there were few Low risk defendants overall in the sample and those that were included had fairly high rates of any FTA (11.5%). These findings could reflect potential intervention in the community that may have disproportionately influenced FTA rates for

defendants at a specific risk level. The potential for external influences (e.g., interventions) to influence measurement of an outcome is a common problem in the validation of risk assessments in practice (Douglas et al., 2011). In Grant County, given pilot eligibility criteria, supervision strategies may have impacted FTA rates for higher risk individuals. Specifically, defendants on high pretrial supervision are the only supervised defendants who receive in-person monitoring. Additionally, although all supervised defendants receive court hearing notifications, defendants on high supervision additionally receive contact information for their attorneys. Improved defendant-attorney communication among higher risk defendants could explain lower FTA rates in this group.

Item-level findings provided some evidence that Item 3 (3+ prior incarcerations) and Item 7 (severe drug use problem) uniquely predicted any arrest. Both prior criminal history and substance use are among the most common risk factors for general recidivism (Gendreau et al., 1996) and assessed on nearly all pretrial risk assessment tools (Desmarais et al., 2020). Descriptive findings similarly showed items measuring criminal history and substance use risk domains best differentiated between defendants who did and did not go on to commit misconduct. These items included Item 1 (age at first arrest), Item 6 (illegal drug use), and Item 7 (severe drug use problem). Conversely, Item 3 (3+ prior incarcerations) and Item 5 (residential instability) predicted in the opposite direction for any FTA and likely contributed to poor performance of IRAS-PAT assessments for the FTA outcome. Item 5 (residential instability) was a weak predictor overall for all outcomes, which could reflect the specific target population of defendants (i.e., charged with felony-level offenses) or broader housing trends in Grant County.

Overall, findings from this validation should be considered in light of several limitations. Primarily, this study involved a small and unique sample of defendants. Specifically, Grant County primarily assessed felony-level 6 defendants during the initial pilot period, which resulted in a slightly higher risk sample overall (only 12.8% of defendants were Low risk). Additionally, several groups of defendants were pilot-eligible but did not meet inclusion criteria for the validation due to specific local practices. A large group of defendants had their cases disposed while they were in initial detention. Another group of individuals were released into the community but did not have a court case disposition by the end of the follow-up period. Investigation into these cases suggested that these individuals were participating in diversion programs while in the community. As a result, these unique features of case processing in Grant County decreased the overall sample size. Notably, despite the exclusion of these individuals from the sample, there was still good performance of IRAS-PAT assessments for arrest outcomes and the overall sample distribution of risk assessment scores did not differ noticeably from that of the sampling frame (*M* score = 4.71, *SD* = 1.81, Range: 0 to 9). In other words, the sample was a good representation of the overall distribution of risk scores in all pilot eligible assessments.

Overall, this investigation provides initial support for the predictive utility of IRAS-PAT assessments in Grant County. IRAS-PAT assessments predicted any arrest and any new arrest outcomes with good accuracy. However, IRAS-PAT assessments did not predict likelihood of any FTA for possible reasons discussed herein.

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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 and highest charge level. Because few defendants in specific demographic subgroups (i.e., Black defendants) classified at High risk, we present these breakdowns for descriptive purposes only.

### Results

**Race.** As shown in Table 5, there were some differences in rates of misconduct between Black and White defendants across risk levels and outcomes. Across all outcomes (any FTA, any new arrest, and any arrest), Low and High risk Black defendants had lower rates of pretrial misconduct than White defendants. However, Black defendants assessed at Moderate risk had higher rates of pretrial misconduct across all outcomes comparatively to White defendants assessed at Moderate risk.

| Pretrial Misconduct Outcomes | Risk Level | | | | | |
|---|---|---|---|---|---|---|
| | Low | | Moderate | | High | |
| | Black | White | Black | White | Black | White |
| | *n* (%) | *n* (%) | *n* (%) | *n* (%) | *n* (%) | *n* (%) |
| Any FTA | 1 (9.1) | 5 (13.5) | 7 (20.6) | 21 (15.0) | 0 (0.0) | 18 (17.8) |
| Any New Arrest | 1 (9.1) | 7 (18.9) | 15 (44.1) | 50 (35.7) | 5 (41.7) | 48 (47.5) |
| Any Arrest | 2 (18.2) | 8 (21.6) | 18 (52.9) | 63 (45.0) | 7 (58.3) | 62 (61.4) |

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

**Sex.** As shown in Table 6, male defendants typically had higher re-arrest rates (any new arrest and any arrest) at all risk levels compared to female defendants. For any FTA, female defendants assessed at Low and High risk had higher rates of FTA relative to male defendants classified at Low and High risk.

| Pretrial Misconduct Outcomes | Risk Level | | | | | |
|---|---|---|---|---|---|---|
| | Low | | Moderate | | High | |
| | Male | Female | Male | Female | Male | Female |
| | *n* (%) | *n* (%) | *n* (%) | *n* (%) | *n* (%) | *n* (%) |
| Any FTA | 4 (10.3) | 2 (15.4) | 22 (17.5) | 6 (10.7) | 6 (8.7) | 13 (28.9) |
| Any New Arrest | 7 (18.0) | 1 (7.7) | 46 (36.5) | 19 (33.9) | 37 (53.6) | 17 (37.8) |
| Any Arrest | 9 (23.1) | 1 (7.7) | 59 (46.8) | 22 (39.3) | 45 (65.2) | 25 (55.6) |

**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, there were some differences in outcomes across age and risk levels. For any FTA, older adults had higher rates of misconduct across all risk levels. For any new arrest, younger defendants assessed at Low risk had lower rates of misconduct than older defendants assessed at Low risk. Younger defendants at Moderate and High risk had slightly higher rates of any new arrest relative to older defendants at Moderate and High risk levels. Finally, younger defendants had higher rates of any arrest across all risk levels compared to older defendants.

**Age.**

| 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 (10.7) | 3 (12.5) | 15 (14.0) | 13 (17.3) | 13 (15.1) | 6 (21.4) |
| Any New Arrest | 4 (14.3) | 4 (16.7) | 41 (38.3) | 24 (32.0) | 41 (47.7) | 13 (46.4) |
| Any Arrest | 6 (21.4) | 4 (16.7) | 51 (47.7) | 30 (40.0) | 54 (62.8) | 16 (57.1) |

**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, there were few misdemeanor-level defendants overall in the sample. Thus, these rates may not reflect stable estimates of misconduct among defendants with misdemeanor-level charges.

**Charge Level.**

| Pretrial Misconduct Outcomes | Risk Level | | | | | |
|---|---|---|---|---|---|---|
| | Low | | Moderate | | High | |
| | Misdemeanor | Felony | Misdemeanor | Felony | Misdemeanor | Felony |
| | *n* (%) | *n* (%) | *n* (%) | *n* (%) | *n* (%) | *n* (%) |
| Any FTA | 1 (9.1) | 5 (12.2) | 2 (20.0) | 26 (15.1) | 1 (25.0) | 18 (16.4) |
| Any New Arrest | 2 (18.2) | 6 (14.6) | 2 (20.0) | 63 (36.6) | 2 (50.0) | 52 (47.3) |
| Any Arrest | 2 (18.2) | 8 (19.5) | 3 (30.0) | 78 (45.4) | 3 (75.0) | 67 (60.9) |

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