VALIDATION OF THE COMPAS RISK ASSESSMENT CLASSIFICATION INSTRUMENT

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Prepared by:

Thomas Blomberg
William Bales
Karen Mann
Ryan Meldrum
Joe Nedelec

Center for Criminology and Public Policy Research
College of Criminology and Criminal Justice
Florida State University
Tallahassee, Florida

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Introduction

Risk assessments of offenders and offender classifications are important tools for judges, jail and prison administrators, and pretrial service departments. Within the field of criminal justice, risk assessments and offender classifications are utilized in a number of ways, including pretrial decision-making regarding detention/release and bail setting, determining the conditions of community supervision for individuals on probation and parole, and the proper placement of offenders in state and federal prisons with appropriate levels of security. With the advent of the information age and computer technology, risk assessment has undergone a significant transformation from a process that was based on subjective evaluations made by judicial officers to one that is largely objective in nature, based on theoretically informed, standardized statistical methods.

The purpose of this review is to provide an overview of the use and evolution of risk assessment tools in the field of criminal justice, with particular attention given to risk assessment in the context of pretrial decision-making. It begins by providing an account of the recent history of risk assessment within the field of criminal justice, tracing its development from the middle of the twentieth century to its current state at the beginning of the twenty-first century. Next, attention is given to the use of risk assessment tools in the context of pretrial decision-making. Following this, an overview of the research pertaining to the predictive validity of risk assessment tools will be presented, including previous assessments of the COMPAS instrument.

Recent History of Risk Assessment in Criminal Justice

A number of researchers have commented on and provided reviews of the development of risk assessment within the field of criminal justice over the last 50 years (e.g. Andrews, Bonta, and Wormith, 2006; Brennan, Dieterich, and Ehret, 2009; Campbell, French, and Gendreau, 2009; Fass, Heilbrun, Dematteo, and Fretz, 2008). According to researchers in this area of research there are four major "generations" of risk assessment. First generation risk assessment and offender classification, which arose during the middle of the twentieth century, was based on unstructured clinical judgments of risk that were prone to error and bias and lacked statistical calculations of risk (Campbell et al., 2009; Grove, Zald, Lebow, Snitz, & Nelson, 2000). In other words, decisions pertaining to bail setting and the choice to detain an arrestee or release defendants on recognizance pending trial were based on "best guess" assessments made by judicial officers of the risk a particular person posed to the community.

In light of the limitations of relying solely on human judgment to assess risk, second generation risk assessment tools made use of additive point scales (Austin, 1983; Gottfredson, 1987; Hoffman, 1994) comprised of items relating to such things as criminal history and mental illness diagnoses (Campbell et al., 2009). Thus, these second generation tools provided the early foundations for more standardized risk assessment tools that were to follow by incorporating into the risk assessment process quantifiable measures of risk. Despite this important advancement, second generation tools were criticized on the grounds that they were largely devoid of theory, and the relative importance of factors (the weights assigned to different factors) included in such risk

assessment tools was still established by professional consensus rather than through statistical methods (Brennan et al., 2009).

The advent of third generation risk assessment tools improved upon second generation tools by not only making use of standardized, quantitative risk calculations, but also by incorporating theoretically driven factors, particularly those pertaining to social learning theory (Andrews et al., 2006; Brennan et al., 2009). In addition, whereas second generation risk assessment tools only emphasized the need to predict risk, third generation tools also sought to identify criminogenic needs that could be targeted for change as a means of reducing risk (Andrews et al., 2006; Bonta, 2002). Nonetheless, though, third generation tools were criticized for being too theoretically narrow and failing to address such things as gender sensitivity (Andrews et al., 2006; Brennan et al., 2009).

The current generation of risk assessment instruments, termed fourth generation, address a number of the issues with older generation risk assessment tools, and moreover, are specifically designed to be integrated into not only the process of risk management, but also the selection of intervention modes and targets for treatment, as well as the assessment of rehabilitation progress (Andrews and Bonta, 2007; Andrews et al., 2006). Examples of these fourth generation instruments, according to Campbell and colleagues (2009; see also Fass et al., 2008) include the Level of Service/Case Management Inventory (LS/CMI; Andrews, Bonta, and Wormith, 2004), the Violence Risk Scale (VRS; Wong and Gordon, 2006); the Correctional Offender Management Profile for Alternative Sanctions (COMPAS, Brennan and Oliver, 2000), and the Correctional

Assessment and Intervention System (CAIS, National Council on Crime and Delinquency, 2004).

In contrast to third generation tools, which were largely theoretically guided by social learning theory, fourth generation tools are multi-theoretical in content. Moreover, many of the fourth generation tools are uniquely calibrated to take into account the gender of the offender. As a result, fourth generation risk assessment tools have the potential to be the best risk assessment tools currently available for criminal justice practitioners. They provide significant improvements over earlier risk assessment tools by not only incorporating gender-specific calibrations, but also by incorporating multi-theoretical factors that can be used to assess risk and establish individualized need for multiple processes within the criminal justice system.

Risk Assessment and Pretrial Decision-making

Pretrial decision-making involves a fundamental tension between the court's desire to protect citizens from dangerous criminals, ensure that accused individuals are judged before the law, and minimize the amount of pretrial punishment meted out to legally innocent defendants (Clark and Henry, 1997). Whether a defendant is released in the pretrial stage of a case and the setting of the bail amount depend primarily on two considerations: the perceived safety risk that the defendant poses to the community (the potential to commit another offense while awaiting trial) and the perceived likelihood that the defendant will return for future court appearances.

In the past, the exercise of judicial discretion has long been at the heart of the pretrial release/detention decision (Gottfredson and Gottfredson, 1990; Walker, 1993).

However, the effects of judicial officers' exercise of discretion in this area has begun to be questioned (Mahoney, Beaudin, Carver, et al., 2001), as pretrial release decisions are often made with incomplete information (Albonetti, 1989). An example of the potential consequences that can occur is evidenced by recent research on pretrial decision-making, which indicates that there are significant racial and ethnic disparities in pretrial release decisions and outcomes (Demuth, 2003).

In response to these issues, the use of objective guidelines or criteria (i.e. standardized risk assessment tools) for pretrial decision-making has been recommended by, among others, the American Bar Association (2002) and the National Association of Pretrial Services (2004). By providing reliable information to courts, pretrial programs can enhance the ability of judicial officers to make fair, equitable, and effective pretrial release/detention decisions (Mahoney et al., 2001), and the use of standardized risk assessment tools such as the LS/CMI, COMPAS, and CAIS can enhance this process. Empirically and theoretically based risk assessment tools can not only serve to minimize subjective personal biases that exist in pretrial decision-making, but can also help to improve the placement of individuals for treatment and public safety, protect courts against legal scrutiny, and improve the allocation of resources (Andrews and Bonta, 2007; Latessa and Allen, 2003).

A similar observation was made by VanNostrand (2003), who stated that by efficiently assessing and releasing defendants who pose little danger to the public or are likely to comply with court dates, the process upholds and affirms the arrestee's constitutional protections and minimizes the infringement of their day-to-day lives. This is particularly important, as research finds that defendants who are not released at the

pretrial stage are more likely to become disconnected from family, friends, health providers, and post adjudication employment opportunities (Irwin, 1985; LaFree, 1985). Furthermore, for jails, releasing low-risk arrestees frees previously occupied bed space in a jail system that is nearing capacity.

Despite the recommendation by several organizations involved with the pretrial process to make use of objective risk assessment tools for pretrial decision-making, the most recent survey of pretrial services programs by the U.S. Department of Justice (Clark and Henry, 2003) found that less than one in four pretrial programs rely exclusively on objective criteria when making decisions such as the setting of bail. In light of research indicating that objective risk assessment tools are better predictors of failure to appear and re-arrest than the use of subjective risk assessment strategies (Grove et al., 2000; Levin, 2008), the finding that a minority of pretrial services programs utilize purely objective risk assessment strategies is a major policy concern. It should be noted, however, that since the time that the study by Clark and Henry (2003) was conducted, it is possible that the use of objective risk assessment instruments has increased.

Research on the Validity of Risk Assessment Tools

A review of the empirical literature on risk assessment tools documents two important findings that are of central importance to the evaluation of the COMPAS risk assessment tool for pretrial decision-making in Broward County. First, a recent meta-analysis of 88 studies that examined the predictive validity of various risk assessment instruments and methodologies indicated that fourth generation risk assessment tools produced the strongest predictive estimates for violent recidivism (Campbell et al., 2009).

Given the earlier discussions pertaining to the benefits accrued from using fourth generation risk assessment methodologies rather than earlier generation risk assessment instruments, this should not be too unexpected, but is important to note. At the same time, it must be emphasized that the study by Campbell and colleagues (2009) only evaluated tools based on the outcome of recidivism and not pretrial decision-making.

The fact that the meta-analysis by Campbell et al. (2009) was limited to the predictive validity of risk assessment tools using recidivism as the outcome leads to the second observation to be made upon a review of the empirical risk assessment research. Specifically, in contrast to the vast number of studies that have examined the use of risk assessment tools for predicting recidivism, there have been few multi-site, racially diverse, empirically validated pretrial assessments for use in the United States (Lowencamp, Lemke, and Latessa, 2008). A similar observation was made in a 2001 NIJ Report (Mahoney et al., 2001), finding that, with the exception of research on pretrial release guidelines, there has been very little empirically grounded research on pretrial release/detention decision-making practices and outcomes since the mid 1980s. Levin (2008) suggests several reasons as to why there are so few studies that examine pretrial decision-making. In particular, Levin notes that there is: limited information on defendants kept in a standardized manner across counties, a lack of centralized accounting of pretrial supervision practices, and a lack of in-house analytical capability among most pretrial agencies. With these considerations in mind, the following section reviews findings from recent studies of pretrial risk assessment instruments.

Pretrial Risk Assessment Tools

The first pretrial screening program was created by the Vera Institute in 1961, and was known as the Manhattan Bail Project (Lowencamp et al., 2008). Factors incorporated into this early risk assessment included: defendant ties to the community, employment status, education, and prior criminal record. Since that time, pretrial risk assessment tools, as with the larger class of risk assessment tools discussed earlier, have grown in complexity, with regard to both the factors included in the instruments as well as the statistical methodologies employed. For example, in 2003 the Urban Institute Justice Policy Center developed and validated a risk assessment tool for defendants in Washington, D.C. (Winterfield, Coggeshall, and Harrell, 2003). The instrument was comprised of 22 items in two separate subscales: one used to predict the risk of offending on release, the other to predict failure to appear. The results of the study found that criminal history, current criminal charge, and drug involvement/testing were significant predictors of both outcomes.

As an additional illustration, VanNostrand (2003) developed a risk assessment tool for pretrial defendants in Virginia that included nine different risk factors: charge type, pending charges, outstanding warrants, criminal history, prior failure to appear, prior violent convictions, length at current residence, employment, and drug abuse. VanNostrand (2003) used this information to create a risk factor scale from 0-10. Using these scores, VanNostrand found a significant relationship between an individual's risk factor score and a combined outcome measure of failure to appear/new arrest. The findings of the study were quite revealing, and provided evidence of the predictive validity of the instrument. For example, only 8% of defendants with a risk factor score of

zero failed to appear or were re-arrested, whereas 62% of individuals with a risk factor score of seven did so.

In one of the most current and complex risk assessment tools developed specifically for pretrial decision-making, Lowencamp et al. (2008) validated a pretrial screening tool that included a number of theoretical constructs to predict both failure to appear and new offenses on release pending sentencing. Demonstrating the general trend in risk assessment tools to increase in complexity and incorporate a wide variety of empirically and theoretically relevant factors, the tool developed by Lowencamp et al. (2008) included 63 items covering eight different theoretical risk and need domains. These included criminal history, pretrial supervision, drug/alcohol use, employment, residence/transportation, mental health, antisocial personality characteristics, and a scale measuring criminal associates. The results of the validation study found that the overall pretrial assessment score was found to be significantly correlated with both failure to appear and new arrest.

Together, these studies demonstrate that, as with risk assessment tools used to predict other criminal justice outcomes such as recidivism, the risk assessment instruments recently developed to predict pretrial defendant outcomes have grown in sophistication. They not only have incorporated factors from a variety of life circumstances and criminological theories, but often create unique risk scores for failure to appear and new arrests separately. The information in this section and previous sections provides a foundation for discussing the COMPAS risk assessment tool and the studies that have evaluated it predictive validity. As will become evident, the factors included and the outcomes considered by the COMPAS closely resemble, and in some

cases go beyond, the factors that have been included in the risk assessment tools discussed earlier. Another added benefit of providing information on studies that have examined the predictive validity of the COMPAS system is that these studies compare the validity of the COMPAS to other fourth generation risk assessment tools.

COMPAS Risk Assessment Tool and Validation Studies

According to Andrews et al. (2006), the COMPAS is one of the best known fourth generation risk assessment instruments currently being utilized. As with other fourth generation risk assessment instruments, the COMPAS can be used to predict a variety of outcomes, and provides separate estimates for violence, recidivism, failure to appear, and community failure. Also similar to other fourth-generation tools, the COMPAS is both guided by theory (e.g. social learning theory, low self-control theory, strain theory, and social control theory) and provides gender specific calibrations.

When a comparison is made between the factors that the COMPAS takes into account and those included in other previously discussed pretrial risk assessment tools, the COMPAS not only includes the factors that appear in other instruments, it exceeds them by taking into account social isolation, leisure time, and family criminality. In total, the COMPAS includes 15 different factors, each of which is measured using multiple-item scales. Approximately one-third of the information incorporated into the COMPAS instrument is collected from official records, one-third from self-report questions that are answered by defendants/inmates, and one-third from an interview with the defendant/inmate, which has a standardized script.

In support of the validity of the COMPAS, peer-reviewed research conducted by both the researchers who developed the COMPAS (i.e. Brennan et al., 2009) and others within the field of criminal justice (e.g. Fass et al., 2008) provides evidence that the COMPAS tool has as much predictive validity as other major risk assessment instruments currently being used (e.g. LSI-R). It is particularly important to point out that in cases in which risk assessment instruments have been developed by for-profit companies that external validation of risk assessment tools is critical. The research cited above provides this need. Even in the case in which the COMPAS developers provided an evaluation of the predictive validity of the tool, the article went through an external, anonymous peer review to ensure quality in the analyses that were presented.

Although the available literature on the validity of the COMPAS legitimates its use, it is equally important to keep in mind that there appears to be no empirical literature validating its use for predicting pretrial failure to appear or re-arrest awaiting trial. Although the literature provides evidence that, in general, the COMPAS is a sound risk assessment tool, it is nonetheless important to empirically validate the instrument in particular settings at particular times for particular purposes. Given that it is unlikely for a single instrument to have universal applicability, research suggests that an adopted assessment should be piloted and validated on the jurisdiction implementing the tool, since the instrument or its classification scales may not be valid for the agency's specific purpose (Gottfredson and Moriarty, 2006.). The validation being conducted by Florida State University on behalf of Broward County (as well as the current evaluation being carried out by the COMPAS developers in other locations) provides a crucial step in this

direction by providing information on the predictive validity of the COMPAS in the context of pretrial decisions and outcomes.

THE COMPAS SYSTEM

The COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) is a statistically-based client assessment, classification, and case management system developed by the Northpointe Institute for Public Management. It is designed to assess key risk and need factors in correctional populations by utilizing information obtained through official records, standardized interviews with clients, and self-report questionnaire information provided by clients. In addition, the COMPAS provides decision-making support for criminal justice practitioners when placing clients into the community. Currently, the COMPAS system is being used by a number of correctional systems across the country to inform the decision-making process regarding pretrial release, probation, community corrections, institutional programming, reentry, and parole. To respond to the diverse needs of correctional systems, separate software packages are available to take into account differences in risk levels and varying needs of young clients (COMPAS Youth) and female clients (COMPAS Women). COMPAS, as currently utilized in the Broward Sheriff's Office, does not include unique calibrations for males or females.

The COMPAS system, which is fully web-based and Microsoft Windows compliant, is tremendously flexible and allows for the customization of the risk and needs assessment instrument, providing users the ability to choose which aspects of the COMPAS instrument are to be measured for the management of particular clients. The following section provides an overview of the different factors that are included in the risk and needs assessment instrument that makes up the core part of the COMPAS system.

COMPAS Instrument Scales

In order to make decisions regarding the risk potential and needs of individual clients, the COMPAS instrument is composed of 22 different scales that empirical research has identified as predictive of future behavior. The information that comprises each scale is obtained via self-report/interviews with clients and from official records. The 22 scales are grouped into five main categories, each of which contains multiple scales. Users have the ability to include all or a combination of the scales as needed. The following section provides an overview of the five assessment categories that compose the COMPAS instrument.

Criminal Involvement

The criminal involvement category is composed of *four scales*: criminal involvement, history of non-compliance, history of violence, and current violence. Information for the criminal involvement category is collected from official records and records pertaining to current charges.

Relationships/Lifestyle

The relationships/lifestyle category is composed of *five scales*: criminal associates/peers, criminal opportunity, leisure and recreation, social isolation, and substance abuse. The information for these scales is provided by inmates via interviews with correctional systems staff members and/or self-reports.

Personality/Attitudes

The personality/attitudes category is composed of *six scales*: criminal personality, negative social cognitions, criminal thinking observation, criminal thinking self-report, anger/violence, and a cognitive behavior scale. The information for these scales is

provided by inmates via interviews with correctional systems staff members and/or self-reports.

Family

The family category is composed of *two scales*: family criminality and socialization failure. The information for these scales is provided by inmates via interviews with correctional systems staff members and/or self-reports.

Social Exclusion

The social exclusion category is composed of *five scales*: financial problems, vocational/educational profile, social environment, residential instability, and social adjustment problems. The information for these scales is provided by inmates via interviews with correctional systems staff members and/or self-reports.

USE of COMPAS in BROWARD COUNTY

Administration of the COMPAS instrument in the Broward County Sheriff's Office (BSO) began in May 2008 and is currently being utilized by three entities within BSO's Department of Community Control: (1) Pretrial Services Division (PSD), (2) the Day Reporting and Reentry Division (DRRD), and (3) the Probation Division of the Broward County Sheriff's Office. In these three Divisions, COMPAS is used to perform a risk assessment for the purpose of determining the appropriate level of supervision for each client. Also, in Probation and DRRD, COMPAS is used to perform a needs assessment to determine social service referrals for the client. The assessment of the COMPAS instrument being conducted by FSU only applies to the COMPAS risk assessment performed by the Pretrial Services Division to provide information to the

court for the initial determination of pretrial release or incarceration. Specific to the Pretrial Services Division, risk assessment and administration of the COMPAS instrument is conducted at the time of arrest for the majority of clients on the first appearance hearing docket or post magistrate with advanced notice by the court. COMPAS is administered at the main jail location for the first appearance hearing. After first appearance hearing and a trial division judge is assigned, the COMPAS instrument is administered in the main pretrial offices and subsequently taken to the courtroom when given advanced notice of the bond hearing. There are forty trial division judges that could possible call for this. The Risk Assessment Unit of the Pretrial Services Division utilizes a number of COMPAS instrument scales to aid in pretrial release decisions: criminal involvement, history of non-compliance, history of violence, current violence, residential instability, substance abuse, education, and vocational. Approximately half of this information is entered into the COMPAS system using official data reports. The remainder of the information is collected through the standardized interview procedure with clients by Risk Assessment Unit staff.

At the time of this assessment, BSO devoted approximately sixteen staff members to conduct COMPAS interviews. Each interview takes approximately twenty minutes to complete including the inmate interview, and criminal and driving record tasks. Information that clients provide but cannot verify is checked by staff post-interview. Staff work in three shifts weekdays and weekends, and interviews are conducted at 10:30 a.m., 11:30 p.m., 2:30 a.m., and 4:00 a.m. daily. Through discussions with BSO officials, a number of impediments were identified that limit the number of clients for which COMPAS can be administered and, therefore, on which there is available COMPAS data:

shift changes; jail lockdowns; physical limitations; physical space (the jail was not designed to accommodate this purpose and therefore all inmates require a deputy to guard and move the inmate for security purposes); offenders may be impaired, violent, or otherwise unable to respond to questions; jail bookings are conducted at four locations (the main jail and three satellite booking facilities); Pretrial staffing is sufficient to cover the main jail only; and jail personnel turnover. Additionally, certain individuals are excluded from COMPAS administration: clients with severe medical and mental health issues who are transported to another jail for care, some females who are transported to the female jail, clients who refuse to be interviewed, individuals with very low bond amounts who are likely to bond out, and individuals who are given notices to appear (NTA) and released by the booking desk prior to First Appearance Hearings.

According to the Department of Community Control's protocol, clients of the Pretrial Services Division are assigned specific supervision requirements based upon decisions made by Judge John Hurley, which are guided, in part, by the risk scores assigned to clients based on the COMPAS instrument. While the COMPAS instrument has been administered to clients since May 2008, Judge Hurley was appointed as the First Appearance Judge and began receiving COMPAS risk scores in March, 2009 and it is difficult to determine the degree to which the judge relies upon or utilizes the COMPAS scores for judicial pretrial decision making.

Risk Classification in BSO Jails

Using the information collected through client interviews and official records, the COMPAS system provides risk levels for three outcomes: risk of violence, risk of recidivism, and risk of failure to appear, with possible scores ranging from one to ten. The scores are coded such that higher values represent a greater potential for a client to present a risk to the community and/or less likely to adhere to the requirements set forth by probation or reentry departments. Specific to the Pretrial Services Division of Broward County, clients who have a combined risk score from one to five (combining three scores) are required to report "in person" every other month and call in weekly; clients with a combined score between six and seven are required to make multiple contacts on a weekly basis with a case management specialist and must also report "in person" once per month and call in two times per week; clients with a combined score between eight and ten are recommended for placement on electronic monitoring.

Validation of the COMPAS Instrument

The subsequent sections of this report include: details of the methodology used to validate the COMPAS instrument in its ability to predict future recidivism, future violence, and failing to appear at court hearings; report the outcomes of the analysis; and summarize the findings.

VALIDATION METHODOLOGY

The methodology section of this report provides the following information: a description of the data sources for the COMPAS risk assessment validation, a description of the techniques employed to construct the research dataset from multiple sources of data, a list of the variables included in the analysis, and a description of the analytic techniques employed.

Data Sources

The data used to conduct the validation study of the COMPAS risk assessment instrument was extracted from the Broward Sheriff's Office (BSO) Jail Management System (JMS). The FSU research team worked closely with information technology staff with the BSO to gain a thorough understanding of the data available in the JMS and to develop a request identifying the jail population and process data to be extracted from the JMS. Based on these discussions, FSU submitted requests for the data described below.

1. Booking Data - All jail booking records from January 2009 through June 22, 2010 (the date the data was extracted) was obtained. This file included 223,045 records that contained the first, middle, and last name of the arrestee, a variety of demographic characteristics, date of booking, charging information, bond amount, and other relevant measures. Additionally, the JMS identification number (JMS Number) was provided, which is a unique number assigned to each unique booking event and the Offender Control Number, which is a unique number assigned to each new arrestee and included in records associated with all subsequent booking events for the

same individual. The booking file contains a record for each arrest charge for each JMS Number. Using the JMS Number, the records in this file were subsequently unduplicated to obtain one record per booking event; after unduplicating the file, it contained 94,253 records.

2. Release Data - Release records for all offenders released from jail between January 2009 and June 22, 2010 (the date that the data was extracted) were provided to the FSU Team. This release file contains the same information as the booking file but also includes the date of jail release and the type of release.
3. COMPAS Data – Data relating to COMPAS risk assessments conducted by pretrial personnel are stored in the JMS. Data on all COMPAS risk assessments conducted in calendar year 2009 were extracted by BSO's information technology staff, which included 28,224 records. For each unique COMPAS assessment identification number, the data supplied includes three records, a record for each of the three classifications of risk: recidivism, violence, and failure to appear. FSU created a dataset that resulted in one record per unique COMPAS assessment identification number and included separate variables for each data element related to the three COMPAS risk assessment categories. This resulted in a dataset with 9,408 records. These data included variables such as first, middle and last name; offender demographic characteristics; date of the COMPAS assessment; risk score from 1 to 10 for each of the three risk categories; and risk score range (low (1–4), medium (5–7) or high (8–10) for each risk category.

4. Failure to Appear (FTA) Data – From the JMS, the BSO extracted a dataset of all FTA events that occurred between January 1, 2009 and July 30, 2010. The July 30, 2010 data. This dataset contained 26,733 records and the data elements include the FTA date; first, middle and last name; and date of birth. An important caveat with regard to the FTA data is that the data files did not allow FSU to determine if the court hearing for which the FTA occurred was linked to the offense which caused the offender to be included in the dataset. In other words, the FTA could be for a court hearing that was related to a separate offense that occurred prior to the offense for which the offender was included in the booking data set (and, subsequently, included in the current study).

The COMPAS Validation Dataset

The process to build the comprehensive dataset necessary to validate the COMPAS risk classification instrument required is described in this section. First, all jail bookings that occurred in 2009 were selected. Second, this file was matched to the jail release file using the JMS number to capture the first jail release subsequent to the booking date. Third, this file was matched to the COMPAS data file. The latter data file does not include the JMS number, therefore, it was necessary to use offenders' names, dates of birth, booking dates, and COMPAS assessment dates to match records in the booking/release dataset to the COMPAS dataset. Various combinations of first name, last name, DOB, and booking date in varying degrees of proximity to the COMPAS assessment dates were examined to determine that best algorithm to ensure accurate

matches across the two data sources. Specifically, if the last and first names matched in both files, or the last name and date of birth matched, and the COMPAS assessment date was within 31 days of the booking date, the records were considered to be matched and included. This file of matched records was then matched with the FTA dataset based on the criteria that the last and first names matched in both files or the last name and date of birth matched. Additionally, only FTA records in which the date of the FTA occurred subsequent to the offender's jail release date were retained. This resulted in a final file for analysis purposes of 5,575 cases. The FTA dates for offenders included in this sample of cases occur post release from jail pretrial. However, this does not necessarily mean that the FTA was related to the charge or offense that led the offender to be included in this study. The FTA occurred subsequent to the offender's jail release date but the court appearance for which the offender failed to appear may be related to an offense and arrest that occurred prior to the arrest represented in the booking file for this study.

The next step was to build two types of recidivism measures and a FTA measure: (1) whether offenders released from jail pretrial in 2009 were arrested for a subsequent crime, (2) whether offenders were arrested for a subsequent act of violence; or (3) whether offenders failed to appear for a scheduled court appearance using predetermined periods of follow up (i.e., one month, two months, three months, six months, nine months, and twelve months post release). An arrest for violence was defined based on the charge description in the booking data and included murder, manslaughter, sex offenses, robbery, assault, battery, or other crimes in which the description indicates a person was harmed or under the threat of bodily injury. When validating the capacity of

the COMPAS instrument to predict future behavior, it is important to ensure that the cases under examination have the same amount of time post release. That is one of the reasons why multiple follow-up periods were selected (i.e., one, two, three, six, nine, and twelve months). All cases considered in the one-month follow-up group were out of jail at least one month. And all cases in the three-month follow-up group were out of jail at least three months, and so on through the twelve-month group. *These groups are not mutually exclusive*—cases may be counted in more than one category if the offender was out of jail for at least that length of time and recidivated in the latter category. For example, offenders in the six-month follow-up group are also in the three-month follow-up group (because the offenders were out of jail for at least six months which encompasses three months also but did not recidivate until the sixth month). Therefore, offenders in the twelve-month group may also be included in each of the shorter follow-up groups. The following bulleted statements reflect the number of cases for each follow-up period:

- One-month follow-up period n = 5,575
- Two-month follow-up period n = 5,575
- Three-month follow-up period n = 5,575
- Six-month follow-up period n = 5,264
- Nine-month follow-up period n = 3,993
- Twelve-month follow-up period n = 2,518

The numbers in the six-month, nine-month, and twelve-month follow-up periods are not less because these offenders had fewer months post release to recidivate, the numbers are

reduced because offenders recidivated or failed to appear in court prior to six months, nine months, or twelve months.

Analytic Techniques

The analytic techniques used to validate the predictive accuracy of the COMPAS risk classification instrument were threefold. First, crosstabular analysis was conducted to generate the percentage of cases within each risk classification level (low, medium, and high) by each outcome measure (recidivism, violence, and FTA) within each follow-up period (one month, two months, three months, six months, nine months, and twelve months). The next step involved calculating the differences in the percentages of offenders who in each cell—by risk classification level (low, medium, high) by outcome measure (recidivism, violence, FTA) by follow-up period (various number of months). Finally, the analysis examined the percentage difference at each threshold—the cut-off point that distinguishes some as low risk compared to medium risk and medium risk compared to high risk.

Validating the predictive accuracy of the COMPAS risk classification instrument involved analyzing the percentage of offenders which COMPAS predicted would recidivate, commit violence, or fail to appear for court compared with the actual number of offenders who recidivated, was arrested for the commission of a violent offense, and failed to appear for court across the six follow-up periods. Further, the analysis included comparing the differences in the percentage of actual outcomes (offenders who behaved as predicted) between risk level categories (i.e., low and medium; medium and high; low and high). This data is descriptive and provides a view of the predictive accuracy of

low/medium risk offenders compared with medium/high risk offenders, as well as low/high risk offenders. The prior empirical literature does not specifically address this analytic technique; however, it provides an additional piece of descriptive data to identify the percent difference in COMPAS's predictive accuracy between risk categories. Because this step is more exploratory, there is no directional expectation regarding the percent difference between low/medium risk and medium/high risk. That said, it would seem most desirable for the direction to reflect either a constant—the percentage difference for low/medium similar to medium/high; or a greater percentage difference as the risk level increases (low/medium less than medium/high).

In addition, the analysis examined the percentage difference of actual outcomes (percentage of offenders who recidivated, committed violence, or failed to appear) at the thresholds between the three risk levels (low, medium, and high). This step generates insight into the rationale for the thresholds or cut-off points between low and medium risk and medium and high risk. If no statistically significant differences were found at the established thresholds, it would indicate that, perhaps, there are not meaningful differences between someone classified as low risk versus medium risk or medium risk versus high risk. The lack of statistically significant differences at the thresholds is particularly importance when an offender scores near the cusp of a level. The offender may score at the high end of medium risk or at the low end of high risk—which could result in a meaningful difference in release decisions. The thresholds between risk levels are important distinctions to make when assessing the risk level of offenders that result in pretrial personnel making recommendations to the judiciary. These distinctions can

provide further credibility to the instrument or undermine the integrity of its predictive capacity.

Validation Sample Population: Demographic Characteristics

Tables 1 and 2 provide a snapshot of the characteristics of the sample of the 5,575 offenders that were included in the COMPAS risk classification validation. Table 1 presents the demographic characteristics of the offenders in the sample and Table 2 presents the number of offenders that COMPAS deemed to be low risk, medium risk, and high risk; Table 2 also presents the outcomes of the offenders (actual recidivism, violence, FTA) by the six follow-up periods. As displayed in Table 1, the sample of offenders is comprised of 86.3 percent males (4,810) and 13.7 percent females (765). The relatively low number of females included in the sample represents the fact that females are underrepresented in the jail population as a whole and, therefore, would likely be underrepresented in this study. This will become a factor in the analysis when cross-tabulations are calculated that divide females by risk classification (low, medium, high) and by follow-up period (number of months). There will be cells where the number of females is insufficient to infer conclusions about the outcomes. In those cases, a symbol (†) is utilized to indicate that status. The race/ethnicity composition is 42 percent white, 50.2 percent black, and 7 percent Hispanic.

The sample of offenders was categorized into four age groups: 18 to 23 years (24.6%), 24 to 29 years (22.3%), 30 to 39 years (23.7%), and 40 and older (29.5%). The youngest offender in the sample was 18 years of age and the oldest was 76 years of age. The ranges for the four age groups were determined to allow for sufficient numbers in

each grouping for the purpose of the analysis. Table 1 also identifies the number of offenders who were booked for violent offenses, property offenses, drug offenses, and other offenses (traffic, probation violations, municipal/city ordinance violations, etc.). If multiple charges existed, the data represents the most serious charge for which the offender was booked. The two largest categories are offenders who committed violent offenses (34.9%) and those who committed "other" types of offenses (29.6%). Property offenses were committed by 15.7 percent of the sample and drug offenses were committed by 19.8 percent of the sample population.

Table 1. COMPAS Validation Sample: Demographic Characteristics

	Number	Percent
Sex		
Male	4,810	86.3%
Female	765	13.7%
Race		
White	2,339	42.0%
Black	2,801	50.2%
Hispanic	389	7.0%
Other	46	0.8%
Age Groups		
18 to 23	1,371	24.6%
24 to 29	1,243	22.3%
30 to 39	1,319	23.7%
40 and Older	1,642	29.5%
Offense Type at Booking		
Violent	1,944	34.9%
Property	878	15.7%
Drug	1,103	19.8%
Other	1,650	29.6%

n=5,575 offenders in the COMPAS risk classification validation sample

Table 2 presents the results of the COMPAS risk classification by the risk categories: recidivism, violence, and FTA. For the category of recidivism (rearrest for any offense), the data presented in Table 2 indicate that more than half of the 5,575offenders that COMPAS was administered on *scored in the low risk level for each of the three risk categories of outcomes* (recidivism, violence, FTA). COMPAS's risk levels are delineated on a scale of one through ten: low includes scores between one and four, medium includes scores between five and seven, and high includes scores between eight and ten.

In the **recidivism category**, there were 3,169 (56.8%) offenders who scored in the low range, while 25.2 percent (n=1406) scored in the medium risk level and 17.9 percent (n=1000) scored in the high risk level. In the **category of violence**, 67 percent (n=3,735) scored in the low range, 22.6 percent (1,262) scored in the medium range, and 10.4 percent (578) scored in the high range. In the **category of FTA**, the vast majority of the offenders scored in the low range (73.7% or 4,108 offenders) while 18.5 percent (n=1,032) scored in the medium range, and 7.8 percent (n=435) scored in the high range.

The follow-up period with the longest duration is 12 months. As previously mentioned, the follow-up periods are not mutually exclusive; therefore, offenders in the twelve-month or nine-month follow-up periods may also be included in the shorter follow-up periods. When examining actual outcomes of the offenders who had COMPAS scores, 29.6 percent of the 5,575 offenders were *rearrested for any type of offense* after being released from jail *within 12 months*. At shorter post-release periods, the recidivism dropped: 5.8 percent (324) were rearrested within one month and 20.1 percent (1,059) were rearrested within six months.

When examining the second outcome category, violence, the number of offenders who were rearrested post release for a violence offense was low: 6.8 percent (n=1,746) were rearrested for a violent offense within 12 months post release, 4.4 percent (n=232) were rearrested for a violent offense within six months post release, and 1.1 percent (n=62) were rearrested for a violent offense within one month.

The final outcome category, FTA, indicates that 62.0 percent (n=1,535) of the offenders failed to appear for a court appearance within 12 months post release while 54.6 percent (n=2,837) failed to appear in court within six months post release and 32.5 percent (n=1,796) failed to appear in court within one month post release. These incidents of failing to appear for court may or may not be related to the offense on record in the bookings file—in other words, the court appearance for which the offender failed to show may not be related to the current booking offense that selected the offender for this study. The court appearance tracked in this study may be related to a previous offense. The three categories of risk that COMPAS assesses are delineated below.

- **Recidivism** scored 1 through 10 resulting in a low, medium, or high risk level. In this validation study, this is measured as rearrest for any offense post release from jail pretrial.
- **Violence** scored 1 through 10 resulting in a low, medium, or high risk level. In this validation study, this is measured as rearrest for a violent offense post release from jail pretrial.
- **Failture to Appear** scored 1 through 10 resulting in a low, medium, or high risk level. In this validation study, this is measured as failing to appear for a court appearance post release from jail pretrial.

Table 2. COMPAS Validation: Predicted Risk Levels and Actual Outcomes

COMPAS Risk Level – Predicted Recidivism	**n**	**%**
Low (Scores = 1–4)	3,169	56.8%
Medium (Scores = 5–7)	1,406	25.2%
High (Scores = 8–10)	1,000	17.9%
COMPAS Risk Level – Predicted Violence		
Low (Scores = 1–4)	3,735	67.0%
Medium (Scores = 5–7)	1,262	22.6%
High (Scores = 8–10)	578	10.4%
COMPAS Risk Level – Predicted Failure to Appear		
Low (Scores = 1–4)	4,108	73.7%
Medium (Scores = 5–7)	1,032	18.5%
High (Scores = 8–10)	435	7.8%
Recidivism: Actual Rearrest for any crime within:		
1 Month	324	5.8%
2 Months	518	9.3%
3 Months	705	12.6%
6 Months	1,059	20.1%
9 Months	1,026	25.7%
12 Months	746	29.6%
Violence: Actual Rearrest for a violent crime within:		
1 Month	62	1.1%
2 Months	102	1.8%
3 Months	145	2.6%
6 Months	232	4.4%
9 Months	220	5.5%
12 Months	170	6.8%
Failure to Appear (FTA) (actual) within:		
1 Month	1,796	32.5%
2 Months	2,316	41.9%
3 Months	2,611	47.3%
6 Months	2,837	54.6%
9 Months	2,335	59.2%
12 Months	1,535	62.0%

COMPAS VALIDATION: RESULTS and FINDINGS

Introduction

The findings of the COMPAS risk assessment validation include three criteria: recidivism (for any offense), violence (rearrest/recidivism for a violent offense), and FTA. For the purpose of this validation, each of the three criteria is further specified into five levels of detail: (1) total sample of offenders upon which COMPAS was administered (between January 1, 2009 through December 31, 2009), (2) all offenders by gender, (3) all offenders by age, (4) all offenders by race/ethnicity, and (5) all offenders by offense type—each level of detail will include a table and a chart.

Tables 3 through 17 contain data addressing the accuracy of the COMPAS risk assessment instrument in its ability to assess the likelihood that offenders will recidivate upon their release pretrial. These tables display data relating to the research question: Do inmates that COMPAS identified as having higher probabilities of future recidivism post release from jail (pretrial) actually recidivate at higher rates than offenders that COMPAS identifies as having a lower likelihood of recidivism? The figures demonstrate the percentage of jail inmates released pretrial who were rearrested for any type of crime within one-, two-, three-, six-, nine-, and twelve-month periods across COMPAS' three levels of the recidivism risk category (low, medium, and high). The percentages quantify the accuracy of the COMPAS risk assessment instrument in predicting actual post-release offending. It is possible that the predictive accuracy of the COMPAS risk assessment instrument varies by the length of the follow-up period. Therefore, the tables present recidivism data in the six follow-up periods listed above. However, for purposes of the

narrative, only three follow-up periods will be discussed: immediate (one-month follow up), intermediate (six-month follow up), and long term (twelve-month follow up).

Additional indicators of the accuracy of the COMPAS risk assessment instrument presented in the three main tables (displaying all offenders as a group) include the differences in the likelihood of arrest between offenders assessed as low risk versus medium risk, medium risk versus high risk, and low risk versus high risk based on the COMPAS risk scores. Narrative explanations are presented for these measures to highlight trends and noteworthy deviations—which may or may not specifically include the aforementioned one-month, six-month, and twelve-month follow-up periods.

Table 3 and Charts 1 and 2 present data for recidivism (any type of offense); Table 4 and Chart 3 present data for recidivism (any type of offense) by gender; Table 5 and Chart 4 present data for recidivism (any type of offense) by age groups; Table 6 and Chart 5 present data for recidivism (any type of offense) by race/ethnicity classification; and Table 7 and Chart 6 present data for recidivism by the type of new offense committed (most serious if more than one offense was committed). The tables and charts provide graphic illustrations of the same data; therefore, narrative explanations of the charts are not included to prevent redundant explanations.

COMPAS and Recidivism: Rearrest for Any Offense

Overall, regardless of the length of the follow-up period post release, the data consistently demonstrate that offenders assessed by COMPAS as having a higher risk of recidivism were, in fact, more likely to recidivate. As presented in Table 3 and Charts 1 and 2, within the first month after pretrial jail release, 13.2% of offenders identified as having a high risk of recidivating did so compared to 7.5% of offenders identified as

medium-risk and 2.7% for low-risk offenders. Within six months after release, 42.1% of the offenders identified as having a high risk of recidivating actually recidivated compared to 25.3% recidivism for medium-risk offenders and 11.3% for low-risk offenders. Examining offenders over a 12-month period post release *indicates a greater predictive power of the COMPAS risk assessment instrument* with 61.0% of the high-risk offenders recidivating compared to 38.4% for those assessed as medium risk and 18.1% for those assessed as low risk.

As described in this section's introduction, Table 3 also displays data comparing the relative differences between each COMPAS risk classification level (low to medium, medium to high, low to high). These comparisons represent the predictive accuracy of the COMPAS risk classification categories when comparing actual recidivism levels across offenders assessed as "low risk" versus "medium risk," "medium risk" versus "high risk," and "low risk versus high risk." These comparisons address the research question: Does identifying an offender as low risk versus medium risk provide a similar level of predictive accuracy of recidivism compared with offenders assessed as medium risk versus high risk? The data indicate that this does not occur when comparing the differences between low risk and medium risk versus medium risk and high risk. However, the predictive accuracy of these categories increased as the duration of the follow-up period lengthened. In each follow-up period, the difference between low risk and medium risk and medium risk and high risk is not significant; however, the *difference between low risk and high risk is significant*. Specifically, the differences in actual recidivism levels between released offenders assessed as low risk relative to offenders assessed as medium risk and offenders assessed as medium risk compared with

offenders assessed as high risk are relatively minimal, regardless of the length of the follow-up period. However, the differences in the likelihood of recidivism between the two extreme categories—low-risk offenders and high-risk offenders—are significant. In summary, these findings indicate that *while the COMPAS risk assessment instrument is very predictive of actual recidivism among offenders released from jail, it is particularly accurate in identifying high-risk offenders*.

Table 3. Recidivism: Percentage of Offenders Rearrested for Any Offense by COMPAS Risk Levels✦

Follow-up Period	Recidivism by COMPAS Risk Level			Differences Between Recidivism Across COMPAS Risk Levels		
	Low Risk	Medium Risk	High Risk	Low to Medium	Medium to High	Low to High
1 Month:						
Recidivism	2.7%	7.5%	13.2%	4.8%	5.7%	10.5%
No Recidivism	97.3%	92.5%	86.8%			
Number of Cases	3,169	1,406	1,000			
2 Months:						
Recidivism	4.8%	11.4%	21.0%	6.6%	9.6%	16.2%
No Recidivism	95.2%	88.6%	79.0%			
Number of Cases	3,169	1,406	1,000			
3 Months:						
Recidivism	6.5%	16.2%	27.2%	9.7%	11.0%	20.7%
No Recidivism	93.5%	83.8%	72.8%			
Number of Cases	3,169	1,406	1,000			
6 Months:						
Recidivism	11.3%	25.3%	42.1%	14.0%	16.8%	30.8%
No Recidivism	88.7%	74.7%	57.9%			
Number of Cases	3,029	1,323	912			
9 Months:						
Recidivism	15.3%	32.2%	52.1%	16.9%	19.9%	36.8%
No Recidivism	84.7%	67.8%	47.9%			
Number of Cases	2,333	989	671			
12 Months:						
Recidivism	18.1%	38.4%	61.0%	20.3%	22.6%	42.9%
No Recidivism	81.9%	61.6%	39.0%			
Number of Cases	1,523	605	390			

✦ Recidivate/Recidivism is defined as rearrest for any offense.

Chart 1. Recidivism: Rearrest for Any Offense by COMPAS Risk Levels

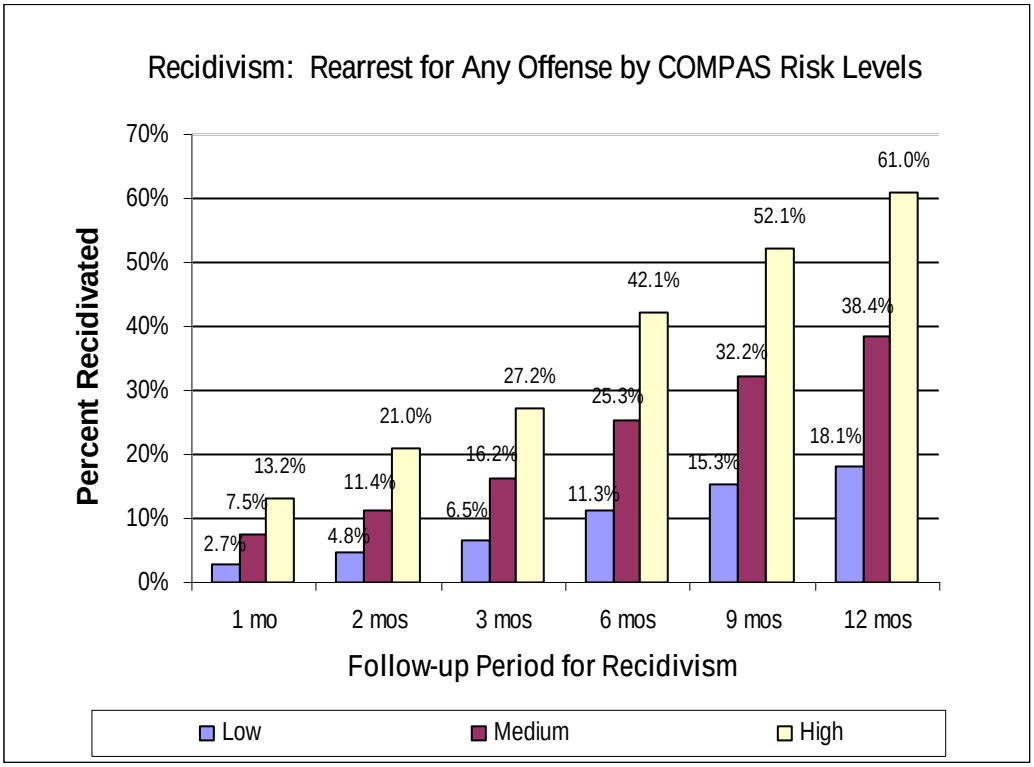
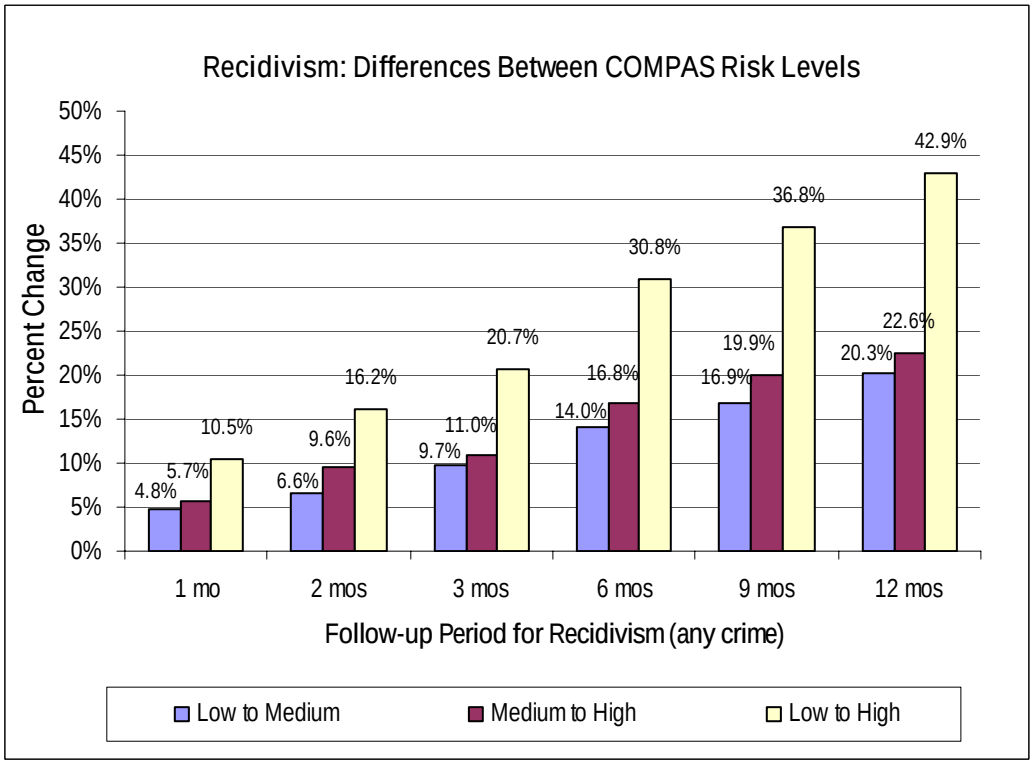


Chart 2. Recidivism: Differences Between COMPAS Risk Levels



COMPAS and Recidivism: Rearrest for Any Offense by Sex

Table 4 and Chart 3 address the research: Are there differences in the predictive accuracy of the COMPAS risk assessment instrument for recidivism males and females released from jail pretrial?

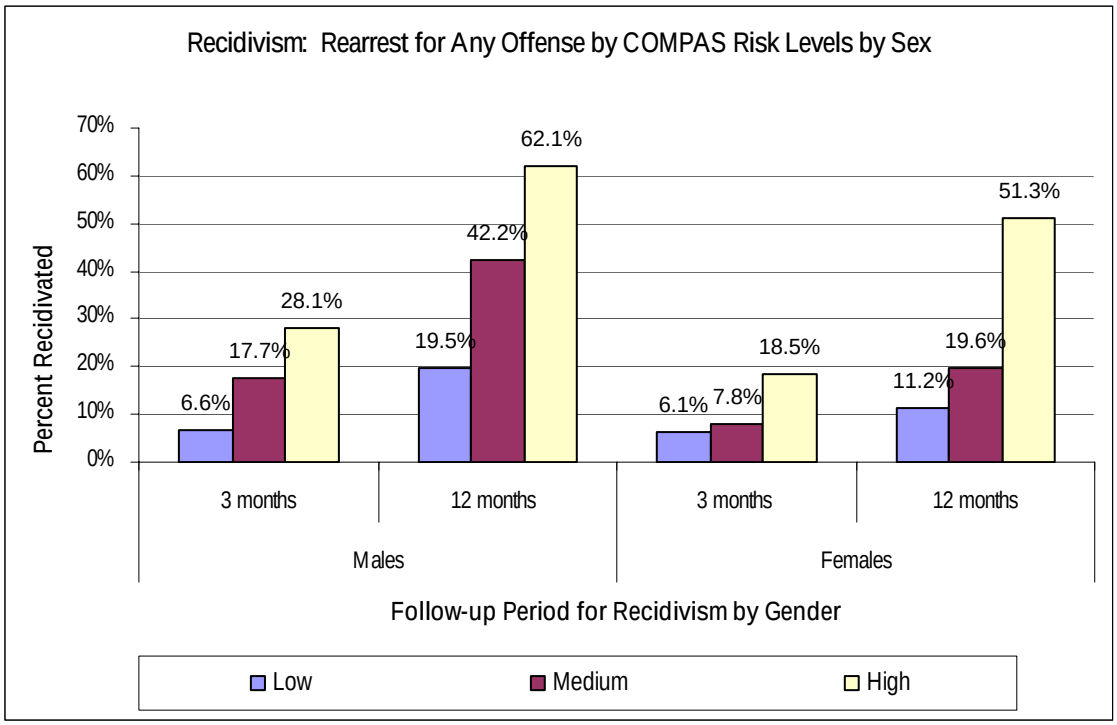
- As the risk level identified by the COMPAS instrument increases, the likelihood of actual recidivism increases, regardless of the offender's gender within each of the six follow-up periods—indicating accuracy in COMPAS's ability to predict risk.
- Males have significantly higher levels of recidivism relative to females regardless of the length of the follow-up period or the level of risk assessed by COMPAS.
- When comparing the differences in the percentage of low-risk offenders who recidivated with medium-risk offenders who recidivated, COMPAS has stronger predictive accuracy when predicting recidivism risk levels for males rather than females.

Table 4. Recidivism: Percentage of Offenders Rearrested for Any Offense Across COMPAS Risk Levels by Sex✦

Follow-up Period	Recidivism by COMPAS Risk Level		
	Low Risk	**Medium Risk**	**High Risk**
1 Month:			
Males	2.8%	7.8%	13.8%
Females	2.7%	5.5%	7.8%
2 Months:			
Males	4.9%	12.3%	21.4%
Females	4.7%	6.5%	12.6%
3 Months:			
Males	6.6%	17.7%	28.1%
Females	6.1%	7.8%	18.5%
6 Months:			
Males	11.7%	27.6%	44.1%
Females	8.8%	12.7%	25.5%
9 Months:			
Males	16.1%	35.1%	53.8%
Females	10.6%	16.5%	40.3%
12 Months:			
Males	19.5%	42.2%	62.1%
Females	11.2%	19.6%	51.3%

✦ Recidivate/Recidivism is defined as rearrest for any offense.

Chart 3. Recidivism: Rearrest for Any Offense Across COMPAS Risk Levels by Sex



COMPAS and Recidivism: Rearrest for Any Crime by Age Groups

Table 5 and Chart 4 address the research question: Are there differences in the predictive accuracy of the COMPAS risk assessment system for recidivism across four offender age groups (18–23 years, 24–29 years, 30–39 years, and 40 years and older)?

- As the risk level identified by the COMPAS instrument increases, the likelihood of actual recidivism increases, regardless of the offender's age grouping within each of the six follow-up periods.
- Among offenders classified as medium risk by COMPAS, those 40 years of age or older exhibit higher recidivism rates in all of the six follow-up periods. Otherwise, there is no pattern that indicates that age is a factor in the predictive accuracy of COMPAS with regard to recidivism rates.

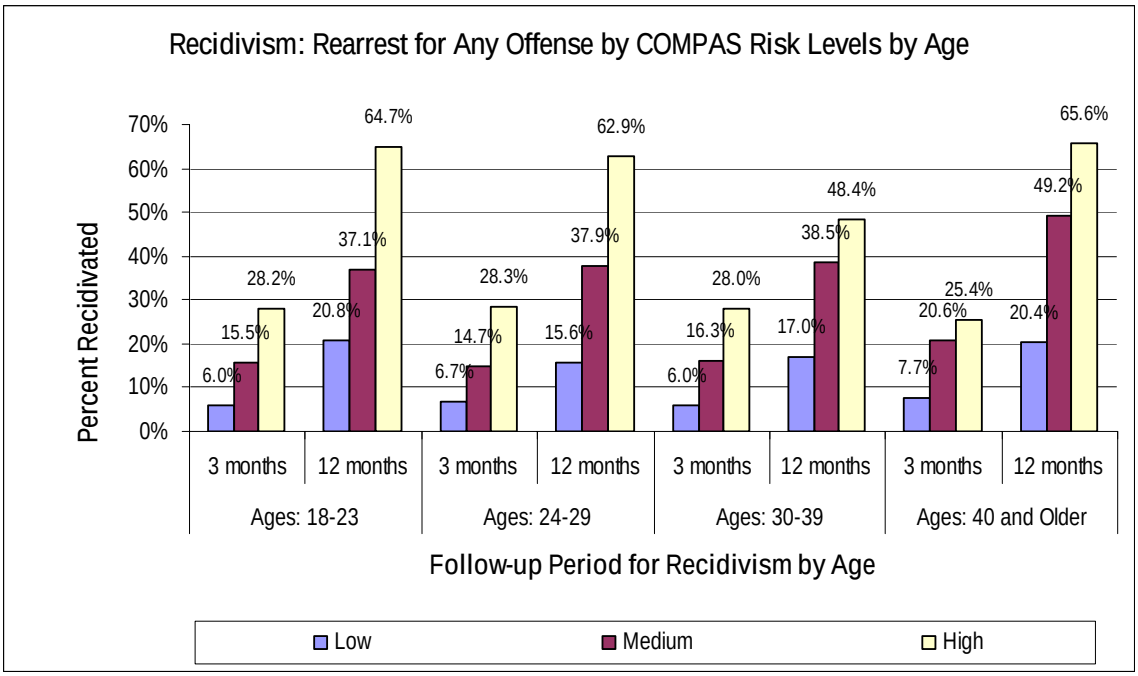
- The predictive accuracy of COMPAS for recidivism is relatively consistent across the four offender age categories. An exception to this finding is among offenders 30 to 39 years of age for the long-term follow-up period of 12 months. The difference in recidivism rate for that age group increases by 31.4% (17.0% to 48.4%) from low to high risk compared with increases of 43.9% (20.8% to 64.7%) for the 18 to 23 age group, 47.3% (15.6% to 62.9%) for the 24 to 29 age group, and 45.2% (20.4% to 65.6%) for the 40 or older age group.

Table 5. Recidivism: Percentage of Offenders Rearrested for Any Offense Across COMPAS Risk Levels Age Grouping✦

Follow-up Period	Recidivism by COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
18-23 years	2.6%	7.5%	13.2%
24-29 years	2.2%	5.1%	13.8%
30-39 years	2.5%	7.8%	14.9%
40 years and over	3.4%	9.8%	11.4%
2 Months:			
18-23 years	4.7%	11.0%	21.8%
24-29 years	5.3%	9.3%	20.2%
30-39 years	4.4%	11.7%	22.3%
40 years and over	5.5%	15.9%	18.4%
3 Months:			
18-23 years	6.0%	15.5%	28.2%
24-29 years	6.7%	14.7%	28.3%
30-39 years	6.0%	16.3%	28.0%
40 years and over	7.7%	20.6%	25.4%
6 Months:			
18-23 years	12.8%	25.7%	43.6%
24-29 years	11.1%	24.1%	42.8%
30-39 years	10.5%	25.4%	42.1%
40 years and over	12.5%	29.1%	39.6%
9 Months:			
18-23 years	18.1%	30.5%	55.7%
24-29 years	14.4%	31.8%	53.3%
30-39 years	13.5%	32.9%	48.0%
40 years and over	17.5%	38.2%	51.4%
12 Months:			
18-23 years	20.8%	37.1%	64.7%
24-29 years	15.6%	37.9%	62.9%
30-39 years	17.0%	38.5%	48.4%
40 years and over	20.4%	49.2%	65.6%

✦ Recidivate/Recidivism is defined as rearrest for any offense.

Chart 4. Recidivism: Rearrest for Any Offense Across COMPAS Risk Levels by Age



COMPAS and Recidivism: Rearrest for Any Crime by Race/Ethnicity

Table 6 and Chart 5 address the research question: Are there differences in the predictive accuracy of the COMPAS risk assessment instrument for recidivism across racial/ethnic groups (white, black, and Hispanics) released from jail pretrial?

- As the risk level identified by COMPAS increases, the likelihood of actual recidivism increases, regardless of the offender's race or ethnicity within each of the six follow-up periods.
- Comparing recidivism rates within the COMPAS risk level categories and the six follow-up periods for whites, blacks and Hispanics indicates no demonstrable pattern or significant differences in the likelihood of recidivism across the racial/ethnic groups.

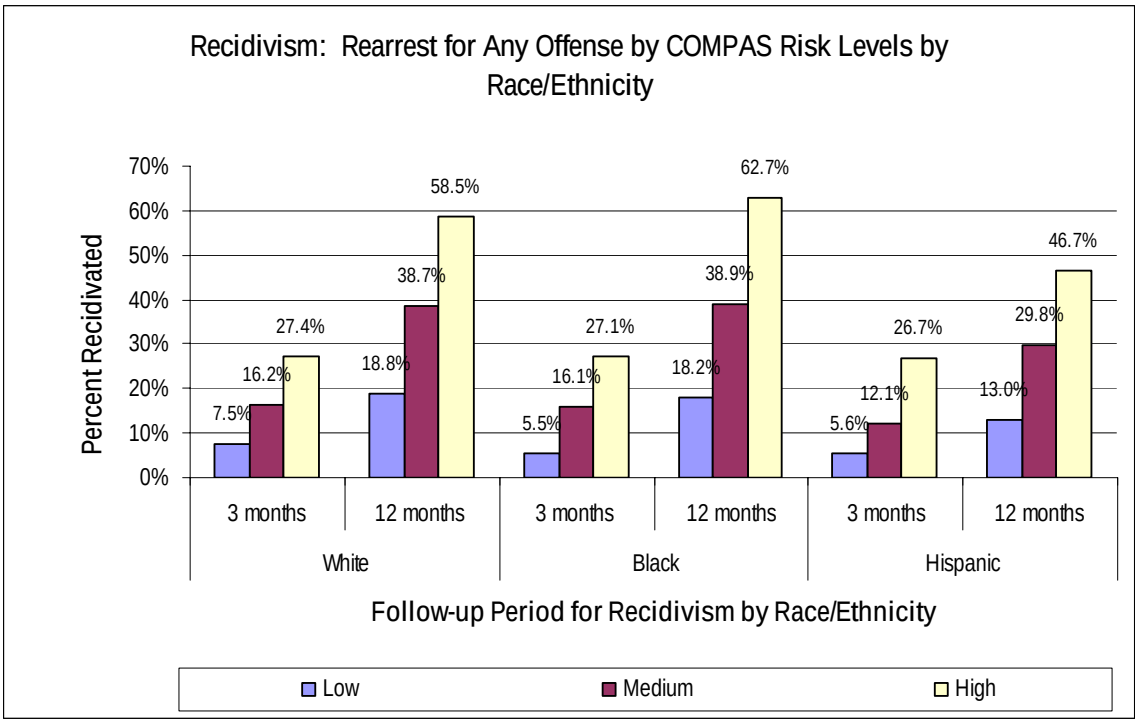
- The predictive accuracy of COMPAS is equivalent across whites, black and Hispanic offenders in the immediate follow-up period (one month) and is slightly greater for black offenders in the intermediate (six months) and long-term (12 months) follow-up periods. Specifically, the analysis for the intermediate follow-up period shows that 10.3% of black offenders assessed by COMPAS as low risk recidivated compared to 43.3% of the black offenders COMPAS assessed as high risk, for a difference of 33.0%. By comparison, the difference was 26.7% for white offenders with 12.1% in the low-risk level recidivating compared to 38.8% in the high-risk level. Comparable findings emerge when examining the differences within the long-term follow-up period (12 months).

Table 6. Recidivism: Percentage of Offenders Rearrested for Any Offense Across COMPAS Risk Levels by Race/Ethnicity✦

Follow-up Period	Recidivism by COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
White	3.3%	7.9%	12.8%
Black	2.0%	7.8%	13.4%
Hispanic	3.4%	2.2%	13.3%
2 Months:			
White	5.5%	10.8%	22.2%
Black	4.0%	12.1%	20.0%
Hispanic	4.8%	8.8%	16.7%
3 Months:			
White	7.5%	16.2%	27.4%
Black	5.5%	16.1%	27.1%
Hispanic	5.6%	12.1%	26.7%
6 Months:			
White	12.1%	24.2%	38.8%
Black	10.3%	26.5%	43.3%
Hispanic	10.9%	21.4%	44.8% †
9 Months:			
White	16.3%	31.8%	48.6%
Black	14.6%	33.5%	53.8% †
Hispanic	12.1%	21.2%	52.6%
12 Months:			
White	18.8%	38.7%	58.5%
Black	18.2%	38.9%	62.7%
Hispanic	13.0%	29.8%	46.7% †

✦ Recidivate/Recidivism is defined as rearrest for any offense.
† Denotes a cell size with fewer than 30 cases

Chart 5. Recidivism: Rearrest for Any Offense Across COMPAS Risk Levels by Race/Ethnicity



COMPAS and Recidivism: Rearrest for Any Offense by Offense Type

Table 7 and Chart 6 address the research question: Are there differences in the predictive accuracy of the COMPAS risk assessment for offenders released from jail pretrial by offense type (original offense)? The offenses were categorized into four categories to simplify the analysis: violent, property, drug, and other.

- As the risk level identified by the COMPAS instrument increases, the likelihood of actual recidivism increases, regardless of the type of crime initially committed within each of the six follow-up periods.
- Violent offenders consistently have lower recidivism rates than those arrested for property, drug, or other crimes regardless of the length of the follow-up period or the COMPAS risk level. Drug and property offenders generally

have similar recidivism rates when comparisons are made within each of the COMPAS risk level categories and follow-up periods. In the few instances when this pattern does not occur, drug offenders recidivated at somewhat higher levels.

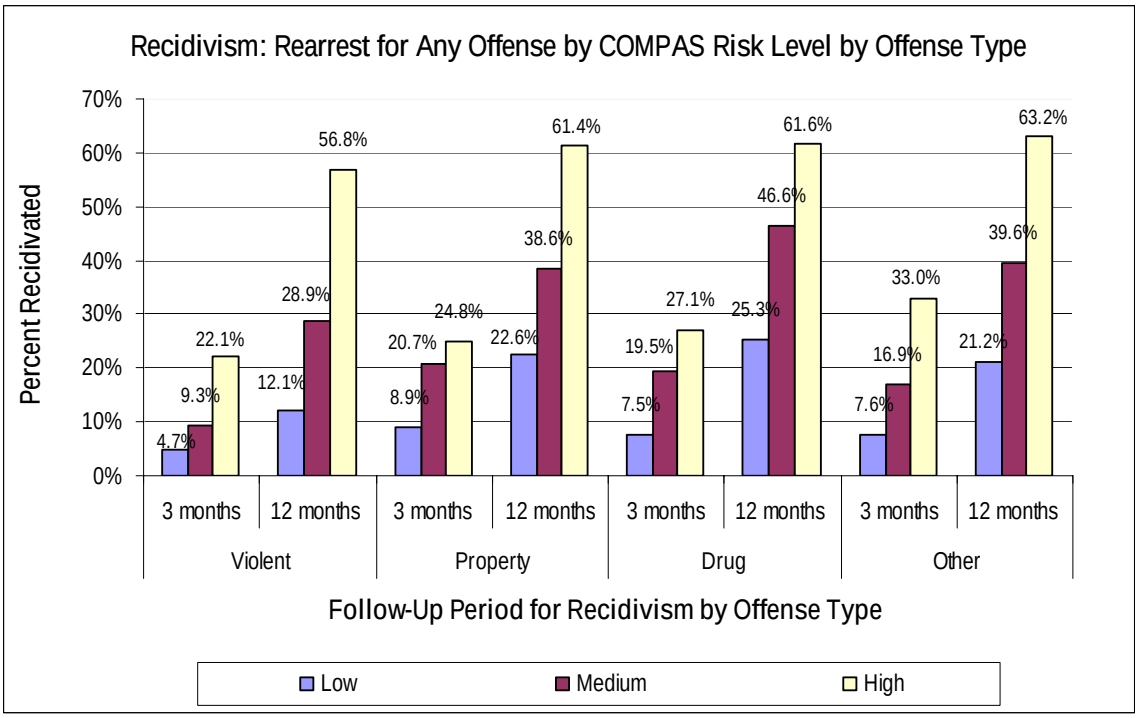
- Focusing on immediate recidivism outcomes based on the one month follow-up period, the predictive accuracy of COMPAS is most pronounced among offender arrested for "other" and drug crimes. The percentage of other offenders who recidivated increased from 3.3% for those assessed as low risk to 20.7% for those assessed as high risk, an increase of 17.4%. Among drug offenders, this difference was 10.4% (2.2% to 12.6%). In contrast, among violent and property offenders, the increase in actual recidivism increased by only 5.9% and 5.1%, respectively, for those assessed as low risk versus high risk (violent: from 2.1% to 8.0%; property: from 4.3% to 9.4%).
- Examining the intermediate follow-up period of six months indicates relative consistency in the COMPAS risk assessment across the four offense categories. A finding of interest when in the long term (12 month) follow-up period is that violent offenders who were assessed as low risk had the lowest actual rate of recidivism (12.1%) of any offense type. Also, the difference in actual recidivism between the low risk and high risk rates for this group was higher than any other offense category (44.7%; from 12.1% to 56.8%). Therefore, in terms of long term predictions of rearrest, the COMPAS risk assessment is particularly effective when applied to violent offenders released from jail pretrial.

Table 7. Recidivism: Rearrest for Any Offense Across COMPAS Risk Levels by Type of Offense✦

Follow-up Period	Recidivism by COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
Violent	2.1%	4.5%	8.0%
Property	4.3%	9.2%	9.4%
Drug	2.2%	8.5%	12.6%
Other	3.3%	8.2%	20.7%
2 Months:			
Violent	3.6%	6.1%	14.2%
Property	7.0%	13.4%	18.8%
Drug	4.4%	14.6%	21.0%
Other	5.9%	12.3%	26.1%
3 Months:			
Violent	4.7%	9.3%	22.1%
Property	8.9%	20.7%	24.8%
Drug	7.5%	19.5%	27.1%
Other	7.6%	16.9%	33.0%
6 Months:			
Violent	7.9%	18.6%	38.2%
Property	15.1%	29.4%	41.0%
Drug	14.0%	28.1%	43.9%
Other	13.0%	26.2%	43.6%
9 Months:			
Violent	9.6%	22.9%	50.4%
Property	20.1%	36.6%	49.2%
Drug	20.1%	36.2%	52.7%
Other	19.1%	34.0%	55.6%
12 Months:			
Violent	12.1%	28.9%	56.8%
Property	22.6%	38.6%	61.4%
Drug	25.3%	46.6%	61.6%
Other	21.2%	39.6%	63.2%

✦ Recidivate/Recidivism is defined as rearrest for any offense.

Chart 6. Recidivism: Rearrest for Any Offense Across COMPAS Risk Levels by Type of Offense



COMPAS and Violence: Rearrest for a Violent Crime

This section addresses the research question: How well does the COMPAS risk assessment instrument predict levels of future violence for offenders released from jail pretrial across six follow-up periods? Overall, regardless of the length of the follow-up period, the data consistently demonstrate that offenders assessed by COMPAS as having a high risk of future violence did, in fact, commit violent crime at higher rates than offenders assessed at lower risk levels. As presented in Table 8 and Charts 7 and 8, within the immediate follow-up period (one month), 2.5% of offenders assessed as having a high risk of violence post-release did commit a violent act compared to 1.3% of offenders assessed as medium risk and 0.7% for offenders assessed as low risk. However, while these differences in violent recidivism across the three risk levels for

violence are statistically significant ($p<.05$), the numerical differences are relatively minimal. Within the intermediate follow-up period (six months), 8.0% of the offenders assessed as high risk of violence actually did commit a violent offense compared to 4.2% for medium-risk offenders and 2.2% for low-risk offenders. This indicates continued support for the predictive efficacy of the COMPAS risk assessment instrument and indicates greater predictive power than with outcomes associated with the immediate follow-up period (one month). Examining the long-term period (12 months) indicates greater predictive power of the COMPAS risk assessment instrument in its ability to differentiate between offenders who will commit future acts of violence—12.5% of the offenders assessed as high risk committed a violent crime compared to 4.8% of the offenders assessed as medium risk and 3.0% for offenders assessed as low risk.

Table 8 and Chart 8 also display outcome data comparing the relative differences between COMPAS risk levels for future violence. This comparison represents the predictive accuracy of the COMPAS risk assessment instrument when comparing actual levels of post-release violence across risk levels—"low risk" versus "medium risk," "medium risk" versus "high risk," and "low risk versus high risk." These comparisons address the research question: Are there similar levels of predictive accuracy for future violence when comparing low risk versus medium risk and medium risk versus high risk? The data indicate that this does not occur when comparing the differences between low risk and medium risk versus medium risk and high risk during each of the follow-up periods. Specifically, the difference in actual future violence between low-risk offenders and medium-risk offenders ranges from 0.6% (0.7% to 1.3%) during the immediate follow-up period (one month) to 2.0% (2.2% to 4.2%) in the intermediate follow-up

period (six months). In contrast, the differences in actual violence between offenders assessed as medium risk compared to offenders assessed as high risk are substantially higher, ranging from 1.2% (1.3% to 2.5%) in the immediate follow-up period (one month) to 7.7% (4.8% to 12.5%) in the long-term follow-up period (12 months). These results indicate that the COMPAS risk assessment predicts future violence more accurately when discriminating between medium-risk offenders and high-risk offenders than for low risk and medium risk.

The findings from the analysis of the predictive accuracy of COMPAS in assessing offenders' likelihood of committing future violence post release are summarized below. First, offenders identified as having a high risk of future violence are, in fact, more likely to commit violent acts post release. Second, the predictive power of COMPAS for violent offending is not as substantial as its ability to predict overall recidivism as reported previously. Third, the ability of COMPAS to predict future violence improves as the follow-up period lengthens. Fourth, COMPAS is more accurate in discriminating between medium risk and high risk for violence than low versus high risk.

Table 8. Violence: Percentage of Offenders Rearrested for a Violent Offense Across COMPAS Risk Level

Follow-up Period	Violence by COMPAS Risk Level			Differences Between Recidivism Across COMPAS Risk Levels		
	Low Risk	Medium Risk	High Risk	Low to Medium	Medium to High	Low to High
1 Month *:						
Recidivism	0.7%	1.3%	2.5%	0.6%	1.2%	1.8%
No Recidivism	99.3%	98.7%	97.5%			
Number of Cases	3,735	1,262	578			
2 Months *:						
Recidivism	1.0%	1.3%	3.1%	0.3%	1.8%	2.1%
No Recidivism	99.0%	98.7%	96.9%			
Number of Cases	3,735	1,262	578			
3 Months:						
Recidivism	1.4%	2.1%	4.4%	0.7%	2.3%	3.0%
No Recidivism	98.6%	97.9%	95.6%			
Number of Cases	3,735	1,262	578			
6 Months:						
Recidivism	2.2%	4.2%	8.0%	2.0%	3.8%	5.8%
No Recidivism	97.8%	95.8%	92.0%			
Number of Cases	3,549	1,184	531			
9 Months:						
Recidivism	2.5%	4.1%	8.5%	1.6%	4.4%	6.0%
No Recidivism	97.5%	95.9%	91.5%			
Number of Cases	2,714	891	388			
12 Months:						
Recidivism	3.0%	4.8%	12.5%	1.8%	7.7%	9.5%
No Recidivism	97.0%	95.2%	87.5%			
Number of Cases	1,757	535	226			

* Denotes the relationship is *not* statistically significant in the cross-tabulation for that group at the $p < .05$ level.

Chart 7. Violence: Rearrest for a Violent Offense Across COMPAS Risk Levels

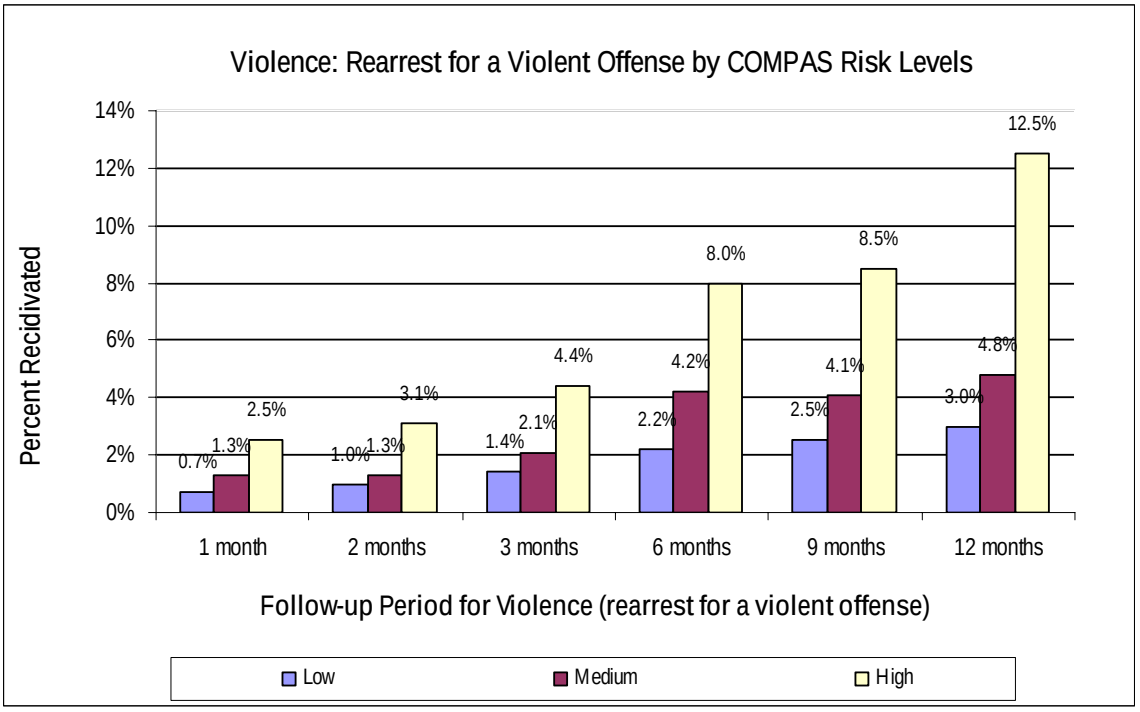
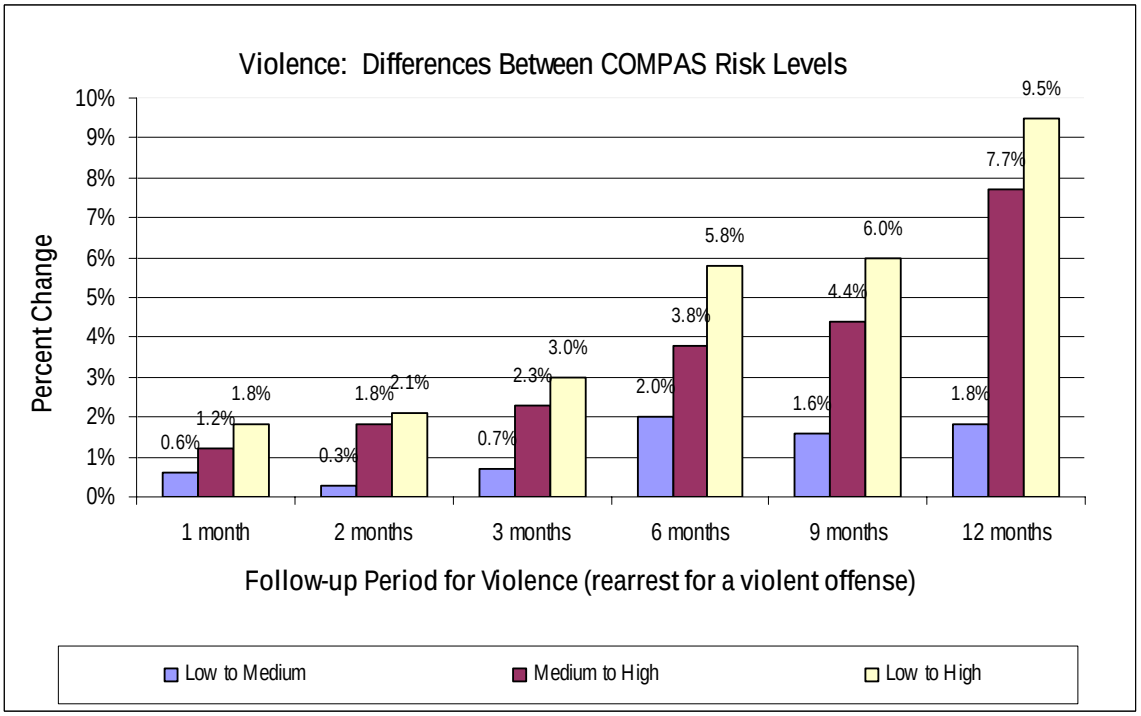


Chart 8. Violence: Differences Between COMPAS Risk Levels Across Follow-Up Periods



COMPAS and Violence: Rearrest for a Violent Crime by Sex

Table 9 and Chart 9 address the research question: Are there differences in the predictive accuracy of the COMPAS risk assessment instrument for violent recidivism between males and females released from jail pretrial. The table displays outcome data comparing the relative differences between each COMPAS risk level for predicted violence compared with actual violence for males and females for each of the six follow-up periods. The following conclusions are derived from this data.

- As the predicted risk level for future violence as assessed by the COMPAS instrument increases from low, medium, to high among males, the occurrence of actual violence increases within each of the follow-up periods. In contrast, while females assessed as medium risk consistently reoffend for a violent crime at a greater rate than those assessed as low risk, actual violent recidivism decreases when comparing females assessed as medium risk to those assessed as high risk.
- Within the immediate follow-up period (one month), females have somewhat higher violent recidivism rates than males. However, for the intermediate (six months) and long-term (12 months) follow-up periods, males commit violence post release at higher rates.
- The predictive accuracy of COMPAS in terms of future violence increases within the short-term follow-up period (one month) for males and females at a comparable rate. The difference in violent recidivism is 1.9% (0.5% to 2.4%) among males in the low-risk level versus the high-risk level and 1.8% (0.9% to 2.7%) for females. This minimal difference is also present for the long-

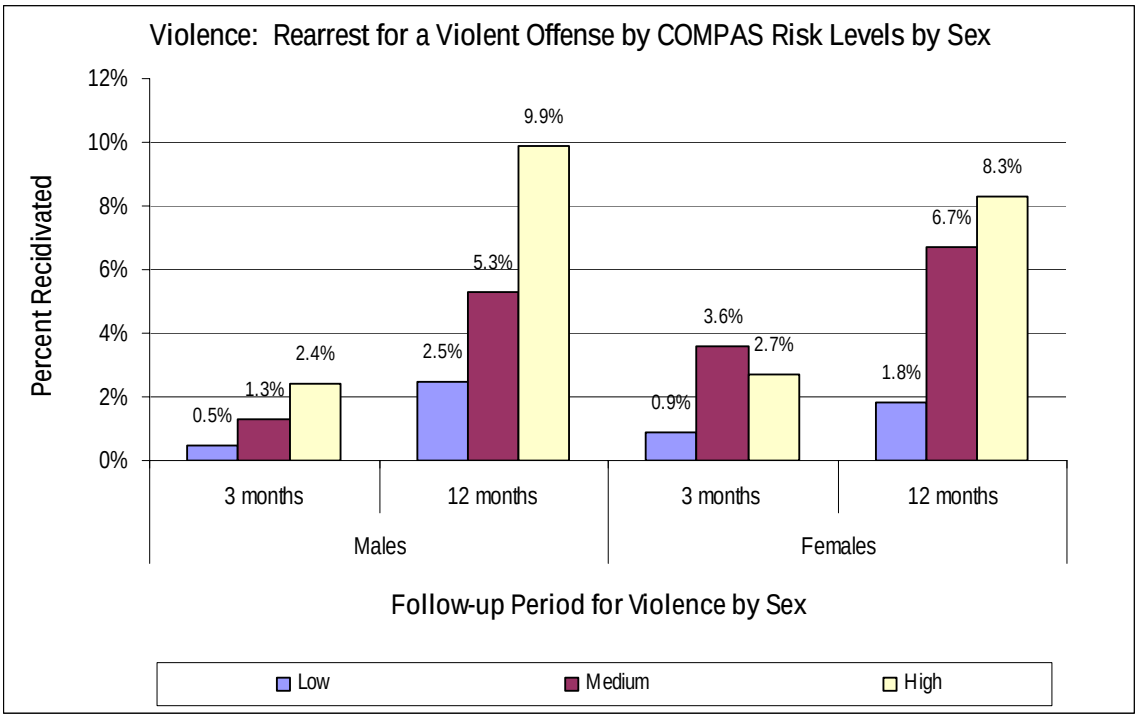
term follow-up period (12 months) in which the difference in violent recidivism is 7.4% (2.5% to 9.9%) for males in the low-risk level versus the high-risk level and 6.5% (1.8% to 8.3%) for females. In contrast, the predictive accuracy of COMPAS in terms of future violence within the intermediate follow-up period (six months) is significantly less for females than males. Specifically, the difference in violent recidivism is 5.3% (1.8% to 7.1%) for males in the low-risk level versus the high-risk level and 1.3% (1.6% to 2.9%) for females.

Table 9. Violence: Percentage of Offenders Rearrested for a Violent Offense Across COMPAS Risk Levels by Sex

Follow-up Period	Violence by COMPAS Risk Level		
	Low Risk	**Medium Risk**	**High Risk**
1 Month:			
Males	0.5%	1.3%	2.4%
Females	0.9%	3.6%	2.7%
2 Months:			
Males	0.8%	1.7%	3.1%
Females *		3.6%	2.7%
3 Months:			
Males	1.2%	2.3%	4.8%
Females	1.2%	4.3%	2.7%
6 Months:			
Males	1.8%	3.6%	7.1%
Females *	1.6%	4.4%	2.9%
9 Months:			
Males	2.3%	4.6%	7.7%
Females	1.8%	11.5%	4.2% †
12 Months:			
Males	2.5%	5.3%	9.9%
Females	1.8%	6.7%	8.3% †

* Denotes the relationship is *not* statistically significant in the cross-tabulation for that group at the $p < .05$ level.

Chart 9. Violence: Rearrest for a Violent Offense Across COMPAS Risk Levels by Sex



COMPAS and Violence: Rearrest for a Violent Offense by Age Groups

Table 10 and Chart 10 address the research question: Are there differences in the accuracy of the COMPAS risk assessment system in predicting violent recidivism subsequent to pre-trial jail release across four offender age groups: 18–23 years, 24–29 years, 30–39 years, and 40 years and older?

- When comparing predicted versus actual violence between the medium-risk and high-risk levels, with a few exceptions (seven of 24 comparisons), as the predicted risk level for violence increases, actual violent recidivism increases, regardless of the offender's age grouping within each of the six follow-up periods.

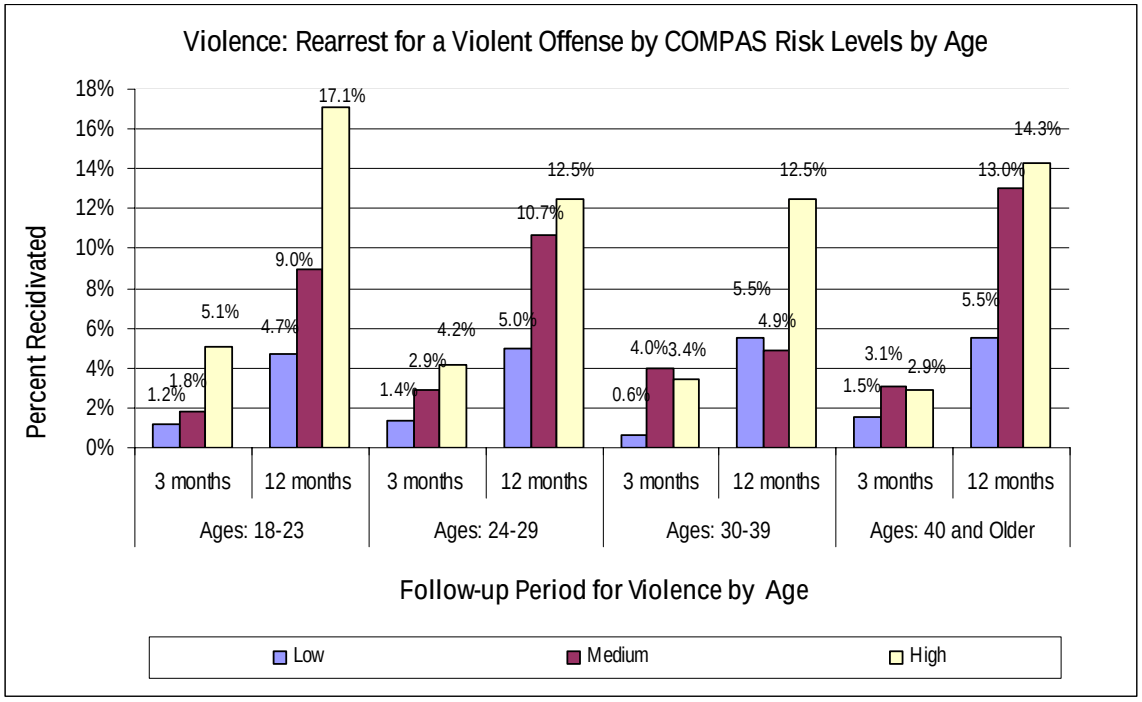
- When comparing predicted versus actual violence between the low-risk and high-risk levels, there are only two instances across the four age groups and six follow-up periods in which the percentage of offenders assessed as high risk actually commit violence at rates less than or equal to those assessed as low risk (24-29 years: 0.0%; 30-39 years -1.3%).
- Examining the immediate follow-up period (one month), the data indicate that COMPAS is most predictive for violent recidivism among offenders 30 to 39 years of age. Specifically, only 0.3% offenders in this age group defined as having a low risk of violence committed a violent crime post jail release compared to 3.4% in the high-risk level. Based on the intermediate follow-up period (six months), COMPAS was most effective in predicting violent recidivism for the age group 24 to 29 years—3.9% of offenders assessed as low risk actually committed violence post release compared to 11.8% for those assessed as high risk, or a difference of 7.9%. In the long-term follow-up period (12 months), the youngest age group of 18 to 23 years exhibited the highest difference in predicted versus actual violence from the low-risk level to the high-risk level (4.7% to 17.1%, or +12.4).

Table 10. Violence: Percentage of Offenders Rearrested for a Violent Offense Across COMPAS Risk Levels by Age Groups

Follow-up Period	Violence by COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
18-23 years *	0.6%	1.3%	2.7%
24-29 years *	0.8%	1.8%	0.8%
30-39 years	0.3%	1.5%	3.4%
40 years and older	0.6%	2.3%	2.9%
2 Months:			
18-23 years	1.2%	1.5%	3.5%
24-29 years *	1.2%	1.8%	1.7%
30-39 years	4.7%	2.5%	3.4%
40 years and older	0.7%	3.1%	2.9%
3 Months:			
18-23 years	1.2%	1.8%	5.1%
24-29 years *	1.4%	2.9%	4.2%
30-39 years	0.6%	4.0%	3.4%
40 years and older *	1.5%	3.1%	2.9%
6 Months:			
18-23 years	2.7%	5.8%	8.9%
24-29 years	3.9%	5.4%	11.8%
30-39 years	2.7%	7.1%	9.6%
40 years and older	3.5%	9.5%	6.5%
9 Months:			
18-23 years	1.6%	3.3%	8.2%
24-29 years	1.6%	5.9%	7.9%
30-39 years	1.5%	8.4%	4.7%
40 years and older *	3.2%	4.9%	5.0%
12 Months:			
18-23 years	4.7%	9.0%	17.1%
24-29 years	5.0%	10.7%	12.5%
30-39 years *	5.5%	4.9%	12.5%
40 years and older *	5.5%	13.0%	14.3%

* Denotes the relationship is *not* statistically significant in the cross-tabulation for that group at the $p < .05$ level..

Chart 10. Violence: Rearrest for a Violent Offense Across COMPAS Risk Levels by Age Groups



COMPAS and Violence: Rearrest for a Violent Offense by Race/Ethnicity

Table 10 and Chart 11 address the research question: Are there differences in the predictive accuracy of the COMPAS risk assessment system for violent recidivism between racial/ethnic offenders (white, black, and Hispanic) released from jail pretrial?

- As the predicted level of violence increases, the occurrence of actual violence increases regardless of the offender's race or ethnicity across all of the follow-up periods. The exception to this finding is among white offenders assessed as high risk in the immediate follow-up period (one month) where no offender recidivated for a violent offense.
- Within the Hispanic group, the relationships between predicted and actual violence are statistically significant with the exception of the immediate

follow-up period (one month). In the immediate follow-up period, 0.7% of the Hispanic offenders assessed as low risk committed violence, 2.2% of offenders assessed as medium risk committed violence, and 3.9% assessed as high risk committed violence post release.

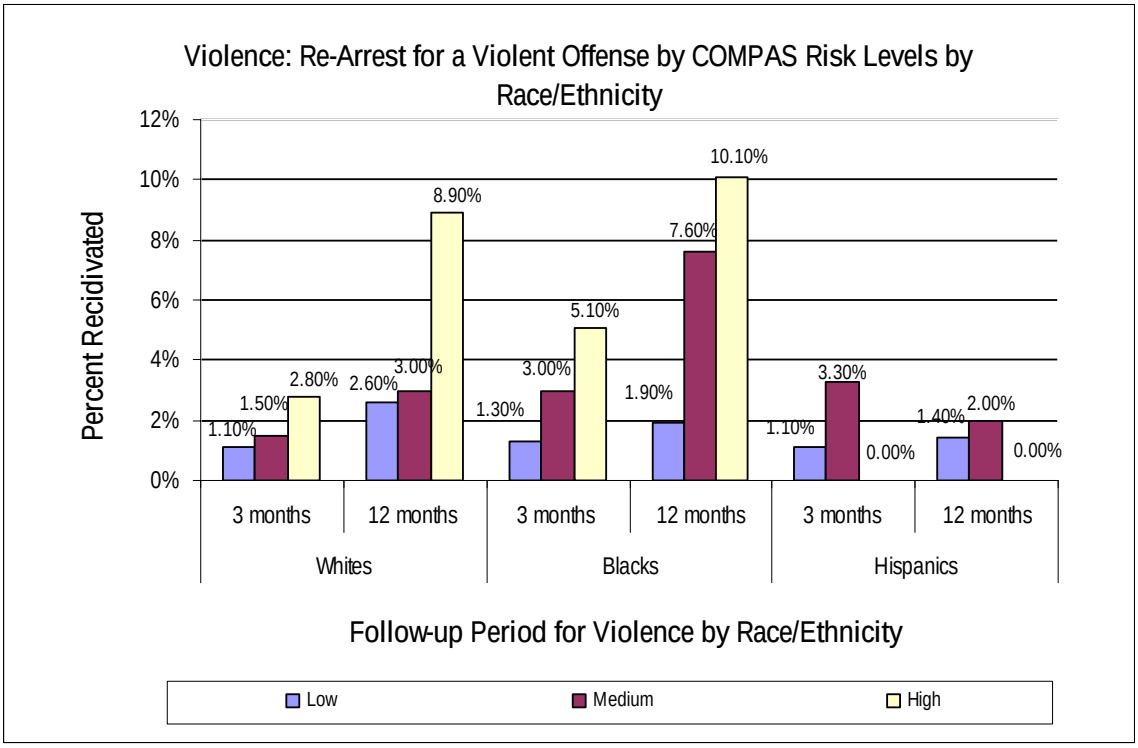
- Based on the intermediate follow-up period (six months), there are significant relationship between predicted and actual violence for both black and Hispanic offenders. COMPAS was most effective in predicting violent recidivism among Hispanics with 11.5% of the high risk offenders committing a violent crime compared to 1.5% of those defined as low risk, a difference of 10.0%. COMPAS was least effective in predicting violent recidivism among whites with only 3.8% of the high risk offenders committing a violent crime compared to 1.6% of those defined as low risk, a difference of 2.2%.
- The long-term follow-up period (12 months) findings are consistent with the intermediate follow-up period. COMPAS was most effective in predicting violent recidivism among Hispanics with 20.0% of the high-risk offenders committing a violent crime compared to 1.4% of those defined as low risk, a difference of 18.6%. COMPAS was least effective in predicting violent recidivism among whites with 8.9% of the high-risk offenders committing a violent crime compared to 2.6% for low-risk offenders, a difference of 6.3%.

Table 11. Violence: Rearrest for a Violent Offense Across COMPAS Risk Levels by Race/Ethnicity

Follow-up Period	Violence by COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
White*	0.6%	1.0%	0.0%
Black	0.5%	1.8%	3.2%
Hispanic*	0.7%	2.2%	3.9% †
2 Months:			
White*	0.8%	1.3%	1.4%
Black	0.9%	2.1%	3.4%
Hispanic	0.7%	3.3%	7.7%†
3 Months:			
White*	1.1%	1.5%	2.8%
Black	1.3%	3.0%	5.1%
Hispanic	1.1%	3.3%	7.7%†
6 Months:			
White*	1.6%	1.7%	3.8%
Black	1.8%	4.8%	7.6%
Hispanic	1.5%	3.5%	11.5%†
9 Months:			
White*	2.3%	2.6%	5.0%
Black	2.3%	6.1%	8.6%
Hispanic	1.0%	4.6%	11.8%†
12 Months:			
White	2.6%	3.0%	8.9%
Black	1.9%	7.6%	10.1%
Hispanic	1.4%	2.0%	20%†

* Denotes the relationship is *not* statistically significant in the cross-tabulation for that group at the $p < .05$ level.
† Denotes cell size smaller than n=30

Chart 11. Violence: Rearrest for a Violent Offense Across COMPAS Risk Levels by Race/Ethnicity



COMPAS and Violence: Rearrest for a Violent Offense by Offense Type

Table 12 and Chart 12 address the research question: Are there differences in the predictive accuracy of the COMPAS risk assessment system when predicting future violence based on the primary offense charge for offenders released from jail pretrial. For purposes of the analysis, offenses were analyzed using four categories: violent, property, drug, and other.

- When comparing offenders predicted to commit violence by COMPAS with those who actually committed violence post release, the actual occurrence of violence increased in accordance with the increased predicted levels of violence—across offense types and follow-up periods with only a few

exceptions. As the predicted risk level increased from low to medium and medium to high, the actual occurrence of violent recidivism increases. The exception includes offenders whose primary charge was a drug offense in the immediate (one month), three-month, nine-month, and long-term (12 months) follow-up periods, in which the actual rate of violent recidivism decreased slightly for offenders in the high-risk level versus the medium-risk level [one month follow up: 1.3% to 0.8% = (-0.5%); three month follow up: 2.0% to 1.7% = (-0.3%); nine month follow up: 3.7% to 2.4% = (-1.3%); 12-month follow up 5.7% to 2.0% = (-3.7%)].

- Offenders whose primary offense charge was a violent crime do not exhibit the highest occurrence of repeat violent. Violent offenders have lower recidivism rates for future violence. Offenders arrested for "other" offenses typically were the most likely to recidivate for a violent offense within each of the three risk levels (low, medium, and high) and across the six follow-up periods. Drug offenders generally had the lowest violent recidivism rates across the six follow-up periods.
- Within the immediate (one month) follow-up period, the predictive accuracy of COMPAS for future violence is most pronounced among offender arrested for "other" and property crimes. The percentage of offenders charged with an "other" offense recidivated at increasing levels from 0.7% for low risk to 3.6% for high risk, an increase of 2.9%. Among property offenders, the increase in recidivism for violence was 2.0% (0.2% to 2.2%). In contrast, among violent and drug offenders, the increase in recidivism rates increased

by 1.8% and 0.5%, respectively, for those assessed as low versus high risk (violent – from 0.7% to 2.5%; drug – from 0.3% to 0.8%).

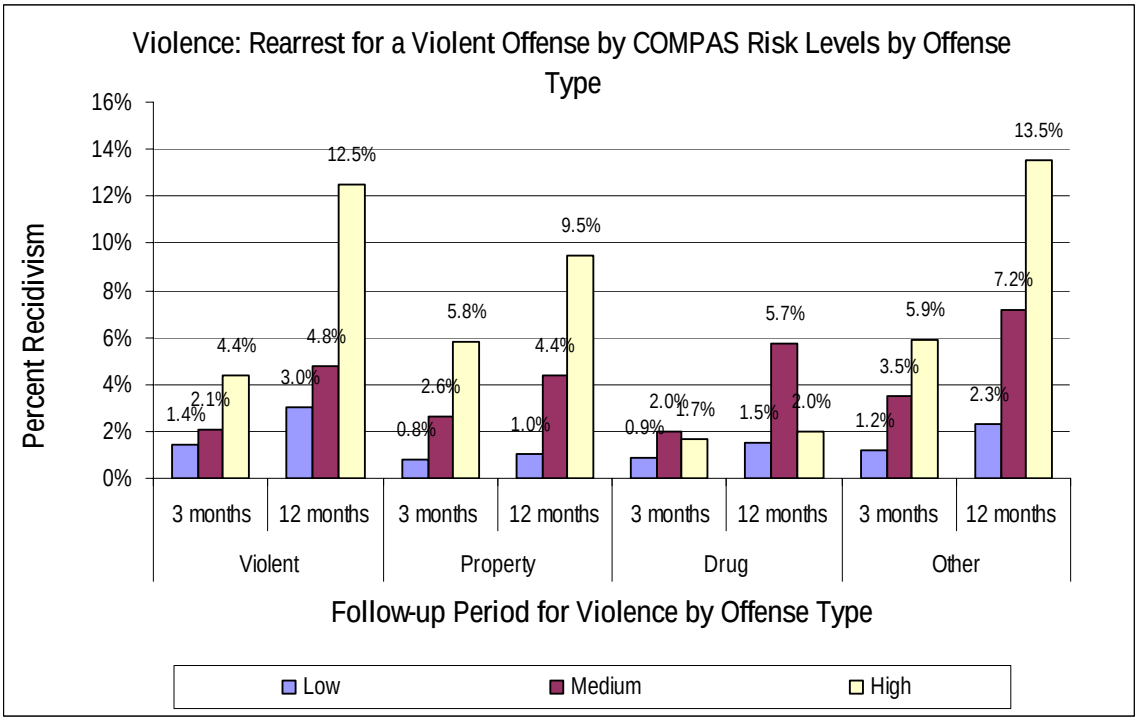
- Examining the intermediate (six months) follow-up period indicates relative consistency in the predictive accuracy of COMPAS for violence across three of the four offense categories—violent, property, and other. Specifically, the increase in the percentage of offenders with violent recidivism between the low-risk and high-risk levels are 5.2% for property offenders (1.1% versus 6.3%), 5.8% for violent offenders (2.2% versus 8.0%), and 6.0% for other offenders (1.7% versus 8.6%). In contrast, among drug offenders, there was little evidence that COMPAS was on target in predicting the likelihood of violent recidivism as evidence by a 1.5% increase in violent recidivism between low and high risk offenders (1.2% versus 2.7%) and only a 0.2% increase in violent recidivism among offenders identified as high risk compared to medium risk.
- Focusing on the long-term (12 months) follow-up period results in comparable conclusions to the intermediate follow-up period. Specifically, the COMPAS risk assessment is predictive of future violence for offenders charged with violent, property and other offenses, but not for drug offense.

Table 12. Violence: Rearrest for a Violent Crime by COMPAS Risk Levels by Offense Type

Follow-up Period	Violence by COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
Violent *	0.7%	1.3%	2.5%
Property	0.2%	1.5%	2.2%
Drug *	0.3%	1.3%	0.8%
Other	0.7%	2.2%	3.6%
2 Months:			
Violent *	1.0%	1.3%	3.1%
Property *	0.6%	1.9%	2.9%
Drug *	0.4%	1.7%	1.6%
Other	0.9%	3.9%	4.1%
3 Months:			
Violent	1.4%	2.1%	4.4%
Property	0.8%	2.6%	5.8%
Drug *	0.9%	2.0%	1.7%
Other	1.2%	3.5%	5.9%
6 Months:			
Violent	2.2%	4.2%	8.0%
Property	1.1%	3.2%	6.3%
Drug *	1.2%	2.5%	2.7%
Other	1.7%	4.6%	8.6%
9 Months:			
Violent	2.5%	4.1%	8.5%
Property	1.2%	4.7%	6.1%
Drug *	1.4%	3.7%	2.4%
Other	2.6%	6.6%	11.1%
12 Months:			
Violent	3.0%	4.8%	12.5%
Property	1.0%	4.4%	9.5%
Drug	1.5%	5.7%	2.0%
Other	2.3%	7.2%	13.5%

* Denotes the relationship is *not* statistically significant in the cross-tabulation for that group at the $p < .05$ level.
† Denotes cell size smaller than n=30

Chart 12. Violence: Rearrest for a Violent Offense Across COMPAS Risk Levels by Offense Type



COMPAS and Failure to Appear (FTA)

Table 13 and Charts 13 and 14 address the research question: How well does the COMPAS assessment predict FTA for offenders released from jail pretrial? These tables and charts present data reflecting COMPAS's predictive levels of FTA compared with actual levels of FTA for offenders in the sample. Examining the rates of FTA among offenders defined as low risk and medium risk for FTA across the follow-up periods indicates that offenders assessed as high risk for FTA are consistently more likely to FTA. However, rates of actual FTA for offenders assessed as medium risk versus high risk are mixed across the six follow-up periods. The short-term follow-up period (one month) supports the accuracy of COMPAS to predict FTA with an increase in actual FTA

from 1.3% among offenders assessed as medium risk to 3.0% for offenders assessed as high risk, an increase of 1.7%.

In contrast, the intermediate follow-up period (six months) indicates no improvement in the prediction of the actual occurrences of FTA relative to the prediction of high risk versus medium risk. Specifically, 15.7% of the offenders assessed as medium risk for FTA actually did fail to appear in court as mandated and 15.6% of offenders assessed as high risk for FTA actually failed to appear in court. The long-term follow-up period (12 months) also indicates the FTA risk assessment prediction for the medium risk and high risk offenders is not consistent with actual FTA behavior. Specifically, 18.0% of the offenders assessed as medium risk failed to appear in court compared to 17.2% of the offenders assessed as high risk for FTA. In summary, this analysis indicates the need to further examine the predictive accuracy of COMPAS for assessing offenders' likelihood of appearing in court post release from jail pretrial with possible adjustments made to the assessment questions or scale.

Table 13. FTA: Percentage of Offenders Who Failed to Appear Across COMPAS Risk Levels

Follow-up Period	COMPAS Risk Level			Changes Across COMPAS Risk Levels		
	Low Risk	Medium Risk	High Risk	Low to Medium	Medium to High	Low to High
1 Month:						
Failure to Appear	1.0%	1.3%	3.0%	0.3%	1.7%	2.0%
No Failure to Appear	99.0%	98.7%	97.0%			
Number of Cases	4,109	1,054	437			
2 Months:						
Failure to Appear	4.2%	6.7%	7.6%	2.5%	0.9%	3.4%
No Failure to Appear	95.8%	93.3%	92.4%			
Number of Cases	4,109	1,054	437			
3 Months:						
Failure to Appear	5.9%	9.7%	9.6%	3.8%	-0.1%	3.7%
No Failure to Appear	94.1%	90.3%	90.4%			
Number of Cases	4,109	1,054	437			
6 Months:						
Failure to Appear	9.0%	15.7%	15.6%	6.7%	-0.1%	6.6%
No Failure to Appear	91.0%	84.3%	84.4%			
Number of Cases	3,913	961	391			
9 Months:						
Failure to Appear	10.8%	16.6%	17.9%	5.8%	1.3%	7.1%
No Failure to Appear	89.2%	83.4%	82.1%			
Number of Cases	2,964	737	290			
12 Months:						
Failure to Appear	11.7%	18.0%	17.2%	6.3%	-0.8%	5.5%
No Failure to Appear	88.3%	82.0%	82.8%			
Number of Cases	1,901	456	163			

Chart 13. FTA: Offenders Who Failed to Appear Across COMPAS Risk Levels

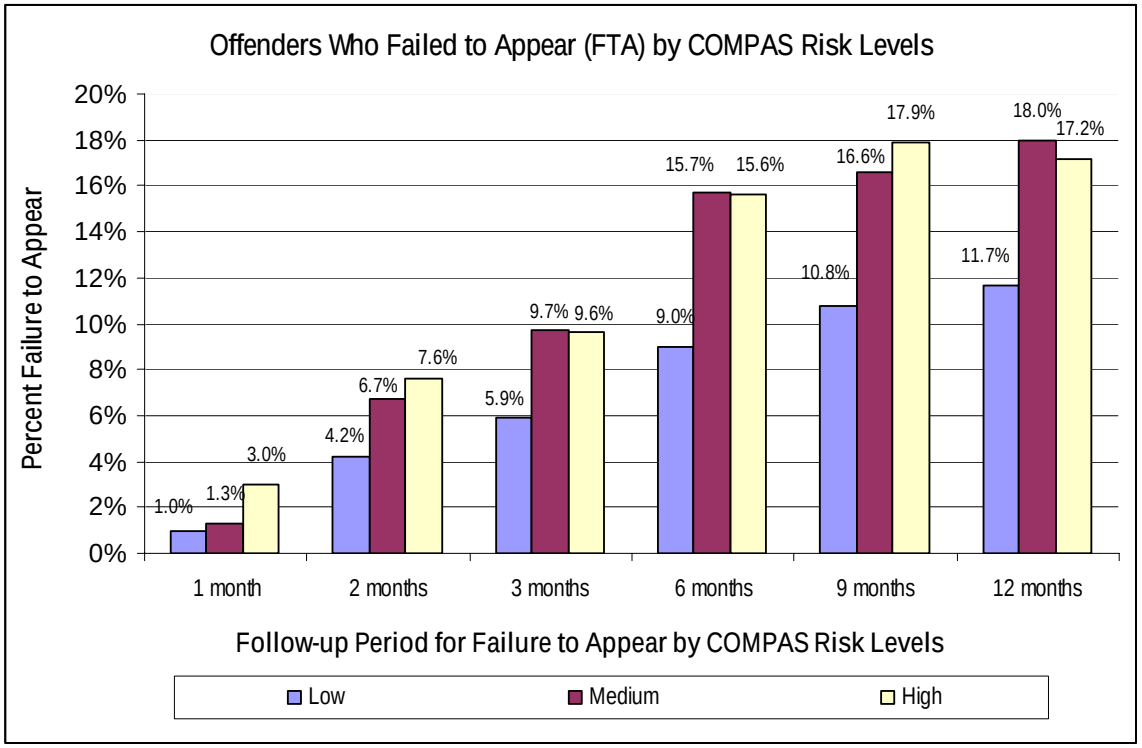
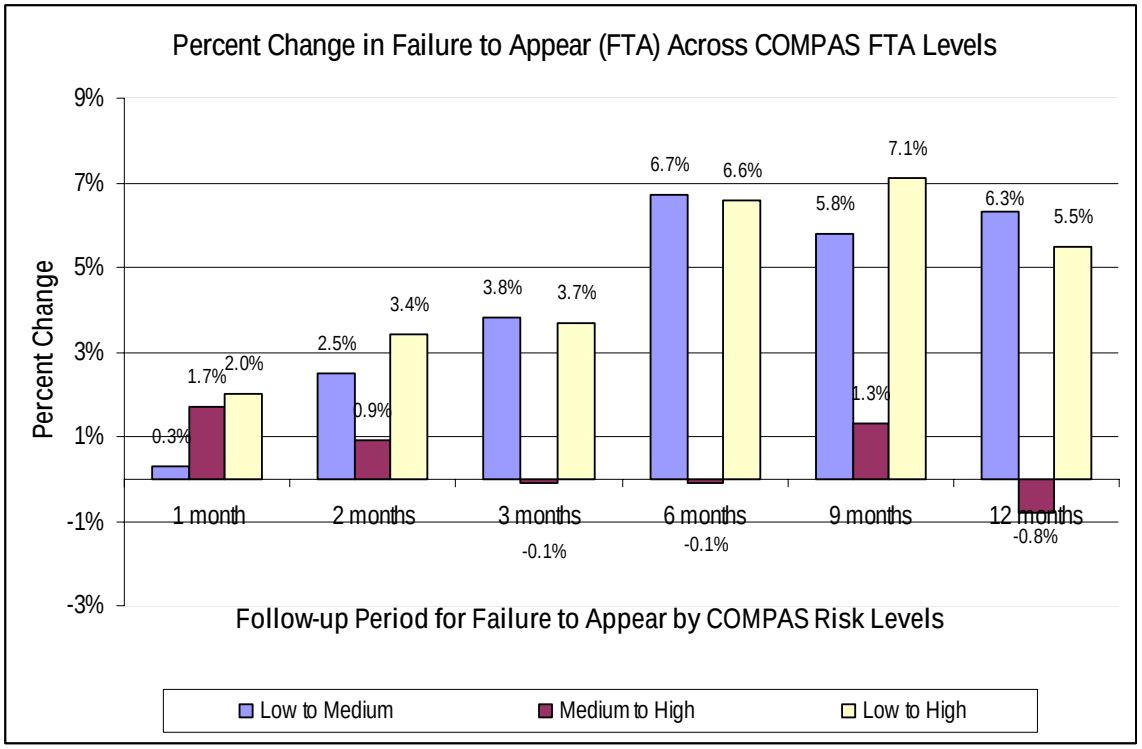


Chart 14. FTA: Differences Between COMPAS Risk Levels Across Follow-Up Periods



COMPAS and FTA: Offenders Who Failed to Appear by Sex

Table 14 and Chart 15 address the research question: Are there differences in the predictive accuracy of the COMPAS risk assessment for predicting FTA by the sex of the offender released from jail pretrial?

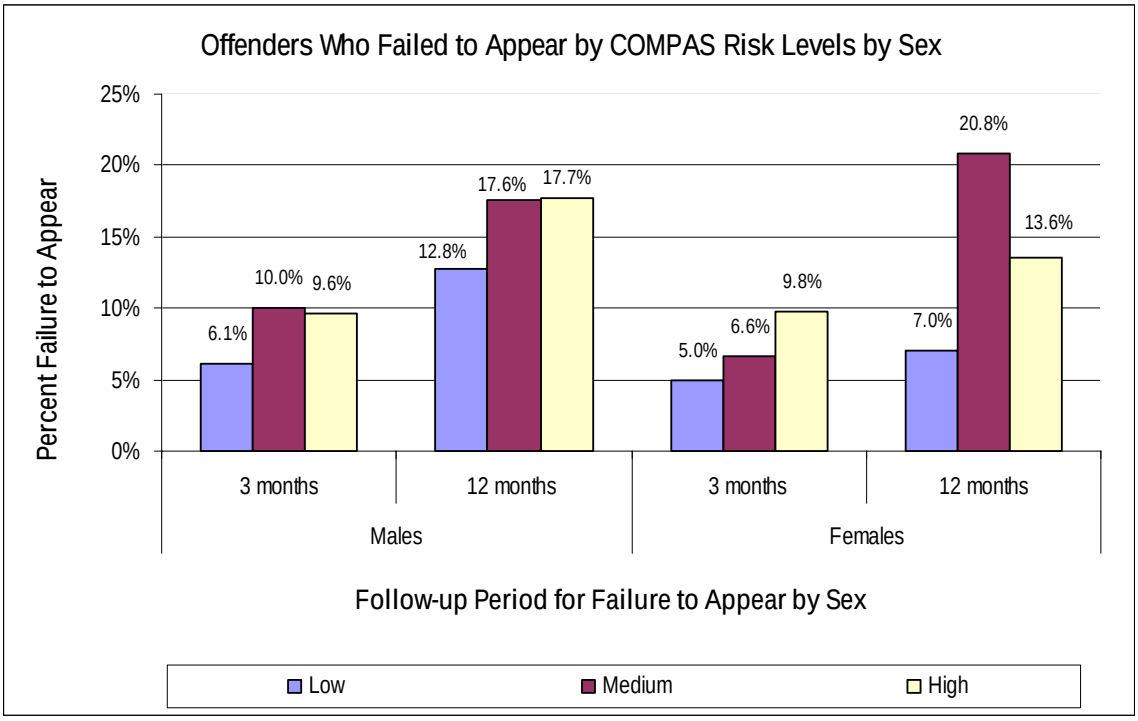
- With a few exceptions, as COMPAS's predicted risk level for FTA increases, actual FTA increases regardless of the offender's gender for each of the follow-up periods. The exceptions include, first, for males in the three month follow-up period, the actual FTA rate decreased slightly from 10.0% to 9.6% from the medium risk to high risk predicted levels of FTA. However, the overall relationship between the sex of the offender and FTA across the three risk levels (low, medium, high) was not statistically significant. Second, the actual FTA rate remained the same (16.0%) across the medium risk and high risk categories for male offenders in the six-month follow-up period. Third, among females in the nine-month follow-up period, the actual FTA rate decreased from 15.4% for offenders assessed as medium risk to 13.5% for offenders assessed as high risk. Fourth, a similar finding was found for the long-term follow-up period (12 months) the actual rate of FTA for females decreased from 20.8% for those offenders assessed as medium risk to 13.6% for those offenders assessed as high risk; however, the number of female cases in the high-risk group was relatively small. The research team designated a cell size of 30 as a minimum for analysis and to draw inferences about the results.

- Males generally have somewhat higher levels of actual FTA relative to females for all of the follow-up periods and risk levels.
- The data do not present a consistent pattern in terms of the relative predictive accuracy for FTA across COMPAS's risk levels between males and females. In the short-term follow-up period (one month), COMPAS clearly is more predictive of FTA for females than males. While the actual FTA rates increase from the low to medium, medium to high, and low to high risk levels for males and females, the differences in actual FTA across the three risk level comparisons are greater for females than males. For example, among females, only 0.3% of the low-risk group failed to appear for court compared to 3.9% of the high-risk group, or a 3.6% increase. In contrast, among males, the low-risk group failed to appear for court at a rate of 1.1% compared to 2.9% in the high-risk group, or a difference of 1.8%. Within the intermediate follow-up period (six months), the difference in actual FTA rates for females assessed as low risk and high risk is significant (6.8% to 16.3%, or +9.5%) compared to a difference of 6.6% for males (9.4% to 16.0%). Due to the low number of females in the high-risk level in the long-term follow-up period (12 months), comparison in the predictive accuracy of the FTA risk levels is not possible.

Table 14. FTA: Offenders Who Failed to Appear Across COMPAS Risk Levels by Sex

Follow-up Period	FTA by COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
Males	1.1%	1.4%	2.9%
Females	0.3%	0.9%	3.9%
2 Months:			
Males	4.4%	7.2%	7.8%
Females	3.0%	2.8%	5.9%
3 Months:			
Males	6.1%	10.0%	9.6%
Females	5.0%	6.6%	9.8%
6 Months:			
Males	9.4%	16.0%	16.0%
Females	6.8%	13.6%	16.3%
9 Months:			
Males	11.5%	16.7%	18.6%
Females	7.6%	15.4%	13.5%
12 Months:			
Males	12.8%	17.6%	17.7%
Females	7.0%	20.8%	13.6%

Chart 15. FTA: Offenders Who Failed to Appear by COMPAS Risk Levels by Sex



COMPAS and FTA: Offenders Who Failed to Appear by Age Groups

Table 15 and Chart 16 address the research question: Are there differences in the predictive accuracy of the COMPAS risk assessment for FTA across age groups? Age was categorized into four groups to simplify the analysis: 18–23 years, 24–29 years, 30–39 years, and 40 years and older. The data reflecting the younger age groups of 18 to 23 and 24 to 29 are problematic for two reasons. First, the relationship between the predicted level of FTA (low, medium, and high) and the number of offenders who actually failed to appear in court within all of the follow-up periods is not statistically significant. Second, there are few offenders assessed by COMPAS as high risk for FTA in the 18 to 23 year old across the six follow-up periods—less than the predetermined threshold of 30. Therefore, only the results for the 30 to 39 age group and 40 and older age group will be used to describe the predictive accuracy of COMPAS for FTA.

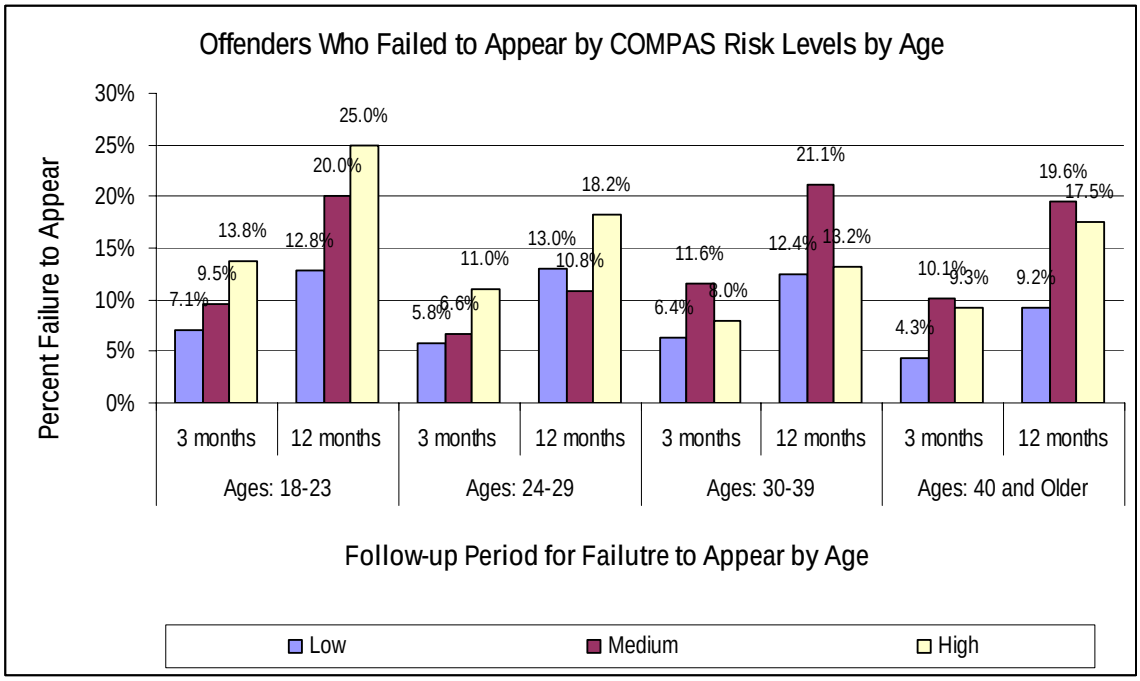
- The actual rate of FTA for the low to medium and low to high FTA risk levels increases as the predicted FTA increases, regardless of the offender's age and follow-up period. This pattern does not hold for the medium to high FTA risk levels in which the actual FTA rates are either the same or decrease. An exception to this rule is among 30 to 39 year olds in the one-month follow-up period where the actual FTA rate increased from 0.9% in the medium-risk level to 4.0% for the high-risk level.

Table 15. FTA: Offenders Who Failed to Appear Across COMPAS Risk Levels by Age

Follow-up Period	COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
18-23 years *	1.1%	1.4%	3.5% †
24-29 years *	1.2%	1.2%	2.4%
30-39 years	1.0%	0.9%	4.0%
40 years and older	0.7%	1.7%	2.7%
2 Months:			
18-23 years *	5.3%	8.2%	13.8% †
24-29 years *	4.2%	4.2%	8.5%
30-39 years	3.9%	8.8%	8.0%
40 years and older	3.2%	6.0%	6.2%
3 Months:			
18-23 years *	7.1%	9.5%	13.8% †
24-29 years *	5.8%	6.6%	11.0%
30-39 years	6.4%	11.6%	8.0%
40 years and older	4.3%	10.1%	9.3%
6 Months:			
18-23 years	9.8%	18.7%	17.9% †
24-29 years *	9.6%	10.7%	16.4%
30-39 years	9.5%	18.3%	14.6%
40 years and older	7.1%	15.6%	15.4%
9 Months:			
18-23 years *	11.6%	18.5%	20.0% †
24-29 years *	11.5%	12.3%	18.2%
30-39 years	11.5%	20.1%	16.2%
40 years and older	8.8%	15.4%	18.4%
12 Months:			
18-23 years *	12.8%	20.0%	25.0% †
24-29 years *	13.0%	10.8%	18.2%
30-39 years	12.4%	21.1%	13.2%
40 years and older	9.2%	19.6%	17.5%

* Denotes the relationship is *not* statistically significant in the cross-tabulation for that group at the $p < .05$ level.
† Denotes cell size smaller than n=30

Chart 16. FTA: Offenders Who Failed to Appear Across COMPAS Risk Levels by Age Groups



COMPAS and FTA: Offenders Who Failed to Appear by Race/Ethnicity

- Table 16 and Chart 17 address the research question: Are there differences in the predictive accuracy of the COMPAS risk assessment for FTA between racial/ethnic groups (white, black, and Hispanics). Conclusions relating to Hispanic offenders' predicted risk for FTA and actual FTA are not possible because, within all of the follow-up periods, the number of Hispanics in the high-risk level is below the minimum threshold of 30 and/or the relationship between the predicted risk level of FTA and the actual rate of FTA are not statistically significant. Inferences or conclusions would be misleading and therefore will not be presented here. However, other inferences can be made.
- For white offenders, the short-term follow-up period (one month) shows increasing rates of actual FTA across increasing levels of predicted risk for

FTA; however, the differences are minimal (low = 1.0%, medium = 1.6%, high = 2.2%). In the intermediate follow-up period (six months), the actual rates of FTA among whites almost double when comparing predicted FTA rates for low risk and medium risk (8.8% to 16.8%) but the actual FTA rate decreases when comparing medium risk to high risk (16.8% to 11.2%). An almost identical pattern emerges in the long-term follow-up period (12 months). The FTA results for black offenders are quite different from the results for white offenders. In the short-term follow-up period, blacks exhibit the same pattern of increasing levels of actual FTA as the predicted levels of FTA increases; this pattern is more pronounced than it is for white offenders. The intermediate follow-up period (six months) shows a more consistent pattern for black offenders with increasing rates of actual FTA with increasing predicted risk levels. This is also the case for the long-term follow-up period (12 months), however, the results are not statistically significant.

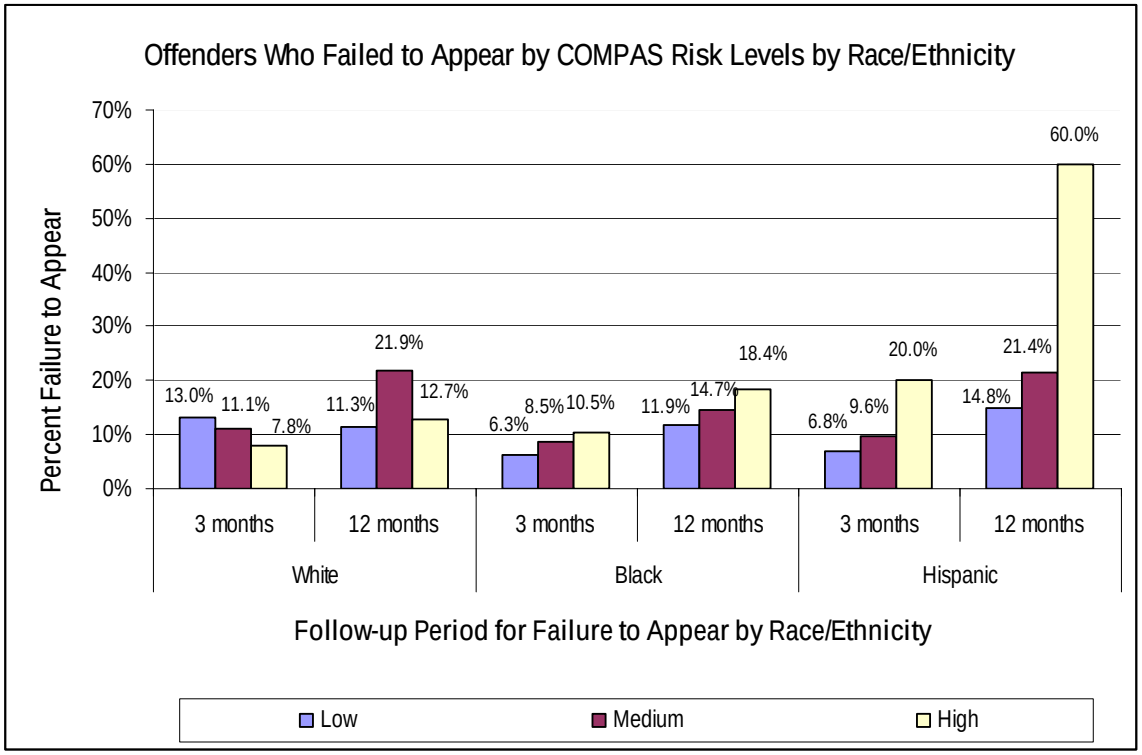
- In summary, the results of the predictive accuracy of COMPAS for FTA across race/ethnicity categories suggest that COMPAS is more predictive for black offenders than white offenders.

Table 16. FTA: Offenders Who Failed to Appear Across COMPAS Risk Levels by Race/Ethnicity

Follow-up Period	COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
White*	1.0%	1.6%	2.2%
Black	1.0%	1.1%	3.6%
Hispanic*	1.5%	1.9%	0.0% †
2 Months:			
White	3.8%	7.9%	6.2%
Black	4.4%	5.9%	8.5%
Hispanic*	5.5%	7.7%	10.0% †
3 Months:			
White	5.4%	11.1%	7.8%
Black	6.3%	8.5%	10.5%
Hispanic*	6.8%	9.6%	20.0% †
6 Months:			
White	8.8%	16.8%	11.2%
Black	9.3%	15.0%	18.0%
Hispanic	9.8%	14.6%	37.5% †
9 Months:			
White	10.1%	18.0%	13.7%
Black	11.4%	15.3%	20.1%
Hispanic*	13.1%	17.1%	42.9% †
12 Months:			
White	11.3%	21.9%	12.7%
Black*	11.9%	14.7%	18.4%
Hispanic	14.8%	21.4%	60.0% †

* Denotes the relationship is *not* statistically significant in the cross-tabulation for that group at the $p < .05$ level.
† Denotes cell size smaller than n=30

Chart 17. FTA: Offenders Who Failed to Appear Across COMPAS Risk Levels by Race/Ethnicity



COMPAS and FTA: Offenders Who Failed to Appear by Offense Type

Table 17 and Chart 18 address the research question: Are there differences in COMPAS's predictive accuracy when assessing the likelihood of FTA by the type of primary offense committed by offenders. For the purpose of this analysis, offenses were categorized into four groups: violent, property, drug, and other. There are total of 24 relationships between the predicted levels of FTA risk (low, medium, and high) across six follow-up periods. Sixteen of the 24 relationships fail to reach statistical significance. This leads to the conclusion that the type of offense that an offender is charged with does not impact the predictive accuracy of COMPAS when predicting the offender's likelihood of appearing for court. Additionally, there are less than 30 offenders whose

primary charge was drug-related in the high-risk level for the long-term follow-up period (12 months) which does not meet the minimum threshold for the number of cases in a cell; therefore, inferences about this relationship are not made. Predicted risk of FTA and actual FTA are statistically significant in the intermediate follow-up period (six months) for all offense types except for the violent category. Further, while the actual FTA rate was higher for offenders assessed as high risk compared offenders assessed as low risk for each of the three offender types (property, drug, and other), the FTA rate declined from the medium to high risk prediction levels for property and other offense types and remained virtually unchanged in the drug offense category. In summary, the data indicate that there are no substantively meaningful differences between the predicted risk levels for FTA and actual FTA across the four offense groups within the follow-up periods.

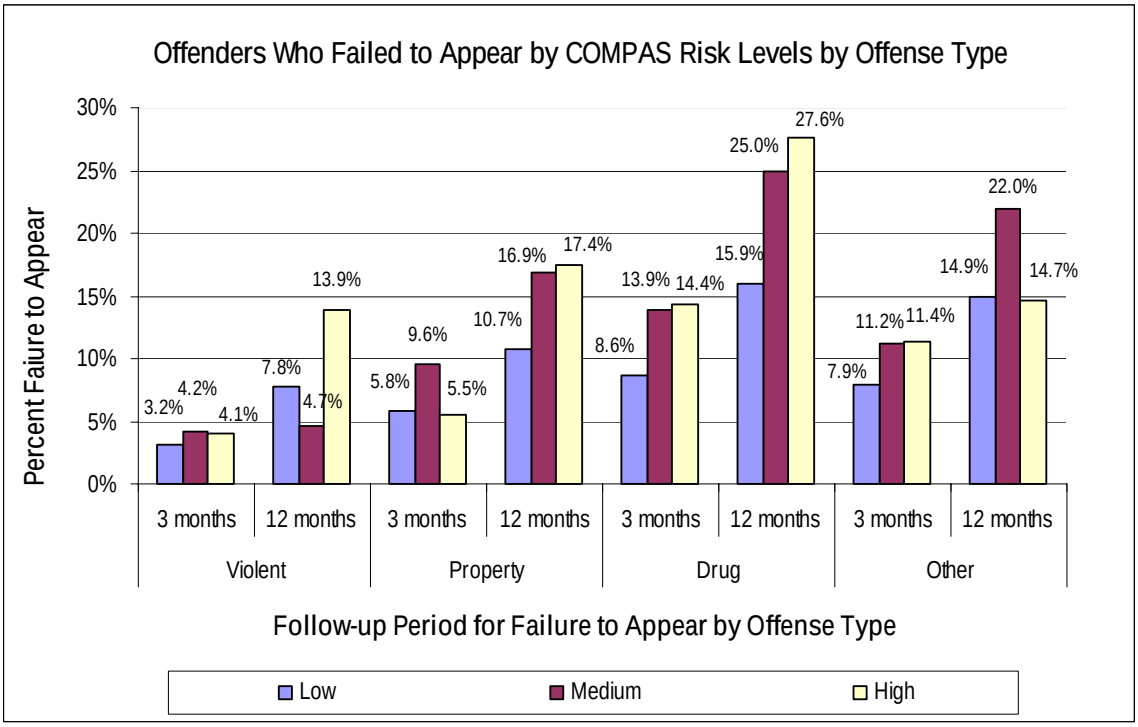
Table 17. FTA: Offenders Who Failed to Appear Across COMPAS Risk Levels by Offense Type

Follow-up Period	COMPAS Risk Level		
	Low Risk	Medium Risk	High Risk
1 Month:			
Violent*	0.6%	0.7%	1.0%
Property*	0.9%	1.2%	1.4%
Drug*	1.2%	1.7%	3.3%
Other	1.4%	1.6%	4.0%
2 Months:			
Violent*	2.1%	1.8%	4.1%
Property*	3.9%	6.6%	1.4%
Drug	5.5%	9.7%	11.1%
Other*	6.3%	8.7%	9.7%
3 Months:			
Violent*	3.2%	4.2%	4.1%
Property*	5.8%	9.6%	5.5%
Drug	8.6%	13.9%	14.4%
Other*	7.9%	11.2%	11.4%
6 Months:			
Violent*	5.2%	7.1%	8.2%
Property	8.9%	17.5%	15.9%
Drug	12.0%	21.1%	21.3%
Other	12.2%	17.5%	16.2%
9 Months:			
Violent*	6.8%	7.2%	9.2%
Property*	11.6%	16.2%	18.6%
Drug	14.0%	24.6%	24.5%
Other*	13.8%	17.7%	19.4%
12 Months:			
Violent*	7.8%	4.7%	13.9%
Property*	10.7%	16.9%	17.4% †
Drug	15.9%	25.0%	27.6% †
Other*	14.9%	22.0%	14.7%

* Denotes the relationship is *not* statistically significant in the cross-tabulation for that group at the $p < .05$ level.

† Denotes cell size smaller than n=30

Chart 18. FTA: Offenders Who Failed to Appear Across COMPAS Risk Levels by Offense Type



COMPAS's Individual Scores and Thresholds: Validating the Ten Risk Assessment Scores

This final section of the COMPAS validation presents findings relating to the ten individual scores that comprise the three risk assessment levels of low, medium, and high. This final component of the COMPAS validation addresses the research question: Are there incremental increases in actual occurrences of recidivism (rearrest for any offense), violence (rearrest for a violent offense), and FTA among offenders released from jail pretrial? The COMPAS instrument presents the assessment results as a graphic representation of a sliding bar from one through ten for recidivism, violence, and FTA. The sliding bar represents where on the scale of one through ten the offender scored for each risk level. Individual scores between one and four are assessed as "low risk", scores

between five and seven are assessed as "medium risk," and scores between eight and ten are assessed as "high risk." To the extent that the percentage of offenders who "fail" on these three measures of risk increases (actual occurrences of recidivism, violence, and FTA) at a rate consistent with incremental increases through the ten individual scores of risk identified by COMPAS, the risk assessment instrument is further validated. This validation has already demonstrated a high level of accuracy with the COMPAS instrument; however, this additional analysis will provide more depth and explanation to the instrument's performance. Additionally, changes in actual failure rates are examined between the cutoff points that separate low from medium risk and medium from high risk to determine if the delineated thresholds are appropriate—if the point values of one to four for low risk, five to seven for medium risk, and eight to ten for high risk reflect meaningful differences in the actual occurrences of recidivism, violence, and FTA.

COMPAS Risk Scores and Recidivism: Rearrest for Any Offense

Table 18 presents the percentage of offenders, released from jail pretrial, who recidivated by committing any offense across the ten individual risk scores and the six follow-up periods. Overall, across all six follow-up periods, the actual percentage of offenders who recidivated increased as the individual risk score increased from one to ten. In 51 of the 54 (94.4%) possible comparisons, the recidivism rates increased when the risk score scale value increased. The three instances in which the change in actual recidivism percentages changed counter to expectations based on the risk scores include the following:

- In the two-month follow-up period, the same rate of recidivism (18.8%) occurred among offenders who had risk scores of eight and nine.

- The percentage of offender's recidivating decreased from 29.2% to 27.1% from levels six to seven in the six-month follow-up period.
- The percentages decreased from 63.5% to 61.6% from risk scores nine to ten in the 12-month follow-up period.
- In summary, these findings indicate that the specific COMPAS risk score predictions for recidivism based on any arrest are validated.

To determine the appropriateness of the thresholds between the three risk levels (cutoff points) used to distinguish between low and medium, and medium and high risk, the changes in the percentages of actual occurrences of recidivism at the transition points are examined (the point where low becomes medium and medium becomes high). The presence of minimal differences in these values would suggest that the risk categories may not be discriminating between the varying risks of recidivism sufficiently. Conversely, the presence of substantial differences would indicate that the thresholds are appropriate.

The data in Table 18 supports the identified thresholds used to categorize offenders as low, medium, and high risk based on the risk scores included in each of these risk levels. Specifically, there are substantive increases in the percentage of offenders who recidivated when examining the numbers in the cells for a risk score of 4 to a risk score of 5 (from the upper risk score value of the low risk level to the lower risk score value of the medium risk level) and from 7 to 8 (from the upper risk score of the medium risk value to the lower risk score value of the high risk level).

Table 18. COMPAS Scores and Thresholds: Percentage of Offenders Recidivating by Individual COMPAS Risk Scores ✦

		Follow-up Period					
Risk Level	**Risk Score**	**1 Month**	**2 Months**	**3 Months**	**6 Months**	**9 Months**	**12 Months**
Low:	1	1.9%	3.0%	4.6%	7.3%	10.0%	12.4%
	2	2.3%	4.4%	6.0%	8.3%	11.8%	16.4%
	3	3.4%	6.1%	7.7%	16.0%	21.1%	22.2%
	4	4.5%	7.6%	9.7%	17.9%	24.3%	27.5%
Medium:	5	6.3%	9.1%	13.4%	19.9%	26.4%	31.0%
	6	7.1%	11.8%	16.6%	29.2%	35.2%	40.1%
	7	9.1%	13.4%	18.6%	27.1%	35.3%	45.1%
High:	8	12.2%	18.8%	23.9%	38.7%	47.4%	58.4%
	9	12.5%	18.8%	25.6%	41.1%	54.4%	63.5%
	10	15.8%	25.6%	34.7%	48.9%	57.1%	61.6%

✦ *Recidivism is defined as rearrest for any offense.*

COMPAS Risk Scores and Violence: Rearrest for a Violent Crime

Table 19 presents the percentage of offenders, released from jail pretrial, who recidivated by committing a violent offense across the ten individual risk scores and the six follow-up periods. Presenting inferences or conclusions based on these data somewhat problematic due to the reduced "n" size in several of the cells. In 33 of the 60 cells, the percentage of offenders who committed a violent offense is configured on a sample of offenders that is fewer than 10 (n <10). The majority of the cells with an insufficient cell size occurs in the follow-up periods of one month and two months (all but one cell has fewer than 10 cases). Therefore, inferences will be made based on the results presented for three-month, six-month, nine-month, and twelve-month follow-up periods only.

Generally, across these four follow-up periods, the percentages of offenders who were rearrested for a violent offense increased as the risk scores on the violence scale increased from one to ten—this was the case in 28 of the 40 possible comparisons. There were twelve instances, when comparing actual percentages of violence with predicted levels of violence, where the increases did not rise concurrently—percentages of actual violence did not increase incrementally with increasing levels of predicted risk. However, in six of these twelve instances, there were fewer than ten cases in the cells which reduces the number of comparisons (to six) in which the thresholds do not appear to be working. In summary, the findings suggest there is support for the validity of the thresholds utilized to predict the likelihood of future violence; however the support is not as strong as was demonstrated for the general recidivism category. Given the relatively low rates of violent recidivism that resulted in a minimal number of cases to examine, generalizations and inferences can not be stated with certainty.

The data in Table 19 indicate support for the current scoring method used to categorize offenders as low, medium and high risk for violence based. There are generally significant increases in the percentages of offenders who were rearrested for a violent offense at the threshold between low and medium (a risk score of 4 compared to a risk score of 5, the upper score for low and the lower score for medium) and at the threshold between medium and high (a risk score of 7 compared to a risk score of 8, the upper score for medium and the lower score for high).

Table 19. COMPAS Scores and Thresholds: Percentage of Offenders Rearrested for a Violent Offense by Individual COMPAS Risk Scores ✦

		Follow-up Period					
Risk Level	**Risk Score**	**1 Month**	**2 Months**	**3 Months**	**6 Months**	**9 Months**	**12 Months**
Low	1	0.5%*	0.6%*	1.0%	1.5%	2.3%	2.7%
	2	0.4%*	0.7%*	1.3%	1.7%	2.1%	1.6%*
	3	0.7%*	0.9%*	1.2%*	2.0%	2.3%	1.7%*
	4	1.1%*	1.4%*	1.6%*	1.9%	2.1%*	2.6%*
Medium	5	1.8%*	2.2%	2.6%	3.9%	4.0%	4.2%*
	6	1.1%*	1.4%*	2.0%*	3.4%	5.1%	5.8%
	7	1.8%*	2.1%*	3.1%	4.0%	5.7%	7.7%
High	8	1.8%*	2.7%*	4.9%	7.2%	8.1%	11.1%
	9	1.8%*	2.2%*	3.1%*	6.2%	6.7%	8.8%*
	10	4.7%*	5.5%*	7.0%*	7.1%*	8.9%*	11.1%*

* Indicates that there are fewer than 10 cases in the cell.

COMPAS Risk Scores and FTA

Table 20 presents the percentage of offenders, released from jail pretrial, who failed to appear for a court hearing across the ten individual risk scores and the six follow-up periods. Presenting inferences or conclusions based on these data somewhat problematic due to the reduced "n" size in several of the cells. There are many instances in which there are a limited number of offenders who failed to appear for court within a particular risk levels and/or follow-up period. Specifically, 14 of the 60 cells in the table contain fewer than 10 cases for analysis. The low number of cases (low "n" size) is concentrated in the high-risk level scores (9 and 10) and the one-month, two-month, three-month, and twelve-month follow-up periods. In many of those cells, the number of

cases is less than 10. In fact, eight of the ten cells in the one-month follow-up period have fewer than ten cases.

Overall, the percentages of actual FTA increases as the predicted or assessed scores for FTA increase across the follow-up periods. This suggests that COMPAS's scoring system is appropriate and accurately predicts the likelihood of FTA. One exception to this observation is in the category of low risk. There are a couple of instances in which the percentages of actual FTA decrease as the COMPAS score increases from three to four. As was the case in the previous tables, this table also contains cells with fewer than ten cases. Inferences will not be made based on the one-month follow-up period eight of the ten cells have fewer than ten cases (inferences would not be definitive).

Examining the 50 possible comparisons in the table indicates that 23 of the 50 comparisons (46%) did not follow the pattern of concurrent incremental increases. These are instances where the actual occurrences of FTA did not increase in a manner consistent with increases predicted by the individual COMPAS scores for FTA (future risk of FTA). This does not undermine the validity of the instrument when considered in the context of the reduced number of cells to examine as a result of small cell size. Further, examining the thresholds between low and medium levels, and medium and high levels, overall, the data support the validity of COMPAS's scoring system.

To summarize, given the number of cells with less than 10 cases and the instances in which the predicted levels of FTA do not consistently increase with actual occurrences of FTA, there is still sufficient support in the analysis to indicate that COMPAS's scoring system is valid. The data suggests slightly less supportive for COMPAS's accuracy in

predicting future FTA than recidivism and violence at this level (individual score level rather than the risk level); however, the instrument does appears to be valid.

Table 20. COMPAS Thresholds: Percentage of Offenders Who Failed to Appear by Individual COMPAS Risk Scores

		Follow-up Period					
Risk Level	**Risk Score**	**1 Month**	**2 Months**	**3 Months**	**6 Months**	**9 Months**	**12 Months**
Low:	1	0.6%	3.3%	4.7%	7.2%	7.9%	8.1%
	2	0.6%*	3.1%	5.3%	8.5%	10.5%	10.5%
	3	1.5%	5.7%	8.0%	12.2%	15.8%	18.3%
	4	2.5%*	6.8%	1.9%	10.9%	13.9%	16.7%
Medium:	5	1.5%*	7.3%	10.5%	15.9%	15.8%	16.3%
	6	0.6%*	4.4%	7.3%	13.8%	16.8%	18.1%
	7	2.1%*	9.1%	11.5%	18.1%	17.7%	21.4%
High:	8	4.0%*	8.8%	11.4%	16.5%	18.0%	19.3%
	9	1.8%*	8.0%*	8.0%*	16.4%	18.5%	15.6%*
	10	2.1%*	4.2%*	7.3%*	12.4%	17.0%	14.3%*

*** Indicates that there are fewer than 10 cases in the cell.**

Summary and Conclusions

This validation of the COMPAS Risk Assessment Classification system currently being utilized by BSO has high levels of accuracy in predicting general recidivism, violence, and failure to appear for court. The data indicated some departures when predicting future violence; however, violence is a more complex behavior to predict. Acts of violence vary extensively—violence may be an act of passion as with murder and less likely to be repeated, or may take the form of domestic violence which is likely to be a repetitive act. Further, violence is likely to occur in instances in which the victim and

offender are known to each other, particularly with murder, which adds more complexity to the act and difficulty when predicting it. Therefore, it is not surprising that predicting violence was, perhaps, more challenging than predicting recidivism in general or predicting FTA.

When the validation examined data at sub-grouping levels (e.g., across sex, race/ethnicity, age, and offense type) and across the six follow-up periods, inferences were more difficult to be drawn because the number of cases in many of the cells decreased to such a level that generalizations would be cautioned against. Low cell sizes appeared more frequently in the analysis for females, Hispanics, and violent offenses, particularly when examining females who committed violent offenses or Hispanics who committed violent offenses. The validation makes note of a couple of instances where the calibrations for the COMPAS risk levels and individual scoring formulas may need to be examined for adjustments. The thresholds that the COMPAS instrument utilizes to distinguish between low risk and medium risk, and medium risk and high risk, are supported by the data. There are instances in which the pattern is slightly inconsistent when crossing levels; however, those instances are the exception.

The support for COMPAS's predictive accuracy is demonstrated on multiple levels and dimensions. First, there is support for predictive accuracy at the three risk levels when comparing actual occurrences of failure with predicted levels of failure across low, medium, and high levels for the three categories of recidivism, violence, and FTA and across varying follow-up periods. Second, there is support for the appropriateness and accuracy of the individual scores that comprise the risk levels of low, medium, and high across varying follow-up periods. Third and final, there is support for

the appropriateness of the thresholds that distinguish low level risk from medium level risk, and medium level risk from high level risk for recidivism, violence, and FTA across varying periods of follow up. While the strength of the support varies across the measures, sub-categories, and follow-up periods, when the analysis is considered in total, COMPAS performs well in predicting risk for offenders released from jail pretrial. The data demonstrates the strongest level of support in the category of recidivism—COMPAS is highly predictive of future recidivism.

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