



PPIC

PUBLIC POLICY
INSTITUTE OF CALIFORNIA

25 YEARS

DECEMBER 2019

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Pretrial Risk Assessment in California



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The policies governing California’s pretrial system are undergoing substantial change. Amid recent correctional reforms and ongoing challenges to the state’s bail system, pretrial risk assessment has emerged as a way to help counties make decisions about whether arrested individuals should remain in the community or be detained until any charges stemming from that arrest are resolved.

This report presents an overview of pretrial risk assessment in California and offers considerations for using, evaluating, and improving the effectiveness of local pretrial risk assessment systems.

- **Forty-nine of California’s 58 counties use pretrial risk assessment tools alongside bail.** These tools rely on criminal history, demographic, and/or socioeconomic information to make “risk predictions” of whether individuals are likely to be arrested during the pretrial period or to miss their court date.
- **A risk assessment tool is only one component of informed pretrial decision making.** A comprehensive pretrial policy framework also includes an explanation of why a particular tool was chosen and how it should be used—as well as guidance regarding how risk assessment results should translate into decisions about release with or without supervisory conditions, or detention, in individual cases.
- **Equity is an ongoing concern.** Critics argue that risk assessment tools that use criminal history could propagate preexisting inequities in the criminal justice system for racial minorities and homeless, unemployed, and impoverished individuals. However, proponents maintain that these tools offer new opportunities for monitoring and evaluating accuracy—which could ultimately help mitigate inequities.
- **Counties may face data challenges in testing a tool’s accuracy and equity.** Local testing is critical, in part because many tools were not developed with populations that include Latinos and Asian Americans. Since the criminal history data used in these tools may be housed in different agencies and many counties may not process enough cases to properly test their tool on their own, data-sharing agreements and cross-county collaboration may be necessary.
- **Transparent decision making is essential.** By carefully tracking the risk predictions made by their assessment tool—as well as how these predictions are translated into release or detention decisions—counties can identify any patterns of inconsistency, inaccuracy, and inequity. To promote transparent decision making, judges and pretrial services officers should explicitly state their reasoning if they override the prescribed recommendation.

Developing a pretrial risk assessment system that balances an arrested individual’s right to liberty and the need to preserve victim and public safety, while also promoting equity, is an ongoing endeavor. With transparent decision making, as well as consistent and complete data collection, counties will be in a strong position to conduct the routine monitoring, testing, and evaluation necessary to identify areas of weakness and ensure their pretrial decisions align with local policy objectives.

Introduction

The pretrial period begins with an arrest and ends when the charges stemming from that arrest are resolved through plea bargain, trial, or dismissal—a process that can last a few hours or persist over many months.¹ The fundamental decision made during this time is whether the arrested individual should be detained until the charges are resolved. In California, several actors in the criminal justice system can make the decision to release or detain individuals at different stages in the pretrial process—law enforcement officers at arrest and booking; pretrial services officers prior to arraignment; and judges at arraignment (Tafoya 2015; Tafoya et al. 2017). The purpose of pretrial risk assessment is to inform these decisions—particularly those made by judges at arraignment.

In California, most counties use pretrial risk assessment tools in concert with the bail system, which includes money or cash bail, to make decisions about pretrial release and detention (PDRW 2017). These risk assessment tools predict the likelihood that pretrial misconduct—generally referring to a new arrest or failure to appear in court—will occur based on a person’s demographic, criminal history, and/or socioeconomic background.²

Under the bail system, people who have been arrested or charged with a crime can offer a financial guarantee that they will appear for their court dates in exchange for their pretrial release, with the bail amount typically based on the severity of the offense. Critics have argued that this system fails to protect public safety and privileges wealthy people who can afford bail over poorer people who cannot (BRWG 2016; PDRW 2017). Advocates of the current system argue that bail is an effective means of ensuring court appearances.

Across the United States, policies governing pretrial release and detention—especially money bail—are being challenged, evaluated, and revised.³ Since 2012, every state has adopted new pretrial policies. In 2017 alone, 14 states made provisions to adopt or investigate the use of pretrial risk assessment tools (Widgery 2018). In addition, two states, New Jersey and Alaska, have nearly, but not completely, eliminated money bail.⁴

Challenges to the bail system are also cropping up in California. In January 2018, the First District Court of Appeals in San Francisco ruled the pretrial detention of Kenneth Humphrey unconstitutional because “a defendant may not be imprisoned solely due to poverty.” Should the ruling be upheld, it may constitute an existential challenge to the state’s bail system. Concurrent challenges—motivated in part by high rates of pretrial detention in California relative to the rest of the nation—have been posed by the Judicial Council and state legislature.

In October 2016, the Judicial Council founded a Pretrial Detention Reform Workgroup (PDRW) to “identify ways to make release decisions that will treat people fairly, protect the public, and ensure court appearances” (PDRW 2017, 1). The PDRW (2017, 2) made ten recommendations intended to better “balance the protection of public safety” with the rights of arrested individuals, particularly their right to liberty, by increasing the number of people who are released pretrial. Their recommendations included eliminating money bail, establishing pretrial services in each county, and using pretrial risk assessment tools that have been proven accurate to help judges make decisions about release and detention based on “objective factors” (PDRW 2017, 50).

¹ Although California lacks statewide statistics regarding the average length of the pretrial period, in Santa Clara County, for example, the average length of pretrial detention was one month for those charged with misdemeanors and seven months for those charged with felonies (BRWG 2016, 2).

² In this report, any discussion of risk assessment tools refers specifically to pretrial risk assessment tools. The research and analysis provided here about pretrial risk assessment tools are not intended to apply to other contexts in the criminal justice system.

³ Under the bail system, individuals who are offered bail and who can afford to pay a fee are released during the pretrial period, whereas those who cannot are detained. Bail schedules assign a pecuniary price on release that is based solely on the seriousness of the arrest offense—a proxy for threat to public safety (Tafoya 2013). Most people who are released on bail in California pay the predetermined fee listed in the bail schedule, although judges can weigh other factors to set bail at their discretion (Tafoya 2015; Tafoya et al. 2017).

⁴ For example, New Jersey’s system, instituted in 2017, does not outlaw bail. However, it seems to have obviated the need for it. In 2018, bail was imposed in only 102 of 44,383 cases—mainly after defendants missed court dates while on pretrial release (Grant 2019).

Each of these proposed reforms was codified by the state legislature in Senate Bill 10 (SB 10). SB 10 was signed into law in August 2018, but challenged immediately by the bail bond industry. Although its fate will be decided in a voter referendum in November 2020, SB 10 clearly signals the intent of state legislators: they sought to establish a system enabling pretrial decisions that would more effectively protect public safety, while also maintaining individuals' right to liberty and eliminating their potential to be detained "solely due to poverty."⁵ In addition, in October 2019, the governor signed SB 36, which requires pretrial service agencies that use risk assessment tools to test the tool on a regular basis and requires that the Judicial Council publish an annual report on the outcomes and potential biases in pretrial release.

Although they are sometimes portrayed as mutually exclusive alternatives, pretrial risk assessment and money bail can be compatible, as the current pretrial justice system in California illustrates. This report focuses on pretrial risk assessment and considerations for improving existing assessment systems. The broader question of whether pretrial risk assessment should replace bail is one that rests with the voters, the legislature, the courts, or some combination thereof.

We begin this report by describing the current landscape of pretrial services in California. We then present an overview of the most common risk assessment tools used across the state and ways to mitigate racial inequity. Lastly, we identify several key considerations for counties as they seek to improve their pretrial risk assessment systems and provide guidance for routine monitoring and testing of these systems to ensure they are performing as intended.

Background on Pretrial Services

Pretrial services is the arm of the criminal justice system responsible for conducting pretrial risk assessments, making recommendations for pretrial release or detention, supervising and providing services to released individuals, and locating those who do not show up for court appearances. These services have existed in California since the 1960s. However, most counties established pretrial services in the wake of public safety realignment in 2011 (CSJ 2015). Realignment reduced the prison population but expanded jail populations because many individuals who would have previously served time in state prisons due to supervision violations instead served that time in county jails (Bird et al. 2018; Grattet et al. 2017).⁶

Jail overcrowding prompted many counties to reexamine their pretrial policies and led the state legislature to explore bail reforms (Tafoya 2013, 2015). Though none of those early reforms made it through the legislative process, the passage of Proposition 47 in 2014 again reshaped pretrial justice. Individuals charged with drug and property crimes that had been downgraded from felonies to misdemeanors were more likely to be released pretrial (Bird et al. 2016). By 2015, 46 California counties had established pretrial services as independent agencies; units within law enforcement, probation, or the courts; or multi-agency collaborations (CSJ 2015).

⁵ Importantly, most of California's counties have already instituted some of these reforms. By 2017, 49 counties were using pretrial risk assessment tools to inform at least some pretrial release or detention decisions (PDRW 2017).

⁶ For every three inmates released from state prison, one was admitted to jail (Lofstrom and Raphael 2013).

Goals of Pretrial Justice

Practitioners and policymakers refer to four main goals of pretrial justice: maximizing individuals' right to liberty, public safety, court appearances, and equity (e.g., PDRW 2017; Mahoney et al. 2001, 1). Releasing as many people as possible under the fewest conditions maximizes individuals' right to liberty. Minimizing behavior that endangers individual victims or the general public maximizes public safety. Maximizing court appearances protects the efficiency of the justice system. Finally, ensuring that pretrial policies apply equally to all people—that some people are not treated disparately relative to others—maximizes equity.

For pretrial services to function effectively, practitioners and policymakers must determine how to balance these objectives. Because pretrial risk assessment tools enable stakeholders to monitor the accuracy and equity of release and detention decisions, these tools can help counties strike their desired balance between releasing as many people as possible while protecting victim and public safety and ensuring court appearances.

In August 2019, the Judicial Council awarded funding for two-year pilots in 16 counties to either implement new pretrial programs or enhance existing programs across the state. The pilot programs share many of the same goals, including seeking to assess more people more quickly; collect and store data more efficiently; and create “graduated supervision levels” so that individuals deemed low risk receive minimal or no supervision during the pretrial period, while higher-risk individuals receive more supervision or are detained. All of the pilots leverage risk assessment tools to meet these challenges and will include an evaluation of the program (Balassone 2019).

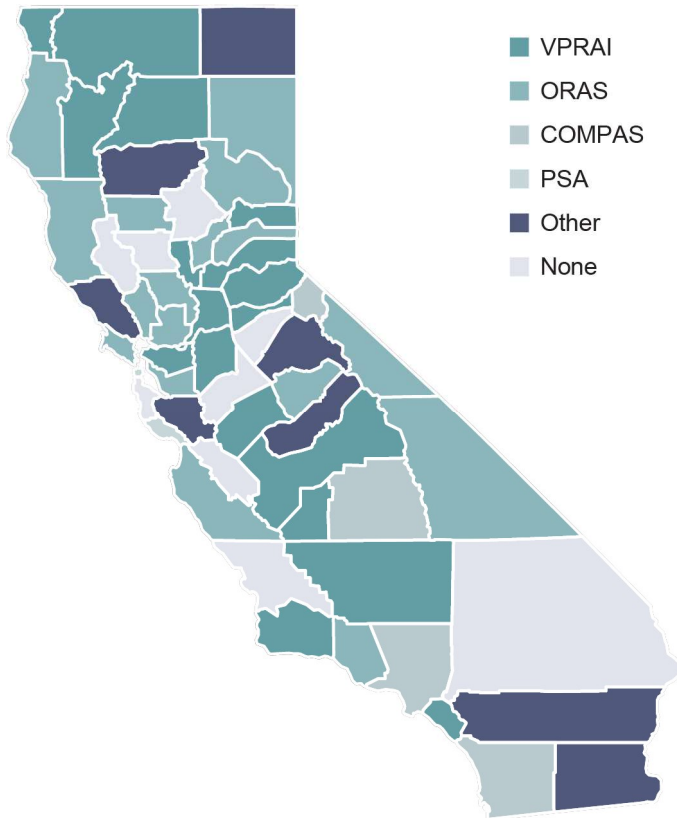
How much counties spend on pretrial services is unclear, particularly when these responsibilities are embedded in other agencies. Notably, personnel levels drive pretrial costs (Clark and Henry 2003), and personnel levels vary because counties have different arrest rates and provide different services (CSJ 2015; Lofstrom et al. 2018). Funding amounts for the pretrial pilot programs suggest a wide range in costs. Funding to establish new programs ranged from \$531,000 in Calaveras County to \$9.59 million in Sacramento County. Alameda County received \$14.4 million to restore its defunct program. Costs in counties expanding their programs also varied widely, with allocations between \$330,000 for a collaboration between Nevada and Sierra Counties, and \$17.3 million in Los Angeles County.

The Role of Pretrial Risk Assessment Tools

As shown in Figure 1, 49 of California's 58 counties currently use a pretrial risk assessment tool to inform at least some pretrial decision making. Only four counties—Santa Clara, Sonoma, Riverside, and Tuolumne—developed their own tools. By contrast, the vast majority of counties use a tool that was developed outside of California. Most counties use the Virginia Pretrial Risk Assessment Instrument (VPRAI; 18 counties) or the Ohio Risk Assessment System tool (ORAS; 17 counties). The COMPAS and PSA tools are used by four counties and two counties, respectively.

FIGURE 1

Most counties use a pretrial risk assessment tool developed outside of California



SOURCE: Author illustration based on PDRW (2017) and personal communication.

Counties also use these tools in different ways: in some counties, all eligible arrested and booked individuals undergo pretrial risk assessment, while in others, only those charged with specific crimes do (PDRW 2017). These differences are likely attributable to variation in how developed the county’s system of pretrial justice is, how long the county has been using a particular risk assessment tool (or whether it uses a tool at all) to inform release or detention decisions, and the resources available to make risk assessments and administer pretrial justice more generally. Some counties have been using pretrial risk assessment tools to inform at least some pretrial release or detention decisions for years, whereas others have never used such tools.

Comparing Pretrial Risk Assessment Tools

Table 1 presents key attributes for the four most common pretrial risk assessment tools used in California. When tested by developers, each has about a 65 percent chance of distinguishing a person at high risk of committing pretrial misconduct from a person who is at low risk.⁷ While this accuracy rate may not seem especially high, it should be compared to the current standard—judges’ risk predictions. The best evidence indicates that pretrial

⁷ The most common measure of accuracy is called the area under the curve (AUC). The AUC, which ranges from 0.00 to 1.00, indicates the probability that a risk assessment tool can distinguish people who are highly likely to commit pretrial misconduct from people who are not. Most tools used in California have an AUC of 0.65, which means they have about a 65 percent chance of distinguishing a high-risk person from a low-risk person. More information on the AUC is presented in [Technical Appendix D](#).

risk assessment tools make more accurate pretrial risk predictions than judges (Baradaran and McIntyre 2012; Berk et al. 2018; Kleinberg et al. 2017).⁸

An important difference between the tools is that they define pretrial misconduct in different ways, though each tool predicts some combination of failure to appear in court and a new arrest. Ideally, pretrial risk assessment tools should predict each pretrial misconduct outcome separately (Gouldin 2016; Kleinberg et al. 2019; PAI 2019). PSA predicts three outcomes separately: failure to appear, new arrest, and new violent arrest. However, VPRAI, ORAS, and COMPAS do not predict failure to appear and new arrest separately. ORAS and VPRAI predict failure to appear *or* new arrest, while COMPAS predicts any new felony arrest *or* failure to appear in court. These “compound” prediction outcomes make it impossible for county policymakers to distinguish people at high risk of arrest from people at high risk of missing a court date. This could lead to misleading risk predictions and could make it difficult to tailor pretrial recommendations appropriately (Gouldin 2016). See additional considerations regarding how pretrial misconduct can be defined in the textbox on page 9.

TABLE 1
Select characteristics of pretrial risk assessment tools currently used in California

	VPRAI	ORAS	COMPAS	PSA
Number of counties	18	17	4	2
Pretrial misconduct outcome	Failure to appear	Failure to appear	Failure to appear	Failure to appear
	New arrest	New arrest	New felony arrest	New arrest
				New violent arrest
Compound prediction outcome	Yes	Yes	Yes	No
Predictor domains	Criminal behavior	Criminal behavior	Criminal behavior	Criminal behavior
	Employment	Employment	Employment	Age
	Substance Use	Substance Use	Substance Use	
	Supervision	Residence	Residence	
		Age		
Interview required (length of interview)	Yes (20 minutes)	Yes (10-15 minutes)	No	No
Transparent risk prediction model	Yes	Yes	No	Yes
Free to use	Yes	Yes	No	Yes

SOURCES: Personal communication; Arnold Ventures (n.d.); BJA (n.d.); Danner et al. (2016); DeMichele et al. (2018b); Equivant (n.d.); Latessa et al. (2009); PDRW (2017); VDCJS (2018).

NOTES: Counties may be using different versions of each tool. The information presented represents the current versions of each tool: COMPAS-PRRS II, ORAS-PAT, and VPRAI-R. We show the full range of predictors for each instrument in [Technical Appendix B](#). PSA refers to a new arrest as “new criminal activity” and to a new violent arrest as “new violent criminal activity.”

⁸ In a national sample, Baradaran and McIntyre (2012) found that, relative to judges’ decisions, their probit regression model would release 25 percent more defendants while also decreasing the probability of pretrial violent arrest by more than one-third, from 1.9 percent to 1.2 percent, and the probability of any pretrial arrest by 18.8 percent, from 17.0 percent to 13.8 percent. Similarly, Kleinberg et al. (2017) found that, relative to judges’ decisions, their machine learning algorithm could reduce detention rates in New York City by 41.9 percent without increasing crime rates.

The four tools use different predictors—criminal history, demographic, and/or socioeconomic indicators—to predict whether individuals will commit pretrial misconduct (see [Technical Appendix B](#)).⁹ Some tools use demographic indicators such as age; however, factors such as race/ethnicity or gender are not used in any of these tools. Notably, VPRAI, ORAS, and COMPAS use socioeconomic factors to predict risk. As described further below, critics have expressed concern that including these characteristics can systematically disadvantage certain marginalized groups. For example, if factors like unemployment, homelessness, and mental illness increase an individual’s chance of being classified as high risk, then these groups could be disproportionately detained. Likewise, racial minorities who are overrepresented in these populations could also be systematically and disproportionately classified as high risk and detained (Starr 2014).¹⁰

Defining pretrial misconduct

According to California law, whether individuals pose a threat to victim or public safety should be the primary consideration when making pretrial release and detention decisions (Karnow 2008; Tafoya 2013). In practice, there is a wide range in how pretrial misconduct is defined. As shown in Table 1, most risk assessment tools adopt fairly expansive definitions of pretrial misconduct, such as any new arrest and failure to appear. They also often predict those outcomes over two years—far longer than the average felony pretrial period, even for serious and violent crimes.

In contrast, some legal scholars indicate that narrower interpretations of pretrial misconduct that focus on the individuals’ threat to public safety are more appropriate when predicting risk. According to a Judicial Council report, California law allows pretrial detention only as a means of preventing serious violent crimes (PDRW 2017). Similarly, Mayson (2018, 501) concluded that “the threshold [for detention] cannot be less than a substantial risk of serious violent crime in a six-month span.”

It is important to note that counties can develop their own assessment tools, as a few counties have, which may provide them with more latitude in how they define pretrial misconduct. Regardless of what counties choose, it is critical that county agencies be explicit and transparent about this definition. The primary tradeoff to consider is that defining pretrial misconduct broadly and over a longer time period could lead to risk predictions that overestimate the threat people pose to public safety, thereby inhibiting counties from achieving objectives related to preserving individuals’ right to liberty. In contrast, narrowly defining pretrial misconduct would allow more individuals to be released pretrial but could lead to risk predictions that do not take into account the potential for new non-violent offenses and failures to appear in court.

⁹ The statistical models that underlie most tools assign numerical values called weights to each predictor by assessing the strength and direction of its relationship to an outcome such as an arrest during the pretrial period. For example, predictors that strongly increase the chance of pretrial misconduct receive large positive weights; those that weakly decrease the chance of pretrial misconduct receive small negative weights. During assessment, the weights for the predictors associated with each assessed individual are tallied to calculate risk scores (Picard-Fritsche et al. 2017).

¹⁰ However, the pragmatic way to understand whether including a predictor in a risk prediction model systematically disadvantages one group of people relative to another is through testing. If adding or subtracting a predictor promotes disparity in risk predictions between groups of people or introduces disparity in rates of misclassification between groups of people, its inclusion should be questioned.

The data collection required for these assessments takes time and resources. In addition, the ORAS and VPRAI tools require interviews—which may make them more expensive to administer. Although there is a lack of comprehensive information on this topic, in Kentucky, completing the PSA assessment takes up to 45 minutes (PDRW 2017, 81). Meanwhile, “conducting an interview, reviewing a defendant’s records, and electronically submitting a report to the court takes approximately one hour” in Santa Clara County, which uses its own tool (BRWG 2016, 27). Finally, how an assessment tool predicts risk is key to understanding whether and how it can help counties achieve their policy objectives. According to the Chief Probation Officers of California (CPOC 2019, 9), “jurisdictions should be wary of proprietary assessments that do not disclose weighting and scoring.” The ORAS, PSA, and VPRAI transparently report how they were developed and how they predict risk. By contrast, the COMPAS risk prediction model is proprietary. [Technical Appendix B](#) contains additional information about these tools.

Concerns of Racial Inequity

Critics of pretrial risk assessment tools argue that they exacerbate past and current inequity—especially racial inequity—in the criminal justice system (Angwin et al. 2016; Mayson 2019; Starr 2014; Tonry 2014). But proponents maintain that implementing risk assessments in a transparent and deliberate way could actually help correct inequities in pretrial decision making (Kleinberg et al. 2019; Picard et al. 2019).

One central concern involves the fact that assessment tools use criminal history information—such as previous arrests, convictions, and incarceration—to predict the probability that an individual will commit an offense during the pretrial period. However, these metrics do not only reflect individual behavior—they also reflect the operations of the criminal justice system. Research has found that racial minorities and other marginalized groups are overrepresented in criminal justice data in part because they are subject to greater surveillance and enforcement (Alexander 2010; Braga et al. 2019).

Although we cannot know with certainty the degree to which criminal history data reflect differences in individuals’ behavior versus differences in enforcement, research indicates that these data overstate the involvement of racial minorities in crime (Weaver et al. 2019). This disparity begins at arrest and is propagated through each stage of the criminal justice system (Harris et al. 2009; Lofstrom et al. 2018). If past criminal history data are used to predict future criminal behavior, those predictions could thus overstate the probability of racial minorities committing a crime. The same could be true of other socioeconomic characteristics that might be associated with disparities in the criminal justice system, such as being homeless, unemployed, or in poverty.

Yet pretrial risk assessment tools also present opportunities for greater transparency, which could serve to mitigate inequities in pretrial decision-making processes. Developing a transparent and consistent pretrial decision-making system makes it possible to evaluate whether release or detention decisions are accurate and equitable (Berk et al. 2018; DeMichele et al. 2018a; Koepke and Robinson 2019). Furthermore, if patterns of inconsistency, inaccuracy, or inequity become evident during monitoring and evaluation, pretrial risk assessment systems can be modified accordingly (PAI 2019; Kleinberg et al. 2019; Mayson 2019; Picard et al. 2019).

Considerations for Improving Pretrial Risk Assessments

Pretrial risk assessment is often equated with the use of pretrial risk assessment tools, but the latter do not advance the goals of pretrial justice on their own. To accomplish local policy objectives, counties should develop broader policy frameworks that govern:

- **How pretrial misconduct is defined and how risk is predicted.** This involves selecting or designing a tool that aligns with local objectives for how pretrial misconduct should be defined (see textbox on page 9), ensuring that the necessary data are available, and allocating the resources needed to conduct the assessments.
- **How risk predictions are interpreted and translated into release or detention decisions.** This involves providing guidance for pretrial services officers and judges regarding how the results of risk assessment tools should be mapped onto decisions about release with or without supervisory conditions, or detention.

A pretrial risk assessment tool is only one component of what is ideally a comprehensive infrastructure that supports the entire pretrial risk assessment process. This section describes several factors for counties to consider as they seek to build upon and improve these systems, including potential limitations in the available data, challenges in interpreting risk predictions, and the importance of transparency in the decision-making process.

Data Challenges in Using Risk Assessment Tools

Some of the data required for pretrial risk assessment tools may prove challenging to collect because different criminal justice agencies track different information. At the county level, for example, law enforcement agencies track arrests and jail incarcerations, the courts track convictions, and probation offices track supervision violations. Each of these agencies may need to collaborate, individually or jointly through an integrated countywide data system, to share data and implement pretrial risk assessment. Depending on whether incarceration is measured locally or statewide, to assess risk using the COMPAS, ORAS, and PSA, data-sharing agreements with state agencies might also be necessary.

Additionally, the data required to make some risk predictions may not be available. In particular, most risk assessment tools use past failures to appear in court to make predictions about future behavior. Yet many California counties do not systematically collect information about failures to appear (PAI 2019). When they do, they may measure failures to appear inconsistently. For example, failures to appear can be recorded for every nonappearance, only when a bench warrant is issued, or as self-reported by defendants (Clark and Henry 2003; Gouldin 2018). Such vast inconsistency in measurement can lead to risk predictions that vary less with individual behavior and more with how that behavior is recorded (Myburgh et al. 2015).

Regardless of which agency collects and stores the data, how the data are collected matters. Data collection processes should be systematized so that they are as similar as possible for everyone. For example, failures to appear should be recorded under the same circumstances for all individuals (Gouldin 2018; Myburgh et al. 2015). Likewise, efforts should be made to ensure that pretrial services officers characterize information solicited in interviews similarly (e.g., clarifying the difference between heavy drug use and drug use) (Cohen 1960; Fleiss 1971).

Interpreting Risk Predictions

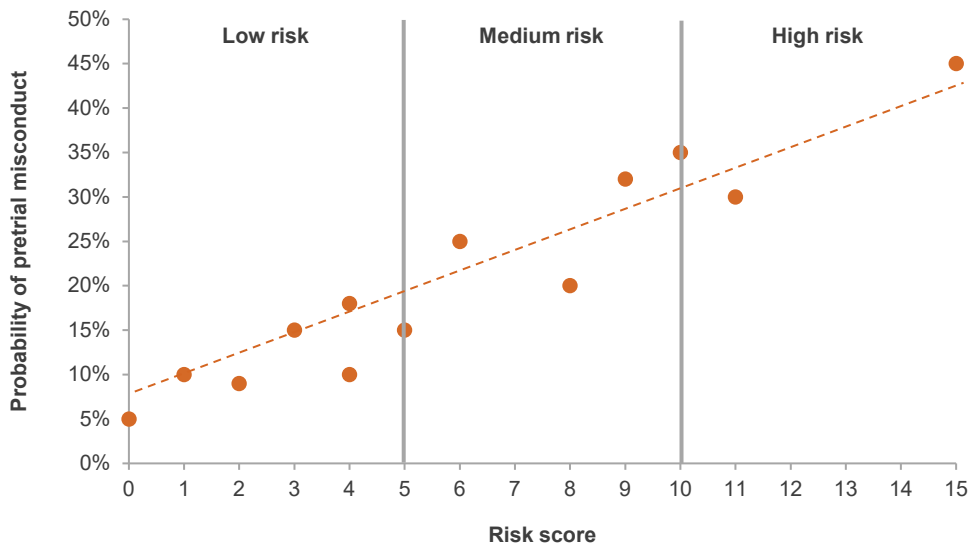
Pretrial risk assessment tools generally report risk scores—weighted sums based on the underlying probability that an individual will commit pretrial misconduct—and descriptive risk categories, which characterize people as low, medium, or high risk. Risk categories are typically translated, often directly, into release or detention

decisions.¹¹ In fact, one objective of California’s pretrial pilot programs is to create graduated supervision levels based on risk predictions—for example, the lowest-risk individuals might be released on their own recognizance with a reminder sent to them about their court date, while medium-risk individuals might be released on their own recognizance with additional supervisory conditions (see [Technical Appendix F](#)).

It is important to recognize that although descriptive risk levels can be helpful, they can also obscure the underlying probability of pretrial misconduct, which could lead to inappropriate decisions. Figure 2 shows probabilities of pretrial misconduct plotted against risk scores. Cut points delineated by vertical lines divide individuals into high, medium, and low risk levels. In general, people classified as high risk have a higher probability of pretrial misconduct than people classified as low risk—a logical and desired result.

FIGURE 2

Hypothetical risk categories based on the probability of pretrial misconduct and associated risk scores



SOURCE: Author illustration.

However, this figure also illustrates some of the pitfalls of risk categories:

- They can make different people look similar and similar people look different. A person who scores 5 has a 20 percent chance of pretrial misconduct, whereas a person who scores 9 has a 30 percent chance. Yet both will be classified as medium risk. Individuals whose risk scores lie on either side of a cut point will be classified differently even though they have similar probabilities of pretrial misconduct.
- Risk categories can also heighten perceptions of how “risky” people are. Risk predictions rarely span the full range of probabilities. In fact, the average probability of committing pretrial misconduct is usually well below 50 percent even at the highest risk level.¹²

¹¹ Translating risk predictions into pretrial release or detention decisions requires interpretation, which can be challenging because most tools do not report the actual probability that a person will commit pretrial misconduct. Importantly, risk predictions reflect how people similar to the assessed individual behaved on average. If an assessed individual has a 20 percent chance of pretrial arrest, that risk prediction means that when the tool was last validated, one in five people who resemble the assessed individual were arrested during the pretrial period.

¹² According to Mayson (2018, 514), less than 15 percent of those classified high risk by some pretrial risk assessment tools were rearrested during the pretrial period.

- Finally, people may incorrectly assume similar numbers of people are classified into each risk level. Instead, in most scenarios, we would expect that far more people should be released than detained because far more people are likely to be classified as low risk.

Three key pieces of information can help combat these challenges. First, sharing risk scores and not just risk categories would allow pretrial services officers and judges to see whether or not an individual is near a cut point. Second, emphasizing the range of probability of pretrial success, rather than misconduct, for each risk category would highlight the fact that most people are more likely to succeed than not if released (DeMichele et al. 2018a).¹³ Third, information about how many people are likely to be classified into each risk level can help pretrial services officers and judges make decisions that adhere to local policy objectives.

These pieces of information work together to help judges make decisions. For example, if the policy objective is to release as many people as possible under the fewest restrictions possible, but a large proportion of individuals are classified as moderate risk, judges will need to differentiate within the moderate category. With information on risk scores, judges might release without conditions all those classified as low risk, as well as those who are classified as moderate risk but are near the low-risk cut point.

The Importance of Transparent Decision Making

A pretrial risk assessment tool uses the same predictors and the same statistical model to predict risk for all assessed individuals. For non-proprietary tools, how risk predictions are made is transparent—the information and the process used to make them is known. Moreover, those risk predictions are consistent—people with identical predictors have identical risk predictions. Similarly, all else being equal, people with the same risk predictions should experience the same release or detention decisions. If they do not, those decisions can be challenged on the grounds that they are inconsistent, inaccurate, or inequitable.

Judges make pretrial release or detention decisions based on risk predictions and recommendations made by pretrial services officers, who gather additional information to facilitate those decisions.¹⁴ Well-designed pretrial risk assessment systems structure decision-making to help judges and others translate risk predictions into decisions that reflect local policy objectives. Structure can take the form of written policies, decision trees, and/or decision matrices to indicate whether people who meet certain criteria should be released or detained (Koepeke and Robinson 2019).¹⁵

Overrides occur when judges or pretrial services officers make decisions that conflict with the recommendations of the pretrial risk assessment system. Even in well-designed and seemingly comprehensive pretrial risk assessment systems, research has found that judicial overrides are commonplace (e.g., BRWG 2016). Although judges or others often override with good reason (e.g., to address a credible threat to a particular victim), if the reasons for those overrides are unknown, research indicates that the goals of pretrial justice can be compromised. Overrides without explicit explanations run the risk of introducing ambiguity, inconsistency, inaccuracy, and inequity into assessment systems (Garrett and Monahan 2018; Kleinberg et al. 2017; PDRW 2017; Mamalian

¹³ One helpful approach would be reporting predictions as probabilities bounded by ranges of uncertainty (PAI 2019). For example, reporting that someone has a 20 percent chance of committing pretrial misconduct with a range of uncertainty between 15 and 25 percent is different than reporting the same chance with a range of uncertainty between 5 and 35 percent. None of the pretrial risk assessment tools used in California present risk predictions as bounded probabilities.

¹⁴ Pretrial services officers (PSOs) can also override recommendations from pretrial risk assessment systems. They can do so in two ways: by changing their recommendations to judges or by themselves choosing to release or detain a person against the recommendation of the system. Like judicial overrides, overrides by PSOs should also be monitored, evaluated, and addressed.

¹⁵ It is important to understand that arraignment court judges are often under pressure to make hundreds of decisions each day (Ottone and Scott-Hayward 2018). When people must make decisions quickly, they may often rely on immediate and intuitive associations rather than considered and complex analyses (Kahneman 2011). Decision-making based on such associations may in turn reinforce implicit biases—unconscious, socially determined stereotypes about others—that could disadvantage racial minorities and the poor in criminal justice proceedings (DeMichele et al. 2018a; Guthrie et al. 2007).

2011; Stevenson 2019). For this reason, judges and pretrial services officers should be required to explicitly state why they override each time they do so.

Altogether, transparency in pretrial decision making entails a record of the information that contributed to each release or detention decision, including which risk category was predicted; how it was predicted (e.g., the predictors and the assessment tool used); the recommendation to release or detain; whether that recommendation was overridden and why; and the final release or detention decision (PAI 2019). This information will help enable evaluation of whether pretrial decision-making processes align with local policy objectives.

Defining accuracy

Accuracy in risk assessment can be defined in terms of error rates. Risk assessment tools can make two kinds of errors. **False positives** occur when people are misclassified as high risk. When these types of errors occur, arrested individuals and their families primarily bear the costs because people classified as high risk are more likely to be detained. In addition, the public pays the costs associated with pretrial incarceration. **False negatives** occur when people are misclassified as low risk. Victims and communities primarily bear the costs of this kind of error because people classified as low risk are more likely to be released and therefore have the opportunity to commit crimes in the community.

During validation and evaluation, assessing how many false positives there are relative to false negatives can help counties strike the appropriate balance between protecting public safety and protecting arrested individuals' right to liberty. Allowing fewer false positives than false negatives prioritizes individuals' right to liberty over public safety and vice versa.

However, the rates at which false negatives and false positives occur can only be assessed among those who have been released pretrial. Determining the number of low- and medium-risk people who were detained is key because those individuals potentially could have been released without threatening victim or public safety. Understanding why they were detained can help counties assess whether the decision-making process aligns with local objectives.

See [Technical Appendices D and E](#) for more information.

Evaluating Pretrial Risk Assessment Systems

This section describes how counties can test and evaluate their pretrial risk assessment systems to ensure that they are performing as intended. We focus on data challenges in testing and evaluation as well as considerations for promoting equity.

Data Challenges in Evaluation

Pretrial risk assessment tools must be tested to understand how they perform for the local population and within the local system of pretrial justice. This testing, also referred to as “validating” the tool, involves assembling a dataset, using it to determine the accuracy of the risk predictions made by the tool, and evaluating the equity of the decisions that resulted from those predictions.

Pretrial risk assessment tools that have not been locally tested can classify people inaccurately and lead to inequitable pretrial decisions because how a tool performs reflects the policy objectives and the pretrial misconduct patterns in which it was validated. Lack of testing could lead to misleading assumptions about a tool’s accuracy.¹⁶ Most pretrial risk assessment tools have not been validated for populations like California’s. For instance, 11 California counties are rural, according to the US Census Bureau. Yet most tools have been validated only in urban areas (Mamalian 2011). Likewise, Latino and Asian Americans make up large shares of the population in many California counties. Yet most tools used in California, including the ORAS, VPRAI and PSA, were not initially tested on populations that included these racial/ethnic groups (DeMichele et al. 2018b; Latessa et al. 2009; VanNostrand 2003).

Counties may struggle to assemble data that include enough observations to properly test their assessment tool. For instance, individuals’ criminal history is a key input. Yet policy contexts shift over time, and major changes in the criminal justice landscape have affected pretrial justice at the state level. Importantly, in 2014 Proposition 47 reduced pretrial detention rates for individuals charged with some crimes.¹⁷ Although past and future policy contexts cannot be perfect mirrors, the policy context that produced the test data should be as similar as possible to the policy context in which the tool will be used (Koepeke and Robinson 2019). Although there are no established standards regarding how large these datasets should be, both the ORAS and the VPRAI were initially tested using sample sizes of about 2,000, which seems commonplace (Latessa et al. 2009; VanNostrand 2003).¹⁸ Less populous counties may be able to use fewer observations, but probably not fewer than 500.¹⁹

These challenges are likely to affect many counties in California, as can be seen when we examine the frequency with which pretrial misconduct outcomes might occur. COMPAS, for example, uses new felony arrests to construct its pretrial misconduct measure. Figure 3 shows California Department of Justice (DOJ) data on the number of felony arrests that occurred in each county for the three most recent years (2016–18).

More than a quarter of counties (16) processed fewer than 2,000 felony arrests during this three-year period and would likely find it difficult to evaluate and monitor their pretrial data because they do not process enough arrests.²⁰ Importantly, the DOJ data do not distinguish pretrial arrests from all arrests, so the number of pretrial

¹⁶ For example, VPRAI developers reported an accuracy rate of 65 percent, whereas researchers in Riverside County found that the accuracy rate was 61 percent—a difference that translates to four additional inaccurate risk predictions per 100 risk predictions (Lovins and Lovins 2015).

¹⁷ County policies can similarly affect pretrial justice. For example, many counties now send text messages to remind defendants about their court dates (Balassone 2018). Pretrial misconduct rates prior to such policies may differ from pretrial misconduct rates afterward.

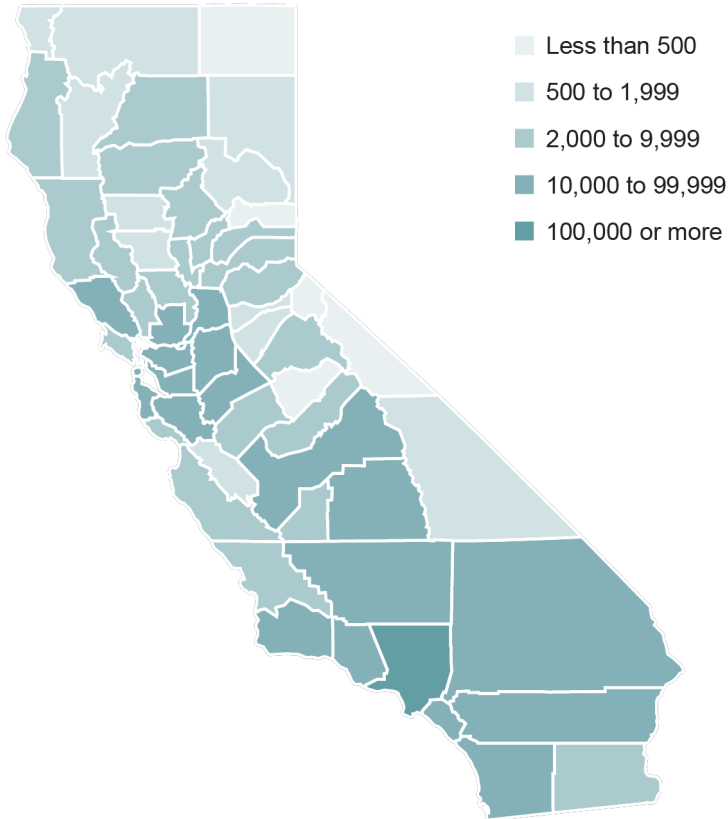
¹⁸ In the published literature, validation datasets range in size from about 500 to more than 30,000 observations (Lovins and Lovins 2015; PJI 2009; Siddiqi 2009).

¹⁹ With smaller samples validating for population subgroups will be challenging. For example, if African Americans are only 10 percent of the population, a 500-person sample will include about 50 blacks, which limits the potential for statistical modeling to evaluate equity.

²⁰ Narrowing the timeframe to 2018, more than half (32) of California’s counties did not process 2,000 felonies.

felony arrests is certainly less than the total number of felony arrests shown in Figure 3, even with repeat offenders present in the data.

FIGURE 3
Many counties in California processed fewer than 2,000 felony cases between 2016 and 2018



SOURCE: California Department of Justice

NOTE: These numbers reflect all felony arrests, not just those that occurred during pretrial periods.

These data limitations are all the more significant in light of recent legislation (SB 36) mandating that counties test their pretrial risk assessment tool at least once every three years. Counties may also be experiencing concurrent data challenges in implementing these tools, as described earlier. Prior research and case studies suggest some approaches to overcome various challenges in using, testing, and evaluating these tools with limited data:

- Counties that process a reasonable volume of cases, but that have not collected the historical data necessary to test a pretrial risk assessment before it is used, can pilot a tool and test it afterward. Similarly, counties that are missing data for some predictors or outcomes (e.g., failure to appear) can verify the tool’s predictive accuracy without those variables. The Riverside County case study in [Technical Appendix A](#) illustrates these options.
- Counties can develop their own pretrial risk assessment tools, as illustrated by the Santa Clara County and Sonoma County case studies in [Technical Appendix A](#). For counties with very limited data, Dressel and Farid (2018) illustrate how a tool might be developed using only two predictors.

- Smaller counties that are similarly sized and relatively homogenous can collaborate to test or develop a risk assessment tool (Vetter and Clark 2013). As the research in this area is scant, we look forward to the evaluation of the ongoing collaborative pretrial pilot project in Nevada and Sierra Counties.
- Counties that process too few cases to develop or test pretrial risk assessment tools can still achieve more transparency, consistency, and equity by structuring pretrial decisions through decision matrices and decision trees, as shown in [Technical Appendix F](#).

Defining equity

In pretrial risk assessment, there are two commonly used standards for measuring equity between groups of people. **Predictive parity** measures how often risk predictions were not followed by the expected outcome. For example, this standard requires that individuals who are deemed high risk commit pretrial misconduct at the same rate for each racial/ethnic group. **Statistical parity** measures how often pretrial misconduct outcomes were not preceded by the appropriate risk prediction. For example, this standard requires that the percentage of people who did not commit pretrial misconduct but were classified as high risk be the same for each racial/ethnic group.

Failure to meet predictive parity means risk classifications will be more accurate for some groups compared to others, while failure to meet statistical parity means that certain groups will be more likely to be classified as high risk (see the ProPublica-COMPAS case study in [Technical Appendix A](#)). Since the two standards cannot be maximized simultaneously, county stakeholders should determine which form of equity they wish to prioritize and measure in their evaluation and testing.

See [Technical Appendices D and E](#) for more information.

Promoting Equity

An essential aspect of the evaluation process is examining whether pretrial risk assessment systems compromise equity between groups of people (see textbox above for how equity can be measured).²¹ If a risk assessment tool makes inequitable predictions, there are several options for practitioners and policymakers. More equity might be achieved by, for example, shifting cut points to classify fewer people as high risk or by removing predictors that might exacerbate inequity from the risk prediction model.²² If more equity in risk prediction cannot be achieved or if the tradeoffs between accuracy and equity or individuals' right to liberty and victim and public safety are too high, the policies that translate risk predictions into pretrial release or detention decisions can be modified to

²¹ As described in the textbox on page 14, accuracy in risk prediction can be measured in more than one way, which means that equity in risk prediction, which is defined in terms of accuracy, can also be measured in multiple ways. In the textbox on this page, we define two standards of equity, predictive parity and statistical parity. Correcting inequity in either standard involves tradeoffs that are a consequence of group average differences in the probability of committing pretrial misconduct (Berk et al. 2018; Kleinberg et al. 2016). First, predictive parity and statistical parity cannot be simultaneously maximized. But they can be balanced in relation to each other (Huq 2019). Even a "balanced" system is likely to have slight inequities by one standard or the other. Second, equity is defined as a function of accuracy. Therefore, regardless of how the equity standards are balanced, increasing equity in risk prediction will generally come at the expense of decreasing accuracy. Again, slight inaccuracies and inequities will be present, which is why their consequences need to be evaluated and addressed (Berk et al. 2018; Chouldechova 2017; Huq 2019; Kleinberg et al. 2016; Mayson 2019). We elaborate on these issues in [Technical Appendices D and E](#).

²² In Figure 2, for example, raising the first cut point from 5 to 6 could increase individual liberty, but decrease public safety. Individuals with a 25 percent chance of pretrial misconduct will now be classified as low risk and likely released, whereas before they would have been classified as medium risk and more likely to be detained.

mitigate the degree to which inequity is propagated, as shown in the Center for Court Innovation case study in [Technical Appendix A](#) (Picard et al. 2019).

One approach is to alter graduated supervision levels to expand the conditions under which people can be released. For instance, when Kentucky instituted a pretrial risk assessment system based on the PSA, judges initially followed the recommendations from the system. As a result, pretrial detention rates decreased from 69 percent to 65 percent. But ongoing evaluation showed that judges returned to making their own release and detention decisions within six months, after which pretrial detention rates rose. A research study found that the judges' decisions systematically disadvantaged African Americans such that racial disparity in pretrial release without financial conditions increased by 8 percentage points relative to levels prior to the implementation of the pretrial risk assessment system (Stevenson 2019, 363). To remedy this situation, state policymakers modified policies to allow pretrial services officers to release more people before arraignment. By expanding the conditions under which individuals were released by pretrial services officers prior to arraignment, they reduced the number of cases in which judges had the opportunity to make decisions about pretrial release and detention (Stevenson 2017).

In addition to demonstrating how a jurisdiction might mitigate racial inequity in a pretrial risk assessment system, Kentucky's experience also highlights the need for routine testing of pretrial risk assessment tools and routine evaluation of pretrial risk assessment systems to ensure that the goals of pretrial justice are achieved.²³

Conclusion

Amid potential reforms to the state's bail system, pretrial risk assessment offers the opportunity to make release or detention decisions that might better balance arrested individuals' right to liberty with the need to maintain victim and public safety. When used effectively, pretrial risk assessment can help make pretrial decisions more transparent, consistent, and equitable. Since most counties already have pretrial services and are already using a risk assessment tool, this report focuses on ways to improve existing systems and practices, as well as considerations for evaluating whether pretrial programs meet local policy objectives.

To function effectively, all stakeholders should understand how pretrial risk assessment works, what risk predictions mean in the local policy context, and how to translate risk predictions into release or detention decisions. Local collaboration—among pretrial services, the police, probation officers, the courts, social services, and the larger community—is critical. Creating a public forum that allows for the improvement of pretrial policies that are collectively agreed upon, communicated through training, and easy to administer can promote the success of these policies (CPOC 2019; DeMichele et al. 2018a; Myburgh et al. 2015; PAI 2019). To that end, the Community Corrections Partnerships, established to implement realignment, provide models of public and transparent policymaking that can be replicated.²⁴

Lack of sufficient data may present challenges to the implementation of effective pretrial risk assessments and their ongoing evaluation. First, the criminal history data often used in assessment tools—such as incarceration, arrests, and failures to appear—may be housed in different local or state agencies. It is critical that agencies work

²³ Several of the case studies presented in [Technical Appendix A](#) further illustrate this point.

²⁴ Transparency requires a record of information that contributed to each release or detention decision, including which risk category was predicted; how it was predicted (e.g., the predictors and the assessment tool used); the recommendation to release or detain; whether that recommendation was overridden and why; and the final release or detention decision (PAI 2019).

together to store and collect the necessary data, and that the data are collected in a uniform manner. Second, data collection is necessary for evaluating and monitoring whether pretrial risk assessment systems are achieving the desired objectives. However, many counties in California may not process enough cases to ensure the accuracy of these tools with the data they have available or for their own local populations. Options for addressing these challenges range from piloting and evaluating the accuracy of the tools with the available data to collaborating with neighboring counties that have similar populations on data collection and testing.

Racial equity is a key concern for practitioners and policymakers involved in pretrial services and risk assessment. In particular, pretrial risk assessment tools have raised questions about whether the use of criminal history information will systematically disadvantage racial minorities and other marginalized groups. However, when implemented effectively, pretrial risk assessment systems also enable transparency and consistent decision-making processes—which can offer an important avenue for identifying and addressing potential inequities in pretrial justice. Stakeholders should track accuracy and equity rates across race/ethnicity and other socioeconomic characteristics during ongoing testing and evaluation of pretrial risk assessment tools—and, if needed, adjust decision-making protocols based on these findings.

Ensuring that pretrial risk assessment systems balance arrested individuals' right to liberty with victim and public safety, while also promoting equity, is an ongoing process that requires transparency as well as consistent and complete data collection. In addition, routine monitoring, testing, and evaluation of pretrial risk assessment systems are essential to identify areas of weakness and develop strategies that will enable counties to offer pretrial services that align with their policy objectives.

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ACKNOWLEDGMENTS

This report benefited tremendously from valuable feedback from external reviewers including Rhys Hester and Michael Tonry. We also appreciate the helpful comments from our internal reviewers, Mia Bird, Magnus Lofstrom, and Lynette Ubois; insights from our director of government affairs, Deborah Gonzalez; and the herculean editorial support of Vicki Hsieh.

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