CRIME AND JUSTICE BULLETIN

Investigating bias towards Aboriginal people in police bail decisions

Ilya Klauzner

AIM

To investigate whether police custody managers exhibit bias towards Aboriginal defendants in their bail decisions, once accounting for the risk of reoffending and absconding when on bail.

METHOD

We compare the rates of different measures of bail misconduct for Aboriginal and non-Aboriginal defendants at the margins of release on bail, using an outcome test design. If marginal Aboriginal defendants have lower rates of bail misconduct than marginal non-Aboriginal defendants, then we conclude that custody managers apply a stricter threshold of release and are biased against Aboriginal defendants. We calculate outcomes for marginal defendants using the quasi-random allocation of defendants to police custody managers with differing propensities to grant bail. By using an instrumental variable strategy, we approximate the 'marginal defendant' as the defendant who would have been denied bail if they were allocated to a harsher custody manager but would have been granted bail if they were allocated to a more lenient custody manager.

RESULTS

Rates of bail misconduct are similar between Aboriginal and non-Aboriginal defendants among our measures of misconduct. For example, Aboriginal defendants on the margins of release are 20.2 p.p. more likely to reoffend or abscond on bail than Aboriginal defendants refused bail, while the corresponding number for non-Aboriginal defendants is 19.8 p.p.

CONCLUSION

We find no evidence to suggest that there is bias, in the form of a stricter threshold of release by police custody managers in their bail decisions, between Aboriginal and non-Aboriginal defendants. This suggests that strategies to reduce disparities in the likelihood of receiving bail should focus either on other criminal justice decisions (such as the decision to charge or arrest accused persons) or research should focus on structural factors of the criminal justice system (such as the potential presence of institutional bias).

KEYWORDS   Aboriginal people   Bail   Police

INTRODUCTION

Aboriginal[1] adults on remand contribute significantly to Aboriginal over-representation in the prison population. Although Aboriginal adults only comprise 2.2% of the NSW population, they account for 27.8% of the remand population (NSW Bureau of Crime Statistics and Research, 2021). Of further concern is that the number of Aboriginal adults on remand has been steadily increasing over the last seven years, rising from 880 people in 2015 to 1,470 in 2022 (an increase of 67%). Over the same time period the number of non-Aboriginal adults on remand increased by 19% (NSW Bureau of Crime Statistics and Research, 2022a).

This large disparity in rates of remand between Aboriginal and non-Aboriginal adults could be a result of systemic bias (e.g., by unfair laws or institutions; Blagg et al., 2005; Small & Pager, 2020), structural disadvantage, the present effects of colonialism (Anthony & Blagg, 2021; Cunneen & Tauri, 2019), intergenerational trauma (Menzies, 2019), higher rates of offending on bail by Aboriginal adults, or bias by individuals making bail decisions. Prior research by Klauzner and Yeong (2021) suggests that the high number of Aboriginal adults in remanded custody may be partly due to higher rates of bail refusal by individual police decision-makers. They found that Aboriginal adults were 20.4% more likely to be denied bail by the police than non-Aboriginal adults, even after controlling for factors specified in NSW bail legislation, including offence type, criminal history, and demographic characteristics. While suggestive of an association between Aboriginality and the likelihood of police bail, there were several important factors that could not be observed in this analysis, such as the strength of the prosecution case, availability of bail accommodation, and criminal ties. If these factors are also influential in shaping police bail decisions, then Klauzner and Yeong (2021) would be overestimating the effect of Aboriginality on bail outcomes. Using more sophisticated methods in the United States, Arnold et al. (2018) did find bias by bail judges towards minority defendants.

Confirming the existence of bias (conscious or otherwise) by police decision-makers in bail decisions may inform policy makers about appropriate responses to reduce the disparity in remand rates between Aboriginal and non-Aboriginal people. For example, whether policies that target the bail decision-making process of individual police officers may be effective in reducing disparities in remand rates or if other policies or further research is needed.

Bail decision-making in NSW

Generally, most adults charged with an offence in NSW will have their guilt and penalty determined by the courts. However, it can take the courts a substantial amount of time to finalise the matter. For example, in 2021, for people bail refused at finalisation the median time from arrest to finalisation in the NSW District Court was 460 days while in the Local Court delay was 184 days (NSW Bureau of Crime Statistics and Research, 2022b). Many defendants will be remanded in custody for a part, or all, of this period.
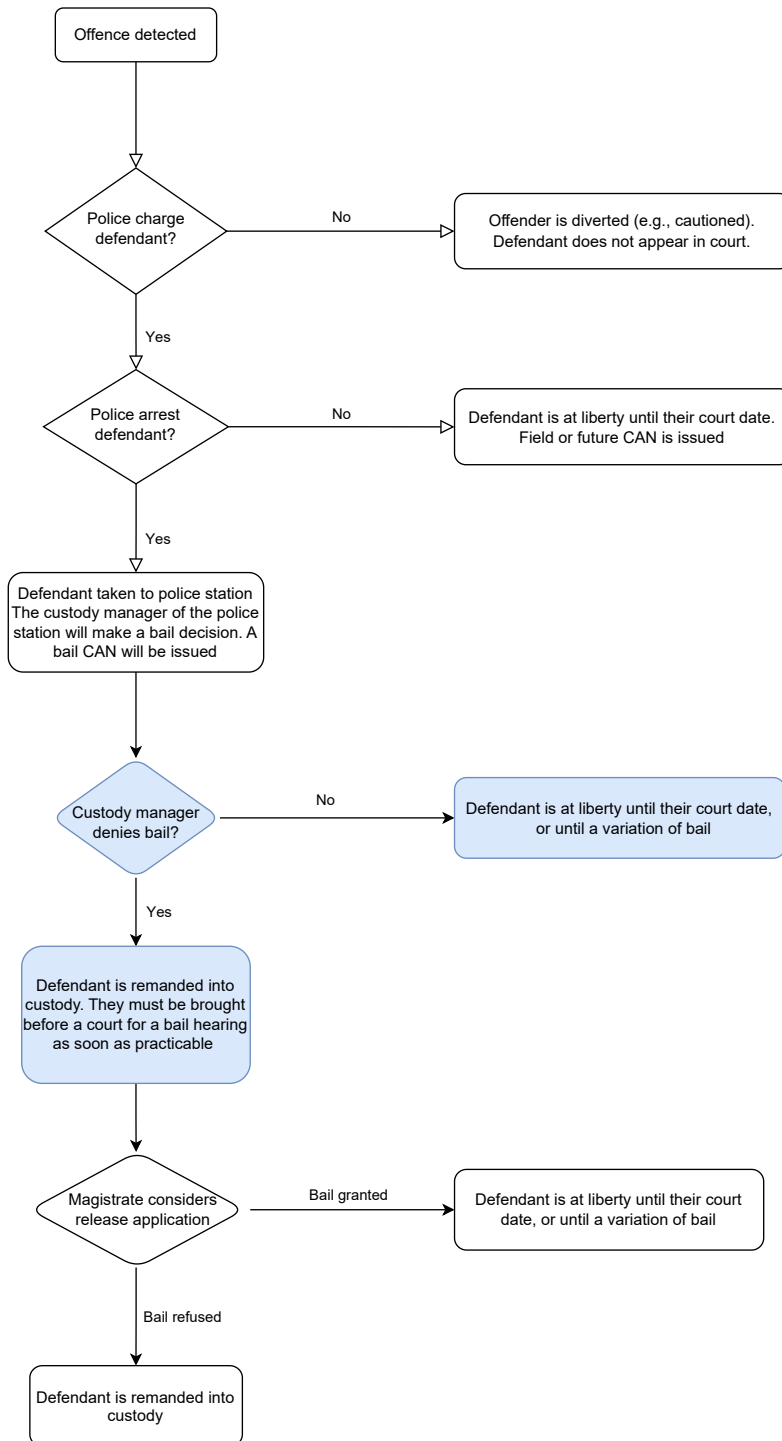
Bail authorities (police and the courts) determine whether an accused person will be allowed to be at liberty (i.e., on bail) while their court case is being finalised. Figure 1 presents a flowchart of how bail decisions occur in NSW. The process begins when an offence is detected by or reported to the police and the police officer decides whether to charge the accused person.[2] More minor offences can be dealt with by a caution (such as cannabis possession) or an infringement notice (such as driving offences), and do not require attendance at court. For more serious offences, a police officer will lay criminal charges against the accused person by issuing a Court Attendance Notice (CAN). The police officer also decides whether to arrest the accused person, lay charges at the police station and subject the accused to a formal bail assessment. If the accused is not arrested, a Field or Future CAN will be issued either at the

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1   In this report we use the term Aboriginal to refer to Aboriginal people, Torres Strait Islanders and people who identify both as Aboriginal and Torres Strait Islander. Note that only a very small proportion of the Indigenous population in NSW are of Torres Strait Islander origin only (Australian Bureau of Statistics, 2022b). In our statistical analysis, we define Aboriginality by identification to police and the recording of Aboriginality in police databases. This is explained in our method section, and the limitations of this approach are addressed in the discussion section. We use the terms 'Indigenous' and 'Aboriginal and Torres Strait Islander' where original sources use these.
2   Other agencies also have the power to charge a person with an offence.

scene or sent via mail and the individual will be at liberty in the community until their first court hearing. If the accused person is arrested, they will be brought to a police station, a bail CAN issued, and a bail decision must be made.[3] In this paper we examine only the formal police bail decision made on a bail CAN, (i.e., the section of Figure 1 which is shaded blue). We do not consider any other decision points depicted in Figure 1.

Figure 1. Flow chart of police decisions and court bail decision

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Police bail decisions are made by custody managers for accused persons issued a bail CAN. Typically, only one custody manager is on duty at a police station and he or she is generally not the arresting and charging officer. The custody manager makes their bail decision in accordance with the *Bail Act 2013* (NSW) (hereafter the Bail Act). The Act specifies that bail authorities must apply the unacceptable risk test when deciding whether to grant bail. First, they must determine if a defendant is at risk of any of the following:

1. Failing to appear at any proceedings for the offence;

2. Committing a serious offence;

3. Endangering the safety of victims, individuals, or the community;

4. Interfering with witnesses or evidence.

If the bail authority considers that there is an unacceptable risk that the person will commit one or more of the above four actions, and that these risks cannot be mitigated by bail conditions, the accused must be refused bail. The Bail Act defines a wide range of factors that bail authorities must consider when determining whether any unacceptable risks are present, including the person's community ties, criminal associations, special vulnerabilities, and any need to be free. There are a small number of very serious offences where a 'Show Cause' clause applies. Persons accused of these offences must show cause as to why their detention is unjustified. If they do show cause, then the unacceptable risk test applies.

When applying the unacceptable risk test, custody managers will have an implicit risk threshold, that is a point where a defendant's perceived risk of the above four actions changes from acceptable to unacceptable. Above this risk threshold a custody manager will deny bail and below it they will grant bail. In cases where police grant bail, the accused person is usually at liberty for the whole period before their matter is finalised unless they breach their bail conditions or commit a further offence. In cases where police refuse bail, the accused person is remanded into custody and brought before a magistrate for a subsequent bail decision (also known as a release application) as soon as practicable.

Past research

An extensive literature exists on bias in decision-making. As part of this work scholars have proposed several broad and distinct definitions of bias and discrimination (terms which we use interchangeably in this paper). For example, one sociological definition of bias emphasises discrimination by institutions, such as governments and large businesses through their policies and practices (Small & Pager, 2020). Although, this is an important form of discrimination which we address in the discussion, in this bulletin we only examine bias by individuals. However, even bias perpetrated by individuals is theorised to have diverse motivations and may manifest in different ways. Taste-based discrimination refers to prejudice (Lang & Spitzer, 2020). For example, a judge may give a harsher sentence to a member of a different race simply because of their prejudice toward that race (e.g., they believe the group is more criminal by nature). This discrimination is explicit, and an individual is willing to pay a price for their prejudice (e.g., an employer hiring a less productive worker to avoid hiring a worker from a different race) (Lang & Spitzer, 2020).

Statistical discrimination is also explicit, but has been framed by some as a rational response to a lack of information by decision makers (Lang & Spitzer, 2020). If race or another group characteristic is correlated with an outcome of interest, a rational decision-maker may use accurate information on the group characteristic in the absence of information on the individual's outcomes. For example, absent perfect information on a person's likelihood of reoffending on bail, a magistrate may be more likely to refuse bail to men because they generally tend to offend more. Statistical discrimination is theorised as accurate, i.e., decision makers have correct information about the group that they are discriminating against. However, inaccurate statistical discrimination could also occur, such as explicit but incorrect stereotypes about a certain group. This would result in a decision maker acting the same as a taste-based discriminator. Finally, implicit discrimination can occur because of an individual's unconscious beliefs, attitudes, or associations (Bertrand et al., 2005). For example, an examiner may unconsciously associate intelligence

with being male, and as a result grade women more harshly than men. Empirically, implicit discriminators act as either taste-based discriminators or accurate statistical discriminators depending on the accuracy of their beliefs, associations, and heuristics.

The long-standing issue of Aboriginal over-representation in the criminal justice system has prompted a great deal of scholarly investigation in Australia into the possible existence of systemic bias in the criminal justice system. Blagg et al. (2005) finds large disparities between Aboriginal and non-Aboriginal people in many areas of the criminal justice system, including Aboriginal overrepresentation in arrests, imprisonment, and victimisation. Cunneen and Tauri (2019) find these disparities towards Indigenous peoples in criminal justice systems in Australia, New Zealand, Canada, and the United States. They identify a variety of causes of these disparities, including the present and historical impact of colonialism and child removal, policies made without regard to Indigenous customs, practices, and knowledge, and the socio-economic marginalisation of Indigenous peoples. Anthony (2017) finds that Aboriginal people are among the most incarcerated people on earth, having higher rates of incarceration than African Americans, Aboriginal Canadians, Māori, and Indigenous Americans.

However, large disparities in outcomes are not, on their own, sufficient to demonstrate that individual decision-makers are biased because they may simply reflect systematic differences between Aboriginal and non-Aboriginal people on factors that are relevant to the outcome of interest. To address this issue, many studies concerned with bias in decision-making apply regression or other statistical adjustments to account for a range of relevant legal factors such as the type and seriousness of offending, or prior criminal history. Weatherburn and Snowball (2012), for example, both used logistic regression to control for criminal history, offence severity, and concurrent offences. They found that, net of these factors, Aboriginal defendants in NSW were around 12% more likely to be denied bail by courts than non-Aboriginal defendants. Similarly, Klauzner and Yeong (2021) in analysing police and court bail decisions in NSW between 2015 and 2019, found that Aboriginal adults were 20.4% more likely than non-Aboriginal adults to be denied bail by the police even after controlling for offence type, criminal history, and demographic factors. However, Aboriginal adults were not more likely to be denied bail by the courts once these factors were considered. In Perth, Allan et al. (2005) analysed court bail decisions for 648 defendants, and considered a range of legal and extra-legal factors. They found no differences in the likelihood of bail refusal for Aboriginal and non-Aboriginal defendants after controlling for other case characteristics.

The above studies suffer from two critical shortcomings. Firstly, they omit key variables that are used in bail determinations. For example, in NSW, section 18 of the Bail Act outlines all the factors that police and courts must consider when making a bail decision. Several of these factors, including an "accused person's … circumstances, and community ties", "the strength of the prosecution case", and "the conduct of the accused person towards any victim of the offence", are not recorded in administrative data, and thus were not included in previous studies. Secondly, most of the factors controlled for in Australian studies are retrospective measures (e.g., prior offending or the severity of an offence that has already taken place). However, the police and courts make bail decisions to minimise the risk of future reoffending and absconding. It is possible that police and magistrates can effectively predict this risk through factors that are observable only at the time the decision is made, like a defendant's demeanour in court or their level of remorse. If magistrates and police officers are relying on factors unobservable to researchers in their bail decisions, the prior studies may incorrectly conclude that they are biased in their bail decisions.

Outcome tests have emerged as an alternative method for identifying bias in decision-making, as they are less susceptible to the problem of omitted variable bias, and directly examine the outcomes with which decision makers are concerned.[4] In the outcome test, individuals from different groups are compared at the same indifference point of a decision-maker (Arnold et al., 2018; Becker, 1957). In the bail context, for

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4   The outcome test described here is also less susceptible to the inframarginality problem which afflicts comparisons of the average outcomes for different groups. Such comparisons are biased if different groups have different risk distributions. However, empirical applications of the test may suffer from inframarginality if they cannot compute an unbiased estimate of the outcome at the margins of a decision-maker's indifference point. Many studies (such as Arnold et al., 2018) overcome the inframarginality problem by using the quasi-random allocation of judges to defendants to estimate the rate of pre-trial misconduct among marginal defendants, in an instrumental variable strategy.

example, a custody manager has an implicit risk threshold for bail misconduct. We define bail misconduct as absconding or proven reoffending on bail, which is also referred to as pre-trial misconduct in the American literature. This means that if they are presented with a defendant that they determine to have a higher risk of bail misconduct than their threshold, then they will deny that person bail. Logically, this suggests that there is also a defendant whose risk is determined to be similar to the custody manager's risk threshold (i.e., at their indifference point of whether to grant or refuse bail). Instead of adjusting for group differences on observable characteristics, these tests directly compare the observed outcomes (e.g., reoffending) for members of each group who are on the margin of the decision (Arnold et al., 2018; Becker, 1957).

For example, a researcher may examine the rates of bail misconduct among Aboriginal and non-Aboriginal defendants that magistrates were indifferent in releasing on bail or detaining (i.e., at their indifference point and henceforth, the marginal defendant). If the bail misconduct rates are similar, it suggests that the magistrate applied the same threshold in their bail decision to both groups, and therefore there is no evidence of bias. However, these tests cannot detect accurate statistical discrimination, or decision makers that act like statistical discriminators (e.g., accurate implicit bias). In the example of bail, this is because although a magistrate may be discriminating against a particular group, that group on average will be more likely to commit bail misconduct. Therefore, there will be no finding of bias in an outcome test.

Arnold et al. (2018) used this test to examine whether bail judges in Miami and Philadelphia exhibit bias against minority races, including African American and Hispanic persons. By exploiting the quasi-random assignment of bail judges to cases, they estimate the rate of pretrial misconduct for the marginal African American and marginal non-African American defendant. They found that the marginal African American defendant had a lower rate of bail misconduct suggesting that bail judges are much more likely to grant bail to white defendants than African American defendants, even where the defendant has the same risk of reoffending on bail or failing to appear at their court date. Arnold et al. (2018) only found this bias in one of the two courts they examined, and primarily attributed this bias to incorrect stereotypes. However, the results from other research that has used the outcome test to examine bias in judicial decision-making is mixed. Anwar and Fang (2015), for example, found no evidence of racial bias in judges' decisions to release prisoners to parole when they compared recidivism among marginal parolees (i.e., parolees who were on the margins of being released on parole). However, Abrams et al. (2012) and Alesina and Ferrara (2014) examined sentences imposed by criminal courts in the United States and both found evidence of bias against minority defendants.

As most jurisdictions do not allow police to make bail decisions, there are no studies that have used the outcome test to examine police bail decisions. However, studies have applied the outcome test to other types of police decisions, most notably, traffic stops and traffic fines. Goncalves and Mello (2021), for example, examined bias in speeding fines issued by the Florida Highway Patrol. In Florida, fine amounts are determined by the speed at which a car is travelling, with higher amounts prescribed for speeds falling in higher ranges. When examining the speeds recorded by highway patrol officers from 2005 to 2015, the researchers found an unusually high proportion of drivers recording speeds just below fine thresholds. Given drivers would not know where and when the police would be measuring their speed, this "bunching" of readings below the cutoff implies that highway patrol officers were manipulating speed recordings to give some drivers a discount. Goncalves and Mello (2021) then examined how this manipulation differed by race and found that African American and Hispanic speeders were less likely to receive these discounts on their speeding fines than White speeders. Pierson et al. (2020). examined racial disparities in over 100 million traffic stops conducted across the USA. They concluded the existence of bias against African American and Hispanic drivers. African American drivers were less likely to be stopped by police after dark, likely because police could not see their ethnicity, and police had a lower threshold for searching both African American and Hispanic drivers compared to white drivers, based on their likelihood of carrying contraband. Similarly, Feigenberg and Miller (2022) found that although African American and Hispanic motorists were twice as likely to be stopped in Texas, they were no more likely to hold contraband than white drivers, and that equalising search rates between racial groups could yield a greater contraband success rate.

Current study

The current study will examine whether there is bias in police bail decisions by comparing the probability of reoffending or absconding on bail for Aboriginal defendants at the margins of release (henceforth, marginal Aboriginal defendant) with non-Aboriginal defendants at the margins of release (henceforth, marginal non-Aboriginal defendant). We exploit the variation of each custody manager's leniency and the quasi-random allocation of custody mangers to accused persons to find unbiased estimates of the probability of pretrial misconduct for these two groups. By doing this we can infer the implicit risk threshold of reoffending and absconding above which police officers deny accused persons of each group bail. By using this outcome test methodology our study is better placed than previous Australian studies to answer the question of whether bias exists in bail decisions. A major limitation of previous studies of bail decision making is that they only account for factors that are observable to researchers (e.g., demographics, offence severity and criminal history), and may omit other important relevant variables (e.g., housing). Our study does not suffer from this omitted variable bias problem, as we use the outcome test to examine whether police apply the same risk threshold of reoffending and absconding on bail to Aboriginal and non-Aboriginal defendants, rather than estimating residual racial differences in bail accounting for observed factors.

Our study focuses on the police bail decision for several reasons. Firstly, Klauzner and Yeong (2021) found that police were more likely to deny bail to Aboriginal adults than non-Aboriginal adults, net of other factors, but found no differences between these groups in terms of the court decision. Secondly, the police decision determines whether the accused will enter remand. Even if a court subsequently overturns a bail refusal, short episodes of remand are costly to the state and can have social, economic, legal, and emotional consequences for the accused (see Kirk & Wakefield, 2018 for a summary). Thirdly, most adults that are granted bail by the police will not have bail determined by the courts unless they breach their bail conditions. This means that the police bail decision is the substantive decision for most defendants in NSW. Finally, identifying the existence (or lack of) bias in police decisions to refuse bail will help inform appropriate policy responses to reduce remand rates of Aboriginal adults, and inform future research on police discretionary decision-making (such as the decision whether to charge or caution an accused person).

METHOD

Definition of bias

Consistent with the approach used by Arnold et al. (2018) we measure bias as the difference in the outcomes of Aboriginal and non-Aboriginal adults that are on the threshold of being refused bail by police. It can also be conceptualised as the difference in implicit risk thresholds police apply to each group. Police must directly consider a defendant's risk of bail misconduct under the Bail Act and refuse bail if a defendant poses an unacceptable risk. Implicitly, this suggests each custody manager has a threshold, or a point where a defendant's risk changes from acceptable to unacceptable. We refer to this as the implicit risk threshold. If the custody manager applies the same risk threshold to both Aboriginal and non-Aboriginal people, they are considered unbiased. However, if the threshold is higher for Aboriginal people than non-Aboriginal people, that is, only Aboriginal people at lower risk of bail misconduct are released, then the custody manager would be considered biased.

For such a threshold to exist, we assume that a custody manager makes an implicit ranking of all the accused persons that they deal with, based on an assessment of the person's risk of committing bail misconduct. For this purpose, bail misconduct refers to the risk of offending or absconding whilst on bail (which is broadly consistent with the unacceptable risk test defined in the Bail Act). A custody manager will only release an accused person who has a risk of bail misconduct that is below a certain level. The existence of a threshold also suggests the existence of the marginal defendant, which refers to a

defendant that has a risk level at or near this threshold, meaning that the custody manager is indifferent[5], or could justify both granting or refusing bail to the same defendant under the Bail Act. We argue that if we identify the rates of reoffending and absconding on bail for the marginal defendant, we also identify a weighted average of the implicit risk threshold of custody managers.

More formally, we define α_n as the probability of bail misconduct by the marginal non-Aboriginal defendant, while α_a is the probability of bail misconduct by the marginal Aboriginal defendant. Intuitively, we define no bias as:

$$\alpha_n = \alpha_a$$

In other words, the marginal Aboriginal and non-Aboriginal defendant have the same probability of bail misconduct. However, if a custody manager is biased against Aboriginal defendants we would expect:

$$\alpha_n > \alpha_a$$

This is because if the custody manager is stricter on Aboriginal defendants (i.e., only releasing Aboriginal defendants at lower risk of bail misconduct), the marginal Aboriginal defendant who is released to bail will have a lower probability of bail misconduct. Conversely, if we find the following:

$$\alpha_n < \alpha_a$$

This suggests that the custody manager is applying a stricter threshold for non-Aboriginal defendants and hence, is biased against non-Aboriginal defendants.

Bias identified through this test may imply the existence of either taste-based discrimination or implicit discrimination (Arnold et al., 2018). In other words, any difference in outcomes observed may be due to explicit prejudice against members of a particular race or implicit biased beliefs, or explicit inaccurate stereotypes from custody managers about the probability that a defendant of a particular race will commit further offences or abscond while on bail. However, this test cannot establish the existence of accurate statistical discrimination (Arnold et al., 2018). That is, it is unable to identify bias where a custody manager explicitly discriminates against people of a particular race but, on average, members from that race are also more likely to offend or abscond on bail. This is because although a custody manager may be explicitly discriminating against a race, on average that race will also be more likely to commit bail misconduct. This means that the bail misconduct rates would be similar for the marginal defendants. The subsequent sections detail how we empirically test the equality of risk thresholds applied by police to Aboriginal and non-Aboriginal defendants.

Data source and sample

We use two datasets in our analysis. The first dataset is an extract from the NSW Police Force's Computerised Operational Policing System (COPS) which contains information on the police bail decision. This includes the time and date of the bail decision, an identifier of the custody manager that made the decision, and the unacceptable risks the defendant was flagged with. This is merged with BOCSAR's Reoffending Database (ROD), which contains information relating to all criminal court appearances finalised in NSW courts, as well as the first court bail decision.

Our merged dataset has information on all police bail decisions between 28th January 2015 and 18th May 2021.[6] The sample is restricted to decisions before 28th February 2021 to allow sufficient time for the majority of matters to be finalised (and therefore included in the ROD dataset). Secondly, we exclude all bail decisions involving young people under the age of 18 at the time of charge, because the Bail Act contains several provisions altering the bail decision making process for young people.[7] Thirdly, we

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5   This does not mean a custody manager is apathetic toward the defendant's bail decision, simply that their risk level is very close to a custody manager's risk threshold.
6   We start from the 28th of January 2015 as it is the first date that the Show Cause amendments of the Bail Act came into force. This means that all bail decisions are made under the same decision-making framework.
7   For example, young people never need to show cause and have an accommodation requirement for bail.

remove any bail decisions that occurred while the accused was already in custody for another offence. Fourthly, if a defendant has multiple police bail decisions on the same day, we only pick one, as these decisions are likely heavily correlated.[8] Finally, we remove custody managers with fewer than 15 bail decisions in a given year. This is because our leniency measure may be unreliable for custody managers with a low number of bail decisions. This leaves us with 180,126 bail decisions that occurred between the 28th of January 2015 and the 28th of February 2021. We remove 1,336 observations where the defendant has an unknown Aboriginality status, leaving us with 178,790 bail decisions. These bail decisions were made by 2,237 custody managers. The variables that we used in the analysis are described in the next section.

Variables

We examine the following variables to best approximate the definition of bail misconduct as specified in the Bail Act:

1. **Any misconduct:** A variable coded one if a defendant committed a proven offence[9] or absconded after their charge date and before their finalisation date, and zero otherwise.

2. **Any reoffence:** A variable coded one if a defendant committed a proven offence after their charge date and before their finalisation date, and zero otherwise.

3. **Absconding:** A variable coded one if a defendant absconded (i.e., they were charged with failing to appear at any point during their index offence), and zero otherwise.

4. **Violent reoffence:** A variable coded one if the most serious offence that a defendant committed between their charge date and finalisation date was a proven violent offence, and zero otherwise. A violent reoffence includes homicide or related offences (ANZSOC code 01),[10] Acts intended to cause injury (ANZSOC 02), Sexual assault and related offences (ANZSOC 03), and robbery, extortion and related offences (ANZSOC 06).

5. **Serious reoffence:** A variable coded one if the most serious offence that a defendant committed between their charge date and finalisation date was a proven serious offence, and zero otherwise. A serious offence is defined as any offence falling within ANZSOC divisions 01, 03, 06, 07, and 09, or ANZSOC subcategories 211, 212, 511, 1011, 1012, 1021, 1031, and 1032.

6. **Detectable reoffence:** A variable coded one if a defendant committed a proven homicide (01), robbery (061), break and enter (07), theft of a motor vehicle (0811), illegal use of a motor vehicle (0812), and theft from retail (0823) between their charge date and finalisation date, and zero otherwise.

The first three outcomes are our main measures of bail misconduct and are those which are typically used in the international literature. These mostly align with the Bail Act, except that the second unacceptable risk listed in the Bail Act relates to a defendant's risk of committing "a serious reoffence". As this is not defined in the legislation, we use Outcomes 4 and 5 as measures of serious reoffending. Outcome 4 examines violent reoffences and Outcome 5 examines serious violent, property and drug offences.[11] Further, not all crimes are detected by or reported to the police and if detection rates are different for Aboriginal and non-Aboriginal people then this would bias our results. For example, if police surveillance of Aboriginal people is higher, more crimes would be detected in Aboriginal communities than in non-Aboriginal communities. In our analysis, this would result in Aboriginal people having a higher rate of offending on bail even if their actual rate of offending is similar to non-Aboriginal people.

8 We pick the bail refusal if there are multiple bail decisions. If there are still multiple decisions, then we pick the most serious offence, followed by the offence that was finalised the latest.

9 This does not include breach of bail, bond, or community based orders, as these are not offences.

10 ANZSOC codes are used to group offences by type across Australian and New Zealand jurisdictions. Interested readers are directed to Australian Bureau of Statistics (2011) for more information.

11 Our definition of serious violent, property and drug offences is similar to the measure used in Donnelly et al. (2022), but our measure is more selective. For example, instead of including the full 'Acts intended to cause injury' ANZSOC division, we only include serious assault, and we also exclude dealing or trafficking drugs in non-commercial quantities. This allows us to exclude some offences that are arguably more sensitive to police enforcement and where Aboriginal people are overrepresented including stalking offences (Ramsey et al., 2022).

To minimise this possibility, we also examine 'detectable offences', or offences that are more likely to be reported to or detected by police, like homicide. Here, we use the definition adopted by Yeong (2019) with one slight modification.[12] Additionally, our absconding measure is not sensitive to police surveillance, as the courts determine whether a defendant has absconded.

Our outcomes of bail misconduct are narrower than the four unacceptable risks specified in the Bail Act because we cannot directly measure the risk of endangering the safety of victims, individuals or the community (section 17(2)(c)), or the risk of interfering with witnesses or evidence (section 17(2)(d)). We argue however, that if a defendant is at risk of committing a serious crime (as measured by outcomes 4 and 5) then they are also at risk of endangering the safety of individuals and the community. This is consistent with the unacceptable risks recorded by police in the COPS extract used in this study. These data show that of all defendants who were flagged by police as having an unacceptable risk of endangering the safety of the community, 63.5% were also flagged as having an unacceptable risk of committing a serious crime. Additionally, very few custody managers flagged an unacceptable risk of interfering with witnesses or evidence as the sole reason for refusing a defendant bail. In our data, only 0.7% of defendants who were assessed by police as having at least one unacceptable risk, were exclusively flagged as posing an unacceptable risk of interfering with witnesses or evidence. This suggests that the outcome measures we use in this study broadly capture the risks police consider under the unacceptable risk test.

Our main independent variable is the police bail decision associated with a unique charge. Where there are multiple police bail decisions on the same charge number, the decision immediately preceding the court bail decision is selected. Where a person has multiple police bail decisions on the same day, the most severe decision (i.e., bail refusal) is selected, followed by the charge corresponding to the most serious offence, followed by the charge corresponding to the latest finalisation. Our analysis is conducted separately for Aboriginal and non-Aboriginal individuals. Aboriginality is defined by police and includes Aboriginal people, Torres Strait Islanders and people who identify both as Aboriginal and Torres Strait Islander. If the police identify an individual as Aboriginal on any police contact (past, present, or future), then the person is considered in this study to be Aboriginal. Other definitions of Aboriginality are considered in the appendix.[13] Additionally, the following controls are used in the analysis because they have been found to influence the police bail decision (see Klauzner & Yeong, 2021):[14]

- ° Female: a variable coded one for female and zero for male.
- ° Age: Age at finalisation date. Coded as 18 – 24, 25 – 34, and 45 and above.
- ° Remoteness area: coded as Major City, Inner Regional, Outer Regional to Very Remote, and missing.
- ° SEIFA quartile: a measure of socioeconomic disadvantage based on the defendant's postcode of residence at index contact.[15] Lower scores indicate more disadvantage (Australian Bureau of Statistics, 2016a).[16] We code SEIFA into five indicator variables, one for each quartile of the distribution and a fifth category for those with a missing SEIFA rank.
- ° ANZSOC: The ANZSOC division of the most serious offence at the police bail decision. ANZSOC codes are used to group offences by type across Australian and New Zealand jurisdictions.
- ° Maximum possible penalty: A variable coded one if the maximum statutory penalty for all offences at the bail decision was non-custodial, 2 if it was less than two years custody, and 3 if it was more than three years custody.
- ° Show cause: A variable coded one if any offence at the bail decision was a show cause offence.

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12 Yeong (2019) includes steal from person as a detectable offence. However, we exclude this offence from our detectable offence outcome, as the likelihood of a theft being reported to police may vary widely. For example, according to Australian Bureau of Statistics (2022a), only 37% of households reported theft (other than motor vehicle) to police.

13 In the appendix, we also examine how our results change if we define Aboriginality by index appearance, rather than any appearance. It is hypothesised that the former measurement is an underestimate of true Aboriginality while the latter definition is an overestimate. To be conservative our main results are reported using Aboriginality on any appearance, as this is likely to give an underestimate (as opposed to an overestimate) of any observed differences between the two groups. Additionally, in the appendix we examine the impact on our results of a change in recording of Aboriginality in January 2022.

14 These controls are included to increase the precision of our estimates, and in the appendix as a randomisation test, to give evidence to our claim that custody manager leniency is as good as random. Our instrumental variable strategy should ensure that our results are unbiased even without these controls.

15 The index contact is defined as the most recent formal police contact before a young person's consent date.

16 Defendants held on remand at the time that their matter was finalised have missing SEIFA scores in our data.

- ° Median Sentence Ranking: A ranking of the most serious offence from 1 to 135 by how harsh a penalty the median person received for the offence. Lower values correspond to more serious offences (e.g., rank 1 is murder). Further information is provided by Mackinell et al. (2010).
- ° Number of concurrent offences at bail decision: coded as zero, one, and two or more.
- ° Current breaches: Number of combined breaches of custodial orders, community orders, and violence orders at bail hearing. Coded as zero, one or two or more.
- ° Court appearances: Number of proven court appearances in the 5 years before the index contact. Coded as none, 1-2, 3-5, and 6 or more prior appearances.
- ° Violent offences: Number of violent offences in the 5 years before the index contact. A violent offence is defined as any offence falling within ANZSOC divisions 1, 2, 3, or 6. Coded as zero, one or two or more.
- ° Prior prison: Number of court appearances in the 5 years before the index contact where a prison sentence was imposed. Coded as zero, one or two or more.
- ° Prior breaches: Number of breaches of orders (sum of breaches of custodial orders, community orders, violence orders and apprehended domestic violence orders) in the 5 years before the index contact. Coded as zero, one, two, or three or more.

Additionally, we use numerous fixed effects. This includes Police Area Command (PAC) by month-year. PACs are geographical subdivisions of the police. Including this fixed effect allows us to control for different police practices that occur between PACs in any one month, including local directives for arrest and bail decisions. Finally, we include day of week by PAC, and hour of day by PAC fixed effects. These control for seasonal and temporal trends in the willingness to deny bail. For example, a custody manager may be reluctant to deny bail in the early evening as the defendant will need to wait a night in custody before they will be seen by courts.

Empirical strategy

In the previous section, we introduced our definition of bias in bail decisions. However, α_r (the impact of bail on bail misconduct for the marginal defendant of race r) is challenging to estimate. This is because it is difficult for any researcher to define who the marginal defendant is, and to estimate the unbiased impact of bail on bail misconduct for the marginal defendant. For example, a simple regression of bail on bail misconduct would give an average rate of misconduct among all defendants who the custody manager released. This is problematic for at least two reasons. Firstly, comparisons based on average outcomes are unhelpful because different groups may have different risk distributions. This issue is known in the literature as the inframarginality problem (Ayres, 2002). For example, a custody manager may set a higher bar for release for Aboriginal defendants, but if the released Aboriginal defendants engage in more bail misconduct than the non-Aboriginal defendants, we are likely to infer bias against the non-Aboriginal defendants. Secondly, bail may be determined by unobservable factors that differ between Aboriginal and non-Aboriginal defendants. If this is the case, our comparison between Aboriginal and non-Aboriginal misconduct rates will be biased.

To overcome these problems, we use an instrumental variable (IV) strategy. This strategy is used by Arnold et al. (2018) to test for bias in US bail decisions. It involves using the variation in the leniency or harshness of custody managers and the quasi-random allocation of custody managers to accused persons, to estimate the impact of bail on bail misconduct. Importantly, this strategy estimates a Local Average Treatment Effect (LATE). The LATE can be interpreted as the impact of bail on bail misconduct for defendants who would be released by a lenient custody manager but refused bail by a harsh custody manger. This narrower estimate allows us to approximate the 'marginal' defendant, and therefore a weighted average of custody managers' implicit threshold of release. If a defendant from a particular race would have been granted bail by a particular custody manger but not another custody manager, this implies they were on the 'margins' of being released. Henceforth, our results for the "marginal defendant", refer to our estimates for defendants who would be released by a lenient custody manager but refused bail by a harsh custody manger.

We use a similar strategy to Arnold et al. (2018) and Rahman (2019) to measure the leniency of custody managers. It involves controlling for factors that we know determine the allocation of accused persons to custody managers (such as location and time) and examining the variation in bail decisions that cannot be explained by these factors. To do this, we regress a binary variable equal to one if the defendant is released on bail, and zero otherwise, on fixed effects of the following factors:

1. Police area command (PAC) by month-year

2. PAC by day of week

3. PAC by hour of day

The PAC tells us in which group of police stations a defendant will have their bail decision processed. Unfortunately, we do not have an indicator of the exact police station where the accused is received (which would determine the pool of custody managers who would decide on bail for that individual), so we approximate by using PAC. We interact PAC with our time variables (i.e., month, day, and hour) so that we only compare defendants at the point where they would be randomly assigned to custody managers, i.e., defendants arrested at a similar time in the same PAC. Additionally, the time variables control for any temporal trends in willingness to deny bail, within the same PAC. For example, custody managers may be less likely to deny bail in the evening as defendants will need to spend at least a night in police custody. The PAC month-by-year fixed effects also control for general crime trends, and other factors impacting police bail decisions that are unrelated to the custody manager (e.g., public outrage over a crime committed on bail).

The residuals from this regression are then used to calculate our leniency index, which is a leave-one-out mean for custody manager leniency. In other words, we sum the residuals from the previous regression, for each custody manager in each year, and divide this by the number of bail decisions that each custody manager makes in each year. In making this calculation we remove all bail decisions relating to the defendant for which we calculate the index, from the equation. This is because our empirical strategy depends on defendants being randomly assigned to custody managers with different leniency. This would not be true if the defendant could influence their custody manager's leniency. Therefore, our measure of leniency is the average leniency of the custody manager in any one year, excluding decisions concerning the defendant for whom we are calculating the leniency index. For further information about the leniency index see the appendix.[17]

Instrumental variable method

We conduct IV analyses using two-stage-least-squares, calculated separately for Aboriginal and non-Aboriginal defendants. Both stages are estimated together using the STATA package ivreghdfe (Correia, 2018). The first stage of the analysis estimates the probability of being granted bail based on the leniency of the custody manager:

$$Released_{ic} = \alpha_0 + \alpha_1 L_{ict} + \beta X'_i + v_{ic}$$

Where $Released_{ic}$ is a binary variable equal to one if defendant $\mathbf{i}$ is released by custody manager $\mathbf{c}$. v_{ic} refers to the error term, L_{ict} is our measure of officer leniency and X'_i are our control variables, which include the previously mentioned PAC by time fixed effects. The predicted probabilities ($Released'_{ic}$) in the first stage are used to estimate the impact of being released on bail misconduct.

$$Y_{ic} = \beta_0 + \beta_1 Released'_{ic} + \gamma X_i + u_{ic}$$

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17 Unlike Arnold et. al. (2018), our leniency index is pooled in that the index is calculated across all bail applications a custody manager receives, whether the defendant is Aboriginal or not. The primary reason for this departure is that our sample size for Aboriginal defendants is low, so by having a pooled index we preserve much more of our sample size. Further, when examining the first stage regression for Aboriginal defendants, the first stage F-statistic is much larger for the pooled leniency index than for a separate leniency index for Aboriginal defendants. Similarly, the F-statistics found in Table A2 are large for every subsample when examining Aboriginal defendants. This suggests that the pooled leniency index is a good instrument for Aboriginal defendants. We examined how our results changed with separate leniency indexes and found no substantial differences.

Where Y_{ic} is a binary variable equal to one if the defendant has engaged in bail misconduct and zero otherwise, and u_{ic} is the error term. We cluster our standard errors by custody manager, as custody manager leniency is the level of our treatment. The parameter of interest is β_1^r, the LATE of being granted bail on bail misconduct for race r. This is our best estimate of the probability of bail misconduct by the marginal Aboriginal defendant (α_a) and marginal non-Aboriginal defendant (α_n).

The IV strategy relies on several assumptions. They are as follows:

1. Randomisation: The assignment of custody managers to accused persons is as good as random.

2. Relevance: The leniency or harshness of the custody manager strongly influences whether a defendant will be granted bail or not.

3. Exclusion restriction: The assigned custody manager does not affect bail misconduct except through the bail decision.

4. Monotonicity: For a given case, any defendant released by a strict custody manager would have also been released by a more lenient custody manager, and any defendant detained by a lenient custody manager would have also been detained by a stricter custody manager.

Assumption 1 is satisfied because accused persons are assigned to custody managers solely based on their location and time of arrest. Seeing that our leniency index accounts for time and location of arrest, the allocation of custody managers of different leniency to defendants should be as good as random. We also verified that our leniency index was not correlated with observable characteristics by regressing the leniency index with our control variables and fixed effects, separately for Aboriginal and non-Aboriginal defendants (Appendix Table A3). Although the joint test that all regressors are equal to zero is rejected for non-Aboriginal defendants, all individual characteristics are very small in magnitude suggesting that leniency is as good as random.

Assumption 2 can be examined by looking at the first-stage regression defined in Equation 4, because this regression directly models the impact of our leniency measure on being released on bail. The first stage regressions were conducted separately for Aboriginal and non-Aboriginal defendants and are reported in Table A4. The coefficient of the leniency measure is highly significant in both regressions, having an F statistic of 222.4 and 228.0 for Aboriginal and non-Aboriginal defendants, respectively. This confirms that our leniency measure is highly predictive of whether a defendant receives bail or not.

Assumption 3 is not formally testable, but it is highly likely that the only impact the custody manager has on a defendants' bail misconduct is through their bail decision. However, there is a possible scenario where this assumption may fail. In small regional areas, there may be only a small number of custody managers, and these officers might also engage in other police duties. These custody managers may personally know the defendants to whom they grant bail and hence monitor their actions more closely because they are on bail. This greater surveillance could increase the likelihood of detection of bail misconduct. However, this is unlikely to occur in major cities, and in the Appendix, we verify that our results are consistent when dropping regional areas from our analysis.

Assumption 4 is also difficult to test but in Table A4 of the Appendix we show that the leniency index is a strong predictor of being released on bail among many different sub-populations of Aboriginal and non-Aboriginal defendants. Each coefficient in Table A4 is positive suggesting that leniency impacts release rates in the same direction for a wide range of defendants.

Figure 2 shows the distribution of custody managers by our leniency measure and the relationship between custody manager leniency and likelihood of release on bail. There is a different figure for bail decisions related to Aboriginal and non-Aboriginal defendants. Both figures confirm the strong first stage relationship, where custody managers with a low leniency score have a much lower rate of release, and vice-versa. Figure 2 also shows that for both Aboriginal and non-Aboriginal defendants, most custody managers are near-zero in our leniency measure, and there are only a small proportion of custody managers that are very harsh or very lenient.

Figure 2: Distribution of custody manager leniency measure and relationship with likelihood of release
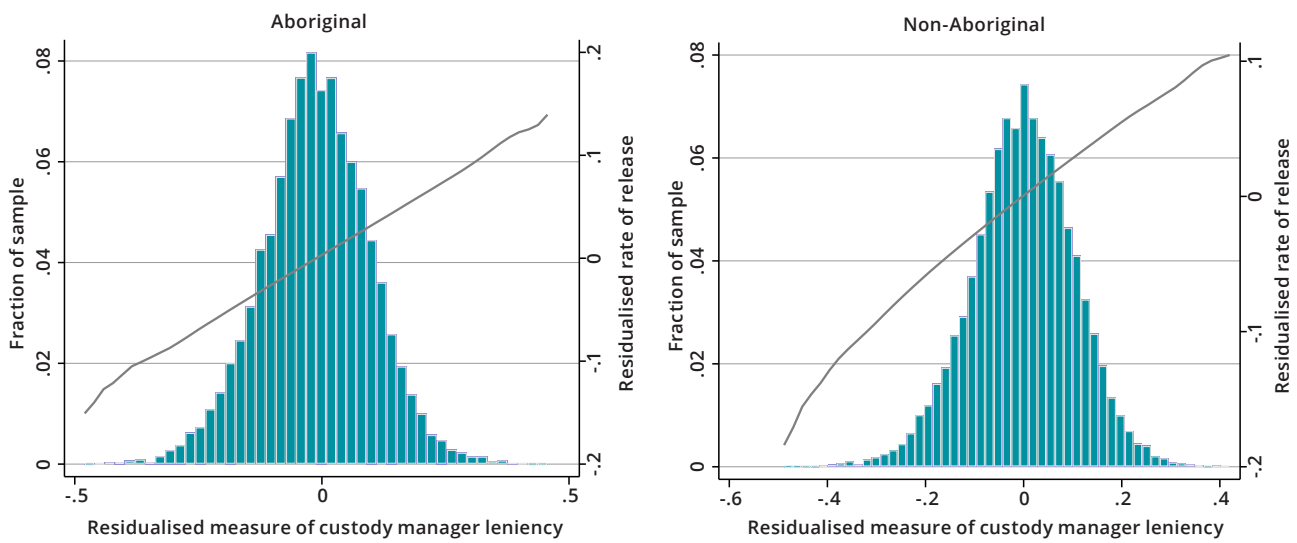
There is one noteworthy difference in our study compared to Arnold et al. (2018). In Arnold et al. (2018), someone who is refused bail cannot reoffend or abscond on bail because they are in custody until their matter is finalised. However, defendants in our study can reoffend or abscond if they are bail refused. This is because defendants who are police bail refused may subsequently be granted bail by the courts, and will therefore be at liberty for some period before their court finalisation date. The court bail decision may also be varied at future court appearances. This variation does not impact our identification strategy in any meaningful way and may even be advantageous because we can observe misconduct rates for defendants who are denied bail by police as well as for defendants who are granted bail. In the Appendix, we also examine the results if we restrict the sample to only instances where the courts uphold the police bail decision and find broadly similar results.

RESULTS

Descriptive statistics

Table 1 shows descriptive statistics for Aboriginal and non-Aboriginal defendants included in the study. Only 46% of Aboriginal defendants in the study sample were granted bail by police compared to 65% of non-Aboriginal defendants. The first two columns show the characteristics of defendants who were refused bail by Aboriginality and the second two columns show the characteristics of defendants who were granted bail by Aboriginality. Here, we consider a range of demographic variables and factors that custody managers must consider under the Bail Act when determining bail, including prior breaches of court orders, the defendant's criminal history and proxies for the likelihood of being sentenced to imprisonment if convicted, such as the type of offence and the maximum statutory penalty prescribed for that offence.

Table 1. Characteristics of defendants, by bail status and Aboriginality

	Bail refused		Bail granted	
	Aboriginal [N=26,893]	Non-Aboriginal [N=45,798]	Aboriginal [N=22,743]	Non-Aboriginal [N=83,356]
Panel A: Demographics				
Age				
18-24	0.25	0.18	0.31	0.22
25-34	0.36	0.33	0.32	0.30
35-44	0.25	0.29	0.23	0.25
45+	0.13	0.20	0.15	0.23
Female	0.16	0.11	0.27	0.19
Remoteness area				
Major cities	0.46	0.71	0.52	0.77
Inner regional	0.26	0.14	0.32	0.17
Outer regional	0.08	0.03	0.09	0.03
Remote/very remote	0.02	0.00	0.03	0.00
Unknown	0.19	0.12	0.04	0.03
SEIFA				
Most disadvantaged	0.27	0.28	0.33	0.27
Disadvantaged	0.27	0.22	0.33	0.25
Less disadvantaged	0.21	0.25	0.24	0.27
Least disadvantaged	0.06	0.13	0.07	0.18
Unknown	0.19	0.12	0.04	0.03
ANZSOC category				
Violent	0.33	0.34	0.50	0.58
Property	0.27	0.19	0.13	0.09
Drug offences	0.06	0.12	0.05	0.06
Traffic/driving	0.02	0.02	0.04	0.04
Breaches	0.20	0.21	0.10	0.08
Other	0.13	0.12	0.18	0.14
Maximum possible penalty				
More than 2 years imprisonment	0.73	0.73	0.66	0.65
Two years imprisonment	0.26	0.27	0.30	0.32
Non-custodial	0.00	0.00	0.04	0.02
Show cause offence	0.31	0.27	0.02	0.01
Concurrent offences				
0	0.36	0.34	0.50	0.51
1	0.30	0.29	0.31	0.32
2+	0.34	0.36	0.18	0.17
Current breaches				
0	0.71	0.70	0.89	0.92
1	0.22	0.23	0.08	0.06
2+	0.07	0.07	0.04	0.02
Prior violent offence				
0	0.35	0.56	0.60	0.82
1	0.32	0.27	0.25	0.14
2+	0.34	0.17	0.15	0.05

Table 1. Characteristics of defendants, by bail status and Aboriginality (continued)

	Bail refused		Bail granted	
	Aboriginal [N=26,893]	Non-Aboriginal [N=45,798]	Aboriginal [N=22,743]	Non-Aboriginal [N=83,356]
Prior prison				
0	0.44	0.69	0.79	0.93
1	0.20	0.14	0.10	0.04
2+	0.37	0.17	0.10	0.03
Prior court appearances				
None	0.07	0.23	0.25	0.55
1-2 prior appearances	0.22	0.30	0.34	0.29
3-5 prior appearances	0.38	0.29	0.27	0.12
6 or more prior appearances	0.34	0.18	0.14	0.04
Prior breaches				
0	0.37	0.58	0.64	0.85
1	0.13	0.10	0.10	0.05
2	0.15	0.11	0.10	0.05
3+	0.36	0.21	0.16	0.05
Bail misconduct				
Any	0.13	0.08	0.29	0.16
Abscond	0.06	0.04	0.08	0.04
Reoffence	0.09	0.06	0.29	0.16
Violent reoffence	0.02	0.01	0.05	0.02
Serious reoffence	0.02	0.01	0.05	0.02
Detectable reoffence	0.01	0.00	0.03	0.01

Note: Numbers may not add up to one due to rounding. There are some missing observations for age, meaning that the number of observations for age are: 26,893 (Aboriginal refused), 45,547 (non-Aboriginal refused), 22,742 (Aboriginal granted), 83,128 (non-Aboriginal granted)

As seen from the first two columns of Table 1, Aboriginal defendants who were refused bail were 7 percentage points (p.p.) more likely to be aged between 18 and 24, and 5 p.p. more likely to be female, than non-Aboriginal defendants who were bail refused. Aboriginal defendants were much less likely to live in a major city than non-Aboriginal defendants (46% compared to 71%), and less likely to reside in the most advantaged SEIFA quartile (6% compared to 13%). In terms of offending characteristics, Aboriginal defendants who were bail refused were 8 p.p. more likely to be accused of a property offence and 6 p.p. less likely to be accused of a drug offence, than a non-Aboriginal defendant who was bail refused. Aboriginal defendants also had more extensive criminal justice histories than non-Aboriginal defendants, being 17 p.p. more likely to have 2 or more prior violent offences, 20 p.p. more likely to have 2 or more prior prison sentences, and 16 p.p. more likely to have 6 or more prior court appearances than non-Aboriginal defendants. Similarly, Aboriginal defendants were 15 p.p. more likely to have 3 or more prior breaches than non-Aboriginal defendants. Table 1 also shows descriptive bail misconduct rates for Aboriginal and non-Aboriginal defendants who were refused bail. As explained previously, defendants refused bail by police may still commit bail misconduct, as a court may subsequently grant them bail. We see here that Aboriginal defendants were 5 p.p. more likely to reoffend (with any new offence) or abscond on bail than non-Aboriginal defendants. Similar results were observed for violent reoffending, serious reoffending, and reoffending with a detectable offence whilst on bail.

The last two columns of Table 1 examine these same statistics for defendants in the study sample who were granted bail. The results for defendants that were bail granted are broadly consistent with the results for those that were bail refused. For example, Aboriginal defendants who were granted bail were more likely to be aged between 18 and 24, be female, live outside major cities and be from more disadvantaged areas than non-Aboriginal defendants who were granted bail. Similarly, Aboriginal defendants who were granted bail had more extensive criminal histories than non-Aboriginal defendants

who were released on bail. For example, 15% of Aboriginal defendants who were released on bail had two or more prior violence offences compared to 5% of non-Aboriginal defendants released on bail. However, Aboriginal defendants were 8 p.p. less likely to be accused of a violent offence for their index offence than non-Aboriginal defendants, and 4 p.p. more likely to be charged with a property offence. In terms of bail misconduct, 16% of non-Aboriginal defendants absconded or reoffended on bail compared with 29% of Aboriginal defendants. Aboriginal defendants who were granted bail were also more likely than non-Aboriginal defendants to reoffend with a violent, serious and/or detectable offence before the finalisation of their matter.

The descriptive statistics show a large disparity in bail refusal rates between Aboriginal and non-Aboriginal people but also demonstrate that on average, and irrespective of their bail status, Aboriginal defendants have more extensive criminal histories and commit more bail misconduct than non-Aboriginal defendants. Aboriginal defendants who are refused bail are also more likely to be charged with a property crime. However, these simple comparisons suffer from the aforementioned inframarginality problem. That is, the risk distributions may differ for Aboriginal and non-Aboriginal defendants. In the remaining sections, we first estimate the proportion of Aboriginal and non-Aboriginal defendants on the margins of being released and then compare their bail misconduct rates.

Marginal defendant (complier analysis)

As discussed in the methods section, our empirical strategy involves estimating the impact of bail on bail misconduct for the marginal defendant and then comparing these values for Aboriginal and non-Aboriginal defendants. In the Appendix, we estimate the proportion of marginal defendants, which we define as defendants which would have been released on bail had their bail decision been made by a lenient custody manager but would have been refused if it was made by a harsh custody manager. We calculate this through complier analysis. We also estimate the proportion of defendants that would aways be granted bail no matter the leniency of the custody manger, and the proportion of defendants that would always be denied bail no matter the leniency of the custody manager. These proportions differ substantially between Aboriginal and non-Aboriginal defendants, suggesting that these groups have different risk distributions of bail misconduct. These differences support the presence of the inframarginality problem when comparing average outcomes for Aboriginal and non-Aboriginal defendants, i.e., that comparing defendants of different risk distributions is uninformative about the outcomes of defendants at the margins of release. In the next section we compare misconduct rates among marginal Aboriginal and non-Aboriginal defendants, which provides a greater understanding of the extent of bias in each group.

Instrumental variable analysis

Table 2 presents the results of our instrumental variable analysis. The Aboriginal column shows our estimate of the impact of police bail on various measures of bail misconduct (indicated by the rows) for the marginal Aboriginal defendant (our estimate of α_a), while the non-Aboriginal column is our estimate of the impact of police bail on bail misconduct for the non-Aboriginal marginal defendant (our estimate of α_n). In other words, these are the average bail misconduct rates for marginal defendants in each group who are released on bail by the police. We also present the difference between these two estimates for Aboriginal and non-Aboriginal defendants and the *p*-value of a statistical test to determine whether the misconduct rates for the groups can be considered equivalent. A *p*-value less than .05 would suggest that there is a statistically significant difference in misconduct rates among marginal Aboriginal and non-Aboriginal defendants released on bail. If bail misconduct rates are lower for the marginal Aboriginal defendant than the marginal non-Aboriginal defendant this may suggest that custody managers are applying a higher threshold for release for Aboriginal defendants and would be indicative of bias. Each outcome in Table 2 is shown twice. The first row shows our estimates for the particular outcome adjusted for our fixed effects (e.g., PAC and time fixed effects), while the second row adjusts for these fixed effects as well as our other controls described in the methods section (e.g., prior offending).

Table 2. 2SLS estimates of the impact of being released on bail on bail misconduct, by Aboriginality

		Aboriginal	Non-Aboriginal	Difference	*p*-value of difference	Fixed effects	Controls
Panel A: Bail misconduct outcomes							
1	Any	0.190***	0.165***	0.025	0.67	Yes	No
		(0.050)	(0.030)				
2	Any	0.202***	0.198***	0.004	0.95	Yes	Yes
		(0.052)	(0.032)				
3	Abscond	0.046	0.034**	0.012	0.74	Yes	No
		(0.032)	(0.017)				
4	Abscond	0.048	0.045**	0.004	0.93	Yes	Yes
		(0.034)	(0.019)				
5	Reoffend	0.200***	0.178***	0.023	0.68	Yes	No
		(0.047)	(0.028)				
6	Reoffend	0.210***	0.208***	0.002	0.97	Yes	Yes
		(0.049)	(0.031)				
Panel B: Specific offending outcomes							
7	Violent	0.069***	0.033***	0.036	0.16	Yes	No
		(0.023)	(0.011)				
8	Violent	0.071***	0.035***	0.036	0.53	Yes	Yes
		(0.024)	(0.013)				
9	Serious	0.074***	0.027***	0.045	0.054	Yes	No
		(0.021)	(0.011)				
10	Serious	0.081***	0.034***	0.048	0.063	Yes	Yes
		(0.022)	(0.012)				
11	Detectable	0.023	0.013	0.010	0.59	Yes	No
		(0.017)	(0.008)				
12	Detectable	0.030	0.015	0.015	0.47	Yes	Yes
		(0.018)	(0.009)				
Observations without controls		49,381	129,104				
Observations with controls		49,380	128,604				

Note: Standard errors clustered by custody manager in parentheses. When asterisk shown: * *p* < .10, ** *p* < .05, *** *p* < .01. 255 and 50 observations are dropped from Aboriginal and non-Aboriginal regressions, respectively, due to singleton observations (Correia, 2015). The further reduction in observations between regressions with controls and without controls is due to missingness in control variables.

The first two rows examine any misconduct on bail, which we define as absconding or committing any offence prior to finalisation of the index matter. Once we adjust for our controls, row 2 shows that the marginal Aboriginal defendant released on bail was 20.2 p.p. more likely to abscond or reoffend than the marginal Aboriginal defendant who was not released on bail, while the marginal non-Aboriginal defendant was 19.8 p.p. more likely to abscond or reoffend on bail than the marginal non-Aboriginal defendant who was not released on bail. These coefficients are almost identical and hence the difference was not statistically significant. When only examining absconding, release on bail has a similar impact for both the marginal Aboriginal and marginal non-Aboriginal defendant, where Aboriginal defendants released on bail are 4.8 p.p. more likely to abscond compared to 4.5 p.p. for non-Aboriginal defendants. Examining only reoffending as an outcome, our adjusted estimate shows that the marginal Aboriginal defendant released on bail is 21.0 p.p. more likely to reoffend on bail, while the marginal non-Aboriginal defendant is 20.8 p.p. more likely to reoffend on bail. Again, the difference between the two is not statistically significant.

In Panel B of Table 2, we examine different definitions of 'serious' reoffending on bail. Rows 7 and 8 limit our measure of bail misconduct to violent reoffending on bail. Our adjusted estimate (row 8) shows that the marginal released Aboriginal defendant was 7.1 p.p. more likely to commit a violent offence on bail compared to the marginal Aboriginal defendant who was refused bail, while the marginal released non-Aboriginal defendant was 3.5 p.p. more likely to commit a violent offence compared to the marginal non-Aboriginal defendant who was refused bail. Similarly, in row 10, when we only examine serious offending as our outcome, the marginal Aboriginal defendant is 8.1 p.p. more likely to commit a serious offence on bail while the marginal non-Aboriginal defendant released on bail is only 3.4 p.p. more likely to commit a serious reoffence compared to the marginal non-Aboriginal defendant who is refused bail. Finally, in the last two columns we limit the analysis to offences less likely to be influenced by policing or surveillance. Row 12 shows that the marginal Aboriginal defendant is 3.0 p.p. more likely to commit such an offence on bail, whereas the marginal non-Aboriginal defendant was 1.5 p.p. more likely to commit a detectable offence on bail. However, both our estimates for Aboriginal and non-Aboriginal defendants are imprecise due to the small number of defendants who commit these types of offences.

Table 2 shows that there are no statistically significant differences in our coefficient estimates of release on bail misconduct between Aboriginal and non-Aboriginal defendants. This suggests that the bail threshold custody managers apply is similar for both Aboriginal and non-Aboriginal defendants. In other words, custody managers do not show evidence of bias under our definition and mathematically $\alpha_a = \alpha_n$. In fact, for most outcomes, Aboriginal defendants have a slightly higher rate of bail misconduct than non-Aboriginal defendants, a result which could suggest that custody managers are slightly more lenient towards Aboriginal defendants compared to non-Aboriginal defendants. However, these differences should be treated with caution as our estimates for Aboriginal defendants are imprecise due to a much small number of Aboriginal defendants compared with non-Aboriginal defendants. In the Table A8 of the Appendix we also estimate Table 2 using OLS. We find that the OLS results overestimate the difference in rates of bail misconduct, with Aboriginal defendants having higher rates than non-Aboriginal defendants. This is likely due to inframarginality concerns with OLS. Namely, non-Aboriginal defendants may have a higher proportion of low-risk defendants than Aboriginal defendants, who are always granted bail and so not relevant in estimating a custody manager's risk threshold.

DISCUSSION

This bulletin examined whether the large disparity in police bail refusal rates for Aboriginal and non-Aboriginal people is due to bias, either explicit prejudice or implicit bias, in the decisions made by custody managers. We identified police custody managers' implicit risk thresholds for bail by comparing rates of offending and absconding on bail by marginal Aboriginal and marginal non-Aboriginal defendants. While custody managers granted bail to 65% of non-Aboriginal defendants and only 46% of Aboriginal defendants in this sample, we do not find any evidence that this disparity is due to bias by individual police custody managers. We found that marginal defendants in both groups had similar rates of bail misconduct. This was true across a range of misconduct measures, including absconding, any reoffending, violent reoffending, and reoffending with offences that have a high detection rate. This suggests that police custody managers apply similar risk thresholds to Aboriginal and non-Aboriginal defendants when deciding whether to release an accused person on bail.[18]

Our work enhances the earlier analysis of Klauzner and Yeong (2021) by addressing their concerns of omitted variable bias and directly examining the outcomes custody managers must consider when making their bail decisions (i.e., reoffending and absconding on bail). Our finding that there is no difference in the risk thresholds that custody managers apply to Aboriginal and non-Aboriginal

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18 In fact, our results suggest that custody mangers may apply a slightly more lenient threshold in granting bail to Aboriginal defendants compared to non-Aboriginal defendants. This could be consistent with section 18(k) of the Bail Act which specifies that custody managers must consider any special vulnerability or needs the accused person has including because of … being an Aboriginal or Torres Strait Islander…". However, practically the impact of section 18(k) is unclear, as custody managers must still apply the same unacceptable risk test to both Aboriginal and non-Aboriginal defendants.

defendants, suggests that the disparity in bail outcomes for Aboriginal and non-Aboriginal people reported by Klauzner and Yeong (2021) was likely driven by omitted variable bias. That is, police were considering factors when making bail determinations that the researchers could not observe. Similarly, our work shows the importance of using the IV strategy compared to simply comparing average rates of misconduct for Aboriginal and non-Aboriginal defendants, either through an ordinary least squares (OLS) regression or otherwise. In fact, had we used the results of our OLS regression in Table A8, we would have incorrectly concluded that marginal Aboriginal defendants had much higher bail misconduct rates than marginal non-Aboriginal defendants. This is because comparing average misconduct rates includes low-risk defendants that would have always been granted bail and who have no bearing on the risk threshold of the custody manager's bail decision.

It is noteworthy that our results contrast with Arnold et. al.'s (2018) finding that bail judges in Miami and Philadelphia were biased against African-American defendants. Using a similar methodology to ours, Arnold et al. (2018) estimated much lower rates of misconduct for marginal African-American defendants compared with marginal non-African-American defendants. There are several possible reasons for these differences. Firstly, results from the United States are not always generalisable to NSW. Bail is governed by different laws and practices in the two jurisdictions, and the systems may treat minorities differently. Secondly, the historical contexts of Aboriginal Australians differ substantially from African Americans, with Cunneen and Tauri (2019) and Blagg et al. (2005) arguing that colonialism presently impacts the experiences of Aboriginal Australians in the justice system. Brookman et al. (2021) found that racial animus and public perceptions of the appropriateness of punitive punishment also differs between Australian and American citizens. Thirdly, police custody managers may be more experienced than Miami or Philadelphia bail judges. Arnold et al. (2018) found that less experienced judges were more likely to be biased. However, according to the NSW Bail Act, all custody managers in NSW must have a rank of sergeant or above. Custody managers therefore have a base level of experience, and potentially a better understanding of the factors that are relevant when assessing risk of bail misconduct. Further, NSW custody managers must use a compliance tool when making their bail decision. This tool, which prompts custody managers to consider all the factors set out in section 18 of the Bail Act, may help to ensure consistency in bail decisions between Aboriginal and non-Aboriginal defendants. Finally, the information available to police may differ in quality and/or content to that which is presented to the court, thereby permitting more informed decisions.

Our study is not without limitations. Firstly, our definition of the police bail decision is narrower than that used in previous Australian studies including Klauzner and Yeong (2021). Our study examines the formal police bail decision, where the accused is arrested and a Bail CAN is issued (see Figure 1), but Klauzner and Yeong (2021) also considered defendants who were charged but were not arrested; these individuals were considered as being bail granted (i.e. those who received a Field or Future CAN). A potential issue with us focusing on the formal police bail decision is that although we find no evidence for bias at this decision point, police officers may still exhibit bias earlier in the charging process. That is when deciding to either arrest a defendant and subject a defendant to a bail decision or whether to issue a Field or Future CAN and effectively dispense with bail. We could not examine this decision because our identifier for the police custody manager was only available for the formal bail decision and this identifier was essential to our empirical strategy. However there is some evidence that bias could exist at earlier stages of the prosecution process. Papalia et al. (2019) and Weatherburn and Thomas (2022) both find that Aboriginal young people in NSW were more likely to be charged (hence less likely to be diverted) than a group of non-Aboriginal young people matched on observable characteristics. It is possible that these disparities may also occur in the adult population. Further, the decision about whether to arrest a defendant or not may be more susceptible to bias than the bail decision. This is because police officers making the charge decision are generally less specialised and less experienced than custody managers. Both these factors were associated with more bias in Arnold's et al. (2018) study. This is an area where future research is clearly warranted.

Secondly, our empirical strategy could not detect instances of accurate statistical discrimination. In other words, a custody manager may explicitly or implicitly discriminate against Aboriginal people, but if Aboriginal people on average are more likely to commit bail misconduct, our test would not show any discrimination. Similarly, unlike Arnold et al. (2018), our custody manager leniency index is calculated without distinguishing between Aboriginal and non-Aboriginal defendants, and hence our measure does not vary by Aboriginality. Aboriginal defendants make up a relatively small proportion (27.8%) of our sample and so we used a pooled index to preserve more of our sample. However, the implication of this decision is that custody managers that are lenient for non-Aboriginal defendants are assumed to also be lenient for Aboriginal defendants and similarly for harsh custody managers. The strong impact of custody manager leniency on being released on bail for our sample of Aboriginal defendants, and subsamples of Aboriginal defendants (shown in Table A4) suggests that the pooled leniency measure is a good measure of leniency for custody managers that make bail decisions for Aboriginal people.

Thirdly, our definition of bias examines bias at the level of the individual bail decision but cannot rule out the presence of other types of bias in the criminal justice system, such as institutional discrimination and historic discrimination (Small & Pager, 2020). Institutional discrimination refers to discrimination occurring through organisations (including the police and courts) and their structures and policies. In the justice context this would include laws and policy changes which disproportionately affect Aboriginal people. For example, Ramsey et al. (2022) found that over the last ten years the number of domestic violence related stalking/intimidation offences (which involve threats, intimidation and verbal abuse) have more than doubled in NSW and report that this trend most likely reflects greater targeting of this behaviour by police rather than greater rates of offending. Since 28% of all court finalisations for domestic violence related stalking/intimidation and 52% of custodial penalties imposed for this offence involve Aboriginal defendants, this change in police policy has had a substantial impact on Aboriginal people. In fact, Weatherburn and Ramsey (2016) found that the increase in enforcement of stalking and intimidation offences was a substantial contributor to the growth in the Aboriginal prison population between 2001 and 2015. This change may not have been motivated by bias, but it does demonstrate how bias can occur at an institutional level even if there is no bias at an individual level. It is also important to note that some of the outcomes measured in this bulletin may be susceptible to police enforcement strategies, such as with stalking offences, or police surveillance. For example, if police surveillance of Aboriginal people is higher, more crimes would be detected in Aboriginal communities than in non-Aboriginal communities, which would impact our results. However, our absconding outcome is not impacted by police detection, and results of that outcome is consistent with our other outcomes.

Similarly, discrimination in the past may impact outcomes in the present (Small & Pager, 2020). Menzies (2019) describes the forced removal of Aboriginal children in Australia as "the most crucial assault on Aboriginal Australians". She argues that this policy of forced removal and separation has caused a collective and intergenerational trauma that impacts the health, wellbeing, and justice outcomes of Aboriginal Australians in the present. This is supported by a recent study undertaken by the Australian Institute of Health and Welfare (2018) which found that members of the Stolen Generation were 3.3 times more likely to be incarcerated in the previous five years compared to other Aboriginal Australians. Relatedly, De Maio et al. (2005) found the children of removed carers used alcohol and drugs at twice the rate as other Aboriginal children and were twice as likely to have behavioural difficulties; both factors that strongly predict future contact with the criminal justice system. Similarly, Anthony and Blagg (2021) argue that agencies such as police and health employ in their duties widespread myths about Aboriginal people that stem from colonialism. Thus, historic discrimination could have an indirect effect on bail decisions by driving higher rates of chronic offending among this vulnerable group.

Fourthly, our measure of Aboriginality may be unreliable in some cases. The measure of Aboriginality used in this study came from police records and it is possible that some Aboriginal people were not correctly identified either because police were unwilling to ask about Aboriginality, or the defendant was unwilling to disclose to police. On the other hand, it is also possible that our measure of Aboriginality is an overestimate since it classifies a defendant as Aboriginal if they have been identified as such in any of their interactions with the police. This means that in our study, a non-Aboriginal defendant who is incorrectly

recorded by police as Aboriginal on one police contact but as non-Aboriginal on all other contacts will still be classified as Aboriginal. However, in the Appendix, we show that even when a narrower definition of Aboriginality is used, that is, only classifying defendants as Aboriginal if they were identified as such at their index police contact, very similar results are obtained. Additionally, in the Appendix, we examine bail decisions for a sample of defendants arrested between January 2022 and June 2022, which is the period immediately following a NSW Police Force mandate for police officers to ask all accused persons whether they identify as Aboriginal (Rawsthorne & Gooley, 2022). Repeating our analysis using these more recent data also yields similar results.

The lack of evidence found in this study for bias in bail decisions of police custody managers suggests that focusing efforts on training police officers in unconscious bias or racial discrimination or providing additional training in the application of the bail laws, is unlikely to reduce the disparity in bail refusal rates between Aboriginal and non-Aboriginal people (although, such training may benefit other areas of police operations, including the police decision on whether to charge accused persons). Our results suggest that other strategies to reduce the inequality of bail refusal rates will need to be considered. One issue highlighted by the current research is the relatively high levels of offending on bail. We find that more than one in four Aboriginal people who are granted bail commit another offence. The reasons for this are beyond the scope of the current research but as discussed above could include institutional discrimination, the present impact of historic discrimination and over policing of vulnerable communities (Blagg et al., 2005; Cunneen & Tauri, 2019; Menzies, 2019; Small & Pager, 2020), as well as other, more general, risk factors such as intergenerational disadvantage (e.g., Besemer et al., 2017). Regardless of the cause, the relatively high rates of reoffending on bail among Aboriginal people may contribute to a vicious cycle of bail refusal and further disparities. According to the Bail Act, a serious indictable offence committed on bail is a show cause offence, and a history of serious offending on bail is a matter that must be considered as part of a bail decision. Both these factors mean it is highly unlikely that defendants who have committed offences on bail will be granted bail in the future. Investment in programs to support Aboriginal people on bail and ensuring that bail conditions imposed by authorities are appropriate and practicable may therefore be more effective strategies to address the disproportionately high rates of remand.

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APPENDIX

Different definition of Aboriginality

In the main paper, a defendant was considered Aboriginal if the police marked them as Aboriginal at any court appearance (prior, current, or future). However, this measure may be an overestimate. For example, if a defendant is marked as non-Aboriginal for five offences, but Aboriginal for one offence, this may be an error. An alternative measure is to mark a defendant as Aboriginal if the police mark them as Aboriginal only on the index appearance. This measure may be an underestimate as the police may not ask defendants their Aboriginality or Aboriginal defendants may be unwilling to reveal their Aboriginality. However, looking at this measure will give an indication to how sensitive our results in the main paper are to our definition of Aboriginality.

Most of the differences of the Aboriginal and non-Aboriginal coefficients are larger when looking at our new measure in Table A1 compared to the corresponding estimates in Table 2 of the main paper. However, all the differences in Table A1 are not statistically significant. This means that our main conclusion, that we find no evidence of bias against Aboriginal defendants does not change.

Table A1. **2SLS estimates of the impact of being released on bail on bail misconduct, by Aboriginality at index appearance**

	Aboriginal		Non-Aboriginal		Difference	p-value of difference	Controls
Panel A: Pretrial misconduct							
Any	0.211***	(0.0559)	0.150***	(0.0289)	0.061	0.32	Yes
	0.225***	(0.0596)	0.182***	(0.0315)	0.043	0.51	No
Abscond	0.0336	(0.0354)	0.0345**	(0.0167)	-0.00099	0.98	Yes
	0.0340	(0.0395)	0.0465**	(0.0185)	-0.012	0.77	No
Reoffend	0.217***	(0.0518)	0.162***	(0.0270)	0.055	0.34	Yes
	0.228***	(0.0554)	0.192***	(0.0294)	0.037	0.55	No
Panel B: Specific offending							
Violent	0.0753***	(0.0266)	0.0289**	(0.0113)	0.046	0.11	Yes
	0.0763***	(0.0295)	0.0314**	(0.0127)	0.045	0.17	No
Serious	0.0711***	(0.0235)	0.0294***	(0.0103)	0.042	0.11	Yes
	0.0808***	(0.0260)	0.0346***	(0.0116)	0.046	0.11	No
Detectable	0.0145	(0.0189)	0.0146*	(0.00790)	-0.000098	1.00	Yes
	0.0232	(0.0210)	0.0178**	(0.00888)	0.0054	0.81	No
Observations without controls	34,861		139,851				
Observation with controls	34,860		139,351				

New data on Aboriginality

On the 13th January 2022, a major change occurred in the way NSW police recorded Aboriginality. It became mandatory for police to ask all offenders and victims if they were Aboriginal or Torres Strait Islander and record this in their police database (Rawsthorne & Gooley, 2022). Prior to this change, Police were required to ask about Aboriginality in certain circumstances, but in practice it was up to the discretion of individual police officers whether they asked or not. Enforcement of individual police officers asking about Aboriginality also increased after January 2022. Consequently, the quality of data on Aboriginality at the index contact increased in 2022.

Unfortunately, our main sample ends before this change in recording. However, in this section we examine a data extract of police bail decisions between 13th January 2022 and 31st July 2022. This period of time is small, but it gives us an indication of whether our results would stay the same with the new Aboriginality recording.[19] Panel A of Table A2 replicates the OLS regressions in Table A8 but with our new data extract, while Panel B replicates our IV regressions in Table 2 but with the new data. Our preferred specification would be the IV regressions, but IV regressions are considerably less reliable in small sample sizes. Therefore, we also include OLS estimates. For Table A2, our measure of Aboriginality is taken at index offence. We use this measure because if we used an Aboriginality indicator at any offence, Aboriginality may have been determined before the policy change. We do not include any of our specific reoffending variables (such as in Panel B of Table 2) because the instances of these reoffences are extremely low.[20]

In Panel A, like in the main results, misconduct rates for all variables are slightly higher for Aboriginal defendants compared to non-Aboriginal defendants. In Panel B our estimates are too imprecise draw any conclusions. The results in Panel A are similar to Table A8 suggesting that Table A2 does not show any evidence of bias against Aboriginal defendants in bail decisions.

Table A2. OLS and IV estimates of the impact of being released on bail on bail misconduct for 2022 sample

	Aboriginal		Non-Aboriginal		Difference	p-value of difference	Controls
Panel A: OLS estimates							
Any	0.0885***	(0.0274)	0.0220**	(0.00982)	0.067	0.027	Yes
	0.111***	(0.0388)	0.0654***	(0.0178)	0.046	0.29	No
Abscond	0.0483**	(0.0193)	0.0122	(0.00745)	0.036	0.087	Yes
	0.0669**	(0.0278)	0.0283**	(0.0123)	0.039	0.21	No
Reoffend	0.0975***	(0.0258)	0.0283***	(0.00861)	0.069	0.013	Yes
	0.121***	(0.0374)	0.0709***	(0.0167)	0.050	0.23	No
Panel B: IV estimates							
Any	0.932	(1.102)	0.0945	(0.137)	0.84	0.46	Yes
	0.427	(0.576)	0.129	(0.141)	0.30	0.62	No
Abscond	-0.0319	(0.573)	0.172	(0.116)	-0.20	0.73	Yes
	-0.185	(0.443)	0.209*	(0.119)	-0.39	0.41	No
Reoffend	1.285	(1.451)	0.0491	(0.111)	1.24	0.40	Yes
	0.756	(0.637)	0.129	(0.123)	0.63	0.34	No
Observations without controls	847		3,529				
Observation with controls	847		2,550				

19 This period of time is not only small in terms of sample size but also in terms of the opportunity for misconduct on bail. The last finalisation date in this data extract was the 5th September 2022. This means many defendants are only on bail for a couple of months and therefore have a more limited opportunity to commit misconduct on bail than in the main paper, where many defendants are on bail for a significant amount of time.
20 Only 35, 25, and 30 cases committed a violent, serious, or detectable reoffence on bail respectively.

Calculation of leniency index

The calculation of L_{itc} is shown below:

$$L_{itc} = \left(\frac{1}{n_{tc} - n_{itc}}\right)\left(\sum_{k=0}^{n_{tc}} Released^*_{itk} - \sum_{b=0}^{n_{itc}} Released^*_{itb}\right)$$

Where **Released*** refers to the residuals from the regression of being released to bail on our fixed effects, which was described in the methods section. L_{itc} is calculated for custody manager **c** in year **t**, making a bail decision for defendant **i**. Essentially, the leniency index sums the residuals for all bail decisions that a particular custody manager makes in a year and divides this by the total number of bail decisions they made (n_{tc}). Thus, a measure of average leniency for each custody manager is calculated. The equation is complicated by the fact that when examining bail misconduct for defendant **i** we do not want the custody manager's leniency to be influenced by defendant **i**. This is because our empirical strategy depends on defendants being randomly assigned to custody managers with different leniency. This would not be true if the defendant could influence their custody manager's leniency. For this reason, we subtract all the residuals concerning defendant **i** and all the bail decisions concerning that defendant from the custody manager's leniency index. This means L_{itc} is the average leniency of custody manager **c** in year **t**, excluding the decisions concerning defendant **i**.

Instrumental variable tests

Randomisation test

Table A3 examines the randomisation assumption of the IV strategy. It shows the results from a regression of observable characteristics on our custody manager leniency variable. Because we assume that the assignment of custody managers to defendants is as good as random most of the variables in Table A3 should not be significant, and a joint test of significance should not be rejected. The joint test of significance for the Aboriginal sample in column 1 is not rejected (p-value = .14), but it is rejected for the non-Aboriginal sample (p-value=<.001). However, we argue that the F statistic is still very small and comparable to the F-statistics in randomisation tests of other IV papers, such as Rahman (2019). Further, most variables are small in magnitude and insignificant (despite a very large sample size), suggesting that assignment of custody managers to defendants is as good as random.

Table A3.   Regression of custody manager instrumental variable on all observed characteristics

	(1)	(2)
	Aboriginal	Non-Aboriginal
Age		
25-34	0.000005	-0.000488
	(0.00128)	(0.000794)
35-44	0.000254	-0.00163*
	(0.00147)	(0.000858)
45+	-0.00123	-0.000201
	(0.00173)	(0.000895)
Remoteness area		
Inner regional	0.00417	0.00593**
	(0.00285)	(0.00288)
Outer regional	0.0164***	0.0156***
	(0.00591)	(0.00560)
Remote/Very remote	0.0294**	-0.00509
	(0.0119)	(0.0133)
Unknown	0.00346	-0.0218
	(0.00264)	(0.0232)
SEIFA		
Disadvantaged	-0.000545	-0.000191
	(0.00281)	(0.00170)
Less disadvantaged	0.00545*	0.00376***
	(0.00284)	(0.00131)
Least disadvantaged	0.00484	0.00388**
	(0.00317)	(0.00154)
Unknown	0	0.0248
	(.)	(0.0232)
Prior Violent offences		
1	0.000738	-0.000554
	(0.00137)	(0.000846)
2+	0.00131	0.00144
	(0.00160)	(0.00131)
Prior prison		
1	0.00158	0.0000792
	(0.00158)	(0.00124)
2+	-0.000797	0.00123
	(0.00162)	(0.00143)
Prior court appearances		
1-2	0.00221	-0.000496
	(0.00160)	(0.000793)
3-5	0.00130	-0.000826
	(0.00192)	(0.00117)
6+	-0.000881	-0.00194
	(0.00238)	(0.00161)

Table A3. **Regression of custody manager instrumental variable on all observed characteristics (cont'd)**

	(1) Aboriginal	(2) Non-Aboriginal
Prior breaches		
1	-0.00157	0.0000464
	(0.00180)	(0.00127)
2	-0.00167	-0.00195
	(0.00178)	(0.00121)
3+	-0.00197	0.0000492
	(0.00172)	(0.00136)
ANZSOC category		
Property	-0.00313**	-0.00200**
	(0.00150)	(0.000995)
Drug offence	-0.00339	-0.00237*
	(0.00249)	(0.00133)
Traffic/driving	-0.00260	0.00205
	(0.00339)	(0.00197)
Breaches	-0.00243	0.00114
	(0.00221)	(0.00135)
Other	-0.00121	0.0000743
	(0.00161)	(0.00101)
Maximum possible penalty		
Non-custodial	0.00179	-0.000519
	(0.00374)	(0.00267)
Two years	0.00106	-0.00238***
	(0.00154)	(0.000910)
Show cause	0.00137	-0.00154
	(0.00147)	(0.00108)
Median Sentence Ranking	0.0000171	0.0000534***
	(0.0000257)	(0.0000157)
Concurrent offences		
1	0.000811	-0.00169**
	(0.00137)	(0.000748)
2+	-0.00110	-0.000791
	(0.00149)	(0.000863)
Current breaches		
1	0.00169	-0.00135
	(0.00205)	(0.00141)
2+	0.00235	0.00177
	(0.00239)	(0.00165)
Fixed Effects	Yes	Yes
R squared	0.17	0.098
Observations	49,380	128,604
F statistic	1.27	2.09
P value	0.14	<0.001

Standard errors clustered by custody manager in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Test of relevance and monotonicity

The results of the first stage regression defined in Equation 4 are presented in the first row of Table A4. The first row shows the coefficient and statistical significance of our leniency measure on being granted bail for non-Aboriginal and Aboriginal defendants. The second assumption of the IV strategy is that the leniency of the custody manager should strongly influence whether a defendant is granted bail. This means we would expect to see a large coefficient and F-statistic. We find that this is the case, as the F-statistic for non-Aboriginal defendants is 227.95 and 222.44 for Aboriginal defendants, both being highly significant.

The subsequent rows of Table A4 examine the leniency coefficient in various subsamples. By showing that the impact of leniency on being granted bail is non-negative across all subgroups, this gives more evidence for the monotonicity assumption i.e., that more lenient custody managers will increase the probability of bail being granted to all defendants. We find that the coefficients are positive and significant for the vast majority of subgroups increasing our confidence that monotonicity is satisfied.

Table A4.   Coefficient and significance of custody manager leniency in first stage regressions of bail refusal for whole sample and subsamples

Group	Non-Aboriginal			Aboriginal		
	Coefficient	F-statistic	p-value	Coefficient	F-statistic	p-value
Whole sample	0.28	227.95	0.00	0.32	222.44	0.00
Age recoded						
18-24	0.31	78.72	0.00	0.28	50.24	0.00
25-34	0.30	139.97	0.00	0.28	58.58	0.00
35-44	0.32	158.60	0.00	0.39	68.72	0.00
45+	0.20	48.23	0.00	0.52	56.59	0.00
Gender						
Male	0.29	220.09	0.00	0.33	190.85	0.00
Female	0.22	59.88	0.00	0.32	38.23	0.00
Remoteness of postcode of residence						
Major cities	0.27	138.71	0.00	0.31	82.64	0.00
Inner regional	0.29	81.51	0.00	0.38	88.54	0.00
Outer regional	0.32	22.09	0.00	0.36	23.55	0.00
Remote/very remote	6.85			0.40	9.69	0.00
Socioeconomic disadvantage quartiles						
Most disadvantaged	0.31	96.83	0.00	0.34	66.33	0.00
Disadvantaged	0.27	108.78	0.00	0.35	68.73	0.00
Less disadvantaged	0.28	77.16	0.00	0.33	40.17	0.00
Least disadvantaged	0.20	42.49	0.00	0.36	6.49	0.01
Prior violent offences						
0	0.25	146.32	0.00	0.30	94.03	0.00
1	0.35	111.79	0.00	0.38	89.36	0.00
2 or more	0.36	51.23	0.00	0.28	46.59	0.00
Prior prison						
0	0.27	184.42	0.00	0.34	144.94	0.00
1	0.39	44.86	0.00	0.34	24.38	0.00
2 or more	0.32	34.36	0.00	0.29	61.45	0.00
Prior court appearances						
None	0.20	65.14	0.00	0.30	23.33	0.00
1-2 prior appearances	0.31	150.44	0.00	0.32	64.56	0.00
3-5 prior appearances	0.34	100.30	0.00	0.34	78.40	0.00
6 or more prior appearances	0.42	74.80	0.00	0.29	41.76	0.00

Table A4. **Coefficient and significance of custody manager leniency in first stage regressions of bail refusal for whole sample and subsamples**

Group	Non-Aboriginal			Aboriginal		
	Coefficient	F-statistic	p-value	Coefficient	F-statistic	p-value
Prior breaches						
0	0.24	140.13	0.00	0.32	117.17	0.00
1	0.47	37.62	0.00	0.40	18.33	0.00
2	0.44	46.65	0.00	0.35	15.02	0.00
3 or more	0.38	80.79	0.00	0.30	51.57	0.00
ANZSOC Category of principal offence						
Violent	0.23	109.55	0.00	0.33	101.35	0.00
Property	0.34	66.84	0.00	0.24	18.93	0.00
Drug offences	0.36	18.29	0.00	0.07	0.06	0.80
Traffic/driving	0.18	2.01	0.16	0.51	0.20	0.66
Breaches	0.33	64.17	0.00	0.31	18.05	0.00
Other	0.23	42.77	0.00	0.38	33.28	0.00
Maximum penalty of charges						
More than 2 years	0.30	230.03	0.00	0.32	156.50	0.00
Two years	0.26	99.93	0.00	0.31	51.41	0.00
Non-custodial	0.19	2.98	0.09	-5.00	.	0.00
Show cause offence						
No	0.29	199.73	0.00	0.36	201.22	0.00
Yes	0.18	38.43	0.00	0.13	15.50	0.00
Concurrent offences						
No concurrent	0.21	93.76	0.00	0.33	92.89	0.00
One offence	0.30	121.86	0.00	0.35	75.88	0.00
Two or more offences	0.36	167.63	0.00	0.23	28.42	0.00
Current breaches						
0	0.26	150.90	0.00	0.31	155.43	0.00
1	0.42	82.47	0.00	0.34	31.80	0.00
2+	0.20	2.47	0.12	0.14	0.20	0.65

Restricting analysis to major cities

In this section we restrict the analyses that we completed in Table 2 to defendants that were marked as residing in major cities at the finalisation of their index offence (Australian Bureau of Statistics, 2016b). We remove regional areas from our analysis because it plausible that in small regional areas the custody manager may also engage in general policing duties. Such officers may personally know their defendants and hence may monitor their actions closely, knowing that they are on bail, meaning they could be more likely to be caught offending on bail. This would violate assumption 3 of our IV strategy, namely that the assigned custody manager only affects bail misconduct through the bail decision.

The results which are reported in Table A5 do not meaningfully differ from the main paper. However, it is important to note that some differences between our Aboriginal and non-Aboriginal coefficients have increased compared to the main paper. Even so, the Aboriginal coefficient is not below the non-Aboriginal coefficient in any of our models. This confirms our conclusion that there is no bias against Aboriginal defendants.

Table A5. **Estimates of the impact of being released on bail on bail misconduct, for the subsample of defendants that resided in a major city at index offence**

	Aboriginal		Non-Aboriginal		Difference	p-value of difference	Controls
Panel A: Pretrial misconduct							
Any	0.332***	(0.0902)	0.172***	(0.0363)	0.16	0.098	Yes
	0.338***	(0.0870)	0.202***	(0.0397)	0.14	0.16	No
Abscond	0.0661	(0.0581)	0.0354*	(0.0202)	0.031	0.61	Yes
	0.0681	(0.0570)	0.0448**	(0.0222)	0.023	0.70	No
Reoffend	0.272***	(0.0793)	0.187***	(0.0339)	0.085	0.33	Yes
	0.277***	(0.0772)	0.216***	(0.0372)	0.062	0.48	No
Panel B: Specific offending							
Violent	0.0727*	(0.0371)	0.0212	(0.0135)	0.052	0.19	Yes
	0.0724**	(0.0368)	0.0236	(0.0149)	0.049	0.22	No
Serious	0.101***	(0.0355)	0.0151	(0.0128)	0.086	0.026	Yes
	0.101***	(0.0351)	0.0190	(0.0143)	0.082	0.034	No
Detectable	0.0486*	(0.0293)	0.0083	(0.0096)	0.040	0.20	Yes
	0.0510*	(0.0288)	0.0101	(0.0106)	0.041	0.19	No
Observations without controls	23,301		95,950				
Observation with controls	23,300		95,947				

Standard errors clustered by custody manager in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Agreement in police and court bail decisions

In our main instrumental variable results, both defendants that were denied bail as well as those that were granted bail could abscond or reoffend on bail. This is because even though the police may deny bail to a defendant and remand them into custody, a magistrate may overturn this decision and release the defendant on bail.[21] Table A6 shows that our results are similar when we limit our sample to defendants where police and courts made the same bail decisions. Most of the estimates are now larger in magnitude than in Table 2, which is a product of the reduced opportunity of defendants that are bail denied, to reoffend or abscond. For example, non-Aboriginal defendants released on bail are 30.3 p.p. more likely to commit misconduct on bail, according to row 1 of Table A3, compared to 19.0 p.p. in row 1 of Table 2. However, the differences between the Aboriginal and non-Aboriginal coefficients are still very low and insignificant for most models. This means that our results do not differ meaningfully when we restrict our analysis to bail decisions where the police and courts agreed.

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21   Note that even if both the police deny bail and the magistrate denies bail in the first instance, a defendant may still be released on bail at a later stage, as there could be multiple bail applications before a case is finalised. Therefore, even in Tables A6, defendants that are bail denied may still reoffend or abscond on bail.

Table A6. Estimates of the impact of being released on bail on bail misconduct, for the subsample of defendants where the police and courts made the same bail decision

	Aboriginal		Non-Aboriginal		Difference	*p*-value of difference	Controls
Panel A: Pretrial misconduct							
Any	0.303***	(0.0678)	0.324***	(0.0595)	-0.021	0.82	Yes
	0.325***	(0.0860)	0.342***	(0.0665)	-0.017	0.87	No
Abscond	0.0954**	(0.0437)	0.0833***	(0.0321)	0.012	0.82	Yes
	0.106*	(0.0574)	0.0952**	(0.0380)	0.011	0.87	No
Reoffend	0.307***	(0.0646)	0.322***	(0.0577)	-0.015	0.86	Yes
	0.328***	(0.0821)	0.342***	(0.0647)	-0.014	0.89	No
Panel B: Specific offending							
Violent	0.126***	(0.0315)	0.0587**	(0.0235)	0.067	0.091	Yes
	0.152***	(0.0406)	0.0572**	(0.0278)	0.095	0.055	No
Serious	0.148***	(0.0300)	0.0611***	(0.0221)	0.087	0.024	Yes
	0.191***	(0.0392)	0.0680***	(0.0263)	0.120	0.011	No
Detectable	0.067***	(0.0242)	0.0206	(0.0162)	0.046	0.120	Yes
	0.091***	(0.0315)	0.0230	(0.0197)	0.068	0.069	No
Observations without controls	36,423		104,913				
Observation with controls	36,422		104,540				

Standard errors clustered by custody manager in parentheses
* *p* < 0.10, ** *p* < 0.05, *** *p* < 0.01

Complier analysis

In Table A7, we estimate the proportion of all defendants who are marginal, as defined by compliers (see Dahl et al., 2014 for exact calculations). That is the proportion of defendants who would have been denied bail if their bail decision was being made by a harsh sergeant but would have been granted bail if their bail decision was being made by a lenient sergeant. We also estimate the proportion of defendants who would have always been granted bail regardless of the leniency of the sergeant ("Always takers"), and the proportion of defendants who would have always been denied bail regardless of the leniency of the sergeant ("Never takers"). As our measure of sergeant leniency is continuous, we examine these proportions at different thresholds. For example, a 1% threshold means a defendant is a complier if a custody manager in the 1st percentile of leniency denies bail but a custody manager in the 99th percentile of leniency grants bail.

Table A7. Distribution of compliers, always-takers and never-takers in the sample

	Aboriginal			Non-Aboriginal		
Threshold	1%	1.5%	2%	1%	1.5%	2%
Marginal defendants	0.180	0.165	0.154	0.165	0.151	0.142
Always-takers	0.368	0.376	0.381	0.559	0.567	0.571
Never-takers	0.452	0.459	0.464	0.276	0.282	0.287

Table A7 shows that there are a similar proportion of marginal defendants (compliers) amongst both Aboriginal and non-Aboriginal defendants. At the 1% threshold, 18% of Aboriginal defendants and 16.5% of non-Aboriginal defendants are compliers. However, Aboriginal defendants are much more likely to be denied bail regardless of the leniency of the custody manager making the bail decision (never-takers;

45% compared to 28%), while non-Aboriginal defendants are more likely to receive bail regardless of the leniency of the custody manager (always-takers; 56% compared to 28%).

The differences we observe in the proportion of always-takers and never-takers further support the presence of the inframarginality problem when comparing average outcomes for Aboriginal and non-Aboriginal defendants. People who are released on bail and who we observe misconduct for, consist of both always-takers and some marginal defendants. Our results suggest that non-Aboriginal defendants have more than twice the proportion of defendants who would always be released on bail. Because these always takers would tend to be less risky, on average non-Aboriginal defendants may have a lower rate of bail misconduct than Aboriginal defendants even if the threshold at which custody managers release Aboriginal and non-Aboriginal defendants is the same.

OLS estimates of misconduct rates

Table A8 is the same as Table 2 but instead of using the complex instrumental variable method, estimate Equation 5 using ordinary least squares (also known as a linear probability model). The benefit of this approach is the simplicity of methodology, but the drawback is Table A8 estimates the average impact of being released on misconduct for only the defendants that were released, while the IV method estimated this impact for the marginal defendant. This means that the OLS method is less informative about the threshold at which custody managers release defendants and therefore less likely to be able to detect bias. Further as we reported in Table A7, we estimated that there was a much higher proportion of non-Aboriginal defendants compared to Aboriginal defendants, who would be granted bail no matter the leniency of their custody manager (always-takers). This suggests that non-Aboriginal defendants may have lower rates of misconduct even if the threshold at which custody managers release Aboriginal and non-Aboriginal defendants is the same.

As we predicted, in Panel A in Table A8, for non-Aboriginal defendants, the coefficients of the impact of release on misconduct are lower than in Table 2. This results in an overestimation of the difference of rates of bail misconduct between marginal Aboriginal and non-Aboriginal defendants. For example, according to row 2 of Table A8, marginal Aboriginal defendants are 4.5 p.p. more likely to have any misconduct on bail, but in our IV estimate in row 2 of Table 2, the difference is 0.3 p.p. Interestingly, when considering our measures of specific offending in Panel B, our OLS models do not overestimate these differences compared to Table 2. For example, in Table A8, our adjusted model suggests that the misconduct rate of marginal Aboriginal defendants is 1.5 p.p. greater than for marginal non-Aboriginal defendants. However, the corresponding difference in Table 2 is 4.7 p.p. In every model in Table A8, we find a statistically significant difference between the impact of release on Aboriginal and non-Aboriginal defendants. However, this is due to estimates in IV models being much less precise than in OLS models and therefore, should be interpreted with caution.

Table A8.   OLS estimates of the impact of being released on bail on bail misconduct, by Aboriginality

	Aboriginal		Non-Aboriginal		Difference	*p*-value of difference	Controls
Panel A: Pretrial misconduct							
Any	0.159***	(0.00460)	0.0795***	(0.00225)	0.079	<0.01	Yes
	0.204***	(0.00564)	0.158***	(0.00308)	0.045	<0.01	No
Abscond	0.026***	(0.00251)	0.004***	(0.00119)	0.022	<0.01	Yes
	0.030***	(0.00318)	0.017***	(0.00165)	0.013	<0.01	No
Reoffend	0.190***	(0.00454)	0.102***	(0.00220)	0.088	<0.01	Yes
	0.237***	(0.00550)	0.181***	(0.00303)	0.056	<0.01	No
Panel B: Specific offending							
Violent	0.0330***	(0.00189)	0.0141***	(0.00077)	0.019	<0.01	Yes
	0.0454***	(0.00247)	0.0272***	(0.00118)	0.018	<0.01	No
Serious	0.0285***	(0.00176)	0.0130***	(0.00072)	0.015	<0.01	Yes
	0.0424***	(0.00236)	0.0282***	(0.00118)	0.014	<0.01	No
Detectable	0.0196***	(0.00146)	0.00681***	(0.00052)	0.013	<0.01	Yes
	0.0299***	(0.00204)	0.0149***	(0.00086)	0.015	<0.01	No
Observations without controls	49,381		129,104				
Observation with controls	49,380		128,604				

Standard errors clustered by custody manager in parentheses
* *p* < 0.10, ** *p* < 0.05, *** *p* < 0.01