Review of the robustness of the Commonwealth Grants Commission's Justice assessment data and method

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Executive Summary

In this paper, we provide a critical review of the Commonwealth Grants Commission (CGC) justice assessment data and methodology. Overall, the CGC does an admirable job of distributing federal revenue to the states in a way that is fair, and which allows for each state/territory ('states') to provide services to its citizens at a standard that is not lower than other jurisdictions.

Nonetheless, assessing the needs of each jurisdiction and their ability to pay is a complicated and difficult task. Here, we focus on the justice assessment, where the CGC attempts to determine how much funding each jurisdiction needs to provide similar justice services to all Australians. Our review is focused on what could be done better and should be read in the context of our overall positive regard for the CGC and its role in the Australian fiscal federation system.

We begin with a broad discussion of the appropriate overarching framework that should be used to assess expenses in the justice system, taking into account the best available research and practice.

We then move on to focusing on the four main elements of the CGC's assessment of jurisdiction-level justice costs and the adjustments required to allow each state to provide justice services to its citizens at a standard which is not lower than other states:

1. Police costs
2. Court costs
3. Corrective services costs
4. Wage costs (to provide state-level services)

In each of these areas, we identify issues with the current methodology. Some of these are driven by data availability and some by modelling approach. As much as possible, we are led by peer-reviewed academic research in our assessments.

In the modelling of police costs, we identify several issues which may impact on the CGC's assessment. Much of this is about unobserved and unmodelled heterogeneity, namely, large differences in police district sizes across jurisdictions, large difference in the number of proceedings for each offender and large differences in offence type across states. We identify anomalies in the assessment of central policing expenses and socio-economics status (SES) for Indigenous Australians, which are included in the cost regressions. Finally, we identify some problems in comparability of police data across states. We propose some alternative approaches, which include a cost regression with direct disabilities as contributors rather than offences as a proxy. We suggest exercising caution with respect to the CGC's approach and our results given the deep underlying uncertainty and unavailability of the types of data that would allow detailed modelling of heterogeneity.

For criminal courts, we identify some problems in the way that court expenses are allocated to criminal and other costs. We argue in support of the current way that Indigenous non-response is handled by the CGC. However, we raise concerns about the socio-demographic modelling which is conducted only on a sub-sample of states and then applied to the remainder of Australia's population. This approach results in one-third of the population being excluded from the model, with no adjustment for obvious differences in the included and excluded sub-samples. Again, we propose alternative approaches and advocate for more attention to the uncertainty of estimates.

We argue in support of the current way that the SES profile of prisoners is derived from criminal courts by the CGC. We identify some potential issues in the regional prison costs estimation and suggest an alternative specification that could be used by the CGC. More generally, some caution is needed in the application of these regional cost weights in the assessment.

We finish with a short discussion of the modelling of wage costs. Most hiring in state public services comes from private sector employees in the same state. We argue for using average wage costs unadjusted for individual characteristics, which might vary across the state. When a state chooses a worker from its own private sector, the state is not conditioning on how the characteristics of its potential employees might differ from those of another state. It is hiring from an existing pool of actual workers in its state, with whatever distribution of characteristics prevails. These are part of the costs of hiring and should be included in the CGC's model. Using alternative data sources, we show how this alternative modelling approach affects the results and we suggest an alternative way that the CGC might consider in calculating wage costs.

In conclusion, our review aims to contribute constructively to the ongoing discussion and refinement of the CGC's methodologies and data use, advocating for improvements that align with best practices and the complexities of the justice system in Australia.

Overarching issues

Assessment of expenses in the justice system

It is becoming increasingly clear in the criminological literature that additional resources allocated in the three pillars of the justice system – police, courts and corrections – do not necessarily yield clear benefits in either crime prevention or economic terms. This is especially the case in relation to prisons, with the Productivity Commission recently acknowledging that:

> Imprisonment is expensive, both in terms of direct fiscal costs and its effects on the lives of the imprisoned individuals and their families. While imprisonment can obviously reduce offending and improve community safety in the short term, it may not enhance community safety in the longer term, given that a significant proportion of criminal activity involves repeat offending. Indeed, imprisonment may increase the likelihood of such reoffending (Productivity Commission, 2021, p. 95).

Research demonstrates the comparatively reduced costs of community-based sentencing options, compared with prison (Morgan, 2018). Community-based sentencing, especially for short prison sentences, is at least as, or potentially more effective, than prison in reducing reoffending (Trevena & Weatherburn, 2015; Wang & Poynton, 2017). The effectiveness of community-based in comparison to prison-based sentencing, especially for short-term sentences, can be attributed to the detrimental disruption that is caused by a lack of meaningful intervention.

It is more difficult to determine the cost impact of police spending. Police presence can of course act as a deterrent. Blesse & Diegmann (2022) find increases in car theft and burglary when police stations are closed. People slow down when they see a police car parked along the highway, thereby reducing the risk of road accidents. (Wu, Koper & Lum, 2021). Therefore, if police allocate more resources to highway patrols, this may prevent road accidents. In the process, however, police may arrest more people, which will add increased costs to the justice system. In addition, there is evidence that traffic offences of this nature impact Aboriginal and Torres Strait Islander people disproportionately (Australian Law Reform Commission, 2017). An investigation in Western Australia found that Aboriginal drivers received three times more fines as a result of being pulled over by police than non-Aboriginal drivers. When tickets were issued by traffic cameras, however, Aboriginal drivers received fewer penalties than non-Aboriginal drivers (Wahlquist, 2020). A similar example comes from the Victorian Police Commissioner, who recently acknowledged to the Yoorook Justice Commission that police officers had been systemically racist (Oakes, 2023).

A recent US study by Chalfin et. al. (2022) finds that while a larger police force reduces serious crime offences, it, at the same time, leads to more arrests for low-level “quality-of-life” offences, with effects that imply a disproportionate impact for minorities. So, overall, it may be that the allocation of additional police resources detects crimes that otherwise would have

gone undetected, but also does so in a way that disproportionately targets particular offences and cohorts in the population. It is also important to recognise that not all types of police have an equal impact. Additional resources directed at specialist officers may have a different impact on reports of crime than adding additional general duty police officers.

In the context of the courts, the cost allocation calculated by the Commonwealth Grants Commission is confined to the specific costs borne by the courts, even though this will be affected by other variables. For example, a lack of legal representation (i.e., the legal aid budget) may mean that the courts need to spend more time explaining court processes to self-represented defendants. As a recent report on unrepresented defendants in the Magistrates' Court of Victoria noted:

> An unrepresented accused may be more likely to plead guilty earlier 'to get it over with', without necessarily appreciating that this may result in a criminal record, which may impact on their future, including employment, study, travel, volunteering and even familial relationships and responsibilities. On the other hand, an unrepresented accused may contest a matter that they would have been advised to plead to, and may receive tougher sentences because of their lack of understanding of mitigating factors (Antolak-Saper, Clough & Naylor, 2021, p. 17).

Another complexity is that crime prevention programs take many forms (e.g. education, sporting, employment), and thus their costs will be allocated to a range of sectors other than those considered in this report (e.g. health, education). Furthermore, the benefits of crime prevention programs may be multifactorial. This is exemplified by the justice reinvestment experience in Bourke, New South Wales. In the 'Maranguka' project, an Aboriginal-led initiative, community representatives co-designed a whole-of-community response, working in partnership with a range of agencies, including police. Some of the programs that were developed included a men's healing program, an after-school program, a driver's licence program and health and development checks. An impact evaluation by KPMG (2018) found *inter alia*:

- a 23% reduction in police-recorded incidents of family violence;
- a 42% reduction in adult days spent in custody;
- a 31% increase in Year 12 retention rates;
- an 84% increase in VET course completion;
- an 83% increase in the number of driver's licences obtained through the driving program;
- a 38% reduction in the top five categories of youth crime; and
- a 27% reduction in youth bail breaches

KPMG also determined that the changes in Bourke yielded a gross positive impact of $3.1 million, compared to its operational costs of $0.6 million, and that two-thirds of this impact related to the justice system. Some of these benefits (e.g., increased education) are

independently associated with a reduction in offending and will yield longer-term benefits than those assessed here.

Given the foregoing, we consider that the mode of assessment for allocating GST in respect of police, courts and corrections is only partially aligned with the actual costs associated with these justice institutions or good justice practice, in terms of the research evidence on what works to prevent crime. In the short term, the costs of initiatives like the Koori Court (Dawkins, Brookes, Middlin & Crossley, 2011) or Drug Court (KPMG, 2014) are borne by individual agencies (i.e. the court). However, the benefits, in terms of potential decreases in reoffending, will reduce costs to all three agencies – police, courts *and* corrections – as well as increase well-being in society more generally. Benefits of reduced offending and reoffending will generate concomitant reductions in costs such as health and welfare and off-set increases in areas such as tax receipts. Beyond this, potentially difficult to estimate benefits, such as improved relationships between the justice system and Koori community, can be anticipated to provide the largest increases in overall well-being. Jurisdictions that invest resources in crime prevention and other initiatives to reduce offending and reoffending should not be disincentivised to do so. It is important that any system of redistribution of resources does not disincentivise investments in evidence-based measures that cut costs and crime. Removing any adverse incentives to target specific offender groups in some locations would also be an important step in allowing best practice policy to be implemented. To this extent, we will advocate to allocate cost weights to population characteristics directly, without employing offences as (the only) police service proxy.[1]

Some general thought on data not covered elsewhere in this report

In considering the assessment of funds within the justice sector, it's crucial to acknowledge the variability of costs among the states. The structure and functions of organisations involved in justice administration, such as the Crime Statistics Agency in Victoria or Aboriginal legal services (Dreyfus, 2023), who play a significant role in the justice system, are not uniform across different jurisdictions. This lack of consistency signifies that any assessment of cost across states should acknowledge such uncertainties. It underscores the importance of a flexible and nuanced understanding of justice expense assessment that can adapt to the diverse landscape of state-level justice administration. As there are various limits on these data and what the CGC can do, a discounting of the justice assessment seems warranted.

[1] Proceedings (offences) may be a poor reflection of the work that police do in responding to criminal offending or victimisation. For example, consider property crime. All of these are responded to and police interview and interact with victims and undertake investigations. This may involve substantial cost even if there does not end up being sufficient evidence to take a matter forward to taking legal action against an offender. Other possibilities may be to directly consider victimisation rates or community safety.

Police costs

Empirical police cost assessment

Estimating law enforcement costs is a genuinely difficult problem. To make decisions about the assignment and allocation of police to various issues and tasks, it is important to have an assessment of the costs of policing, as well as the benefits. It is crucial to note that within police expenditure, the costs extend beyond just the marginal cost of policing crime. Police departments engage in a variety of activities, each with their own associated costs, which need to be factored into the overall assessment. This complexity adds to the challenge of understanding the true economic impact of law enforcement.

Ideally, researchers would like to know the marginal cost of policing for different types of crimes in different jurisdictions. Such data are often not available, and researchers instead must estimate models with aggregate data.

Research by Hunt, Saunders & Kilmer (2019) underscores the challenges in this area. Using Monte Carlo simulations, they demonstrate that the true confidence intervals from such estimates are often extremely wide, and that standard errors can be almost as large as the point estimates themselves. This research suggests that, at a minimum, some caution should be exercised in applying estimates of the type used by the CGC. The findings highlight the need for a nuanced approach that considers the diverse range of police responsibilities and the complexities in accurately and precisely estimating their costs.

Varying police district sizes across states

In the police cost regression assessment conducted by the CGC, a possible discrepancy arises from the representation of police districts across states and territories. Among the 139 police districts considered, some states, due to their operational structure, have a disproportionately high number of districts. For instance, New South Wales (NSW) accounts for 58 of these districts, representing 42% of the total, which is significantly higher than its population share. In contrast, Victoria has only 21 police districts or 15%, well below its population share. This discrepancy raises concerns about potential bias in the regression analysis, due to varying representations of police districts by state.

To explore whether the size of police districts across states influences the outcomes of the police cost regression, we replicated the CGC's 2020 review police regression, which includes sampling weights. These weights are intended to reflect the inverse probability of an observation's inclusion, due to the sampling design. To assess if these population weights adequately compensate for different police district sizes, we conducted an additional

regression model. This model mirrors the CGC's model, with the key difference being the explicit inclusion of a police district population variable as a control factor.

The results of these two regression models are presented in Table 1 below. While the coefficients remain qualitatively similar, the inclusion of the population variable leads to a reduction in the size of all other regression coefficients and an increase in the size of the intercept.

Table 1. Replicated CGC police regression with police district population, 2020 review data

Coefficients:	Estimate	Std. Error	t value	Pr(>|t|)	
Original CGC police regression model (replicated)					
(Intercept)	218.353	29.80935	7.32	0	***
InnerRegional	109.9637	32.83414	3.35	0.001	***
OuterRegional	158.374	59.02411	2.68	0.008	***
Remote	964.6439	224.563	4.3	0	***
VeryRemote	1289.637	243.8376	5.29	0	***
Offences_per_capita	4355.802	1100.464	3.96	0	***
Original CGC police regression model with added population (Model II)					
(Intercept)	279.9661	44.1206	6.35	0	***
InnerRegional	74.94448	35.4812	2.11	0.037	**
OuterRegional	130.9223	57.51226	2.28	0.024	**
Remote	938.7987	223.3013	4.2	0	***
VeryRemote	1267.126	247.7878	5.11	0	***
Offences_per_capita	4022.688	1142.545	3.52	0.001	***
Population	-0.00014	4.98E-05	-2.75	0.007	***

Signif. codes: <0.001 '***' <0.01 '**' <0.05 '*'< 0.1 '. '

Number of observations:139

R-squared: 0.7163 vs. 0.7267

F-statistic: 41.7 vs. 40.3

Consequently, as shown in Table 2, the cost weightings for different remoteness areas and offenders are notably reduced. The significant changes observed with the inclusion of the population variable suggest that the original CGC regression's sample weighting did not fully account for the differences in police district sizes across jurisdictions.

Table 2. Implied unit cost weights from police regressions, with population included

	Unit Cost Weight CGC	Unit Cost Weights Model II
1.Major cities of Australia	1	1
2.Inner regional Australia	1.5	1.3
3.Outer Regional Australia	1.7	1.5
4.Remote Australia	5.4	4.4
5.Very remote Australia	6.9	5.5
Cost per offender	20.0	15.4

Based on these findings, we recommend explicitly incorporating police district population size into the empirical model specification. This adjustment is crucial, to mitigate biases arising from the varied sizes of police districts across different jurisdictions, ensuring a more accurate and equitable assessment of police costs.

Offences vs. Proceedings

In the context of allocating costs, the Commonwealth Grants Commission utilizes offenders as a proxy for police services. However, in the actual calculations and final police regression analysis, the variable that ostensibly represents offenders seems to be criminal proceedings. The use of proceedings, however, is not an appropriate measure for cost allocation.

Proceedings refer to the type of legal action (court or non-court) initiated by police against a person as a result of an investigation of an offence(s) (ABS, 2023). An offender can face multiple proceedings, with the number typically determined by the charging police officer, who often brings forth as many proceedings as deemed necessary for a conviction. This is done on experience and on local knowledge surrounding what the appropriate proceedings should be. The average number of proceedings per offender varies significantly across jurisdictions, as evidenced by the data in Table 3. The range spans from as low as 1.3 proceedings per offender in South Australia to as high as 1.9 in NSW, a difference that may partly arise from different types of offences, a point we delve into in the following section. But beyond these offence types, the variation in proceedings likely stems from policy choices and local norms.

Conceptually, proceedings are also not the correct unit for cost assessment. The bulk of costs are associated with the offender, and the additional costs of multiple proceedings against a single offender are relatively minor.[2] For instance, during an investigation, the same process of evidence gathering is required regardless of the number of proceedings. Executing a search warrant entails virtually the same effort whether it is for one or for multiple charges. Similarly, in the prosecutorial process, appearing in court to be a witness to multiple proceedings versus a single one only marginally increases time expenditure, while the actual costs are more closely linked to the fixed costs of court appearances, which are directly proportional to the number of offenders.

Finally, it is important to keep in mind that much police work may never result in a proceeding. Police regularly engage in activities such as warning drivers and others about potentially dangerous or illegal activity and diverting people into programs away from the justice system. Charges may also be dropped or people may plead and therefore no proceeding occurs.

In conclusion, additional proceedings beyond the initial charge against an offender incur minimal extra work time and associated costs. Consequently, the costs for criminal proceedings are more accurately represented by the number of offenders. The CGC should consider using offenders rather than proceedings as a measure. This approach aligns more closely with the CGC's guideline of policy neutrality, as it would reduce the potential for policy influence over this variable.

Table 3. Offenders and proceedings by state, 2020 review data

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Offenders	128777	75860	93237	41678	49316	10414	2762	11851
Proceeding Mean	1.9	1.5	1.8	1.8	1.3	1.5	1.3	1.9
Proceeding Estimate	244676	113790	167827	75020.4	64110.8	15621	3590.6	22516.9

Differences in the type of offences

Not all offences are created equal. Higher drug statistics may be seen as ‘good’, for example, if they are resulting in less illegal drug use and reducing harm. Further, rating the offences due to seriousness might have unintended consequences. Minor drug possession and selling

[2] From conversation with Dr Adam Masters of the ANU Centre for Social Research and Methods, a recognised expert in police costing, with an 18-year tenure at the Australian Federal Police. Processes might differ in other states.

(depending on the level) could prevent many people from drug overdoses or more serious crime. The faceless and impersonal nature of cyber-related crime may be missed by the focus on individual offenders and offences. Complexities and linkages with organised crime gangs may be overlooked in using this type of method.

When considering the various types of offences in the assessment of state police spending needs, it is also essential to recognise that different offences carry distinct cost profiles. For instance, the financial burden of investigating and prosecuting a murder is substantially higher than that of a minor offence such as pedestrian offences. This disparity is due to a multitude of factors, such as the complexity of investigations—often exacerbated by the absence of a living victim to provide testimony, in the context of homicide—the extended duration of more complex criminal trials, and the lengthy prison sentences that typically follow a conviction. Each of these stages incurs significant costs to the justice system.

In a recent study from Canada, Ellingwood (2016) argues against macro-level cost assessments which do not allow for more granular estimates. Ellingwood provides better estimates by examining police data at a micro-level to allow for a more accurate assessment on policing costs by offence type, through calculating the hours used and salaries per incident.

Some offences, such as alcohol or drug possession, may be the result of targeted policy choices and can disproportionately affect specific demographics or regions—for example, having alcohol-free areas within towns. Chalfin, Hansen, Weisburst & Williams (2022) find that more police lead to less violent crime, but more arrests for drug possession and other minor offences. Chalfin & McCrary (2017) discuss the extensive literature on crime deterrence and policing and how it differs by context and offence. Zhang, Balles, Nyland, Nguyen, White & Zgierska (2022) examine how increased law enforcement contact can lead to increased reincarceration for drug offenders.

The prevalence of such policy-driven offences in remote districts can lead to an imbalanced allocation of cost weights to SDC disabilities, even though the offences at the heart of these policies may incur relatively lower costs. This misalignment risks skewing the cost allocation in the empirical assessment, suggesting that these areas have intrinsically higher policing costs, when in reality, these costs are inflated due to specific legislative decisions.

Table 4, presented below, delineates the top five types of offences in each state, as a proportion of total offences for the year 2016/17, as per ABS data. These offences are ranked according to their proportion in New South Wales (NSW). Graph 1 visually represents this data, highlighting significant variations in offence proportions across states, especially in those offences largely driven by policy decisions.

For instance, NSW records a striking 20% of its offences as fare evasion, a figure conspicuously higher compared to other states. The proportion of drug possession offences in Victoria is significantly lower than in Queensland, Western Australia, and South Australia—the latter

having triple the rate of Victoria. Tasmania and the Northern Territory exhibit public order offences at three and four times the rate of Victoria, respectively.

Table 4. Proportions of offence types by states, 2020 review data, ordered by NSW offences

Offence Type	NSW	Vic	Qld	SA	WA	Tas	NT	ACT
Assault	23%	23%	12%	13%	20%	18%	24%	26%
Fare Evasion	20%	3%	6%	12%	0%	0%	0%	0%
Public Order Offences	14%	11%	17%	18%	7%	30%	40%	18%
Possess/ Use Illicit Drugs	10%	7%	18%	21%	15%	8%	7%	12%
Other Theft	7%	8%	6%	6%	10%	7%	0%	7%
All Other Offences	26%	47%	42%	30%	48%	38%	29%	37%

Note: For Queensland, the split between other theft and fare evasion, not reported in ABS data, is derived from the average of all other states.

Graph 1. Proportions of offence types by states, 2020 review data, ordered by NSW offences

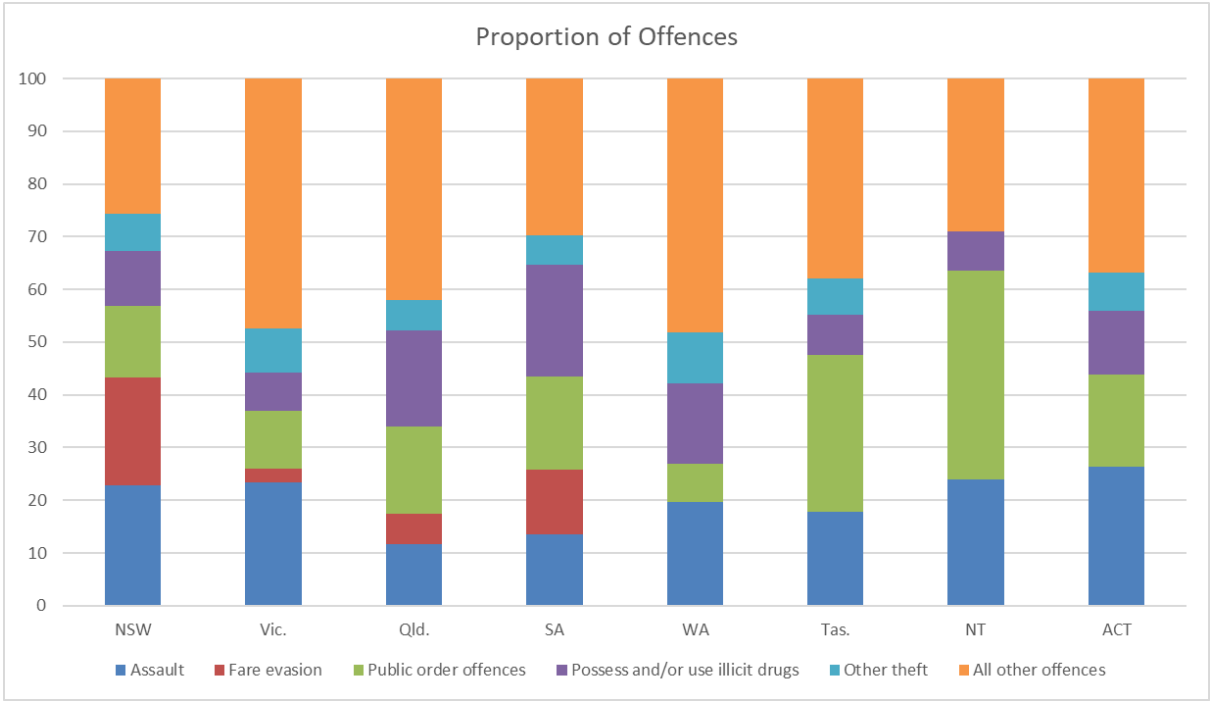

Table 5 converts these offence proportions to rates per 100,000 people. This reinforces the earlier observations. Fare evasion rates range from zero in some states to as high as 400 per 100,000 in others. The rate of drug possession offences in some states is up to seven times that of Victoria. Comparing overall offence rates, Victoria and the ACT have the lowest, while NSW has a 36% higher rate, Tasmania 64% higher, and South Australia 134% more offences per capita than Victoria.[3]

These stark differences, particularly considering the specific offences they comprise, can be attributed to varying policy choices across states.[4] If minor offences are prosecuted in some state and not in others, but are treated equally in the assessment, states will have a disincentive to reduce such offences. This conflicts with the policy neutrality principle of the CGC, which strives to ensure that the equalisation process neither incentivises nor disincentivises states from preferring certain policies over others. Furthermore, it emphasises that no state should be able to directly influence its GST share, through its revenue or expenditure policy choices.

Table 5. Offence rates per 100,000 people by states, 2020 review data, ordered by NSW offences

Offence type	NSW	Vic.	Qld.	SA	WA	Tas.	NT	ACT
Assault	371	312	252	436	363	403	1366	202
Fare evasion	387	37	130	405	0	0	0	0
Public order offences	257	153	366	574	133	682	2260	137
Possess and/or use illicit drugs	198	101	400	690	286	173	425	95
Other theft	134	117	129	186	183	157	1	56
All offences	1894	1392	2201	3265	1874	2281	5709	784

To avoid this distortion, it would be prudent to refine the assessment methodology. If offences must be included as a proxy for policing needs, they should be weighted according to their

[3] Note if there is any large variation in offence across years, we suggest the CGC consider using multiyear averages as is done in other assessments to reduce the reliance on a particular year's data.

[4] Crime victimisation surveys show the real difference in experience versus what police are recording in the system, which can be quite at odds. This is clearly mediated by legislative, policy and resource prioritisation differences.

relative cost or seriousness.[5] The seriousness of the offence could be measured using the Australian Bureau of Statistics (ABS) National Offence Index (NOI) (ABS, 2018), which ranks offences from the most serious (Murder = 1; Attempted murder = 2; Aggravated sexual assault = 7) to least serious (Consumption of legal substances in regulated spaces = 175; Traffic and vehicle regulatory offences, not further defined = 180). Weighting the jurisdictions' offences by the inverse of the NOI would enable the costs incurred when processing each offence to be better assessed.[6] This will more accurately reflect if, for example, one jurisdiction is predominantly dealing with serious offences, while another has mostly low-level offences.

More importantly, offences that stem directly from policy choices should be carefully considered and ideally excluded from cost assessments, or a discount should be applied to the policing cost assessment to account for the fact that at least some of the costs are coming from policy choices. An adjustment would serve to eliminate counterproductive incentives and more accurately reflect the intrinsic costs of policing services, leading to a more equitable and unbiased assessment of state justice spending needs aligning with the CGCs principal of policy neutrality.

Assessment of central policing expenses

The CGC receives detailed police cost data from the states. In the interest of preserving the integrity of the data provided to the CGC, it is recommended that states report central policing costs separately from those of police districts. A breakdown of expenses by individual police districts and centralised costs will enhance the accuracy of analysis and ensure a fair distribution of funds. This ensures a transparent and equitable assessment framework that does not inadvertently advantage any district, based on geographical location or perceived need. For the fiscal year 2016-17, centralised costs in Victoria comprised 58% of the total police expenditure.

When examining these costs, the current methodology used by the CGC distributes all of a state's central police expenses across police districts as a preliminary step in a regression analysis. This analysis then establishes spending patterns, based on remoteness and offenders in each police district, to derive regional cost weights and offender cost weights. However, this blanket allocation approach presents two significant issues.

First, certain central costs should be evaluated on an equal per capita (EPC) basis, given their independence from the factors of geographical remoteness and the number of offences. These costs, therefore, should not be apportioned among police districts, which would affect the empirical assessment of the aforementioned cost weights.

[5] Assuming seriousness is highly correlated with costs.

[6] More research into whether perceived seriousness is correlated with complexity cost would be desirable.

Secondly, a considerable portion of central costs constitutes Policing Support Services. It is more rational to allocate these expenses to police districts, according to the Full-Time Equivalent (FTE) staffing levels, rather than based on district expenses. This is because such costs are incurred in direct support of police personnel and are more accurately reflective of staffing numbers, rather than of expenses across the board.

In this report, we list and categorise the central police cost items for Victoria. We have consulted with Dr Adam Masters of the ANU Centre for Social Research and Methods, a recognised expert in police costing, with an 18-year tenure at the Australian Federal Police. His extensive experience positions him as a highly qualified authority on this subject matter. We acknowledge that category names and cost distributions could vary in other jurisdictions.

Our analysis of the Victorian central costs for 2016-17 shows that 32% of the expenses are either inherently central or deemed proportional to the population. These expenses should be segregated from other expenses and not dispersed among police districts prior to the empirical assessment, but rather evaluated based on EPC. Another 64% of the central costs are associated proportionally with police staffing and thus should be allocated to districts according to FTE numbers. The remaining 4% of central costs, being those that are proportionate to offender numbers, should be distributed based on offence statistics. Please refer to Table 6 for a detailed categorisation of the central Victorian Police cost categories.[7]

[7] We analysed the proportions of the different central policing cost items to derive the above statistics. These proportions are not reported in the table.

Table 6. Categorization of the central Victorian Police cost categories

Expenses category Victoria Police	Expert judgement on expenses
Policing Support Services - Central	
Professional Standards Command	proportional to staff
Human Resources Department	proportional to staff
Capability Department	central
Media and Corporate Communications	proportional to staff
People Development Command	proportional to staff
Corporate & Regulatory Services Department	proportional to staff
Command Support	central
Public Support Services Department	by population
Procurement Department	proportional to staff
Corporate Finance Department	proportional to staff
Enterprise Program Management Department	proportional to staff
Strategic Investment, Reporting & Audit Department	central
Executive Services & Governance Department	central
Operational Infrastructure Department	proportional to staff
Information Technology	proportional to staff
Information, Systems & Security Command	proportional to staff
Executive Management	central
Corporate Costs	proportional to staff
Operational Policing Services (Statewide)	
Road Policing Command	by population
Forensic Services Department	by offenders
Legal Services	proportional to staff
Intelligence and Covert Support Command	by population
Crime Command	proportional to staff
Counter Terrorism Command	central
Transit & Public Safety Command	by population
State Emergencies & Security Command	by population
Family Violence Command	by offenders

Inconsistency of three-tier socioeconomic status (SES) for Indigenous Australians in police expense modelling

Our next analysis delves into the rationale behind the CGC decision to use a three-tier Socioeconomic Status (SES) categorisation for Indigenous offenders in their police cost

assessment, as opposed to the standard five-tier system applied in the assessments of prisons and courts. Upon review, we find the justification for this deviation unconvincing.

The CGC's argument hinges on the absence of a linear SES-offence relationship traditionally expected to descend from the most to the least disadvantaged. However, similar non-linear patterns are observed in other variables, like remoteness, and a non-expected relationship between offenders and SES categories, by themselves, do not warrant a significant methodological shift, such as combining the two lowest and two highest SES groups.

As shown in Table 7, the distribution of offenders across the five SES groups demonstrates a relatively even spread, with percentages ranging from 15% to 24%. This uniformity confirms the absence of small sample issues that might otherwise justify the merging of SES categories. Notably, the distribution of Indigenous offenders across SES categories is more balanced compared to the non-Indigenous group, which exhibits a wider range—from 13% to 37%. The data also reveal a non-monotonic relationship between offence rates and SES for Indigenous populations. Interestingly, the offence rate is lower in the second most advantaged group (13.5%) compared to the least disadvantaged group (18.7%), challenging conventional expectations about SES and offending patterns.

Table 7. Proportion of offenders across SES by Indigenous status, 2020 review data

	Proportion of offenders in each SES in per cent		Offence rates in each SES in per cent	
SES	Indigenous offenders	Non-Indigenous offenders	Indigenous offenders	Non-Indigenous offenders
1. Most disadvantaged	22	37	22.5	4.4
2. 2nd most disadvantaged	24	23	22.2	2.7
3. Middle quintile	19	16	19.7	1.8
4. 2nd most advantaged	15	13	13.5	1.5
5. Least disadvantaged	20	10	18.7	1.2

Additionally, Table 8 provides insight into the state-specific implications of the CGC's methodology, particularly for Victoria and Queensland. These states show a significantly higher proportion of Indigenous individuals in the least disadvantaged group relative to the second least, by a factor of 2.3 and 1.7 respectively. The ratio is considerably higher than in other states, where most have a ratio below 1, indicating a greater prevalence of Indigenous people in the second most advantaged SES category.

Table 8. Proportions of Indigenous least disadvantaged relative to 2nd least disadvantaged in the population by state, 2020 review data

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
ERP Proportion of Indigenous Least over 2nd Least disadvantaged	0.8	2.3	1.7	0.2	0.5	0.3	only least disadvantaged	0.9

Given that the offence rate used to calculate assessed police expenses as 39% higher for the top Indigenous SES group, compared to the one below it, adhering to the five-tier SES system would result in higher assessed expenses for states like Victoria. This current 'simplification' by the CGC not only overlooks these nuances but also disproportionately impacts states with a higher proportion of Indigenous individuals in particular SES categories.

In conclusion, we see no compelling rationale to deviate from the customary five-group SES framework for Indigenous populations in police expense assessments. This change disadvantages states like Victoria and the ACT who have a higher proportion of the group with the higher offence rate, as the distribution of Indigenous populations across SES tiers is not uniform. This is not in line with the CHC's principal of horizontal equalization as it ignores the difference in disabilities by grouping these two tiers together without reason. Therefore, we strongly recommend that the CGC revert to using the five SES categories for Indigenous groups in their police expenses assessment.

Police cost regressions

Given the concerns with using offence rates as the basis for police costs, we explored whether the police cost regressions could instead look directly at the proportion of individuals in different SES categories, separately by Indigenous and non-Indigenous status. This would provide a better proxy for actual cost disabilities and remove the perverse effects created by using offences which we have discussed above.

We estimated two models, excluding the offences data. The first is a simple model with geographical variables and the second adds in proportions of individuals in five different SES quintiles split by Indigenous/non-Indigenous. In both cases we include the total population in the Police District for the reasons described earlier.

Adding information on the SES quintiles does not substantively change the results from the regression which excludes offences and only controls for geographic variables. If the inclusion of offences is intended to control for cost disabilities associated with different proportions of different SES categories across police districts, then dropping offences and including the different SES categories directly should produce statistically significant coefficients on the SES

categories. However, for the most part, the coefficients on the SES quintiles are statistically insignificant.

There is also no consistent pattern in the magnitudes of the coefficients. For example, although neither is statistically significant, the coefficient on the proportion of people in the 2nd least disadvantaged category (PropSES4) is larger than the one for the most disadvantaged category (PropSES1). This does not make much sense. Also, the proportion of Indigenous individuals in the 2nd most disadvantaged group has a statistically significant and negative impact on police costs.

All of this suggests that the offence variable, which was previously included, and was statistically significant, is not picking up the effect of cost disabilities, but rather other factors. Some of these other factors may represent policy choices that should not be included in this model.

Another problem may be that the SES categories are not informative. Another may be that Police District is too broad to capture the variability in policing costs from the SES categories. In either case, our suggestion is to estimate the simpler model using only police district population and remoteness as the explanatory variables.

This provides a simple and easy to apply model. Most of the costs are driven by the 'Remote' and `Very Remote' categories and there seem to be some economies of scale associated with population. This simpler model is clearly not subject to any policy choices and is more in line with the philosophy of the Commonwealth Grants Commission approach of avoiding variables that may be affected by policy choice.

Table 9. Police cost regressions using 2020 review data

Coefficients:	Estimate	Std. Error	t value	Pr(>|t|)	
Police cost regressions (without offences)					
(Intercept)	1116.9	119.4	9.35	0	***
InnerRegional	-149.0	150.6	-0.99	.324	
OuterRegional	148.6	174.0	0.85	.394	
Remote	2351.2	312.6	7.52	0	***
VeryRemote	3335.6	308.4	10.8	0	***
Total Population	-0.0011	0.0004	-3.11	.002	**
Police cost regressions (with direct measures of SES disadvantage for Indigenous and non-Indigenous)					
(Intercept)	581.6	379.3	1.53	.128	
InnerRegional	-153.7	167.7	-0.92	.361	
OuterRegional	416.0	210.7	1.97	.051	.
Remote	2743.1	477.4	5.75	0	***
VeryRemote	4055.7	1012.0	4.01	0	***
PropSES1	639.3	538.6	1.19	.238	
PropSES2	497.5	934.7	0.53	.596	
PropSES3	824.3	1078.1	0.76	.446	
PropSES4	2067.8	1286.4	1.61	.111	
PropIndSES1	-374.5	1276.3	-0.29	.770	
PropIndSES2	-6674.0	3047.5	-2.19	.031	*
PropIndSES3	-970.3	2262.4	-0.43	.669	
PropIndSES4	-7952.2	3056.6	-2.60	.01	**
PropIndSES5	-8702.7	4910.3	-1.77	.079	.

Significance codes: <0.001 '***' <0.01 '**' <0.05 '*'< 0.1 '. '
Number of observations:139 (132 in second regression)
R-squared: 0.6811 vs. 0.7143
F-statistic: 71.6 vs. 22.7

Notes: "PropSES" refers to proportion of non-Indigneous population in SES quintiles going from 1 (most disadvantaged) to 5 (least disadvantaged). Least disadvantaged quintile is dropped; it is the reference group. "PropInSES" refers to proportion of Indigneous population in SES quintiles going from 1 (most disadvantaged) to 5 (least disadvantaged).

Adequacy of state police data

In evaluating the police assessment and state-reported police data, our critique identifies issues that impact the validity and comparability of this information for assessing state policing needs.

The variability in offence types and their associated costs, though a minor element in our broader critique, does introduce initial complications. More severe offences inherently demand more resources, which is an issue that prevails as long as offences are used as a proxy for police services. The literature suggests different costs for different types of offences. It also suggests heterogeneity in the effect of policing on different types of offences. More police make drug crimes go up, but make robbery go down, for example see Blesse & Diegmann (2022). Assault is mixed and depends upon how police and the justice system respond to assault call-outs (Blesse & Diegmann, 2022; Chalfin et al., 2022; Zhang et al. 2022). Another issue is that arrests may not be a good measure of reducing harm from illegal drug use (Spooner, McPherson & Hall, 2004).

An additional concern is the current practice of allocating central police costs, based on regional expenses. This does not adequately reflect the true nature of these costs, which will bias the remote and offender cost weightings.

The possibility for policy-driven offence rates further complicates the landscape. Certain offences may be more prevalent in specific states, due to targeted policies, which can skew the perception of policing needs in those areas. This misalignment potentially distorts the overall cost assessment, suggesting that some regions require more policing resources than they might actually need, when in reality, these perceived needs could be the result of particular legislative and policy choices.

Addressing these multifaceted concerns necessitates a considerably more intricate empirical assessment, to adequately account for the impacts of heterogeneity. Ideally, this approach could offer a more accurate representation of costs. However, the reality is that the requisite data to support such a comprehensive assessment may not be readily available in the short term. Alternatively, as we propose, simplifying the assessment methodology by eliminating the use of offence data as a proxy could be a more pragmatic solution. This approach would reduce the need for extensive assessments aimed at addressing the concerns we have presented, thereby streamlining the overall process and aligning with the CGCs principal guidelines.

Discounting

Based on the Commonwealth Grants Commission's principles and guidelines on discounting assessments, and considering the various issues discussed in our chat, there are compelling arguments for applying discounts to certain assessments in the context of police cost allocation. These arguments stem from concerns about data reliability, the appropriateness of proxies, and the potential for policy-driven distortions.

Variability in Offence Types and Associated Costs: The substantial differences in costs associated with different types of offences across states suggest that a uniform assessment may not accurately reflect the true fiscal needs. Given the complexity and variability of these

costs, applying a discount would acknowledge the inherent limitations in accurately measuring and comparing these expenses across jurisdictions.

Policy-Driven Offence Rates and Cost Allocation: The influence of policy decisions on offence rates, particularly in cases where policy choices disproportionately affect certain demographics or regions, calls for a cautious approach in cost assessment. The CGC's guidelines suggest using discounts when proxies might not fully capture the intended measures. Since offence rates can be influenced by local policy choices, this justifies considering a discount to mitigate the risk of misrepresenting policing needs.

Inconsistencies in Data Reporting Across States: varying methodologies and classifications used by states in reporting police and justice data more generally can lead to inconsistencies that undermine the reliability of comparative assessments. Recognizing these limitations through the application of a discount would ensure a more balanced approach, aligning with the CGC's principle of adjusting assessments considering data concerns.

In summary, the CGC's framework of discounting assessments provides a mechanism to address the various concerns raised in this discussion. The variability in offence costs, the influence of policy-driven offence rates and inconsistencies in data reporting all present substantial challenges to accurately measuring state fiscal capacities in the context of justice spending. Applying appropriate discounts would help mitigate these challenges, leading to a more equitable and accurate representation of states' fiscal capacities.

Court costs

Variability in state-reported data on court expenses

In the 2020 review, state-reported data on court expenses, detailed in Table 10, exhibits a strikingly wide variance in the proportion of criminal court expenditure across states. This range extends from a low of 32% in Queensland to a high of 75% in Western Australia. The mean of these proportions is 51%, with a large standard deviation of 20. Such a large standard deviation relative to the mean suggests that there must be a large number of unobserved factors which determine this cost (for example, approaches to addressing civil matters in courts versus tribunals or alternative dispute resolution processes). If these unobserved factors are correlated with other variables of interest, this could lead to biased estimates of the impact of variance in states on overall costs.

Economically, it is unlikely for similarly purposed institutions across different states to have such disparate expenditure percentages without some underlying anomalies or inconsistencies in data reporting or categorisation. Typically, one would expect a narrower range of variation in comparable metrics across states, assuming consistent methodologies in data collection and similar operational environments. The pronounced disparity indicated by the high standard deviation could point towards inconsistencies in how states classify or report their court expenses, or it might reflect fundamentally different approaches to budget allocation and management in the criminal justice system across these jurisdictions.

In conclusion, the high variance in the reported criminal court cost proportion raises questions about the data's reliability for making accurate comparative assessments or for drawing broad conclusions about state-level spending practices in the realm of criminal court expenditures.

Table 10. Criminal court expenditure proportion as reported for the 2020 review across states

States	Criminal courts % of total court expenditure
NSW	55
Vic	55
Qld	32
WA	75
SA	22
Tas	58
ACT	33
NT	75
Total	51

Sociodemographic composition modelling is only conducted on a sub-sample of states

The idea that case finalisation rates differ across various sociodemographic segments is well-established. Nonetheless, reliable data on the Indigenous status of defendants was limited to just five states and territories, namely New South Wales, Queensland, Western Australia, South Australia, and Northern Territory. Consequently, the CGC had to rely on this subset of data for their assessments, thereby omitting around a third of Australia's population from the analysis.

Finalisations differ markedly between states (as illustrated in Table 11 below). This variation implies that relying on data from just a subset of states and territories might not accurately represent national trends in defendant rates.

Table 11. Criminal Court Finalizations by state from RoGS data for the 2020 review

State	Criminal Court Finalisations	Proportion of total finalisations in %	Proportion of population in %
NSW	210,161	24	32
Vic	224,382	26	25
Qld	227,048	26	20
WA	108,958	13	11
SA	53,242	6	7
Tas	18,245	2	2
ACT	6,406	1	2
NT	16,481	2	1

We suggest using all available information from all states in an iterative averaging procedure to reduce these issues as much as possible. This could be done by allocating SDC level costs first using only data which are available for all states—age and SES.

One approach would be to allocate expenditure based solely on age and SES, as this data is accessible for all states. Another strategy might involve estimating Indigenous status in each SDC and state where this information is absent, using the average Indigenous status known for the age and SES group across states where it is available. This estimate could be further refined by adjusting the average proportionally to the Indigenous population in each state. This method allows the CGC to calculate SDC averages for all 50 age-SES-Indigenous status groups, incorporating data from all states and reducing bias towards the subset of states that record all dimensions. The allocation would then proceed on this basis.

Alternatively, the CGC could impute the Indigenous status of defendants from offender and incarceration rates, where Indigenous status data is available for all jurisdictions. This would involve using SDC level variables to predict the proportion of Indigenous individuals in each SDC for those states lacking this specific data. The resulting imputed data could subsequently be integrated into the assessment.

Treatment of Indigenous status non-response

There is evidence of racial profiling by justice agencies, on the basis of appearance. For example, a recent report (Hopkins & Popopvic, 2023) found that African, Middle Eastern and Indigenous people in Victoria were more likely to receive a COVID-19 fine than expected for their population size. Where Indigenous status is not stated, this may be because the person's status is not easily visually identifiable. Accordingly, a method that splits non-stated Indigenous status according to the proportion in the general population, rather than amongst the population in criminal justice datasets, may function as a more accurate proxy, provided that it does not overstate the proportion of Indigenous people.

Corrective services costs

Prison regional costs

In our analysis, we replicated the Commonwealth Grants Commission's (CGC) prison cost regression using the available data for 14 Victorian prisons. This replication allowed us to assess the correlation between prison costs and several variables, including the proportion of maximum security prisoners, inverse prison size, and location - either major city or inner regional. In Victoria, prisons are situated only in these two remoteness categories, with inner regional serving as the reference category dropped in the regression.

The findings, detailed in Table 12, indicate a slightly higher cost per prisoner at $123,395 in Victoria and a smaller additional cost for maximum security prisoners of only $37,689, compared to the CGC's national analysis. Interestingly, our results show a reversed relationship with remoteness. Similar to recent findings from New South Wales state prison regressions, we discovered that prisons located in major cities have a cost loading per prisoner of $28,890 compared to those in inner regional areas. This difference is statistically significant, unlike the CGC regression coefficient on remoteness. However, it is important to note that these comparisons are somewhat limited, as Victoria's prison locations are confined to the two most urban categories of remoteness. Finally, the inverse prisoner size variable, interpreted as representing the fixed costs of prisons, was found to be $2.1 million, larger than in the CGC analysis, but not statistically significant due to the limited number of prisons in the Victorian regression.

Overall, these results align with recent findings from NSW (NSW Treasury, 2023), suggesting that, at least in some states, the relationship between remoteness and prison costs is the opposite of what the CGC identified in their 2020 review. Given the statistical insignificance of the remoteness coefficient in the CGC's regression and the results from both NSW and Victoria, we advise caution in applying a remote cost loading based on the prison regression findings. We suggest exploring the cost in more details including all remoteness categories into the regression, while it could be a regional effect both Victoria and NSW are picking up, it could also be the case that both large city prisons and remote prisons are both more costly relative to regional prisons.

Table 12. CGC prison regression for the 2020 review and Victorian prisons only

	CGC regression Results			
	Estimate	t value	Pr(>|t|)	
(Intercept)	73,773	13.1040		< 2e-16
Propmax	63,989	4.65400		0.00001
Remote	31,340	1.26100		0.21040
InverseSize	1,409,314	1.92000		0.05780
	Victoria prisons only			
(Intercept)	123,395	13.8		0
Propmax	37,689	3.3		0.008
Major City	28,890	3.4		0.007
InverseSize	2,130,016	1.26		0.236

Criminal court defendants as proxy for prisoners' SES profile

Our analysis of the ABS data, presented in Table 12, indicates that sentenced prisoners in Victoria serve relatively longer sentences than most other jurisdictions. For non-Indigenous prisoners, the mean and median sentences are 7.1 (second longest after NSW) and 5.5 years (longest) respectively, compared with the national averages of 6.4 and 4.5 years. For Indigenous prisoners, the Victorian sentences are the longest in Australia, at 5.8 and 4.2 years respectively; compared with national figures of 4.0 and 2.5 years. The reason that the length of sentences for Indigenous people is shorter across Australia is because they tend to be imprisoned for less serious offences (Australian Law Reform Commission, 2017).

The interplay between socioeconomic status (SES) and legal outcomes is a multifaceted issue. Defendants from higher SES backgrounds may have access to more effective counsel, which may correlate with lower conviction rates and/or conviction for less serious alternative charges (Natolak-Saper et al., 2021). Conversely, the data suggest that those of lower SES, exemplified by comparing Indigenous versus non-indigenous populations as a proxy for SES, tend to receive shorter sentences—37.5% shorter on average, with the median sentence being 44% lower (see Table 13).

These divergent trends in conviction rates and sentence lengths across different SES groups may have a counterbalancing effect, complicating the use of a uniform SES profile mark-up, like the Commission considered in the 2020 review for this disability. Therefore, it is advisable to continue employing the SES profile derived from criminal courts as the more appropriate proxy. This approach acknowledges the complex dynamics at play and avoids oversimplification of the relationship between SES and sentencing patterns.

Table 13. Length of sentence served by indigenous status (2012-2022)

ABORIGINAL AND TORRES STRAIT ISLANDER									
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Mean (years)	4.8	5.8	3.9	5.2	3.3	4.9	2.6	5.1	4.0
Median (years)	2.2	4.2	3.0	3.6	2.5	2.0	1.4	3.4	2.5
NON-INDIGENOUS									
Mean (years)	7.4	7.1	5.0	6.6	5.1	5.5	5.8	6.8	6.4
Median (years)	4.7	5.5	3.9	5.0	4.0	3.0	5.0	4.8	4.5

Justice related Infrastructure assessment

Given the uncertainties and data limitations identified in the justice assessment detailed in previous sections of this report, it is important to acknowledge that allocating infrastructure needs in proportion to assessed expenditures could exacerbate existing issues in the justice assessment. Therefore, a more prudent approach would be to allocate infrastructure expenditure within the justice assessment framework proportionally to population. This method offers a more balanced and cautious strategy, potentially mitigating the impact of any discrepancies identified in the assessment process.

Wage costs

We considered the current wage cost disability assessment because of its connection to and impact on the justice assessment. We recognise that the Commonwealth Grants Commission recently commissioned a review of the wage costs methodology and that the CGC has proposed some changes in response to that report (Preston, 2023).

In their 2020 report, on page 418, the CGC argues that states are not recruiting from a national labour market, but rather from the labour market within their own state:

> The Commission's previous analysis of Census data showed that 60% of people joining State public services between 2006 and 2011 moved from the private sector in their State, while only 3% moved from the State public service in another State. This suggests that the direct impact of competition for labour from other sectors within a State appears to be stronger than the impact of a national labour market for State public service employees. In the absence of strong evidence for the influence of national markets and a sound method for measuring the impact of that influence, the Commission has decided not to make any changes to the assessment in respect of the national labour market argument.

In light of these facts, we are concerned that the current wage cost disability assessment is potentially problematic. If states are hiring from within their own state-specific labour markets, then it does not appear to us to be correct to control for worker characteristics. If characteristics of workers vary across states in ways that mean hiring from the private sector has different costs in different states, then these should be included in the assessment of wage costs and not eliminated by being included as control variables.

We also note that there is a high degree of volatility that is observed in the assessment over time which raises concerns about the applicability of the estimates.

Wage differentials across states

Given that the CGC's own assessment is that states are recruiting from within their own state-specific, private labour markets, we question the inclusion of controls for other characteristics in the state-specific wage cost regressions. Including controls implies that state public service agencies are recruiting from a hypothetical, national worker where all observable differences in wages have been removed. But states are recruiting primarily from the pool of workers in their own state. These workers have specific characteristics that will make them more or less expensive to hire. Removing these characteristics risks failing to properly assess the actual cost of hiring workings in one's own state.

The fact that Western Australia has higher wages because it has more mining jobs does not mean it is easy or inexpensive to hire public service workers in Western Australia. This adds to

the expense and cost for the state, so removing these characteristics misrepresents the true cost of hiring labour. The different characteristics of workers within a state are not a policy variable over which states have control.

For these reasons, we argue for using the average differences across states in wage costs without controls. To see what difference this will make to the current calculations, we estimate models of the natural log of hourly wage and the natural log of annual earnings using Household Income and Labour Dynamics in Australia (HILDA) data for the period 2001-2021.

Table 14. Difference in private sector wage costs across states (2001 – 2021)

State/territory	ln(wages)		ln(annual earnings)	
	With controls	No controls	With controls	No controls
Victoria	-0.015	-0.017	-0.032	-0.028
Queensland	-0.035	-0.074	-0.011	-0.049
South Australia	-0.058	-0.108	-0.071	-0.149
Western Australia	0.018	0.028	-0.008	0.029
Tasmania	-0.067	-0.143	-0.041	-0.162
Northern Territory	-0.001	0.005	0.109	0.073
ACT	0.062	0.078	0.039	0.011
NSW: omitted reference category				

Notes: Shaded cells are not statistically significant.

Table 14 uses the natural log of hourly wages and the natural log of annual earnings. The models “with controls” include age, gender, poor English ability, educational attainment, workforce experience, occupation and industry controls and time dummies. Without controls contains only time dummies. Regressions are restricted to persons employed in the private sector with non-zero earnings. Regressions for annual earnings contain a dummy variable equal to one if the annual earnings are imputed.

If we condition only on the three most recent years of data, we find relatively similar results with more cells that are statistically insignificant due to the smaller sample sizes (see Table 15 below).

Table 15. Difference in private sector wage costs across states (2019 – 2021)

State/territory	ln(wages)		ln(annual earnings)	
	With controls	No controls	With controls	No controls
Victoria	-0.006	-0.001	-0.049	-0.029
Queensland	-0.039	-0.073	-0.054	-0.070
South Australia	-0.060	-0.104	-0.107	-0.160
Western Australia	0.017	0.022	-0.070	-0.025
Tasmania	-0.070	-0.179	-0.025	-0.185
Northern Territory	0.029	0.003	-0.062	-0.139
ACT	0.076	0.127	0.069	0.102
NSW: omitted reference category				

Notes: Shaded cells are not statistically significant.

Tables 14 and 15 consider workers of all educational backgrounds. It could be that the public sector is mainly recruiting from tertiary-educated workers. Tables 16 and 17 repeat the same exercise as Tables 14 and 15 but only including tertiary-educated workers.

Table 16. Difference in private sector wage costs across states, tertiary-educated workers only (2001 – 2021)

State/territory	ln(wages)		ln(annual earnings)	
	With controls	No controls	With controls	No controls
Victoria	-0.043	-0.046	-0.062	-0.075
Queensland	-0.050	-0.039	-0.036	-0.027
South Australia	-0.113	-0.119	-0.114	-0.148
Western Australia	0.004	0.041	-0.047	0.016
Tasmania	-0.117	-0.94	-0.155	-0.145
Northern Territory	-0.002	0.022	0.034	-0.057
ACT	0.071	0.089	0.069	0.101
NSW: omitted reference category				

Notes: Shaded cells are not statistically significant.

Table 17. Difference in private sector wage costs across states, tertiary educated workers only (2019 – 2021)

State/territory	ln(wages)		ln(annual earnings)	
	With controls	No controls	With controls	No controls
Victoria	-0.028	-0.010	-0.046	-0.048
Queensland	-0.044	-0.014	-0.033	-0.001
South Australia	-0.049	-0.065	-0.136	-0.168
Western Australia	0.026	0.050	-0.056	-0.024
Tasmania	-0.051	-0.092	-0.220	-0.262
Northern Territory	0.075	0.137	-0.025	-0.018
ACT	0.091	0.163	0.122	0.203
NSW: omitted reference category				

Notes: Shaded cells are not statistically significant.

In all cases, there are some important differences between the models without controls and those with controls. It is difficult to provide a simple characterisation of how things change with coefficients increasing for some states but decreasing for others. Our suggestion to reconsider the wage costs modelling is primarily based upon the theoretical arguments rather than any assessment of the results from these regressions.

The discount applied to the wage cost disability factor

If the Commission chooses not to implement the approach of correcting for labour costs by using estimates without controls, we suggest retaining the current level of discount on the basis that the current assessment of the wage costs disability is volatile and potentially subject to bias due to states' inability to control the characteristics of their work force.

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