

# 2025 Methodology Review – Queensland submission to the wages assessment

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**Queensland  
Government**

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## Preface

Queensland continues to have concerns about the conceptual validity of the wages assessment. While there are some private sector wage influences on public sector wages, other factors are also relevant. Indeed, Queensland maintains that many public sector wage movements reflect national sectoral conditions and shortages for particular skilled workers that are predominantly public sector employees (for example, medical and teaching staff).

This is reflected on pages 12 to 13 of Professor Preston’s Wage Cost Consultant Report which states “The estimates on Table 3 and graphics in Figure 2 lead to the conclusion that the pattern of geographic wage relativities are not completely consistent across the public and private sectors.”.

Given these concerns, Queensland contends that current wages assessment based on a private sector wage proxy has significant shortcomings and it is imperative that if the Commission continues to use this methodology that they maintain **at least a 12.5 per cent discount**.

## Summary

A summary of Queensland’s positions is provided in the following table with further detail in the submission below.

### SUMMARY OF QUEENSLAND POSITIONS

Commission question	Queensland response
Do states agree on continuing to use private sector wages as a policy neutral proxy for the market pressures faced by public sector employers?	<b>Do not support.</b> However, if this method is retained, changes outlined in this submission would represent an improvement.
Do states agree that the Commission should continue to use all private sector employees to proxy for public sector drivers of costs?	<b>Support</b>
Do states support the continued use of the Characteristics of Employment survey data?	<b>Do not oppose</b> , noting Queensland’s preference that future consideration be given to the use of administrative data.
Do states agree the Commission should use hourly wages rather than weekly wages as the dependent variable?	<b>Do not support</b>
Do states support including usual hours of work in the model as 3 categories, part-time, full-time and more than full-time hours?	<b>Do not oppose further examination of this approach</b> , noting that a clearer rationale for the assumptions underpinning this change should be included in the draft report.

Commission question	Queensland response
Do states support replacing imputed work experience and imputed work experience squared with 5-year age groups?	<b>Support</b>
Do states agree with the Commission’s proposed criteria for including control variables in the model?	<b>Support</b>
Do states support using a less complex model by replacing industry group categories with industry division categories and removing the interaction terms with gender and every other independent variable?	<b>Support</b>
Do states agree with the proposed approach to combine estimates of relative differences in states wages across years?	<b>Do not support</b> the averaging approach as proposed by the Commission. However, <b>support</b> the pooling of data using a rolling window sample.
Do states agree that a 12.5% discount remains appropriate?	<b>Support</b> a discount of at least 12.5 per cent.

## Wages

### Queensland position

*Queensland’s position in this submission is informed by detailed analysis undertaken by Dr Christiern Rose, Dr Lizi Yu, and Professor Alicia Rambaldi at University of Queensland (UQ) (report attached) responding to the Commission’s ‘Wage costs consultation paper’ released in June 2023 and ‘Wage Costs Consultation Report’ by Professor Alison Preston released in August 2023. While the Commission’s subsequent ‘Wage costs consultation paper – addendum’ was released after the UQ analysis was completed, the key positions and recommendations outlined by Queensland Treasury in the submission are clearly supported by this independent analysis from UQ.*

### **Do states agree on continuing to use private sector wages as a policy neutral proxy for the market pressures faced by public sector employers?**

Queensland does not support the use of private sector wages as a policy neutral proxy for public sector employees. Queensland has previously raised concerns over the current wages assessment model and continues to hold those concerns and would like to reiterate the view that public sector wage pressures are determined by a number of factors beyond private sector wages. Other relevant factors being national sectoral conditions and shortages for particular skilled workers that are predominantly public sector employees (for example, medical and teaching staff) beyond geographical factors identified through an assessment of private sector wages.

This was reflected on pages 12 to 13 in Professor Preston’s Wage Cost Consultant Report, which stated:

*“The estimates in Table 3 and the Graphics in Figure 2 lead to the conclusion that the pattern of geographic wage relativities are not completely consistent across the public and private sectors.”*

In particular, Queensland would contend that private sector wages are not a sufficient proxy for public sector wages because:

- For multiple public sector industries, attracting and competing for workers the relevant labour market is the interstate market for these specific skills rather than a diverse range of occupations across the private sector. Such industries include health<sup>1,2</sup>, schools<sup>3</sup>, and justice<sup>4</sup>.
- These industries have a high workforce concentration in the public sector with unique skill sets that are often not readily transferable at scale to the private sector.

However, if the Commission chooses to retain the current wages assessment, the conceptual basis underpinning the method would be improved by the following 3 adjustments:

- Adopting a pooling approach to estimate wage costs (see response to Commission question below).
- Continuing to discount the assessment given uncertainties with the conceptual basis for private sector wages, the survey size, and the estimation technique (see response to Commission question on this issue below).

### ***Do states agree that the Commission should continue to use all private sector employees to proxy for public sector drivers of costs?***

Queensland supports continuing to use all private sector employees in the regression analysis. Restricting the sample to female employees could introduce bias in the assessment, is not reflective of the public sector workforce, and could reintroduce increased volatility (by substantially reducing the sample size) which would be at odds with other proposed changes.

### ***Do states support the continued use of the Characteristics of Employment survey data?***

Queensland does not oppose continuing to use the Characteristics of Employment data as the basis for this regression.

However, as noted by the UQ report, in time there would be merit in the Commission investigating whether there are advantages in using administrative data such as the *Person Level Integrated Data Asset* PLIDA.

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<sup>1</sup> Department of Health and Aged Care 2021. *National Medical Workforce Strategy, 2021-2031*. Australian Government: Canberra.

<sup>2</sup> L. MacDonald & G. Stayner 2022. “Australia facing nursing shortage as more than two years of COVID takes its toll.” *ABC News*. 22 July. Accessed 13 November 2023. Available at <https://www.abc.net.au/news/2022-07-22/nursing-shortage-on-the-cards-due-to-pandemic/101253058>.

<sup>3</sup> Department of Education 2022. *Issue Paper: Teacher Workforce Shortages*. Australian Government: Canberra.

<sup>4</sup> R. Riga 2023. “Queensland Police look to poach new recruits from interstate and overseas.” *ABC News*. 9 May. Accessed 13 November 2023. Available at <https://www.abc.net.au/news/2023-05-09/qld-police-new-recruits/102322728>.

***Do states agree the Commission should use hourly wages rather than weekly wages as the dependent variable?***

Queensland does not support using hourly wages as the dependent variable in the regression analysis. Using hourly wages as the dependent variable is not considered an appropriate change from using weekly wages for several reasons, as outlined below.

Firstly, given that the proposed dependent variable, hourly wage, is defined as the ratio of weekly wage to paid hours, it is susceptible to the risk of spurious correlations for the ratio problem. This concern has been extensively discussed in relevant literature, notably by Kronmal (1993).<sup>5</sup>

Specifically, when both the numerator (weekly wage) and the denominator (paid hours) of a ratio share a common correlated variable—such as gender or age—this can create a heavily biased estimate. This situation can be quite common with many variables, which can cause severe bias in coefficient estimation.

Secondly, the hourly wage is generally more relevant for analysing sectors or occupations characterised by significant variations in work hours, which is especially true where part-time positions and irregular work hours are common. The underlying rationale of this assessment, i.e. to use wages of comparable private-sector workers as a proxy for estimating public-sector wages, is more aligned with the concept of a “usual wage” approach.

Thirdly, the proposed new dependent variable (log hourly wage) substantially reduces the R-squared, as reported in the Commission’s original consultation paper and UQ analysis, from around 0.6-0.7 to 0.4.

Such a substantial reduction in R-squared indicates that the explanatory variables used in the model explain a much smaller proportion of the variation in the log hourly wage, suggesting that the model fits the data for log hourly wage less well than for log weekly wage. For further modelling and analysis supporting Queensland’s position see the attached *Modelling Public Wages Expense Across States and Time Using Survey Data* report from UQ.

***Do states support including usual hours of work in the model as 3 categories, part-time, full-time and more than full-time hours?***

Queensland does not oppose the Commission undertaking further examination of including usual hours of work in the model as 3 categories noting that this significantly reduces the complexity of the hours variables from previous iterations of the wage model. We note that both UQ and Professor Preston in their respective reviews of these previous iterations of the model have expressed concerns with the interpretation and statistical properties of the coefficients when direct measures of hours are the explanatory variables of hourly wages.

If the Commission were to make this change, they should provide a clearer rationale, backed by evidence, for the assertions made in paragraph 20 of the wage costs consultation paper addendum which underpin the Commission’s proposal to make this change in approach. A more detailed and appropriate explanation, including supporting evidence, should be included in the Draft Report for the 2025 Review.

The ongoing uncertainty and concerns related to the most appropriate measures of key variables such as hours worked serves to reinforce the ongoing need for a discount of at least 12.5 per cent related to this assessment.

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<sup>5</sup> For recent studies, see Clemens and Hunt (2019) and Bartlett and Partnoy (2020).

***Do states support replacing imputed work experience and imputed work experience squared with 5-year age groups?***

Queensland does not oppose the proposed change, but we note there are differing opinions from the independent consultants. While this proposed change to the original Commission consultation paper suggested by Professor Preston appears to be motivated by developing a simpler model, analysis by UQ suggests the original specification to capture labour market experience is more closely aligned with the empirical literature.

These differing interpretations further highlight the challenges in developing an accepted measure for assessing wage costs and why an ongoing discount should be maintained for this assessment.

***Do states agree with the Commission's proposed criteria for including control variables in the model?***

Queensland supports the proposed criteria. The analysis by the Commission suggests that the addition of certain explanatory variables and interactions between explanatory variables appear to make little difference to the estimated state coefficients that determine the wage relativities across states. As these would not materially affect average state coefficients, it is consistent with the Commission's supporting principles to not include these control variables for simplicity. Where any additional control variable may materially affect a state's average coefficient, Queensland would recommend the Commission consult with states before including it in the assessment.

***Do states support using a less complex model by replacing industry group categories with industry division categories and removing the interaction terms with gender and every other independent variable?***

Queensland supports the proposed changes, where appropriate (i.e. resulting in a less complex assessment but without leading to any perverse, unintended or materially different outcomes). The potential significant drop in coefficients that need to be estimated, from greater than 800 to around 180, suggests a significant reduction in complexity and significantly less demands on the small sample size used to estimate the coefficients.

Queensland recommends this proposed change would be most effective and appropriate if the Commission adopts a rolling window approach (as discussed in more detail below in response to the next issue raised by the Commission), which will further improve the stability of the estimated state coefficients.

***Do states agree with the proposed approach to combine estimates of relative differences in states wages across years?***

Queensland supports appropriate changes to the wages assessment that reduce the annual volatility in the regression results. Recent updates using the current wage cost regression have highlighted significant issues with the current specification as demonstrated by the annual volatility in the results which do not match other indicators of wage costs.

However, we do not support the 'pooling' approach as recommended by the Commission. This approach is based on performing a regression across each assessment year (on the 'unpooled' samples) and then taking a weighted average of the state effects from each sample. The weighted average would then be based on a formula which accounts for the distance to the year of interest

(application year) and the variance of the estimate, with higher variance resulting in a lower weighting.

This approach, as outlined by the Commission, appears particularly arbitrary in nature, especially in how the future and past years are used to construct the weighted average. For example, it is uncertain how the decision on the weighting applied to each year is made. It is also unclear how the standard error can be reliably calculated using this approach leading to less confidence in the overall results. Finally, the proposed approach will have less statistical power compared to true pooling methods as it is still based on the smaller sample in each individual year.

Instead of this method, Queensland recommends that a rolling window sample is used. As outlined by UQ in their detailed analysis, a rolling window sample approach would instead combine data across either a three or five year window centred on a year of interest. **This would have the advantage of increasing the size of the data sample, increasing accuracy, substantially decreasing variability over time, and leading to a more reliable estimate.** In addition, the rolling window pooling approach is considered to be more transparent and less arbitrary than the Commission's proposed approach.

Pooling is a commonly used statistical technique in academic literature, with UQ's analysis citing recent work on this issue published in the *Journal of Econometrics*, while a pooling approach is also recommended by the Commission's own consultant, Professor Preston.

We therefore strongly recommend that the Commission consider adopting a rolling window sample for their pooling approach.

### ***Do states agree that a 12.5% discount remains appropriate?***

Queensland strongly supports the ongoing discounting of the wage expense assessment given the uncertainty surrounding the conceptual case, the data used in the regression, and the specification of the regression.

The detailed review of the wage assessment's conceptual basis and regression analysis has highlighted that there will always be a high level of uncertainty associated with this assessment and that the conceptual foundations of this assessment are not without question.

As highlighted above in regard to specific aspects of this assessment, it is clear from the independent reports of the Commission, UWA and UQ academics, all subject experts working in the field of labour economics and econometrics, that differences of opinion and approach are common in considering the most appropriate approach to undertaking this assessment.

By way of example, during the consultation period, several key differences of view emerged from the independent analysis. These include:

- **whether weekly or hourly wages should be the dependent variable.** While Professor Preston agreed with the Commission on this specification, UQ raised a number of concerns, based on empirical issues, and issues related to what the analysis is attempting to measure, referencing relevant studies and literature.
- **whether to exclude male private sector workers from the sample.** A suggestion was put forward by Professor Preston, but both the Commission and UQ argue that such a change in approach would likely impact the reliability of the coefficient estimates.
- **how to reduce annual volatility in the coefficient estimates.** A pooling approach to the estimation has been recommended by both the UWA and UQ academics, although this approach still appears to be less favoured by the Commission than application of an alternative smoothing



technique independent of the estimation. As outlined above, there appears to be **substantial** limitations to the Commission's proposed approach and a range of academic literature highlighting the potential benefits of an appropriate pooling approach.

- **how to measure work experience.** There have been several approaches considered to attempt to develop a measure of work experience by the Commission. The original proposal put forward by the Commission was also favoured by UQ. However, it is noted that the Commission's own independent expert, Professor Preston, suggested a significant simplification of the proposed approach with the aim of decreasing model complexity.

Further, in the detailed analysis undertaken by UQ, they highlight that using the confidence intervals associated with the estimated state coefficients can provide a measure of uncertainty. The results demonstrate that the small sample size will continue to result in uncertainty of the estimated state coefficients and particularly for those smaller states and territories where the sample is smaller.

Therefore, given the nature of this assessment and the substantial range of uncertainties related to the most appropriate methodological approach to its estimation, there is a strong and clear case for the continued discounting of the wage expense assessment by **at least 12.5 per cent**.