SUPPORT DOCUMENT

NCVER

Adjustment notes for apprentice and trainee estimates: December quarter 2014

National Centre for Vocational Education Research

This technical note provides a cumulative record of the adjustment notes relevant for the estimation of apprentice and trainee figures at each collection. This document commences with the adjustment note for Collection 83 (March 2015 estimates used to produce the publication, *Australian vocational education and training statistics: apprentices and trainees 2014 — December quarter*, available at <http://www.ncver.edu.au>).

This document should be attributed as NCVER 2015, *Adjustment notes for apprentice and trainee estimates: December quarter 2014*, NCVER, Adelaide.

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The views and opinions expressed in this document are those of NCVER and do not necessarily reflect the views of the Australian Government or state and territory governments.

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Introduction

Apprentice and trainee data are reported by the State and Territory Training Authorities to NCVER on a quarterly basis, starting at the September quarter of 1994. The set of data submitted that quarter is referred to as Collection 1. The sets of data submitted in subsequent quarters are referred to as Collection 2, Collection 3 and so on.

NCVER publishes data on the numbers of contracts of training that commence, complete, cancel/withdraw, re-commence, expire or are suspended and the time at which these events occur (referred to as the "date of effect"). From these events, the number of contracts in training at a given time can be calculated.

Due to time delays in reporting data on the status of contracts to NCVER, the most recent data are estimated. In short, the estimation methodology is based on the calculation of “average lag ratios”. A lag ratio is the ratio of the actual number of events (commencements, completions, etc) which occurred in a particular quarter to the number of those events which were reported in a given quarter. The average lag ratio is calculated by taking the average of the lag ratios found in a “time window”, which is a moving period of eight quarters from the past. Further details on this methodology are provided in the technical paper produced by NCVER, *Estimation of apprentice and trainee statistics*, which may be found on the NCVER Portal as a related item to this quarterly publication.

The purpose of this technical paper is to document the adjustments that are made to the estimates at each collection, and produce a cumulative document of these adjustments, commencing at Collection 80, June 2014 estimates.

Adjustment note for Collection 83

NCVER examines the quarterly apprentice and trainee estimates produced by the endorsed model in order to check that the estimates are reasonable. In particular, a decision rule was introduced in Collection 45 that mandated reviewing all estimates with relative prediction errors of 10% or more. The goal of the review is to correct for any large bias in estimation that might be caused by changes in the pattern of reporting practices over time. Note that whilst an estimate might be adjusted for bias, its associated prediction error is not altered.

The commencement estimate for South Australia for the December quarter 2014 was associated with a relative prediction error of 13.9%.

The completion estimate for South Australia for the December quarter 2014 was associated with a relative prediction error of 26.1%.

The cancellation/withdrawal estimate for the Northern Territory for the December quarter 2014 was associated with a relative prediction error of 23.0%.

The commencement estimate for the Australian Capital Territory for the December quarter 2014 was associated with a relative prediction error of 8.2%.

The relative prediction errors for expired contracts remained relatively high. Tasmania (34.4%), the Australian Capital Territory (23.2%), Queensland (18.0%), and Western Australia (17.0%) had the highest prediction errors, while the other states and territories were below 10%.

The contribution of expired contracts to the in-training estimate is usually small both in level and variation. High relative errors appear to be explained to some degree by the fact that the estimates are small numbers and therefore any variation is relatively large. Adjustments to the estimates of expired contracts have little effect on the corresponding estimates of in-training. Consequently, no alterations to estimates of expired contracts have been made.

South Australia

Commencements for the December quarter 2014

From endorsed model – Estimate = 2760; Relative error = 13.9%.

Time window for calculating the average lag factor is from March quarter 2012 to December quarter 2013.

The lag ratios corresponding to quarters six and seven are at a higher level than the ratios for the other six quarters. However, the lag ratios for quarters 8, 9, and 10 do not confirm that the high level shown in quarters 6 and 7 will persist. There is also doubt as to what level the lag ratios will fall to as the time window advances, especially as the lag ratios for quarters 9 and 10 are not considered final. The data presents no clear basis for adjusting the estimate.

No revision.

Completions for the December quarter 2014

From endorsed model – Estimate = 2907; Relative error = 26.1%.

Time window for calculating the average lag factor is from March quarter 2012 to December quarter 2013.

The revised estimate was calculated by excluding the lag ratio corresponding to quarter six of the time window (see attachment 1). The lag ratio for this quarter is clearly higher than all the other lag ratios in the time window. Additionally, the lag ratios for quarters none and ten, though not yet 'finalised', strongly suggest that lag ratios will remain lower than the excluded quarter's ratio, and that an eventual return to the level of quarters one to five is possible.

Revised estimate = 2683.

Northern Territory

Cancellations/withdrawals for the December quarter 2014

From endorsed model – Estimate = 505; Relative error = 23.0%.

Time window for calculating the average lag factor is from March quarter 2011 to December quarter 2012

The revised estimate was calculated by excluding the lag ratio corresponding to quarter two of the time window (see attachment 1). The lag ratio for this quarter is clearly higher than all the other lag ratios in the time window. Although the lag ratios for quarters nine and ten are not yet considered 'final', the strongly suggest that lag ratios will remain lower than the excluded quarter's ratio, and that ratios might persist at the level of quarters four to eight.

Revised estimate = 472.

Australian Capital Territory

Commencements for the December quarter 2014

From endorsed model – Estimate = 608; Relative error = 8.2%.

Time window for calculating the average lag factor is from March quarter 2012 to December quarter 2013.

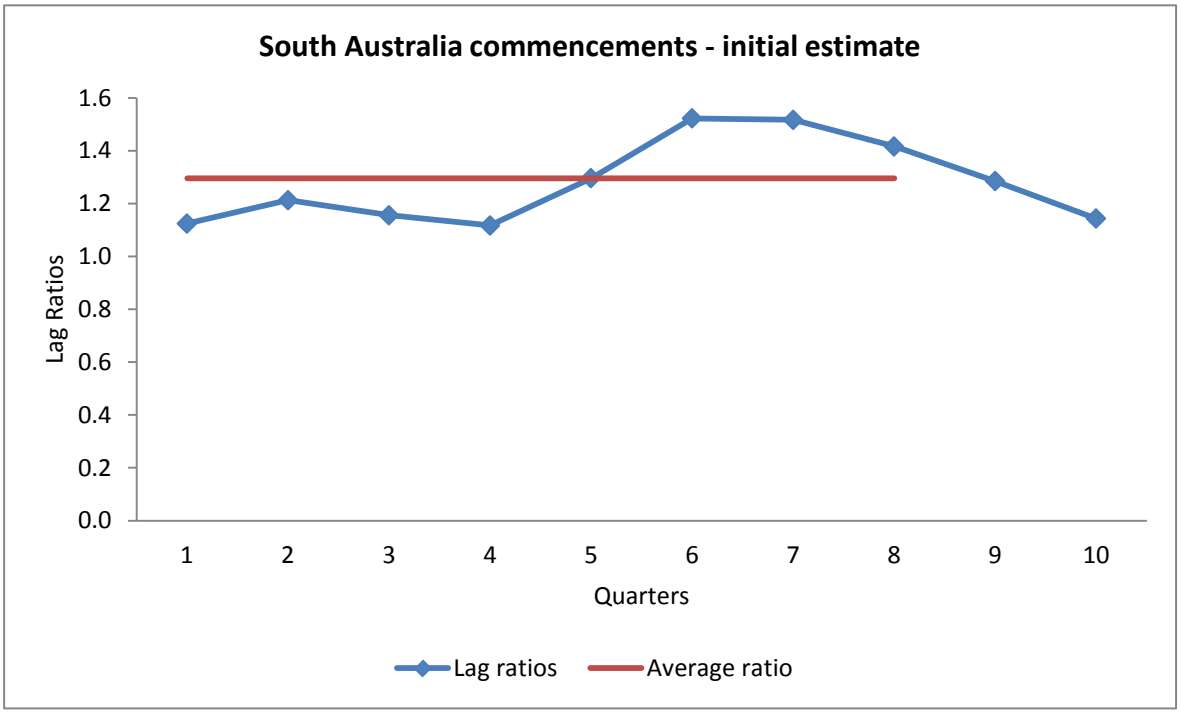
The revised estimate was calculated by excluding the lag ratio corresponding to quarter two of the time window (see attachment 1). The lag ratio for this quarter is clearly higher than all the other lag ratios in the time window. Further, the lag ratios for quarters nine and ten (though not considered 'final') strongly suggest that ratios might continue at the level of quarters three to eight.

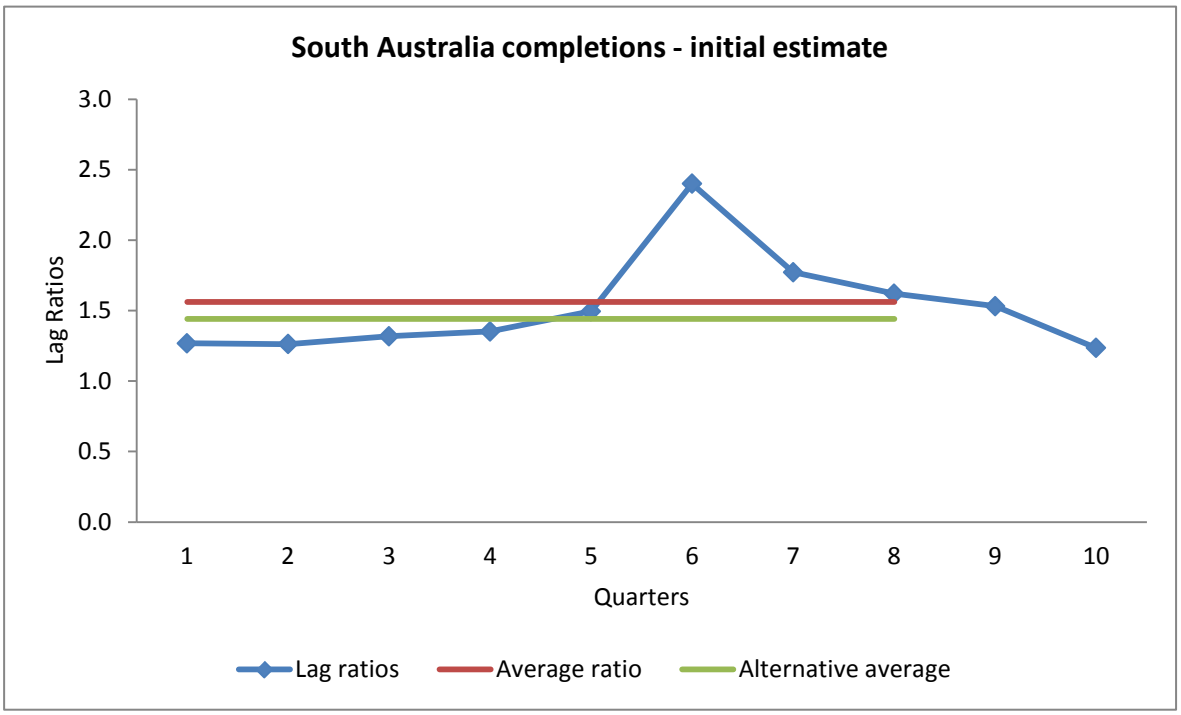
Revised estimate = 591.

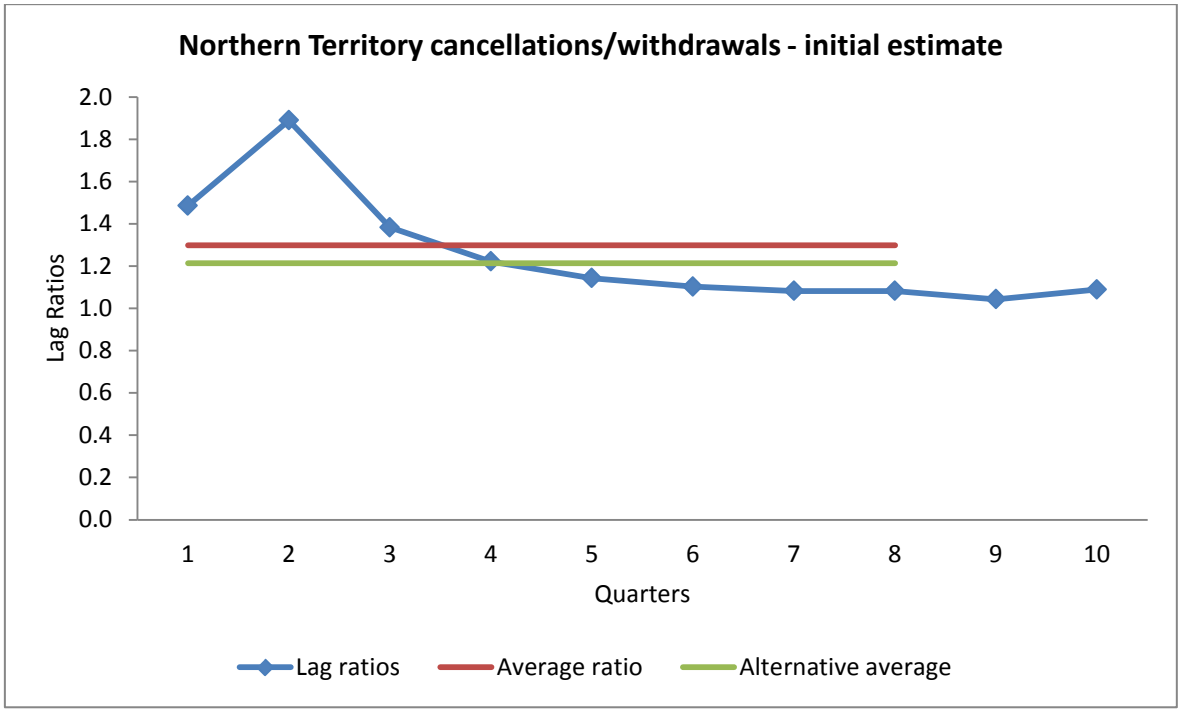
Attachment 1: Revised estimates for Collection 83

The following graphs depict the pattern of the lag ratios for the estimates that were revised or considered for revision. The graph shows the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8) and also the two quarters following (labelled 9 and 10).

Horizontal lines are also displayed on the graphs. One represents the average lag as calculated from the lags in the time window (red line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (green line).






Northern Territory cancellations/withdrawals - initial estimate
Lag Ratios
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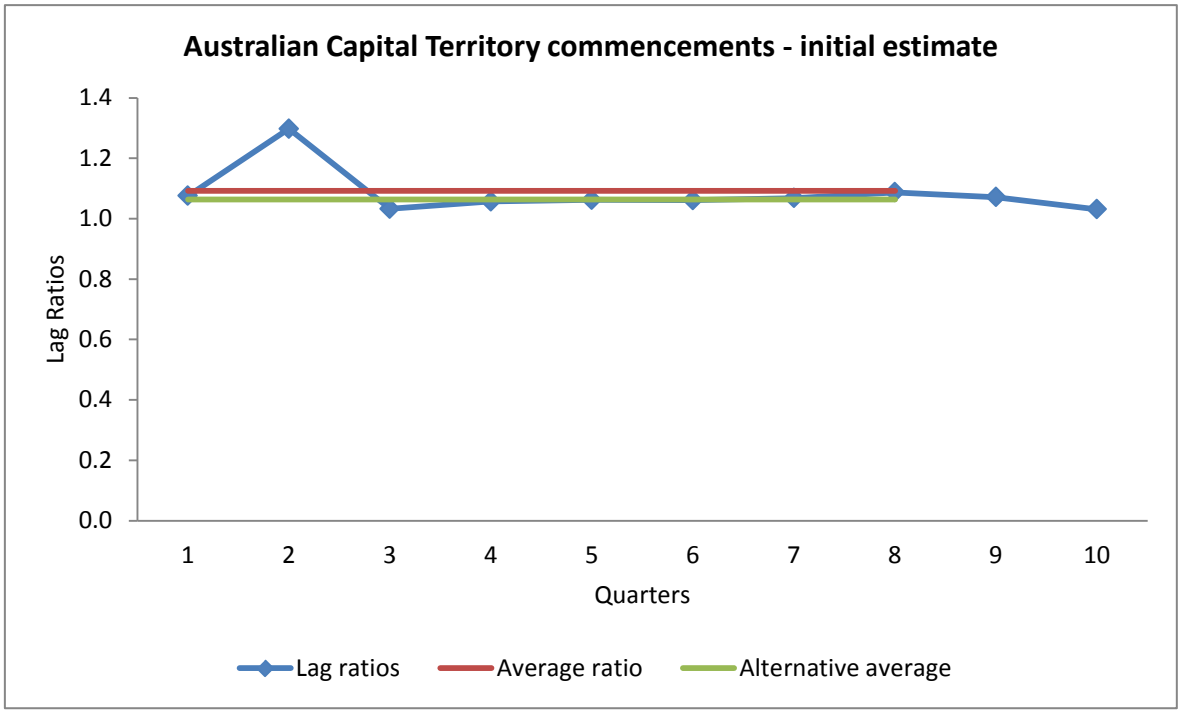
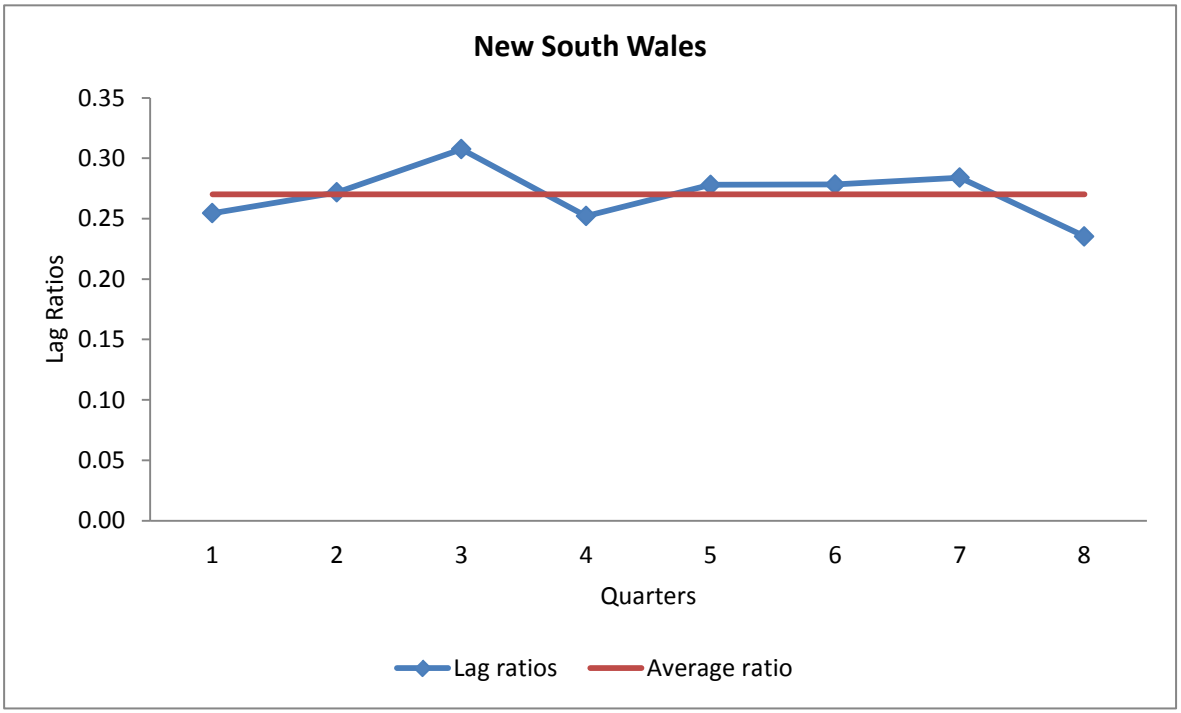
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1
2
3
4
5
6
7
8
9
10
Quarters
Lag ratios
Average ratio
Alternative average

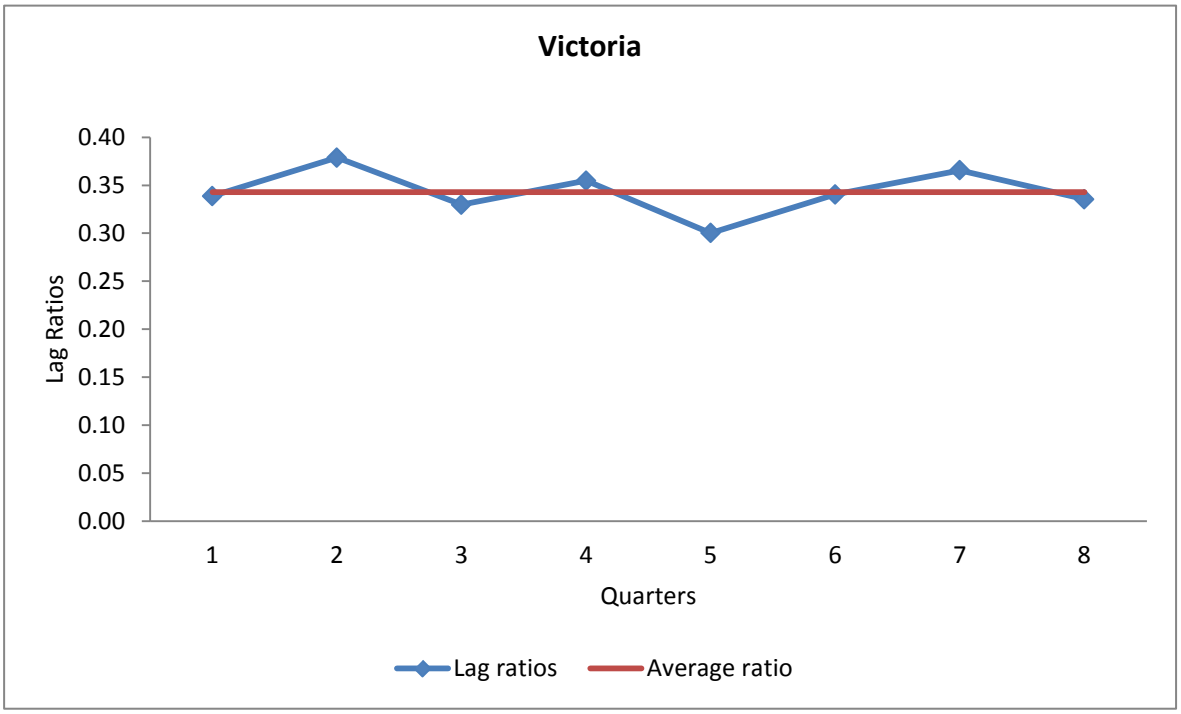

Australian Capital Territory commencements - initial estimate
Lag Ratios
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1
2
3
4
5
6
7
8
9
10
Quarters
Lag ratios
Average ratio
Alternative average

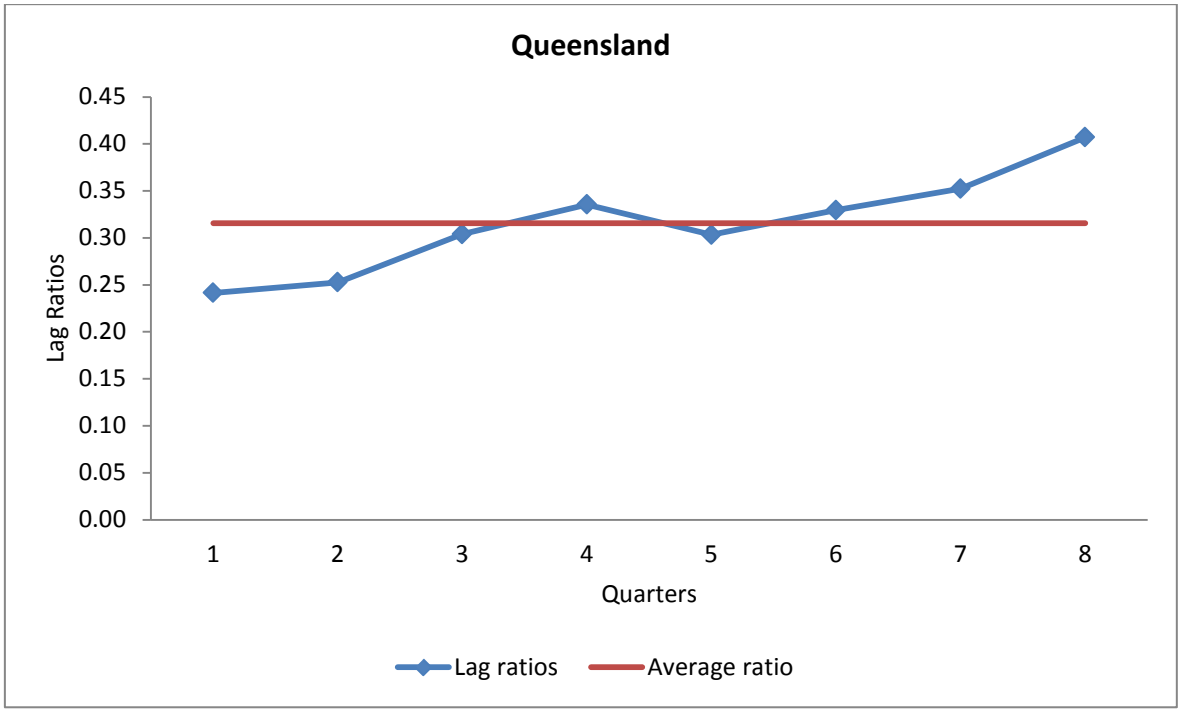
Attachment 2: Expired contracts for Collection 83

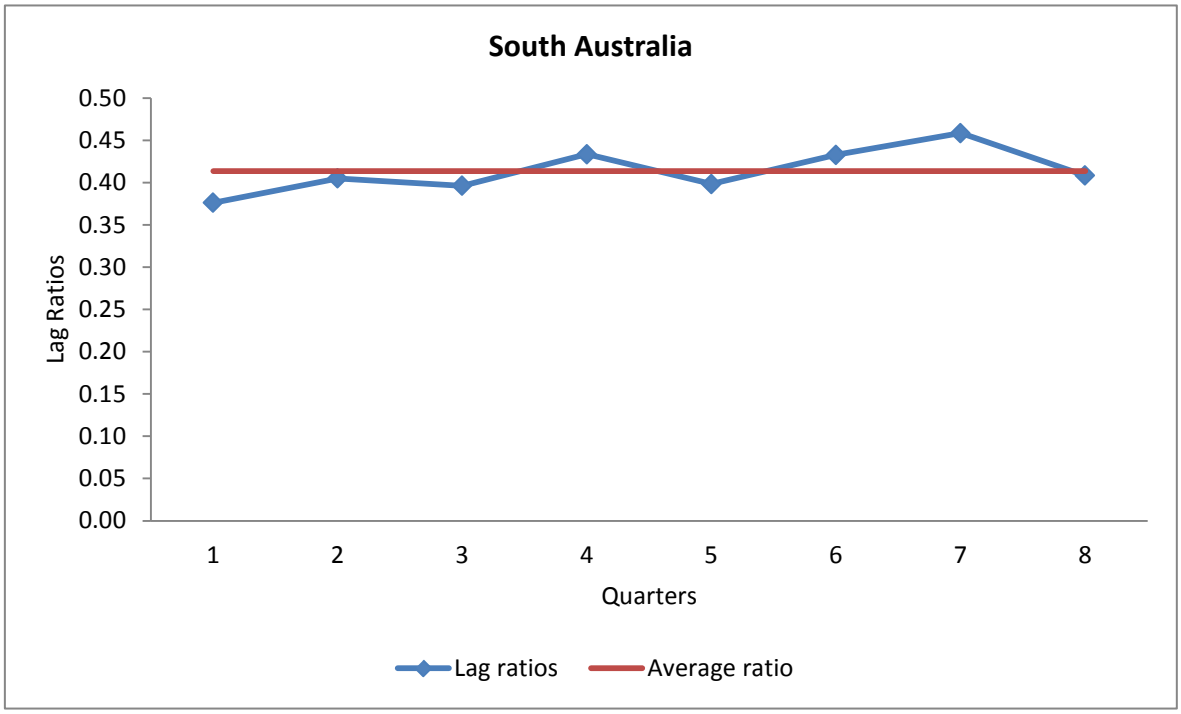
Although subject to high relative errors, estimates of expired contracts have not been altered because they are such a small contributor to the in-training estimate. As can be seen from the following graphs, which depict the pattern of the lag ratios for the estimates of expired contracts, an alternative way of estimating expired contracts is often unclear.

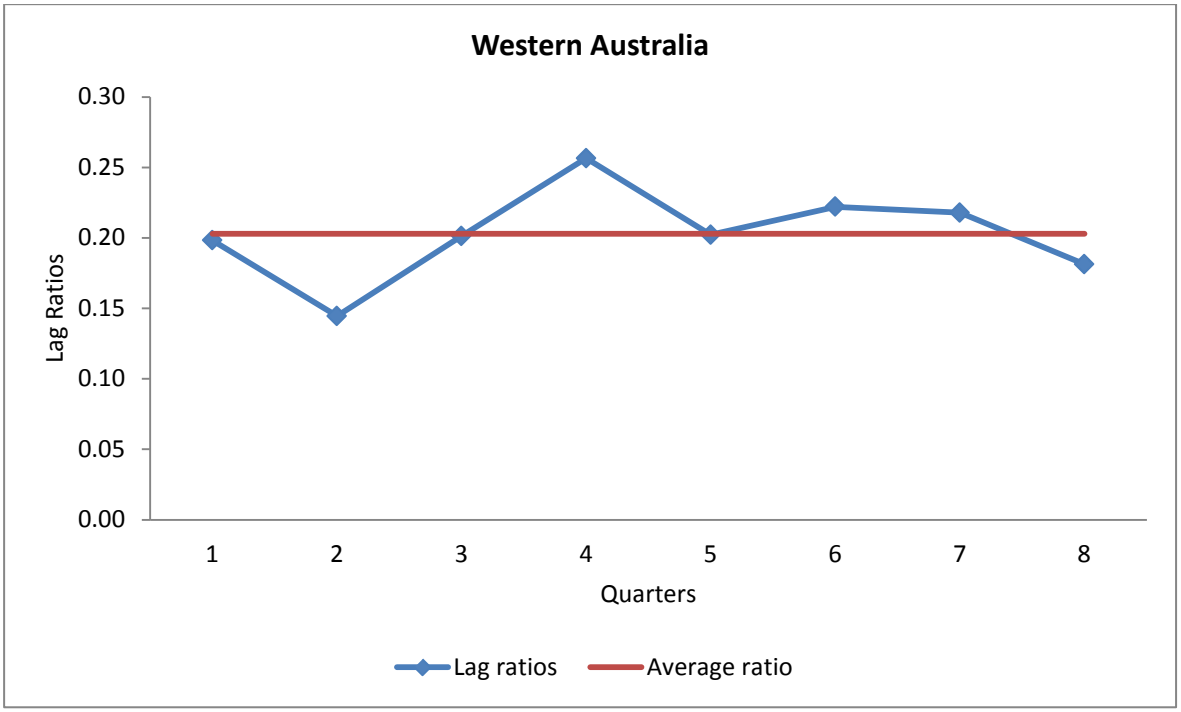
The graphs show the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8). A horizontal line is also displayed, representing the average lag as calculated from the lags in the time window (red line).

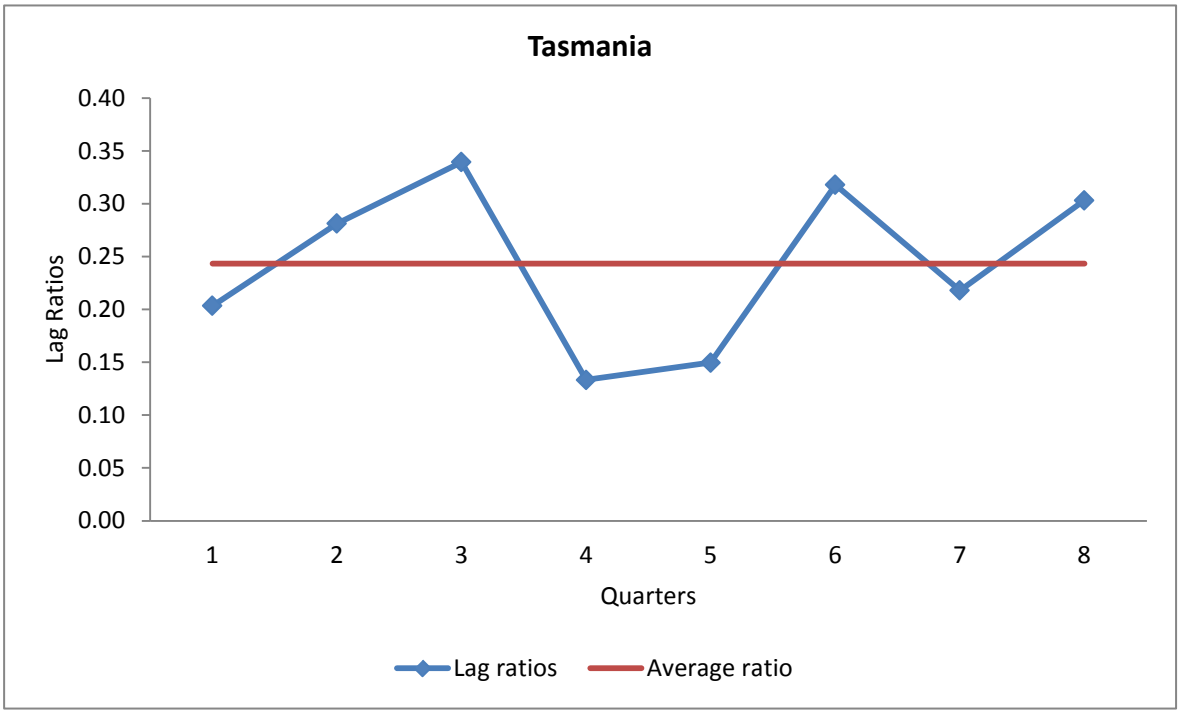


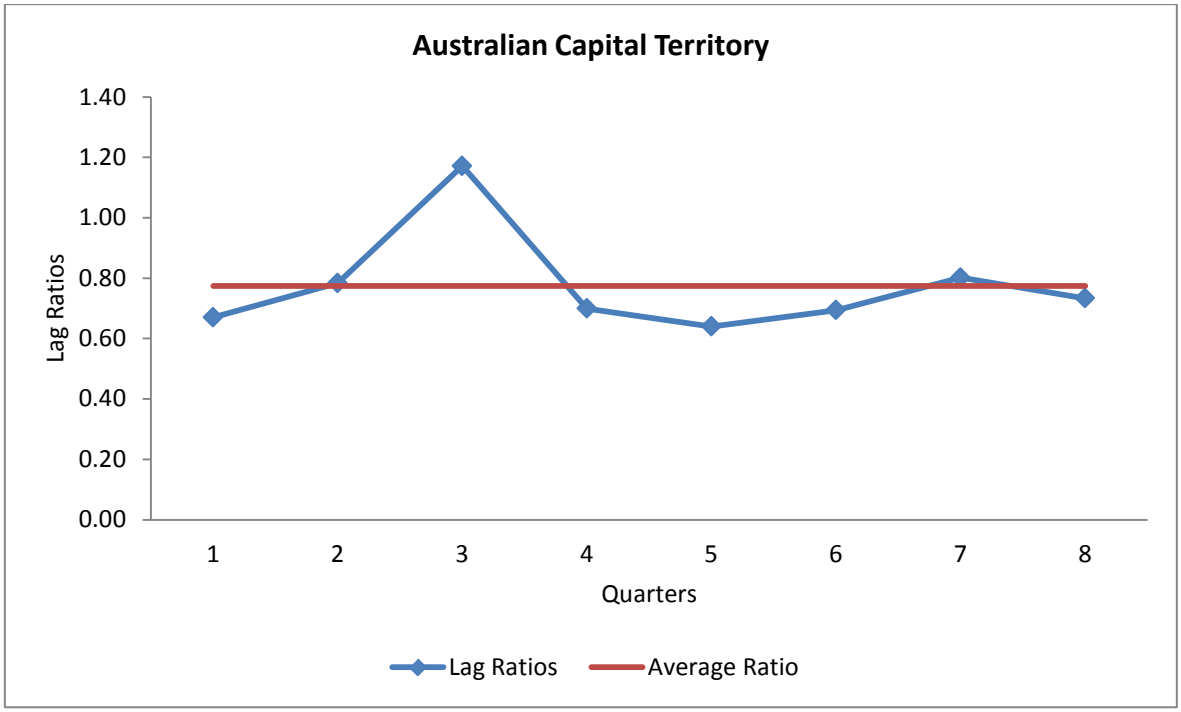



Queensland
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag Ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio


South Australia
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag Ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio


Western Australia
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag Ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio


Tasmania
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag Ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio


Australian Capital Territory
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Lag Ratios
1
2
3
4
5
6
7
8
Quarters
Lag Ratios
Average Ratio

Adjustment note for Collection 82

NCVER examines the quarterly apprentice and trainee estimates produced by the endorsed model in order to check that the estimates are reasonable. In particular, a decision rule was introduced in Collection 45 that mandated reviewing all estimates with relative prediction errors of 10% or more. The goal of the review is to correct for any large bias in estimation that might be caused by changes in the pattern of reporting practices over time. Note that whilst an estimate might be adjusted for bias, its associated prediction error is not altered.

The cancellation/withdrawal estimate for the Northern Territory for the September quarter 2014 was associated with a relative prediction error of 21.5%.

The commencement estimate for South Australia for the September quarter 2014 was associated with a relative prediction error of 14.3%.

The completion estimate for South Australia for the September quarter 2014 was associated with a relative prediction error of 25.8%.

The relative prediction errors for expired contracts remained relatively high. Tasmania (33.5%), the Australian Capital Territory (24.4%), Western Australia (16.4%), and Queensland (14.1%) had the highest prediction errors while the other states and territories were below 10%.

The contribution of expired contracts to the in-training estimate is usually small both in level and variation. High relative errors appear to be explained to some degree by the fact that the estimates are small numbers and therefore any variation is relatively large. Adjustments to the estimates of expired contracts have little effect on the corresponding estimates of in-training. Consequently, no alterations to estimates of expired contracts have been made.

Northern Territory

Cancellations/withdrawals for the September quarter 2014

From endorsed model – Estimate = 443; Relative error = 21.5%.

Time window for calculating the average lag factor is from December quarter 2010 to September quarter 2012.

The revised estimate was calculated by excluding the lag ratios corresponding to quarters two and three of the time window (see attachment 1). The lag ratios for these quarters are clearly higher than all the other lag ratios in the time window. Although the lag ratios for quarters nine and ten are not yet considered 'final', they suggest that lag ratios will remain lower than the excluded quarters' ratios.

Revised estimate = 403.

South Australia

Commencements for the September quarter 2014

From endorsed model – Estimate = 3075; Relative error = 14.3%.

Time window for calculating the average lag factor is from December quarter 2011 to September quarter 2013.

The lag ratios corresponding to quarters seven and eight are at a higher level than the ratios for the previous six quarters. However, the lag ratios for quarters nine and ten, whilst not yet considered 'final', do not confirm that the high level shown in quarter eight will persist. There is also doubt as to what level the lag ratios will fall to (if they do fall) as the time window advances. The data presents no clear basis for adjusting the estimate.

No revision.

Completions for the September quarter 2014

From endorsed model – Estimate = 2628; Relative error = 25.9%.

Time window for calculating the average lag factor is from December quarter 2011 to September quarter 2013.

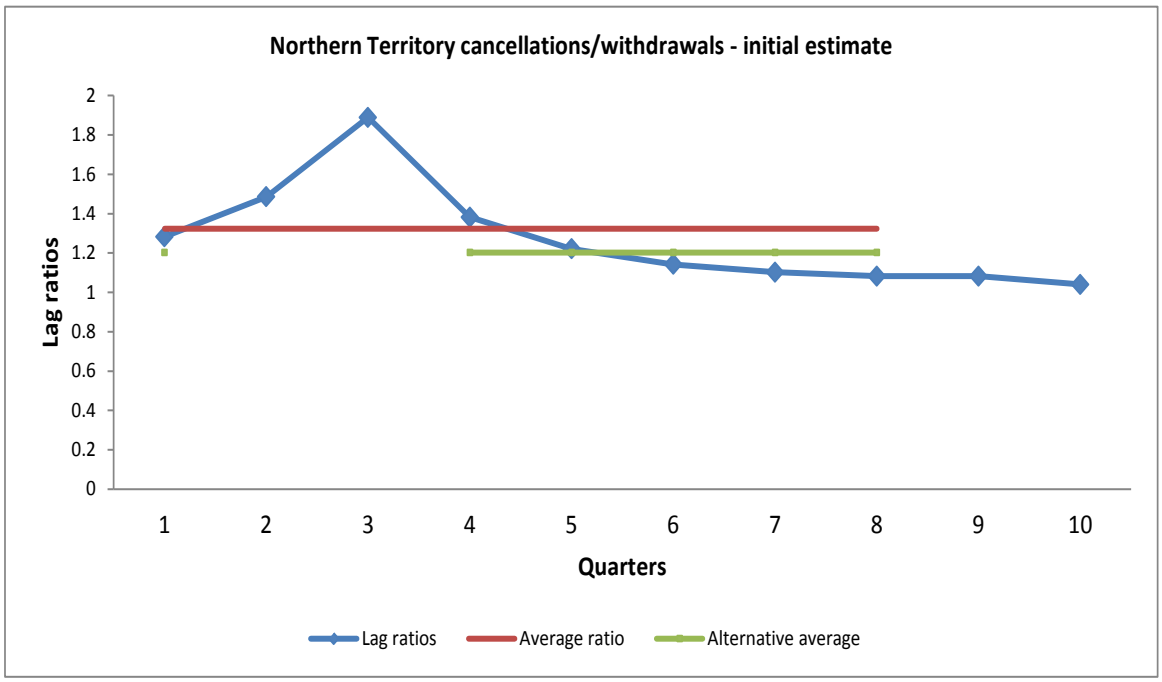
The revised estimate was calculated by excluding the lag ratio corresponding to quarter seven of the time window (see attachment 1). The lag ratio for this quarter is clearly higher than all the other lag ratios in the time window. Although the lag ratios for quarters nine and ten are not yet considered 'final', they strongly suggest that lag ratios will remain lower than the excluded quarter's ratio and that an eventual return to the level of quarters one to seven might be possible.

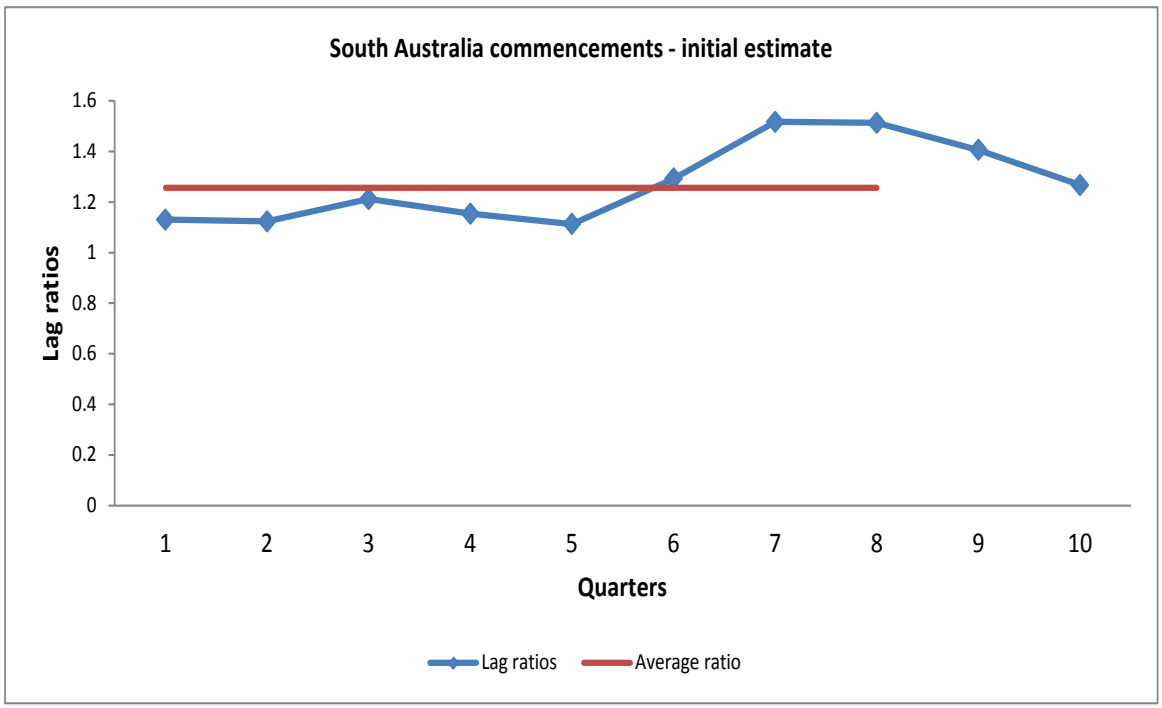
Revised estimate = 2421.

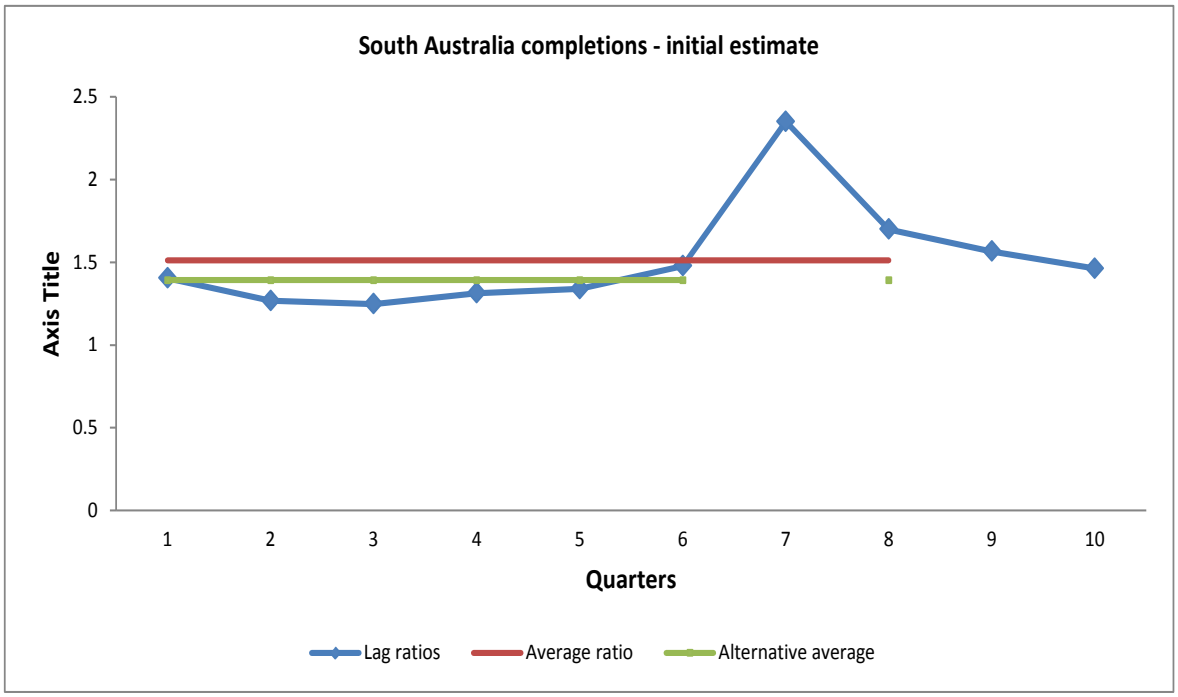
Attachment 1: Revised estimates for Collection 82

The following graphs depict the pattern of the lag ratios for the estimates that were revised or considered for revision. The graph shows the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8) and also the two quarters following (labelled 9 and 10).

Horizontal lines are also displayed on the graphs. One represents the average lag as calculated from the lags in the time window (red line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (green line).



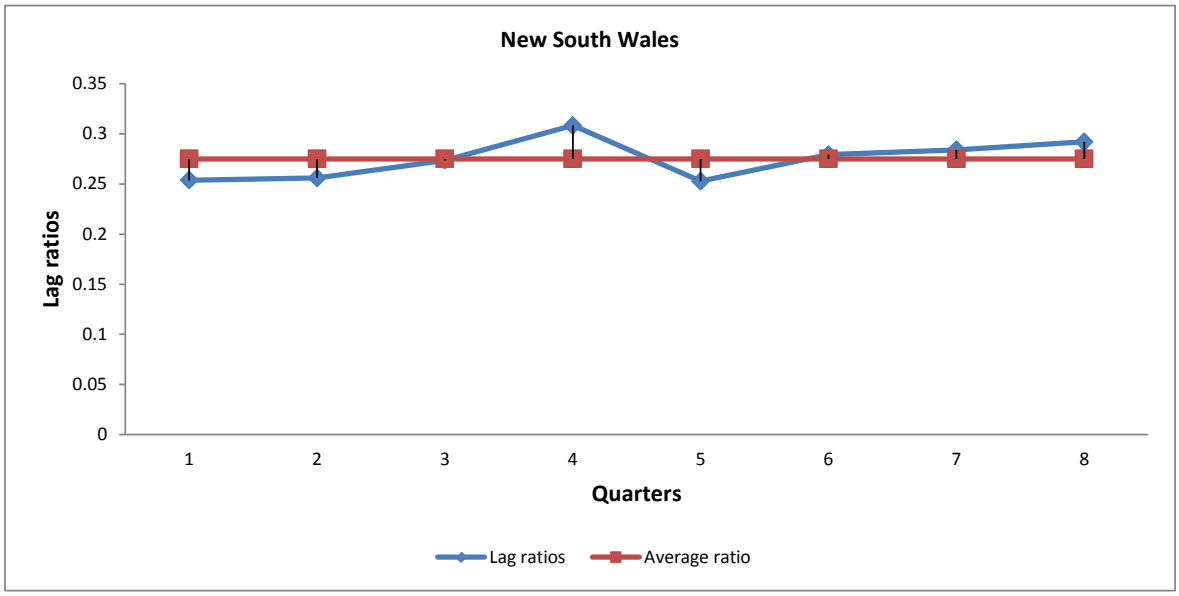


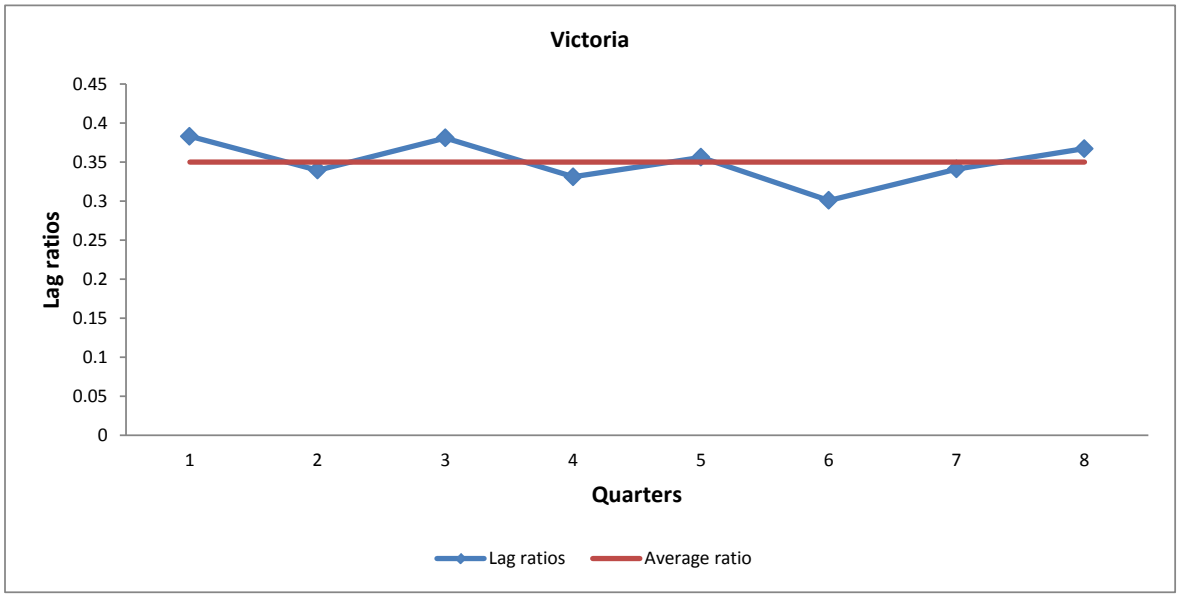

South Australia completions - initial estimate
Axis Title
2.5
2
1.5
1
0.5
0
1
2
3
4
5
6
7
8
9
10
Quarters
Lag ratios
Average ratio
Alternative average

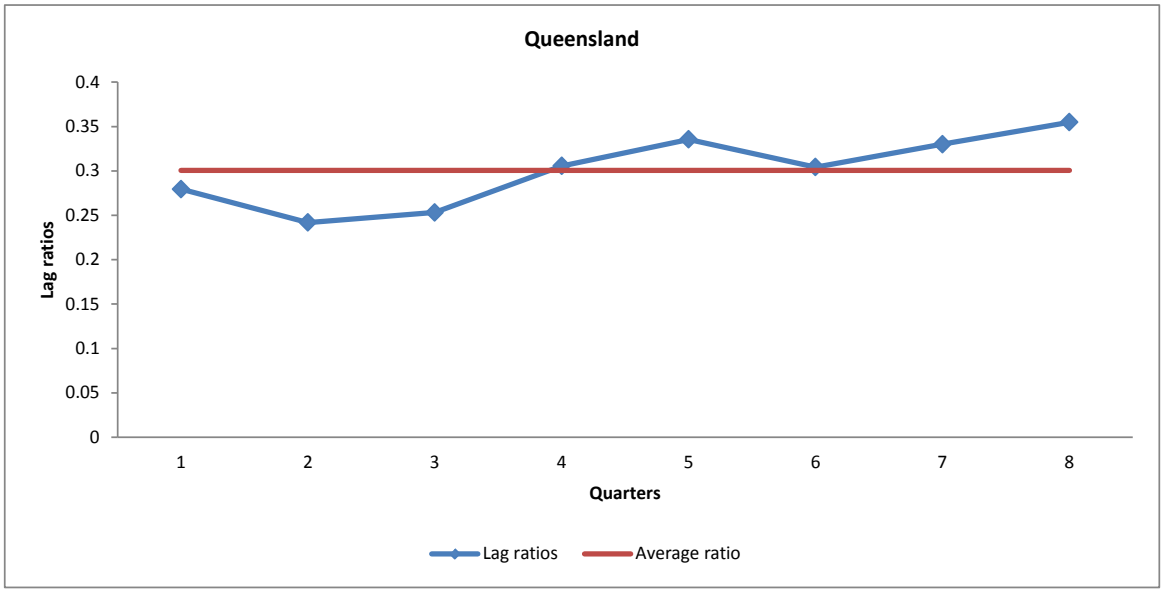
Attachment 2: Expired contracts for Collection 82

Although subject to high relative errors, estimates of expired contracts have not been altered because they are such a small contributor to the in-training estimate. As can be seen from the following graphs, which depict the pattern of the lag ratios for the estimates of expired contracts, an alternative way of estimating expired contracts is often unclear.

The graphs show the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8). A horizontal line is also displayed, representing the average lag as calculated from the lags in the time window (red line).






Queensland
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0.3
0.25
0.2
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0.05
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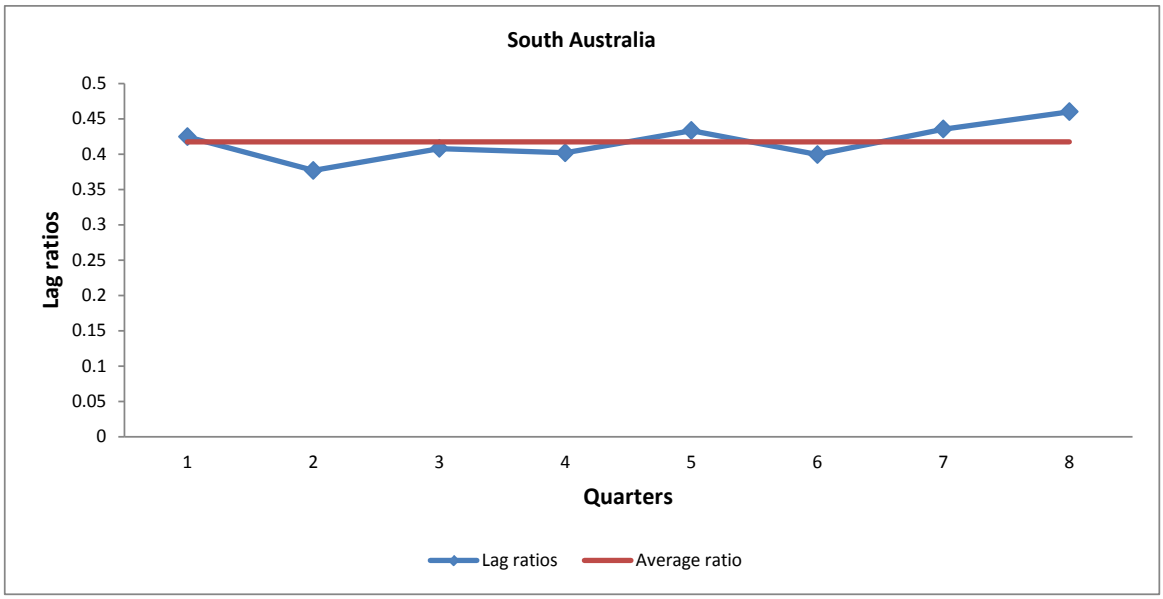
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio


South Australia
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0.45
0.4
0.35
0.3
0.25
0.2
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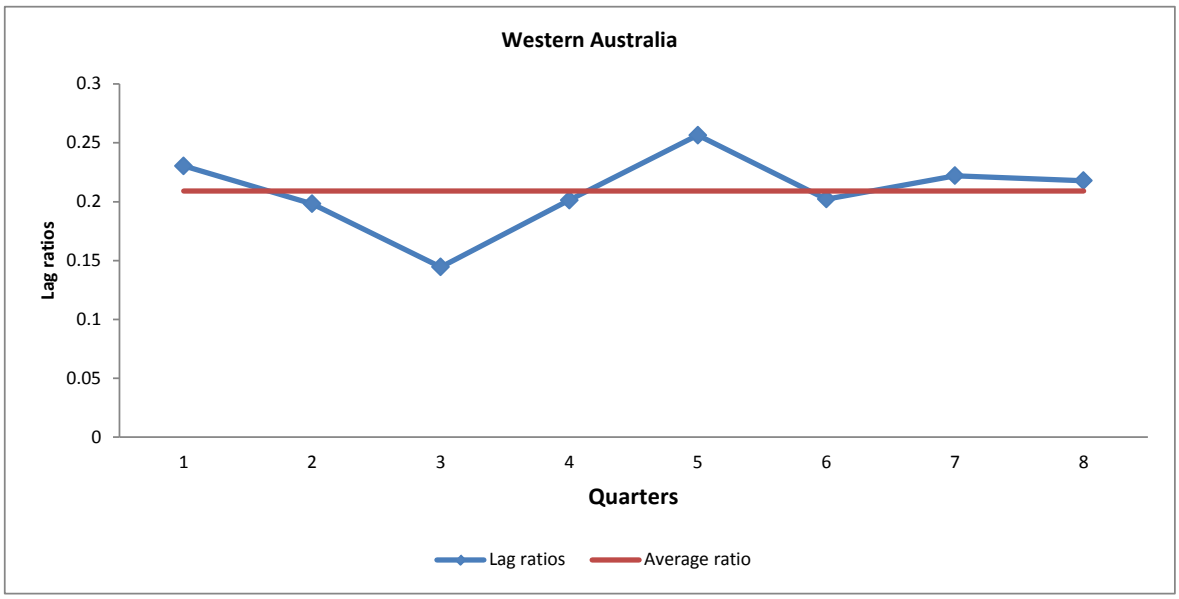
6
7
8
Quarters
Lag ratios
Average ratio


Western Australia
0.3
0.25
0.2
0.15
0.1
0.05
0
Lag ratios
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2
3
4
5
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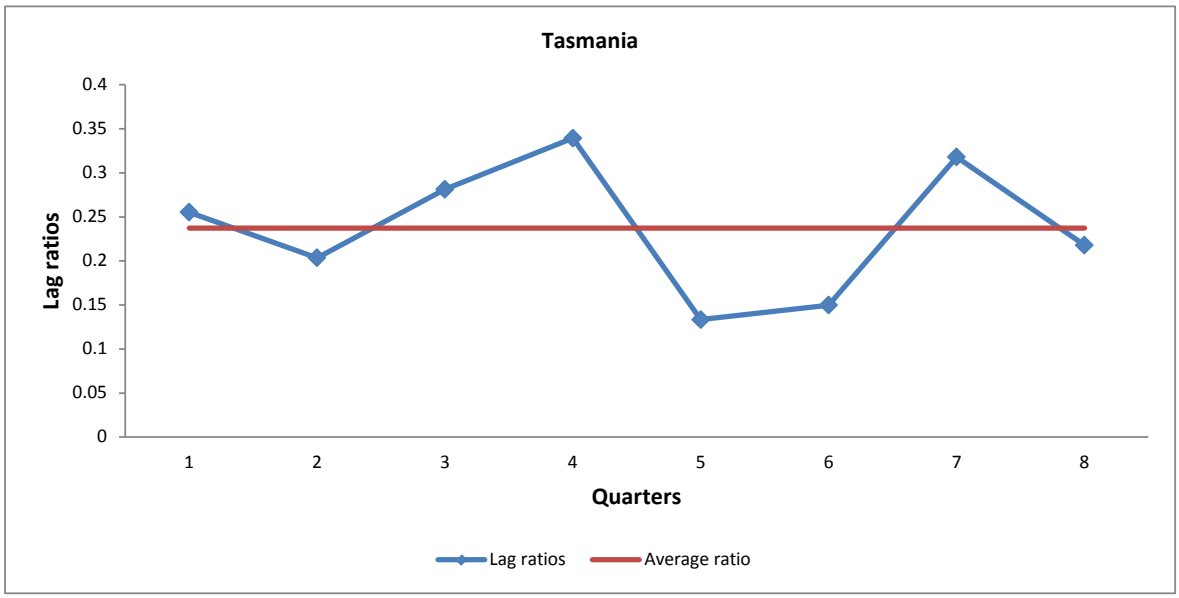
7
8
Quarters
Lag ratios
Average ratio


Tasmania
Lag ratios
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0.35
0.3
0.25
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0.1
0.05
0
1
2
3
4
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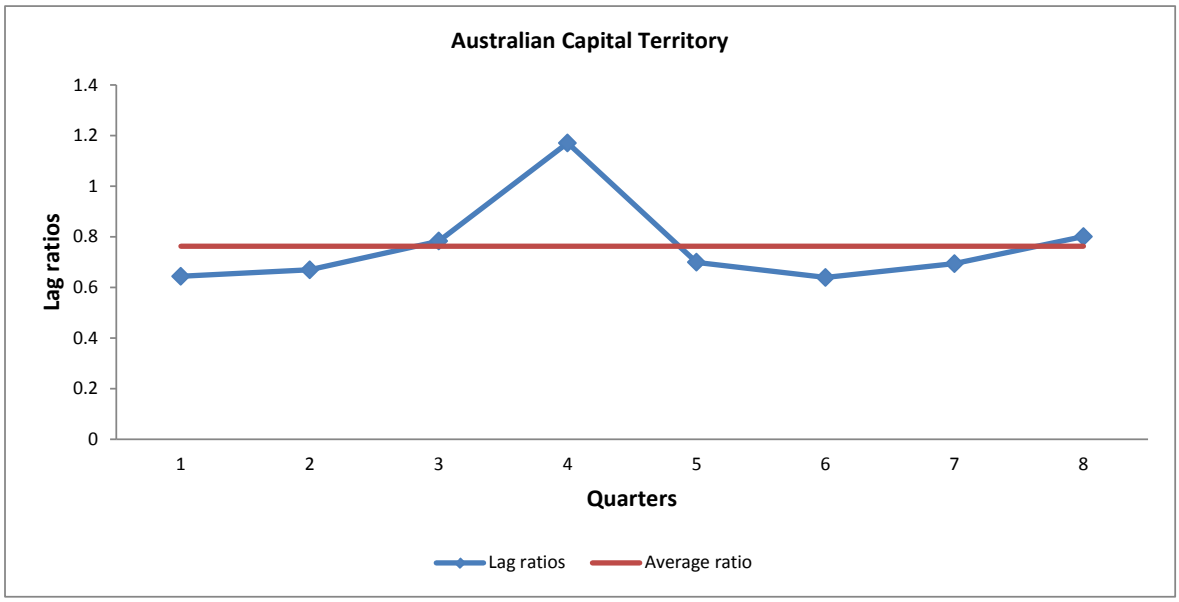
8
Quarters
Lag ratios
Average ratio


Australian Capital Territory
Lag ratios
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio

Adjustment note for Collection 81

NCVER examines the quarterly apprentice and trainee estimates produced by the endorsed model in order to check that the estimates are reasonable. In particular, a decision rule was introduced in Collection 45 that mandated reviewing all estimates with relative prediction errors of 10% or more. The goal of the review is to correct for any large bias in estimation that might be caused by changes in the pattern of reporting practices over time. Note that whilst an estimate might be adjusted for bias, its associated prediction error is not altered.

The cancellation/withdrawal estimate for the Northern Territory for the June quarter 2014 was associated with a relative prediction error of 19.9%.

The commencement estimate for South Australia for the June quarter 2014 was associated with a relative prediction error of 12.2%.

The completion estimate for South Australia for the June quarter 2014 was associated with a relative prediction error of 25.9%.

The relative prediction errors for expired contracts remained relatively high. Tasmania (33.6%), the Australian Capital Territory (24.6%), Western Australia (17.8%), and Queensland (12.6%) had the highest prediction errors while the other states and territories were below 10%.

The contribution of expired contracts to the in-training estimate is usually small both in level and variation. High relative errors appear to be explained to some degree by the fact that the estimates are small numbers and therefore any variation is relatively large. Adjustments to the estimates of expired contracts have little effect on the corresponding estimates of in-training. Consequently, no alterations to estimates of expired contracts have been made.

Northern Territory

Cancellations/withdrawals for the June quarter 2014

From endorsed model – Estimate = 484; Relative error = 19.9%.

Time window for calculating the average lag factor is from September quarter 2010 to June quarter 2012.

The revised estimate was calculated by excluding the lag ratios corresponding to quarters three and four of the time window (see attachment 1). The lag ratios for these quarters are clearly higher than all the other lag ratios in the time window. Although the lag ratios for quarters nine and ten are not yet considered 'final', they suggest that lag ratios will remain lower than the excluded quarters' ratios.

Revised estimate = 443.

South Australia

Commencements for the June quarter 2014

From endorsed model – Estimate = 3065; Relative error = 12.2%.

Time window for calculating the average lag factor is from September quarter 2011 to June quarter 2013.

The lag ratios corresponding to quarters seven and eight are at a higher level than the ratios for the previous six quarters. However, the lag ratios for quarters nine and ten, whilst not yet considered 'final', do not confirm that the high level shown in quarter eight will persist. There is also doubt as to what level the lag ratios will fall to (if they do fall) as the time window advances. The data presents no clear basis for adjusting the estimate.

No revision.

Completions for the June quarter 2014

From endorsed model – Estimate = 4162; Relative error = 25.9%.

Time window for calculating the average lag factor is from September quarter 2011 to June quarter 2013.

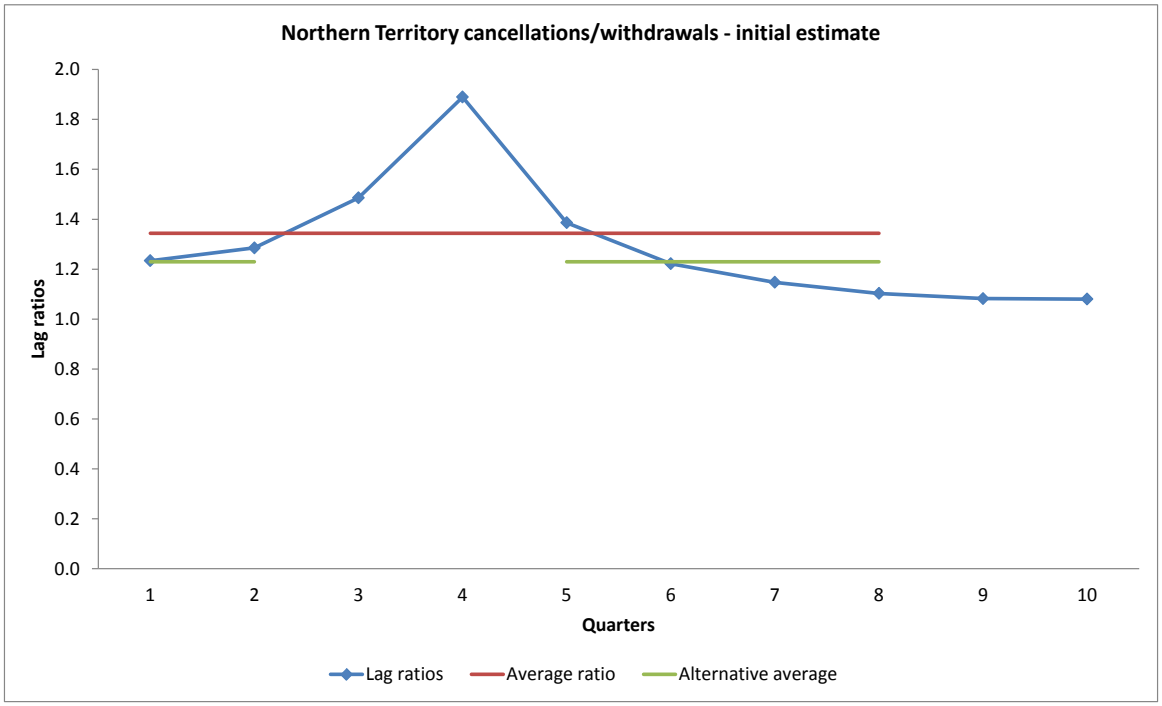
The revised estimate was calculated by excluding the lag ratio corresponding to quarter eight of the time window (see attachment 1). The lag ratio for this quarter is clearly higher than all the other lag ratios in the time window. Although the lag ratios for quarters nine and ten are not yet considered 'final', they strongly suggest that lag ratios will remain lower than the excluded quarter's ratio and that a return to the level of quarters one to seven might be possible.

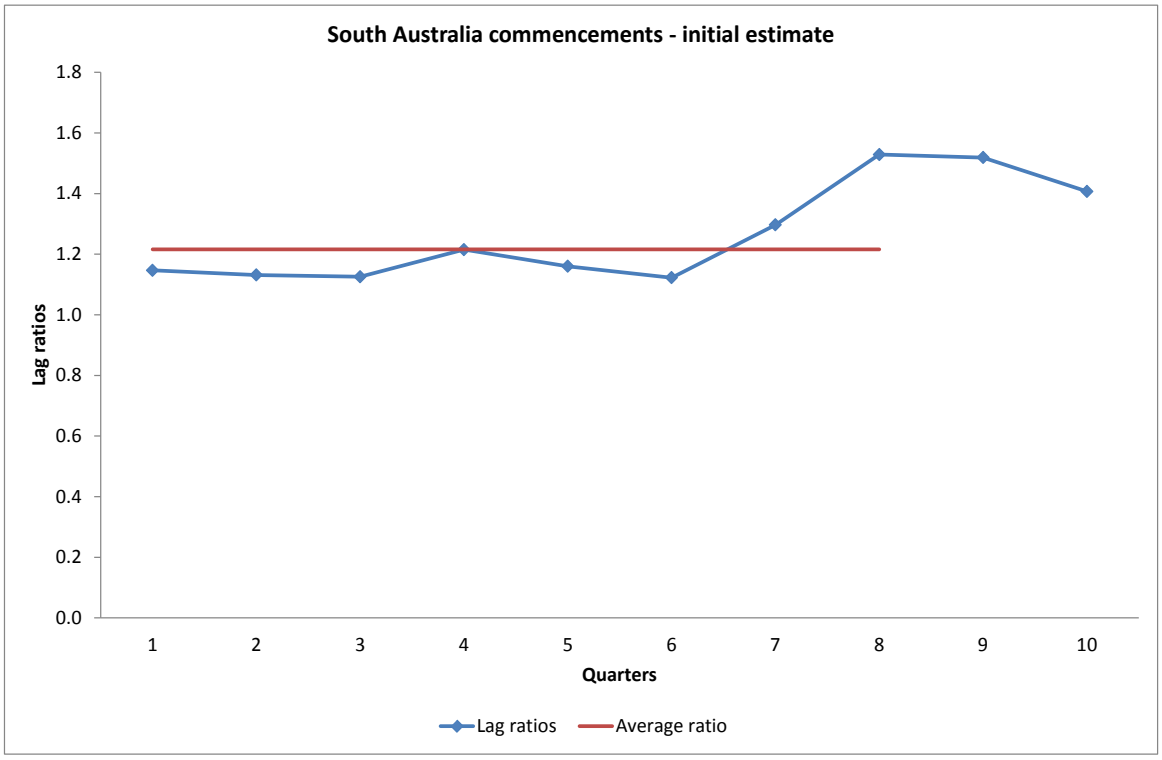
Revised estimate = 3811.

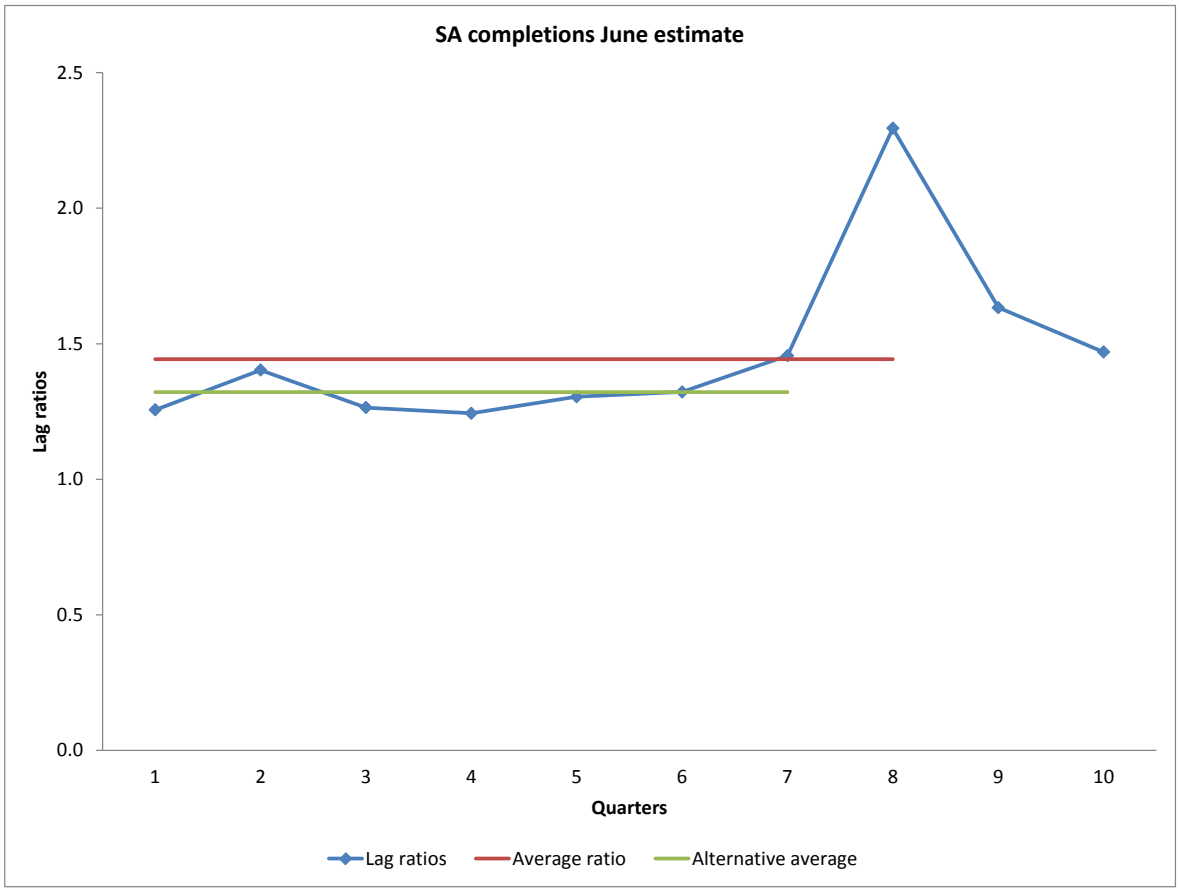
Attachment 1: Revised estimates for Collection 81

The following graphs depict the pattern of the lag ratios for the estimates that were revised or considered for revision. The graph shows the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8) and also the two quarters following (labelled 9 and 10).

Horizontal lines are also displayed on the graphs. One represents the average lag as calculated from the lags in the time window (red line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (green line).



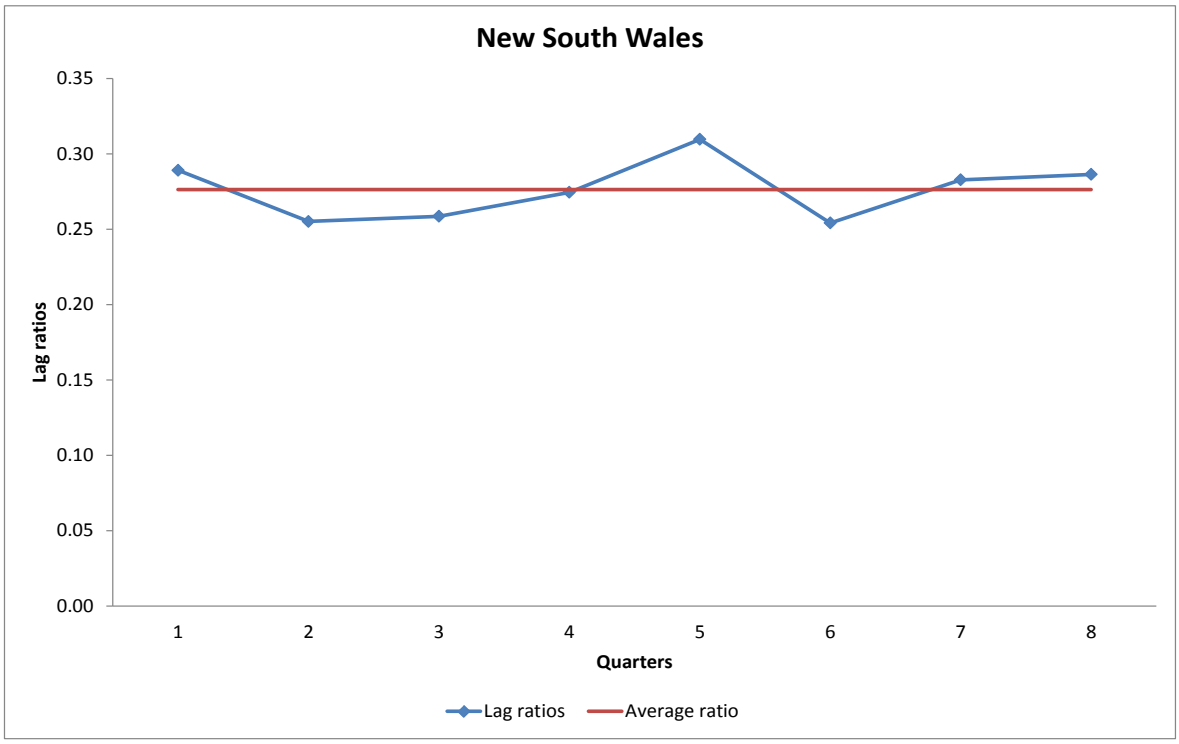


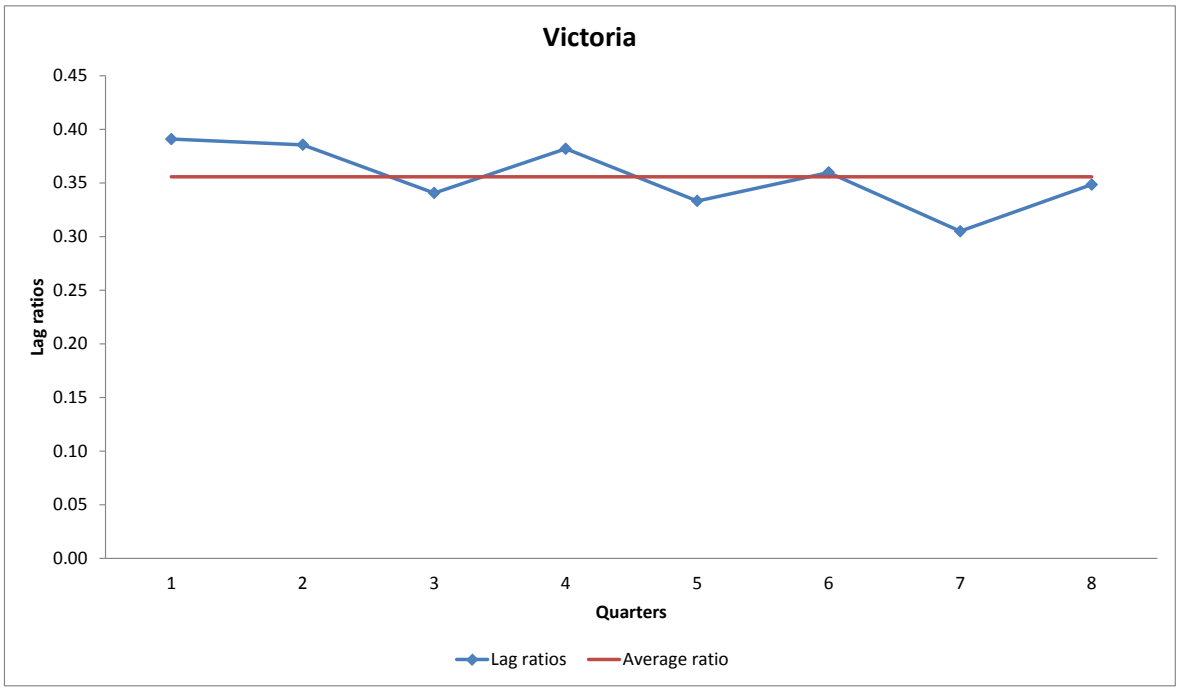

SA completions June estimate
2.5
2.0
1.5
1.0
0.5
0.0
Lag ratios
1
2
3
4
5
6
7
8
9
10
Quarters
Lag ratios
Average ratio
Alternative average

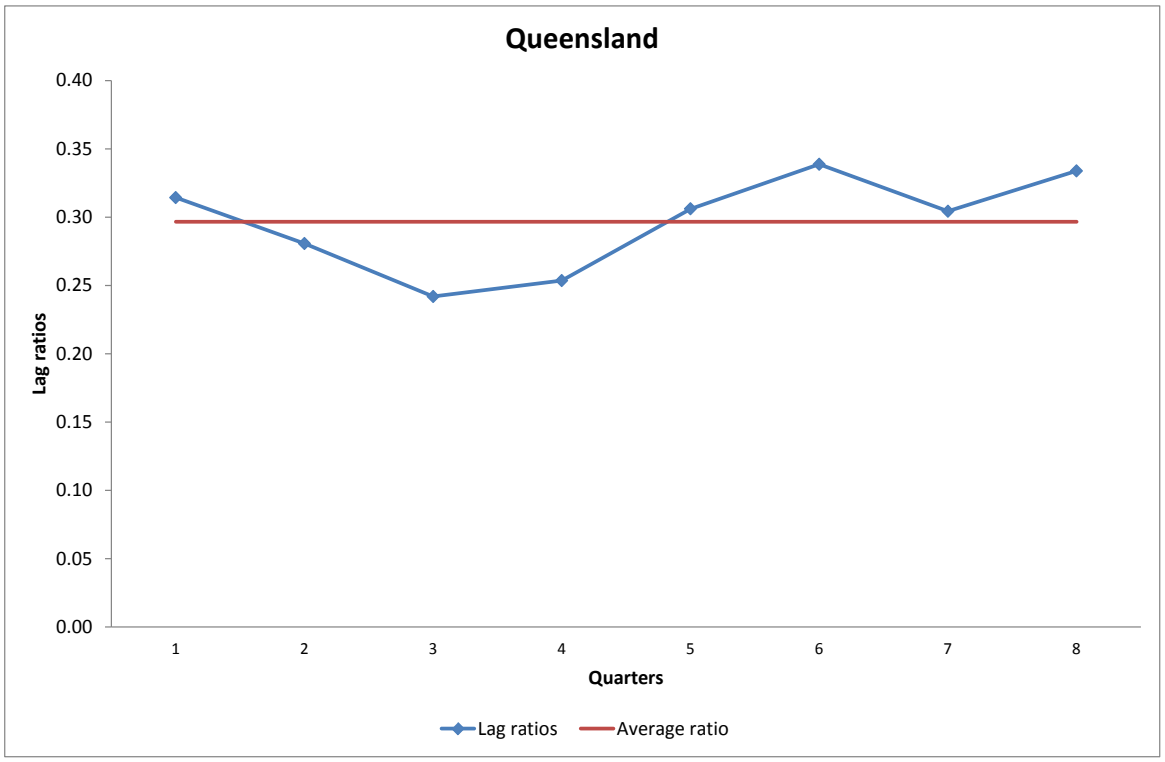
Attachment 2: Expired contracts for Collection 81

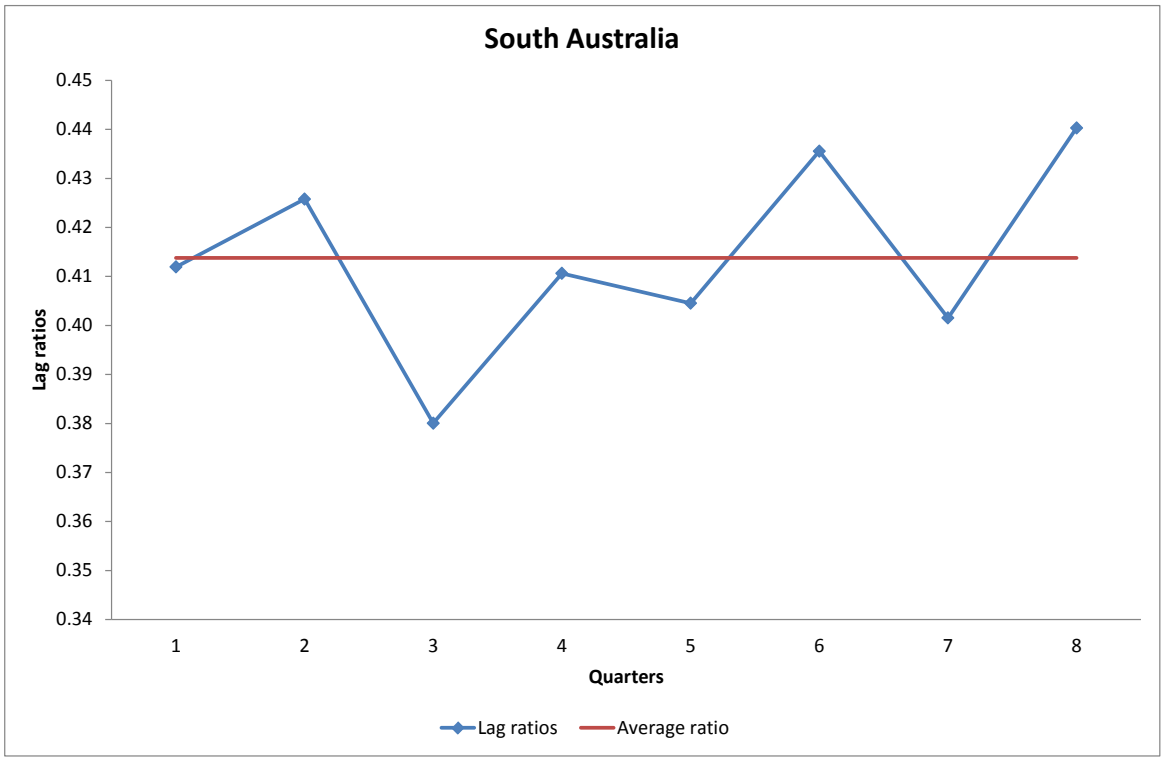
Although subject to high relative errors, estimates of expired contracts have not been altered because they are such a small contributor to the in-training estimate. As can be seen from the following graphs, which depict the pattern of the lag ratios for the estimates of expired contracts, an alternative way of estimating expired contracts is often unclear.

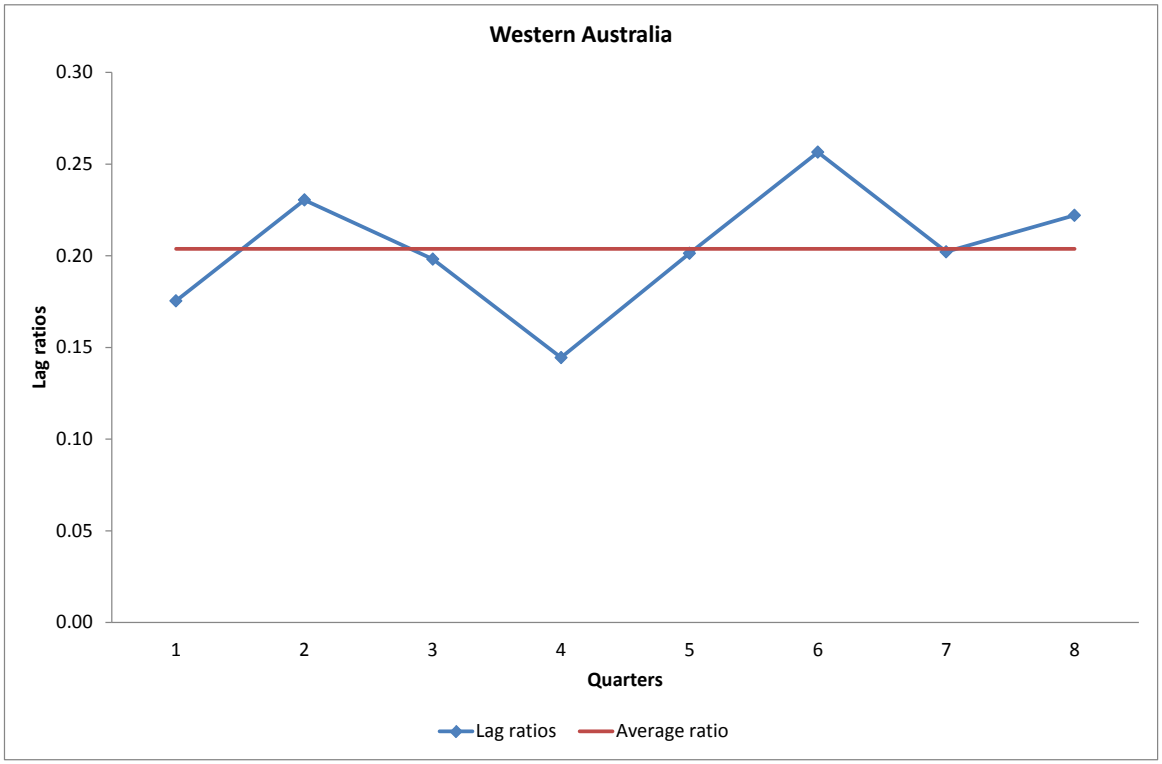
The graphs show the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8). A horizontal line is also displayed, representing the average lag as calculated from the lags in the time window (red line).

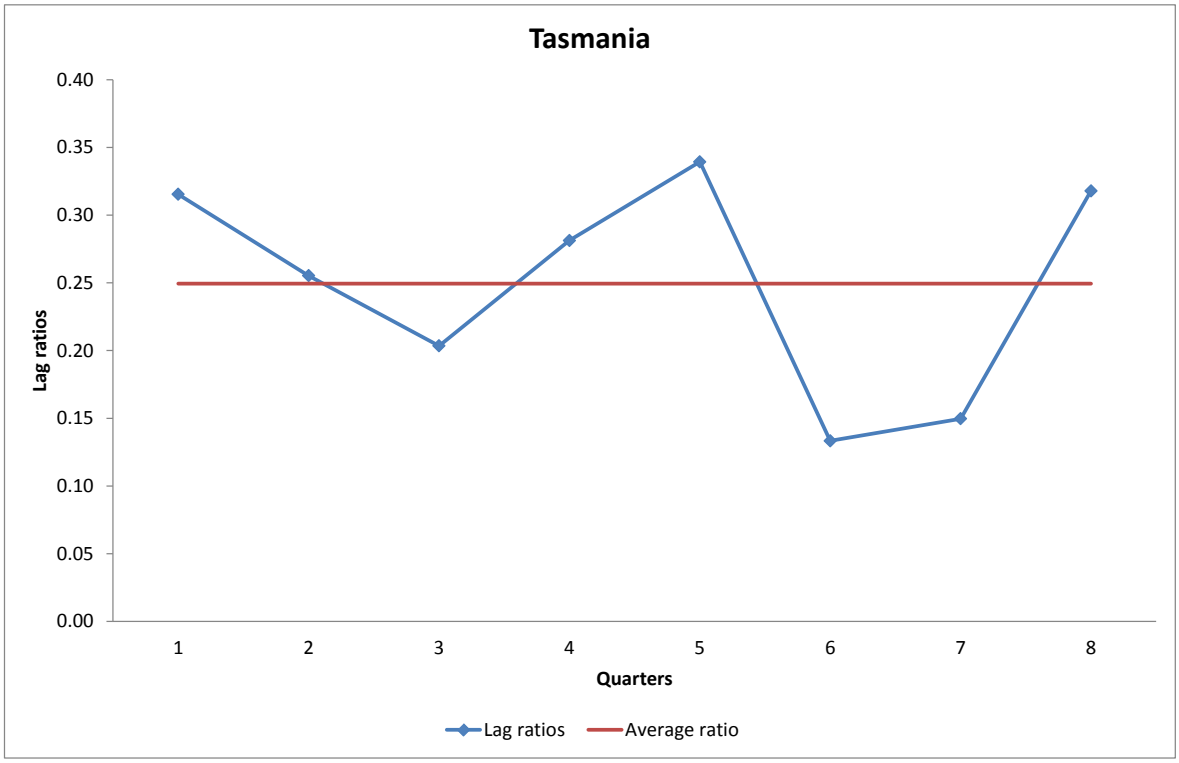


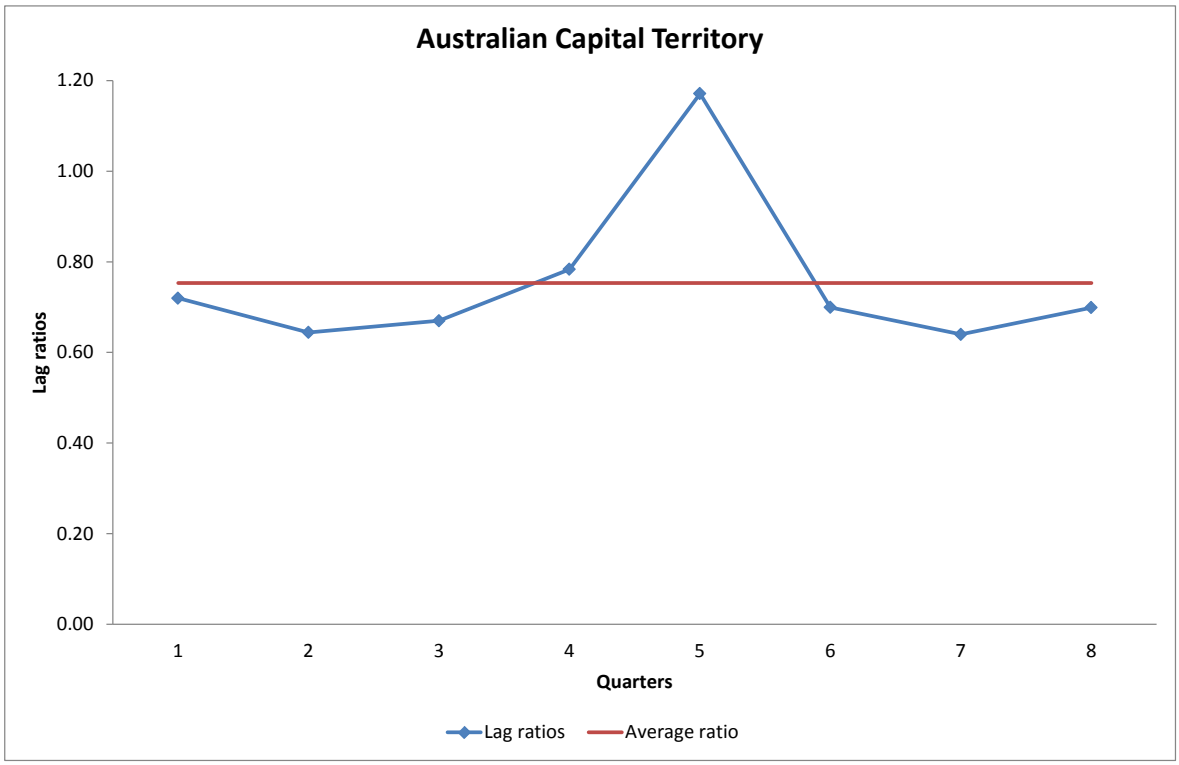



Queensland
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio


South Australia
0.45
0.44
0.43
0.42
0.41
0.40
0.39
0.38
0.37
0.36
0.35
0.34
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio


Western Australia
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio


Tasmania
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio


Australian Capital Territory
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Average ratio

Adjustment note for Collection 80

NCVER examines the quarterly apprentice and trainee estimates produced by the endorsed model in order to check that the estimates are reasonable. In particular, a decision rule was introduced in Collection 45 that mandated reviewing all estimates with relative prediction errors of 10% or more. The goal of the review is to correct for any large bias in estimation that might be caused by changes in the pattern of reporting practices over time. Note that whilst an estimate might be adjusted for bias, its associated prediction error is not altered.

The cancellation/withdrawal estimate for the Northern Territory for the March quarter 2014 was associated with a relative prediction error of 18.1%.

The relative prediction errors for expired contracts remained relatively high. Tasmania (33.0%), the Australian Capital Territory (24.4%), Western Australia (19.5%), and Queensland (12.0%) had the highest prediction errors while the other states and territories were below 10%.

The contribution of expired contracts to the in-training estimate is usually small both in level and variation. High relative errors appear to be explained to some degree by the fact that the estimates are small numbers and therefore any variation is relatively large. Adjustments to the estimates of expired contracts have little effect on the corresponding estimates of in-training. Consequently, no alterations to estimates of expired contracts have been made.

Northern Territory

Cancellations/withdrawals for the March quarter 2014

From endorsed model – Estimate = 398; Relative error = 18.1%.

Time window for calculating the average lag factor is from June quarter 2010 to March quarter 2012.

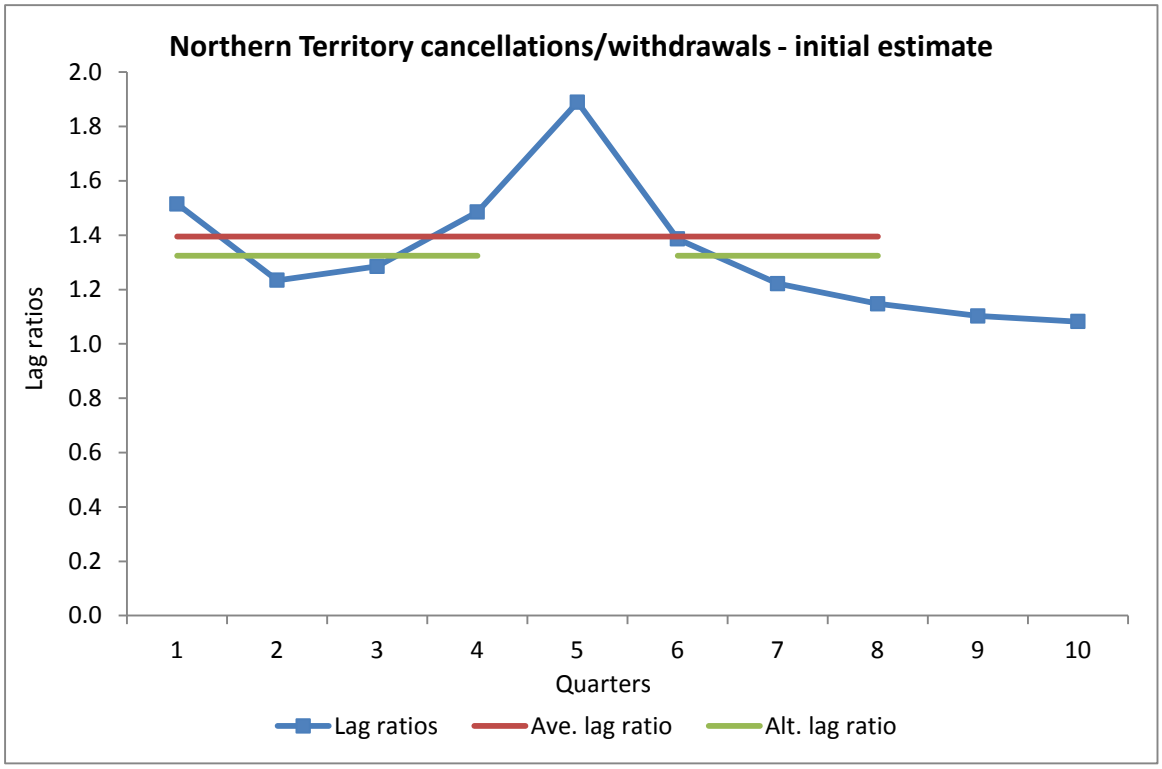
The revised estimate for cancellations/withdrawals in the Northern Territory was calculated by excluding the lag ratio corresponding to quarter five of the time window (see attachment 1). The lag ratio for this quarter is clearly higher than all the other lag ratios in the time window.

Revised estimate = 378.

Attachment 1: Revised estimates for Collection 80

The following graph depicts the pattern of the lag ratios for the estimate that was revised or considered for revision. The graph shows the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8) and also the two quarters following (labelled 9 and 10).

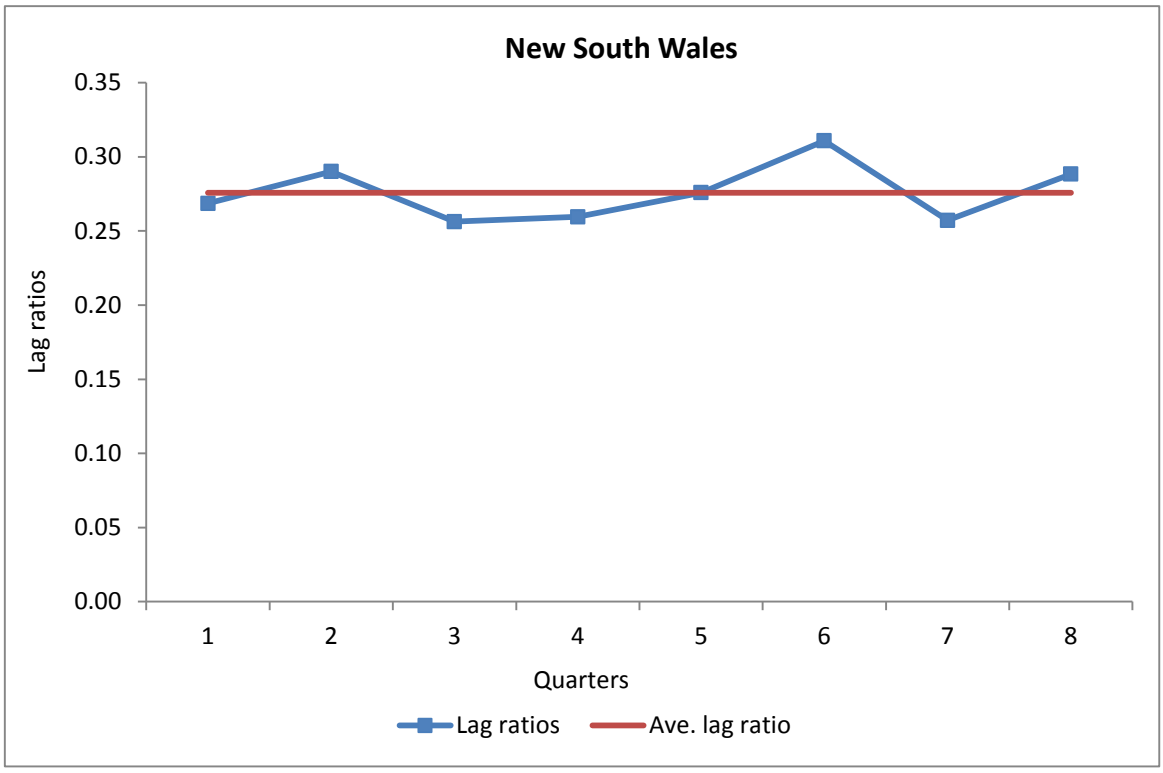
Horizontal lines are also displayed on the graph. One represents the average lag as calculated from the lags in the time window (red line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (green line).

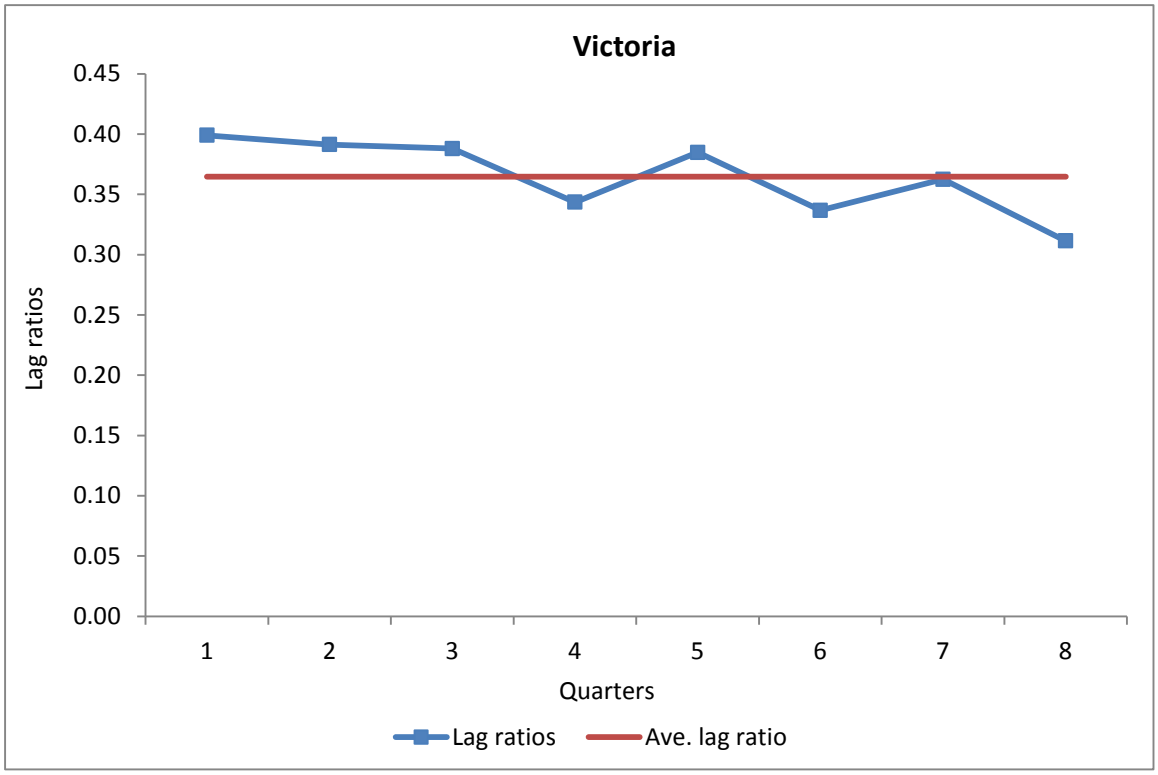


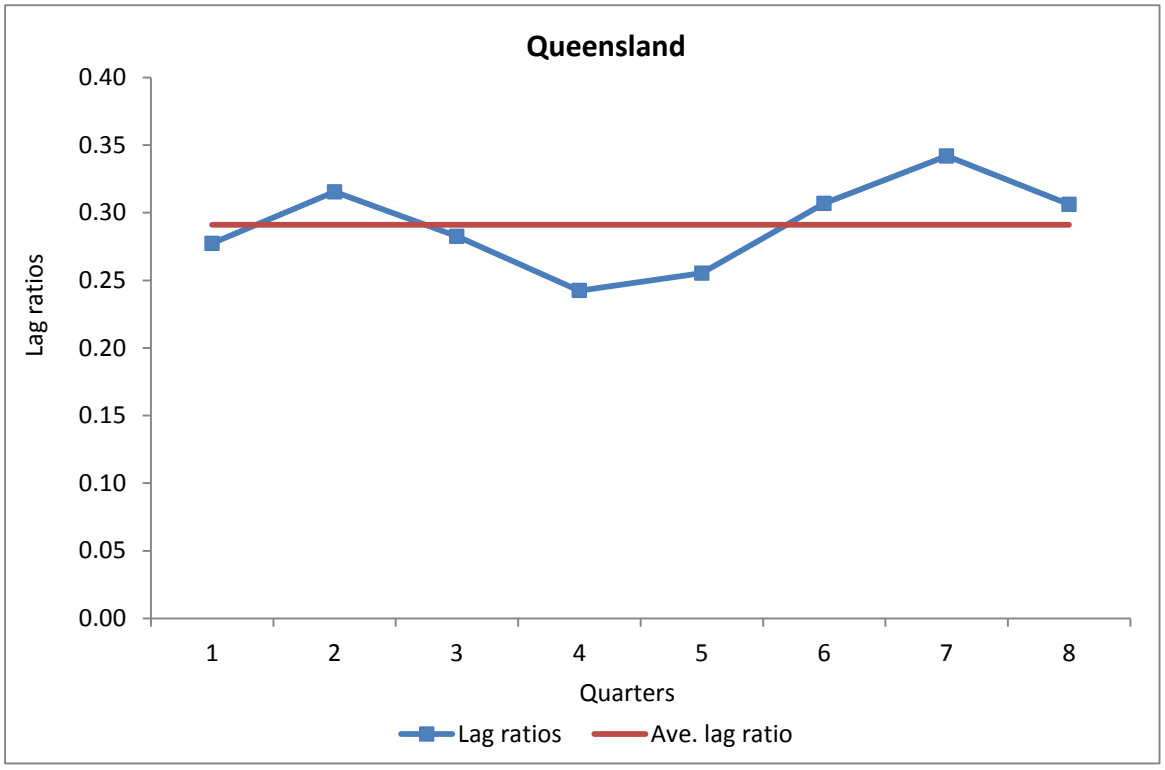
Attachment 2: Expired contracts for Collection 80

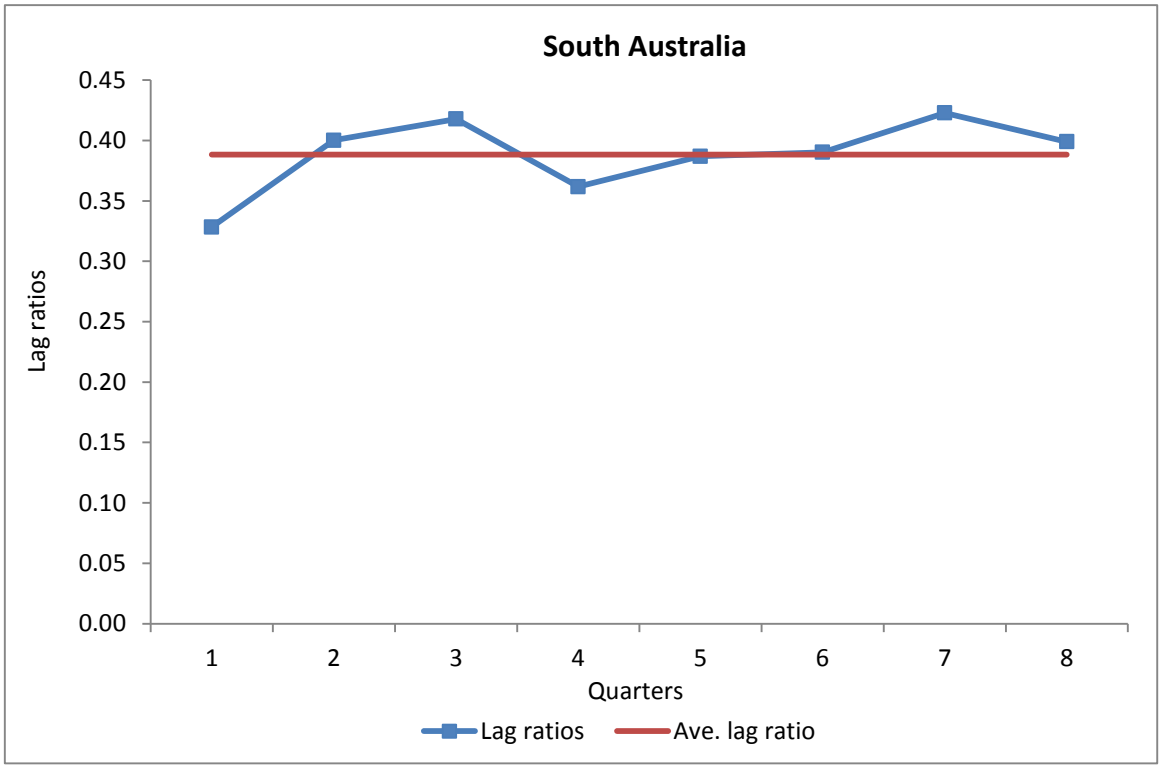
Although subject to high relative errors, estimates of expired contracts have not been altered because they are such a small contributor to the in-training estimate. As can be seen from the following graphs, which depict the pattern of the lag ratios for the estimates of expired contracts, an alternative way of estimating expired contracts is often unclear.

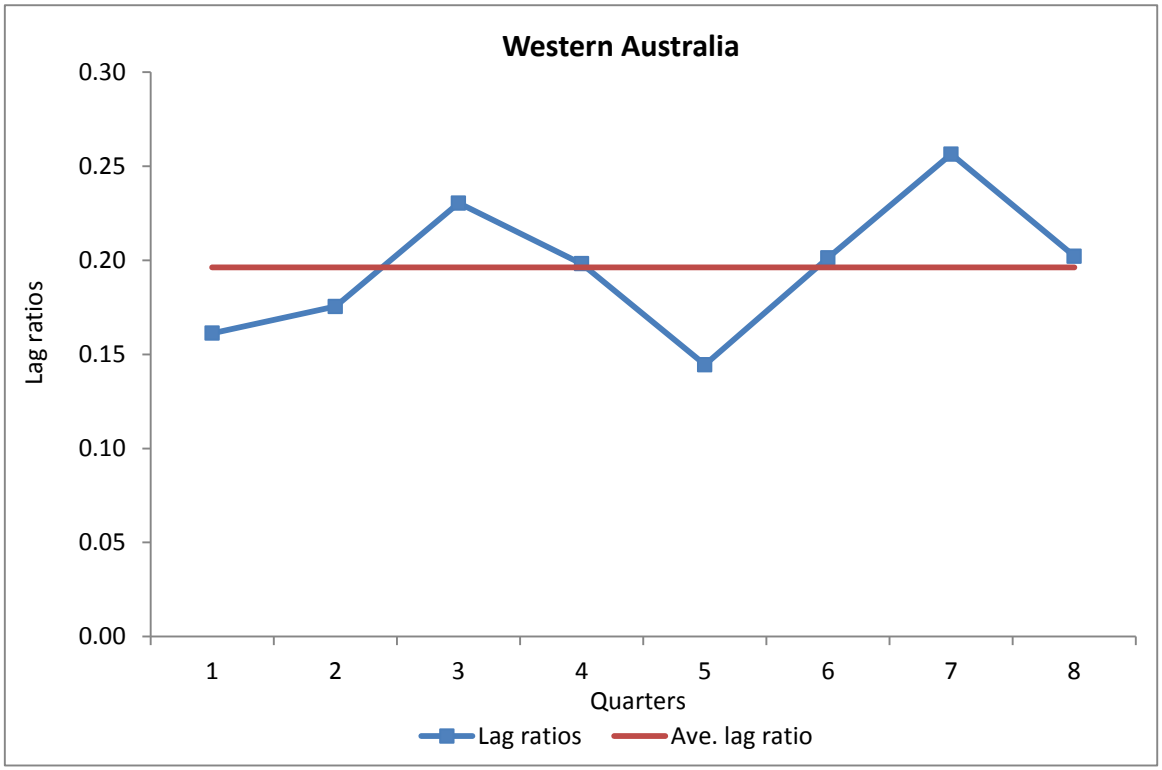
The graphs show the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8). A horizontal line is also displayed, representing the average lag as calculated from the lags in the time window (red line).

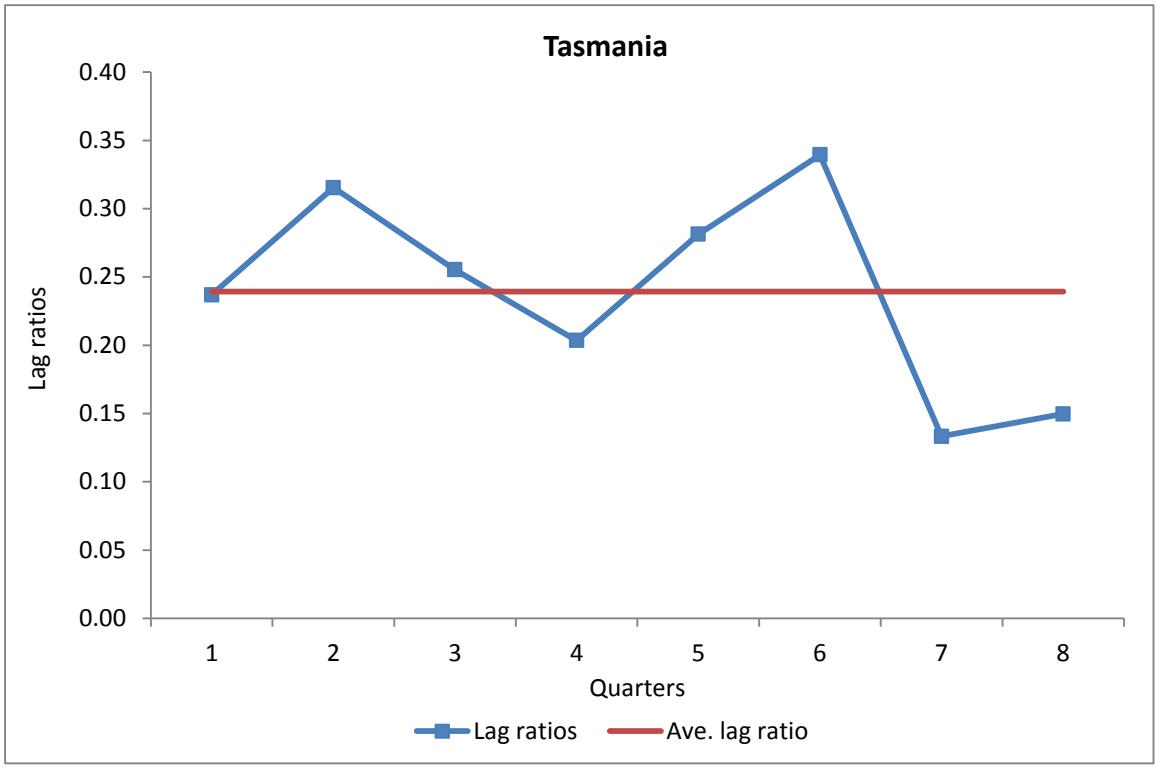


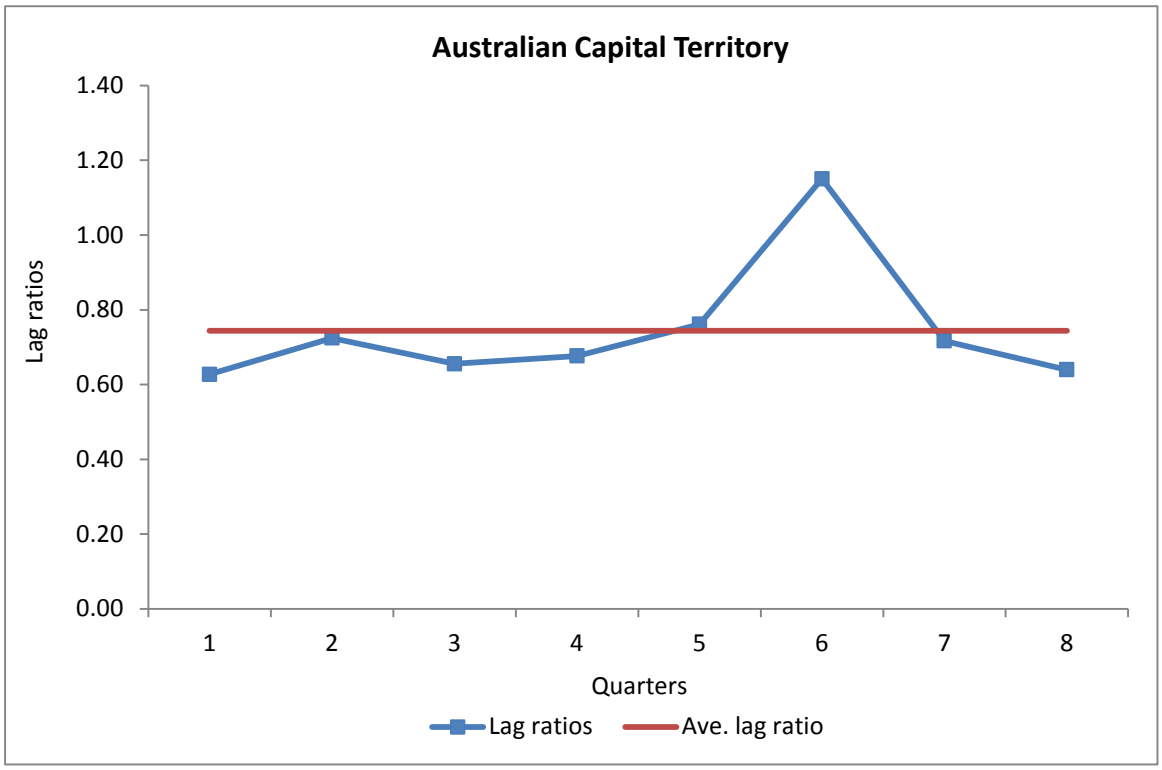

Victoria
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Ave. lag ratio


Queensland
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Ave. lag ratio


South Australia
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Ave. lag ratio


Western Australia
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Ave. lag ratio


Tasmania
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Ave. lag ratio


Australian Capital Territory
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Lag ratios
1
2
3
4
5
6
7
8
Quarters
Lag ratios
Ave. lag ratio