SUPPORT DOCUMENT

NCVER

Adjustment notes for apprentice and trainee estimates: December quarter 2016

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 91 (March 2017 estimates used to produce the publication, *Australian vocational education and training statistics: apprentices and trainees 2016 — December quarter*, available at <http://www.ncver.edu.au>).

Contents

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 88, June 2016 estimates.

Adjustment note for Collection 91

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.

For the majority of states and territories relative prediction errors were below 10%. South Australia has high relative prediction errors for completions and cancellations/withdrawals. The Northern Territory has a relative *error of 12.1% for completions for the December 2016 quarter. The Australian Capital Territory has a relative prediction error 11.8% for cancellations/withdrawals for the September 2016 quarter.*

Relative prediction errors for expiries were between 9% and 49% across the jurisdictions this quarter*.*

The estimates for South Australia need to be treated with caution. The high relative prediction errors noted below are thought to be a combination of factors. The time windows used to calculate average reporting lags correspond to the transition to a new processing system and also rapid changes in non-trade commencements. Indications are that current reporting lags are lower than the averages calculated from the time windows. This suggests that in addition to the high variability, the estimated commencements, completions and cancellations/withdrawals could have a bias toward overestimating the final counts. Eventually the time window will move out of this period but initial estimates and first revision estimates can be expected to have high relative prediction errors for some quarters yet.

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

Completions for the December quarter 2016

From endorsed model – Estimate = 1837; Relative error = 11.5%.

Time window for calculating the average lag factor is from March quarter 2014 to December quarter 2015.

There is a downward trend across the quarters in the time window. The next two quarters to come into the time window over the next six months indicate that the lag ratios will stay low. The lag ratio for quarter one, being a clear outlier, is the major contributor to the high relative error. Quarter one has been excluded from the revised estimate.

Revised estimate = 1769

Cancellations for the December quarter 2016

From endorsed model - Estimate = 1770; Relative error = 61.2%.

Time window for calculating the average lag factor is from March quarter 2013 to December quarter 2014.

There is a downward trend across the quarters in the time window. The next two quarters to come into the time window over the next six months indicate that the lag ratios will stay low. The lag ratios for quarters one to three are clearly higher than the lag ratios for the later quarters. In particular, the lag ratio for quarter 2 is a huge outlier, being over three times the average lag ratio for quarters four to eight. Quarters one to three have been excluded from the revised estimate.

Revised estimate = 1274

Cancellations/withdrawals for the September quarter 2016

From endorsed model - Estimate = 1257; Relative error = 21.7%.

Time window for calculating the average lag factor is from March quarter 2013 to December quarter 2014.

The high relative error is mainly due the relatively high values in the quarters one to four of the time window and relatively low values in quarters five to eight. The quarters that will come into the time window in the next two quarters suggest the lower levels are more appropriate. Quarters one to four have been excluded from the revised estimate.

Revised estimate = 1046

Cancellations/withdrawals for the June quarter 2016

From endorsed model - Estimate = 988; Relative error = 10.0%.

Time window for calculating the average lag factor is from March quarter 2013 to December quarter 2014.

The high relative error is mainly due the relatively high lag ratios in quarters one to three compared to those of quarters four to eight. The quarters that will come into the time window in the next two quarters suggest the lower levels are more appropriate. Quarters one to three have been excluded from the revised estimate.

Revised estimate = 922

Northern Territory

Completions for the December quarter 2016

From endorsed model - Estimate = 376; Relative error = 12.1%.

Time window for calculating the average lag factor is from March quarter 2014 to December quarter 2015.

The lag ratios rise steeply from quarter five to peak at quarter six before returning to lower levels by quarter eight. The next two quarters to come into the time window suggest that the lower level will persist. The lag ratio for quarter six is clearly too high while the lag ratio for quarter seven is less extreme but still relatively high. Quarters six and seven have been excluded from the revised estimate.

Revised estimate = 357

Australian Capital Territory

Cancellations/withdrawals for the December quarter 2016

From endorsed model – Estimate = 554; Relative error = 11.8%.

Time window for calculating the average lag factor is from March quarter 2013 to December quarter 2014.

The lag ratios display a downward trend from quarter one to quarter eight in the time window. The next two quarters to come into the time window suggest that the level of the lag ratios for quarters seven and eight might be appropriate for calculating a revised estimate. However, this would mean basing an estimate on only two quarters. Furthermore, these quarters are associated with lag ratios which are less than one.

The implication of a lag ratio less than one is that counts have decreased over time rather than increase. This could be due to atypical activity (e.g. correcting records in a database) which has no relevance to system behaviour in recent quarters.
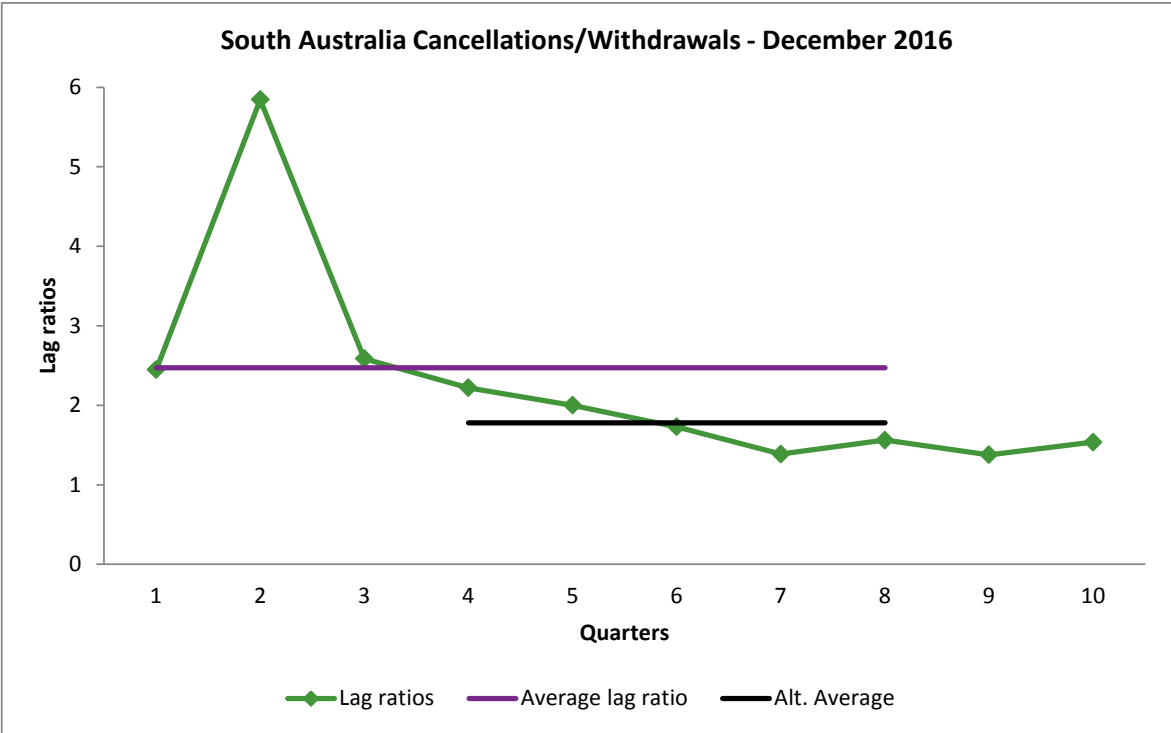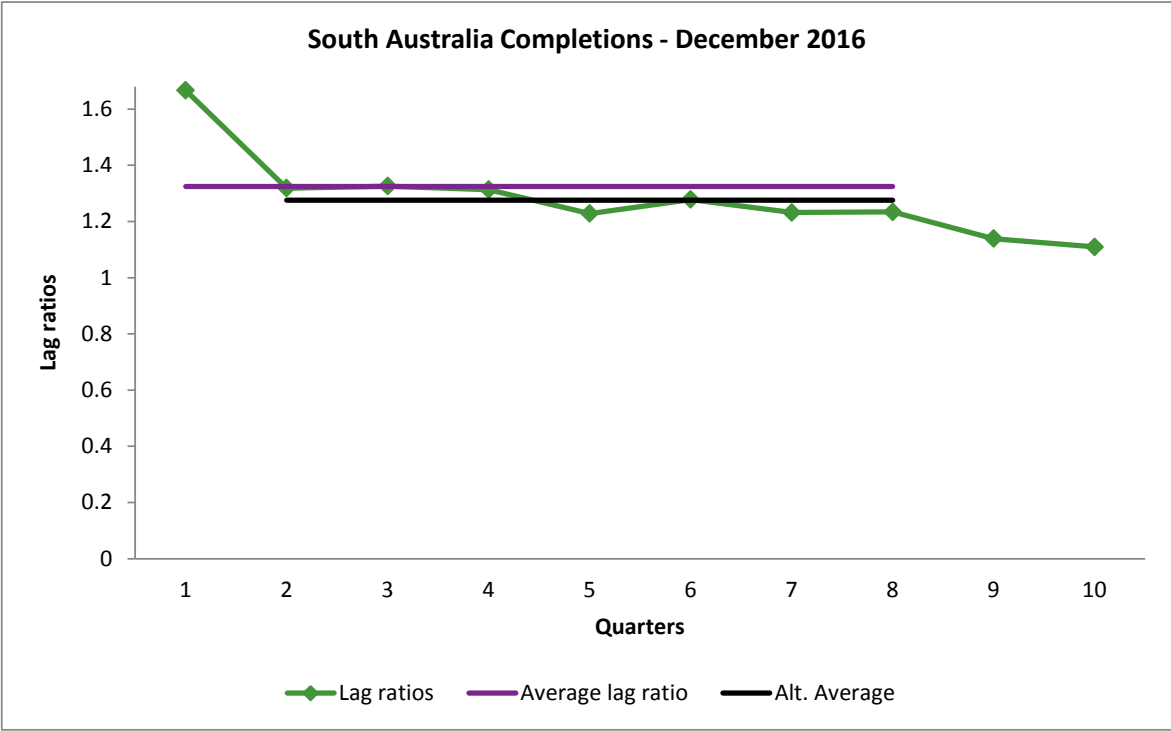
There is sufficient doubt to suggest that revising this estimate runs as much risk of creating a worse estimate as there is of creating a better estimate.

No revision.

Attachment 1: Revised estimates for Collection 91

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 (purple line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (black line).

South Australia Completions - December 2016

South Australia Cancellations/Withdrawals - December 2016

South Australia Cancellations/Withdrawals - September 2016

South Australia Cancellations/Withdrawals - June 2016

Northern Territory Completions - December 2016

Australian Capital Territory Cancellations/Withdrawals December 2016
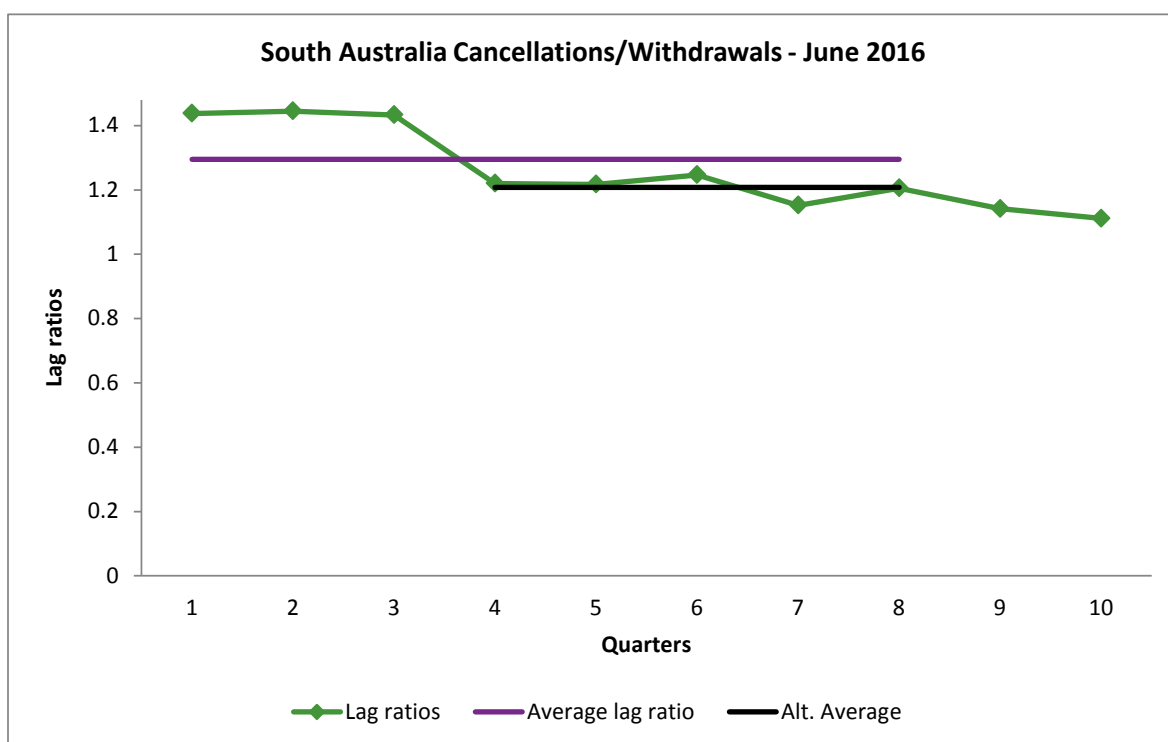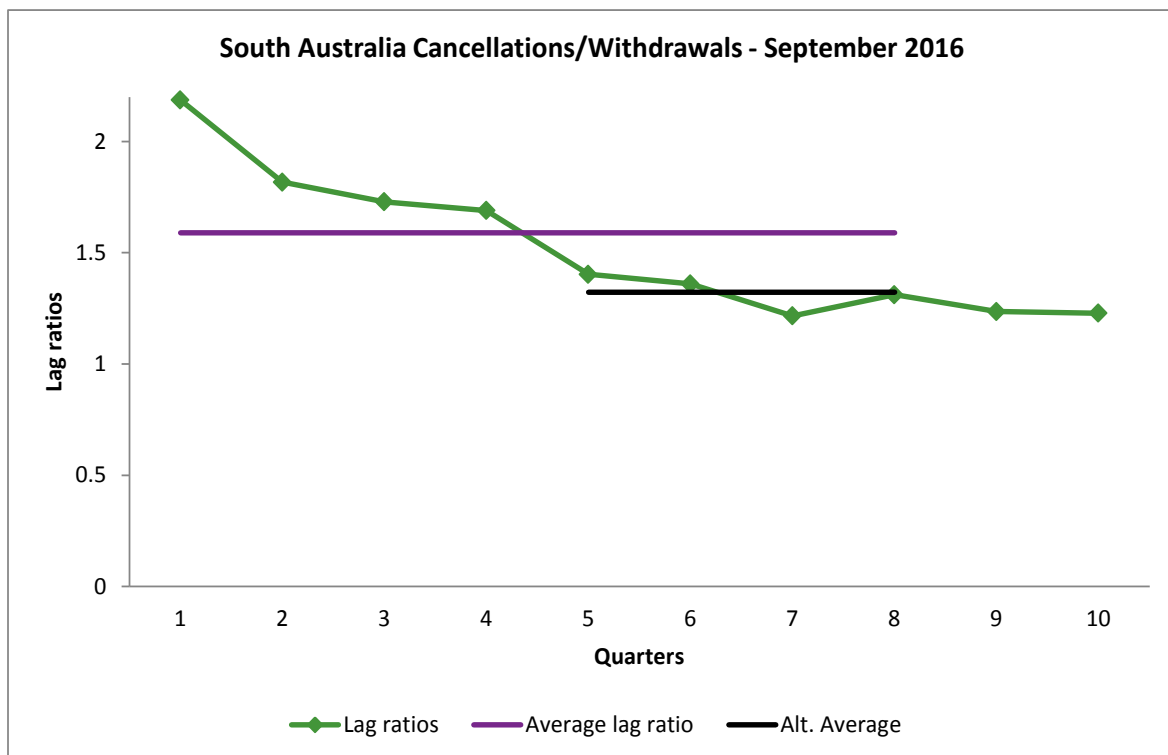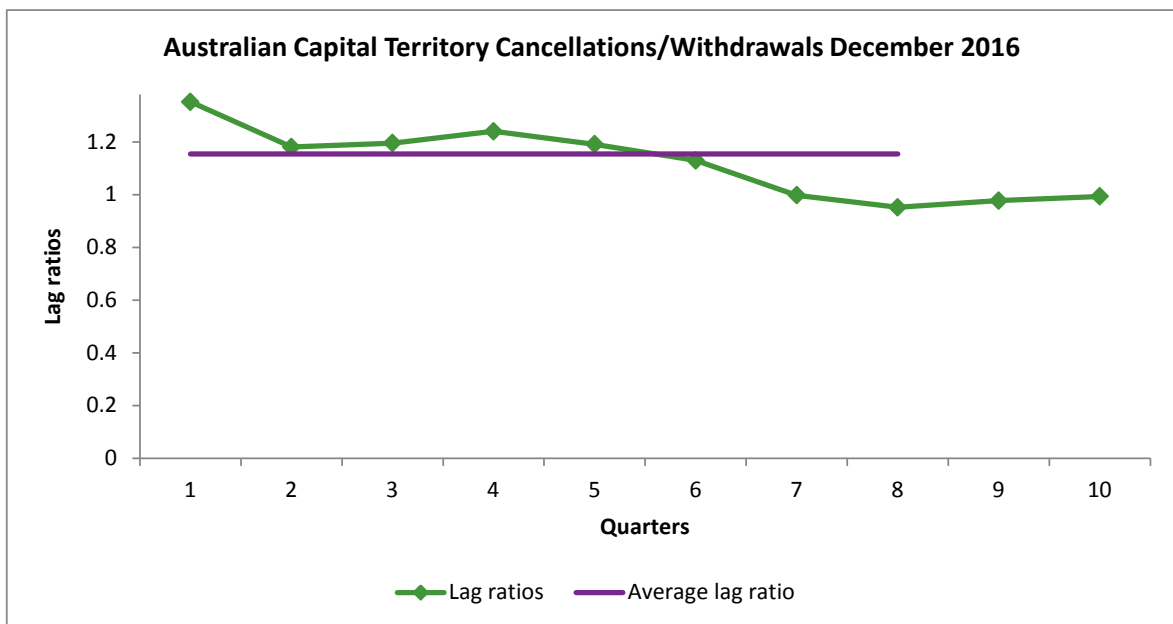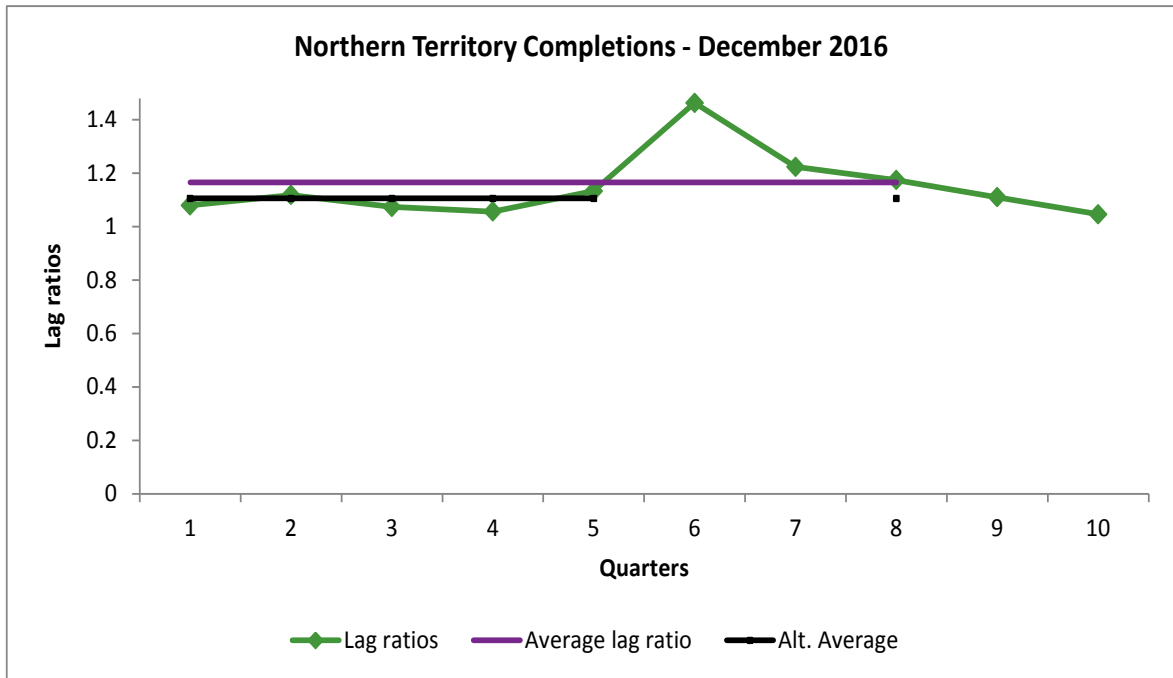
Attachment 2: Expired contracts for Collection 91

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 (purple line).

Queensland

South Australia

Western Australia

Tasmania

Australian Capital Territory
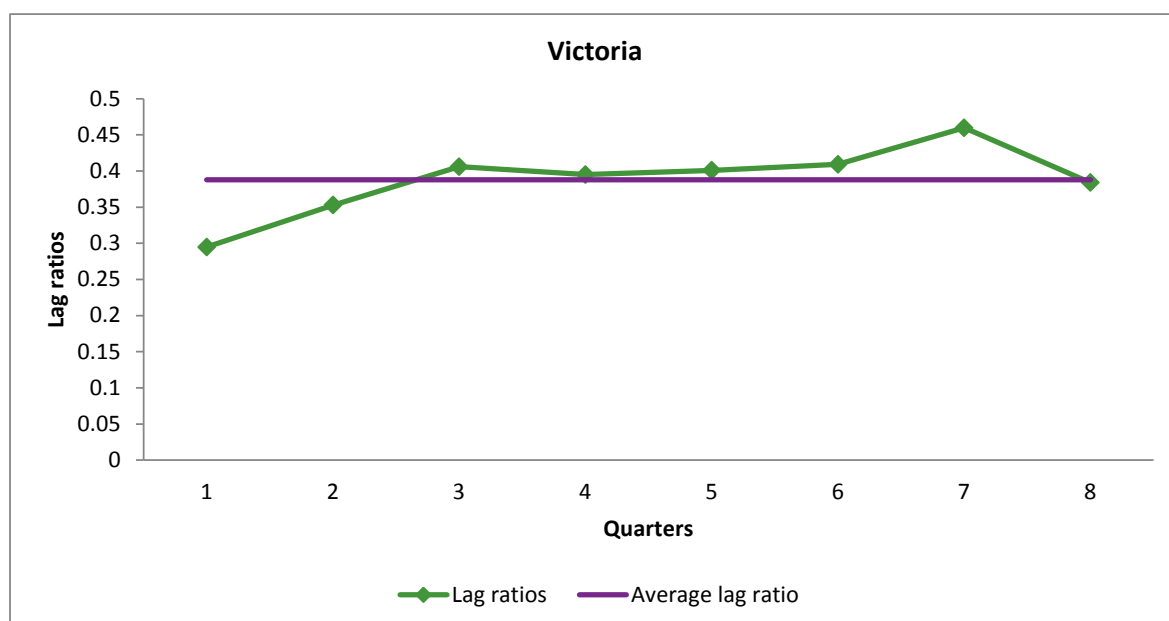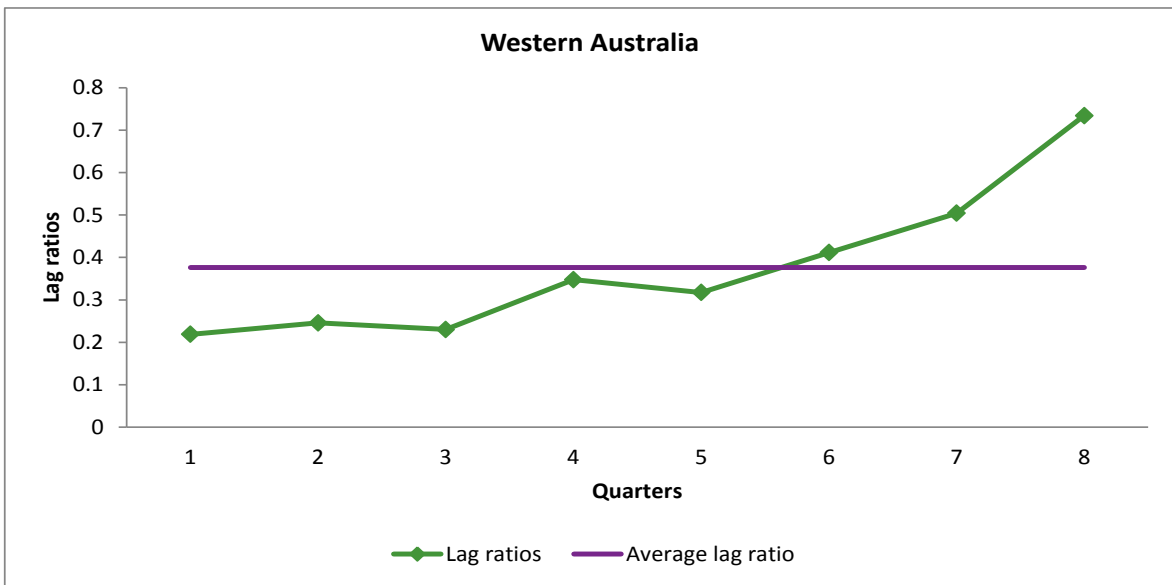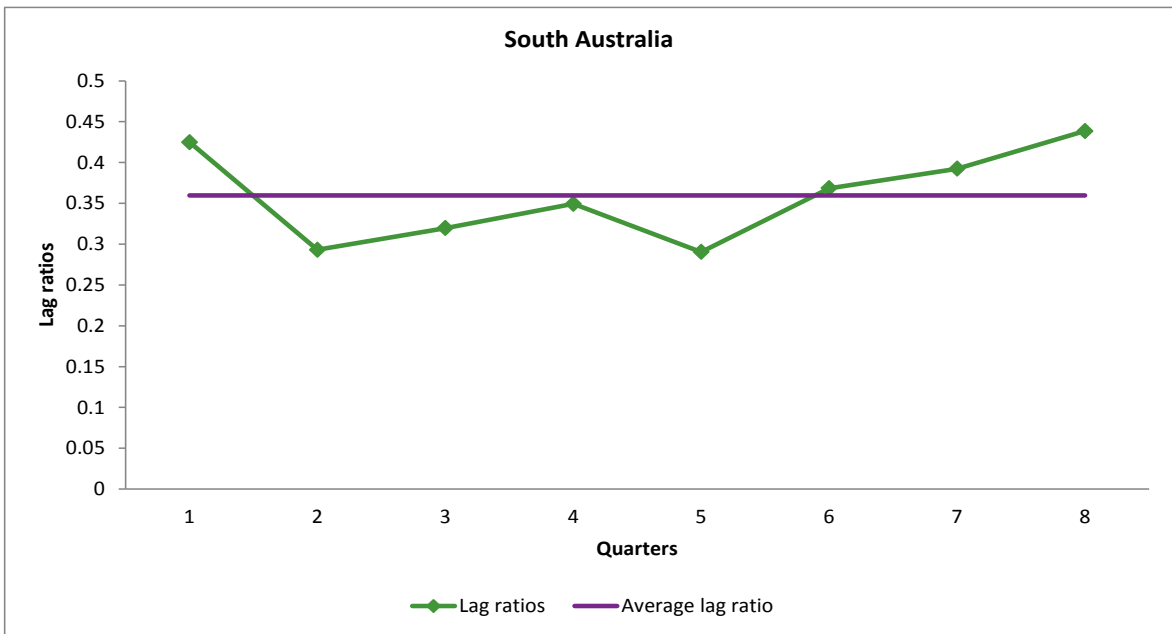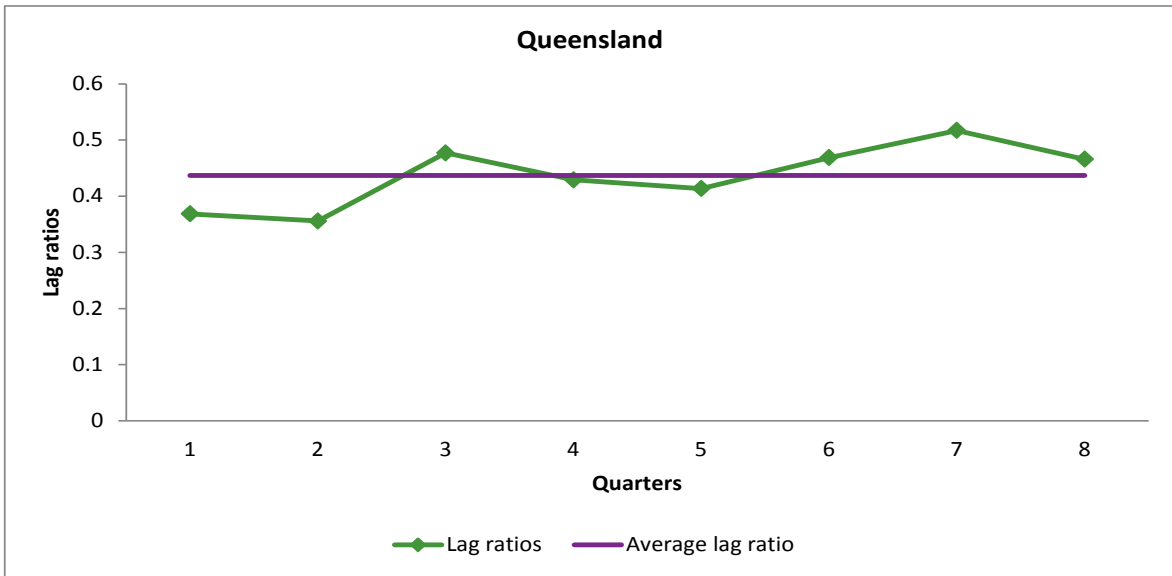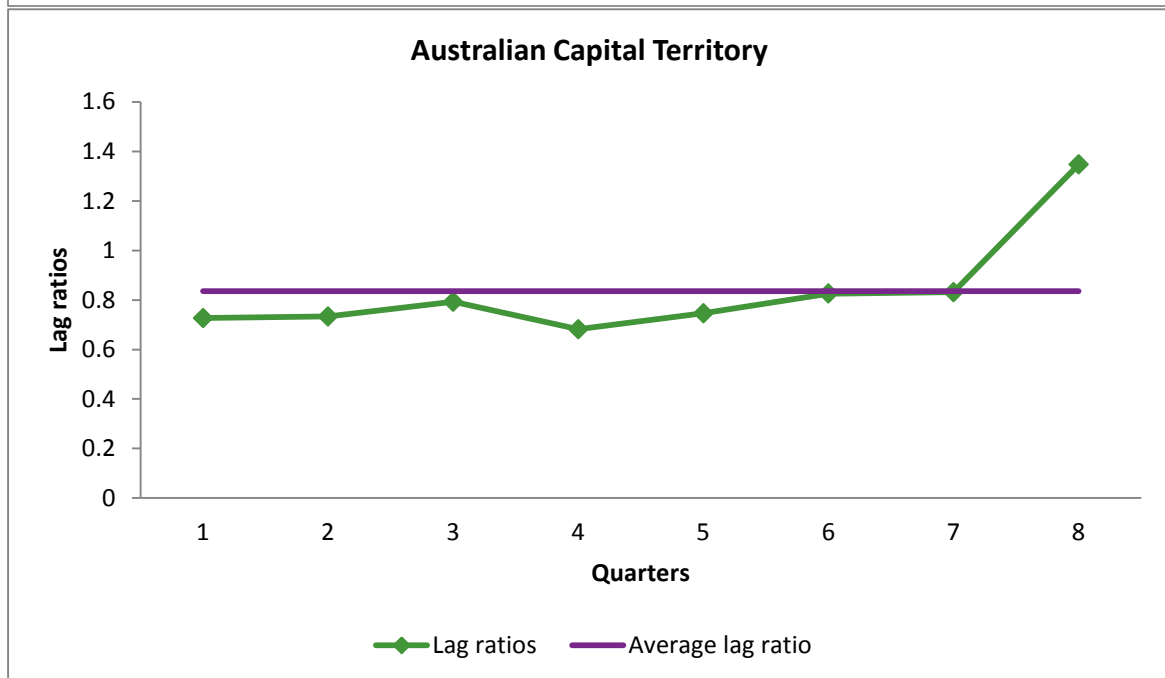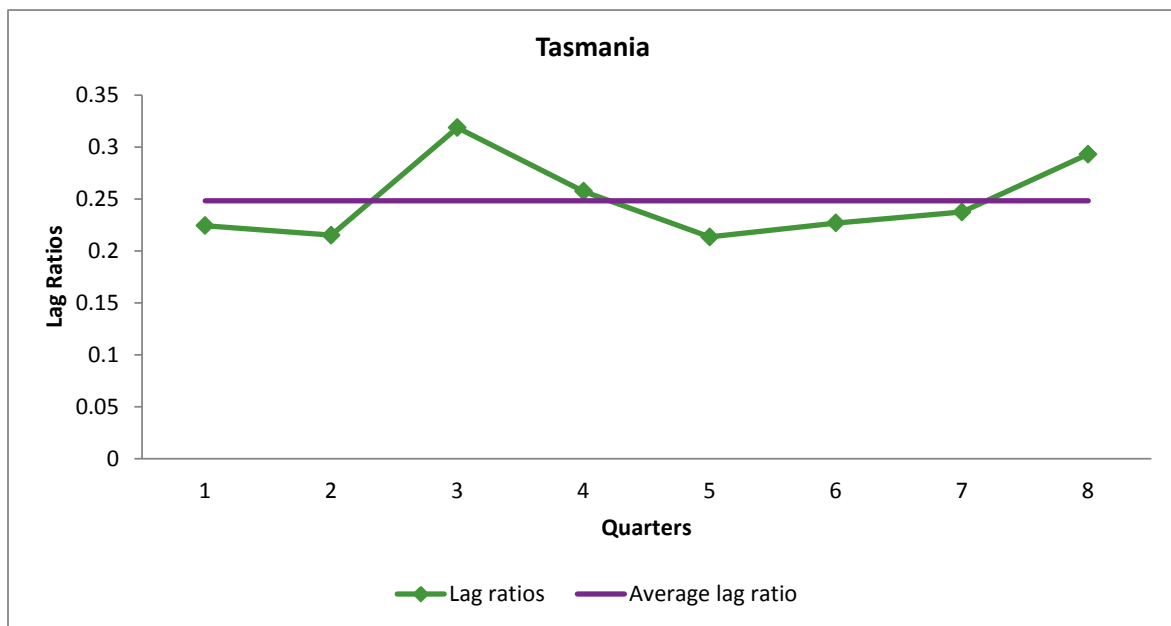
Adjustment note for Collection 90

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.

For the majority of states and territories relative prediction errors were below 10%. South Australia has high relative prediction errors for commencements, completions and cancellations/withdrawals. The Northern Territory has a relative *error of 12.2% for completions for the September 2016 quarter. The Australian Capital Territory has a relative prediction error 13.9% for cancellations/withdrawals for the September 2016 quarter.*

Relative prediction errors for expiries were between 8% and 38% across the jurisdictions this quarter.

The estimates for South Australia need to be treated with caution. The high relative prediction errors noted below are thought to be a combination of factors. The time windows used to calculate average reporting lags correspond to the transition to a new processing system and also rapid changes in non-trade commencements. Indications are that current reporting lags are lower than the averages calculated from the time windows. This suggests that in addition to the high variability, the estimated commencements, completions and cancellations/withdrawals could have a bias toward overestimating the final counts. Eventually the time window will move out of this period but initial estimates and first revision estimates can be expected to have high relative prediction errors for some quarters yet.

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 September quarter 2016

From endorsed model – Estimate = 2214; Relative error = 11.3%.

Time window for calculating the average lag factor is from December quarter 2013 to September quarter 2015.

The lag ratios are higher in quarters one to two than in quarters three to eight. The next two quarters to come into the time window do not suggest that the lags will return to higher levels. Quarters one to two have been excluded from the revised estimate.

Revision estimate = 2096

Completions for the September quarter 2016

From endorsed model - Estimate = 1648; Relative error = 14.9%.

Time window for calculating the average lag factor is from December quarter 2013 to September quarter 2015.

The lag ratios corresponding to quarters one to two are clearly higher than those for quarters three to eight. Quarters one to two have been excluded from the revised estimate.

Revised estimate = 1526

Completions for the June quarter 2016

From endorsed model - Estimate = 1590; Relative error = 11.7%.

Time window for calculating the average lag factor is from December quarter 2013 to September quarter 2015.

The lag ratios corresponding to quarters one to two are higher than those for quarters three to eight. Quarters one to two have been excluded from the revised estimate.

Revised estimate = 1513

Cancellations for the September quarter 2016

From endorsed model - Estimate = 1700; Relative error = 61.2%.

Time window for calculating the average lag factor is from December quarter 2012 to September quarter 2014.

The lag ratios corresponding to quarters two to four are higher than the other lag ratios with the lag for quarter two being particularly high. The lags for quarters four to eight are clearly trending toward a lower level. Quarters two to four have been excluded from the revised estimate.

Revised estimate = 1223

Cancellations/withdrawals for the June quarter 2016

From endorsed model - Estimate = 1143; Relative error = 20.5%.

Time window for calculating the average lag factor is from December quarter 2012 to September quarter 2014.

The high relative error is mainly due the relatively high values in the middle of the time window and relatively low values at either end. The quarters that will come into the time window in the next two quarters suggest the lower levels are more appropriate. Quarters two to five have been excluded from the revised estimate.

Revised estimate = 968

Cancellations/withdrawals for the March quarter 2016

From endorsed model - Estimate = 1299; Relative error = 10.1%.

Time window for calculating the average lag factor is from December quarter 2012 to September quarter 2014.

The high relative error is mainly due the relatively high lag ratios in quarters one to four compared to those of quarters five to eight. The quarters that will come into the time window in the next two quarters suggest the lower levels are more appropriate. Quarters one to four have been excluded from the revised estimate.

Revised estimate = 1186

Northern Territory

Completions for the September quarter 2016

From endorsed model - Estimate = 297; Relative error = 12.2%.

Time window for calculating the average lag factor is from December quarter 2013 to September quarter 2015.

The lag ratio for quarter seven is clearly higher than the other lag ratios. The next two quarters to come into the time window suggest that the lags might be returning to a lower level. Quarter seven has been excluded from the revised estimate.

Revised estimate = 285

Australian Capital Territory

Cancellations/withdrawals for the September quarter 2016

From endorsed model - Estimate = 652; Relative error = 13.9%.

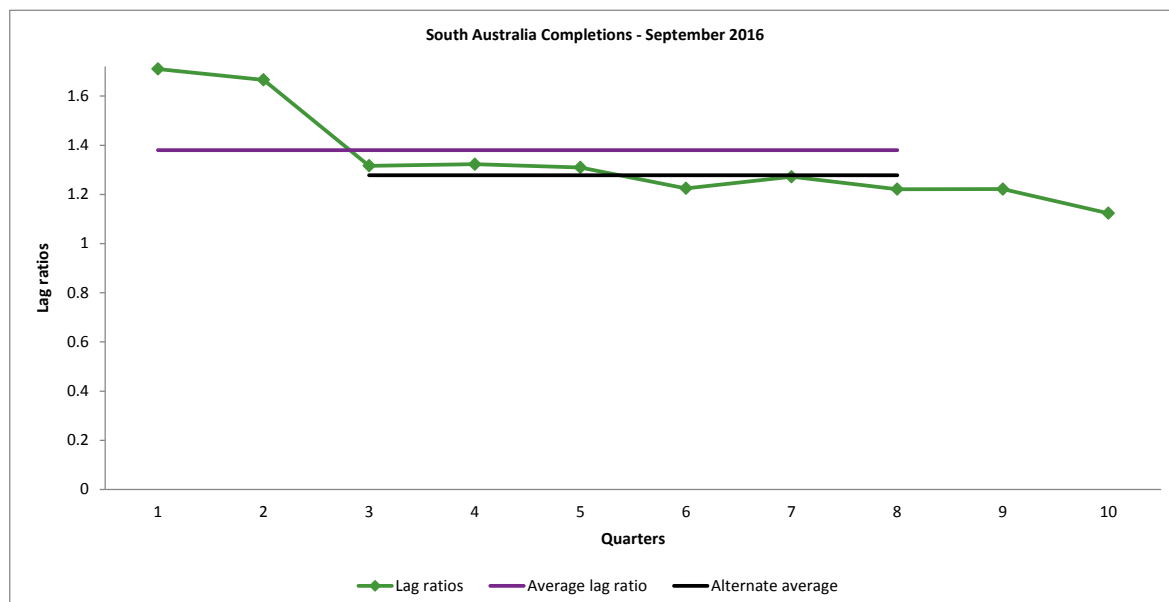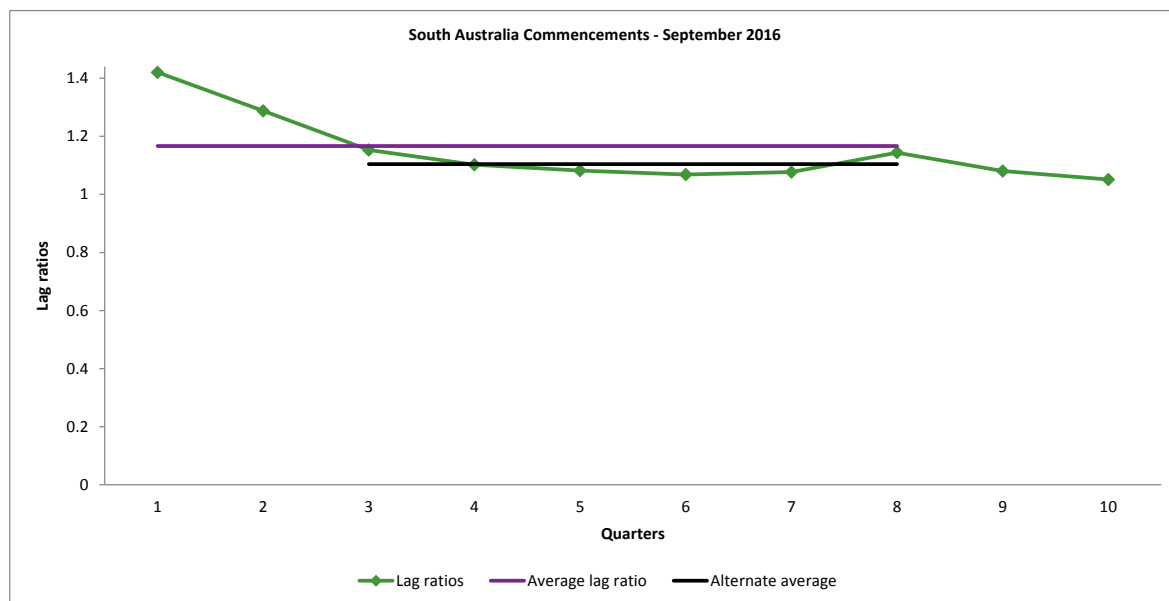*Time window for calculating the average lag factor is from December quarter 2012 to September quarter 2014.*

The lag ratios are higher in quarters one and two than in quarters three to eight. The next two quarters to come into the time window suggest that the lags will not return to the higher levels of the early quarters. Quarters one and two have been excluded from the revised estimate.

Revised estimate = 614

Attachment 1: Revised estimates for Collection 90

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 (purple line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (black line).

South Australia Commencements - September 2016

South Australia Completions - September 2016

South Australia Completions - June 2016

Lag ratios / quarters

Legend: Lag ratios | Average lag ratio | Alternate average

South Australia Cancellations/withdrawals - September 2016

Lag ratios / Quarters

Legend: Lag ratios | Average lag ratio | Alternate average

South Australia Cancellations/withdrawals - June 2016

Lag ratios / Quarters

Legend: Lag ratios | Average lag ratio | Alternate average

South Australia Cancellations/withdrawals - March 2016

Northern Territory Completions - September 2016

Australian Capital Territory Cancellations/withdrawals - September 2016
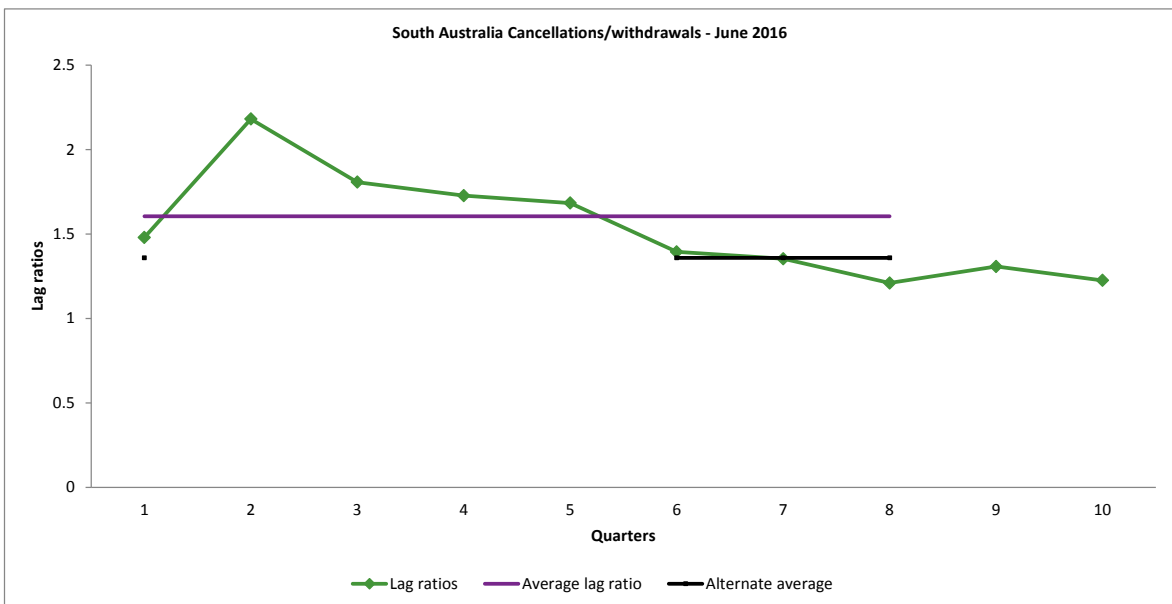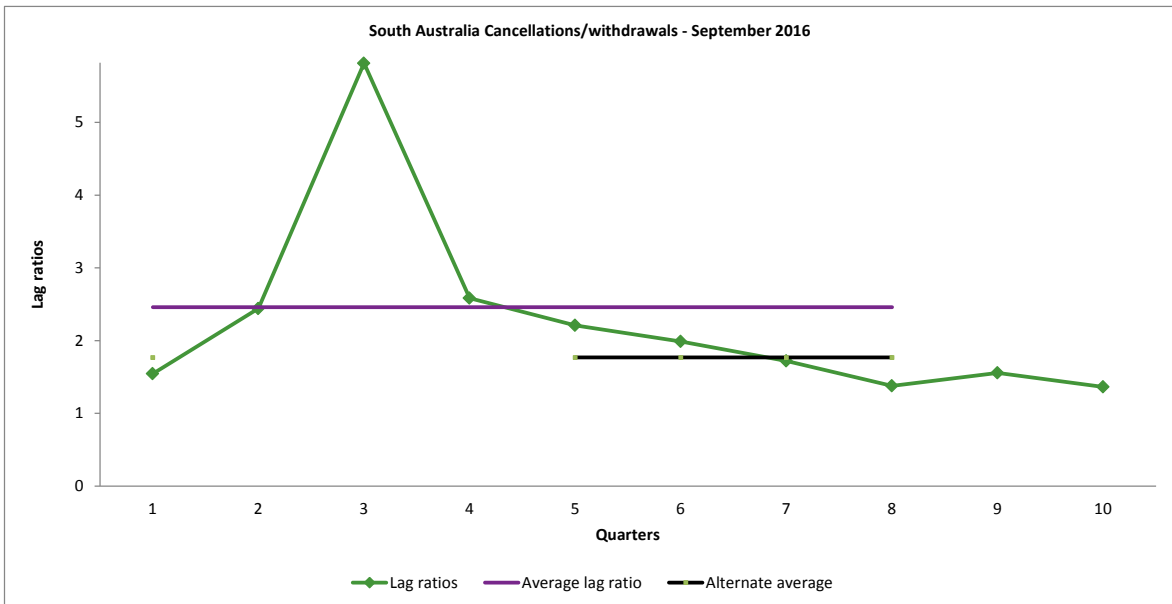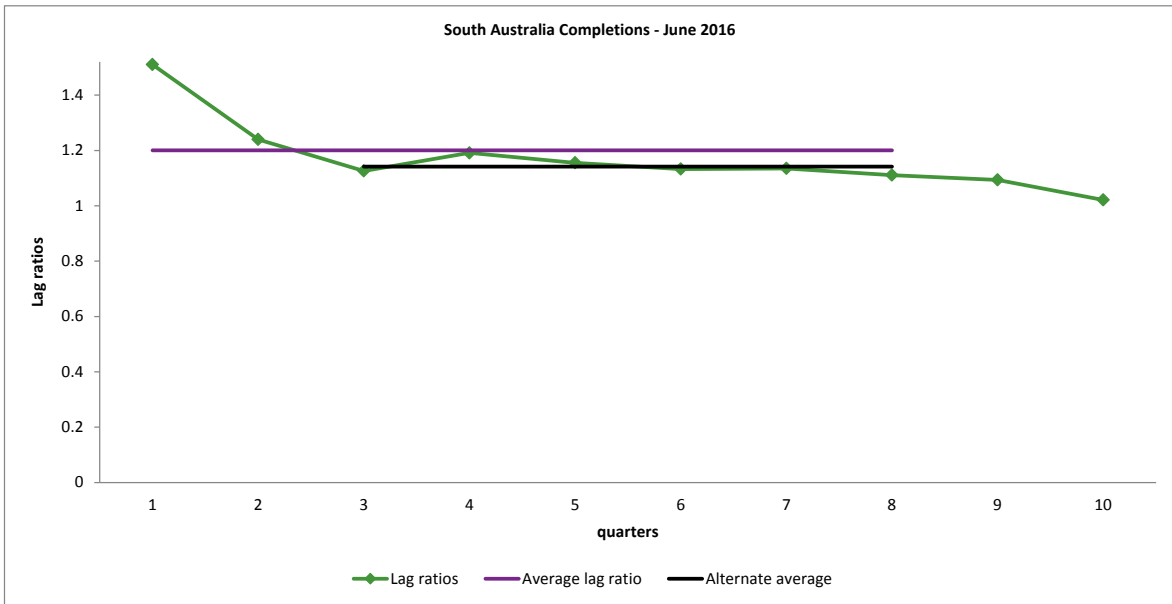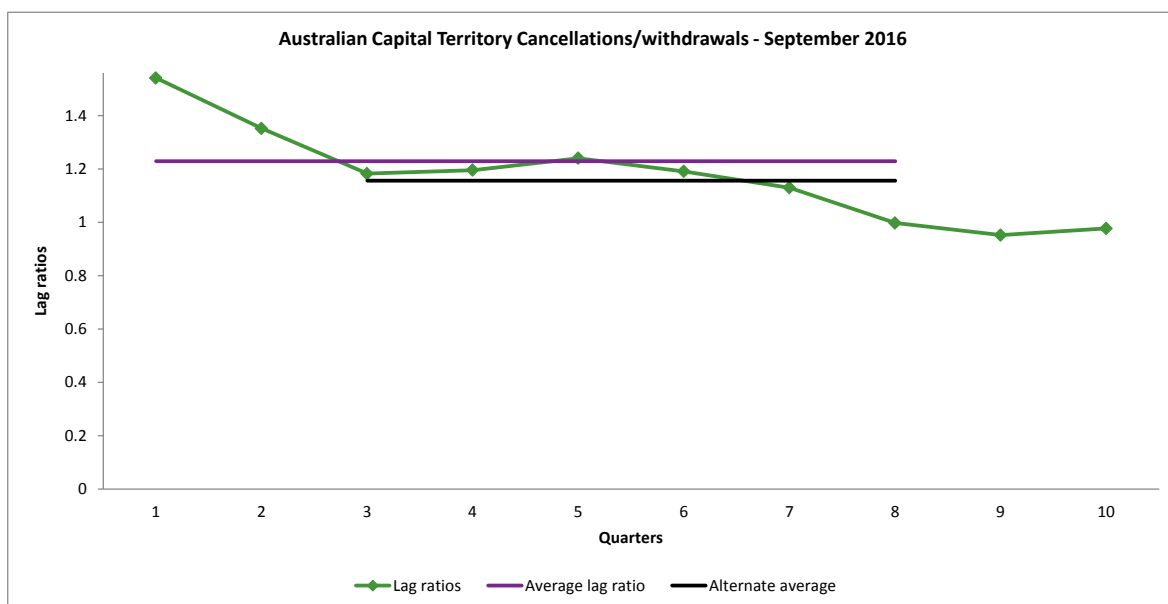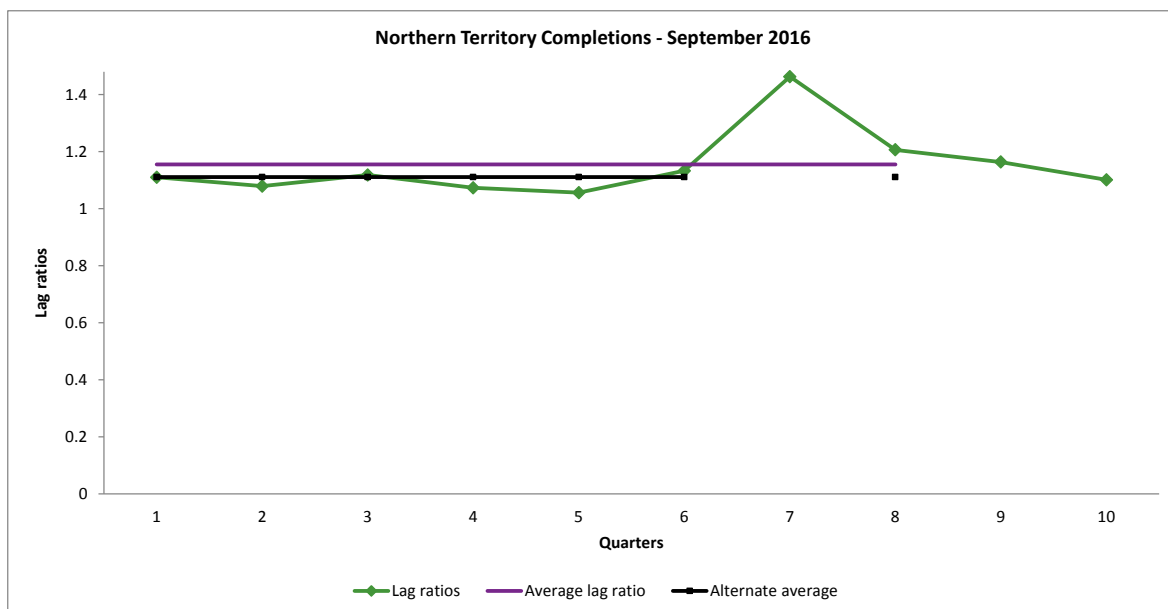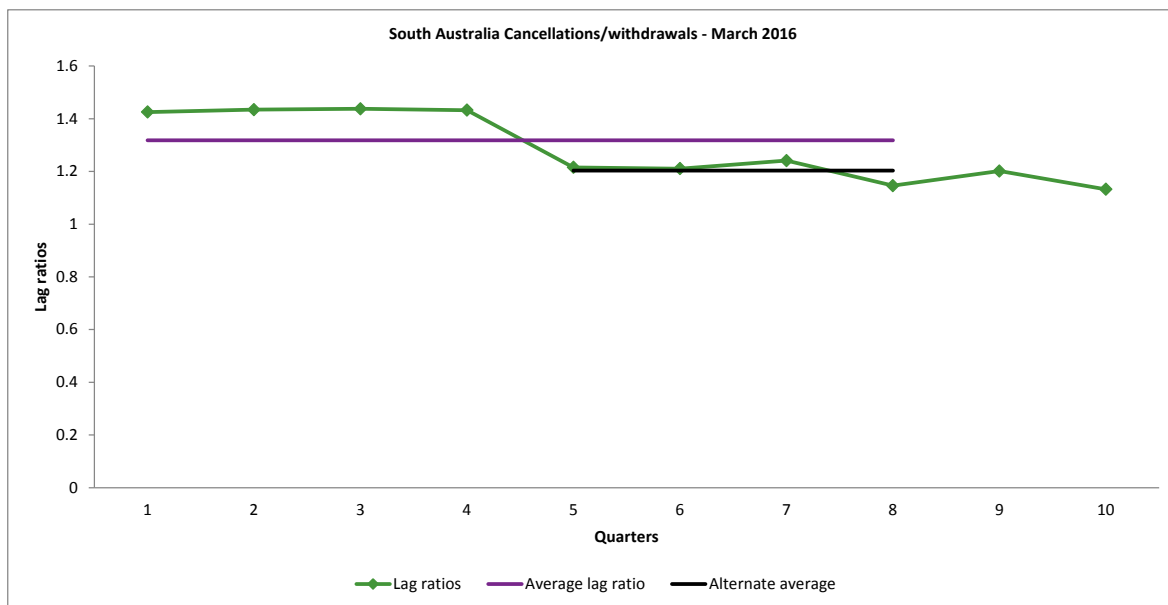
Attachment 2: Expired contracts for Collection 90

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 (purple line).

Queensland

South Australia

Western Australia

Tasmania

Australian Capital Territory
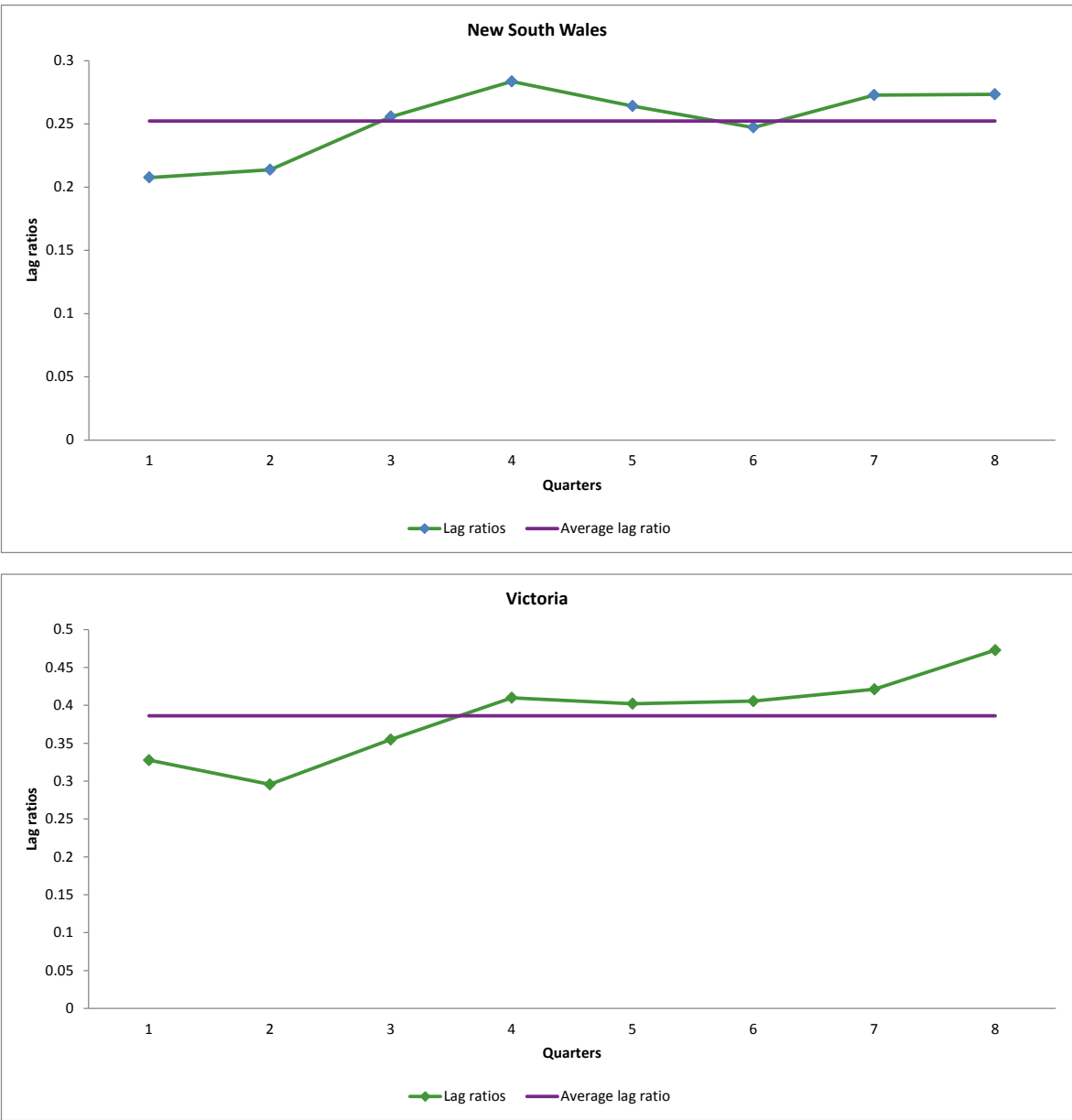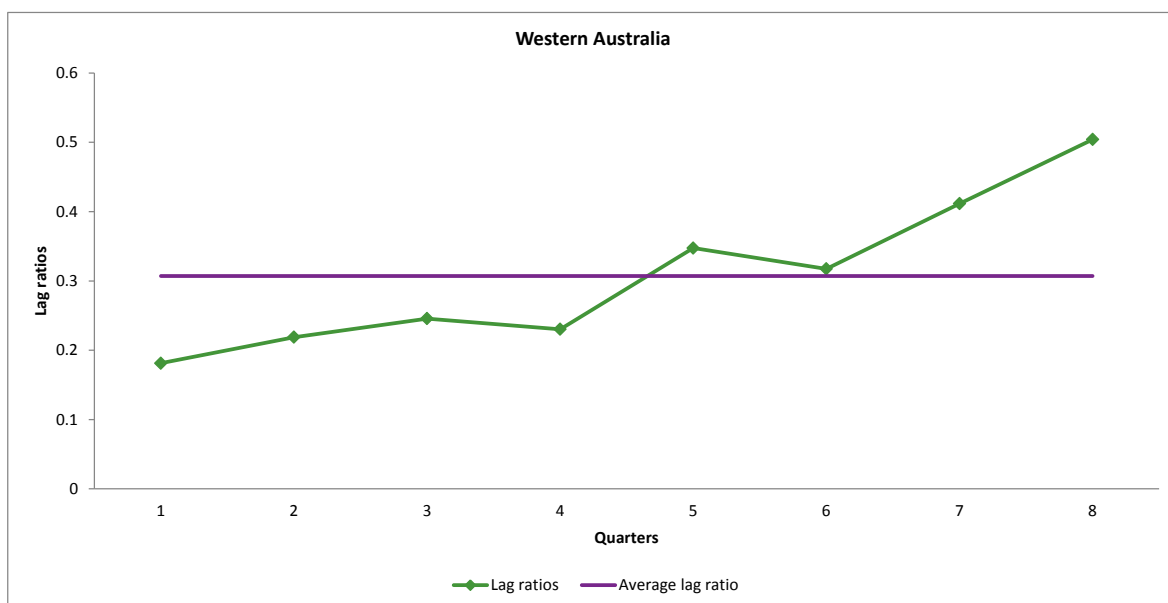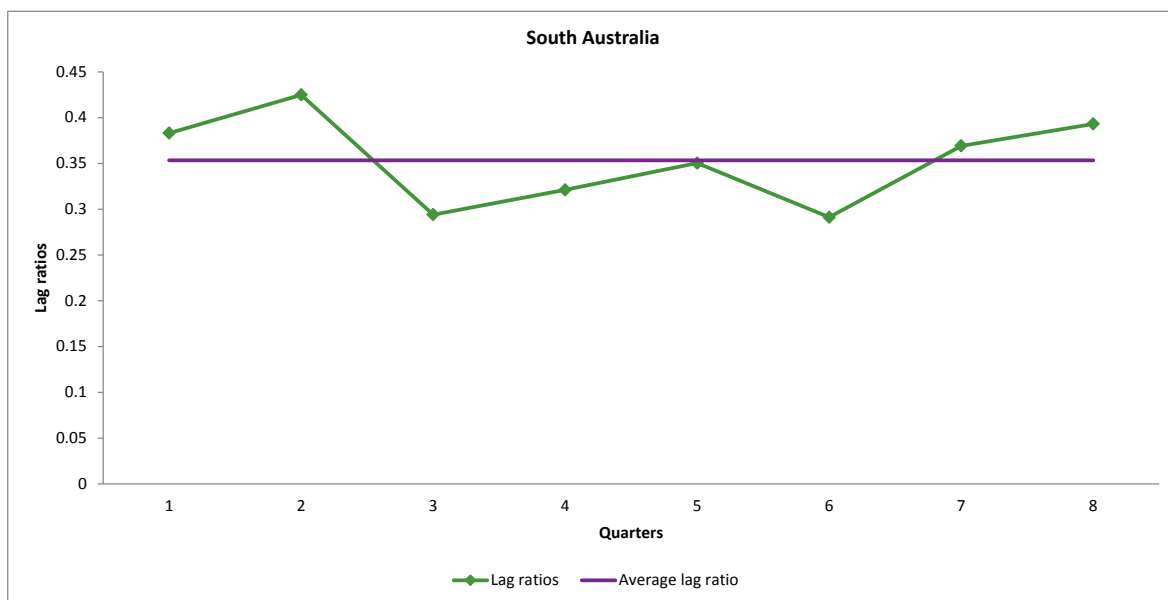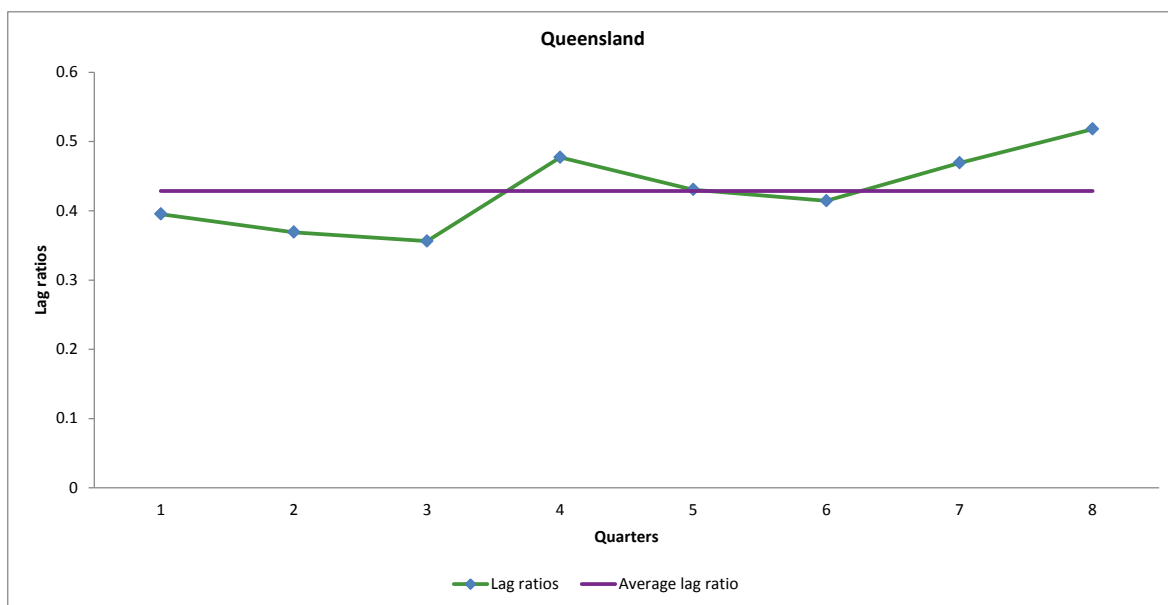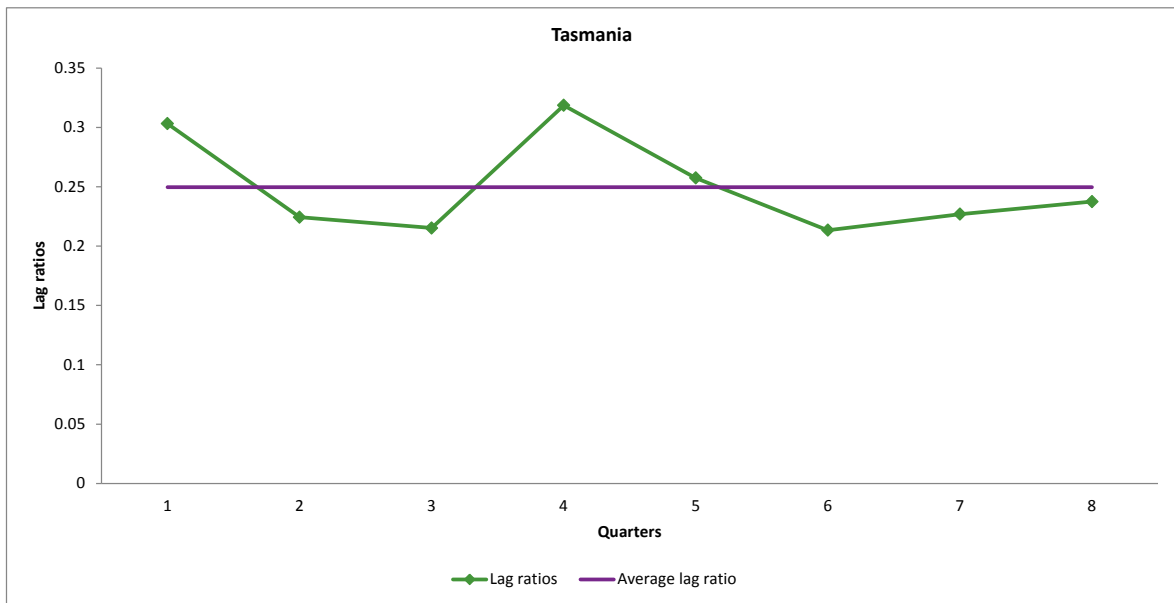
Adjustment note for Collection 89

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.

For the majority of states and territories relative prediction errors were below 10%. South Australia has high relative prediction errors for commencements, completions and cancellations/withdrawals. The Northern Territory has a relative error of 11.5% for completions for the June 2016 quarter. The Australian Capital Territory has a relative prediction error 11.1% for cancellations/withdrawals for the June 2016 quarter.

Relative prediction errors for expiries were between 7% and 31% across the jurisdictions this quarter.

The estimates for South Australia need to be treated with caution. The high relative prediction errors noted below are thought to be a combination of factors. The time windows used to calculate average reporting lags correspond to the transition to a new processing system and also rapid changes in non-trade commencements. Indications are that current reporting lags are lower than the averages calculated from the time windows. This suggests that in addition to the high variability, the estimated commencements, completions and cancellations/withdrawals could have a bias toward overestimating the final counts. Eventually the time window will move out of this period but initial estimates and first revision estimates can be expected to have high relative prediction errors for some quarters yet.

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 June quarter 2016

From endorsed model – Estimate = 2587; Relative error = 15.4%.

Time window for calculating the average lag factor is from September quarter 2013 to June quarter 2015.

The lag ratios are higher in quarters one to three than in quarters four to eight. The next two quarters to come into the time window suggest that the lags will return to higher levels, though how high is uncertain. Quarters one to two have been excluded from the revised estimate while quarter 3 has been retained in case future lag ratios continue to rise.

Revision estimate = 2405

Commencements for the March quarter 2016

From endorsed model – Estimate = 3139; Relative error = 9.2%.

Time window for calculating the average lag factor is from September quarter 2013 to June quarter 2015.

Although this estimate had a relative error under 10%, there was an obvious discrepancy in the pattern of lag ratios. For this reason it was decided to adjust this estimate.

The lag ratios are higher in quarters one to two than in quarters three to eight. The latter ratios are consistently about the same level. Quarters one to two have been excluded from the revised estimate.

Revision estimate = 2994

Completions for the June quarter 2016

From endorsed model – Estimate = 1840; Relative error = 18.0%.

Time window for calculating the average lag factor is from September quarter 2013 to June quarter 2015.

The lag ratios corresponding to quarters one to three are clearly higher than those for quarters four to eight. Quarters one to three have been excluded from the revised estimate.

Revised estimate = 1621

Completions for the March quarter 2016

From endorsed model – Estimate = 2066; Relative error = 12.3%.

Time window for calculating the average lag factor is from September quarter 2013 to June quarter 2015.

The lag ratios corresponding to quarters one to two are clearly higher than those for quarters three to eight. Quarters one to two have been excluded from the revised estimate.

Revised estimate = 1945

Completions for the December quarter 2015

From endorsed model – Estimate = 1977; Relative error = 11.1%.

Time window for calculating the average lag factor is from September quarter 2013 to June quarter 2015.

The lag ratio corresponding to quarter one is clearly higher than the other lag ratios and has been excluded from the revised estimate.

Revised estimate = 1908

Cancellations/withdrawals for the June quarter 2016

From endorsed model – Estimate = 1604; Relative error = 59.2%.

Time window for calculating the average lag factor is from September quarter 2012 to June quarter 2014.

The very high relative error is due to an extremely high lag ratio in quarter four of the time window. It is clearly atypical compared with the other lag ratios and has been excluded from the revised estimate.

Revised estimate = 1299

Cancellations/withdrawals for the March quarter 2016

From endorsed model – Estimate = 1528; Relative error = 20.6%.

Time window for calculating the average lag factor is from September quarter 2012 to June quarter 2014.

The high relative error is mainly due the relatively high values in the middle of the time window and relatively low values at either end. The quarters that will come into the time window in the next two quarters suggest the lower levels are more appropriate. Quarters three and four are the main contributors to the high relative error and have been excluded from the revised estimate.

Revised estimate = 1403

Northern Territory

Completions for the June quarter 2016

From endorsed model – Estimate = 226; Relative error = 11.5%.

Time window for calculating the average lag factor is from September quarter 2013 to June quarter 2015.

The lag ratio for quarter eight is clearly higher than the other lag ratios. The next two quarters to come into the time window suggest that the lags might be returning to a lower level. Quarter eight has been excluded from the revised estimate.

Revised estimate = 217

Australian Capital Territory

Cancellations/withdrawals for the June quarter 2016

From endorsed model – Estimate = 667; Relative error = 11.1%.

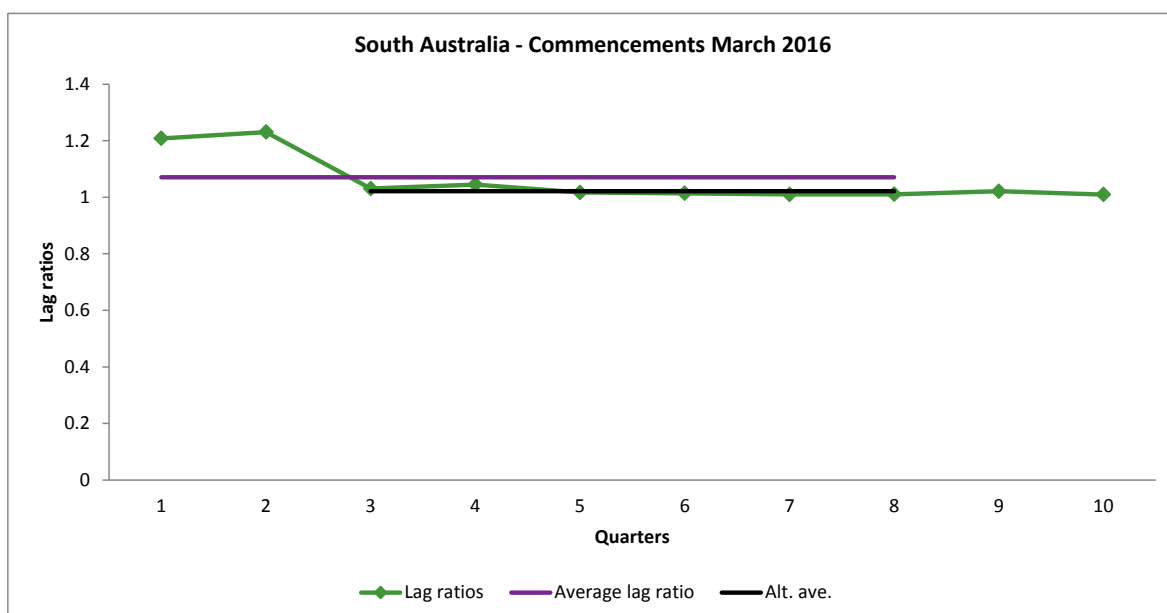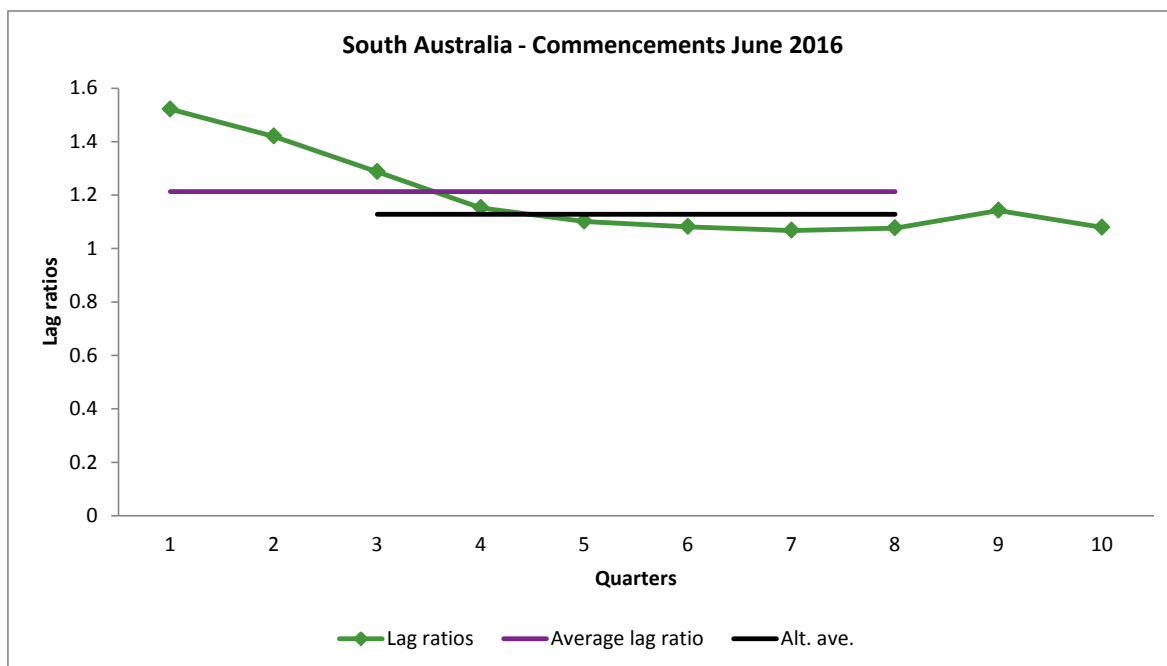Time window for calculating the average lag factor is from September quarter 2012 to June quarter 2014.

The lag ratios are higher in quarters one to three than in quarters four to eight. The next two quarters to come into the time window suggest that the lags will not return to the higher levels of the early quarters. Quarters one to three have been excluded from the revised estimate.
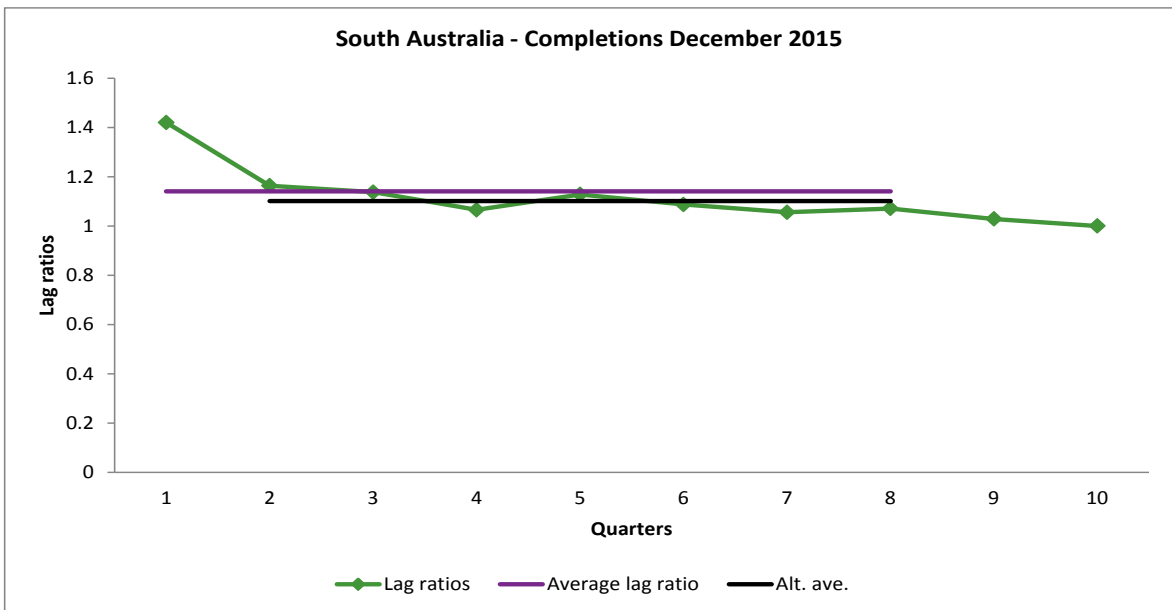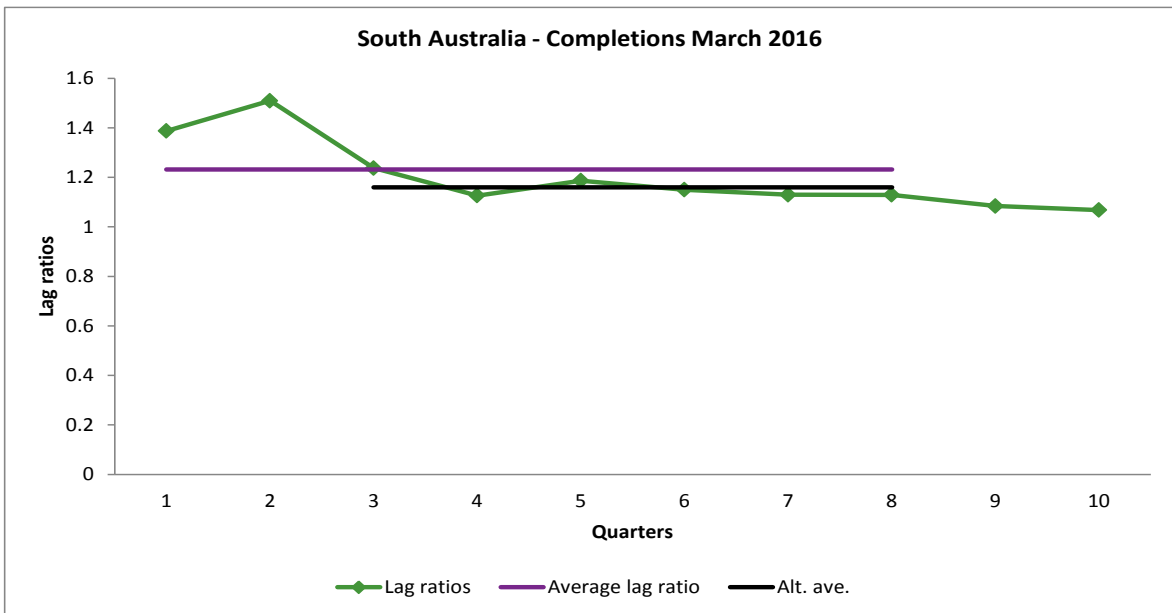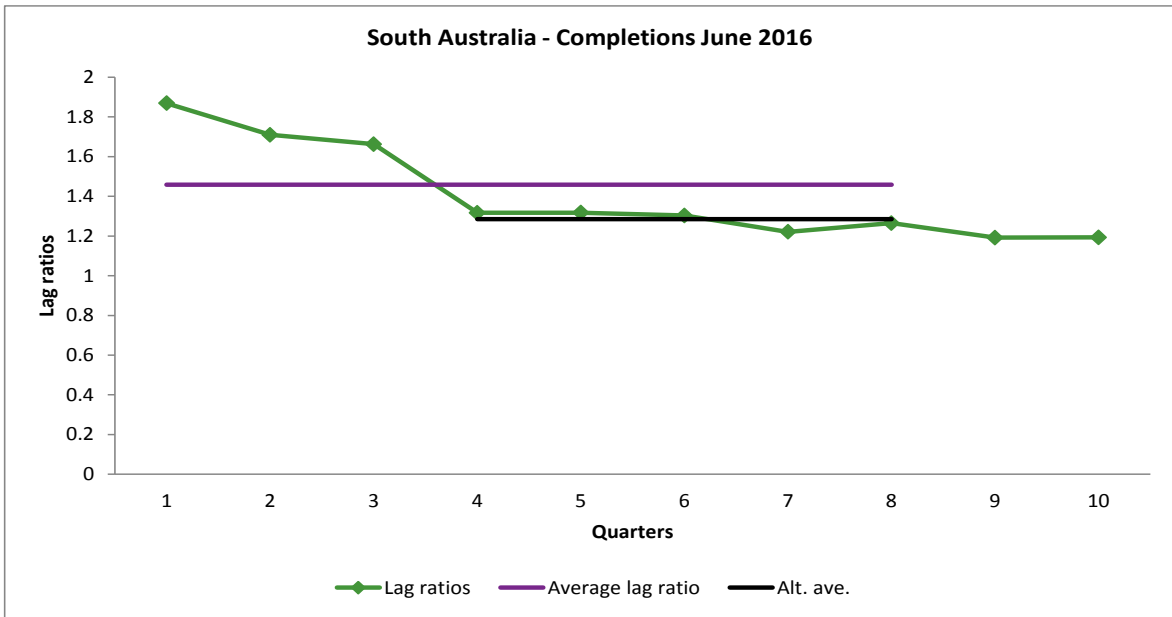
Revised estimate = 624

Attachment 1: Revised estimates for Collection 89

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 (purple line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (black line).

South Australia - Commencements June 2016

South Australia - Commencements March 2016

South Australia - Completions June 2016

South Australia - Completions March 2016

South Australia - Completions December 2015

South Australia - Cancellations/Withdrawals June 2016

Lag ratios — Average lag ratio — Alt. ave.

South Australia - Cancellations/Withdrawals March 2016

Lag ratios — Average lag ratio — Alt. ave.

Northern Territory - Completions June 2016

Lag ratios / Quarters

Lag ratios — Average lag ratio — Alt. ave.

Australian Capital Territory- Cancellations/Withdrawals June 2016

Lag ratios / Quarters

Lag ratios — Average lag ratio — Alt. ave.
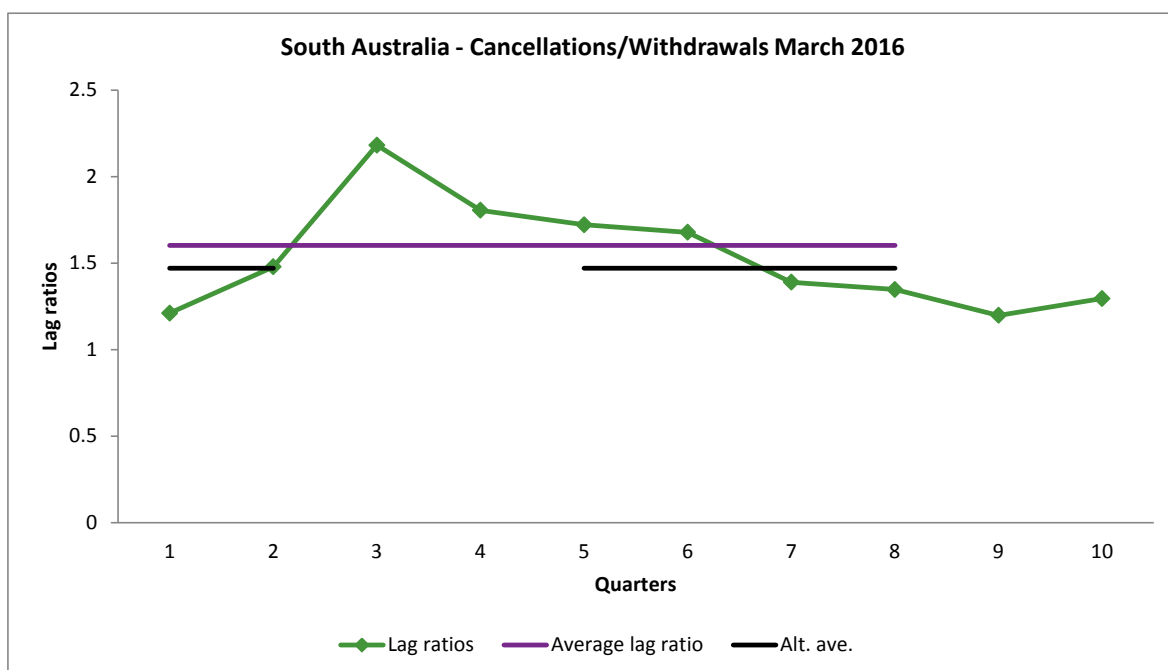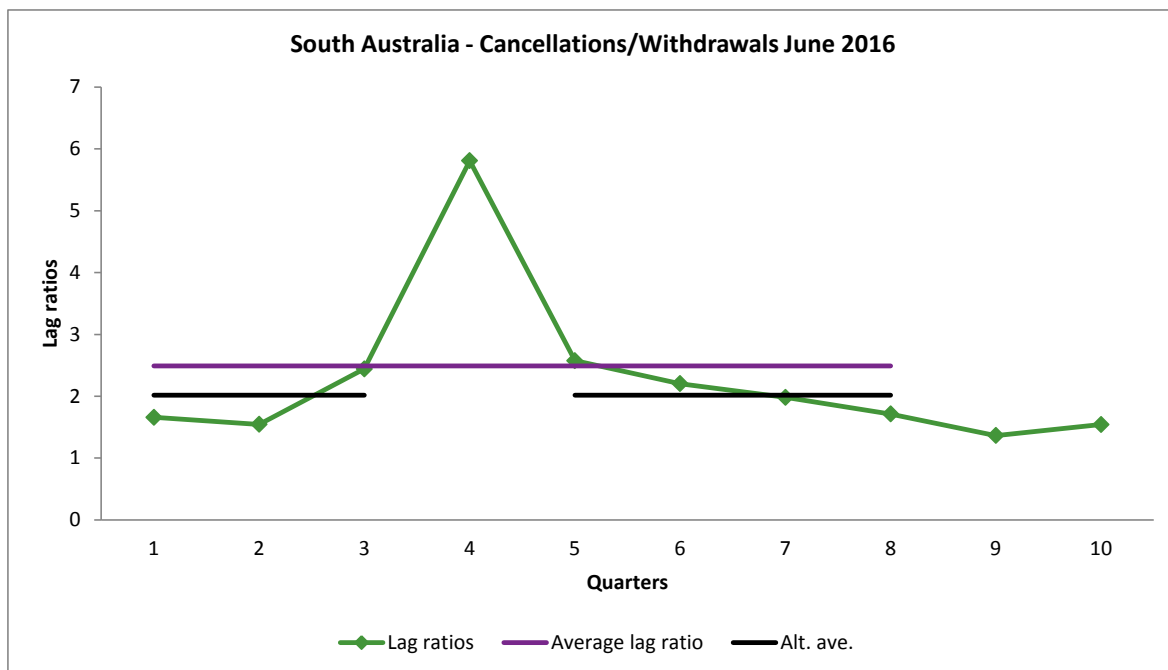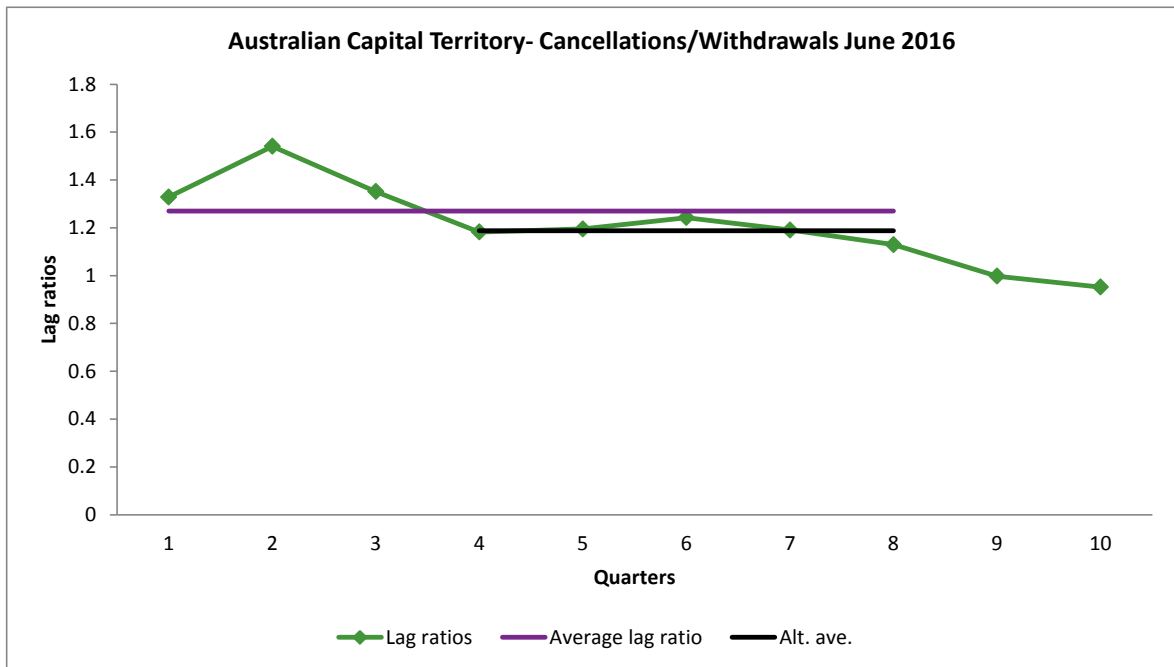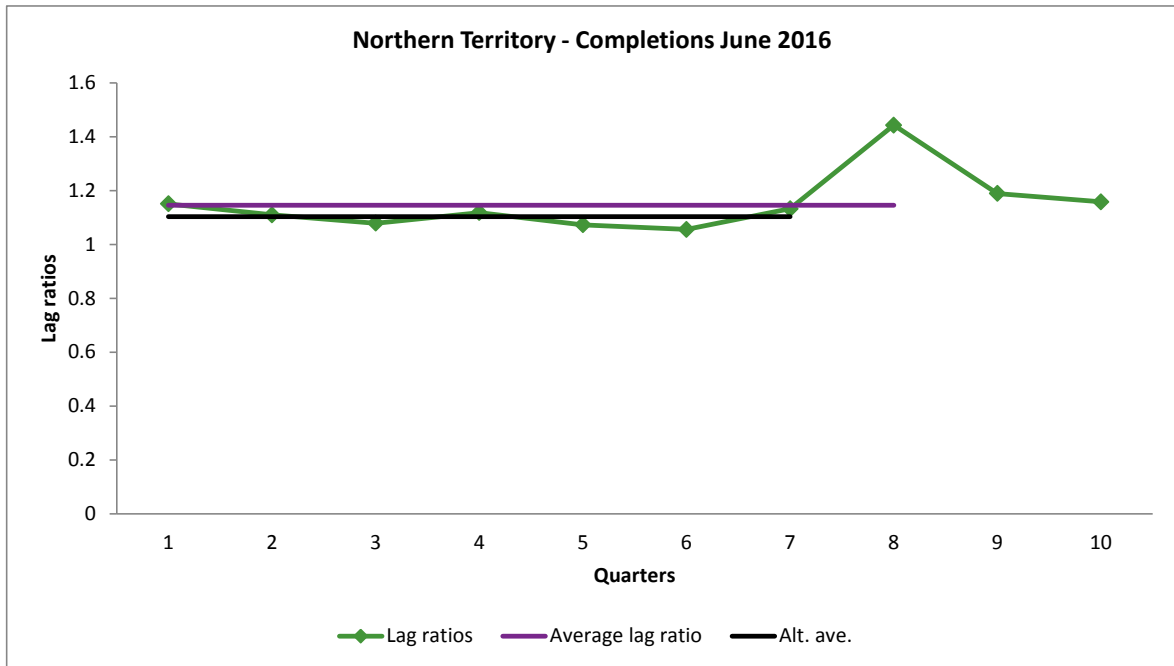
Attachment 2: Expired contracts for Collection 89

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 (purple line).

New South Wales

Victoria

Queensland

South Australia

Western Australia

Tasmania

Australian Capital Territory
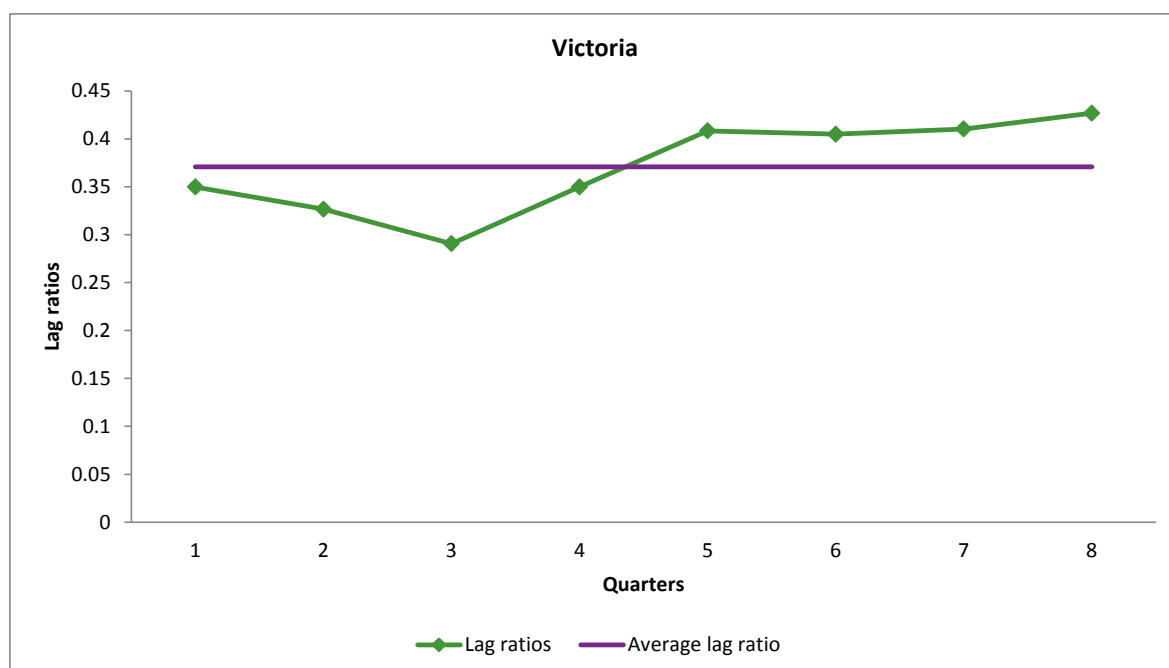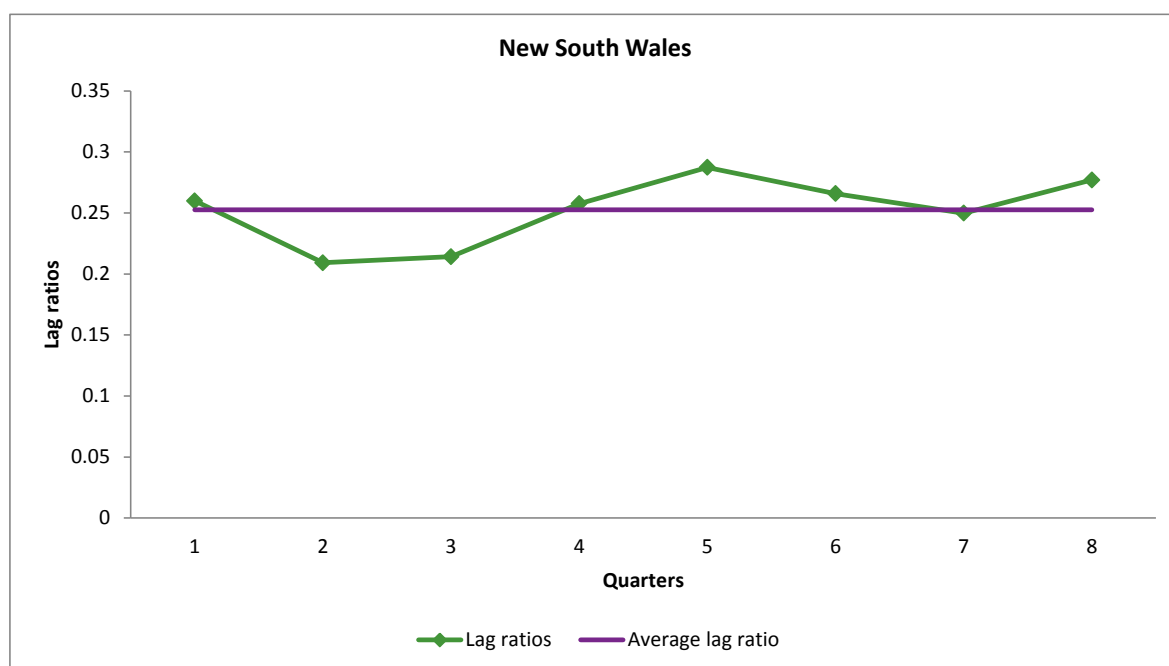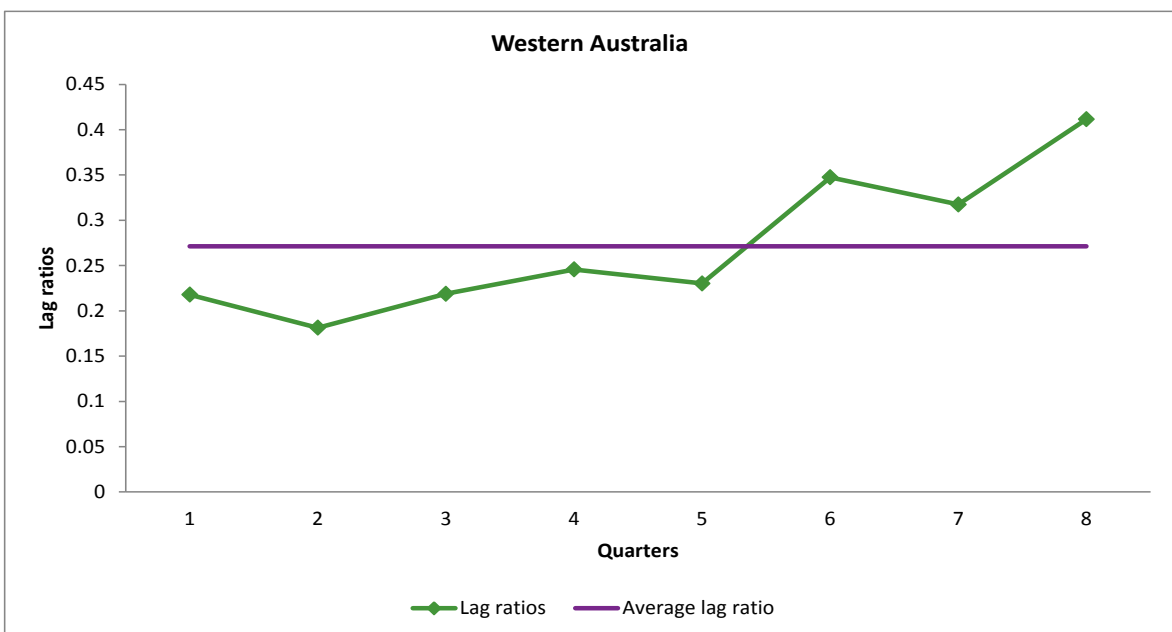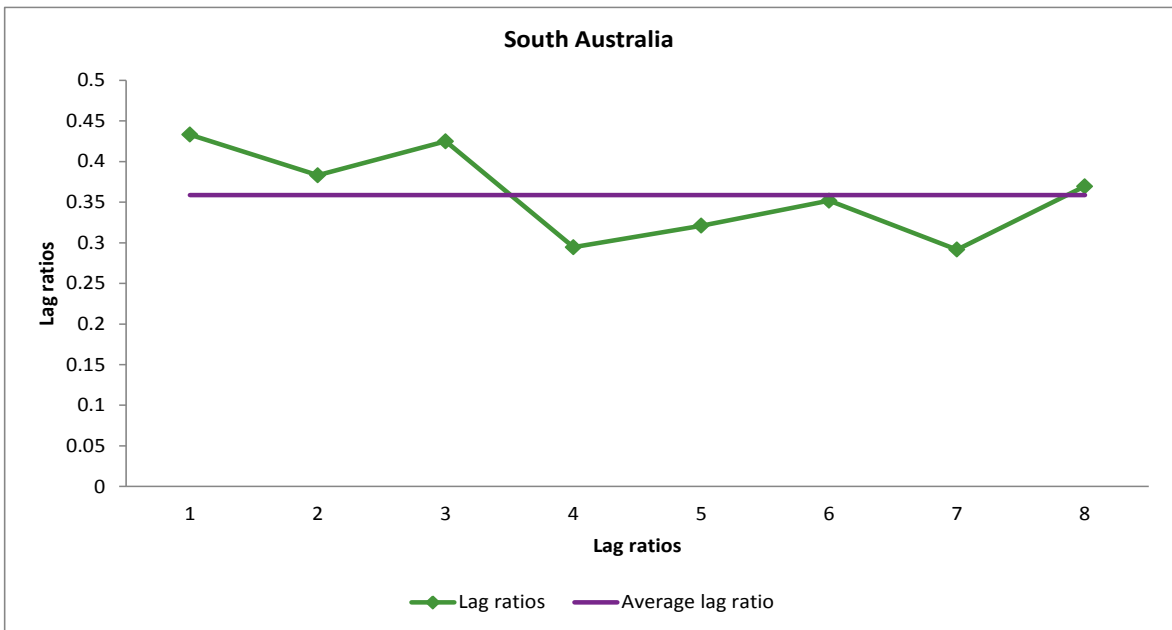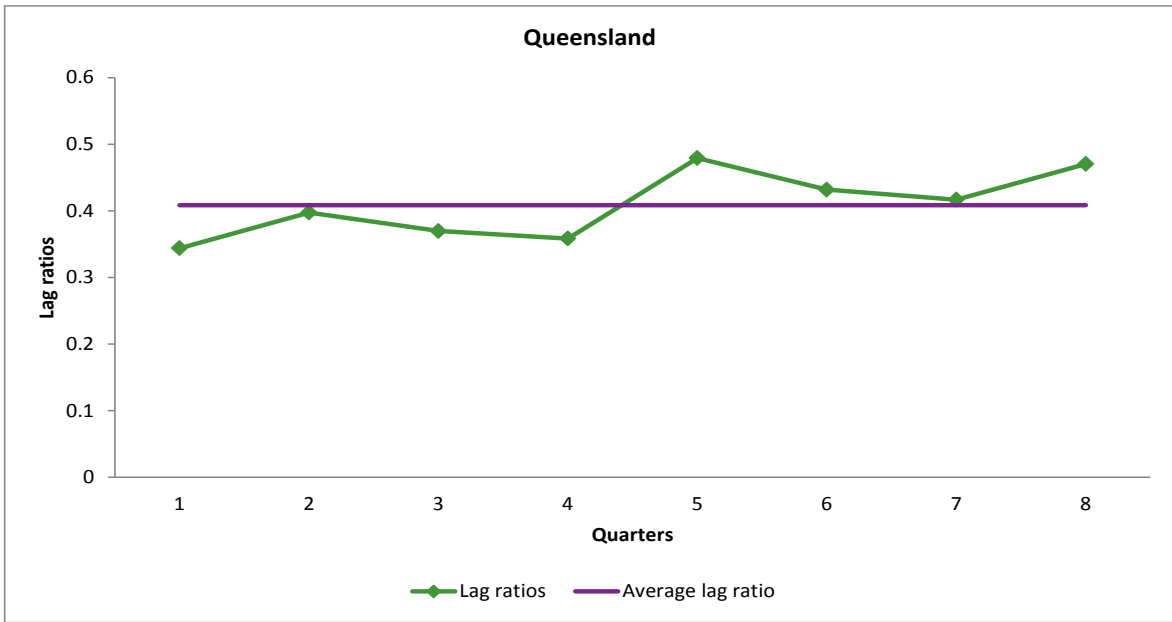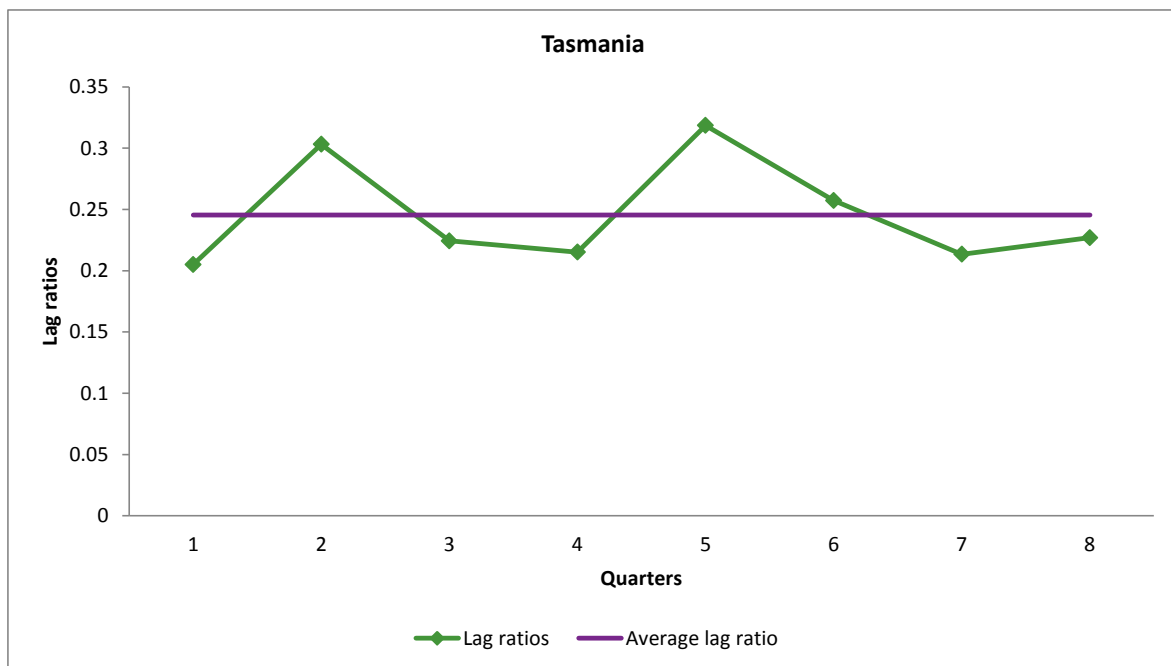
Adjustment note for Collection 88

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.

For the majority of states and territories relative prediction errors were below 10%. South Australia has high relative prediction errors for commencements, completions and cancellations/withdrawals. The Australian Capital Territory has a relative prediction error just under 11% for cancellations/withdrawals for the March 2016 quarter.

Relative prediction errors for expiries were between 7% and 24% across the jurisdictions this quarter.

The estimates for South Australia need to be treated with caution. The high relative prediction errors noted below are thought to be a combination of factors. The time windows used to calculate average reporting lags correspond to the transition to a new processing system and also rapid changes in non-trade commencements. Indications are that current reporting lags are lower than the averages calculated from the time windows. This suggests that in addition to the high variability, the estimated commencements, completions and cancellations/withdrawals could have a bias toward overestimating the final counts. Eventually the time window will move out of this period but initial estimates and first revision estimates can be expected to have high relative prediction errors for some quarters yet.

The data received from the ACT contained some anomalies for cancellations/withdrawals. It is currently under investigation. This has had implications for the revision of estimates.

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 March quarter 2016

From endorsed model – Estimate = 3552; Relative error = 16.5%.

Time window for calculating the average lag factor is from June quarter 2013 to March quarter 2015.

The lag ratios are higher in quarters one to four than in quarters five to eight. The next two quarters to come into the time window suggest that the lags will return to higher levels, though how high is uncertain. Quarters one to three have been excluded from the revised estimate while quarter 4 has been retained in case future lag ratios continue to rise.

Revision estimate = 3183

Completions for the March quarter 2016

From endorsed model – Estimate = 2448; Relative error = 28.0%.

Time window for calculating the average lag factor is from June quarter 2013 to March quarter 2015.

The lag ratios corresponding to quarters one to four are clearly higher than those for quarters five to eight. However, the next two quarters (nine and ten) to come into the time window have lag ratios that are already approaching the level displayed in quarters five to eight. It can be expected that the lag ratios for quarters nine and ten will increase over the next two collections. This suggests that future lag ratios could be slightly higher than those in quarters five to eight. To allow for this, quarter 4 has been retained in the revised estimate while quarters one to three have been excluded.

Revised estimate =.2073

Completions for the December quarter 2015

From endorsed model – Estimate = 2033; Relative error = 11.9%.

Time window for calculating the average lag factor is from June quarter 2013 to March quarter 2015.

The lag ratios corresponding to quarters one to three are clearly higher than those for quarters four to eight. The next two quarters (nine and ten) to come into the time window indicate some growth in the lag ratios but there is no indication of a return to the levels of the early quarters. Accordingly, quarters one to three have been excluded from the revised estimate.

Revised estimate =.1885

Completions for the September quarter 2015

From endorsed model – Estimate = 1749; Relative error = 10.8%.

Time window for calculating the average lag factor is from June quarter 2013 to March quarter 2015.

The two highest lag ratios occur in quarters one and two and these quarters have been excluded from the revised estimate. The lag ratio for quarter three is a possible candidate for exclusion but has been retained in case future lag ratios continue to rise.

Revised estimate =.1674

Cancellations/withdrawals for the March quarter 2016

From endorsed model – Estimate = 2055; Relative error = 60.7%.

Time window for calculating the average lag factor is from June quarter 2012 to March quarter 2014.

The very high relative error is due to an extremely high lag ratio in quarter five of the time window. It is clearly atypical compared with the other lag ratios and has been excluded from the revised estimate. Quarters four and six were also high and were considered for exclusion but the resulting averaged lag was around the level of the quarter nine lag ratio which is expected to exhibit some growth before entering the time window). Accordingly, a more conservative approach was taken and only quarter five was excluded from the revised estimate.

Revised estimate =.1657

Cancellations/withdrawals for the December quarter 2015

From endorsed model - Estimate = 1476; Relative error = 21.0%.

Time window for calculating the average lag factor is from June quarter 2012 to March quarter 2014.

The lag ratios for quarters four to seven are much higher than those for the other quarters. The quarters that will come into the time window in the next two quarters suggest the lower levels are more appropriate. Experimentation revealed that excluding quarters four to seven resulted in an average lag ratio that very low (about the level of the quarters about to enter the time window). Excluding only quarters four and five resulted in an average lag ratio that (subjectively) gave a good compromise between reflecting the lower level of the lag ratios and guarding against possible growth in future lag ratios.

Revised estimate =.1354

Cancellations/withdrawals for the September quarter 2015

From endorsed model - Estimate = 1188; Relative error = 10.6%.

Time window for calculating the average lag factor is from June quarter 2012 to March quarter 2014.

The lag ratios for quarters three to six are much higher than those for the other quarters. The quarters that will come into the time window in the next two quarters do not give a clear indication of the level of lag ratios for future quarters. Also, the lag ratios for the high quarters are about the same level. This leaves no criteria for excluding only some of those quarters - if one is to be excluded then all of them should be excluded. Given the above and the fact that the relative prediction error is under 11%, no revision was undertaken.

No revision.

Australian Capital Territory

Cancellations/withdrawals for the March quarter 2016

From endorsed model – Estimate = 596; Relative error = 11.0%.

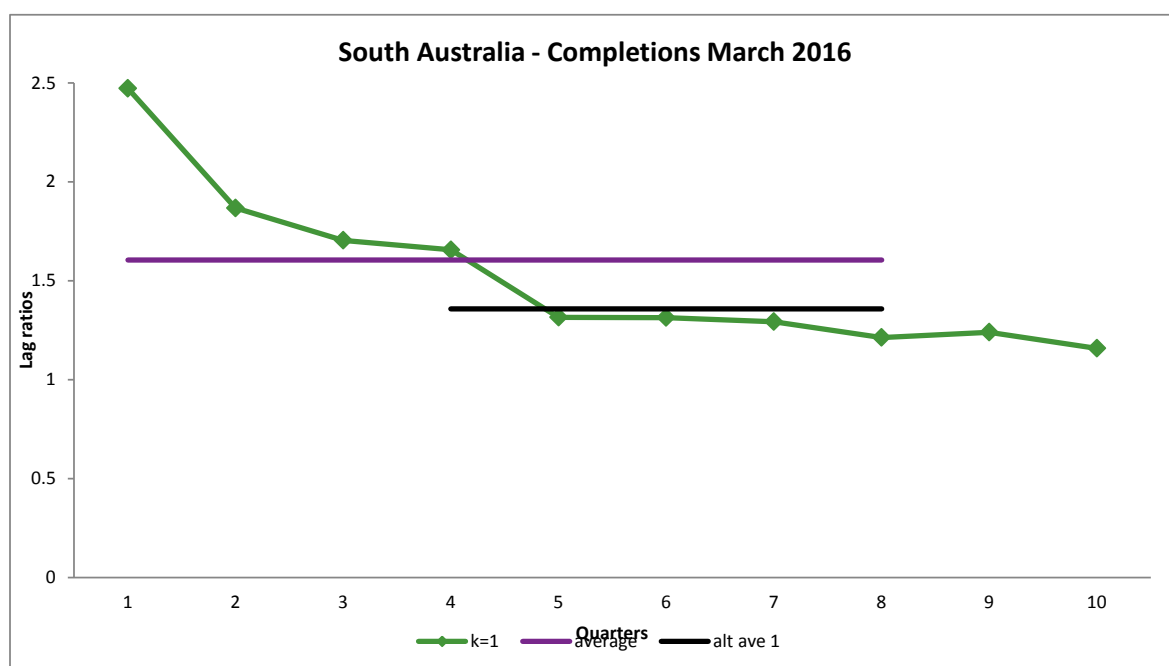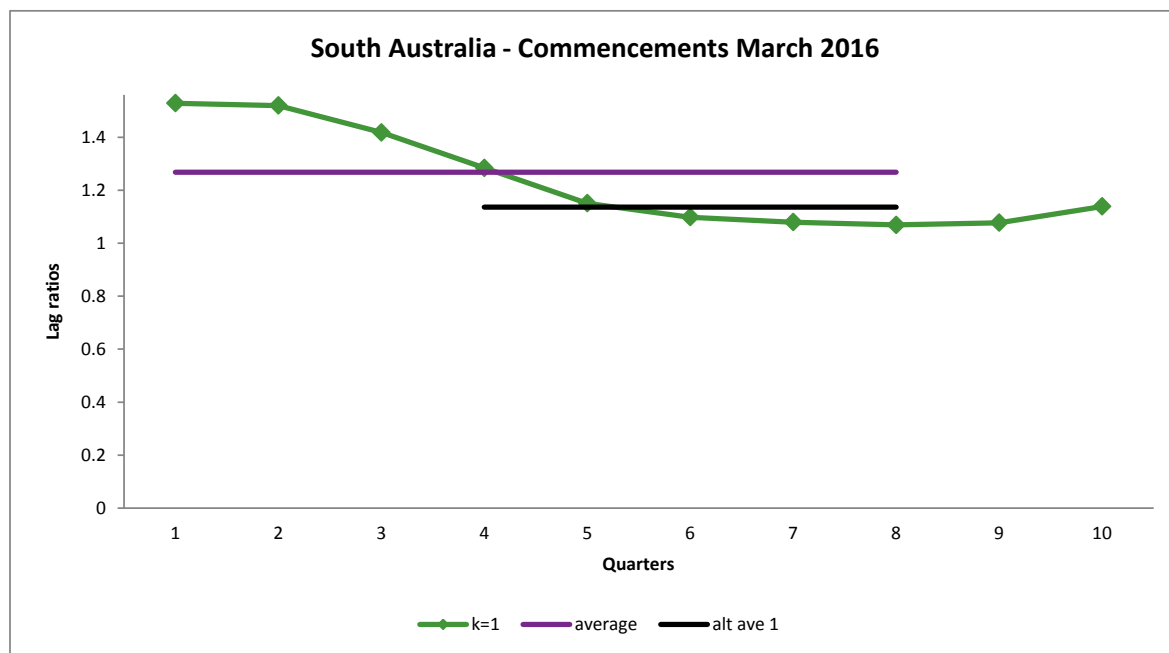Time window for calculating the average lag factor is from June quarter 2012 to March quarter 2014.

The lag ratios are higher in quarters one to four than in quarters five to eight. The next two quarters to come into the time window suggest that the lags will not return to the higher levels of the early quarters. Quarters one to four have been excluded from the revised estimate.
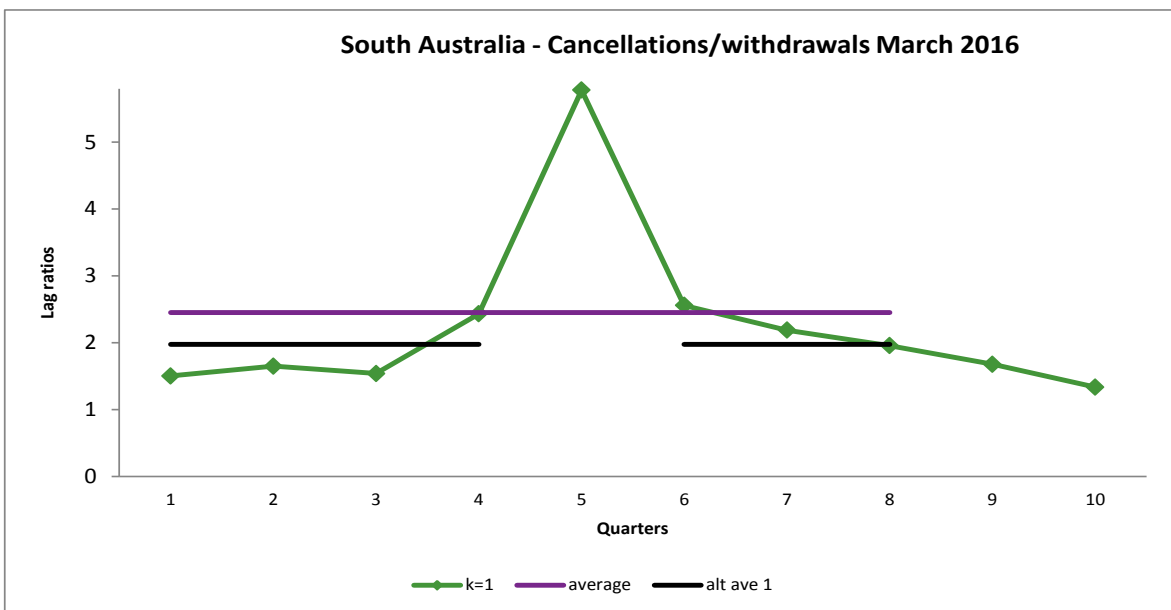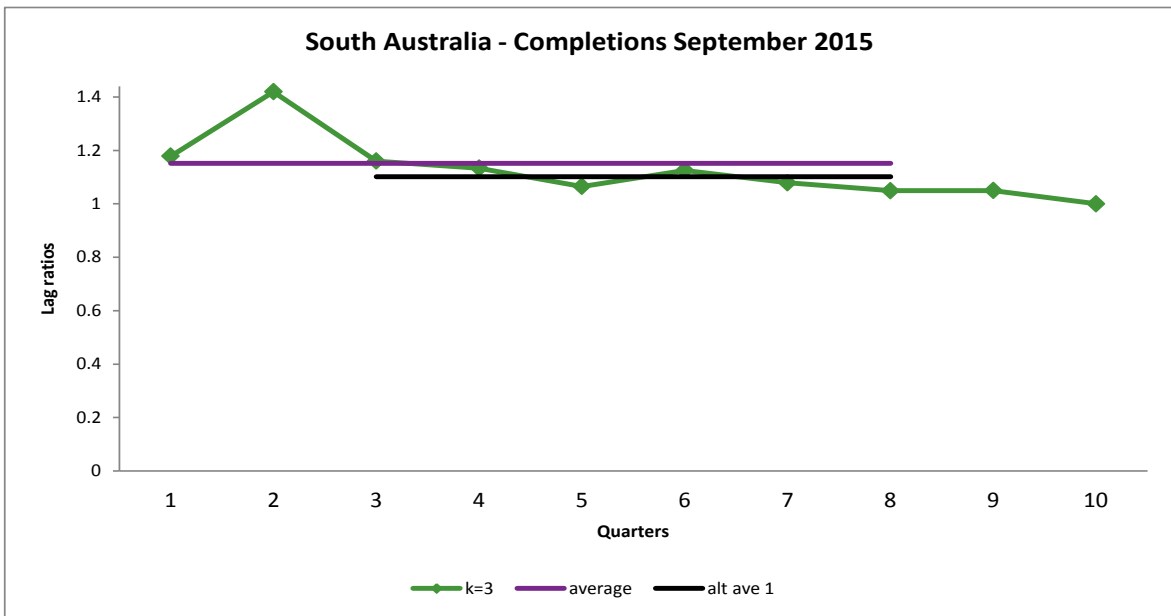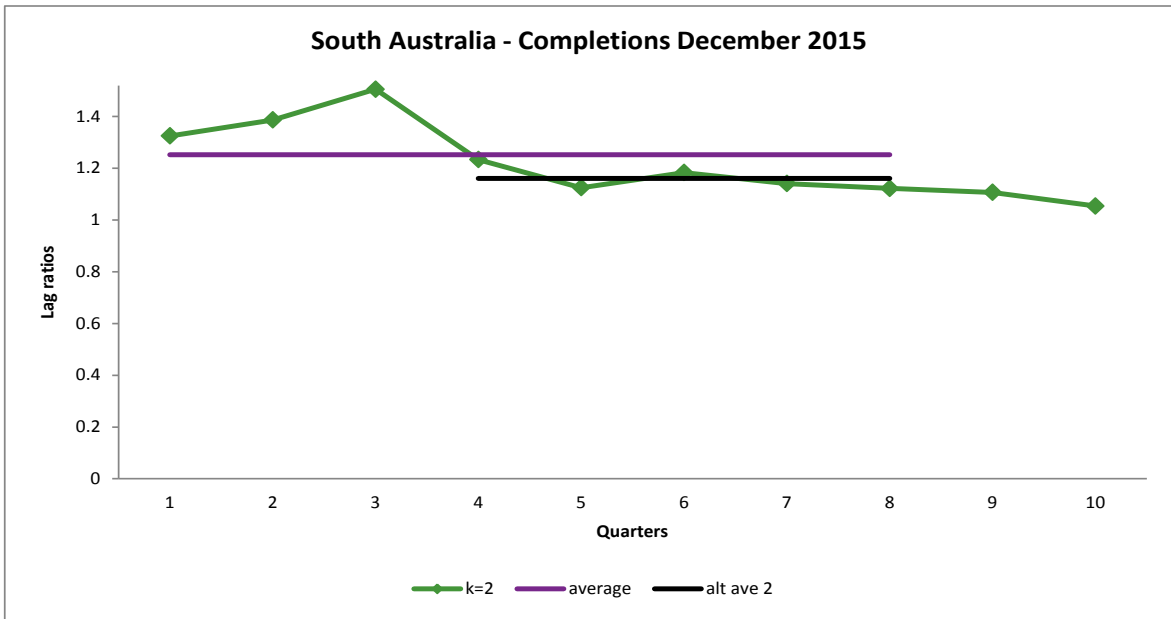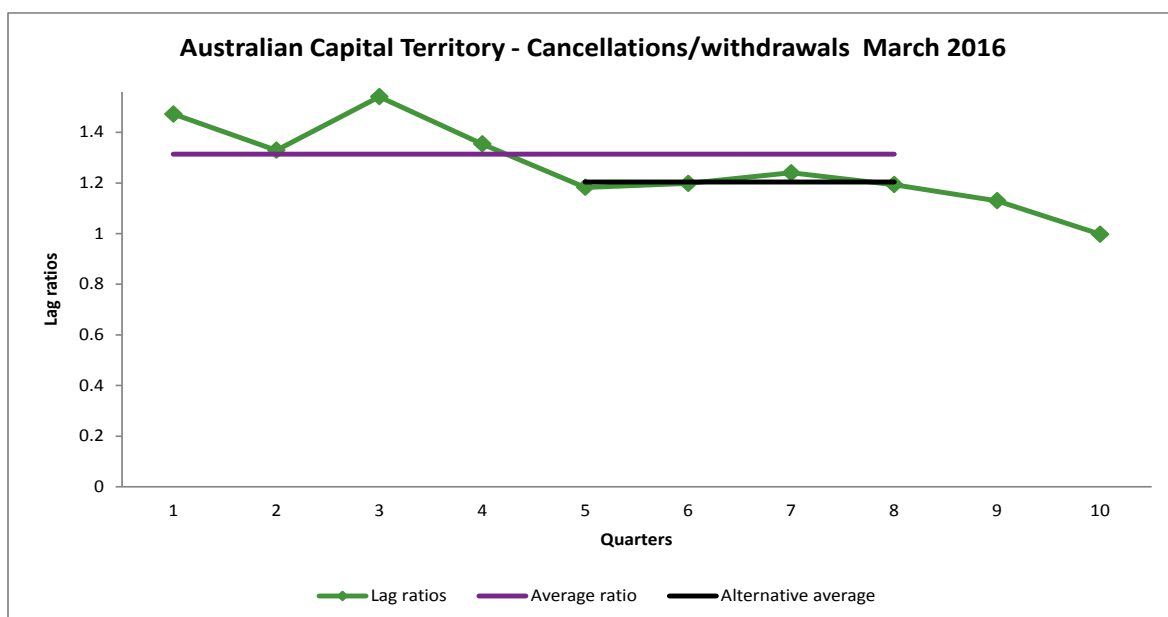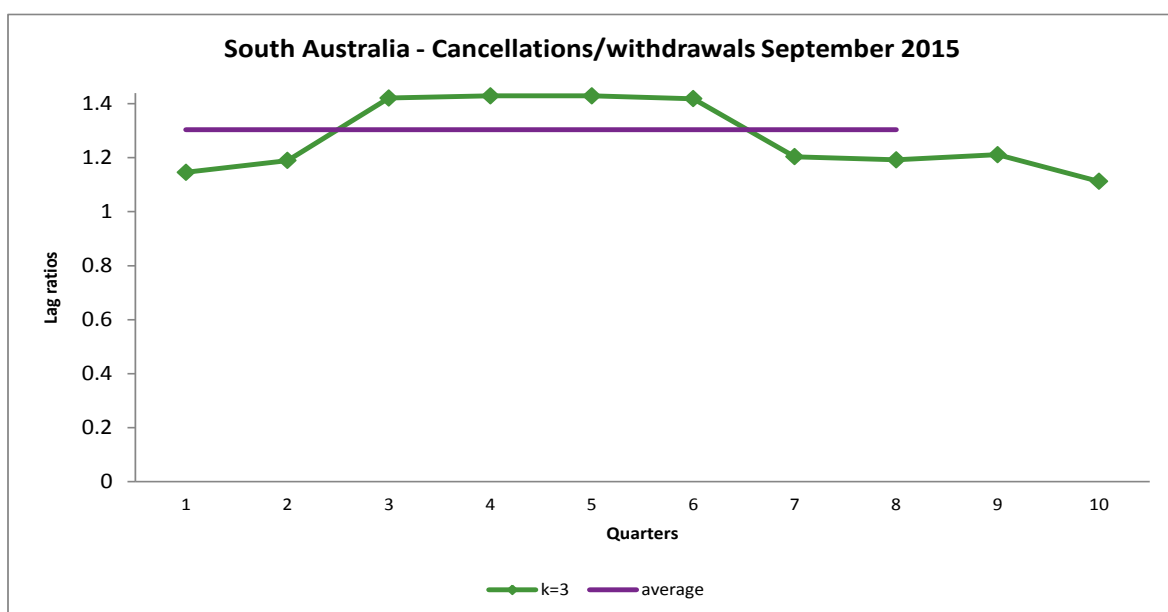
Revised estimate =.547

Attachment 1: Revised estimates for Collection 88

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 (purple line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (black line).

South Australia - Commencements March 2016

South Australia - Completions March 2016

South Australia - Completions December 2015

South Australia - Completions September 2015

South Australia - Cancellations/withdrawals March 2016

South Australia - Cancellations/withdrawals December 2015

Legend: k=2 — average — alt ave 2

South Australia - Cancellations/withdrawals September 2015

Legend: k=3 — average

Australian Capital Territory - Cancellations/withdrawals March 2016

Legend: Lag ratios — Average ratio — Alternative average
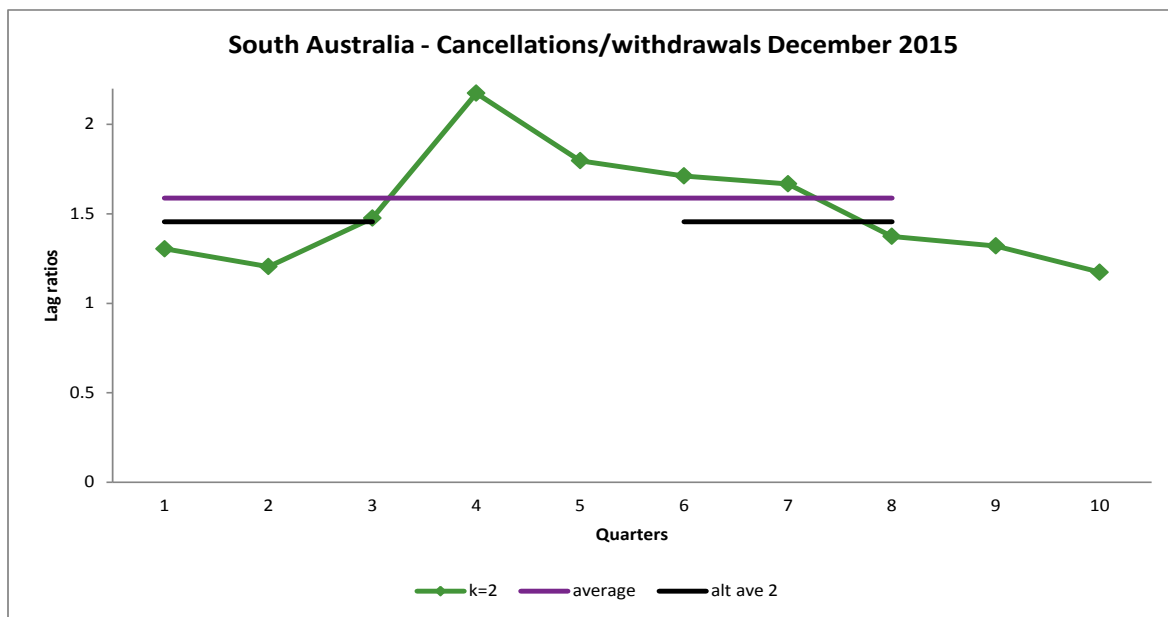
Attachment 2: Expired contracts for Collection 88

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 (purple line).

Queensland

South Australia

Western Australia

Tasmania

Australian Capital Territory