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Mr Pradeep Philip
Secretary
Department of Health
50 Lonsdale Street
Melbourne Vic 3000

13 February 2013

Commercial in Confidence

Dear Secretary

Population Growth Projections

In accordance with our letter of engagement, we have assisted you to prepare a Department of Health slide (see attached) outlining the Australian population data from 2006 to 2011.

Also in accordance with our letter of engagement, you have sought our views on the veracity of certain statements on that slide. Specifically, you have sought our views on the following statements:

- i. *"The correct calculation of population growth is to calculate the growth from B1 to B2."*
- ii. *"The current SPP determination has incorrectly calculated the population growth from A to B2."*
- iii. *"An obsolete data series has been used as the base to calculate population growth..."*

We believe, subject to the limitations stated in the next paragraph, that the above statements are factually correct in the context they have been presented on the slide.

As noted in our letter of engagement, the purpose of our engagement has been to assist you to prepare a chart of population data determined in accordance with both a previous and a more current ABS methodology. KPMG accepts no responsibility for the integrity of either ABS methodology. In assisting you to prepare the chart KPMG has drawn population data from ABS sources. KPMG has not independently verified such data and accepts no responsibility for the accuracy of such information.

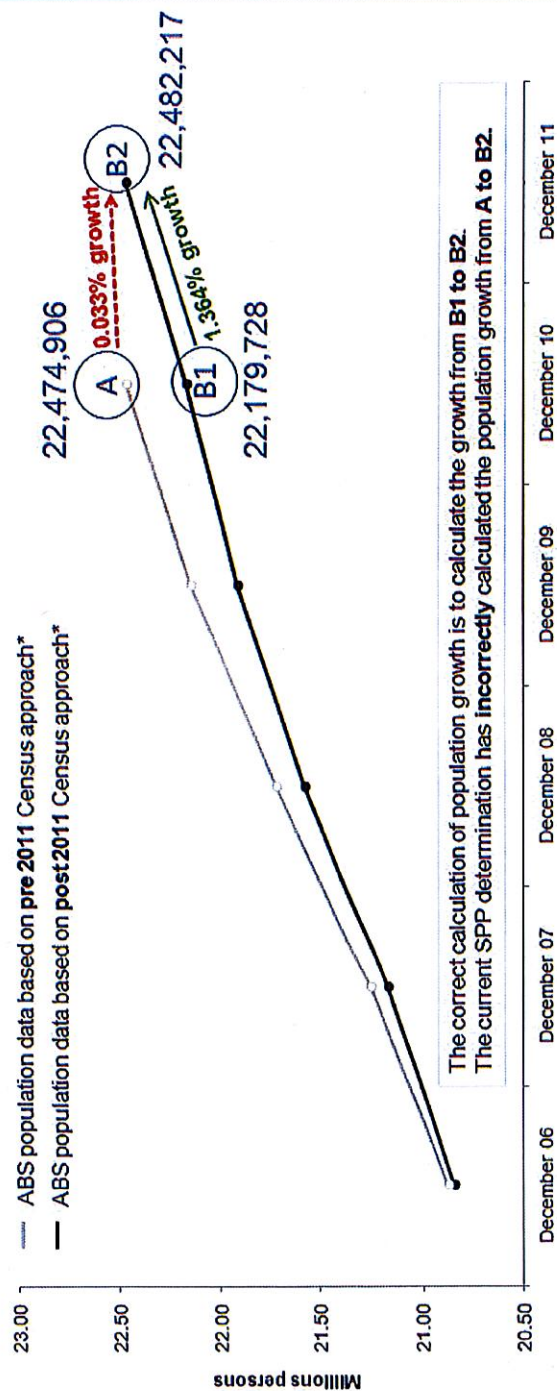
This advice has been provided to you in accordance with our engagement letter dated 12 February 2013, and may not be used for any other purpose or provided to, or referred to in any communications with, any other party without the prior written consent of KPMG.

Yours sincerely

Chris Leptos AM
Partner
chrisleptos@kpmg.com.au

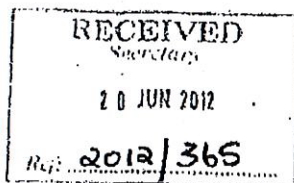
An obsolete ABS data series has been used as the base to calculate population growth, resulting in the growth rate being materially understated

health



Note: All population figures exclude Other Territories

Sources
 A – ABS data published 30/9/11 in Commonwealth Government Final Budget Outcome 2010-11 [Link](#) (Table 32)
 B1 – ABS data released on 20/06/12 [Link](#) (Table 4)
 B2 – ABS data published 24/9/12 in Commonwealth Government Final Budget Outcome 2011-12 [Link](#) (Table 33)
 * Explanation of the ABS pre and post 2011 Census approach [Link](#)



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Facsimile: (02) 6251 6009

Ms Glenys Beauchamp
Secretary
Department of Regional Australia, Local Government, Arts and Sport
4 Mort Street
CANBERRA CITY ACT 2601

Attn: Shane Bennett
Assistant Secretary, Regional Economic and Evaluation Branch
Department of Regional Australia, Local Government, Arts and Sport

Dear Ms Beauchamp

LOCAL GOVERNMENT (FINANCIAL ASSISTANCE) ACT 1995

In accordance with Sections 4A, 8 and 10 of the *Local Government (Financial Assistance) Act 1995*, I estimate that the populations of states and territories at 31 December 2010 and 31 December 2011, incorporating data from the 2011 Census of Population and Housing for the first time are as set out below.

	31 December 2010	31 December 2011
New South Wales	7,176,687	7,247,669
Victoria	5,499,030	5,574,455
Queensland	4,446,516	4,513,009
South Australia	1,633,196	1,645,040
Western Australia	2,319,812	2,387,232
Tasmania	509,742	511,718
Northern Territory	230,529	232,365
Australian Capital Territory	364,216	370,729
<i>Sub-total, states, NT and ACT</i>	22,179,728	22,482,217
Other territories (a)	3,047	3,123
TOTAL	22,182,775	22,485,340

(a) Comprises Jervis Bay Territory, Territory of Christmas Island and Territory of Cocos (Keeling) Islands

Although not required by the relevant Act, I have included separately, the population of the Other Territories, and a sub total for the States, NT and ACT so that these estimates can be reconciled with published estimates of the population of Australia.

The above estimates are preliminary, based on the latest statistics available to me. The estimates for 31 December 2011 were released at 11:30 AM today, 20 June 2012 in the publication *Australian Demographic Statistics, December 2011* (cat. no. 3101.0).

Yours sincerely

Brian Pink
Australian Statistician

/s/ 4 June 2012

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF REGIONAL AUSTRALIA, LOCAL GOVERNMENT, ARTS AND SPORT

**LOCAL GOVERNMENT (FINANCIAL ASSISTANCE) ACT 1995
SUBSECTIONS 7(2) AND 7(5)**

I, SIMON CREAN, Minister for Regional Australia, Regional Development and Local Government, pursuant to subsections 7(2) and 7(5) of the *Local Government (Financial Assistance) Act 1995*, hereby estimate that:

1. the **base figure** for 2011-12 under subsection 7(2) is \$1,856,603,938;
2. the **additional previous year funding amounts** in relation to each State for 2012-13 under subsection 7(5) are:

New South Wales	\$239,018,878
Victoria	\$169,843,908
Queensland	\$154,355,522
Western Australia	\$125,964,787
South Australia	\$45,275,026
Tasmania	\$43,657,157
Northern Territory	\$19,298,067
Australian Capital Territory	\$26,416,459

Dated this

27/6/

day of July 2012

SIMON CREAN

SCHEDULE

LOCAL GOVERNMENT (FINANCIAL ASSISTANCE) ACT 1995 SUBSECTIONS 7(2) AND 7(5)

EXPLANATION OF THE BASIS ON WHICH THE ESTIMATES WERE MADE

1. Base Figure for 2011-12

$$\begin{aligned}\text{Base figure for 2011-12} &= \text{base figure for 2010-11} \times \text{final factor for 2011-12} \\ &= \$1,446,854,609 \times 1.2832 \\ &= \$1,856,603,937\end{aligned}$$

[Note: this is the final entitlement for the general purpose grant for 2011-12]

2. Additional previous year funding amount by State for 2012-13

Additional previous year funding amount for 2012-13

$$= \text{additional previous year funding amount for 2011-12} \times \text{final factor for 2011-12}$$

State	additional previous year funding amount 2012-13	=	additional previous year funding amount 2011-12	×	final factor for 2011-12
NSW	\$306,709,024	=	\$239,018,878	×	1.2832
Vic	\$217,943,703	=	\$169,843,908	×	1.2832
Qld	\$198,069,006	=	\$154,355,522	×	1.2832
WA	\$161,638,015	=	\$125,964,787	×	1.2832
SA	\$58,096,913	=	\$45,275,026	×	1.2832
Tas	\$56,020,864	=	\$43,657,157	×	1.2832
NT	\$24,763,280	=	\$19,298,067	×	1.2832
ACT	\$33,897,600	=	\$26,416,459	×	1.2832

[Note: these are the final entitlements for the local roads grant by State for 2011-12]

3. Final Entitlement for 2011-12

Final entitlement for 2011-12 = Base figure for 2011-12 + Additional previous year funding amounts by State for 2012-13

$$\begin{aligned}&= \$1,856,603,937 + \$823,829,804 \\ &= \$2,680,433,741\end{aligned}$$

$$\left(\frac{\text{Population of Australia}}{\text{Previous population of Australia}} \right) \times \left(\frac{\text{CPI}}{\text{Previous CPI}} \right)$$

1) the unadjusted factor is calculated as follows:

$$\left(\frac{22,482,217^{(a)}}{22,179,728^{(b)}}\right) \times \left(\frac{184.9^{(c)}}{179.5^{(d)}}\right) = 1.0441$$

$$\left(\frac{2012-13 \text{ unadjusted amount}^{(e)} - 2011-12 \text{ adjustment amount}}{2011 - 12 \text{ final entitlement}} \right) \times \left(\frac{1}{\text{unadjusted factor}} \right)$$
$$\left(\frac{2,191,852,904 - 1,117,780,000}{2,680,433,742} \right) \times \left(\frac{1}{1.0441} \right) = 0.3838$$
$$1.0441 \times 0.3838 = 0.4007$$

WAYNE MAXWELL SWAN

- (a) Estimate for 31 December 2011 prepared by the Australian Statistician on 20 June 2012.
- (b) Estimate for 31 December 2010 prepared by the Australian Statistician on 20 June 2012.
- (c) Treasury forecast of the All Groups Consumer Price Index number, weighted average of the 8 capital cities in respect of the March quarter 2013.
- (d) All Groups Consumer Price Index number, weighted average of the 8 capital cities, published on 24 April 2012 by the Australian Statistician in respect of the March quarter 2012.
- (e) This amount represents the 2011-12 unadjusted amount (excluding all bring-forwards) of \$2,099,274,882 multiplied by the unadjusted factor for 2012-13 (estimated to be 1.0441).

Table from Commonwealth Treasury showing its use of population data

POPULATION PARAMETERS

Legend:

Requires manual input (hard coded)
Calculation
Actuals data (hard coded)

Raw population figures
- obtained from ABS

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	TOTAL
2009-10	7,184,252	5,499,792	4,472,621	2,259,655	1,634,775	505,377	354,988	227,985	22,149,445
2010-11	7,272,153	5,585,566	4,548,661	2,317,064	1,650,377	509,292	361,914	229,874	22,474,906
2011-12	7,247,663	5,574,455	4,513,009	2,387,232	1,645,040	511,718	370,729	232,365	22,482,217

Weighted population figures

- obtained from Weighted population calculation sheet
- product of hospital utilisation weightings (from DOHA) and raw population figures (from ABS)

	TOTAL
2009-10	22,255,527
2010-11	22,744,603
2011-12	22,822,727



RESERVE BANK OF AUSTRALIA

SWIFT/ONLINE POSTINGS

EXECUTIVE DIRECTOR
FINANCE AND CORPORATE SERVICES
DEPARTMENT OF HEALTH
50 LONSDALE STREET
MELBOURNE VIC 3000

STATE POOL ACCOUNT
DEPARTMENT OF HEALTH
VICTORIA

Total Posts: 1

Date	Br	Particulars	Debit	Credit
07/11/2012	2			\$278,410,660.80
		Ref: 7/11/2012 *		
		TOTALS	\$0.00	\$278,410,660.80



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DEPARTMENT OF HEALTH
50 LONSDALE STREET
MELBOURNE VIC 3000

STATE POOL ACCOUNT
DEPARTMENT OF HEALTH
VICTORIA

Total Posts: 1

Date	Br	Particulars	Debit	Credit
07/12/2012	2			\$263,081,512.24
		Ref: 7/12/2012 *		
		TOTALS	\$0.00	\$263,081,512.24



RESERVE BANK OF AUSTRALIA

TRANSACTION DATA QUERY DETAILS

Account Name: STATE POOL ACCOUNT
DEPARTMENT OF HEALTH
VICTORIA

Start Date: 07/01/2013
End Date: 07/01/2013
Transaction Type: RTGS Receipts Credit

Total Transactions: 1

Particulars	Debit	Credit
Ref: 7/1/2013 *		\$263,081,512.24
Account : DEPARTMENT OF THE TREASURY		
Totals	\$0.00	\$263,081,512.24



RESERVE BANK OF AUSTRALIA

SWIFT/ONLINE POSTINGS

EXECUTIVE DIRECTOR
FINANCE AND CORPORATE SERVICES
DEPARTMENT OF HEALTH
50 LONSDALE STREET
MELBOURNE VIC 3000

STATE POOL ACCOUNT
DEPARTMENT OF HEALTH
VICTORIA

Total Posts: 1

Date	Br	Particulars	Debit	Credit
07/02/2013	2			\$263,081,512.24
		Ref: 7/2/2013 *		
		TOTALS	\$0.00	\$263,081,512.24



Australian Bureau of Statistics

3101.0 - Australian Demographic Statistics, Jun 2012 Quality

Declaration

Latest ISSUE Released at 11:30 AM (CANBERRA TIME) 18/12/2012

FEATURE ARTICLE 3: THE 2006-2011 INTERCENSAL PERIOD AND REVISIONS TO HISTORICAL ERP

INTRODUCTION

In the previous two issues of **Australian Demographic Statistics** (cat. no. 3101.0), the ABS provided information on the relatively high intercensal error for the 2006-11 period and the challenge it has presented to users in understanding historical population growth over that period.

In the issue released on 27 September 2012, the ABS indicated its intention to revise the historical Estimated Resident Population, and proposed a 20 year revision instead of the 5 yearly revision which usually takes place when rebasing. The ABS determined that such revisions were necessary to more accurately reflect the population growth of recent years apparent from data on births, deaths and net overseas migration.

This was followed by an invitation for feedback from users, which was supplemented by an extensive consultation process, which is discussed in this article.

The ABS has now decided to revise historical ERP back 20 years to 1991 as the methodological response to the relatively high 2006-11 intercensal error. Historical ERP estimates from September 1991 to March 2011 will be revised through this process. The revised estimates will be published in **Australian Demographic Statistics** (cat. no. 3101.0).

The purpose of this article is to:

- explain why the revisions are necessary;
- provide a summary of the consultation processes which have informed the chosen ABS treatment;
- explain the guiding principles underpinning the chosen ABS treatment;
- inform users of the ABS decision and methods that will be used; and
- outline the expected impact of the revisions and the implications for other statistical series.

WHY REVISIONS ARE NECESSARY

In compiling the preliminary population estimates based on the 2011 Census, ABS introduced a key innovation which improved the quality of ERP. The introduction of

Automated Data Linking (ADL) into processing of the 2011 Census Post Enumeration Survey (PES) resulted in an improved, and lower, measure of net undercount than would have been derived had the same methodology used in processing the 2006 PES been used. In other words, the 2011 PES found that more people were actually counted by the Census than would have been suggested by the previous PES methodology.

As a result of this methodological change, the undercount adjustment used in rebasing the 2011 population estimates was also considerably lower than the undercount adjustment that was applied in the rebasing of the 2006 population estimates. ABS was able to estimate from a statistical impact study that if the ADL methodology and supporting technology had been available during the processing of the 2006 PES, the 30 June 2006 population estimates would have been lower by more than 200,000 people.

Given the different methodologies that were used in the processing of the 2006 PES and 2011 PES, the intercensal error for the 2006-2011 period is 294,000, which is around three times higher than the intercensal errors that have been measured historically.

The conventional demographic treatment for intercensal error is to spread the total amount evenly through the series for the previous 5 years, as the error is usually assumed to have accumulated over 5 years and cannot be attributed to a particular source. This conventional treatment resulted in a downward revision of population growth over the 5 year period 2006-2011, from 1.8% (average annual growth) that had been indicated in the population components of births, deaths and migration since 2006 to 1.5%.

This large reduction to growth created a challenge to users' understanding of historical population growth. The reduction implied growth rates which are artificially too low, because:

1. they are the result of an ABS change in method (ADL); and
2. they are in stark contrast to the growth implied by an assessment of components of growth.

These challenges were recognised by the ABS, and general advice on how to best use the preliminary estimates was provided in a feature article titled 'Advice on the use of 2011 Preliminary Rebased ERP' in **Australian Demographic Statistics** (cat. no. 3101.0) on 27 September 2012.

For these reasons, in the 2011 final rebased ERP release on 20 June 2013, a different treatment is required to the conventional demographic treatment for intercensal error. It is necessary to adjust historical ERP to reflect the different undercount adjustments that would have been used had the 2011 PES methodology been available in earlier years.

CONSULTATION PROCESSES WHICH HAVE INFORMED THE ABS TREATMENT

Since the 20 June 2012 release of **Australian Demographic Statistics** (cat. no. 3101.0), the ABS has extensively engaged with users of ERP to inform the process of reviewing the treatment of intercensal error ahead of the release of final rebased population estimates on 20 June 2013.

This process culminated in an intensive phase of consultation from the 27 September release through to 27 November 2012 following the publication of an article articulating the ABS intention to revise historical ERP data.

ABS sought and received a number of key perspectives from members of a number of fora, including the ABS Population Estimates Technical Workshop, the Australian Statistics Advisory Council, and the ABS State Statistical Forum. Invitations were also sent to stakeholders to submit written submissions. In addition, ABS held a wide range of meetings with users of ERP.

During this consultation process, the ABS heard consistently from users that a high quality ERP which provides coherent information on both population levels and growth is essential for informed decision making, policy development and evaluation and other planning processes.

Most feedback received through this process supported a 20 year treatment of intercensal error for final rebasing to ensure that population growth in the period up until 30 June 2011 most closely reflected the best estimate of historical growth; that reflected in the population components of births, deaths and migrations statistics.

There was wide support for principles (see below) to be developed to guide the consideration of a methodological response, in particular that any revisions should be based upon the best data available to ABS.

Some organisations indicated support for a 10 year treatment and voiced concerns about the strength of the evidence base back to 1991. There was also some concern about perceived differences in coverage between the Net Overseas Migration (NOM) component of population growth compared with the growth reflected in the Census-based population estimates, particularly for the overseas-born population. The ABS has confirmed through recent analysis that this is not a major contributor to the large intercensal error, and will publish further information on this issue in early 2013.

One organisation also cautioned the ABS against making any revisions and departing from the conventional treatment of intercensal error.

ABS gave very careful consideration to all of these perspectives before making its decision to proceed with revising historical ERP over a 20 year period.

PRINCIPLES UNDERPINNING THE TREATMENT

The ABS developed six guiding principles that were used to develop a robust treatment for revising historical ERP.

1. The credibility of population estimates, both level and growth, should be maintained for all spatial levels (i.e. national, state, and sub-state).
2. The use of ADL in the PES has been a major improvement in how we measure Census coverage, and the 2011 net undercount should be used to inform our historical understanding of Census coverage.
3. Population growth for the 2006-2011 period should, as closely as possible, reflect the growth in the population components (i.e. births, deaths and migration) for all spatial levels (i.e. national, state, and sub-state).
4. Any assumptions should be based upon the best available data.

5. Any revision to the historical ERP series should maintain the demographically plausible relationships between the fundamental building blocks of population series (e.g. age-sex profiles).

6. Where revised data exist for population components data, they should be used regardless of whether they were available at the time of previous rebasing processes (e.g. recently identified late registration births for NSW for 2005-2010 should be included).

10 OR 20 YEAR REVISION PERIOD?

A revision period of 10 years, where the PES undercount adjustment for 2006 is the only data revised, cannot provide a coherent or demographically plausible series. This is because the resulting quarter on quarter population change would be well outside what are considered to be acceptable margins of error on the components of growth (births, deaths and migration).

While it might be considered appropriate to revise back to the start of the ERP series in 1971, at which point the undercount would also have been lower had the ADL methodology been available, this was not considered optimal. Revising back further than to 1991 would result in little gain for considerably greater effort.

THE REVISION METHOD

The ABS treatment will involve revising the PES undercount adjustment component of the ERP rebasing methodology for the 1996, 2001 and 2006 bases. The revised PES undercount adjustments will be published in the 20 June 2013 issue of **Australian Demographic Statistics** (cat. no. 3101.0) and will be determined through reference to:

1. Components of growth, which will be a strong indicator of change in historical ERP levels;
2. Historical intercensal error;
3. Studies into the impact of changes in PES undercount methodology, in particular the introduction of ADL in 2011; and
4. Other data, where available.

The revisions will have the largest impact on 2006 ERP estimates and the smallest impact on 1996 ERP estimates. This will ensure the series is plausible between 1991 and 1996, given the growth reflected in the series prior to 1991, which will remain unchanged.

THE IMPACT OF REVISIONS

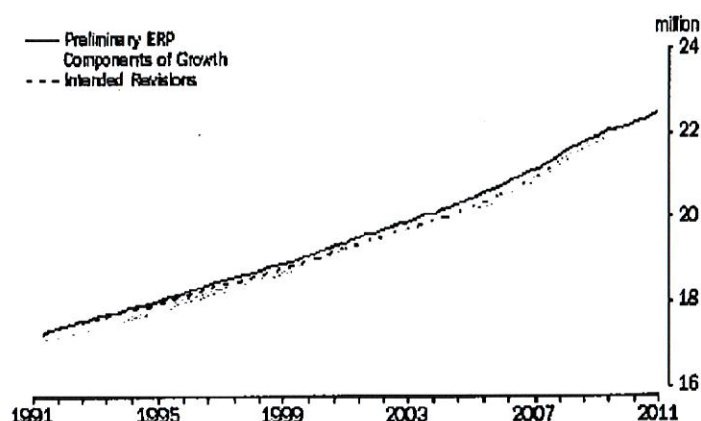
The 20 June 2013 issue of **Australian Demographic Statistics** (cat. no. 3101.0) will include the final rebased ERP estimates, based on the 2011 Census, and will also include all revised series at the national and state and territory levels back to 1991. An additional feature article will be included in this issue comparing the revised series with the previously published series.

The ABS intends to release the revised sub-state series with the release of final rebased

sub-state estimates in the August 2013 release of **Regional Population Growth, Australia** (cat. no. 3218.0).

The intended revision to the 2006 PES undercount adjustment for Australia will be similar to the level obtained through the taking of components of growth back in time from 2011. The intended revision to the 2001 PES undercount adjustment will be smaller in magnitude than the revision applied to the 2006 PES undercount adjustment, and less again for the 1996 PES undercount adjustment.

The graph below provides an illustrative representation of the impact of the 20 year revision at the national level on ERP, with the most noticeable revision being for 2006. The indicative revisions in the graph are 240,000 fewer people at 2006, 130,000 fewer at 2001 and 70,000 fewer at 1996.



Until a revised undercount adjustment is derived for each state and territory, the size and direction of their current 2006-11 intercensal error should be considered an illustrative guide. This information should be considered to be indicative since other data will be used to inform the size of revisions for each state and territory.

Revisions at the sub-state level will be guided by revised undercount adjustment estimates at the capital city and rest of state level, and revisions for a state or territory should not be assumed to apply to all levels of geography within.

IMPLICATIONS FOR OTHER STATISTICAL SERIES

The revisions to historical ERP will have implications for other ABS demographic data, including fertility and mortality rates. The ABS intends to gauge the need for revisions to be applied to other ABS demographic data on an individual collection basis. A summary of the series for which revisions will be required will be included in the 20 June 2013 issue of **Australian Demographic Statistics** (cat. no. 3101.0).

The revisions to historical ERP data will also need to be applied to other ABS data for which historical ERP is a key input. Two of the most prominent examples of these data include Labour Force and National Accounts. The table below provides an indication of the timing of when these data will be revised and the publication within which they will be released.

Release timing	Publication	Deliverable
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June 2013	Australian Demographic Statistics, Dec 2012 (cat. no. 3101.0)	Final rebased ERP for 30 June 2011 and revised historical ERP series back to 1991 - national and state and territory levels
August 2013	Regional Population Growth, Australia, 2012 (cat. no. 3218.0)	Final rebased ERP for 30 June 2011 and revised historical ERP series back to 1991 - sub-state levels
September 2013	Australian National Accounts: National Income, Expenditure and Product, Jun 2013 (cat. no. 5206.0)	Final rebased ERP for 30 June 2011 and revised historical ERP series back to 1991 - national and state and territory levels
February 2014	Labour Force, Australia, Jan 2014 (cat. no. 6202.0)	Rebenchmarked Labour Force data, including historical revisions back to 1991 - national, state and territory, and sub-state levels
June 2014	Australian National Accounts: National Income, Expenditure and Product, Mar 2014 (cat. no. 5206.0)	Rebenchmarked Labour Force data, including historical revisions back to 1991 - national and state and territory

ERP is also used within a broad range of non-ABS data series. The ABS will work with a range of stakeholders to support them through the transition period and after revised data are released, and welcomes any requests for advice and support.

FOR MORE INFORMATION

For more information, please contact ABS Demography at demography@abs.gov.au.

OTHER RELEVANT ABS REFERENCES

- 'Feature article: Preliminary Rebasing of Australia's Population Estimates using the 2011 Census of Population and Housing', **Australian Demographic Statistics, Dec 2011** (cat. no. 3101.0)
- 'Technical note: The impact of improvements to the 2011 PES on measuring population growth (2006-2011)', **Australian Demographic Statistics, Dec 2011** (cat. no. 3101.0)
- 'Technical note: Statistical impact of ADL', **Census of Population and Housing - Details of Undercount, 2011** (cat. no. 2940.0)
- 'Feature article: Proposed ABS Treatment of Intercensal Error for 2006-2011', **Australian Demographic Statistics, Mar 2012** (cat. no. 3101.0)
- 'Feature article: Advice on the use of 2011 preliminary rebased ERP', **Australian Demographic Statistics, Mar 2012** (cat. no. 3101.0)

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