

Estimating Australia's abortion rates 1985–2003

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The annual number of induced abortions in Australia is difficult to ascertain and has therefore not been regularly reported.¹ Attempts have been made to estimate it at different times using Medicare and hospital morbidity data. It was estimated at 89 521 in 1993–94 (by an expert panel of the National Health and Medical Research Council)² and at 95 200 in 1995–96 (by the Australian Bureau of Statistics).³ The Alan Guttmacher Institute's estimate of 91 944 abortions in 1995–96 represents an abortion rate of 22.2 per 1000 women and points to an increase over the preceding 2 years.⁴

Legislation on abortion varies among the Australian states,⁵ and abortion statistics are routinely collected only in states with legislation requiring notification of abortions — ie, in South Australia (from 1970), the Northern Territory (from 1974) and Western Australia (from 1998). In South Australia, hospitals are required to notify the numbers of abortions performed by each doctor each month, and these are checked against the notifications received from doctors. The SA data have been published every year since 1970,^{6,7} and, since 1985, with statistics on births, to provide a more comprehensive picture of pregnancy outcome in the state.⁸

Annual abortion statistics for Australia in the *private* sector may be obtained from Medicare claims for complete years from 1985. As Medicare claims do not include services for *public* patients, the statistics for public patients have to be obtained from national hospital morbidity data. The latter have included data for all states by patient type (private/public) since July 1993, so that abortion statistics for private and public patients for calendar years using Medicare and hospital morbidity statistics are available from 1994.⁹

We aimed to assess the accuracy of SA hospital morbidity and Medicare statistics for identifying the number of abortions in South Australia and to use these sources for

ABSTRACT

Aim: To estimate national rates of induced abortion in Australia from 1985 to 2003, using Medicare claim statistics for private patients and hospital morbidity statistics for public patients.

Design and setting: Estimates were based on Australian and South Australian data collections relating to abortions. SA hospital morbidity statistics were compared with SA statutory notifications of abortions to estimate the accuracy of these collections. Medicare statistics on abortion procedures performed on private patients in South Australia were then compared with hospital morbidity statistics for private patients. National statistics on abortion derived from Medicare and hospital morbidity statistics were adjusted for inaccuracies found in these sources.

Main outcome measures: Numbers of induced abortions in Australia for each year from 1985 to 2003; abortion rates per 1000 women aged 15–44 years.

Results: Abortion numbers based on Medicare claims by private patients overestimated by 18.7% the number of abortions derived from statutory notifications in South Australia during the period 1988–89 to 1999–00. Hospital morbidity data using principal diagnosis codes relating to medical abortion overestimated statutory notifications by 2.3% (mainly because of readmissions). National statistics were adjusted for these overestimations and for the estimated 14.1% of private patients who would not have submitted Medicare claims (based on surveys of private-clinic patients in New South Wales and Victoria). The estimated Australian abortion rate increased from 17.9 per 1000 women aged 15–44 in 1985 to a peak of 21.9/1000 in 1995, then declined to 19.7/1000 in 2003 (estimated number of abortions, 84 460).

Conclusion: There are no data currently available for deriving accurate numbers of induced abortions in Australia. Suggestions are made for collection of national statistics.

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deriving national abortion statistics for 1985–2003.

METHODS

Hospital morbidity statistics

Selection of diagnosis codes followed discussion with coding specialists at the National Centre for Classification in Health and the SA Department of Health's Medical Record Advisory Unit, which have coding standards for termination of pregnancy, induction and duration of pregnancy.¹⁰ The SA hospital morbidity collection (ISAAC) has recorded patient type (public/private) for all hospitals since 1988, and has been demonstrated in an external audit to provide reliable data.¹¹ Data were requested for the

financial years 1988–89 to 1999–00 (being the years for which SA Medicare data were available for comparison) for separations with the following principal diagnosis codes for legal induced abortion or medical abortion:

- 635.00–635.92 for 1988–89 to 1998–99, when the International classification of diseases, 9th revision, clinical modification (ICD-9-CM) was used;
- O04.0–O04.9 for 1999–00, when the International statistical classification of diseases, 10th revision, Australian modification (ICD-10-AM) was used.

These statistics were compared with statutory notifications of terminations of pregnancy received by the Pregnancy Outcome Unit of the SA Department of Health.^{6,7}

Hospital morbidity statistics for Australia were requested from the Australian Department of Health and Ageing for public patients in public and private hospitals for the calendar years 1993–2003 for separations with the same principal diagnosis codes. As data were not yet available for the second half of 2003,

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1 Comparison between numbers of abortions notified and estimated numbers of abortions derived from South Australian hospital morbidity data and Medicare claims, 1988–89 to 1999–00

Financial year	Abortions notified (public and private patients)	Estimated number of abortions			
		Public and private patients		Private patients only	
		From hospital morbidity data*†	From Medicare claims‡ (for private patients) ¹³ and hospital morbidity data* (for public patients)†	From hospital morbidity data for private patients*	From Medicare claims‡ by private patients ^{§13}
1988–89	4 188	4 252 (+64, +1.5%)	4 344 (+156, +3.7%)	1 446	1 538 (+92, +6.4%)
1989–90	4 436	4 534 (+98, +2.2%)	4 556 (+120, +2.7%)	1 598	1 620 (+22, +1.4%)
1990–91	4 575	4 656 (+81, +1.8%)	4 717 (+142, +3.1%)	1 706	1 767 (+61, +3.6%)
1991–92	4 741	4 862 (+121, +2.6%)	5 006 (+265, +5.6%)	1 595	1 739 (+144, +9.0%)
1992–93	4 768	4 933 (+165, +3.5%)	5 077 (+309, +6.5%)	1 032	1 176 (+144, +14.0%)
1993–94	5 062	5 193 (+131, +2.6%)	5 339 (+277, +5.5%)	1 043	1 189 (+146, +14.0%)
1994–95	5 363	5 540 (+177, +3.3%)	5 713 (+350, +6.5%)	799	972 (+173, +21.7%)
1995–96	5 538	5 692 (+154, +2.8%)	5 907 (+369, +6.7%)	562	777 (+215, +38.3%)
1996–97	5 453	5 591 (+138, +2.5%)	5 775 (+322, +5.9%)	448	632 (+184, +41.1%)
1997–98	5 632	5 791 (+159, +2.8%)	6 012 (+380, +6.7%)	380	601 (+221, +58.2%)
1998–99	5 581	5 747 (+166, +3.0%)	5 924 (+343, +6.1%)	356	533 (+177, +49.7%)
1999–00	5 612	5 849 (+237, +4.2%)	6 086 (+474, +8.4%)	343	580 (+237, +69.1%)
Total	60 949	62 640 (+1691, +2.8%)	64 456 (+3507, +5.8%)	11 308	13 124 (+1816, +16.1%)

* Principal diagnosis codes for medical abortion 635.00–635.92 (ICD-9-CM) or O04.0–O04.9 (ICD-10-AM). † Figures in parentheses represent difference, and proportional difference, respectively, between estimated and notified abortions. ‡ Medicare Benefits Schedule item 35643. § Figures in parentheses represent difference, and proportional difference, respectively, between number of abortions estimated from private-patient Medicare claims and number estimated from private-patient hospital morbidity data.

we estimated that 51.4% of separations with these principal diagnosis codes would have occurred in the second half of the year, based on the distribution of separations for the years 1996–2000.

Medicare statistics

National statistics for Medicare Benefits Schedule (MBS) item 35643 (“evacuation of the contents of the gravid uterus by curettage or suction curettage, not being a service to which item 35639/35640 applies, including procedures to which item 35626, 35627 or 35630 applies, where performed”) had previously been obtained from the Commonwealth Department of Health and Aged Care for calendar years 1985–1999; statistics for 2000–2003 were obtained from the Health Insurance Commission (HIC) website.¹² Medicare statistics for this item for services in South Australia from 1988–89 to 1999–00 were obtained from a Senate Community Affairs Legislation Committee document.¹³ These were compared with SA hospital morbidity statistics for private patients for the respective financial years.

Abortion rates for South Australia (based on statutory notifications) and for the

whole of Australia were calculated using estimated resident population figures for women aged 15–44 years¹⁴ as denominators. Abortion proportions (ie, abortions as a proportion of the total number of livebirths and abortions, which gives an indication of the proportion of “known” pregnancies terminated) were calculated using the most complete livebirth statistics available for each year.¹⁵ Estimated national abortion rates and proportions were compared with those from a number of other countries for which there are reasonably reliable data.^{4,16}

Data adjustments

A study among 2249 women attending private abortion clinics in New South Wales found that 14.8% had no Medicare card or did not intend to submit a claim (usually for reasons of privacy), and another 6.8% were uncertain about claiming.¹⁷ The corresponding proportions among 1293 women respondents at private clinics in Victoria were 13.1% and 20.7%, respectively.¹⁸ Combining data from the two studies, an average of 14.1% would not claim and another 11.9% were uncertain about claiming. We took

these findings into consideration in making adjustments for national data.

RESULTS

Estimating the accuracy of SA data

Comparisons of abortion numbers derived from ISAAC (the SA hospital morbidity collection) with the numbers of statutory notifications showed that ISAAC overestimated the number of abortions by 2.8% during the period studied (Box 1). Statutory notifications were assumed to be undernotified by 1% (a level compatible with the excess in ISAAC, as well as with undernotification rates of about 0.5% in the early years of the SA perinatal data collection⁸ and of about 2.6% in national birth registrations [for 1999]).¹⁵ Abortions for congenital abnormalities at ≥ 20 weeks' gestation were subtracted from the notification total, as they would not be included in the ISAAC data extracted. After making these adjustments, the total number of notifications in South Australia for 1988–89 to 1999–00 was 61 204. The overestimation of abortions by ISAAC then reduced to 2.3%. Preliminary examination of the excess of 237 recorded

2 Estimated abortion numbers, rates and proportions, Australia 1985–2003

Calendar year	From Medicare claims* by private patients (A)	From hospital morbidity statistics† for public patients (B)‡	Estimate 1 of TNA (A + B)	Estimate 2 of TNA, adjusted for over-estimation of SA numbers only	Estimate 3 of TNA, adjusted for over-estimation§ and underestimation¶	Abortion rate per 1000 women aged 15–44 (based on Estimate 3)	Abortion proportion per 100 livebirths** and abortions
1985	56 371	(10 183)	66 554	66 384	65 240	17.9	20.9
1986	59 876	(10 816)	70 692	70 522	69 296	18.6	22.2
1987	60 271	(10 887)	71 158	70 988	69 752	18.3	22.2
1988	62 420	(11 275)	73 695	73 525	72 240	18.5	22.7
1989	66 414	(11 997)	78 411	78 258	76 862	19.3	23.5
1990	69 223	(12 504)	81 727	81 576	80 113	19.9	23.4
1991	70 361	(12 710)	83 071	82 842	81 430	20.0	24.0
1992	73 448	(13 267)	86 715	86 400	85 003	20.8	24.3
1993	74 395	12 470††	86 865	86 542	85 153	20.8	24.7
1994	76 691	13 044	89 735	89 388	87 965	21.5	25.3
1995	77 218	14 783	92 001	91 606	90 182	21.9	25.9
1996	77 375	13 494	90 869	90 490	89 076	21.5	25.9
1997	75 569	13 691	89 260	88 874	87 497	21.0	25.6
1998	75 183	13 429	88 612	88 213	86 862	20.8	25.4
1999	73 392	14 068	87 460	87 014	85 731	20.4	25.1
2000	74 888	13 795	88 683	88 205	86 931	20.6	25.4
2001	76 332	13 753	90 085	89 607	88 306	20.8	25.9
2002	75 282	13 013	88 295	87 817	86 552	20.3	25.5
2003	72 967	13 195	86 162	85 684	84 460	19.7	##

SA = South Australian. TNA = total number of abortions. * Medicare Benefits Schedule item 35643. † Principal diagnosis codes for medical abortion 635.00–635.92 (ICD-9-CM) or O04.0–O04.9 (ICD-10-AM). ‡ Figures in parentheses are estimates based on the average (15.3%) that hospital statistics comprised of total abortions for the period 1994–2002. § Overestimation proportions applied nationally for Medicare and hospital morbidity statistics were estimated from SA data. ¶ Underestimation proportion was estimated from studies of NSW and Victorian private-abortion-clinic patients. ** Sources for numbers of livebirths: Australian Bureau of Statistics (1985–1993), Australian Institute of Health and Welfare National Perinatal Statistics Unit (1994–2002). †† Jan–Jun 1993 statistics may not be exact but have been included, as the pattern was similar to 1994. ## 2003 Australian livebirth numbers not yet available.

cases in ISAAC in 1999–00 showed that a majority of these were readmissions of women after abortion procedures.

Medicare services for private patients in South Australia from 1988–89 to 1999–00 for item 35643 totalled 13 124, whereas the number of private-patient separations in ISAAC was 11 308, representing an average overestimation of 16.1%. The overestimation proportion had increased in later years as the number of private services had decreased (Box 1). If the amount of overestimation among private patients is the same as that for all ISAAC data (ie, 2.3%) when compared with abortion notifications (ie, if there were actually 11 054 abortions for private patients), we can infer that Medicare claims (13 124) overestimated the true number of abortions among private patients by about 18.7%.

Medicare claims were made for a relatively small proportion of abortions in South Australia (about 21.5% during the period 1988–89 to 1999–00), as most abortions are

performed in public hospitals. The use of Medicare claims and hospital morbidity data for public patients to estimate abortions for South Australia resulted in an average overestimation of only 5.8% (Box 1).

Estimations for Australia

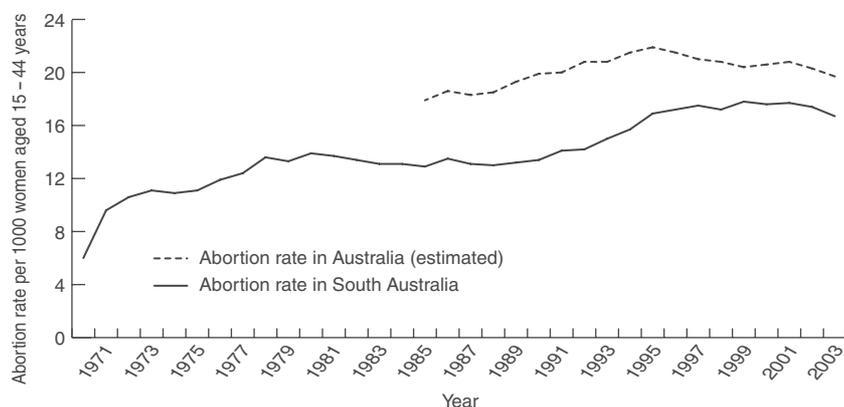
If the SA overestimation proportions applied to Australia in general, the overestimation from the use of Medicare and hospital morbidity data would be greater for Australia as a whole, as Medicare claims are made for 84.7% of abortions overall. Extrapolating from SA figures would result in overestimation by about 16.2% of the total number of abortions ([18.7% of 84.7%] + [2.3% of 15.3%]).

The estimated numbers of abortions in Australia were derived for each year of the period 1993–2003 using the sum of Medicare claims for item 35643 (for private patients) and separations with principal diagnosis codes relating to medical abortion

(for public patients) (Estimate 1, Box 2). Estimates for 1985–1992 were based on the average (15.3%) that the hospital statistics comprised of total abortions for the period 1994–2002. A second estimate of numbers was derived by subtracting the overestimation of SA numbers only from Estimate 1 (Estimate 2, Box 2). (In deriving numbers for calendar years, we used the average between two financial years.) As Medicare numbers were similar for 1985–86 to 1987–88 and 1988–89,¹³ the same adjustment was made for earlier years as for 1988. As the overestimation was increasing between 1998–99 and 1999–00, an average number between the numbers for calendar year 1999 and financial year 1999–00 was subtracted from each of the years 2000–2003.

To derive Estimate 3 (Box 2), national abortion numbers were adjusted assuming that hospital morbidity statistics overestimated the true number of abortions by 2.3% and that Medicare statistics overestimated by 18.7%, but then allowing also for a

3 Abortion rate in Australia (estimated), 1985–2003, and South Australia, 1970–2003



14.1% underestimation of Medicare statistics for private patients not claiming a rebate.

National abortion rates per 1000 women aged 15–44 years were calculated based on Estimate 3. These rates were only about 0.3 per 1000 lower, on average, than those derived from Estimate 2. They are graphed in Box 3, together with SA rates for 1970–2003.

The abortion rate in South Australia increased from 6.0 per 1000 women aged 15–44 in 1970 to the first peak of 13.9 per 1000 in 1980 and remained relatively stable in the 1980s, before increasing again in the 1990s (Box 3). It levelled out from 1997 (17.5/1000; 5608 abortions), then declined significantly (even after adjusting for age) between 2001 (17.7/1000) and 2003 (16.7/1000; 5214 abortions).

The estimated national abortion rate increased from 17.9 per 1000 in 1985 to a peak of 21.9 per 1000 in 1995 (with an estimated 90 182 abortions), then declined to 19.7 per 1000 in 2003 (with an estimated 84 460 abortions). The SA rate has consistently been lower than the estimated Australian rate, although the difference narrowed from 1996.

The national abortion proportion increased from an estimated 20.9% of known pregnancies in 1985 to 25.9% in 1995, and has since remained relatively stable (Box 2). In South Australia, the abortion proportion has been consistently lower, reaching a peak of 24.1% in 2001 and then declining.

Australian abortion proportions and rates are compared in Box 4 with those of a number of other developed countries.^{4,16}

DISCUSSION

Our study shows that there are no data currently available for deriving accurate national abortion numbers and rates.¹⁹ What we have provided are only the best estimates, based on extrapolation from SA data with a few adjustments.

Medicare statistics for different MBS item numbers, now published on the HIC website,¹² are for services by state of Medicare cardholder, and statistics by state of service provision have to be specially requested. The date is the date the service was processed by the HIC, not the date of the procedure, which may lead to some inaccuracy in data comparison for individual years.

MBS item 16525 (“management of second trimester labour, with or without induction, for intrauterine fetal death, gross fetal abnormality or life-threatening

maternal disease”) has previously also been used for deriving abortion statistics.^{2,4} However, its inclusion would further overestimate the number of induced abortions. The number of claims against this item in Australia for the years 1994–2003 varied from 605 to 1019 annually, being higher in the earlier years.

While use of Medicare item 35643 is the most appropriate for estimating the number of induced abortions, it did lead to overestimation by about 18.7% of the number of abortions in the private sector in South Australia in the period studied. This overestimation arises probably because the item description “evacuation of the contents of the gravid uterus ...” does not explicitly exclude procedures for missed abortion. Examination of all the other item numbers mentioned in its description suggests that procedures for incomplete abortions should be claimed under items 35639/35640. The increasing overestimation based on item 35643 in more recent years may be related to the increasing use of early ultrasound, resulting in earlier diagnosis and evacuation of non-viable pregnancies that might have previously presented later as spontaneous abortions. The relatively small number of private services and practitioners for abortion in South Australia in recent years would make the data vulnerable to large changes in overestimation proportions (Box 1).

Much smaller, but consistent, overestimations (about 2.3%) of the numbers of abortions resulted from basing estimates on principal diagnosis codes used in hospital morbidity statistics. These overestimates arose mainly from readmissions.

4 Abortion rates and abortion proportions in some developed countries, for most recent year available*^{4,16}

Country	Abortion rate per 1000 women aged 15–44 years	Abortion proportion per 100 livebirths and abortions
Germany	7.7	15.2
The Netherlands	8.7	12.7
Finland	10.9	16.4
Norway	14.8	19.6
Canada	15.4 (2000)	24.2 (2001)
England and Wales	16.1	22.8
Sweden	19.6	25.8
Australia	19.7 (2003, estimated)	25.5 (2002, estimated)
New Zealand	21.0 (2003)	24.8 (2003)
United States	21.3 (2000)	24.5 (2000)

* Figures are for 2002 except where otherwise specified.

Separations for incomplete or missed abortions have separate ICD-9-CM or ICD-10-AM category codes, and we found a few miscodes in our preliminary examination. As hospital morbidity statistics contribute only about 15.3% to national abortion statistics, the use of hospital morbidity statistics would have contributed only about 0.4% of overestimation nationally, if our findings apply to the rest of Australia. Extrapolation of SA findings to national data would be more appropriate for hospital morbidity statistics than for Medicare claims, as there have been national coding standards for the hospital morbidity statistics operating in the past decade. In addition, the proportion of missed abortions among MBS item 35643 claims may vary considerably between the states.¹⁹ For stability, we have used an overall overestimation rate for Medicare claims for the period studied, although there were increases in overestimation over time in SA. If these increases applied to other states, the recent fall in the national abortion rate may be greater than estimated.

We also examined the use of separations for principal diagnosis codes for later gestations that include terminations for congenital abnormalities (655.00–655.93 in ICD-9-CM and O35.0–O35.9 in ICD-10-AM). These would also include management of other (non-terminated) pregnancies with congenital abnormalities. Their inclusion with the other codes used (635.00–635.92 [ICD-9-CM] and O04.0–O04.9 [ICD-10-AM]) increased the overestimation to 3.7%–4.2%. Use of principal diagnosis codes 656.00–656.93 in ICD-9-CM and O36.0–O36.9 in ICD-10-AM (“maternal care for other fetal problems”) resulted in large numbers for these codes for South Australia (eg, 2980 in 1993 and 2565 in 1998), as they include many obstetric conditions, such as inductions for fetal distress, isoimmunisation, intrauterine death and poor fetal growth. If we intend to use these later-gestation codes to identify terminations of pregnancy, we need to select these separations using codes for induction of labour and duration of pregnancy.

We also explored the use of procedure codes for deriving the number of pregnancy terminations. Using ICD-9-CM codes, this resulted in overestimation of the number of abortions by 2.9% in one year and underestimation by 0.7% in another year. However, using ICD-10-AM codes, the overestimation was 39.9% in one year. Unlike the ICD-9-CM codes, the relevant ICD-10-AM pro-

cedure codes lack specificity (eg, the code for dilatation and curettage includes procedures for induced as well as spontaneous abortion).

In adjusting national private-patient statistics we assumed that 14.1% of women would not claim a Medicare rebate for item 35643, based on studies of women attending private abortion clinics in NSW and Victoria. If we were to assume from the clinic studies that 50% of women who were uncertain about submitting a Medicare claim did not claim, then the adjustment for 20.1% underestimation of Medicare data (instead of 14.1%) would have resulted in an estimate of 89 834 abortions in 2003 (a rate of 20.9 per 1000 women aged 15–44 years).

Despite all these limitations, our estimates of national abortion rates are not incompatible with rates derived from statutory reporting in some states — for example, 16.7 per 1000 in 2003 in South Australia;⁷ 19.9 per 1000 in 2001¹ and 19.4 per 1000 in 2002²⁰ in Western Australia; and 21.9 per 1000 in 1999–00 in the Australian Capital Territory²¹ — and the trends are similar to those in South Australia.

Even if separate MBS item numbers, clearly described, were set aside for induced abortions, missed abortions and incomplete abortions, we would still be unable to obtain accurate national induced-abortion statistics that are linked to characteristics of the women, previous obstetric history, gestation and complications of abortion (some of which are contained in hospital morbidity statistics). Moreover, specifying abortion item numbers might discourage even more women from claiming, for reasons of privacy.^{17–19}

A proposal for mandatory notification of abortions in Australia of deidentified data¹⁹ would require legislative change, which would be difficult to achieve and would take considerable time.

We would suggest working towards a deidentified national collection, perhaps coordinated through the Australian Institute of Health and Welfare, of a list of agreed data items from two sources:

- *Hospitals.* National hospital morbidity statistics for public and private hospitals are already held by the Australian Institute of Health and Welfare. Hospital morbidity data in South Australia have been shown to provide only a small overestimate of true numbers (mainly due to readmissions, which could be identified within the collection by data linkage). Provision should be

made for using coding specifications to capture abortions performed at ≥ 20 weeks and for including any hospitals not currently included.¹⁹

- *Private clinics.* The same information could be collected, by agreement, from private clinics, either directly or through the Abortion Providers Federation of Australia.

An attempt to collect the data retrospectively for 2003 or 2004 for states without specific abortion legislation would demonstrate the feasibility of this approach.

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COMPETING INTERESTS

None identified. The opinions expressed are solely those of the authors.

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RESEARCH

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