



Pregnancy Outcome

in South Australia 2016

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Abbreviations and symbols

Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ARM	artificial rupture of membranes
ASFR	age-specific fertility rate
APH	ante-partum haemorrhage
BMI	body mass index
CTG	cardiotocography
ENMR	early neonatal mortality rate
IPPV	intermittent positive pressure ventilation
IUGR	intrauterine growth restriction
LSCS	lower segment caesarean section
PPH	postpartum haemorrhage
SA	South Australia
SACC	Standard Australian Classification of Countries
SBR	Supplementary Birth Record
VBAC	vaginal birth after caesarean
WHO	World Health Organization

Symbols

..	not applicable
n/a	not available
n/p	not published due to low cell count

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Executive Summary

Number of births and fertility rates

The number of births notified in South Australia in 2016 was 20,069 which was 85 less births than in 2015. The number of women who gave birth was 19,765. The total fertility rate was 1.75 live births per woman, slightly lower than the rate of 1.80 in 2015. Fertility rates increased slightly in both the 30-34 and 35-39 year age groups.

Place of birth

Compared with 2015, the total number of births remained relatively stable at the three metropolitan teaching hospitals. The total number of births in metropolitan private hospitals decreased slightly from 21.6% of all births in 2015, to 20.8% in 2016. There were 97 women (0.5%) who gave birth at home (98 babies), and among these women 77 (78.6%) had planned home births.

Teenage women

Four hundred and seventy four teenage women gave birth in 2016; accounting for 2.4% of women who gave birth in South Australia. The teenage pregnancy rate has been steadily declining since 2002 and the teenage pregnancy rate in 2016, of 17.6 per 1,000 women, was the lowest recorded since 1970. A further 419 teenage women had medical terminations of pregnancy, accounting for 9.6% of terminations in South Australia.

Women aged 35 and over

The proportion of women aged 35 years and over who gave birth increased slightly from 20.3% in 2015 to 21.3% in 2016. The mean age of women giving birth has been increasing over the previous decade, and reached its highest at 30.8 years in 2016. Also in line with previous years, more women gave birth in the 30-34 year age group than in the 25-29 year age group.

Country of birth

Seventy-two percent of women who gave birth in 2016 were Australian-born. Of women born overseas who gave birth, the largest proportions came from India (4.7% of women), China (3.2%) and the United Kingdom/ Ireland (2.0%).

Smoking during pregnancy and Body Mass Index

The proportion of women smoking at their first antenatal visit has declined steadily from 25.0% in 1998 to 9.4% in 2016. Additionally, 2.5% of women quit smoking before their first antenatal visit.

Statistics on Body Mass Index were available for 87.0% of women who gave birth in 2016. They indicated that 48.9% of all women giving birth were overweight, including 12.7% classified as obese and 10.0% severely or morbidly obese.

Antenatal care and length of stay

Eighty-seven percent of women attended antenatal care within the first 14 weeks of pregnancy. Of the women for whom the number of antenatal visits was reported, 88.4% attended seven or more antenatal visits. Many women had more than one type of antenatal care; however the most common types used were hospital clinics (43.4%), obstetricians in private practice (24.7%) and general practitioners (20.8%).

The median length of stay in hospital for all women after a birth was two days; the median length of stay was also two days for women who had a vaginal birth and four days for women who had a caesarean section. Amongst private patients, the median length of stay was two days longer for vaginal births and one day longer for caesarean sections.

Aboriginal mothers and babies

Seven hundred and fifty Aboriginal women gave birth in South Australia in 2016, accounting for 3.8% of all women who gave birth in the state. In 2016, 14.6% of Aboriginal women who gave birth were teenagers (compared with 1.9% of non-Aboriginal women).

Of the Aboriginal women for whom week of gestation at the first antenatal visit was reported, 67.6% attended for antenatal care within the first 14 weeks of pregnancy (compared with 88.1% of non-Aboriginal women).

Of the Aboriginal women for whom the number of antenatal visits was reported, 71.3% attended at least seven antenatal visits during pregnancy (compared with 89.1% of non-Aboriginal women).

In 2016, at the first antenatal visit, 43.9 % of Aboriginal women reported that they smoked, a slight increase from 42.6% in 2015, while in non-Aboriginal women this proportion was 8.1%.

In 2016, the proportion of preterm births (<37 weeks gestation) was 15.0% among babies of Aboriginal women compared with 9.3% among babies of non-Aboriginal women. The proportion of low birthweight babies was 15.0% among babies of Aboriginal women compared with 7.4% among babies of non-Aboriginal women.

The perinatal mortality rate of babies of Aboriginal women was 17.1 per 1,000 births in 2016 compared with 8.4 per 1,000 births for births to non-Aboriginal women.

The Aboriginal status of the baby was also collected independently of the mother. There were 1,031 Aboriginal babies, representing 5.1% of all babies born in South Australia in 2016.

Procedures

At least one ultrasound examination was performed for 99.3% of women who gave birth in 2016. A third of all labours were induced (33.9%) and 17.0% of women giving birth had labour augmented. The main reasons for induction of labour were diabetes or gestational diabetes (15.3%), prolonged pregnancies (14.3%) and hypertension (11.7%). Forty-eight percent of inductions of labour were performed for other than defined indications. Epidurals were used for pain relief during labour for 31.1% of women. Of women who gave birth vaginally, 22.5% had an episiotomy.

Method of birth

In 2016, 52.7% of women had normal spontaneous vaginal births, a further 6.1% were delivered by ventouse and 5.7% by forceps. The proportion of women giving birth by caesarean section was 35.3%, similar to the proportion in 2015 (35.0%). The main reasons given for caesarean section were previous caesarean section (38.3%), failure to progress in labour or cephalopelvic disproportion (25.3%) and fetal distress (13.9%).

Of those who had previously given birth, 29.3% previously had a caesarean section. Only 14.9% of women had a vaginal birth following a previous first caesarean without intervening births, compared with 30% in 1998, when this was first reported.

Plurality

In 2016 multiple births accounted for 3.0% of all births, while women with twins or triplets accounted for 1.5% of all women who gave birth.

Perinatal mortality

The perinatal mortality rate for all births (live births of any gestation and stillbirths of at least 400g birthweight or 20 weeks gestation) in 2016 was 8.7 per 1,000 births. The stillbirth rate was 6.8 per 1,000 births and the neonatal mortality rate was 2.0 per 1,000 live births.

Terminations of pregnancy

There were 4,346 terminations of pregnancy recorded, compared with 4,441 terminations in 2015. The induced abortion rate was 13.2 per 1,000 women aged 15-44 years, compared with 13.5 per 1,000 women aged 15-44 years in 2015. The termination of pregnancy rate has been declining steadily since 2008.

In 2016, 96.6% of terminations were performed in metropolitan public hospitals, including the Pregnancy Advisory Centre, and 74.8% were performed by doctors in family advisory clinics.

Ninety percent of terminations were performed within the first 14 weeks of pregnancy and 2.8% were performed at or after 20 weeks gestation. Of the terminations performed at or after 20 weeks gestation; 43.3% were for congenital anomalies. Approximately 18% of reported pregnancies ended as terminations in 2016.

Background

Data collection

The *South Australian Health Care Regulations 2008 – Part 5 Pregnancy Outcome Data and Statistics* require the notification of all births occurring in South Australia to the Minister for Health and Wellbeing. This includes births to women who normally reside interstate. Births of South Australian residents which occur in other states are not included. The perinatal data have been collected since 1981, with some changes to the data items collected over the years.

The perinatal data are compiled from notifications submitted by hospital and homebirth midwives and neonatal nurses using either the Supplementary Birth Record (SBR) data collection form (Appendix 1), or its electronic equivalent. For a more complete picture of pregnancy outcome in South Australia, data from the Medical Termination of Pregnancy collection are also included.

The *Criminal Law Consolidation (Medical Termination of Pregnancy) Regulations 2011* require the notification of medical terminations of pregnancy to the Chief Executive of the Department for Health and Wellbeing. It is from these notifications that the medical termination of pregnancy statistics are collated each year.

This annual report also includes data on perinatal mortality, as supplied to the South Australian Perinatal Statistics Collection. All maternal and perinatal deaths in South Australia are subsequently reviewed by the Maternal and Perinatal Mortality Committee, using the perinatal data statistics in addition to death certificates, pathology reports, autopsy reports and findings from the State Coroner. Recommendations made by the Maternal and Perinatal Mortality Committee are released annually to inform practice and reduce maternal and perinatal mortality in South Australia¹.

Data on congenital abnormalities detected at birth or in the neonatal period (within 28 days of birth) are also provided as part of the Perinatal Statistics Collection using the Congenital Abnormality Form (Appendix 2) or its electronic equivalent. Limited statistics on birth defects are included in this report as these are reported annually by the South Australian Birth Defects Register at the Women's and Children's Hospital². The Register complements statistics on birth defects from the perinatal and medical termination collections with statistics on birth defects detected and notified after discharge from the birth hospital, up to the child's fifth birthday.

In addition to this annual report, Pregnancy and Neonatal Care Bulletins, comparing selected pregnancy characteristics and outcomes are also provided to all South Australian hospitals with at least 100 births per year and aggregate reports are provided for hospitals with smaller numbers of births. Comparisons of maternity performance indicators are also provided to hospitals with at least 550 births per year.

Annual report

The births described in this report include live births, stillbirths and terminations of pregnancy of at least 400g birthweight or 20 weeks gestation. Fifty-two births of less than 400g birthweight have been included, consisting of 45 stillbirths and 7 live births. The 7 live births were born at 20-27 weeks gestation and six died in the neonatal period. The 20,069 births in South Australia in 2016 comprised of 19,933 live births and 136 stillbirths. The number of women who gave birth was 19,765 (53 fewer women than in 2015). Definitions used in this report are provided in the Methods and Terminology section.

Findings relating to Aboriginal women and babies in the text of this report have been italicised for easy identification, in accordance with the request of the Aboriginal Health Council of South Australia.

Mothers

1.1 Place of residence

This table uses the ABS Australian Statistical Geography Standard boundaries (ASGS 2016)¹, with Statistical Area Level 4 boundaries for the four Adelaide metropolitan regions, and Statistical Area Level 3 boundaries to present the nine non-metropolitan regions in South Australia. The distribution of births according to the mother's place of residence by these regions is provided in Table 1 together with the estimated resident population and crude birth rate. The crude birth rate in 2016 for South Australia was 11.6 per 1,000 population. It was lowest in the Mid North and highest in the Adelaide - North Region.

Table 1: Births and crude birth rate by ABS Statistical Geographical Boundaries (ASGS 2016) regions, South Australia, 2016

ASGS 2016 (Mother's residence)	Total births		Live births	Estimated resident population, June 30, 2016 ⁺	Crude birth rate per 1,000 population
	Number	Percent	Number	Number	
Adelaide - Central and Hills	2,953	14.7	2,932	297,752	9.8
Adelaide - North	6,161	30.7	6,126	430,776	14.2
Adelaide - South	4,101	20.4	4,082	362,232	11.3
Adelaide - West	2,666	13.3	2,643	233,519	11.3
Barossa	363	1.8	363	36,493	9.9
Lower North	748	3.7	738	58,473	12.6
Mid North	407	2.0	405	51,719	7.8
Yorke Peninsula	712	3.6	706	66,683	10.6
Eyre Peninsula and South West	257	1.3	257	23,051	11.1
Outback - North and East	299	1.5	293	27,890	10.5
Fleurieu - Kangaroo Island	717	3.6	714	71,368	10.0
Limestone Coast	326	1.6	321	27,369	11.7
Murray and Mallee	215	1.1	214	25,729	8.3
Interstate	144	0.7	139
Total	20,069	100.0	19,933	1,713,054	11.6

+ Australian Bureau of Statistics. Population estimates by age and sex, Regions of South Australia, 2016. Canberra: ABS, 2016 (Catalogue No 3235.0).

1.2 Maternal and baby race

The distribution of women who gave birth, by race is provided in Table 2. *In 2016 there were 750 births to Aboriginal mothers which represented 3.8% of all women. The Aboriginal status of the baby was also collected independently of the mother. There were 1,031 Aboriginal babies, representing 5.1% of all babies born in South Australia in 2016. They comprised 1,003 (97.3%) Aboriginal, 13 (1.3%) Torres Strait Islander and 15 (1.4%) Aboriginal and Torres Strait Islander babies.*

Table 2: Race of women who gave birth, South Australia, 2016

Race	Number of women	% Women
Caucasian	14,680	74.3
Aboriginal	750	3.8
Asian	2,886	14.6
Other	1,449	7.3
Total	19,765	100.0

1.3 Maternal age

Table 3 shows the age and race distribution of women who gave birth in South Australia in 2016. The largest number of women who gave birth was in the 30-34 years age group. The proportion of women in this age group (35.6%) has exceeded that of the 25-29 years age group (28.3%) since 2001. Teenage women accounted for 2.4% of women who gave birth and women aged 35 years or more accounted for 21.3%. *Aboriginal women were generally younger than non-Aboriginal women: 14.6% were teenagers and only 10.4% were 35 years or older.* Among Asian women, 0.4% of women who gave birth were teenagers and 22.4% were aged 35 years or older.

Table 3: Age and race of women who gave birth, South Australia, 2016

Age	Caucasian		Aboriginal		Asian		Other		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
<19	328	2.2	110	14.6	12	0.4	24	1.7	474	2.4
20-24	1,852	12.6	225	30.0	162	5.6	194	13.4	2,433	12.3
25-29	4,115	28.0	208	27.7	810	28.1	469	32.4	5,602	28.3
30-34	5,204	35.5	129	17.2	1,255	43.5	454	31.3	7,042	35.6
35-39	2,591	17.7	64	8.5	560	19.4	258	17.8	3,473	17.6
40-44	536	3.7	12	1.6	81	2.8	47	3.2	676	3.4
45+	54	0.4	2	0.3	6	0.2	3	0.2	65	0.3
Total	14,680	100.0	750	100.0	2,886	100.0	1,449	100.0	19,765	100.0

The five year age-specific fertility rate was highest in the 30-34 year age group (123.8 per 1,000 women), followed by the 25-29 year age group (97.1 per 1,000 women, Table 4). When compared with the age-specific fertility rates for 2015, the only increase was in the 30-34 and 35-39 year age groups (121.3 and 63.6 per 1,000 women respectively in 2015). The general fertility rate (see Appendix 3) was 59.5 per 1,000 women aged 15-44 years, slightly decreased when compared with 60.0 in 2015. The total fertility rate was 1.75 live births per woman, which remains below replacement level of 2.1 children per woman³.

Table 4: Age-specific fertility rates (ASFR), South Australia, 2016

Age (years)	Number of live births	Estimated resident female population ⁺	Age-specific fertility rate per 1,000 women (ASFR) ^{#‡}
<15	3	n/a	n/a
15-19	470	53117	8.8
20-24	2439	59544	41.0
25-29	5654	58253	97.1
30-34	7097	57322	123.8
35-39	3517	52298	67.2
40-44	683	54398	12.6
45+	70	n/a	n/a
Total	19,932	334,932	58.4

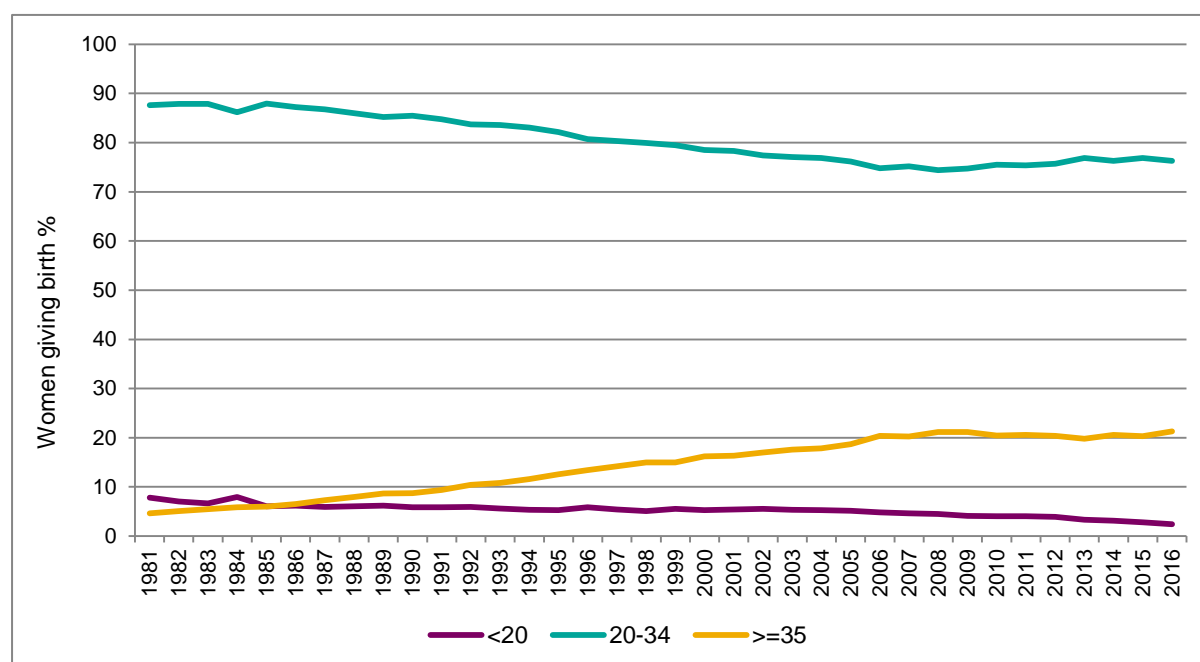
⁺ Australian Bureau of Statistics. Population estimates by age and sex, Regions of South Australia, 2016. Canberra: ABS, 2016 (Catalogue No 3235.0).

[#] the number of live births and fertility rate for women aged 15-19 years include live births for younger ages, and the number and rate for women aged 40-44 years include live births for older ages. The total number and rate include all live births and excludes terminations of pregnancy.

[‡]Sum of 5-year ASFRs = 350.5 per 1,000 women. Total fertility rate = 350.5 x 5 = 1,752.5 live births per 1,000 women = 1.75 live births per woman.

The proportion of women giving birth aged 35 years or older has increased each year from 4.6% in 1981 to 21.3% in 2016 (Figure 1).

Figure 1: Age groups of women who gave birth in South Australia, 1981-2016



1.4 Country of birth

The distribution of mother's country of birth is provided in Table 5 by group, and in Table 6 by specified country. Of the 27.8% of women born outside of Australia, the largest proportion were born in India (4.7%), China (3.2%) and the United Kingdom and Ireland (2.0%).

Table 5: Country of birth group* for women who gave birth, South Australia, 2016

	Country of birth group	Number	%
1	Oceania	14,445	73.1
2	North-West Europe	874	4.4
3	Southern and Eastern Europe	462	2.3
4	North Africa and Middle East	938	4.8
5	South-East Asia	810	4.1
6	North-East Asia	1,574	8.0
7	Southern and Central Asia	125	0.6
8	Americas	100	0.5
9	Sub-Saharan Africa	409	2.1
	Unknown	28	0.1
	Total	19,765	100.0

* Australian Bureau of Statistics. Standard Australian Classification of Countries 2008 (SACC). Cat No. 1269.0. Canberra: ABS

Table 6: Specified country of birth* for women who gave birth, South Australia, 2016

	Specified country of birth	Number	% of women	% of migrant women who gave birth (n=5,500)
1100	Australia	14,265	72.2	
6104	India	927	4.7	16.9
5101	China	634	3.2	11.5
2101	UK/Ireland	398	2.0	6.3
4110	Vietnam	244	1.2	4.4
4107	Philippines	231	1.2	4.2
6101	Afghanistan	227	1.2	4.1
1301	New Zealand	152	0.8	2.8
3207	Sudan	149	0.8	2.7
6107	Pakistan	145	0.7	2.6
4105	Malaysia	139	0.7	2.5
6106	Nepal	98	0.5	1.8
4109	Thailand	93	0.5	1.7
6108	Sri Lanka	91	0.5	1.7
3103	Iran	83	0.4	1.5
4102	Cambodia	75	0.4	1.4
9220	South Africa	71	0.4	1.3
5105	South Korea	69	0.4	1.3
7104	USA	66	0.3	1.2
6102	Bangladesh	63	0.3	1.1
4106	Myanmar (Burma)	62	0.3	1.1
3111	Saudi Arabia	59	0.3	1.1
7102	Canada	58	0.3	1.1
9106	Congo	56	0.3	1.0
2305	Germany	53	0.3	1.0
4103	Indonesia	53	0.3	1.0
3104	Iraq	50	0.3	0.9
9203	Burundi	45	0.2	0.8
2611	Russia	42	0.2	0.8
5103	Japan	42	0.2	0.8
	All other countries	1,025	5.2	17.7
	Total	19,765	100.0	100.0

* Australian Bureau of Statistics. Standard Australian Classification of Countries 2008 (SACC). Cat No. 1269.0. Canberra: ABS

1.5 Occupation of father and mother

The distribution of occupations for both mothers giving birth in 2016, and fathers is presented in Table 7. The most common occupation type for mothers were home duties (22.1%), professionals (17.8%), salespersons and personal service workers (15.8%). The most common occupations for fathers were tradespersons (17.3%), professionals (14.9%) and managers and administrators (13.3%).

Table 7: Occupation* of father and mother, South Australia, 2016

Occupation		Father		Mother	
		Number	%	Number	%
1	Managers and administrators	2,623	13.3	1,486	7.5
2	Professionals	2,945	14.9	3,510	17.8
3	Para professionals	1,075	5.4	1,342	6.8
4	Tradespersons	3,428	17.3	515	2.6
5	Clerks	496	2.5	1,962	9.9
6	Salespersons and personal service workers	1,144	5.8	3,113	15.8
7	Plant and machine operators and drivers	1,119	5.7	56	0.3
8	Labourers and related workers	2,311	11.7	537	2.7
9	Students	489	2.5	828	4.2
	Pensioners	58	0.3	27	0.1
	Home duties	97	0.5	4,361	22.1
	Unemployed	1,089	5.5	1,010	5.1
	Other	441	2.2	343	1.7
	Unknown	2,450	12.4	675	3.4
Total		19,765	100.0	19,765	100.0

* Australian Bureau of Statistics. ASCO. First Edition. Occupation Definitions. Canberra: ABS,1990. (Catalogue No. 1223.0)

1.6 Body mass index (BMI)

Reported height and weight at the first antenatal visit were used to calculate the Body Mass Index (BMI) for women who gave birth. This was considered valid only for women who attended the first antenatal visit before 20 weeks gestation. Among these 18,267 women (92.4% of all women who gave birth), height and weight were not reported for 1072 women (5.9%). Therefore BMI could only be calculated for 17,195 women who gave birth in 2016 (87.0%). Table 8 shows that 48.9% of these women recorded a BMI ≥ 25.0 .

Table 8: BMI of women at the first antenatal visit, South Australia, 2016

BMI*		Number	%	Adjusted % (excluding unknown n=17,195)
<18.5	underweight	421	2.3	2.5
18.5 – 24.9	normal	7850	43.0	45.7
25.0 – 29.9	overweight	4772	26.1	27.8
30.0 – 34.9	obese	2315	12.7	13.5
35.0 – 39.9	severely obese	1083	5.9	6.3
>40	morbidly obese	754	4.1	4.4
Unknown		1072	5.9	
Total		18,267	100.0	100.0

* based on height and weight at first antenatal visit, where gestation at first antenatal visit was <20 weeks

1.7 Smoking status

In 2016, 9.4% of all women were reported to be smokers at their first antenatal visit, and 2.5% had quit smoking before their first visit (Table 9). Smoking status was unknown for 0.7% of women. The proportion of all women smoking during pregnancy has been declining in South Australia, from 21.9% in 2001 to 9.4% in 2016.

The proportion of Aboriginal women who reported that they smoked at the first antenatal visit has increased slightly from 42.6% in 2015 to 43.9% in 2016. This was considerably higher than non-Aboriginal women (8.1%). Additionally, 4.9% of Aboriginal women reported that they quit smoking in pregnancy prior to their first antenatal visit, compared to 2.4% of non-Aboriginal women.

Table 9: Tobacco smoking status at first antenatal visit by Aboriginality, South Australia, 2016

Smoking status	Non-Aboriginal		Aboriginal		Total	
	Number	%	Number	%	Number	%
Smoker	1,535	8.1	329	43.9	1,864	9.4
Quit before 1st visit	458	2.4	37	4.9	495	2.5
Non-smoker	16,905	88.9	366	48.8	17,271	87.4
Unknown smoking status	117	0.6	18	2.4	135	0.7
Total	19,015	100.0	750	100.0	19,765	100.0

The highest rates of smoking at the first antenatal visit were among teenagers (28.7%) and women aged 20-24 years (18.7%). Smoking rates were high among all age groups of Aboriginal women varying from 35.7% among women aged over 40 years to 50.4% among those aged 30-34 years (Table 10).

Table 10: Tobacco smoking status at first antenatal visit by age and Aboriginality, South Australia, 2016

Age	Smoker		Quit before 1st visit		Non-smoker		Unknown smoking status		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
Total										
≤20	136	28.7	33	7.0	299	63.1	6	1.3	474	100.0
20-24	454	18.7	115	4.7	1849	76.0	15	0.6	2433	100.0
25-29	525	9.4	148	2.6	4898	87.4	31	0.6	5602	100.0
30-34	456	6.5	113	1.6	6434	91.4	39	0.6	7042	100.0
35-39	235	6.8	74	2.1	3130	90.1	34	1.0	3473	100.0
≥40	58	7.8	12	1.6	661	89.2	10	1.4	741	100.0
Total	1,864	9.4	495	2.5	17,271	87.4	135	0.7	19,765	100.0
Non-Aboriginal										
≤20	86	23.6	21	5.8	255	70.1	2	0.6	364	100.0
20-24	369	16.7	104	4.7	1726	78.2	9	0.4	2208	100.0
25-29	432	8.0	140	2.6	4795	88.9	27	0.5	5394	100.0
30-34	391	5.7	110	1.6	6375	92.2	37	0.5	6913	100.0
35-39	204	6.0	71	2.1	3102	91.0	32	0.9	3409	100.0
≥40	53	7.3	12	1.7	652	89.7	10	1.4	727	100.0
Total	1,535	8.1	458	2.4	16,905	88.9	117	0.6	19,015	100.0
Aboriginal										
≤20	50	45.5	12	10.9	44	40.0	4	3.6	110	100.0
20-24	85	37.8	11	4.9	123	54.7	6	2.7	225	100.0
25-29	93	44.7	8	3.9	103	49.5	4	1.9	208	100.0
30-34	65	50.4	3	2.3	59	45.7	2	1.6	129	100.0
35-39	31	48.4	3	4.7	28	43.8	2	3.1	64	100.0
≥40	5	35.7	0	0.0	9	64.3	0	0.0	14	100.0
Total	329	43.9	37	4.9	366	48.8	18	2.4	750	100.0

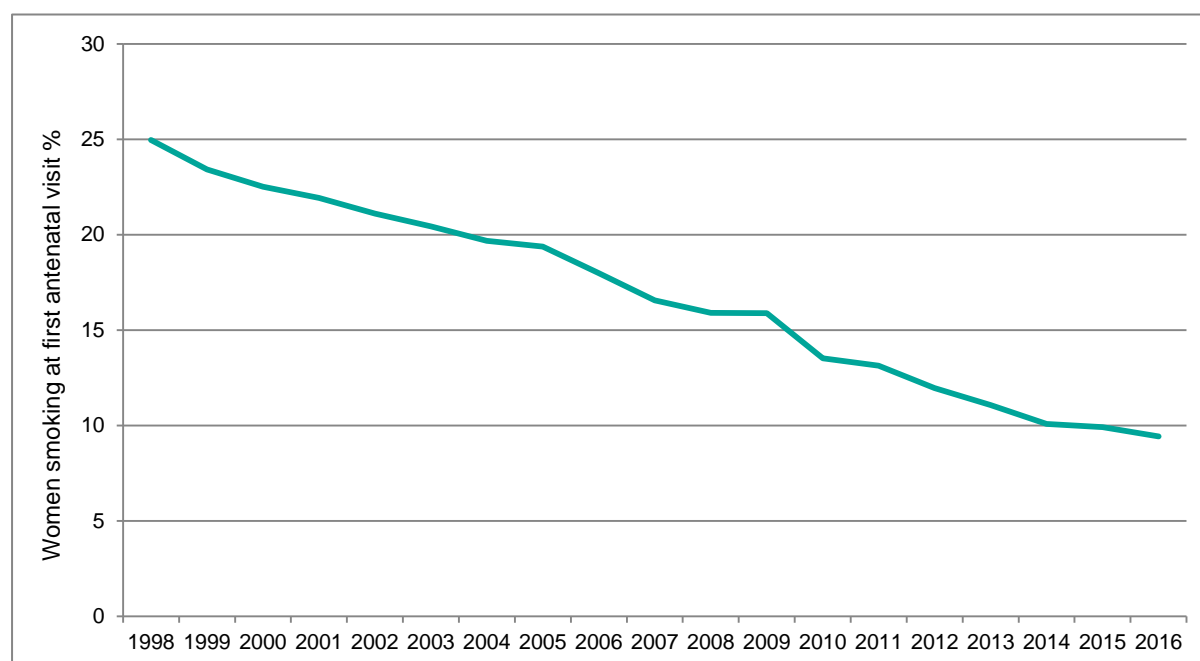
In the second half of pregnancy, 7.8% of women were reported to be smokers and 0.2% of those women smoked more than 20 cigarettes per day. *In the second half of pregnancy, 36.9% of Aboriginal women smoked, compared with 6.7% of non-Aboriginal women. A higher proportion of Aboriginal women (1.3% compared with 0.2%) smoked more than 20 cigarettes per day (Table 11) although the numbers are small. In 2016, the proportion of women who ceased smoking from the first to second half of their pregnancy was higher for Aboriginal women (6.9%) than non-Aboriginal women (1.4%).*

Table 11: Tobacco smoking status in second half of pregnancy by Aboriginality, South Australia, 2016

Average number of tobacco cigarettes	Non-Aboriginal		Aboriginal		Total	
	Number	%	Number	%	Number	%
None	17,510	92.1	419	55.9	17,929	90.7
Occasional (<1)	25	0.1	10	1.3	35	0.2
1-20	1,214	6.4	257	34.3	1,471	7.4
≥21	34	0.2	10	1.3	44	0.2
Unknown	232	1.2	54	7.2	286	1.5
Total	19,015	100.0	750	100.0	19,765	100.0

The proportion of women who reported smoking at the first antenatal visit declined consistently since 1998 (25.0%) through to 2007 (16.6%) and is now at its lowest in 2016 at 9.4% (Figure 2).

Figure 2: Proportion of women smoking at first antenatal visit, South Australia, 1998-2016



Pregnancy Profile

2.1 Parity and previous pregnancy outcomes

In 2016, 41.3% of women who gave birth had no previous births and 29.7% were pregnant for the first time. Among Aboriginal women, 34.3% who gave birth had no previous births, and 24.7% were pregnant for the first time (Table 12).

The proportion of women with a parity of 4 or greater was much higher among Aboriginal women (12.8%) than among Caucasian women (2.8%) and Asian women (0.9%).

Table 12: Parity by race of women who gave birth, South Australia, 2016

Parity*	Race of women								Total	
	Caucasian		Aboriginal		Asian		Other			
	Number	%	Number	%	Number	%	Number	%	Number	%
0-primigravida	4,301	29.3	185	24.7	1,000	34.7	375	25.9	5,861	29.7
0-multigravida	1,735	11.8	72	9.6	367	12.7	122	8.4	2,296	11.6
1	5,405	36.8	187	24.9	1,132	39.2	468	32.3	7,192	36.4
2	2,112	14.4	135	18.0	294	10.2	214	14.8	2,755	13.9
3	727	5.0	75	10.0	67	2.3	111	7.7	980	5.0
4	228	1.6	41	5.5	18	0.6	57	3.9	344	1.7
≥5	172	1.2	55	7.3	8	0.3	102	7.0	337	1.7
Total	14,680	100.0	750	100.0	2,886	100.0	1,449	100.0	19,765	100.0

* Number of previous pregnancies reaching 20 weeks gestational age (including live birth and stillbirth)

Among women with previous pregnancies (multigravid women), the proportions who had previous specified adverse pregnancy outcomes are shown in Table 13. In total, 60.2% of the multigravidae women had experienced a previous adverse pregnancy outcome. Just over a third of the women (35.9%) had a previous miscarriage and almost a fifth (19.9%) a termination of pregnancy.

Table 13: Previous adverse pregnancy outcomes, women who gave birth, South Australia, 2016 (multigravidae only, n= 13,904)

Previous adverse pregnancy outcome	Number	%
Miscarriage	4,991	35.9
Termination of pregnancy	2,760	19.9
Stillbirth	207	1.5
Neonatal death	92	0.7
Ectopic pregnancy	316	2.3
Total	8,366	60.2

2.2 Antenatal visits

Women who gave birth are grouped in Table 14 according to their number of reported antenatal visits. However, for 4.8% of women (6.3% of Aboriginal women), the number of antenatal visits attended was not reported. If women for whom the number of antenatal visits was not reported are excluded, 71.3% of Aboriginal women compared with 89.1% of Caucasian women attended at least seven antenatal visits during pregnancy.

A low frequency of antenatal visits may be taken, particularly in term births, as an indication of inadequate antenatal care. Although the exact number of antenatal visits was reported for 18,817 (95.2%) women, 18,760 (99.7% out of 18,817) women report having attended at least one antenatal visit.

Table 14: Antenatal visits by race, women who gave birth, South Australia, 2016

Antenatal visits	Race of women									
	Caucasian		Aboriginal		Asian		Other		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
None	33	0.2	18	2.4	4	0.1	2	0.1	57	0.3
1-6	1,287	8.8	184	24.5	435	15.1	215	14.8	2,121	10.7
≥7	12,682	86.4	501	66.8	2,290	79.4	1,166	80.5	16,639	84.2
Unknown number of visits	678	4.6	47	6.3	157	5.4	66	4.6	948	4.8
Total	14,680	100.0	750	100.0	2,886	100.0	1,449	100.0	19,765	100.0

2.3 Gestation at first antenatal visit

Of the women for whom week of gestation at the first antenatal visit was reported, 87.4% attended antenatal care within the first 14 weeks of pregnancy. *Of the Aboriginal women for whom week of gestation at the first antenatal visit was reported, 67.6% attended antenatal care within the first 14 weeks of pregnancy (compared with 88.1% of non-Aboriginal women).* Gestation at the first antenatal visit was reported as unknown for 3.2% of all women (Table 15).

Table 15: Gestation at first antenatal visit, women who gave birth by Aboriginal status, South Australia, 2016

Gestation at first antenatal visit	Non-Aboriginal			Aboriginal			Total		
	Number	%	Adjusted % excluding unknown (n=18,408)	Number	%	Adjusted % excluding unknown (n=716)	Number	%	Adjusted % excluding unknown (n=19,124)
<14 weeks gestation	15,438	81.2	83.9	439	58.5	61.3	15,877	80.3	83.0
14 weeks or greater	2,970	15.6	16.1	277	36.9	38.7	3,247	16.4	17.0
Unknown	607	3.2		34	4.5		641	3.2	
Total	19,015	100.0	100.0	750	100.0	100.0	19,765	100.0	100.0

* includes 56 women with no antenatal care

2.4 Type of antenatal care

Table 16 describes the main types of antenatal care used in South Australia. The most common types of antenatal care were specialist led public hospital clinics (43.4%), obstetricians in private practice (24.7%), general practitioners and public hospital shared care (13.3%, Table 17). There were 56 women (0.3%) who had no antenatal care.

Table 16: Type of antenatal care, women who gave birth, South Australia, 2016

Type of care*	Number	% of antenatal care
No care	57	0.3
Midwifery group practice at birth hospital	2,575	12.0
Birth unit/centre	1,101	5.1
Public clinic (specialist led)	8,572	39.8
GP and public hospital (shared care)	2,618	12.2
GP led	1,487	6.9
Obstetrician +/- midwife in private practice	4,879	22.7
Eligible midwife in private practice	68	0.3
<i>Aboriginal family birthing program (includes metropolitan and rural locations)</i>	144	0.7
Other	19	0.1
Not stated	6	0.0
Total	21,526	100.0

* Individual women may have used more than one type of antenatal care

2.5 Medical conditions

Medical conditions were recorded in the current pregnancy for 9,634 women (48.7%). The frequencies of specified medical conditions are provided in Table 17. Up to four conditions can be reported for each pregnancy.

Table 17: Medical conditions in current pregnancy, women who gave birth, South Australia, 2016

	Medical condition	Number	% of women (n = 19,765)
1	None	10,131	51.3
2	Anaemia	2,237	11.3
3	Urinary tract infection	436	2.2
4	Hypertension (pre-existing)	234	1.2
5	Diabetes (pre-existing)	164	0.8
6	Epilepsy	105	0.5
7	Asthma	1,555	7.9
8	Other	7,315	37.0

2.6 Obstetric complications

Obstetric complications were recorded for 8,790 women who gave birth (44.5%). The reported frequencies of the most common complications are presented in Table 18. Up to four complications can be reported for each pregnancy.

There was one maternal death notified to the Maternal, Perinatal and Infant Mortality Committee in 2016.

Table 18: Most common obstetric complications in current pregnancy, women who gave birth, South Australia, 2016

Obstetric complication	Number	% of women (n= 19,765)
No complication	10,975	55.5
Threatened miscarriage	178	0.9
Antepartum haemorrhage (APH) - abruption	110	0.6
APH - placenta praevia	94	0.5
APH – other & unknown causes	476	2.4
Pregnancy hypertension	1,342	6.8
Intrauterine growth restriction (suspected)	1,106	5.6
Gestational diabetes	2,764	14.0
Other complications (including 37 women with impaired glucose tolerance)	4,949	25.0

2.7 Procedures performed in current pregnancy

Procedures performed in the current pregnancy that are collected on the Supplementary Birth Record are presented in Table 19. At least one ultrasound examination was performed for 99.3% of women in 2016. Amniocentesis was performed for 1.5%, and chorion villus sampling for 0.4% of women who gave birth.

Table 19: Procedures performed in current pregnancy, women who gave birth, South Australia, 2016

Procedure	Yes		No		Unknown	
	Number	%	Number	%	Number	%
First trimester anomaly screen (ultrasound & biochemical)	15,341	77.6	4,284	21.7	140	0.7
Second trimester anomaly screen (biochemical only)	2,452	12.4	17,162	86.8	151	0.8
Ultrasound dating scan	12,019	60.8	6,998	35.4	748	3.8
Ultrasound morphology scan	17,876	90.4	1,747	8.8	142	0.7
Other ultrasound scan	9,493	48.0	10,037	50.8	235	1.2
Amniocentesis	301	1.5	19,394	98.1	70	0.4
Chorion villus biopsy	74	0.4	19,620	99.3	71	0.4
Antenatal fetal blood sampling	22	0.1	19,673	99.2	70	0.4
Other surgical procedure	164	0.8	19,601	99.4	0	0.0

Labour

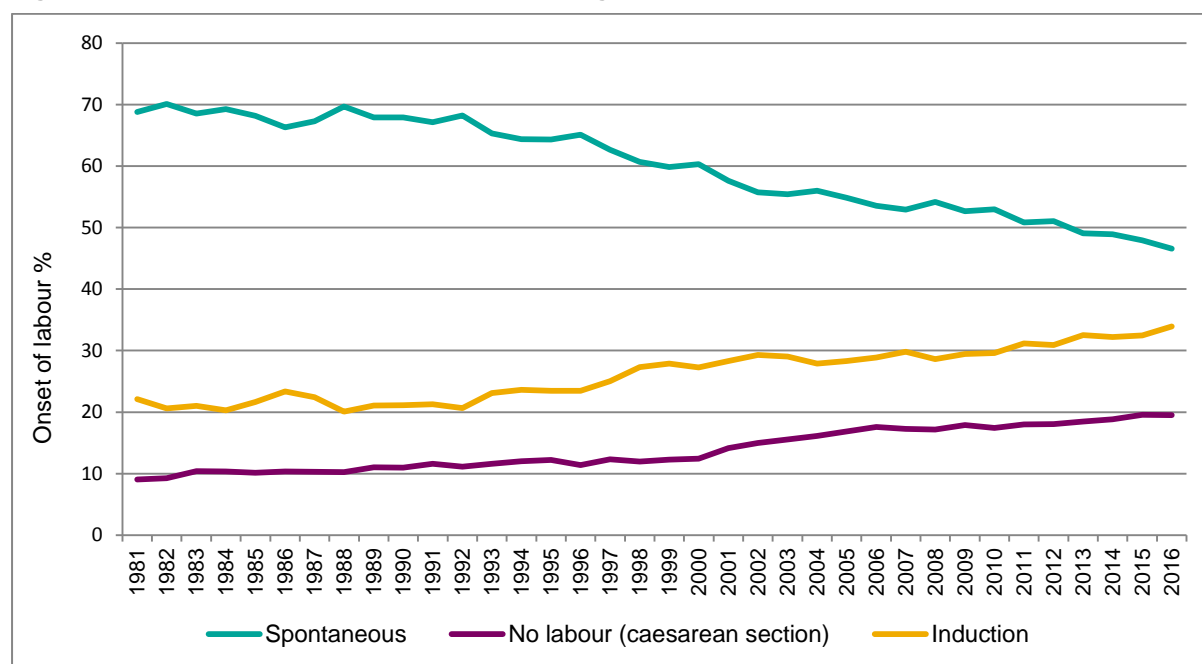
3.1 Onset of labour

Labour occurred spontaneously in 46.6% of women who gave birth in 2016 (Table 20), which has decreased over time from 60.3% in 2000 (Figure 3). Induction of labour has increased slightly from 27.3% in 2000 to 33.9% in 2016. The proportion of women with no labour due to caesarean sections has increased from 12.4% to 19.5%, over the same time period.

Table 20: Onset of labour, women who gave birth, South Australia, 2016

Onset of labour	Number	%
Spontaneous	9,203	46.6
No labour – caesarean section	3,853	19.5
Induction	6,709	33.9
Total	19,765	100.0

Figure 3: Trend for onset of labour for women who gave birth in South Australia, 1981-2016



3.2 Induction of labour

Labour was induced for 33.9% of women who gave birth in 2016. The methods of induction used were artificial rupture of membranes (ARM) in 73.7% of inductions, oxytocics in 60.7%, and prostaglandins in 43.9% (Table 21). Up to three methods of induction can be reported on the Supplementary Birth Record. In many cases more than one method was used.

Table 21: Method of induction of labour, women who gave birth, South Australia, 2016

Method of induction	Number	% of women (n =19,765)	% of inductions (n =6,709)
Any induction	6,709	33.9	
Artificial rupture of membranes	4,941	25.0	73.7
Oxytocics	4,072	20.6	60.7
Prostaglandins	2,943	14.9	43.9
Other	542	2.7	8.1

In 2016, 15.3% of women were induced for diabetes (including diabetes mellitus, gestational diabetes and glucose intolerance), 14.3% for prolonged pregnancy (41 or more completed weeks), 11.7% for hypertension, and 8.7% for intrauterine growth restriction (IUGR, Table 22).

Table 22: Reasons for induction of labour, South Australia, 2016 (n=6,709)

Reason for induction	Number	% of women (n=6,709)
Other	3238	48.3
Diabetes*	1021	15.2
Prolonged pregnancy	950	14.3
Hypertension	782	11.7
IUGR	586	8.7
Premature rupture of membranes	507	7.6
Fetal death	48	0.7
Fetal distress	28	0.4
Chorioamnionitis	17	0.3
Isoimmunisation	10	0.2

*includes diabetes mellitus and gestational diabetes

3.3 Augmentation of labour

The proportion of women giving birth who had labour augmented was 17.0% (Table 23). Of the 9,203 women who went into spontaneous labour, augmentation was used for 3,358 (36.5%). Methods used in augmentation were ARM (72.7%), oxytocics (42.4%) and prostaglandins (1.0%). Up to three methods of augmentation can be reported on the Supplementary Birth Record. In some cases more than one method was used.

Table 23: Augmentation after spontaneous labour onset, women who gave birth, South Australia, 2016

Method of augmentation	Number	% of women (n=19,765)	% of augmentations (n=3,358)
Any augmentation	3,358	17.0	
Artificial rupture of membranes	2,442	12.4	72.7
Oxytocics	1,424	7.2	42.4
Prostaglandins	32	0.2	1.0
Other	5	0.0	0.2

3.4 Method of birth and fetal presentation

Of the women who gave birth, 52.7% had normal spontaneous vaginal births (Table 24). Caesarean section was performed for 35.1% of women, with 17.3% of women having elective section. Ventouse and forceps were used for 6.1% and 5.7% of births, respectively. The method of birth reported for women who had multiple births is that of the first birth.

Table 24: Method of birth, women who gave birth, South Australia, 2016

Method of birth	Number	% of women
Normal spontaneous	10,414	52.7
Caesarean section (emergency)	3,526	17.8
Caesarean section (elective)	3,414	17.3
Ventouse	1,207	6.1
Forceps	1,117	5.7
Breech spontaneous	50	0.3
Unknown	16	0.1
Assisted breech (no forceps)	14	0.1
Assisted breech (with forceps for head)	4	0.0
Breech extraction	3	0.0
Total	19,765	100.0

* Birth method is for the singleton infant or first infant of a multiple birth

Fetal presentation is presented in Table 25, and the method of birth by presentation is provided in Table 26. Four and a half percent of all presentations were breech. Caesarean section was the method of birth for 89.8% of breech presentations (Table 27).

Table 25: Fetal presentation, all births, South Australia, 2016

Fetal presentation	Number	% of births
Vertex	18,915	94.3
Breech	899	4.5
Face	24	0.1
Brow	37	0.3
Other	154	0.8
Unknown	40	0.2
Total	20,069	100.0

Table 26: Method of birth by fetal presentation, all births, South Australian 2016

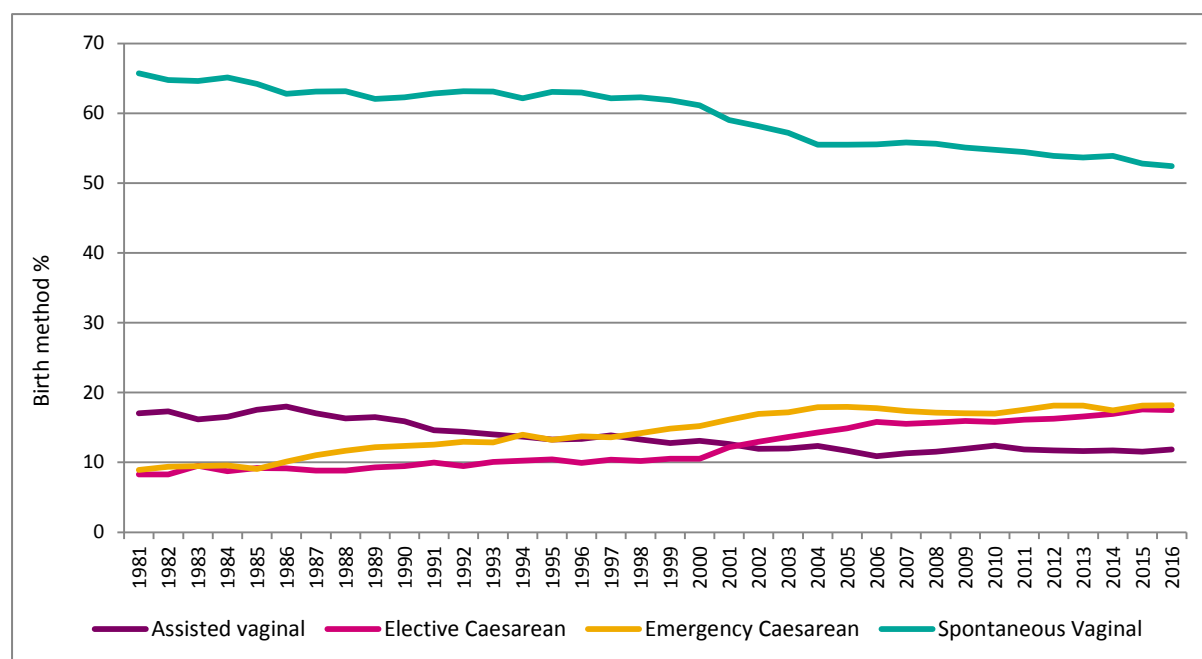
Method of birth	Fetal presentation								Total	
	Vertex		Breech		Other		Unknown			
	Number	%	Number	%	Number	%	Number	%	Number	%
Normal spontaneous	10,412	55.0	0	0.0	46	21.4	4	10.0	10,462	52.1
Forceps	1,120	5.9	0	0.0	8	3.7	0	0.0	1,128	5.6
Assisted breech (no forceps)	0	0.0	20	2.2	0	0.0	0	0.0	19	0.1
Elective caesarean	2,966	15.7	493	54.8	44	20.5	8	20.0	3,511	17.5
Emergency caesarean	3,210	17.0	315	35.0	106	49.3	15	37.5	3,646	18.2
Ventouse	1,203	6.4	0	0.0	9	4.2	0	0.0	1,212	6.0
Breech extraction	0	0.0	10	1.1	2	0.9	0	0.0	12	0.1
Breech spontaneous	0	0.0	58	6.4	0	0.0	0	0.0	59	0.3
Assisted breech (forceps)	0	0.0	4	0.4	0	0.0	0	0.0	4	0.0
Unknown	3	0.0	0	0.0	0	0.0	13	32.5	16	0.1
Total	18,914	100.0	900	100.0	215	100.0	40	100.0	20,069	100.0

Table 27: Method of birth in breech presentation, by plurality, all births, South Australia, 2016

Method of birth	Plurality							
	Singleton		Twins		Triplets		Total	
	Number	%	Number	%	Number	%	Number	%
Assisted breech (no forceps)	13	1.8	6	3.4	0	0.0	19	2.1
LSCS (elective)	413	57.2	80	45.7	0	0.0	493	54.8
LSCS (emergency)	243	33.7	71	40.6	1	50.0	315	35.0
Breech extraction	2	0.3	7	4.0	1	50.0	10	1.1
Breech spontaneous	47	6.5	11	6.3	0	0.0	58	6.5
Assisted breech (forceps)	4	0.6	0	0.0	0	0.0	4	0.4
Total	722	100.0	175	100.0	2	100.0	899	100.0

The proportion of elective caesarean section has been over 15% since 2006. In the past 2 years both elective and emergency caesarean sections have plateaued at 17.5% and 18.2% of all births, respectively.

Figure 4: Method of birth for all births in South Australia, 1981-2016*



* excludes births with unknown method of birth (n=135)

3.5 Analgesia for labour and anaesthesia for birth

Analgesia for labour was used by 62.6% of women who gave birth in South Australia in 2016. The most commonly used methods for analgesia were nitrous oxide and oxygen (40.2%), epidurals (31.1%) and narcotics (13.8%, Table 28). Anaesthesia for birth was used by 63.1% of women who gave birth in South Australia in 2016. The most common methods were epidurals (28.6%), spinal anaesthetic (26.3%) and local anaesthesia (6.7%, Table 29). The proportion of women who had an epidural for either analgesia or anaesthesia was 33.7% (6,666 women). General anaesthesia was used for 1.9% of births, and 5.4% of all caesarean sections.

Table 28: Analgesia for labour,* women who gave birth, South Australia, 2016

Analgesia	Number	% of women (n=19,765)
None	7,388	37.4
Nitrous oxide and oxygen	8,143	40.2
Narcotic (parenteral)	2,589	13.8
Epidural (lumbar/caudal)	6,435	31.1
Spinal	185	1.0
Other	530	2.9
Combined spinal-epidural	24	0.1

* more than one method may be recorded for each woman

Table 29: Anaesthesia for birth,* women who gave birth, South Australia, 2016

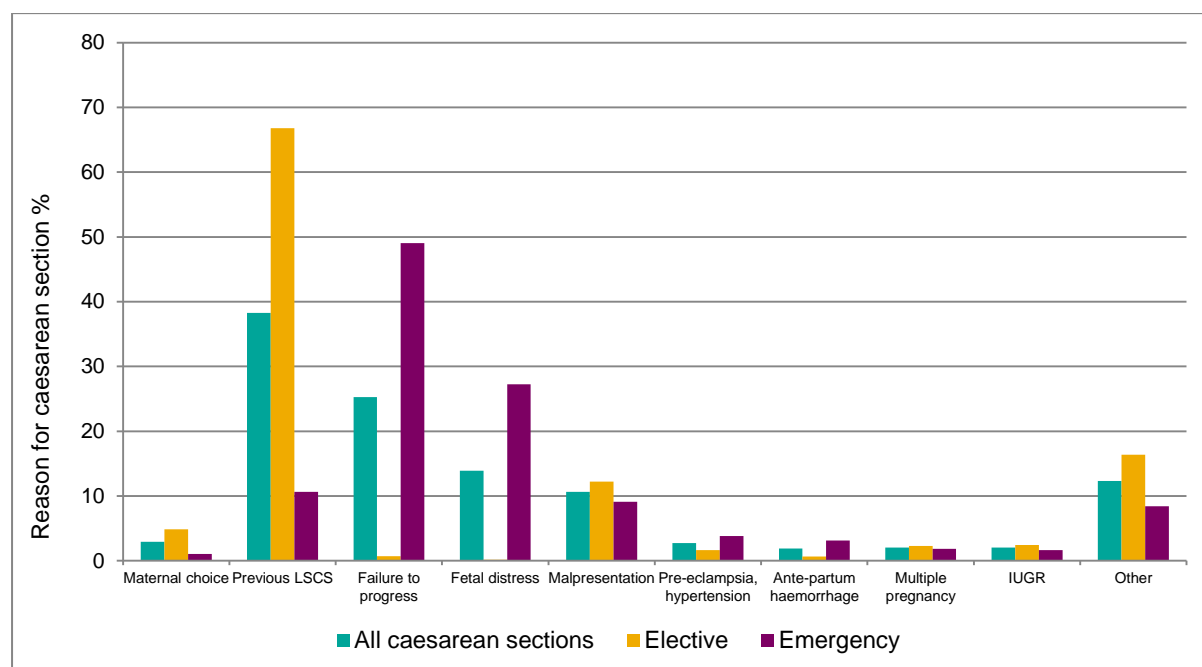
Anaesthesia	Number	% of women (n=19,765)
None	7,285	36.9
Local anaesthesia	1,333	6.7
Pudendal	136	0.7
Epidural (lumbar/caudal)	5,647	28.6
Spinal	5,196	26.3
General anaesthesia	382	1.9
Other	116	0.6
Combined spinal-epidural	75	0.4

* more than one method may be recorded for each woman

3.6 Reason for caesarean section

Up to two reasons for caesarean section can be recorded on the Supplementary Birth Record. In 2016 the most common reasons for caesarean section were previous caesarean section (38.3%), failure to progress or cephalopelvic disproportion (25.3%), fetal distress (13.9%) and malpresentation (10.6%, Figure 5). Maternal choice accounted for 2.9% of all caesarean sections (up from 1.5% in 2012 when it was first collected).

The main reasons for elective caesarean sections were previous caesarean section (66.8%), malpresentation (12.2%) and maternal choice (4.9%). The main reasons given for emergency caesarean sections were failure to progress or CPD (49.1%), fetal distress (27.2%) and previous caesarean section (10.6%).

Figure 5: Reason for caesarean section in South Australia, 2016 (n=6,940)

3.7 Caesarean section by maternity service

Just over a third of all women in South Australia gave birth by caesarean section in 2016 (35.3%, Table 30). The proportion of emergency caesarean section births were similar across all levels of maternity services ranging from 17.1% to 19.0%. However, the metropolitan private hospitals had much higher proportion of elective caesarean section births (27.6%) compared to the other maternity services, leading to a higher overall proportion of caesarean births at metropolitan private hospitals (44.7%).

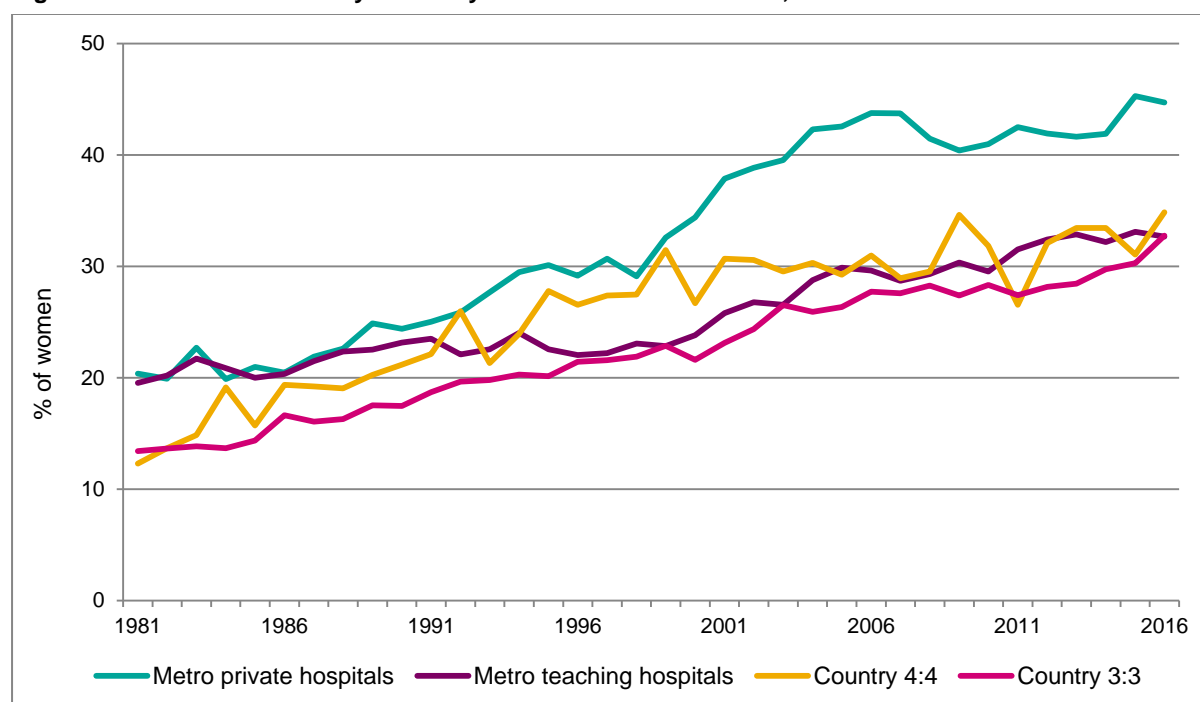
Table 30: Caesarean section by maternity service* in South Australia, 2016

Maternity Service	Total women	Elective caesarean		Emergency caesarean		Elective & emergency caesarean	
	Number	Number	%	Number	%	Number	%
Metro teaching hospitals	11,892	1,749	14.7	2136	18.0	3885	32.7
Metro private hospitals	4,105	1,133	27.6	702	17.1	1835	44.7
Country hospitals level 4:4	829	142	17.1	147	17.7	289	34.9
Country hospitals level 3:3	2,842	390	13.7	541	19.0	931	32.8
Total	19,668	3,414	17.4	3,526	17.9	6,940	35.3

* Excludes home births (n=97)

The proportion of women having a caesarean section has been increasing since the early 1980s, across all maternity services. The largest increase is within metropolitan private hospitals (20.3% in 1981 to 44.7% of women in 2016, Figure 6). The proportion of women having a caesarean section at metropolitan teaching hospitals and both country hospital service categories has also increased over time, but remain lower than proportion of women at metropolitan private hospitals.

Figure 6: Caesarean section by maternity service in South Australia, 1981-2016



3.8 Complications of labour and birth

Complications of labour or birth were recorded for 7,936 women who gave birth (40.1%). Up to four complications can be recorded. The most common complications are presented in Table 31. The main complications of labour and birth were primary post-partum haemorrhage (PPH,15.3%), failure to progress (12.4%) and fetal distress (12.0%).

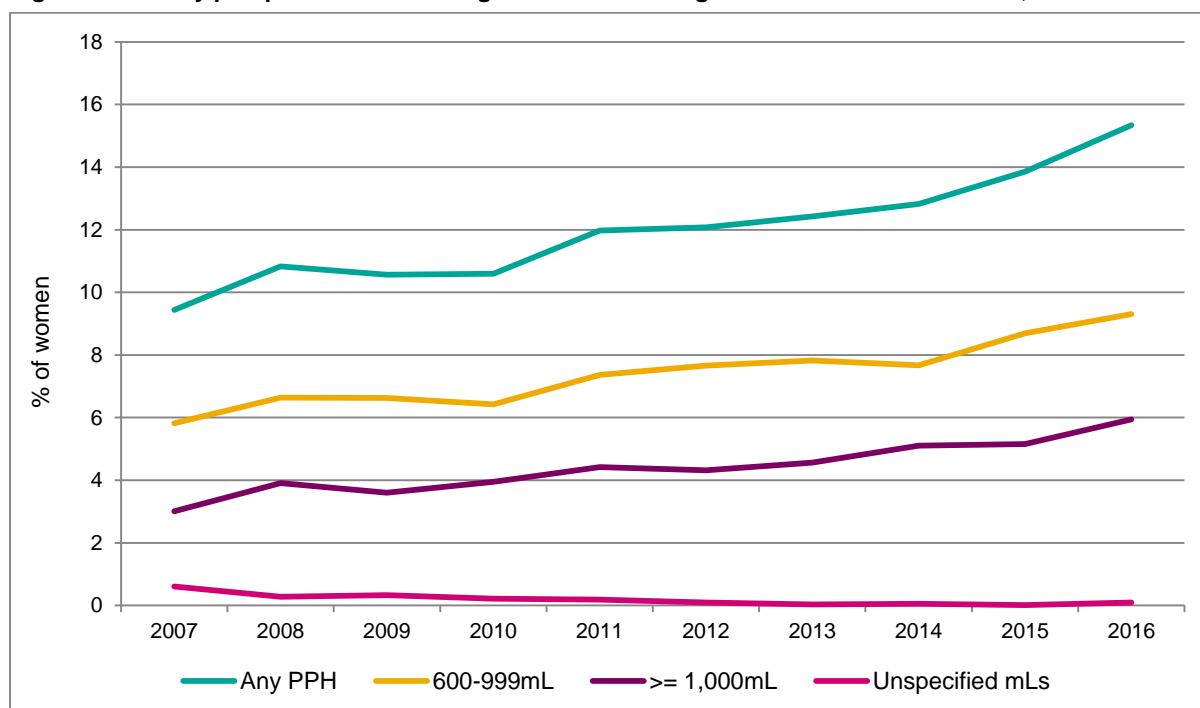
Table 31: Most common complications of labour and birth, women who gave birth, South Australia, 2016

Complication	Number of women	% of women (n=19,765)
None	11,829	59.9
Primary post-partum haemorrhage		
600-999ml	1,839	9.3
1,000 ml or more	1,174	5.9
>600ml but unspecified mls	18	0.1
Fetal distress	2,369	12.0
Retained placenta	266	1.4
Prolonged labour	165	0.8
Cord prolapse	30	0.2
Wound infection	11	0.1
Failure to progress	2,450	12.4
Third degree tear or fourth degree tear	455	2.3
Other	4,662	23.6

3.9 Primary post-partum haemorrhage (PPH)

Primary PPH is reported if the blood loss within 24 hours of birth was at least 600 mls. In 2016 the proportion of women with a PPH of 600mls or more was 15.3% (Table 31) compared to 13.9% in 2015. The proportion of women who had a PPH has increased from 9.4% in 2007 to 15.3% in 2016. Data are presented below in Figure 7 from 2007 onwards, when more precise data began being collected on PPH volume.

Figure 7: Primary postpartum haemorrhage for women who gave birth in South Australia, 2007-2016



3.10 Perineal status after birth

Of the 19,765 women who gave birth, episiotomy was performed for 2,877 women (14.6%, Table 32). Among the 12,809 women who gave birth vaginally, 53.2% had a first or second degree tear, 24.6% had an intact perineum after birth, 22.5% had an episiotomy and 3.6% of women had a third or a fourth degree tear. Forceps births had the highest proportion of third and fourth degree tears (12.3%). Among women who had an episiotomy, 16.9% (n=488) had a tear that extended the episiotomy. In total, 5,287 women (41.3%) had a repair of a perineal tear.

Table 32: Method of birth* and perineal status for women gave birth vaginally in South Australia, 2016

Method of birth*	Perineal status								
	Total	Intact		Episiotomy		1-2 degree tear†		3-4 degree tear†	
	Number	Number	%	Number	%	Number	%	Number	%
Spontaneous	10,414	2,969	28.5	1,306	12.5	6,051	58.1	242	2.3
Ventouse	1,207	115	9.5	626	51.9	486	40.3	75	6.2
Forceps	1,121	29	2.6	933	83.2	265	23.6	138	12.3
Breech	67	41	61.2	13	19.4	15	22.4	0	0.0
Total	12,809	3,154	24.6	2,878	22.5	6,817	53.2	455	3.6

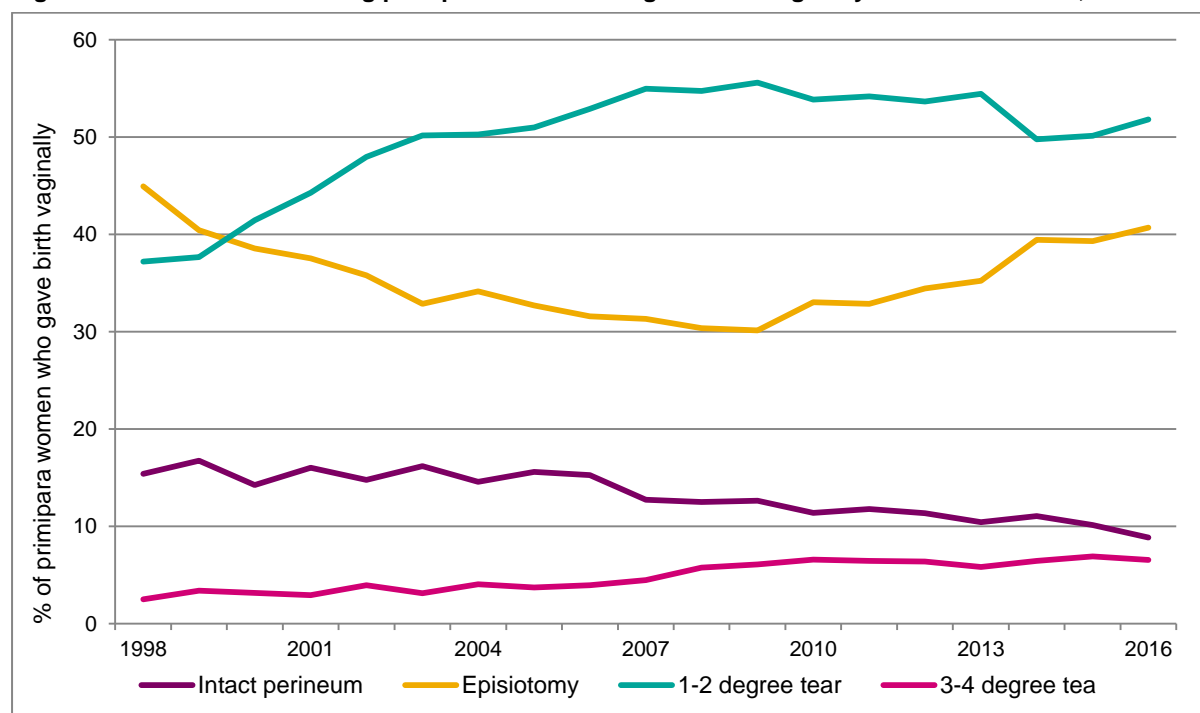
* Birth method is for the singleton infant or first infant of a multiple birth. Forceps includes cases of assisted breech with forceps for head (n=4). Cases with unknown method were excluded (n=16)

† Including cases with extended tear after episiotomy

‡ Includes women with emergency caesarean section and episiotomy (n=4)

The trend in perineal status among primipara women who gave birth vaginally are shown in Figure 8. The proportion of primipara women who gave birth vaginally and had an episiotomy decreased from 45.0% in 1998 to a low of 30.1% in 2009. Since 2009 this proportion has been increasing, and in 2016 was 40.7%. The proportion of women with third or fourth degree tears has increased gradually from 2.5% in 1998 to 6.5% in 2018, but has remained relatively stable since 2010.

Figure 8: Perineal status among primipara women who gave birth vaginally in South Australia, 1998-2016



3.11 Fetal monitoring during labour

Cardiotocography (CTG) was performed during labour for 64.7% of women who gave birth. The majority of these were external CTGs (47.8%) while a scalp clip was used for 16.9% (Table 33). A fetal scalp pH was taken during labour in 196 women who gave birth (1.0%, Table 34).

Table 33: Cardiotocography performed during labour, women who gave birth, South Australia, 2016

CTG during labour	Number of women	% of women (n=19,765)
None	6,975	35.3
External	9,455	47.8
Scalp clip	3,335	16.9
Total	19,765	100.0

Table 34: Fetal scalp pH taken during labour, women who gave birth, South Australia, 2016

Fetal scalp pH taken	Number of women	% of women (n=19,765)
No	19,569	99.0
Yes	196	1.0
Total	19,765	100.0

3.12 Postnatal length of stay

The distribution of length of stay for women who gave birth in hospitals are presented in Table 35 for public and private patients. The median duration for all women was three days (interquartile range (IQR, 2-4 days). Homebirths and maternal deaths have been excluded from postnatal length of stay statistics.

Table 35: Postnatal length of stay by patient type, women who gave birth in South Australian hospitals*, 2016

Length of stay (days)	Public		Private		Total	
	Number	%	Number	%	Number	%
<1	737	5.0	14	0.3	751	3.8
1	3,139	21.3	57	1.2	3,196	16.3
2	3,922	26.6	196	4.0	4,118	20.9
3	3,274	22.2	581	11.8	3,855	19.6
4	1,811	12.3	1,512	30.8	3,323	16.9
5	864	5.9	1,706	34.7	2,570	13.1
6	374	2.5	537	10.9	911	4.6
7 or more	634	4.3	309	6.3	943	4.8
Total	14,755	100.0	4,912	100.0	19,667	100.0

* Excludes homebirths (n=97) and maternal deaths (n=1)

The median length of stay for all hospital births was two days for vaginal births, and four days for caesarean section (Table 36). Among private patients, the median length of stay was two days longer for vaginal births and one day longer for caesarean births.

Table 36: Postnatal length of stay by patient and birth type, women who gave birth in South Australian hospitals*, 2016

Length of stay (days)	Public			Private			Total		
	Vaginal	Caesarean	Total	Vaginal	Caesarean	Total	Vaginal	Caesarean	Total
Number of women	9996	4757	14753	2730	2182	4912	12726	6939	19665
Mean	2.3	4.2	2.9	4.3	5.3	4.7	2.7	4.5	3.4
Standard deviation	3.1	4.3	3.7	3.9	3.5	3.7	3.4	4.1	3.8
Median	2.0	3.0	2.0	4.0	5.0	5.0	2.0	4.0	3.0
IQR	1-3	3-4	1-3	4-5	5-6	4-5	1-4	3-5	2-4

* Excludes homebirths (n=97) and maternal deaths (n=1)

Babies

4.1 Crude birth rate

In 2016 there were 20,069 births in South Australia, 85 fewer births than in 2015. Of the births in 2016, 99.3% were live births and 0.7% were stillbirths (Table 37). The crude birth rate has generally been declining since the early 1980s to a low of 11.4 per 1000 population in 2004. The crude birth rate increased slightly between 2005 to 2008, and has been declining since to the rate of 11.7 per 1,000 population in 2016.

Table 37: Crude birth rate for infants born in South Australia, 1981-2016

Year	Live Birth		Stillbirth		Total		Total Population†	Crude Birth Rate‡
	Number	%	Number	%	Number	%		
1981	18905	99.2	147	0.8	19052	100.0	1,318,769.00	14.3
1982	19004	99.4	124	0.7	19128	100.0	1,331,108.00	14.3
1983	19652	99.3	146	0.7	19798	100.0	1,345,775.00	14.6
1984	20140	99.3	135	0.7	20275	100.0	1,360,048.00	14.8
1985	19656	99.1	171	0.9	19827	100.0	1,371,197.00	14.3
1986	19650	99.3	149	0.8	19799	100.0	1,382,550.00	14.2
1987	19272	99.4	123	0.6	19395	100.0	1,392,764.00	13.8
1988	19400	99.3	131	0.7	19531	100.0	1,404,909.00	13.8
1989	19653	99.1	170	0.9	19823	100.0	1,419,029.00	13.8
1990	19855	99.3	133	0.7	19988	100.0	1,432,056.00	13.9
1991	19622	99.4	127	0.6	19749	100.0	1,446,299.00	13.6
1992	20004	99.3	148	0.7	20152	100.0	1,455,442.00	13.7
1993	19844	99.4	123	0.6	19967	100.0	1,458,632.00	13.6
1994	19673	99.4	128	0.7	19801	100.0	1,463,089.00	13.4
1995	19472	99.3	148	0.8	19620	100.0	1,465,340.00	13.3
1996	18979	99.3	132	0.7	19111	100.0	1,469,079.00	12.9
1997	18535	99.3	139	0.7	18674	100.0	1,475,658.00	12.6
1998	18613	99.4	121	0.7	18734	100.0	1,483,270.00	12.5
1999	18403	99.4	115	0.6	18518	100.0	1,490,934.00	12.3
2000	17766	99.4	106	0.6	17872	100.0	1,497,503.00	11.9
2001	17584	99.3	120	0.7	17704	100.0	1,503,461.00	11.7
2002	17623	99.3	122	0.7	17745	100.0	1,511,567.00	11.7
2003	17707	99.3	134	0.8	17841	100.0	1,520,399.00	11.6
2004	17408	99.4	113	0.6	17521	100.0	1,528,189.00	11.4
2005	18067	99.3	129	0.7	18196	100.0	1,538,804.00	11.7
2006	18660	99.3	140	0.7	18800	100.0	1,552,529.00	12.0
2007	18660	99.3	140	0.7	18800	100.0	1,570,619.00	12.5
2008	19819	99.2	151	0.8	19970	100.0	1,588,665.00	12.5
2009	19761	99.3	140	0.7	19901	100.0	1,608,902.00	12.3
2010	19883	99.4	119	0.6	20002	100.0	1,627,322.00	12.2
2011	20194	99.3	150	0.7	20344	100.0	1,639,614.00	12.3
2012	20527	99.3	138	0.7	20665	100.0	1,656,035.00	12.4
2013	20124	99.3	138	0.7	20262	100.0	1,670,689.00	12.0
2014	20604	99.3	145	0.7	20749	100.0	1,685,550.00	12.2
2015	20001	99.2	153	0.8	20154	100.0	1,698,921.00	11.8
2016	19933	99.3	136	0.7	20069	100.0	1,708,183.00	11.7

† ABS Estimated Resident Populations (ERP) for South Australia

‡ Crude birth rate per 1,000 population

4.2 Place of birth

Of the 20,069 births notified in 2016, 98 (0.5%) were home births and of those, 77 were planned homebirths. The remaining 19,971 births occurred in hospitals, including 103 births born before arrival at hospitals into which the women had been booked. The 'Born Before Arrival' births have been included in the statistics for the booked birthing hospital. The distribution of all births by place of birth (home or hospital) and plurality is provided in Table 38.

Table 38: Total births notified by place of birth and plurality, South Australia, 2016

Condition at birth	Home births		Hospital births			Total births
	Singleton	Twin	Singleton	Twin	Triplet	
Live birth	96	2	19,241	582	12	19,933
Stillbirth	0	0	128	8	0	136
Total births	96	2	19,369	590	12	20,069

4.3 Place of birth by race of mother

Of all births, 81.1% occurred in metropolitan hospitals (teaching and private) and 18.4% in country hospitals (Table 39). In 2016 there were 98 homebirths accounting for 0.5% of all births in South Australia. *Aboriginal women had the highest percentage of births in country hospitals, and Caucasian women had the highest percentage of homebirths (0.6%).*

Table 39: Place of birth by race of mother who gave birth, South Australia, 2016

Place of birth	Race of mother									
	Caucasian		Aboriginal		Asian		Other		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
Metropolitan teaching hospital	7,999	53.6	480	63.2	2,385	81.8	1,265	85.9	12,129	60.4
Metropolitan private hospital	3,656	24.5	16	2.1	404	13.9	82	5.6	4,158	20.7
Country hospital	3,176	21.3	261	34.4	127	4.4	120	8.2	3,684	18.4
Home	90	0.6	2	0.3	1	0.0	5	0.3	98	0.5
Total	14,921	100.0	759	100.0	2,917	100.0	1,472	100.0	20,069	100.0

4.4 Hospital birth by perinatal service

Among the 19,971 hospital births in South Australia in 2016, 60.7% occurred in metropolitan teaching hospitals, 20.8% in metropolitan private hospitals and 18.5% in country hospitals (Table 40).

Table 40: Hospital births by perinatal service delineation, South Australia, 2016

Hospital category	Number of births	Percent of hospital births
Metropolitan teaching	12,129	60.7
Women's & Children's Hospital (WCH)	4,693	23.5
Lyell McEwin Hospital (LMH)	3,837	19.2
Flinders Medical Centre (FMC)	3,597	18.0
Other	2	0.0
Metropolitan private	4,158	20.8
Country	3,684	18.5
Level 4:4	840	4.2
Level 3:3 ≥ 100 births	2,325	11.6
Level 3:3 < 100 births	519	2.6
Total	19,971	100.0

The numbers of births in individual hospitals by race of women are detailed in Table 41. Maternity and neonatal services at SA hospitals are delineated according to six levels of service, as defined in the Standards for Maternal and Neonatal Services in South Australia policy document⁴. In 2016, the Women's and Children's Hospital was defined as providing Level 5 maternity services and Level 6 neonatal services, as it provided a high risk pregnancy service and neonatal intensive care, but had no maternity intensive care facility on site. In 2016, the Lyell McEwin Hospital provided Level 6 maternity services and Level 5 neonatal services with maternity intensive care services and special care neonatal services. In 2016 the Flinders Medical Centre provided Level 6 maternity and neonatal services with both maternity and neonatal intensive care services. All the metropolitan private maternity hospitals had special care nurseries, as did Mt Gambier and Port Augusta hospitals.

Compared with 2015, the total number of births remained stable overall at the three metropolitan teaching hospitals. The total number of births in metropolitan private hospitals decreased. There was a decrease in the numbers of births at all metro private hospitals except Calvary (766 in 2015).

The total number of births in country hospitals was stable (3,678 in 2015). In the Level 4:4 country centres, there were decreased births at both Mount Gambier and Port Augusta. Increased births occurred at many level 3:3 hospitals, such as Loxton, Clare, and Kapunda. South Coast District (Victor Harbor) exceeded 100 births in 2016 (90 births in 2015).

Table 41: Hospital births by perinatal service delineation and race, South Australia, 2016

Hospital	Caucasian	Aboriginal	Asian	Other	Total births	Total women
Metropolitan teaching						
Women's & Children's Hospital	2,620	215	1,416	442	4,693	4,575
Lyell McEwin Hospital	2,562	176	578	521	3,837	3,785
Flinders Medical Centre	2,816	89	390	302	3,597	3,530
The Queen Elizabeth Hospital	1	0	0	0	1	1
The Royal Adelaide Hospital	0	0	1	0	1	1
Total	7,999	480	2,385	1,265	12,129	11,892
Metropolitan private						
Ashford Hospital	1,181	7	151	27	1,366	1,351
Burnside War Memorial Hospital	853	4	91	17	965	951
Calvary Healthcare Adelaide	688	5	97	6	796	786
North Eastern Community Hospital	564	0	36	16	616	610
Flinders Private Hospital	370	0	29	16	415	407
Total	3,656	16	404	82	4,158	4,105
Country						
Level 4:4* Country						
Mount Gambier & District Health Service	467	23	18	26	534	527
Port Augusta Hospital & Reg Health Service	193	93	5	15	306	302
Subtotal	660	116	23	41	840	829
Level 3:3* Country ≥100 births per annum						
Gawler Health Service‡	475	10	16	6	507	507
Mount Barker District Soldiers' Memorial Hosp	455	6	10	5	476	476
Port Lincoln Health Service	250	20	10	7	287	287
Murray Bridge Soldiers' Memorial Hospital	169	14	14	16	213	213
Whyalla Hospital & Health Services	155	21	8	6	190	190
Riverland General Hospital(Berri)	135	12	15	8	170	170
Port Pirie Regional Health Service	125	12	2	6	145	145
Naracoorte Health Service	109	2	7	10	128	128
South Coast District Hospital (Victor Harbor)	95	3	8	2	108	108
Northern Yorke Peninsula Reg Health Service	90	6	2	3	101	101
Subtotal	2,058	106	92	69	2,325	2,325
Level 3:3* Country <100 births per annum						
Loxton Hospital	91	7	1	0	99	99
Lower North Health Centre (Clare)	91	1	0	1	93	91
Barossa Health (Tanunda Centre)	67	0	2	2	71	71
Kapunda Hospital	54	1	1	1	57	57
Ceduna Hospital	28	24	3	0	55	55
Mid North Health (Jamestown)	41	3	0	0	44	44
Sthn Flinders Health Service (Crystal Brook)	32	1	1	0	34	34
Kangaroo Island Health Service	26	0	4	1	31	31
Waikerie Health Service	22	1	0	5	28	28
Southern Yorke Peninsula Health Service	1	0	0	0	1	1
Meningie District Memorial Hospital	1	0	0	0	1	1
Coober Pedy Hospital	1	0	0	0	1	1
Keith & District Hospital	1	0	0	0	1	1
Ernabella Clinic	0	1	0	0	1	1
Other South Australia	2	0	0	0	2	0
Subtotal	458	39	12	10	519	517
Total (Country)	3,176	261	127	120	3,684	3,671
Grand total	14,831	757	2,916	1,467	19,971	19,668

* Perinatal service delineation – see text for further information

‡ This is a metropolitan hospital situated at the metropolitan/country boundary; it has the characteristics of a country hospital and has been included as such.

4.5 Home birth

Supplementary Birth Records were received from home birth midwives regarding planned home births for 76 women (77 births) which occurred at home in 2016. There were 21 unplanned home births. The unplanned births have been excluded from the planned home birth statistics below. Three of the women received no antenatal care.

Ascertainment of planned home births occurring at home in South Australia for the year 2016 is estimated to be 73.6% (95 out of an estimated 129 home births). This estimate has been derived from a comparison with data from the Births, Deaths and Marriages Registration Division on births registered, which did not occur in hospital (and were not babies born before arrival at the hospital into which the woman had been booked). This proportion has decreased from last year (91.7%).

In addition, 18 women (18 births) who planned to birth at home were transferred to hospital care before birth. Statistics for all 95 planned home births (94 women) in 2016 are provided in Table 42 – Table 45. The age profile of women who planned a home birth in 2016 was similar to all births, with most women in the 30-34 year age category. Of the 77 babies that were birthed at home, 97.4% were normal spontaneous vaginal deliveries.

Table 42: Age of women in planned home births, South Australia, 2016

Age	Birthed at home		Birthed in hospital		Total	
	Number of women	%	Number of women	%	Number of women	%
<20	-	-	-	-	-	-
20-24	7	9.2	0	0.0	7	7.5
25-29	18	23.7	3	16.7	21	22.3
30-34	23	30.3	11	61.1	34	36.2
35-39	24	31.6	3	16.7	27	28.7
40-44	4	5.3	1	5.6	5	5.3
Total	76	100.0	18	100.0	94	100.0

Table 43: Method of birth in planned home births, South Australia, 2016

Method of birth	Birthed at home		Birthed in hospital		Total	
	Number of births	%	Number of births	%	Number of births	%
Normal spontaneous vaginal	75	97.4	8	44.4	83	87.4
Forceps	0	0.0	2	11.1	2	2.1
Assisted breech (no forceps)	0	0.0	1	5.6	1	1.1
Emergency caesarean section	0	0.0	6	33.3	6	6.3
Ventouse	0	0.0	1	5.6	1	1.1
Breech spontaneous	1	1.3	0	0.0	1	1.1
Unknown	1	1.3	0	0.0	1	1.1
Total	77	100.0	18	100.0	95	100.0

Table 44: Birthweight of planned home births, South Australia, 2016

Birthweight (g)	Birthed at home		Birthed in hospital		Total	
	Number of births	%	Number of births	%	Number of births	%
1,500-1,999	1	1.3	0	0.0	1	1.1
2,000-2,499	-	-	-	-	-	-
2,500-2,999	4	5.2	0	0.0	4	4.2
3,000-3,499	22	28.6	3	16.7	25	26.3
3,500-3,999	24	31.2	9	50.0	33	34.7
4,000-4,499	23	29.9	2	11.1	25	26.3
4,500+	3	3.9	4	22.2	7	7.4
Total	77	100.0	18	100.0	95	100.0

Table 45: Perinatal outcome in planned home births, South Australia, 2016

Perinatal outcome	Birthed at home		Birthed in hospital		Total	
	Number of births	%	Number of births	%	Number of births	%
Stillbirth	-	-	-	-	-	-
Discharged within 28 days	76	98.7	18	100.0	94	99.0
In hospital at 28 days	-	-	-	-	-	-
Neonatal death	1	1.3	0	0.0	1	1.1
Total	77	100.0	18	100.0	95	100.0

4.6 Sex

Of all infants born, 51.6% were male with a male-female birth ratio of 1.07, which is slightly higher than 2015 (1.05). There were 661 more male infants born than female (Table 46). The outcome of male and female babies were similar as shown in Table 47.

Table 46: Sex of baby, all births, South Australia, 2016

Sex of baby	Number	%
Male	10,365	51.6
Female	9,704	48.4
Total	20,069	100.0

Table 47: Sex of baby by birth status, South Australia, 2016

Birth status	Sex of baby					
	Male		Female		Total	
	Number	%	Number	%	Number	%
Stillbirth	64	0.6	72	0.7	136	0.7
Live birth	10301	99.4	9,632	99.3	19,933	99.3
Total	10365	100.0	9,704	100.0	20,069	100.0

4.7 Plurality

In 2016, there were 19,465 singleton infants born in South Australia, 97.0% of the total infants born. The total number of multiple births was 604 (3.1% of total births) with 592 twin infants (3.0%) and 12 triplets (0.06%). *The proportion of multiple infants born to Aboriginal women was 2.4%, less than the proportion for non-Aboriginal women (3.1%, Table 48).*

Among women who gave birth there were 296 twin and 4 triplet pregnancies in 2016. Thus there was one twin pregnancy in every 66 pregnancies, one triplet pregnancy in every 4,866 pregnancies among women who gave birth. Women who gave birth with twins and triplets comprised 1.5% of all women who gave birth.

Table 48: Plurality of birth by maternal Aboriginal status for infants born in South Australia, 2016

Plurality	Maternal Aboriginal status					
	Non-Aboriginal		Aboriginal		Total	
	Number	%	Number	%	Number	%
Singleton	18,724	97.0	741	97.6	19,465	97.0
Twin	574	3.0	18	2.4	592	3.0
Triplet	12	0.1	0	0.0	12	0.0
Total	19,310	100.0	759	100.0	20,069	100.0

4.8 Gestational age

Gestational age is the duration of pregnancy in completed weeks. In 2016, the average gestational age for all babies was 38.5 weeks (SD 2.3 weeks), with the majority of infants (90.2%) born at term (37-41 weeks, Table 49). *Preterm birth occurred for 9.5% of all infants born, and this proportion was higher for infants of Aboriginal women (15.0%).*

Table 49: Gestational at birth by race of women, South Australia, 2016

Gestation at birth (weeks)	Race of women									
	Caucasian		Aboriginal		Asian		Other		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
Preterm births (20-36)	1,470	9.9	114	15.0	231	7.9	99	6.7	1,914	9.5
Term births (37-41)	13,416	89.9	644	84.9	2,682	91.9	1,364	92.7	18,106	90.2
Post-term births (42+)	28	0.2	1	0.1	3	0.1	6	0.4	38	0.2
Unknown	7	0.1	0	0.0	1	0.0	3	0.2	11	0.1
Total	14,921	100.0	759	100.0	2,917	100.0	1,472	100.0	20,069	100.0

Gestation at birth varied between singleton and multiple births. Almost three quarters of multiple births (74.7%) were preterm, while the vast majority of singleton births were term births (92.2%, Table 50).

Table 50: Gestation at birth by plurality, South Australia, 2016

Gestation at birth (weeks)	Singleton births		Multiple births		Total	
	Number	%	Number	%	Number	%
<24	94	0.5	14	2.3	108	0.5
24-27	66	0.3	6	1.0	72	0.4
28-31	130	0.7	47	7.8	177	0.9
32-36	1,173	6.0	384	63.6	1,557	7.8
37-41	17,953	92.2	153	25.3	18,106	90.2
42+	38	0.2	0	0.0	38	0.2
Unknown	11	0.1	0	0.0	11	0.1
Total	19,465	100.0	604	100.0	20,069	100.0

Among singleton births, the majority of stillbirths occurred before 37 weeks gestation (91.4%), with the highest proportion occurring before 24 weeks gestation (60.2%, Table 51). Among live births, only 7.0% of babies were born preterm.

Table 51: Gestational age at birth for singleton infants, South Australia, 2016

Gestation at birth (weeks)	Birth status					
	Stillbirth		Live birth		Total	
	Number	%	Number	%	Number	%
<24	77	60.2	17	0.1	94	0.5
24-27	10	7.8	56	0.3	66	0.3
28-31	12	9.4	118	0.6	130	0.7
32-36	18	14.1	1,155	6.0	1,173	6.0
37-41	11	8.6	17,942	92.8	17,953	92.2
42+	0	0.0	38	0.2	38	0.2
Unknown	0	0.0	11	0.1	11	0.1
Total	128	100.0	19,337	100.0	19,465	100.0

4.9 Birthweight

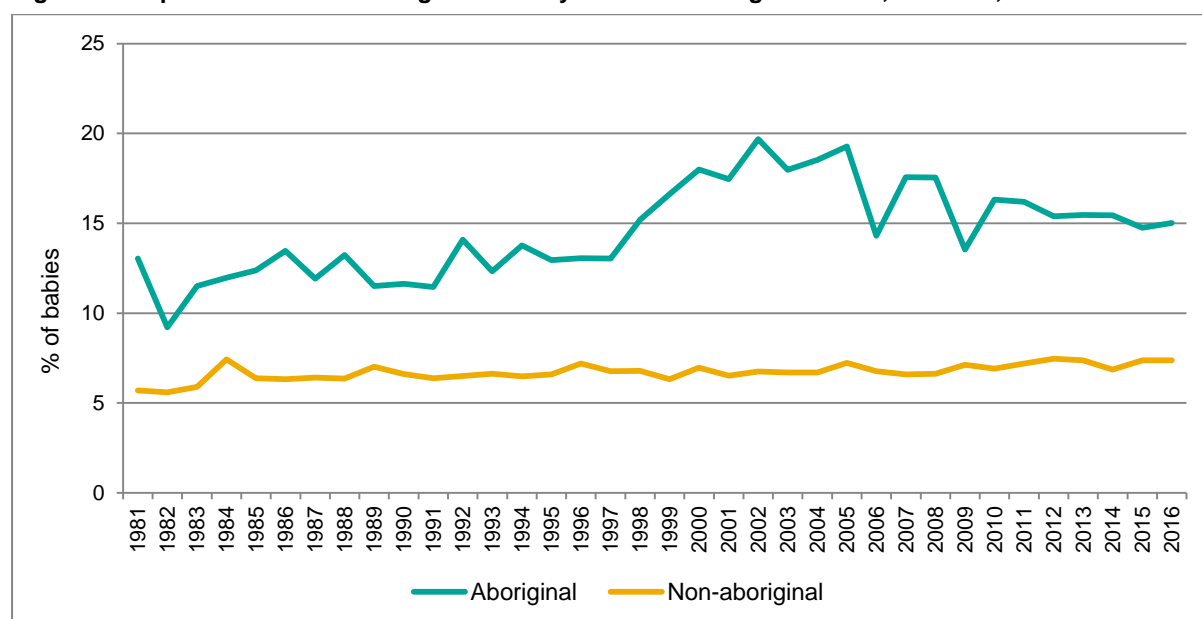
The distribution of birthweight for all births in South Australia is presented in Table 52. The percentage of low birthweight babies (<2,500g) was 7.7%, and that of very low birthweight babies (<1,500g) was 1.7%. The mean birthweight was 3,308g (SD 612.2 g), with birthweights ranging from 120g to 5590g. *The proportion of low birthweight babies was 15.0% among babies of Aboriginal women compared with 7.4% among babies of non-Aboriginal women. Among liveborn babies and excluding terminations of pregnancy, these proportions were 13.8% and 6.8% respectively.*

Table 52: Birthweight distribution of all births, South Australia, 2016

Birthweight (grams)	Maternal Aboriginal status					
	Non-Aboriginal		Aboriginal		Total	
	Number	%	Number	%	Number	%
<400	49	0.3	3	0.4	52	0.3
400-499	29	0.2	2	0.3	31	0.2
500-749	59	0.3	10	1.3	69	0.3
750-999	33	0.2	5	0.7	38	0.2
1,000-1,499	118	0.6	13	1.7	131	0.7
1,500-1,999	273	1.4	18	2.4	291	1.5
2,000-2,499	862	4.5	63	8.3	925	4.6
2,500-2,999	3082	16.0	144	19.0	3226	16.1
3,000-3,499	7156	37.1	254	33.5	7410	36.9
3,500-3,999	5820	30.1	176	23.2	5996	29.9
4,000-4,499	1592	8.2	62	8.2	1654	8.2
4,500+	226	1.2	9	1.2	235	1.2
Unknown	11	0.1	0	0.0	11	0.1
Total	19,310	100.0	759	100.0	20,069	100.0

The proportion of infants of low birthweight born to non-Aboriginal women has been relative stable for the past three decades, with increasing gradually from 5.7% of all non-Aboriginal babies in 1981 to 7.4% in 2016 (Figure 9). *The proportion of infants with low birthweight born to Aboriginal women has fluctuated over time, with an increased trend from 13.0% in 1981 to a peak of 19.7% in 2002, generally declining since then to 15.0% in 2016.*

Figure 9: Proportion of low birthweight babies by maternal Aboriginal status, all births, 1981-2016



4.10 Birthweight, plurality and gestational age

A comparison of multiple births with singletons shows that 63.1% multiple births were of low birthweight compared with only 5.9% for singleton (Table 53). Among singleton births, only 2% of term birth infants were lower birthweight, but was 43.1% for infants with gestational age of 32-36 weeks, and more than 96% for infants with gestational age under 32 weeks (Table 54).

Table 53: Birthweight by plurality, all births, South Australia, 2016

Birthweight (grams)	Singleton births		Multiple births	
	Number	%	Number	%
<400	47	0.24	5	0.83
400-499	26	0.13	5	0.83
500-749	58	0.3	11	1.82
750-999	31	0.16	7	1.16
1,000-1,499	93	0.48	38	6.29
1,500-1,999	184	0.95	107	17.72
2,000-2,499	717	3.68	208	34.44
2,500-2,999	3038	15.61	188	31.13
3,000-3,499	7377	37.9	33	5.46
3,500-3,999	5994	30.79	2	0.33
4,000-4,499	1654	8.5	0	0
4,500+	235	1.21	0	0
Unknown	11	0.06	0	0
Total	19,465	100.0	604	100.0

Table 54: Birthweight by gestation for singleton infants* born in South Australia, 2016

Birthweight (grams)	Gestation (weeks)								Total	
	20-27		28-31		32-36		37-43			
	Number	%	Number	%	Number	%	Number	%	Number	%
<1000	145	90.6	16	12.3	1	0.1	0	0.0	162	0.8
1000-1499	14	8.8	63	48.5	15	1.3	1	0.0	93	0.5
1500-1999	0	0.0	38	29.2	126	10.7	20	0.1	184	1.0
2000-2499	0	0.0	8	6.2	364	31.0	345	1.9	717	3.7
2500-2999	0	0.0	4	3.1	446	38.0	2,588	14.4	3,038	15.6
3000-3499	1	0.6	1	0.8	174	14.8	7,200	40.0	7,376	37.9
3500-3999	0	0.0	0	0.0	35	3.0	5,957	33.1	5,992	30.8
4000-4499	0	0.0	0	0.0	9	0.8	1,645	9.1	1,654	8.5
≥4500	0	0.0	0	0.0	3	0.3	232	1.3	235	1.2
Total	160	100.0	130	100.0	1,173	100.0	17,988	100.0	19,451	100.0

*Excludes singleton infants with unknown birthweight or gestational age (n=14)

4.11 Apgar scores

The Apgar score is a method to summarise the health of a newborn infant. It is determined by evaluating the infant's heart rate, respiratory effort, muscle tone, skin colour and reflexes. Each criterion is scored from 0 to 2, then summing the five values to obtain the Apgar score. For all liveborn infants with an Apgar score reported one minute after birth, 90.9% had a score of 7-10 and 1.9% had a score less than 4 (Table 55). For liveborn infants with an Apgar score reported at five minutes, 98.2% had an Apgar score of 7-10 and only 0.3% had an Apgar score less than 4. Among all liveborn infants with an Apgar score reported one minute after birth, 92.0% established spontaneous respirations within the first minute of life.

Table 55: Apgar scores* at one and five minutes after birth for infants born alive, South Australia, 2016

Apgar Score	1 min after birth		5 min after birth	
	Number	%	Number	%
0-3	368	1.9	61	0.3
4-6	1,446	7.3	298	1.5
7-10	18,065	90.9	19534	98.2
Total	19879	100.0	19893	100.0

* Excludes infants with no Apgar score reported one minute (n=54) or five minutes (n=40) after birth

4.12 Infant resuscitation

Up to four methods of infant resuscitation can be reported for each infant on the SBR. Among all liveborn infants, 15.4% received some form of resuscitation. The proportion that received endotracheal intubation was 0.8% and 0.2% received external cardiac massage (Table 56). In 2016, 9.9% of liveborn infants received one type of resuscitation, 4.5% received two types, 0.9% received three types and 0.1% received four types of resuscitation methods. Other resuscitation methods may include medications such as adrenaline or intravenous therapy.

Table 56: Resuscitation* received by infants born alive in South Australia, 2016

Method of resuscitation	Liveborn infants (n=19,933)	
	Number	%
None	16,870	84.6
Aspiration	1,036	5.2
Oxygen therapy	1,355	6.8
IPPV - bag & mask	1,761	8.8
IPPV - Intubation	150	0.8
Narcotic antagonist	20	0.1
Sodium Bicarbonate	2	0.0
External cardiac massage	42	0.2
Other	18	0.1

* More than one resuscitation method may be reported for each infant

4.13 Birth injuries

Birth injuries were reported in 1.1% of liveborn infants in 2016 (n=219). The most common injury reported was injury to scalp (0.7%). Nerve injury and fracture occurred less frequently (Table 57).

Table 57: Birth injuries* among liveborn infants, South Australia, 2016

Birth injury	Liveborn infants (n=19,933)	
	Number	%
None	19,714	98.9
Fracture	14	0.1
Dislocation	2	0.0
Nerve injury	35	0.2
Shoulder dystocia	1	0.0
Subdural and cerebral haemorrhage	3	0.0
Injury to scalp	138	0.7
Severe birth asphyxia	3	0.1
Other	28	0.0

* More than one injury may be reported for each infant

4.14 Congenital anomalies

Among the 20,069 births in 2016 there were 523 births (2.6%) notified with congenital anomalies, the same proportion of births as 2015. In South Australia births notified on the SBR with a congenital anomaly are coded according to the British Paediatric Association (BPA) Classification of Diseases. This is a 5-digit extension of the 4-digit classification of the International Classification of Diseases (ICD9). Table 58 presents the most common congenital anomalies used for international monitoring (sentinel defects) that were notified to the perinatal statistics collection over the past ten years. For coding ranges see Methods and Terminology.

Terminations of pregnancy are not included in this table unless they meet the criteria for inclusion in the perinatal data collection of at least 400g birthweight or 20 weeks gestation. Notifications of congenital anomalies identified after discharge from the hospital of birth, but within the first five years of life are made directly to the South Australian Birth Defects Register at the Women's and Children's Hospital. More complete statistics on congenital anomalies in South Australia are available from the Birth Defect Register Annual Report².

Table 58: Selected congenital anomalies, South Australia, 2007-2016

Congenital Anomaly	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of births	18,803	19,757	19,970	19,901	20,002	20,344	20,666	20,263	20,154	20,069
Anencephalus	1	1	2	1	2	2	2	1	1	0
Spina bifida	5	4	18	11	6	4	7	6	9	5
Encephalocele	2	1	0	1	0	1	2	2	0	1
Hydrocephalus	12	11	14	4	9	11	13	12	10	9
Cleft palate	12	9	11	12	11	14	12	13	17	10
Cleft lip and palate	30	28	25	18	13	14	14	16	14	20
Tracheo-oesophageal fistula, oesophageal atresia and stenosis	12	5	6	3	6	5	7	8	10	4
Atresia and stenosis of large intestine, rectum and anal canal	7	9	7	9	10	5	8	5	2	10
Hypospadias and epispadias	41	40	39	44	43	38	44	42	32	28
Renal agenesis and dysgenesis	8	3	11	8	12	10	7	5	12	16
Limb reduction defects	18	9	8	13	8	15	17	10	10	17
Anomalies of diaphragm	7	9	9	6	5	1	8	8	4	13
Anomalies of abdominal wall	7	9	17	7	15	14	8	17	12	10
Trisomy 21	19	21	22	15	16	19	17	15	13	18

4.15 Treatment given in neonatal period

The proportions of live births that received specified treatments in the neonatal period are provided in Table 59. Up to four treatments can be reported on the Supplementary Birth Record, and in some cases more than one treatment was given. The most common treatments in the neonatal period were intravenous therapies (12.5%) and gavage feeding (8.2%).

Table 59: Neonatal treatment given, all live births, South Australia, 2016

Neonatal treatment	Number	% of live births (n=19,933)
None	16,486	82.7
Oxygen therapy for more than 4 hours	973	4.9
Phototherapy for jaundice	1,266	6.4
Gavage feeding more than once	1,630	8.2
Any intravenous therapy	2,488	12.5

4.16 Level of neonatal care utilised

Table 60 outlines the neonatal levels of care utilised in 2016, as defined in the Standards for Maternal and Neonatal Services policy document⁴. In 2016, 80.0% of neonates utilised Level 1-3 care only. Level 4-5 care was used by 16.8% of neonates, Level 6 care at the Women's and Children's Hospital or Flinders Medical Centre by 3.0% and paediatric intensive care at the Women's and Children's Hospital by 0.2% of neonates. As would be expected, with decreasing birthweight, an increasing percentage of babies required higher level care.

Table 60: Level of nursery care by birthweight, all live births, South Australia, 2016

Level of care utilised	Birthweight (grams)							
	<1,500		1,500-2,499		2,500+		Total	
	Number	% of care	Number	% of care	Number	% of care	Number	% of care
Well baby care (level 1-3)	11	2.8	278	20.2	16,134	86.0	16,423	80.0
Nursery/special care (level 4-5)	190	48.7	916	66.4	2,346	12.5	3,452	16.8
Neonatal intensive care, FMC/WCH (level 6)	185	47.4	180	13.1	249	1.3	614	3.0
Paediatric intensive care unit, WCH (level 6)	4	1.0	5	0.4	40	0.2	49	0.2

4.17 Perinatal outcome by plurality

The proportion of live births in hospital at 28 days was 19.2% for multiple births compared with 1.5% for singletons (Table 61). The proportion of combined stillbirth and neonatal deaths were 0.9% for singletons, and 2.8% for multiple births. *The proportion of live births in hospital at 28 days was also higher in babies born to Aboriginal women (4.7%) compared to Caucasian and Asian women (2.0% and 1.8%, respectively, Table 62).*

Table 61: Perinatal outcome by plurality, all births, South Australia, 2016

Perinatal outcome	Singleton births		Multiple births		Total	
	Number	%	Number	%	Number	%
Stillbirth	128	0.7	8	1.3	136	0.7
Discharged within 28 days	18,996	97.6	467	77.3	19,463	97.0
In hospital at 28 days	311	1.6	120	19.9	431	2.2
Neonatal death	30	0.2	9	1.5	39	0.2
Total	19,488	100.0	604	100.0	20,069	100.0

Table 62: Perinatal outcome by race, all births, South Australia, 2016

Perinatal outcome	Caucasian		Aboriginal		Asian		Other		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
Stillbirth	91	0.6	13	1.7	19	0.7	13	0.9	136	0.7
Discharged within 28 days	14,482	97.1	710	93.5	2,841	97.4	1,430	97.2	19,463	97.0
In hospital at 28 days	314	2.1	36	4.7	55	1.9	26	1.8	431	2.2
Neonatal death	34	0.2	0	0.0	2	0.1	3	0.2	39	0.2
Total	14,921	100.0	759	100.0	2,917	100.0	1,472	100.0	20,069	100.0

4.18 Length of stay of live born babies

Table 63 shows the distribution of length of stay of liveborn babies in hospital for preterm (<37 weeks gestation) and term births (≥37 weeks gestation). The mean duration of stay for all liveborn babies was 4.4 days (SD 9.6) and the median duration was 3 days. The mean duration was 2.9 days (SD 3.4) for term births, 18.6 days (SD 24.8) for preterm births, while the median durations were 2 and 10 days respectively.

Table 63: Length of stay of liveborn babies in hospital, South Australia, 2016

Length of stay (days)	Preterm births		Term births		Total	
	Number	%	Number	%	Number	%
<1	17	1.0	1,160	6.5	1,177	6.0
1	46	2.6	4,075	22.7	4,121	20.9
2	90	5.0	3,963	22.1	4,053	20.5
3	120	6.7	3,300	18.4	3,420	17.3
4	101	5.7	2,695	15.0	2,796	14.2
5	116	6.5	1,869	10.4	1,985	10.1
6	115	6.5	393	2.2	508	2.6
7-13	387	21.7	356	2.0	743	3.8
14-20	261	14.6	62	0.4	323	1.6
21-27	152	8.5	33	0.2	185	0.9
28 or more	379	21.2	44	0.3	423	2.1
Total	1,784	100.0	17,950	100.0	19,734	100.0

Perinatal Mortality

5.1 Perinatal mortality rates

High crude perinatal mortality rates are often associated with low and high birthweight births, low gestation births and multiple births⁵. The perinatal mortality rate for all births (live births of any gestation and stillbirths of at least 400g birthweight or 20 weeks gestation) in 2016 was 8.7 per 1,000 births. The stillbirth rate was 6.8 per 1,000 births and the neonatal mortality rate was 2.0 per 1,000 live births (Table 64).

More detail regarding perinatal mortality is available in the 'Maternal, Perinatal and Infant Mortality in South Australia' reports⁶. The global average neonatal mortality rate reported by the World Health Organization (WHO) was 18.6 per 1,000 births in 2016, with the lowest regional average in Europe (5.1 per 1,000), followed by the Americas (7.5 per 1,000)⁷.

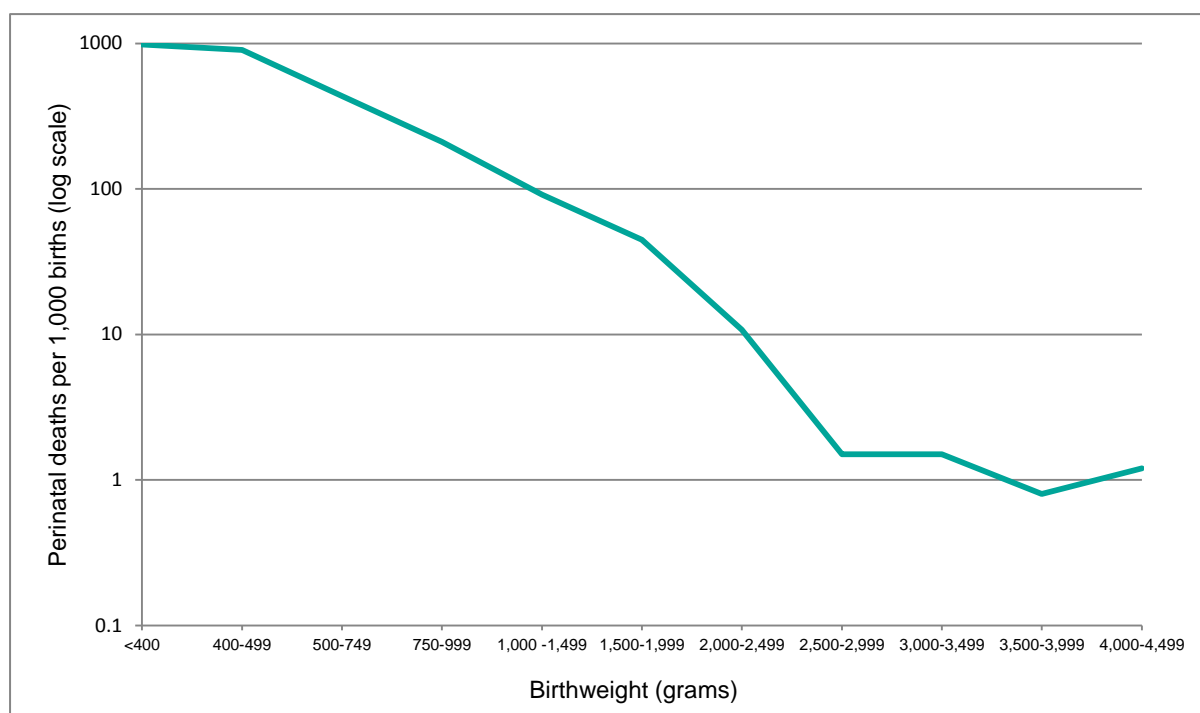
Table 64: Perinatal mortality by birthweight, all births, South Australia, 2016

Birthweight (grams)	Total births	Live births	Stillbirths		Neonatal deaths		Perinatal deaths	
			Number	Deaths per 1,000 births	Number	Deaths per 1,000 live births	Number	Deaths per 1,000 births
<400	52	7	45	865.4	6	857.1	51	980.8
400-499	31	7	24	774.2	4	571.4	28	903.2
500-749	69	48	21	304.3	9	187.5	30	434.8
750-999	38	32	6	157.9	2	62.5	8	210.5
1,000-1,499	131	121	10	76.3	2	16.5	12	91.6
1,500-1,999	291	282	9	30.9	4	14.2	13	44.7
2,000-2,499	925	918	7	7.6	3	3.3	10	10.8
2,500-2,999	3226	3223	3	0.9	2	0.6	5	1.5
3,000-3,499	7410	7402	8	1.1	3	0.4	11	1.5
3,500-3,999	5996	5994	2	0.3	3	0.5	5	0.8
4,000-4,499	1654	1653	1	0.6	1	0.6	2	1.2
4,500+	235	235	0	0.0	0	0.0	0	0.0
Unknown	11	11	0	0.0	0	0.0	0	0.0
Total	20,069	19,933	136	6.8	39	2.0	175	8.7

5.2 Perinatal mortality by birthweight

The relationship between perinatal mortality and birthweight is demonstrated in Table 64 and Figure 10. The highest perinatal mortality rate was observed for the lowest birthweight group weighing <400g (980.8 per 1,000). There were no deaths among the highest birthweight group of 4,500 grams or more. The perinatal mortality rate for babies of normal birthweight (2,500 grams or more) was 1.2 per 1,000 births.

Figure 10: Perinatal mortality rate by birthweight, all births, South Australia, 2016



5.3 Perinatal mortality by gestational age at birth

The decline in perinatal mortality with increasing gestational age is demonstrated in Table 65. The mortality rate was 1.2% for infants with a gestational age at birth of 37 weeks or more. There were no neonatal deaths or perinatal deaths for infants with a gestational age at birth of 42 weeks or more.

Table 65: Perinatal mortality by gestational age at birth, South Australia, 2016

Gestation at birth (weeks)	Total births	Live births	Stillbirths		Neonatal deaths		Perinatal deaths	
			Number	Deaths per 1,000 births	Number	Deaths per 1,000 live births	Number	Deaths per 1,000 births
<24	108	27	81	750.0	14	518.5	95	879.6
24-27	72	62	10	138.9	8	129.0	18	250.0
28-31	177	163	14	79.1	2	12.3	16	90.4
32-36	1557	1537	20	12.8	5	3.3	25	16.1
37-41	18106	18095	11	0.6	10	0.6	21	1.2
42+	38	38	0	0.0	0	0.0	0	0.0
Unknown	11	11	0	0.0	0	0.0	0	0.0
Total	20,069	19933	136	6.8	39	2.0	175	8.7

5.4 Perinatal mortality by birthweight and gestation

The World Health Organization (WHO) recommends that fetuses and infants weighing between 500 and 1,000 grams should be included in national perinatal mortality statistics, and that for international rate comparisons, the classification to be used should be fetuses and infants weighing at least 1000 grams or 28 weeks gestation⁸. Therefore, three birthweight and gestation categories are presented in Table 66 comparing perinatal mortality rates using local and international definitions. Using the WHO definition (at least 1,000 grams or 28 weeks gestation) the perinatal mortality rate was 3.3 per 1,000

births in 2016 in South Australia, with a stillbirth rate of 2.4 per 1,000 births, and neonatal mortality rate of 0.9 per 1,000 live births. The early neonatal mortality rate in South Australia (for infants weighing at least 1000 grams or 28 weeks gestation that died during the first seven days of life) was 0.6 per 1,000 live births.

Table 66: Perinatal mortality by birthweight and gestation*, South Australia, 2016

Birthweight/ gestation	Total births	Live births	Stillbirths		Neonatal deaths		Perinatal deaths	
			Number	Deaths per 1,000 births	Number	Deaths per 1,000 live births	Number	Deaths per 1,000 births
≥400g/20 weeks	20,061	19,925	136	6.8	39	2.0	175	8.7
≥500g/22 weeks	20,009	19,918	91	4.5	32	1.6	123	6.1
≥1,000g/28 weeks	19,896	19,848	48	2.4	18	0.9	66	3.3

*Excludes unknown birthweight and gestational age (n=11)

5.5 Perinatal mortality by plurality

The perinatal death rate for multiple births was 28.1 compared with 8.1 deaths per 1,000 births for singletons (Table 67). In 2016, all triplets that reached 20 weeks of gestational age at birth were born alive, but the neonatal mortality was very high, 250 deaths per 1,000 births.

Table 67: Perinatal mortality by birthweight, all births, South Australia, 2016

Gestational age at birth (weeks)	Total births	Live births	Stillbirths		Neonatal deaths		Perinatal deaths	
			Number	Deaths per 1,000 births	Number	Deaths per 1,000 live births	Number	Deaths per 1,000 births
Singleton	19465	19337	128	6.6	30	1.6	158	8.1
Twins	592	584	8	13.5	6	10.3	14	23.6
Triplets	12	12	0	0.0	3	250.0	3	250.0
Multiple birth	604	596	8	13.2	9	1.5	17	28.1
Total	20,069	19,933	136	6.8	39	2.0	175	8.7

5.6 Perinatal mortality by race

The perinatal mortality rate for births to Aboriginal women was 17.1 per 1,000 births in 2016 compared with 8.4 per 1,000 births for births to Caucasian women (Table 68 and 69). Perinatal mortality rates have fluctuated for babies born to Aboriginal women, with a general declining trend since the mid-1980s, while the rates for babies born to non-Aboriginal women have been relatively stable (Figure 11).

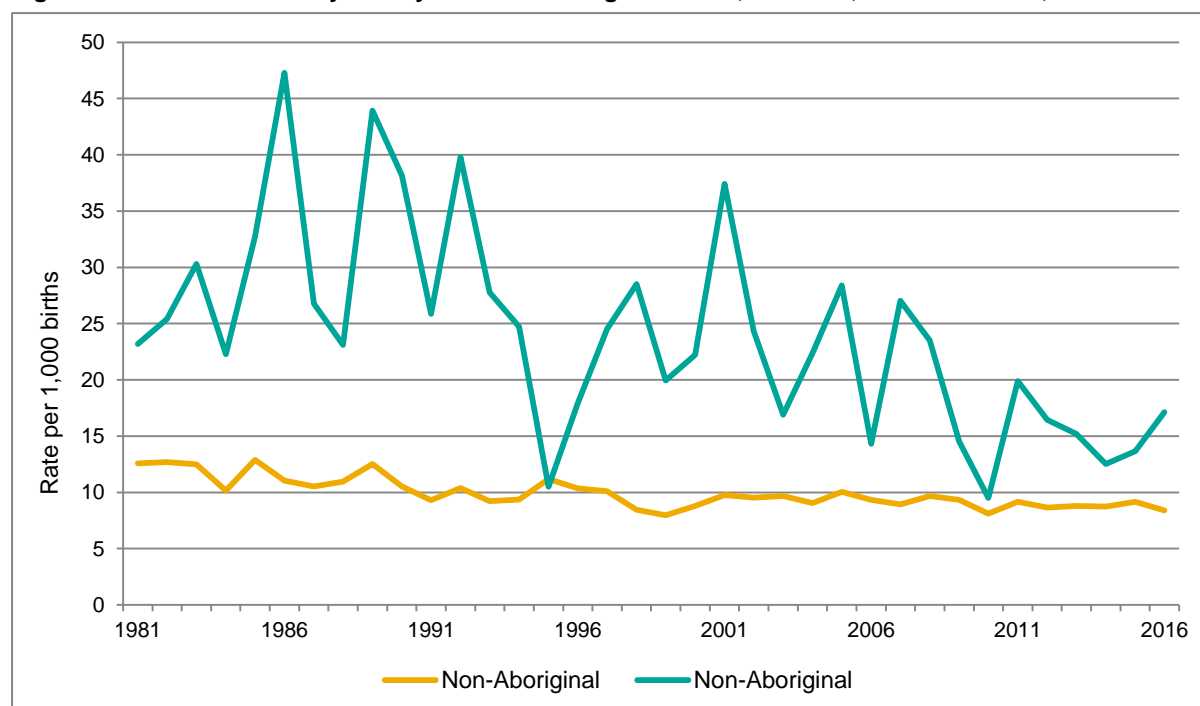
Table 68: Perinatal mortality by race of mother, all births, South Australia, 2016

Race of mother	Total births	Stillbirths	Neonatal deaths	Alive at 28 days	Perinatal deaths	
	Number	Number	Number	Number	Number	Deaths per 1,000 births
Caucasian	14,921	91	34	14,796	125	8.4
Aboriginal	759	13	0	746	13	17.1
Asian	2,917	19	2	2,896	21	7.2
Other	1,472	13	3	1,456	16	10.9
Total	20,069	136	39	19,894	175	8.7

Table 69: Perinatal mortality by maternal Aboriginal status, all births, South Australia, 2007-2016

Year	Maternal Aboriginal status					
	Non-Aboriginal		Aboriginal		Total	
	Number of deaths	Perinatal death per 1,000 births	Number of deaths	Perinatal death per 1,000 births	Number of deaths	Perinatal death per 1,000 births
2007	171	8.9	16	27.0	187	9.5
2008	187	9.7	15	23.5	202	10.1
2009	180	9.3	9	14.5	189	9.5
2010	157	8.1	6	9.5	163	8.1
2011	180	9.2	14	19.9	194	9.5
2012	173	8.7	11	16.4	184	8.9
2013	172	8.8	11	15.2	183	9.0
2014	175	8.7	9	12.5	184	8.9
2015	178	9.2	10	13.7	188	9.3
2016	162	8.4	13	17.1	175	8.7

Figure 11: Perinatal mortality rate by maternal Aboriginal status, all births, South Australia, 1981-2016



Terminations of Pregnancy

6.1 Numbers and rates

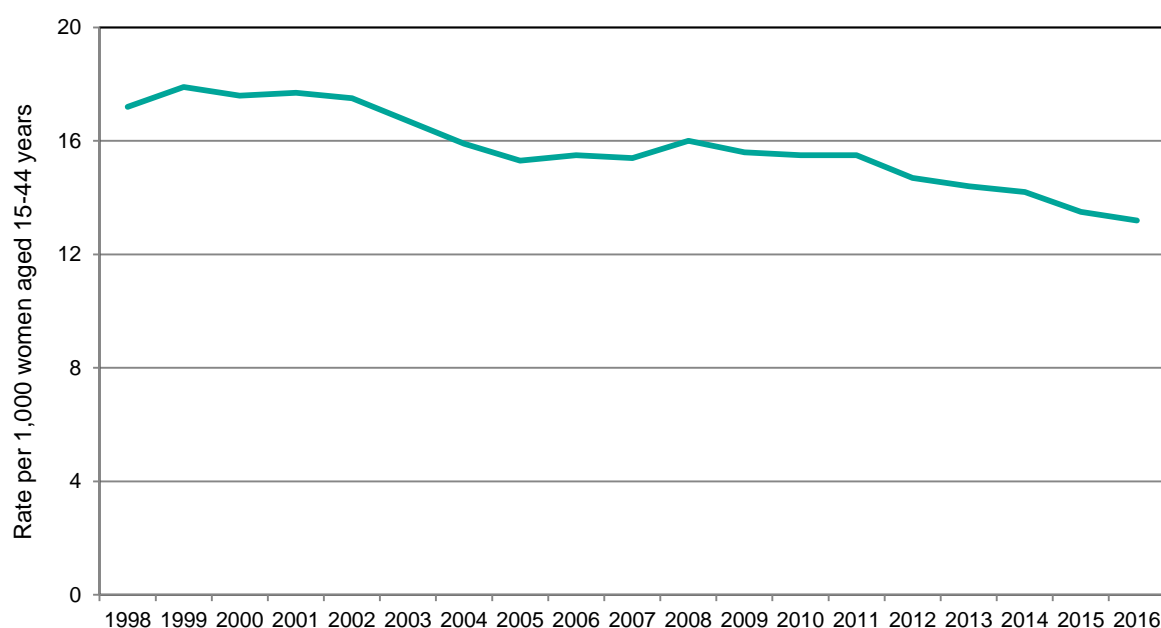
There were 4,346 terminations of pregnancy notified in South Australia in 2016, compared with 4,441 terminations in 2015. The pregnancy termination rate was 13.2 per 1,000 women aged 15-44 years, compared with 13.5 per 1,000 women aged 15-44 years in 2015 (Table 70).

Table 70: Number of pregnancy terminations, and rate per 1,000 women aged 15-44 years, South Australia, 1998-2016

Year	Number	Termination rate	Year	Number	Termination rate
1998	5,488	17.2	2008	5,101	16.0
1999	5,679	17.9	2009	5,057	15.6
2000	5,580	17.6	2010	5,048	15.5
2001	5,579	17.7	2011	5,010	15.5
2002	5,467	17.5	2012	4,765	14.7
2003	5,216	16.7	2013	4,683	14.4
2004	4,931	15.9	2014	4,650	14.2
2005	4,715	15.3	2015	4,441	13.5
2006	4,889	15.5	2016	4,346	13.2
2007	4,885	15.4			

Since 1999, there has been a steady decline in the rate of pregnancy terminations in South Australia from 17.9 in 1999 to 13.2 per 1,000 women aged 15-44 years in South Australia (Figure 12).

Figure 12: Pregnancy termination rate per 1,000 women aged 15-44 years, South Australia, 1998-2016



6.2 Age of women

The age distribution of women who had pregnancies terminated in 2016 is shown in Table 71. Among the five-year age groups, the highest pregnancy termination rate was among women aged 20-24 years and women aged 25-29 years (both 19.3 terminations per 1,000 women). Pregnancy termination rates continued to fall for teenage women, from 8.6 per 1,000 women in 2015 to 8.3 per 1,000 women aged 15-19 years in 2016.

Table 71: Number and rate of pregnancy terminations by age group, South Australia, 2016

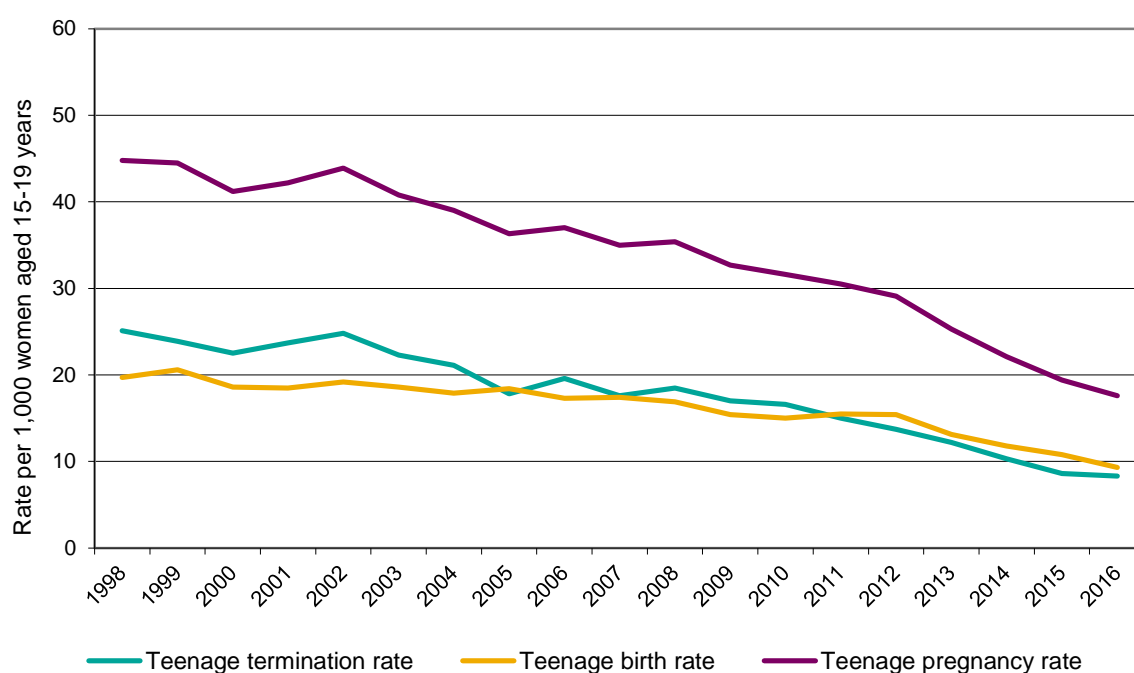
Age group	Number	%	Estimated resident female population 30 June 2016 ¹¹	Termination rate per 1,000 women
Under 15	10	0.2	--	n/p
15-19	409	9.4	50,786	8.3*
20-24	1,092	25.1	56,468	19.3
25-29	1,109	25.5	57,591	19.3
30-34	926	21.3	57,762	16.0
35-39	571	13.1	52,245	10.9
40-44	209	4.8	54,026	4.2^
45 and over	20	0.5		n/p
Total	4,346	100.0	328,878	13.2

* includes terminations for women aged under 15

^ includes terminations for women aged 45 and over

The teenage pregnancy rate (including live births and induced terminations) continued to decline, and in 2016 was the lowest on record for the state at 17.6 per 1,000 women aged 15-19 years compared with 19.4 in 2015 (Figure 13).

Figure 13: Teenage pregnancy, termination and birth rates*, SA, 1998-2016



*Terminations and births to women aged less than 15 years are included in the numerators

6.3 Residential region and health service category

The proportion of women residing in the Metropolitan Adelaide region who had a termination of pregnancy in a metropolitan hospital (either private or public) was very high at 99.5%. However, only 12.2% of women residing in Country South Australia had their termination in a country hospital, with most women travelling to metropolitan areas (Table 72).

Most terminations were conducted in metropolitan public hospitals (96.6%), followed by country hospitals (2.6%) and metropolitan private hospitals (0.8%). The distribution of terminations by health service category has been stable over the past 5 years.

Table 72: Pregnancy terminations by residential region and health service category, South Australia, 2016

Residential Region	Health Service Category						Total
	Metro Public		Metro Private		Country		
	Number	% of residential region	Number	% of residential region	Number	% of residential region	
Metropolitan	3486	98.6	33	0.9	17	0.5	3536
Country	698	87.6	2	0.3	97	12.2	797
Interstate/Unknown	13	100.0	0	0	0	0	13
Total	4,197	96.6	35	0.8	114	2.6	4,346

Of the terminations performed in a metropolitan public hospital, 58.7% (2,462) were performed by the Pregnancy Advisory Centre. A full list of terminations by metropolitan public hospitals is presented below (Table 73).

Table 73: Pregnancy terminations in metropolitan public hospitals, South Australia, 2016

Metropolitan public hospital	Number	% terminations in metropolitan public hospitals	% all terminations
Pregnancy Advisory Centre	2,462	58.7	56.6
Women's and Children's Hospital	659	15.7	15.2
Flinders Medical Centre	491	11.7	11.3
Lyell McEwin Hospital	292	7.0	6.7
Noarlunga Health Services	292	7.0	6.7
The Queen Elizabeth Hospital	1	0.0	0.0
Total	4,197	100.0	96.6

6.4 Clinicians performing terminations

Medical practitioners in family advisory clinics performed 74.8% of the terminations in South Australia in 2016. Obstetricians/gynaecologists performed 13.7% of all terminations, followed by trainee obstetricians (7.6%) and general practitioners (3.9%, Table 74).

Table 74: Pregnancy terminations by category of doctor, South Australia, 2016

Category of doctor performing termination	Number	%
Medical practitioner in family advisory clinic	3,252	74.8
Obstetrician/gynaecologist	597	13.7
Trainee obstetrician	329	7.6
General practitioner	168	3.9
Total	4,346	100.0

6.5 Reported reason for termination

In 2016, 95.6% of terminations performed were for the woman's mental health, 3.7% for congenital anomalies and 0.7% for specified medical conditions (Table 75). Of the 159 terminations for congenital anomalies, 71 terminations (44.7%) were for chromosomal abnormalities detected or suspected prenatally and 82 (51.6%) were for other fetal abnormalities. Six terminations were performed for exposure to drugs during pregnancy (Table 76).

Table 75: Reported reason for termination of pregnancy, South Australia, 2016

Reason	Number	%
Mental health of woman	4,153	95.6
Congenital anomaly	159	3.7
Specified medical condition	31	0.7
Pre-existing psychiatric	3	0.1
Total	4,346	100.0

Table 76: Reported reason for termination for congenital anomalies, South Australia, 2016

Reason for termination	Number	%
Chromosomal abnormality	71	44.7
Other fetal abnormality	82	51.6
Exposure to drugs during pregnancy	6	3.8
Total	159	100.0

6.6 Termination by gestational age

In 2016, the majority of pregnancy terminations were performed in the first trimester (<14 weeks gestation, 90.2%). The proportion performed in the second trimester (14 -27 weeks gestation) was 9.8% (Table 77), similar to the average over the past five years (8.2%).

Table 77: Gestation by age of women and trimester, South Australia, 2016

Age of women (years)	First trimester		Second trimester		Total Number
	Number	% of age group	Number	% of age group	
Under 15	7	70.0	3	30.0	10
15–19	361	88.3	48	11.7	409
20–24	988	90.5	104	9.5	1,092
25–29	1,000	90.2	109	9.8	1,109
30–34	835	90.2	91	9.8	926
35–39	520	91.1	51	8.9	571
40 and over	209	91.3	20	8.7	229
Total	3,920	90.2	426	9.8	4,346

The proportion of terminations performed at 20 weeks gestation or later was 2.8%, slightly higher than the proportion in 2015 (2.0%, Table 78). Of the 120 pregnancy terminations performed at 20 weeks gestation or later, 52 were for congenital anomalies (43.3%), 58 were for the mental health of the woman (48.3%) and 10 for specified medical conditions of the woman (8.3%). Terminations for congenital anomalies are often performed after 20 weeks gestation as many fetal conditions are detected only in the second trimester.

Table 78: Reported reason for termination of pregnancy by gestation, South Australia, 2016

Reason for termination	Gestation (weeks)						Total
	<14		14–19		20+		
	Number	% of reason	Number	% of reason	Number	% of reason	Number
Mental health of woman	3,861	93.0	234	5.6	58	1.4	4,153
Congenital anomalies	45	28.3	62	39.0	52	32.7	159
Specified medical condition of woman	11	35.5	10	32.3	10	32.3	31
Pre-existing psychiatric	3	100.0	0	0.0	0	0.0	3
Total	3,920	90.2	306	7.0	120	2.8	4,346

6.7 Method of pregnancy termination, and associated sterilisation

In 2016 the majority (55.9%) of pregnancy terminations were performed by vacuum aspiration/dilatation and curettage (Table 79). Procedures with mifepristone as a cervical primer prior to vacuum aspiration or dilatation and curettage were not specifically differentiated. Pharmaceutical termination of pregnancy using Mifepristone and Misoprostol was used in 33.5% of all terminations, increasing in use over the past 5 years (27.2% of all terminations in 2012).

Table 79: Method of pregnancy termination, South Australia, 2016

Method of termination	Number	%
Vacuum aspiration / dilatation and curettage	2,429	55.9
Mifepristone +/- misoprostol	1,455	33.5
Dilatation and evacuation	421	9.7
Misoprostol	18	0.4
Vaginal prostaglandin	16	0.4
Other	4	0.1
Hysterotomy	3	0.1
Total	4,346	100.0

For terminations of pregnancy performed in the first trimester, vacuum aspiration/dilation and curettage was utilised for the majority of cases (61.5%) followed by Mifepristone and Misoprostol (35.7%, Table 80). For terminations of pregnancy performed in the second trimester, dilatation and evacuation was utilised for the majority of cases (74.4%) followed by Mifepristone and Misoprostol (12.7%).

Table 80: Method of pregnancy termination by trimester, South Australia, 2016

Method of termination	First trimester		Second trimester		Total Number
	Number	% first trimester	Number	% second trimester	
Vacuum aspiration / Dilatation and curettage	2,409	61.5	20	4.7	2,429
Mifepristone +/- Misoprostol	1,401	35.7	54	12.7	1,455
Dilatation and evacuation	104	2.7	317	74.4	421
Misoprostol	2	0.1	16	3.8	18
Vaginal prostaglandin	2	0.1	14	3.3	16
Other	0	0.0	4	0.9	4
Hysterotomy	2	0.1	1	0.2	3
Total	3,920	100.0	426	100.0	4,346

6.8 Complications

There were 173 (4.0%) women who experienced complications related to the termination of a pregnancy. Eighty three (48.0%) of these complications were notified on the data collection form soon after the termination. To improve the ascertainment of complications resulting after the termination, and to ensure that all notifications are received, a data linkage was conducted with the South Australian hospital morbidity data (Integrated South Australian Activity Collection), which records hospital admissions. A further 90 complications (52.0%) were identified through this process.

The most common complication was retained products of conception (123 women), which represented 71.1% of all complications and occurred in 2.8% of all terminations (Table 81). Post-operative haemorrhage was the second most common complication (23 women), which represented 13.3% of all complications and occurred in 0.5% of all terminations.

Table 81: Complications resulting from termination of pregnancy, South Australia, 2016

Main complication	Number of women with complication	% of all women with complications	% of all women with termination procedures
Retained products of conception	123	71.1	2.8
Haemorrhage post-operative	23	13.3	0.5
Uterine infection	8	4.6	0.2
Failed procedure	7	4.0	0.2
Haemorrhage intra-operative	5	2.9	0.1
Bleeding	4	2.3	0.1
Perforation/ trauma to uterus	3	1.7	0.1
Total	173	100.0	4.0

The two most common termination methods in 2016 were vacuum aspiration and Mifepristone and Misoprostol. Terminations using Mifepristone and Misoprostol resulted in 142 complications, representing 9.8% of all terminations using this method (Table 82). Terminations using vacuum aspiration resulted in 19 complications, representing 0.8% of all terminations using this method.

Overall, 129 (74.6%) women with complications following an initial procedure progressed to a surgical procedure, including 122 women who had a termination of pregnancy with Mifepristone and Misoprostol as the initial procedure.

Table 82: Method of termination resulting in complication, South Australia, 2016

Method of termination	Number of terminations	Number of complications	Number subsequent surgical D&C	% of termination method with complication	% of complication method with subsequent D&C
Mifepristone +/- Misoprostol	1,455	142	122	9.8	85.9
Vacuum aspiration / Dilatation and curettage	2,429	19	6	0.8	31.6
Vaginal prostaglandin	16	2	0	12.5	0
Dilatation and evacuation	421	8	1	1.9	0
Misoprostol	18	1	0	5.6	12.5
Hysterotomy	3	1	0	33.3	0
Other	4	0	0	0.0	0
Total	4,346	173	129	4.0	74.6

Seven women had a failed procedure, all with Mifepristone and Misoprostol. The overall failure rate for all terminations was 0.2% (Table 83). Of the 142 women with complications reported following induced abortion with Mifepristone and Misoprostol, 111 (78.1%) were due to retained products.

Table 83: Complication type and method of termination procedure, South Australia, 2016

Method of termination	Number of complications	Failed Procedure	Perforated Uterus	Haemorrhage intra-operative	Haemorrhage post-operative	Uterine infection	Retained products conception	Bleeding
Mifepristone +/-Misoprostol	142	7	1	1	14	4	111	4
Vacuum aspiration/ Dilatation and curettage	19	0	2	1	5	3	8	0
Vaginal prostaglandin	2	0	0	1	0	0	1	0
Dilatation and evacuation	8	0	0	1	4	1	2	0
Misoprostol	1	0	0	0	0	0	1	0
Hysterotomy	1	0	0	1	0	0	0	0
Total	173	7	3	5	23	8	123	4

6.9 Previous pregnancy terminations

Of the 4,346 women who had pregnancy terminations in 2016, 1,642 (37.8%) had undergone a previous termination (Table 84). The proportion of women who had a previous termination generally increased with age. Table 85 shows the number of previous terminations by age group.

Table 84: Women with previous pregnancy terminations by age, South Australia, 2016

Age (years)	Number	% of age group	% of all terminations
< 20	59	14.4	1.4
20 - 24	334	30.6	7.7
25 - 29	445	40.1	10.2
30 - 34	432	46.7	9.9
35 - 39	264	46.2	6.1
40+	108	47.2	2.5
Total	1,642	37.8	37.8

Table 85: Number of previous pregnancy terminations by age of women, South Australia, 2016

Number of previous terminations	Age group							Number	%
	< 15	15–19	20–24	25–29	30–34	35–39	40+		
0	10	350	758	664	494	307	121	2,704	62.2
1	0	54	251	290	259	152	67	1,073	24.7
2	0	4	59	96	101	70	21	351	8.1
3	0	1	18	39	38	27	8	131	3.0
4+	0	0	6	20	34	15	12	87	2.0
Total	10	409	1092	1109	926	571	229	4,346	100.0

6.10 Total induced abortion rates

The total first abortion rate (TFAR) is a method used to estimate the proportion of women who will experience a termination of pregnancy in their reproductive lifetime. The TFAR for 2016 was 243.5 per 1,000 women aged 15-44 years. This suggests that 24.3% of women would have at least one termination of pregnancy in their reproductive lifetime if they experienced the termination of pregnancy rates of the different age groups for 2016.

The total induced abortion rate (TAR) is the sum of pregnancy termination rates for each of the five-year age groups multiplied by five. This can be calculated using the rates in Table 70 and in 2016 was 390.2 per 1,000 women aged 15-44. This represents the number of induced abortions 1,000 women would have during their lifetime if they experienced the induced abortion rates of the different age groups for 2016 (Table 86).

Table 86: Calculation of total first induced abortion rate (TFAR), South Australia, 2016

Age (years)	Number of women who had terminations (A)	Number of women who had previous terminations (B)	Number of women who had first termination (A) – (B)	Estimated female resident population 30 June 2016	First termination of pregnancy rate per 1,000 women‡
15-19	419	59	360	50,786	7.1*
20-24	1,092	334	758	56,468	13.4
25-29	1,109	445	664	57,591	11.5
30-34	926	432	494	57,762	8.6
35-39	571	264	307	52,245	5.9
40-44	229	108	121	54,026	2.2^
Total	4,346	1,642	2,704	328,878	8.2

* includes terminations for women aged under 15

^ includes terminations for women aged 45 and over

Further details of termination of pregnancy in South Australia in 2015 may be obtained from the Annual Report of the South Australian Abortion Reporting Committee for the year 2016¹².

Obstetric Profiles by Hospital Category

Obstetric profiles for 2016 for the three major metropolitan public hospitals and an additional three hospital categories are provided in Table 87. Obstetric profiles are also reported to birthing hospitals in South Australia via the Pregnancy and Neonatal Care Bulletins.

The hospital categories, as determined by their perinatal service delineation are:

1. Women's & Children's Hospital
2. Flinders Medical Centre
3. The Lyell McEwin Hospital
4. Metropolitan private hospitals
5. Two Level 4:4 country hospitals (Mount Gambier and Port Augusta)
6. Other country hospitals (perinatal service delineation of 3:3)

Two mothers who gave birth at Queen Elizabeth Hospital and Royal Adelaide Hospital have been excluded from these hospital category statistics.

A list of maternal and baby characteristics identified either as risk factors for poor perinatal outcome in earlier analyses¹³, or of general interest, is provided with mean values for all state hospitals and the six hospital categories outlined above.

Where indicated (+) in Table 87 the mean (number of women who gave birth or births) relates to the 21 hospitals or groups of hospitals for which obstetric profiles have been provided. These are as follows:

1. Women's & Children's Hospital
2. Flinders Medical Centre
3. Lyell McEwin Hospital
4. Ashford Hospital
5. Burnside War Memorial Hospital
6. Calvary Healthcare Adelaide
7. Flinders Private Hospital
8. North Eastern Community Hospital
9. Mount Gambier & District Health Service
10. Port Augusta Hospital & Regional Health Service
11. Gawler Health Service
12. Mount Barker District Soldiers' Memorial Hospital
13. Port Lincoln Health Service
14. Murray Bridge Soldiers' Memorial Hospital
15. Whyalla Hospital & Health Services
16. Riverland General Hospital (Berri)
17. Port Pirie Regional Health Service
18. Naracoorte Health Service
19. South Coast District (Victor Harbour)
20. Northern Yorke Peninsula Regional Health Service (Wallaroo)
21. Country hospitals with <100 births per year

Table 87: Obstetric profiles by hospital category, South Australia, 2016

Factors	All state hospitals ^a	Metropolitan hospitals				Country hospitals	
	Mean	WCH	FMC	LMH	Private	Level 4:4	Other
Maternal factors							
Women (n= 19,666) +	894	4575	3530	3785	4105	829	2842
% <i>Aboriginal women</i>	3.8	4.6	2.5	4.6	0.4	14.0	5.1
% Antenatal visits <7 ^b	11.0	21.1	11.6	14.1	1.0	7.1	5.6
% Teenage women	2.4	2.0	2.3	4.1	0.0	5.4	3.5
% Women ≥35 years	21.2	22.3	20.1	14.5	33.4	15.0	14.2
% Single women ^c	8.9	9.7	8.4	12.4	2.4	14.5	11.3
% 4+ prior live births	3.2	3.2	2.8	6.4	0.5	3.5	3.7
% 1+ prior perinatal deaths	1.5	2.3	1.3	1.8	0.9	1.5	0.8
% Obstetric complications	44.7	47.5	57.0	49.5	35.1	46.8	31.5
% Labour complications	40.3	48.8	55.0	36.7	27.3	31.4	34.6
% Induction	34.1	37.3	36.2	31.9	35.3	31.7	28.2
% Emergency caesarean	17.9	20.6	19.1	13.8	17.1	17.7	19.0
% Elective caesarean	17.4	13.2	17.3	14.2	27.6	17.1	13.7
% Any caesarean	35.3	33.8	36.3	28.0	44.7	34.9	32.8
% Ultrasound examination ^b	98.1	98.9	98.1	98.0	98.2	98.9	96.9
% Amniocentesis ^b	1.5	3.0	0.8	1.6	0.9	1.6	0.8
% Episiotomy	14.7	16.9	15.3	16.7	16.3	8.7	6.9
% Repair of perineal tear	26.9	30.8	26.0	23.9	27.0	20.1	27.2
% Epidural analgesia ^d	32.7	40.4	29.4	28.9	42.3	20.6	19.3
% Spinal analgesia ^d	0.9	0.2	0.6	1.5	0.9	1.9	1.6
% Private patients	25.0	8.5	1.1	0.4	100.0	17.1	7.9
% Primiparous women	41.4	46.0	43.0	35.4	44.1	36.8	37.6
% Previous caesarean	18.6	16.6	18.9	17.2	22.4	20.6	17.5
% PPH	15.4	21.3	21.3	16.1	6.1	10.5	12.7
Baby factors							
Births (n= 19,969) +	2757	4693	3597	3837	4158	840	2844
% Birthweight <2,500g	7.7	13.2	10.2	6.5	4.6	6.1	2.1
% Gestational age <37 weeks at birth	9.6	15.6	12.8	7.3	7.4	8.8	2.1
% Prolonged hospitalisation (>27 days) ^e	2.2	4.6	3.5	0.8	1.2	0.5	0.3
% Neonatal intensive care (Level 6 or WCH paediatric intensive care) ^e	3.2	7.7	5.2	0.8	0.7	0.6	1.0
% Birth defect	2.6	5.4	2.2	2.2	1.2	1.3	1.6

^a Mean values are calculated based on data from all state hospitals.

^b adjusted for missing values (missing values are included in the "no" group)

^c a single woman refers to never married, widowed, divorced, or separated, 15 unknown cases were excluded for this analysis

^d refer to analgesia during labour

^e excluded stillbirths and births with unknown outcome

+ mean number of women who gave birth, or mean number of births for the 21 hospitals or groups of hospitals

National Core Maternity Indicators

The National Core Maternity Indicators assist in improving the quality of maternity services in Australia by establishing baseline data for monitoring and evaluating practice change. This annual report presents the indicators with 95% Confidence Intervals (CI) for South Australian births in 2016. The core maternity indicators are also reported for individual hospitals in the Pregnancy and Neonatal Care Bulletins for 2016. Indicator specifications are in accordance with the National Core Maternity Indicators report.

For the purpose of indicators 5, 6 and 8 'selected primiparae' was defined as:

- woman who was 20-34 years of age at the time of giving birth
- giving birth for the first time at ≥ 20 weeks of gestation
- singleton pregnancy
- cephalic presentation
- 37 to 41 weeks gestation.

Antenatal Period: A1a A1b Smoking in pregnancy

Description: This indicator has two parts: (a) among all women who gave birth, the proportion who reported smoking tobacco at any time within the first 20 weeks of pregnancy; and (b) among women who reported smoking, the proportion who reported smoking after 20 weeks of pregnancy.

Purpose: This indicator is used to monitor public health and assess the effectiveness of smoking cessation advice in the antenatal period.

❖ Indicator A1a:	Smoking in the first 20 weeks of pregnancy for all women giving birth
Numerator:	The number of women who gave birth and reported smoking tobacco in the first 20 weeks of pregnancy (n=2,359)
Denominator:	The total number of women who gave birth (n=19,765)
CI A1a	11.9% (95% CI 11.5% - 12.4%)
❖ Indicator A1b:	Smoking after the first 20 weeks of pregnancy for all women who gave birth and reported smoking during pregnancy
Numerator:	The number of women who gave birth and reported smoking tobacco in the second 20 weeks of pregnancy (n= 1,550)
Denominator:	The number of women who gave birth who reported smoking tobacco at any time in the pregnancy (n= 2,359)
CI A1b	65.7% (95% CI 63.8% – 67.6%)

Antenatal Period: A2 Antenatal care in the first trimester

Description: Among all women who gave birth, the proportion who commenced antenatal care in the first trimester (before 14 weeks gestation).

Purpose: This indicator is used to assess the accessibility of antenatal services.

❖ Indicator A2:	Antenatal care in the first trimester for all women giving birth
Numerator:	The number of women who had their first antenatal visit before 14 weeks gestation and went on to give birth (n=15,826)
Denominator:	The number of all women who gave birth (n=19,765)
Indicator A2	80.1% (95% CI 79.5% - 80.6%)

Labour and Birth: Induction of labour for selected primiparae

Description: The proportion of all selected primiparae, whose labour was induced.

Purpose: This indicator is used to benchmark practice.

❖ Indicator B1:	Induction of labour for selected women giving birth for the first time
Numerator:	The number of selected primiparae who had labour induced (n=2,595)
Denominator:	All selected primiparae (n=5,818)
Indicator B1	44.6% (95% CI 43.2% - 45.9%)

Labour and Birth: Unassisted vaginal birth for selected primiparae

Description: The proportion of all selected primiparae, who had a normal (non-instrumental) vaginal birth.

Purpose: This indicator is used to benchmark practice.

❖ Indicator B2:	Unassisted (non-instrumental) vaginal birth for selected women giving birth for the first time
Numerator:	The number of selected primiparae who had a normal (non-instrumental) vaginal birth (n=2,587)
Denominator:	All selected primiparae (n=5,818)
Indicator B2	44.5% (95% CI 43.2% - 45.7%)

Labour and Birth: Assisted vaginal birth for selected primiparae

Description: The proportion of all selected primiparae, who had a vaginal birth with the assistance of instruments.

Purpose: This indicator is used to benchmark practice.

❖ Indicator B3:	Assisted (instrumental) vaginal birth for selected women giving birth for the first time
Numerator:	The number of selected primiparae who had a vaginal birth with the assistance of instruments (n=1,423).
Denominator:	All selected primiparae (n=5,818).
Indicator B3	24.5% (95% CI 23.4% - 25.6%).

Labour and Birth: Episiotomy for women having their first baby and giving birth vaginally

Description: This indicator has two parts among women who had their first baby: (a) the proportion who received an episiotomy while giving birth vaginally without instruments; and (b) the proportion who received an episiotomy during an instrumental vaginal birth.

Purpose: This indicator is used to benchmark practice.

❖ Indicator B4a:	Episiotomy for women having their first baby and giving birth vaginally unassisted (non-instrumental)
Numerator:	The number of women having their first baby who had an episiotomy while giving birth vaginally without instruments (n=773)
Denominator:	The number of women having their first baby who gave birth vaginally without instruments (n=3,391)
Indicator B4a	22.8% (95% CI 21.4% - 24.2%)
❖ Indicator B4b:	Episiotomy for women having their first baby and giving birth vaginally assisted (instrumental)
Numerator:	The number of women having their first baby who had an episiotomy during a vaginal birth with instruments (n=1,304)
Denominator:	The number of women having their first baby who gave birth vaginally with instruments (n=1,787)
Indicator B4b	73.0% (95% CI 70.9% - 75.0%)

Labour and birth: Caesarean section for selected primiparae

Description: The proportion of all selected primiparae who gave birth by caesarean section.

Purpose: This indicator is used to benchmark practice.

❖ Indicator B5:	Caesarean section for selected women giving birth for the first time
Numerator:	The number of selected primiparae who gave birth by caesarean section (n=1,807)
Denominator:	All selected primiparae (n=5,818)
Indicator B5	31.1% (95% CI 29.9% - 32.3%)

Labour and birth: Women having their second birth vaginally whose first birth was by caesarean section

Description: The proportion of women having their second birth vaginally whose first birth was by caesarean section.

Purpose: This indicator is used to benchmark practice for vaginal birth following.

❖ Indicator B6:	Women having their second birth vaginally whose first birth was by caesarean section
Numerator:	The number of women having their second birth vaginally whose first birth was by caesarean section (n=346)
Denominator:	The number of women having their second birth whose first birth was by caesarean section (n=2,323)
Indicator B6	14.9% (95% CI 13.5% - 16.4%)

Labour and Birth: General anaesthetic for women giving birth by caesarean section

Description: The proportion of women who gave birth by caesarean section who received a general anaesthetic.

Purpose: This indicator is used to benchmark anaesthetic care in association with caesarean section.

❖ Indicator B7: General anaesthetic for women giving birth by caesarean section	
Numerator:	The number of women who gave birth by caesarean section and had a general anaesthetic (n=373)
Denominator:	The total number of women who gave birth by caesarean section (n=6,940).
Indicator B7	5.4% (95% CI 4.9% - 5.9%)

Birth Outcomes: Third and fourth degree tears for vaginal births

Description: The proportion of women who have a third or fourth degree perineal laceration after giving birth vaginally. This indicator has two parts: (a) for all vaginal first births (b) for all vaginal births.

Purpose: Third and fourth degree perineal lacerations cause significant ongoing maternal morbidity. This is an outcome indicator that measures their occurrence.

❖ Indicator C1a:	Third and fourth degree tears for all vaginal first births
Numerator:	The number of women who had a third or fourth degree perineal laceration after giving birth for the first time and had a vaginal birth (n=320)
Denominator:	The number of women who gave birth for the first time and had a vaginal birth (n=5,168)
Indicator C1a	6.2% (95% CI 5.6% - 6.9%)

❖ Indicator C1b:	Third and fourth degree tears for all vaginal births
Numerator:	The number of women who had a third or fourth degree perineal laceration after giving birth vaginally (n=454)
Denominator:	The number of women who gave birth vaginally (n=12,728)
Indicator C1b	3.6% (95% CI 3.3% - 3.9%).

Birth Outcomes: Apgar score of less than 7 at 5 minutes for births at or after term

Description: The proportion of liveborn term infants with an Apgar score of less than 7 at 5 minutes.

Purpose: This indicator of the condition of the baby after birth provides an outcome measure of intrapartum care and resuscitation of the newborn.

❖ Indicator C2:	Apgar score of less than 7 at 5 minutes for births at or after term
Numerator:	The number of babies born alive at term with an Apgar score less than 7 at 5 minutes (n=242)
Denominator:	The number of live babies born at term (n=18,133)
Indicator C2	1.3% (95% CI 1.2% - 1.5%)

Birth Outcomes: Small babies among births at or after 40 weeks gestation

Description: The proportion of babies born at or after 40 weeks gestation who weighed less than 2,750 grams at birth.

Purpose: This indicator aims to identify intrauterine growth restriction for babies born at or after 40 weeks gestation. This indicator is used to benchmark practice.

❖ Indicator C3:	Small babies among births at or after 40 weeks gestation
Numerator:	The number of babies born at or after 40 weeks gestation who weighed less than 2,750 grams at birth (n=88).
Denominator:	The total number of babies born at or after 40 weeks (n=6,367).
Indicator C3	1.4% (95% CI 1.1% - 1.7%).

Key Statistics and Trends 2007 - 2016

Perinatal statistics are presented in Table 88 and 89 for both socio-demographic and obstetric aspects for each year from 2007-2016, and for 1981, when the perinatal data collection was commenced. The trends noted between 1981 and 2016 are as follows:

1. The total fertility rate was 1.75 live births per woman in 2016, equivalent to the level in 1981. The highest rate was observed in 2007, 2008 and 2012 (1.91 live births per woman).
2. *There was a steady increase in the proportion of Asian women from 1.8% in 1981 to 14.6% in 2016, and of Aboriginal women from 1.5% in 1981 to 3.8% in 2016.*
3. The proportion of teenage women giving birth decreased from 7.8% in 1981 to 2.4% in 2016. Over the past decade, there has been a general decline in both the teenage birth and termination rates.
4. The mean age of women giving birth has increased each year. The proportion of women who gave birth who were 35 years or older increased from 4.6% in 1981 to a peak of 21.3% in 2016. Amongst primiparous women, the proportion aged 35 years or older in 1981 was 1.2%, and in 2016 was 12.5%. The mean age among women giving birth increased from 26.6 years in 1981 to a peak of 30.8 in 2016. The mean age among primiparous women increased from 24.4 years in 1981 to 29.1 years in 2016.
5. The proportion of multiple births peaked at 3.6% of all births in 2002 and 2003, and in 2016 this proportion was 3.0% of all births.
6. The induction of labour rate increased from 22.1% in 1981 to 33.9% in 2016. Forty-four percent of inductions in 2016 were performed for other than defined indications.
7. The proportion of normal spontaneous vaginal births decreased from 66.1% in 1981 to 52.7% in 2016. The proportion of caesarean section has increased gradually but steadily in the past decade, and reached 35.1% in 2016. The proportion of breech and ventouse births were stable in the past decade and were 0.4% and 6.1% respectively in 2016.
8. There was a gradual increase in the proportion of low birthweight births (<2,500 grams) from 5.8% in 1981 to 7.7% in 2016. The proportion of preterm births was 5.5% in 1981 and increased to 9.5% in 2016.
9. The proportion of births with congenital abnormalities identified before discharge from hospital after birth has been relatively stable in the last decade and was 2.6% in 2016.
10. In the past decade, the proportion of babies utilising Level 2 care ranged from a low of 15.2% in 2009 to the highest rate of 17.2% in 2016. The utilisation of Level 3 care ranged from 2.3% in 2007 to 3.1% in 2016. The proportion of births using paediatric intensive care remained stable over the past decade. The proportion of infants in hospital at 28 days after birth has also been relatively stable over the past decade.
11. Using the WHO definition (at least 1,000 grams or 28 weeks gestation) the perinatal mortality rate for international comparison was 3.3 per 1,000 births in 2016. This rate has decreased from 7.2 in 1981, however it has fluctuated over the previous decade with the lowest rate of 2.1 deaths per 1,000 births being recorded in 2012.

Table 88: Socio-demographic aspects of perinatal statistics, South Australia, 1981 and 2007 – 2016

Characteristic	Year										
	1981	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total births	19,052	19,757	19,970	19,901	20,002	20,344	20,666	20,263	20,749	20,154	20,069
Live births	18,905	19,624	19,819	19,761	19,883	20,194	20,528	20,125	20,604	20,001	19,333
Women who gave birth	18,857	19,471	19,672	19,604	19,667	20,043	20,338	19,925	20,448	19,818	19,765
Total fertility rate per woman	1.75	1.91	1.91	1.87	1.84	1.89	1.91	1.85	1.83	1.80	1.75
Place of birth (%)											
Teaching hospital	52.2	52.6	53.2	53.7	54.3	55.5	56.8	57.3	57.8	59.5	60.4
Private hospital	19.7	26.6	26.5	25.7	25.6	24.1	23.3	22.8	22.5	21.5	20.7
Country hospital	27.8	20.2	20.3	19.9	19.3	19.9	19.4	19.3	19.3	18.6	18.4
Domiciliary*	0.3	0.5	0.5	0.7	0.7	0.5	0.5	0.6	0.5	0.5	0.5
Race											
Aboriginal, %	1.5	3.0	3.2	3.1	3.2	3.5	3.3	3.6	3.5	3.6	3.8
Number of women who gave birth	277	578	624	607	625	693	662	717	712	718	750
Number of births to Aboriginal mothers	280	590	637	618	630	703	669	729	720	732	759
Number of babies identified as Aboriginal							904	952	947	1,001	1,031
Asian, %	1.8	6.2	7.0	8.1	9.6	11.1	12.1	12.0	12.9	13.7	14.6
Age											
Mean age (years)	26.6	30.1	30.1	30.1	30.1	29.7	30.2	29.8	30.0	30.1	30.8
Teenage (%)	7.8	4.6	4.5	4.1	4.0	4.0	3.9	3.3	3.1	2.8	2.4
≥35 years (%)	4.6	20.2	21.1	21.1	20.5	20.6	20.4	19.8	20.6	20.3	21.3
Primiparae											
Mean age (years)	24.4	28.3	28.2	28.3	28.3	27.9	28.4	28.2	28.4	28.5	29.1
Teenage, %	15.4	8.9	8.8	8.4	7.8	7.8	7.8	6.7	6.3	5.6	4.6
≥35 years, %	1.2	12.5	12.7	12.8	12.2	12.0	11.8	12.4	12.9	12.5	12.5

Table 89: Obstetric aspects of perinatal statistics, South Australia, 1981 and 2007 – 2016

Characteristic	Year										
	1981	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Plurality											
Multiple births, %	2.0	2.9	3.0	3.0	3.3	2.9	3.2	3.3	2.9	3.3	3.0
Twins, number	363	544	592	578	644	586	636	640	574	648	592
Triplets, number	21	21	3	12	15	12	15	27	21	18	12
Quadruplets, number	0	0	0	0	4	0	0	0	0	0	0
Induction of labour (%)	22.1	29.8	28.6	29.4	29.6	31.2	30.9	32.5	32.2	32.5	33.9
Method of birth, %											
Normal spontaneous	66.1	56.0	56.0	55.4	55.2	54.7	54.2	53.9	54.1	53.1	52.7
Elective caesarean	8.2	15.3	15.4	15.7	15.5	15.8	15.9	16.2	16.6	17.2	17.3
Emergency caesarean	8.7	17.1	16.8	16.7	16.7	17.3	17.9	17.8	17.3	17.8	17.8
Forceps	15.2	4.1	4.2	4.6	5.4	5.7	5.5	5.6	5.3	5.6	5.7
Breech	1.1	0.4	0.5	0.4	0.3	0.5	0.4	0.5	0.4	0.3	0.4
Ventouse	0.7	7.1	7.1	7.2	6.9	5.9	6.0	5.9	6.3	5.9	6.1
Total caesarean	16.9	32.3	32.2	32.4	32.2	33.2	33.8	34.0	33.9	35.1	35.1
Birthweight <2,500 g, %	5.8	6.9	7.0	7.3	7.2	7.5	7.7	7.7	7.1	7.6	7.7
Singletons	4.9	5.5	5.5	5.7	5.6	6.2	6.1	5.8	5.7	5.9	5.9
Multiples	52.1	53.6	53.4	59.8	54.1	51.9	56.8	63.0	57.2	59.6	63.1
Gestational age <37 weeks, %	5.5	8.5	8.6	9.0	8.9	9.2	9.4	9.8	9.2	9.6	9.5
Singletons	4.8	7.1	7.0	7.2	7.2	7.5	7.6	7.7	7.5	7.6	7.5
Multiples	41.1	57.2	59.3	67.5	58.4	61.5	64.7	70.6	69.2	69.4	74.7
Congenital abnormalities, %	3.4	2.6	2.7	2.7	2.8	3.0	2.7	2.8	2.7	2.6	2.6
Level of perinatal care utilised, %											
Level II care	n/a	16.1	15.4	15.3	16.0	16.2	16.7	16.5	15.9	16.9	17.2
Level III care	3.3	2.3	2.5	2.9	2.5	2.6	2.7	2.7	2.5	2.9	3.1
WCH ICU care	n/a	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hospitalisation for 28 days or more, %	4.2	2.1	2.2	2.2	2.0	2.2	2.4	2.4	2.1	2.1	2.1
Neonatal deaths, number	96	55	51	49	44	44	46	45	39	35	39
Stillbirths, number	147	132	151	140	119	150	138	138	145	153	136
Perinatal deaths, number	243	188	202	189	163	194	184	183	184	188	175
Perinatal mortality rate per 1,000 births											
≥400g / 20 weeks	12.8	9.5	10.1	9.5	8.1	7.4	8.9	6.6	8.9	9.3	8.7
≥500 g / 22 weeks*	11.6	5.2	5.3	4.9	4.4	5.3	4.1	5.2	4.6	5.2	6.1
≥1,000 g / 28 weeks	7.2	2.6	3.4	3.5	3.2	3.2	2.1	2.8	2.4	3.2	3.3
Standardized perinatal mortality ratio	117.6	65.1	67.3	65.2	57.6	62.9	57.6	59.4	60.0	59.9	55.8

Summary Statistics for 2016

These statistics refer to all live births as well as stillbirths of at least 400g birthweight or 20 weeks gestation. Fifty two babies of less than 400g birthweight have been included.

1. Number of births

Notified births with Supplementary Birth Records: 20,069

Notified women who gave birth on SBRs: 19,765

Crude birth rate: 11.7 live births per 1,000 population

Total fertility rate: 1.75 live births per woman

2. Place of birth

Home births: 98 home births in all (0.5%), of which 77 were planned home births

Metropolitan teaching hospitals: 12,129 (60.4%)

Metropolitan private hospitals: 4,158 (20.7%)

Country hospitals: 3,684 (18.4%)

3. Sex of babies

Males 10,365 (51.6%)

Females 9,704 (48.4%)

Male: Female sex ratio 1.07:1

4. Plurality

Singleton 19,465 (97.0%)

Twin 592 (3.0%)

Triplet 12 (0.0%)

5. Race of women

Caucasian 14,680 (74.3%)

Aboriginal 750 (3.8%)

Asian 2,886 (14.6%)

Other 1,449 (7.3%)

6. Obstetric interventions

Induction of labour: 6,709 (33.9% of women)

Augmentation of labour: 3,358 (17.0% of women)

Forceps: 1,117 (5.7%)

Ventouse: 1,207 (6.1%)

Episiotomy: 2,877 (22.5% of women who gave birth vaginally)

Caesarean section: 6,940 (35.3%)

Elective caesarean section: 414 (17.4%)

Emergency caesarean section: 3,526 (17.9%)

7. Low birthweight (<2,500 g)

Number of all births of low birthweight =1,537 (7.7% of all births)

Number of singleton births of low birthweight =1,156 (5.9% of singleton births)

Number of multiple births of low birthweight =381 (63.1% of multiple births)

8. Congenital anomalies

Births notified with congenital anomalies: 523 (2.6%)

9. Perinatal mortality rates

The perinatal mortality rate for all births (live births of any gestation and stillbirths of at least 400g birthweight or 20 weeks gestation) in 2016 was 8.7 per 1,000 births

10. Terminations of pregnancy

Total terminations of pregnancy: 4,346

Pregnancy termination rate: 13.2 per 1,000 women aged 15-44 years

Teenage pregnancy rate: 17.6 per 1,000 women aged 15-19 years

Methods and Terminology

Age specific fertility rate

The number of live births to women in an age group in a year, divided by the estimated resident population of women of that age group in the same year, expressed per 1,000 population.

Apgar score

The Apgar score is a method used to summarize the health of a newborn infant. It is determined by evaluating the infant's heart rate, respiratory effort, muscle tone, reflexes and skin colour. Each criterion is scored from 0 to 2, then summing the five values to obtain the Apgar score.

Indicator	Score		
	0	1	2
Heart rate	Absent	Slow (below 100)	Over 100
Respiratory effort	Absent	Slow, irregular	Good, crying
Muscle tone	Flaccid	Some flexion of extremities	Active motion
Reflex irritability	No response	Grimace	Vigorous cry
Colour	Blue, pale	Body pink, extremities blue	Completely pink

Birthweight

The first weight of a fetus or newborn obtained after birth. This is preferably measured within the first hour of life before significant post-natal weight loss has occurred. Low birthweight is defined as a birthweight of less than 2,500 grams. Very low birthweight is defined as a birthweight of less than 1,500 grams.

Body Mass Index

A person's weight in kilograms divided by their height in meters squared. A person's BMI can then be used as a guide to determine whether they are underweight, normal weight or overweight for their height, according to the following categories.

BMI range	Category
<18.5	Underweight
18.5 to 24.9	Normal
25.0 to 29.9	Overweight
30.0 to 34.9	Obese
35.0 to 39.9	Severely obese
>40	Morbidly obese

Caesarean section

Birth of a child by an abdominal operation. Elective caesarean section is defined as a caesarean section that takes place as a planned procedure before the spontaneous onset of labour. Emergency caesarean section is defined as a caesarean section that is undertaken for a complication before the onset of labour, or during labour (whether that labour is of spontaneous onset or following induction).

Congenital Anomalies

Congenital anomalies are coded according to the British Paediatric Association (BPA) Classification of Diseases. Anomalies presented in Table 58 are from the following code ranges:

BPA Code	Category
74000-74029	Anencephalus
74100-74199	Spina bifida
74200-74209	Encephalocele
74230-74239	Hydrocephalus
74900-74909	Cleft palate
74910-74929	Cleft lip and palate
75030-75038	Tracheo-oesophageal fistula, oesophageal atresia and stenosis
75120-75124	Atresia and stenosis of large intestine, rectum and anal canal
75260-75261	Hypospadias and epispadias
75300-75301	Renal agenesis and dysgenesis
75520-75549	Limb reduction defects
75660-75669	Anomalies of diaphragm
75670-75679	Anomalies of abdominal wall
75800-75809	Trisomy 21

Crude birth rate

The number of live births occurring among the ABS Estimated Resident Populations (ERP) for South Australia, per 1,000 population during the same year.

Early Neonatal Mortality Rate

The Early Neonatal Mortality Rate (ENMR) is defined as infants weighing at least 1000 grams or 28 weeks gestation that died during the first seven days of life.

Fetal death

Death prior to the complete expulsion or extraction from a woman of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

General fertility rate

The total number of live births in a year, divided by the estimated resident population of women aged 15 to 44 years in the same year, expressed per 1,000 population.

Gestational age

The duration of pregnancy in completed weeks determined by the best obstetric estimate, using ultrasonography and the first day of the last normal menstrual period.

Induction of labour

An intervention undertaken to stimulate the onset of labour by pharmacological or other means.

Live birth

The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which after such separation breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached.

This report does not include live births less than 20 weeks gestation and less than 400g birthweight.

Maternal death

Defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Multigravida

A woman who has been pregnant more than once.

Neonatal death

Death of a live born infant within 28 days of birth.

Neonatal death rate

The number of neonatal deaths in a defined time period, divided by the total number of live births in the same time period, multiplied by 1,000.

Parity

The total number of previous pregnancies resulting in live births or stillbirths.

Perinatal deaths

Stillbirths and neonatal deaths combined

Perinatal mortality rate

The number of stillbirths and neonatal deaths in a defined time period, divided by the total number of stillbirths and live births in the same time period, multiplied by 1,000

For South Australian statistics, the rate refers to live births and stillbirths of at least 400g birthweight or 20 weeks gestation.

For national statistics, the rate refers to all births of at least 20 weeks gestation or 400g birthweight, and neonatal deaths occurring within 28 days of birth.

For international comparison, the rate refers to all births of at least 1,000g birthweight or, when birthweight is unavailable, of at least 28 weeks gestation and neonatal deaths occurring within seven days of birth (as recommended by WHO).

Preterm

Less than 37⁺⁰ completed weeks gestation.

Primigravida

A woman pregnant for the first time.

Primipara

A pregnant woman who has had no previous pregnancy resulting in a live birth or stillbirth.

Pregnancy termination rate

All rates of populations were calculated using the reproductive age range 15 to 44 years. Terminations occurred in women that were younger or older than this age group. These events were added to the numerator for the 15 to 19 years group or the 40 to 44 years group respectively.

Stillbirth

Birth of a fetus at or after 20 weeks gestation or with a birthweight of 400g or more, with no signs of life at birth.

Stillbirth rate

The number of stillbirths in a defined time period, divided by the total number of stillbirths and live births in the same time period, multiplied by 1,000

Termination of pregnancy

The removal or expulsion of a pregnancy from the uterus via surgical or medical intervention, and excludes spontaneous abortions or miscarriages

Total abortion rate (TAR)

The sum of the five-year age-specific termination of pregnancy rates, multiplied by five. This represents the number of induced abortions (or terminations of pregnancy) that 1,000 women would have during their reproductive lifetime if they experienced the induced abortion rates of the different age groups for the current year.

Total fertility rate

The sum of age-specific fertility rates at a given time. It represents the number of children a woman would bear during her lifetime if she experienced current age-specific fertility rates at each age of her reproductive life.

Total first abortion rate (TFAR)

The sum of the five-year age-specific termination of pregnancy rates of women experiencing their first termination, multiplied by five. The total first abortion rate (TFAR) is a method used to estimate the proportion of women who will experience a termination of pregnancy in their reproductive lifetime


Women who gave birth

Women who gave birth after a pregnancy ending with the birth of one or more live births or stillbirths.

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Appendix 1



Government of South Australia
Department of Health

2016 SUPPLEMENTARY BIRTH RECORD

FOR COMPLETION BY MIDWIVES AND NEONATAL NURSES

25913

Mother's name (Surname) (Given names)

Child's surname (if different) (Given name - if known)

Mother's address

Postcode

Hospital/Place of birth

Mother's Case Record Number

Plurality (1=single, 2=twin, 3=triplet, 4=quad)

Personal information above this line is confidential

For multiple births, please complete a separate baby form for each baby.

MOTHER'S INFORMATION

1 Mother's date of birth

2 Ethnicity

3 Country of birth

4 Type of patient

5 Marital status

6 Baby's father

Baby's mother

PREVIOUS PREGNANCY OUTCOMES

7 Number of previous pregnancies

8 Number of previous pregnancies resulting in births ≥20 weeks (posty)

9 Number of previous outcomes

10 Outcome of last pregnancy

11 Date of delivery/termination of last pregnancy

12 Method of last birth

13 Number of previous caesareans

14 Date of last menstrual period

15 Intended place of birth

16a Number of antenatal visits

16b First antenatal visit

Height (cm)

Weight (kg)

Please return top copy to:
Pregnancy Outcome Unit, PO Box 6,
Rundle Mall, Adelaide SA 5000

17 Type of antenatal care

18 Tobacco smoking status at first visit

19 Average number of tobacco cigarettes smoked per day in 2nd half of pregnancy

20 Medical conditions present in this pregnancy

21 Obstetric complications

22 Date of admission prior to birth

23 Procedures performed in this pregnancy

LABOUR AND BIRTH

24 Onset of labour

25 If induction, or augmentation after spontaneous onset, specify methods

26 Presentation prior to birth

27 Method of birth

28 Complications of labour, birth and puerperium

29 Perineal status after birth

30 CTG performed during labour

31 Fetal scalp pH taken during labour

32 Analgesia for labour

33 Anaesthesia for birth

34 Mother's outcome for birth hospital/home birth

35 MOTHER'S FINAL DISCHARGE/DEATH

BABY DETAILS

1 Case record number

2 Aboriginal status

3 Place of birth

4 Date of birth

5 Hour of birth

6 Sex

7 Birth weight (grams)

8 Gestation at birth

CONDITION AT BIRTH

9 Apgar Score

10 Time to establish regular breathing

11 Resuscitation at birth

12 Condition occurring during birth

13 Congenital abnormalities

14 Treatment given

15 Nursery care required

16 Was transfer to NICU/PICU for a congenital abnormality?

OUTCOME OF BABY

17 Outcome of baby

18 Baby transferred to

19 Date of final discharge (or death)

Appendix 2



Government of South Australia
Department of Health

S.A. PREGNANCY OUTCOME STATISTICS UNIT,
PO Box 6, Rundle Mall, Adelaide SA 5000

CONGENITAL ABNORMALITY FORM

SBR No.

ACC NO.

2	1				
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BABY'S SURNAME.....

BABY'S FIRST NAME.....

SEXIF MULTIPLE BIRTH, BIRTH ORDER.....

DATE OF BIRTH...../...../..... UR NO.

HOSPITAL.....

ADDRESS OF MOTHER.....

FAMILY HISTORY OF CONGENITAL ABNORMALITY Yes No Not known

1. Parents (specify)..... ☐ Yes ☐ No ☐ Not known

2. Siblings of this baby (including known stillbirths and 2nd trimester terminations of pregnancy) ☐ Yes ☐ No ☐ Not known

(specify).....

3. Other relatives (specify)..... ☐ Yes ☐ No ☐ Not known

RESIDENCE OF MOTHER DURING THE FIRST 16 WEEKS OF PREGNANCY

EXPOSURE TO TERATOGENS

DURING THE FIRST 16 WEEKS OF PREGNANCY

This information can be provided by the doctor undertaking antenatal care

Yes If yes, details

1. Infection (including viral) ☐

2. Xrays ☐

3. Environmental chemicals ☐

4. Prescribed drugs ☐

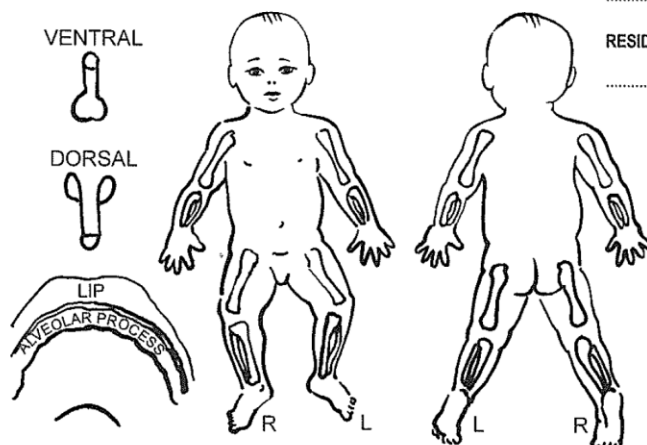
5. Over-the-counter drugs ☐

6. Alcohol ☐

7. Other addictive substances ☐

8. Any other substances ☐

Comments.....



GEST =

CONGENITAL ABNORMALITIES / BIRTH DEFECTS PRESENT

(Please list all defects & specify where relevant right/left, anterior/posterior)

Office use only

1.....

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2.....

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10.....

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SPECIFIC SYNDROME/S (if known).....

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HAS THE FATHER OF THIS CHILD A HISTORY OF EXPOSURE TO ANY POTENTIAL TERATOGENS? ☐ Yes ☐ No ☐ Not known

(specify).....

ADDITIONAL INFORMATION (eg drinking water supply/local epidemics)

PRENATAL DIAGNOSIS

Please tick all tests performed during this pregnancy

Please tick if abnormal result

1. ☐ MSAFP (NTD etc) ☐

2. ☐ Triple/Quadruple screen (Down's, etc) ☐

3. ☐ Ultrasound (morphology) ☐

4. ☐ Chorion villus sampling ☐

5. ☐ Amniocentesis ☐

6. ☐ Cordocentesis ☐

7. ☐ Other (specify)..... ☐

8. ☐ Not known ☐

Comments.....

NAME OF NOTIFYING DOCTOR..... Signed..... Date.....

NAME & ADDRESS OF OBSTETRICIAN / MIDWIFE (if not the same).....

For more information

Pregnancy Outcome Unit
SA Health, Government of South Australia
PO Box 6 Rundle Mall, Adelaide
South Australia 5000 Australia
Telephone: (08) 8226 6382
www.sahealth.sa.gov.au/pregnancyoutcomes

Public I2-A1



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