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# Determinants of caesarean section in Queensland, 2006 to 2015

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Published by the State of Queensland (Queensland Health), February, 2018



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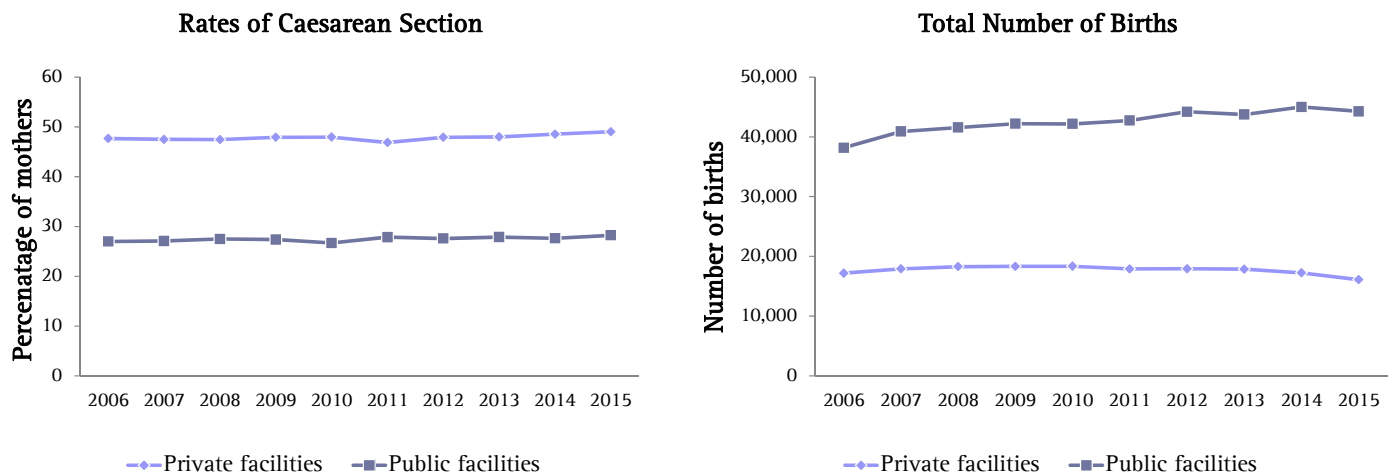
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## Determinants of caesarean section in Queensland, 2006 to 2015

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The rate of caesarean section in public and private hospitals has remained stable between 2006 and 2015, as shown in Figure 1. This rate is higher for mothers giving birth in private hospitals than in public hospitals. In the same period, the total number of mothers giving birth in public hospitals has increased while the total number of mothers giving birth in private hospitals has slightly decreased.

**Figure 1: Rates of caesarean section and total number of births in public acute and private hospitals, Queensland, 2006 to 2015**



Source: Perinatal Data Collection (PDC), Department of Health, Queensland

To better understand factors impacting on caesarean section rates over time and between sectors in Queensland, the Robson Ten Group Classification System (TGCS)<sup>1</sup> was applied to the data from the Queensland Perinatal Data Collection (PDC). The TGCS allows examination of caesarean section rates among births with similar clinical characteristics between settings and time periods to facilitate understanding of groups and settings contributing to changing caesarean section rates. The TGCS classifies births based on characteristics of an individual woman and her pregnancy to form ten mutually-exclusive groups as shown in Table 1.

The caesarean section rate in most TGCS categories has remained relatively stable in both public and private hospitals between 2006 and 2015, as shown in Figure 2, with rates consistently higher in mothers giving birth in private hospitals than in public hospitals for all categories. In the ten years prior to this (1997 to 2006) an increase was observed in most categories<sup>2</sup> which suggests there has been some success in discouraging caesarean section for low risk births in both public and private hospitals.

Lower rates were observed for groups with low risk births such as single, cephalic, spontaneous labour births (group 1 and 3). The lowest caesarean section rate was observed for women in group 3 (those who had given birth before with spontaneous labour and no previous caesarean section) in both public and private hospitals. Even though the size of this group is significant (in 2015, it made up 27.0 per cent of all women giving birth in public hospitals and 12.7 per cent of all women giving birth in private hospitals – see Table 2 and Table 3), it represented a very small portion of the overall number of caesarean sections observed as a result of this low rate.

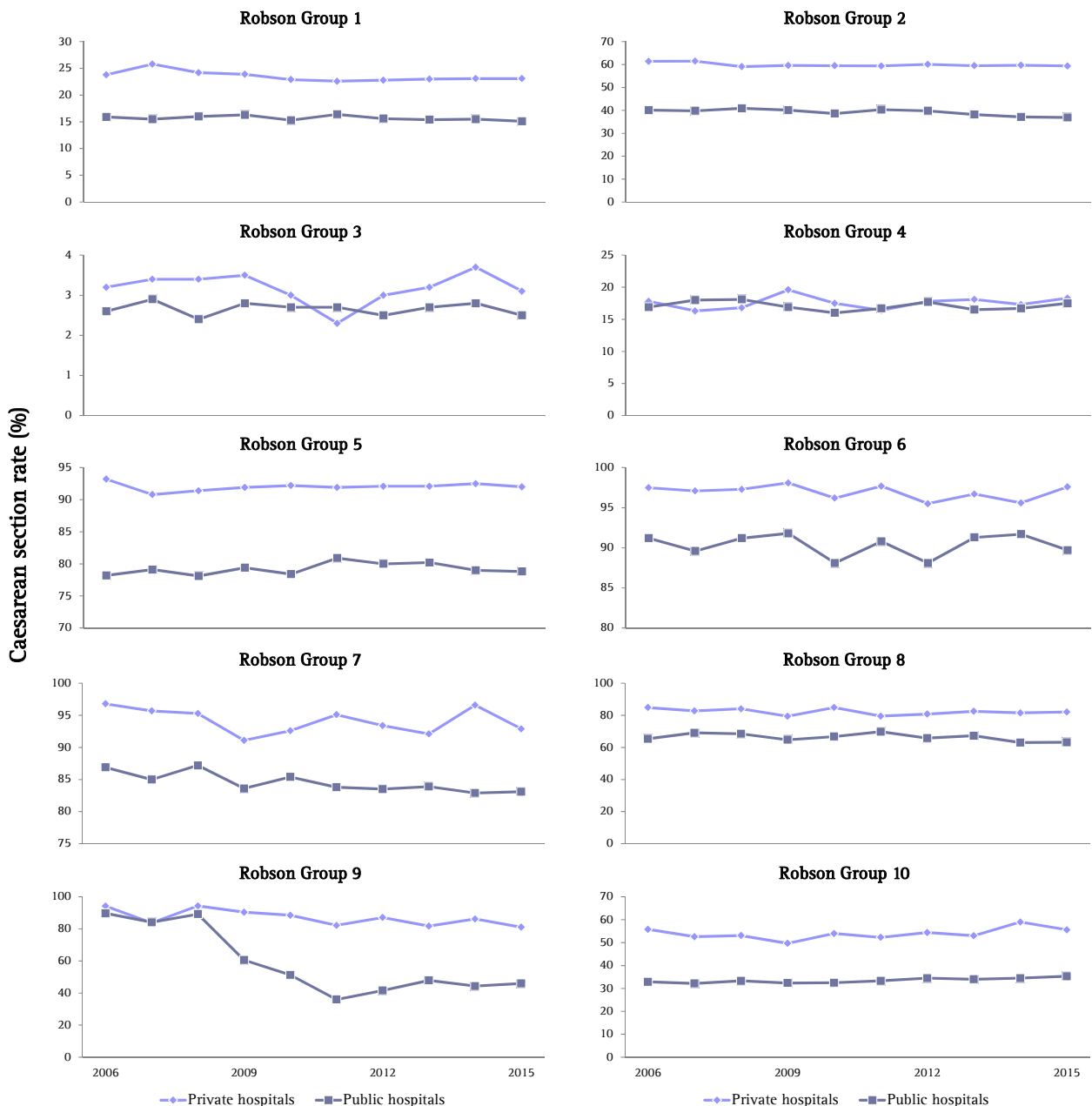
**Table 1: Robson Ten Group Classification System**

Group	Criteria
1	nulliparous, single cephalic, 37+ weeks gestation at birth, spontaneous labour
2	nulliparous, single cephalic, 37+ weeks gestation at birth, induced or caesarean section before labour
3	multiparous, single cephalic, 37+ weeks gestation at birth, spontaneous labour, no previous caesarean section
4	multiparous, single cephalic, 37+ weeks gestation at birth, induced or caesarean section before labour, no previous caesarean section
5	previous caesarean section, single cephalic, 37+ weeks
6	all nulliparous breeches
7	all multiparous breeches, including previous caesarean section
8	all multiple pregnancies, including previous caesarean section
9	all abnormal lies, including previous caesarean section
10	all single cephalic births less than 37 weeks gestation, including previous caesarean section.

Nulliparous: of, relating to, or being a female that has not borne offspring.

Multiparous: having experienced one or more previous births.

**Figure 2: Trends in caesarean section rates by TGCS in public acute and private hospitals, Queensland, 2006 to 2015**



Source: Perinatal Data Collection (PDC), Department of Health, Queensland

Very high caesarean section rates were observed for the group of women who had previously delivered using caesarean section (group 5) for both public and private hospitals. For example, in 2015, 92.0 per cent of women had a repeat caesarean section in private hospitals and 78.8 per cent of women had a repeat caesarean section in public hospitals. As a result of this high rate, and the fact that the size of this group is significant (in 2015, it made up 20.4 per cent of all births in private hospitals and 13.4 per cent of all births in public hospitals – see Table 2 and Table 3), it represented a large portion of the overall number of caesarean sections.

Very high caesarean rates were also observed for the groups of women who had a medical risk factor such as multiple births or breech presentation (groups 6 to 10), but the size of this group is much smaller (see Table 2 and Table 3) so they represented a small portion of the overall number of caesarean sections.

**Table 2: Percentage of all births in public acute hospitals for each TGCS group, Queensland, 2006 to 2015**

Group	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	22.3	22.7	23.2	23.5	24.2	23.7	23.1	23.2	22.3	21.2
2	11.2	10.9	10.8	10.7	10.7	11.2	11.5	12.0	12.2	13.5
3	31.2	31.3	31.1	30.6	30.2	29.7	29.6	28.7	28.5	27.0
4	11.2	11.0	10.5	10.6	10.2	10.4	10.7	11.0	11.7	12.8
5	12.2	12.3	12.7	12.7	12.9	12.8	12.7	13.2	13.1	13.4
6	1.8	1.8	1.8	1.7	1.6	1.9	1.7	1.8	1.7	1.8
7	1.9	1.9	2.0	2.0	1.9	1.7	1.8	1.7	1.8	1.7
8	1.4	1.5	1.5	1.4	1.4	1.4	1.5	1.3	1.4	1.4
9	0.4	0.4	0.5	0.7	0.8	1.0	1.0	0.9	1.0	1.0
10	6.4	6.2	6.0	6.1	6.1	6.2	6.4	6.2	6.3	6.3

Excludes mothers who had inadequate information to be assigned to a robson category.

For multiple births, the mother was categorised based on the hospital of birth for the first baby.

Source: Perinatal Data Collection (PDC), Department of Health, Queensland

**Table 3: Percentage of all births in private hospitals for each TGCS group, Queensland, 2006 to 2015**

Group	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	16.9	17.8	17.6	17.6	17.5	17.3	17.0	17.2	16.5	15.4
2	20.1	19.7	19.9	19.7	20.0	20.4	20.9	22.3	23.1	23.4
3	15.4	15.0	14.7	14.7	14.3	14.3	13.9	13.5	13.7	12.7
4	15.6	14.9	14.7	14.4	14.5	15.2	14.9	14.6	14.7	15.4
5	19.6	20.2	21.3	21.4	21.8	20.8	20.7	20.0	20.3	20.4
6	2.8	2.9	2.4	2.6	2.6	2.6	2.5	2.7	2.8	2.8
7	2.2	2.2	1.9	1.9	1.9	1.7	1.9	2.0	1.5	1.9
8	2.4	2.1	2.4	2.3	2.1	2.4	2.2	2.2	2.1	1.9
9	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5
10	4.9	4.9	4.9	5.0	5.1	5.1	5.5	5.2	5.0	5.5

Excludes mothers who had inadequate information to be assigned to a robson category.

For multiple births, the mother was categorised based on the hospital of birth for the first baby.

Source: Perinatal Data Collection (PDC), Department of Health, Queensland

An apparent decrease in caesarean section rates for abnormal lies (group 9) from 2008 to 2011 in public hospitals was observed. This is attributable to a doubling of the number of births categorised as abnormal lies (from 194 to 422), while the number of caesarean sections in this group decreased only slightly (from 173 to 152).

There has been little change to the caesarean section rates for breech (groups 6 and 7) and multiple births (group 8) between 2006 and 2015. A review of the evidence and guidelines for these groups may be warranted, as there have been questions posed regarding the requirement for and/or safety of caesarean section for breech and twin births.

There is a slight increase in caesarean section rates in public hospitals for group 10 (single, cephalic pre-term deliveries). However, the caesarean section rate in public hospitals is still well below the rate in private hospitals for this group.

A potential limitation of this classification system is the loss of information resulting from combining women whose labour was induced and those who had a caesarean prior to the onset of labour in groups 2 and 4. The caesarean rates in groups 2 and 4 were divided into induced and no labour subgroups. Among women who were induced but had no previous caesarean sections, multiparous women (group 4 induced) had a much lower caesarean section rate than nulliparous women (group 2 induced). This suggests that a woman's first birth experience has a profound impact on the method likely to be used for her next birth. The remaining two groups (groups 2 and 4 no labour) shows the number of caesarean section births with no labours for mothers with term, single cephalic pregnancies.

**Table 4: Caesarean section (CS) rates and contribution to the CS rate for groups 2 and 4 of Robson TGCS when split into induced and no labour subgroups, public acute and private hospitals, Queensland, 2014 and 2015**

TGCS Group	Number of births				CS rate within each group (%)		Proportion of all CS births (%)		Contribution to overall CS rate (%)	
	Public		Private		Public	Private	Public	Private	Public	Private
	CS	Total Births	CS	Total Births						
2 Induced	2,949	10,162	1,346	4,480	29.0	30.0	11.8	8.3	3.3	4.0
4 Induced	597	9,635	142	4,265	6.2	3.3	2.4	0.9	0.7	0.4
2 No labour	1,289	1,289	3,272	3,272	100.0	100.0	5.2	20.1	1.4	9.8
4 No labour	1,266	1,266	752	752	100.0	100.0	5.1	4.6	1.4	2.3

For multiple births, the mother was categorised based on the hospital of birth for the first baby.

Source: Perinatal Data Collection (PDC), Department of Health, Queensland

In summary, the overall rate of caesarean section has stabilised from 2006 to 2015. The group with the most impact on the total number of caesarean sections observed is the group of women who have had a previous caesarean section (group 5).

*The authors acknowledge the contribution of the Queensland Maternal and Perinatal Quality Council to the interpretation of results included in this report.*

## References

1. Robson MS. Classification of caesarean sections. *Fetal and Maternal Medicine Review* 2001;12(1):23-39.
2. Howell S, Khor S-L, Johnston T. Determinants of caesarean section in Queensland, 1997-2006. 2008; (Statbite #9). [https://www.health.qld.gov.au/\\_data/assets/pdf\\_file/0030/361668/statbite9.pdf](https://www.health.qld.gov.au/_data/assets/pdf_file/0030/361668/statbite9.pdf).