The Pregnancy Research and Translation Ecosystem: Robson group audit of caesarean section rates across health services in the Barwon, South West and Grampians Regions

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INTRODUCTION

Safer Care Victoria has identified the increasing rate of caesarean sections (CS) as an area of concern, with 38.4% of women giving birth by CS in Victoria in 2020 [1]. The Pregnancy Research and Translation Ecosystem (PRT-E) is a Western Alliance Flagship Program, partnering with health services from the Barwon, South West and Grampians regions. The PRT-E stakeholder group, comprising of pregnancy care clinicians and a consumer, identified optimising this rate as a shared priority and agreed on establishing improved systems for auditing CS. The Robson classification system is recognised as the gold standard for assessing, monitoring, and comparing CS rates across patient groups and settings [2].

PRT-E
Pregnancy Research & Translation Ecosystem

OBJECTIVES

The aim of this audit was to describe and compare CS rates across participating health services, in accordance with the Robson Classification System, to inform decision-making and identify priorities for intervention to safely optimise CS rates.

POPULATION

All PRT-E health service partners were invited to participate in the audit (n=6). Data were collected from 4 health services in the Barwon, South West and Grampians Regions. Data related to maternal obstetric history, pregnancy and labour outcomes relevant to CS and for alignment to Robson Group classifications were included from all women who gave birth >28 weeks gestation, between 1 January and 31 December 2022.

METHODS

Routinely collected data were extracted from perinatal Birthing Outcome System (BOS), or equivalent, databases of participating health services. Aggregation and descriptive analysis was undertaken by the PRT-E research team.

The Modified Monash Model was used to define health service locations. This model measures remoteness and population size to assign classification from MM 1 to MM 7 [3].

MM1	Metropolitan
MM2	Regional centres
MM3	Large rural towns
MM4	Medium rural towns
MM5	Small rural towns
MM6	Remote communities
MM7	Very remote communities

Image 1: Modified Monash Model: Classifications [3]

RESULTS

4342 women gave birth at the 4 participating health services. Analysis of aggregated data showed the overall CS rate was 40.3% (17.4% elective and 22.9% emergency CS). Robson group 2 and 5 contributed the highest proportion of CS, 29.5% and 32.9% respectively. Remaining groups contributed between 0.6% and 9.5%.
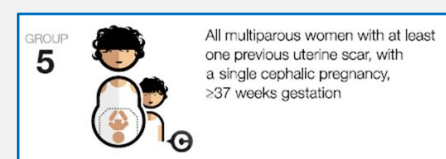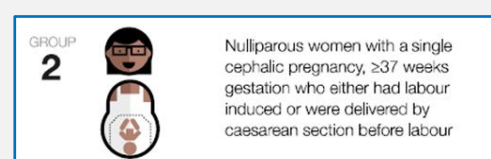
Image 2 & 3: Robson group 2 & 5 definition [2]

CS rates at individual health services ranged from 34.9% to 43.7%, with Robson group 2 and 5 consistently contributing the highest proportion towards these rates. CS rates within Robson group 2 ranged from 50.1% to 70%. CS rates within Robson group 5 ranged from 77.8% to 88%.

Image 4: Combined CS rates from 4 PRT-E partnered health services 2022

Group	Group Definition	Group Size	%	Elective CS	%	Emergency CS	%	Total CS	%	Contribution to CS rate
1	Nulliparous women with a single cephalic pregnancy, at greater than or equal to 37 weeks gestation in spontaneous labour.	698	16.1%	2	0.3%	164	23.5%	166	23.8%	9.5%
2	Nulliparous women with a single cephalic pregnancy, at greater than or equal to 37 weeks gestation, who either had labour induced or were delivered by caesarean section before labour.	1010	23.3%	102	10.1%	415	41.1%	517	51.2%	29.5%
3	Multiparous women, without a previous uterine scar, with a single cephalic pregnancy at greater than or equal to 37 weeks gestation in spontaneous labour.	776	17.9%	0	0.0%	20	2.6%	20	2.6%	1.1%
4	Multiparous women, without a previous uterine scar, with a single cephalic pregnancy at greater than or equal to 37 weeks gestation who either had labour induced or were delivered by caesarean section.	731	16.8%	79	10.8%	68	9.3%	147	20.1%	8.4%
5	All multiparous women, with at least one previous uterine scar and a single cephalic pregnancy at greater than or equal to 37 weeks gestation.	684	15.8%	415	60.7%	161	23.5%	576	84.2%	32.9%
6	All nulliparous women with a single breech pregnancy.	97	2.2%	61	62.8%	33	34.0%	94	96.9%	5.4%
7	All multiparous women with a single breech pregnancy including women with previous uterine scars.	75	1.7%	47	62.7%	26	34.7%	73	97.3%	4.2%
8	All women with multiple pregnancies, including women with previous uterine scars.	63	1.5%	25	39.7%	22	34.9%	47	74.6%	2.7%
9	All women with a single pregnancy with presentations other than cephalic or breech including women with previous uterine scars.	19	0.4%	4	21.1%	7	36.8%	11	57.9%	0.6%
10	All women with a single cephalic pregnancy at less than 37 weeks gestation, including women with previous uterine scars.	189	4.4%	22	11.6%	78	41.3%	100	52.9%	5.7%
	Total women giving birth	4342	100.0%	757	17.4%	994	22.9%	1751	40.3%	

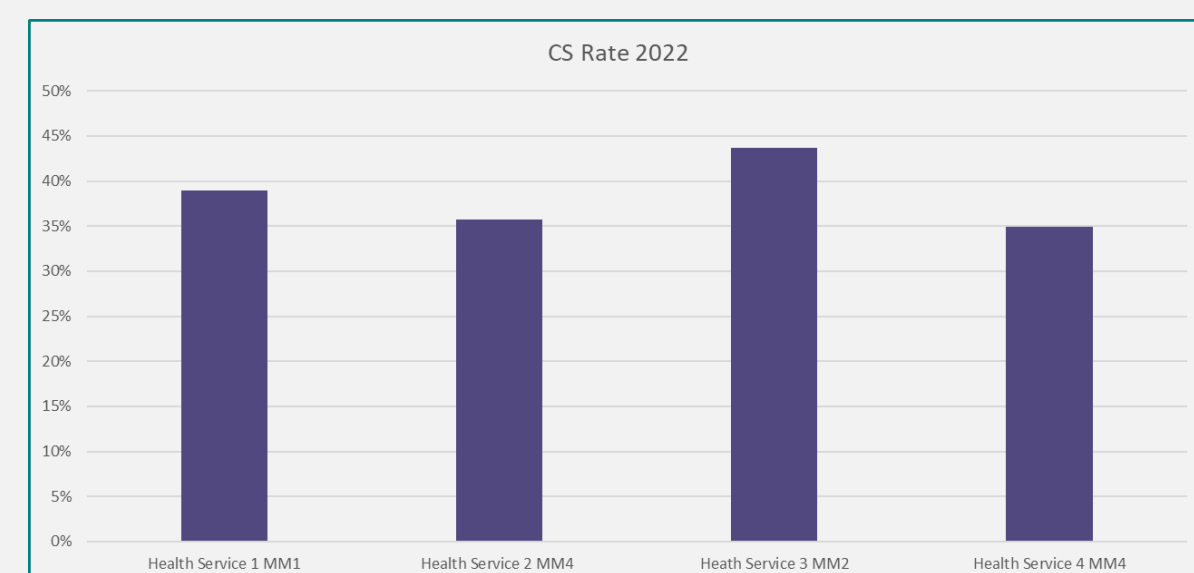**Image 5:** Comparison of CS rates by health service

CS Rate 2022

Image 6: Comparison of CS rates in Robson group 2 by health service
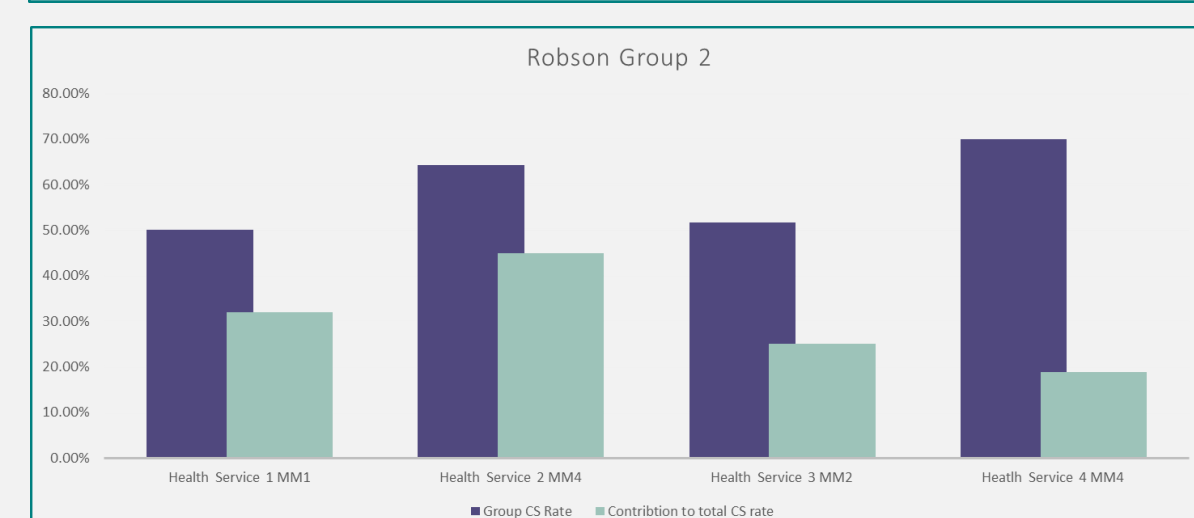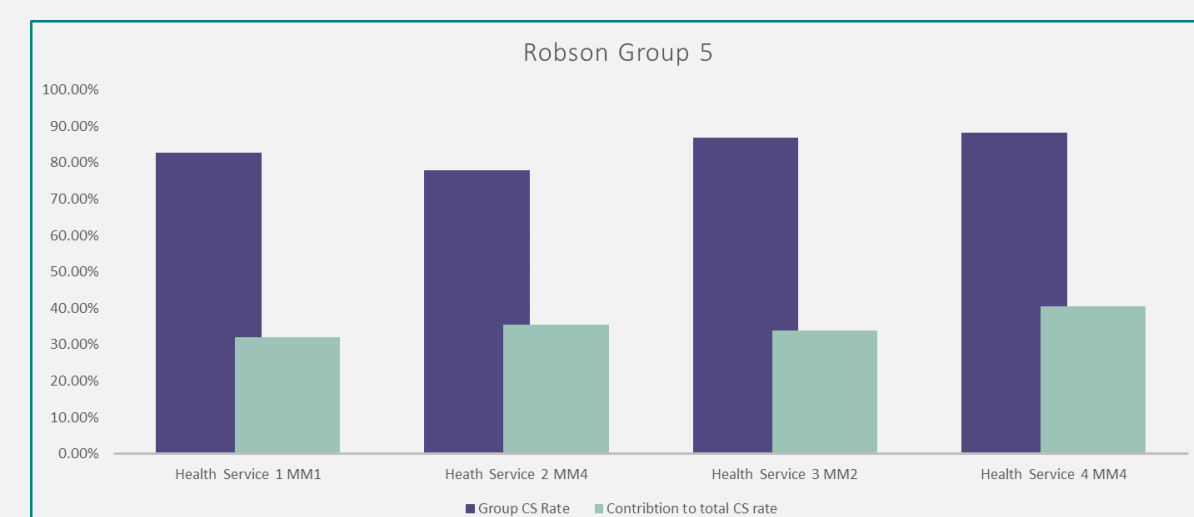
Robson Group 2

Image 7: Comparison of CS rates in Robson group 5 by health service

Robson Group 5

CONCLUSION

Consistent with state-wide figures, the overall rate of CS across participating services was high, particularly among nulliparous women who are induced or have a pre-labour CS (Robson group 2) and multiparous women who have had a previous CS (Robson group 5). Further research is required to identify potential factors contributing to higher CS rates within these groups, as well as factors contributing to the variation in rates across metropolitan, regional and rural settings. Whilst CS rates across participating health services followed similar trends, variation in rates was identified. Additional research including exploration of these variations is needed to identify and evaluate novel strategies to safely reduce CS

REFERENCES

1. Safer Care Victoria. (2020). *Victoria's Mothers Babies and Children 2020 report and presentations.* Stage Government Victoria. https://www.safercare.vic.gov.au/publications/victorias-mothers-babies-and-children-2020-report-and-presentations

2. World Health Organization. (2017). *Robson Classification: Implementation Manual.* https://www.who.int/publications/i/item/9789241513197

3. Department of Health. (2023). *Modified Monash Model.* Australian Government. https://www.health.gov.au/topics/rural-health-workforce/classifications/mmmm

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