Safer Care Victoria

Victorian perinatal services performance indicators

2016–2017

VICTORIA State Government

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Safer Care Victoria

Foreword

It is a great pleasure to write the foreword for the Victorian Perinatal Services Performance Indicators report for 2016–17. The Perinatal Safety and Quality Committee (PSQC), sponsored by the Department of Health and Human Services and Safer Care Victoria, have invested a significant effort examining this data. We have provided consumer summaries for each indicator so that the information is accessible to everyone in Victoria for whom performance in this sector is important. For the first time we have been able to engage many of the private hospitals who have been willing to publicly share information about the performance of their individual maternity and newborn services, rather than us reporting an anonymised private sector aggregate. This is a huge step forward to improving health care in both the public and private sectors, as clinicians from both areas can now learn from each other.

Every year the PSQC reviews the suite of indicators that we publicly report on, ensuring that a measure of every part of the pregnancy and childbirth journey is captured, from antenatal care to the birthing process, and finally through to postnatal health of the mother and baby. We retire indicators when performance across the maternity and newborn sector has been optimised and is reasonably consistent across health services. We replace retired indicators with new indicators, which we hope will focus a spotlight on aspects of health care that might be variable between health services, and therefore have scope for improvement in some quarters.

Two indicators – on episiotomy rates and patient experience – are shadowed this year, with the expectation that they will be incorporated into the main report in the next reporting period. By shadowing these indicators, we anticipate that health services will examine the accuracy of their data collection in these areas. We hope that this renewed focus will drive hospitals to continue to provide excellent care.

Overall the maternity and newborn sector is performing extremely well. Our goal is to support health services so that provision of care to mothers and babies will be even better in the future.

Professor Rod Hunt, PhD
Chair, Perinatal Safety and Quality Committee

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Contributors and acknowledgements

We thank the following authors for their key contributions to the Victorian perinatal services indicators report 2016–17:

- Rod Hunt
- Mary-Ann Davey
- Shirin Anil
- Sarah Kenny
- Gemma Wills
- David Simon
- Euan Wallace

This report was developed by the Safer Care Victoria with expert advice from the Perinatal Safety and Quality Committee.

Perinatal Safety and Quality Committee members

Professor Rod Hunt (Chair)	The Royal Children's Hospital
Ms Laura Bignell	The Royal Women's Hospital
Ms Alison Boylan	Department of Health and Human Services
Professor John Carlin	Murdoch Research Institute
Ms Karen Clark	St Vincents Private
Dr Mary-Ann Davey	Monash University
Ms Nicole Highet	Consumer representative
Dr Jim Holberton	Mercy Hospital for Women
Professor Sue McDonald	Latrobe University/Mercy Hospital for Women
Ms Lauren Newman	Portland District Health
Professor Jeremy Oats	Chair, Consultative Council on Obstetric and Paediatric Mortality and Morbidity
Associate Professor Scott Simmons	Mercy Hospital for Women
Dr David Simon	West Gippsland Healthcare Group
Dr Christine Tippett	Maternity and Newborn Clinical Network, Safer Care Victoria
Ms Gemma Wills	Safer Care Victoria
Dr Shirin Anil (Acting for Ms Vickie Veitch)	Safer Care Victoria

We would like to acknowledge our health information management student Sana Ahmed for her valuable contribution to this report.

Appreciation is also extended to the Consultative Council on Obstetric and Paediatric Mortality and Morbidity for permission to use data from the Victorian Perinatal Data Collection.

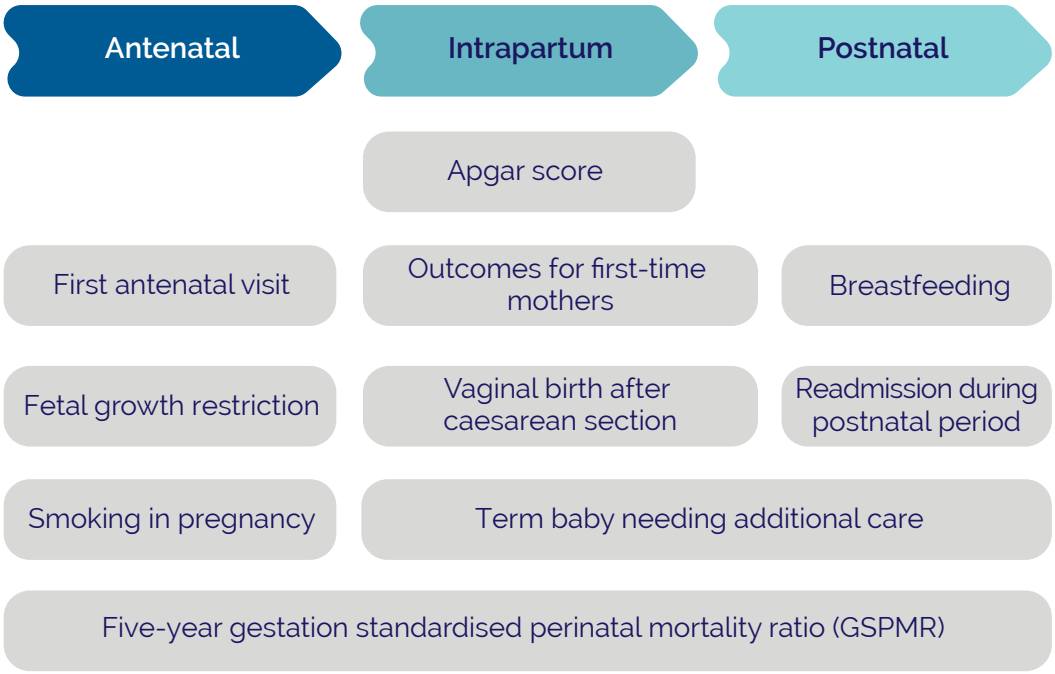
About this report

Victoria is one of the safest places in the world to start a family. We, as Victorians, should be justly proud of that. We should also be proud of the dedicated health practitioners – midwives, neonatal nurses, physiotherapists, social workers, GPs, obstetricians, anaesthetists, paediatricians, paramedics, and others – who provide us and our families with such safe and high quality care. They are special people and the care they (you) provide is, mostly, outstanding.

"Mostly". What does that mean? It means that there is always an opportunity to improve. We at Safer Care Victoria know that. You, whether you are a health practitioner or a consumer, know that too. At least we hope you do. This report, the *Perinatal Services Performance Indicators* annual report, presents and discusses outcome data on ten key performance areas of perinatal care. The outcomes span the entirety of pregnancy: antenatal, intrapartum (labour and birth) and postnatal care (Figure 1). The indicators have been selected, developed and refined over time. They are widely accepted as appropriate, useful and insightful measures of the quality of care provided to women and their babies.

Women's experiences have been added to the report for the first time (see *What's new?*). Not having these has been a major omission. Any report on maternity and newborn outcomes cannot be complete without women's voices being present, guiding plans for future improvement. We are committed to increasing experience measures in future reports. The *Partnering with Consumers* team at Safer Care Victoria and Department of Health and Human Services will work with the Perinatal Safety and Quality Committee, the Maternity and Newborn Clinical Network, clinicians and health services to develop, test and introduce more patient reported outcomes and experiences. We continue with the provision of consumer information for each indicator as a means to more meaningful consumer engagement.

Figure 1: Schema of perinatal services performance indicators



How to use this report

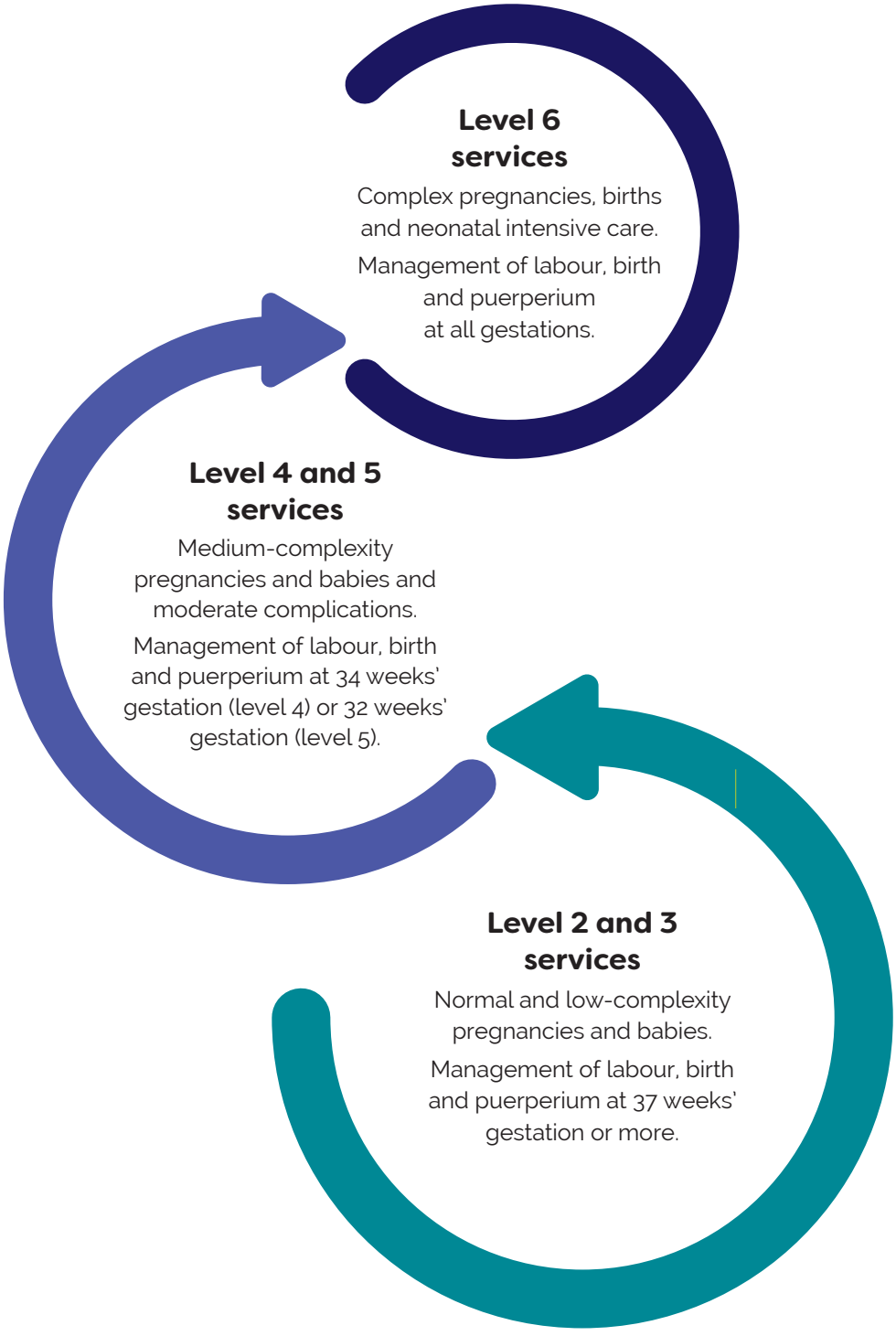
The maternity and newborn outcomes are reported here to assist all of us – women and their families, public and private health services, community and private maternity care providers, Safer Care Victoria, and the Department of Health and Human Services – to identify best care by comparing services with each other and over time. This comparison is known as "benchmarking". It can be either internal, to identify best practice within a health service and/or to compare practice over time, or external, allowing health services to assess their performance relative to others, identifying best practice in their field, and opportunities for improvements, particularly where they have been successful in other organisations. Such benchmarking is a valuable tool for health services to achieve best practice but only when it is coupled with specific and measurable performance improvement activities.

To assist with guiding improvement goals, we thought that readers of the report may find it useful to be provided some tips on how to interpret and use the data. Statewide rates (provided separately for either public or private hospitals or as a combined result) do not represent a desired target. In most cases further improvements in performance are achievable and expected. Table 1 provides a summary of the purpose and expected outcomes of each indicator. In essence, even where a hospital appears to be doing well, there is always room for improvement.

Variation between services is presented using interquartile ranges with red and green vertical lines representing the least (red) and most (green) favourable quartiles, respectively.

Health services are clustered by capability levels 1 to 6 as per the *Capability framework for Victorian maternity and newborn services* (Department of Health 2010) (figure 2). This allows services to more easily compare themselves with like services.

Figure 2: Levels of maternity/neonatal care



The indicators are only that – indicators. They do not explain the results. Irrespective of their size, services should review and examine their performance to understand the factors contributing to their results. This will allow them to plan and implement local initiatives to improve the outcomes and care provided. Safer Care Victoria is pleased to work with any health service to help them understand the drivers for their reported performance, identify opportunities for improvement, and share positive examples of good practice where appropriate. Health services that are achieving best practice are encouraged to share their understanding and practices with others. Safer Care Victoria can assist with that sharing where needed.

Specifically, we recommend that health service managers and clinicians should use the data in this report to:

- track their organisation's performance and trends
- compare their results with health services of a similar profile (capability and size)
- guide and inform local audits, including adverse event reviews through their perinatal mortality and morbidity committees
- identify priority areas for performance improvement within
- evaluate the impact of improvement programs and provide feedback to relevant stakeholders
- inform their clinical workforce of their hospital's maternity and newborn outcomes, building clinician engagement
- inform their consumers (women and families) of the hospital's maternity and newborn outcomes, seeking their suggestions for service improvements
- provide education and support to staff and the local community
- guide collaboration with neighbouring health services and community-based healthcare providers to improve local practice, referral systems and performance.

Regarding consumer engagement, we recommend that each service produces a simple, easy to read summary of their outcomes and provide a copy of this to each woman attending their service.

Each indicator has a list of recommended actions that should be undertaken by health services, particularly outlier services, to support performance improvement. These include:

- an assessment of their local capability, processes to support regular clinical audits and the provision of performance data feedback to clinicians
- a multidisciplinary review of local clinical practice guidelines and protocols to ensure they are based on current evidence and research
- a review of organisational barriers that constrain continual practice improvement
- benchmarking against peer-group services
- engaging with health services achieving better outcomes to support local and regional improvement (this may include referral of results to their regional perinatal morbidity and mortality committee for expert multidisciplinary consideration)
- identifying improvement goals including timelines, and working with Safer Care Victoria to monitor performance and improvement initiatives over time.

Safer Care Victoria's Maternity and Newborn Clinical Network will also use the statewide data, focussing on variations in practices and outcomes, to inform priority improvement programs across the state.

Table 1: Perinatal indicators and desired outcomes

Indicator	Description	Desired outcome
1a	Rate of induction in standard primiparae	• Rates should be low and consistent for this low-risk group of women. • Variation in rates may indicate that clinical practice and/or system processes may not be supported by evidence for best clinical practice.
1b	Rate of caesarean in standard primiparae	
1c	Rate of third- and fourth-degree perineal tears in standard primiparae	
2	Rate of term babies without congenital anomalies who require additional care	• Rates should be low and consistent across peer-group hospitals, reflecting differing case mix. • High rates may indicate quality-of-care issues during labour and childbirth or suboptimal identification and/or management of complications during pregnancy.
3	Rate of severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks	• Rates should be low and consistent across peer-group hospitals, reflecting differing case mix. • Health services should aim to improve methods for identifying and managing severe FGR.
4a	Rate of women who planned a vaginal birth after a primary caesarean section	• Rates should be moderately high, with little variation across peer-group hospitals. • Unless contraindicated, women should be provided with the opportunity for vaginal birth after caesarean section (VBAC) and information to support decision making.
4b	Rate of women who achieved a planned vaginal birth after a primary caesarean section	
5	Perinatal mortality ratio for babies born at 32 weeks or more (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies)	• Variation among peer-group hospitals is expected to be small. • It is desirable to have gestation standardized perinatal mortality ratio (GSPMR) to be 1 or less. • Health services having least favourable results, in particular, must understand the extent of suboptimal performance issues and address these.
6a	Readmissions during the postnatal period (mother)	• Rates should be low and consistent among peer group hospitals. • As these indicators are new, health services should develop systems to explore the factors influencing results.
6b	Readmissions during the postnatal period (baby)	
7	Smoking cessation rate	• Rates should be high. • Services should ensure that data submitted against this indicator is complete and reliable.

Indicator	Description	Desired outcome
8a	Rate of breastfeeding initiation for babies born at 37+ weeks gestation	• Rates should be high and consistent among peer-group hospitals.
8b	Rate of use of infant formula by breastfed babies born at 37+ weeks' gestation	• Rates should be low and consistent among peer-group hospitals.
8c	Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks' gestation	• Rates should be high and consistent among peer-group hospitals.
9	Rate of women attending their first antenatal visit prior to 12 weeks' gestation	• Rates should be high. • Services should ensure data submitted against this indicator is reliable and meets the Victorian perinatal data collection (VPDC) business rules. • The large variation among Victorian hospitals should be a focus for improvement (data quality and performance) at the local, regional or system level.
10	Rate of term babies without congenital anomalies with an Apgar score < 7 at five minutes	• Rates should be low and consistent among peer-group hospitals, reflecting differing casemix. • Clinicians should ensure Apgar assessment, scoring and reporting is accurate. • This is an important indicator for longer term infant outcomes, and poorer results should be a priority area for performance improvement.

Data sources and reporting rules

The data for this report are derived from:

- the Victorian Perinatal Data Collection (VPDC) by calendar year (2016): Indicators 1, 3, 4, 5, 7, 8, 9 and 10
- the Victorian Admitted Episodes Dataset (VAED) by financial year (2016–17): Indicators 2 and 6
- the Victorian Healthcare Experience Survey (VHES) by calendar year (2016): Shadow indicators 11a and 11b.

The VPDC[1] and the VAED[2] are health data collections managed by the Department of Health and Human Services. Victorian public and private health services are required to submit data to both collections. Further information on the data sources and the business rules for each indicator can be found in Appendix 1.

There is an unavoidable time lag between data submission by health services and performance reporting. It is therefore important that health services regularly monitor their own performance and use this report to supplement evaluation of their performance relative to best practice and peer-group organisations.

1 The VPDC manual, including data definitions, business rules and submission guidelines, is available at <https://www2.health.vic.gov.au/hospitals-and-health-services/quality-safety-service/consultative-councils/council-obstetric-paediatric-mortality/perinatal-data-collection>.

2 The VAED manual, including data definitions, business rules and submission guidelines, is available at <https://www2.health.vic.gov.au/hospitals-and-health-services/data-reporting/health-data-standards-systems/data-collections/vaed>.

When interpreting the data in this report, it is important to note the following:

- For Indicators 1 and 4, while the report uses the terms 'least/most favourable', it may be clinically appropriate to undertake IOL or C-Section, or, not to offer VBAC based upon individual patient circumstances and clinician advice regarding the potential benefits and risks.
- Apart from Indicator 5, data are only reported when a health service has had a *minimum* of 10 occasions for an event (denominator)[3]. Therefore, data from smaller health services should be interpreted with caution as it can be highly volatile. The interpretation of the gestation standardised perinatal mortality ratio (GSPMR) (Indicator 5) is complex and a detailed explanation is provided in the section on Indicator 5. Separate reporting rules apply for the GSPMR as shown in Appendix 1.
- Private patients admitted to a public health service are reported in the results for the relevant public health service.
- Public health services' outcomes are presented in order of maternity service capability[4] as defined in the *Capability framework for Victorian maternity and newborn services* (Department of Health 2010) . An overview of the capability levels is provided at Figure 2. A detailed list of health service capability and the total number of women who gave birth in 2016 is provided at Appendix 4.
- Private health services' outcomes are presented according to the number of women who gave birth at each health service in 2016.
- Although the statewide rates provided for each indicator are a suitable measure for comparing health services, they do not necessarily represent the optimal or target rate.
- The indicators reported in this report do not adjust for maternal characteristics such as obesity, mental health conditions, chronic illnesses, socio-economic status, or IVF pregnancies. Health services should take into account individual patient profiles when reviewing their reported data.

The performance indicators in this report are reviewed periodically to ensure they are fit for purpose,[5] robust and feasible (Health Information and Quality Authority 2013). New indicators are added in response to current and/or emerging issues, and long-standing indicators may be retired when high levels of performance across Victorian health services are sustained for a period of time. The majority of indicators are outcome focused (in the short term) and reflect 'the impact of services on the status of an individual or group' (Productivity Commission 2016, p. 10.50).

3 For example, a hospital that has not had 10 standard primiparae women birth in the given year (denominator) will not be included in the results for Indicator 1.

4 The maternity capability levels used in this report are based on levels of care at the time of the reporting period.

5 'Fit for purpose' includes an assessment of whether each indicator is valid, reliable, evidence-based, sensitive, specific, relevant and timely.

What's new?

The *Perinatal Services Performance Indicators* report is always evolving and improving under the expert advice of the Perinatal Safety and Quality Committee. We would like to highlight the following changes in this year's report:

Inclusion of individual private hospital data: Data for all indicators by individual private hospitals are being reported for the first time. Public hospitals have always been published in an identifiable manner. We invited all private hospitals to make their data similarly identified. Many agreed enthusiastically, recognising the importance of transparent reporting in care improvement. Some remained more hesitant and these services remain anonymous at their request. Over time we hope to be able to share the outcomes for all hospitals in an identified manner.

Indicator 7 – smoking cessation rate is presented as the percentage of women who quit smoking after 20 weeks' gestation among those who smoked before 20 weeks' gestation. This gives a measure of smoking cessation rate at individual level rather than the health services level. Previous reports displayed relative reduction in smoking before and after 20 weeks gestation and so the rates reported in this report are not directly comparable with previous reports.

Shadow Indicators 1bi and 1bii – caesarean section for women having a first baby – singleton, cephalic-presenting, term births reports the proportion of first time mothers who gave birth following a spontaneous onset of labour, and an induced labour respectively. They include only women with singleton pregnancy, a baby with the head presenting and birth at 37 or more weeks' gestation. This is known as the Ten Group Classification System (Robson, 2001), but modified to exclude women having a planned caesarean (Zhang et al, 2016). This is an internationally recognised method of comparing the caesarean section rate between hospitals.

Shadow Indicators 1ci and 1cii – Third and fourth degree perineal tear rates for all primparae by unassisted and assisted vaginal births report the third- and fourth-degree perineal tears in first time mothers. These tears are a significant birth-related complication that may lead to long-term disability or morbidity. Third- and fourth-degree tear rates may reflect the quality of intrapartum care or differences in how these data are reported and captured. This is an outcome indicator that measures incidence. The rate should be as close to zero as possible.

Shadow Indicators 1di and 1dii – Episiotomy rates for all primparae by unassisted and assisted vaginal births report the episiotomy rates in first time mothers. An episiotomy should only be performed when clinically indicated, such as instrumental birth or suspected fetal compromise, as there is risk of significant associated morbidity. The ideal rate of episiotomy has not been well established. However, for unassisted (normal) vaginal births, the rates of episiotomy should be as low as possible particularly in first time mothers.

Shadow Indicators 11a and 11b (Patient experience indicators) – Patients are uniquely positioned to provide insightful comments about their care. By monitoring indicators of patient experience, it is possible to improve our understanding of patients' experience of care and identify areas for quality improvements and service redesign.

For more information and business rules on shadow indicators, please refer to Appendix 2.

Data and results

Where we are getting better

Compared to previous years, the following indicators have improved in the 2016–17.

Indicator 3: The statewide rate of severe fetal growth restricted (FGR) babies undelivered by forty weeks' gestation fell from 34.9% in 2015 to 30.6% in 2016 in public hospitals and from 36.3% in 2015 to 31.1% in 2016 in private hospitals.

Indicator 9: The rate of women attending their first antenatal visit by 12 weeks' gestation increased significantly, from 20.2% in 2015, to 32.3% in 2016 for public hospitals, and continues to be high (86.7%) for private hospitals.

Where we are doing less well

The following outcomes suggest the need for health services to comprehensively review their practices, and identify and actively plan for performance improvement including improvements to data collection.

Indicator 1a: The statewide rate of inductions of labour in standard primiparae increased from 3.0% in 2015 to 3.9% in 2016 in public hospital and from 13.6 per cent in 2015 to 15.9 per cent in 2016 in private hospitals.

Statewide outcomes

Table 2 summarises the statewide public and private hospital rates for 2016–17, including the most favourable and least favourable quartiles. The statewide public hospital rates for the 2015–16 are also shown for comparison.

Table 2: Summary of statewide results, 2016–17

Perinatal indicator	Statewide public & private 2016–17*	Statewide public 2016–17	Statewide private 2016–17	Least favourable quartile cut-off[a]	Most favourable quartile cut-off[a]	Statewide public 2015–16
Indicator 1a: Rate of inductions in standard primiparae	8.2%	3.9%	15.9%	≥ 13.2%	≤ 0%	3.0%
Indicator 1b: Rate of caesarean sections in standard primiparae	22.6%	16.1%	34.1%	≥ 33.2%	≤ 10.9%	15.9%
Indicator 1c: Rate of third- and fourth-degree perineal tears in standard primiparae giving birth vaginally	5.4%	6.7%	2.6%	≥ 6.5%	≤ 0%	6.5%
Indicator 2: Rate of term babies without congenital anomalies who require additional care	9.6%	9.4%	11.5%	≥ 12.4%	≤ 2.8%	8.6%

Perinatal indicator	Statewide public & private 2016–17*	Statewide public 2016–17	Statewide private 2016–17	Least favourable quartile cut-off[a]	Most favourable quartile cut-off[a]	Statewide public 2015–16
Indicator 3: Rate of severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks	30.8%	30.6%	31.1%	≥37.0%	≤ 22.7%	34.9%
Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section	25.5%	30.0%	16.3%	≤ 15.8%	≥ 32.3%	29.3%
Indicator 4b: Rate of women who had a planned vaginal birth following a primary caesarean section	54.8%	56.4%	48.8%	≤ 35.9%	≥ 63.5	57.7%
Indicator 5: Perinatal mortality ratio for babies born at 32 weeks or more (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years' pooled data (2012–2016)	1.00	1.00	0.69	≥ 1.23 (public) ≥ 1.31 (private)	≤ 0.98 (public) ≤ 0.94 (private)	1.00
Indicator 6a: Readmissions during postnatal period – mother	2.5%	2.5%	2.5%	Cut-off adjusted according to the number of births	Cut-off adjusted according to the number of births	2.4%
Indicator 6b: Readmissions during postnatal period – baby[b]	NA	4.2%	NA	Cut-off adjusted according to the number of births	Cut-off adjusted according to the number of births	4.0%
Indicator 7: Smoking cessation rate	26.1%	21.4%	66.1%	≤ 11.2%	≥ 37.5%	NA[c]

Perinatal indicator	Statewide public & private 2016–17*	Statewide public 2016–17	Statewide private 2016–17	Least favourable quartile cut-off[a]	Most favourable quartile cut-off[a]	Statewide public 2015–16
Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks' gestation	95.4%	95.1%	96.4%	≤ 93.8%	≥ 97.5%	94.8%
Indicator 8b: Rate of use of infant formula by breastfed babies born at 37+ weeks' gestation	28.2%	25.1%	38.4%	≥ 31.4%	≤ 12.7%	25.2%
Indicator 8c: Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks' gestation	76.8%	78.0%	72.0%	≤ 75.0%	≥ 90.5%	79.7%
Indicator 9: Rate of woman attending their first antenatal visit prior to 12 weeks' gestation	45.4%	32.3%	86.7%	≤ 24.1%	≥ 79.7%	20.2%
Indicator 10: Rate of term babies without congenital anomalies with an Apgar score of < 7 at five minutes	1.4%	1.6%	0.9%	≥ 1.7%	≤ 0.4%	1.5%

NA – not applicable

a – Quartiles are calculated for statewide public and private health services combined, unless stated otherwise.

b – The number of admitted (unqualified or qualified) neonates discharged from hospital forms the denominator of this indicator. As VAED reporting of unqualified neonate admissions is optional for private hospitals, it is not possible to establish an accurate denominator (that includes public and private hospitals) for this indicator. Therefore Indicator 6b will only report the performance of public hospitals.

c – Definition of Indicator 7 has been modified to make it more sensitive, hence it is not comparable to previous year.

Comparison of statewide performance over time

Figures 3–9 compares statewide performance for Indicators 1, 2, 3, 4, 5, 9 and 10 over time.

Figure 3: Statewide comparison of performance for outcomes for standard primiparae (Indicators 1a, 1b and 1c), 2010 to 2016

Figure 4: Statewide comparison of performance for term babies without congenital anomalies who require additional care (Indicator 2), 2010–11 to 2016–17

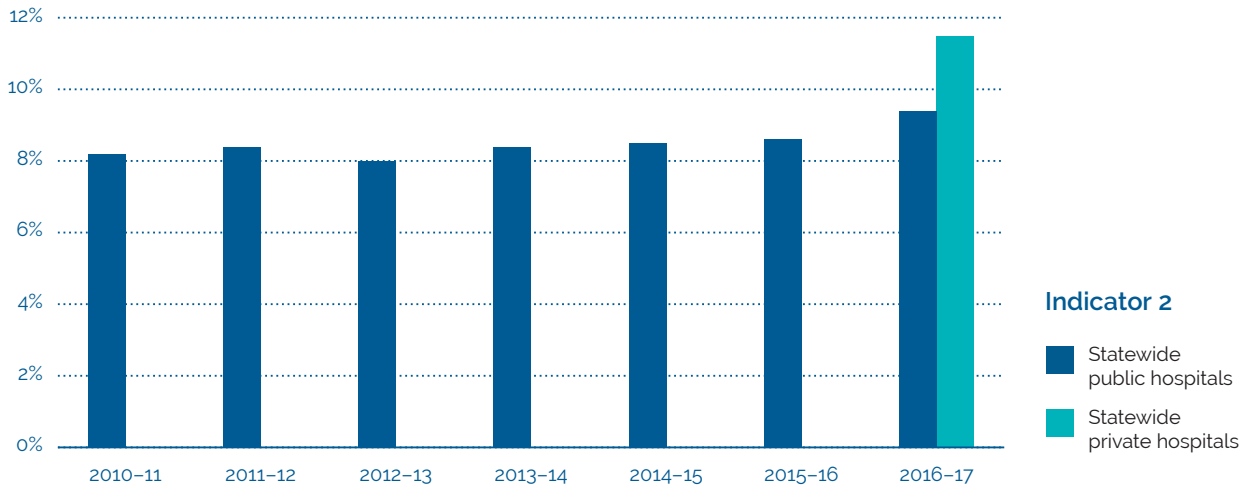


Figure 5: Statewide comparison of severe fetal growth restriction (Indicator 3), 2010 to 2016

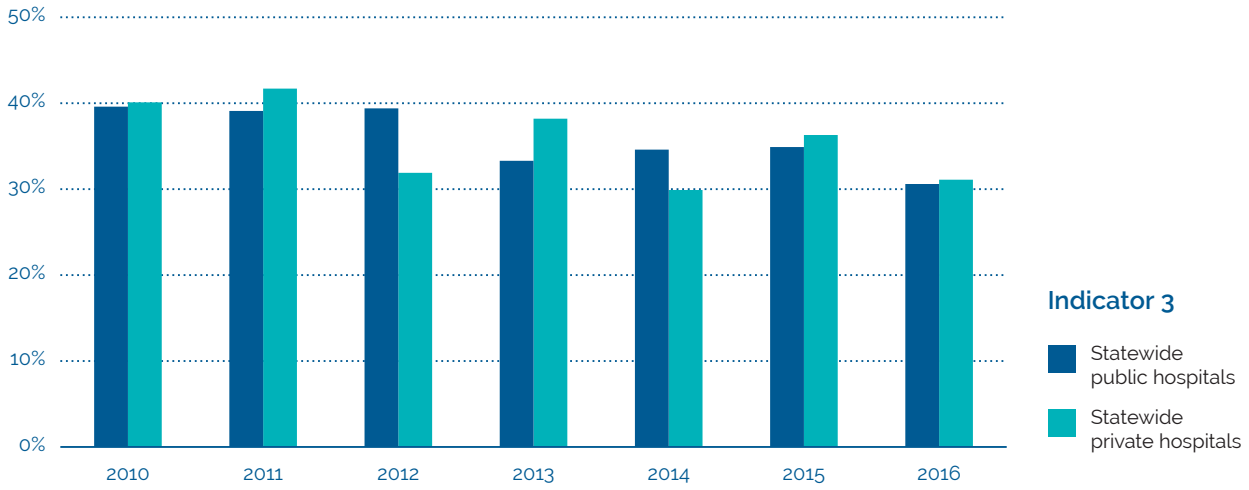
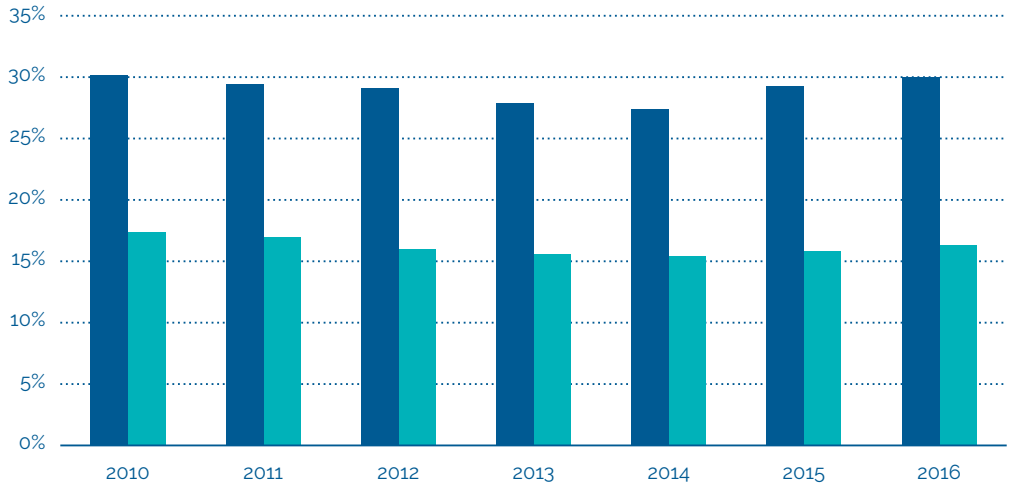


Figure 6: Statewide comparison of performance for vaginal births after primary caesarean section (Indicators 4a and 4b), 2010 to 2016



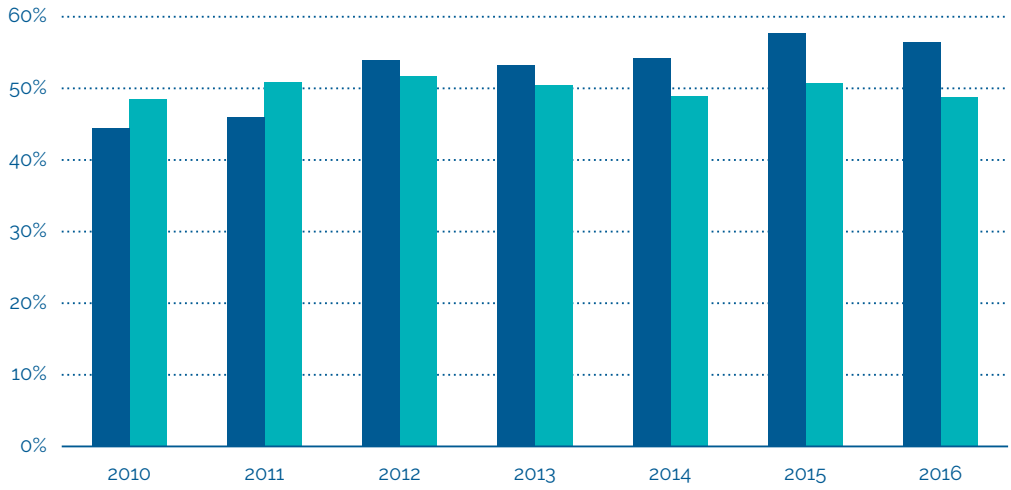


Figure 7: Statewide comparison of performance for gestation standardised perinatal mortality ratio at 32 weeks (Indicator 5), 2007–11 to 2012–16

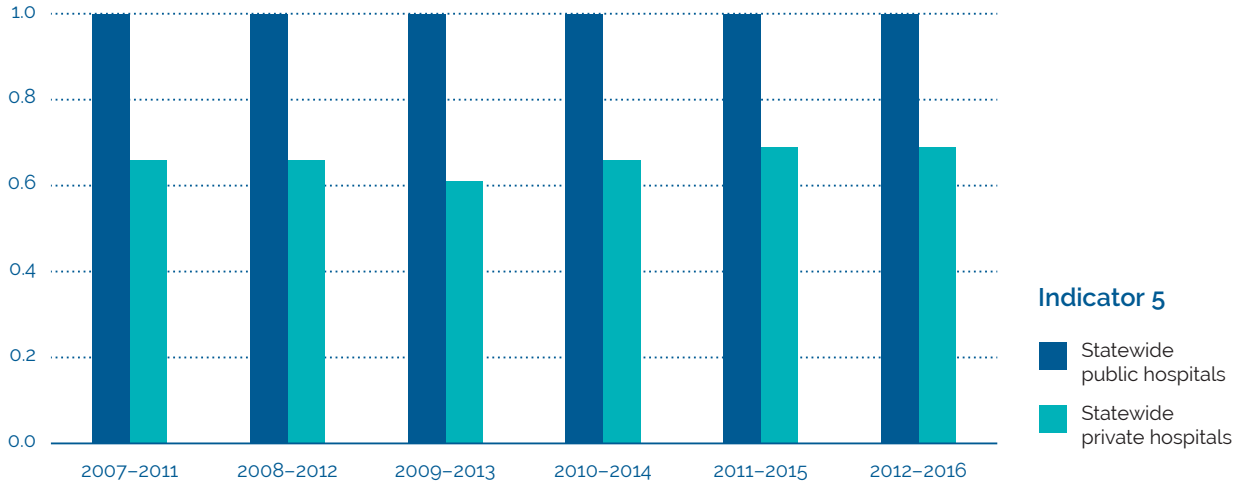


Figure 8: Statewide comparison of performance for first antenatal visit before 12 weeks gestation (Indicator 9), 2010 to 2016

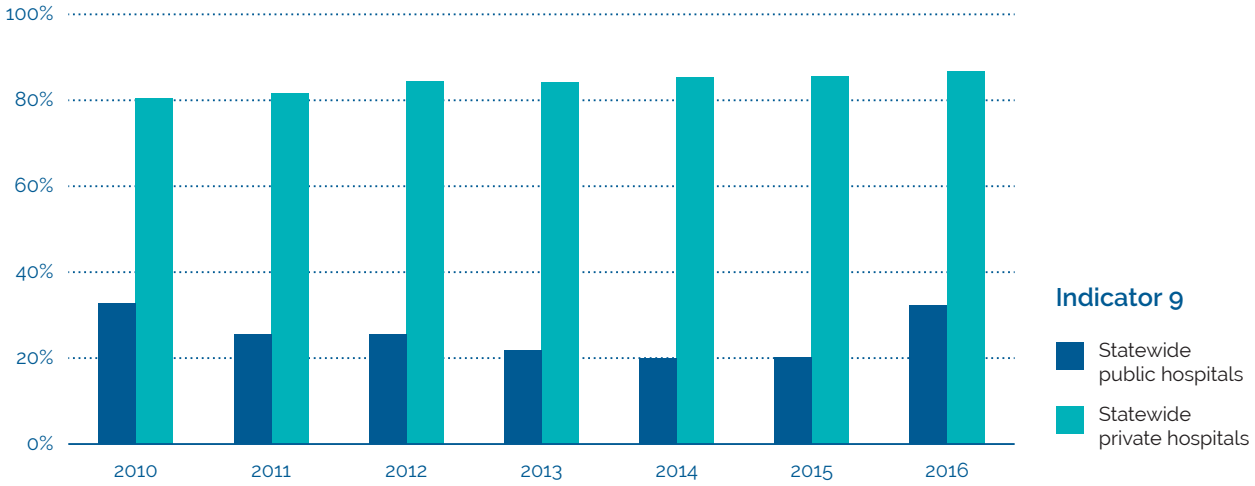
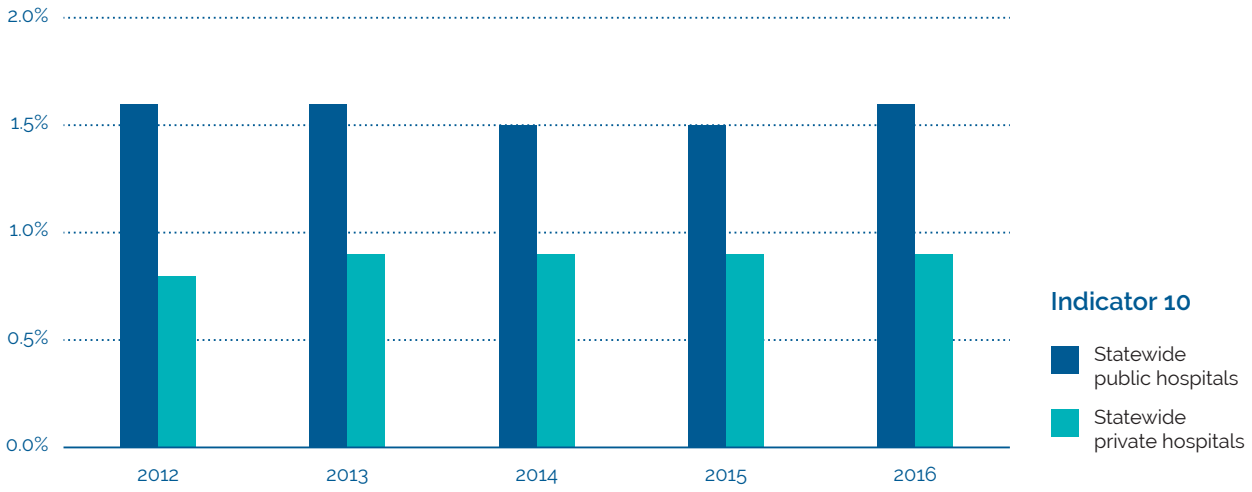


Figure 9: Statewide comparison of performance for Apgar score < 7 at five minutes (Indicator 10), 2012 to 2016



Indicators 1a, b and c: Outcomes for standard primiparae

Purpose and rationale

The 'standard primipara' is the cohort of women with uncomplicated or low-risk pregnancies. The intervention and complication rates for this group of women should be low and broadly consistent across hospitals.

This suite of measures shows the outcomes for standard primiparae in relation to:

- Indicator 1a – the rate of inductions
- Indicator 1b – the rate of caesarean section
- Indicator 1c – the rate of third- and fourth-degree perineal tears with vaginal births.

Comparing the rates between hospitals of the outcomes for standard primiparae (rather than all women giving birth) controls for differences in complexity of caseloads and therefore increases the validity of those comparisons.

The standard primipara definition and inclusion criteria for the indicator are outlined in Appendix 1.

Clinical significance

Intervention(s) during labour and birth, particularly for women having their first baby, can occur at different stages and should be limited to women who have a clear medical and/or psychosocial indication.

Induction of labour can increase the need for instrumental vaginal birth or caesarean section. For primiparous women, a caesarean section limits the potential to birth vaginally in future pregnancies, and has other important consequences following birth and for future pregnancies. Therefore, safely reducing the number of primiparous women who have an induced labour may reduce the numbers who require birthing interventions overall.

Given that 'standard primiparae' are expected to experience an uncomplicated or low-risk pregnancy, it is also expected that the rate of induction and caesarean section should, in most cases, be close to zero.

Some of the variation between hospitals may reflect incomplete reporting of pre-existing maternal medical conditions and/or complications of pregnancy. However, health services that are consistently above the statewide average for inductions of labour or caesarean section, especially for 'standard primiparae', should audit their policies, procedures and practices to identify the underlying reasons and areas for improvement.

Third- and fourth-degree perineal tears are a significant birth-related complication that may lead to long-term disability or morbidity. Third- and fourth-degree tear rates may reflect the quality of intrapartum care or differences in how this data is reported and captured. Hospitals with high rates are encouraged to review their intrapartum practices, while those with very low rates may need to ensure staff are appropriately trained to identify and classify perineal tears.

Observations on the data

Indicator 1a: Inductions in standard primiparae

In 2016, the statewide rate of standard primiparae having an induced labour was 8.2 per cent, 3.9 per cent in statewide public and 15.9 per cent in statewide private hospitals. Variation in the rate of inductions in standard primiparae was observed between individual hospitals (Figure 10).

Indicator 1b: Caesarean section in standard primiparae

The statewide rate of standard primiparae who gave birth by caesarean section was 22.6 per cent, 16.1 per cent in public hospitals and 34.1 per cent in private hospitals. These rates slightly increased from 2015 (Figure 11). To make the indicator more robust, shadow indicators are being proposed, namely rate caesarean section for women having a first baby – singleton, cephalic-presenting, term births, detailed in Appendix 2.

Indicator 1c: Third- and fourth-degree perineal tears in standard primiparae

The statewide rate of standard primiparae giving birth vaginally with third- or fourth-degree perineal tears was 5.4 per cent, 6.7 per cent in public hospitals and 2.6 per cent in private hospitals (Figure 12). To make the indicator more robust, shadow indicators are being proposed, namely third and fourth degree perineal tear rates for all primparae by unassisted and assisted vaginal births, detailed in Appendix 2.

Expectations for performance improvement

Hospitals with results in the upper quartile range (least favourable) for Indicators 1a, 1b and 1c are expected to:

- undertake regular multidisciplinary audit and review of the indications for induction of labour and caesarean section (weekly or monthly depending on the size of the service)
- ensure the information (verbal and written) provided to women regarding the benefits and risks of induction of labour and caesarean section are based on scientific evidence
- undertake a review of the local booking, prioritisation and authorisation processes for induction of labour and caesarean section including escalation in the absence of clinical indication
- consider processes to have a second peer review process for interventions
- ensure clinicians are competent in avoiding as well as identifying and classifying perineal tears
- verify a sample of unit records with Safer Care Victoria to ensure local coding of standard primipara is correct (when local data varies from rates published in this report)
- ensure systems are in place to provide clinical follow-up to women affected post-discharge and to monitor their outcomes over time.

Safer Care Victoria's Maternity and Newborn Clinical Network has published the *Victorian standard for induction of labour*, which is available on the department's website at <https://www2.health.vic.gov.au/hospitals-and-health-services/safer-care-victoria/maternity-ehandbook/induction-of-labour>

Consumer summary

Indicators 1a, 1b and 1c: Outcomes for standard primiparae

A 'standard primipara' represents a woman 20–34 years old who is giving birth for the first time. The woman is free of medical complications and is pregnant with a single baby that is growing normally and is born head-first between 37 and 40 weeks (not prematurely).

This indicator focuses on low-risk and uncomplicated pregnancies; therefore, medical intervention and the rate of complications during labour and birth for this group of women are expected to be low.

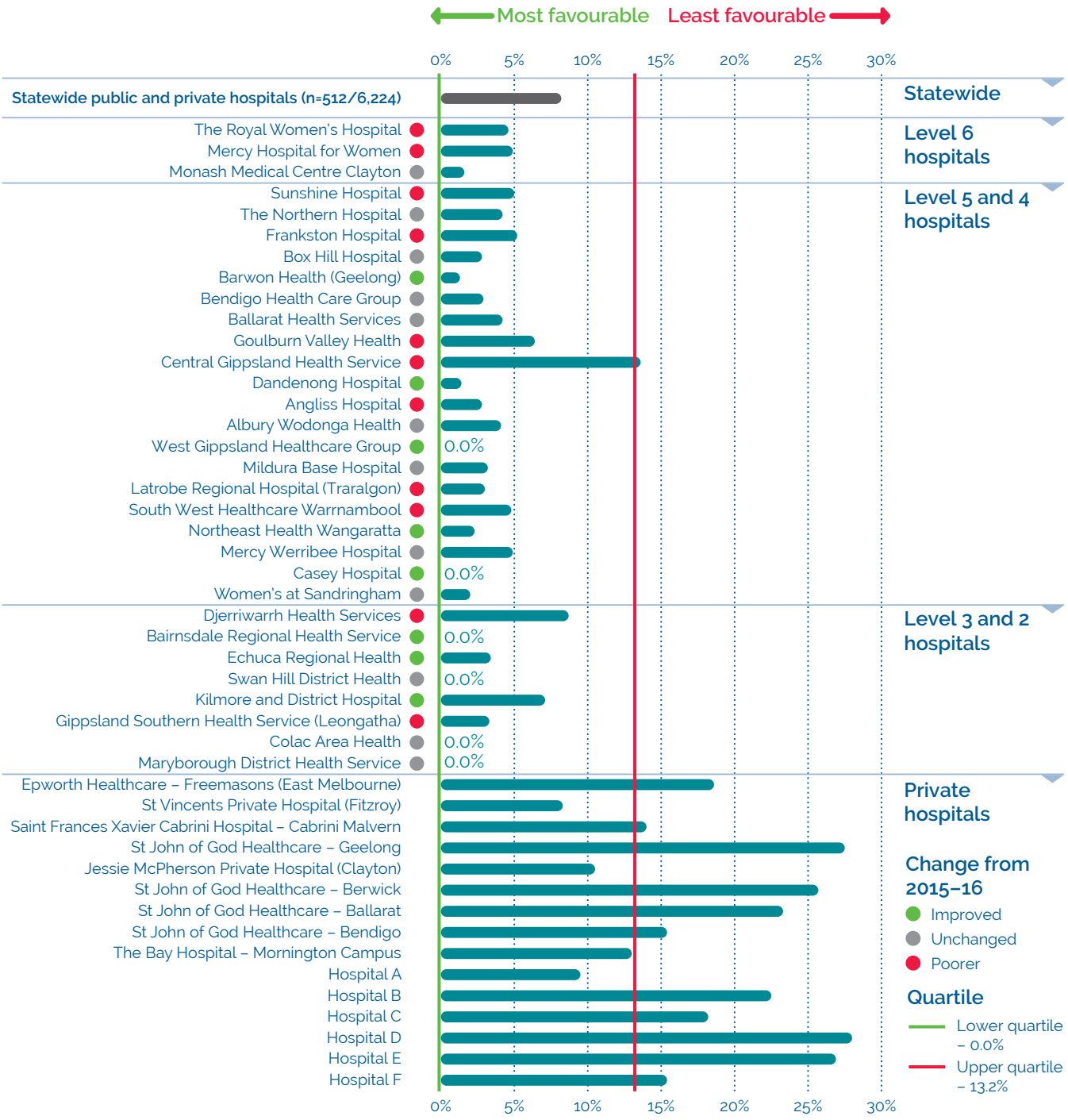
Induced labour and caesarean section can increase the risk of complications, lead to longer recovery times for women and adversely affect future pregnancies. Therefore, hospitals with higher levels of medical intervention are encouraged to review their practices and processes.

Complications such as third- and fourth-degree perineal tears after vaginal birth can cause long-term problems for women. Therefore, a low rate of third- and fourth-degree perineal tears after vaginal birth is desirable.

The data presented in this report indicates variation in practice across Victorian hospitals. Overall, private hospitals had higher rates of medical intervention (15.9 per cent for induction of labour; 34.1 per cent for caesarean section) than public hospitals (3.9 per cent for induction of labour; 16.1 per cent for caesarean section). The statewide rate of third- and fourth-degree tears after vaginal birth is, however, higher in public hospitals (6.7 per cent) than in private hospitals (2.6 per cent).

Ask your health service about the level of organisational and clinical support provided to low-risk women to avoid unnecessary interventions and complications.

Figure 10: Indicator 1a: Rate of inductions of labour in standard primiparae in Victorian public and private hospitals, 2016

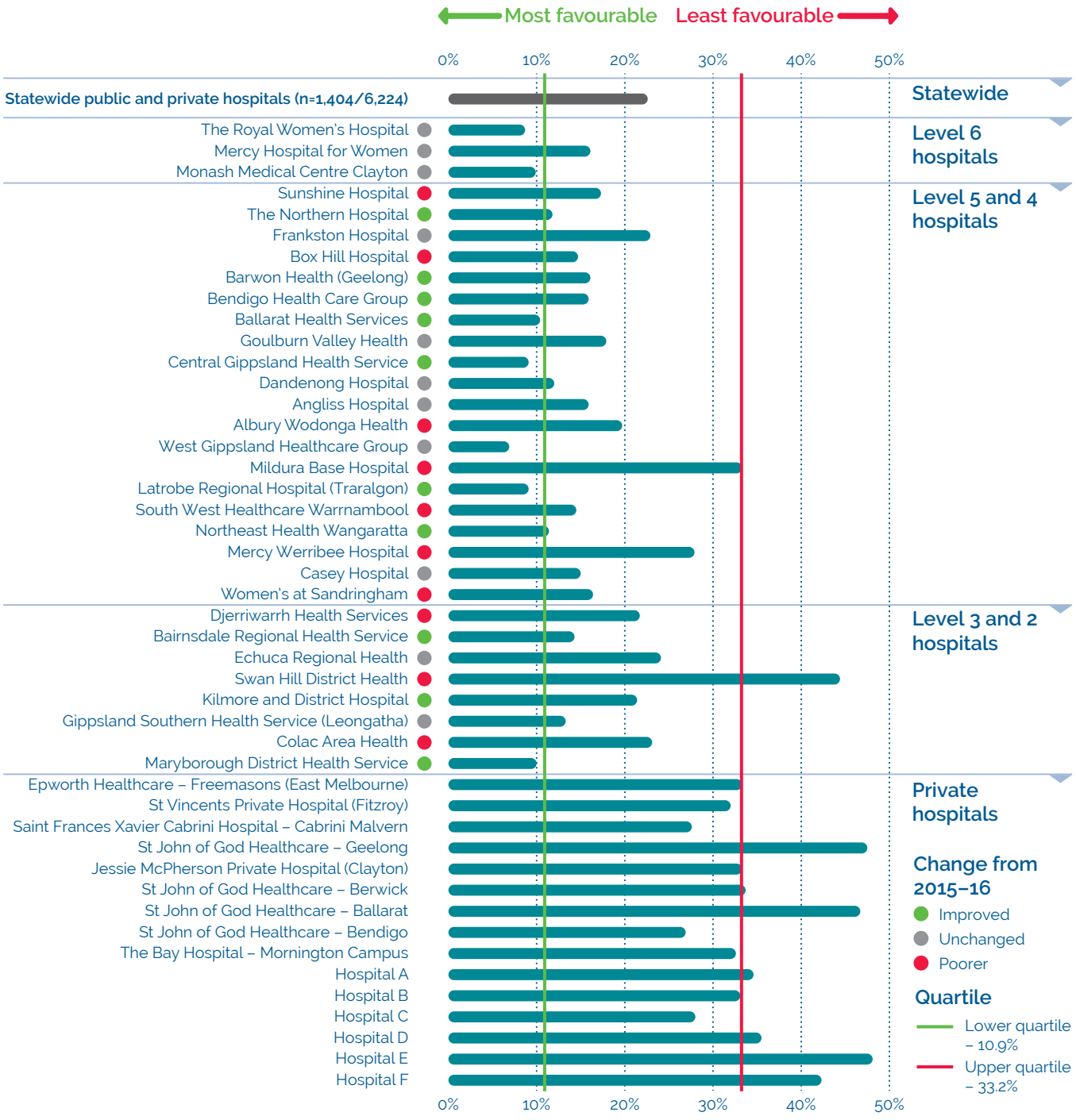


Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	3.9%	3.0%	2.9%	2.9%
Private hospitals	15.9%	13.6%	12.3%	13.8%
Public and private hospitals	8.2% (0.0%; 13.2%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of ≥ 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting. Only those services that had a published result in the 2015–16 reporting period will have a direction of change shown on the graph.

Figure 11: Indicator 1b: Rate of caesarean section in standard primiparae in Victorian public and private hospitals, 2016

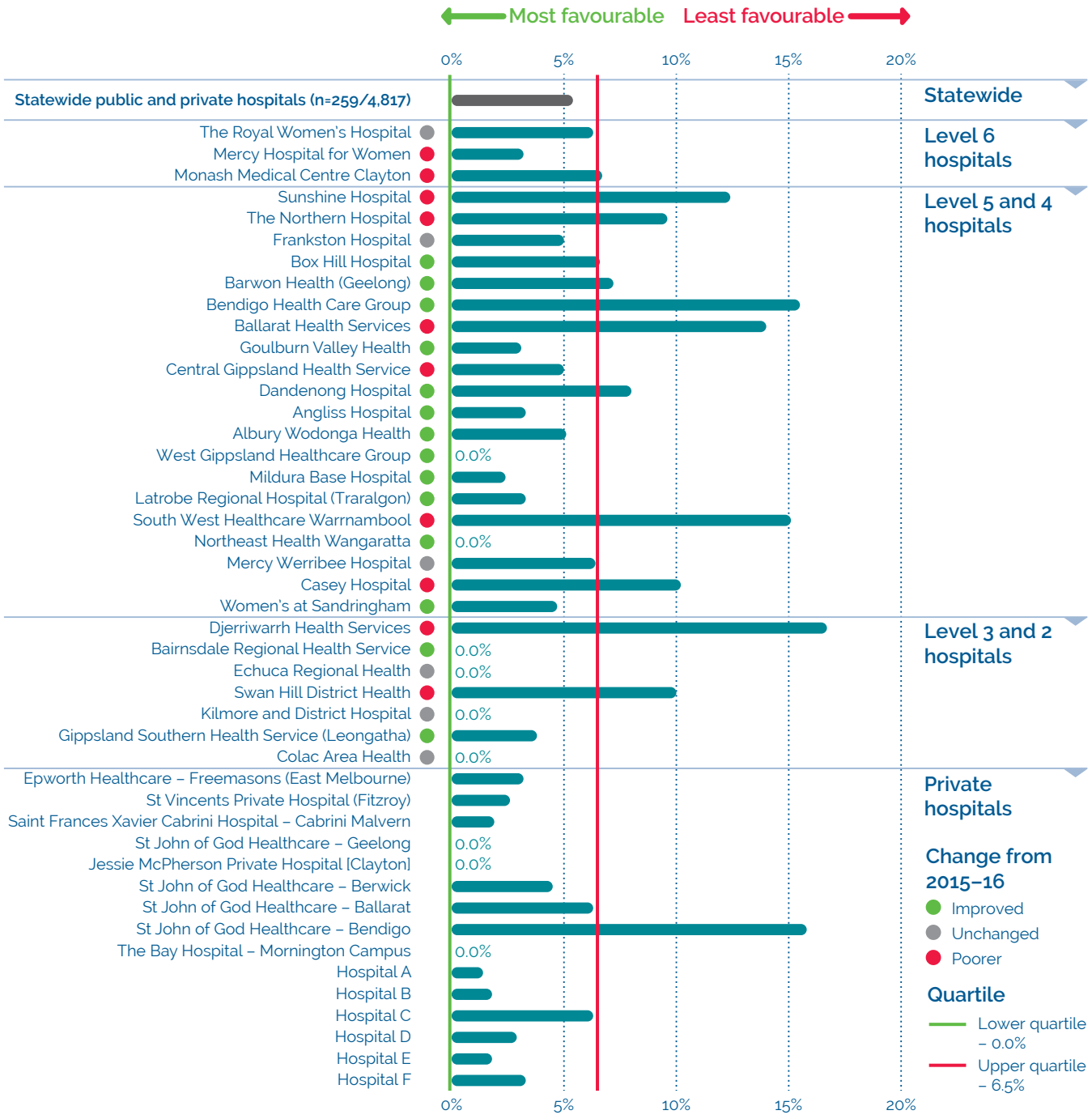


Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	16.1%	15.9%	16.1%	15.5%
Private hospitals	34.1%	33.6%	31.5%	33%
Public and private hospitals	22.6% (10.9%; 33.2%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of ≥ 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting. Only those services that had a published result in the 2015–16 reporting period will have a direction of change shown on the graph.

Figure 12: Indicator 1c: Rate of third- and fourth-degree perineal tears in standard primiparae giving birth vaginally in Victorian public and private hospitals, 2016



Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	6.7%	6.5%	6.2%	5.7%
Private hospitals	2.6%	2.7%	3.3%	3.2%
Public and private hospitals	5.4% (0.0%; 6.5%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of ≥ 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting. Only those services that had a published result in the 2015–16 reporting period will have a direction of change shown on the graph.

Indicator 2: Term babies without congenital anomalies who require additional care

Purpose and rationale

This indicator aims to highlight variations in the care required for term babies without congenital anomalies. As such, the indicator indirectly measures the quality of perinatal care provided during labour, birth and/or the immediate neonatal period, with adverse events principally due to avoidable factors.

Term babies without congenital anomalies reflected in this measure include those with low five-minute Apgar scores, birth trauma, early seizures, hypoxic ischaemic encephalopathy, fetal growth restriction and sepsis. It also includes babies with minor conditions such as hyperbilirubinaemia.

The indicator is derived from newborn diagnostic-related groups and Australian Classification of Health Interventions procedure codes (National Centre for Classification in Health 2007) to identify the term babies requiring more than normal care. This may include babies who were admitted to a special care nursery or neonatal intensive care unit (see Appendix 2 for further information on the data specifications for this indicator).

Some of the variation occurring between health services may be due to differences in reporting to the VAED therefore health services should ensure they have accurate capture and reporting of newborn diagnostic and treatment codes.

Clinical significance

The babies included in this indicator are at least 37 weeks 0 days' gestation, have a birthweight of 2,500 grams or more, and are born without congenital anomalies. Therefore, their need for additional medical care and treatment should be low. Higher rates may indicate quality-of-care issues during labour, birth and/or the immediate neonatal period.

Observations on the data

The rate of term babies born in a public hospital without congenital anomalies who required additional care in 2016–17 was 9.6 per cent in statewide public and private hospitals. Data shows wide variation between public hospitals, ranging from a rate of 0.0 to 31.4 per cent (see Figure 13).

Expectations for performance improvement

Health services should ensure there are adequate mechanisms to capture, review and report on adverse intrapartum events and outcomes.

Outlier services are expected to:

- undertake multidisciplinary reviews of adverse events and outcomes to identify areas for clinical practice or system improvement
- monitor the competency and confidence of their clinicians in fetal surveillance during labour and in neonatal resuscitation
- review the availability of senior clinicians to both supervise junior staff and be available to rapidly escalate care after hours.

Consumer summary

Indicator 2: Term babies without congenital anomalies who require additional care

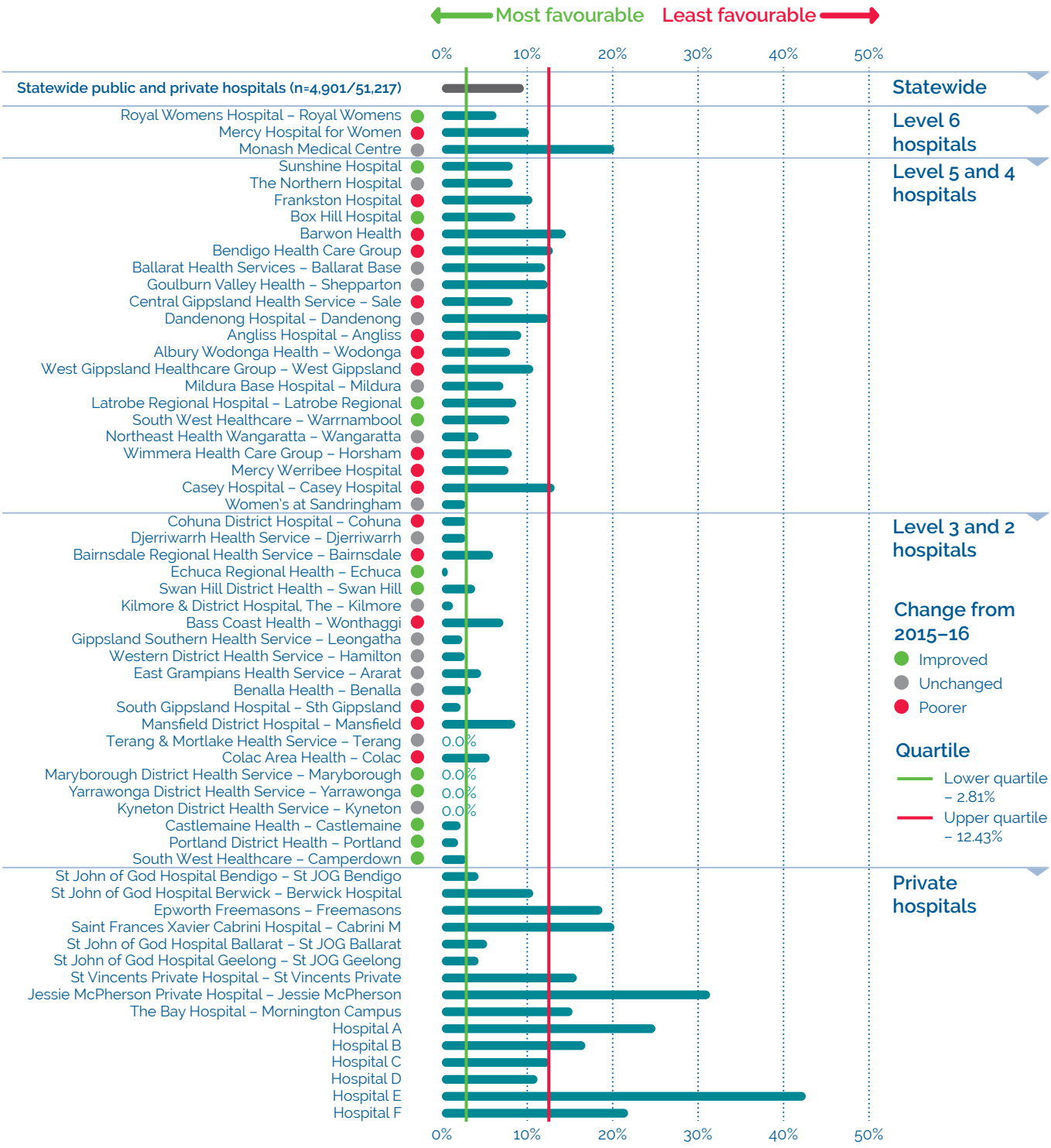
Following birth, some babies will develop problems that require more than normal care. This may include admission to a special care nursery or neonatal intensive care unit.

This indicator focuses on the quality of care during labour, birth and immediately following birth for babies born after 37 weeks gestation without congenital anomalies. In 2016–17, 9.6 per cent of babies born in public hospitals at more than 37 weeks gestation and without congenital anomalies required additional care.

Health services should review their performance to determine whether there may be avoidable reasons for the higher care needs of babies.

Ask your health service how they review unexpected events during labour and childbirth, how often this review is undertaken, and how they report on service improvement.

Figure 13: Indicator 2: Rate of term babies without congenital anomalies who require additional care in Victorian public hospitals, 2016–17



Statewide rates

	2016 (quartiles: lower; upper)	2015–16	2014–15	2013–14
Public hospitals	9.43%	8.6%	8.5%	58.4%
Private hospitals	11.53%	2.7%	3.3%	3.2%
Public and private hospitals	9.6% (2.8%; 12.4%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of ≥ 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting.

Indicator 3: Severe fetal growth restriction (FGR)

Purpose and rationale

The purpose of this indicator is to identify the proportion of **severely** growth-restricted singleton babies who were not born by 40 weeks' gestation.

For this indicator, a baby is considered to be **severely** growth-restricted when their birthweight is **below the third centile for gestation, sex and plurality**. It is calculated based on the study by Dobbins et al. (2012), which gives the tables for birthweight centiles according to the gestational week for live singleton male and females babies in Australia. For example if a male singleton baby weighing 1,700 grams is born at 35 weeks, it falls below the third centile for gestation, sex and plurality and hence is severely growth restricted (refer to Appendix 1, Indicator 3).

Rate of severe FGR in singleton babies who were not born by 40 weeks' gestation has been chosen as a performance indicator for quality of antenatal care as it has been shown to be strongly and most consistently associated with adverse perinatal outcomes, including perinatal mortality (Unterscheider et al. 2013). The detection of severe FGR allows timely delivery reducing perinatal mortality rate.

In this report, the indicator excludes births at earlier gestations (less than 32 weeks) as it is not reasonable to expect clinicians to detect a pregnancy that is affected by severe FGR before this time.

For further information on the data specifications for this indicator, refer to Appendix 1.

Clinical significance

Severe FGR is associated with increased risk of perinatal mortality and morbidity, admission to a special care nursery or neonatal intensive care unit, and long-term health consequences (Liu et al. 2014; Ismail & Chang 2012). The risk of mortality for a severely growth-restricted baby increases as the pregnancy advances.

Growth-restricted babies should be identified during the antenatal period to allow medical management and appropriate timing of the birth before 40 weeks' gestation. Detection of severe FGR, and active monitoring and management during pregnancy is expected to reduce the increased risk of mortality and morbidity.

Observations on the data

In 2016, 30.8 per cent of singleton babies with severe FGR were born at 40 or more weeks' gestation in Victorian public and private hospitals. In public hospitals 30.6 per cent were born at 40 weeks or later and in private hospitals 31.1 per cent were born at 40 or more weeks. The data indicates wide variation between hospitals (Figure 14).

Expectations for performance improvement

Improved detection of severe FGR, and improved monitoring and management during pregnancy is important, therefore health services (and in particular those with results in the upper quartile range – that is the least favourable) are expected to:

- monitor their rates at a regular interval (monthly or quarterly depending on the size of the service) including the possible reasons for the lack of detection
- provide direct feedback to clinicians following multidisciplinary case review
- monitor the competency and confidence of clinicians in assessing fetal wellbeing during pregnancy
- review and update local fetal surveillance procedures and FGR policies to ensure there is a clear and evidence-based course of action
- ensure obstetric ultrasound procedures to monitor fetal well-being and growth are of high quality and according to current clinical standards
- ensure women with higher risk pregnancies are referred to the most appropriate level of service, within or outside of the organisation
- hospitals should try to achieve severe FGR rate of less than 28.6 per cent, as the target set out in the Victorian Health Services Monitor report.

Consumer summary

Indicator 3: Rate of severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks

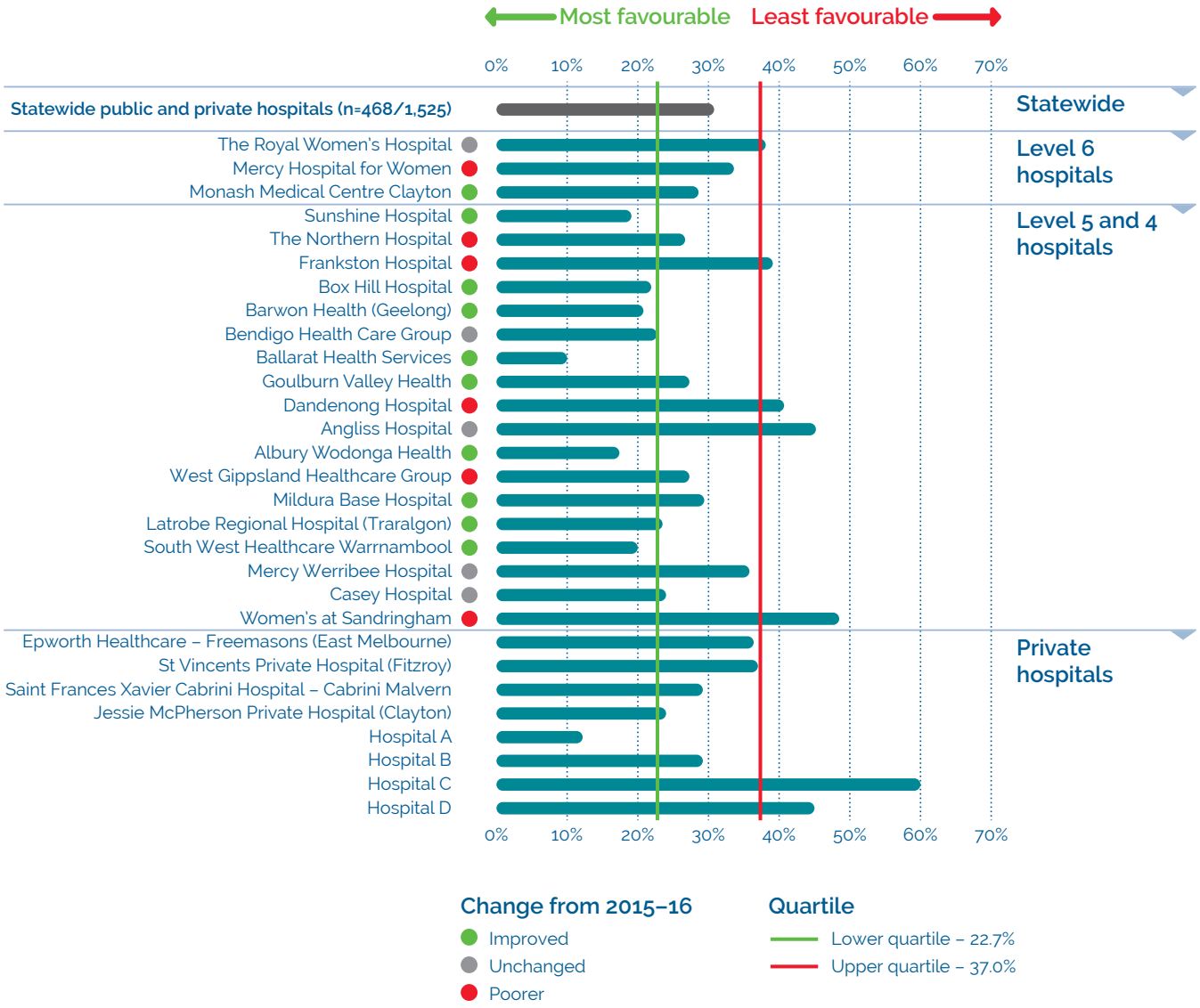
FGR refers to poor growth of a baby during pregnancy. Severe FGR is associated with increased risk of death and long-term health consequences for babies; therefore, it is recommended that severely growth-restricted babies are identified and born before 40 weeks' gestation.

This indicator is concerned with babies with severe FGR who were not born before 40 weeks' gestation, reflecting poor identification and/or management.

The data presented in this report indicates that a high number of severely growth-restricted babies were not born before 40 weeks' gestation in both private (31.1 per cent) and public hospitals (30.6 per cent). Although this is a challenging issue for healthcare providers, the data suggests an immediate need for Victorian hospitals to improve methods for identifying and managing severe FGR.

Ask your health service about the risk factors for FGR, and let them know if you are concerned about your baby's growth, movement or wellbeing during pregnancy.

Figure 14: Indicator 3: Rate of severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks in Victorian public and private hospitals, 2016



Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	30.6%	34.9%	N/A	N/A
Private hospitals	31.1%	36.3%	N/A	N/A
Public and private hospitals	30.8% (22.7%; 37.0%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on only those public and private health services that meet the criteria for public reporting

Indicators 4a and 4b: Vaginal births after primary caesarean section

Purpose and rationale

This indicator identifies the proportion of women who planned for a vaginal birth after a primary caesarean section (VBAC) (Indicator 4a) and those who had a planned, term VBAC (Indicator 4b). It considers only women who have had one prior birth and that birth was by caesarean section.

Each woman who has had a previous caesarean section must be assessed by their maternity care provider to determine if there are any contraindications to her planning a VBAC for subsequent births. If there are none, and appropriate clinical support can be provided by the hospital, women should be encouraged to consider or plan a VBAC and be offered factual information about the risks and benefits.

A planned VBAC should be conducted in a suitability staffed and equipped delivery suite with continuous intrapartum care and monitoring, and with available resources for urgent caesarean section and advanced neonatal resuscitation should complications occur (Royal Australian and New Zealand College of Obstetricians and Gynaecologists 2015). Not all hospitals in Victoria offer VBAC, and those that do not have been excluded from the indicator.

Clinical significance

Approximately one-third of all babies in Victoria are born by caesarean section (Consultative Council on Obstetric and Paediatric Mortality and Morbidity 2016). While many of these procedures are necessary and improve outcomes for women and babies, having a caesarean section can prolong recovery from the birth, increase the small risk of serious morbidity after the birth and increase the risk of major complications in subsequent pregnancies (particularly problems with implantation of the placenta). For health services, caesarean section procedures require additional resources and costs.

Reducing the number of avoidable caesarean sections minimises these problems. There are two main strategies to achieve this:

- preventing a woman's first caesarean section (having a caesarean section for the first birth greatly increases the risk of needing a caesarean in subsequent births)
- encouraging women who have had a prior caesarean section to safely attempt a subsequent VBAC and supporting them to achieve this (Royal Australian and New Zealand College of Obstetricians and Gynaecologists 2015).

The safety of women and babies is paramount, and sound clinical judgement is required to differentiate the avoidable from the unavoidable first caesarean section and to assess women with a prior caesarean section for whom a plan for a VBAC is appropriate.

Observations on the data

Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section

The proportion of women planning a VBAC increased from 29.3 per cent in 2015 to 30.0 per cent in 2016 for public hospitals and 15.8 per cent in 2015 to 16.3 per cent in 2016 for private hospitals. Wide variation was however observed (see Figure 15).

Indicator 4b: Rate of women attempting a VBAC who had a planned vaginal birth following a primary caesarean section

In 2016, there was a decrease in the proportion of women who had a planned VBAC compared to the previous year in both public (56.4 per cent in 2016; 57.7 per cent in 2015) and private hospitals (48.8 per cent in 2016; 50.8 per cent in 2015). Again, wide variation in rates between hospitals was observed (see Figure 16).

Expectations for performance improvement

Health services with results in the lower quartile range (least favourable outliers) are expected to:

- report on the capability of the health service to offer a VBAC to women without contraindications
- undertake a review of the VBAC pathway offered and report on identified deficiencies to assessing facilities, specialists or standards of care
- ensure the information (verbal and written) provided to women regarding the benefits and risks of VBAC are evidence-based.

Consumer summary

Indicator 4: Vaginal births after primary caesarean section

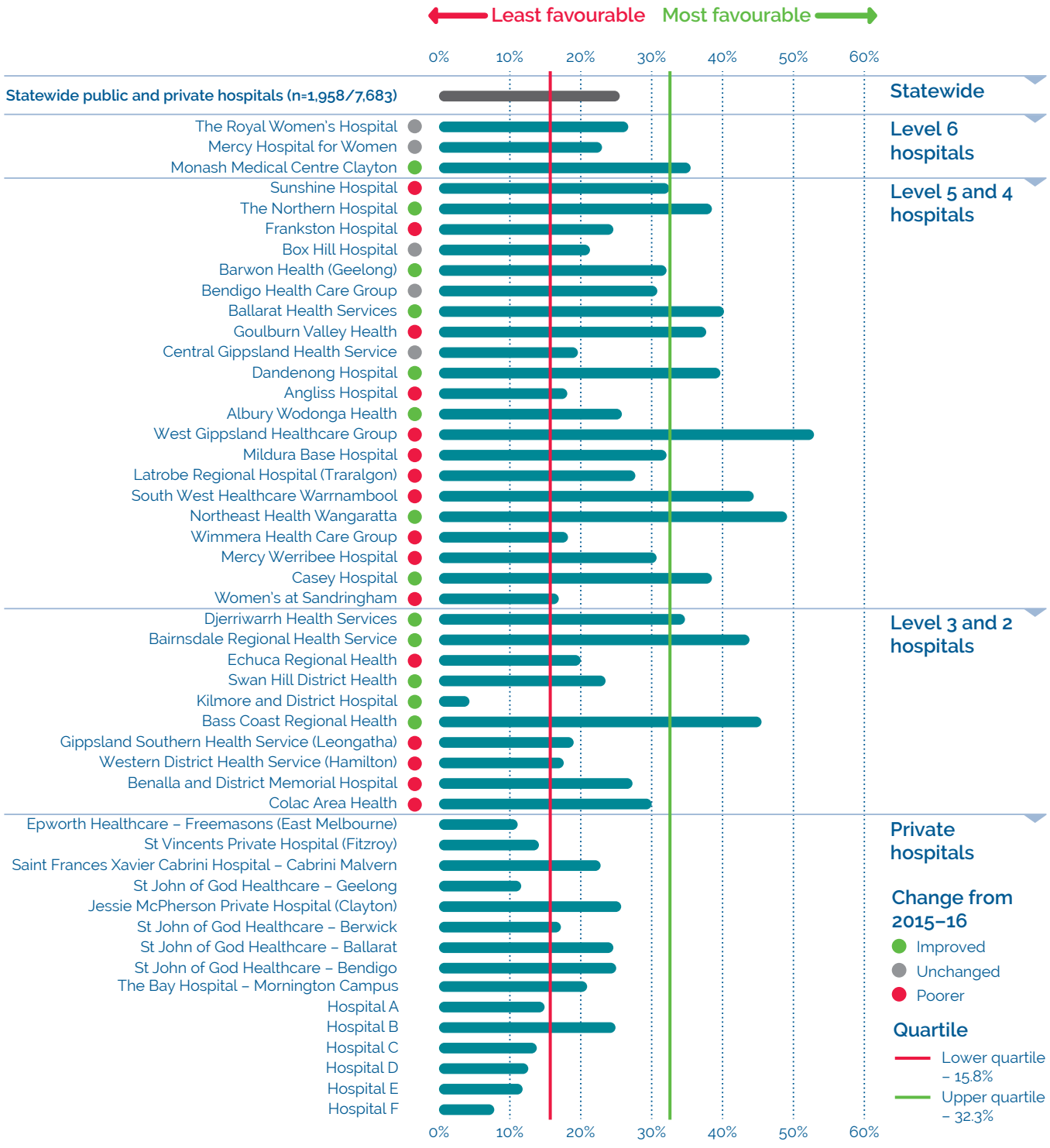
Caesarean section can be a life-saving procedure. However, it is associated with greater health risks for both the woman and her baby and should only be considered when medically indicated. Having a caesarean section for the first birth greatly increases the risk of needing a caesarean section in subsequent births. Additionally, the risk of severe complications increases significantly with each caesarean section. For women who have had a previous caesarean section, it is important to determine whether it is medically safe to attempt a vaginal birth.

This indicator looks at the rate of women who have had one prior birth that was a caesarean section and who plan a VBAC (Indicator 4a), and the proportion of those who plan a VBAC who actually do give birth vaginally (Indicator 4b).

The data presented in this report indicates variation in practice across Victorian hospitals. Overall, the number of women who planned a VBAC was greater in public (30.0 per cent) than private hospitals (16.3 per cent). Of these women, 56.4 per cent compared with 48.8 per cent who gave birth in a public and private hospital respectively had a VBAC.

Ask your health service about the level of organisational and clinical support provided to women wishing to safely follow the VBAC pathway.

Figure 15: Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section in Victorian public and private hospitals, 2016

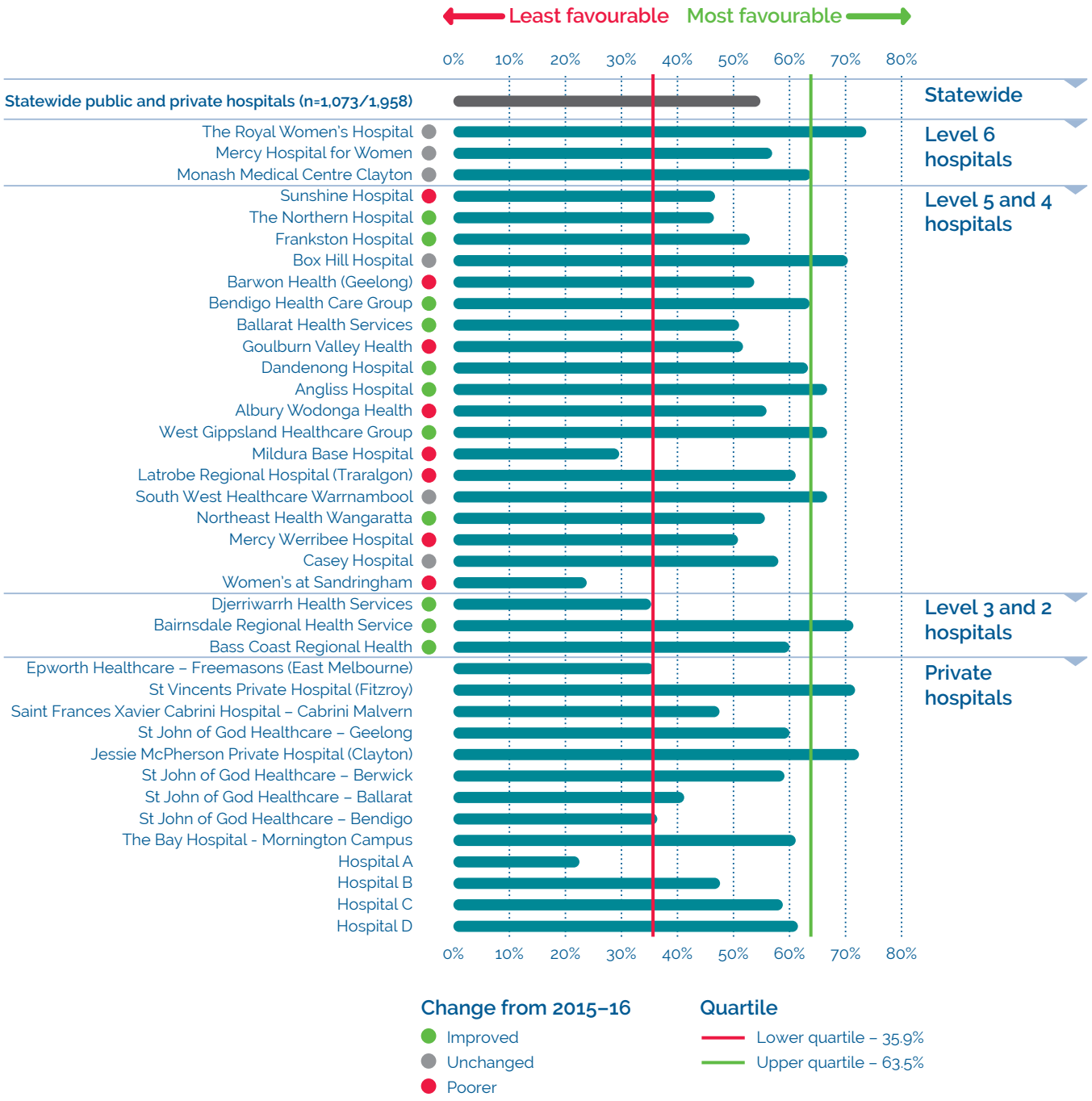


Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	30.0%	29.3%	27.4%	27.9%
Private hospitals	16.3%	15.8%	15.4%	15.6%
Public and private hospitals	25.5% (15.8%; 32.3%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting

Figure 16: Indicator 4b: Rate of women who had a planned vaginal birth following a primary caesarean section in Victorian public and private hospitals, 2016



Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	56.4%	57.7%	54.2%	53.2%
Private hospitals	48.8%	50.8%	48.9%	50.5%
Public and private hospitals	54.8% (35.9%; 63.5%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting

Indicator 5: Five-year (2012–2016) gestation standardised perinatal mortality ratio (GSPMR)

Perinatal mortality

Perinatal mortality is the term used to describe the deaths of babies before they are born (stillbirths) at 20 or more weeks' gestation and those who die in the first 28 days after birth.

The leading causes of perinatal death are pre-term birth, complications of pregnancy, congenital anomalies, fetal growth restriction, infection and antepartum haemorrhage, reflecting trends nationally (Hilder et al. 2014) and in the United Kingdom (Centre for Maternal and Child Enquiries 2009). However in around one in ten cases the cause is unknown.

Victoria and Australia experience one of the lowest maternal and perinatal mortality rates internationally. Although the perinatal mortality rate in Victoria has fallen since 2009, women with a higher risk of losing a baby include Aboriginal and Torres Strait Islander women, women born in North Africa, the Middle East or southern and central Asia, women with multiple pregnancies, women whose babies are born pre-term or with fetal growth restriction (FGR). Other important risk factors for perinatal mortality are: maternal obesity; cigarette smoking; lower socioeconomic status; problems accessing antenatal care; pre-existing illness such as diabetes and hypertension.

Contributing or preventable factors occur in a small number of cases. High-quality, expert review of all perinatal deaths by health services is important to improve the overall safety and quality of care provided to women and babies and to share the lessons learnt.

What is the gestation standardised perinatal mortality ratio (GSPMR)?

The GSPMR is a measure of perinatal mortality that compares the observed perinatal mortality rate at individual hospitals with what would be expected, taking into account the gestation of the babies born there. It is a partially risk-adjusted calculation, enabling hospitals with higher proportions of babies born at lower gestations (and therefore higher likelihood of perinatal mortality) to be validly compared with hospitals that have a different casemix.

Pooling the data over five-year periods adds stability to the data and reduces the risk of over interpretation of chance fluctuations.

The indicator provides a broad comparative measure of perinatal mortality rates across hospitals. It captures the rate for those babies born at 32 or more weeks' gestation, which is relevant for the majority of hospitals that do not normally care for babies born before 32 weeks' gestation, beyond the provision of immediate emergency care and transfer to a higher capability service.

Any deaths related to congenital anomalies and terminations of pregnancy are excluded from this data to better represent deaths that may be avoidable.

A GSPMR of 1 indicates that the observed number of perinatal deaths at that hospital is exactly what would be expected, considering the gestation of babies born there.

It is important to note that the statewide rate does not necessarily represent the optimal or clinically appropriate rate for perinatal mortality, and conclusions about whether perinatal deaths were avoidable or the safety of a maternity service cannot be determined from the GSPMRs.

Figure 17 provides a visual representation of the variation in perinatal mortality occurring across Victorian public hospitals when compared with the statewide public hospital rate.

How to interpret the rate

The statewide public hospital rate and the statewide private hospital rate (the reference populations) are set at '1'. Therefore, a ratio over 1 indicates that the service had more deaths than the statewide rate. A rate below 1 indicates the perinatal mortality is less than the statewide rate. For example, an individual hospital with a rate of:

- 0.5 has a perinatal mortality that is half the statewide rate
- 1 has a perinatal mortality that is equal to the statewide rate
- 1.5 has a perinatal mortality that is 50 per cent above the statewide rate
- 2 represents perinatal mortality that is double the statewide rate.

These rates are about babies who died after 32 weeks of gestation, as most of the state maternity services have a maternity capability level below 5 or a newborn level below 4, and do not provide planned services for babies born before 32 weeks of gestation.

What is included or excluded in the GSPMR?

The GSPMR data is reported by the birth hospital and:

- includes babies who died after 32 weeks of gestation (stillbirths or babies who died within the first 28 days of life)
- excludes deaths from congenital anomalies and all terminations of pregnancy
- takes into account the gestation of the babies born at each service.

What does the GSPMR tell us?

The GSPMR:

- reports the relative perinatal mortality rate at each hospital compared with the statewide public hospital rate or private hospital rate, taking into account the gestation of the baby
- identifies the hospitals in Victoria where stillborn babies and babies who die within the first 28 days of life are born (however this may not be where the baby died)
- allows some comparison of hospitals of similar capability and size
- indicates the difference between the statewide private hospital average and the statewide public hospital average. However, the differences in casemix between the two sectors should be noted
- adjusts for the most important risk for perinatal death, which is gestation
- shows where there is variation in perinatal mortality rates for hospitals of similar capability or size
- provides a focus for maternity services to undertake detailed reviews of the outcomes for the babies born in their service, and to identify opportunities to improve their care
- attributes the death to the birth hospital, even if the baby died outside of the hospital or the mother received pregnancy care elsewhere.

What can't the GSPMR tell us?

The GSPMR does not indicate:

- statewide or individual hospital perinatal mortality rates
- whether the results for a given hospital are improving over the 5-year period
- the reasons for the deaths or how the babies died (a baby may have died before arriving at the birth hospital, while in the hospital or following discharge from hospital, for example, due to SIDS, a car accident or injury)
- whether the death could have been avoided
- whether the care around the time of death was provided by a different hospital (transfer) or health professional than the birth hospital
- where the baby died (it only tells us where the baby was born)
- the safety of a maternity service
- the contribution of important risk factors associated with perinatal mortality, such as obesity, smoking or pre-existing illness of the mother, low socioeconomic status and ethnicity.

Purpose and rationale of GSPMR

The gestation standardised perinatal mortality ratio (GSPMR) measures perinatal mortality (deaths) including fetal deaths (stillbirths) and deaths of liveborn babies within the first 28 days after birth (neonatal deaths), taking into account the gestation at which the baby is born. The GSPMR compares the perinatal mortality rates at individual public hospitals with the overall statewide public hospital rate. Due to the overall small number of perinatal deaths, it is calculated over a five-year period. While this may be considered a fairly crude statistic, it is valuable because it provides a 'first look' into perinatal mortality patterns across Victoria.

Clinical significance

Variation in the GSPMR may be due to differences in the health or socioeconomic status of women but may also relate to the quality of care and care delivery systems. While the cause of a persistently high GSPMR is likely to be multifactorial, it is expected that hospitals will closely analyse their relative performance and investigate possible causes to optimise the outcomes for women and babies.

Expectations for performance improvement

All health services are expected to:

- have formal processes to review all perinatal deaths, and identify avoidable factors and opportunities for improvement in care processes and organisational systems such as staff availability, supervision and skill mix[6]
- rural and regional public hospitals are expected to actively participate in the six regional perinatal mortality and morbidity committees established in 2016[7]
- ensure all perinatal deaths are reported to the Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) within the time period specified by the CCOPMM[8]
- develop organisation-wide strategies approved by the health service executive to address contributing factors (if identified) and report on their implementation
- report their mortality review findings and recommendations to the CCOPMM (in the case of services with higher than expected perinatal mortality – a GSPMR greater than 1).

It is important to note that GSPMR is derived from data pooled for five-year periods, therefore improvements in the ratio may not be observed until three to four years later.

6 The *Department of Health and Human Services policy and funding guidelines 2016* (Department of Health and Human Services 2016) requires all health services to review perinatal deaths in accordance with the Perinatal Society of Australia and New Zealand's (2009) *Clinical practice guideline for perinatal mortality.*

7 Six regional perinatal mortality and morbidity committees were established in 2016 across Victoria to systematically review and audit all deaths and other clinical outcomes for mothers and babies in their region. The regional committees do not replace the existing requirements of health services to investigate and report adverse outcomes. Instead, they act as another layer of review for rural health services, which will benefit those that do not have the critical mass and expertise to undertake this work independently. The Royal Women's Hospital is supporting and facilitating the establishment of the committees.

8 For more details visit the CCOPMM website <https://www2.health.vic.gov.au/hospitals-and-health-services/quality-safety-service/consultative-councils/council-obstetric-paediatric-mortality>.

Potential to improve outcomes

A high GSPMR is a trigger for hospitals to carefully review perinatal deaths and identify any preventable factors related to care that may have contributed to adverse outcomes.

In response to their reported GSPMR, a number of hospitals have submitted improvement plans which have been endorsed by the Department, and have identified strategies that have improved their performance in the most recent years of the reporting period. An example is ensuring that all clinicians (midwives, medical staff employed by the health service, and private obstetricians who provide care at the health service) have successfully completed a recent fetal surveillance training program.

It is important to note that, because of the need to include 5 years' results in the GSPMR, the results for the most recent year will often be more favourable than the 5-year average for some hospitals.

Observations on the data

Based on pooled data from 2012 to 2016, the GSPMR for babies born at 32 weeks or more ranged from 0.56 to 1.58 for public hospitals and 0.84 to 1.58 for private hospitals.

The statewide private hospital perinatal mortality ratio result is about 31 per cent lower than the statewide public hospital perinatal mortality ratio from 32 weeks' gestation. This reflects, at least in part, the difference in casemix and patient risk profile between the public and private hospital systems.

The GSPMR is complex, has limitations and must be interpreted with caution.

It's important to note that the GSPMR cannot tell us about the avoidability of perinatal deaths. Instead, this is a role that must be undertaken by a multidisciplinary panel, formed locally to consider individual circumstances.

Publishing the GSPMR allows hospitals to learn from each other and improves the transparency of reporting of outcomes for Victorian public hospitals.

Consumer summary

Indicator 5: Five-year (2012–2016) gestation standardised perinatal mortality ratio

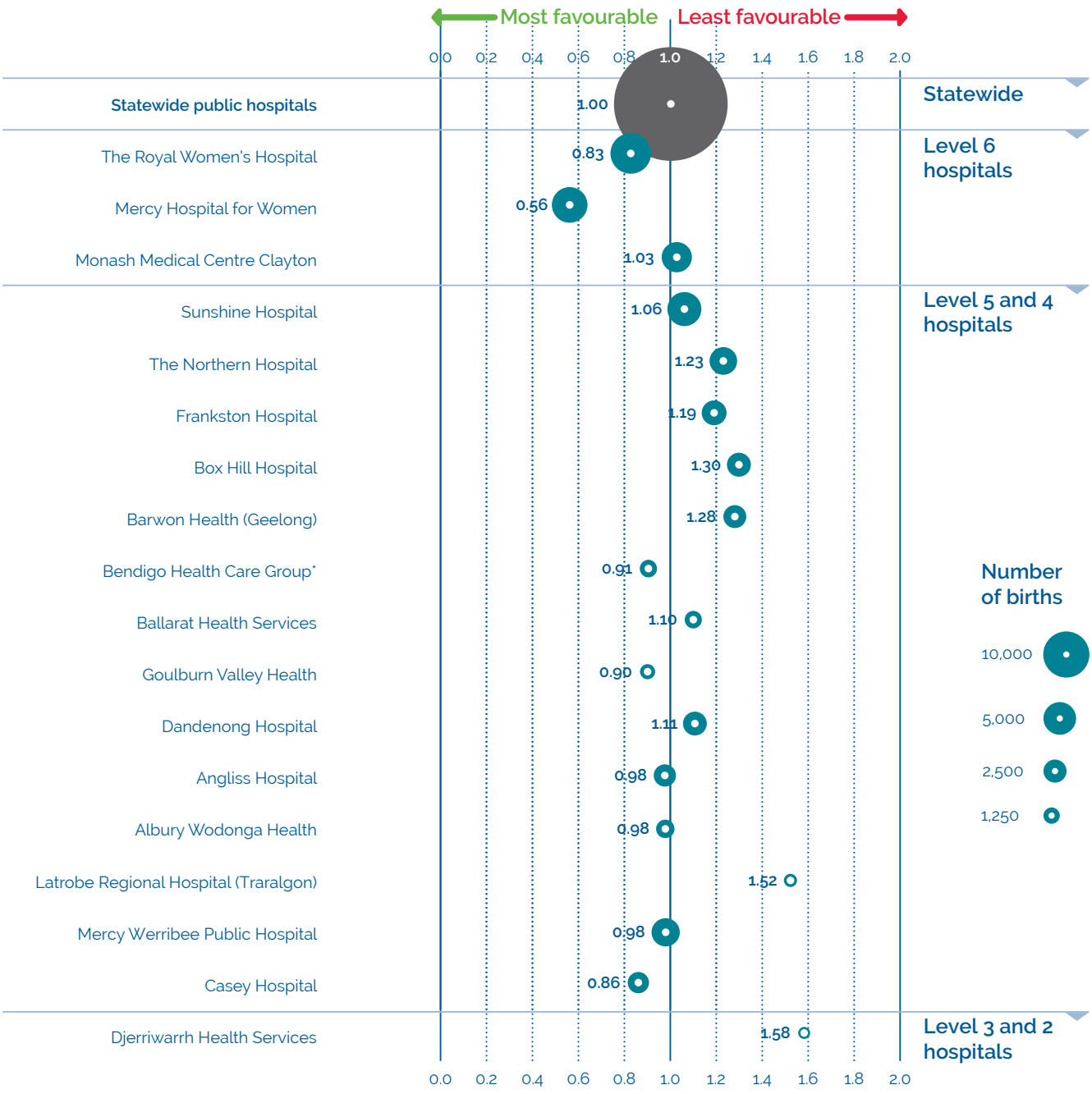
Victoria and Australia experience one of the lowest perinatal mortality rates internationally. However, having a robust system for identifying contributing or preventable factors and sharing lessons learnt is important for improving the safety and quality of hospitals. Hospitals are required to review all perinatal deaths.

Gestation is an important risk factor for perinatal mortality. GSPMR provides a broad and impartial method of comparing the rate of death of babies born in hospitals based on their age (in weeks) at birth. The ratio allows hospitals to consistently compare the rate of death of babies born at their service with the rate at all other hospitals in Victoria.

It is important to note that there are many factors that can lead to the death of a baby. It is also important to note that the GSPMR does not take into account all risk factors that can lead to the death of a baby. This and other limitations to the indicator mean that it should be interpreted with caution.

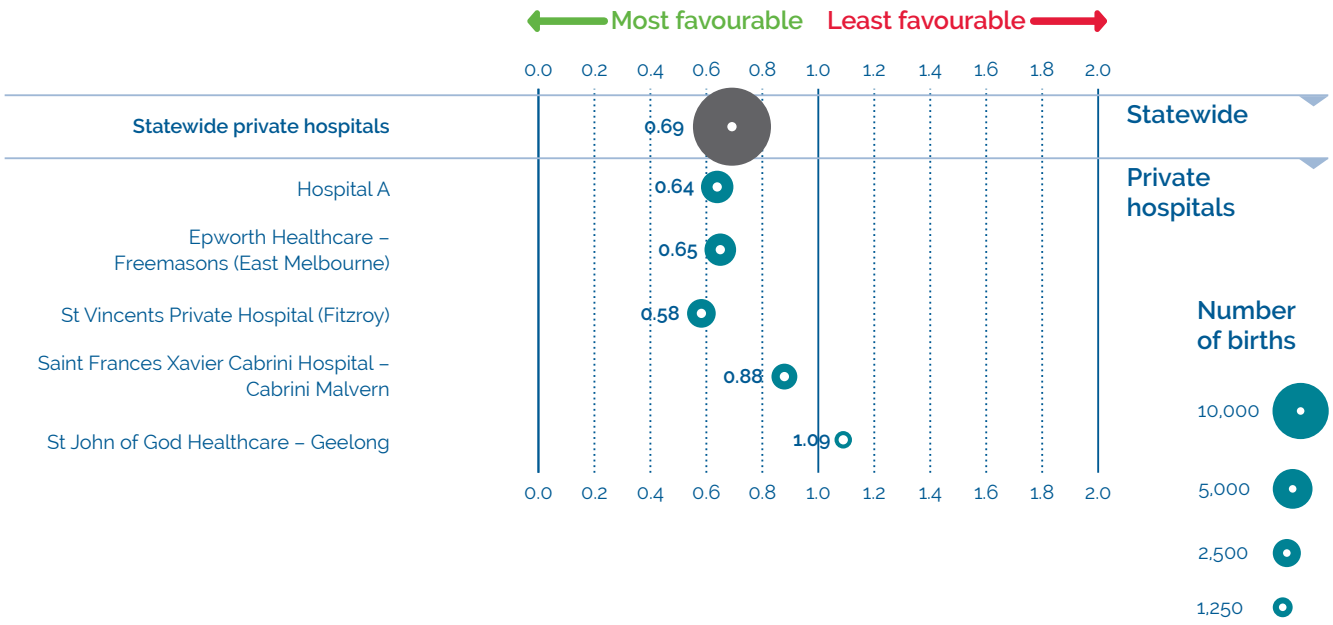
The data presented in this report indicates there is variability in the rate of death of babies born in public hospitals from 32 weeks. A GSPMR of 1 indicates that the observed number of perinatal deaths at a hospital is what would be expected. A higher GSPMR warrants hospitals to review each case so that they can identify and address contributing or preventable factors.

Figure 17: Indicator 5: Perinatal mortality ratio for babies born at 32 weeks or more (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years' pooled data in Victorian public hospitals, 2012–2016



* This health service is not within the publishing range. However, as they are a major regional hub, they have consented to be included for comparison.

Figure 18: Indicator 5: Perinatal mortality ratio for babies born at 32 weeks or more (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years' pooled data in Victorian private hospitals, 2012–2016



Statewide rates

	2012–2016 (quartiles: lower; upper)
Public hospitals	1.00 (0.98; 1.23)
Private hospitals	0.69 (0.64; 0.88)

Note: GSPMRs are published only for those health services with at least 5 deaths at 32 or more weeks' gestation in at least one year in the 5-year reporting period (2012 to 2016). Excludes termination of pregnancy, deaths due to congenital anomalies and fetus papyraceus. In interpreting these ratios, conclusions cannot be drawn about the avoidability of any of these deaths. Quartiles for this indicator are calculated based on only those public and private health services that meet the criteria for reporting.

Note: Individual public and private health services' rate have both been calculated in relation to the public statewide rate.

Indicator 6: Readmission during the postnatal period

Purpose and rationale

This suite of indicators measures the rate of unplanned and potentially preventable readmissions of women and babies within 28 days of discharge from hospital.

High-quality and coordinated care means most women and babies do not return to hospital as an inpatient during the postnatal period. Unplanned and preventable hospital stays during this period reflects a deviation from the normal course of postnatal recovery, resulting in increased healthcare costs and a possible impact on health and wellbeing outcomes for women and their babies[9].

For the purpose of this indicator, an unplanned readmission is limited to a defined list of diagnosis codes (see **Appendix 1**) where it is determined that readmission could have been prevented with high-quality postnatal care.

Readmissions that meet the criteria for inclusion are attributed to the health service that provided admitted postnatal care to the mother prior to discharge. This enables health services to monitor their rates of preventable maternal and newborn postnatal readmissions against statewide averages, to improve their discharge care and handover to community care.

For the first time, private hospitals have been included in the results for Indicator 6a. Indicator 6b only reports on the performance of public hospitals[10].

Clinical significance

Postnatal care supports women to recover and adjust following childbirth, establish breastfeeding and develop early parenting skills. Providing high-quality and timely postnatal care can have a positive effect on the long-term health and wellbeing of women and their families.

Evidence suggests higher readmission rates are associated with inconsistent discharge procedures, poor postnatal care and limited support in the community[11].

The intersection of hospital-based maternity and newborn services and the community-based maternal and child health service system is a key point of care transition within the first six weeks after the birth of a child in Victoria.

The *Postnatal care program guidelines for Victorian health services* (Department of Health 2012) outline the Victorian Government's expectations regarding postnatal care delivered in public hospitals. For most women and babies, the transition from hospital-based care to community-based maternal child health services usually occurs after at least one home visit by a hospital midwife (within 24–48 hours of discharge). However this should be tailored by health services to meet the individual needs of women such as those at higher risk of post-natal issues[12].

9 Independent Hospital Pricing Authority 2016; Lain et al. 2016.
10 Reporting of unqualified neonate admissions in the Victorian Admitted Episodes Dataset by private hospitals for the period was optional. As a result it is not possible to establish an accurate denominator (that includes public and private hospitals) for this indicator.
11 Lain et al. 2014; Young et al. 2013.
12 Department of Health 2012, Postnatal Care Program, Guidelines for Victorian Health Services, section iv. *Access to home-based postnatal care.*

Observations on the data

Indicator 6a: Readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian hospital

In 2016–17, the statewide average rate of unplanned maternal readmissions within 28 days of discharge was 2.5 per cent.

One health service performed above the expected range of readmission rates, given the number of births at their service (Figure 19 – funnel plot).

Indicator 6b: Admission of a baby within 28 days of discharge from a birthing episode admission in a Victorian public hospital

In 2016–17, the public hospital statewide average rate of unplanned neonatal readmissions within 28 days of discharge was 4.2 per cent.

Five health services performed above the expected range of readmission rates, given the number of births at each service (Figure 21 – funnel plot).

Expectations for performance improvement

The reasons for local variation in practice can be multifactorial and encompass population differences, the influence of community care and readmission thresholds. However, health services should use the data and their own local analysis to review and improve their postnatal care programs and linkages with community-based services.

The review of performance by health services should focus on women and babies at higher risk of readmission to ensure they are receiving tailored and responsive programs. Specifically, health services should consider:

- whether the postpartum length of stay in hospital is appropriate
- which cohorts of women and babies have higher readmission rates
- providing information and education tools to women and their families at discharge
- the number of home-based visits and the extent of care different cohorts of women can expect from hospital midwives
- a cohort analysis of the common reasons for readmission of women and babies discharged from their service
- a review of how their postnatal program is targeted to reduce risks and how effective it is
- how well their postnatal care program and local maternity service providers evaluate the transfer of care processes and outcomes, and monitor this indicator (and others like it, such as referral to specialist services).

Consumer summary

Once you and your baby leave hospital after the birth, it is expected that you will recover at home with support from midwives from the hospital, your local maternal and child health service and general practitioner (GP). It is unusual that you would need to return to hospital for further treatment.

This indicator measures the proportion of women and babies that return to hospital and are admitted for care within 28 days for reasons where a condition could possibly have been prevented or treated in the community by a midwife, maternal and child health nurse or GP.

The data shows that, in 2016–17, there was more variation in the readmission of babies across the system than mothers.

Before leaving hospital with your baby, ask your care team about the information, advice and support available to you once you leave the hospital, making sure that it is tailored to your specific needs.

Figure 19: Indicator 6a: Funnel plot for the potentially preventable readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public hospital, 2016–17

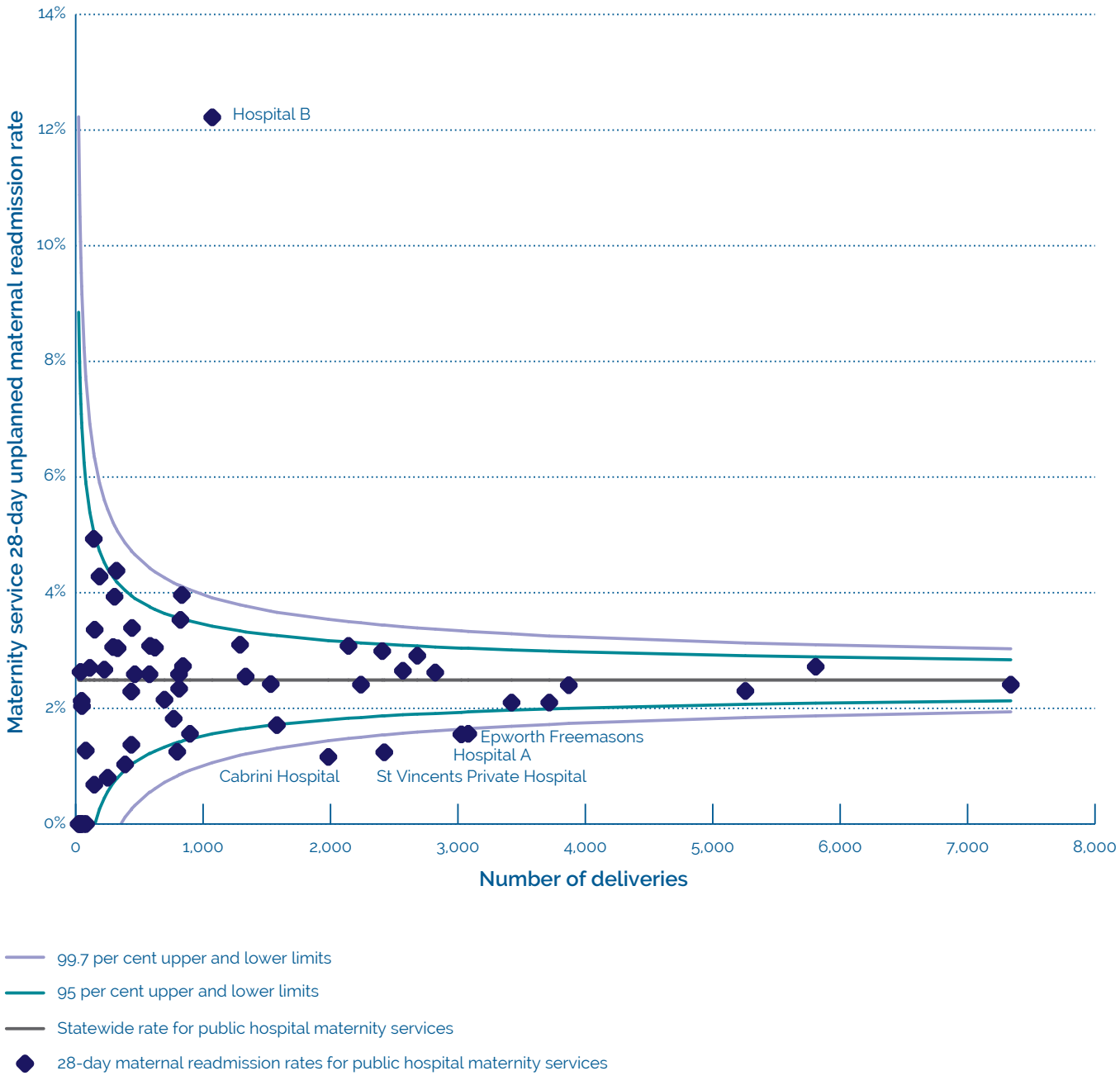


Figure 20: Indicator 6a: Potentially preventable readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public and or private hospital, 2016–17

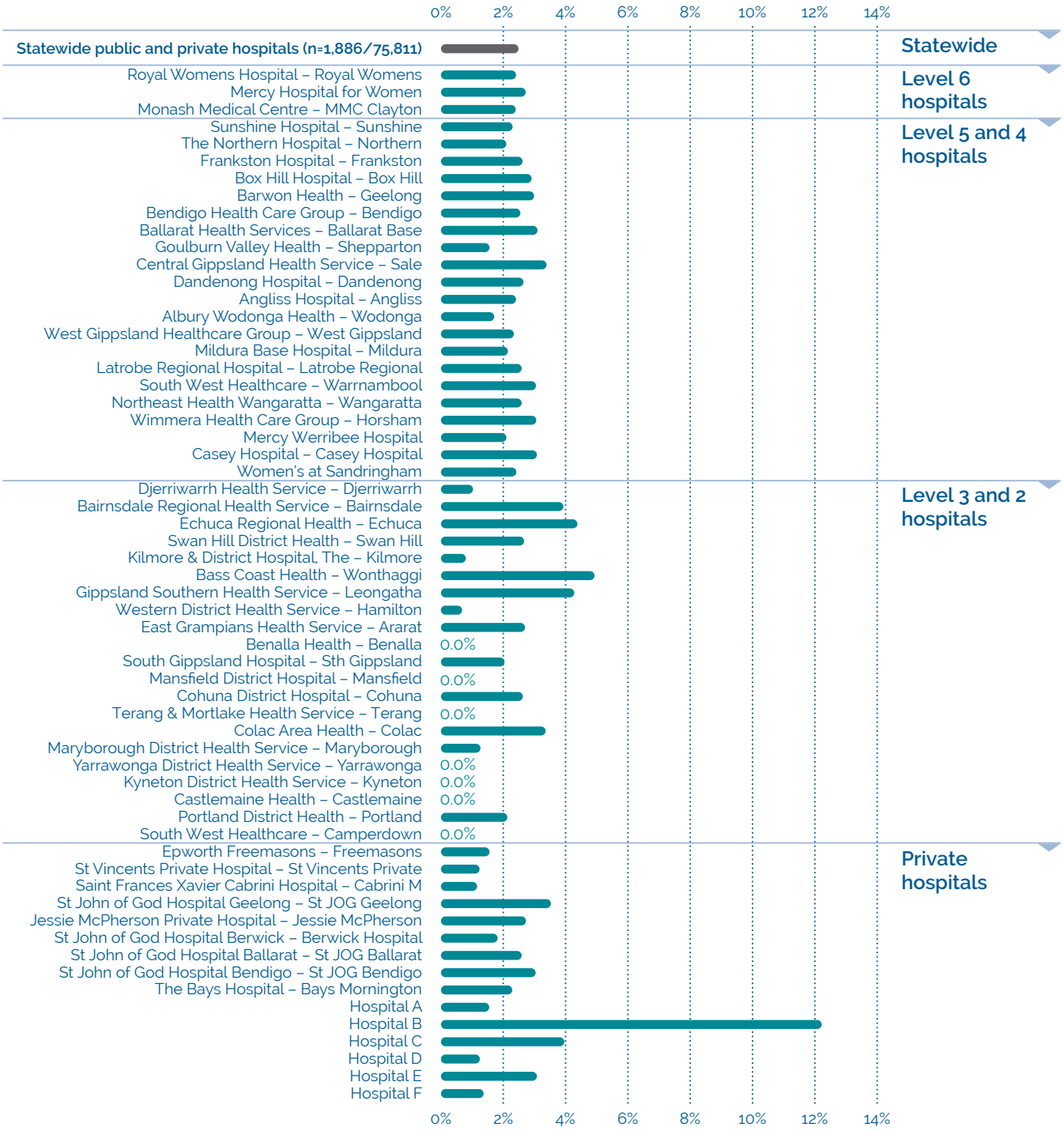


Figure 21: Indicator 6b: Funnel plot for a potentially preventable readmission of a neonate within 28 days of discharge from a birthing episode admission in a Victorian public hospital, 2016–17

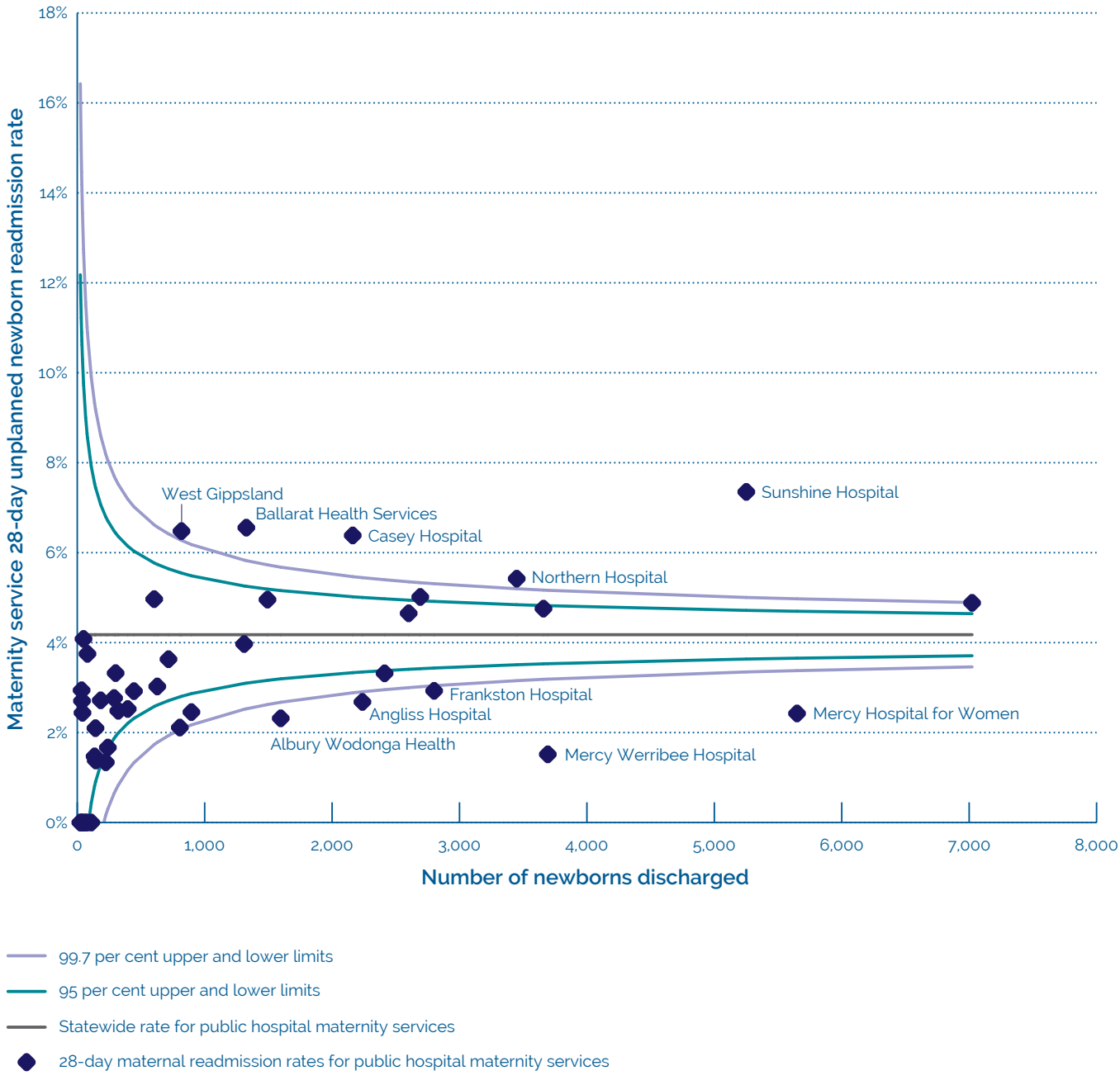
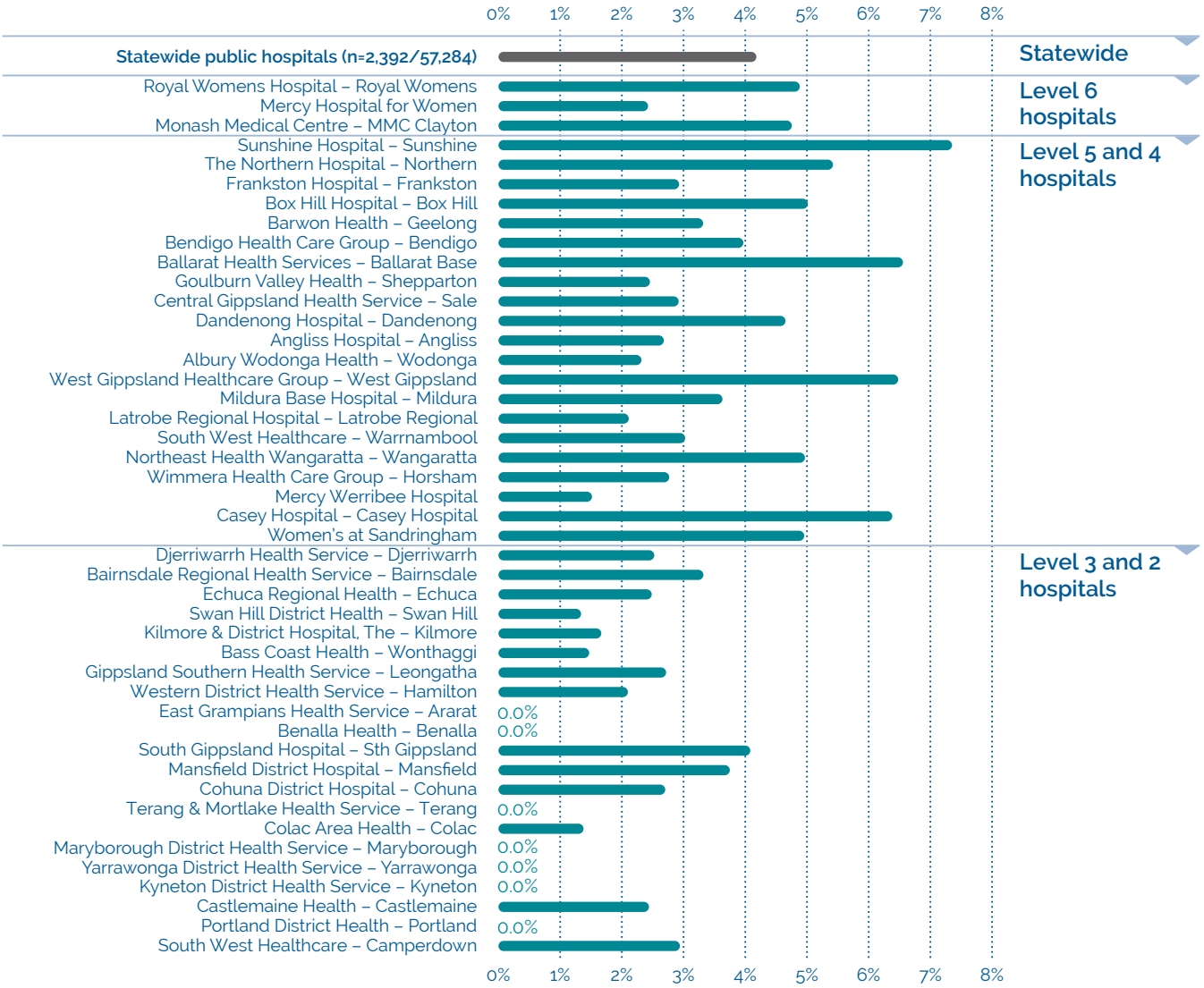


Figure 22: Indicator 6b: Potentially preventable readmission of a neonate within 28 days of discharge from a birthing episode admission in a Victorian public hospital, 2016–17



Indicator 7: Smoking cessation

Purpose and rationale

This indicator assesses the performance of health services in providing smoking cessation advice, assistance and follow-up during the antenatal period to reduce both the rate of smoking among pregnant women and the risk of smoking-associated adverse health outcomes for babies.

The data presented in this report relates to the percentage of women who stopped smoking after 20 weeks gestation among those who smoked before 20 week.

Clinical significance

Women who smoke while pregnant have an increased risk of ectopic pregnancy, miscarriage, placenta praevia and pre-term labour, and are more likely to give birth to a low-birthweight baby compared with non-smokers.

Low-birthweight babies are more vulnerable to infection and other short- and long-term health problems. The damaging effects of maternal cigarette smoking on the unborn baby include reduction of oxygen supply, restricted growth and development, increased risk of cleft lip and cleft palate, and increased heart rate and disruption of the baby's breathing movements in utero (Quit Victoria 2013).

Smoking in pregnancy is a preventable cause of significant obstetric and perinatal complications, and adverse outcomes. Pregnancy is therefore an important time for health professionals to implement strategies and interventions to assist women to quit smoking, particularly given that women are motivated to protect their baby's health.

Effective interventions are multifaceted and based on individual needs and circumstances. Pregnant women should be regularly assessed and counselled on the serious health impact of smoking (Gross. 2016; Passey et al. 2013). Support services including advice and targeted activities such as telephone counselling for smoking cessation (Cummins et al. 2016) and incentive based smoking cessation programs (Zhang et al. 2016) have also been found to be effective.

Observations on the data

Figure 23 shows that in 2016, the statewide public and private hospitals combined rate of smoking cessation during pregnancy was 26.1 per cent.

The smoking cessation rate showed wide variation between hospitals, which warrants attention by health services and health professionals providing antenatal care (general practitioners, obstetricians and midwives).

Expectations for performance improvement

Health services with low smoking cessation rates are expected to undertake regular multidisciplinary reviews of smoking cessation interventions provided to women including, but not limited to:

- examining the smoking cessation interventions they provide to women during pregnancy and identifying gaps in their service provision including the intensiveness of their interventions/programs
- monitoring and supporting the competency and confidence of clinicians in providing smoking cessation advice and interventions
- developing and reporting on evidence-based strategies to improve rates to the health service executive.

Consumer summary

Indicator 7: Smoking during pregnancy

Smoking during pregnancy is strongly associated with poor health outcomes for women and their babies. Sustained interventions through education and support programs offered by hospitals, general practitioners and other health care providers can help pregnant women to stop smoking.

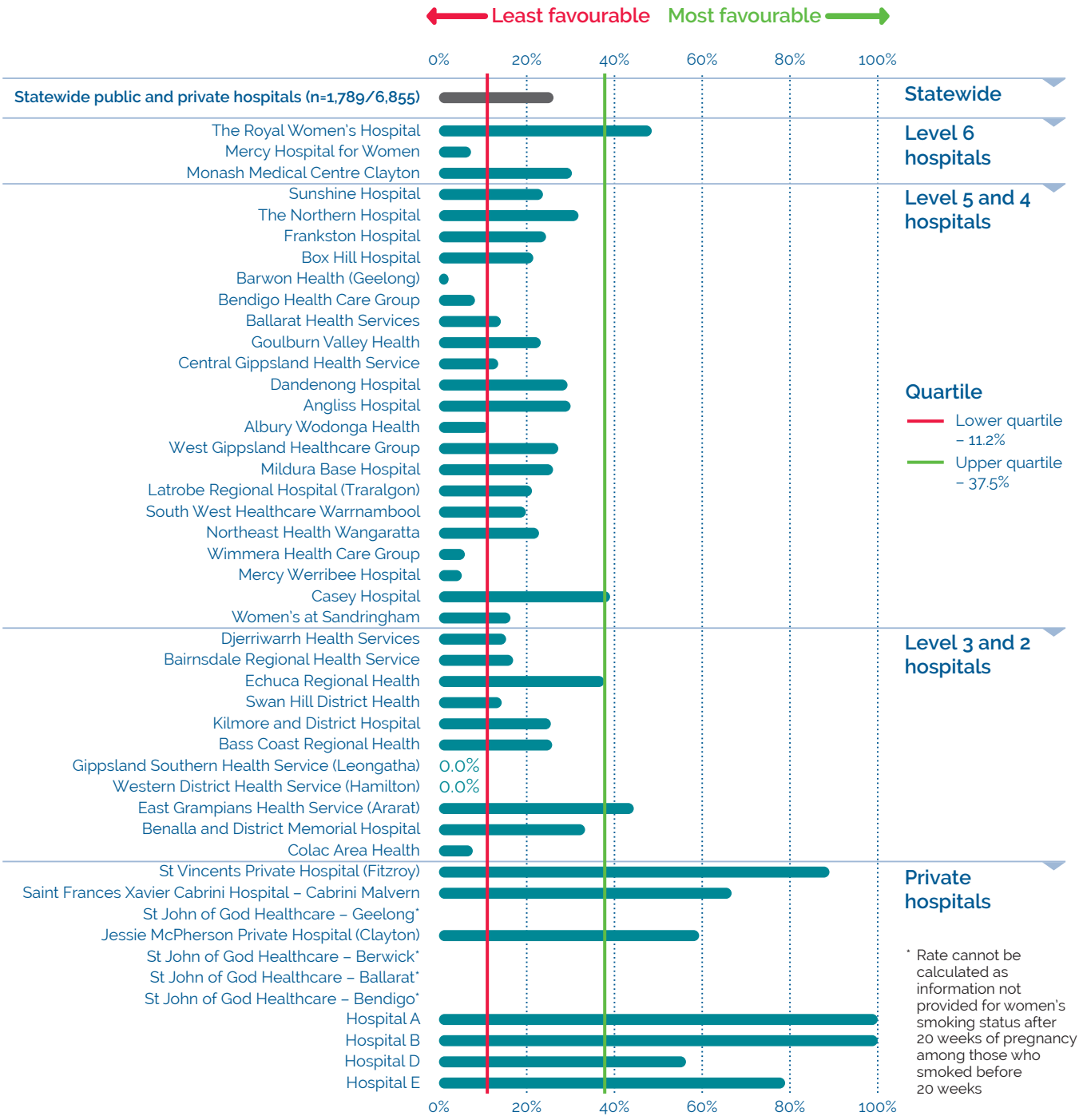
This indicator measures the percentage of women who quit smoking in the later pregnancy (after 20 weeks gestation) at Victorian hospitals. The smoking cessation rate is used as a measure of the effectiveness of smoking cessation interventions offered by hospitals and to recognise services which are making the greatest impact towards smoking cessation, regardless of the number of women who smoke at their service.

Overall, the smoking cessation rate in public hospitals was 24.4 per cent and the overall smoking cessation rate in private hospitals was 66.1 per cent.

Previous reports displayed relative reduction in smoking before and after 20 weeks gestation, so the rates reported in this report are not directly comparable with previous reports.

Ask your health service about the level of support or programs they provide throughout pregnancy to help women stop smoking.

Figure 23: Indicator 7: Smoking cessation rate during pregnancy in Victorian public and private hospitals, 2016



	2016 (lower quartile; upper quartile)
Public hospitals	24.4%
Private hospitals	66.1%
Public and private hospitals	26.1% (11.2%; 37.5%)

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published.

Indicators 8a, 8b and 8c: Breastfeeding in hospital

Purpose and rationale

This suite of measures assesses the initiation of breastfeeding in Victorian hospitals during the birthing episode, namely:

- Indicator 8a – rate of breastfeeding initiation in term babies
- Indicator 8b – rate of use of infant formula in term breastfed babies
- Indicator 8c – rate of final feed exclusively from the breast for term breastfed babies.

There are short- and long-term health benefits for women and their babies associated with breastfeeding, and health services are responsible for promoting, protecting and supporting breastfeeding. The World Health Organization (2011) encourages exclusive breastfeeding for babies to six months of age and continued breastfeeding for up to two years or beyond.

The Australian national breastfeeding strategy 2010–2015 (Australian Health Ministers' Conference 2009) encourages the monitoring of breastfeeding initiation and duration rates. The 2010 Australian National Infant Feeding Survey (2011) reported that 96 per cent of babies were initially breastfed however by one month only 61 per cent were fully breastfed and exclusive breastfeeding reduced to 15 per cent at six months. This indicates the need for ongoing breastfeeding support for women following discharge from hospital.

This indicator is limited by its focus on breastfeeding rates during the hospital admission and does not capture data on whether breastfeeding is maintained in the longer term.

Clinical significance

Breastfeeding provides optimal nourishment for a growing baby's physical, cognitive and immunological development, and is known to improve the bond between mother and baby. Babies who are breastfed have a reduced risk of respiratory illnesses, and infections of the ear and gastrointestinal tract. Breastfeeding has also been shown to protect babies from sudden infant death syndrome (SIDS), diabetes and heart disease later in life (Ip et al. 2007; Victoria et al. 2016). Women who have breastfed have lower rates of cancer of the breast and ovaries, type 2 diabetes and obesity (Ip et al. 2007; Neville et al. 2014).

Clinicians should encourage women to recognise when their babies need feeding and offer help if required. In addition, providing women with accurate information about the importance of breastfeeding to their health and the health of their baby can result in changes in infant feeding decisions (Oliveira IBB 2016). The Baby Friendly Hospital Initiative (World Health Organization 2009) provides information and support to hospitals and community healthcare facilities to encourage exclusive breastfeeding and improve infant health.

There are a variety of reasons why women are less likely to breastfeed.

Pre-term babies (those born at less than 37 weeks gestation) can experience difficulties breastfeeding and hence have been excluded from this indicator suite. Some obstetric interventions may affect a baby's ability to suck effectively from the breast, which may in turn be associated with early cessation of breastfeeding. Providing infant formula as an alternative to breast milk is also associated with early cessation of breastfeeding.

It is important to note that some health services provide care to a greater number of babies who have a sound medical indication for the use of infant formula than other services, and this will influence their results on this indicator.

Observations on the data

Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks' gestation

In 2016, 95.4 per cent of women who gave birth at 37 or more weeks gestation in public and private hospitals combined put the baby to the breast or attempted to express breast milk at least once. This rate has been relatively consistent across public and private hospitals over time (see Figure 24).

Indicator 8b: Rate of use of infant formula by breastfed babies born at 37+ weeks' gestation

In 2016, a high proportion of term breastfed babies were given infant formula in hospital (28.2 per cent in public and private hospitals combined) (see Figure 25). This rate varies significantly between hospitals including those providing a similar level of care.

Indicator 8c: Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks' gestation

Figure 26 shows that 76.6 per cent of term breastfed babies in public and private hospitals combined had their last feed before discharge entirely from the breast with no complementary expressed breast milk or infant formula. This rate varies markedly between hospitals.

Expectations for performance improvement

Outlier services are expected to:

- examine where their policies and practices do not align with the Department of Education and Early Childhood Development's (2014) *Promoting breastfeeding – Victorian breastfeeding guidelines*
- analyse the factors associated with reduced rates of breastfeeding in hospital and ensure additional support is available or accessible, particularly for vulnerable groups of women
- regularly audit the rationale for using formula with breastfed babies in hospital
- ensure the use of formula for breastfed babies is limited to those who have a clear medical indication, and educate women on the reasons for this
- assess, monitor and support the competency and confidence of clinicians in providing breastfeeding support and education
- ensure women, including those of linguistically diverse backgrounds, are provided with educational opportunities for, and ready access to, accurate and appropriately translated (verbal and written) information about the importance of breastfeeding to their health and the health of their baby
- develop and report on strategies to improve breastfeeding rates to the health service executive.

Consumer summary

Indicators 8a, 8b and 8c: Breastfeeding

Breastfeeding is important for a baby's growth and development. It is also important for the long-term health of mothers.

The World Health Organization encourages exclusive breastfeeding for babies to six months of age and continued breastfeeding along with other food up to two years or beyond. Health professionals are responsible for encouraging and supporting breastfeeding, wherever possible.

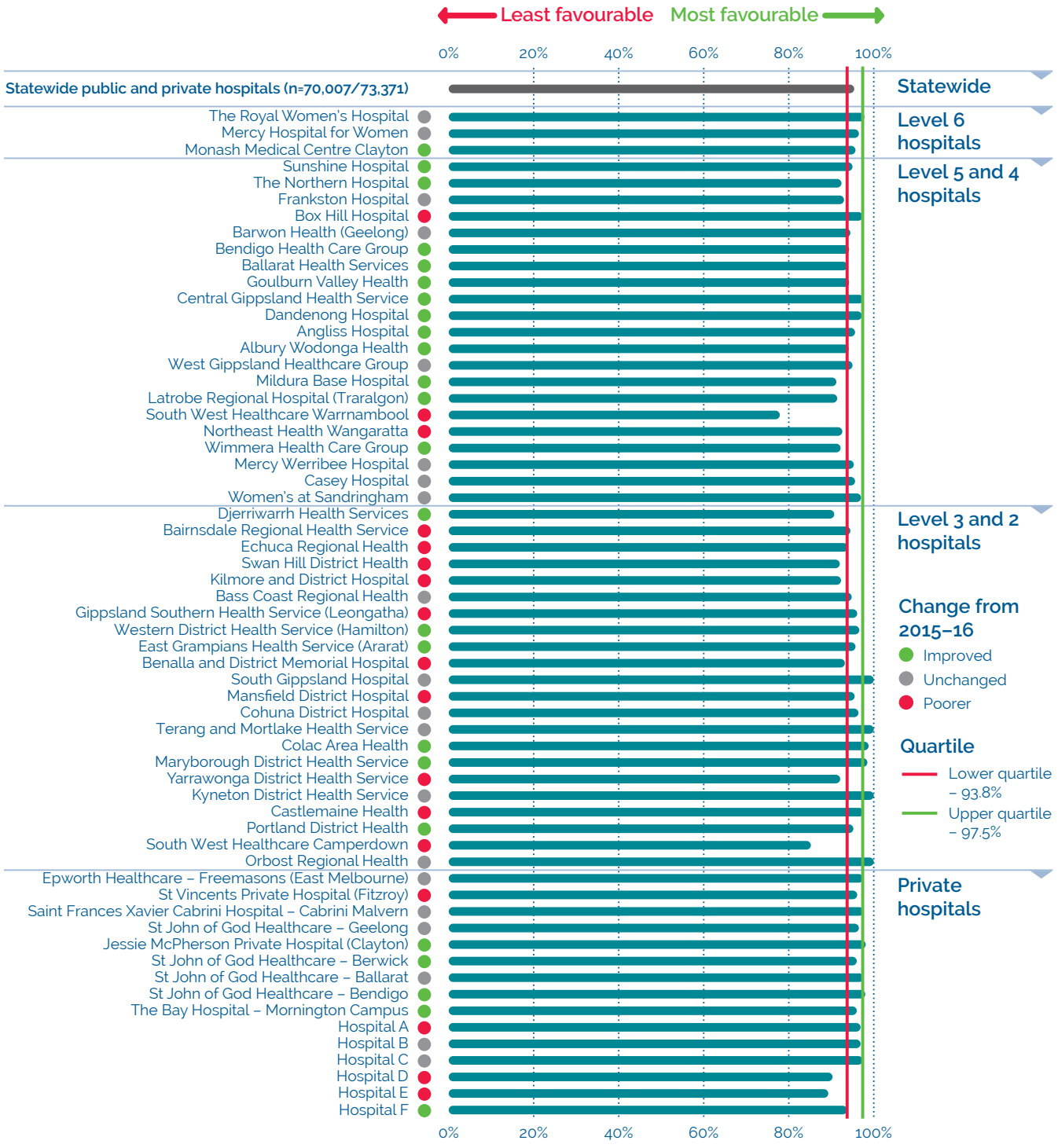
This indicator aims to identify whether women choose to breastfeed, but more importantly, the effectiveness of infant feeding support provided by hospitals in the immediate postnatal period.

The data presented in this report shows that the vast majority of women in Victorian hospitals initiate breastfeeding (95.4 per cent for public and private hospitals combined), however there are clear differences in the results between public and private hospitals for the use of infant formula for breastfed babies (25.1 per cent in public hospitals compared with 38.4 per cent in private hospitals) and women fully breastfeeding at the time of discharge from hospital (78.0 per cent in public hospitals compared with 72.0 per cent in private hospitals).

Health services should review their strategies to provide optimal support for women wishing to breastfeed.

Ask your health service about the evidence-based policies they have in place to support successful long-term breastfeeding.

Figure 24: Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks' gestation in Victorian public and private hospitals, 2016

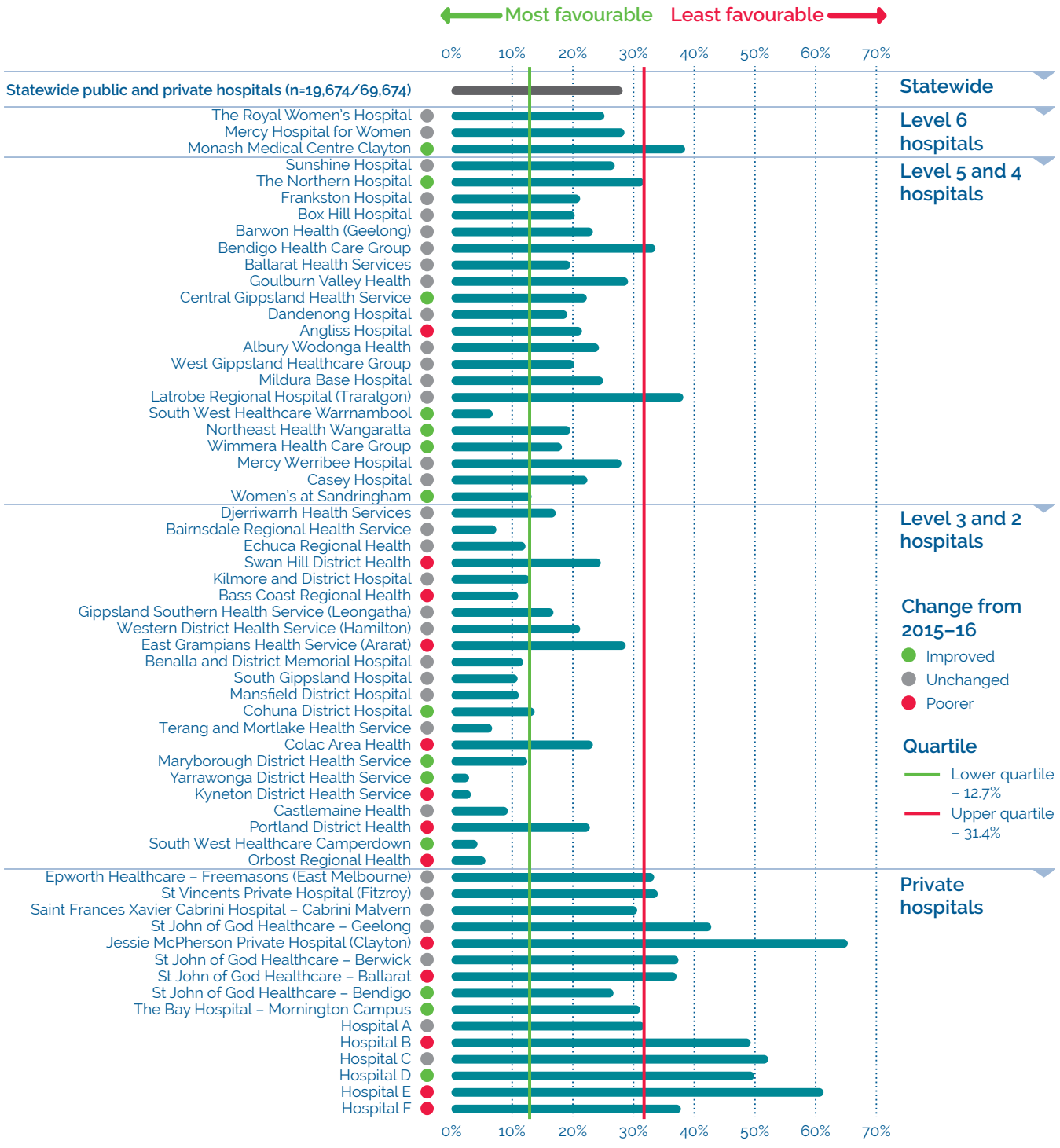


Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	95.1%	94.8%	94.7%	94.2%
Private hospitals	96.4%	96.7%	96.7%	96.3%
Public and private hospitals	95.4% (93.8%; 97.5%)	95.2%	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting.

Figure 25: Indicator 8b: Rate of use of infant formula by breastfed babies born at 37+ weeks' gestation in Victorian public and private hospitals, 2016

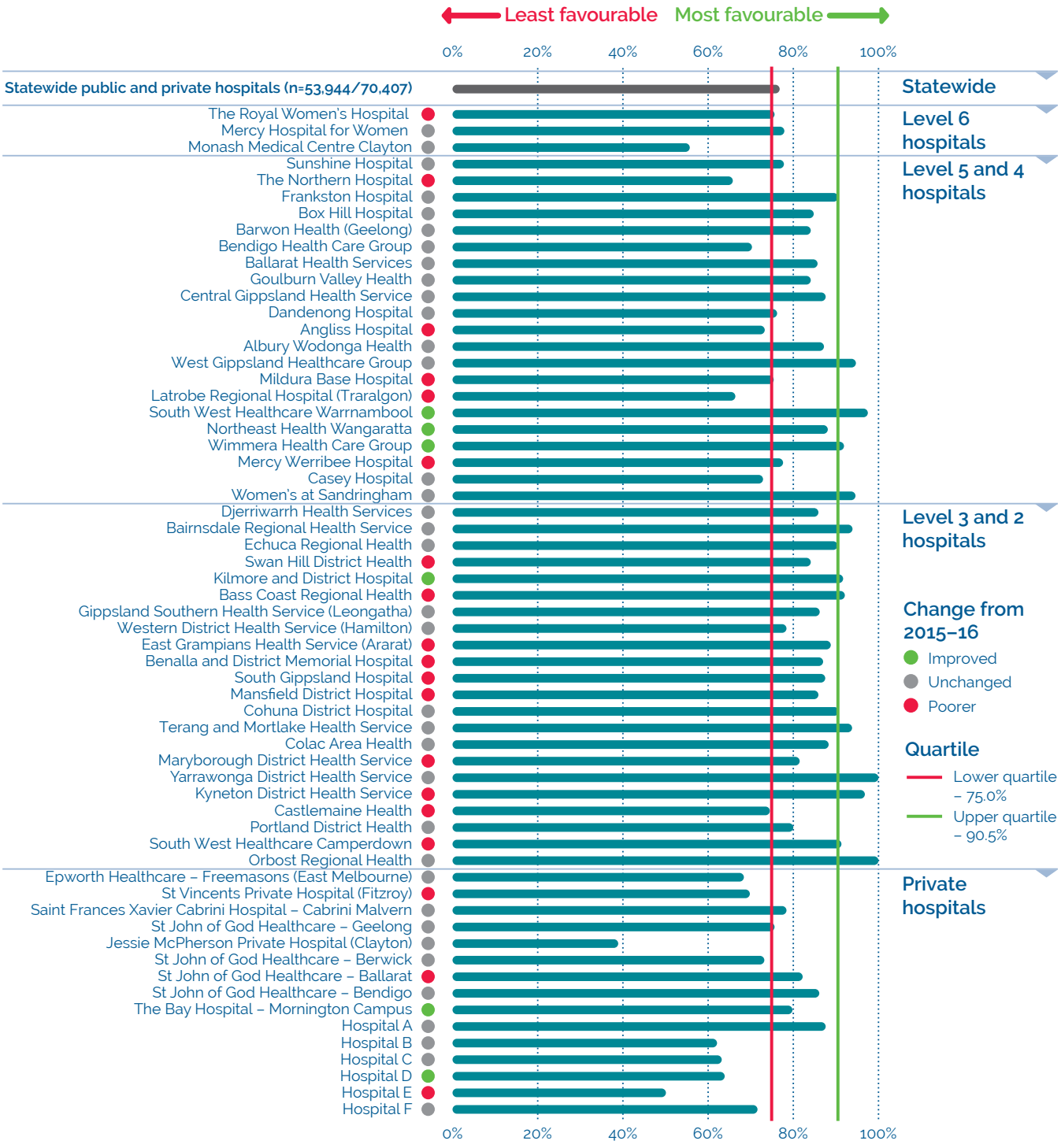


Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	25.1%	25.2%	25.2%	25.3%
Private hospitals	38.4%	38.7%	39.5%	38.6%
Public and private hospitals	28.2% (12.7%; 31.4%)	28.6%	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of ≥ 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting.

Figure 26: Indicator 8c: Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks' gestation in Victorian public and private hospitals, 2016



Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	78.2%	79.7%	80%	79.7%
Private hospitals	72.2%	72.9%	73.3%	74.5%
Public and private hospitals	76.8% (75.0%; 90.5%)	78.0%	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on **all** public and private health services, regardless of whether they meet the criteria for public reporting.

Indicator 9: Access to antenatal care

Purpose and rationale

This indicator explores the rate of women who had their first antenatal visit with a maternity care provider prior to 12 weeks' gestation. This first antenatal visit may occur in the community or at a public hospital.

In the current maternity care system, a range of professional groups provide antenatal care including public hospital staff (obstetricians and midwives), private specialists or private midwives and general practitioners (often as shared care providers with a public health service). This diversity is important as it allows different approaches to care and some choice for women.

The first antenatal visit is defined as the first visit to a midwife or doctor arranged specifically for the purpose of providing maternity care. It excludes visits for confirmation of pregnancy and medical visits for incidental problems while pregnant.

This indicator measures access to antenatal care for all women who gave birth at a particular health service. It does not identify if the right women accessed the most appropriate care at the right time.

Health services should refer to Appendix 1 of this report and the Victorian perinatal data collection manual (sections 1 to 5)[13], for further information on the business rules for this indicator.

Clinical significance

The *Clinical practice guidelines: antenatal care – module II* (Australian Health Minister's Advisory Council 2014) recommend women attend their first antenatal care visit within the first 10 weeks of pregnancy. Early care ensures that a tailored care plan to meet the individual health and social needs of the woman throughout her pregnancy and the postnatal period can be developed. Early screening for infectious diseases is critical for appropriate management throughout the pregnancy, with the effectiveness of fetal anomaly screening also determined by timely access to care.

Late access to antenatal care is demonstrated to adversely impact outcomes for women and their babies including increased risk of neonatal and maternal mortality (Mbuagbaw et al., 2015; Confidential Enquiry into Maternal and Child Health 2007). Therefore early engagement of women in antenatal care, in particular those who are more vulnerable, is important (National Collaborating Centre for Women's and Children's Health 2010).

Observations on the data

In 2016, 45.4 per cent of women who gave birth in a public and private hospitals combined had their first antenatal visit recorded as occurring before 12 weeks' gestation. (Figure 27).

Markedly more women who gave birth in a private hospital (86.7 per cent) had their first visit before 12 weeks' gestation, compared with a public hospital (32.3 per cent).

13 Available by searching the department's website at: <www2.health.vic.gov.au>.

The data reported to the VPDC for this measure is believed to be inaccurate, sometimes excluding early antenatal visits to a general practitioner that include referral for antenatal investigations, and possibly including some visits that are for reasons other than pregnancy care. Given this, hospitals should review and subsequently improve their data collection processes to ensure accurate capture of care provided in the community.

Expectations for performance improvement

While the statewide public hospital rate of women who attended their first antenatal appointment before 12 weeks' gestation increased in 2016 compared with 2015, there is an imperative for all hospitals to:

- review their processes for capturing and recording reliable data, particularly where antenatal care is provided in the community
- improve education of maternity staff about how to record this data accurately by asking about antenatal care by a general practitioner
- develop strategies to address the factors impeding access to early antenatal care and report on this to the health service executive
- identify high-risk women who may require a more focused approach to ensure early and ongoing access to antenatal care
- agree on local targets to guide incremental improvement and monitor progress
- explore links between access to and quality of antenatal care to outcomes on other indicators of performance.

Consumer summary

Indicator 9: Initiation of antenatal care

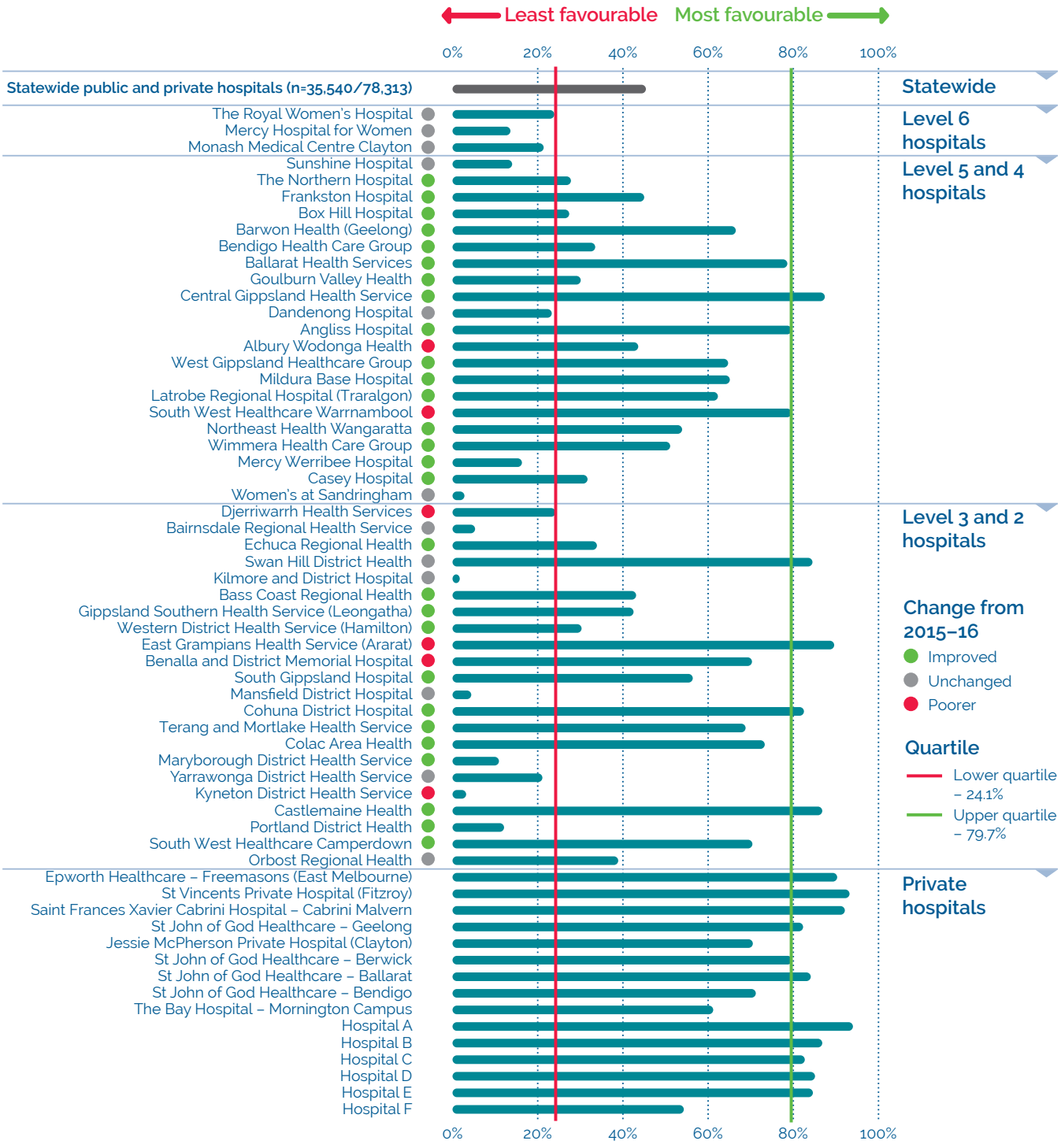
Antenatal care refers to care provided during pregnancy. It is recommended that women attend their first antenatal appointment within the first 10 weeks of pregnancy. Early access to antenatal care is important to identify and manage risks to the health of a woman and the development of her baby.

This indicator measures the rate of women who attended an antenatal appointment within the first 12 weeks of their pregnancy.

The data presented in this report indicates that 32.3 per cent of women who gave birth in a public hospital attended their first antenatal appointment before 12 weeks compared with 86.7 per cent of women who gave birth in a private hospital. Accurate data collection relating to antenatal care occurring outside of the hospital and in the community appears to be a factor that requires hospitals' attention and action.

Understanding a hospital's performance should take into account outcomes across all indicators.

Figure 27: Indicator 9: Rate of women attending their first antenatal visit prior to 12 weeks' gestation in Victorian public and private hospitals, 2016



Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	32.3%	20.2%	20.0%	21.8%
Private hospitals	86.7%	85.6%	85.4%	84.1%
Public and private hospitals	45.4% (24.1%; 79.7%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of ≥ 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on **all** public and private health services, regardless of whether they meet the criteria for public reporting.

Indicator 10: Apgar score less than 7 at five minutes

Purpose and rationale

This indicator measures the wellbeing of babies at birth. It is used as a proxy for the quality of intrapartum care and neonatal resuscitation, where necessary, following birth. The Apgar score is a validated measure of adverse long-term outcomes.

Clinical significance

Singleton babies who are born at more than 37 weeks' gestation and without congenital anomalies, are expected to be born in good condition, show healthy physiological adaption to birth and not require significant resuscitation measures. The Apgar score is an assessment of a newborn's wellbeing at birth based on five physiological attributes at one and five minutes (and longer if applicable): colour (circulation), breathing, heart rate, muscle tone and reflexes.

Each attribute is given a score of 0, 1 or 2 with a total minimum score of 0 (indicating no or greatly diminished signs of life) and a maximum score of 10. An Apgar score below 7 at five minutes indicates a baby who requires ongoing resuscitation measures or additional care that may be due to avoidable factors during labour, childbirth or resuscitation.

Observations on the data

In 2016, a five-minute Apgar score less than 7 was reported for 1.4 per cent of singleton, term babies without congenital anomalies in public and private hospitals combined, 1.6 per cent in public hospitals and 0.9 per cent in private hospitals (see Figure 28). These individual hospital rates have remained stable since reporting of this indicator commenced in 2012.

Expectations for performance improvement

Hospitals with results in the upper quartile range should ensure there are adequate mechanisms to capture, review and report on adverse intrapartum and neonatal resuscitation events and outcomes.

Hospitals with results in the highest quartile range (least favourable outliers) are expected to:

- undertake multidisciplinary reviews of low Apgar (< 7) events and outcomes to identify areas for clinical practice or system improvement
- monitor and support the competency and confidence of clinicians in fetal surveillance during labour
- monitor and support the competency and confidence of clinicians in neonatal resuscitation
- review the availability of senior clinicians to both supervise junior staff and be available to rapidly escalate care after hours
- ensure women with a higher risk of complications are referred to appropriate specialist services antenatally.
- ensure clinicians are correctly and consistently identifying and reporting Apgar scores to the Victorian perinatal data collection (VPDC)
- hospitals should try to achieve Apgar score < 7 at 5 minutes less than 1.6 per cent, as the target set out in the Victorian Health Services Monitor report.

Consumer summary

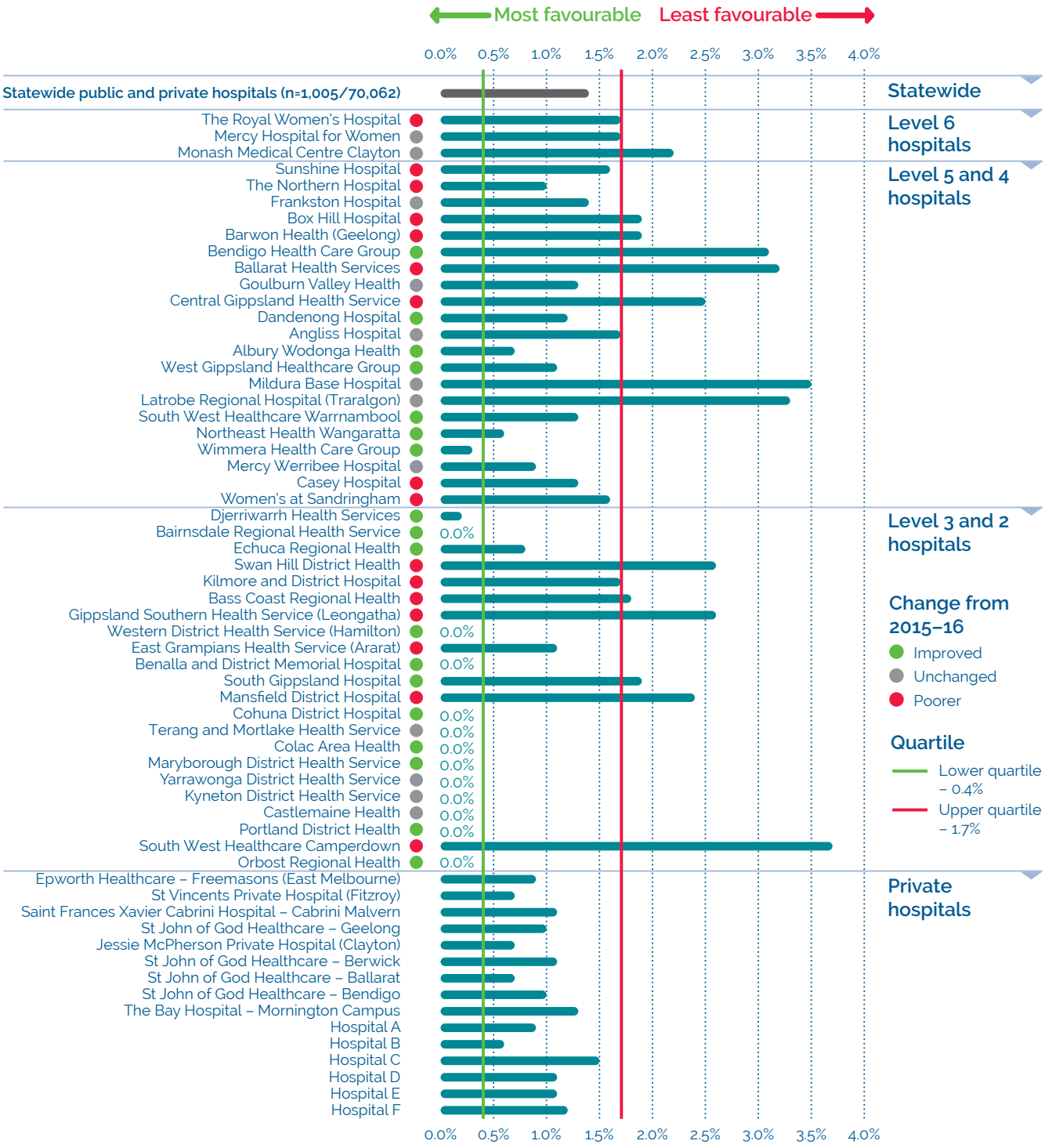
Indicator 10: Singleton, term babies without congenital anomalies with an Apgar score less than 7 at five minutes

The Apgar score is an assessment of a baby's health at one minute and five minutes after birth. The maximum score is 10. An Apgar score of less than 7 at five minutes after birth indicates a baby who requires resuscitation and may experience poor health outcomes longer term.

The data presented in this report indicates that 1.6 per cent of singleton babies born after 37 weeks gestation in public hospitals had an Apgar score below 7 at five minutes after birth compared with 0.9 per cent of babies born after 37 weeks gestation in private hospitals.

Ask your health service how they review unexpected events during labour and childbirth, how often this review is undertaken and how they report on service improvements.

Figure 28: Indicator 10: Rate of term babies without congenital anomalies with an Apgar score less than 7 at five minutes in Victorian public and private hospitals, 2016



Statewide rates

	2016 (quartiles: lower; upper)	2015	2014	2013
Public hospitals	1.6%	1.5%	1.5%	1.6%
Private hospitals	0.9%	0.9%	0.9%	0.9%
Public and private hospitals	1.4% (0.4%; 1.7%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of ≥ 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on **all** public and private health services, regardless of whether they meet the criteria for reporting.

Appendix 1: Definitions and data sources

Indicator 1: Outcomes for standard primiparae

Definition:

The standard primipara is defined as a woman who is 20–34 years of age, giving birth for the first time, free of obstetric and specified medical complications and pregnant with a singleton pregnancy of gestation 37 weeks 0 days to 40 weeks six days, with a not-small-for-gestational-age (greater than the 10th centile) infant and a vertex presentation.

Data source:

Victorian Perinatal Data Collection (VPDC)

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

This data is routinely submitted by each health service on each birth.

The indicators are derived using the following VPDC variables: 'Parity', 'Maternal age', 'Plurality', 'Estimated gestational age', 'Birth presentation', 'Obstetric complications-ICD-10-AM code', 'Maternal medical conditions-ICD-10-AM code', 'Indication for induction-ICD-10-AM code', 'Indications for operative delivery-ICD-10-AM code', 'Birthweight', 'Labour type', 'Method of birth', 'Perineal/genital laceration – degree/type'.

The inclusion criteria for the standard primipara are revised each year based on the data reported to the VPDC as code or text. This review ensures that some women who would have been identified as standard primiparae, but in fact have a condition that should exclude them, are accounted for.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 1a: Rate of inductions in standard primiparae in Victorian public and private hospitals	The number of standard primiparae who give birth undergoing induction of labour	The number of standard primiparae
Indicator 1b: Rate of caesarean section in standard primiparae in Victorian public and private hospitals	The number of standard primiparae who give birth undergoing caesarean section	The number of standard primiparae
Indicator 1c: Third- and fourth-degree perineal tears in standard primiparae giving birth vaginally in Victorian public and private hospitals	The number of standard primiparae who give birth vaginally and sustain a third- or fourth-degree tear	The number of standard primiparae who give birth vaginally

Indicator 2: Rate of term babies without congenital anomalies who require additional care

Definition:

An inborn term baby is an infant born at the reporting hospital at gestational age of 37 weeks or more. Term babies without congenital anomalies who require additional care are defined as newborns that:

- are not less than 37 weeks 0 days' gestation
- weigh not less than 2,500 grams
- are without congenital anomalies
- are grouped to Victorian diagnostic-related groups (VIC-DRGs) representing the need for more than normal care (see list of VIC-DRGs provided below).

The exclusions are:

- babies born at another hospital
- pre-term newborn babies
- infants with congenital anomalies
- birthweight less than 2,500 grams
- stillborn babies
- readmission (separation not related to the birth episode).

The denominator for 2016–17 reporting period is episodes grouped to the Version 7.0 VIC-DRGs:

- P68A (v7): Neonate, AdmWt >=2500g W/O Sig OR Proc >=37 Comp Wks Gest W Mult Major Probs
- P68B (v7): Neonate, AdmWt >=2500g W/O Sig OR Proc >=37 Comp Wks Gest W Major Problem
- P68C (v7) Neonate, AdmWt >=2500g W/O Sig OR Proc >=37 Comp Wks Gest W Other Problem
- P68D (v7) Neonate, AdmWt >=2500g W/O Sig OR Proc >=37 Comp Wks Gest W/O Problem
- P06A Neonate, Admission weight > 2499g with Significant Operating Room Procedure with Multi Major Problems
- P06B Neonate, Admission weight > 2499g with Significant Operating Room Procedure without Multi Major Problems
- P60A Neonate, Died or Transferred < 5 days of admission, without Significant Operating Room Procedure, Newborn
- P60B Neonate, Neonate W/O Sig OR Proc, Died or Transferred to Acute Facility Sameday.

Data source:

Victorian Admitted Episodes Dataset (VAED)

Data from the VAED is reported by financial year from 1 July 2016 to 30 June 2017.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 2: Rate of term babies without congenital anomalies who require additional care in Victorian public and private hospitals	The number of inborn term babies without birth defects grouped to VIC-DRG P68A, P68B, P68C, P06A, P06B, P60A# and P60B#	The number of inborn term babies without congenital anomalies grouped to VIC-DRG P68A, P68B, P68C, P68D, P06A, P06B, P60A# and P60B#

All newborns initially grouped to P60Aand P60B were regrouped to the next logical VIC-DRG following removal of the separation mode 'Died or Transferred' and replaced with the separation mode of 'Home'. This was done so that only those babies in P60A and P60B who require additional care are counted in the numerator. To include the whole of P60A and P60B in the numerator would overestimate the rate of newborns requiring additional care, as some healthy newborns are transferred for other reasons.

Indicator 3: Severe fetal growth restriction (FGR)

Definition:

Severe FGR is defined as a birthweight less than the third centile for gestation and sex whether liveborn or stillborn.

Exclusions are:

- babies without severe FGR
- multiple births
- births at earlier gestations (less than 32 weeks).

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

The indicator is derived using the following VPDC variables: 'Baby sex', 'Gestation', 'Birth weight' and 'Plurality'.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 3: Rate of severe FGR in a singleton pregnancy undelivered by 40 weeks in Victorian public and private hospitals	Birth at 40 or more weeks' gestation of a singleton baby with severe FGR	Singleton births (live and stillborn) with severe FGR born at and beyond 32 weeks gestation

The Australian national birthweight percentiles by sex and gestational age, 1998–2007 (Dobbins et al. 2012) is used to calculate the birth weight centiles for this indicator (tables shown below).

Birthweight centiles for live singleton male infants, Australia, 1998–2007

Gestational age (weeks)	Number of births	Mean (SD) birthweight (g)	Birthweight percentile (g)										
			1st	3rd	5th	10th	25th	50th	75th	90th	95th	97th	99th
20	230	349 (60)	210	248	254	273	310	340	390	430	450	470	500
21	335	418 (66)	270	290	300	335	375	420	460	500	540	542	575
22	401	505 (76)	350	370	390	410	460	500	554	600	630	650	690
23	395	595 (82)	390	450	470	500	540	588	650	700	730	756	800
24	640	681 (105)	426	470	500	550	618	684	750	810	850	875	970
25	715	783 (131)	440	505	530	620	700	785	865	944	995	1030	1100
26	937	894 (152)	500	576	621	680	802	900	996	1078	1130	1155	1210
27	1 069	1016 (194)	510	605	660	752	904	1030	1138	1250	1320	1352	1440
28	1345	1146 (217)	591	680	735	844	1030	1165	1295	1395	1470	1522	1640
29	1524	1301 (252)	662	782	860	964	1150	1311	1463	1620	1700	1757	1860
30	2105	1474 (283)	774	900	984	1091	1300	1498	1650	1800	1920	1980	2182
31	2576	1666 (304)	915	1055	1126	1270	1480	1680	1855	2028	2142	2230	2435
32	3895	1867 (331)	1075	1214	1294	1430	1659	1880	2080	2270	2405	2503	2710
33	5599	2106 (371)	1200	1381	1473	1638	1880	2106	2340	2560	2710	2845	3070
34	9824	2340 (385)	1400	1580	1690	1860	2100	2340	2580	2810	2990	3120	3343
35	16054	2585 (408)	1600	1795	1920	2080	2330	2578	2835	3095	3275	3410	3665
36	32747	2826 (428)	1805	2015	2120	2295	2550	2820	3095	3360	3550	3690	3930
37	73986	3093 (449)	2050	2265	2372	2540	2800	3080	3378	3670	3865	3990	4235
38	230003	3344 (439)	2340	2540	2640	2800	3050	3330	3625	3910	4090	4215	4445
39	293109	3486 (430)	2510	2700	2800	2950	3195	3470	3765	4040	4220	4335	4560
40	409976	3632 (434)	2650	2840	2940	3090	3340	3620	3915	4195	4370	4490	4708
41	192154	3769 (438)	2780	2970	3070	3220	3470	3755	4060	4340	4515	4630	4850
42	19804	3832 (462)	2760	2980	3095	3250	3520	3820	4130	4430	4615	4740	4970
43	797	3761 (540)	2615	2785	2935	3085	3380	3750	4100	4470	4670	4825	5180
44	53	3715 (563)	–	–	–	3110	3300	3620	4070	4415	–	–	–

Source: Dobbins T, Sullivan E, Roberts C, Simpson J 2012, *Australian national birthweight percentiles by sex and gestational age, 1998–2007*, The Medical Journal of Australia, DOI: 10.5694/ma11.11331, viewed 15 November 2016, <https://www.mja.com.au/journal/2012/197/5/australian-national-birthweight-percentiles-sex-and-gestational-age-1998-2007>.

Birthweight centiles for live singleton female infants, Australia, 1998–2007

Gestational age (weeks)	Number of births	Mean (SD) birthweight (g)	Birthweight percentile (g)										
			1st	3rd	5th	10th	25th	50th	75th	90th	95th	97th	99th
20	197	333 (65)	190	210	230	265	290	320	374	410	450	490	525
21	256	386 (69)	210	250	270	300	340	390	433	470	510	515	530
22	333	474 (72)	260	325	355	400	425	480	520	560	589	610	620
23	376	558 (89)	320	375	400	445	506	560	615	660	700	725	800
24	528	637 (95)	380	430	480	520	580	641	700	754	793	815	860
25	599	730 (128)	410	470	498	559	645	740	817	884	940	975	992
26	809	825 (166)	428	490	520	594	717	840	940	1026	1072	1106	1186
27	879	949 (188)	500	568	598	675	840	965	1077	1175	1240	1280	1390
28	1136	1073 (230)	495	622	675	764	928	1090	1230	1347	1410	1470	1610
29	1188	1215 (252)	572	712	790	870	1055	1240	1380	1494	1595	1680	1840
30	1656	1394 (277)	725	870	918	1030	1220	1400	1571	1715	1840	1920	2130
31	2052	1582 (302)	880	1000	1060	1190	1385	1590	1780	1948	2065	2146	2338
32	3119	1772 (322)	970	1140	1230	1348	1570	1780	1970	2170	2290	2400	2620
33	4421	2014 (356)	1180	1330	1424	1560	1790	2011	2235	2450	2616	2746	2970
34	8108	2242 (375)	1331	1525	1615	1764	2005	2240	2470	2705	2870	2995	3220
35	13104	2486 (403)	1525	1710	1820	1980	2230	2480	2735	2995	3175	3300	3516
36	28386	2720 (420)	1750	1940	2040	2198	2445	2710	2980	3250	3450	3575	3810
37	66928	2979 (439)	1970	2175	2275	2430	2690	2965	3255	3545	3735	3865	4100
38	214002	3215 (425)	2256	2440	2540	2690	2930	3200	3490	3770	3945	4062	4290
39	282046	3351 (415)	2420	2600	2690	2830	3070	3340	3620	3890	4060	4175	4390
40	398257	3493 (416)	2566	2740	2830	2975	3210	3480	3765	4030	4200	4316	4525
41	181434	3619 (424)	2680	2855	2945	3090	3330	3605	3900	4170	4340	4455	4670
42	17701	3665 (445)	2670	2850	2950	3110	3360	3650	3955	4240	4420	4545	4760
43	801	3579 (463)	2660	2800	2865	3010	3240	3560	3880	4210	4385	4560	4760
44	52	3705 (523)	—	—	—	3070	3403	3695	3965	4230	—	—	—

Source: Dobbins T, Sullivan E, Roberts C, Simpson J 2012, *Australian national birthweight percentiles by sex and gestational age, 1998–2007*, The Medical Journal of Australia, DOI: 10.5694/ma11.11331, viewed 15 November 2016, <https://www.mja.com.au/journal/2012/197/5/australian-national-birthweight-percentiles-sex-and-gestational-age-1998-2007>

Indicator 4: Vaginal births after primary caesarean section

Definition:

Definitions for this indicator may differ from other vaginal birth after caesarean (VBAC) indicators. Primary caesarean is often defined as the first ever caesarean regardless of parity, whereas this indicator selects only prior caesareans in women with one prior birth.

The VPDC collects outcomes for women at term whose only previous birth was a caesarean section; any of these woman who entered labour and did not have a subsequent planned caesarean is assumed to have planned a VBAC.

Exclusions:

Not all hospitals in Victoria offer VBAC, and those that do not have been excluded from the indicator.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

The indicators are derived using the following VPDC variables: 'Parity', 'Total number of previous caesareans', 'Plurality', 'Estimated gestational age', 'Labour type' and 'Method of birth'.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section in Victorian public and private hospitals	The number of women (para 1 and at term with a singleton pregnancy) whose previous birth was a caesarean section and who enter labour with a plan for a vaginal birth	The number of women (para 1 and at term with a singleton pregnancy) whose previous birth was a caesarean section
Indicator 4b: Rate of women who achieved a planned vaginal birth following a primary caesarean section in Victorian public and private hospitals	The number of women (para 1 and at term with a singleton pregnancy) whose previous birth was a caesarean and who enter labour with a plan for a vaginal birth and who achieve a vaginal birth	The number of women (para 1 and at term with a singleton pregnancy) whose previous birth was a caesarean and who enter labour with a plan for a vaginal birth

Indicator 5: Five-year gestation standardised perinatal mortality ratio (GSPMR)

Definition:

The GSPMR is standardised according to the gestational age-specific perinatal mortality rates of the total population in Victorian public hospitals and private hospitals. The standardisation does not adjust for interhospital transfers, and deaths are ascribed to the birth hospital regardless of the timing of the death in relation to the transfer[14].

The data in this report:

- is calculated from five years of pooled data between 2012 and 2016
- is standardised using gestational age
- excludes births earlier than 32 weeks 0 days
- excludes birthweights less than 150 grams regardless of gestation
- excludes all deaths due to congenital anomalies and all terminations of pregnancy.

These exclusions provide a more sensitive indicator to reflect the quality of care. Hospitals are only reported where they have had five or more perinatal deaths in any of the five pooled years.

The GSPMR is presented with data for public hospitals being shown in relation to the statewide public hospital perinatal mortality rate for each week of gestation as the standard or reference population, and private hospitals being shown in relation to the statewide private hospital mortality rate. GSPMR of the individual health service is published in this report only if there are five or more perinatal deaths (stillbirths and neonatal deaths) in at least one year of the five pooled years (2012–2016).

A GSPMR of 1 indicates that the observed number of perinatal deaths at that hospital is exactly what would be expected, considering the number of births and the gestation of babies born there. The statewide rate (1) does not necessarily represent the optimal or clinically appropriate rate for perinatal mortality.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2012 to 31 December 2016.

Numerator/denominator:

Indicator	Observed	Expected
Indicator 5: Perinatal mortality ratio for babies born at 32 or more weeks (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years' pooled data in Victorian public and private hospitals (32 weeks or more GSMPR)	Observed perinatal deaths from 32 weeks 0 days (by weeks' gestation at birth)	Expected perinatal deaths from 32 weeks 0 days (by weeks' gestation at birth)

The GSPMR is calculated and applied to all public hospitals having five or more observed perinatal deaths in any of the included calendar years (2012–2016).

14 Adjusting for transfers has been tested and has been found not to affect the results significantly.

Indicator 6a: Readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public or private hospital

Definition:

This indicator measures the rate of unplanned and potentially preventable readmissions of women within 28 days of discharge from hospital following a birthing admission.

Readmissions that meet the criteria for inclusion are attributed to the health service that provided admitted postnatal care to the mother prior to discharge.

Data source:

Victorian Admitted Episodes Dataset (VAED)

Data from the VAED is reported by financial year 1 July 2016 to 30 June 2017.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 6a: Potentially preventable readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public or private hospital	The number of women readmitted to any health service with a potentially preventable readmission diagnosis code within 28 days	The number of women provided with admitted postnatal care prior to discharge

Inclusion and exclusion criteria

Women transferred to another health service following a birth separation are excluded from the numerator total, as are women who are readmitted as part of a planned follow-up plan after their birth episode.

The denominator is the total number of birth episodes at a health service. The only exclusion is maternal death. No further exclusions have been made, therefore this total includes birth episodes with DRGs indicating serious complexity, operating procedures or caesarean section delivery.

Readmission diagnosis code

The readmission rate will be calculated for the hospital that discharged the mother from the birth episode. The rate includes admissions to any Victorian health service (public and private) after birth, not just a readmission to the birthing service.

Women who present to an emergency department or urgent care centre, but are not admitted, are excluded from the numerator total.

Women who are readmitted and have a primary diagnosis related to their pregnancy or birth are included in the numerator total. However, diagnosis codes that are associated with a complexity that cannot be prevented (or managed) through postnatal care or that are associated with a condition(s) that manifests after discharge from hospital without any indication of its presence prior to this time, are excluded.

Potentially preventable readmission primary diagnosis codes are limited to the following:

- O722 – Delayed and secondary postpartum haemorrhage
- O860 – Infection of obstetric surgical wound
- O85 – Puerperal sepsis
- O9120 – Non-purulent mastitis without attachment difficulties
- Z466 – Fitting and adjustment of urinary device
- O894 – Spinal epidural headache during puerperium
- O901 – Disruption of perineal obstetric wound
- O149 – Pre-eclampsia (unspecified)
- O16 – Unspecified maternal hypertension
- O9903 – Anaemia complicating childbirth and the puerperium
- O731 – Retained portion placenta and membranes without haemorrhage
- O721 – Other immediate postpartum haemorrhage
- O902 – Haematoma of obstetric wound
- O862 – Urinary tract infection following delivery
- O900 – Disruption of caesarean section wound
- Z391 – Care and examination of lactating mother
- O13 – Gestational hypertension
- N390 – Urinary tract infection (site not specified)
- O9121 – Non-purulent mastitis with attachment difficulty
- F531 – Severe mental and behavioural disorder associated with puerperium (not elsewhere classified)
- F530 – Mild mental and behavioural disorder associated with puerperium (not elsewhere classified)
- G971 – Other reaction to spinal and lumbar puncture
- R509 – Fever (unspecified)
- R33 – Retention of urine
- O152 – Eclampsia in the puerperium
- O720 – Third-stage haemorrhage

Indicator 6b: Readmission of a baby within 28 days of discharge from a birthing episode admission in a Victorian public hospital

Definition:

Readmissions that meet the criteria for inclusion are attributed to the health service that provided admitted postnatal care of the baby prior to discharge.

Data source:

Victorian Admitted Episodes Dataset (VAED)

Data from the VAED is reported by financial year 1 July 2016 to 30 June 2017.

The indicator is derived using the primary diagnosis codes.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 6b: Potentially preventable readmission of a baby within 28 days of discharge from a birthing episode admission in a Victorian public hospital	The number of babies readmitted to any health service with a potentially preventable readmission diagnosis code within 28 days of discharge	The number of babies provided with postnatal care prior to discharge from the birthing episode

Inclusion and exclusion criteria

Babies transferred to another health service following a birth separation are excluded from the numerator total, as are babies who are readmitted as part of a planned follow-up plan after their birth episode.

The denominator includes the total number of babies discharged from a health service. Stillbirths and neonatal deaths prior to discharge are excluded. Qualified and unqualified babies are included – irrespective of their accommodation type during the birth episode (if they spent time in a neonatal intensive care unit or a special care nursery).

Babies who are readmitted on the same day of discharge are also excluded. This is because it is not possible to determine from the dataset whether these are genuine readmissions or a new separation following a planned transfer of care.

Readmission diagnosis code

Babies who present to an emergency department or urgent care centre but are not admitted, are excluded from the numerator total.

The readmission rate is calculated for the hospital that discharged the baby from the birth episode. The rate includes admissions to any Victorian health service after birth, not just a readmission to the birthing service.

Newborns who are readmitted and have a primary diagnosis related to their pregnancy or birth are included in the numerator total. However, diagnosis codes that are associated with a complexity that cannot be prevented (or managed) through postnatal care or that are associated with a condition(s) that manifests after discharge from hospital without any indication of its presence prior to this time, are excluded.

Potentially preventable readmissions are limited to the following cohort of primary diagnoses:

- P599 – Neonatal jaundice (unspecified)
- R634 – Abnormal weight loss
- P929 – Feeding problem of newborn (unspecified)
- R628 – Other lack of expected normal physiological deviation
- P369 – Bacterial sepsis of newborn (unspecified)
- P928 – Other feeding problems of newborn
- P590 – Neonatal jaundice with pre-term delivery
- P598 – Neonatal jaundice from other specific causes
- P0732 – Other pre-term infant ≥ 32 weeks' gestation but < 37 completed weeks
- P551 – ABO isoimmunisation of fetus and newborn
- Z0371 – Observation of newborn for suspected infectious condition
- P2840 – Apnoea of newborn, unspecified
- P282 – Cyanotic attacks of newborn
- A870 – Enteroviral meningitis
- P38 – Omphalitis newborn with or without mild haemorrhage
- P741 – Dehydration of newborn
- P809 – Hypothermia of newborn unspecified
- P90 – Convulsions of newborn

Indicator 7: Smoking cessation

Definition:

The percentage of women who stopped smoking after 20 weeks gestation among those who smoked before 20 weeks.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

The indicators are derived using the following VPDC variables: 'Maternal smoking at less than 20 weeks' and 'Maternal smoking at more than or equal to 20 weeks'.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 7: Smoking cessation rate	Number of women who stopped smoking after 20 weeks gestation among those who smoked before 20 weeks	Number of women who smoked before 20 weeks gestation

Indicator 8: Breastfeeding initiation

Definition:

This suite of measures assesses the initiation of breastfeeding in Victorian hospitals during the birthing episode, namely:

- Indicator 8a – rate of breastfeeding initiation in term babies
- Indicator 8b – rate of use of infant formula in term breastfed babies
- Indicator 8c – rate of final feed exclusively from the breast for term breastfed babies.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

This data is routinely submitted by each health service on each birth.

The indicators are derived using the following VPDC variables: 'Breastfeeding attempted', 'Formula given in hospital', 'Last feed before discharge taken exclusively from the breast', 'Estimated gestational age' and 'Birth status'.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks in Victorian public and private hospitals	The number of women giving birth at 37 or more weeks' gestation attempting to breastfeed at least once (regardless of the success of the attempt)	The number of women giving birth at 37 or more weeks' gestation
Indicator 8b: Rate of use of infant formula by breastfed babies born at 37+ weeks in Victorian public and private hospitals	The number of babies born at 37 or more weeks' gestation whose mother initiated breastfeeding and was given infant formula in hospital	The number of babies born at 37 or more weeks' gestation whose mother initiated breastfeeding
Indicator 8c: Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks' gestation in Victorian public and private hospitals	The number of babies born at 37 or more weeks' gestation whose mother initiated breastfeeding and who fed directly and entirely from the breast at the last feed before discharge	The number of babies born at 37 or more weeks' gestation whose mother initiated breastfeeding

Indicator 9: First antenatal visit

Definition:

The first antenatal visit is the first visit to a midwife or doctor arranged specifically for the purpose of providing maternity care. It excludes visits for confirmation of pregnancy unless some maternity care is provided (for example, referral for first-trimester screening) and medical visits for incidental problems while pregnant.

A maternity or antenatal care provider is defined as the clinician who provides care to pregnant women and includes midwife, a doctor/GP, or an obstetrician

This includes antenatal visits that may occur in the community (general practitioners, midwives or obstetricians practising privately **or** at a community health centre) and is not therefore necessarily the date of the first antenatal visit at the public health service.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

The indicator is derived using the VPDC variable: 'Gestational age at first antenatal visit'.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 9: Rate of women had antenatal care prior to 12 weeks' gestation	The number of women who had antenatal care prior to 12 weeks' gestation with a maternity care provider (including care in the community by GPs) and who birthed at the health service	The number of women who gave birth

Indicator 10: Term babies without birth anomalies with an Apgar score less than 7 at five minutes

Definition:

The rate of term babies without congenital anomalies with an Apgar score of less than 7 at five minutes in Victorian public hospitals.

Excludes babies born at less than 37 weeks' gestation, infants born with congenital anomalies, multiple births, stillbirths and babies born before arrival at hospital.

The Apgar score is used to evaluate the fitness of a newborn infant, based on heart rate, respiration, muscle tone, reflexes and colour. The maximum or best score is 10. The Apgar score should be determined consistently and reliably, according to best practice guidelines and to ensure that babies with a low Apgar (6 or less) receive timely and appropriate resuscitation procedures. Rates for this indicator should show little variation among peer group services and inter-rater reliability should be high within health services. This supports quality reporting of neonatal outcomes for meaningful comparisons.

Inborn is defined as a baby born at the reporting hospital.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

This data is routinely collected for every birth at each health service.

The indicator is derived using the following VPDC variables: 'Apgar score at 5 minutes', 'Estimated gestational age', 'Birth status', 'Birth plurality', 'Setting of birth actual' and 'Congenital anomalies indicator'.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 10: Rate of term babies without congenital anomalies with an Apgar score of less than 7 at five minutes in Victorian public and private hospitals	The number of inborn, singleton, liveborn, term babies without congenital anomalies with an Apgar score less than 7 at five minutes	The number of inborn, singleton, liveborn term babies without congenital anomalies

Appendix 2: Indicators in development

Shadow Indicators 1bi and 1bii: Caesarean Section for women having a first baby – singleton, cephalic-presenting, term births

Definition:

This indicator appears this year as a 'shadow' indicator, with a plan to use it as a replacement for Indicator 1b. Indicator 1 measures outcomes for women having their first birth. Shadow indicator 1bi and 1bii report the proportion of caesarean births for first time mothers who give birth to singleton, cephalic-presenting, term babies. The definitions are based on the Ten Group Classification System (Robson, 2001), but use the modified classification proposed by Zhang (2016) so as to exclude women having a planned caesarean section.

- Shadow indicator 1bi considers women whose labour commenced spontaneously
- Shadow Indicator 1bii considers women who labour was induced.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

This data is routinely submitted by each health service on each birth.

The indicators are derived using the following VPDC variables: 'Parity', 'Plurality', 'Birth presentation', 'Estimated gestational age', 'Onset of labour' and 'Method of birth'.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 1bi: Proportion of births by caesarean section for women giving birth for the first time, with a singleton, cephalic-presenting baby born at 37 or more weeks and whose labour commenced spontaneously in Victorian public and private hospitals	The number of women giving birth for the first time, with spontaneous onset of labour, and a singleton, cephalic-presenting baby born at 37 or more weeks by caesarean section	The number of women giving birth for the first time, with spontaneous onset of labour, and a singleton, cephalic-presenting baby born at 37 or more weeks
Indicator 1bii: Proportion of births by caesarean section for women giving birth for the first time, with a singleton, cephalic-presenting baby born at 37 or more weeks and whose labour was induced in Victorian public and private hospitals	The number of women giving birth for the first time, with induced labour, and a singleton, cephalic-presenting baby born at 37 or more weeks by caesarean section	The number of women giving birth for the first time, with induced labour, and a singleton, cephalic-presenting baby born at 37 or more weeks

Figure 29: Shadow indicator 1bi (Shadow): Ten group classification system: 1. spontaneous labour in nulliparous, single cephalic, ≥ 37 weeks

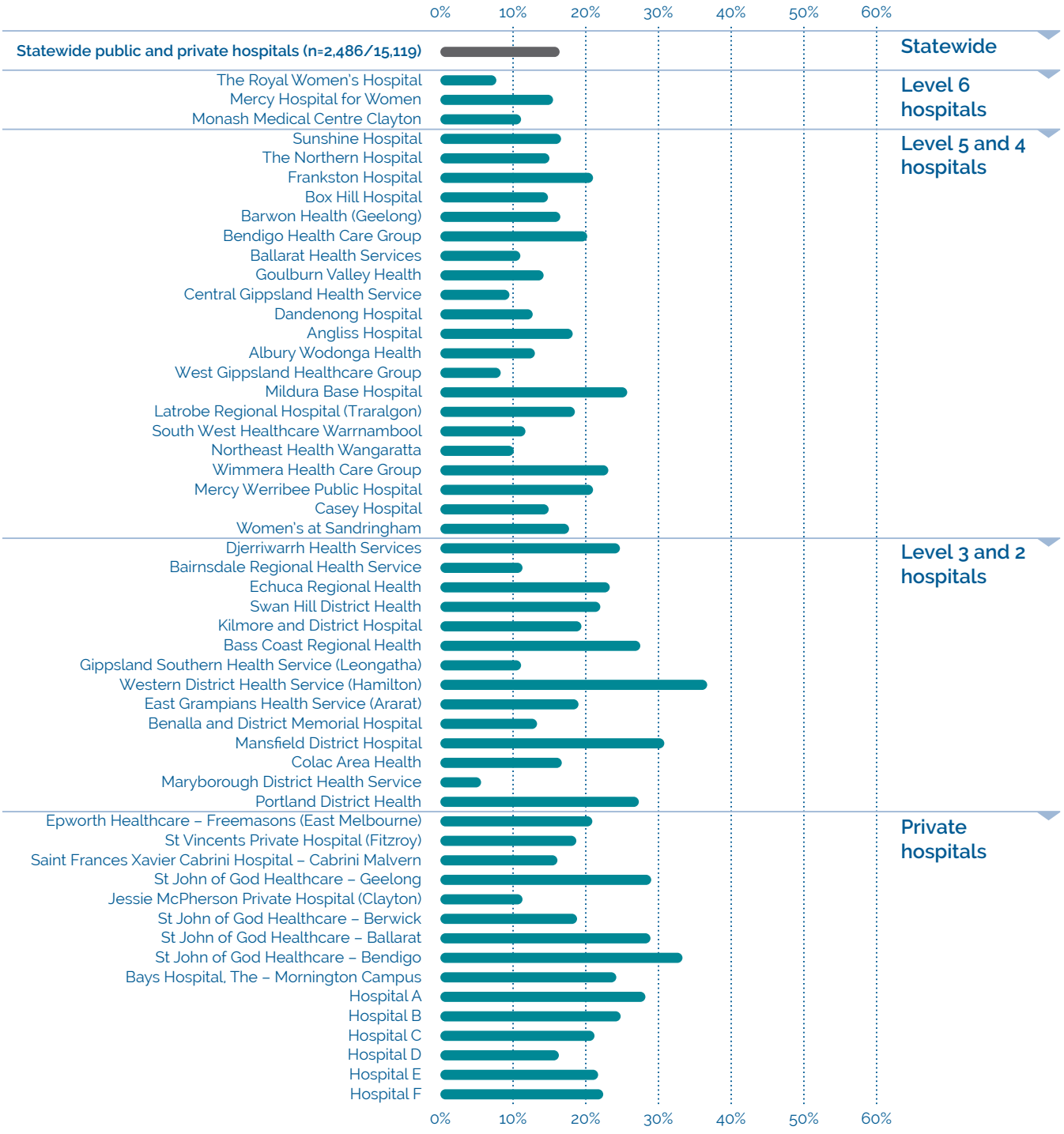
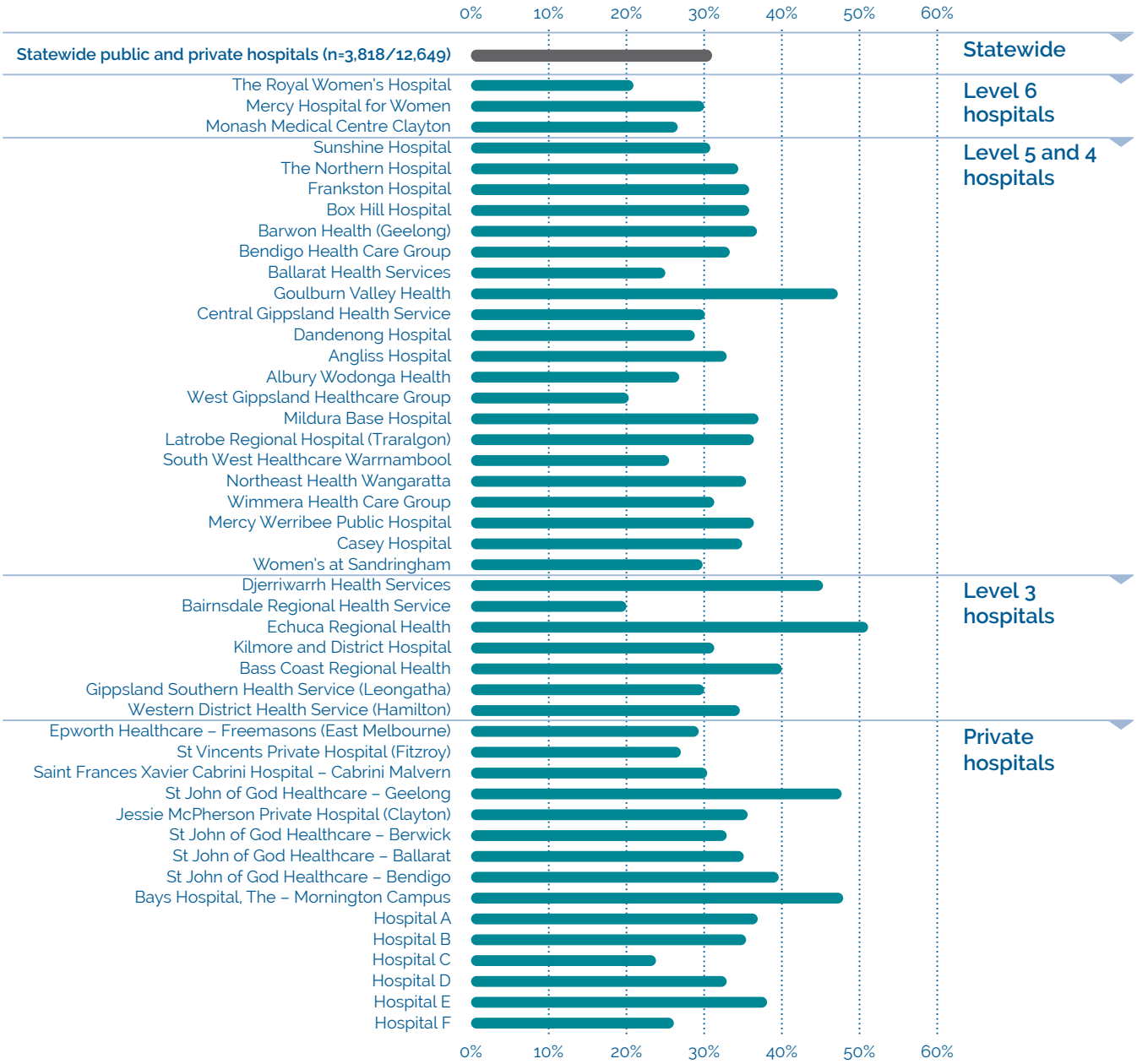


Figure 30: Shadow indicator 1bii (Shadow): Ten group classification system (2): Nulliparous, single cephalic, ≥ 37 weeks, induced labour (excluding pre-labour Caesarean Sections)



Shadow Indicators 1ci and 1cii: Third and fourth degree perineal tear rates for all primiparae (2016)

Definition:

For all primiparae, (i) the proportion who have a third or fourth degree perineal tear during an unassisted vaginal birth, and (ii) the proportion who had a third or fourth degree perineal tear during an assisted vaginal birth.

A birth is defined as the event in which a baby comes out of the uterus after a pregnancy of at least 20 weeks gestation or weighing 400 grams or more.

Assisted (or operative/instrumental) vaginal birth refers to a forceps or vacuum assisted birth. Operative intervention in the second stage of labour may be indicated by conditions of the fetus or the mother. Maternal indication includes inadequate progress in labour, congestive heart failure and cerebral vascular malformations.

Included are those women who gave birth for the first time and had a vaginal birth, with or without instruments. Women who had a multiple birth are included if this was the first time they had given birth.

Excluded are those women who did not give birth for the first time or gave birth by caesarean section.

Third degree perineal tear: Perineal laceration, rupture or tear as in Code 2 occurring during delivery, also involving: anal sphincter, rectovaginal septum and / sphincter not otherwise specified. Excludes laceration involving the anal or rectal mucosa.

Fourth degree perineal tear: Perineal laceration, rupture or tear as in Code 3 occurring during delivery, also involving: anal mucosa and / or rectal mucosa.

The rates for third and fourth degree tears includes episiotomies extended by a laceration of a third and fourth degree type.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

This data is routinely submitted by each health service on each birth.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 1ci: Proportion who have a third or fourth degree perineal tear during an unassisted vaginal birth in Victorian public and private hospitals	The number of primiparae who had a third or fourth degree perineal laceration during an unassisted vaginal birth	The number of primiparae who had an unassisted vaginal birth
Indicator 1cii: Proportion who have a third or fourth degree perineal tear during an assisted vaginal birth in Victorian public and private hospitals public and private hospitals	The number of primiparae who had a third or fourth degree perineal laceration during an assisted (instrumental) vaginal birth	The number of primiparae who had an assisted vaginal birth

Figure 31: Shadow indicator 1ci: Third and fourth degree perineal tear rates for all primparae by unassisted vaginal birth (2016)

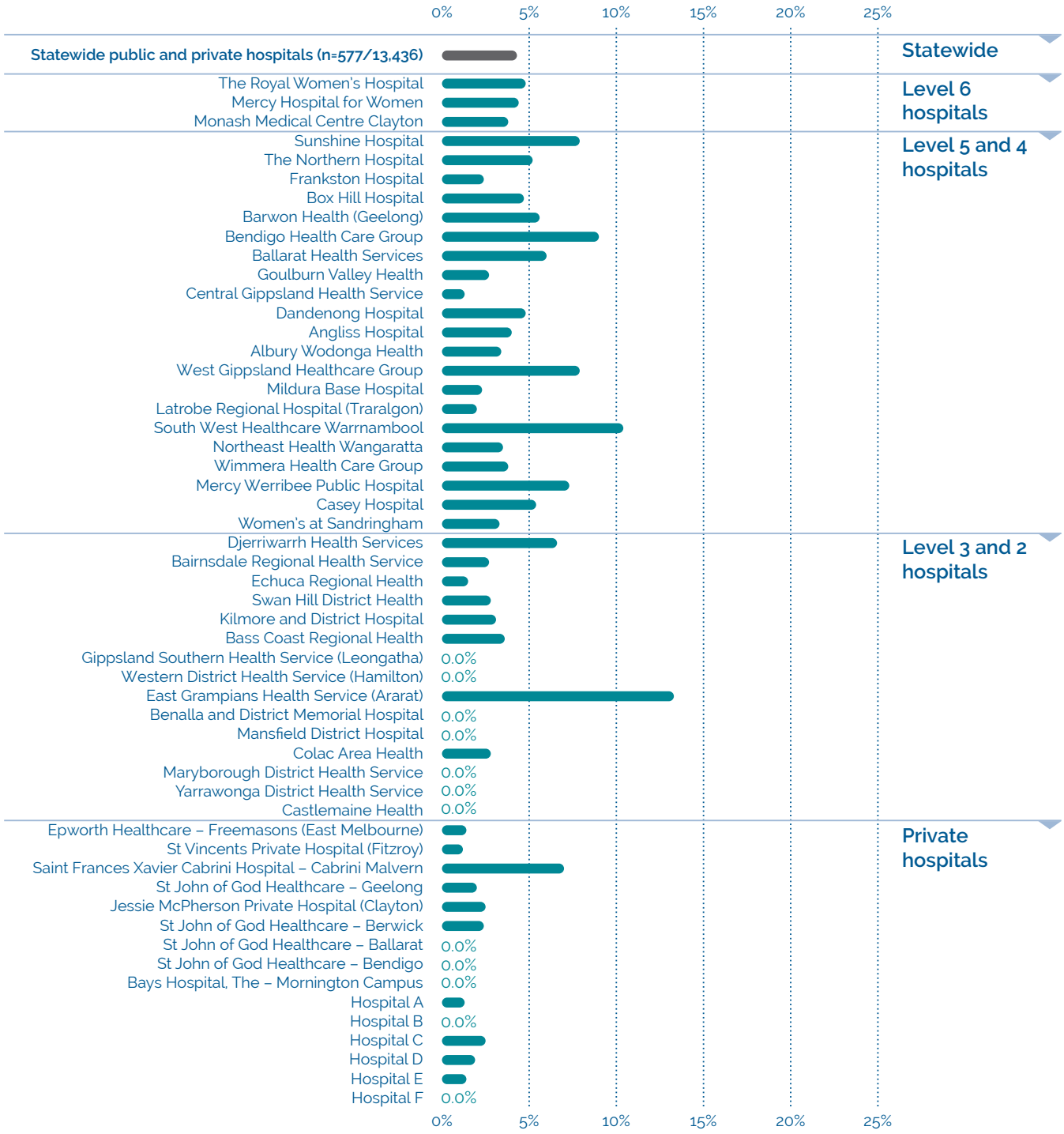
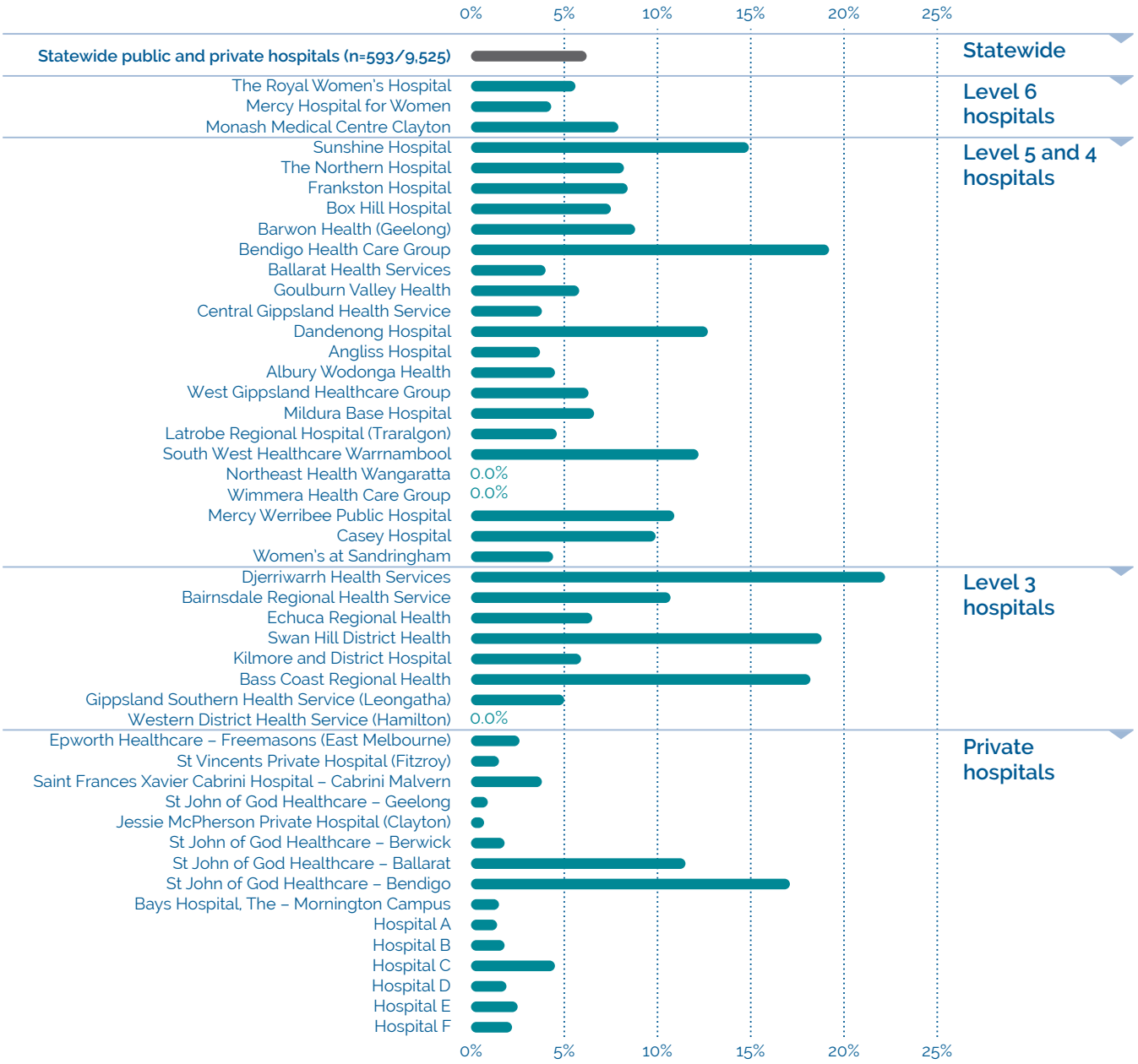


Figure 32: Shadow indicator 1cii: Third and fourth degree perineal tear rates for all primparae by assisted vaginal birth (2016)



Shadow Indicators 1di and dii: Episiotomy rates for all primparae (2016)

Definition:

For all primiparae, (i) the proportion who received an episiotomy during an unassisted vaginal birth, and (ii) the proportion who received an episiotomy during an assisted vaginal birth.

A birth is defined as the event in which a baby comes out of the uterus after a pregnancy of at least 20 weeks gestation or weighing 400 grams or more.

Episiotomy is defined as whether an incision of the perineum and vagina was made during vaginal delivery.

Included are those women who gave birth for the first time and had a vaginal birth, with or without instruments. Women who had a multiple birth are included if this was the first time they had given birth.

Excluded are those women who did not give birth for the first time or gave birth by caesarean section.

Assisted (or operative/instrumental) vaginal birth refers to a forceps or vacuum assisted birth. Operative intervention in the second stage of labour may be indicated by conditions of the fetus or the mother. Maternal indication includes inadequate progress in labour, congestive heart failure and cerebral vascular malformations.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2016 to 31 December 2016.

This data is routinely submitted by each health service on each birth.

Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 1di: Proportion who received an episiotomy during an unassisted vaginal birth in Victorian public and private hospitals	The number of primiparae who had an episiotomy during an unassisted vaginal birth	The number of primiparae who had an unassisted vaginal birth
Indicator 1dii: Proportion who received an episiotomy during an assisted vaginal birth in Victorian public and private hospitals	The number of primiparae who had an episiotomy during an assisted vaginal birth	The number of primiparae who had an assisted (instrumental) vaginal birth

Figure 33: Shadow indicator 1di: Episiotomy rates for all primparae by unassisted vaginal birth (2016)

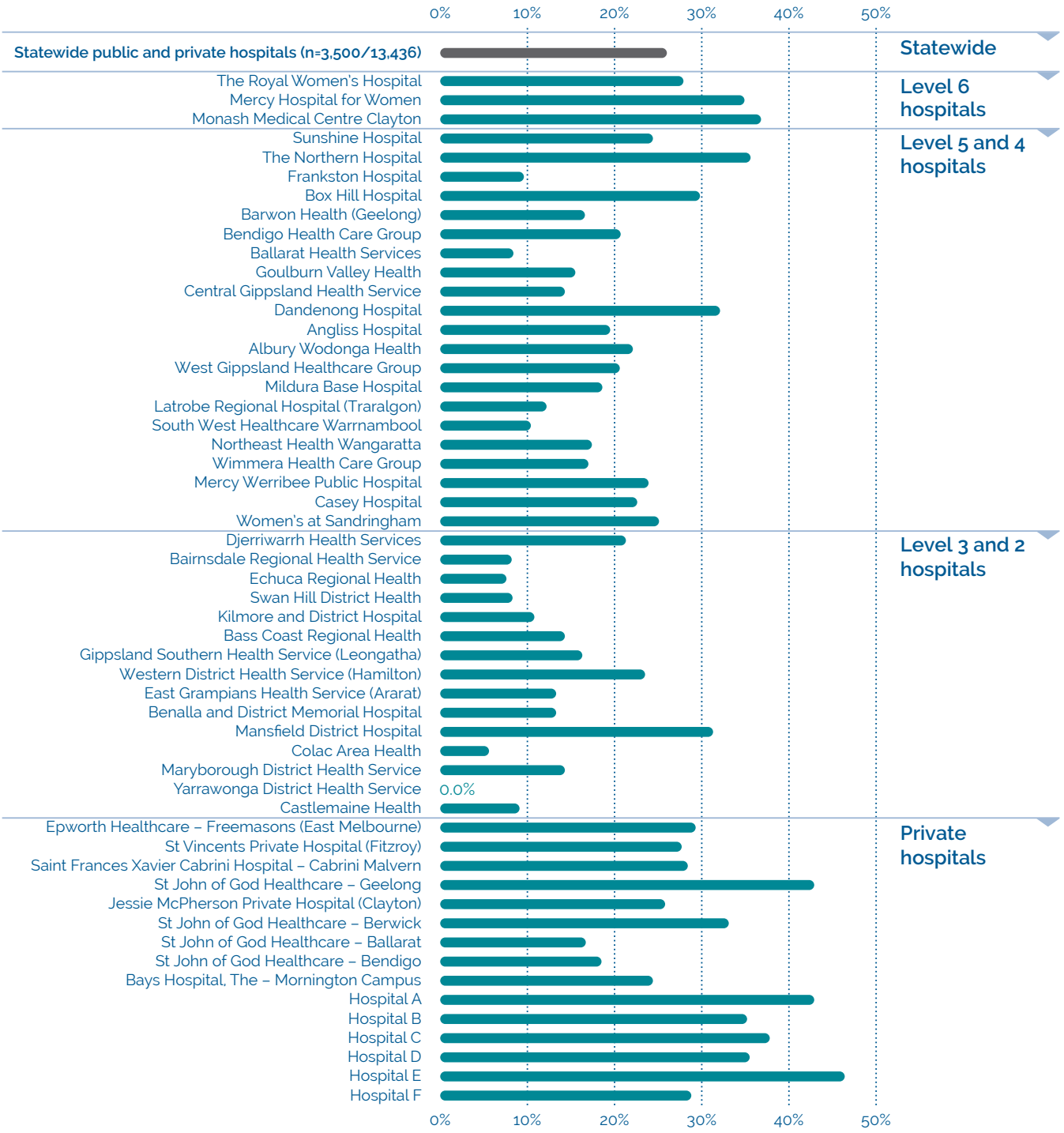
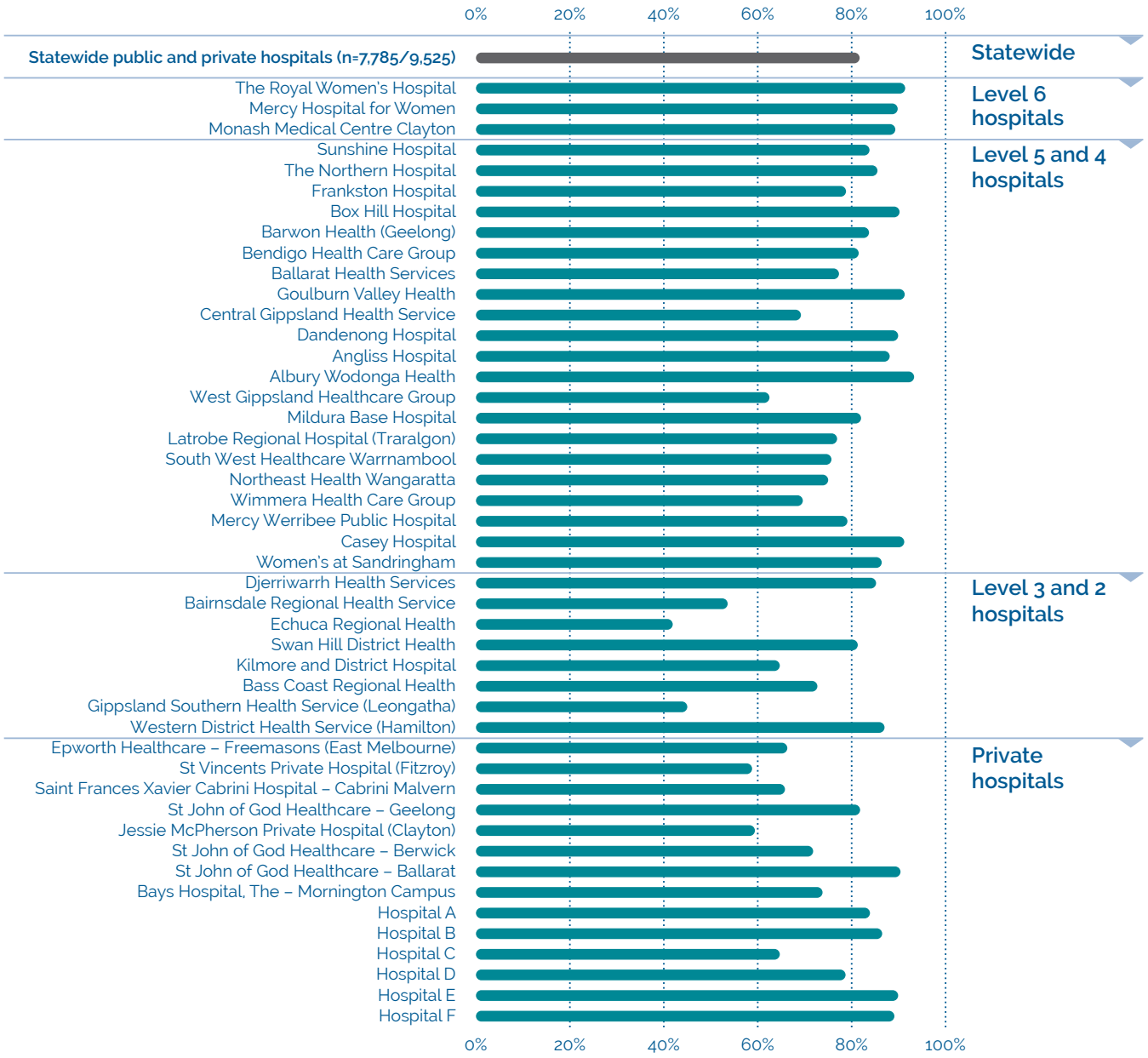


Figure 34: Shadow indicator 1dii: Episiotomy rates for all primparae by assisted vaginal birth (2016)



Shadow Indicator 11a and b: Patient experience

Purpose and rationale

Research shows that understanding experiences of care for individuals and families can have a significant impact on the quality and efficiency of health care. The Victorian Healthcare Experience Survey (VHES) collects patient experience information from recent users of Victorian public health services and is used to formally monitor statewide health service performance and measure key aspects of care. This information is supporting a stronger focus on consumers' experience of care as a driver for safety and quality, as recommended by *Targeting zero – review of hospital safety and quality assurance in Victoria.*[15]

Collection of VHES maternity survey data commenced in January 2016, with approximately 5,700 surveys contributing to the development of the following indicators for 2016. By understanding and monitoring the experience of maternity care, health services are in a better position to identify areas for quality improvements.[16]

The following two indicators are predicated on the VHES maternity survey and are provided to support person centred care and breastfeeding.

- **Indicator 11a: Thinking about your care during labour and birth, were you involved, as much as you wanted to be, in decisions about your care?**

Keeping women and families at the centre of decisions and supporting active participation in their care during the perinatal period can:

- enable improved self-care and management, including better access to information, education and resources
- foster meaningful relationships to improve their health and wellbeing (including peer support networks and community groups)

Since this indicator reflects care over a relatively short period (>24 hours) this is an important measure of how consistent information sharing and care planning in a service is achieved.

- **Indicator 11b: Did you feel that midwives and other health professionals gave you consistent advice about feeding your baby?**

Indicator 8b reflects that in 2016, in all public hospitals, infant formula was used to support the feeding of 25.1 per cent of babies while still in hospital.

With breastfeeding long demonstrated to support a healthy start for babies, midwives have a central role in the early establishment of breastfeeding. The sensitive provision of consistent evidence based information, together with practical advice and support provide the best support for women to successfully establish and maintain breastfeeding.

15 Duckett S, Cuddihy M, Newnham H 2016, *Targeting Zero: Supporting the Victorian hospital system to eliminate harm and strengthen quality of care – Report of the Review of Hospital Safety and Quality Assurance in Victoria,* viewed 12 January 2018, <https://www.dhhs.vic.gov.au/publications/targeting-zero-review-hospital-safety-and-quality-assurance-victoria>

16 Health Foundation. *Measuring patient experience: evidence scan.* London: Health Foundation 2013.

Definitions

Data source:

Victorian Agency for Information (the Agency) validated the Victorian Healthcare Experience Survey (VHES) results. Data extracted 28 April 2017.

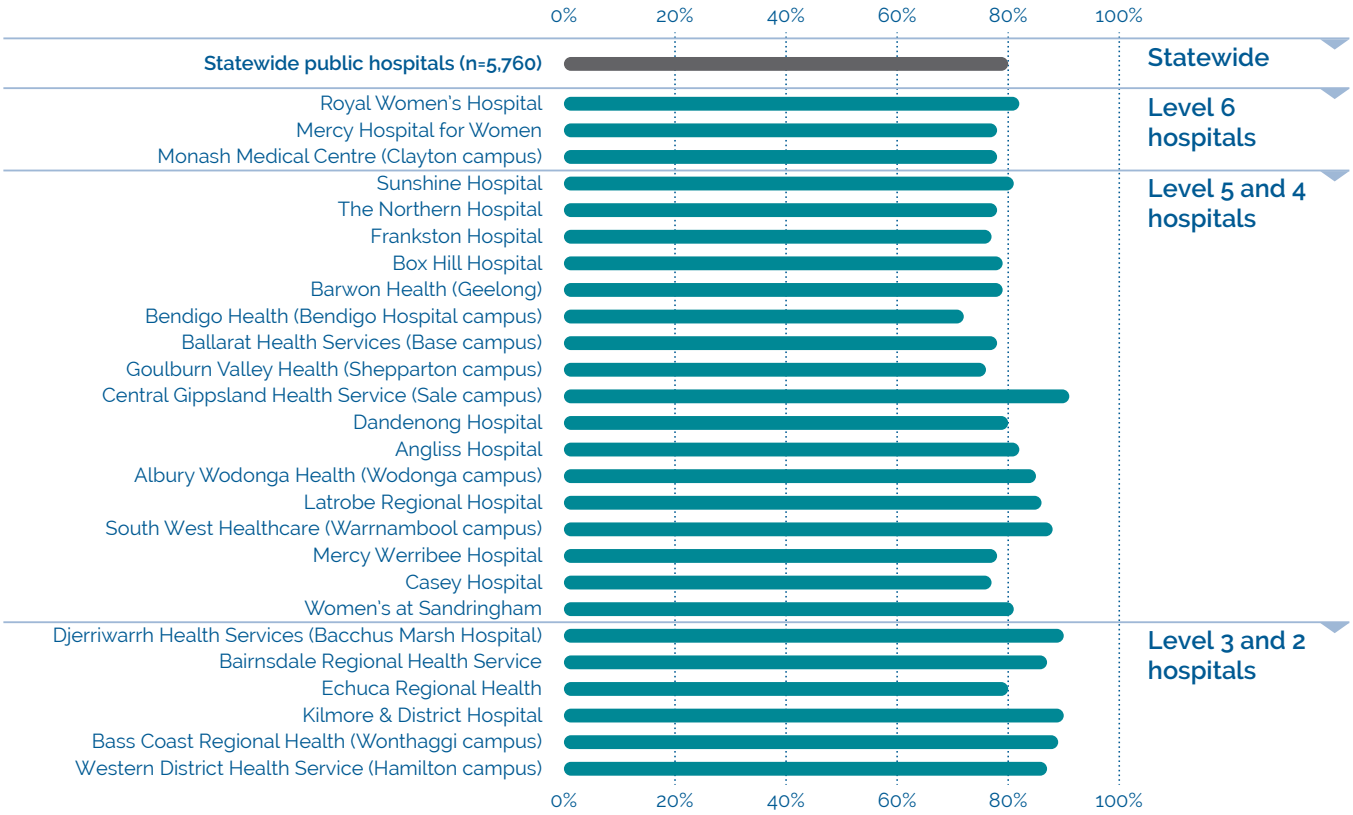
VHES data is reported by calendar year: 1 January 2016 to 31 December 2016.

Results are not reported when there are fewer than 42 responses for a health service, or when data were not provided by the health service. Note: the maternity questionnaire of the VHES is distributed to a random sample of consumers one month following a hospital admission for pregnancy and birth.

Numerator/denominator:

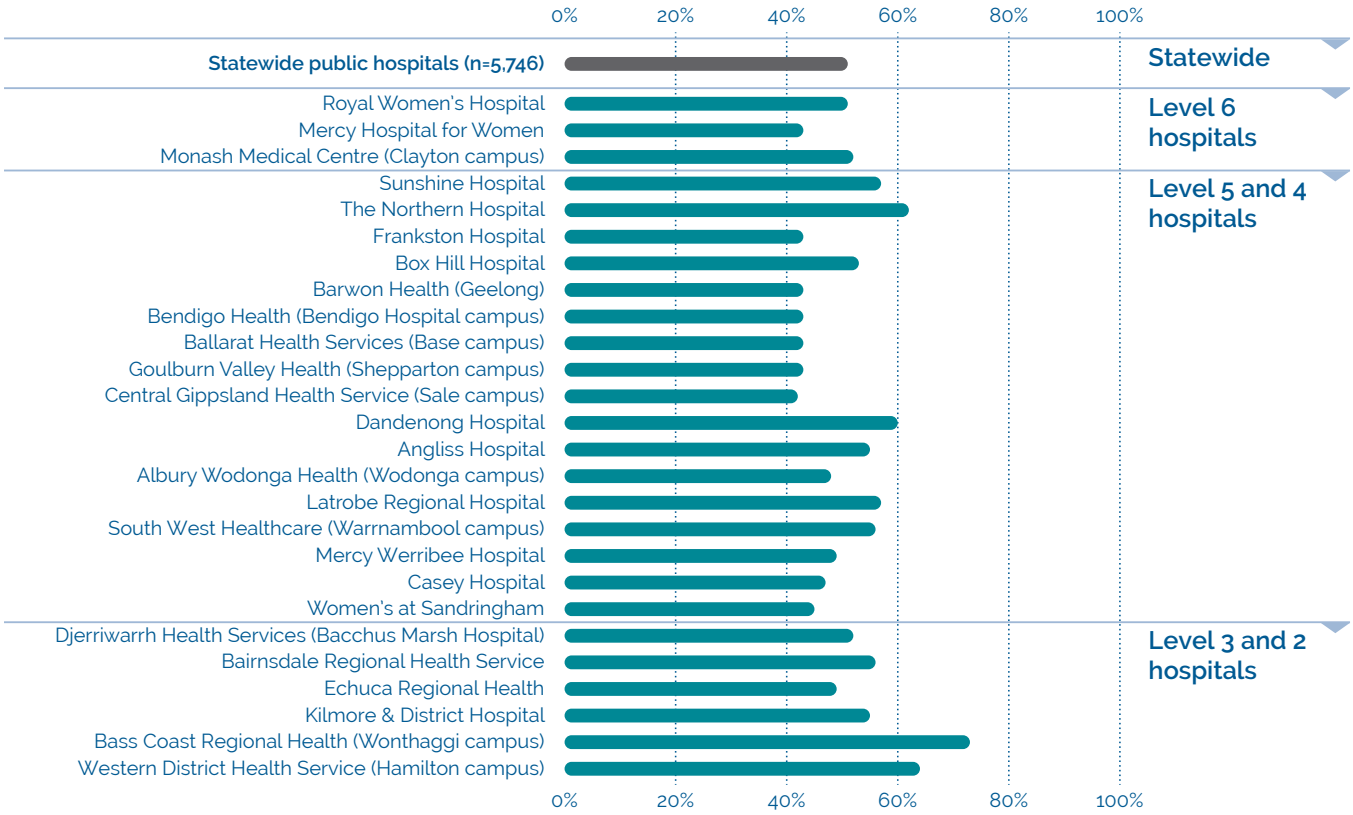
Indicator	Numerator	Denominator
Indicator 11a: Thinking about your care during labour and birth, were you involved, as much as you wanted to be, in decisions about your care?	The number of women who answered 'yes, always' to question 36 of the maternity questionnaire of the Victorian Healthcare Experience Survey.	The number of women who answered question 36 of the maternity questionnaire of the Victorian Healthcare Experience Survey.
Indicator 11b: Did you feel that midwives and other health professionals gave you consistent advice about feeding your baby?	The number of women who answered 'yes, always' to question 51 of the maternity questionnaire of the VHES program.	The number of women who answered question 51 of the maternity questionnaire of the VHES program.

Figure 35: Shadow indicator 11a: Thinking about your care during labour and birth, were you involved, as much as you wanted to be, in decisions about your care? VHES 2016



Note: Results are not reported when there were fewer than 42 responses for a health service, or when data were not provided by the health service.
Source: Victorian Agency for Health Information analysis of the Victorian Healthcare Experience Survey. Data extracted 28 April 2017.

Figure 36: Shadow indicator 11b: Did you feel that midwives and other health professionals gave you consistent advice about feeding your baby? VHES 2016



Note: Results are not reported when there were fewer than 42 responses for a health service, or when data were not provided by the health service.
Source: Victorian Agency for Health Information analysis of the Victorian Healthcare Experience Survey. Data extracted 28 April 2017.

Appendix 3: Key terms

Antenatal	Before birth – the period between conception and birth. Also called 'prenatal'.
Apgar score	A score based on the baby's skin colour, spontaneous activity, reflex activity, pulse rate and respiration at specific times after birth.
Caesarean section	A surgical operation by which the fetus is extracted through an incision in the abdominal and uterine walls.
Centile	A centile is a measure used in statistics indicating the value below which a given percentage of observations in a group of observations fall. For example, the 10th centile is the value (or score) below which ten per cent of the observations may be found.
Congenital anomaly	An anomaly occurring before birth including structural, functional, genetic, chromosomal and biochemical abnormalities. Also called birth defect, congenital malformation' or 'congenital disorder'.
Fetal growth restriction (FGR)	Birthweight below the 10th centile for gestational age, plurality and sex. Severe FGR is a birthweight less than the 3rd centile.
Fourth-degree tear	A tear of the perineum into the anal sphincter extending into the lining of the anus.
Gestation	The number of weeks of pregnancy calculated from the first day of the mother's last normal menstrual period.
Inborn	Baby born at the reporting hospital.
Induction of labour	Use of interventions (medications, rupture of membranes) to assist the process of labour to begin.
Intrapartum	During labour.
Live birth	The birth of a baby, at any stage of maturity, who has breathed or shown other signs of life after being born.
Maternity care provider	The clinician who provides most occasions of antenatal care and is expected to be primarily responsible for making decisions regarding intrapartum care.
Neonatal	Newborn; from birth until the 28th day.

Perinatal	The period before, during and after birth – antenatal, intrapartum and postnatal periods.
Perineal tear	A tear or rupture of the pelvic floor and associated structures.
Postnatal	The period after birth (and generally accepted to last for 6 weeks).
Pre-term	Prior to 37 weeks' gestation.
Primipara	A woman who has given birth for the first time.
Singleton	The birth of only one child during a single delivery
Standard primipara	A woman, 20–34 years of age, who has given birth for the first time, free of obstetric and specific medical complications and is pregnant with a singleton pregnancy of gestation between 37 weeks 0 days and 40 weeks six days, with a non-small-for-gestational-age (greater than 10th centile) infant and a head-first (cephalic) presentation.
Stillbirth	The birth of an infant of at least 20 weeks' gestation or, if gestation is unknown, weighing at least 400 grams, who shows no signs of life at birth.
Term baby	An infant born between 37 and 42 weeks' gestation.
Third-degree tear	A tear of the perineum into the anal sphincter that does not extend to the lining of the anus.
Vaginal birth	A birth of a baby via the vagina whether or not it was assisted.
Vaginal birth after caesarean (VBAC)	Vaginal birth after caesarean; a woman who has a normal vaginal birth, forceps birth or ventouse birth following a previous caesarean birth.

Appendix 4: Total women and babies, 2016

Table 3: Total number of women and babies, by place of birth, 2016

Health service	Maternity capability level of service*	Number of women	Number of babies
The Royal Women's Hospital	6	7,596	7,749
Mercy Hospital for Women	6	5,852	5,980
Monash Medical Centre Clayton	6	4,144	4,307
Sunshine Hospital	5	5,374	5,448
The Northern Hospital	5	3,556	3,593
Frankston Hospital	5	2,881	2,909
Box Hill Hospital	5	2,687	2,709
University Hospital Geelong	5	2,442	2,466
Bendigo Health Care Group	5	1,350	1,367
Ballarat Health Services	5	1,369	1,389
Goulburn Valley Health	5	1,078	1,086
Albury Wodonga Health	5	1,594	1,617
Latrobe Regional Hospital (Traralgon)	5	812	824
Central Gippsland Health Service	4	449	457
Dandenong Hospital	4	2,677	2,677
Angliss Hospital	4	2,307	2,326
West Gippsland Healthcare Group	4	880	895
Mildura Base Hospital	4	880	885
South West Healthcare Warrnambool	4	720	731
Northeast Health Wangaratta	4	626	639
Wimmera Health Care Group	4	330	331
Mercy Werribee Hospital	4	3,725	3,750
Casey Hospital	4	2,137	2,137
Women's at Sandringham	4	1,560	1,563

Health service	Maternity capability level of service*	Number of women	Number of babies
Djerriwarrh Health Services	3	469	469
Bairnsdale Regional Health Service	3	358	359
Echuca Regional Health	3	378	383
Swan Hill District Health	3	233	234
Kilmore and District Hospital	3	303	303
Bass Coast Regional Health	3	183	184
Gippsland Southern Health Service (Leongatha)	3	209	209
Western District Health Service (Hamilton)	3	186	188
East Grampians Health Service (Ararat)	3	96	96
Benalla and District Memorial Hospital	3	74	74
South Gippsland Hospital	3	56	56
Mansfield District Hospital	3	90	90
Cohuna District Hospital	2	59	60
Terang and Mortlake Health Service	2	16	16
Colac Area Health	3	167	167
Maryborough District Health Service	2	68	68
Yarrawonga District Health Service	2	38	38
Kyneton District Health Service	2	31	31
Castlemaine Health	2	41	53
Portland District Health	2	66	66
South West Healthcare Camperdown	3	27	27
Orbost Regional Health	2	18	18
Other public hospitals		9	9

Health service	Maternity capability level of service*	Number of women	Number of babies
Hospital A	Private hospitals	3,263	3,345
Epworth Healthcare – Freemasons (East Melbourne)		3,129	3,171
St Vincents Private Hospital (Fitzroy)		2,550	2,614
Saint Frances Xavier Cabrini Hospital – Cabrini Malvern		2,091	2,118
Hospital B		1,112	1,121
Hospital C		930	937
St John of God Healthcare – Geelong		941	962
Jessie McPherson Private Hospital (Clayton)		893	951
St John of God Healthcare – Berwick		840	847
Hospital D		816	827
Hospital E		612	620
St John of God Healthcare – Ballarat		477	482
Bays Hospital, The – Mornington Campus		483	487
Hospital F		445	447
St John of God Healthcare – Bendigo		329	335
Private homebirth		**255**	**255**
Public hospital total		**60,203**	**61,035**
Private hospital total (*n* = 16)		**18,911**	**19,264**
Statewide total		**79,114**	**80,299**

Notes: Excludes babies born ≤ 20 weeks' gestation, all terminations of pregnancy and birthweight ≤ 150g. Babies born before arrival are counted at the hospital the mother and baby are subsequently transported to. Public hospitals with ≤ 5 births are included in 'Other public hospitals'. Non-maternity public hospitals with occasional births are also included in 'Other public hospitals'.

* Maternity capability levels for period 2016–17. Capability levels for private hospitals were not determined for that period.

Appendix 5: Overview of results

Table 4: Overview of indicator results, 2016–17

Maternity Level		Number of births	Indicators							
			1a	1b	1c	2	3	4a	4b	5
	Statewide public and private hospitals		8.2	22.6	5.4	9.6	30.8	25.4	54.8	1 (public) 0.68 (private)
	Lower quartile range		0	10.9	0	2.8	22.7	15.8	35.9	0.98 (public) 0.94 (private)
	Upper quartile range		13.2	33.2	6.5	12.4	37	32.2	63.5	1.23 (public) 1.31 (private)
6	The Royal Women's Hospital	7,749	4.6	8.7	6.3	6.4	38.1	26.7	73.7	0.83
6	Mercy Hospital for Women	5,980	4.9	16.1	3.2	10.2	33.6	23	56.9	0.56
6	Monash Medical Centre Clayton	4,307	1.6	9.9	6.7	20.2	28.6	35.5	63.8	1.03
5	Sunshine Hospital	5,448	5	17.3	12.4	8.3	19.1	32.5	46.7	1.06
5	The Northern Hospital	3,593	4.2	11.8	9.6	8.3	26.7	38.5	46.5	1.23
5	Frankston Hospital	2,909	5.2	22.9	5	10.6	39.1	24.6	52.9	1.19
5	Box Hill Hospital	2,709	2.8	14.7	6.6	8.6	21.9	21.3	70.4	1.3
5	Barwon Health (Geelong)	2,466	1.3	16.1	7.2	14.5	20.8	32.1	53.7	1.28
5	Bendigo Health Care Group	1,367	2.9	15.9	15.5	13	22.7	30.8	63.6	N/A
5	Ballarat Health Services	1,389	4.2	10.04	14	12.1	10	40.2	51	1.1
5	Goulburn Valley Health		6.4	17.9	3.1	12.4	27.3	37.7	51.7	0.9
5	Albury Wodonga Health	1,617	4.1	19.7	5.1	8	17.4	25.8	55.9	0.98

Maternity Level		Indicators								Total number of indicators in least favourable quartile (shaded red)	Total number of indicators in most favourable quartile (shaded green)
		6a	6b	7	8a	8b	8c	9	10		
	Statewide public and private hospitals	2.5	4.2 (public)	21.4	95.4	28.2	76.8	45.4	1.4		
	Lower quartile range	N/A	N/A	11.2	93.8	12.7	75	24.1	0		
	Upper quartile range	N/A	N/A	32.5	97.5	31.4	90.5	79.7	1.7		
6	The Royal Women's Hospital	2.4	4.9	48.5	97.8	24.8	75.9	23.9	1.7	3	5
6	Mercy Hospital for Women	2.7	2.4	7.3	96.5	28.5	77.9	13.6	1.7	3	1
6	Monash Medical Centre Clayton	2.4	4.8	30.3	95.7	38	56.1	21.4	2.2	6	3
5	Sunshine Hospital	2.3	7.4	23.7	95	26.6	78.1	14	1.6	2	2
5	The Northern Hospital	2.1	5.4	31.8	92.4	31.6	65.9	27.8	1	5	1
5	Frankston Hospital	2.6	2.9	24.4	93	21	90.6	45	1.4	2	1
5	Box Hill Hospital	2.9	5	21.5	97.4	20.1	84.9	27.4	1.9	3	2
5	Barwon Health (Geelong)	3	3.3	2.2	94.5	23.2	84.2	66.5	1.9	5	1
5	Bendigo Health Care Group	2.55	4	8.2	94.2	33.6	70.3	33.5	3.1	6	1
5	Ballarat Health Services	3.1	6.6	14.1	93.8	19.6	85.7	78.6	3.2	2	3
5	Goulburn Valley Health	1.6	2.5	23.2	94.2	29.1	84.1	30.1	1.3	1	2
5	Albury Wodonga Health	1.7	2.3	11.3	94.1	24.3	87.2	43.6	0.7	0	2

Maternity Level		Number of births	Indicators							
			1a	1b	1c	2	3	4a	4b	5
5	Latrobe Regional Hospital (Traralgon)	824	3	9.1	3.3	8.7	23.5	27.7	61.1	1.52
4	Central Gippsland Health Service	457	13.6	9.1	5	8.3	N/A	19.6	N/A	N/A
4	Dandenong Hospital	2,677	1.4	12	8	12.5	40.7	39.7	63.3	1.11
4	Angliss Hospital	2,326	2.8	15.9	3.3	9.3	45.2	18.1	66.7	0.98
4	West Gippsland Healthcare Group	895	0	6.9	0	10.7	27.3	52.9	66.7	N/A
4	Mildura Base Hospital	885	3.2	33.3	2.4	7.2	29.4	32.1	29.6	N/A
4	South West Healthcare Warrnambool	731	4.8	14.5	15.1	7.9	20	44.4	66.7	N/A
4	Northeast Health Wangaratta	639	2.3	11.4	0	4.3	N/A	49.1	55.6	N/A
4	Wimmera Health Care Group	331	N/A	N/A	N/A	8.2	N/A	18.2	N/A	N/A
4	Mercy Werribee Public Hospital	3,750	4.9	27.9	6.4	7.8	35.8	30.7	50.8	0.98
4	Casey Hospital	2,137	0	15	10.2	13.2	24	38.5	58	0.86
4	Women's at Sandringham	1,563	2	16.4	4.7	2.8	48.5	16.9	23.8	N/A
3	Djerriwarrh Health Services	469	8.7	21.7	16.7	2.8	N/A	34.7	35.3	1.58
3	Bairnsdale Regional Health Service	359	0	14.3	0	6	N/A	43.8	71.4	N/A
3	Echuca Regional Health	383	3.4	24.1	0	0.7	N/A	20	N/A	N/A
3	Swan Hill District Health	234	0	44.4	10	3.9	N/A	23.5	N/A	N/A
3	Kilmore and District Hospital	303	7.1	21.4	0	1.3	N/A	4.3	N/A	N/A
3	Bass Coast Regional Health	184	N/A	N/A	N/A	7.2	N/A	45.5	60.5	N/A

Maternity Level		Indicators								Total number of indicators in least favourable quartile (shaded red)	Total number of indicators in most favourable quartile (shaded green)
		6a	6b	7	8a	8b	8c	9	10		
5	Latrobe Regional Hospital (Traralgon)	2.6	2.1	21.2	91.4	38.2	66.4	62.3	3.3	5	1
4	Central Gippsland Health Service	3.4	2.9	13.5	97.6	22.3	87.6	87.4	2.5	2	3
4	Dandenong Hospital	2.7	4.7	29.3	97.2	19.1	76.2	23.3	1.2	4	1
4	Angliss Hospital	2.4	2.7	30	95.6	21.5	73.3	79.6	1.7	3	2
4	West Gippsland Healthcare Group	2.3	6.5	27.2	95	20.2	94.7	64.7	1.1	0	6
4	Mildura Base Hospital	2.2	3.6	26	91.2	25	75.4	65.1	3.5	4	0
4	South West Healthcare Warrnambool	3.1	3	19.8	77.9	6.8	97.5	79.6	1.3	2	5
4	Northeast Health Wangaratta	2.6	5	22.8	92.6	19.6	88.1	53.9	0.6	1	2
4	Wimmera Health Care Group	3.1	2.8	5.9	92.2	18.2	91.9	51.1	0.3	2	1
4	Mercy Werribee Public Hospital	2.1	1.5	5.2	95.3	28	77.6	16.3	0.9	3	1
4	Casey Hospital	3.1	6.4	39	95.6	22.4	72.9	31.7	1.3	3	4
4	Women's at Sandringham	2.4	5	16.3	97	13.2	94.6	2.8	1.6	3	2
3	Djerriwarrh Health Services	1	2.5	15.3	90.7	17.2	85.9	24.2	0.2	4	3
3	Bairnsdale Regional Health Service	3.9	3.3	16.9	94.5	7.4	93.9	5.3	0	1	6
3	Echuca Regional Health	4.4	2.5	37.7	93.9	12.2	90.4	33.9	0.8	0	4
3	Swan Hill District Health	2.7	1.4	14.3	92	24.6	84.1	84.5	2.6	4	2
3	Kilmore and District Hospital	0.8	1.7	25.5	92.3	12.9	91.7	1.7	1.7	4	3
3	Bass Coast Regional Health	4.9	1.5	25.8	94.8	11	92.1	43.1	1.8	1	3

Maternity Level		Number of births	Indicators							
			1a	1b	1c	2	3	4a	4b	5
3	Gippsland Southern Health Service (Leongatha)	209	3.3	13.3	3.8	2.4	N/A	19	N/A	N/A
3	Western District Health Service (Hamilton)	188	N/A	N/A	N/A	2.7	N/A	17.6	N/A	N/A
3	East Grampians Health Service (Ararat)	96	N/A	N/A	N/A	4.6	N/A	N/A	N/A	N/A
3	Benalla and District Memorial Hospital	74	N/A	N/A	N/A	3.4	N/A	27.3	N/A	N/A
3	South Gippsland Hospital	56	N/A	N/A	N/A	2.2	N/A	N/A	N/A	N/A
3	Mansfield District Hospital	90	N/A	N/A	N/A	8.6	N/A	N/A	N/A	N/A
3	Colac Area Health	167	0	23.1	0	5.6	N/A	30	N/A	N/A
3	South West Healthcare Camperdown	27	N/A	N/A	N/A	2.9	N/A	N/A	N/A	N/A
2	Cohuna District Hospital	60	N/A	N/A	N/A	2.9	N/A	N/A	N/A	N/A
2	Terang and Mortlake Health Service	16	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
2	Maryborough District Health Service	68	0	10	N/A	0	N/A	N/A	N/A	N/A
2	Yarrawonga District Health Service	38	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
2	Kyneton District Health Service	31	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
2	Castlemaine Health	53	N/A	N/A	N/A	2.2	N/A	N/A	N/A	N/A
2	Portland District Health	66	N/A	N/A	N/A	1.9	N/A	N/A	N/A	N/A
2	Orbost Regional Health	18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Alpine (Bright, Myrtleford and Mt Beauty)	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	Kerang District Hospital	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Maternity Level		Indicators								Total number of indicators in least favourable quartile (shaded red)	Total number of indicators in most favourable quartile (shaded green)
		6a	6b	7	8a	8b	8c	9	10		
3	Gippsland Southern Health Service (Leongatha)	4.3	2.7	0	96.1	16.8	86.2	42.5	2.6	2	1
3	Western District Health Service (Hamilton)	0.7	2.1	0	96.6	21.2	78.4	30.3	0	1	2
3	East Grampians Health Service (Ararat)	2.7	0	44.4	95.7	28.7	88.8	89.6	1.1	0	2
3	Benalla and District Memorial Hospital	0	0	33.3	93.2	11.8	87	70.3	0	1	3
3	South Gippsland Hospital	2	4.1	N/A	100	10.9	87.5	56.4	1.9	1	3
3	Mansfield District Hospital	0	3.8	N/A	95.5	11.1	85.9	4.4	2.4	2	1
3	Colac Area Health	3.4	1.4	7.7	98.8	23.3	88.3	73.3	0	1	4
3	South West Healthcare Camperdown	0	2.9	N/A	85.2	4.3	91.3	70.4	3.7	2	2
2	Cohuna District Hospital	2.6	2.7	N/A	96.4	13.7	90.7	82.5	0	0	3
2	Terang and Mortlake Health Service	0	0	N/A	100	6.7	93.8	68.8	0	0	4
2	Maryborough District Health Service	1.3	0	29.2	98.5	12.5	81.5	10.9	0	1	5
2	Yarrawonga District Health Service	0	0	N/A	92.1	2.9	100	21.1	0	2	3
2	Kyneton District Health Service	0	0	N/A	100	3.2	96.8	3.2	0	1	4
2	Castlemaine Health	0	2.4	N/A	97.6	9.3	74.5	86.8	0	1	5
2	Portland District Health	2.1	0	N/A	95.2	22.8	80	12.1	0	1	2
2	Orbost Regional Health	N/A	N/A	N/A	100	5.6	100	38.9	0	0	4
2	Alpine (Bright, Myrtleford and Mt Beauty)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	Kerang District Hospital	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A

Maternity Level		Number of births	Indicators							
			1a	1b	1c	2	3	4a	4b	5
1	Kyabram and District Health Service	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Seymour District Memorial Hospital	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private hospitals	Hospital A	3,345	9.5	34.6	1.4	25.0	12.2	14.9	22.5	0.95
	Epworth Healthcare – Freemasons (East Melbourne)	3,171	18.6	33.3	3.2	18.8	36.4	11.1	35.7	0.94
	St Vincent's Private Hospital (Fitzroy)	2,614	8.3	32	2.6	15.8	37	14.1	71.7	0.84
	Saint Frances Xavier Cabrini Hospital – Cabrini Malvern	2,118	14	27.6	1.9	20.2	29.2	22.8	47.5	1.31
	Hospital B	1,121	22.5	33.1	1.8	16.8	29.2	24.9	47.6	N/A
	Hospital C	937	18.2	28	6.3	12.6	60	13.8	58.8	N/A
	St John of God Healthcare – Geelong	962	27.5	47.5	0	4.3	N/A	11.6	60	1.58
	Jessie McPherson Private Hospital (Clayton)	951	10.5	33.3	0	31.4	24	25.7	72.4	N/A
	St John of God Healthcare – Berwick	847	25.7	33.7	4.5	10.7	N/A	17.2	59.1	N/A
	Hospital D	827	28	35.5	2.9	11.2	45	12.6	61.5	N/A
	Hospital E	620	26.9	48.1	1.8	42.6	N/A	11.8		N/A
	St John of God Healthcare – Ballarat	482	23.3	46.7	6.3	5.3	N/A	24.6	41.2	N/A
	Bays Hospital, The – Mornington Campus	487	13	32.6	0	15.3	N/A	20.9	61.1	N/A
	Hospital F	447	15.4	42.3	3.3	21.8	N/A	7.8	N/A	N/A
	St John of God Healthcare – Bendigo	335	15.4	26.9	15.8	4.3	N/A	25	36.4	N/A

Maternity Level		Indicators								Total number of indicators in least favourable quartile (shaded red)	Total number of indicators in most favourable quartile (shaded green)
		6a	6b	7	8a	8b	8c	9	10		
1	Kyabram and District Health Service	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Seymour District Memorial Hospital	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Private hospitals	Hospital A	1.6	N/A	N/A	96.9	31.8	87.6	94	0.9	5	2
	Epworth Healthcare – Freemasons (East Melbourne)	1.6	N/A	N/A	97.5	33.4	68.4	90.3	0.9	7	3
	St Vincent's Private Hospital (Fitzroy)	1.2	N/A	89	96.1	34	69.8	93.2	0.7	6	3
	Saint Frances Xavier Cabrini Hospital – Cabrini Malvern	1.2	N/A	66.7	97.6	30.6	78.4	92.1	1.1	3	3
	Hospital B	12.2	N/A	N/A	96.9	49.3	62.1	86.8	0.6	4	1
	Hospital C	3.9	N/A	N/A	97.4	52.2	63.2	82.7	1.5	6	1
	St John of God Healthcare – Geelong	3.5	N/A	N/A	96.5	42.8	75.6	82.3	1	5	2
	Jessie McPherson Private Hospital (Clayton)	2.7	N/A	59.3	98.1	65.3	38.9	70.5	0.7	4	4
	St John of God Healthcare – Berwick	1.8	N/A	N/A	96	37.4	73.2	79.7	1.1	4	1
	Hospital D	1.2	N/A	56.3	90.3	49.9	63.9	85.1	1.1	7	2
	Hospital E	3.1	N/A	78.9	89.3	61.3	50.1	84.6	0.4	7	2
	St John of God Healthcare – Ballarat	2.6	N/A	N/A	97.6	37.1	82.2	84.1	0.7	3	2
	Bays Hospital, The – Mornington Campus	2.3	N/A	N/A	96	31.1	79.8	61.2	1.3	1	1
	Hospital F	1.4	N/A	N/A	93.7	37.8	71.6	54.3	1.2	7	0
	St John of God Healthcare – Bendigo	3.0	N/A	N/A	98	26.7	86.1	71.2	1	2	1

Table 5: Gestation standardised perinatal mortality ratio for babies born from 32 weeks – moving average trend, 2008–2012 to 2012–2016

Level of service	Health service	2008–2012	2009–2013	2010–2014	2011–2015	2012–2016
6	Mercy Hospital for Women	0.51	0.50	0.98	0.49	0.56
6	Monash Medical Centre Clayton	0.82	0.92	0.99	1.03	1.03
6	The Royal Women's Hospital	1.04	0.37	0.93	0.84	0.83
5	Ballarat Health Services	1.33	1.84	1.18	1.09	1.10
5	Barwon Health (Geelong)	0.73	0.77	1.00	1.24	1.28
5	Bendigo Health Care Group	0.81	0.89	N/A	095	N/A
5	Box Hill Hospital	0.87	1.32	1.13	1.41	1.30
5	Frankston Hospital	1.14	1.33	1.27	1.33	1.19
5	Goulburn Valley Health	0.67	1.08	1.19	1.04	0.90
5	Sunshine Hospital	1.13	1.21	1.31	1.20	1.06
5	The Northern Hospital	1.18	1.24	1.23	1.11	1.23
5	Albury Wodonga Health	0.88	1.15	1.06	1.26	0.98
5	Latrobe Regional Hospital (Traralgon)	1.47	N/A	N/A	1.61	1.52
4	Angliss Hospital	0.84	0.86	0.90	1.19	0.98
4	Dandenong Hospital	1.13	1.05	0.95	1.07	1.11
4	Mildura Base Hospital	0.92	N/A	N/A	1.20	N/A
4	Northeast Health Wangaratta	1.13	N/A	N/A	N/A	N/A
4	South West Healthcare Warrnambool	1.06	N/A	N/A	N/A	N/A
4	Casey Hospital	1.11	1.40	1.23	0.98	0.86
4	Mercy Werribee Public Hospital	0.60	0.78	0.57	0.85	0.98
4	Women's at Sandringham	0.37	N/A	N/A	N/A	N/A
3	Djerriwarrh Health Services	N/A	2.07	2.03	1.81	1.58

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