Victorian perinatal services performance indicators

2013-14

VICTORIA State Government | Health and Human Services

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Preface

The *Victorian perinatal services performance indicators 2013–14* report aims to help improve outcomes for Victorian women and their babies by providing a focus for performance improvement in Victorian health services that provide maternity and neonatal care.

Victoria and Australia experience one of the lowest maternal and perinatal mortality rates internationally. Identifying preventable or contributing factors and sharing lessons learned is, however, necessary to continually improve the safety and quality of health services.

The recently reported incidents at Djerriwarrh Health Services are important to acknowledge from the perspective of the families concerned, the residents of the Bacchus Marsh community and the broader health service system. This report includes the gestation standardised perinatal mortality ratio at Djerriwarrh Health Services for the period that the cluster of perinatal (neonatal and stillbirth) deaths occurred.

Work is underway to establish regional perinatal mortality and morbidity committees to foster ongoing collaborative arrangements between rural and regional maternity and neonatal services. These committees will support the review of maternal and perinatal deaths as well as establish robust processes for quality improvement and the management of risk relating to clinical governance. To further support health services, the Consultative Council on Obstetric and Paediatric Mortality and Morbidity (the council) is working to enhance the visibility and dissemination of recommendations arising from the review of births and deaths. The council is also collaborating with other states and territories to improve national reporting of perinatal and maternal mortality. During 2016, the Department of Health and Human Services will collaborate with the Perinatal Safety and Quality Committee to further refine the indicators presented in this report.

Health services should review their performance across the ten performance indicators in this report to recognise their strengths, identify opportunities to learn from, share outcomes and plan for performance improvement within a continuous quality framework.

Acknowledgements

This report was developed by the Victorian Government Department of Health and Human Services with expert advice from the Perinatal Safety and Quality Committee, a subcommittee of the Victorian Ministerial Perinatal Services Advisory Committee.

Perinatal Safety and Quality Committee members

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Ms Laura Bignell	The Royal Women's Hospital
Dr Mary Anne Biro	Monash University
Ms Nicole Highet	Consumer representative
Dr Mary-Ann Davey	Monash University
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Ms Alison Boylan	Department of Health and Human Services
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Appreciation is also extended to the Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) for permission to use data from the Victorian Perinatal Data Collection (VPDC).

About this report

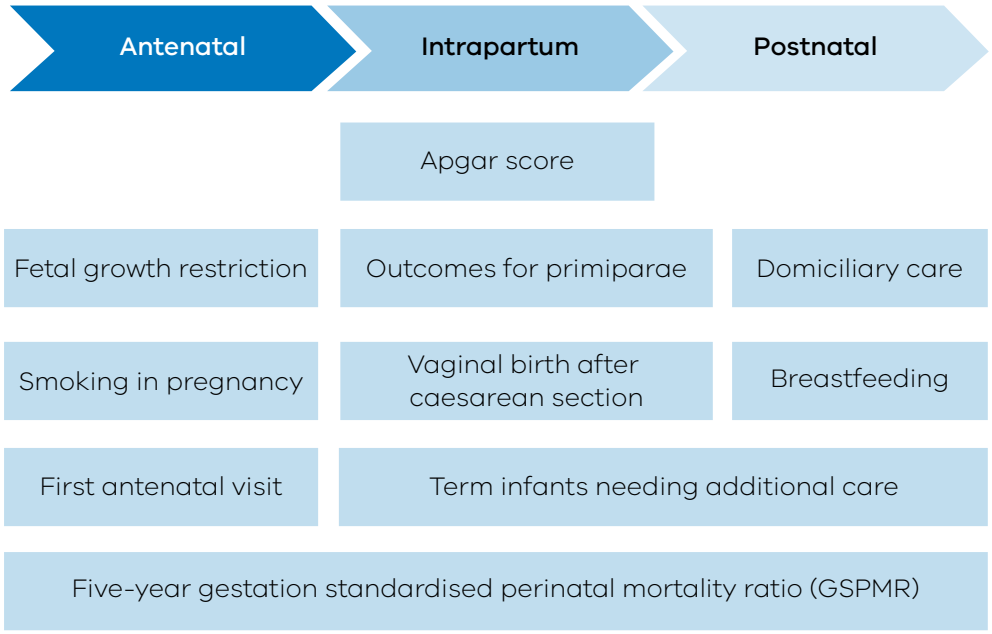
Monitoring and reporting on the outcomes and experiences of women and their babies during pregnancy and childbirth in Victorian health services is a key commitment of the Victorian Government.

The *Victorian perinatal services performance indicators 2013–14* ('the report') aims to help improve outcomes for Victorian women and their babies by providing a focus for performance improvement priorities in Victorian health services that provide maternity care.

The report contains data on 10 performance indicators of perinatal care in Victorian health services. The indicators span the antenatal, intrapartum and postnatal periods (Figure 1) and are measured at the statewide public and private hospital level as well as individual public hospital level. All Victorian public hospitals providing birthing services are required to report accurate data against the perinatal performance indicators.

These indicators are regarded as key areas for assessing the quality of care provided to mothers and babies. Consumer information is included for each indicator presented.

Figure 1: Schema of perinatal performance indicators



Benchmark for key performance indicators

This report provides a level of benchmarking for health services to compare their results and monitor variation against peer group hospitals. The statewide public hospital rate, and where possible a statewide private hospital rate, is provided for each indicator.

It is important to note however that the statewide rates do not represent the desired target or expectation. 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.

Outlier services (those that differ from the majority of services) are presented using an interquartile range approach with results in the lower and upper quartiles highlighted in either red (for least favourable results) or green (for most favourable results). All other results are presented as orange. The Department of Health and Human Services will work with health services that are outliers to understand the drivers for the reported performance and the opportunities for improvement as well as where positive examples can be shared across services.

The Victorian Government is committed to driving continuous improvement in the healthcare sector to deliver better health outcomes for all Victorians. Health services are responsible for understanding their own local performance against the indicators and taking action to improve care and systems where contributing factors have been identified. An assessment of service capacity is integral to the capability of the service. Where health services identify capacity constraints, these should be addressed at the local level or in partnership with the department and other local service providers.

Methods

The data for this report is derived from:

- The Victorian Perinatal Data Collection (VPDC) by calendar year: Indicators 1, 3, 4, 5, 7, 8, 9 and 10.
- The Victorian Admitted Episodes Dataset (VAED) by financial year: Indicators 2 and 6.

Data is reported by health services at the time the episode of care was completed. This occurs once the woman and her baby are discharged from the place of birth.

Public health services are required to submit patient level data to both the VPDC[1] and the VAED[2].

Further information on the data sources and definitions for each indicator can be found in Appendix 1.

What's new

This report includes the following new sections and information:

- Further information to interpret the gestation standardised perinatal mortality ratio (GSPMR) (page 41).
- A summary of results and trends for each health service (Appendix 4).

1 The Victorian Perinatal Data Collection (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 Victorian Admitted Episodes Dataset (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

Table 1: Perinatal indicators and desired outcomes

Indicator	Description	Desired outcome
Indicator 1a	Rate of inductions in standard primiparae	• Rates should be low and consistent for this low-risk group of women (equal to or below the lower quartile rate for all three indicators). • Variation in rates may indicate that clinical practice and/or system processes (and/or ascertainment for third- and fourth-degree perineal tears) may not be supported by evidence for best clinical practice.
Indicator 1b	Rate of caesarean section in standard primiparae	
Indicator 1c	Rate of third- and fourth-degree perineal tears in standard primiparae giving birth vaginally	
Indicator 2	Rate of term infants without congenital anomalies who require additional care	• Rates should be low (equal to or below the lower quartile rate). • Variation 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.
Indicator 3	Rate of severe fetal growth restriction (birthweight less than the third centile for gestation and sex) in a singleton pregnancy undelivered by 40 weeks	• Rates should be low (equal to or below the lower quartile rate) • Health services should aim to improve methods for identifying and managing severe FGR.
Indicator 4a	Rate of women who planned for vaginal birth following a primary caesarean section	• Rates should be high (equal to or above the upper quartile rate) 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.
Indicator 4b	Rate of women who achieved a planned vaginal birth following a primary caesarean section	
Indicators 5a and 5b	Perinatal mortality ratio for babies born at 22 weeks (5a) and 32 weeks (5b) or more (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years pooled data	• Variation among peer group hospitals is expected to be small. • Less favourable outliers must understand the extent of suboptimal performance issues and address these.
Indicator 6	Rate of women referred to postnatal domiciliary care or Hospital in the Home	• Rates should be high (equal to or above the upper quartile rate). • Hospitals with poorer results should plan for improved performance.

Indicator	Description	Desired outcome
Indicators 7a and 7b	Rate of women smoking during pregnancy before 20 weeks (7a) and after 20 weeks (7b) gestation.	• Rates should be low (equal to or below the lower quartile rate). • Services should ensure that data submitted against this indicator is reliable.
Indicator 8a	Rate of breastfeeding initiation for babies born at 37+ weeks gestation	• Rates should be high (equal to or above the upper quartile rate) and consistent among peer group hospitals.
Indicator 8b	Rate of use of infant formula by breastfed babies born at 37+ weeks gestation	• Rates should be low (equal to or below the lower quartile rate) and consistent among peer group hospitals.
Indicator 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 (equal to or above the upper quartile rate) and consistent among peer group hospitals.
Indicator 9	Rate of women attending their first antenatal visit prior to 12 weeks' gestation	• Rates should be high (equal to or above the upper quartile rate). • Services should ensure data submitted against this indicator is reliable. • The large variation among Victorian hospitals should be a focus for improvement at the local, regional or system level.
Indicator 10	Rate of term infants without congenital anomalies with an Apgar score of <7 at five minutes	• Rates should be low (equal to or below the lower quartile rate) and consistent among peer group hospitals, reflecting differing case mix. • This is an important indicator for longer term infant outcomes and poorer results should be a priority area for performance improvement.

Using this report

This report provides individual hospital (or campus) level data for public health services compared with the statewide public hospital average and, where available, the statewide private hospital average.

Interquartile ranges (identified throughout the report as most favourable, least favourable and non-outlying) are used to identify health services whose performance on a given indicator is outlying.

Variation in hospital performance may be due to factors unrelated to the clinical care provided to women and their babies.

Differences in casemix, models of service delivery, data collection and reporting processes can also contribute to variation across and between hospitals.

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

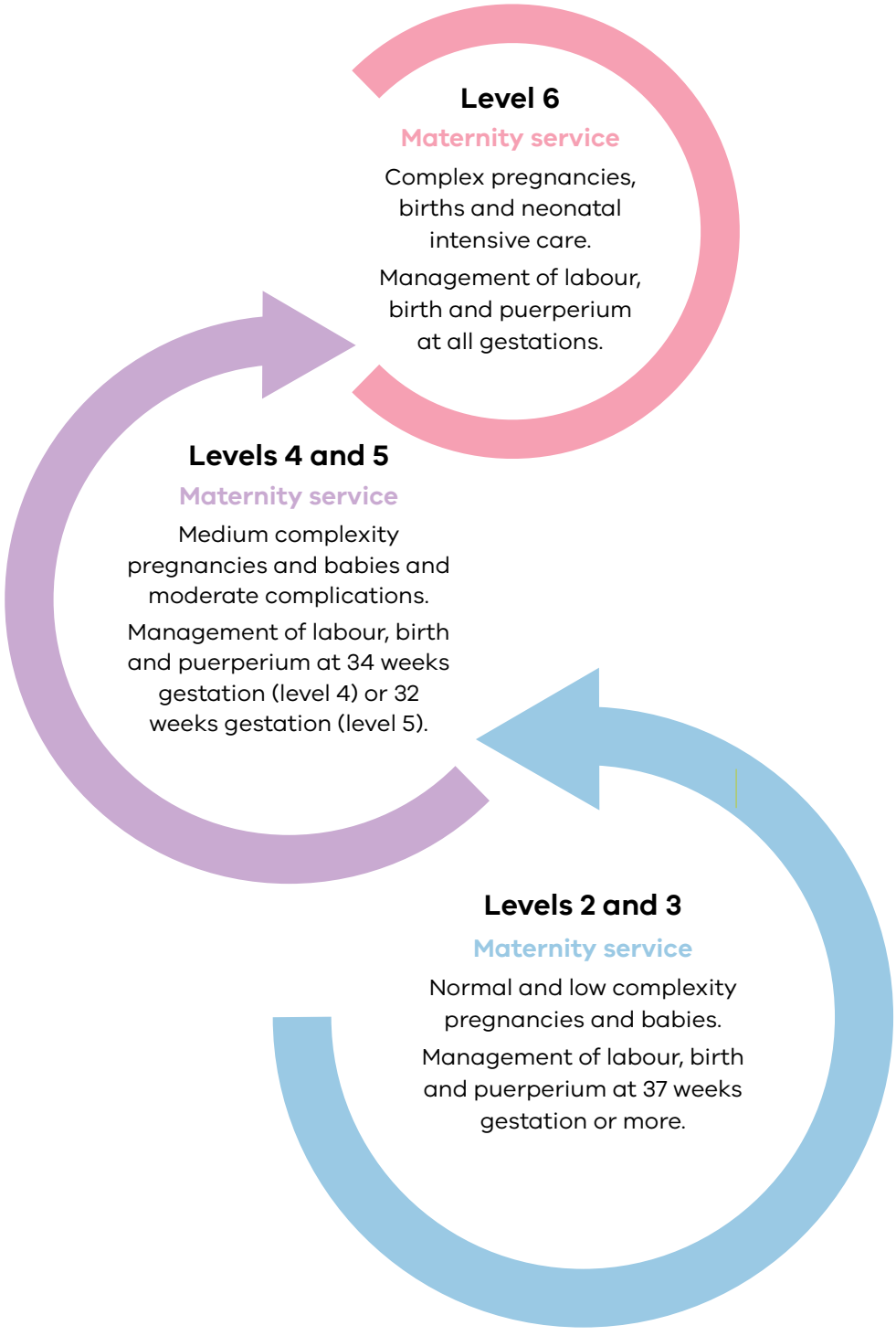
1. Apart from the GSPMR (indicators 5a and 5b), only health services with a minimum of 10 possible occasions for an event (denominator) are reported. Therefore, not all health services are included in each indicator. For example, a hospital that has not had 10 standard primiparae women birth in the given year (denominator) will not be included in the results for indicator 1.
2. Private patients who were admitted to a public hospital are reported in the public hospital results.
3. Although the statewide rates provided for each indicator are a good measure for assessing a health service's performance, they do not necessarily present the optimal or target rate.
4. Hospitals are ordered by level of maternity and neonatal service capability as defined in the *Capability framework for Victorian maternity and newborn services* (Department of Health 2010) and within these levels by decreasing numbers of birthing women. This ensures hospitals are grouped with similar services in terms of the complexity they are able to manage. An overview of the levels of capability is provided at Figure 2. A detailed list of health service capability and total number of birthing women is provided at Appendix 3.
5. Conclusions about whether perinatal deaths were avoidable cannot be determined from the GSPMRs (indicator 5). Health services are required to review all perinatal deaths in accordance with the Perinatal Society of Australia and New Zealand *Clinical practice guideline for perinatal mortality* (2009).
6. Understanding a hospital's performance should take into account outcomes across all indicators.

The *Capability framework for maternity and newborn services* (Department of Health 2010)[3] delineates the role and describes the service elements required at each level of maternity and newborn care within the context of statewide services. Health services use this framework to identify and demonstrate their role as a provider of safe, effective and sustainable maternity and newborn services within Victoria's maternity and neonatal service system. The framework sets the minimum standards for services, staffing and

3 An updated guideline, Defining levels of care for Victorian newborn services, was published in 2015 and can be found at: https://www2.health.vic.gov.au/hospitals-and-health-services/patient-care/perinatal-reproductive/maternity-newborn-services/newborn-care-in-victoria
Levels of care represented in this report are based on levels of care at the time of the reporting period. Updated levels of care will be used in future reports.

skill mix, and clinical support services, as well as linkages to other specialised services for six levels of care of increasing complexity (Figure 2).

Figure 2: Levels of maternity/neonatal care



Health services, including program or service managers and clinicians, should use this report to:

- track their own performance and trends, using raw local data more frequently if required
- compare results with services of a similar profile
- perform ongoing local audits, including adverse event reviews through their perinatal mortality and morbidity committees
- perform local analysis of specific groups or cohorts of cases such as age profiles
- identify priority areas for focus and plan for performance improvement within a continuous quality framework
- evaluate improvement programs and provide feedback to relevant stakeholders
- provide education and support to staff and local communities.

Outlier services should undertake:

- an assessment of their local capability and the 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 with peer group services and engage with hospitals achieving better outcomes to support local and regional improvement.

The department is working with outlier services to monitor performance and improvement initiatives over time.

Each indicator has a list of recommended actions that should be undertaken by health services and, in particular, outlier services to ensure ongoing performance improvement.

Data and results

Key strengths

The following outcomes highlight areas of improvement from the 2013–14 reporting period:

1. Indicator 1a: the upper quartile, which represents the least favourable outcomes for rate of induction of labour in standard primiparae, decreased from 6.1 per cent in 2012 to 4.6 per cent in 2013. The statewide public hospital rate remained constant at 2.9 per cent; however, it has decreased from 4.2 per cent since 2008.
2. Indicator 1b: a number of public hospitals reported a significant decrease in the rate of caesarean section in standard primiparae in 2013 compared with previous years. The statewide public hospital rate remained constant between 2012 and 2013 at 15.5 per cent and since 2008 (15.6 per cent).
3. Indicator 1c: the statewide public hospital rate for severe perineal trauma in standard primiparae decreased from 6.8 per cent in 2012 to 5.7 per cent in 2013.[4]
4. Indicator 6: more Victorian women than ever before were referred to postnatal home-based care and support in 2013. The statewide public hospital rate has improved significantly from 92 per cent in 2008–09 to 98.5 per cent in 2013–14.

Key learnings and opportunities

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:

1. Indicator 1a: the statewide private hospital rate was three times greater than the statewide public hospital rate and increased from 12.6 per cent in 2012 to 13.8 per cent in 2013.
2. Indicator 1c: the statewide public hospital rate of perineal trauma in standard primiparae has remained relatively unchanged since 2008 (5.3 per cent). However it is almost double the rate occurring in private hospitals overall.
3. Indicator 2: there was significant variation across public hospitals relating to the rate of term infants without congenital anomalies who require additional care (0 to 21 per cent in 2013). The statewide public hospital rate has increased from 7.1 per cent in 2007–08 to 8.4 per cent in 2013–14. This may reflect quality of care during labour and birth and in the immediate neonatal period.
4. Indicator 3: the rate of babies with severe fetal growth restriction (FGR) undelivered by 40 weeks gestation appears to be high in both public and private hospitals (33.3 per cent in public hospitals in 2013). This is a concern, given that FGR is associated with increased risk of perinatal mortality and morbidity as pregnancy advances. Although the statewide public hospital rate for this indicator has decreased since it was implemented in 2010 (39.6 per cent in 2010) and identification of FGR poses a challenge for health care providers, this indicator still remains an area for improved performance.

4 In late 2015, the Perinatal Safety and Quality Committee considered the episiotomy and perineal trauma rates in Victoria. Following consideration of the outcomes of the review, the Department of Health and Human Services and the Maternity and Newborn Clinical Network will progress work in this area during 2016.

5. Indicator 5: this report includes the GSPMR at Djerriwarrh Health Services for the period that the cluster of perinatal deaths occurred.[5] More information on this indicator is provided on (page 41).
6. Indicator 7: the statewide public hospital rate of smoking during pregnancy after 20 weeks gestation increased from 7.6 per cent in 2012 to 8.3 per cent in 2013 and has increased from 5.6 per cent since 2009.
7. Indicator 8: there was significant variation between public and private hospitals with regards to the measures for successful breastfeeding. The rate of use of infant formula in breastfed babies born at greater than 37 weeks gestation (Indicator 8b) requires particular attention by both public and private hospitals.
8. Indicator 9: the statewide public hospital rate of women attending their first antenatal visit prior to 12 weeks gestation has continued to decrease from 31.9 per cent in 2009 to 25.6 per cent in 2012 and 21.8 per cent in 2013. This was significantly less than the statewide private hospital rate of 84.1 per cent in 2013. Accurately capturing data relating to antenatal care occurring in the community is challenging for health services; however, improving data collection also requires hospitals' attention and action.
9. Indicator 10: there was significant variation across public hospitals with regards to Apgar score < 7 at five minutes, suggesting opportunities for improvement in the management of higher risk pregnancies, care provided during labour and birth and neonatal resuscitation. Appropriate and early triaging of higher complexity pregnancies may also be an area for improvement.

Table 2 provides a summary of the statewide public and private hospital rates for the indicators in 2013 compared with 2012–13 and the outlier rates for 2013.

5 This is the first time Djerriwarrh Health Services met the threshold for public reporting, that is, having five or more perinatal deaths in any of the five years of analysis.

Table 2: Summary of statewide results, 2013–14

Perinatal Indicator	Statewide public 2013	Statewide private 2013	Outlier rate (least favourable)	Outlier rate (most favourable)	Statewide public 2012
Indicator 1a: Rate of induction in standard primiparae	2.9%	13.8%	≥ 4.6%	≤ 0.9%	2.9%
Indicator 1b: Rate of caesarean section in standard primiparae	15.5%	33%	≥ 18%	≤11.9%	15.5%
Indicator 1c: Rate of third- and fourth-degree perineal tears in standard primiparae giving birth vaginally	5.7%	3.2%	≥ 7.4%	≤ 1.1%	6.8%
Indicator 2: Rate of term infants without congenital anomalies who require additional care[#]	8.4%	N/A	≥8.4%	≤ 3.5%	8%
Indicator 3: Rate of severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks	33.3%	38.2%	≥ 35.6%	≤ 28.6%	39.4%
Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section	27.9%	15.6%	≤ 21.9%	≥ 32.6%	29.1%
Indicator 4b: Rate of women who achieved a planned vaginal birth following a primary caesarean section	53.2%	50.5%	≤ 45.7%	≥ 60%	53.9%
Indicator 5a: Perinatal mortality ratio for babies born at 22 weeks or more (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years pooled data (2009-2013)	100	79	≥ 137	≤ 111	100

[#] Indicators 2 and 6 are derived from data collected in the Victorian Admitted Episodes Dataset (VAED) and are reported by **FINANCIAL** year (2013-14).

Perinatal Indicator	Statewide public 2013	Statewide private 2013	Outlier rate (least favourable)	Outlier rate (most favourable)	Statewide public 2012
Indicator 5b: 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 (2009-2013)	100	61	≥ 121	≤ 89	100
Indicator 6: Rate of women referred to postnatal domiciliary care or Hospital in the Home[#]	98.5%	N/A	≤ 96%	≥ 99.6%	97.3%
Indicator 7a: Rate of women smoking during pregnancy before 20 weeks' gestation	13.3%	2.1%	≥ 23.2%	≤13.2%	14.1%
Indicator 7b: Rate of women smoking during pregnancy after 20 weeks' gestation	8.3%	0.4%	≥ 17.5%	≤ 7.9%	7.6%
Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks gestation	94.2%	96.3%	≤ 91.2%	≥ 95.9%	93.9%
Indicator 8b: Rate of use of infant formula by breastfed babies born at 37+ weeks gestation	25.3%	38.6%	≥ 25%	≤10.8%	25.2%
Indicator 8c: Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks gestation	79.7%	74.5%	≤ 78.5%	≥ 89.6%	80.1%
Indicator 9: Rate of woman attending their first antenatal visit prior to 12 weeks' gestation	21.8%	84.1%	≤ 5.8%	≥ 50.5%	25.6%
Indicator 10: Rate of term infants without congenital anomalies with an Apgar score of <7 at five minutes	1.6%	0.9%	≥ 2.1	≤ 0.6	1.6%

[#] Indicators 2 and 6 are derived from data collected in the Victorian Admitted Episodes Dataset (VAED) and are reported by **FINANCIAL** year (2013-14).

Figure 3: Outcomes for standard primiparae, 2013 (Indicators 1a, b and c)

- 1a: Inductions
- 1b: Caesarean
- 1c: 3rd and 4th degree perineal tears
- 1a: Inductions upper quartile
- 1b: Caesarean upper quartile
- 1c: 3rd and 4th degree perineal tears upper quartile
- Level 6 hospitals
- Level 4 and 5 hospitals
- Level 2 and 3 hospitals
- Statewide public hospitals
- Statewide private hospitals
- ↓ Direction of desired outcome

How to interpret this chart

This radar plot displays performance relating to the three sub-indicators of Indicator 1: Outcomes for standard primiparae. Each wedge of the radar provides 2013 results for individual public hospitals for:

- Indicator 1a rate of inductions of labour
- Indicator 1b rate of caesarean section
- Indicator 1c rate of third- and fourth-degree perineal tears.

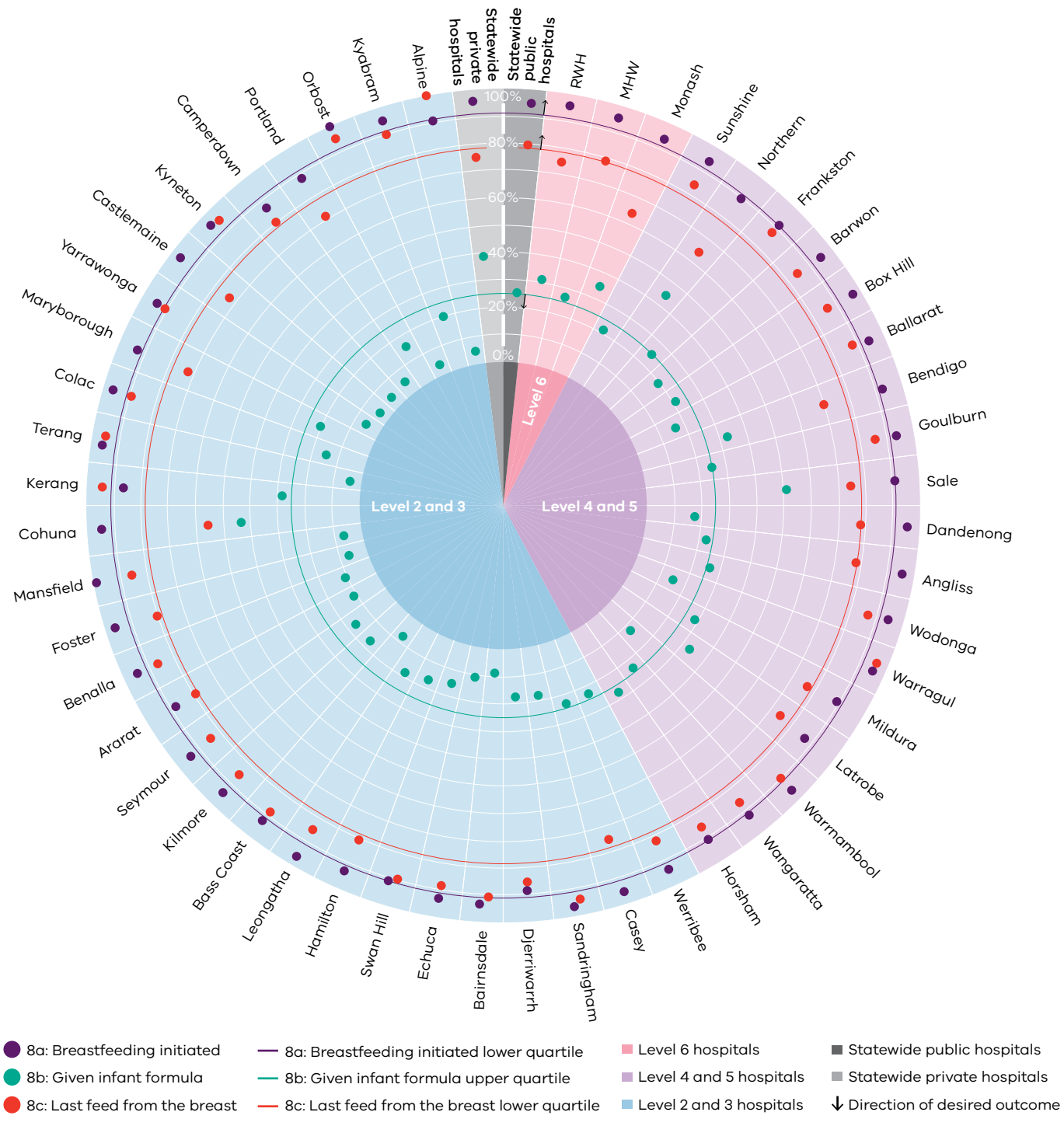
Public hospitals are ordered clockwise by their capability level, then by number of births.

Results for each hospital are shown as a point on the radial axis with increasingly better outcomes moving towards the centre. Each indicator is represented by a different coloured point and statewide rates for public and private hospitals are provided at the top of the radar. The three coloured solid lines represent the least favourable quartile for each respective indicator (upper quartile).

The arrows highlight the direction of the desired outcome; therefore, results outside the corresponding upper quartile indicate a least performing outlier hospital relative to its peers and the statewide average.

This figure is not intended to imply a relationship between these outcomes. Only review at the local health service level can determine the extent to which these outcomes are affected by poor performance or unavoidable factors.

Figure 4: Breastfeeding in hospital, 2013 (Indicators 8a, b and c)



How to interpret this chart

This radar plot displays performance relating to the three sub-indicators of Indicator 8: Breastfeeding in hospital. Each wedge of the radar provides 2013 results for individual public hospitals for

- Indicator 8a rate of breastfeeding initiated
- Indicator 8b rate of infant formula given
- Indicator 8c rate of last feed from the breast

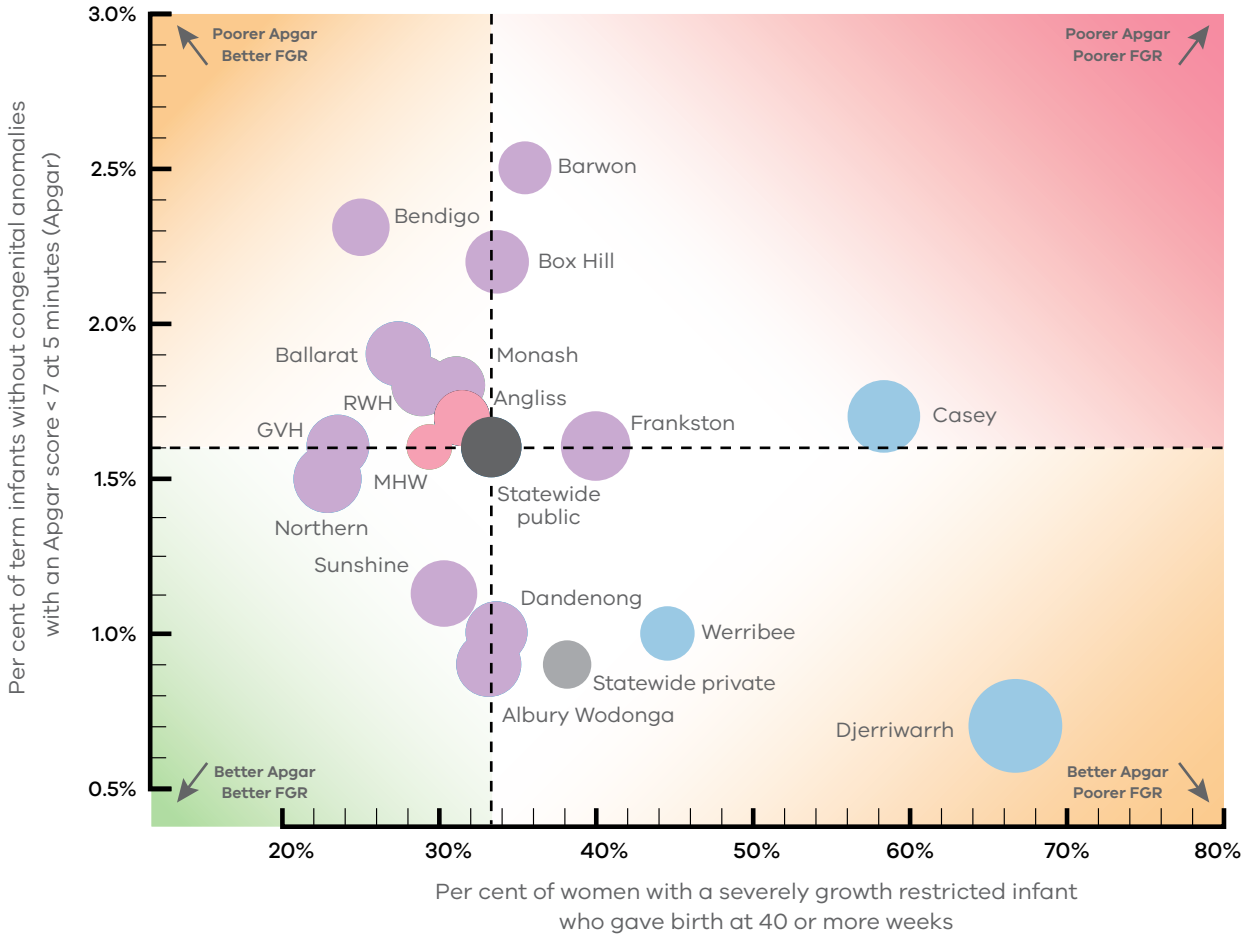
Public hospitals are ordered clockwise by their capability level, then by number of births.

Results for each hospital are shown as a point on the radial axis. Each indicator is represented by a different coloured point and statewide rates for public and private hospitals are provided at the top of the radar.

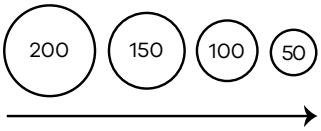
The three coloured solid lines represent the least favourable quartile for each respective indicator (8a lower quartile; 8b upper quartile; and 8c lower quartile).

The arrows highlight the direction of the desired outcome; therefore, results outside the relevant quartile and not in the desired direction indicate a least performing outlier hospital relative to its peers and the statewide average.

Figure 5: 32 week GSPMR with results for FGR and Apgar, 2013 (Indicators 3, 5b and 10)



Better GSPMR
32 week gestation standardised perinatal mortality ratio (GSPMR)



- Level 6 hospitals
- Level 4 and 5 hospitals
- Level 2 and 3 hospitals
- Statewide public hospitals
- Statewide private hospitals
- The lower L corner to the upper R corner represents increasingly poorer results for FGR and Apgar

Figure 5 provides a snapshot of the results for the three outcome indicators (GSPMR, severe FGR and low Apgar scores) relating to babies for the reported public hospitals.

There is a cluster of public hospitals around the statewide public hospital rate (dark grey dot). Private hospitals (light grey dot) show a low rate of low Apgar scores and lower perinatal mortality than public hospitals, however, they show a higher FGR score than public hospitals overall. The hospitals with outlying results are indicated by their proximity to the statewide public hospital result.

How to interpret this chart

This bubble plot displays three different performance indicators relating to outcomes for babies. Each hospital is represented by a bubble, the size of which is proportional to Indicator 5b: 32 week GSPMR. The statewide average GSPMR is 100 and hospitals with a higher ratio (less favourable outcome) have a larger bubble. Hospitals with a lower mortality ratio (more favourable outcome) have a smaller bubble.

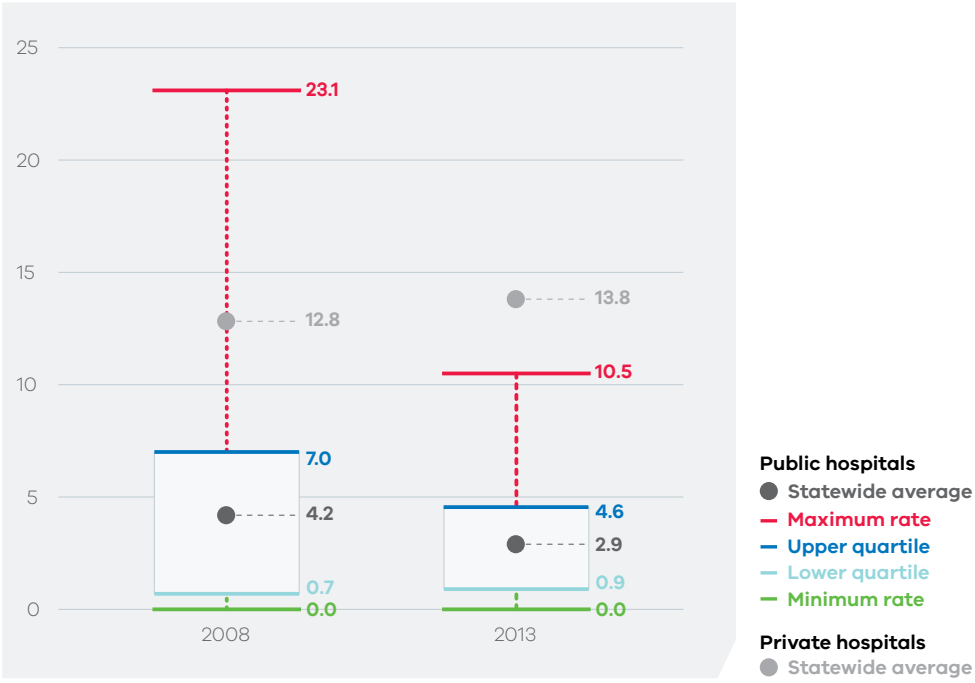
The position of each hospital in relation to the horizontal axis represents the percentage of babies with severe fetal growth restriction (FGR) who are born at 40 or more weeks gestation (Indicator 3). Hospitals with a higher percentage of FGR babies born at 40 or more weeks (less favourable outcome) are shifted further to the right.

The position of each hospital in relation to the vertical axis represents the percentage of singleton, term infants without congenital anomalies with an Apgar score of < 7 at five minutes (Indicator 10). Hospitals with a less favourable outcome for Apgar score appear towards the top of the chart.

Although FGR is a major contributor to perinatal mortality, the interrelationships between the three indicators shown should be interpreted with caution. Only review at the local health service level can determine the extent to which these outcomes are affected by poor performance or unavoidable factors. Further information on the interpretation of the GSPMR is provided at page 41 and in Appendix 1.

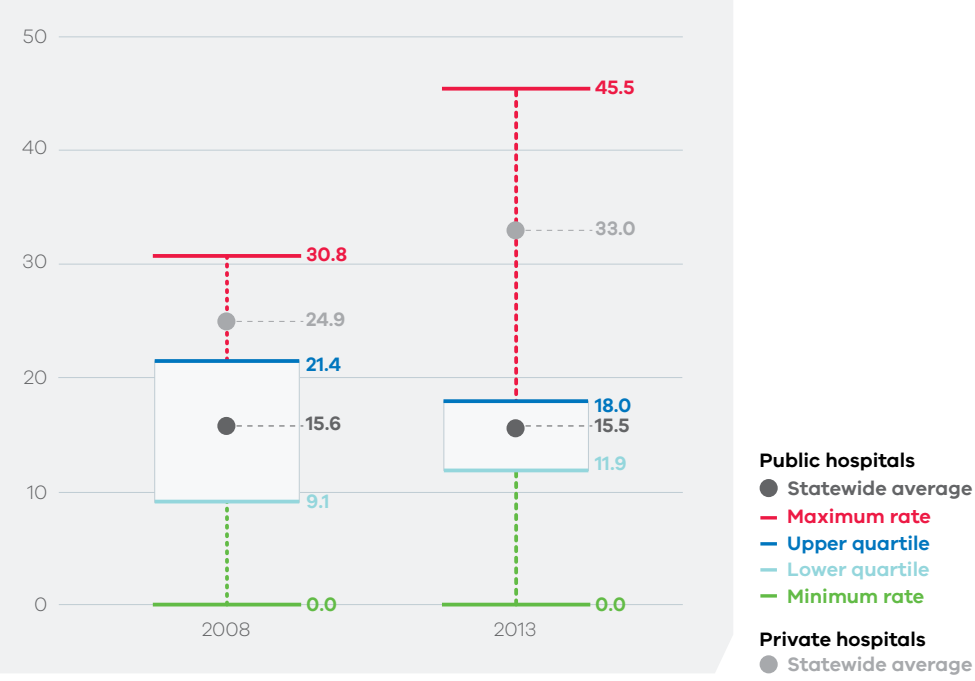
Figure 6: Comparison of statewide performance over time

Indicator 1a: Rate of inductions in standard primiparae in Victorian public hospitals



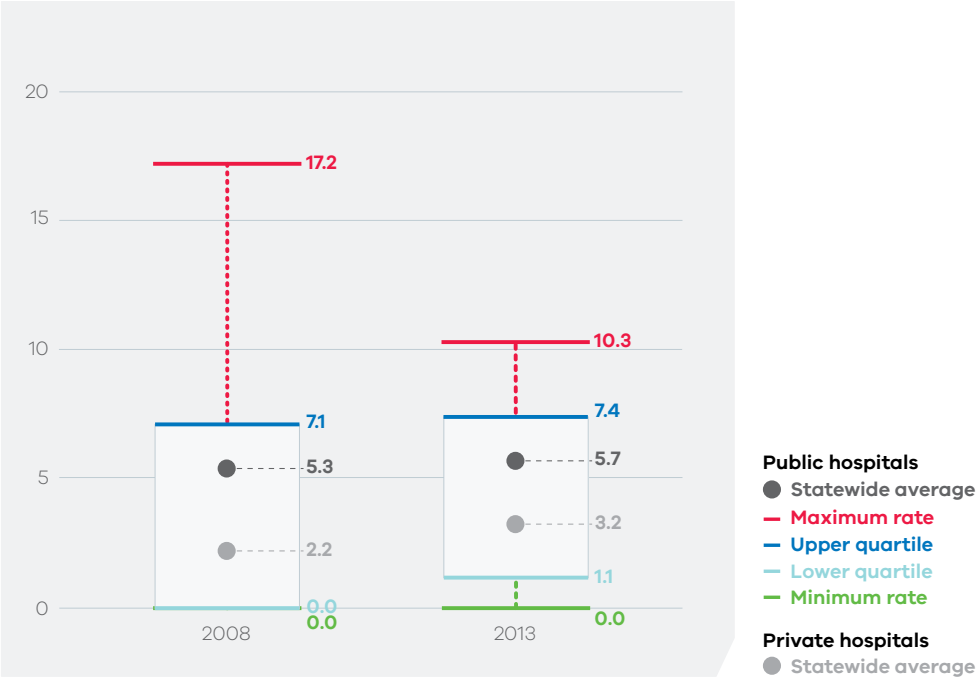
Note: the public hospital statewide average (the mean) is shown rather than the median.

Indicator 1b: Rate of caesarean section in standard primiparae in Victorian public hospitals



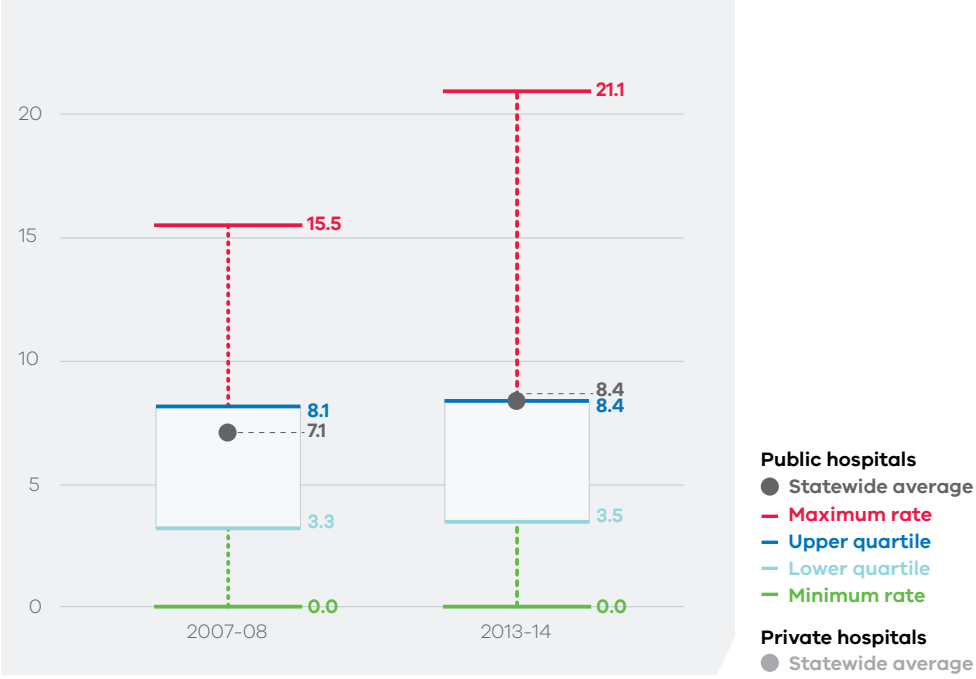
Note: the public hospital statewide average (the mean) is shown rather than the median.

Indicator 1c: Rate of third- and fourth-degree perineal tears in standard primiparae in Victorian public hospitals



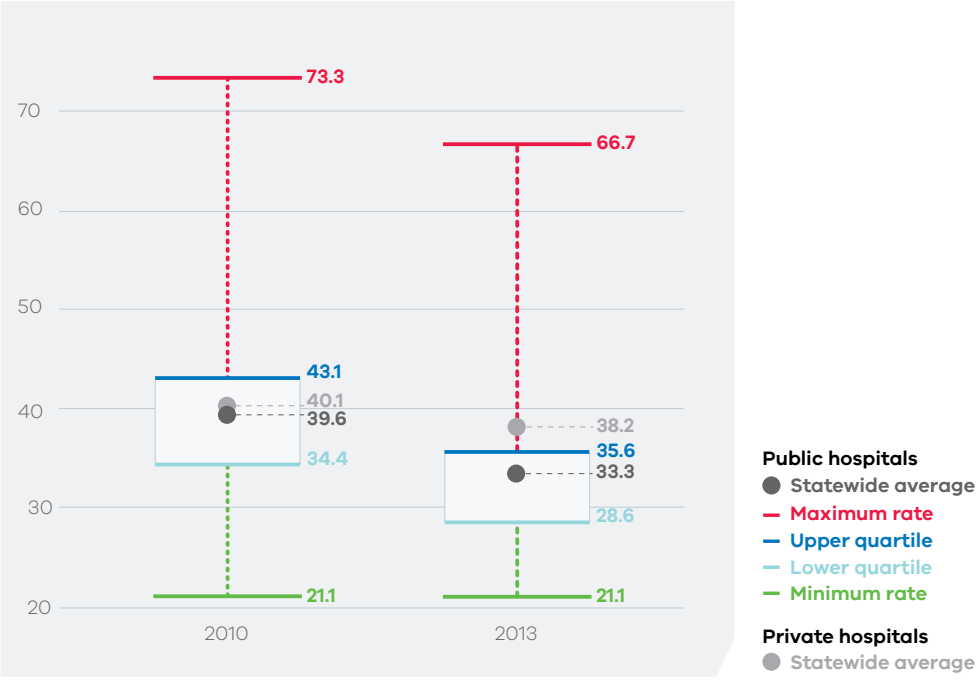
Note: the public hospital statewide average (the mean) is shown rather than the median.

Indicator 2: Rate of term infants without congenital anomalies requiring additional care in Victorian public hospitals



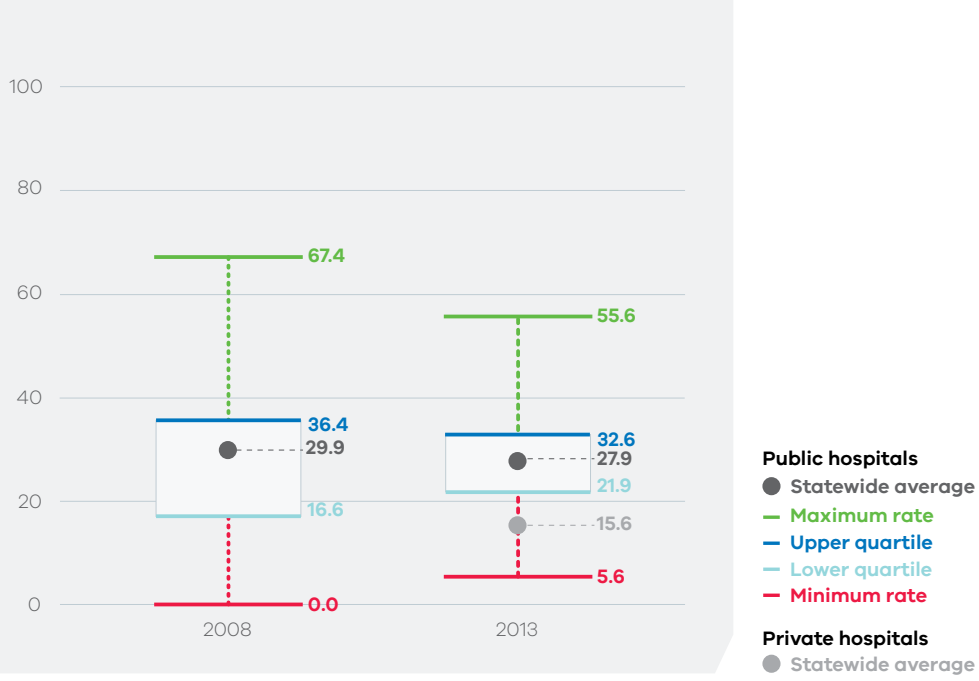
Note: the public hospital statewide average (the mean) is shown rather than the median.

Indicator 3: Rate of severe fetal growth restriction in a singleton pregnancy undelivered by 40 weeks in Victorian public hospitals



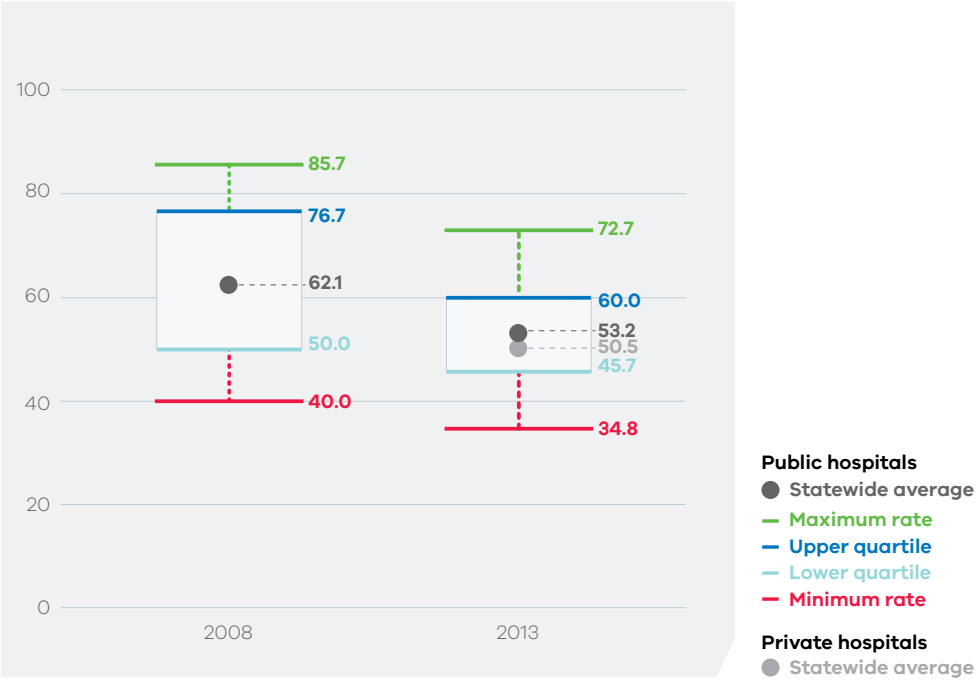
Note: the public hospital statewide average (the mean) is shown rather than the median.

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



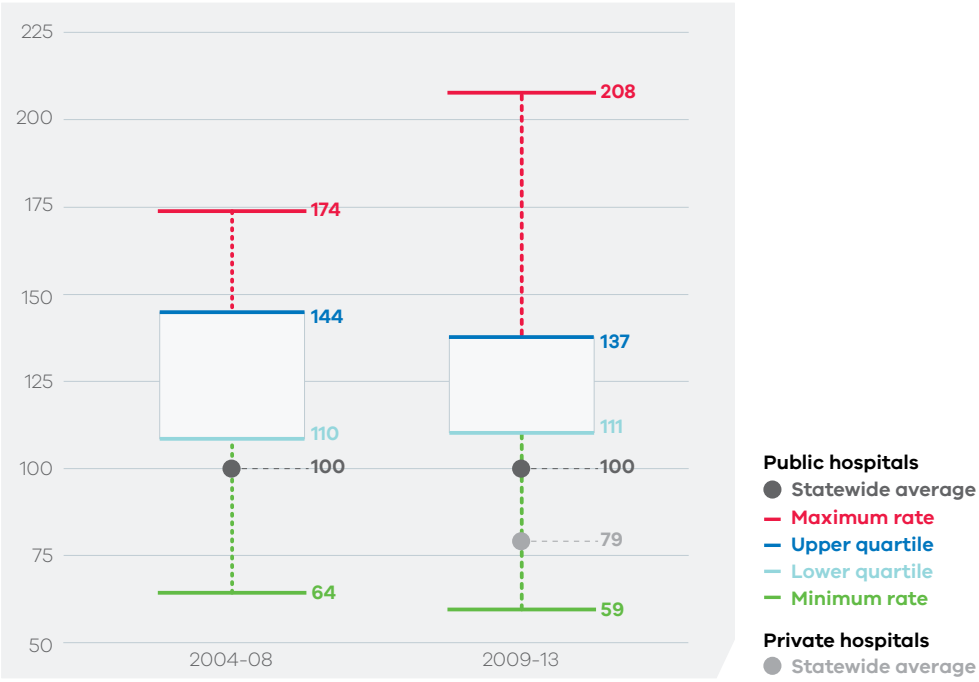
Note: the public hospital statewide average (the mean) is shown rather than the median.

Indicator 4b: Rate of women who achieved a planned vaginal birth following a primary caesarean section in Victorian public hospitals



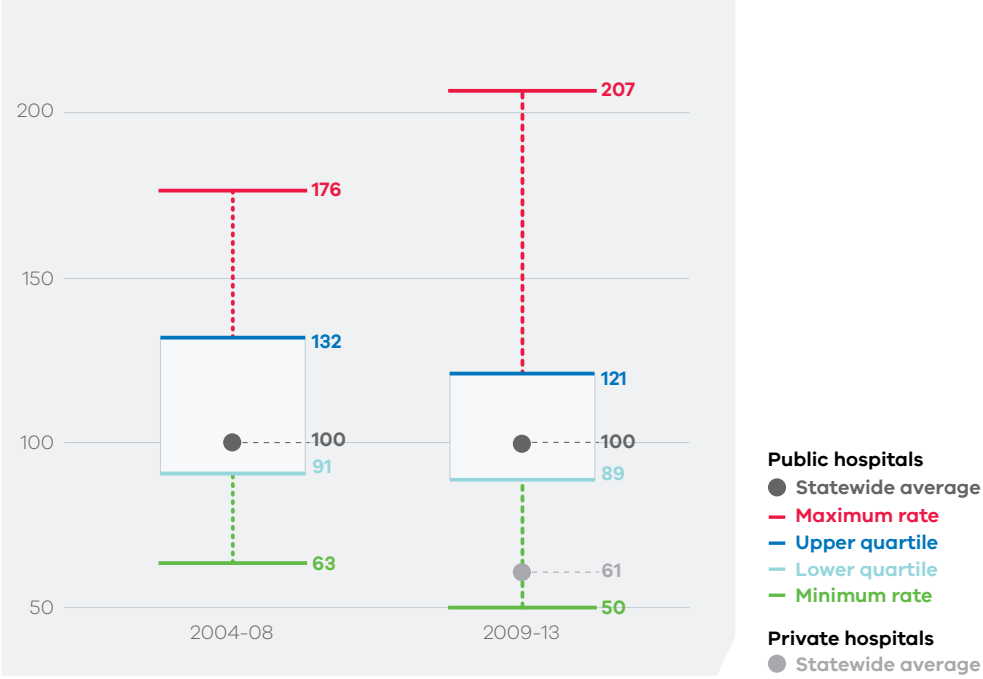
Note: the public hospital statewide average (the mean) is shown rather than the median.

Indicator 5a: Perinatal mortality ratio for babies born at 22 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



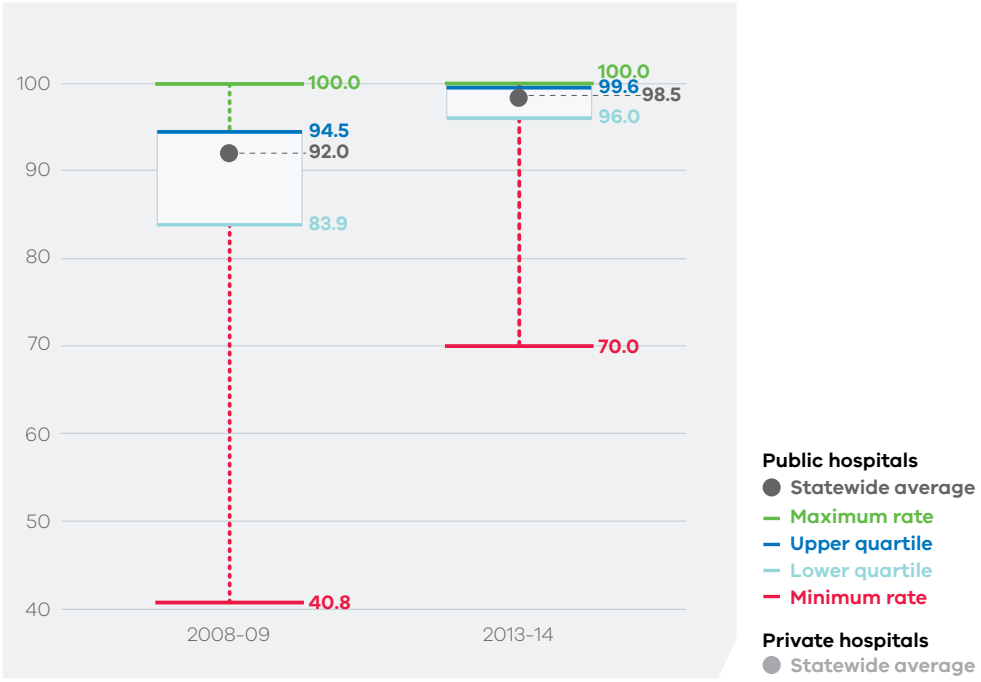
Note: the public hospital statewide average (the mean) is shown rather than the median.

Indicator 5b: 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



Note: the public hospital statewide average (the mean) is shown rather than the median.

Indicator 6: Rate of women referred to postnatal domiciliary care or Hospital in the Home in Victorian public hospitals



Note: the public hospital statewide average (the mean) is shown rather than the median.

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

Purpose and rationale

The standard primipara represents a woman experiencing an uncomplicated or low-risk pregnancy. The intervention and complication rates for this group of women should therefore be low and broadly consistent across hospitals.

This suite of indicators captures data on three important outcomes for standard primiparae in Victorian hospitals:

- Indicator 1a: Rate of inductions in standard primiparae
- Indicator 1b: Rate of caesarean section in standard primiparae
- Indicator 1c: Rate of third- and fourth-degree perineal tears in standard primiparae.

Inter-hospital comparison of 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 definition of a standard primipara and the inclusion criteria for the indicator set are outlined in Appendix 1.

Clinical significance

Intervention during labour and birth, particularly for women having their first birth, can occur at different stages and is best limited to women who have a clear medical (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 the standard primipara represents a woman experiencing an uncomplicated or low-risk pregnancy, it is 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 complications of pregnancy or pre-existing maternal medical conditions that affected the pregnancy. However, services that are consistently above the statewide average for inductions of labour or caesarean birth, especially for this cohort of women, should audit their policies, procedures and practices to identify the underlying reasons and identify 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 that staff are appropriately trained to identify and classify perineal tears.

Observations on the data

Indicator 1a: Inductions in standard primiparae

The statewide rate of standard primiparae being induced in public hospitals in 2013 was 2.9 per cent. This remains unchanged from 2012.

Standard primiparae who gave birth in private hospitals were substantially more likely to have labour induced than those in public hospitals and this is reflected in the significantly higher statewide rate for private hospitals of 13.8 per cent in 2013 (see Figure 7). This rate increased from 12.6 per cent in 2012.

Women included in the standard primiparae group are unlikely to have a medical indication for induction of labour and some hospitals had very low rates of (or no) inductions. Some of the highest rates were in small hospitals caring for small numbers of standard primiparae and rates should be interpreted with caution. However, there were a number of hospitals (mostly rural) where almost 10 per cent of standard primiparae had labour induced. These health services should review and address the reasons for these inductions using a quality performance improvement framework.

Indicator 1b: Caesarean section in standard primiparae

The statewide rate of standard primiparae who gave birth by caesarean section in public hospitals in 2013 was 15.5 per cent. This remains unchanged from 2012; however, apart from high rates in two smaller rural hospitals with low denominator numbers, there was less variation across Victorian public hospitals overall than in previous years.

As in previous years, standard primiparae in private hospitals were more likely than those in public hospitals to give birth by caesarean section (33.0 per cent and 15.5 per cent respectively). There was an increase in the statewide rate for private hospitals from 29.6 per cent in 2012 to 33.0 per cent in 2013.

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

The statewide rate of standard primiparae with third- or fourth-degree perineal tears decreased from 6.8 per cent in 2012 to 5.7 per cent in 2013. While the rate in several individual hospitals has decreased, in others there was a marked increase and there is large variation in rates across hospitals. It is not clear to what extent this reflects less favourable perineal outcomes versus better ascertainment that enables referral and appropriate management.

Fewer third- and fourth-degree perineal tears were reported in private hospitals than in public hospitals (3.2 per cent compared with 5.7 per cent respectively).

Expectations for performance improvement

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

- undertake regular multidisciplinary audits and reviews 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 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.

The Department of Health and Human Services' Maternity and Newborn Clinical Network (MNCN) has published a *Victorian standard for induction of labour* which is available at <www.health.vic.gov.au/clinicalnetworks/maternity>.

Consumer summary

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

A standard primipara refers to a woman aged 20 to 34 years 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.

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.

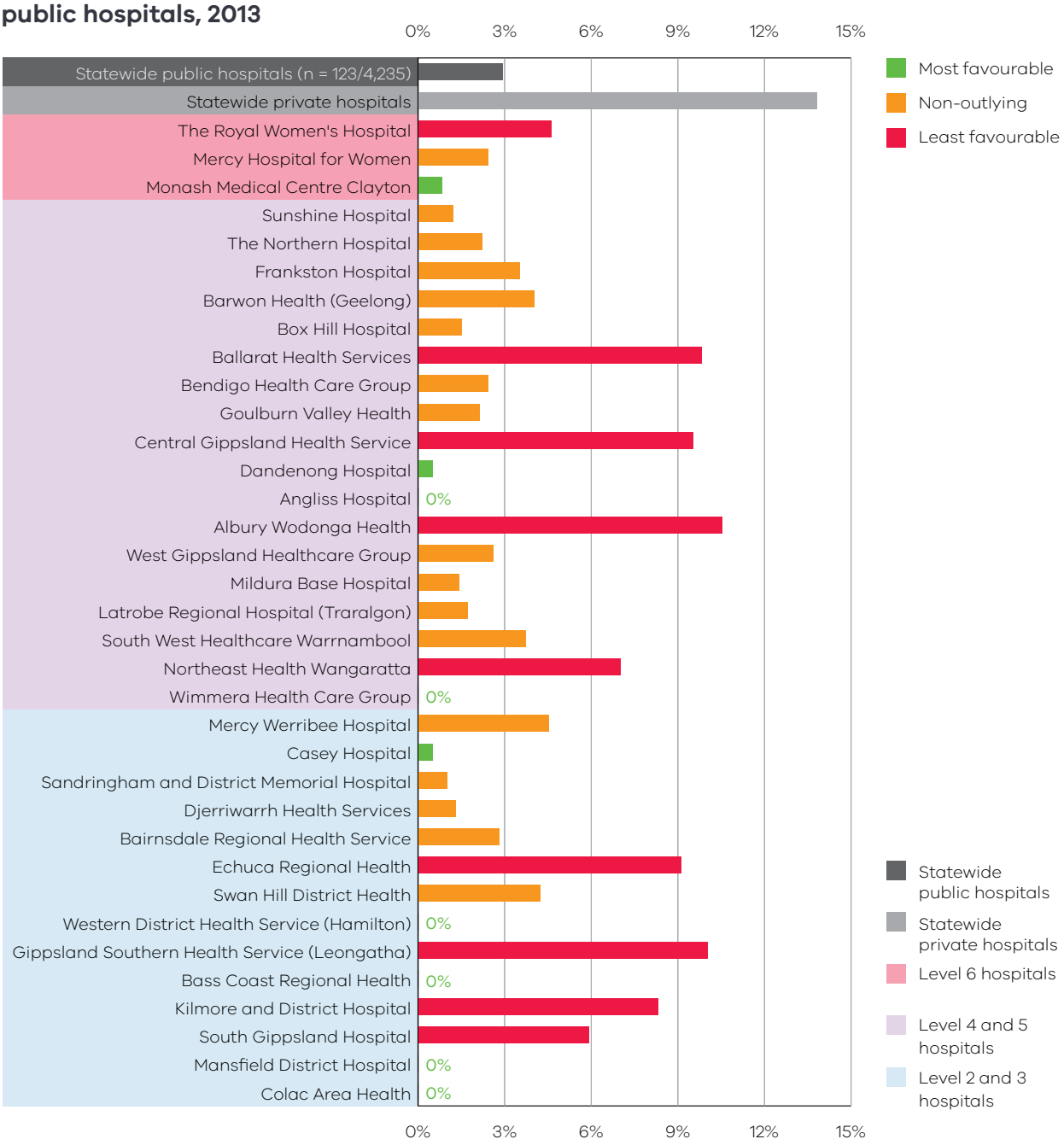
Induced labour and caesarean section can increase the risk of complications, lead to longer recovery times for women and affect future pregnancies. Therefore, hospitals with levels of medical intervention above the statewide rate are encouraged to review their practices and processes.

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 (13.8 per cent for induction of labour; 33.0 per cent for caesarean section) than public hospitals (2.9 per cent for induction of labour; 15.5 per cent for caesarean section). The statewide rate of third- and fourth-degree tears after vaginal birth is, however, higher in public hospitals (5.7 per cent) than in private hospitals (3.2 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 7: Indicator 1a: Rate of inductions in standard primiparae in Victorian public hospitals, 2013



Statewide rates for public hospitals

2013 (quartiles: lower; upper)	2012	2011	2010
2.9% (0.9%; 4.6%)	2.9%	4.2%	4.5%

Note: The inclusion criteria for this indicator were refined in 2011 to further exclude maternal medical conditions.
Note: A result of 0% indicates that a health service met the reporting criteria of 10 or more standard primiparae in 2013, however none of these births resulted in an induction of labour.

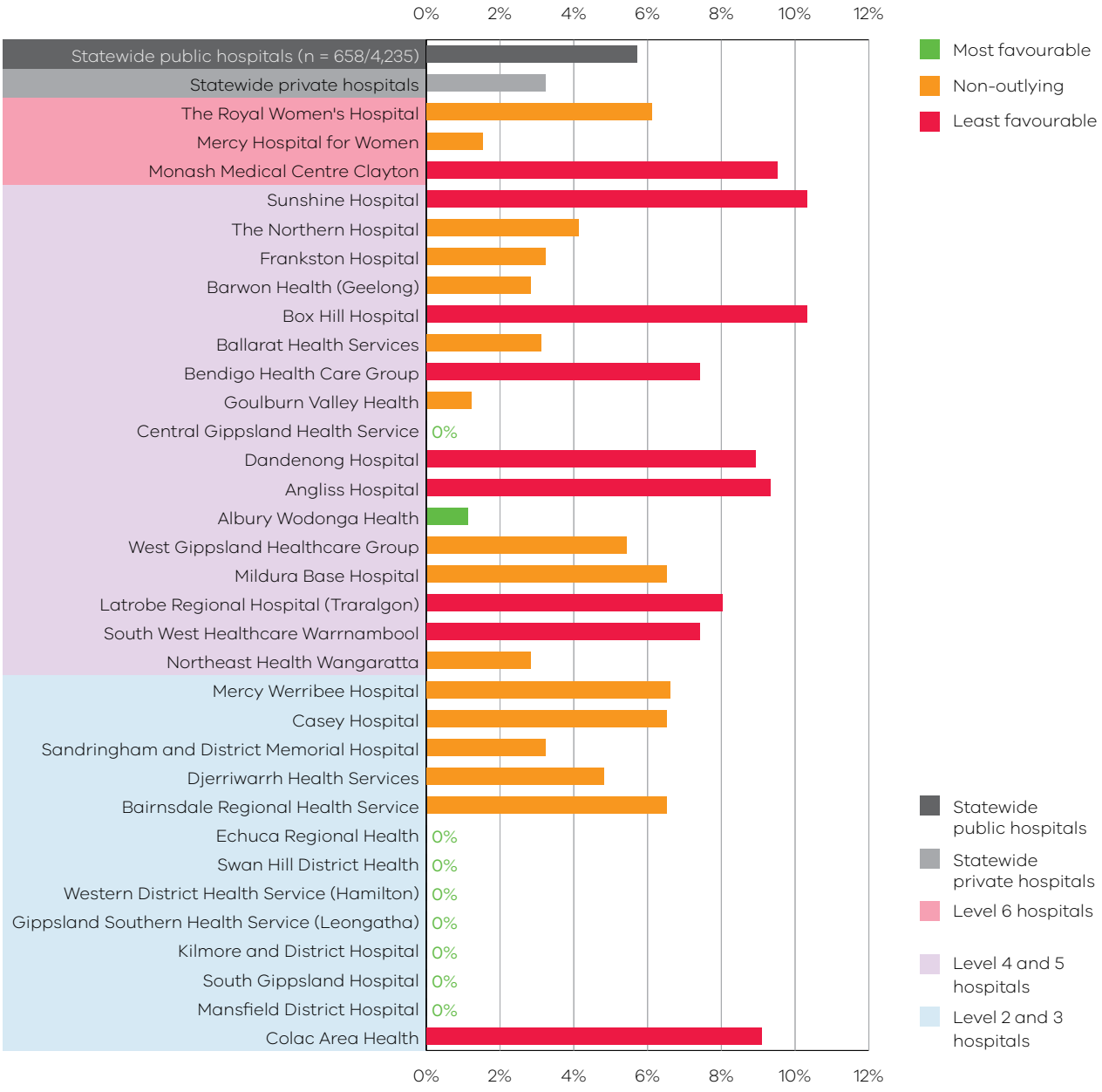
Figure 8: Indicator 1b: Rate of caesarean section in standard primiparae in Victorian public hospitals, 2013

Statewide rates for public hospitals

2013 (quartiles: lower; upper)	2012	2011	2010
15.5% (11.9%; 18.0%)	15.5%	16.1%	16.6%

Note: The inclusion criteria for this indicator were refined in 2011 to further exclude maternal medical conditions.
Note: A result of 0% indicates that a health service met the reporting criteria of 10 or more standard primiparae in 2013, however none of these births resulted in a caesarean section.

Figure 9: Indicator 1c: Third- and fourth-degree perineal tears in standard primiparae giving birth vaginally in Victorian public hospitals, 2013



Statewide rates for public hospitals

2013 (quartiles: lower; upper)	2012	2011	2010
5.7% (1.1%; 7.4%)	6.8%	5.9%	6.4%

Note: The inclusion criteria for this indicator were refined in 2011 to further exclude maternal medical conditions.
Note: A result of 0% indicates that a health service met the reporting criteria of 10 or more standard primiparae giving birth vaginally in 2013, however none of these births resulted in a third- or fourth-degree perineal tear.

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

Purpose and rationale

This indicator aims to highlight variations in the care required for term infants without congenital anomalies in Victorian hospitals. As such, it is concerned with the quality of perinatal care with a primary focus on adverse events occurring during labour, birth and/or the immediate neonatal period that are principally due to avoidable factors.

A term infant without congenital anomalies includes those with low five-minute Apgar scores, birth trauma, early seizures, hypoxic ischaemic encephalopathy, FGR and sepsis. It also includes infants with more minor conditions, such as hyperbilirubinaemia.

The indicator is derived from newborn diagnostic-related groups (DRGs) and the Australian Classification of Health Interventions (ACHI) procedure codes to identify term newborns requiring more than normal care. This may include babies who were admitted to a special care nursery or neonatal intensive care unit.

Some of the variation occurring between health services may be a result of differences in reporting to the VAED. Health services should ensure there is accurate capture and reporting of diagnostic and treatment codes relevant to the newborn.

Clinical significance

The infants included in this indicator are at least 37 weeks 0 days gestation, 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 infants without congenital anomalies who required additional care in 2013–14 was 8.4 per cent, similar to 8.0 per cent in 2012–13. There was wide variation across public hospitals, ranging from zero to 21 per cent (see Figure 10).

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 infants without congenital anomalies who require additional care

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

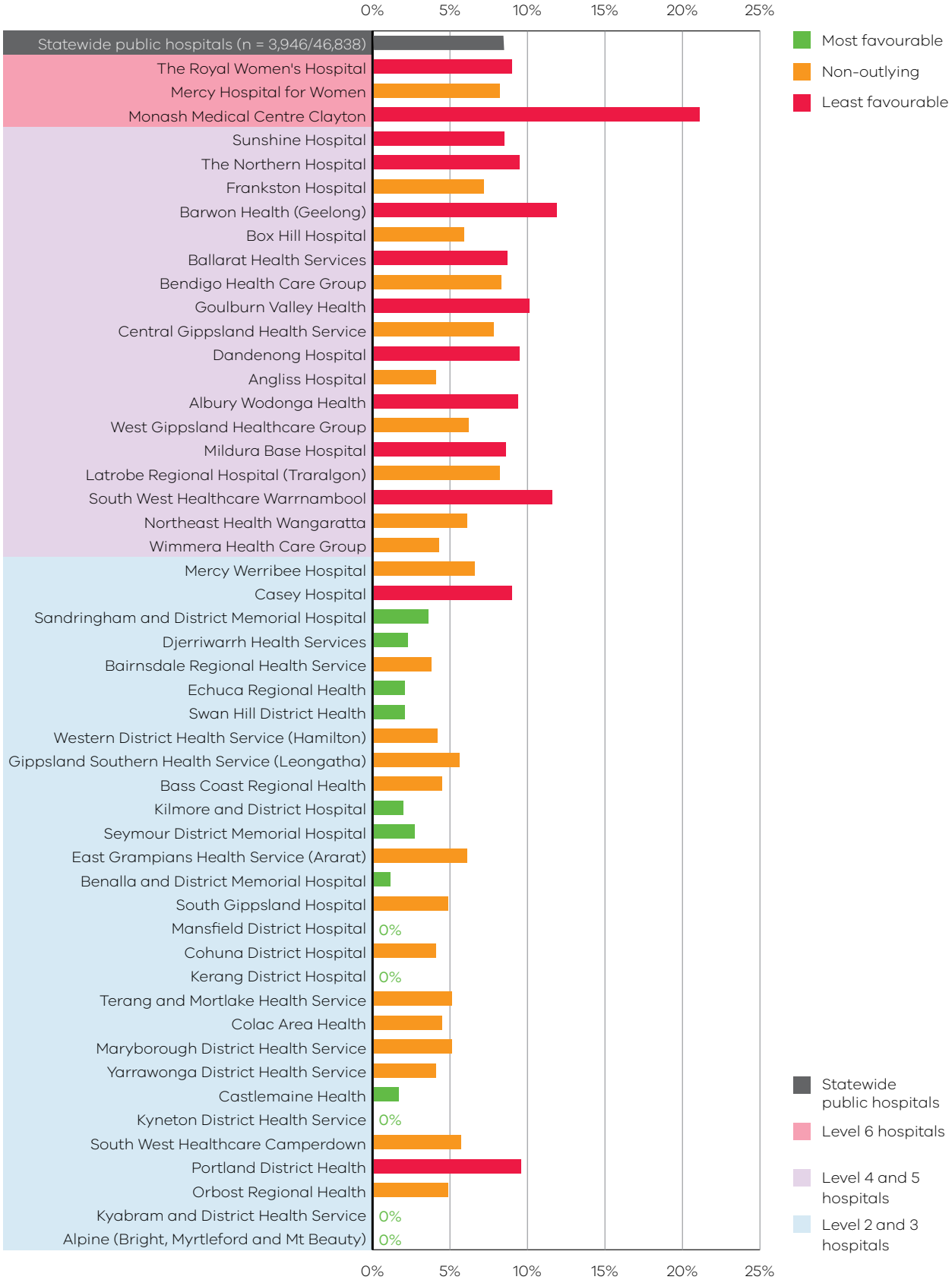
This indicator focuses on the quality of care during labour, birth and immediately following birth for babies born at greater than 37 weeks without congenital anomalies.

In 2013, 8.4 per cent of infants born in public hospitals at more than 37 weeks and without congenital anomalies required additional care. This was a slight increase from 8.0 per cent in 2012.

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 10: Indicator 2: Rate of term infants without congenital anomalies who require additional care in Victorian public hospitals, 2013–14



Statewide rates for public hospitals

2013-14 (quartiles: lower; upper)	2012–13	2011–12	2010–11
8.4% (3.5%; 8.4%)	8.0%	8.4%	8.2%

Note: An error in the method of data collection means that results for 2012-13 onwards are not comparable with 2008-09 to 2011-12.
Note: A result of 0% indicates that a health service met the reporting criteria of 10 or more inborn term infants without congenital anomalies however none of these infants required additional care.

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

Purpose and rationale

The purpose of this indicator is to identify the proportion of severely growth restricted singleton babies who are not born by 40 weeks gestation. A baby is considered to be severely growth restricted when their birthweight is below the third centile for gestation, sex and plurality.

Clinical significance

Severe FGR is associated with increased risk of perinatal mortality and morbidity, admission to special care or neonatal intensive care nurseries and long-term health consequences. 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 during pregnancy would be expected to reduce the increased risk of mortality and morbidity.

Observations on the data

In 2013, 33.3 per cent of singleton babies with severe growth restriction were born at 40 or more weeks gestation in Victorian public hospitals. This rate has decreased from 39.4 per cent in 2012.

The data indicates wide variation between hospitals, ranging from 21.0 per cent to 67.0 per cent.

In 2013, there were more babies undelivered at 40 weeks gestation in public hospitals than private hospitals (see Figure 11).

Expectations for performance improvement

All hospitals, in particular those with results in the upper quartile range (least favourable outliers), are expected to:

- report on their detection of FGR at a regular interval (monthly or quarterly depending on the size of the service) including the possible reasons for the lack of detection
- monitor the competency and confidence of clinicians in assessing fetal wellbeing during pregnancy
- review management of FGR policies
- ensure women with higher risk pregnancies are referred to the most appropriate level of service.

Consumer summary

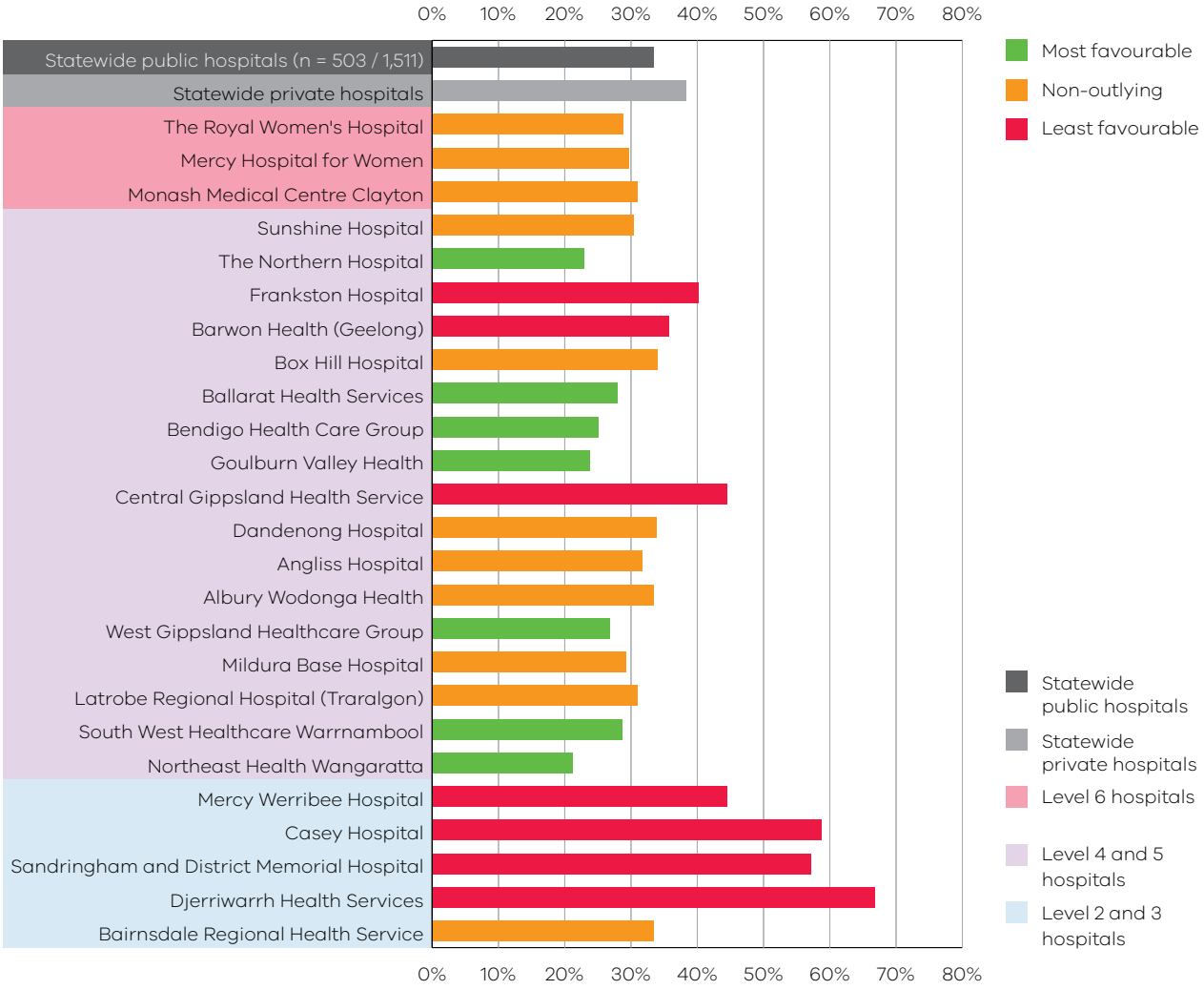
Indicator 3: Severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks

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 born in public (33.3 per cent) and private hospitals (38.2 per cent) were not born before 40 weeks gestation. 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 11: Indicator 3: Rate of severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks in Victorian public hospitals, 2013



Statewide rates for public hospitals

2013 (quartiles: lower; upper)	2012	2011	2010
33.3% (28.6%; 35.6%)	39.4%	39.1%	39.6%

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 achieved a planned term VBAC (Indicator 4b).

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

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. 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 (as 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 in a suitably staffed and equipped delivery suite with continuous intrapartum care and monitoring and with available resources should complications occur (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

In 2013, there was a slight decrease in the proportion of women planning a VBAC in public hospitals compared with 2012 (27.9 per cent in 2013; 29.1 per cent in 2012). There was wide variation across public hospitals, ranging from a rate of 5.6 per cent to 55.6 per cent.

Similarly to previous years, fewer women attending private hospitals planned a VBAC than in public hospitals (15.6 per cent and 27.9 per cent respectively) (see Figure 12).

In 2013, the proportion of women in public and private hospitals who achieved a planned VBAC remained stable (53.2 and 50.5 per cent respectively) compared with 2012. There

was again wide variation in rates across public hospitals, ranging from around 35.0 per cent to 73.0 per cent (see Figure 13).

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 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 that the information (verbal and written) provided to women regarding the benefits and risks of VBAC are based on scientific evidence.

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 plan a VBAC and actually do give birth vaginally.

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 (27.9 per cent) than private hospitals (15.6 per cent). Of these women, 53.2 per cent compared with 50.5 per cent who gave birth in a public and private hospital respectively achieved a VBAC.

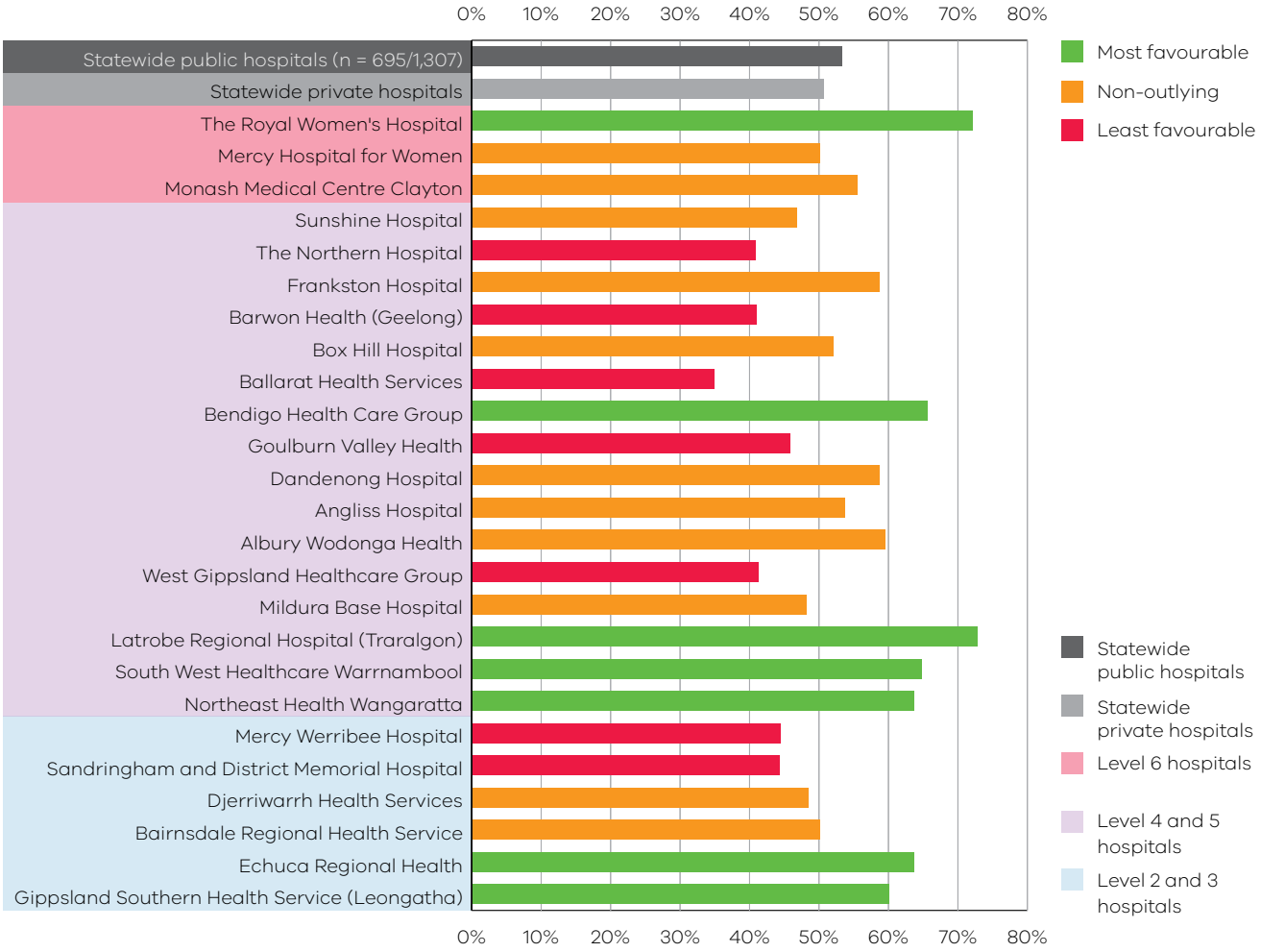
Ask your health service about the level of organisational and clinical support provided to women wishing to safely follow the VBAC pathway.

Figure 12: Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section in Victorian public hospitals, 2013

Statewide rates for public hospitals

2013 (quartiles: lower; upper)	2012	2011	2010	2009
27.9% (21.9%; 32.6%)	29.1%	29.4%	30.2%	30.3%

Figure 13: Indicator 4b: Women who achieved a planned vaginal birth following a primary caesarean section in Victorian public hospitals, 2013



Statewide rates for public hospitals

2013(quartiles: lower; upper)	2012	2011	2010	2009
53.2% (45.7%; 60.0%)	53.9%	46.0%	44.4%	53.5%

Indicators 5a and 5b: Five-year (2009–13) gestation standardised perinatal mortality ratio

Perinatal mortality

Perinatal mortality includes fetal deaths (stillbirths) and deaths of liveborn babies within the first 28 days after birth (neonatal deaths). Victoria and Australia experience one of the lowest maternal and perinatal mortality rates internationally.

Although perinatal mortality rates have fallen since 2009, there remain groups of women with a higher risk of losing a baby, including:

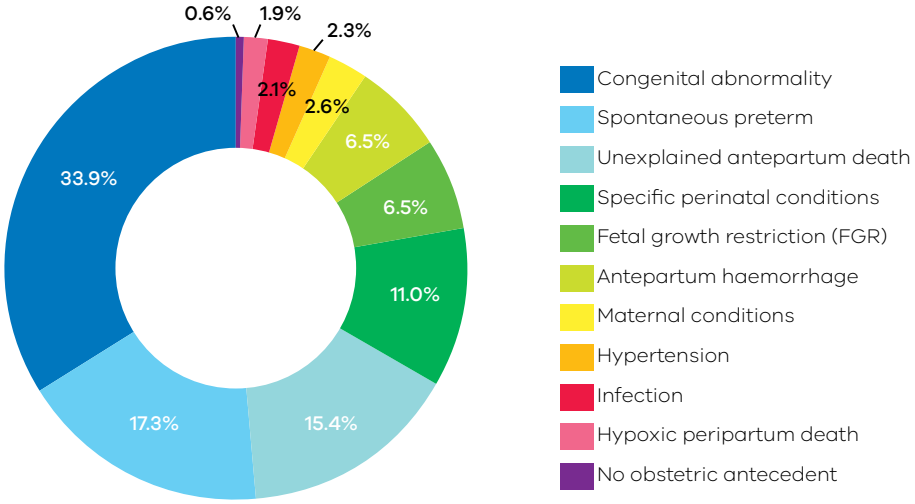
- Aboriginal women
- women born in North Africa, the Middle East, sub-Saharan Africa or southern and central Asia
- women who have had multiple pregnancies
- women whose babies are born pre-term or with FGR.

Important risk factors for perinatal mortality are maternal weight; substance abuse including cigarette smoking; socioeconomic status; access to antenatal care; pre-existing illness, such as diabetes and hypertension; and ethnicity.

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

Almost all perinatal deaths are due to factors during pregnancy and childbirth. The leading causes are congenital anomalies, preterm birth, FGR and intrapartum haemorrhage, reflecting trends nationally (Hilder et. 2014) and in the UK (Centre for Maternal and Child Enquiries 2009). Figure 14 details the causes of perinatal deaths in 2013, adjusted for (or excluding) terminations of pregnancy for maternal psychosocial indications.

Figure 14: Causes of perinatal death, (excluding terminations of pregnancy for maternal psychosocial indications), Victoria 2013



Source: Consultative Council on Obstetric and Paediatric Mortality and Morbidity 2016, Victoria's Mothers, Babies and Children 2012 and 2013, Victoria (unpublished)

What is the GSPMR?

- A comparison of the perinatal mortality rates at individual public hospitals with the overall statewide public hospital rate (reference population equals 100).
- A ratio over 100 indicates perinatal mortality higher than the statewide reference. A rate below 100 indicates perinatal mortality below the statewide reference:
  - 50 = perinatal mortality that is half the statewide reference
  - 100 = perinatal mortality that is equal to the statewide reference
  - 150 = perinatal mortality 50% above the statewide reference
  - 200 = perinatal mortality that is double the statewide reference.
- Provided two ways:
  - results for babies who died after 22 weeks gestation (Indicator 5a)
  - results for babies who died after 32 weeks gestation (Indicator 5b) – most smaller hospitals are not expected to care for babies born before 32 weeks gestation.

How is the GSPMR calculated and what's included or excluded?

The GSPMR:

- includes babies who died from 22 weeks gestation (stillbirths or who lived up to 28 days)
- excludes babies with congenital anomalies and all terminations of pregnancy
- is calculated over five years due to the small numbers involved in perinatal mortality
- takes into account the gestation of the babies born at each service.
- Data for the GSPMR is reported by the birth hospital.

What does the GSPMR tell us?

The GSPMR:

- identifies the public hospitals in Victoria where stillborn babies and babies who die within the first 28 days of life are born (not necessarily where they died)
- allows comparison of public 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.

What can't the GSPMR tell us?

The GSPMR does not indicate:

- the statewide or individual hospital perinatal mortality rates (N/1,000 births)
- 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, SIDS, car accident, injury)
- whether the death could have been avoided
- if the care around the time of death was provided by a different hospital 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.

What are the advantages of the GSPMR?

The GSPMR:

- provides the department, hospitals and the community with information to help understand the birth patterns for perinatal mortality across Victoria
- adjusts for the most important risk of perinatal death, which is gestation
- shows variation in perinatal mortality rates for hospitals of similar capability or size
- provides a focus for the maternity services to undertake detailed review of the outcomes for the babies born in their service and to identify opportunities to improve their care
- publishing the GSPMR allows other hospitals to learn from each other and improves the transparency of reporting of outcomes for Victorian public hospitals.

What are the disadvantages of the ratio?

The GSPMR:

- does not take into account interhospital transfers, which may unfairly bias receiving hospitals
- does not take into account other important risk factors associated with perinatal mortality, such as obesity, smoking, pre-existing illness of the mother, low socioeconomic status and some ethnic groups
- attributes to the hospital babies who died at home following discharge (up to 28 days) for any reason
- attributes the death to the birth hospital regardless of where the baby died or where the mother received her care during pregnancy.

Can we find a better measure for perinatal mortality?

- The department is exploring options that take into account more of the important risk factors associated with perinatal mortality and potential solutions for the other limitations of the current measure.

Purpose and rationale

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 overinterpretation of chance fluctuations.

Indicator 5a provides a broad comparative measure of perinatal mortality rates across hospitals. Indicator 5b captures the GSPMR for those babies born at 32 or more weeks gestation, which is more meaningful for non-tertiary hospitals that would 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 high GSPMR warrants hospitals to identify preventable factors related to care that may have contributed to adverse outcomes.

A GSPMR of 100 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 15 provides a visual representation of the variation in perinatal mortality occurring across Victorian public hospitals when compared with the statewide public hospital rate.

Clinical significance

Variation in GSPMR may be due to differences in the health and/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.

Observations on the data

Based on pooled data from 2009 to 2013, the 22 weeks or more gestation GSPMR for public hospitals ranged from 59 to 208. When considering only babies born from 32 weeks gestation at public hospitals, the GSPMR ranged from 50 to 207 (see Figure 15). This reflects ratios that are about half to double the statewide public hospital perinatal mortality rate respectively.

The statewide private hospital perinatal mortality ratio result is about 40 per cent to 20 per cent less than the statewide public hospital perinatal mortality ratio from 22 weeks and 32 weeks gestation, respectively. This reflects, at least in part, the less disadvantaged populations using private maternity care and the higher-risk women and babies being seen in the public hospital system.

Expectations for performance improvement

The Department of Health and Human Services' *Policy and funding guidelines 2015-–16* (2015) requires all health services to review perinatal deaths in accordance with the Perinatal Society of Australia and New Zealand's (PSANZ) *Clinical practice guideline for perinatal mortality* (2009). All hospitals should have formal processes to review all perinatal deaths, identifying avoidable factors, opportunities for improvement in care processes and organisational systems such as staff availability, supervision and skill mix.

Regional perinatal mortality and morbidity committees are being established 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.

All perinatal deaths are required to be reported to the Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) within the time period specified by the CCOPMM[6].

Health services with higher than expected perinatal mortality (a GSPMR greater than 100) are also required to:

- report their mortality review findings and recommendations to the CCOPMM
- develop organisation-wide strategies approved by the health service executive to address contributing factors (if identified) and report on their implementation.

It should be noted that because the GSPMR is derived from data pooled for 5 year periods, as hospitals introduce practice improvements to lower their GSPMR, improvements in the ratio may not be observed until 3-4 years later.

6 Further information on the legislated functions of the Consultative Council on Obstetric and Paediatric Mortality and Morbidity can be found at: http://www.austlii.edu.au/au/legis/vic/consol_act/phawa2008222/

Consumer summary

Indicator 5: Five-year (2009–13) gestation standardised perinatal mortality ratio (GSPMR)

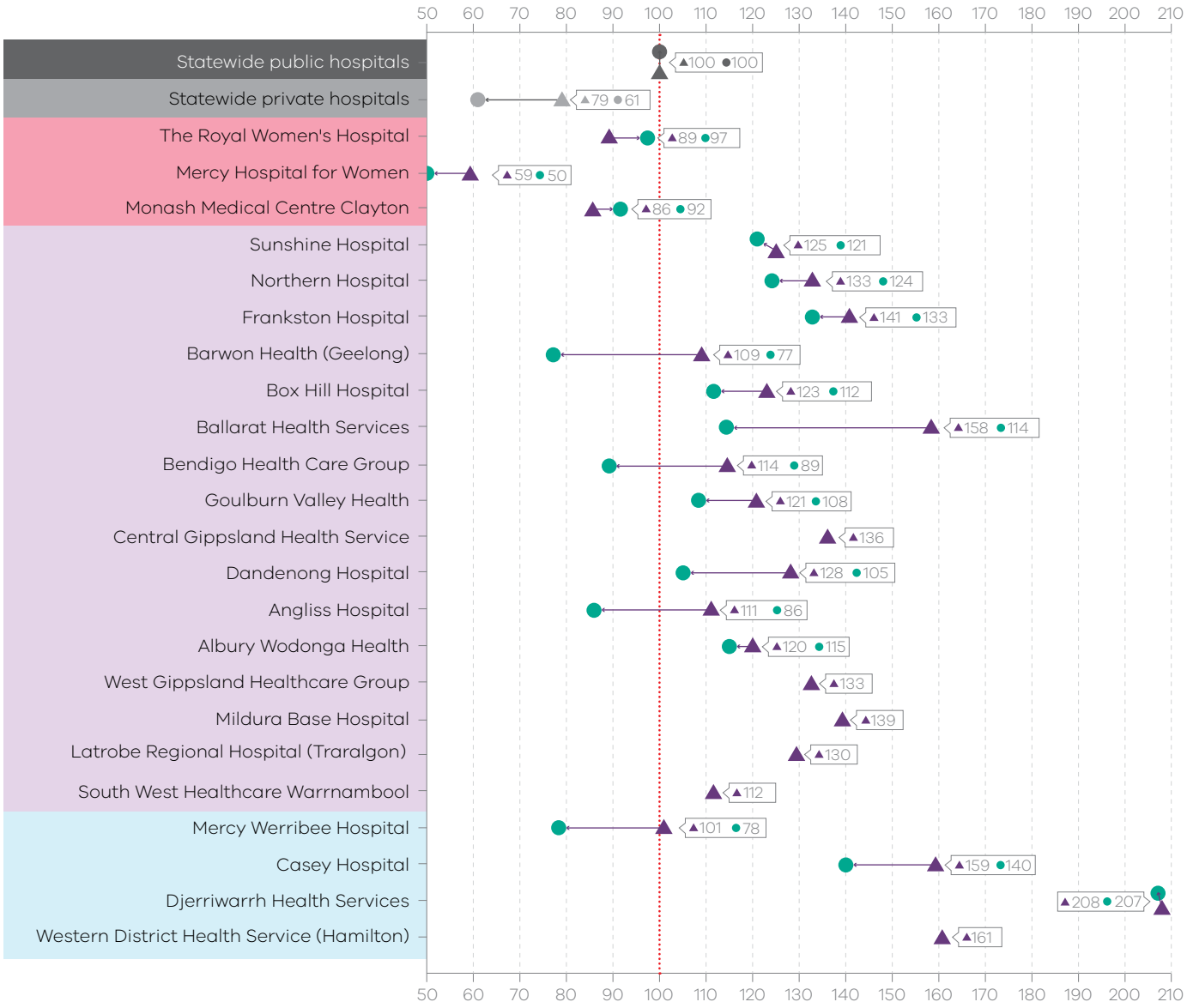
Victoria and Australia experience one of the lowest perinatal mortality rates internationally. However, having a robust system for identifying contributing or preventable factors and sharing lessons learned is important for improving the safety and quality of hospitals. Hospitals are required to review 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 at 22 and 32 weeks. A GSPMR of 100 indicates that the observed number of perinatal deaths at a hospital is what would be expected. A higher GSPMR warrants hospitals to identify and address contributing or preventable factors.

Figure 15: Indicators 5a and b: Perinatal mortality ratio for babies born at 22 weeks and 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, 2009–13



Level 6 hospitals | Level 4 and 5 hospitals | Level 2 and 3 hospitals

Statewide public hospitals	Statewide private hospitals	Individual public hospitals
▲ 22+ weeks gestation	▲ 22+ weeks gestation	▲ 22+ weeks gestation
● 32+ weeks gestation	● 32+ weeks gestation	● 32+ weeks gestation

Statewide rates for public hospitals

22+ weeks gestation (quartiles: lower; upper)	32+ weeks gestation (quartiles: lower; upper)
100 (111; 137)	100 (89; 121)

Note: Excludes terminations of pregnancy and deaths due to congenital anomalies. In interpreting these ratios, conclusions cannot be drawn about the avoidability of any of these deaths.

Indicator 6: Referral to postnatal domiciliary care or Hospital in the Home

Purpose and rationale

This indicator assesses the proportion of women referred to home-based (domiciliary) postnatal care or Hospital in the Home following discharge from hospital. The target for all Victorian public hospitals is 100 per cent.

Home-based models of postnatal care are being used to assist women to transition from hospital to home and to provide care and advice in the most appropriate care setting. The *Postnatal care program guidelines for Victorian health services* (Department of Health 2012) outlines the Victorian Government's expectations of public hospitals in the delivery of the postnatal period of care.

This indicator is limited by its focus on whether women are referred to postnatal home-based care rather than whether postnatal home-based care is received and the quality of this care. The Department of Health and Human Services is exploring a measure of preventable readmissions within 28 days of discharge from hospital which may provide a more robust approach to monitoring the quality and effectiveness of postnatal care.

Clinical significance

Postnatal care begins immediately after birth and aims to assist women to recuperate from the birthing process, provide breastfeeding and parenting education and support, and deliver clinical care to promote the physical and psychological health and wellbeing of the woman and her baby.

The average length of inpatient stay for a public hospital birth episode is approximately two days for an uncomplicated vaginal birth and four days for a caesarean birth (without major complications). Following discharge, the hospital that provided the intrapartum care must offer women at least one postnatal home-based visit. Additional home visits are provided on the basis of individual clinical and psychosocial needs.

Observations on the data

In 2013–14, 98.5 per cent of women who gave birth in a public hospital were referred for at least one postnatal home-based visit (see Figure 16). This result is the highest statewide level ever reported.

Hospitals with lower rates were located in rural areas. This may be due to longer inpatient stays or the greater time and cost associated with travelling long distances to deliver home visits.

Hospitals with low rates should identify the contributing factors and consider options for improving referral and access to home-based postnatal care services to ensure women and their families are well supported following discharge from hospital.

Expectations for performance improvement

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

- report on the reasons for low rates
- implement strategies to achieve service and system improvements
- review options for improving referral and access to home-based postnatal care services (especially where there are unavoidable local barriers).

Consumer summary

Indicator 6: Referral to postnatal domiciliary care or Hospital in the Home

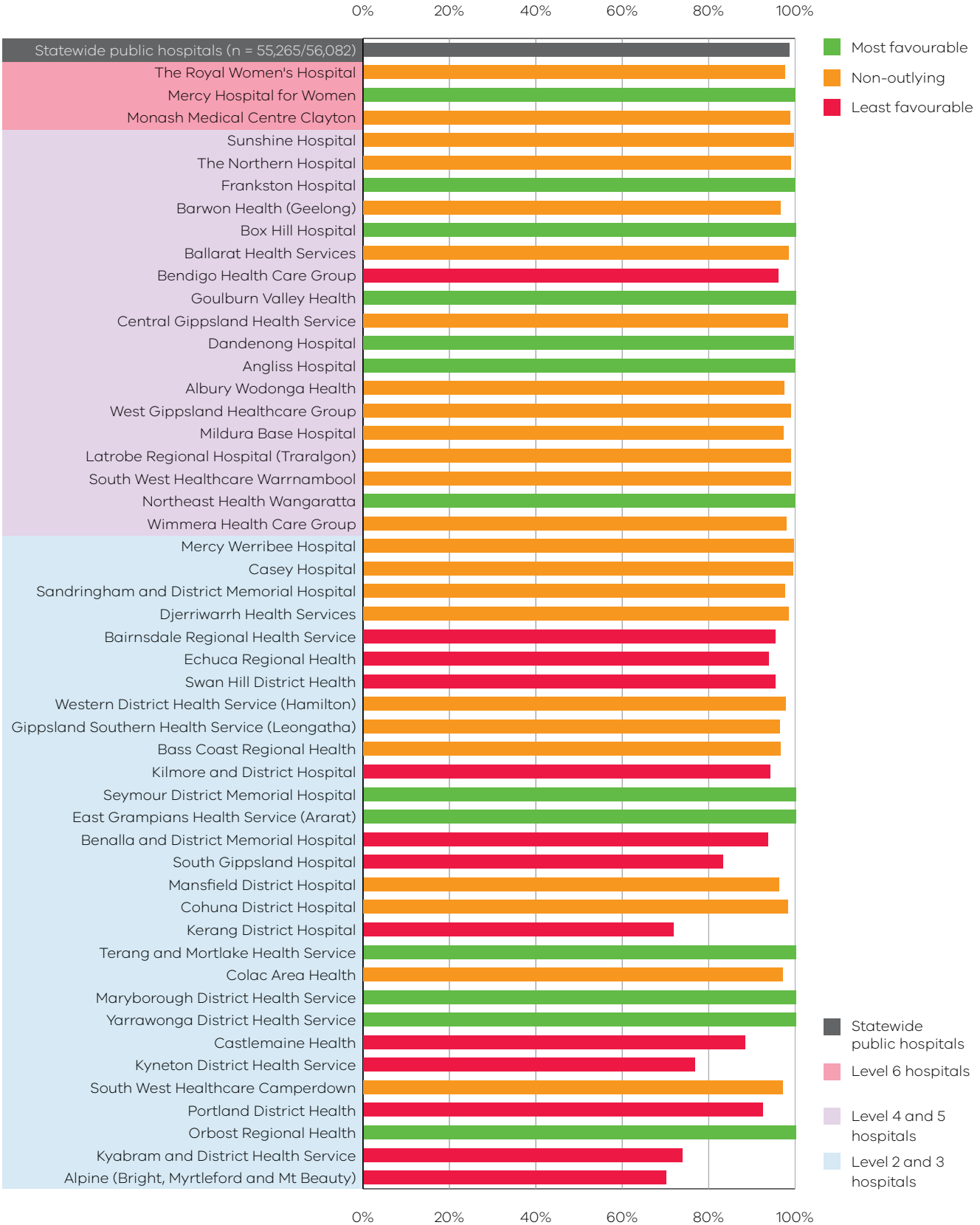
Postnatal care begins immediately after birth and may include routine clinical examination of the woman and her baby and support for infant feeding and parenting.

Postnatal care may be provided in hospital, in a community setting or in the woman's home. All women who give birth in a Victorian public hospital must be offered a home visit by a qualified health professional. This indicator measures the percentage of women referred for home-based postnatal care. The target for all Victorian public hospitals is 100 per cent.

Of the women who gave birth in a public hospital in 2013–14, 98.5 per cent were offered a home visit during the postnatal period. Some rural hospitals may have difficulty providing home-based postnatal care to all women due to travel distances and may therefore provide this care in hospital.

Ask your health service about the care and support they offer or arrange following the birth of your baby, including in-home services.

Figure 16: Indicator 6: Rate of women referred to postnatal domiciliary care or Hospital in the Home in Victorian public hospitals, 2013–14



Statewide rates for public hospitals

2013–14 (quartiles: lower; upper)	2012–13	2011–12	2010–11
98.5% (96.0%; 99.6%)	97.3%	96.2%	94.3%

Indicator 7: Smoking during pregnancy

Purpose and rationale

This indicator indirectly 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 rate of women smoking during pregnancy prior to and after 20 weeks gestation.

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 fetus 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.

Evidence-based smoking cessation advice and interventions in pregnancy can reduce smoking rates (Quit Victoria 2015).

Observations on the data

Fewer women attending public hospitals in 2013 smoked in the first 20 weeks of pregnancy than in 2012. The rate of smoking after 20 weeks gestation was, however, higher in 2013 than in 2012.

The percentage of women who quit smoking after 20 weeks gestation ranged from 1.3 per cent to 33.3 per cent. The large variation across hospitals warrants attention by health services and health professionals providing antenatal care (general practitioners, obstetricians and midwives). Implementing effective smoking cessation interventions during pregnancy is an important public health measure and component of maternity care.

Substantially fewer women attending private hospitals smoked in pregnancy.

Expectations for performance improvement

Health services with results in the upper quartile range (least favourable outliers) are expected to undertake regular multidisciplinary reviews of smoking cessation interventions provided to women, including, but not limited to:

- examine the smoking cessation interventions they provide to women antenatally and identify gaps in their service provision
- monitor the competency and confidence of clinicians in providing smoking cessation advice and interventions
- develop and report on strategies to improve rates to the health service executive.

Consumer summary

Indicator 7: Smoking during pregnancy

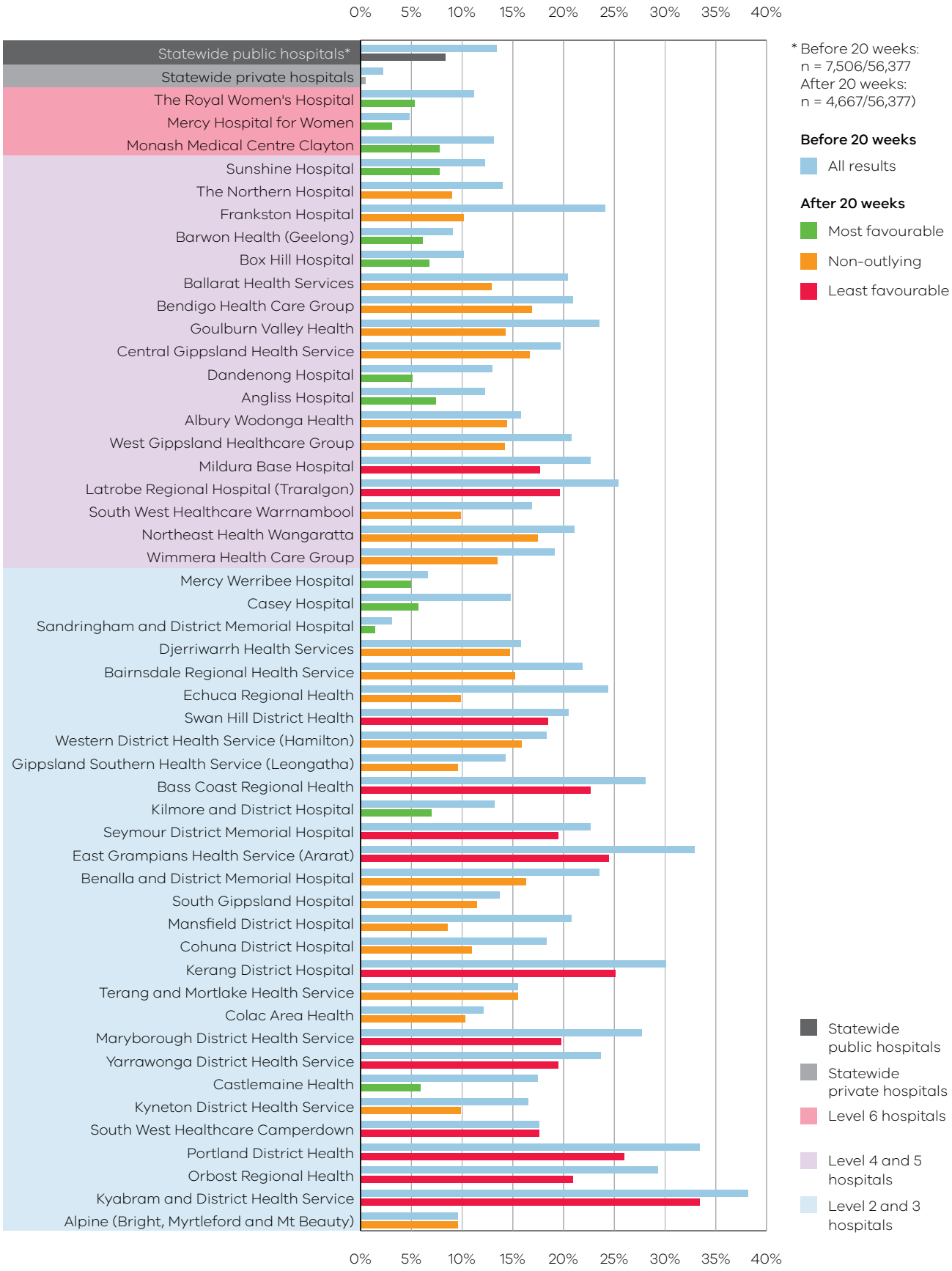
Smoking during pregnancy is strongly associated with poor health outcomes for women and their babies. Interventions, such as education and support programs offered by hospitals, can help pregnant women to stop smoking.

This indicator measures the rate of women who smoked in early pregnancy (before 20 weeks) compared with later pregnancy (after 20 weeks) to identify the effectiveness of smoking cessation interventions offered by hospitals.

Overall, the rate of smoking amongst women who gave birth in a public hospital decreased from 13.3 per cent in early pregnancy (before 20 weeks) to 8.3 per cent after 20 weeks. Women who gave birth in private hospitals were less likely to smoke both in early pregnancy (2.1 per cent) and later pregnancy (0.4 per cent).

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

Figure 17: Indicators 7a and b: Rate of women smoking during pregnancy (before 20 weeks and after 20 weeks gestation) in Victorian public hospitals, 2013



Statewide rates for public hospitals

	2013 (quartiles: lower, upper)	2012	2011	2010
a) Before 20 weeks	13.3% (13.2%; 23.2%)	14.1%	14.8%	12.7%
b) After 20 weeks	8.3% (7.9%; 17.5%)	7.6%	6.9%	6.1%

Indicators 8a, 8b and 8c: Breastfeeding

Purpose and rationale

This suite of indicators assesses the initiation of breastfeeding in Victorian hospitals:

- 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 Australian national breastfeeding strategy 2010–2015* (Australian Health Ministers' Conference 2009) encourages the monitoring of breastfeeding initiation and duration rates. The World Health Organization (2011) encourages exclusive breastfeeding for babies to six months of age and continued breastfeeding up to two years or beyond.

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.

A longitudinal study of Australian children conducted in 2004 found that while 92 per cent of babies were initially breastfed, by one week only 80 per cent were fully breastfed and this decreased to 56 per cent at three months and 14 per cent at six months (Australian Institute of Family Studies 2008). This indicates the need for ongoing breastfeeding support for women following discharge from hospital.

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 track. Breastfeeding has also been shown to protect babies from sudden infant death syndrome (SIDS) and diabetes and heart disease later in life (Ip et al. 2007). 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 are ready to breastfeed and offer help if needed. In addition, providing mothers 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. Health promotion efforts should emphasise the importance of breastfeeding for normal growth and development, and the risks and costs associated with premature weaning (Berry & Gribble 2008).

There are different reasons why women are less likely to breastfeed. 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.

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 more babies with a medical indication for the use of formula than other services and this will affect their rates.

Observations on the data

Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks gestation in Victorian public hospitals

As in previous years, around 94.0 per cent of women who gave birth at 37 or more weeks gestation in a public hospital put the baby to the breast or attempted to express breast milk at least once. This rate was relatively consistent across public and private hospitals and between public hospitals (see Figure 18).

Indicator 8b: Rate of use of infant formula by breastfed babies born at 37+ weeks gestation in Victorian public hospitals, 2013

In 2013, a high proportion of term breastfed babies were given infant formula in hospital (25.3 per cent in public hospitals and 38.6 per cent in private hospitals) (see Figure 19). This rate has increased annually since data collection commenced in 2010 and varies 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 in Victorian public hospitals, 2013

Figure 20 shows that 79.7 per cent of term breastfed babies in public hospitals had their last feed before discharge entirely from the breast with no complementary expressed breast milk or formula. Around 75.0 per cent of term breastfed babies in private hospitals achieved this.

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 *Promoting breastfeeding – Victorian breastfeeding guidelines* (2014)
- 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 in breastfed babies in hospital
- ensure the use of formula for breastfed babies is limited to those who have a clear medical indication
- assess and monitor the competency and confidence of clinicians in providing breastfeeding support and education

- ensure women, including those of linguistically diverse backgrounds, are provided with ready access to accurate and appropriately translated verbal and written information about the importance of breastfeeding to 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.

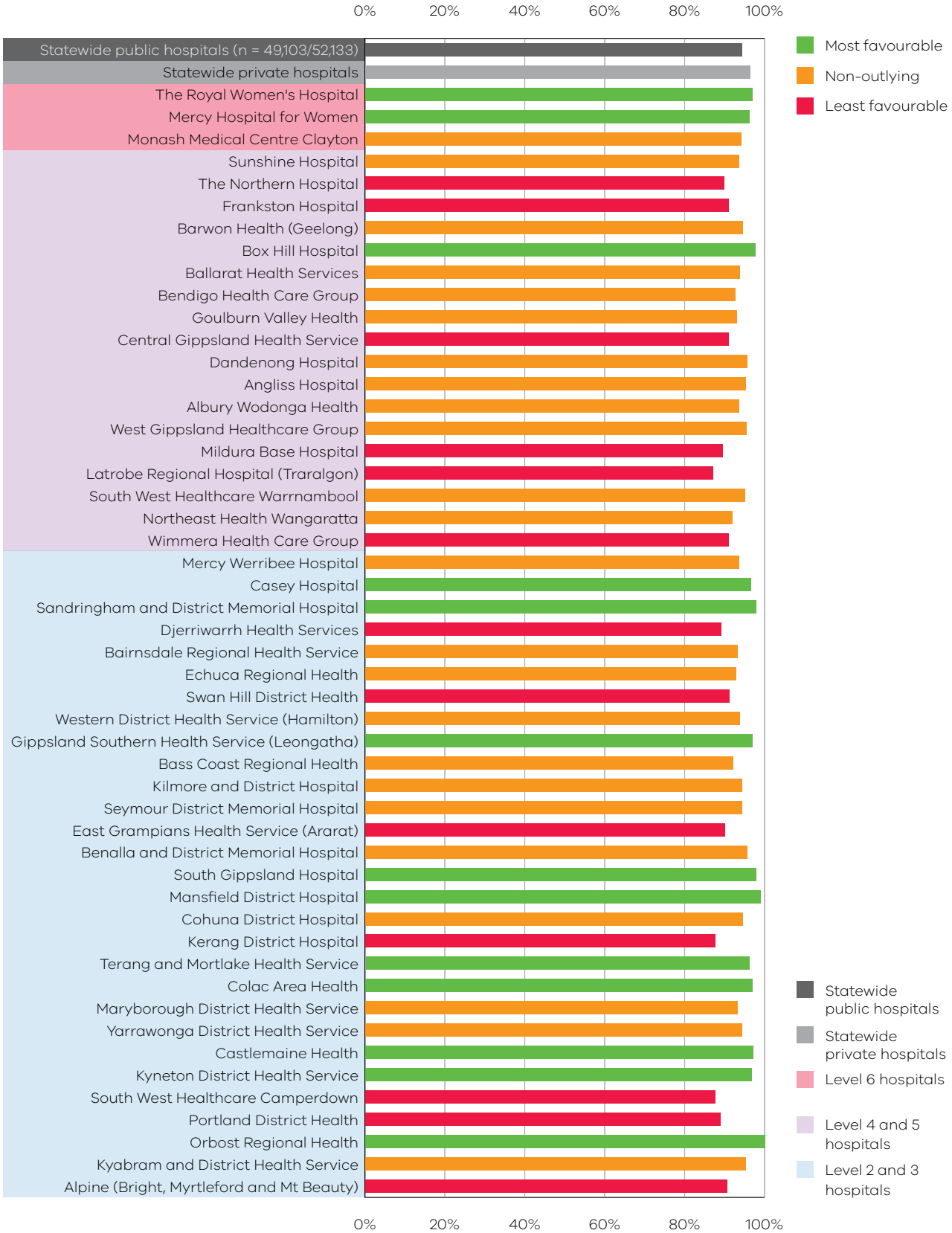
The World Health Organization encourages exclusive breastfeeding for babies to six months of age and continued breastfeeding up to two years or beyond. Health professionals are responsible for encouraging and supporting breastfeeding, wherever possible.

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

The data presented in this report shows that initiation of breastfeeding (94.2 per cent in public hospitals; 96.3 per cent in private hospitals) and the number of babies fully breastfed at the time of discharge from hospital (79.7 per cent in public hospitals; 74.5 per cent in private hospitals) is high in Victorian hospitals. There is, however, an opportunity for hospitals to review their use of infant formula for breastfed babies born at more than 37 weeks (25.3 per cent in public hospitals; 38.6 per cent in private hospitals).

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

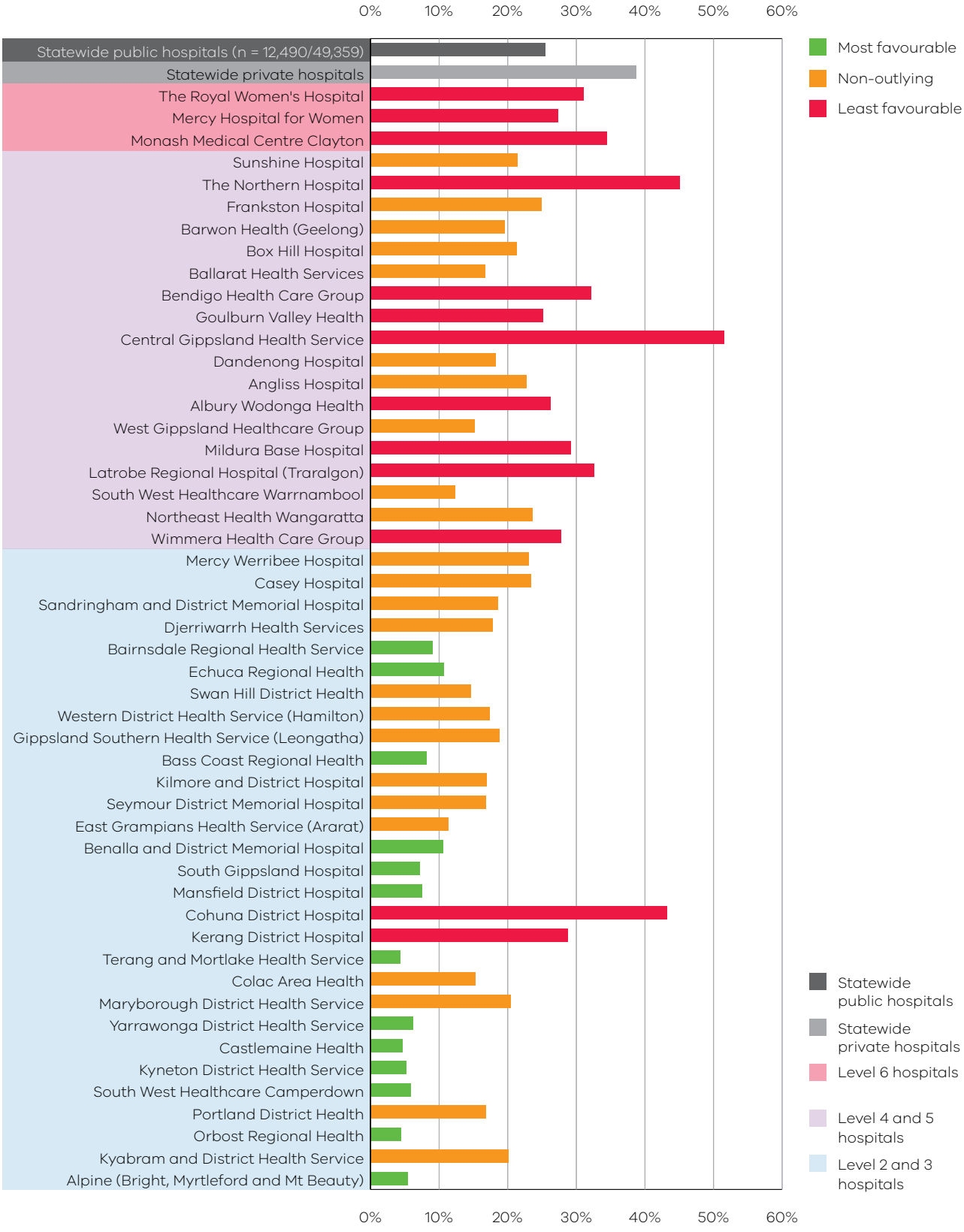
Figure 18: Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks gestation in Victorian public hospitals, 2013



Statewide rates for public hospitals

2013 (quartiles: lower, upper)	2012	2011	2010
94.2% (91.2%; 95.9%)	93.9%	94.2%	93.6%

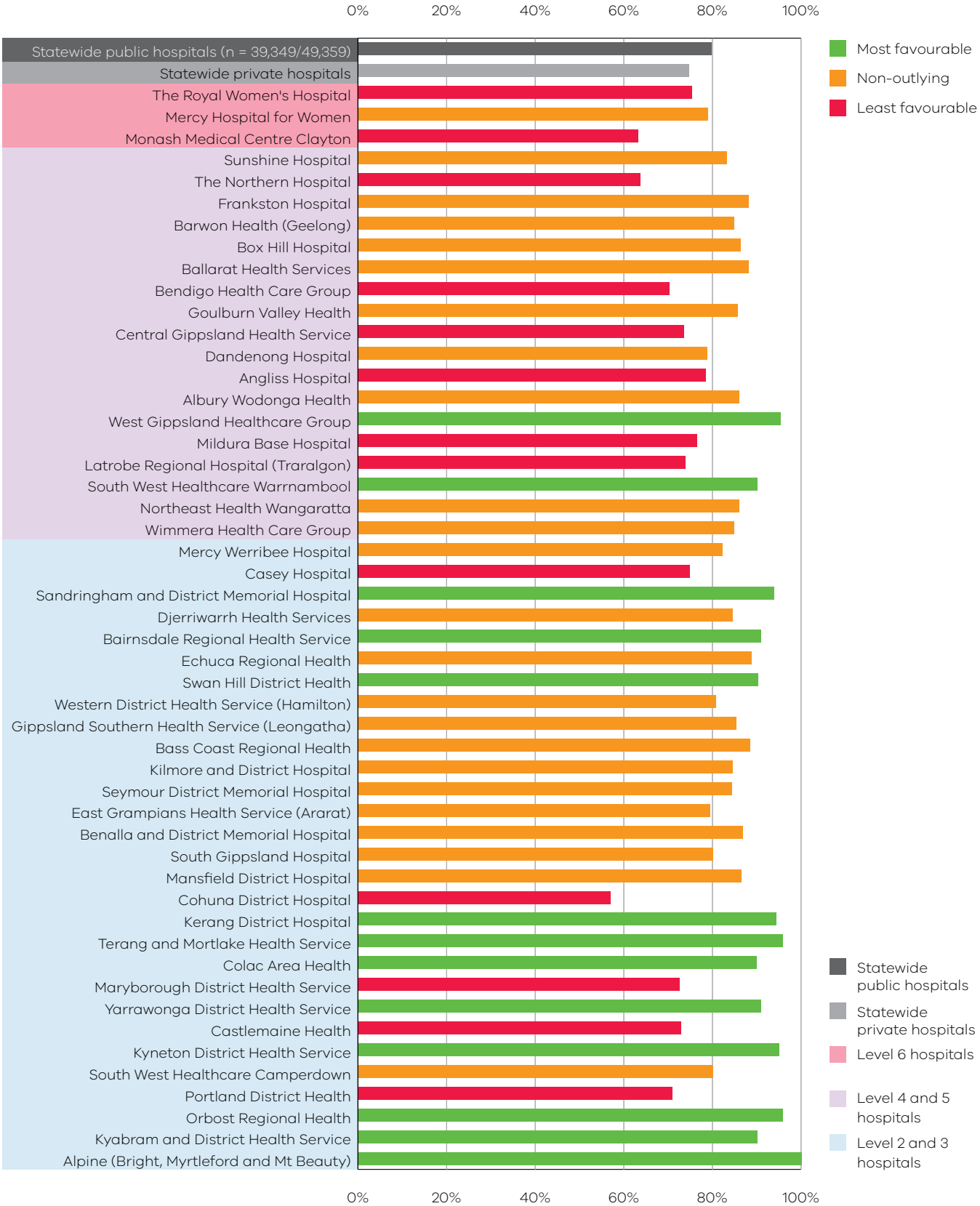
Figure 19: Indicator 8b: Rate of use of infant formula by breastfed babies born at 37+ weeks gestation in Victorian public hospitals, 2013



Statewide rates for public hospitals

2013 (quartiles: lower, upper)	2012	2011	2010
25.3% (10.8%; 25.0%)	25.2%	24.1%	22.1%

Figure 20: 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 hospitals, 2013



Statewide rates for public hospitals

2013 (quartiles: lower, upper)	2012	2011	2010
79.7% (78.5%; 89.6%)	80.1%	82.5%	82.6%

Indicator 9: Antenatal clinic services

Purpose and rationale

This indicator explores the rate of women attending their first antenatal visit prior to 12 weeks gestation.

This indicator refers to the first antenatal visit with a maternity care provider, which may occur in the community (general practitioners, midwives or obstetricians practising privately **or** at a community health centre) or at a public hospital.

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 and medical visits for incidental problems while pregnant.

Health services should refer to Appendix 1 and the *Victorian perinatal data collection manual* (found at: http://www.health.vic.gov.au/ccopmm/vpdc/index.htm) for further information on the business rules for this indicator.

Clinical significance

The *National antenatal care guidelines* (Department of Health and Ageing 2012) recommend that women attend their first antenatal visit within the first 10 weeks of pregnancy. This provides an opportunity to identify clinical and other risks to the woman and her baby as well as to develop a care plan that meets the individual health and social needs of the woman throughout her pregnancy and the postnatal period. Late access to antenatal care may be associated with poorer health and wellbeing outcomes for women and their babies.

Observations on the data

In 2013, 21.9 per cent of women who gave birth in a public hospital had their first antenatal visit before 12 weeks gestation. This represents a 3.7 per cent decrease from 2012.

The data indicates variation between public hospitals. In some individual public hospitals very few women were seen before 12 weeks while in others the majority were seen before 12 weeks (see Figure 21). Markedly more women in private hospitals had their first visit before 12 weeks.

The accuracy of data collection relating to antenatal care provided in community-based settings may have affected public hospital results for this indicator. This indicates a need for hospitals to review and subsequently improve their data collection processes.

Expectations for performance improvement

Given that the statewide public hospital rate of women who attended their first antenatal appointment before 12 weeks gestation decreased in 2013 compared with 2012, 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
- 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: Antenatal clinic services

Antenatal care refers to the period between conception and birth.

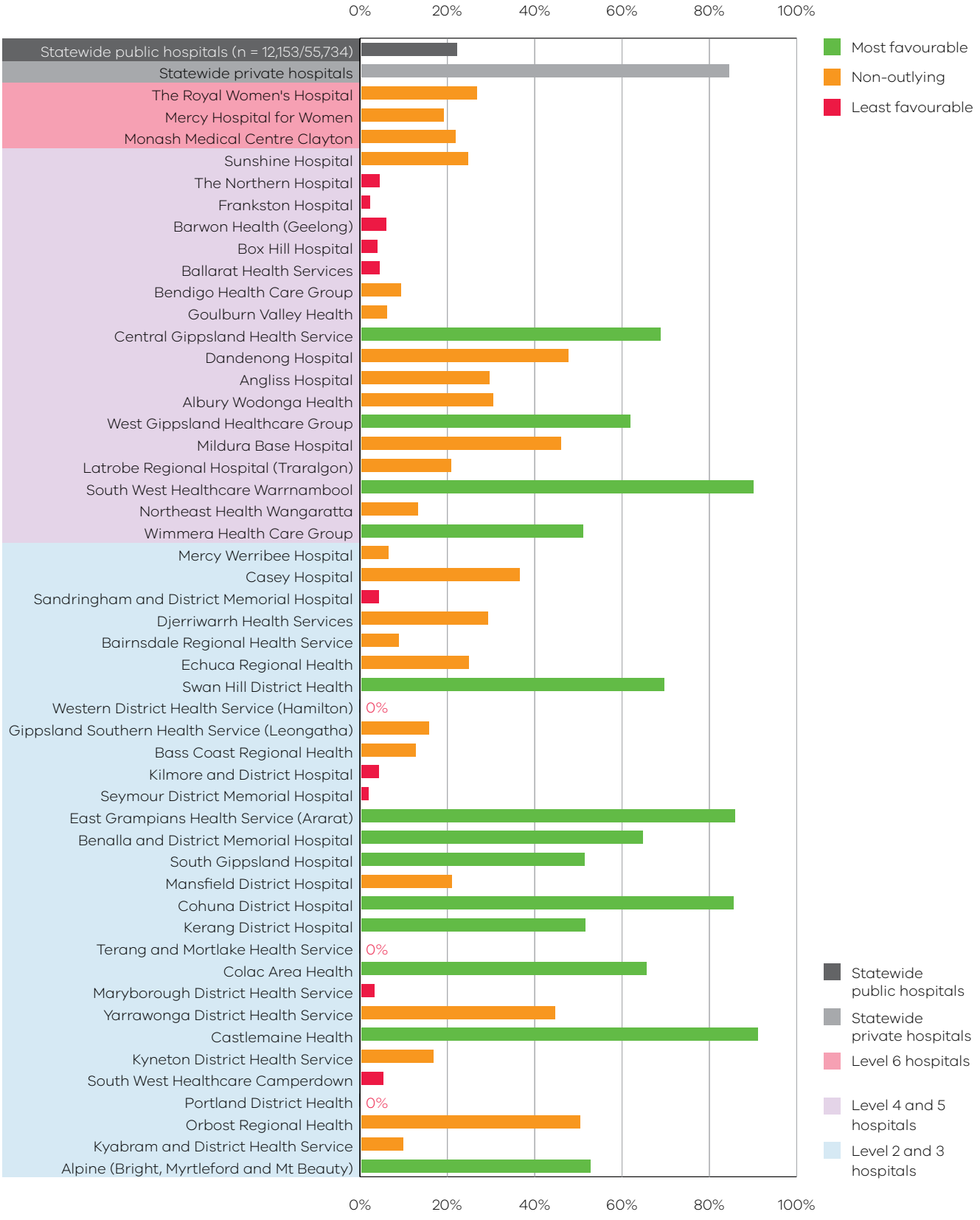
It is recommended that women attend their first antenatal appointment within the first 10 weeks of pregnancy. Early access to antenatal care is important to identify and manage risks to the health of a woman and the development of her baby.

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 only 21.8 per cent of women who gave birth in a public hospital attended their first antenatal appointment before 12 weeks compared to 84.1 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 21: Indicator 9: Rate of women attending their first antenatal visit prior to 12 weeks gestation in Victorian public hospitals, 2013



Statewide rates for public hospitals

2013 (quartiles: lower, upper)	2012	2011	2010
21.8% (5.8%; 50.5%)	25.6%	25.6%	32.8%

Note: A result of 0% indicates that a health service met the reporting criteria of 10 or more women attending antenatal care with a maternity care provider in 2013, however none of these women attended antenatal care prior to 12 weeks' gestation.

Indicator 10: Term infants without congenital anomalies with an Apgar score < 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 to a large extent the quality of resuscitation measures undertaken on the infant following birth.

The Apgar score is a validated measure for adverse long-term outcomes in infants.

Clinical significance

Singleton infants who are 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 minimum score of 0 (indicating no or greatly diminished signs of life) and a maximum score of 10. An Apgar score < 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 2013, a five-minute Apgar score, < 7 was reported for 1.6 per cent of term babies without congenital anomalies in public hospitals overall and 0.9 per cent in private hospitals. This compares with 1.6 per cent and 0.8 per cent respectively for 2012.

Thirteen individual public hospitals reported rates of 2.1 per cent or more, with some rural hospitals reporting higher rates than metropolitan hospitals (see Figure 22).

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 adverse events and outcomes to identify areas for clinical practice or system improvement
- monitor the competency and confidence of 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
- ensure women with a higher risk of complications are referred to appropriate specialist services antenatally.

Consumer summary

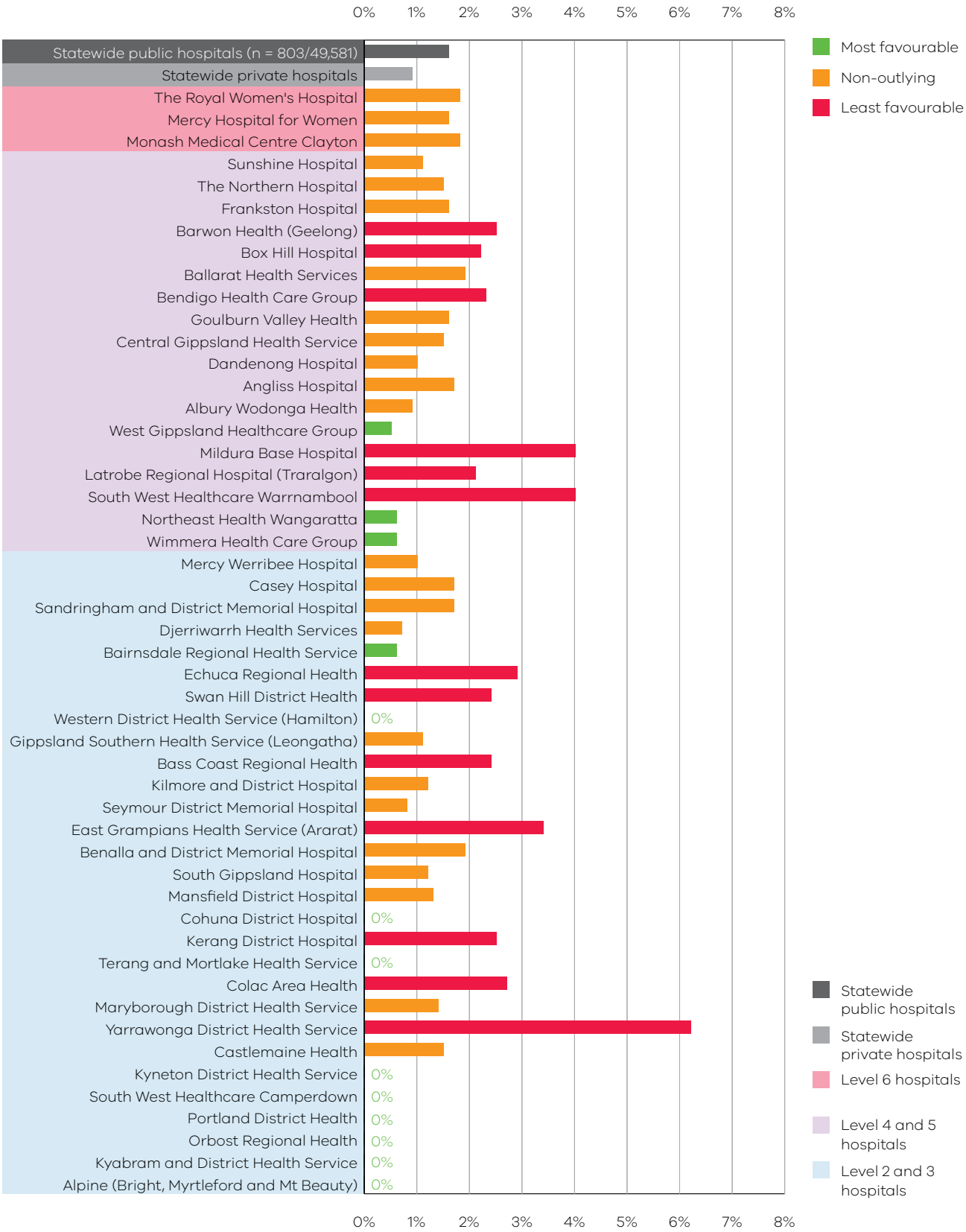
Indicator 10: Term infants without congenital anomalies with an Apgar score < 7 at five minutes

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

The data presented in this report indicates that 1.6 per cent of babies born at greater than 37 weeks and in public hospitals had an Apgar score of < 7 at five minutes after birth compared with 0.9 per cent of babies born at greater than 37 weeks and 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 22: Indicator 10: Rate of term infants without congenital anomalies with an Apgar score < 7 at five minutes in Victorian public hospitals, 2013



Statewide rates for public hospitals	
2013 (quartiles: lower, upper)	2012
1.6% (0.6%; 2.1%)	1.6%

Note: A result of 0% indicates that a health service met the reporting criteria of 10 or more singleton, liveborn term infants without congenital anomalies in 2013, however none of these infants had an Apgar score of <7 at five minutes.

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) - calendar year.

Data from the VPDC is reported by calendar years 1 January 2013 to 31 December 2013.

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

The VPDC identifies standard primparae based on information submitted by midwives. In most hospitals the VPDC report is derived from information entered into the birthing outcomes software and transmitted electronically to the Department of Health and Human Services.

In a few hospitals and home-birth situations, this is undertaken manually by completing a form supplied by the VPDC. Department of Health and Human Services staff then enter the data manually. Identification of standard primiparae relies on accurate and complete reports to the VPDC. Validation studies have shown high levels of accuracy for most of the variables used to select standard primiparae.

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 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 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 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 infants without congenital anomalies who require additional care

Definition:

An inborn term infant is defined as an infant born at the reporting hospital at gestational age of 37 weeks or more.

Exclusions:

- Pre-term newborn babies
- Infants with congenital anomalies
- Birthweight less than 2,500 grams
- Stillborn babies
- Readmission (separation not related to the birth episode)

Data source:

Victorian Admitted Episodes Dataset (financial year).

Numerator/Denominator:

Indicator	Numerator	Denominator
Indicator 2: Rate of term infants without congenital anomalies who require additional care in Victorian public hospitals	The number of inborn term infants without congenital anomalies grouped to VIC-DRG P67A, P67B, P67C, P06A, P06B and P60A[#]	The number of inborn term infants without congenital anomalies grouped to VIC-DRG P67D, P67A, P67B, P67C, P06A, P06B and P60A[#]

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

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

Definition:

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

Exclusions

- Babies without severe FGR; multiple births

Data source:

Victorian Perinatal Data Collection (VPDC) - calendar year.

Data from the VPDC is reported by calendar years 1 January 2013 to 31 December 2013.

This data is routinely collected for all births from each health service.

Numerator/Denominator:

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

Indicator 4: Vaginal births after primary caesarean section (VBAC)

Definition:

The way this indicator is defined may differ from other VBAC indicators. Primary caesarean is often defined as the first ever caesarean regardless of parity, whereas this indicator selects only prior caesareans in primiparae.

The VPDC collects outcomes for women at term whose only previous birth was a caesarean section; it began collecting data on whether a woman has a plan for a vaginal birth in 2009. While this variable is poorly answered, 'plan for VBAC' is derived from the type of labour and method of birth variables. Any woman who entered labour and did not have a subsequent planned caesarean is assumed to have planned a VBAC.

Data source:

Victorian Perinatal Data Collection (VPDC) - calendar year.

Data from the VPDC is reported by calendar years 1 January 2013 to 31 December 2013.

This data is routinely collected for all births from each health service.

Numerator/Denominator:

Indicator	Numerator	Denominator
Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section in Victorian public 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 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 (GSMPR)

Definition:

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

In interpreting these ratios, conclusions cannot be drawn about the avoidability of these deaths. This needs to be undertaken by expert perinatal mortality and review panels at the local level.

The data in this report are calculated:

- from five years of pooled data between 2009 and 2013
- standardised using gestational age
- excluding births less than 22 weeks 0 days for the total GSMPR or less than 32 weeks 0 days for the 32 weeks or more GSMPR
- excluding birthweights < 150 g regardless of gestation and all deaths due to congenital malformations and all terminations of pregnancy.

The GSPMR is presented with data for public hospitals being shown in relation to the statewide public hospital perinatal mortality rate as the standard or reference population. 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.

A GSPMR of 100 indicates that the observed number of perinatal deaths at that hospital is exactly what would be expected, considering the gestation of babies born there. The statewide rate (100) does not necessarily represent the optimal or clinically appropriate rate for perinatal mortality.

Data source:

Victorian Perinatal Data Collection (VPDC) - calendar year.

Data from the VPDC is reported by calendar years 1 January 2013 to 31 December 2013.

This data is routinely collected for all births from each health service.

Numerator/Denominator:

Indicator	Observed	Expected
Indicator 5a: Perinatal mortality ratio for babies born at 22 weeks (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years pooled data in Victorian public hospitals (Total GSMPR)	Observed perinatal deaths from 22 weeks 0 days (by weeks gestation at birth)	Expected perinatal deaths from 22 weeks 0 days (by weeks gestation at birth)
Indicator 5b: Perinatal mortality ratio for babies born at 32 weeks (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years pooled data in Victorian public 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 adjusted GSPMR is calculated for all public and private hospitals and provided to each health service. Due to the potential for over-interpretation of small numbers, results are published for hospitals with five or more observed deaths in any of the five pooled years of analysis, 2009 -2013).

Indicator 6: Referral to postnatal domiciliary care or Hospital in the Home

Definition:

Note that the same methodology for the 2011–12 data was used in 2012–13. However, a new separation referral code was introduced in the VAED in 2012–13 to capture the rate of women who decline referral to domiciliary postnatal care in the home. This code captures those women who were offered domiciliary care but declined the service.

This has not been included in the indicator. That is, episodes that refused postnatal care have been included in the denominator and are not counted in the numerator. Therefore, results are underestimated.

Data source:

Victorian Admitted Episodes Dataset (financial year).

Numerator/Denominator:

Indicator	Numerator	Denominator
Indicator 6: Rate of women referred to postnatal domiciliary care or Hospital in the Home in Victorian public hospitals	Number of women giving birth referred to postnatal domiciliary care or Hospital in the Home	Number of women giving birth excluding women transferred to another hospital

Indicator 7: Smoking during pregnancy

Data source:

Victorian Perinatal Data Collection (VPDC) - calendar year.

Data from the VPDC is reported by calendar years 1 January 2013 to 31 December 2013.

This data is routinely collected for all births from each health service. Data collection may require collaboration with shared care or community-based providers, including shared documentation systems.

Numerator/Denominator:

Indicator	Numerator	Denominator
Indicator 7a: Rate of women smoking during pregnancy (before 20 weeks gestation) in Victorian public hospitals	Number of women who identified as smoking before 20 weeks gestation	All women who gave birth
Indicator 7b: Rate of women smoking during pregnancy (after 20 weeks gestation) in Victorian public hospitals	Number of women who identified as smoking after 20 weeks gestation	All women who gave birth

Indicator 8: Breastfeeding

Data source:

Victorian Perinatal Data Collection (VPDC) - calendar year.

Data from the VPDC is reported by calendar years 1 January 2013 to 31 December 2013.

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

Numerator/Denominator:

Indicator	Numerator	Denominator
Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks in Victorian public 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 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 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: Antenatal clinic services

Data source:

Victorian Perinatal Data Collection (VPDC) - calendar year.

Data from the VPDC is reported by calendar years 1 January 2013 to 31 December 2013.

This data is routinely collected for all births at each health service

Numerator/Denominator:

Indicator	Numerator	Denominator
Indicator 9: Rate of women attending their first antenatal visit prior to 12 weeks gestation in Victorian public hospitals	The number of women attending antenatal care prior to 12 weeks gestation with a maternity care provider (excluding visits for confirmation of pregnancy and medical visits for incidental problems while pregnant)	The number of women attending antenatal care with a maternity care provider

Indicator 10: Term infants without birth anomalies with an Apgar score < 7 at five minutes

Exclusions

Infants born less than 37 weeks gestation, congenital anomalies, multiple births, stillbirths.

Data source:

Victorian Perinatal Data Collection (VPDC) - calendar year.

Data from the VPDC is reported by calendar years 1 January 2013 to 31 December 2013.

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

Numerator/Denominator:

Indicator	Numerator	Denominator
Indicator 10: Rate of term infants without congenital anomalies with an Apgar score of < 7 at five minutes in Victorian public hospitals	The number of singleton, liveborn, term infants without congenital anomalies with an Apgar score < 7 at five minutes	The number of singleton, liveborn term infants without congenital anomalies

Appendix 2: Key terms

Antenatal	Before birth – the period between conception and birth. Also called 'prenatal'.
Apgar score	The Apgar score is a measure of the baby's skin colour, spontaneous activity, reflex activity, pulse rate and respiration at specific times after birth.
Assisted vaginal birth	One of the methods that may be used to speed up a birth. Assisted vaginal birth is performed either by using forceps (special large curved tongs placed around the baby's head to assist movement through the birth canal) or vacuum extraction (gentle suction applied following placement of a large suction cap on the baby's head).
Caesarean section	A surgical operation by which the fetus is extracted through an incision in the abdominal and uterine walls.
Congenital anomaly	An anomaly of prenatal origin arising from conception or occurring before the end of pregnancy. This includes structural, functional, genetic, chromosomal and biochemical anomalies.
Domiciliary care	Postnatal care provided in the woman's home.
Expected	The number of deaths that are predicted to occur based on the number of births at each week of gestation at the hospital and the statewide rate of perinatal deaths.
Fetal growth restriction (FGR)	Birthweight below the 10th percentile for gestational age, plurality and sex. Severe FGR is defined as a birthweight less than the 3rd percentile.
Forceps	See Assisted vaginal birth above.
Fourth-degree tear	A tear of the perineum into the anal sphincter, which extends to 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.
Induction of labour	Sometimes it is necessary to help the process of labour to begin. Any method that does this is called 'induction'.
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.
Observed	The sum of actual number of perinatal deaths at each week of gestation.
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.
Perineum	The area between the anus and the vagina.

Postnatal	After birth.
Pre-term	Prior to 37 weeks gestation.
Primipara	A woman who has given birth for the first time.
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 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 infant	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.
Uterus	The hollow pear-shaped muscle in which the baby grows throughout pregnancy. Also referred to as 'the womb'.
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 3: Total women and babies, 2013

Health service	Level of service	Number of women	Number of babies
The Royal Women's Hospital	6	6,923	7,128
Mercy Hospital for Women	6	6,013	6,147
Monash Medical Centre Clayton	6	3,568	3,697
Sunshine Hospital	5	5,235	5,289
The Northern Hospital	5	2,996	3,026
Frankston Hospital	5	2,567	2,598
Barwon Health (Geelong)	5	2,431	2,457
Box Hill Hospital	5	2,313	2,342
Ballarat Health Services	5	1,357	1,375
Bendigo Health Care Group	5	1,311	1,329
Goulburn Valley Health	5	1,170	1,189
Central Gippsland Health Service	5	499	507
Dandenong Hospital	4	2,557	2,561
Angliss Hospital	4	2,178	2,206
Albury Wodonga Health	4	1,606	1,626
West Gippsland Healthcare Group	4	933	944
Mildura Base Hospital	4	868	882
Latrobe Regional Hospital (Traralgon)	4	830	836
South West Healthcare Warrnambool	4	727	742
Northeast Health Wangaratta	4	591	602
Wimmera Health Care Group	4	373	376
Mercy Werribee Hospital	3	2,393	2,418
Casey Hospital	3	1,526	1,526
Sandringham and District Memorial Hospital	3	1,513	1,519
Djerriwarrh Health Services	3	975	975
Bairnsdale Regional Health Service	3	344	344
Echuca Regional Health	3	338	344
Swan Hill District Health	3	245	247
Western District Health Service (Hamilton)	3	209	210
Gippsland Southern Health Service (Leongatha)	3	190	190
Bass Coast Regional Health	3	186	188

Health service	Level of service	Number of women	Number of babies
Kilmore and District Hospital	3	175	175
Seymour District Memorial Hospital	3	124	124
East Grampians Health Service (Ararat)	3	119	119
Benalla and District Memorial Hospital	3	111	111
South Gippsland Hospital	3	88	88
Mansfield District Hospital	3	82	82
Cohuna District Hospital	3	55	55
Kerang District Hospital	3	40	40
Terang and Mortlake Health Service	3	26	26
Colac Area Health	2	166	166
Maryborough District Health Service	2	76	76
Yarrawonga District Health Service	2	72	72
Castlemaine Health	2	69	69
Kyneton District Health Service	2	61	61
South West Healthcare Camperdown	2	40	40
Portland District Health	2	27	27
Orbost Regional Health	2	24	24
Kyabram and District Health Service	2	21	21
Alpine (Bright, Myrtleford and Mt Beauty)	2	21	21
Other public hospitals		**15**	**16**
Private practising midwives (Private homebirth)		**280**	**280**
Public hospital total		**56,362**	**57,217**
Private hospital total		**20,066**	**20,429**
Statewide total		**76,723**	**77,942**

Source: Victorian Perinatal Data Collection (VPDC). Excludes babies born ≤20 weeks gestation, all terminations of pregnancy and birthweight ≤150 g.

Public hospitals with ≤ 5 are included in other 'Other public hospitals'. Non maternity public hospitals with occasional births are also included in 'Other public hospitals'.

Levels of service are defined in the (former) Department of Health's Capability framework for Victorian maternity and newborn services (2010).

Appendix 4: Overview of results, 2013–14

Table 3 provides an overview of indicator results for the 2013–14 reporting period and allows your health service to track performance and trends against other services of similar size and capability level. Results highlighted in **red** indicate a result in the least performing quartile for the state. Results in **green** indicate a result in the best performing quartile for the state. Health services with outlying results should investigate the possible reasons and identify priority areas for improvement at a local level and, where required, in collaboration with other services in their region or with the Department of Health and Human Services. Refer to the notes section below for further information.

Table 3: Overview of indicator results, 2013-14

Level of service		Number of births	Indicators								
			1a	1b	1c	2	3	4a	4b	5a	5b
	Statewide public hospitals	56,362	2.9	15.5	5.7	8.4	33.3	27.9	53.2	100	100
	Statewide private hospitals	20,066	13.8	33.0	3.2	N/A	38.2	15.6	50.5	79	61
	Lower quartile range		0.9	11.9	1.1	3.5	28.6	21.9	45.7	111	89
	Upper quartile range		4.6	18.0	7.4	8.4	35.6	32.6	60.0	137	121
6	The Royal Women's Hospital	6,923	4.6	15.1	6.1	8.9	28.7	28.2	71.9	89	97
6	Mercy Hospital for Women	6,013	2.4	17.4	1.5	8.1	29.5	22.8	50.0	59	50
6	Monash Medical Centre Clayton	3,568	0.8	11.2	9.5	21.0	30.9	32.6	55.4	86	92
5	Sunshine Hospital	5,235	1.2	15.9	10.3	8.4	30.3	31.0	46.6	125	121
5	The Northern Hospital	2,996	2.2	16.5	4.1	9.4	22.8	26.6	40.7	133	124
5	Frankston Hospital	2,567	3.5	19.0	3.2	7.1	40.0	23.8	58.6	141	133
5	Barwon Health (Geelong)	2,431	4.0	18.3	2.8	11.8	35.6	23.9	40.9	109	77
5	Box Hill Hospital	2,313	1.5	10.7	10.3	5.8	33.9	27.3	51.9	123	112
5	Ballarat Health Services	1,357	9.8	22.0	3.1	8.6	27.8	28.4	34.8	158	114
5	Bendigo Health Care Group	1,311	2.4	17.1	7.4	8.2	25.0	28.2	65.5	114	89
5	Goulburn Valley Health	1,170	2.1	13.5	1.2	10.0	23.7	45.5	45.7	121	108
5	Central Gippsland Health Service	499	9.5	14.3	0.0	7.7	44.4	15.2		136	
4	Dandenong Hospital	2,557	0.5	8.2	8.9	9.4	33.8	33.1	58.5	128	105

Level of service		Indicators								Total number of outlying indicators
		6	7a	7b	8a	8b	8c	9	10	
	Statewide public hospitals	98.5	13.3	8.3	94.2	25.3	79.7	21.8	1.6	
	Statewide private hospitals	N/A	2.1	0.4	96.3	38.6	74.5	84.1	0.9	
	Lower quartile range	96.0	13.2	7.9	91.2	10.8	78.5	5.8	0.6	
	Upper quartile range	99.6	23.2	17.5	95.9	25.0	89.6	50.5	2.1	
6	The Royal Women's Hospital	97.4	11.1	5.2	96.8	30.9	75.3	26.5	1.8	4
6	Mercy Hospital for Women	99.8	4.7	3.0	96.1	27.2	78.9	18.8	1.6	1
6	Monash Medical Centre Clayton	98.7	13.0	7.7	94.1	34.3	63.1	21.6	1.8	4
5	Sunshine Hospital	99.5	12.2	7.7	93.5	21.3	83.1	24.4	1.1	3
5	The Northern Hospital	98.9	13.9	8.9	89.8	45.0	63.6	4.1	1.5	7
5	Frankston Hospital	99.8	24.0	10.1	90.8	24.8	88.1	2.0	1.6	7
5	Barwon Health (Geelong)	96.5	9.0	6.0	94.4	19.4	84.8	5.7	2.5	6
5	Box Hill Hospital	100.0	10.1	6.7	97.6	21.2	86.3	3.6	2.2	3
5	Ballarat Health Services	98.4	20.3	12.8	93.7	16.6	88.1	4.2	1.9	6
5	Bendigo Health Care Group	96.0	20.8	16.8	92.6	32.0	70.1	9.0	2.3	5
5	Goulburn Valley Health	100.0	23.4	14.2	93.0	25.0	85.5	5.9	1.6	4
5	Central Gippsland Health Service	98.2	19.6	16.6	90.8	51.4	73.4	68.4	1.5	6
4	Dandenong Hospital	99.6	12.9	5.0	95.6	18.1	78.7	47.4	1.0	2

Level of service		Number of births	Indicators								
			1a	1b	1c	2	3	4a	4b	5a	5b
4	Angliss Hospital	2,178	0.0	10.7	9.3	4.0	31.6	15.0	53.6	111	86
4	Albury Wodonga Health	1,606	10.5	15.2	1.1	9.3	33.3	24.4	59.4	120	115
4	West Gippsland Healthcare Group	933	2.6	5.1	5.4	6.1	26.7	50.7	41.2	133	
4	Mildura Base Hospital	868	1.4	16.2	6.5	8.5	29.2	42.2	48.1	139	
4	Latrobe Regional Hospital (Traralgon)	830	1.7	13.8	8.0	8.1	30.8	23.9	72.7	130	
4	South West Healthcare Warrnambool	727	3.7	0.0	7.4	11.5	28.6	29.3	64.7	112	
4	Northeast Health Wangaratta	591	7.0	16.3	2.8	6.0	21.1	19.3	63.6		
4	Wimmera Health Care Group	373	0.0	45.5		4.2		21.9			
3	Mercy Werribee Hospital	2,393	4.5	20.1	6.6	6.5	44.4	31.3	44.3	101	78
3	Casey Hospital	1,526	0.5	15.1	6.5	8.9	58.6	9.8		159	140
3	Sandringham and District Memorial Hospital	1,513	1.0	19.6	3.2	3.5	57.1	35.5	44.2		
3	Djerriwarrh Health Services	975	1.3	17.1	4.8	2.2	66.7	34.1	48.3	208	207
3	Bairnsdale Regional Health Service	344	2.8	13.9	6.5	3.7	33.3	31.3	50.0		
3	Echuca Regional Health	338	9.1	9.1	0.0	2.0		29.7	63.6		
3	Swan Hill District Health	245	4.2	12.5	0.0	2.0		5.9			
3	Western District Health Service (Hamilton)	209	0.0	23.5	0.0	4.1		17.6		161	
3	Gippsland Southern Health Service (Leongatha)	190	10.0	15.0	0.0	5.5		55.6	60.0		

Level of service		Indicators								Total number of outlying indicators
		6	7a	7b	8a	8b	8c	9	10	
4	Angliss Hospital	99.8	12.2	7.3	95.1	22.6	78.4	29.3	1.7	3
4	Albury Wodonga Health	97.3	15.7	14.3	93.5	26.1	85.9	30.2	0.9	3
4	West Gippsland Healthcare Group	98.9	20.7	14.1	95.4	15.1	95.2	61.5	0.5	1
4	Mildura Base Hospital	97.2	22.6	17.6	89.4	29.1	76.4	45.6	4.0	7
4	Latrobe Regional Hospital (Traralgon)	98.8	25.3	19.5	86.9	32.5	73.7	20.5	2.1	7
4	South West Healthcare Warrnambool	98.8	16.8	9.8	95.0	12.2	90.0	89.7	4.0	3
4	Northeast Health Wangaratta	99.8	21.0	17.4	91.8	23.5	85.9	12.9	0.6	2
4	Wimmera Health Care Group	97.8	19.0	13.4	90.9	27.6	84.8	50.7	0.6	4
3	Mercy Werribee Hospital	99.5	6.5	4.9	93.4	22.9	82.1	6.1	1.0	3
3	Casey Hospital	99.3	14.7	5.6	96.5	23.3	74.8	36.2	1.7	6
3	Sandringham and District Memorial Hospital	97.5	3.0	1.3	97.8	18.4	93.7	4.0	1.7	4
3	Djerriwarrh Health Services	98.4	15.7	14.6	89.0	17.7	84.4	28.9	0.7	4
3	Bairnsdale Regional Health Service	95.3	21.8	15.1	93.2	8.9	90.8	8.5	0.6	1
3	Echuca Regional Health	93.7	24.3	9.8	92.8	10.6	88.7	24.6	2.9	4
3	Swan Hill District Health	95.2	20.4	18.4	91.0	14.5	90.2	69.3	2.4	5
3	Western District Health Service (Hamilton)	97.6	18.2	15.8	93.7	17.2	80.7	0.0	0.0	4
3	Gippsland Southern Health Service (Leongatha)	96.3	14.2	9.5	96.8	18.7	85.2	15.4	1.1	1

Level of service		Number of births	Indicators								
			1a	1b	1c	2	3	4a	4b	5a	5b
3	Bass Coast Regional Health	186	0.0	20.0		4.4		42.9			
3	Kilmore and District Hospital	175	8.3	37.5	0.0	1.9		5.6			
3	Seymour District Memorial Hospital	124				2.6					
3	East Grampians Health Service (Ararat)	119				6.0					
3	Benalla and District Memorial Hospital	111				1.0					
3	South Gippsland Hospital	88	5.9	17.6	0.0	4.8					
3	Mansfield District Hospital	82	0.0	8.3	0.0	0.0					
3	Cohuna District Hospital	55				4.0					
3	Kerang District Hospital	40				0.0					
3	Terang and Mortlake Health Service	26				5.0					
2	Colac Area Health	166	0.0	8.3	9.1	4.4		16.7			
2	Maryborough District Health Service	76				5.0					
2	Yarrawonga District Health Service	72				4.0					
2	Castlemaine Health	69				1.6					
2	Kyneton District Health Service	61				0.0					
2	South West Healthcare Camperdown	40				5.6					
2	Portland District Health	27				9.5					

Level of service		Indicators								Total number of outlying indicators
		6	7a	7b	8a	8b	8c	9	10	
3	Bass Coast Regional Health	96.5	28.0	22.6	92.0	8.0	88.3	12.4	2.4	4
3	Kilmore and District Hospital	94.1	13.1	6.9	94.2	16.8	84.5	4.0	1.2	5
3	Seymour District Memorial Hospital	100.0	22.6	19.4	94.2	16.7	84.2	1.6	0.8	2
3	East Grampians Health Service (Ararat)	100.0	32.8	24.4	89.9	11.2	79.4	85.5	3.4	4
3	Benalla and District Memorial Hospital	93.5	23.4	16.2	95.5	10.5	86.7	64.5	1.9	2
3	South Gippsland Hospital	83.1	13.6	11.4	97.7	7.1	80.0	51.1	1.2	2
3	Mansfield District Hospital	96.1	20.7	8.5	98.8	7.4	86.4	20.7	1.3	0
3	Cohuna District Hospital	98.2	18.2	10.9	94.4	43.1	56.9	85.2	0.0	2
3	Kerang District Hospital	71.7	30.0	25.0	87.5	28.6	94.3	51.3	2.5	6
3	Terang and Mortlake Health Service	100.0	15.4	15.4	96.0	4.2	95.8	0.0	0.0	1
2	Colac Area Health	97.0	12.0	10.2	96.9	15.2	89.9	65.2	2.7	3
2	Maryborough District Health Service	100.0	27.6	19.7	93.2	20.3	72.5	2.9	1.4	4
2	Yarrawonga District Health Service	100.0	23.6	19.4	94.3	6.1	90.9	44.4	6.2	3
2	Castlemaine Health	88.3	17.4	5.8	97.1	4.5	72.7	90.8	1.5	2
2	Kyneton District Health Service	76.7	16.4	9.8	96.7	5.1	94.9	16.4	0.0	1
2	South West Healthcare Camperdown	97.0	17.5	17.5	87.5	5.7	80.0	5.0	0.0	3
2	Portland District Health	92.3	33.3	25.9	88.9	16.7	70.8	0.0	0.0	7

Level of service		Number of births	Indicators								
			1a	1b	1c	2	3	4a	4b	5a	5b
2	Orbost Regional Health	24				4.8					
2	Kyabram and District Health Service	21				0.0					
2	Alpine (Bright, Myrtleford and Mt Beauty)	21				0.0					

Level of service		Indicators								Total number of outlying indicators
		6	7a	7b	8a	8b	8c	9	10	
2	Orbost Regional Health	100.0	29.2	20.8	100.0	4.3	95.7	50.0	0.0	2
2	Kyabram and District Health Service	73.7	38.1	33.3	95.2	20.0	90.0	9.5	0.0	3
2	Alpine (Bright, Myrtleford and Mt Beauty)	70.0	9.5	9.5	90.5	5.3	100.0	52.4	0.0	2

Notes:

1. The business rules found at Appendix 1 outline the inclusion and exclusion criteria for each indicator and should be used to fully interpret these findings.
2. The **RED** shading indicates a result that is in the least performing quartile (outlier).
3. An indicator result of 0.0% indicates that a health service had no cases in the numerator.
4. Missing data against a health service or indicator represents small health services such that the denominator inclusion threshold for the indicator was not met and therefore results were not published in that year
5. Results for GSPMR (Indicators 5a and 5b): 2013–14 results are based on pooled data from 2009 to 2013
6. Indicators 1, 3, 4, 5, 7, 8, 9, and 10 are derived from data collected in the Victorian Perinatal Data Collection (VPDC) and are reported by **CALENDAR** year.
7. Indicators 2 and 6 are derived from data collected in the Victorian Admitted Episodes Dataset (VAED) and are reported by **FINANCIAL** year.

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