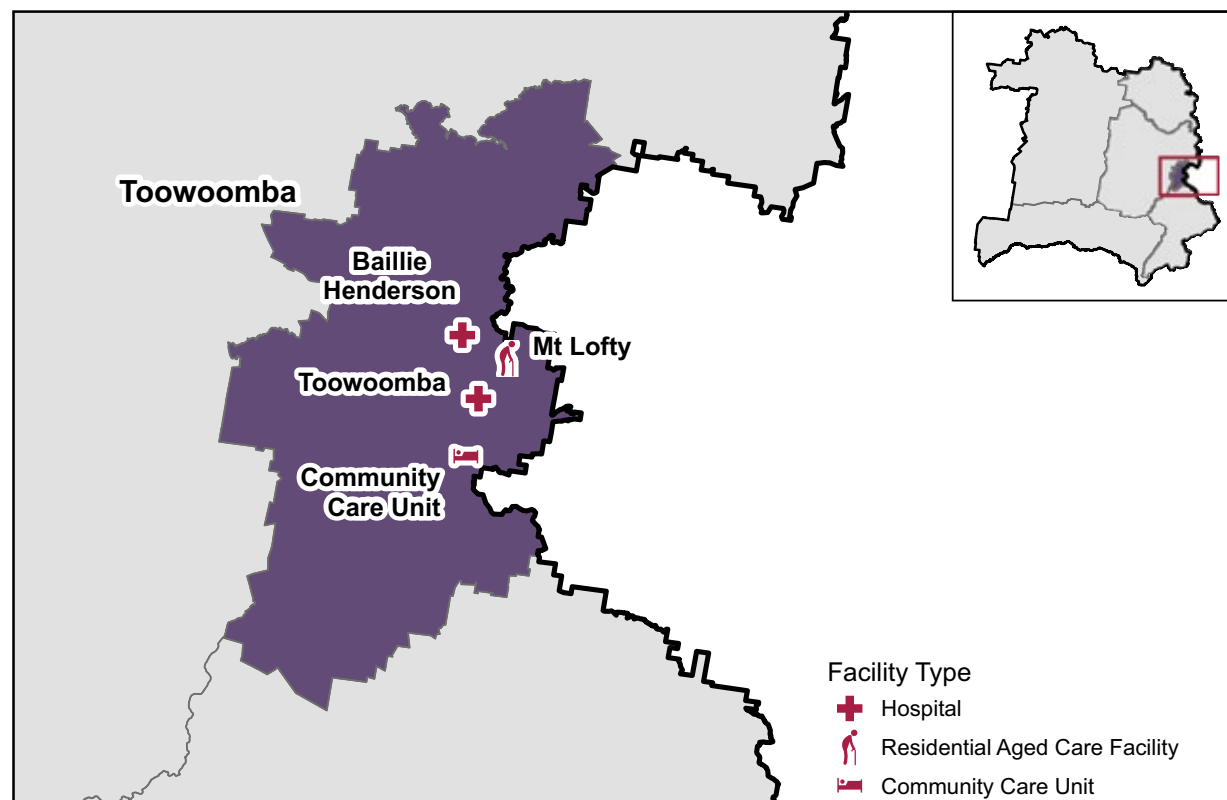


## 2.1.5 TOOWOOMBA PLANNING REGION

The Toowoomba planning region includes Toowoomba Hospital (TH), Baillie Henderson Hospital and Mt Lofty Heights Nursing Home as well as private facilities (St Andrew's Hospital, St Vincent's Private Hospital, Toowoomba Community Care units, Toowoomba Surgicentre). As a major referral hospital, the TH has three levels of catchment: local, HHS wide and an extended catchment including South-West Queensland.

**Figure 6 Local Catchment for Toowoomba planning region**



## Toowoomba Hospital Separations

Toowoomba Hospital mainly services the local catchment of Toowoomba local planning area accounting for 57 percent (25,116) of the total 44,228 separations in 2016/17. As the major referral hospital in the area, interstate or other HHS residents accounted for 13 percent (5,725) of separations at Toowoomba Hospital.

**Table 17 Total separations at Toowoomba Hospital, by place of residence, 2016/17**

| HHS of Residence     | Hospital           | Place of Residence   | Separations   | % of Total Separations |
|----------------------|--------------------|----------------------|---------------|------------------------|
| Darling Downs        | Toowoomba Hospital | Darling Downs - East | 5,383         | 12%                    |
|                      |                    | Goondiwindi          | 744           | 2%                     |
|                      |                    | South Burnett        | 2,355         | 5%                     |
|                      |                    | Southern Downs       | 3,538         | 8%                     |
|                      |                    | Toowoomba            | 25,116        | 57%                    |
|                      |                    | Western Downs        | 1,367         | 3%                     |
| Other HHS/Interstate |                    |                      | 5,725         | 13%                    |
| <b>TOTAL</b>         |                    |                      | <b>44,228</b> | <b>100%</b>            |

Source: AIM Base Case 16/17 and Case Base -Inpatient Projections (Base Year 2016-17,ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018.

Note: excludes Renal Dialysis and Unqualified Neonates. Private Hospital (Public Separations Only)

In 2016/17 there were 200 public separations from St Andrew's Hospital. The majority 35 percent (70) of separations were residents of Toowoomba planning region.

**Table 18 Total public separations at St Andrew's Hospital, by place of residence, 2016/17**

| HHS of Residence     | Hospital   | Place of Residence   | Separations | % of Total Separations |
|----------------------|--|----------------------|-------------|------------------------|
| Darling Downs        | St Andrew's Toowoomba Hospital (public patients) | Darling Downs - East | 24          | 12%                    |
|                      |  | Goondiwindi          | 1           | 1%                     |
|                      |  | South Burnett        | 29          | 15%                    |
|                      |  | Southern Downs       | 39          | 20%                    |
|                      |  | Toowoomba            | 70          | 35%                    |
|                      |  | Western Downs        | 8           | 4%                     |
| Other HHS/Interstate |  | All                  | 29          | 15%                    |
| <b>TOTAL</b>         |  |                      | <b>200</b>  | <b>100%</b>            |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

In 2016/17 there were 83 public separations from Toowoomba Surgicentre. A majority of 88 percent (73) of separations were residents of Darling Downs Health and the remaining 12 percent (10) came from another HHS or interstate.

**Table 19 Total public separations at Toowoomba Surgicentre (private), by place of residence, 2016/17**

| HHS of Residence     | Hospital              | Place of Residence   | Separations | % of Total Separations |
|----------------------|-----------------------|----------------------|-------------|------------------------|
| Darling Downs        | Toowoomba Surgicentre | Darling Downs - East | 9           | 11%                    |
|                      |                       | South Burnett        | 5           | 6%                     |
|                      |                       | Southern Downs       | 14          | 17%                    |
|                      |                       | Toowoomba            | 41          | 49%                    |
|                      |                       | Western Downs        | 4           | 5%                     |
| Other HHS/Interstate |                       | All                  | 10          | 12%                    |
| <b>TOTAL</b>         |                       |                      | <b>83</b>   | <b>100%</b>            |

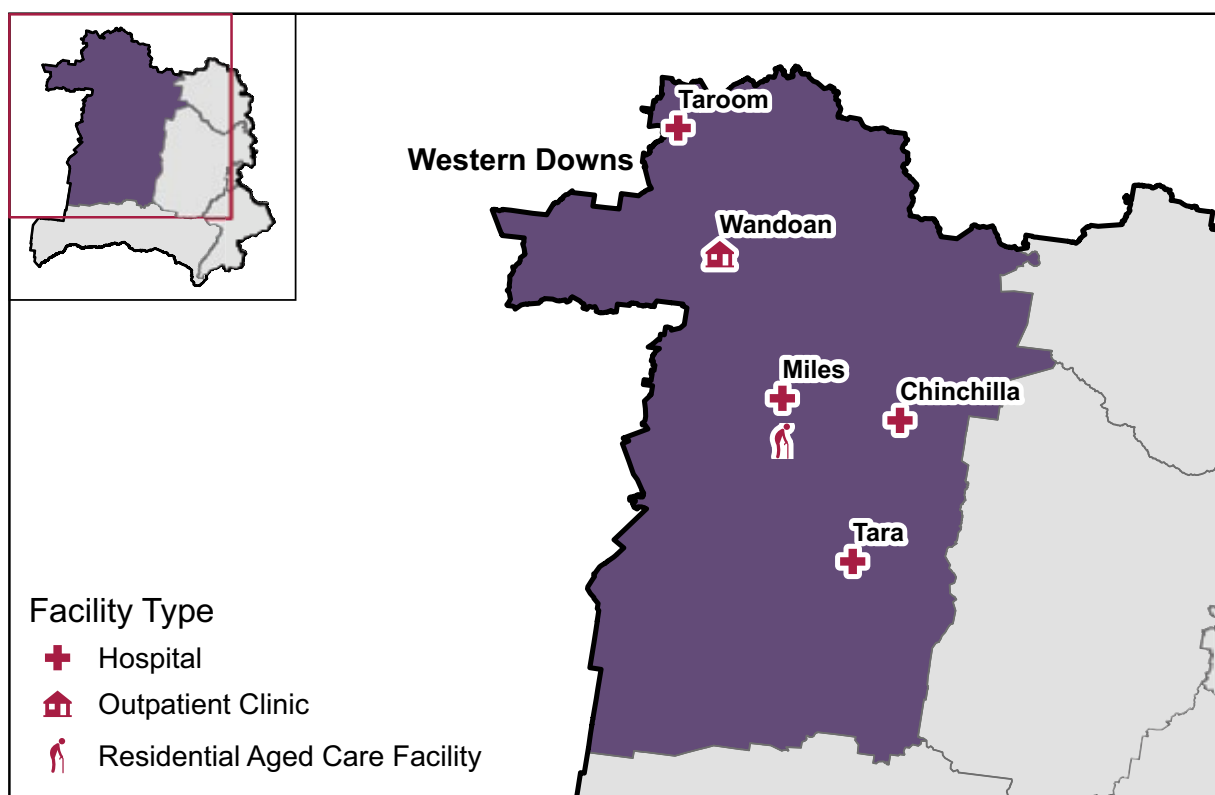
Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.



## 2.1.6 WESTERN DOWNS PLANNING REGION

The Western Downs planning region consists of six public facilities namely; Chinchilla Hospital, Miles Hospital, Tara Hospital, Taroom Hospital, Wandoan Outpatient Clinic and Milton House Residential Aged Care Facility.

Figure 7: Local Catchment for Western Downs Planning Region



## Chinchilla Hospital Separations

Chinchilla Hospital had 1,248 separations for 2016/17. A majority 92 percent (1,152) of the total activity came from residents of Western Downs planning region. Refer to Table 17 and Figure 6.

Table 20: Total separations at Chinchilla Hospital, by place of residence, 2016/17

| HHS of Residence     | Hospital            | Place of Residence   | Separations  | % of Total Separations |
|----------------------|---------------------|----------------------|--------------|------------------------|
| Darling Downs        | Chinchilla Hospital | Darling Downs - East | 15           | 1.2%                   |
|                      |                     | South Burnett        | 5            | 0.4%                   |
|                      |                     | Southern Downs       | 1            | 0.1%                   |
|                      |                     | Toowoomba            | 11           | 0.9%                   |
|                      |                     | Western Downs        | 1,152        | 92.3%                  |
| Other HHS/Interstate |                     |                      | 64           | 5.1%                   |
| <b>TOTAL</b>         |                     |                      | <b>1,248</b> | <b>100%</b>            |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

## Miles Hospital Separations

Miles Hospital had 829 separations for 2016/17. A majority 85 percent (703) of total activity came from residents of Western Downs planning region. Refer to Table 18 and Figure 6.

**Table 21: Total separations at Miles Hospital, by place of residence, 2016/17**

| HHS of Residence     | Hospital       | Place of Residence   | Separations | % of Total Separations |
|----------------------|----------------|----------------------|-------------|------------------------|
| Darling Downs        | Miles Hospital | Darling Downs - East | 7           | 0.8%                   |
|                      |                | South Burnett        | 5           | 0.6%                   |
|                      |                | Southern Downs       | 1           | 0.1%                   |
|                      |                | Toowoomba            | 9           | 1.1%                   |
|                      |                | Western Downs        | 703         | 84.8%                  |
| Other HHS/Interstate |                |                      | 104         | 12.5%                  |
| <b>TOTAL</b>         |                |                      | <b>829</b>  | <b>100%</b>            |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

## Tara Hospital Separations

Tara Hospital had 706 separations for 2016/17. A majority 92 percent (652) of the total activity came from residents of Western Downs planning region. Refer to Table 19 and Figure 6.

**Table 22: Total separations at Tara Hospital, by place of residence, 2016/17**

| HHS of Residence     | Hospital      | Place of Residence   | Separations | % of Total Separations |
|----------------------|---------------|----------------------|-------------|------------------------|
| Darling Downs        | Tara Hospital | Darling Downs - East | 23          | 3.3%                   |
|                      |               | Toowoomba            | 3           | 0.4%                   |
|                      |               | Western Downs        | 652         | 92.4%                  |
| Other HHS/Interstate |               |                      | 28          | 4.0%                   |
| <b>TOTAL</b>         |               |                      | <b>706</b>  | <b>100%</b>            |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

## Taroom Hospital Separations

Taroom Hospital had 228 separations for 2016/17. A majority 88 percent (201) of the total activity came from residents of Western Downs planning region. Refer to Table 20 and Figure 6.

**Table 23: Total separations at Taroom Hospital, by place of residence, 2016/17**

| HHS of Residence     | Hospital        | Place of Residence   | Separations | % of Total Separations |
|----------------------|-----------------|----------------------|-------------|------------------------|
| Darling Downs        | Taroom Hospital | Darling Downs - East | 1           | 0.4%                   |
|                      |                 | Southern Downs       | 1           | 0.4%                   |
|                      |                 | Toowoomba            | 1           | 0.4%                   |
|                      |                 | Western Downs        | 201         | 88.2%                  |
| Other HHS/Interstate |                 |                      | 24          | 10.5%                  |
| <b>TOTAL</b>         |                 |                      | <b>228</b>  | <b>100%</b>            |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.



## 2.2 DARLING DOWNS HEALTH POPULATION PROFILE

The 2016 Australian census estimated resident population for the Darling Downs Health catchment as 281,961 people.

Population split by local planning region shows that Toowoomba local planning region accounts for 48 percent (134,983) of the total catchment population, followed by Darling Downs –East at 15 percent (43,280). The population gender representation was equally distributed in all the local planning regions in Darling Downs Health except Western Downs local planning region (which accounts for 6 percent of total Darling Downs Health Catchment population) in which 48 percent (8,204) of females were estimated compared to 52 percent (8,980) of males.

**Table 24: Darling Downs Health Catchment - Population by local planning region, 2016-17**

| Local planning region | Female         | %Female    | Male           | %Male      | Person         | % Person    |
|-----------------------|----------------|------------|----------------|------------|----------------|-------------|
| Toowoomba             | 69,336         | 51%        | 65,648         | 49%        | 134,983        | 48%         |
| Darling Downs - East  | 21,333         | 49%        | 21,948         | 51%        | 43,280         | 15%         |
| Southern Downs        | 20,773         | 51%        | 20,142         | 49%        | 40,915         | 15%         |
| South Burnett         | 17,362         | 50%        | 17,217         | 50%        | 34,579         | 12%         |
| Western Downs         | 8,204          | 48%        | 8,980          | 52%        | 17,184         | 6%          |
| Goondiwindi           | 5,535          | 50%        | 5,485          | 50%        | 11,020         | 4%          |
| <b>TOTAL</b>          | <b>142,542</b> | <b>51%</b> | <b>139,418</b> | <b>49%</b> | <b>281,961</b> | <b>100%</b> |

Source: Australian Bureau of Statistics Catalogue No. 3235.0 - Population by Age and Sex, Regions of Australia; Hospital and Health Service data derived by Statistical Analysis Linkage Team, Health Statistics Unit, Department of Health, Queensland

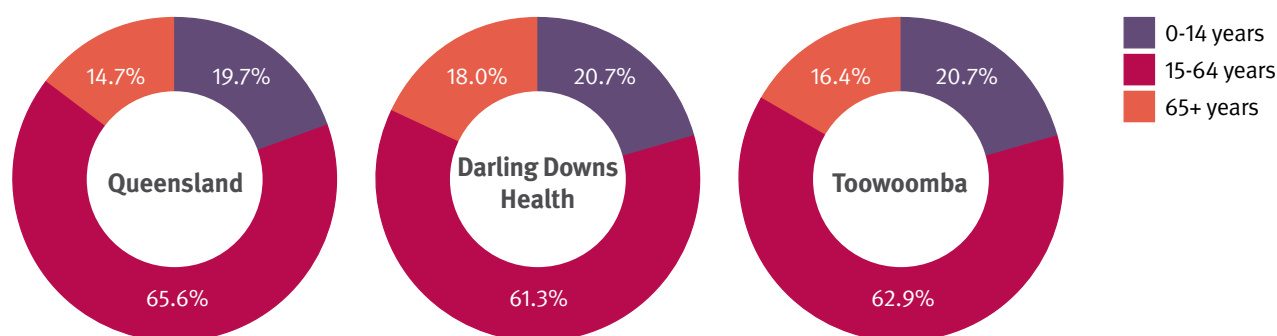
Of the 281,961 persons in the Darling Downs Health catchment, 51 percent (142,542) were female and 49 percent (139,418) were male. A higher proportion 36 percent (102,060) of population were noted among 15-44 year olds. About 12 percent (34,309) of Darling Downs Health catchment population were over 70+ years old age group, and of these 54 percent (18,480) were females.

**Table 25: Darling Downs Health catchment - Population age profile, 2016-17**

| Age          | Female         | %Female    | Male           | %Male      | Person         | % Person    |
|--------------|----------------|------------|----------------|------------|----------------|-------------|
| 0-14         | 28,867         | 49%        | 29,773         | 51%        | 58,641         | 21%         |
| 15-44        | 51,040         | 50%        | 51,020         | 50%        | 102,060        | 36%         |
| 45-69        | 44,155         | 51%        | 42,796         | 49%        | 86,951         | 31%         |
| 70+          | 18,480         | 54%        | 15,829         | 46%        | 34,309         | 12%         |
| <b>TOTAL</b> | <b>142,542</b> | <b>51%</b> | <b>139,418</b> | <b>49%</b> | <b>281,961</b> | <b>100%</b> |

Source: Australian Bureau of Statistics Catalogue No. 3235.0 - Population by Age and Sex, Regions of Australia; Hospital and Health Service data derived by Statistical Analysis Linkage Team, Health Statistics Unit, Department of Health, Queensland

**Figure 8: Proportion of age cohort by region**



Source: ABS 3235.0, Population by Age and Sex, Regions of Australia

Darling Downs Health has a higher proportion of residents aged over 65 years and a slightly higher proportion of residents under 15 years of age compared to the Queensland rates.

## 2.3 ABORIGINAL AND TORRES STRAIT ISLANDER POPULATION

This section summaries the population profile for each local planning area including; age, sex and indigenous status.

The South Burnett local planning area had the highest proportion (9 percent) of the Aboriginal and Torres Strait Islander population followed by Goondiwindi local planning region area (7 percent). Aboriginal and Torres Strait Islander children make up 10 percent of the total population of (0-14 years of age) in Darling Downs Health. Refer to Table 26.

**Table 26: Darling Downs Health Catchment - percentage of population that identify as Indigenous within the population, by Local planning region, by age, 2015-16.**

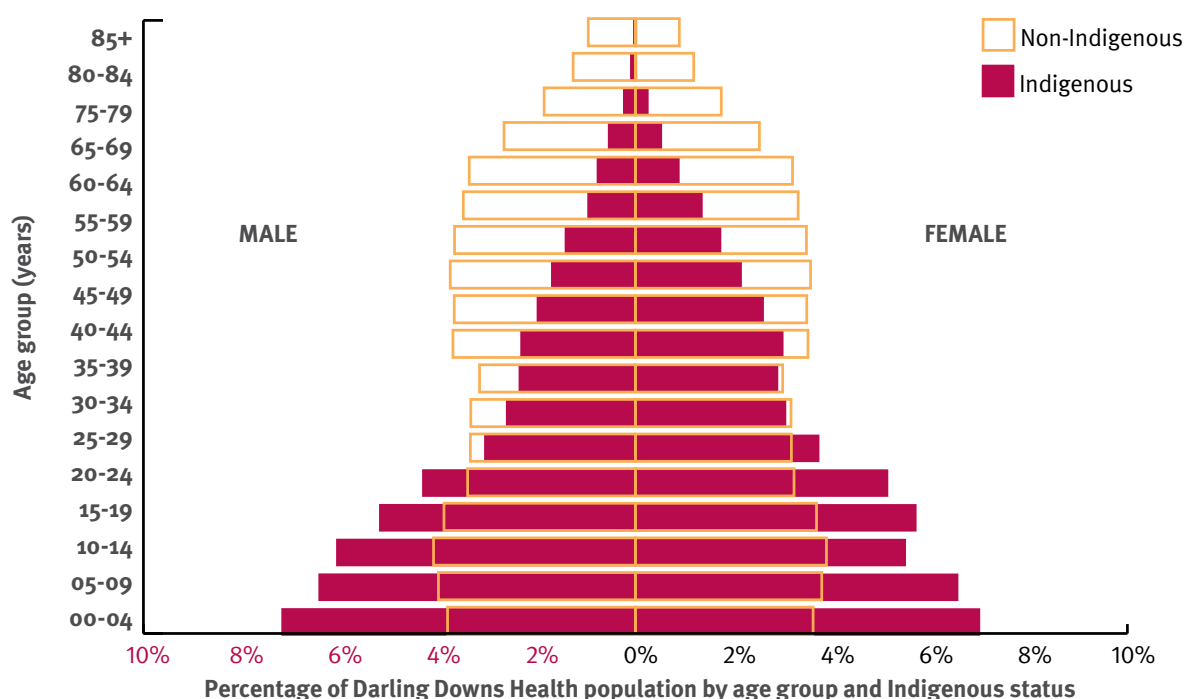
| Local planning region | 0-14       | 15-44     | 45-69     | 70+       | TOTAL     |
|-----------------------|------------|-----------|-----------|-----------|-----------|
| Darling Downs - East  | 9%         | 6%        | 2%        | 1%        | 5%        |
| Goondiwindi           | 12%        | 7%        | 4%        | 1%        | 7%        |
| South Burnett         | 17%        | 13%       | 5%        | 1%        | 9%        |
| Southern Downs        | 8%         | 6%        | 2%        | 0%        | 4%        |
| Toowoomba             | 8%         | 5%        | 2%        | 1%        | 4%        |
| Western Downs         | 8%         | 6%        | 4%        | 2%        | 5%        |
| <b>TOTAL</b>          | <b>10%</b> | <b>6%</b> | <b>3%</b> | <b>1%</b> | <b>5%</b> |

Source: Australian Bureau of Statistics Catalogue No. 3235.0 - Population by Age and Sex, Regions of Australia; Hospital and Health Service data derived by Statistical Analysis Linkage Team, Health Statistics Unit, Department of Health, Queensland. 08 December 2016

The estimated residential population of Aboriginal and Torres Strait Islander people in Darling Downs Health area was 14,325 people, representing 5 percent of the total Darling Downs Health population. Darling Downs Aboriginal and Torres Strait Islander population represented 7.7 percent of total Aboriginal and Torres Strait Islander population in Queensland.

The proportion of Darling Downs HHS non-Indigenous population had constrictive population pyramid structure with lower birth rates and higher life expectancy. The proportion of Indigenous population living in the Darling Downs Health area had high stationary population pyramid structure with higher birth rates and lower life expectancy. There was an 11.8-year gap in health adjusted life expectancy between Aboriginal and Torres Strait Islander residents of Darling Downs Health region and the total Queensland population. Refer to Figure 9 for population pyramid.

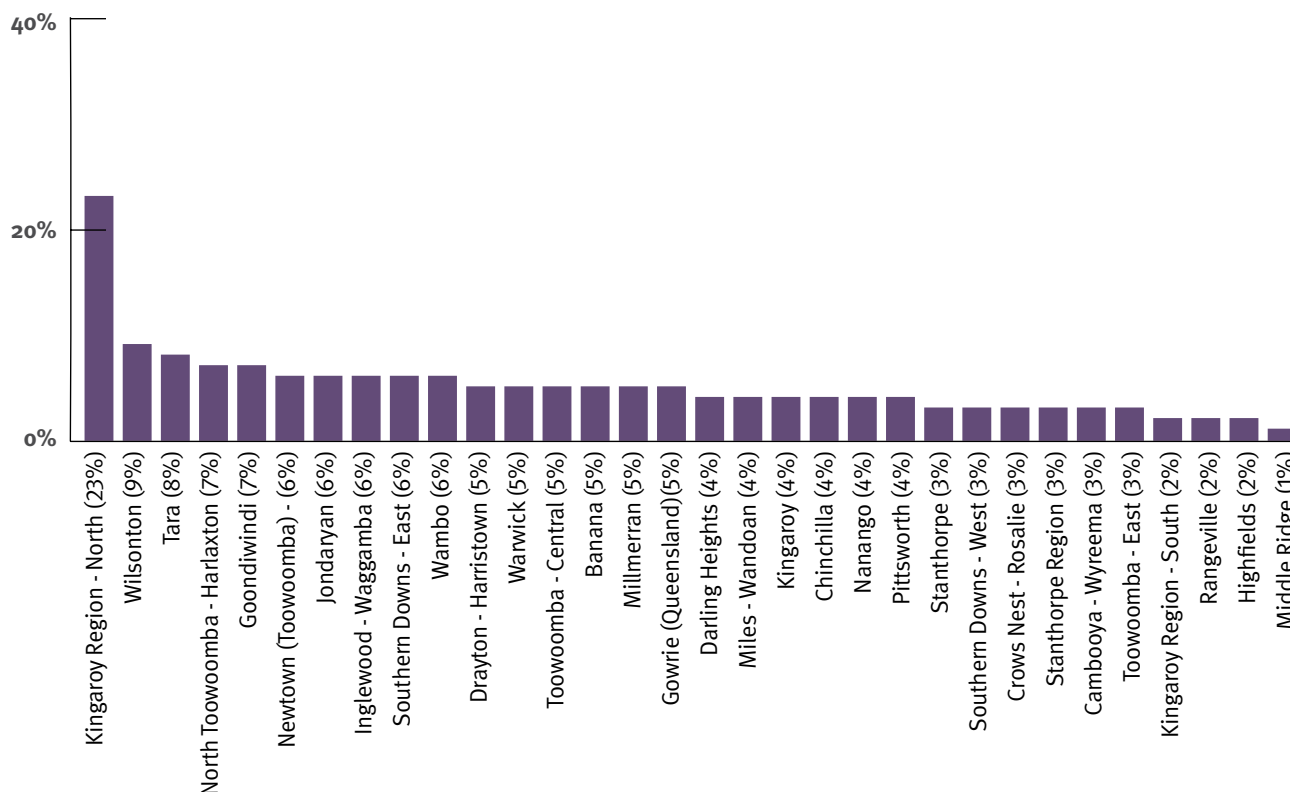
**Figure 9: Darling Downs Health Population pyramid by Indigenous Status**



SA2 Kingaroy Region – North has the highest number of Aboriginal and Torres Strait Islander people with 2,214 indigenous residents or 15% of the total Darling Downs Health Aboriginal and Torres Strait Islander population (14,325). When looking at individual community's it is useful to identify the proportion of Aboriginal and Torres Strait Islander people living within a community rather than as a percentage of the total Darling Downs Health Indigenous population. Therefore, the following graphic shows the proportion of Aboriginal and Torres Strait Islander people in each of the SA2s. Using the Kingaroy Region - North SA2 as an example, the total population for this SA2 is 9,720 therefore Aboriginal and Torres Strait Islander people represent 23 percent of the Kingaroy Region - North population. Refer to Figure 10 for the percentage of Aboriginal and Torres Strait Islander people within each SA2 population.



**Figure 10: Proportion of Darling Downs Health Aboriginal and Torres Strait Islander population in SA2**



While Aboriginal and Torres Strait Islander people constitute 5 percent of the total population in the Darling Downs Health region they account for 9 percent of total public separations. Toowoomba Hospital had the highest percentage of Aboriginal and Torres Strait Islander separations at 57 percent (3,577 separations) followed by Cherbourg Hospital 13 percent (813 separations) and Kingaroy Hospital 7 percent (451 separations). The percentages remain constant based on future projections for 2026/27 and 2036/37.

**Table 27: Total Darling Downs Health Separations by Indigenous Status**

| Indigenous status                         | Year<br>2016/2017 | Total       |
|---|-------------------|-------------|
| Aboriginal and Torres Strait Islander     | 6,266             | 9%          |
| Non-Aboriginal and Torres Strait Islander | 63,023            | 91%         |
| <b>TOTAL</b>                              | <b>69,289</b>     | <b>100%</b> |

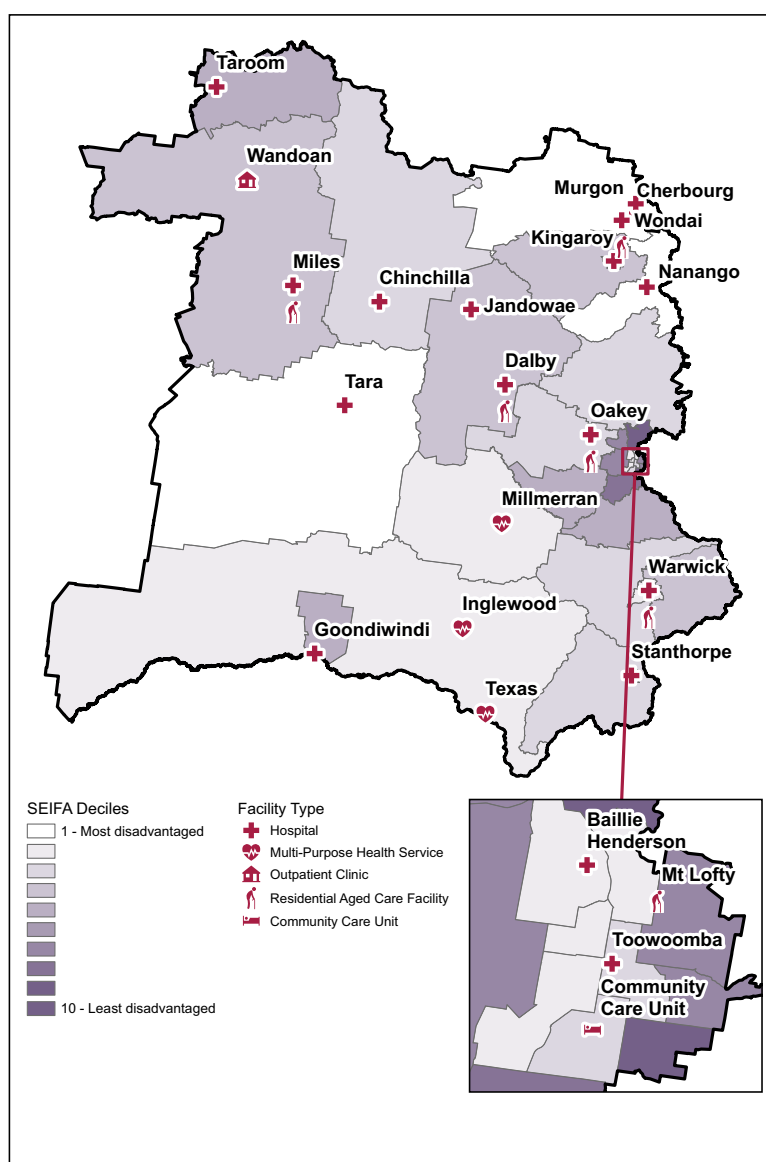
Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note: excludes Renal Dialysis and Unqualified Neonates.

## 2.4 RELATIVE DISADVANTAGE

Socio-Economic Indexes for Areas (SEIFA) are a summary measure of the social and economic conditions of geographic areas across Australia measured at each census year.

The indexes rank areas based on residents' socio-economic indicators and the scores are standardized to a distribution. In general, the Darling Downs Health regions had a SEIFA score between 861 to 1,098. **More than half of the South Burnett planning region residents (58 percent) and quarter of Western Downs planning region residents were listed as most disadvantaged (decile score of 1).** Toowoomba planning region had a mixed SEIFA population profile with both a high proportion of disadvantaged residents as well as the most advantaged residents in the Darling Downs Health region (decile score over 6). The following figure represents SEIFA decile scores by SA2 across the Darling Downs Health catchment area.

**Figure 11: Darling Downs Health SEIFA decile score by SA2**



*Note: Statistical Area Level 2, Indexes, SEIFA 2016. Scores- a lower score indicates that an area is relatively disadvantaged compared to an area with a higher score. Deciles: all areas are ordered from lowest to highest score, the lowest 10 percent of areas are given a decile number of 1 and so on, up to the highest 10 percent of areas which are given a decile number of 10. This means that areas are divided up into ten groups, depending on their score. Decile 1 is the most disadvantaged relative to the other deciles. Note that deciles have equal number of areas, not people.*

Within the Darling Downs Health region Newtown had the largest percentage of one-parent families (25.4 percent) and Kingaroy Region - North SA2 had the highest percentage of families with no parent employed (34.8 percent).

The Darling Downs Health region has a homeless rate of 35.4 per 10,000 persons. The Kingaroy Region - North SA2 had the highest rate of homelessness (175.7 persons per 10,000 persons), followed by Tara SA2 (120.3 persons per 10,000 persons) and Toowoomba Central SA2 (100.2 persons per 10,000 persons).

Source: ABS, Census of Population and Housing, 2016, Place of Enumeration Profile - G03 and ABS 2049.0, Census of Population and Housing: Estimating homelessness, 2016



## 2.4.1 AGE CARE SERVICES

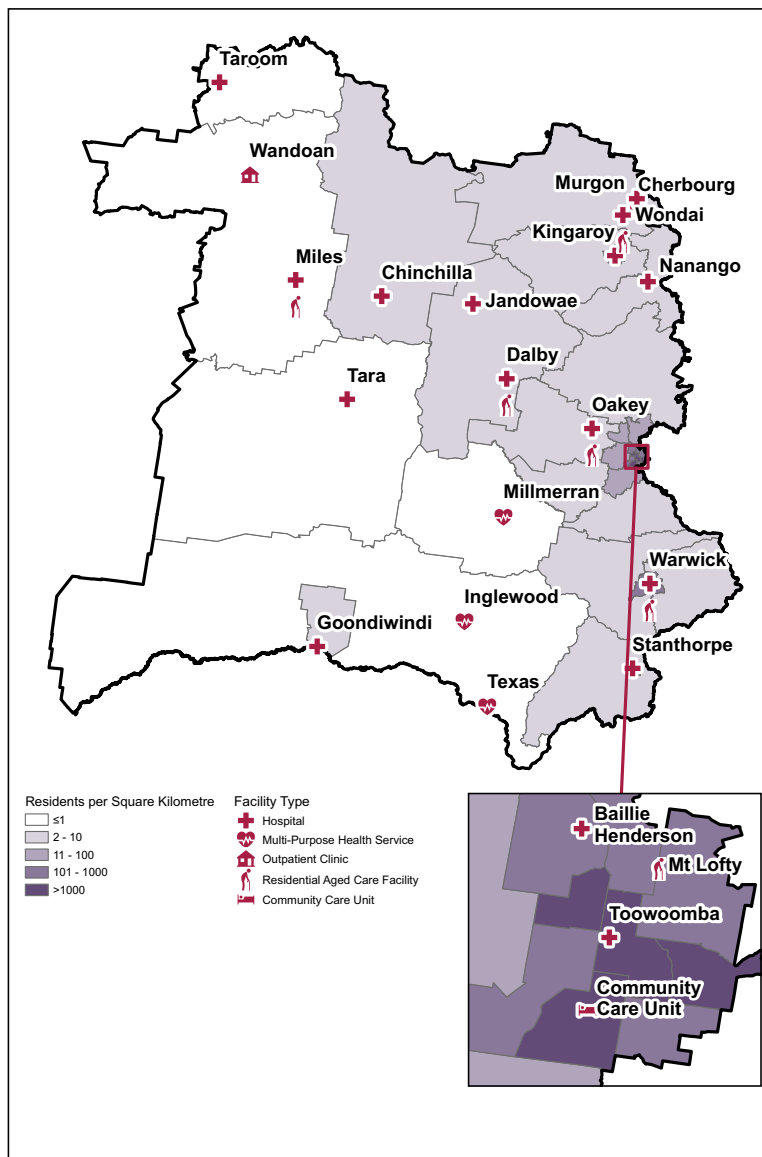
There were 1,904 aged care service operational places (public and private) in the Toowoomba region as at 30 June 2016 including 653 community care, 1,199 residential care and 52 transition care. Across Darling Downs Health there were (including the Toowoomba region) 3,834 places including 1,118 community care, 2,664 residential care and 52 transition care places. (Source: Australian Government Department of Health and Ageing.)

## 2.5 POPULATION DENSITY

Population density in the following figure is represented by residents per square kilometer by SA2 across Darling Downs Health.

The least populated locations within the HHS are Western Downs planning region followed by Goondiwindi planning region. The facilities in these locations are located within areas classified according to the Australian Standard Geographical Classification (ASGC) as Remoteness Area (RA) (remote). Refer to Figure 12 below.

**Figure 12: Residents per square kilometre by SA2, Darling Downs Health, 2015**



Source data is available from the HSU Infobank -[https://qheps.health.qld.gov.au/\\_\\_data/assets/excel\\_doc/0032/1941692/erp\\_1216\\_5yr.xls](https://qheps.health.qld.gov.au/__data/assets/excel_doc/0032/1941692/erp_1216_5yr.xls). Prepared by Statistical Reporting and Coordination Unit (SRC) and Statistical Analysis Linkage Unit (SALU), Statistical Services Branch, Department of Health.

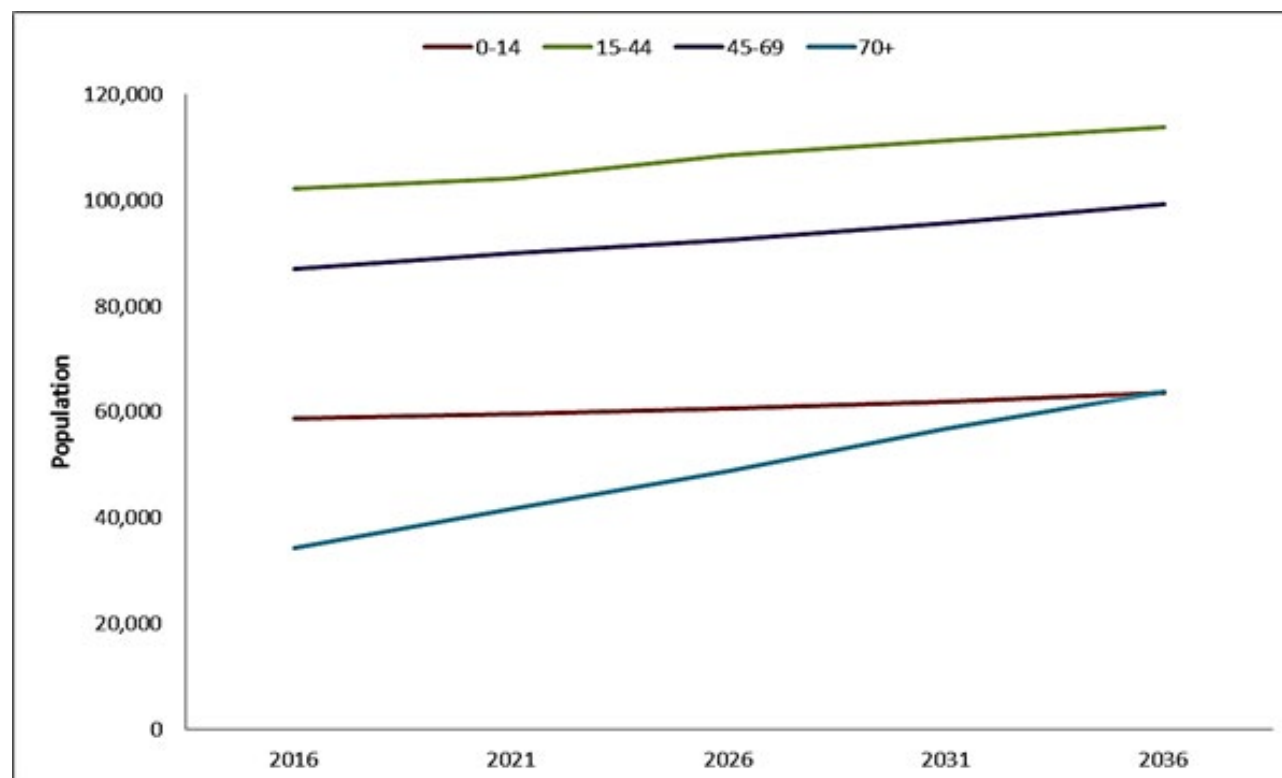
Based on source: Queensland Government Statistician's Office (QGSO) - Australian Bureau of Statistics, 2016 Remoteness Areas, SA2.

## 2.6 DARLING DOWNS HEALTH POPULATION PROJECTION

The population of the HHS-wide catchment is projected to increase at the simple growth rate of 1.03 each year by 2036.

Over this period the population of Toowoomba planning region will have the highest annual population growth rate of 1.2 percent per year. Goondiwindi local planning region will have the lowest population change rate of 0.18 percent per annum.

**Figure 13 Darling Downs Health – wide catchment – Population projections by age, 2016 – 2036**



Source: Queensland Government population projections, 2015 edition; Australian Bureau of Statistics, Population by age and sex, regions of Australia, 2014 (Cat no. 3235.0).

**Table 28: Darling Downs Health – wide Catchment - Population projection by local planning region, 2016-36**

| Local planning region | 2016           | 2021           | 2026           | 2031           | 2036           | Change (No.)  | Change (%) | AGR          |
|-----------------------|----------------|----------------|----------------|----------------|----------------|---------------|------------|--------------|
| Darling Downs - East  | 43,280         | 44,668         | 46,194         | 47,752         | 49,309         | 6,029         | 14%        | 0.65%        |
| Goondiwindi           | 11,020         | 11,095         | 11,200         | 11,313         | 11,431         | 411           | 4%         | 0.18%        |
| South Burnett         | 34,579         | 36,125         | 37,960         | 39,824         | 41,664         | 7,084         | 20%        | 0.94%        |
| Southern Downs        | 40,915         | 42,365         | 43,837         | 45,301         | 46,728         | 5,813         | 14%        | 0.67%        |
| Toowoomba             | 134,983        | 143,014        | 152,495        | 162,087        | 171,444        | 36,461        | 27%        | 1.20%        |
| Western Downs         | 17,184         | 17,824         | 18,495         | 19,138         | 19,735         | 2,551         | 15%        | 0.69%        |
| <b>TOTAL</b>          | <b>281,961</b> | <b>295,091</b> | <b>310,183</b> | <b>325,415</b> | <b>340,310</b> | <b>58,349</b> | <b>21%</b> | <b>0.94%</b> |

Source: Queensland Government population projections, 2015 edition; Australian Bureau of Statistics, Population by age and sex, regions of Australia, 2014 (Cat no. 3235.0). ^Annual Growth Rate.

Darling Downs Health population is projected to increase 21 percent over 20 years. Among the different age groups, the 70+ group are projected to have the highest change of 86 percent which is estimated to be 30,000 extra people in that age group. It is followed by 45-69 year cohort with 14 percent change rate accounting for 12, 297 extra population in this age cohort over 20 years. According to this population projection by the Australian Bureau of Statistics (ABS), it is clear that Darling Downs Health will be required to meet service needs of an aging population growing at an annual growth rate of 3.15 percent over next 20 years.

**Table 29: Darling Downs Health –Catchment - Population projection by age group, 2016-36**

| Year                      | 0-14         | 15-44         | 45-69         | 70+           | Total         |
|---------------------------|--------------|---------------|---------------|---------------|---------------|
| 2016                      | 58,641       | 102,060       | 86,951        | 34,309        | 281,961       |
| 2021                      | 59,606       | 103,938       | 89,992        | 41,554        | 295,091       |
| 2026                      | 60,530       | 108,420       | 92,473        | 48,759        | 310,183       |
| 2031                      | 61,924       | 111,222       | 95,538        | 56,731        | 325,415       |
| 2036                      | 63,512       | 113,704       | 99,248        | 63,845        | 340,310       |
| <b>Change 2016-2036</b>   | <b>4,871</b> | <b>11,644</b> | <b>12,297</b> | <b>29,536</b> | <b>58,349</b> |
| <b>% Change 2016-2036</b> | <b>8%</b>    | <b>11%</b>    | <b>14%</b>    | <b>86%</b>    | <b>21%</b>    |
| <b>AGR^2016-2036</b>      | <b>0.40%</b> | <b>0.54%</b>  | <b>0.66%</b>  | <b>3.15%</b>  | <b>0.94%</b>  |

Source: Queensland Government population projections, 2015 edition; Australian Bureau of Statistics, Population by age and sex, regions of Australia, 2014 (Cat no. 3235.0). ^Annual Growth Rate.



# 3 THE USE OF HOSPITAL SERVICES BY DARLING DOWNS HEALTH RESIDENTS

## KEY FINDINGS

Public hospitals within Darling Downs Health region provided 56 percent of all inpatient separations and 42 percent of same day separations for Darling Downs Health residents in 2016/17.

Private hospitals provided 50 percent of all same day services (excluding renal dialysis) to Darling Downs Health region residents but only 34 percent of overnight separations. Toowoomba Hospital provided 57 percent of total public inpatient separations for Darling Downs residents treated in Darling Downs Health facilities. Warwick Hospital and Kingaroy Hospital provided 9 percent and 8 percent respectively of these services.

Darling Downs Health achieves a self-sufficiency of 85 percent for public services with largest flows to Metro South Hospital (2,895) and Metro North (2,414) and Children's Health Services (1,361).

Local public self-sufficiency for the local planning regions outside of the Toowoomba region ranged from 51 percent for Darling Downs East to 58 percent for the Western Downs. Dalby Hospital provides only 32 percent of Darling Downs East separations. Goondiwindi, Southern Downs and Western Downs achieved rates of 63 percent, 65 percent and 63 percent respectively.

There are less than 300 separations per annum at three facilities (Inglewood, Texas, Wondai, Jandowae and Taroom).

Dalby Hospital (56 percent) and Toowoomba Hospital (52 percent) had the highest percentage of same day separations (excluding renal dialysis). Kingaroy, Miles and Stanthorpe Hospital achieve a rate of approximately 45 percent of same day separations. All other hospitals achieve a rate of 35 percent or less for same day separations.

Relative utilisation (RU) for private and public separations is 93 percent just slightly lower than State average (100 percent). RU for private hospital separations decreased 11 percent in the five years from 2010/11 to 2016/17 from 101.9 percent to 90.7 percent.

For public hospitals RU for overnight separations (103 percent) is higher than RU for same day separations (86.5 percent). The RU for total separations (public and private) for children was 94 percent and similar to the state average, however this is due to a high RU for private hospitals (119 percent) with the RU for public hospital separations for children being 11 percent below State average (89 percent). The RU for public hospital separations for obstetrics was 142 percent noting that this includes antenatal and postpartum separations as well as birthing separations.

SRG orthopaedics had the highest number of separations (9,513) taking all hospitals (private and public) into consideration. For public hospital only, the SRGs with the highest number of separations in 2016/17 were orthopaedics and obstetrics.

There were 2,090 separations in 2016/17 at St Andrews Hospital for renal dialysis for Toowoomba public patients.





## STRATEGIC QUESTIONS

What is the current relationship between the public and private hospital sectors in Toowoomba? What is the impact of the current private hospital sector expansion in Toowoomba?

.....

What will be the future relationship between public and private sectors, for example, higher degrees of integration or collaboration? Joint planning for particular specialty services?

.....

The relative utilisation of admitted same day services (excluding renal dialysis) is lower than expected. What are the underlying reasons for that?

.....

At a HHS level, self-sufficiency is slightly lower than the optimal level. Are there known major barriers to Darling Downs Health's ability to increase the level of self-sufficiency? Are there particular specialties that are more vulnerable due to issues of critical mass?

.....

What are the current priorities for increasing local self-sufficiency for the outlying areas of Darling Downs Health? Are there HHS-wide barriers to further increasing local self-sufficiency or are the barriers location specific?

.....

What are the constraints to increasing self-sufficiency related to smaller hospital's clinical service capability or related to the capacity of Toowoomba Hospital to provide outreach?

.....

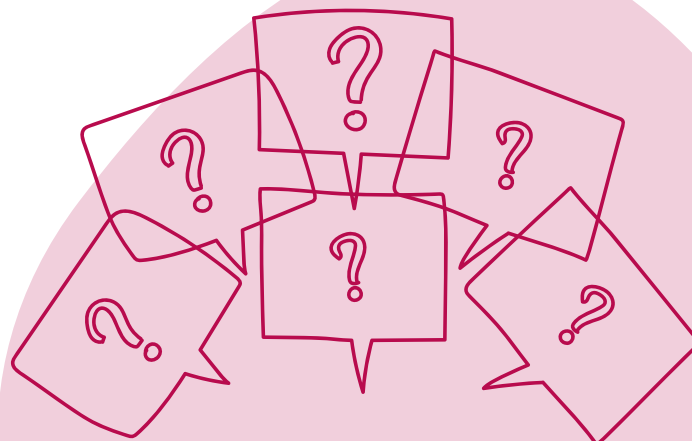
The key benefit of increasing levels of self-sufficiency is improvement in local access but when total volumes are small the service may not be cost-effective or safety factors may arise. Are there particular specialties for which there would be a major benefit to Toowoomba Hospital to increase capacity or capability of the smaller facilities?

.....

What separations by SRG are Darling Downs Health residents travelling to metro hospitals for?

.....

57 percent of all patients treated at TH were Toowoomba residents – what opportunities are there to reduce inflows from other areas to reduce activity growth at Toowoomba Hospital? 50 percent of separations for residents of Darling Downs East are from Toowoomba Hospital. Can Dalby Hospital services be supported to reduce Darling Downs East inflows to Toowoomba Hospital? Is there any capacity to increase services at Oakey Hospital? What separations by SRG are Darling Downs Health residents outside the Toowoomba area travelling to Toowoomba Hospital for?



## 3.1 USE OF PUBLIC AND PRIVATE HOSPITALS BY DARLING DOWNS HEALTH RESIDENTS

Implementing changes to the Clinical Services Capability Framework (CSCF) may change patient flow patterns.

A new or higher capability service may see patient flows that currently flow to private services, flow to the public service. This change will be noticeable in the public and private relative utilisations.

### SEPARATIONS 2016/17

In 2016/17 there were a total of 126,824 hospital separations for Darling Downs Health residents including public and private facilities throughout Queensland.

Public facilities including facilities outside Darling Downs Health provided 57 percent (72,468) of the total 126,824 separations with 49 percent of these separations at Darling Downs Health facilities and 8 percent at hospitals in other HHSs.

8 percent of Darling Downs Health residents were admitted to public hospitals outside the Darling Downs Health region and this includes the 6 percent of Darling Downs Health residents who were admitted to Brisbane hospitals including the Queensland Children's Hospital (CHQ).

43 percent of separations for Darling Downs Health residents were from private facilities in 2016/17. Toowoomba residents had the highest rate of private admissions (52 percent) and the South Burnett had the lowest rate (26 percent).

**Table 30: Total separations for Darling Downs Health residents by place of treatment 2016/17**

| Place of Residence<br>(Planning Region) | Place of Treatment |                      |                      |                    | Total          |
|---|--------------------|----------------------|----------------------|--------------------|----------------|
|   | DDHHS Facilities   | Metro HHS Facilities | Other HHS Facilities | Private Facilities |                |
| Darling Downs East                      | 9,792              | 1,087                | 466                  | 7,822              | 19,167         |
| Goondiwindi                             | 2,525              | 273                  | 118                  | 1,756              | 4,672          |
| South Burnett                           | 9,348              | 1,985                | 819                  | 4,195              | 16,347         |
| Southern Downs                          | 10,234             | 1,370                | 377                  | 6,867              | 18,848         |
| Toowoomba                               | 25,397             | 2,594                | 738                  | 31,451             | 60,180         |
| Western Downs                           | 4,381              | 500                  | 464                  | 2,265              | 7,610          |
| <b>Total</b>                            | <b>61,677</b>      | <b>7,809</b>         | <b>2,982</b>         | <b>54,356</b>      | <b>126,824</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note 1: Excludes Renal Dialysis and Unqualified Neonates. Note 2: Metro HHS includes: Queensland Children's Hospital, Mater Adult Public, Mater Mothers' Public Hospital, Princess Alexandra, Royal Brisbane and Women's Hospital, The Prince Charles Hospital, Metro North (public patients), Metro South (public patients).

**Table 31: Separations by percentage for Darling Downs Health residents by place of treatment 2016/17**

| Place of Residence<br>(Planning Region) | Place of Treatment |                      |                      |                    | Total       |
|---|--------------------|----------------------|----------------------|--------------------|-------------|
|   | DDHHS Facilities   | Metro HHS Facilities | Other HHS Facilities | Private Facilities |             |
| Darling Downs East                      | 51%                | 6%                   | 2.4%                 | 41%                | 100%        |
| Goondiwindi                             | 54%                | 6%                   | 2.5%                 | 38%                | 100%        |
| South Burnett                           | 57%                | 12%                  | 5.0%                 | 26%                | 100%        |
| Southern Downs                          | 54%                | 7%                   | 2.0%                 | 36%                | 100%        |
| Toowoomba                               | 42%                | 4%                   | 1.2%                 | 52%                | 100%        |
| Western Downs                           | 58%                | 7%                   | 6.1%                 | 30%                | 100%        |
| <b>Total</b>                            | <b>49%</b>         | <b>6%</b>            | <b>2.4%</b>          | <b>43%</b>         | <b>100%</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note 1: Excludes Renal Dialysis and Unqualified Neonates. Note 2: Metro HHS includes: Queensland Children's Hospital, Mater Adult Public, Mater Mothers' Public Hospital, Princess Alexandra, Royal Brisbane and Women's Hospital, The Prince Charles Hospital, Metro North (public patients), Metro South (public patients).

There were 68,753 same day separations for Darling Downs Health residents in 2016/17 including private patients but excluding renal dialysis admissions and unqualified neonates. The private hospital same day separation rate (50 percent) was comparable to the total public hospital same day rate of 50 percent (42 percent Darling Downs Health facilities and 8 percent other HHS facilities). By planning region, the highest rate of private same day rate admissions was Toowoomba with 57 percent of private separations being same day.

**Table 32: Total same day separations for Darling Downs Health residents by place of treatment 2016/17**

| Place of Residence<br>(Planning Region) | Place of Treatment |                      |                      |                    | Total         |
|---|--------------------|----------------------|----------------------|--------------------|---------------|
|   | DDHHS Facilities   | Metro HHS Facilities | Other HHS Facilities | Private Facilities |               |
| Darling Downs East                      | 5,069              | 499                  | 277                  | 4,976              | 10,821        |
| Goondiwindi                             | 932                | 95                   | 40                   | 1,084              | 2,151         |
| South Burnett                           | 3,747              | 962                  | 429                  | 2,937              | 8,075         |
| Southern Downs                          | 4,285              | 615                  | 165                  | 4,385              | 9,450         |
| Toowoomba                               | 13,266             | 1,247                | 312                  | 19,882             | 34,707        |
| Western Downs                           | 1,719              | 199                  | 259                  | 1,372              | 3,549         |
| <b>Total</b>                            | <b>29,018</b>      | <b>3,617</b>         | <b>1,482</b>         | <b>34,636</b>      | <b>68,753</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note 1: Excludes Renal Dialysis and Unqualified Neonates. Note 2: Metro HHS includes: Queensland Children's Hospital, Mater Adult Public, Mater Mothers' Public Hospital, Princess Alexandra, Royal Brisbane and Women's Hospital, The Prince Charles Hospital, Metro North (public patients), Metro South (public patients).

**Table 33: Total same day separations (percentage) for Darling Downs Health residents by place of treatment 2016/17**

| Place of Residence<br>(Planning Region) | Place of Treatment |                      |                      |                    | Total       |
|---|--------------------|----------------------|----------------------|--------------------|-------------|
|   | DDHHS Facilities   | Metro HHS Facilities | Other HHS Facilities | Private Facilities |             |
| Darling Downs East                      | 47%                | 5%                   | 3%                   | 46%                | 100%        |
| Goondiwindi                             | 43%                | 4%                   | 2%                   | 50%                | 100%        |
| South Burnett                           | 46%                | 12%                  | 5%                   | 36%                | 100%        |
| Southern Downs                          | 45%                | 7%                   | 2%                   | 46%                | 100%        |
| Toowoomba                               | 38%                | 4%                   | 1%                   | 57%                | 100%        |
| Western Downs                           | 48%                | 6%                   | 7%                   | 39%                | 100%        |
| <b>Total</b>                            | <b>42.2%</b>       | <b>5.3%</b>          | <b>2.2%</b>          | <b>50.4%</b>       | <b>100%</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note 1: Excludes Renal Dialysis and Unqualified Neonates. Note 2: Metro HHS includes: Queensland Children's Hospital, Mater Adult Public, Mater Mothers' Public Hospital, Princess Alexandra, Royal Brisbane and Women's Hospital, The Prince Charles Hospital, Metro North (public patients), Metro South (public patients).

The majority of overnight separations for Darling Downs Health residents in 2016/17 were from facilities within Darling Downs Health accounting for 56 percent (32,659) of the total number of overnight separations (including public and private separations). 34 percent of overnight admissions for Darling Downs Health residents were in private facilities.

**Table 34: Total overnight separations for Darling Downs Health residents by place of treatment 2016/17**

| Place of Residence<br>(Planning Region) | Place of Treatment |                      |                      |                    | Total         |
|---|--------------------|----------------------|----------------------|--------------------|---------------|
|   | DDHHS Facilities   | Metro HHS Facilities | Other HHS Facilities | Private Facilities |               |
| Darling Downs East                      | 4,723              | 588                  | 189                  | 2,846              | 8,346         |
| Goondiwindi                             | 1,593              | 178                  | 78                   | 672                | 2,521         |
| South Burnett                           | 5,601              | 1,023                | 390                  | 1,258              | 8,272         |
| Southern Downs                          | 5,949              | 755                  | 212                  | 2,482              | 9,398         |
| Toowoomba                               | 12,131             | 1,347                | 426                  | 11,569             | 25,473        |
| Western Downs                           | 2,662              | 301                  | 205                  | 893                | 4,061         |
| <b>Total</b>                            | <b>32,659</b>      | <b>4,192</b>         | <b>1,500</b>         | <b>19,720</b>      | <b>58,071</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note 1: Excludes Renal Dialysis and Unqualified Neonates. Note 2: Metro HHS includes: Queensland Children's Hospital, Mater Adult Public, Mater Mothers' Public Hospital, Princess Alexandra, Royal Brisbane

and Women's Hospital, The Prince Charles Hospital, Metro North (public patients), Metro South (public patients).

**Table 35: Total overnight separations (percentage) for Darling Downs Health residents by place of treatment 2016/17**

| Place of Residence<br>(Planning Region) | Place of Treatment |                         |                         |                    | Total       |
|---|--------------------|-------------------------|-------------------------|--------------------|-------------|
|   | DDHHS Facilities   | Metro HHS<br>Facilities | Other HHS<br>Facilities | Private Facilities |             |
| Darling Downs East                      | 57%                | 7%                      | 2.3%                    | 34%                | 100%        |
| Goondiwindi                             | 63%                | 7%                      | 3.1%                    | 27%                | 100%        |
| South Burnett                           | 68%                | 12%                     | 4.7%                    | 15%                | 100%        |
| Southern Downs                          | 63%                | 8%                      | 2.3%                    | 26%                | 100%        |
| Toowoomba                               | 48%                | 5%                      | 1.7%                    | 45%                | 100%        |
| Western Downs                           | 66%                | 7%                      | 5.0%                    | 22%                | 100%        |
| <b>Total</b>                            | <b>56%</b>         | <b>7%</b>               | <b>2.6%</b>             | <b>34%</b>         | <b>100%</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note 1: Excludes Renal Dialysis and Unqualified Neonates. Note 2: Metro HHS includes: Queensland Children's Hospital, Mater Adult Public, Mater Mothers' Public Hospital, Princess Alexandra, Royal Brisbane and Women's Hospital, The Prince Charles Hospital, Metro North (public patients), Metro South (public patients).

### 3.1.1. SELF-SUFFICIENCY

Darling Downs Health operates at a relatively high rate of self-sufficiency. Self-sufficiency is an indicator of the local accessibility of health services. It is calculated:

Separations for residents within their catchment

Separations for residents in all hospitals in Queensland

A high rate of self-sufficiency and a high rate of utilisation can result in a higher number of bed days when benchmarked against regions with low self-sufficiency and utilisation.

**Table 36: Darling Downs Health residents self-sufficiency public hospitals only 13/14 to 16/17**

| Year                     | 2013/14       | 2014/15       | 2015/16       | 2016/17       |
|--------------------------|---------------|---------------|---------------|---------------|
| Separations In HHS       | 44,835        | 54,139        | 56,248        | 61,677        |
| Separations Out of HHS   | 8,297         | 8,808         | 9,094         | 10,791        |
| <b>Total separations</b> | <b>53,132</b> | <b>62,947</b> | <b>65,342</b> | <b>72,468</b> |
| <b>Self Sufficiency</b>  | <b>84.4%</b>  | <b>86.0%</b>  | <b>86.1%</b>  | <b>85.1%</b>  |

Source: AIM Cross Sectional Inpatient Projections (Base Year 16/17). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health. Published by the State of Queensland (Queensland Health), 2018. Note 1: excludes Renal Dialysis and Unqualified Neonates Note 2: 2016/17 includes Chemotherapy as admitted patient activity.

Darling Downs Health achieves a self-sufficiency of 85 percent for public services for Darling Downs Health residents treated within the hospital and health service. This represents 61,677 separations (for Darling Downs Health residents treated within the Darling Downs) compared with 72,468 separations (Darling Downs residents treated at any Queensland hospital).

**Table 37: Self-sufficiency public hospitals all stay types 2016/17**

| Separations      | 2016/17              |                      |        |
|------------------|----------------------|----------------------|--------|
| DDHHS Facilities | Metro HHS Facilities | Other HHS Facilities | Total  |
| 61,677           | 7,809                | 2,982                | 72,468 |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note 1: Excludes Renal Dialysis and Unqualified Neonates. Note 2: Metro HHS includes: Queensland Children's Hospital, Mater Adult Public, Mater Mothers' Public Hospital, Princess Alexandra, Royal Brisbane and Women's Hospital, The Prince Charles Hospital, Metro North (public patients), Metro South (public patients).



## 3.2 ANALYSIS OF DARLING DOWNS HEALTH RESIDENT FLOWS TO FACILITIES WITHIN DARLING DOWNS HEALTH

Toowoomba Hospital provided 62 percent (38,503) of the total Darling Downs Health resident separations. 65 percent of all patients treated at Toowoomba Hospital were Toowoomba residents.

Kingaroy Hospital was the next hospital providing the greatest number of separations for Darling Downs Health residents with 8 percent (4,710) of the total separations, followed by Warwick with 7 percent (4,252) of total separations.

55 percent (5,383) of the total separations for Darling Downs East residents were at Toowoomba Hospital. This was much higher than the other four rural planning regions with 25 percent to 35 percent of the total separations for their resident population occurring at Toowoomba Hospital. The Goondiwindi Hospital and the Kingaroy Hospital provided 52 percent and 48 percent respectively of the total separations for their respective catchment planning regions (Goondiwindi and South Burnett) whereas Dalby provided only 32 percent of the total separations for the Darling Downs East population. Less than 300 separations were recorded in 2016/17 for Inglewood, Jandowae, Taroom, Texas and Wondai Hospitals.

**Table 38: Total separations Darling Downs Health residents treated in Darling Downs Health by place of residence 2016/17**

| Place of Treatment        | Place of Residence   |              |               |                |               |               | Total         |
|---------------------------|----------------------|--------------|---------------|----------------|---------------|---------------|---------------|
|                           | Darling Downs - East | Goondiwindi  | South Burnett | Southern Downs | Toowoomba     | Western Downs |               |
| Cherbourg Hospital        | 3                    |              | 861           |                | 1             |               | 865           |
| Chinchilla Hospital       | 15                   |              | 5             | 1              | 11            | 1,152         | 1,184         |
| Dalby Hospital            | 3,174                | 4            | 10            | 1              | 23            | 260           | 3,472         |
| Goondiwindi Hospital      | 5                    | 1,304        | 3             | 4              | 11            | 13            | 1,340         |
| Inglewood Hospital        | 6                    | 281          | 1             | 6              | 2             |               | 296           |
| Jandowae Hospital         | 234                  |              | 9             | 1              |               | 9             | 253           |
| Kingaroy Hospital         | 167                  |              | 4,527         | 3              | 5             | 8             | 4,710         |
| Miles Hospital            | 7                    |              | 5             | 1              | 9             | 703           | 725           |
| Millmerran Hospital       | 359                  | 2            |               | 4              | 15            |               | 380           |
| Murgon Hospital           | 2                    |              | 798           | 1              | 2             | 1             | 804           |
| Nanango Hospital          | 95                   |              | 687           | 1              | 3             |               | 786           |
| Oakey Hospital            | 273                  |              | 2             | 1              | 56            |               | 332           |
| Private (public patients) | 33                   | 1            | 34            | 53             | 111           | 12            | 244           |
| Stanthorpe Hospital       | 2                    | 21           | 2             | 2,440          | 5             | 1             | 2,471         |
| Tara Hospital             | 23                   |              |               |                | 3             | 652           | 678           |
| Taroom Hospital           | 1                    |              |               | 1              | 1             | 201           | 204           |
| Texas Hospital            | 1                    | 125          | 1             | 4              | 1             | 1             | 133           |
| Toowoomba Hospital        | 5,383                | 744          | 2,355         | 3,538          | 25,116        | 1,367         | 38,503        |
| Warwick Hospital          | 9                    | 43           | 3             | 4,174          | 22            | 1             | 4,252         |
| Wondai Hospital           |                      |              | 45            |                |               |               | 45            |
| <b>Grand Total</b>        | <b>9,792</b>         | <b>2,525</b> | <b>9,348</b>  | <b>10,234</b>  | <b>25,397</b> | <b>4,381</b>  | <b>61,677</b> |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

**Table 39: Total separations (percentage) Darling Downs Health residents by place of treatment within Darling Downs Health facility by place of residence 2016/17**

| Place of Treatment        | Place of Residence   |             |               |                |             |               | Total       |
|---------------------------|----------------------|-------------|---------------|----------------|-------------|---------------|-------------|
|                           | Darling Downs - East | Goondiwindi | South Burnett | Southern Downs | Toowoomba   | Western Downs |             |
| Cherbourg Hospital        | 0%                   | 0%          | 9%            | 0%             | 0%          | 0%            | 1%          |
| Chinchilla Hospital       | 0%                   | 0%          | 0%            | 0%             | 0%          | 26%           | 2%          |
| Dalby Hospital            | 32%                  | 0%          | 0%            | 0%             | 0%          | 6%            | 6%          |
| Goondiwindi Hospital      | 0%                   | 52%         | 0%            | 0%             | 0%          | 0%            | 2%          |
| Inglewood Hospital        | 0%                   | 11%         | 0%            | 0%             | 0%          | 0%            | 0%          |
| Jandowae Hospital         | 2%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| Kingaroy Hospital         | 2%                   | 0%          | 48%           | 0%             | 0%          | 0%            | 8%          |
| Miles Hospital            | 0%                   | 0%          | 0%            | 0%             | 0%          | 16%           | 1%          |
| Millmerran Hospital       | 4%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 1%          |
| Murgon Hospital           | 0%                   | 0%          | 9%            | 0%             | 0%          | 0%            | 1%          |
| Nanango Hospital          | 1%                   | 0%          | 7%            | 0%             | 0%          | 0%            | 1%          |
| Oakey Hospital            | 3%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 1%          |
| Private (public patients) | 0%                   | 0%          | 0%            | 1%             | 0%          | 0%            | 0%          |
| Stanthorpe Hospital       | 0%                   | 1%          | 0%            | 24%            | 0%          | 0%            | 4%          |
| Tara Hospital             | 0%                   | 0%          | 0%            | 0%             | 0%          | 15%           | 1%          |
| Taroom Hospital           | 0%                   | 0%          | 0%            | 0%             | 0%          | 5%            | 0%          |
| Texas Hospital            | 0%                   | 5%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| Toowoomba Hospital        | 55%                  | 29%         | 25%           | 35%            | 99%         | 31%           | 62%         |
| Warwick Hospital          | 0%                   | 2%          | 0%            | 41%            | 0%          | 0%            | 7%          |
| Wondai Hospital           | 0%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| <b>Grand Total</b>        | <b>100%</b>          | <b>100%</b> | <b>100%</b>   | <b>100%</b>    | <b>100%</b> | <b>100%</b>   | <b>100%</b> |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

69 percent of all same day separations occurred at Toowoomba Hospital (excluding renal dialysis). Outside of the Toowoomba planning region, 56 percent of the same day separations were for residents in Darling Downs East, followed by 43 percent of same day separations for residents of the Southern Downs.

**Table 40: Total same day separations Darling Downs Health residents (by planning region) by Darling Downs Health public hospital of treatment 2016/17**

| Place of Treatment        | Place of Residence   |             |               |                |           |               | Total |
|---------------------------|----------------------|-------------|---------------|----------------|-----------|---------------|-------|
|                           | Darling Downs - East | Goondiwindi | South Burnett | Southern Downs | Toowoomba | Western Downs |       |
| Cherbourg Hospital        |                      |             | 209           |                |           |               | 209   |
| Chinchilla Hospital       | 7                    |             | 2             | 1              | 3         | 407           | 420   |
| Dalby Hospital            | 1,788                | 3           | 6             |                | 13        | 146           | 1,956 |
| Goondiwindi Hospital      | 2                    | 397         |               | 2              | 5         | 1             | 407   |
| Inglewood Hospital        | 1                    | 89          | 1             | 3              | 1         |               | 95    |
| Jandowae Hospital         | 80                   |             | 2             | 1              |           | 3             | 86    |
| Kingaroy Hospital         | 90                   |             | 1,980         | 3              | 2         | 3             | 2,078 |
| Miles Hospital            | 3                    |             | 2             |                | 4         | 302           | 311   |
| Millmerran Hospital       | 122                  |             |               | 1              | 1         |               | 124   |
| Murgon Hospital           | 1                    |             | 235           | 1              | 1         | 1             | 239   |
| Nanango Hospital          | 9                    |             | 147           | 1              | 1         |               | 158   |
| Oakey Hospital            | 71                   |             | 1             |                | 7         |               | 79    |
| Private (public patients) | 31                   | 1           | 28            | 49             | 107       | 10            | 226   |

| Place of Treatment  | Place of Residence   |             |               |                |               |               | Total         |
|---------------------|----------------------|-------------|---------------|----------------|---------------|---------------|---------------|
|                     | Darling Downs - East | Goondiwindi | South Burnett | Southern Downs | Toowoomba     | Western Downs |               |
| Stanthorpe Hospital | 2                    | 14          | 1             | 1,033          |               | 1             | 1,051         |
| Tara Hospital       | 8                    |             |               |                | 2             | 232           | 242           |
| Taroom Hospital     | 1                    |             |               | 1              | 1             | 55            | 58            |
| Texas Hospital      |                      | 25          |               | 2              | 1             |               | 28            |
| Toowoomba Hospital  | 2,851                | 378         | 1,131         | 1,847          | 13,114        | 558           | 19,879        |
| Warwick Hospital    | 2                    | 25          | 1             | 1,340          | 3             |               | 1,371         |
| Wondai Hospital     |                      |             | 1             |                |               |               | 1             |
| <b>Grand Total</b>  | <b>5,069</b>         | <b>932</b>  | <b>3,747</b>  | <b>4,285</b>   | <b>13,266</b> | <b>1,719</b>  | <b>29,018</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

**Table 41: Total same day separations (percentage) Darling Downs Health residents (by planning region) by Darling Downs Health public hospital of treatment 2016/17**

| Place of Treatment        | Place of Residence   |             |               |                |             |               | Total       |
|---------------------------|----------------------|-------------|---------------|----------------|-------------|---------------|-------------|
|                           | Darling Downs - East | Goondiwindi | South Burnett | Southern Downs | Toowoomba   | Western Downs |             |
| Cherbourg Hospital        | 0%                   | 0%          | 6%            | 0%             | 0%          | 0%            | 1%          |
| Chinchilla Hospital       | 0%                   | 0%          | 0%            | 0%             | 0%          | 24%           | 1%          |
| Dalby Hospital            | 35%                  | 0%          | 0%            | 0%             | 0%          | 8%            | 7%          |
| Goondiwindi Hospital      | 0%                   | 43%         | 0%            | 0%             | 0%          | 0%            | 1%          |
| Inglewood Hospital        | 0%                   | 10%         | 0%            | 0%             | 0%          | 0%            | 0%          |
| Jandowae Hospital         | 2%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| Kingaroy Hospital         | 2%                   | 0%          | 53%           | 0%             | 0%          | 0%            | 7%          |
| Miles Hospital            | 0%                   | 0%          | 0%            | 0%             | 0%          | 18%           | 1%          |
| Millmerran Hospital       | 2%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| Murgon Hospital           | 0%                   | 0%          | 6%            | 0%             | 0%          | 0%            | 1%          |
| Nanango Hospital          | 0%                   | 0%          | 4%            | 0%             | 0%          | 0%            | 1%          |
| Oakey Hospital            | 1%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| Private (public patients) | 1%                   | 0%          | 1%            | 1%             | 1%          | 1%            | 1%          |
| Stanthorpe Hospital       | 0%                   | 2%          | 0%            | 24%            | 0%          | 0%            | 4%          |
| Tara Hospital             | 0%                   | 0%          | 0%            | 0%             | 0%          | 13%           | 1%          |
| Taroom Hospital           | 0%                   | 0%          | 0%            | 0%             | 0%          | 3%            | 0%          |
| Texas Hospital            | 0%                   | 3%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| Toowoomba Hospital        | 56%                  | 41%         | 30%           | 43%            | 99%         | 32%           | 69%         |
| Warwick Hospital          | 0%                   | 3%          | 0%            | 31%            | 0%          | 0%            | 5%          |
| Wondai Hospital           | 0%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| <b>Grand Total</b>        | <b>100%</b>          | <b>100%</b> | <b>100%</b>   | <b>100%</b>    | <b>100%</b> | <b>100%</b>   | <b>100%</b> |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates

Dalby Hospital achieves the highest rate of same day admissions as a percentage of total separations (56 percent, excluding renal dialysis), followed by Toowoomba Hospital (52 percent), Kingaroy Hospital (44 percent) and Miles Hospital (43 percent).

**Table 42: Percentage of same day separations Darling Downs Health residents by public hospital of treatment 2016/17**

| Hospital of Treatment                       | Total |
|---|-------|
| Cherbourg                                   | 24%   |
| Chinchilla                                  | 35%   |
| Dalby                                       | 56%   |
| Goondiwindi                                 | 30%   |
| Inglewood                                   | 32%   |
| Jandowae                                    | 34%   |
| Kingaroy                                    | 44%   |
| Miles                                       | 43%   |
| Millmerran                                  | 33%   |
| Murgon                                      | 30%   |
| Nanango                                     | 20%   |
| Oakey                                       | 24%   |
| Public patients treated at private facility | 93%   |
| Stanthorpe                                  | 43%   |
| Tara  | 36%   |
| Taroom                                      | 28%   |
| Texas                                       | 21%   |
| Toowoomba                                   | 52%   |
| Warwick                                     | 32%   |
| Wondai                                      | 2%    |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates. Percentage calculation is hospital same day separations as a percentage of total separations for the same facility.

54 percent (2,532) of the overnight separations for Darling Downs East residents were at Toowoomba Hospital. This was much higher than the other four rural planning regions with 22 percent to 30 percent of the total separations for their resident population occurring at Toowoomba Hospital. The Goondiwindi Hospital provided 57 percent of the total overnight separations for their respective catchment planning region whereas Dalby provided only 29 percent of the total separations for the Darling Downs East population.

**Table 43: Total overnight separations Darling Downs Health residents (by planning region) by Darling Downs Health public hospital of treatment 2016/17**

| Place of Treatment        | Place of Residence   |             |               |                |           |               | Total |
|---------------------------|----------------------|-------------|---------------|----------------|-----------|---------------|-------|
|                           | Darling Downs - East | Goondiwindi | South Burnett | Southern Downs | Toowoomba | Western Downs |       |
| Cherbourg Hospital        | 3                    |             | 652           |                | 1         |               | 656   |
| Chinchilla Hospital       | 8                    |             | 3             |                | 8         | 745           | 764   |
| Dalby Hospital            | 1,386                | 1           | 4             | 1              | 10        | 114           | 1,516 |
| Goondiwindi Hospital      | 3                    | 907         | 3             | 2              | 6         | 12            | 933   |
| Inglewood Hospital        | 5                    | 192         |               | 3              | 1         |               | 201   |
| Jandowae Hospital         | 154                  |             | 7             |                |           | 6             | 167   |
| Kingaroy Hospital         | 77                   |             | 2,547         |                | 3         | 5             | 2,632 |
| Miles Hospital            | 4                    |             | 3             | 1              | 5         | 401           | 414   |
| Millmerran Hospital       | 237                  | 2           |               | 3              | 14        |               | 256   |
| Murgon Hospital           | 1                    |             | 563           |                | 1         |               | 565   |
| Nanango Hospital          | 86                   |             | 540           |                | 2         |               | 628   |
| Oakey Hospital            | 202                  |             | 1             | 1              | 49        |               | 253   |
| Private (public patients) | -                    | -           | -             | -              | -         | -             | -     |



| Place of Treatment  | Place of Residence   |              |               |                |               |               | Total         |
|---------------------|----------------------|--------------|---------------|----------------|---------------|---------------|---------------|
|                     | Darling Downs - East | Goondiwindi  | South Burnett | Southern Downs | Toowoomba     | Western Downs |               |
| Stanthorpe Hospital |                      | 7            | 1             | 1,407          | 5             |               | 1,420         |
| Tara Hospital       | 15                   |              |               |                | 1             | 420           | 436           |
| Taroom Hospital     |                      |              |               |                |               | 146           | 146           |
| Texas Hospital      | 1                    | 100          | 1             | 2              |               | 1             | 105           |
| Toowoomba Hospital  | 2,532                | 366          | 1,224         | 1,691          | 12,002        | 809           | 18,624        |
| Warwick Hospital    | 7                    | 18           | 2             | 2,834          | 19            | 1             | 2,881         |
| Wondai Hospital     |                      |              | 44            |                |               |               | 44            |
| <b>Grand Total</b>  | <b>4,723</b>         | <b>1,593</b> | <b>5,601</b>  | <b>5,949</b>   | <b>12,131</b> | <b>2,662</b>  | <b>32,659</b> |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

**Table 44: Total overnight separations (percentage) Darling Downs Health residents (by planning region) by Darling Downs Health public hospital of treatment 2016/17**

| Place of Treatment        | Place of Residence   |             |               |                |             |               | Total       |
|---------------------------|----------------------|-------------|---------------|----------------|-------------|---------------|-------------|
|                           | Darling Downs - East | Goondiwindi | South Burnett | Southern Downs | Toowoomba   | Western Downs |             |
| Cherbourg Hospital        | 0%                   | 0%          | 12%           | 0%             | 0%          | 0%            | 2%          |
| Chinchilla Hospital       | 0%                   | 0%          | 0%            | 0%             | 0%          | 28%           | 2%          |
| Dalby Hospital            | 29%                  | 0%          | 0%            | 0%             | 0%          | 4%            | 5%          |
| Goondiwindi Hospital      | 0%                   | 57%         | 0%            | 0%             | 0%          | 0%            | 3%          |
| Inglewood Hospital        | 0%                   | 12%         | 0%            | 0%             | 0%          | 0%            | 1%          |
| Jandowae Hospital         | 3%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 1%          |
| Kingaroy Hospital         | 2%                   | 0%          | 45%           | 0%             | 0%          | 0%            | 8%          |
| Miles Hospital            | 0%                   | 0%          | 0%            | 0%             | 0%          | 15%           | 1%          |
| Millmerran Hospital       | 5%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 1%          |
| Murgon Hospital           | 0%                   | 0%          | 10%           | 0%             | 0%          | 0%            | 2%          |
| Nanango Hospital          | 2%                   | 0%          | 10%           | 0%             | 0%          | 0%            | 2%          |
| Oakey Hospital            | 4%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 1%          |
| Private (public patients) | 0%                   | 0%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| Stanthorpe Hospital       | 0%                   | 0%          | 0%            | 24%            | 0%          | 0%            | 4%          |
| Tara Hospital             | 0%                   | 0%          | 0%            | 0%             | 0%          | 16%           | 1%          |
| Taroom Hospital           | 0%                   | 0%          | 0%            | 0%             | 0%          | 5%            | 0%          |
| Texas Hospital            | 0%                   | 6%          | 0%            | 0%             | 0%          | 0%            | 0%          |
| Toowoomba Hospital        | 54%                  | 23%         | 22%           | 28%            | 99%         | 30%           | 57%         |
| Warwick Hospital          | 0%                   | 1%          | 0%            | 48%            | 0%          | 0%            | 9%          |
| Wondai Hospital           | 0%                   | 0%          | 1%            | 0%             | 0%          | 0%            | 0%          |
| <b>Grand Total</b>        | <b>100%</b>          | <b>100%</b> | <b>100%</b>   | <b>100%</b>    | <b>100%</b> | <b>100%</b>   | <b>100%</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

### 3.3 ANALYSIS OF DARLING DOWNS HEALTH RESIDENT FLOWS TO BRISBANE METROPOLITAN HOSPITALS

In 2016/17 there were 7,809 total overnight and same day separations for residents of Darling Downs Health provided by hospitals located in the Brisbane metropolitan area.

Of these, 3,617 (46 percent) were same day separations. The greatest volume of same day separations was from the Metro North HHS Hospitals (1,344). Of the 4,192 total overnight separations, the greatest volume (1,838) were provided at Metro South HHS hospitals followed by Metro North hospitals (1,070).

**Table 45: Total Same Day Separations Darling Downs Health Residents (by Darling Downs Health Planning Region), by Place of Treatment Brisbane Metropolitan facilities, 2016/17**

| Place of Residence<br>(Planning Region) | Place of Treatment            |                           |                          |                          | Total        |
|---|-------------------------------|---------------------------|--------------------------|--------------------------|--------------|
|   | Children's Health<br>Services | Mater Public<br>Hospitals | Metro North<br>Hospitals | Metro South<br>Hospitals |              |
| Darling Downs - East                    | 113                           | 46                        | 169                      | 171                      | 499          |
| Goondiwindi                             | 16                            | 21                        | 32                       | 26                       | 95           |
| South Burnett                           | 113                           | 180                       | 478                      | 191                      | 962          |
| Southern Downs                          | 119                           | 79                        | 184                      | 233                      | 615          |
| Toowoomba                               | 286                           | 184                       | 412                      | 365                      | 1,247        |
| Western Downs                           | 42                            | 17                        | 69                       | 71                       | 199          |
| <b>Total</b>                            | <b>689</b>                    | <b>527</b>                | <b>1,344</b>             | <b>1,057</b>             | <b>3,617</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note: excludes Renal Dialysis and Unqualified Neonates. Hospitals include: Queensland Children's Hospital, Mater Adult Hospital, Mater Mothers (public) Hospital, Metro North (public patients), The Prince Charles Hospital, Royal Brisbane and Women's Hospital, Princess Alexandra Hospital, Metro South (public patients).

**Table 46: Total Overnight Separations Darling Downs Health Residents (by Darling Downs Health Planning Region), by Place of Treatment Brisbane Metropolitan facilities, 2016/17**

| Place of Residence<br>(Planning Region) | Place of Treatment            |                           |                          |                          | Total        |
|---|-------------------------------|---------------------------|--------------------------|--------------------------|--------------|
|   | Children's Health<br>Services | Mater Public<br>Hospitals | Metro North<br>Hospitals | Metro South<br>Hospitals |              |
| Darling Downs - East                    | 99                            | 92                        | 109                      | 288                      | 588          |
| Goondiwindi                             | 51                            | 30                        | 31                       | 66                       | 178          |
| South Burnett                           | 161                           | 95                        | 451                      | 316                      | 1,023        |
| Southern Downs                          | 71                            | 137                       | 149                      | 398                      | 755          |
| Toowoomba                               | 240                           | 227                       | 258                      | 622                      | 1,347        |
| Western Downs                           | 50                            | 31                        | 72                       | 148                      | 301          |
| <b>Total</b>                            | <b>672</b>                    | <b>612</b>                | <b>1,070</b>             | <b>1,838</b>             | <b>4,192</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note: excludes Renal Dialysis and Unqualified Neonates. Hospitals include: Queensland Children's Hospital, Mater Adult Hospital, Mater Mothers (public) Hospital, Metro North (public patients), The Prince Charles Hospital, Royal Brisbane and Women's Hospital, Princess Alexandra Hospital, Metro South (public patients).

The tables below indicate the top 10 SRGs for overnight and same day separations provided to Darling Downs Health residents by Brisbane Metropolitan hospitals.

**Table 47: Top 10 SRGs, by total separations for Darling Downs Health residents flow to Brisbane Metropolitan facilities 2016/17**

| SRG 8                     | HHS of Treatment - Childrens Health Services |
|---------------------------|--|
| Non Subspecialty Surgery  | 135  |
| Respiratory Medicine      | 134  |
| Orthopaedics              | 127  |
| Ear, Nose and Throat      | 89   |
| Urology                   | 85   |
| Neurology                 | 77   |
| Diagnostic GI Endoscopy   | 74   |
| Chemotherapy              | 55   |
| Non Subspecialty Medicine | 54   |
| Neurosurgery              | 47   |
| Other                     | 484  |
| <b>Total</b>              | <b>1,361</b>                                 |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates. HHS of Treatment includes: Queensland Children's Hospital.

**Table 48: Top 10 SRGs, by total separations for Darling Downs Health residents flow to Brisbane Metropolitan facilities 2016/17**

| SRG 8                     | HHS of Treatment - Mater Public Hospitals |
|---------------------------|---|
| Urology                   | 234                                       |
| Chemotherapy              | 143                                       |
| Obstetrics                | 136                                       |
| Qualified Neonate         | 95  |
| Gynaecology               | 63  |
| Ophthalmology             | 57  |
| Diagnostic GI Endoscopy   | 52  |
| Non Subspecialty Surgery  | 41  |
| Medical Oncology          | 37  |
| Non Subspecialty Medicine | 36  |
| Other                     | 245                                       |
| <b>Total</b>              | <b>1,139</b>                              |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates. HHS of Treatment includes: Mater Adult Hospital and Mater Mothers (public) Hospital.

**Table 49: Top 10 SRGs, by total separations for Darling Downs Health residents flow to Brisbane Metropolitan facilities 2016/17**

| SRG 8                              | HHS of Treatment - Metro North |
|------------------------------------|--------------------------------|
| Ophthalmology                      | 494                            |
| Chemotherapy                       | 204                            |
| Orthopaedics                       | 170                            |
| Interventional Cardiology          | 131                            |
| Cardiology                         | 105                            |
| Haematology                        | 101                            |
| Obstetrics                         | 98                             |
| Respiratory Medicine               | 95                             |
| Neurology                          | 78                             |
| Plastic and Reconstructive Surgery | 68                             |
| Other                              | 870                            |
| <b>Grand Total</b>                 | <b>2,414</b>                   |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates. HHS of Treatment includes: Metro North (public patients), Royal Brisbane and Women's Hospital and The Prince Charles Hospital.

**Table 50: Top 10 SRGs, by total separations for Darling Downs Health residents flow to Brisbane Metropolitan facilities 2016/17**

| SRG 8                              | HHS of Treatment - Metro South |
|------------------------------------|--------------------------------|
| Interventional Cardiology          | 353                            |
| Chemotherapy                       | 206                            |
| Diagnostic GI Endoscopy            | 172                            |
| Ophthalmology                      | 164                            |
| Renal Medicine                     | 162                            |
| Plastic and Reconstructive Surgery | 159                            |
| Orthopaedics                       | 140                            |
| Vascular Surgery                   | 138                            |
| Cardiology                         | 133                            |
| Cardiac Surgery                    | 129                            |
| Other                              | 1139                           |
| <b>Grand Total</b>                 | <b>2,895</b>                   |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch. Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates. HHS of Treatment includes: Metro South (public patients) and Princess Alexandra Hospital.

## 3.4 RELATIVE UTILISATION OF SERVICES

Relative utilisation (RU) is the ratio of services used by residents of a region, irrespective of where services are accessed to the expected number of admissions.

The expected number of admissions is calculated based on the State average (notionally 100 percent). The use of services may be influenced by burden of disease and socioeconomic profile. Relative utilisation is a measure of inpatient services only. The following services are excluded from the analysis:

- Chemotherapy and radiotherapy
- Diagnostic GI endoscopy
- Renal dialysis
- Interventional cardiology
- Extensive burns
- Transplantation

The RU for Darling Downs Health residents (public and private) is 93.8 percent demonstrating that the Darling Downs Health population uses hospital services at a rate 6.2 percent less than the State average in 2016/17 (refer to Table 52). The RU for public hospital services is 96.2 percent demonstrating that the rate for public services is below the expected rate of utilisation or state average (refer to Table 51). The overall trend since 2010/11 is that public RU fluctuated over the five-year period (ranging from a high of 99 [2011/12] to 96.24 [2016/17]) while at the same time private RU decreased from 101.9 to 90.7 or a reduction of 11.2 percent.

The utilisation of services requiring same day admissions is at a rate much lower than the Queensland average but this is offset by a higher than average use of services requiring an overnight stay.

**Table 51: Darling Downs Health RU public hospitals only 2010/11 -2016/17**

|                    | Year        |             |             |             |             |             |              |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Stay Type          | 2010/11     | 2011/12     | 2012/13     | 2013/14     | 2014/15     | 2015/16     | 2016/17      |
| Overnight+         | 106.9       | 107.2       | 105.9       | 104.8       | 105.7       | 105.1       | 103.73       |
| Same Day           | 81.4        | 84.8        | 82.8        | 84.5        | 89.2        | 89.5        | 86.50        |
| <b>Grand Total</b> | <b>97.7</b> | <b>99.0</b> | <b>97.2</b> | <b>96.9</b> | <b>98.9</b> | <b>98.6</b> | <b>96.24</b> |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018.

**Table 52: Darling Downs Health RU public and private hospitals 2010/11 -2016/17**

| Hospital Type      | Year        |             |             |             |             |             |              |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
|                    | 2010/11     | 2011/12     | 2012/13     | 2013/14     | 2014/15     | 2015/16     | 2016/17      |
| Overnight+         | 101.9       | 99.8        | 100.8       | 98.1        | 95.4        | 91.4        | 90.17        |
| Same Day           | 97.7        | 99.0        | 97.2        | 96.9        | 98.9        | 98.6        | 96.24        |
| <b>Grand Total</b> | <b>99.5</b> | <b>99.4</b> | <b>98.7</b> | <b>97.4</b> | <b>97.5</b> | <b>95.6</b> | <b>93.83</b> |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018.

**Table 53: Public Private Relative Utilisation Darling Downs Health residents by Same day and Overnight stays for Adults and Children 2016/17**

| Stay Type                         | Private      |               | Public       |               | All hospitals |                |
|-----------------------------------|--------------|---------------|--------------|---------------|---------------|----------------|
|                                   | RU           | Separations   | RU           | Separations   | RU            | Separations    |
| Overnight- Adult aged 15 years +  | 104.64       | 17,112        | 104.98       | 33,334        | 104.86        | 50,446         |
| Overnight - Child aged 0-14 years | 130.43       | 891           | 95.64        | 3,939         | 100.59        | 4,830          |
| Same Day - Adult aged 15 years+   | 79.41        | 20,354        | 87.17        | 22,400        | 83.29         | 42,754         |
| Same Day - Child aged 0-14 years  | 110.33       | 943           | 80.51        | 2,544         | 86.86         | 3,487          |
| <b>Grand Total</b>                | <b>90.30</b> | <b>39,300</b> | <b>96.12</b> | <b>62,217</b> | <b>93.78</b>  | <b>101,517</b> |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: Excludes Chemotherapy, Diagnostic Endoscopy, Interventional Cardiology, Extensive Burns, Renal Dialysis, Transplantation, Unallocated and Unqualified Neonates.

Of the top 15 SRG's by total volume of separations (private and public), an RU of close to 100 (96.4-102) is achieved for orthopaedics, non-subspecialty surgery, respiratory medicine, cardiology, gynaecology and urology. This indicates that these services are used at a similar rate to the State average. The services with a high RU (> 110) are Obstetrics, Haematology, Ear Nose and Throat and Immunology and Infections indicating services are used at a rate much higher than the State average. Services with a low RU (<90) are Mental Health and Plastic and Reconstructive Surgery indicating a usage lower than State average.

While orthopaedics had the highest number of separations for all hospitals used by Darling Downs residents, for public hospitals it ranked as the third highest SRG in terms of total separations. Obstetrics and general surgery had the highest number of separations for public hospitals and obstetrics also had the highest RU at 142, indicating a 42 percent higher than expected number of separations for obstetrics at public hospitals. An analysis of separations within this SRG shows that 2,660 separations were for birthing DRGs and 3,866 separations were for antenatal / postpartum DRGs at public hospitals.

The RU for mental health at private hospitals is 37.3 and is well below the state average. This low level of utilisation in private hospitals is most likely driving the high RU for mental health in public hospitals. Despite the high RU for public hospital, overall mental health RU remains well below the state average.

**Table 54: Public Private RU Darling Downs residents - Top 15 SRGs by total separations 2016/17**

| SRG 8                     | Private |             | Public |             | All hospitals |             |
|---------------------------|---------|-------------|--------|-------------|---------------|-------------|
|                           | RU      | Separations | RU     | Separations | RU            | Separations |
| Orthopaedics              | 107.53  | 5,210       | 93.01  | 4,994       | 99.90         | 10,204      |
| Non Subspecialty Surgery  | 109.78  | 2,039       | 97.49  | 6,258       | 100.25        | 8,297       |
| Obstetrics                | 112.89  | 1,104       | 142.67 | 6,526       | 137.43        | 7,630       |
| Non Subspecialty Medicine | 108.88  | 2,753       | 86.60  | 3,787       | 94.76         | 6,540       |
| Respiratory Medicine      | 99.05   | 1,818       | 95.52  | 4,575       | 96.49         | 6,393       |
| Cardiology                | 101.99  | 1,049       | 102.62 | 4,932       | 102.51        | 5,981       |
| Ophthalmology             | 93.62   | 3,935       | 70.42  | 1,220       | 86.85         | 5,155       |



| SRG 8                              | Private      |               | Public       |               | All hospitals |                |
|------------------------------------|--------------|---------------|--------------|---------------|---------------|----------------|
|                                    | RU           | Separations   | RU           | Separations   | RU            | Separations    |
| Haematology                        | 145.48       | 2,704         | 100.17       | 1,794         | 123.24        | 4,498          |
| Neurology                          | 83.17        | 1,006         | 88.44        | 3,345         | 87.16         | 4,351          |
| Gynaecology                        | 102.28       | 2,563         | 97.55        | 1,730         | 100.32        | 4,293          |
| Urology                            | 109.36       | 2,004         | 87.71        | 1,959         | 97.46         | 3,963          |
| Ear, Nose and Throat               | 108.40       | 1,357         | 116.54       | 2,563         | 113.59        | 3,920          |
| Mental Health                      | 37.30        | 1,259         | 107.83       | 2,475         | 65.85         | 3,734          |
| Immunology and Infections          | 126.23       | 1,493         | 91.59        | 2,233         | 102.91        | 3,726          |
| Plastic and Reconstructive Surgery | 65.36        | 1,331         | 73.86        | 944           | 68.64         | 2,275          |
| <b>All other SRGs</b>              |              | <b>7,675</b>  |              | <b>12,882</b> |               | <b>20,557</b>  |
| <b>Grand Total</b>                 | <b>90.30</b> | <b>39,300</b> | <b>96.12</b> | <b>62,217</b> | <b>93.78</b>  | <b>101,517</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: Excludes Chemotherapy, Diagnostic Endoscopy, Interventional Cardiology, Extensive Burns, Renal Dialysis, Transplantation, Unallocated and Unqualified Neonates.

The following tables show total RU for Darling Downs Health residents who are adults aged 15 years and over and children aged 0 to 14 years. Total RU for Darling Downs Health adults is 93.7 with public hospital RU of 97 and private hospital RU of 89.

**Table 55: Public Private RU Darling Downs Health residents aged 15 years and over - Top 15 SRGs by total separations 2016/17**

| SRG 8                              | Private      |               | Public       |               | All hospitals |               |
|------------------------------------|--------------|---------------|--------------|---------------|---------------|---------------|
|                                    | RU           | Separations   | RU           | Separations   | RU            | Separations   |
| Orthopaedics                       | 107.04       | 5,044         | 93.15        | 4,469         | 100.03        | 9,513         |
| Obstetrics                         | 112.89       | 1,104         | 142.60       | 6,520         | 137.36        | 7,624         |
| Non Subspecialty Surgery           | 108.40       | 1,912         | 98.97        | 5,600         | 101.21        | 7,512         |
| Non Subspecialty Medicine          | 109.22       | 2,683         | 89.74        | 3,390         | 97.41         | 6,073         |
| Cardiology                         | 101.95       | 1,048         | 102.82       | 4,902         | 102.67        | 5,950         |
| Respiratory Medicine               | 97.59        | 1,737         | 95.59        | 3,436         | 96.25         | 5,173         |
| Ophthalmology                      | 93.66        | 3,910         | 69.89        | 1,151         | 86.94         | 5,061         |
| Haematology                        | 145.50       | 2,700         | 102.65       | 1,747         | 125.00        | 4,447         |
| Gynaecology                        | 102.30       | 2,556         | 97.90        | 1,715         | 100.49        | 4,271         |
| Neurology                          | 82.48        | 990           | 89.21        | 3,177         | 87.52         | 4,167         |
| Urology                            | 109.23       | 1,962         | 87.54        | 1,848         | 97.51         | 3,810         |
| Mental Health                      | 37.31        | 1,259         | 104.40       | 2,298         | 63.79         | 3,557         |
| Immunology and Infections          | 125.99       | 1,475         | 91.61        | 1,980         | 103.69        | 3,455         |
| Ear, Nose and Throat               | 104.00       | 785           | 120.76       | 1,667         | 114.84        | 2,452         |
| Plastic and Reconstructive Surgery | 65.01        | 1,304         | 73.20        | 895           | 68.12         | 2,199         |
| <b>All other SRGs</b>              |              | <b>6,997</b>  |              | <b>10,939</b> |               | <b>17,936</b> |
| <b>Grand Total</b>                 | <b>89.24</b> | <b>37,466</b> | <b>97.01</b> | <b>55,734</b> | <b>93.73</b>  | <b>93,200</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: Excludes Chemotherapy, Diagnostic Endoscopy, Interventional Cardiology, Extensive Burns, Renal Dialysis, Transplantation, Unallocated and Unqualified Neonates.

Total RU for Darling Downs Health children aged 0 to 14 years is 94 with public hospital RU of only 89 and a private hospital RU of 119. SRG's with total RU notably higher than Queensland average are mental health and dentistry. Within the Top 15 SRGs, high levels of RU (>100) for public hospitals were Mental Health, Ear Nose and Throat followed by Neurosurgery. Whereas in private hospitals high levels of RU (>150) were Gastroenterology, Neurology, Immunology and Infections. Overall the SRGs with the lowest RU (<90) within the top 15 SRGs were Gastroenterology, Endocrinology, Neurology, Non-subspecialty Medicine, Qualified Neonates and Thoracic Surgery.

**Table 56: Public Private RU Darling Downs Health residents 0 to 14 years - Top 15 SRGs by total separations 2016/17**

| SRG 8                     | Private       |              | Public       |              | All hospitals |              |
|---------------------------|---------------|--------------|--------------|--------------|---------------|--------------|
|                           | RU            | Separations  | RU           | Separations  | RU            | Separations  |
| Ear, Nose and Throat      | 115.09        | 572          | 109.41       | 896          | 111.56        | 1,468        |
| Respiratory Medicine      | 146.03        | 81           | 95.29        | 1,139        | 97.54         | 1,220        |
| Qualified Neonate         | 63.49         | 96           | 86.71        | 850          | 83.60         | 946          |
| Non Subspecialty Surgery  | 135.77        | 127          | 86.49        | 658          | 91.88         | 785          |
| Orthopaedics              | 124.76        | 166          | 91.79        | 525          | 98.01         | 691          |
| Dentistry                 | 148.51        | 360          | 74.08        | 142          | 115.64        | 502          |
| Non Subspecialty Medicine | 97.35         | 70           | 66.69        | 397          | 69.99         | 467          |
| Immunology and Infections | 149.81        | 18           | 91.48        | 253          | 93.90         | 271          |
| Neurosurgery              | 147.13        | 8            | 103.60       | 249          | 104.56        | 257          |
| Gastroenterology          | 207.00        | 39           | 54.54        | 157          | 63.91         | 196          |
| Neurology                 | 172.67        | 16           | 75.97        | 168          | 79.86         | 184          |
| Mental Health             | -             | -            | 188.01       | 177          | 187.28        | 177          |
| Thoracic Surgery          | 104.59        | 81           | 69.11        | 73           | 84.12         | 154          |
| Urology                   | 115.41        | 42           | 90.58        | 111          | 96.26         | 153          |
| Endocrinology             | 134.75        | 19           | 74.70        | 125          | 79.37         | 144          |
| <b>All other SRGs</b>     |               | <b>139</b>   |              | <b>563</b>   |               | <b>702</b>   |
| <b>Grand Total</b>        | <b>119.26</b> | <b>1,834</b> | <b>89.07</b> | <b>6,483</b> | <b>94.33</b>  | <b>8,317</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); HSRAM, System Planning Branch, Qld DoH. Note: Excludes Chemotherapy, Diagnostic Endoscopy, Interventional Cardiology, Extensive Burns, Renal Dialysis, Transplantation, Unallocated and Unqualified Neonates.

A detailed analysis of the RU of same day hospital services by Darling Downs Health adult residents aged 15 years and over is shown in the Table below. The greatest number of same day separations for public and private hospitals was in Ophthalmology. This was due to a very high number of private separations – three times greater than the public number of separations. The RU for public ophthalmology was only 32 percent lower than the State average and the private RU for ophthalmology was 11 percent below the State average. Orthopaedics, Non-subspecialty medicine, cardiology, urology and immunology and infections had higher than State average RU for private same day separations and lower than the State average for public same day separations. Haematology, Dentistry and Obstetrics exceeded the State average in both public and private hospitals. Mental Health and Plastic and Reconstructive Surgery were significantly less than the state average in both public and private (<70).

**Table 57: Public Private Relative Utilisation, Darling Downs Health residents by same day separations aged 15 years and over - Top 15 SRG's - 2016/17**

| SRG 8                     | Private |             | Public |             | All hospitals |             |
|---------------------------|---------|-------------|--------|-------------|---------------|-------------|
|                           | RU      | Separations | RU     | Separations | RU            | Separations |
| Ophthalmology             | 89.16   | 3,644       | 68.61  | 999         | 83.76         | 4,643       |
| Orthopaedics              | 104.66  | 2,238       | 85.08  | 1,854       | 94.78         | 4,092       |
| Haematology               | 152.17  | 2,445       | 105.63 | 1,423       | 130.95        | 3,868       |
| Non Subspecialty Medicine | 106.27  | 1,937       | 66.59  | 1,333       | 85.50         | 3,270       |
| Obstetrics                | 118.27  | 128         | 163.81 | 2,988       | 161.26        | 3,116       |
| Gynaecology               | 89.39   | 1,735       | 95.44  | 1,044       | 91.57         | 2,779       |
| Non Subspecialty Surgery  | 89.56   | 373         | 85.38  | 2,195       | 85.97         | 2,568       |
| Cardiology                | 146.98  | 341         | 90.49  | 1,932       | 96.03         | 2,273       |
| Urology                   | 107.41  | 1,050       | 73.95  | 823         | 89.60         | 1,873       |
| Neurology                 | 76.07   | 485         | 77.30  | 1,307       | 76.96         | 1,792       |
| Immunology and Infections | 145.86  | 1,167       | 77.58  | 557         | 113.57        | 1,724       |

| SRG 8                              | Private      |               | Public       |               | All hospitals |               |
|------------------------------------|--------------|---------------|--------------|---------------|---------------|---------------|
|                                    | RU           | Separations   | RU           | Separations   | RU            | Separations   |
| Mental Health                      | 32.08        | 907           | 68.66        | 517           | 39.78         | 1,424         |
| Plastic and Reconstructive Surgery | 50.08        | 805           | 70.01        | 619           | 57.15         | 1,424         |
| Dentistry                          | 147.42       | 1,183         | 108.36       | 221           | 139.50        | 1,404         |
| Ear, Nose and Throat               | 59.07        | 179           | 115.63       | 915           | 99.97         | 1,094         |
| <b>All Other SRGs</b>              |              | <b>1,737</b>  |              | <b>3,673</b>  |               | <b>5,410</b>  |
| <b>Grand Total</b>                 | <b>79.41</b> | <b>20,354</b> | <b>87.17</b> | <b>22,400</b> | <b>83.29</b>  | <b>42,754</b> |

Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: Excludes Chemotherapy, Diagnostic Endoscopy, Interventional Cardiology, Extensive Burns, Renal Dialysis, Transplantation, Unallocated and Unqualified Neonates.

The following table provides an overview of utilisation and separations based on planning region for Darling Downs Health residents.

**Table 58: Comparison of separations by planning region and population by planning region**

| Place of Residence   | DDHHS Resident separations as a total of DDHHS separations 16-17 | DDHHS Resident separations as a percentage (%) of total DDHHS separations 16-17 | Percentage (%) of total DDHHS population | % of DDHHS resident separations provided at hospitals in Planning region |
|----------------------|--|---|--|--|
| Darling Downs - East | 9,792.00   | 16%   | 15%                                      | 7%   |
| Goondiwindi          | 2,525.00   | 4%  | 4%                                       | 3%   |
| South Burnett        | 9,348.00   | 15%   | 12%                                      | 11%  |
| Southern Downs       | 10,234.00  | 17%   | 15%                                      | 11%  |
| Toowoomba            | 25,397.00  | 41%   | 48%                                      | 41%  |
| Western Downs        | 4,381.00   | 7%  | 6%                                       | 4%   |

Note: planning region separations as a percentage of total DDHHS separations does not total 100 percent due to a percentage of patients treated outside the planning region. Source: AIM Inpatient Projections (Base Year 16/17; ASGS 2011); Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Chemotherapy, Diagnostic Endoscopy, Interventional Cardiology, Extensive Burns, Renal Dialysis, Transplantation, Unallocated and Unqualified Neonates.



# 4 THE ROLE OF TOOWOOMBA HOSPITAL

## KEY FINDINGS

In 2016/17, the SRG Mental Health accounted for the greatest number of adult bed days (25.4 percent of total bed days, 32,752), followed by the SRG Orthopaedics (7.7 percent of total bed days, 9,875) and the SRG Obstetrics (7.0 percent of the total bed days, 9,058).

Within the top 10 SRGS for total adult Bed Days, two SRG have an ALOS more than 10 days. These were SRG Other Non-Acute (ALOS 18.17 days) and SRG Mental Health (ALOS 12.21 days).

Half (53 percent, 21,741) of all Toowoomba Hospital adult separations were same day separations. The SRG Chemotherapy had the highest percentage of same day separations (100 percent same day, 3,826) followed by the SRG Diagnostic GI Endoscopy (90 percent same day, 3,339) and the SRG Haematology (82 percent same day, 864).

The SRG Obstetrics accounted for the greatest number of adult separations (12.5 percent of total separations, 5,113), followed by the SRG Chemotherapy (9.4 percent of total separations, 3,826) and the SRG Diagnostic GI endoscopy (9.1 percent of total separations, 3,704). The high number of obstetric admissions is of interest, given on average there are 2,000 births at Toowoomba Hospital indicating a high number of prenatal admissions. Further investigations on postcode and health status of mothers (obesity) may be of interest.

Of the total adult separations at Toowoomba Hospital in 2016/17, 12 percent (4,904) were chargeable separations. The SRG Geriatric Management (non-acute) accounted for the greatest percentage of chargeable separations (41 percent of total SRG separations, 38), followed by rehabilitation (non-acute) (27 percent of total SRG separations, 33) and the SRG Other non-acute (27 percent of total SRG separations, 64).

In 2016/17, there were 3,722 total paediatric separations from Toowoomba Hospital, which accounted for a total of 8,506 total bed days. Of these, 36 percent (1,342) were same day separations and the ALOS across all patients were 2.3 days. The SRG Ear, Nose and Throat accounted for the greatest number of paediatric separations (17.8 percent of total separations, 662), followed by the SRG Qualified Neonate (17.7 percent of total separations, 659) and the SRG Respiratory Medicine (15 percent of total separations, 557).

Annual growth (compound) from 2009/10 to 2016/17 was 7 percent per annum for Toowoomba Hospital and this is significantly higher than AIM projections (see next section). Since 2009/10 emergency separations at Toowoomba Hospital increased at an annual rate of 9 percent per annum compared to non-emergency separations at a rate of 6 percent per annum.

SRG Non-Subspecialty Surgery had the greatest growth between 2012/13 to 2016/17 (excluding SRG Diagnostic GI Endoscopy and SRG Chemotherapy due to admission practice changes) with a total increase in annual separations from 2,286 to 3,750 or 64 percent increase (additional separations 1,464 including outsourced activity).

Emergency separations increased by 13 percent per annum (annual growth) and non-emergency separations increased by 5 percent per annum for the SRG Non-Subspecialty Surgery over seven-year period from 2009/10 to 2016/17.

At Toowoomba Hospital, Average Length of Stay (ALOS) for the Top 10 SRG of greatest total volume (in separations) at Toowoomba Hospital in 2016/17, showed a reduction between 2012/13 and 2016/17, with an exception of SRG Neurology.

While separations for the SRG Ophthalmology and SRG Palliative (non-acute) have increased since 2012/13, the overall trend over the five-year period was a decline in volume.

Five SRGs namely SRG Ophthalmology, SRG Rehabilitation (non-acute), SRG Qualified Neonate, SRG Geriatric Management (non-acute) and SRG Palliative (non-acute), were identified as having a lower number of total separations in 2016/17 than in 2012/13.

The annual growth rate of the chargeable patients between 2012/13 and 2016/17 was 16 percent increase. The total chargeable patients have grown by 107 percent (2,785), with a noticeable 120 percent change (1,264) and 17 percent annual growth rate for chargeable same day patients for the period. The change percentage for overnight chargeable patient was 98 percent (1,521).

## STRATEGIC QUESTIONS

The majority of increased separations at Toowoomba Hospital is for emergency admissions. Is the increase in emergency activity limiting our ability to undertake elective work? How will the proposed new Day Surgery assist? Has theatre 7 made a difference or has the additional capacity merely been absorbed by the increase in emergency surgery? Will this result in elective surgery being capped in the future due to number of theatres available?

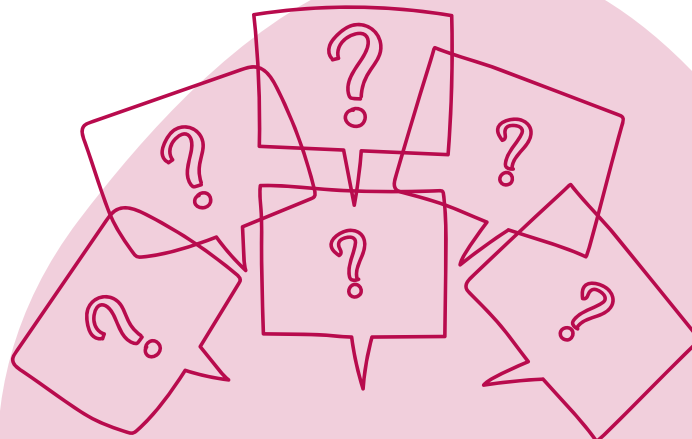
Which areas will the ageing population most impact on e.g. rehabilitation (non-acute) geriatric management, emergency orthopaedics, non-subspecialty surgery, cardiology or neurology?

Are programs such as Hospital in the Home, Hospital in the Nursing Home, community based rehabilitation, primary care and prevention programs sufficiently resourced to make an impact at a whole of population level? What are the barriers to expanding their capacity to meet future demand? Are these services efficient in rural areas, given the distances required to be travelled?

To what extent does Toowoomba Hospital assume the role of 'referral hospital'? Certainly, there are a high number of separations at Toowoomba Hospital for residents from other HHSs.

Given the rate of chargeable separations – are there gaps in our private provider services in Toowoomba? What capacity is there for chargeable overnight patients to be admitted at private facilities to reduce the demand on Toowoomba Hospital beds?

Why did the number of separations for SRGs Rehabilitation (non-acute) and Geriatric Management decrease in the five years to 2016/17? Are the predictions for large percentage increases in these SRGs as relevant as they seem in terms of future bed days required?





## 4.1 SERVICE PROFILE



### Location

Toowoomba Hospital is a tertiary referral hospital.



### Size

302 beds, 70 bed alternatives and 10 cots and a helipad.



### Capability

Toowoomba Hospital Clinical Services Capability Framework (CSCF) is 5. Service level CSCF ratings are provided in Appendix 1.



### Services

provided at the facility are provided in Appendix 2.

## 4.2 CURRENT SERVICE PROVISION

The service profile for Toowoomba Hospital includes public patients treated in private facilities (outsourced patients). This is included to provide information on the total services provided by Toowoomba Hospital.

### Overview

In 2016/17 there were 44,511 total separations (including adults and children) from Toowoomba Hospital, accounting for 137,660 total bed days. Of these 52 percent were same day separations (23,083 separations) and the Average Length of Stay (ALOS) across all adult patients was 3.09 days.

The SRG Obstetrics accounted for the greatest number of separations (11 percent of total separations, 5,119), followed by the SRG Chemotherapy (8.7 percent of total separations, 3,867). The SRG Mental Health had the greatest number of bed days (33,508) followed by SRG Orthopaedics (10,415). Rehabilitation (non-acute) had the longest average length of stay (25.89).

**Table 59: Top 10 SRGs by total separations Toowoomba Hospital 2016/17**

| SRG 8                    | Overnight     | Same Day      | Total Seps    | % Same Day | Total Beddays  | ALOS        | % of Total Seps | % of Total Bed days |
|--------------------------|---------------|---------------|---------------|------------|----------------|-------------|-----------------|---------------------|
| Obstetrics               | 2,567         | 2,552         | 5,119         | 50%        | 9,070          | 1.77        | 11.5%           | 6.6%                |
| Chemotherapy             |               | 3,867         | 3,867         | 100%       | 3,867          | 1.00        | 8.7%            | 2.8%                |
| Non-Subspecialty Surgery | 2,119         | 1,631         | 3,750         | 43%        | 7,941          | 2.12        | 8.4%            | 5.8%                |
| Diagnostic GI Endoscopy  | 370           | 3,347         | 3,717         | 90%        | 5,129          | 1.36        | 8.4%            | 3.7%                |
| Orthopaedics             | 2,218         | 1,412         | 3,630         | 39%        | 10,415         | 2.87        | 8.2%            | 7.6%                |
| Cardiology               | 1,376         | 1,044         | 2,420         | 43%        | 5,131          | 2.12        | 5.4%            | 3.7%                |
| Respiratory Medicine     | 1,523         | 644           | 2,167         | 30%        | 6,961          | 3.21        | 4.9%            | 5.1%                |
| Ear, Nose and Throat     | 911           | 1,203         | 2,114         | 57%        | 2,659          | 1.26        | 4.7%            | 1.9%                |
| Mental Health            | 1,553         | 451           | 2,004         | 23%        | 33,508         | 11.37       | 4.5%            | 24.3%               |
| Neurology                | 1,096         | 772           | 1,868         | 41%        | 5,816          | 3.11        | 4.2%            | 4.2%                |
| Other                    | 7,695         | 6,160         | 13,855        | 44%        | 47,163         | 3.40        | 31.1%           | 34.3%               |
| <b>Total</b>             | <b>21,428</b> | <b>23,083</b> | <b>44,511</b> | <b>52%</b> | <b>137,660</b> | <b>3.09</b> | <b>100%</b>     | <b>100%</b>         |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates..

## 4.2.1 SERVICES FOR ADULTS (15+ YEARS)

In 2016/17 there were 40,789 total adult separations from Toowoomba Hospital, which accounted for 129,059 total bed days. Of these 53 percent (21,741) were same day separations and the Average Length of Stay (ALOS) across all adult patients was 2.9 days.

The SRG Obstetrics accounted for the greatest number of separations (12.5 percent of total separations, 5,113), followed by the SRG Chemotherapy (9.4 percent of total separations, 3,826) and the SRG Diagnostic GI endoscopy (9.1 percent of total separations, 3,704).

**Table 60: Top 10 SRGs by total adult separations (including bed days), Toowoomba Hospital, by SRG by stay type, 2016/17**

| SRG 8                      | Overnight     | Same Day      | Total Seps    | % Same Day | Total Beddays  | ALOS        | % of Total Seps | % of Total Bed days |
|----------------------------|---------------|---------------|---------------|------------|----------------|-------------|-----------------|---------------------|
| Obstetrics                 | 2,564         | 2,549         | 5,113         | 6%         | 9,058          | 1.77        | 12.5%           | 7.0%                |
| Chemotherapy               |               | 3,826         | 3,826         | 9%         | 3,826          | 1.00        | 9.4%            | 3.0%                |
| Diagnostic GI Endoscopy    | 365           | 3,339         | 3,704         | 8%         | 5,116          | 1.37        | 9.1%            | 4.0%                |
| Non- Subspecialty Surgery  | 1,914         | 1,487         | 3,401         | 4%         | 7,421          | 2.18        | 8.3%            | 5.8%                |
| Orthopaedics               | 1,977         | 1,267         | 3,244         | 3%         | 9,875          | 3.04        | 8.0%            | 7.7%                |
| Cardiology                 | 1,373         | 1,040         | 2,413         | 3%         | 5,118          | 2.12        | 5.9%            | 4.0%                |
| Mental Health              | 1,485         | 327           | 1,812         | 1%         | 32,752         | 12.21       | 4.4%            | 25.4%               |
| Neurology                  | 1,059         | 744           | 1,803         | 2%         | 5,732          | 3.18        | 4.4%            | 4.4%                |
| Non- Subspecialty Medicine | 796           | 901           | 1,697         | 2%         | 3,900          | 2.30        | 4.2%            | 3.0%                |
| Respiratory Medicine       | 1,150         | 460           | 1,610         | 1%         | 6,095          | 3.79        | 3.9%            | 4.7%                |
| Other                      | 6,365         | 5,801         | 12,166        | 14%        | 40,166         | 3.29        | 29.8%           | 31.1%               |
| <b>TOTAL</b>               | <b>19,048</b> | <b>21,741</b> | <b>40,789</b> | <b>53%</b> | <b>129,059</b> | <b>2.90</b> | <b>100.0%</b>   | <b>100.0%</b>       |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

The SRG Mental Health (25.4 percent of total bed days, 32,752) accounted for the greatest number of adult bed days followed by the SRG Orthopaedics (7.7 percent of total bed days, 9,875) and the SRG Obstetrics (7.0 percent of the total bed days, 9,058).

Within the top 10 SRGs for the total adult Bed days, two SRG had an ALOS in excess to 10 days. These are SRG Other Non-Acute (ALOS 18.17 days) and SRG Mental Health (ALOS 12.21 days).

**Table 61: Top 10 SRGs by total adult bed days (including separations), Toowoomba Hospital, by SRG by stay type, 2016/17**

| SRG 8                      | Overnight     | Same Day      | Total Seps    | % Same Day | Total Beddays  | ALOS        | % of Total Seps | % of Total Bed days |
|----------------------------|---------------|---------------|---------------|------------|----------------|-------------|-----------------|---------------------|
| Mental Health              | 1,485         | 327           | 1,812         | 18%        | 32,752         | 12.21       | 4.4%            | 25.4%               |
| Orthopaedics               | 1,977         | 1,267         | 3,244         | 39%        | 9,875          | 3.04        | 8.0%            | 7.7%                |
| Obstetrics                 | 2,564         | 2,549         | 5,113         | 50%        | 9,058          | 1.77        | 12.5%           | 7.0%                |
| Non- Subspecialty Surgery  | 1,914         | 1,487         | 3,401         | 44%        | 7,421          | 2.18        | 8.3%            | 5.8%                |
| Respiratory Medicine       | 1,150         | 460           | 1,610         | 29%        | 6,095          | 3.79        | 3.9%            | 4.7%                |
| Neurology                  | 1,059         | 744           | 1,803         | 41%        | 5,732          | 3.18        | 4.4%            | 4.4%                |
| Cardiology                 | 1,373         | 1,040         | 2,413         | 43%        | 5,118          | 2.12        | 5.9%            | 4.0%                |
| Diagnostic GI Endoscopy    | 365           | 3,339         | 3,704         | 90%        | 5,116          | 1.37        | 9.1%            | 4.0%                |
| Other Non-Acute            | 238           | 1             | 239           | 0%         | 4,493          | 18.17       | 0.6%            | 3.5%                |
| Non- Subspecialty Medicine | 796           | 901           | 1,697         | 53%        | 3,900          | 2.30        | 4.2%            | 3.0%                |
| Other                      | 6,127         | 9,626         | 15,753        | 61%        | 39,499         | 3.11        | 38.6%           | 30.6%               |
| <b>TOTAL</b>               | <b>19,048</b> | <b>21,741</b> | <b>40,789</b> | <b>53%</b> | <b>129,059</b> | <b>2.90</b> | <b>100.0%</b>   | <b>100.0%</b>       |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

In 2016/17, 53 percent (21,741) of all Toowoomba Hospital adult separations were same day separations. The SRG Chemotherapy had the highest percentage of same day separations (100 percent same day, 3,826) followed by the SRG Diagnostic GI Endoscopy (90 percent same day, 3,339) and the SRG Haematology (82 percent same day, 864).

**Table 62: Top 15 SRGs for percentage same day adult separations, Toowoomba Hospital, by Stay type, 2016/17**

| SRG 8                              | Overnight     | Same Day      | Total Seps    | % Same Day |
|------------------------------------|---------------|---------------|---------------|------------|
| Chemotherapy                       |               | 3,826         | 3,826         | 100%       |
| Diagnostic GI Endoscopy            | 365           | 3,339         | 3,704         | 90%        |
| Haematology                        | 185           | 864           | 1,049         | 82%        |
| Dermatology                        | 31            | 110           | 141           | 78%        |
| Dentistry                          | 62            | 176           | 238           | 74%        |
| Ophthalmology                      | 21            | 49            | 70            | 70%        |
| Gynaecology                        | 446           | 845           | 1,291         | 65%        |
| Plastic and Reconstructive Surgery | 196           | 342           | 538           | 64%        |
| Ear, Nose and Throat               | 556           | 896           | 1,452         | 62%        |
| Neurosurgery                       | 138           | 159           | 297           | 54%        |
| Non- Subspecialty Medicine         | 796           | 901           | 1,697         | 53%        |
| Renal Medicine                     | 244           | 247           | 491           | 50%        |
| Obstetrics                         | 2,564         | 2,549         | 5,113         | 50%        |
| Urology                            | 515           | 499           | 1,014         | 49%        |
| Vascular Surgery                   | 112           | 102           | 214           | 48%        |
| Other                              | 12,817        | 6,837         | 19,654        | 35%        |
| <b>Total</b>                       | <b>19,048</b> | <b>21,741</b> | <b>40,789</b> | <b>53%</b> |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates.

Of the total adult separations at Toowoomba Hospital in 2016/17, 12 percent (4,904) were chargeable separations. Within the SRG groupings SRG Geriatric Management (non-acute) accounted for the greatest percentage of chargeable separations (41 percent of Geriatric Management SRG separations, 38), followed by Rehabilitation (non-acute) (27 percent of Rehabilitation SRG separations, 33) and the SRG Other non-acute (27 percent of Other non-acute SRG separations, 64).

From the Top 14, the greatest volumes of chargeable patients were for SRG Cardiology (613 separations accounting for 25 percent of total SRG separations), and SRG Non-Speciality Surgery (523 separations accounting for 15 percent of total SRG separations).

**Table 63: Top 14 for SRGs adult separations, Toowoomba Hospital, by chargeable status, 2016/17**

| SRG 8                            | Chargeable   | Non-Chargeable | Total        | % Chargeable |
|----------------------------------|--------------|----------------|--------------|--------------|
| Geriatric Management (non-acute) | 38           | 54             | 92           | 41%          |
| Rehabilitation (non-acute)       | 33           | 89             | 122          | 27%          |
| Other Non-Acute                  | 64           | 175            | 239          | 27%          |
| Cardiology                       | 613          | 1,800          | 2,413        | 25%          |
| Rheumatology                     | 28           | 91             | 119          | 24%          |
| Neurology                        | 421          | 1,382          | 1,803        | 23%          |
| Non- Subspecialty Medicine       | 335          | 1,362          | 1,697        | 20%          |
| Immunology and Infections        | 179          | 823            | 1,002        | 18%          |
| Palliative (non-acute)           | 42           | 198            | 240          | 18%          |
| Respiratory Medicine             | 278          | 1,332          | 1,610        | 17%          |
| Neurosurgery                     | 51           | 246            | 297          | 17%          |
| Non- Subspecialty Surgery        | 523          | 2,878          | 3,401        | 15%          |
| Haematological Surgery           | 6            | 37             | 43           | 14%          |
| Gastroenterology                 | 91           | 578            | 669          | 14%          |
| Other                            | 2,202        | 24,840         | 27,042       | 8%           |
| <b>Total</b>                     | <b>4,904</b> | <b>35885</b>   | <b>40789</b> | <b>12%</b>   |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: excludes Renal Dialysis and Unqualified Neonates..

## 4.2.2 SERVICES FOR CHILDREN (0-14 YEARS)

In 2016/17, there were 3,722 total paediatric separations from Toowoomba Hospital, which accounted for a total of 8,506 total bed days. Of these, 36 percent (1,342) were same day separations and the ALOS across all patients were 2.3 days.

The SRG Ear, Nose and Throat accounted for the greatest number of separations (17.8 percent of total separations, 662), followed by the SRG Qualified Neonate (17.7 percent of total separations, 659) and the SRG Respiratory Medicine (15 percent of total separations, 557). Refer to Table 64, which represents the Top 10 SRGs in terms of total separations at Toowoomba Hospital in 2016/17.

**Table 64: Top 10 SRGs by total Paediatric separations (including bed days), Toowoomba Hospital, by SRG by stay type, 2016/17**

| SRG 8                      | Overnight+   | Same Day     | Total Seps   | % Same Day | Total Bed days | ALOS (days) | % of Total Seps | % of Total Bed days |
|----------------------------|--------------|--------------|--------------|------------|----------------|-------------|-----------------|---------------------|
| Ear, Nose and Throat       | 355          | 307          | 662          | 46%        | 770            | 1.16        | 17.8%           | 9.1%                |
| Qualified Neonate          | 638          | 21           | 659          | 3%         | 3,850          | 5.84        | 17.7%           | 45.3%               |
| Respiratory Medicine       | 373          | 184          | 557          | 33%        | 866            | 1.55        | 15.0%           | 10.2%               |
| Orthopaedics               | 241          | 145          | 386          | 38%        | 540            | 1.40        | 10.4%           | 6.3%                |
| Non- Subspecialty Surgery  | 205          | 144          | 349          | 41%        | 520            | 1.49        | 9.4%            | 6.1%                |
| Mental Health              | 68           | 124          | 192          | 65%        | 661            | 3.44        | 5.2%            | 7.8%                |
| Non- Subspecialty Medicine | 102          | 53           | 155          | 34%        | 225            | 1.45        | 4.2%            | 2.6%                |
| Neurosurgery               | 23           | 102          | 125          | 82%        | 133            | 1.06        | 3.4%            | 1.6%                |
| Dentistry                  | 9            | 72           | 81           | 89%        | 86             | 1.06        | 2.2%            | 1.0%                |
| Immunology and Infections  | 66           | 14           | 80           | 18%        | 162            | 2.03        | 2.1%            | 1.9%                |
| Other                      | 300          | 176          | 476          | 37%        | 693            | 1.46        | 12.8%           | 8.1%                |
| <b>TOTAL</b>               | <b>2,380</b> | <b>1,342</b> | <b>3,722</b> | <b>36%</b> | <b>8,506</b>   | <b>2.29</b> | <b>100.0%</b>   | <b>100.0%</b>       |

Source: AIM Base Case - Inpatient Projections (Base Year 2016-17) (Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Renal dialysis and unqualified Neonates.

The SRG Qualified Neonate (45.3 percent of total bed days, 3,850) accounted for the greatest number of bed days followed by the SRG Respiratory Medicine (10.2 percent of total bed days, 866) and the SRG Ear, Nose and Throat (9.1 percent of the total bed days, 770).

Within the top 10 SRGs for the total paediatric bed days, two SRG had an ALOS in excess of two (2) days. These are SRG Other Qualified neonate (ALOS 5.84 days) and SRG Mental Health (ALOS 3.44 days).

**Table 65: Top 10 SRGs by total Paediatric bed days (including separations), Toowoomba Hospital, by SRG by stay type, 2016/17**

| SRG 8                      | Overnight+   | Same Day     | Total Seps   | % Same Day | Total Bed days | ALOS (days) | % of Total Seps | % of Total Bed days |
|----------------------------|--------------|--------------|--------------|------------|----------------|-------------|-----------------|---------------------|
| Qualified Neonate          | 638          | 21           | 659          | 3%         | 3,850          | 5.84        | 17.7%           | 45.3%               |
| Respiratory Medicine       | 373          | 184          | 557          | 33%        | 866            | 1.55        | 15.0%           | 10.2%               |
| Ear, Nose and Throat       | 355          | 307          | 662          | 46%        | 770            | 1.16        | 17.8%           | 9.1%                |
| Mental Health              | 68           | 124          | 192          | 65%        | 661            | 3.44        | 5.2%            | 7.8%                |
| Orthopaedics               | 241          | 145          | 386          | 38%        | 540            | 1.40        | 10.4%           | 6.3%                |
| Non- Subspecialty Surgery  | 205          | 144          | 349          | 41%        | 520            | 1.49        | 9.4%            | 6.1%                |
| Non- Subspecialty Medicine | 102          | 53           | 155          | 34%        | 225            | 1.45        | 4.2%            | 2.6%                |
| Immunology and Infections  | 66           | 14           | 80           | 18%        | 162            | 2.03        | 2.1%            | 1.9%                |
| Neurosurgery               | 23           | 102          | 125          | 82%        | 133            | 1.06        | 3.4%            | 1.6%                |
| Endocrinology              | 52           | 15           | 67           | 22%        | 131            | 1.96        | 1.8%            | 1.5%                |
| Other                      | 257          | 233          | 490          | 48%        | 648            | 1.32        | 13.2%           | 7.6%                |
| <b>Grand Total</b>         | <b>2,380</b> | <b>1,342</b> | <b>3,722</b> | <b>36%</b> | <b>8,506</b>   | <b>2.29</b> | <b>100.0%</b>   | <b>100.0%</b>       |

Source: AIM Base Case - Inpatient Projections (Base Year 2016-17) (Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Renal dialysis and Unqualified Neonates.



In 2016/17, 36 percent (1,342) of all Toowoomba Hospital paediatric separations were same day separations (refer to Table 66 below). The SRG Chemotherapy had the highest percentage of same day separations (100 percent same day, 41) followed by the SRG Haematological surgery (100 percent same day, 1) and the SRG Dentistry (89 percent same day, 72).

From the top 15 SRGs for same day paediatric separation, the greatest volumes of same day patients were for SRG Ear, Nose and Throat (307 same day separations accounting for 46 percent of total SRG separations), and SRG Mental Health (124 same day separations accounting for 65 percent of total SRG separations).

**Table 66: Top 15 SRGs for percentage same day paediatric separations, Toowoomba Hospital, by Stay type, 2016/17**

| SRG 8                              | Overnight    | Same Day     | Total Seps   | % Same Day |
|------------------------------------|--------------|--------------|--------------|------------|
| Chemotherapy                       |              | 41           | 41           | 100%       |
| Haematological Surgery             |              | 1            | 1            | 100%       |
| Dentistry                          | 9            | 72           | 81           | 89%        |
| Neurosurgery                       | 23           | 102          | 125          | 82%        |
| Mental Health                      | 68           | 124          | 192          | 65%        |
| Ophthalmology                      | 3            | 5            | 8            | 63%        |
| Diagnostic GI Endoscopy            | 5            | 8            | 13           | 62%        |
| Plastic and Reconstructive Surgery | 7            | 10           | 17           | 59%        |
| Cardiology                         | 3            | 4            | 7            | 57%        |
| Drug and Alcohol                   | 12           | 16           | 28           | 57%        |
| Head and Neck Surgery              | 5            | 5            | 10           | 50%        |
| Obstetrics                         | 3            | 3            | 6            | 50%        |
| Ear, Nose and Throat               | 355          | 307          | 662          | 46%        |
| Dermatology                        | 10           | 8            | 18           | 44%        |
| Neurology                          | 37           | 28           | 65           | 43%        |
| Other                              | 1,840        | 608          | 2,448        | 25%        |
| <b>Grand Total</b>                 | <b>2,380</b> | <b>1,342</b> | <b>3,722</b> | <b>36%</b> |

Source: AIM Base Case 16/17 and Base Case - Inpatient Projections (Base Year 2016-17, ASGS 2011). Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Renal dialysis and unqualified Neonates.





## 4.3 HISTORICAL TRENDS IN SERVICE PROVISION

Historical trend for Toowoomba Hospital includes public patients treated in private facilities (outsourced patients). This was included to find the actual demand for the Toowoomba Hospital.

The top 10 SRGs of greatest volume at Toowoomba Hospital in 2016/17 were reviewed over the period 2012/13 to 2016/17 (the 'base year').

Of these SRGs, the SRG with the greatest growth in terms of the total number of separations was SRG Chemotherapy (3,855 separation increase), followed by SRG Diagnostic GI Endoscopy (3,288 separation increase) followed by SRG Non-Subspecialty Surgery (1,464 separation increase). In earlier years SRG Chemotherapy and SRG Diagnostic GI Endoscopy were coded as outpatient occasions of services, however subsequently these were coded as inpatient episode of care.

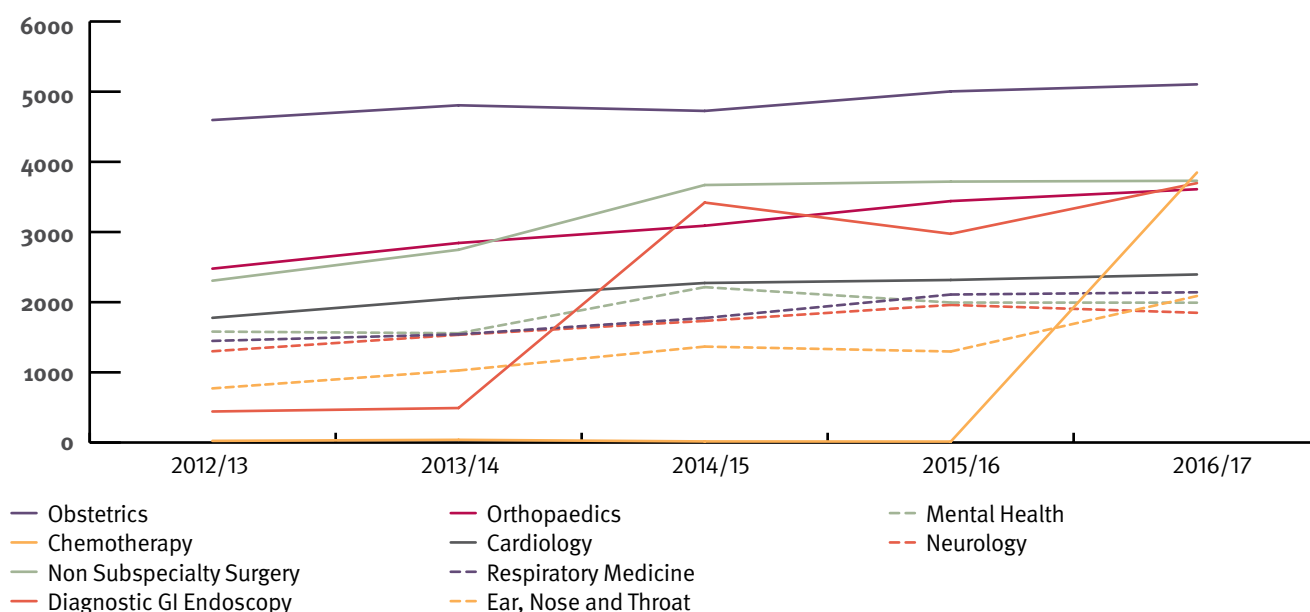
**Table 67: Change in separations, top 10 SRG with greatest total volume of separations in 2016/17, Toowoomba Hospital, by SRG by year (2012/13 – 2016-17)**

| Stay Type                | 2012/13       | 2013/14       | 2014/15       | 2015/16       | 2016/17       | Change (No.)  | Change (%) | AGR <sup>^</sup> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|------------------|
| Obstetrics               | 4,567         | 4,795         | 4,708         | 5,010         | 5,119         | 552           | 12%        | 3%               |
| Chemotherapy             | 12            | 27            | 4             | 2             | 3,867         | 3,855         | 32125%     | 324%             |
| Non Subspecialty Surgery | 2,286         | 2,739         | 3,688         | 3,738         | 3,750         | 1,464         | 64%        | 13%              |
| Diagnostic GI Endoscopy  | 429           | 479           | 3,437         | 2,987         | 3,717         | 3,288         | 766%       | 72%              |
| Orthopaedics             | 2,457         | 2,836         | 3,091         | 3,455         | 3,630         | 1,173         | 48%        | 10%              |
| Cardiology               | 1,759         | 2,058         | 2,290         | 2,336         | 2,420         | 661           | 38%        | 8%               |
| Respiratory Medicine     | 1,431         | 1,531         | 1,778         | 2,133         | 2,167         | 736           | 51%        | 11%              |
| Ear, Nose and Throat     | 757           | 1,020         | 1,371         | 1,299         | 2,114         | 1,357         | 179%       | 29%              |
| Mental Health            | 1,565         | 1,540         | 2,240         | 2,006         | 2,004         | 439           | 28%        | 6%               |
| Neurology                | 1,284         | 1,534         | 1,745         | 1,988         | 1,868         | 584           | 45%        | 10%              |
| Other                    | 9,233         | 10,435        | 12,215        | 13,538        | 13,855        | 4,622         | 50%        | 11%              |
| <b>TOTAL</b>             | <b>25,780</b> | <b>28,994</b> | <b>36,567</b> | <b>38,492</b> | <b>44,511</b> | <b>18,731</b> | <b>73%</b> | <b>15%</b>       |

<sup>\*</sup>Change in admission practice for SRG Chemotherapy from 2016/17 and SRG Diagnostic GI Endoscopy from 2014/15. <sup>^</sup> Annual Growth Rate. Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and excludes Renal dialysis and Unqualified neonates.

When this data is represented in figure form (rather than table form), highest volume of separations for 2016/17 can be seen for the SRG Obstetrics (5,119 total separations, representing 12 percent change), SRG Chemotherapy (3,867 total separations, representing >100 percent due to admission practice change) and SRG Non-Subspecialty Surgery (3,750 total separations, representing 64 percent change) between the years 2012/13 and 2016/17.

**Figure 14: Change in separations, top 10 SRGs with greatest total volume of separations in 2016/17, Toowoomba Hospital, by year (2012/13 – 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and excludes Renal Dialysis and Unqualified Neonates.

When the SRGs Chemotherapy and SRG Diagnostic GI Endoscopy are removed, the total change percentage between 2012/13 and 2016/17 is reduced from 73 percent to 46 percent, and the SRG Non-Specialty Medicine and SRG Gynaecology are moved to top ten high total volume separations.

The SRG with the greatest growth in terms of the total number of separations were the SRG Non-Subspecialty Surgery (1,464 separation increase, representing 64 percent change), followed by SRG Ear, Nose and Throat (1,357 separation increase, representing 179 percent change) and the SRG Orthopaedics (1,173 separation increase, representing 48 percent change). For SRG Ear, Nose and Throat, a marked increase is noted between 2015/16 and 2016/17. This might mean several different things (including a change in admission practice), and consequently requires discussion with local staff prior to any conclusions being drawn. The SRG with the greatest growth as a percentage of change was the SRG Ear, Nose and Throat (179 percent) followed by SRG Non-Specialty medicine (84 percent) and SRG Non-Subspecialty surgery (64 percent).

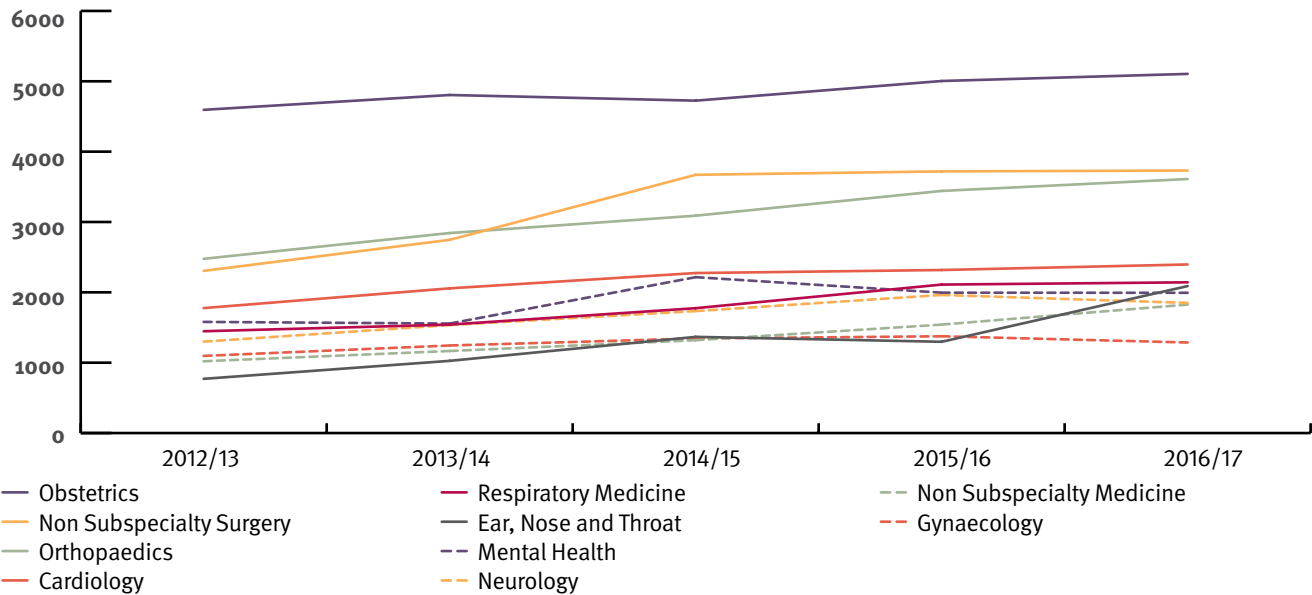
**Table 68: Change in separations, top 10 SRG with greatest total volume of separations in 2016/17, Toowoomba Hospital, by year (2012/13 – 2016-17). Excluding high volume procedures.**

| Stay Type                 | 2012/13       | 2013/14       | 2014/15       | 2015/16       | 2016/17       | Change (No.)  | Change (%) | AGR <sup>^</sup> |
|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|------------------|
| Obstetrics                | 4,567         | 4,795         | 4,708         | 5,010         | 5,119         | 552           | 12%        | 3%               |
| Non Subspecialty Surgery  | 2,286         | 2,739         | 3,688         | 3,738         | 3,750         | 1,464         | 64%        | 13%              |
| Orthopaedics              | 2,457         | 2,836         | 3,091         | 3,455         | 3,630         | 1,173         | 48%        | 10%              |
| Cardiology                | 1,759         | 2,058         | 2,290         | 2,336         | 2,420         | 661           | 38%        | 8%               |
| Respiratory Medicine      | 1,431         | 1,531         | 1,778         | 2,133         | 2,167         | 736           | 51%        | 11%              |
| Ear, Nose and Throat      | 757           | 1,020         | 1,371         | 1,299         | 2,114         | 1,357         | 179%       | 29%              |
| Mental Health             | 1,565         | 1,540         | 2,240         | 2,006         | 2,004         | 439           | 28%        | 6%               |
| Neurology                 | 1,284         | 1,534         | 1,745         | 1,988         | 1,868         | 584           | 45%        | 10%              |
| Non Subspecialty Medicine | 1,006         | 1,159         | 1,320         | 1,553         | 1,852         | 846           | 84%        | 16%              |
| Gynaecology               | 1,082         | 1,252         | 1,367         | 1,403         | 1,301         | 219           | 20%        | 5%               |
| Other                     | 7,145         | 8,024         | 9,528         | 10,582        | 10,702        | 3,557         | 50%        | 11%              |
| <b>TOTAL</b>              | <b>25,339</b> | <b>28,488</b> | <b>33,126</b> | <b>35,503</b> | <b>36,927</b> | <b>11,588</b> | <b>46%</b> | <b>10%</b>       |

<sup>^</sup> Annual Growth Rate. Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and excludes Chemotherapy, Diagnostic GI Endoscopy, Renal Dialysis and Unqualified Neonates.

When this data is represented in figure form (rather than table form), the highest volume of separations can be seen for the SRG Obstetrics (5,119 total separations, representing 12 percent change), SRG Non-Subspecialty Surgery (3,750 total separations, representing 64 percent change) and SRG Orthopaedics (3,630 total separations, representing 48 percent change) between the years 2012/13 and 2016/17.

**Figure 15: Change in separations, top 10 SRGs with greatest total volume of separations in 2016/17, Toowoomba Hospital, by year (2012/13 – 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal Dialysis and Unqualified Neonates.

Emergency admissions increased at an annual growth rate of 9 percent compared to the non-emergency admissions at Toowoomba Hospital which increased at a rate of 6 percent over the seven year period (2009/10 to 2016/17).

**Table 69: Change in separations by Emergency status – Toowoomba Hospital**

| Emergency Status | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | Change (No.) | Change (%) | AGR^ |
|------------------|---------|---------|---------|---------|---------|---------|---------|---------|--------------|------------|------|
| Emergency        | 10595   | 10963   | 11891   | 13335   | 15456   | 17626   | 19400   | 19624   | 9029         | 85%        | 9%   |
| Non-emergency    | 11878   | 12555   | 12498   | 11998   | 13029   | 15328   | 15470   | 17303   | 5425         | 46%        | 6%   |
| Grand Total      | 22473   | 23518   | 24389   | 25333   | 28485   | 32954   | 34870   | 36927   | 14454        | 64%        | 7%   |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.



**Figure 16: Change in separations by Emergency status – Toowoomba Hospital**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal Dialysis and Unqualified Neonates.

### 4.3.1 SRG OBSTETRICS

The following tables and figures take a closer look at SRG Obstetrics, SRG Non-Subspecialty Surgery and SRG Orthopaedics at the ESRG level.

SRG Obstetrics is a grouping of four separate ESRG. The ESRG with the greatest volume of separations in each year from 2009/10 to 2016/17 is ESRG Ante-natal Admission followed by ESRG Vaginal Delivery. The ESRG with the lowest volume of separations in each year from 2009/10 to 2016/17 is ESRG Post-Natal Admission.

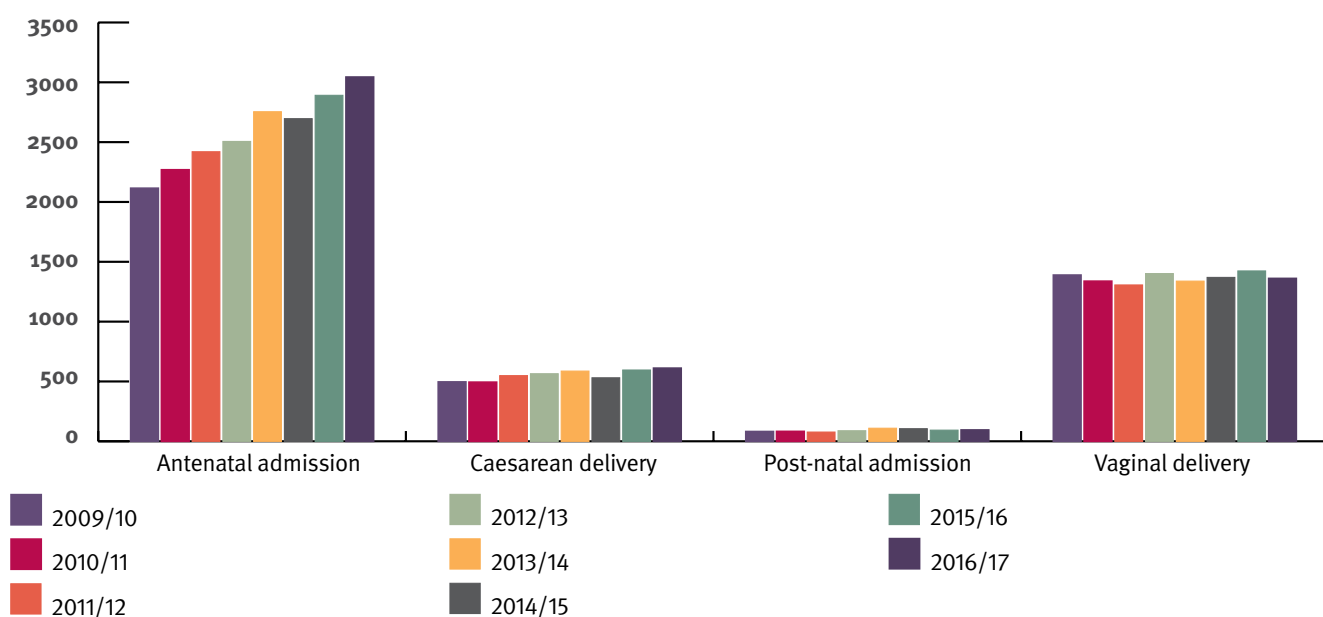
Table 70 shows that over this period, three of the four ESRGs have increased in volume of separations, while the remaining one has remained steady. The ESRG with the greatest volume increase over the period is ESRG Ante-natal Admission. Whilst caesarean deliveries made up 26% of deliveries in 2009/10 this has increased to 31% of deliveries in 2016/17. Caesarean delivery as a proportion of caesarean and vaginal delivery, has increased by 5% between 2009/10 and 2016/17.

**Table 70: Change in separations, SRG Obstetrics, by ESRG by year (2009/10 to 2016/17)**

| ESRG 8               | 2009/10     | 2010/11     | 2011/12     | 2012/13     | 2013/14     | 2014/15     | 2015/16     | 2016/17     |
|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Ante-natal Admission | 2116        | 2270        | 2420        | 2506        | 2754        | 2696        | 2891        | 3044        |
| Caesarean Delivery   | 499         | 497         | 551         | 567         | 589         | 533         | 598         | 614         |
| Post-natal Admission | 85          | 86          | 80          | 91          | 112         | 108         | 96          | 98          |
| Vaginal Delivery     | 1391        | 1340        | 1308        | 1403        | 1340        | 1371        | 1425        | 1363        |
| <b>TOTAL</b>         | <b>4091</b> | <b>4193</b> | <b>4359</b> | <b>4567</b> | <b>4795</b> | <b>4708</b> | <b>5010</b> | <b>5119</b> |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates!

**Figure 17: Change in separations SRG Obstetrics, by ESRG by year (2009/10 to 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.

Table 71, Table 72 and Figure 18 and Figure 19 show these total volumes split between same day separations and overnight separations.

For same day separations, a steady rise in the trendline for ESRG Ante-natal admission can be seen from 2009/10 to 2016/17. This might mean several different things, and consequently requires discussion with local area staff prior to any conclusions being drawn.

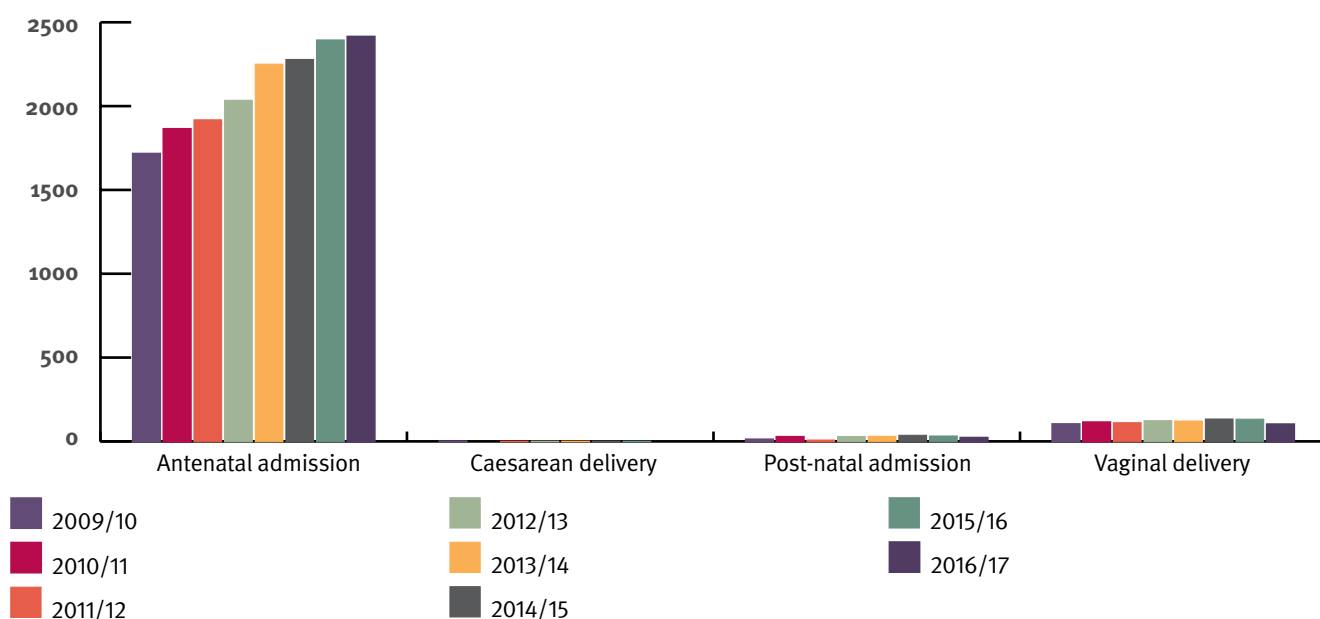
**Table 71: Change in same day separations, SRG Obstetrics, by ESRG by year (2009/10 to 2016/17)**

| ESRG 8               | 2009/10      | 2010/11      | 2011/12      | 2012/13      | 2013/14      | 2014/15      | 2015/16      | 2016/17      |
|----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Ante-natal Admission | 1,718        | 1,865        | 1,918        | 2,034        | 2,249        | 2,277        | 2,393        | 2,414        |
| Caesarean Delivery   | 1            |              | 1            | 1            | 1            | 1            | 1            |              |
| Post-natal Admission | 19           | 34           | 14           | 35           | 36           | 42           | 38           | 29           |
| Vaginal Delivery     | 110          | 121          | 117          | 129          | 127          | 139          | 138          | 109          |
| <b>TOTAL</b>         | <b>1,848</b> | <b>2,020</b> | <b>2,050</b> | <b>2,199</b> | <b>2,413</b> | <b>2,459</b> | <b>2,570</b> | <b>2,552</b> |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.



**Figure 18: Change in same day separations SRG Obstetrics, by ESRG by year (2009/10 to 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2016/17 (file supplied by Qld DoH, November 2018) and AIM Base Case 16/17 (File supplied by Qld DoH, November 2018). Note: Includes public patients in private hospital

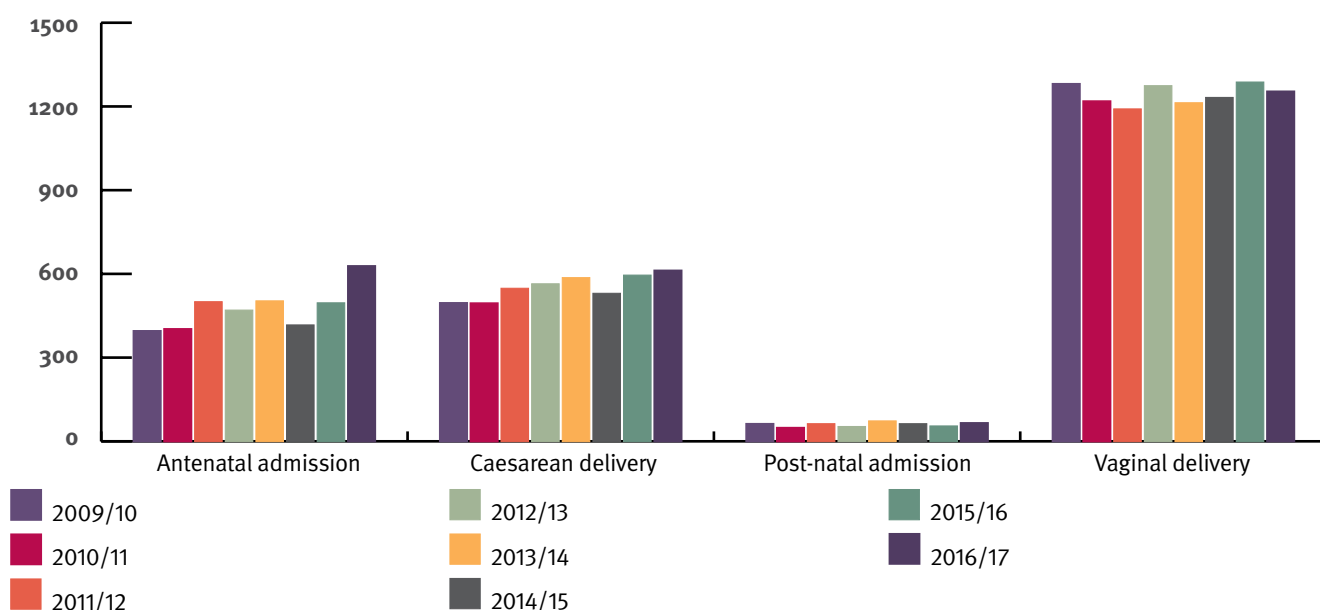
For overnight separations, a relatively constant trendline (growth or decline) pattern across all ESRGs except ESRG Ante-natal admission. For ESRG Ante-natal admission there has been greater growth (in terms of volume of separations) in same day separations than overnight separations. This consisted of a total of 3,044 separations (630 overnight separations and 2,414 same day separations for 2016/17.

**Table 72: Change in overnight separations, SRG Obstetrics, by ESRG by year (2009/10 to 2016/17)**

| ESRG 8               | 2009/10      | 2010/11      | 2011/12      | 2012/13      | 2013/14      | 2014/15      | 2015/16      | 2016/17      |
|----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Ante-natal Admission | 398          | 405          | 502          | 472          | 505          | 419          | 498          | 630          |
| Caesarean Delivery   | 498          | 497          | 550          | 566          | 588          | 532          | 597          | 614          |
| Post-natal Admission | 66           | 52           | 66           | 56           | 76           | 66           | 58           | 69           |
| Vaginal Delivery     | 1,281        | 1,219        | 1,191        | 1,274        | 1,213        | 1,232        | 1,287        | 1,254        |
| <b>TOTAL</b>         | <b>2,243</b> | <b>2,173</b> | <b>2,309</b> | <b>2,368</b> | <b>2,382</b> | <b>2,249</b> | <b>2,440</b> | <b>2,567</b> |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018.

**Figure 19: Change in overnight separations SRG Obstetrics, by ESRG by year (2009/10 to 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018.

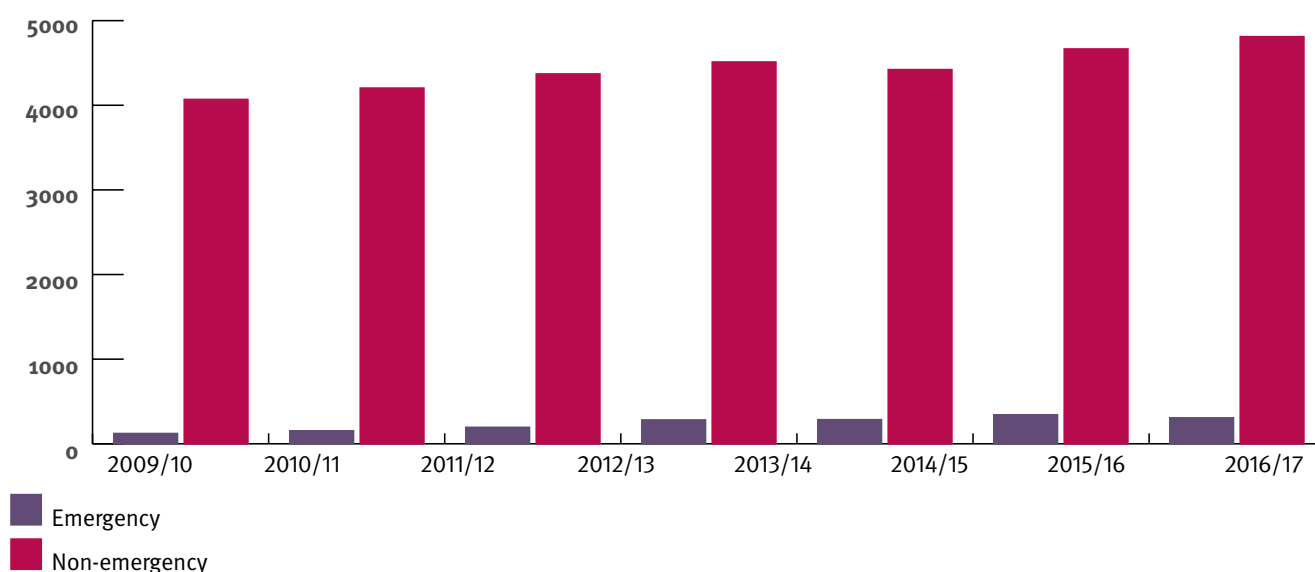
Emergency admissions for SRG Obstetrics increased at an annual growth rate of 11 percent per annum compared to the non-emergency admissions at Toowoomba Hospital which increased at a rate of 3 percent per annum over the seven-year period (2009/10 to 2016/17). Table 73 illustrates that the majority of the Obstetrics admission were non-emergency type over the years.

**Table 73: Change in separations for SRG Obstetrics by Emergency status – Toowoomba Hospital**

| Emergency Status   | 2009/10      | 2010/11      | 2011/12      | 2012/13      | 2013/14      | 2014/15      | 2015/16      | 2016/17      | Change (No.) | Change (%) | AGR <sup>^</sup> |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|------------------|
| Emergency          | 153          | 124          | 156          | 197          | 284          | 287          | 345          | 309          | 156          | 102%       | 11%              |
| Non-emergency      | 3,938        | 4,069        | 4,203        | 4,370        | 4,511        | 4,421        | 4,665        | 4,810        | 872          | 22%        | 3%               |
| <b>Grand Total</b> | <b>4,091</b> | <b>4,193</b> | <b>4,359</b> | <b>4,567</b> | <b>4,795</b> | <b>4,708</b> | <b>5,010</b> | <b>5,119</b> | <b>1,028</b> | <b>25%</b> | <b>3%</b>        |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.

**Figure 20: Change in separations for SRG Obstetrics by Emergency status – Toowoomba Hospital**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.

## 4.3.2 SRG NON-SPECIALTY SURGERY

SRG Non-Specialty Surgery is a grouping of eight separate ESRGs. The ESRG with the greatest volume of separations in each year from 2009/10 to 2016/17 is ESRG Digestive System Diagnosis incl. GI obstruction, followed by ESRG Abdominal pain. The ESRG with the lowest volume of separations in each year from 2009/10 to 2016/17 is ESRG Peritoneal Adhesiolysis.

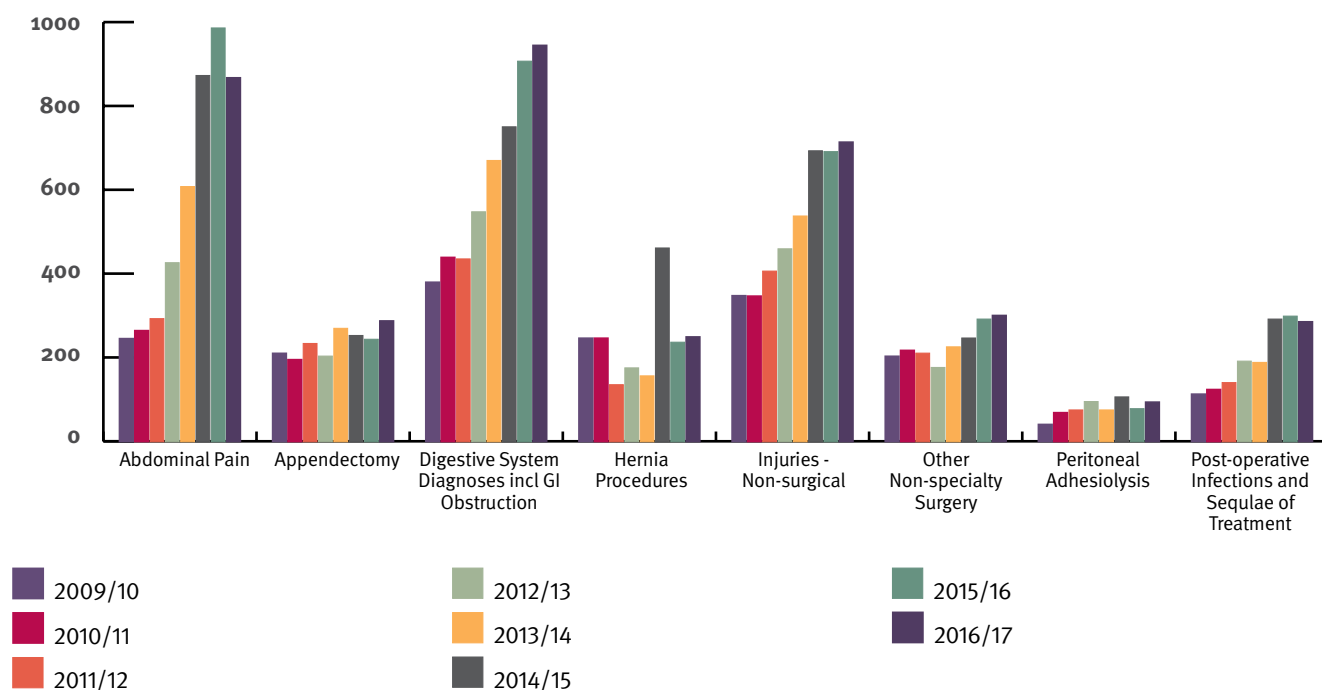
Figure 21 shows that over this period, the ESRG with the greatest volume increase is ESRG Digestive System Diagnosis incl. GI Obstruction, with a relatively large jump in separations between 2014/15 and 2015/16 (growth from 750 separations in 2014/15 to 906 separations in 2015/16). This is closely followed by ESRG Abdominal Pain.

**Table 74: Change in separations, SRG Non-Specialty Surgery, by ESRG by year (2009/10 to 2016/17)**

| ESRG 8  | 2009/10      | 2010/11      | 2011/12      | 2012/13      | 2013/14      | 2014/15      | 2015/16      | 2016/17      |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Abdominal Pain                                      | 247          | 266          | 294          | 427          | 608          | 872          | 985          | 867          |
| Appendectomy  | 212          | 197          | 235          | 205          | 271          | 254          | 245          | 289          |
| Digestive System Diagnoses incl GI Obstruction      | 381          | 440          | 436          | 548          | 670          | 750          | 906          | 944          |
| Hernia Procedures                                   | 248          | 248          | 137          | 177          | 158          | 462          | 238          | 251          |
| Injuries - Non-surgical                             | 349          | 348          | 407          | 460          | 538          | 693          | 691          | 714          |
| Other Non-Specialty Surgery                         | 205          | 219          | 212          | 178          | 227          | 248          | 293          | 302          |
| Peritoneal Adhesiolysis                             | 43           | 71           | 77           | 97           | 77           | 108          | 80           | 96           |
| Post-operative Infections and Sequelae of Treatment | 115          | 126          | 142          | 193          | 190          | 293          | 300          | 287          |
| <b>Grand Total</b>                                  | <b>1,800</b> | <b>1,915</b> | <b>1,940</b> | <b>2,285</b> | <b>2,739</b> | <b>3,680</b> | <b>3,738</b> | <b>3,750</b> |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.

**Figure 21: Change in separations SRG Non-Specialty Surgery, by ESRG by year (2009/10 to 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.

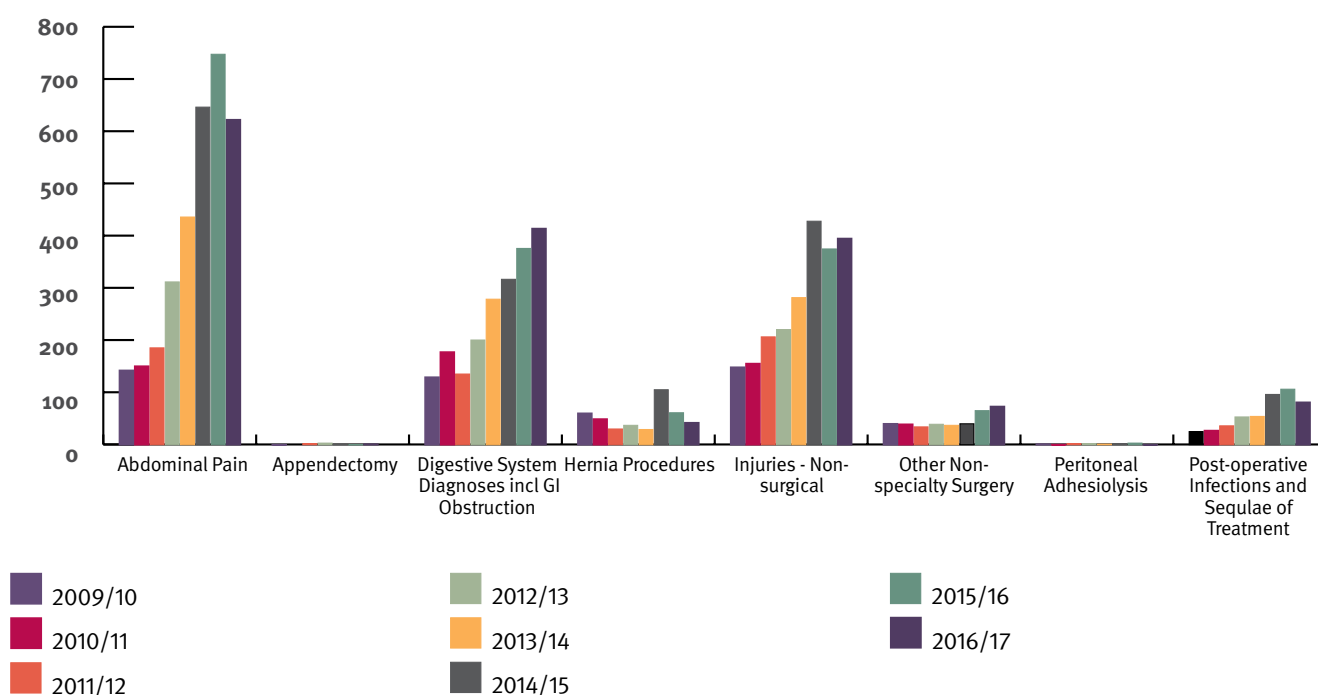
Table 75, Table 76 and Figure 22 and Figure 23 show these total volumes split between same day separations and overnight separations. The ESRG with the greatest volume of same day separations is ESRG Abdominal pain. Same day separations have been growing for the ESRG Digestive System Diagnosis including GI Obstruction across the period.

**Table 75: Change in same day separations, SRG Non-Specialty Surgery, by ESRG by year (2009/10 to 2016/17)**

| ESRG 8  | 2009/10    | 2010/11    | 2011/12    | 2012/13    | 2013/14      | 2014/15      | 2015/16      | 2016/17      |
|---|------------|------------|------------|------------|--------------|--------------|--------------|--------------|
| Abdominal Pain                                      | 143        | 151        | 186        | 312        | 436          | 646          | 747          | 622          |
| Appendectomy  | 1          |            | 3          | 4          | 2            | 1            | 2            |              |
| Digestive System Diagnoses incl GI Obstruction      | 130        | 178        | 136        | 201        | 279          | 317          | 376          | 414          |
| Hernia Procedures                                   | 61         | 50         | 31         | 38         | 30           | 106          | 62           | 43           |
| Injuries - Non-surgical                             | 149        | 156        | 207        | 221        | 282          | 428          | 375          | 395          |
| Other Non-Specialty Surgery                         | 41         | 40         | 35         | 40         | 38           | 41           | 66           | 74           |
| Peritoneal Adhesiolysis                             | 2          | 1          | 3          | 3          | 2            | 3            | 4            | 1            |
| Post-operative Infections and Sequelae of Treatment | 26         | 28         | 37         | 54         | 55           | 97           | 107          | 82           |
| <b>Grand Total</b>                                  | <b>553</b> | <b>604</b> | <b>638</b> | <b>873</b> | <b>1,124</b> | <b>1,639</b> | <b>1,739</b> | <b>1,631</b> |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.

**Figure 22: Change in same day separations SRG Non-Specialty Surgery, by ESRG by year (2009/10 to 2016/17)**



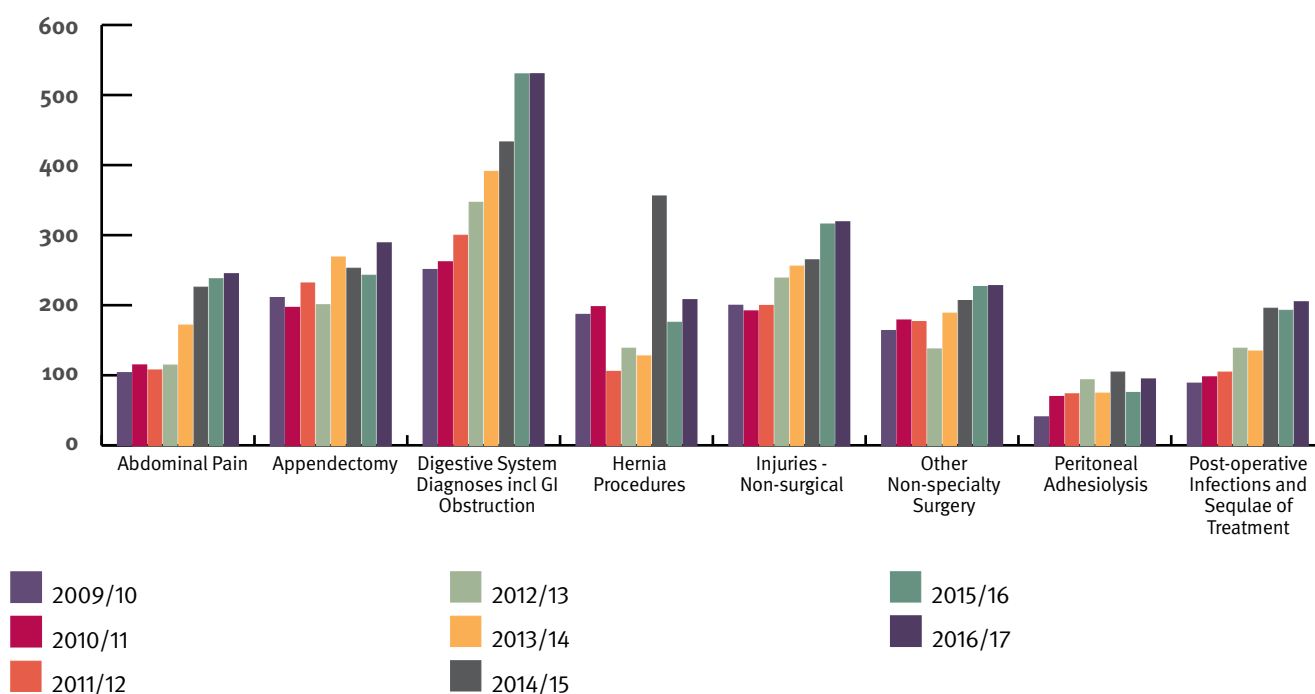
Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.

For overnight separations, a relatively constant trendline across all ESRGs can be seen, except for ESRG Hernia procedures, which increased considerably in volume in 2014/15 and declined in 2015/16. The ESRG with significant volumes of overnight separations is ESRG Digestive System Diagnosis incl. GI Obstruction with 530 overnight separations for 2016/17.

**Table 76: Change in overnight separations, SRG Non-Specialty Surgery, by ESRG by year (2009/10 to 2016/17)**

| ESRG 8  | 2009/10      | 2010/11      | 2011/12      | 2012/13      | 2013/14      | 2014/15      | 2015/16      | 2016/17      |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Abdominal Pain                                      | 104          | 115          | 108          | 115          | 172          | 226          | 238          | 245          |
| Appendectomy  | 211          | 197          | 232          | 201          | 269          | 253          | 243          | 289          |
| Digestive System Diagnoses incl GI Obstruction      | 251          | 262          | 300          | 347          | 391          | 433          | 530          | 530          |
| Hernia Procedures                                   | 187          | 198          | 106          | 139          | 128          | 356          | 176          | 208          |
| Injuries - Non-surgical                             | 200          | 192          | 200          | 239          | 256          | 265          | 316          | 319          |
| Other Non-specialty Surgery                         | 164          | 179          | 177          | 138          | 189          | 207          | 227          | 228          |
| Peritoneal Adhesiolysis                             | 41           | 70           | 74           | 94           | 75           | 105          | 76           | 95           |
| Post-operative Infections and Sequelae of Treatment | 89           | 98           | 105          | 139          | 135          | 196          | 193          | 205          |
| <b>Grand Total</b>                                  | <b>1,247</b> | <b>1,311</b> | <b>1,302</b> | <b>1,412</b> | <b>1,615</b> | <b>2,041</b> | <b>1,999</b> | <b>2,119</b> |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.

**Figure 23: Change in overnight separations SRG Non-Specialty Surgery, by ESRG by year (2009/10 to 2016/17)**

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Note: Includes public patients in private hospital and Excludes Chemotherapy, Diagnostic GI Endoscopy, Renal dialysis and unqualified neonates.

Emergency admissions for SRG Non-Specialty Surgery increased at an annual growth rate of 13 percent compared to the non-emergency admissions at Toowoomba Hospital which increased at a rate of 4.6 percent over the seven-year period (2009/10 to 2016/17). Figure 24 illustrates that a majority of the SRG Non-Sub Specialty Surgery admission were emergency type over the years.

**Table 77: Change in separations for SRG Non-Sub Specialty Surgery by Emergency status – Toowoomba Hospital**

| Emergency Status   | 2009/10      | 2010/11      | 2011/12      | 2012/13      | 2013/14      | 2014/15      | 2015/16      | 2016/17      | Change (No.) | Change (%)  | AGR <sup>^</sup> |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------------|
| Emergency          | 1,362        | 1,465        | 1,602        | 1,925        | 2,370        | 2,941        | 3,221        | 3,148        | 1,786        | 131%        | 13%              |
| Non-emergency      | 438          | 450          | 338          | 360          | 369          | 739          | 517          | 602          | 164          | 37%         | 5%               |
| <b>Grand Total</b> | <b>1,800</b> | <b>1,915</b> | <b>1,940</b> | <b>2,285</b> | <b>2,739</b> | <b>3,680</b> | <b>3,738</b> | <b>3,750</b> | <b>1,950</b> | <b>108%</b> | <b>11%</b>       |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018.



**Figure 24: Change in separations for SRG Non-Sub Specialty Surgery by Emergency status – Toowoomba Hospital**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018.

### 4.3.3 SRG ORTHOPAEDICS

SRG Orthopaedics is a grouping of seven separate ESRG. The ESRG with the greatest volume of separations in each year from 2009/10 to 2016/17 is ESRG Other Orthopaedics - Non-Surgical followed by Other Orthopaedics - Surgical. The ESRG with the lowest volume of separations in each year from 2009/10 to 2016/17 is ESRG Local Excision and Removal of Internal Fixation Device excluding Hip and Femur.

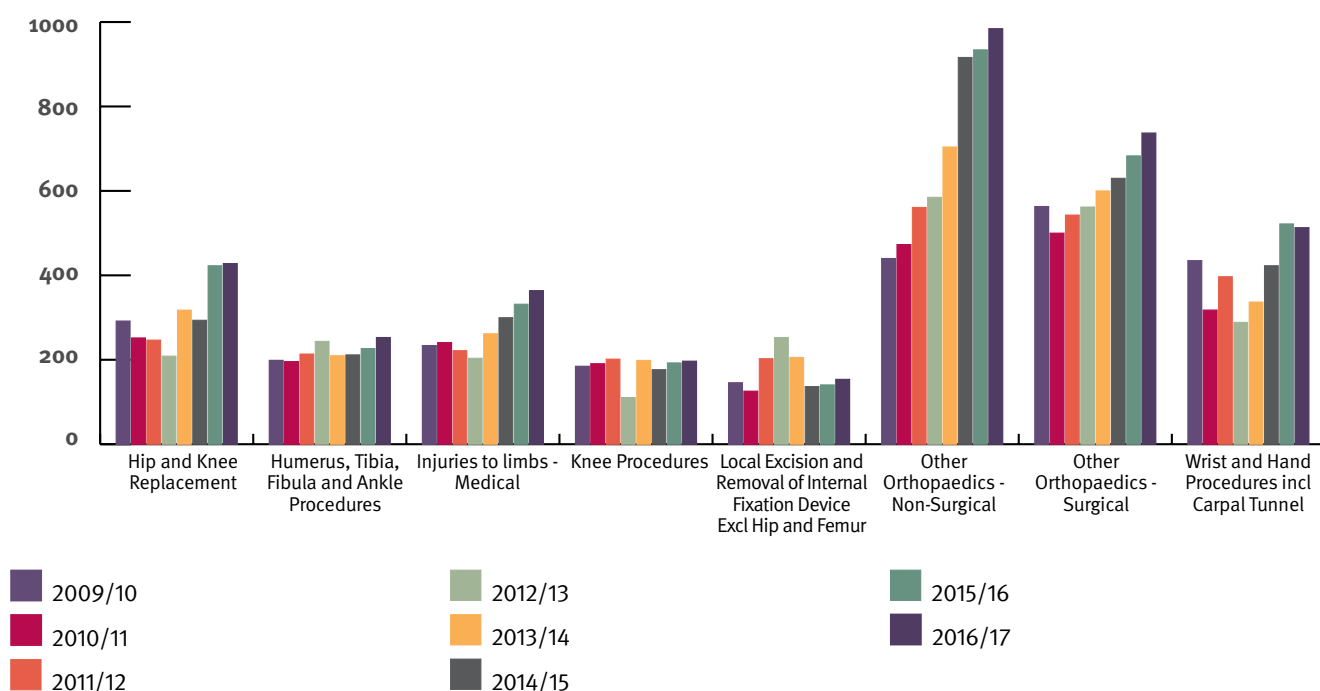
Table 78 shows that over this period, four of the eight ESRGs have increased in volume of separations, while the remaining had changes over years. The ESRG with the greatest volume increase over the period is ESRG Other Orthopaedics - Non-Surgical followed by SRG Other Orthopaedics – Surgical and SRG Hip and Knee Replacement.

**Table 78: Change in separations, SRG Orthopaedics, by ESRG by year (2009/10 to 2016/17)**

| ESRG 8  | 2009/10      | 2010/11      | 2011/12      | 2012/13      | 2013/14      | 2014/15      | 2015/16      | 2016/17      |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Hip and Knee Replacement  | 292          | 252          | 247          | 209          | 318          | 294          | 423          | 428          |
| Humerus, Tibia, Fibula and Ankle Procedures                               | 199          | 196          | 214          | 244          | 210          | 212          | 227          | 253          |
| Injuries to limbs - Medical   | 234          | 241          | 222          | 204          | 262          | 300          | 332          | 364          |
| Knee Procedures   | 185          | 191          | 202          | 111          | 199          | 177          | 193          | 197          |
| Local Excision and Removal of Internal Fixation Device Excl Hip and Femur | 146          | 126          | 203          | 253          | 206          | 137          | 141          | 154          |
| Other Orthopaedics - Non-Surgical   | 440          | 473          | 561          | 585          | 704          | 916          | 934          | 984          |
| Other Orthopaedics - Surgical   | 563          | 500          | 543          | 562          | 600          | 630          | 683          | 737          |
| Wrist and Hand Procedures incl Carpal Tunnel                              | 435          | 318          | 397          | 289          | 337          | 423          | 522          | 513          |
| <b>Grand Total</b>  | <b>2,494</b> | <b>2,297</b> | <b>2,589</b> | <b>2,457</b> | <b>2,836</b> | <b>3,089</b> | <b>3,455</b> | <b>3,630</b> |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018.

**Figure 25: Change in separations SRG Orthopaedics, by ESRG by year (2009/10 to 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018.

Table 79, Table 80 and Figure 26 and Figure 27 show these total volume split between same day separations and overnight separations.

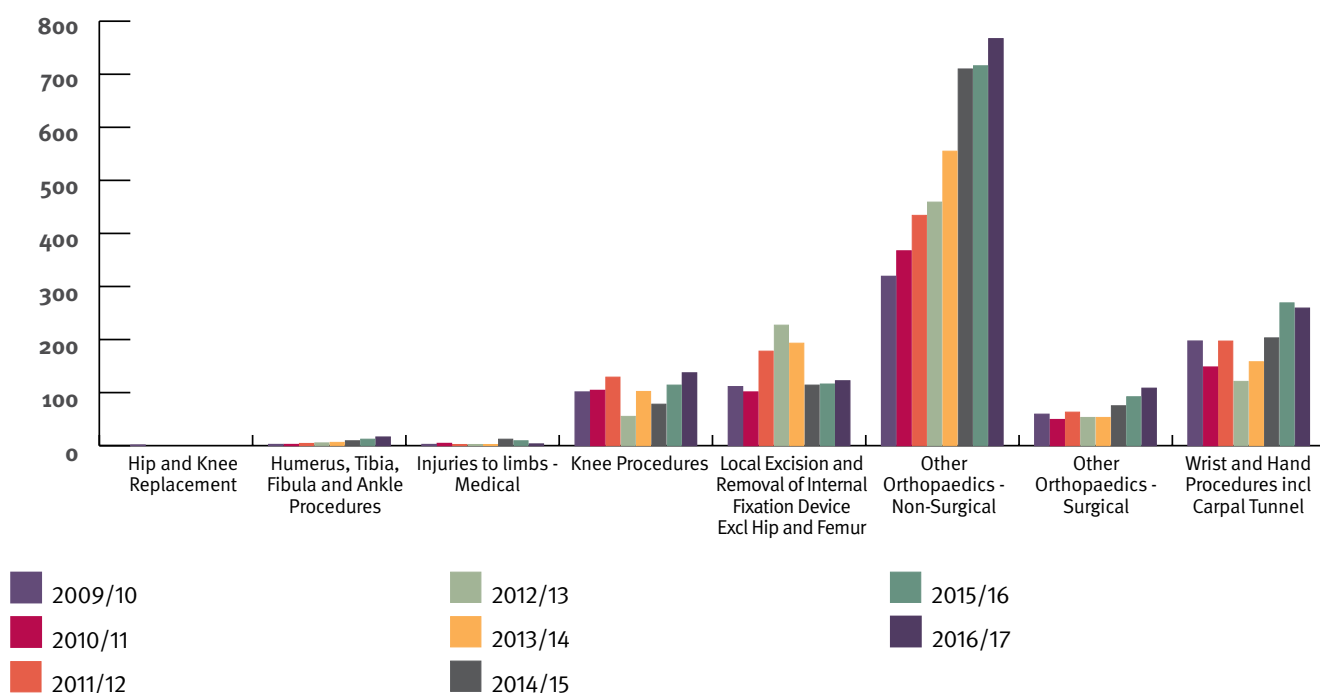
For same day separations, a steady rise in the trendline for ESRG Other Orthopaedics - Non-Surgical can be seen from 2009/10 to 2016/17. ESRG Other Orthopaedics - Non-Surgical had highest number of same day separations. This might mean several different things, and consequently requires discussion with local area staff prior to any conclusions being drawn. ESRG Hip and Knee Replacement, ESRG Humerus, Tibia, Fibula and Ankle Procedures and ESRG Injuries to limbs - Medical had the lowest number of same day separations.

**Table 79: Change in same day separations, SRG Orthopaedics, by ESRG by year (2009/10 to 2016/17)**

| ESRG 8  | 2009/10    | 2010/11    | 2011/12      | 2012/13    | 2013/14      | 2014/15      | 2015/16      | 2016/17      |
|---|------------|------------|--------------|------------|--------------|--------------|--------------|--------------|
| Hip and Knee Replacement  |            | 1          |              |            |              |              |              |              |
| Humerus, Tibia, Fibula and Ankle Procedures                               | 2          | 2          | 4            | 5          | 6            | 9            | 12           | 16           |
| Injuries to limbs - Medical   | 2          | 4          | 2            | 2          | 2            | 12           | 9            | 3            |
| Knee Procedures   | 101        | 104        | 129          | 55         | 102          | 78           | 114          | 137          |
| Local Excision and Removal of Internal Fixation Device Excl Hip and Femur | 111        | 101        | 178          | 227        | 193          | 114          | 116          | 122          |
| Other Orthopaedics - Non-Surgical   | 319        | 367        | 434          | 459        | 555          | 710          | 716          | 767          |
| Other Orthopaedics - Surgical   | 59         | 49         | 63           | 53         | 53           | 75           | 92           | 108          |
| Wrist and Hand Procedures incl Carpal Tunnel                              | 197        | 148        | 197          | 121        | 158          | 203          | 269          | 259          |
| <b>Grand Total</b>  | <b>791</b> | <b>776</b> | <b>1,007</b> | <b>922</b> | <b>1,069</b> | <b>1,201</b> | <b>1,328</b> | <b>1,412</b> |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018.

**Figure 26: Change in same day separations SRG Orthopaedics, by ESRG by year (2009/10 to 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 Published by the State of Queensland (Queensland Health), 2017 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018.

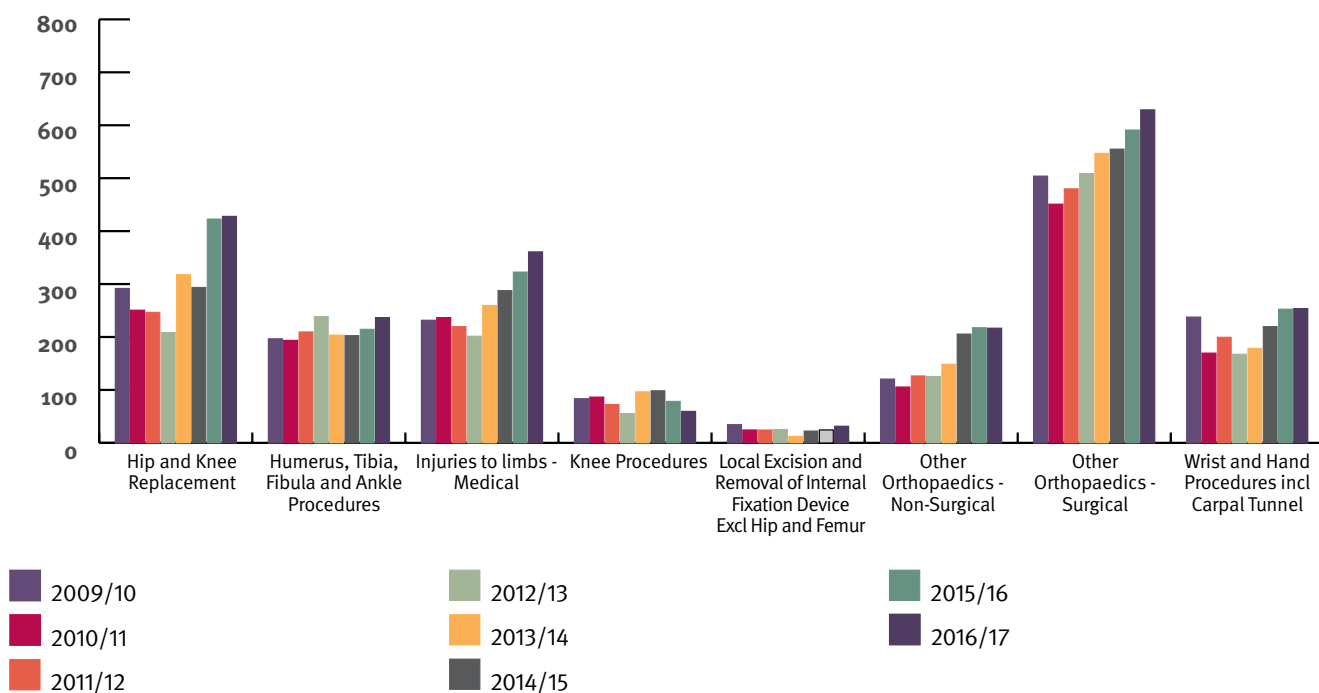
For overnight separations, a relatively constant trendline (growth or decline) pattern across all ESRG except ESRG Knee Procedures. For ESRG Other Orthopaedics - Non-Surgical there has been greater growth (in terms of volume of separations) in same day separations than overnight separations. This consisted of a total separation of 984 separations (217 overnight separations and 767 same day separations for 2016/17).

**Table 80: Change in overnight separations, SRG Orthopaedics, by ESRG by year (2009/10 to 2016/17)**

| ESRG 8  | 2009/10      | 2010/11      | 2011/12      | 2012/13      | 2013/14      | 2014/15      | 2015/16      | 2016/17      |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Hip and Knee Replacement  | 292          | 251          | 247          | 209          | 318          | 294          | 423          | 428          |
| Humerus, Tibia, Fibula and Ankle Procedures                               | 197          | 194          | 210          | 239          | 204          | 203          | 215          | 237          |
| Injuries to limbs - Medical   | 232          | 237          | 220          | 202          | 260          | 288          | 323          | 361          |
| Knee Procedures   | 84           | 87           | 73           | 56           | 97           | 99           | 79           | 60           |
| Local Excision and Removal of Internal Fixation Device Excl Hip and Femur | 35           | 25           | 25           | 26           | 13           | 23           | 25           | 32           |
| Other Orthopaedics - Non-Surgical   | 121          | 106          | 127          | 126          | 149          | 206          | 218          | 217          |
| Other Orthopaedics - Surgical   | 504          | 451          | 480          | 509          | 547          | 555          | 591          | 629          |
| Wrist and Hand Procedures incl Carpal Tunnel                              | 238          | 170          | 200          | 168          | 179          | 220          | 253          | 254          |
| <b>Grand Total</b>  | <b>1,703</b> | <b>1,521</b> | <b>1,582</b> | <b>1,535</b> | <b>1,767</b> | <b>1,888</b> | <b>2,127</b> | <b>2,218</b> |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 published by the State of Queensland (Queensland Health), 2017 and AIM Base Case 16/17 (File supplied by Qld DoH, November 2018). Note: Includes Public Patients in Private Hospital

**Figure 27: Change in overnight separations SRG Orthopaedics, by ESRG by year (2009/10 to 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 published by the State of Queensland (Queensland Health), 2017 and AIM Base Case 16/17 (File supplied by Qld DoH, November 2018). Note: Includes Public Patients in Private Hospital

Emergency separations for SRG Orthopaedics increased at an annual growth rate of 8 percent compared to the non-emergency separations at Toowoomba Hospital which increased at a rate of 3 percent over the seven-year period (2009/10 to 2016/17). Figure 28 illustrates that emergency separations for SRG orthopaedics had increased over time with higher proportions of emergency separations to non-emergency separations from 2014/15.

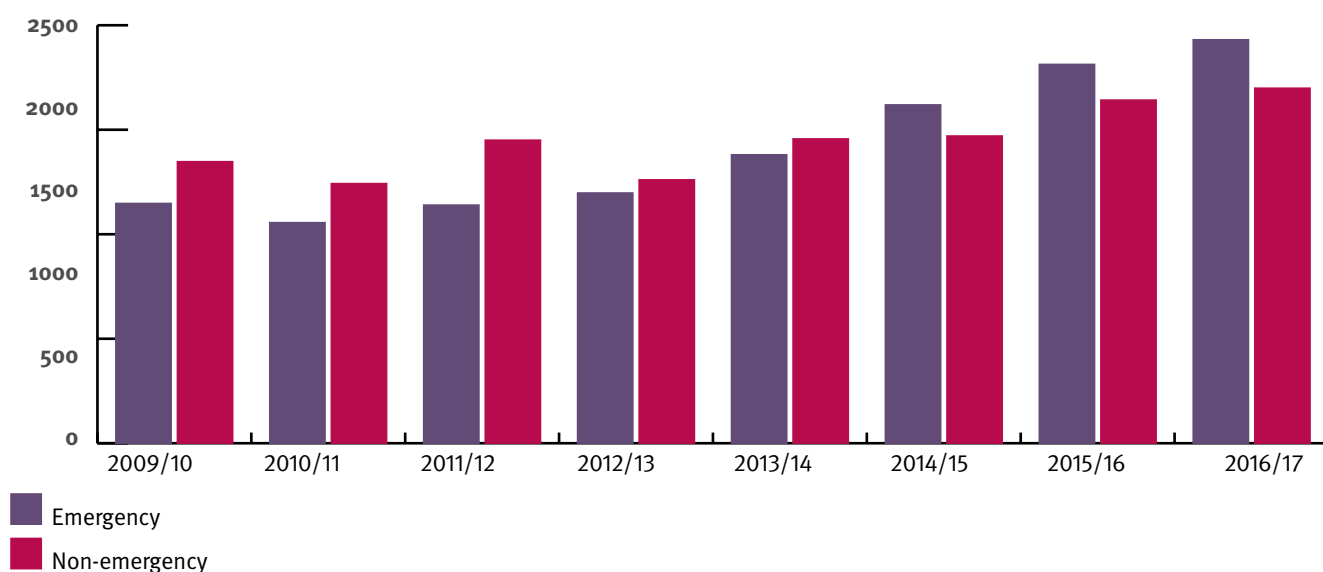
**Table 81: Change in separations for SRG Orthopaedics by Emergency status – Toowoomba Hospital**

| Emergency Status   | 2009/10      | 2010/11      | 2011/12      | 2012/13      | 2013/14      | 2014/15      | 2015/16      | 2016/17      | Change (No.) | Change (%) | AGR <sup>a</sup> |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|------------------|
| Emergency          | 1,147        | 1,055        | 1,139        | 1,197        | 1,380        | 1,619        | 1,813        | 1,931        | 784          | 68%        | 8%               |
| Non-emergency      | 1,347        | 1,242        | 1,450        | 1,260        | 1,456        | 1,470        | 1,642        | 1,699        | 352          | 26%        | 3%               |
| <b>Grand Total</b> | <b>2,494</b> | <b>2,297</b> | <b>2,589</b> | <b>2,457</b> | <b>2,836</b> | <b>3,089</b> | <b>3,455</b> | <b>3,630</b> | <b>1,136</b> | <b>46%</b> | <b>6%</b>        |

Source: Cross Section – Inpatient Projections, Base Year 2015/16 published by the State of Queensland (Queensland Health), 2017 and AIM Base Case 16/17 (File supplied by Qld DoH, November 2018). Note: Includes Public Patients in Private Hospital



**Figure 28: Change in separations for SRG Orthopaedics by Emergency status – Toowoomba Hospital**



Source: Cross Section – Inpatient Projections, Base Year 2015/16 published by the State of Queensland (Queensland Health), 2017 and AIM Base Case 16/17 (File supplied by Qld DoH, November 2018). Note: Includes Public Patients in Private Hospital.

## 4.3.4 AVERAGE LENGTH OF STAY

Table 82 and Figure 29 show that between 2012/13 and 2016/17, ALOS for the Top 10 SRG of greatest total volume (in separations) at Toowoomba Hospital in 2016/17 has reduced. The single exception for this is for SRG Neurology, which has increased slightly by 0.42 days over the period.

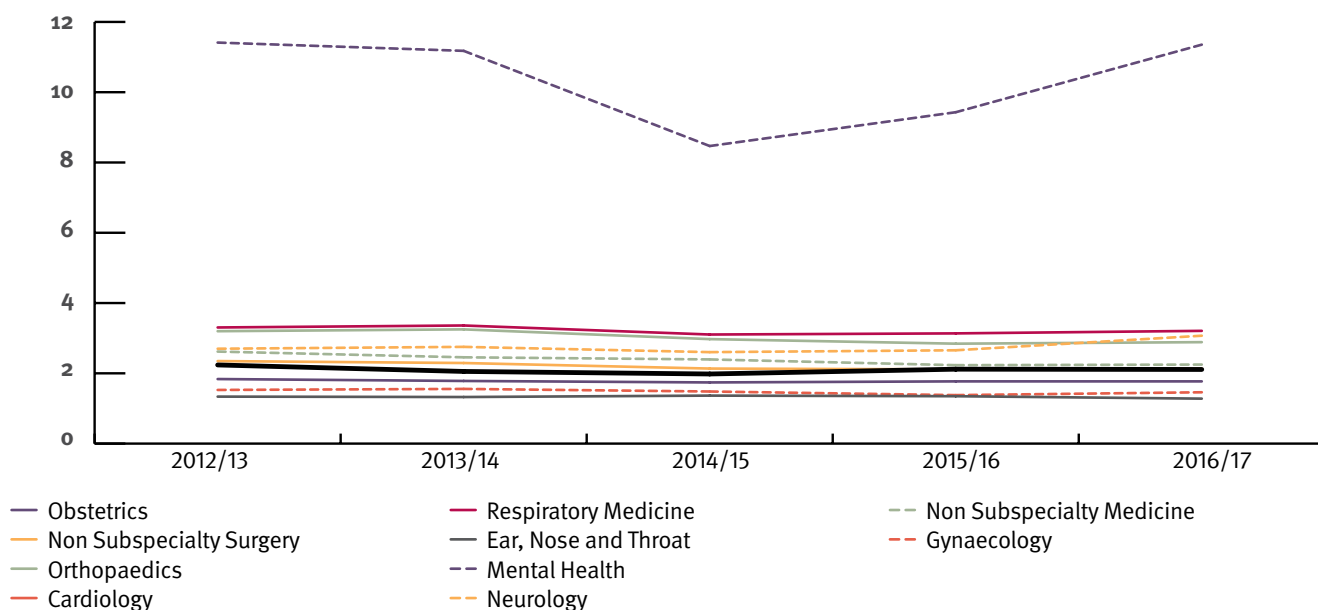
**Table 82: ALOS for Top 10 SRGs with Greatest Total Volume of Separations in 2016/17, Toowoomba Hospital, by SRG by Year (2012/13 – 2016/17)**

| SRG 8                      | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | Change (ALOS) |
|----------------------------|---------|---------|---------|---------|---------|---------------|
| Cardiology                 | 2.28    | 2.05    | 1.96    | 2.13    | 2.12    | -0.16         |
| Ear, Nose and Throat       | 1.36    | 1.34    | 1.41    | 1.38    | 1.26    | -0.10         |
| Gynaecology                | 1.56    | 1.60    | 1.50    | 1.36    | 1.47    | -0.09         |
| Mental Health              | 11.43   | 11.19   | 8.43    | 9.41    | 11.37   | -0.06         |
| Neurology                  | 2.69    | 2.75    | 2.58    | 2.64    | 3.11    | 0.42          |
| Non- Subspecialty Medicine | 2.66    | 2.47    | 2.40    | 2.21    | 2.23    | -0.44         |
| Non- Subspecialty Surgery  | 2.39    | 2.32    | 2.12    | 2.09    | 2.12    | -0.28         |
| Obstetrics                 | 1.88    | 1.79    | 1.72    | 1.77    | 1.77    | -0.10         |
| Orthopaedics               | 3.23    | 3.29    | 2.97    | 2.82    | 2.87    | -0.36         |
| Respiratory Medicine       | 3.33    | 3.40    | 3.08    | 3.12    | 3.21    | -0.12         |

Note: SRG Chemotherapy and SRG Diagnostic GI Endoscopy were removed from the top 10 selections as data source is not the tool for projection of these two SRGs and there was a change in admission practice for SRG Chemotherapy from 2016/17 and SRG Diagnostic GI Endoscopy from 2014/15. Source: Cross Section – Inpatient Projections, Base Year 2016/17 (file supplied by Qld DoH, November 2018) and AIM Base Case 16/17 (File supplied by Qld DoH, November 2018). Note: Includes Public Patients in Private Hospital.



**Figure 29: ALOS for Top 10 SRGs with Greatest Total Volume of Separations in 2016/17, Toowoomba Hospital, by SRG by Year (2012/13 – 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2016/17 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Excludes Prolonged Ventilation, Renal Dialysis, Unqualified Neonates.

### 4.3.5 SRG WITH DECLINING VOLUMES

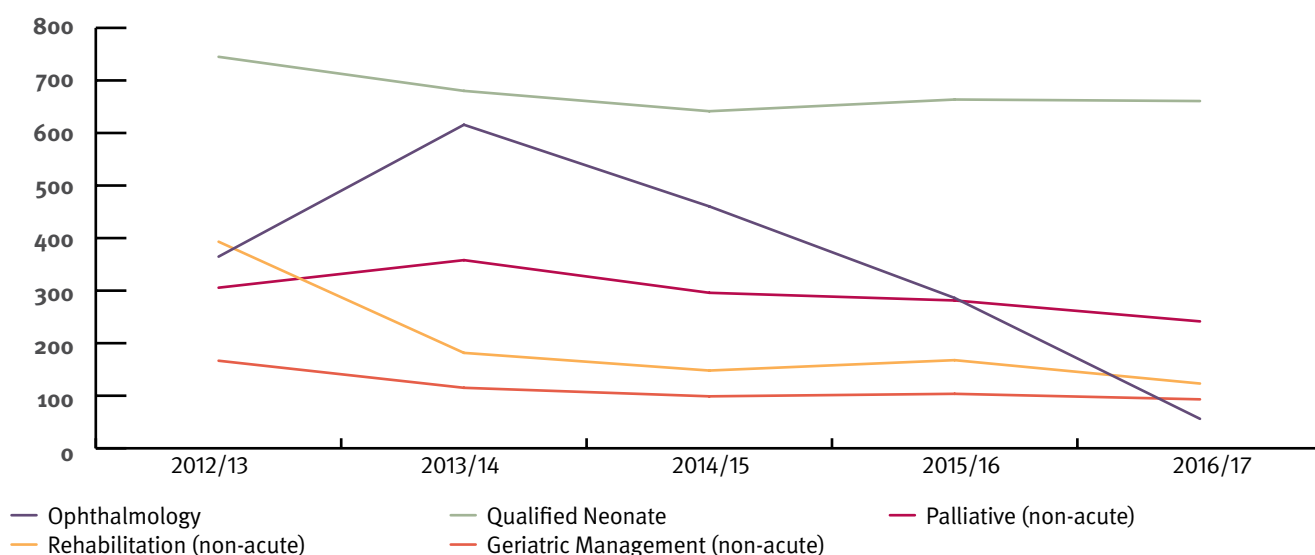
Five SRGs were identified as having a lower number of total separations in 2016/17 than in 2012/13. While separations for the SRG Ophthalmology increased in 2013/14 the overall trend over the four-year period remains one of decline for these SRGs. Refer Table 83 and Figure 30.

**Table 83: SRG with a Declining No. of Total Separations, Toowoomba Hospital, by SRG by Year (2012/13 – 2016/17)**

|                                  | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | Change (No) | Change (%) | AGR <sup>^</sup> |
|----------------------------------|---------|---------|---------|---------|---------|-------------|------------|------------------|
| Ophthalmology                    | 365     | 617     | 461     | 286     | 55      | -310        | -85%       | -38%             |
| Rehabilitation (non-acute)       | 395     | 181     | 147     | 167     | 122     | -273        | -69%       | -25%             |
| Qualified Neonate                | 746     | 679     | 639     | 662     | 659     | -87         | -12%       | -3%              |
| Geriatric Management (non-acute) | 169     | 115     | 98      | 103     | 92      | -77         | -46%       | -14%             |
| Palliative (non-acute)           | 306     | 360     | 296     | 281     | 240     | -66         | -22%       | -6%              |

Source: Cross Section – Inpatient Projections, Base Year 2016/17 and Base case - Inpatient Projections, Base Year 2016/17 Published by the State of Queensland (Queensland Health), 2018. Excludes Prolonged Ventilation, Renal Dialysis, Unqualified Neonates. The table above excludes outsourced activity and would notably affect Ophthalmology figures. <sup>^</sup>Annual Growth Rate.

**Figure 30: Change in Separations, SRG with Declining Volumes, Toowoomba Hospital, by SRG by Year (2012/13 – 2016/17)**



Source: Cross Section – Inpatient Projections, Base Year 2016/17 and AIM Base Case 16/17 Published by the State of Queensland (Queensland Health), 2018. Excludes Prolonged Ventilation, Renal Dialysis, Unqualified Neonates. The table above excludes outsourced activity and would notably affect Ophthalmology figures. Note: Includes Public Patients in Private Hospital.

### 4.3.6 SEPARATIONS BY CHARGEABLE STATUS

The Annual growth rate of the chargeable patients between 2012/13 and 2016/17 was 15 percent increase. The total chargeable patients have grown by 107 percent (2,785), with a noticeable 120 percent change (1,264) and 22 percent annual growth rate for chargeable same day patients for the period. The change percentage for overnight patient was 98 percent (1,521).

**Table 84: SRG by Chargeable and Overnight and Same Day Status, Toowoomba Hospital, by Year (2012/13 – 2016/17)**

| Chargeable Status  | Stay Type                   | 2012/13       | 2013/14       | 2014/15       | 2015/16       | 2016/17       | Change (No)   | Change (%)  | AGR <sup>^</sup> |
|--------------------|-----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|------------------|
| Chargeable         | Overnight+                  | 1,558         | 2,284         | 2,577         | 3,009         | 3,079         | 1521          | 98%         | 19%              |
|                    | Same Day                    | 1,057         | 1,643         | 2,337         | 2,095         | 2,321         | 1,264         | 120%        | 22%              |
|                    | <b>Chargeable Total</b>     | <b>2,615</b>  | <b>3,927</b>  | <b>4,914</b>  | <b>5,104</b>  | <b>5,400</b>  | <b>2,785</b>  | <b>107%</b> | <b>20%</b>       |
| Non-chargeable     | Overnight+                  | 14,839        | 15,578        | 16,581        | 17,855        | 18,349        | 3,510         | 24%         | 5%               |
|                    | Same Day                    | 8,272         | 9,321         | 13,279        | 14,840        | 20,762        | 12,490        | 151%        | 26%              |
|                    | <b>Non-chargeable Total</b> | <b>23,111</b> | <b>24,899</b> | <b>29,860</b> | <b>32,695</b> | <b>39,111</b> | <b>16,000</b> | <b>69%</b>  | <b>14%</b>       |
| <b>Grand Total</b> |                             | <b>25,726</b> | <b>28,826</b> | <b>34,774</b> | <b>37,799</b> | <b>44,511</b> | <b>18,785</b> | <b>73%</b>  | <b>15%</b>       |

<sup>^</sup>Annual Growth Rate. Source: Cross Section – Inpatient Projections, Base Year 2016/17 and AIM Base Case 16/17 Data prepared by Health Service Research, Analysis and Modelling Unit (HSRAM), System Planning Branch, Strategy, Policy and Planning Division (SPPD), Department of Health, Queensland. Published by the State of Queensland (Queensland Health), 2018. Note: Includes Public Patients in Private Hospital and Excludes Renal dialysis and unqualified neonates.