


# Queensland Colorectal Cancer Quality Index

Indicators of  
safe, quality cancer care

Colorectal cancer care in public and  
private hospitals

2005 - 2014

 **cancer alliance**  
queensland

*the*  
**Partnership**  
Queensland Cancer Control  
and Quality Partnership

**qccat**  
Queensland Cancer Control  
Advisory Team

**qcr**  
Queensland Cancer  
Register



Queensland Colorectal Cancer Quality Index has been developed under the auspices of the Queensland Cancer Control Safety and Quality Partnership (The Partnership). The members of The Partnership include: Professor David E Theile AO (Chair), Professor Joanne Aitken, Dr Marie-Frances Burke, Aniko Cooper, Professor Kwun Fong, Adjunct Professor Liz Kenny AO, Shoni Philpot, Professor Mark Smithers, Associate Professor Euan Walpole and Associate Professor David Wyld.

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## Message from the Chair

It is well recognised that study of both process measures and risk adjusted outcomes can be agents for health improvement. Audits conducted by individual clinicians, units, hospitals, and health systems all provide varying dimensions of critical appraisal, and these can all be productive in guiding improvement. Much published literature exists on various quality indicators for the management of colorectal cancer. However, most studies are hospital-based or regional, with incomplete or uncertain case ascertainment. Complete population-based studies are rare.

The role of The Partnership is to identify where service improvement could enhance patients' experience of the cancer services provided in Queensland. Here we present a whole-of-population experience for all colon and rectal cancers diagnosed in Queensland in the 10 years from 2005 to 2014. Metrics of patient demography, presentation, treatments, clinical process, and outcomes are assembled and presented in over 90 displays. All metrics raise questions about how improvement may be achieved. Apart from patient demographics, the metrics are indicators of the quality of care.

Reports are presented to clinical units and to hospital administrators in the belief that improvement is the responsibility of everyone from individual clinicians to teams and systems. Comparison of performance by each hospital with de-identified data has led to practice improvements by clinical units and hospital administrations, including case selection that better suits hospital capability.

The Partnership does not categorically describe issues or prescribe actions, but believes strongly that the initiative for improvement should remain in the hands of the clinical care providers.

Surgical resection is the definitive treatment for colorectal cancer. The primary considerations are ensuring Queenslanders receive best possible care access and the best quality resectional surgery. The immediate indicators of quality of surgery are surgical survival, absence of surgical complications, and oncologic adequacy of resection. The details required for valid comparisons include patient characteristics and cancer staging.

Our previous publications, including an audit of people diagnosed in 2012 (<https://qccat.health.qld.gov.au/reports-publications/>), have studied surgical treatments and outcomes specifically. In this presentation, radiation therapy and systemic therapy have also been studied. Also added are displays of surgical complications.

Future improvement rests significantly with multidisciplinary decision making and care, and the ideal instrument for this is MDTs. Clinicians are the strongest advocates for service improvement, and we encourage you all to join with us in Queensland's cancer control safety and quality program to develop within your hospitals strategies for continued improvement.



A handwritten signature in dark ink, which appears to read 'David Theile'. The signature is fluid and cursive.

Professor David E Theile AO  
Chair  
Queensland Cancer Control Safety and Quality Partnership  
(The Partnership)

## Key Findings

- Over the 10 years 18,497 Queenslanders were diagnosed with colon cancer and 8,443 with rectal cancer.
- For both categories the number of cases presenting has increased, but the age standardised rates have decreased marginally.
- Age standardised mortality has gratifyingly improved for both colon and rectal cases over the 10 years.
- Surgical resection rates for colon cancers has remained steady at 81% and for rectal cancers at 77%.
- Post-surgical resection 5-year survival was 64% for colon cases and 69% for rectal cases.
- Adjuvant systemic therapy for colon cancers has been steady at 25%, but has risen somewhat for Stage III cases to now be 53%.
- For rectal cancer, use of adjuvant systemic therapy has risen slightly to 33%, and somewhat more markedly for Stage III cases to 60%.
- The use of neo-adjuvant radiation therapy for rectal cancers has risen from 25% in the first 5 years (2005-2009) to 35% in the second 5 years (2010-2014).
- Surgical mortality at 30 days has shown a slight reduction through the two 5-year segments. The 2010-2014 figures at 2.6% for colon and 1.3% for rectal are very creditable by international standards.
- The only metric which showed a deterioration of performance from the first to the second 5-year period was “Time to first treatment”. This deterioration was greater in the public sector than in the private.
- Time from diagnosis to start of treatment was markedly greater in the public sector than in the private sector.
- Peri-operative mortality was marginally greater in the public sector than in the private sector.
- Age provided significant disadvantage for post-operative mortality, but only marginal adverse influence on 1 and 2 year survival.
- Comorbidities adversely affected all mortality and survival outcomes.
- Patients resident in rural areas were not disadvantaged with respect to time to first major resection, post-operative mortality, or survival.
- Socio-economic status, or Indigenous status did not significantly influence any process or outcome metrics.
- Laparoscopic approach to resection increased progressively over the 10 years for colonic cases, to be 53% for patients diagnosed in 2014. Private hospital laparoscopic rate was higher – 65% compared to 41%.
- For rectal cases, laparoscopy rates increased to 2012, then reduced to 39% for patients diagnosed in 2014, when public and private hospitals were the same.
- After colon resection, 5% required surgical or radiologic intervention during the same admission and 2.4% were re-admitted for such interventions within 30 days of discharge.



- After rectal resection, 6.8% required interventions during the same admission and 4% were re-admitted for such interventions.
- Anastomotic leak rates were 2.7% for colonic cases and 4.7% for rectal cases.
- For colonic cancer cases, 8.6% had stomas at resection, and a further 2.5% had stomas post resection. Long term stomas were 4.6% at 1 year and 1.9% at 5 years.
- For rectal cancer cases, 14% had abdominoperineal resections. A further 41% had de-functioning stomas at resection, and 3.2% had subsequent de-functioning stomas. The 5-year stoma rate for all rectal cases was 13%.
- Use of MDTs has progressively increased in the public system with 67 MDTs using QOOL to support their MDT processes and data collection. State-wide coverage of MDT is not available and there is known missing data in areas such as the private sector and Townsville.

## What is the Queensland Colorectal Cancer Quality Index?

The Queensland Colorectal Cancer Quality Index report has been developed for public and private cancer services. It is an initiative of the Colorectal Cancer Sub-committee, part of the Cancer Alliance Queensland which brings together the Cancer Control Safety and Quality Partnership (The Partnership), Queensland Cancer Control Analysis Team (QCCAT) and the Queensland Cancer Register (QCR) (<https://qccat.health.qld.gov.au>). The report tracks Queensland's progress delivering safe, quality cancer care and will be provided to all public and private hospitals that perform colorectal cancer surgery. The Queensland Colorectal Cancer Quality Index highlights areas for improvement and identifies the areas where cancer services are performing well. At present The Queensland Colorectal Cancer Quality Index has six dimensions and 36 indicators.

Quality Dimensions		
1	Effective	Achieving the best outcomes for Queenslanders with colorectal cancer and providing cancer services based on recommended guidelines
2	Efficient	Optimally using resources to achieve desired outcomes.
3	Safe	Avoiding and preventing adverse outcomes or injuries during healthcare management.
4	Accessible	Making health services available in the most suitable setting in a reasonable time.
5	Equitable	Providing care and ensuring health status does not vary in quality because of personal characteristics (social, economic, cultural and demographic)
6	Quality of care	Applying best interventions with greatest effectiveness

The Queensland Colorectal Cancer Quality Index reports on ten years of data from 2005-2014, however there may have been changes more recently that are not captured by the time periods reported. Regardless, The Queensland Colorectal Cancer Quality Index provides an important baseline for monitoring current investments in cancer care and changes in clinical practice. It also enables us to reflect on past surgery improvement programs and identify areas where a renewed effort or new approach may be required. This report uses the Australian Institute of Health and Welfare (AIHW) hospital peer groupings to aggregate and present hospital results. Appendix 1 provides a description of each hospital peer grouping.

## Why develop The Queensland Colorectal Cancer Quality Index?

Performance indicators linked to clinical outcomes that align with national benchmarking is a key service action in the Cancer Care State-wide Health Service Strategy, 2014. The Queensland Colorectal Cancer Quality Index has been developed by the Queensland Cancer Control Analysis Team (QCCAT) and lead colorectal clinicians and participants under the auspices of the Queensland Cancer Control Safety and Quality Partnership (The Partnership). The Cancer Alliance Queensland supports a clinician-led, safety and quality program for cancer across Queensland. The Partnership was gazetted as a quality assurance committee under Part 6, Division 1 of the Hospital and Health Boards Act 2011 in 2004. A key role of the Partnership is to provide cancer clinicians, Hospital and Health Services (HHS), hospitals, treatment facilities and Queensland Health with cancer information and tools to deliver the best patient care.

The Queensland Colorectal Cancer Quality Index is a tool for reviewing and comparing information on the safety and quality of cancer surgery and outcomes. The Partnership has prepared The Queensland Colorectal Cancer Quality Index to assist cancer clinicians and administrators to improve patient care. In some cases it may prompt a change in the delivery and organisation of cancer services to improve health outcomes and performance. The Queensland Colorectal Cancer Quality Index includes public and private cancer care services.

## Where has the data come from?

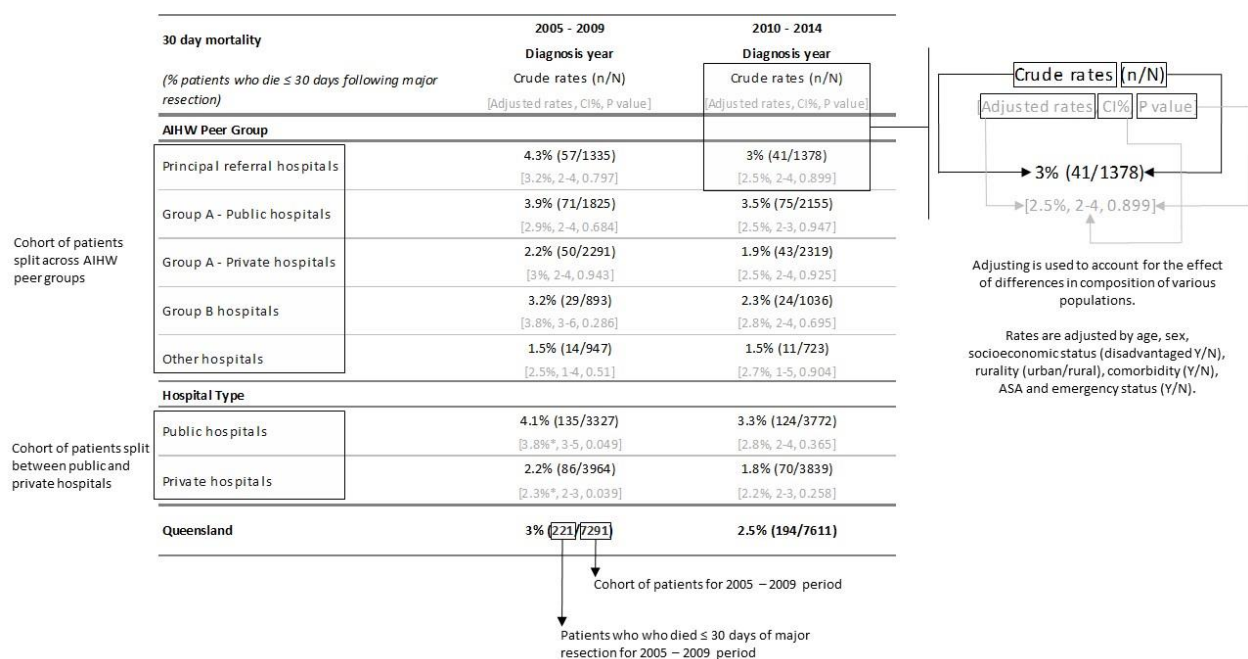
Since 2004 QCCAT have compiled and analysed a vast amount of information about cancer incidence, mortality, surgical survival and surgery. Key to QCCAT's program of work is the ability to match and link population based cancer information on an individual patient basis. This matched and linked data is housed in the Queensland Oncology Repository (QOR), a resource managed by QCCAT. This centralised repository compiles and collates data from a range of source systems including the Queensland Cancer Registry, hospital admissions data, death data, treatment systems, public and private pathology, hospital clinical data systems and QOOL™. QOR contains approximately 50 million records between 1982 – 2014. Our matching and linking processes provide the 540,000+ matched and linked records of cancer patients between 1982 – 2014 which provide the data for The Queensland Colorectal Cancer Quality Index.

The Queensland Colorectal Cancer Quality Index should be interpreted in the context of the previous publication by The Partnership, the Queensland Colorectal Cancer Audit Report 2016. This publication provides information on cancer incidence, mortality and surgical survival, surgery rates and patient flows which is important information for understanding the indicators reported in The Queensland Colorectal Cancer Quality Index. To access this report go to <https://qccat.health.qld.gov.au/reports-publications>

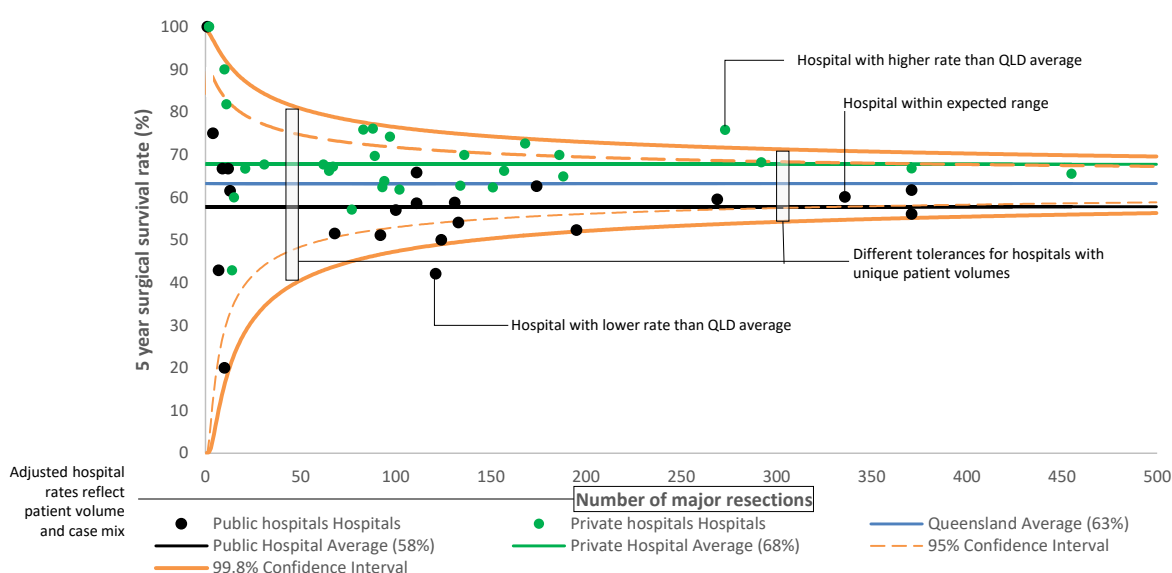
## How to interpret standardised report elements

The Queensland Colorectal Cancer Quality Index uses both data tables and graphical displays to present information. While some sections of analysis require a unique layout, a large proportion of the report presents analysis in two standardised elements, the indicator data table and the funnel plot. A breakdown of both is presented below.

### Indicator data table



### Funnel plot



# Part 1 | Colon Cancer



## Indicator Summary

Indicator summary   Colon cancer results for 2010-2014	Principal referral hospitals	Group A - Public hospitals	Group A - Private hospitals	Group B hospitals	Other hospitals	Public Hospitals	Private Hospitals	Queensland
<b>Section 1   Effective</b>								
1.7   Adjuvant radiation therapy	1.3% (18/1376)	0.9% (20/2154)	0.7% (16/2315)	0.3% (3/1036)	0.1% (1/723)	1% (39/3769)	0.5% (19/3835)	<b>0.8%</b> (58/7604)
1.8   Adjuvant IV systemic therapy	25% (349/1376)	25% (547/2154)	29% (662/2315)	24% (249/1036)	28% (204/723)	25% (944/3769)	28% (1067/3835)	<b>26%</b> (2011/7604)
1.9   Adjuvant IV systemic therapy for stage III patients	47% (177/374)	48% (326/677)	60% (340/563)	50% (132/266)	67% (119/178)	47% (524/1120)	61% (570/938)	<b>53%</b> (1094/2058)
<b>Section 2   Efficient</b>								
2.1   Hospital stay (Median days)	7 (5-12)	8 (5-13)	7 (5-10)	8 (6-12)	7 (5-10)	8 (5-12)	7 (5-11)	<b>7</b> (5-11)
<b>Section 3   Safe</b>								
3.1   In-Hospital mortality	2.5% (36/1417)	2.9% (62/2129)	1.6% (37/2334)	2.1% (22/1028)	0.7% (5/696)	2.8% (106/3780)	1.5% (56/3824)	<b>2.1%</b> (162/7604)
3.2   30 day mortality	3% (43/1417)	3.3% (71/2129)	1.9% (44/2334)	2.5% (26/1028)	1.4% (10/696)	3.3% (124/3780)	1.8% (70/3824)	<b>2.6%</b> (194/7604)
3.3   Perioperative mortality	3.1% (44/1417)	3.7% (78/2129)	2% (47/2334)	2.5% (26/1028)	1.6% (11/696)	3.5% (132/3780)	1.9% (74/3824)	<b>2.7%</b> (206/7604)
3.4   90 day mortality	5.2% (73/1417)	5.8% (124/2129)	3.1% (73/2334)	4.1% (42/1028)	3% (21/696)	5.6% (210/3780)	3.2% (123/3824)	<b>4.4%</b> (333/7604)
3.5   1 year surgical survival	87%	87%	91%	90%	92%	87%	91%	<b>89%</b>
3.6   2 year surgical survival	78%	79%	84%	82%	86%	79%	84%	<b>81%</b>
3.7   5 year surgical survival	59%	60%	66%	66%	72%	59%	68%	<b>64%</b>
3.8   Prolonged LOS ≥ 21 days	9.9% (136/1376)	9.6% (206/2154)	7.3% (168/2315)	8.8% (91/1036)	4.7% (34/723)	9.5% (359/3769)	7.2% (276/3835)	<b>8.4%</b> (635/7604)
3.9   Had medical interventions within same admission	5.7% (79/1376)	7.6% (164/2154)	3.8% (88/2315)	4.5% (47/1036)	2.6% (19/723)	6.7% (253/3769)	3.8% (144/3835)	<b>5.2%</b> (397/7604)
3.10   Had medical interventions in subsequent admissions	2.4% (33/1376)	2.9% (62/2154)	2.1% (49/2315)	2.4% (25/1036)	2.4% (17/723)	2.7% (103/3769)	2.2% (83/3835)	<b>2.4%</b> (186/7604)
3.11   Had an anastomotic leak	2.8% (37/1306)	3.9% (81/2062)	2.3% (52/2282)	2.1% (21/1006)	2.1% (15/708)	3.4% (123/3593)	2.2% (83/3771)	<b>2.8%</b> (206/7364)
3.12   Had an anastomotic leak and died within 90 days of major resection	16% (6/37)	15% (12/81)	9.6% (5/52)	0% (0/21)	13% (2/15)	15% (18/123)	8.4% (7/83)	<b>12%</b> (25/206)

## Part 1 | Colon Cancer

Indicator summary   Colon cancer results for 2010-2014	Principal referral hospitals	Group A - Public hospitals	Group A - Private hospitals	Group B hospitals	Other hospitals	Public Hospitals	Private Hospitals	Queensland
<b>Section 4   Accessible</b>								
4.1   Received first treatment within 30 days						64% (2580/4034)	88% (3537/4020)	76% (6117/8055)
4.3   Received major resection within 30 days	64% (859/1335)	66% (1401/2131)	90% (2041/2269)	85% (871/1023)	88% (636/721)	66% (2439/3704)	89% (3369/3775)	78% (5808/7479)
4.6   Received IV systemic therapy within 30 days						47% (125/268)	73% (157/216)	58% (282/484)
<b>Section 5   Equitable</b>								
5.1   Received major resection within 30 days for those aged ≥75 years	63% (307/490)	65% (525/810)	90% (950/1057)	84% (386/462)	91% (257/282)	65% (898/1390)	89% (1527/1711)	78% (2425/3101)
5.2   Received major resection within 30 days by Indigenous status	62% (13/21)	57% (20/35)	100% (2/2)	78% (7/9)	100% (3/3)	63% (39/62)	75% (6/8)	64% (45/70)
5.3   Received major resection within 30 days by disadvantaged status	55% (127/231)	67% (509/764)	84% (202/240)	85% (249/293)	88% (184/210)	64% (686/1064)	87% (585/674)	73% (1271/1738)
5.4   Received major resection within 30 days by rural status	59% (69/116)	58% (231/400)	90% (65/72)	90% (157/174)	89% (184/206)	60% (326/543)	89% (380/425)	73% (706/968)
<b>Section 6   Quality of care</b>								
6.2   Laparoscopic converted to open surgery (2014 only)	20% (35/171)	36% (90/249)	3.4% (12/357)	17% (26/154)	14% (9/63)	30% (136/453)	6.7% (36/541)	17% (172/994)
6.3   Margins involved (2014 only)	4.0% (11/272)	2.5% (11/444)	2.7% (13/489)	3.2% (7/219)	3.2% (4/126)	3% (23/771)	3% (23/779)	3.0% (46/1550)
6.4   ≥ 12 lymph nodes examined (2014 only)	79% (215/272)	80% (357/444)	80% (390/489)	77% (168/219)	69% (87/126)	80% (619/771)	77% (598/779)	79% (1217/1550)
6.5   Stoma rate at major resection	12% (170/1376)	11% (247/2154)	4.1% (95/2315)	7% (73/1036)	5.7% (41/723)	12% (445/3769)	4.7% (181/3835)	8.2% (626/7604)
6.6   Stoma rate within 12 months after first major resection	2.6% (36/1376)	3.5% (76/2154)	2% (47/2315)	2.2% (23/1036)	2.4% (17/723)	3.1% (118/3769)	2.1% (81/3835)	2.6% (199/7604)
6.7   Living with stoma 1 year after formation of stoma by major resection cohort	6.5% (90/1376)	7.3% (158/2154)	2.5% (59/2315)	4% (41/1036)	2.5% (18/723)	7.2% (273/3769)	2.4% (93/3835)	4.8% (366/7604)
6.8   Living with stoma 1 year after formation of stoma (excludes APR and total proctocolectomy with ileostomy procedures)	61% (86/142)	62% (155/249)	52% (54/104)	50% (41/82)	37% (18/49)	63% (266/420)	43% (88/206)	57% (354/626)
6.9   Living with stoma 5 years after formation of stoma by major resection cohort	2.4% (33/1376)	2.9% (63/2154)	1.3% (30/2315)	2% (21/1036)	2.2% (16/723)	2.9% (109/3769)	1.4% (54/3835)	2.1% (163/7604)
6.10   Living with stoma 5 years after formation of stoma (excludes APR and total proctocolectomy with ileostomy procedures )	34% (31/90)	35% (60/170)	38% (28/74)	38% (21/56)	39% (16/41)	37% (104/280)	34% (52/151)	36% (156/431)

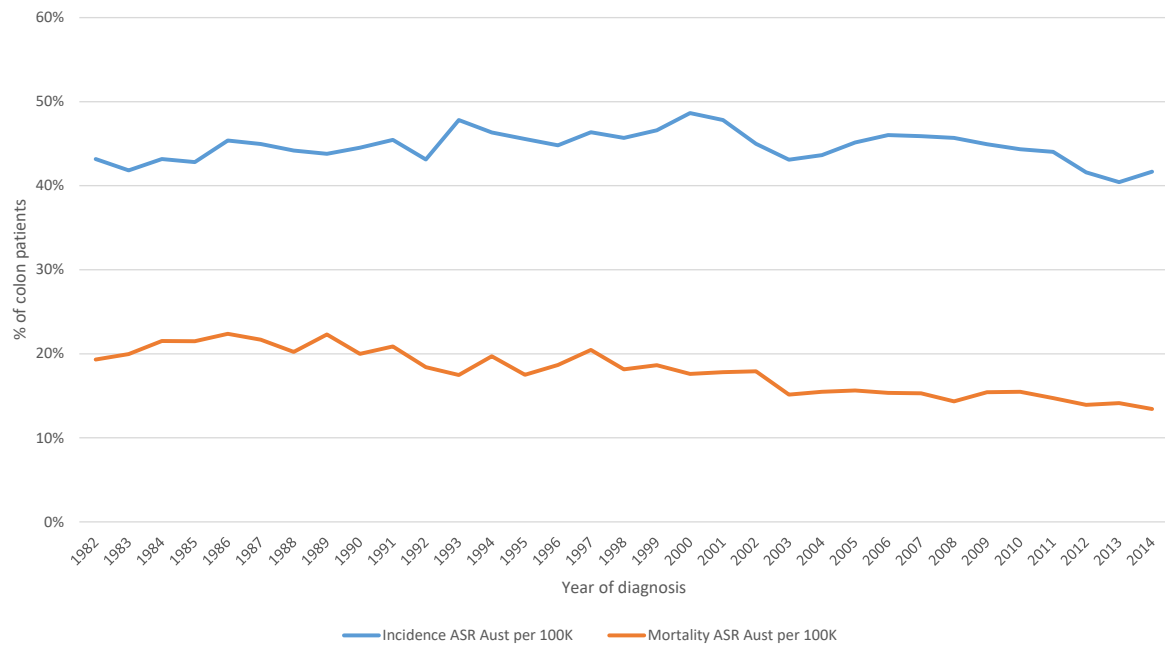
# 1 | Effective

Achieving the best outcomes for Queenslanders with colorectal cancer and providing cancer services based on recommended guidelines.



## 1.1 | Incidence and mortality (age standardised rates)

### 1.1.1 | Queensland colon cancer incidence and mortality trend 1982-2014

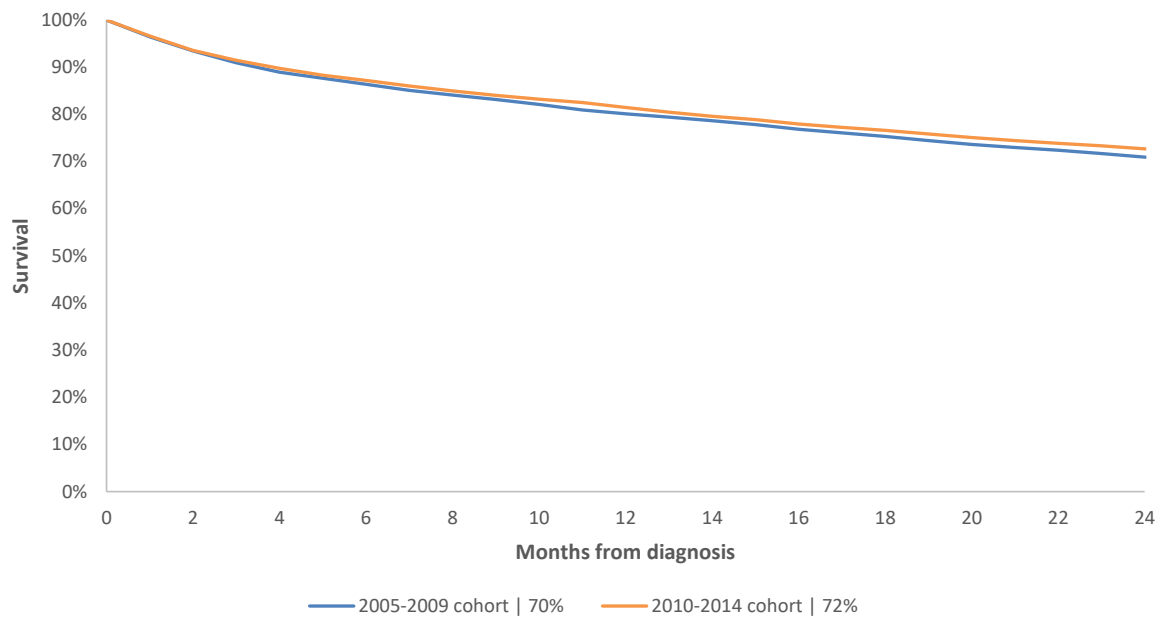




## 1.2 | Survival

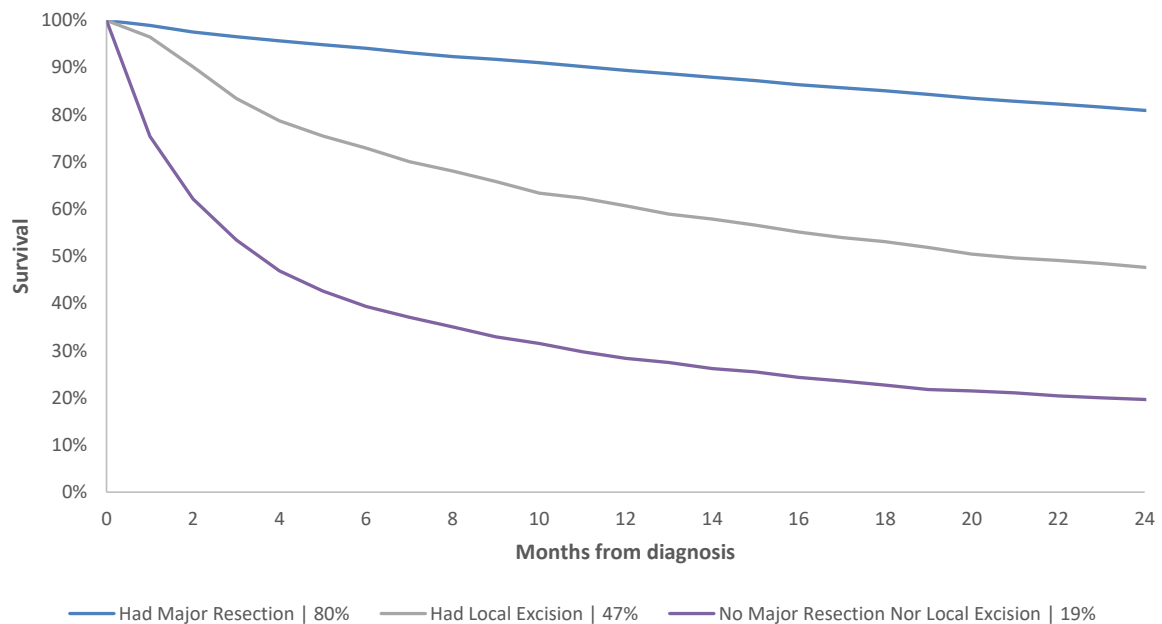
Diagnosis year 2005 – 2014

1.2.1 | What percentage of patients with colon cancer are living two years after their diagnosis?



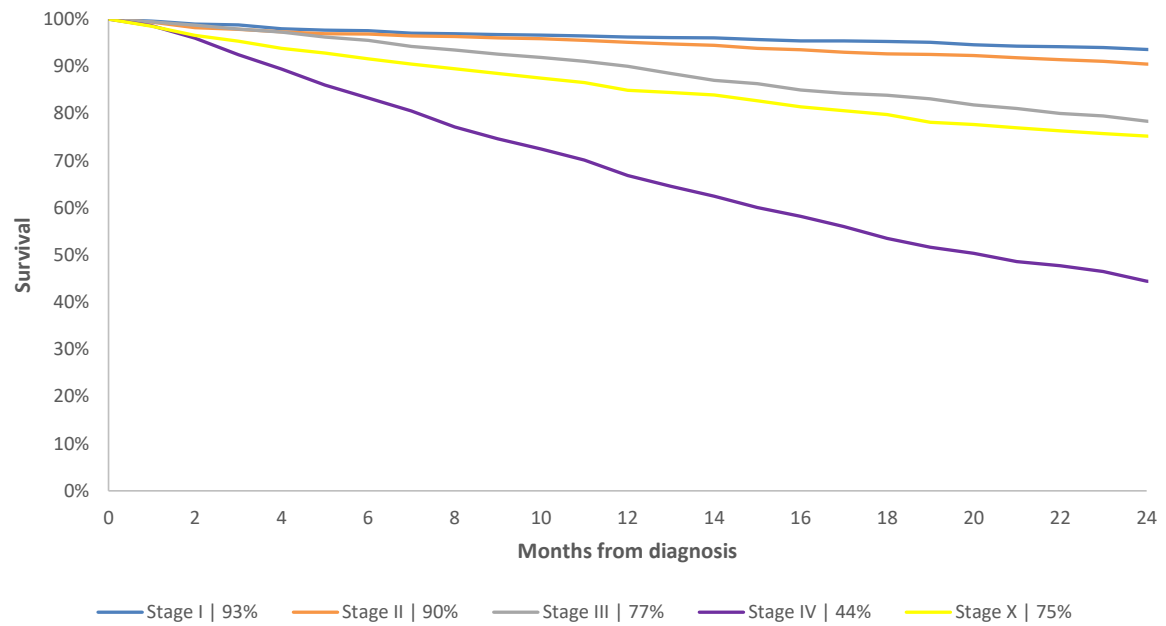
Diagnosis year 2005 – 2014

1.2.2 | What percentage of patients with colon cancer are living two years after their diagnosis by surgery type?



Diagnosis year 2005 – 2014

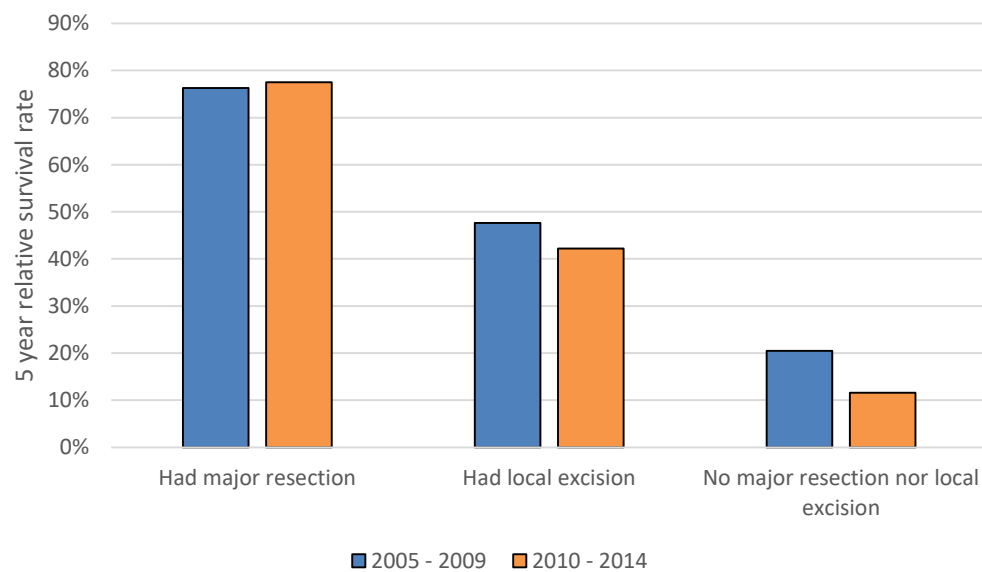
1.2.3 | What percentage of patients with colon cancer are living two years after their diagnosis by stage?



## Diagnosis year 2005 – 2009 &amp; 2010 – 2014

## 1.2.4 | What percentage of people with colon cancer are living 5 years after their diagnosis?

Relative Survival (% of people who would have survived if cancer was the only cause of death)	Diagnosis Year	
	2005 - 2009	2010 - 2014
Had major resection	76%	78%
Had local excision	48%	42%
No major resection nor local excision	20%	12%



### 1.3 | Queenslanders receiving treatment

Diagnosis year 2005 – 2009 and 2010 – 2014

#### 1.3.1 | How many Queenslanders with colon cancer receive major resection by HHS of residence?

Major resection number  (% of patients receiving major resection)	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Major resection number (Rate)	Major resection number (Rate)
Cairns and Hinterland	377 (76%)	403 (80%)
Central Queensland	307 (82%)	316 (78%)
Central West	19 (79%)	22 (79%)
Darling Downs	513 (81%)	572 (80%)
Gold Coast	898 (77%)	964 (79%)
Mackay	216 (77%)	252 (80%)
Metro North	1462 (82%)	1455 (82%)
Metro South	1479 (83%)	1484 (79%)
North West	27 (75%)	27 (71%)
South West	43 (75%)	47 (80%)
Sunshine Coast	756 (83%)	813 (82%)
Torres and Cape	16 (89%)	11 (73%)
Townsville	313 (80%)	340 (80%)
West Moreton	345 (80%)	381 (81%)
Wide Bay	517 (85%)	517 (80%)
<b>Queensland</b>	<b>7288 (81%)</b>	<b>7604 (80%)</b>

## Diagnosis year 2005 – 2009 and 2010 – 2014

1.3.2 | How many Queenslanders with colon cancer receive IV systemic therapy by HHS of residence?

IV systemic therapy number  <i>(% of patients receiving IV systemic therapy)</i>	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	IV systemic therapy number (Rate)	IV systemic therapy number (Rate)
Cairns and Hinterland	170 (34%)	152 (30%)
Central Queensland	121 (32%)	160 (40%)
Central West	4 (17%)	8 (29%)
Darling Downs	155 (24%)	220 (31%)
Gold Coast	377 (32%)	465 (38%)
Mackay	70 (25%)	89 (28%)
Metro North	474 (27%)	508 (29%)
Metro South	602 (34%)	612 (33%)
North West	9 (25%)	15 (39%)
South West	21 (37%)	16 (27%)
Sunshine Coast	303 (33%)	318 (32%)
Torres and Cape	5 (28%)	7 (47%)
Townsville	84 (22%)	109 (26%)
West Moreton	185 (43%)	170 (36%)
Wide Bay	181 (30%)	201 (31%)
<b>Queensland</b>	<b>2761 (31%)</b>	<b>3050 (32%)</b>

## Diagnosis year 2005 – 2009 and 2010 – 2014

## 1.3.3 | How many Queenslanders with colon cancer receive radiation therapy by HHS of residence?

Radiation therapy number  <i>(% of patients receiving radiation therapy)</i>	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Radiation therapy number (Rate)	Radiation therapy number (Rate)
Cairns and Hinterland	43 (9%)	33 (7%)
Central Queensland	37 (10%)	24 (6%)
Central West	2 (8%)	3 (11%)
Darling Downs	57 (9%)	41 (6%)
Gold Coast	136 (12%)	93 (8%)
Mackay	28 (10%)	22 (7%)
Metro North	183 (10%)	131 (7%)
Metro South	187 (10%)	146 (8%)
North West	4 (11%)	3 (8%)
South West	5 (9%)	8 (14%)
Sunshine Coast	100 (11%)	86 (9%)
Torres and Cape	2 (11%)	1 (7%)
Townsville	38 (10%)	35 (8%)
West Moreton	45 (10%)	41 (9%)
Wide Bay	56 (9%)	48 (7%)
<b>Queensland</b>	<b>923 (10%)</b>	<b>715 (8%)</b>

## 1.4 | Patient characteristics

Diagnosis year 2005 – 2009 and 2010 – 2014

## 1.4.1 | What are the characteristics of patients with colon cancer who receive major resection?

Colon   Surgical procedure	Colon cancer		Had major resection		Local excision or biopsy only		No surgery	
<b>Queensland</b>	9004	9493	7288	7604	889	979	827	910
<b>Proportion of cancer type</b>	100%	100%	81%	80%	10%	10%	9%	10%
Median age at diagnosis	72	73	71	72	72	73	79	81
% Male	51%	51%	51%	51%	56%	56%	50%	47%
% ≥75 Age	41%	44%	39%	41%	43%	45%	60%	68%
% Indigenous	0.8%	0.9%	0.8%	1%	1.1%	0.3%	0.8%	1.2%
% Socioeconomically disadvantaged	23%	24%	23%	23%	18%	22%	27%	29%
% Live rural	36%	37%	36%	37%	31%	33%	41%	42%
% With ≥ 1 comorbidity	33%	31%	32%	31%	33%	34%	34%	33%
% ASA ≥ 3	31%	37%	35%	41%	26%	39%	-	-
% Discussed at QOOL MDT	3.8%	26%	4.3%	29%	2%	17%	1.3%	11%
1 year survival from diagnosis	79%	80%	88%	90%	59%	59%	29%	26%
2 year survival from diagnosis	70%	72%	79%	82%	48%	46%	20%	17%

<b>Legend</b>	2005-2009	2010-2014
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Diagnosis year 2005 – 2009 and 2010 – 2014

## 1.4.2 | What are the characteristics of patients with colon cancer who receive major resection by peer group?

1.4.2 | What are the characteristics of patients with colon cancer who receive major resection by peer group?

											Legend		2005-2009		2010-2014		
Colon   Peer Group		Principal referral hospitals		Group A - Public hospitals		Group A - Private hospitals		Group B hospitals		Other hospital		Public hospitals		Private hospitals		Queensland	
Queensland		1335	1376	1825	2154	2289	2315	893	1036	946	723	3327	3769	3961	3835	7288	7604
Proportion of QLD total		18%	18%	25%	28%	31%	30%	12%	14%	13%	10%	46%	50%	54%	50%	100%	100%
Median age at diagnosis		71	71	70	71	71	73	72	73	71	72	71	71	72	73	71	72
% Male		50%	53%	51%	55%	50%	48%	54%	50%	49%	52%	51%	54%	51%	49%	51%	51%
% Indigenous		1.7%	1.7%	1.5%	1.6%	0.2%	0.1%	0.2%	1%	0.2%	0.4%	1.6%	1.7%	0.2%	0.2%	0.8%	1%
% Socioeconomically disadvantaged		17%	17%	38%	36%	9%	11%	34%	29%	27%	29%	29%	28%	18%	18%	23%	23%
% Live rural		16%	18%	53%	53%	13%	18%	64%	56%	60%	64%	38%	39%	34%	36%	36%	37%
% With ≥ 1 comorbidity		37%	34%	34%	32%	30%	28%	34%	35%	27%	23%	35%	33%	30%	29%	32%	31%
% ASA ≥ 3		56%	59%	52%	49%	53%	60%	54%	47%	42%	46%	53%	52%	51%	55%	52%	54%
% Discussed at QOOL MDT		13%	64%	5.9%	52%	0.2%	1.1%	1.7%	18%	1.3%	3.5%	8.8%	57%	0.5%	1.8%	4.3%	29%
% Had neo-adjuvant XRT		13%	10%	10%	7%	11%	7%	10%	8%	9%	6%	12%	8%	10%	7%	11%	8%
Median length of stay		8	7	9	8	8	7	9	8	8	7	9	8	8	7	8	7
In-hospital mortality		3.7%	2.4%	3.7%	3.1%	2.1%	1.6%	2.9%	1.9%	1.2%	1%	3.8%	2.8%	2%	1.5%	2.8%	2.1%
30 day mortality		4.3%	3%	3.9%	3.5%	2.2%	1.9%	3.2%	2.3%	1.5%	1.5%	4.1%	3.3%	2.2%	1.8%	3%	2.6%
90 day mortality		7.3%	5.1%	7.2%	5.8%	4.4%	3.1%	4.5%	4%	4.1%	3.5%	7.2%	5.5%	4.3%	3.3%	5.6%	4.4%
1 year surgical survival		85%	87%	83%	87%	90%	91%	89%	90%	88%	92%	84%	87%	89%	91%	87%	89%
2 year surgical Survival		75%	77%	73%	78%	82%	83%	80%	81%	82%	86%	74%	77%	82%	84%	78%	80%
Only contains 2012 & 2014 values																	
Mean number of lymph nodes examined		-	19	-	19	-	18	-	17	-	17	-	19	-	17	-	18
% With ≥ 12 lymph nodes examined		-	83%	-	79%	-	78%	-	74%	-	69%	-	81%	-	75%	-	78%
% With positive lymph nodes		-	41%	-	42%	-	34%	-	35%	-	32%	-	41%	-	33%	-	37%
% With involved surgical margins		-	5%	-	4%	-	2%	-	5%	-	4%	-	5%	-	3%	-	4%
% Late stage (III/IV)		-	46%	-	46%	-	37%	-	38%	-	34%	-	46%	-	36%	-	41%

Refer to appendix 1 for hospital grouping definitions



## Part 1 | Colon Cancer

Diagnosis year 2012 & 2014

### 1.4.3 | What are the characteristics of patients with colon cancer who receive major resection by stage?

1.4.3   What are the characteristics of patients with colon cancer who receive major resection by stage?											Legend		2012		2014	
Colon   Peer Group	Principal referral hospitals		Group A - Public hospitals		Group A - Private hospitals		Group B hospitals		Other hospital		Public hospitals		Private hospitals		Queensland	
Queensland	273	272	437	444	472	489	218	219	132	126	773	771	759	779	1532	1550
Proportion of QLD total	18%	18%	29%	29%	31%	32%	14%	14%	9%	8%	50%	50%	50%	50%	21%	20%
I	16%	21%	18%	21%	17%	28%	23%	26%	21%	29%	17%	20%	19%	29%	18%	25%
II	33%	31%	32%	32%	36%	37%	35%	32%	39%	31%	33%	32%	36%	34%	35%	33%
III	33%	35%	33%	37%	28%	26%	29%	28%	21%	36%	33%	36%	27%	28%	30%	32%
IV	13%	10%	15%	7%	12%	7%	7.8%	10%	9.1%	2%	14%	8.7%	10%	6%	12%	7.4%
X (T0,N0,M0)	2.6%	2.2%	0.9%	1.8%	6.1%	0.6%	4.1%	0.9%	6.8%	0%	1.6%	1.8%	6.1%	0.6%	3.8%	1.2%
O (Tis, NO, M0)	-	-	0.2%	0%	-	-	0.5%	0.5%	0.8%	0%	0.1%	0%	0.3%	0.3%	0.2%	0.1%
Not Known	1.5%	0.7%	0.7%	1.8%	0.6%	1%	0.9%	1.8%	1.5%	3.2%	0.9%	1.4%	0.9%	1.5%	0.9%	1.5%

Refer to appendix 1 for hospital grouping definitions

## 1.5 | Queenslanders receiving major resection

Diagnosis year 2005 – 2009 and 2010 – 2014

### 1.5.1 | How many major resections for colon cancers are performed by each hospital?

<b>Surgery Number</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(Number of cancer patients receiving a major resection)</i>	<b>Diagnosis year</b>	<b>Diagnosis year</b>
	<b>N</b>	<b>N</b>
<b>AIHW Peer Group</b>		
Principal referral hospitals	1335 (18%)	1376 (18%)
Group A - Public hospitals	1825 (25%)	2154 (28%)
Group A - Private hospitals	2289 (31%)	2315 (30%)
Group B hospitals	893 (12%)	1036 (14%)
Other hospitals	946 (13%)	723 (10%)
<b>Hospital Type</b>		
Public hospitals	3327 (46%)	3769 (50%)
Private hospitals	3961 (54%)	3835 (50%)
<b>Queensland</b>	<b>7288</b>	<b>7604</b>

Refer to appendix 1 for hospital grouping definitions

## 1.6 | QOOL\* Multidisciplinary team (MDT) review rate

Diagnosis year 2005 – 2009 and 2010 – 2014

1.6.1 | What percentage of patients with colon cancer were reviewed by a multidisciplinary team during their cancer management?

QOOL MDT rate  (% of patients who receive MDT review)	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	MDT review number (Rate)	MDT review number (Rate)
Cairns and Hinterland	28 (6%)	230 (46%)
Central Queensland	11 (3%)	87 (21%)
Central West	0 (0%)	3 (11%)
Darling Downs	13 (2%)	246 (34%)
Gold Coast	64 (5%)	441 (36%)
Mackay	1 (0%)	5 (2%)
Metro North	66 (4%)	512 (29%)
Metro South	64 (4%)	383 (20%)
North West	1 (3%)	0 (0%)
South West	2 (4%)	21 (36%)
Sunshine Coast	60 (7%)	394 (40%)
Torres and Cape	0 (0%)	12 (80%)
Townsville	2 (1%)	6 (1%)
West Moreton	7 (2%)	55 (12%)
Wide Bay	21 (3%)	110 (17%)
<b>Queensland</b>	<b>340 (4%)</b>	<b>2505 (26%)</b>

\*MDT Rate is limited to hospitals that use QOOL to capture MDT review.  
See definitions for further description

## 1.7 | Adjuvant radiation therapy rate

Diagnosis year 2005 – 2009 and 2010 – 2014

1.7.1 | What proportion of patients receive adjuvant radiation therapy within 3 months of their first major resection?

Adjuvant radiation therapy	2005 - 2009	2010 - 2014
(% of patients who received adjuvant radiation therapy)	Diagnosis year	Diagnosis year
	Crude rates (n/N)	Crude rates (n/N)
	[Adjusted rates, CI%, P value]	[Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	0.7% (9/1335) [0.6%, 0-1, 0.599]	1.3% (18/1376) [1.2%, 1-2, 0.11]
Group A - Public hospitals	0.8% (14/1825) [0.8%, 0-2, 0.52]	0.9% (20/2154) [0.9%, 1-2, 0.477]
Group A - Private hospitals	0.6% (14/2289) [0.5%, 0-1, 0.442]	0.7% (16/2315) [0.7%, 0-1, 0.877]
Group B hospitals	0.7% (6/893) [0.9%, 0-2, 0.617]	0.3% (3/1036) [0.3%, 0-1, 0.1]
Other hospitals	0.7% (7/946) [0.9%, 0-2, 0.45]	0.1% (1/723) [0.2%, 0-1, 0.105]
<b>Hospital Type</b>		
Public hospitals	0.7% (24/3327) [0.7%, 0-1, 0.918]	1% (39/3769) [1%, 1-1, 0.209]
Private hospitals	0.7% (26/3961) [0.7%, 0-1, 0.924]	0.5% (19/3835) [0.5%, 0-1, 0.142]
<b>Queensland</b>	<b>0.7% (50/7288)</b>	<b>0.8% (58/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

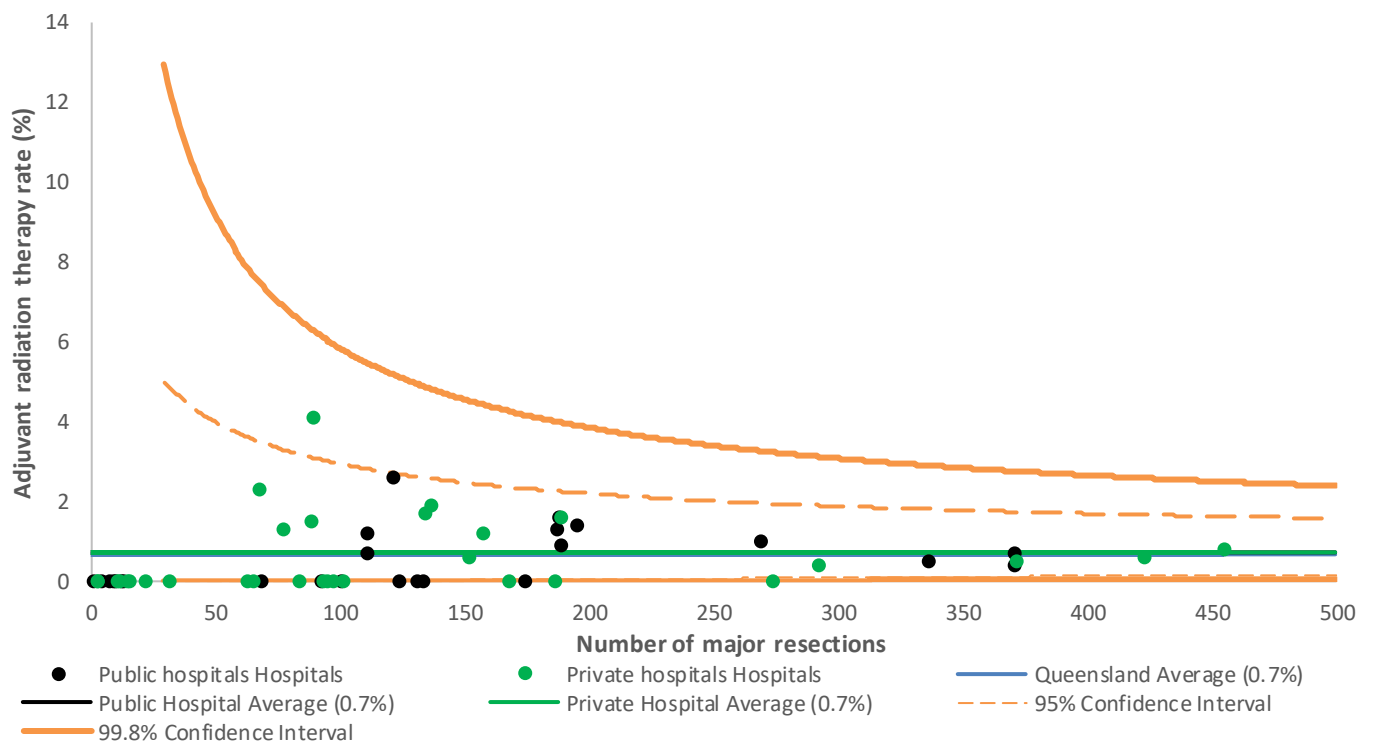
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

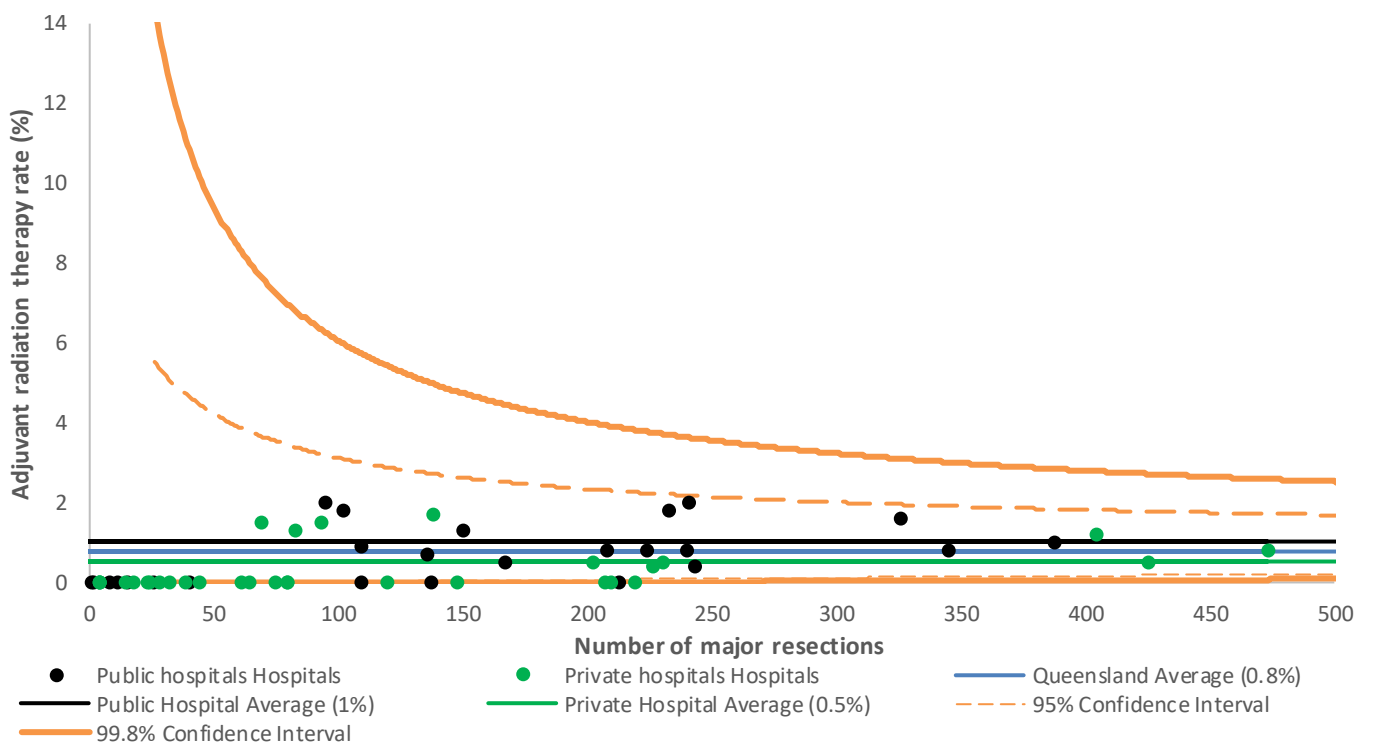
1.7.2 | Patients receiving adjuvant radiation therapy by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

1.7.3 | Patients receiving adjuvant radiation therapy by hospital volume



## 1.8 | Adjuvant IV systemic therapy rate

Diagnosis year 2005 – 2009 and 2010 – 2014

1.8.1 | What proportion of patients receive adjuvant IV systemic therapy within 3 months of their first major resection?

Adjuvant IV systemic therapy	2005 - 2009	2010 - 2014
<i>(% of patients who received adjuvant IV systemic therapy within 3 months of major resection)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	18% (246/1335) [18%**, 16-20, 0]	25% (349/1376) [24%, 22-27, 0.083]
Group A - Public hospitals	24% (435/1825) [23%, 21-25, 0.465]	25% (547/2154) [24%*, 22-26, 0.025]
Group A - Private hospitals	29% (665/2289) [29%**, 27-32, 0]	29% (662/2315) [30%**, 28-33, 0]
Group B hospitals	16% (142/893) [17%**, 14-20, 0]	24% (249/1036) [25%, 22-28, 0.233]
Other hospitals	26% (246/946) [27%*, 24-30, 0.03]	28% (204/723) [28%, 25-32, 0.256]
<b>Hospital Type</b>		
Public hospitals	21% (699/3327) [20%**, 19-22, 0]	25% (944/3769) [24%**, 22-25, 0.002]
Private hospitals	26% (1035/3961) [27%**, 25-29, 0]	28% (1067/3835) [29%**, 28-31, 0.001]
<b>Queensland</b>	<b>24% (1734/7288)</b>	<b>26% (2011/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

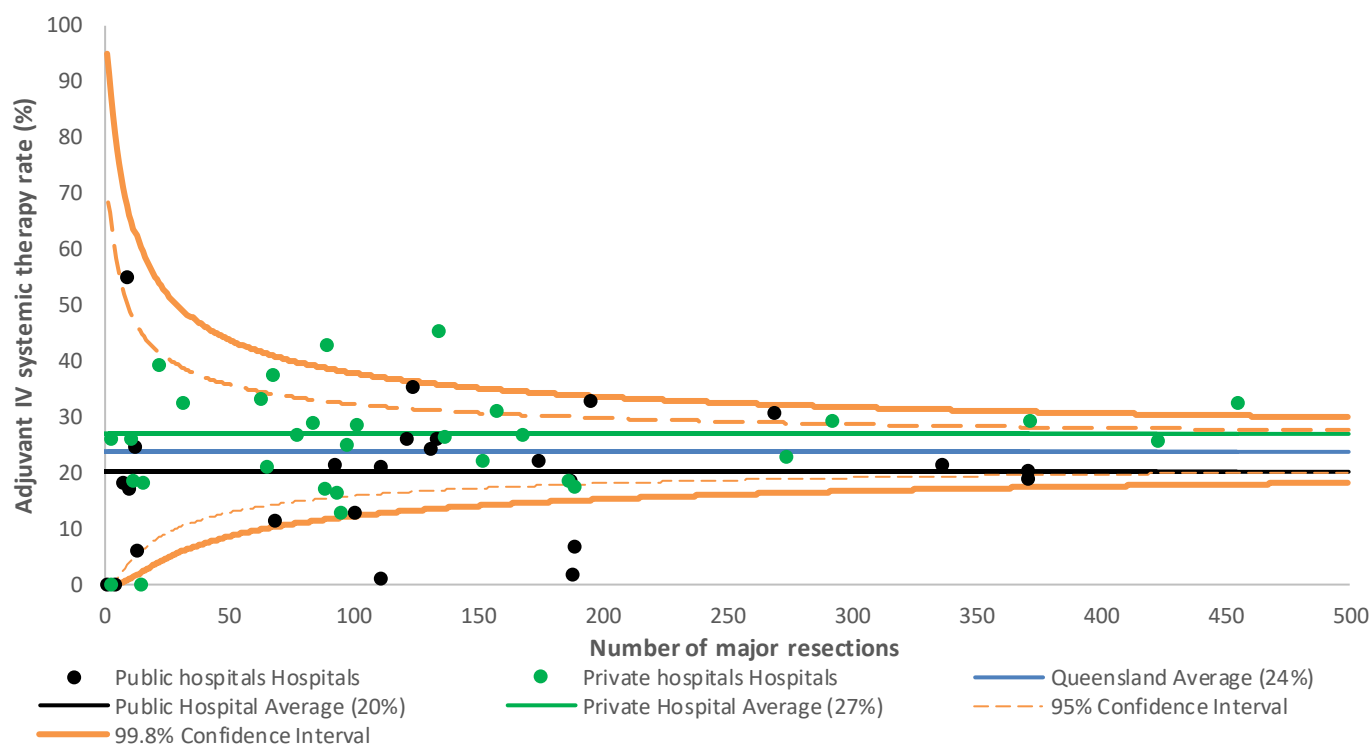
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

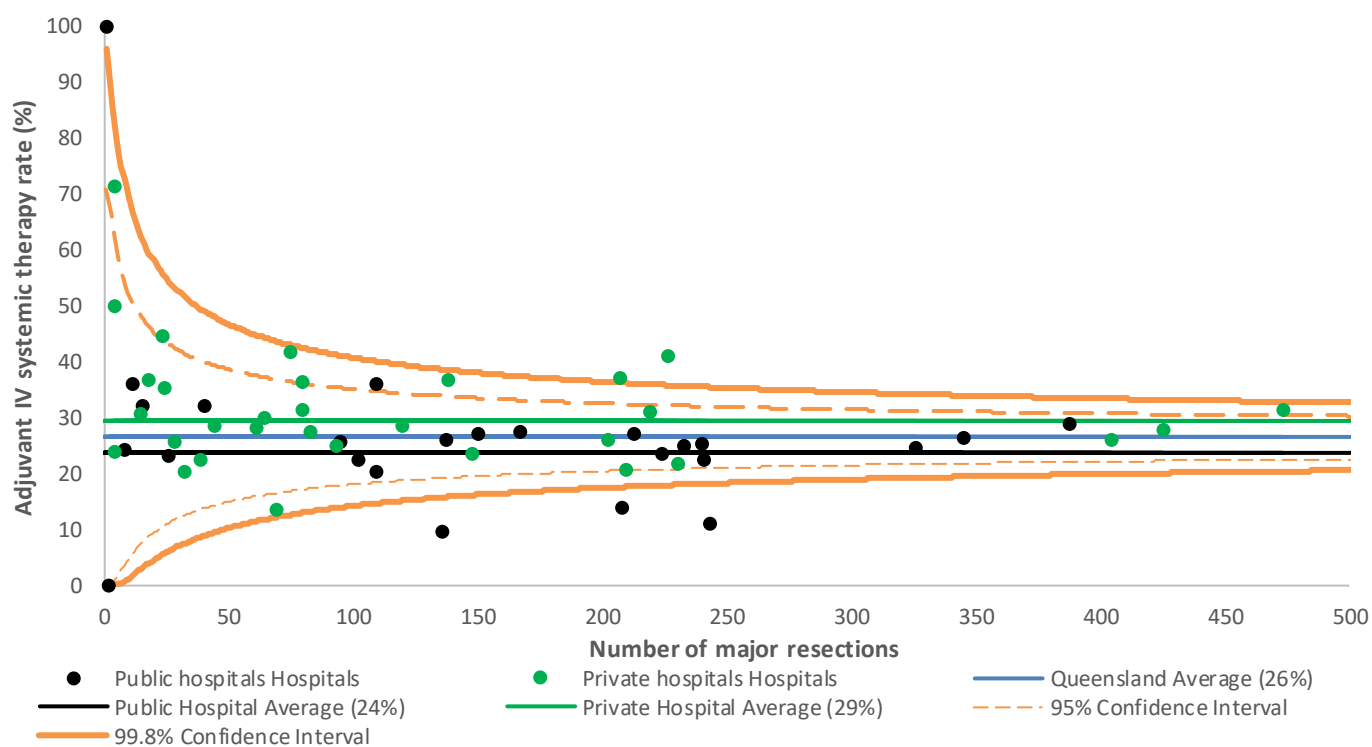
1.8.2 | Patients receiving adjuvant IV systemic therapy by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

1.8.3 | Patients receiving adjuvant IV systemic therapy by hospital volume



## 1.9 | Adjuvant IV systemic therapy for stage III patients

Diagnosis year 2005 – 2009 and 2010 – 2014

1.9.1 | What proportion of stage III patients receive adjuvant IV systemic therapy within 3 months of their first major resection?

Adjuvant IV systemic therapy for stage III patients	2005 - 2009	2010 - 2014
(% of stage III patients who received adjuvant IV systemic therapy)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	34% (112/331) [35%*, 30-40, 0]	47% (177/374) [48%, 44-54, 0.072]
Group A - Public hospitals	45% (221/488) [43%*, 39-48, 0.042]	48% (326/677) [48%*, 44-52, 0.018]
Group A - Private hospitals	58% (321/550) [59%**, 54-64, 0]	60% (340/563) [60%**, 55-64, 0.002]
Group B hospitals	38% (78/206) [39%**, 33-45, 0.006]	50% (132/266) [52%, 46-58, 0.699]
Other hospitals	60% (129/214) [61%**, 55-68, 0]	67% (119/178) [62%**, 56-69, 0.004]
<b>Hospital Type</b>		
Public hospitals	40% (342/846) [40%**, 36-43, 0]	47% (524/1120) [47%**, 44-50, 0.001]
Private hospitals	55% (519/943) [56%**, 52-60, 0]	61% (570/938) [60%**, 57-64, 0]
<b>Queensland</b>	<b>48% (861/1789)</b>	<b>53% (1094/2058)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

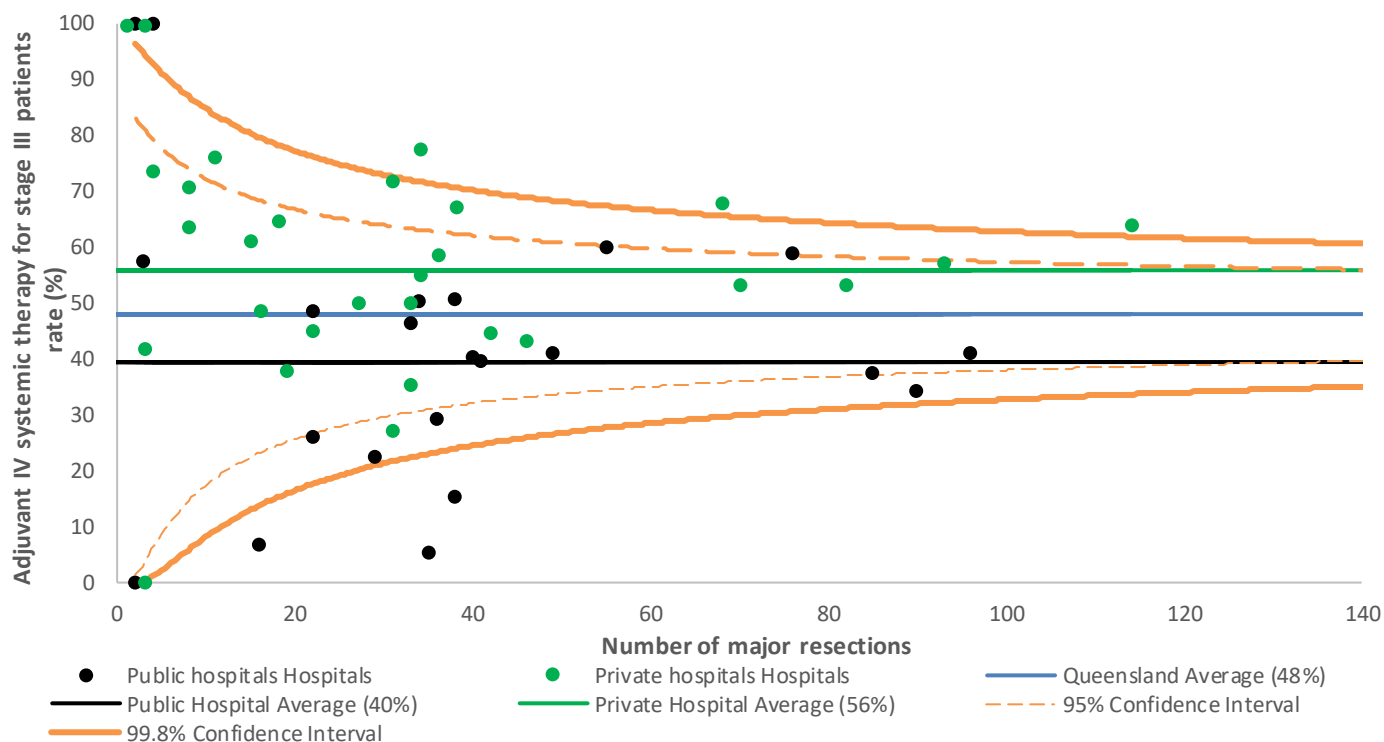
Refer to appendix 1 for hospital grouping definitions



Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

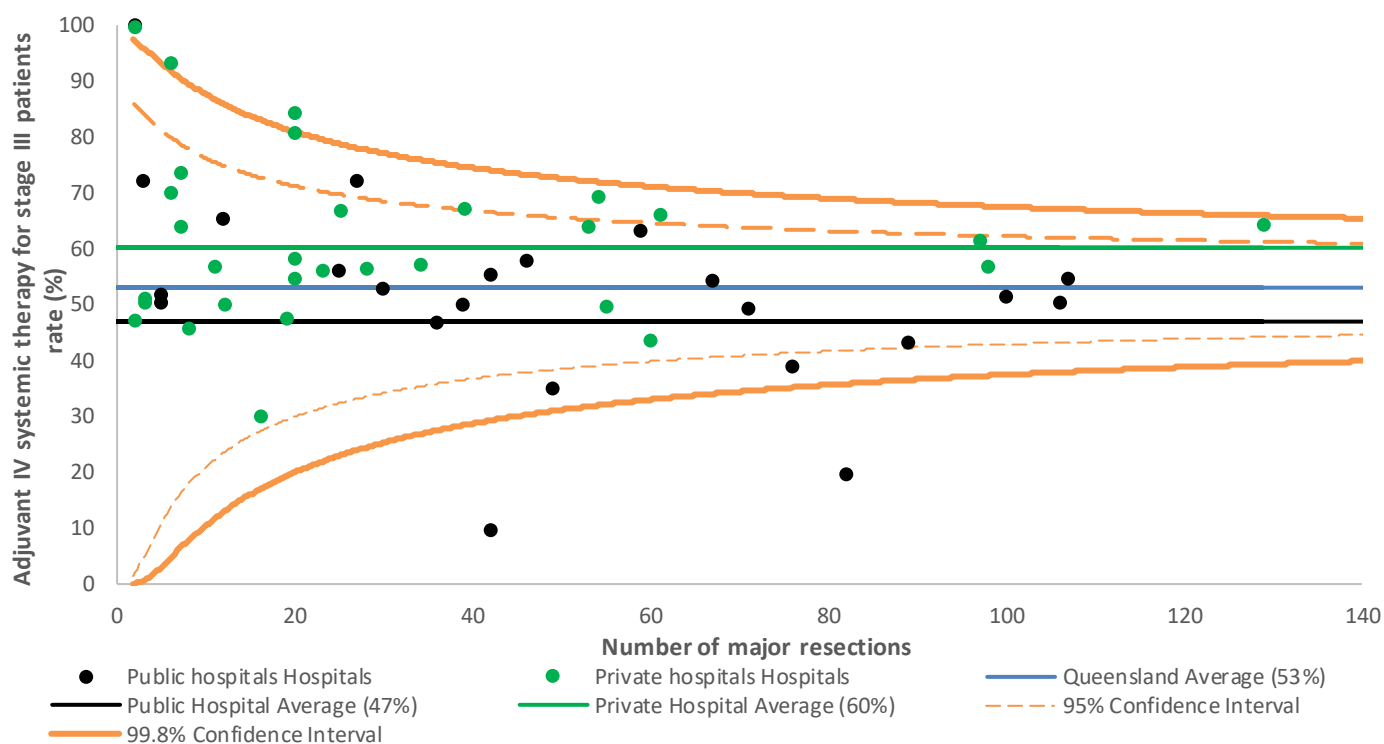
1.9.2 | Stage III patients receiving adjuvant IV systemic therapy by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

1.9.3 | Stage III patients receiving adjuvant IV systemic therapy by hospital volume



## 2 | Efficient

Optimally using resources to achieve desired outcomes.



## 2.1 | Hospital stay

Diagnosis year 2005 – 2009 and 2010 – 2014

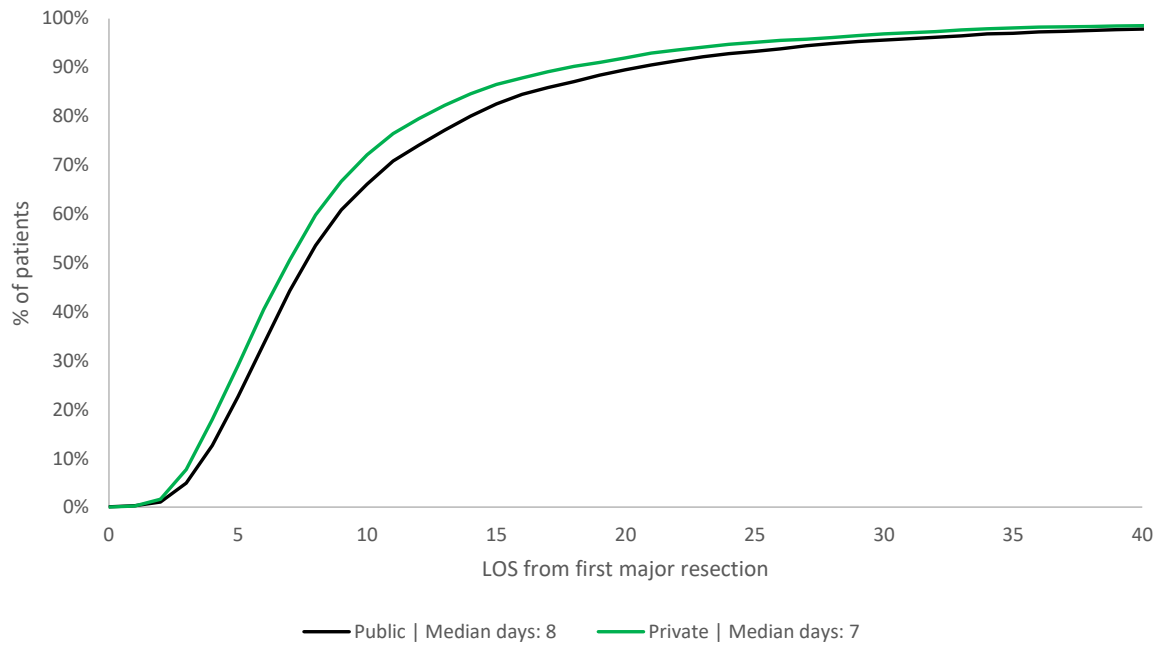
## 2.1.1 | How long do people having major resection stay in hospital?

Length of stay (days)	2005 - 2009	2010 - 2014
<i>(Median time between the admission and discharge date of major resection)</i>	Diagnosis year Median IQR	Diagnosis year Median IQR
<b>AIHW Peer Group</b>		
Principal referral hospitals	8 (6-13)	7 (5-12)
Group A - Public hospitals	9 (7-14)	8 (5-13)
Group A - Private hospitals	8 (5-12)	7 (5-10)
Group B hospitals	9 (6-13)	8 (6-12)
Other hospitals	8 (6-11)	7 (5-10)
<b>Hospital Type</b>		
Public hospitals	9 (6-13)	8 (5-12)
Private hospitals	8 (6-12)	7 (5-11)
<b>Queensland</b>	<b>8 (6-12)</b>	<b>7 (5-11)</b>

For a description on Interquartile range (IQR) - refer to definitions  
Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2014

2.1.1.2 | Distribution of length of stay from first major resection



## 3 | Safe

Avoiding and preventing adverse outcomes or injuries during healthcare management.



### 3.1 | In-hospital mortality

Diagnosis year 2005 – 2009 and 2010 – 2014

#### 3.1.1 | What percentage of patients die in hospital after major resection?

**Mortality rate is calculated from facility of last major resection.**

<b>In-Hospital mortality</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% patients who die in hospital following major resection)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	3.7% (50/1340) [3.6%, 3-5, 0.123]	2.5% (36/1417) [2.4%, 2-3, 0.563]
Group A - Public hospitals	3.8% (70/1826) [3.5%, 3-5, 0.118]	2.9% (62/2129) [2.4%, 2-3, 0.512]
Group A - Private hospitals	2.1% (49/2325) [2.2%, 2-3, 0.181]	1.6% (37/2334) [1.8%, 1-3, 0.35]
Group B hospitals	2.9% (26/891) [2.8%, 2-4, 0.974]	2.1% (22/1028) [2.4%, 2-4, 0.629]
Other hospitals	0.9% (8/906) [1.1%*, 1-2, 0.01]	0.7% (5/696) [1.1%, 0-3, 0.151]
<b>Hospital Type</b>		
Public hospitals	3.8% (126/3330) [3.5%*, 3-4, 0.036]	2.8% (106/3780) [2.4%, 2-3, 0.321]
Private hospitals	1.9% (77/3958) [2.1%*, 2-3, 0.028]	1.5% (56/3824) [1.7%, 1-2, 0.21]
<b>Queensland</b>	<b>2.8% (203/7288)</b>	<b>2.1% (162/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

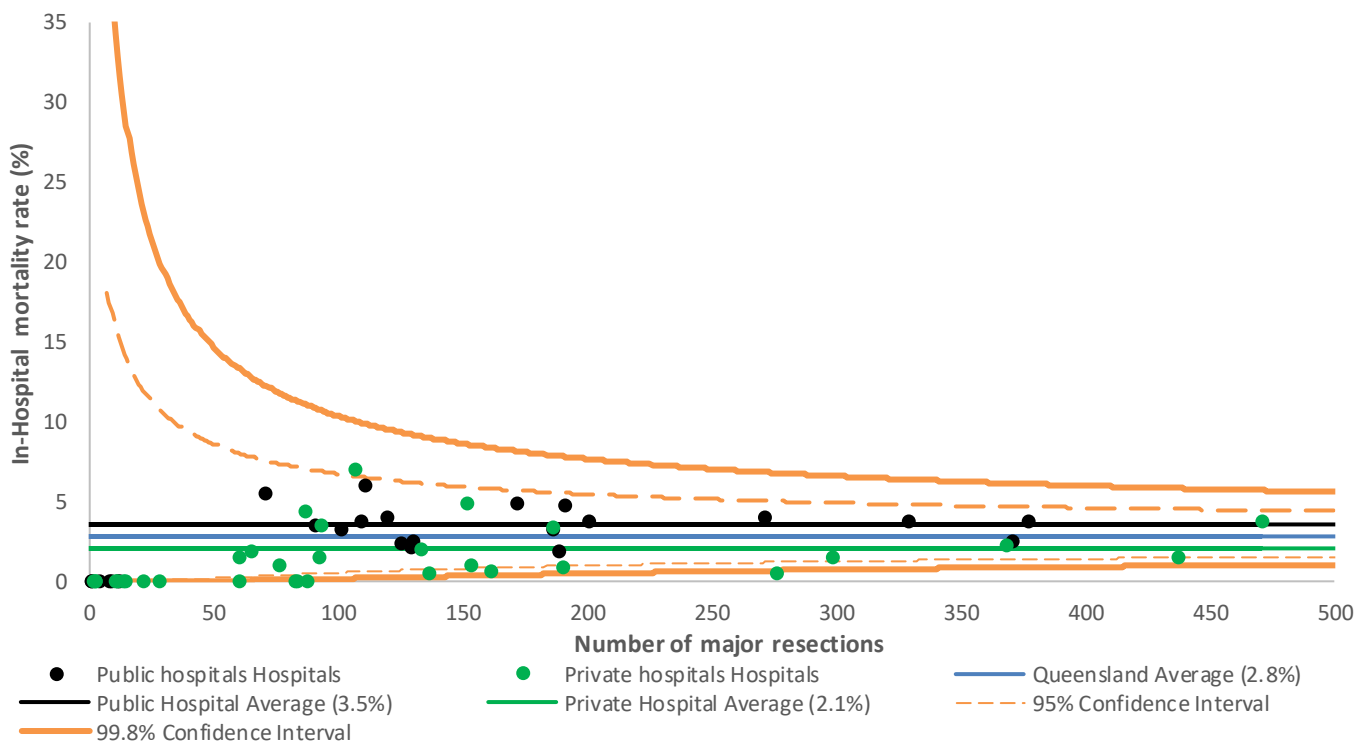
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

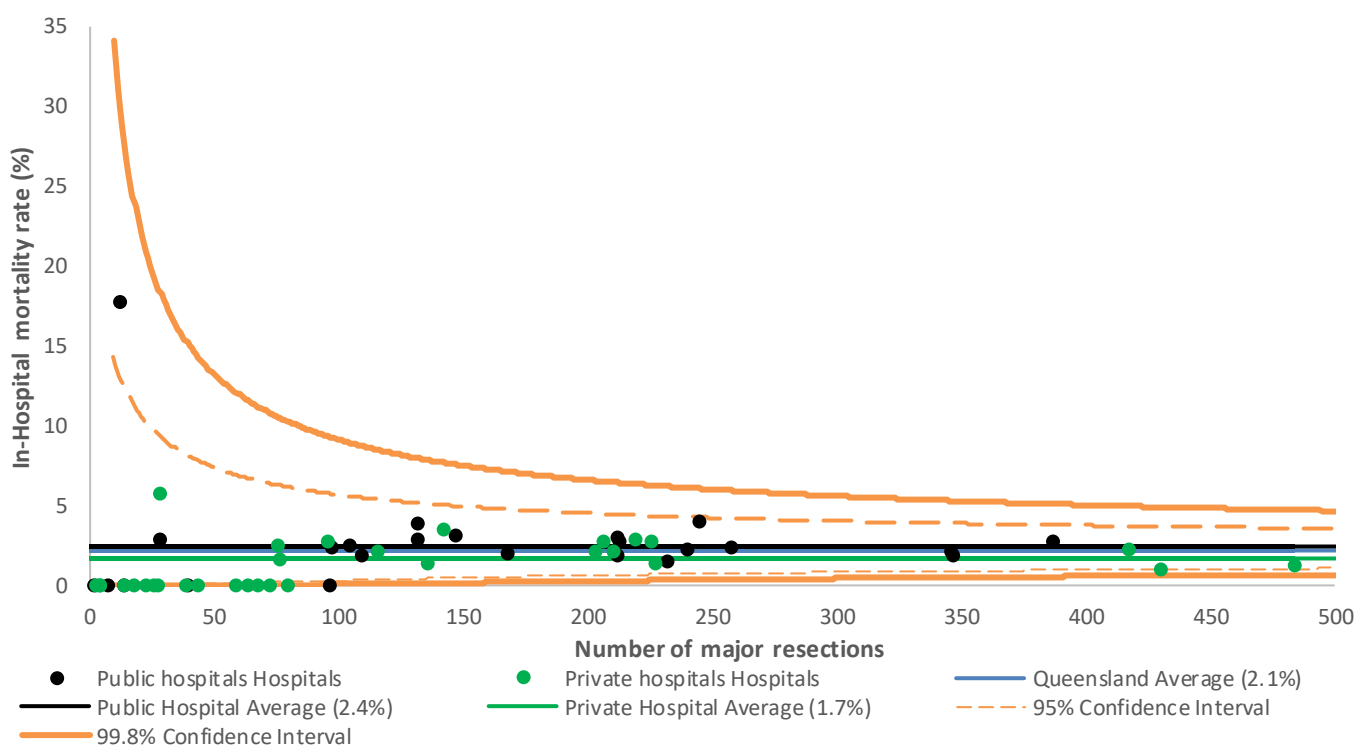
3.1.2 | In-hospital mortality following major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

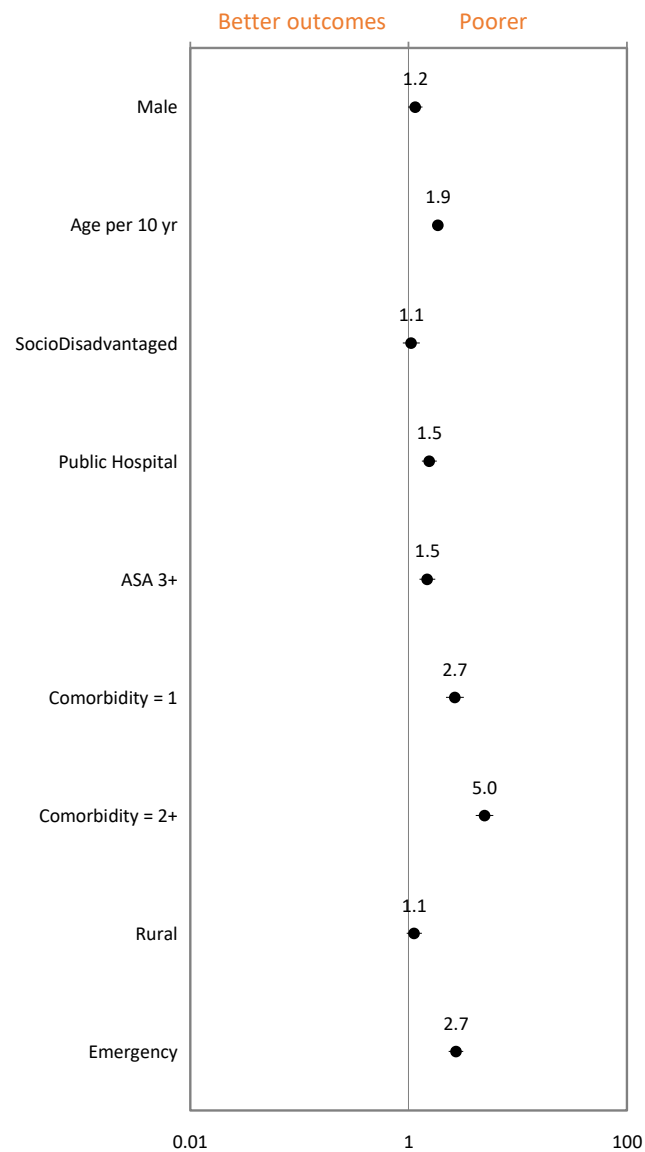
3.1.3 | In-hospital mortality following major resection by hospital volume



## Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.1.4 | Relative risk of in-hospital mortality following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.



## 3.2 | 30 day mortality

Diagnosis year 2005 – 2009 and 2010 – 2014

3.2.1 | What percentage of patients die within 30 days of major resection?

**Mortality rate is calculated from facility of last major resection.**

<b>30 day mortality</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% patients who die ≤ 30 days following major resection)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	4.2% (56/1340) [3.9%, 3-5, 0.088]	3% (43/1417) [2.9%, 2-4, 0.441]
Group A - Public hospitals	4% (73/1826) [3.7%, 3-5, 0.172]	3.3% (71/2129) [2.7%, 2-4, 0.771]
Group A - Private hospitals	2.2% (50/2325) [2.2%, 2-3, 0.054]	1.9% (44/2334) [2.2%, 2-3, 0.344]
Group B hospitals	3.4% (30/891) [3.3%, 2-5, 0.708]	2.5% (26/1028) [2.7%, 2-4, 0.75]
Other hospitals	1.3% (12/906) [1.7%, 1-3, 0.057]	1.4% (10/696) [2.1%, 1-4, 0.576]
<b>Hospital Type</b>		
Public hospitals	4.1% (136/3330) [3.8%*, 3-5, 0.036]	3.3% (124/3780) [2.8%, 2-4, 0.383]
Private hospitals	2.1% (85/3958) [2.3%*, 2-3, 0.027]	1.8% (70/3824) [2.2%, 2-3, 0.274]
<b>Queensland</b>	<b>3% (221/7288)</b>	<b>2.6% (194/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

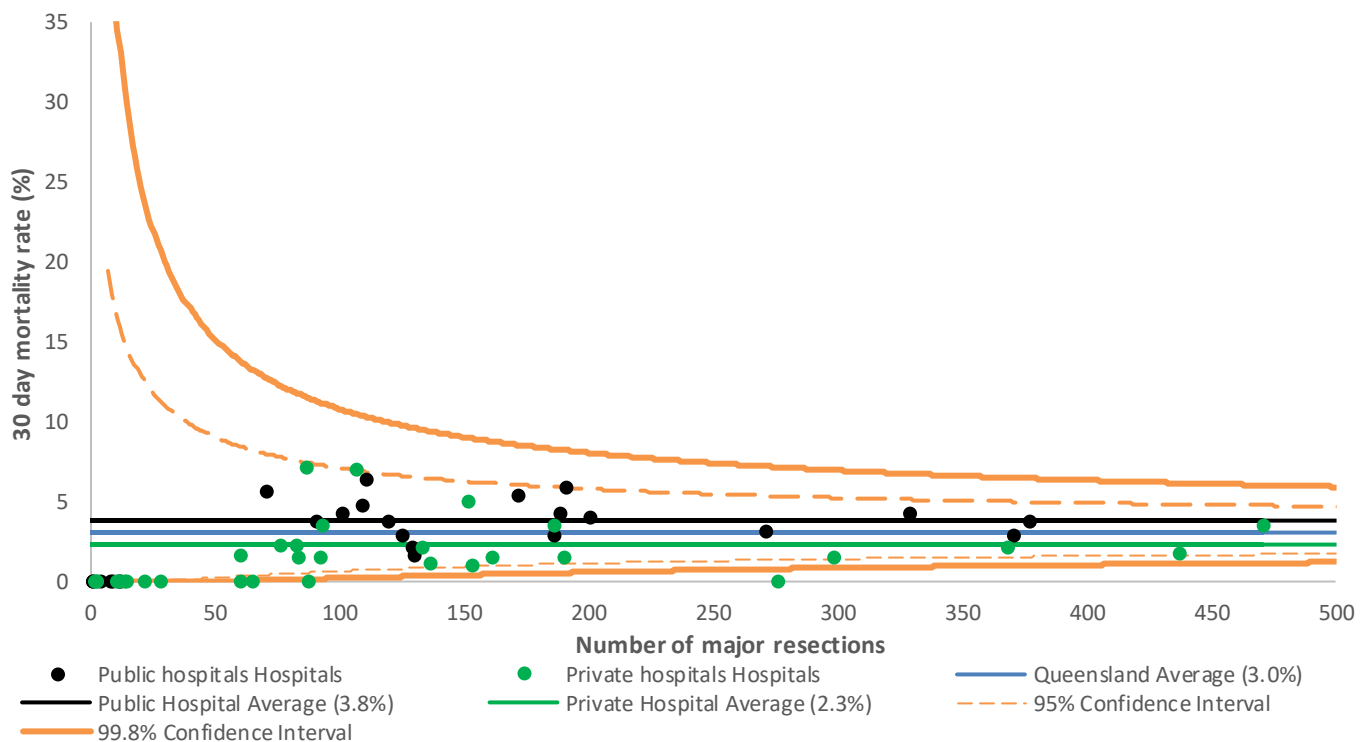
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

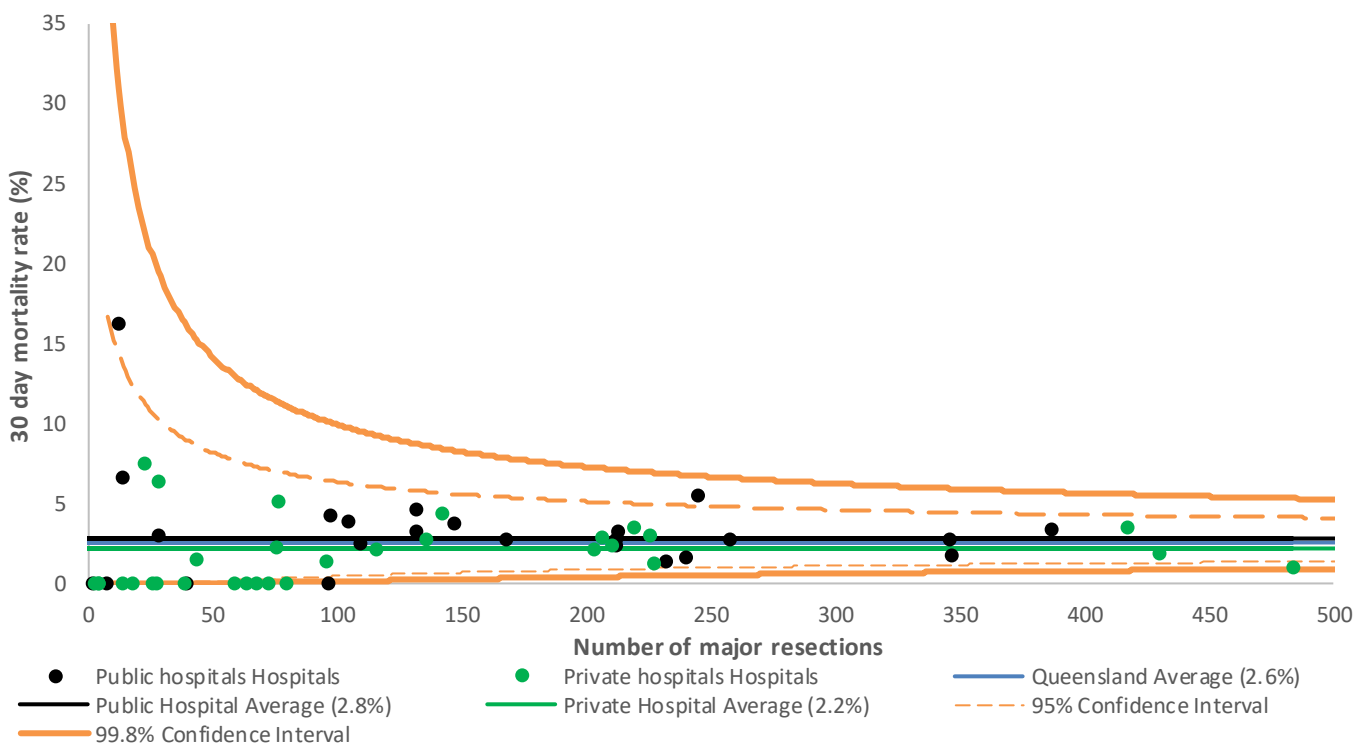
3.2.2 | 30 day mortality following major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

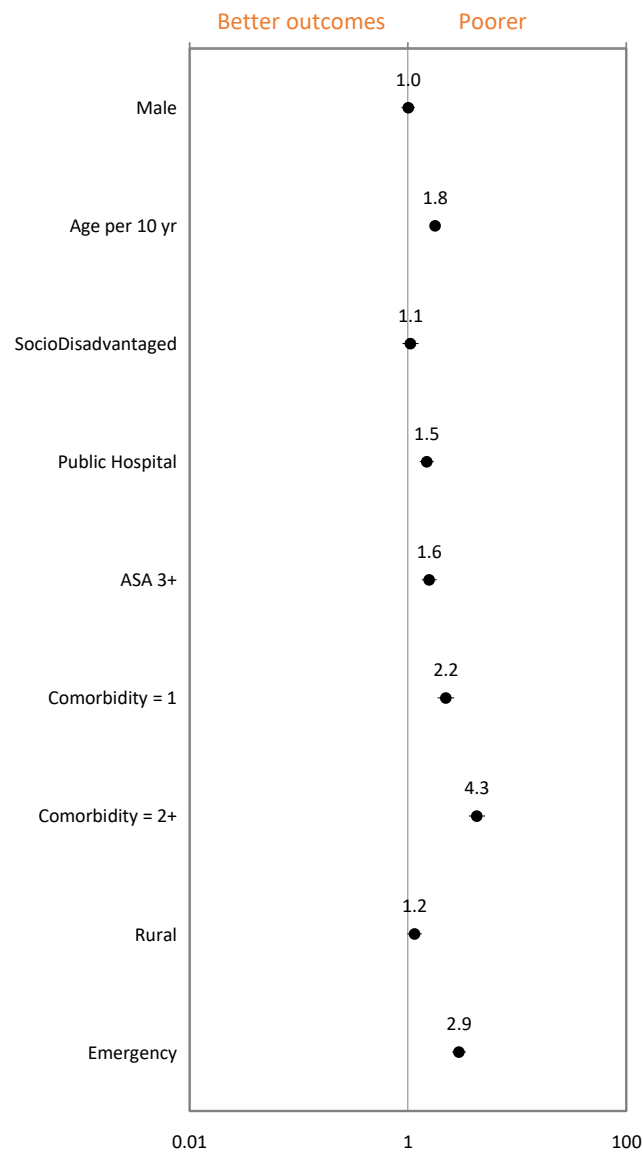
3.2.3 | 30 day mortality following major resection by hospital volume



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.2.4 | Relative risk of 30 day mortality following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.

### 3.3 | Perioperative mortality

Diagnosis year 2005 – 2009 and 2010 – 2014

3.3.1 | What percentage of patients died in-hospital or within 30 days of major resection?

**Mortality rate is calculated from facility of last major resection.**

Perioperative mortality	2005 - 2009	2010 - 2014
<i>(% patients who die in hospital or within 30 days of major resection)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	4.6% (61/1340) [4.3%, 3-6, 0.086]	3.1% (44/1417) [2.9%, 2-4, 0.616]
Group A - Public hospitals	4.6% (84/1826) [4.2%, 3-5, 0.097]	3.7% (78/2129) [3%, 2-4, 0.518]
Group A - Private hospitals	2.4% (56/2325) [2.5%, 2-3, 0.059]	2% (47/2334) [2.3%, 2-3, 0.324]
Group B hospitals	3.6% (32/891) [3.4%, 2-5, 0.955]	2.5% (26/1028) [2.7%, 2-4, 0.965]
Other hospitals	1.4% (13/906) [1.8%*, 1-3, 0.029]	1.6% (11/696) [2.3%, 1-4, 0.623]
<b>Hospital Type</b>		
Public hospitals	4.6% (152/3330) [4.3%*, 3-5, 0.024]	3.5% (132/3780) [3%, 2-4, 0.338]
Private hospitals	2.4% (94/3958) [2.5%*, 2-3, 0.017]	1.9% (74/3824) [2.3%, 2-3, 0.231]
<b>Queensland</b>	<b>3.4% (246/7288)</b>	<b>2.7% (206/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

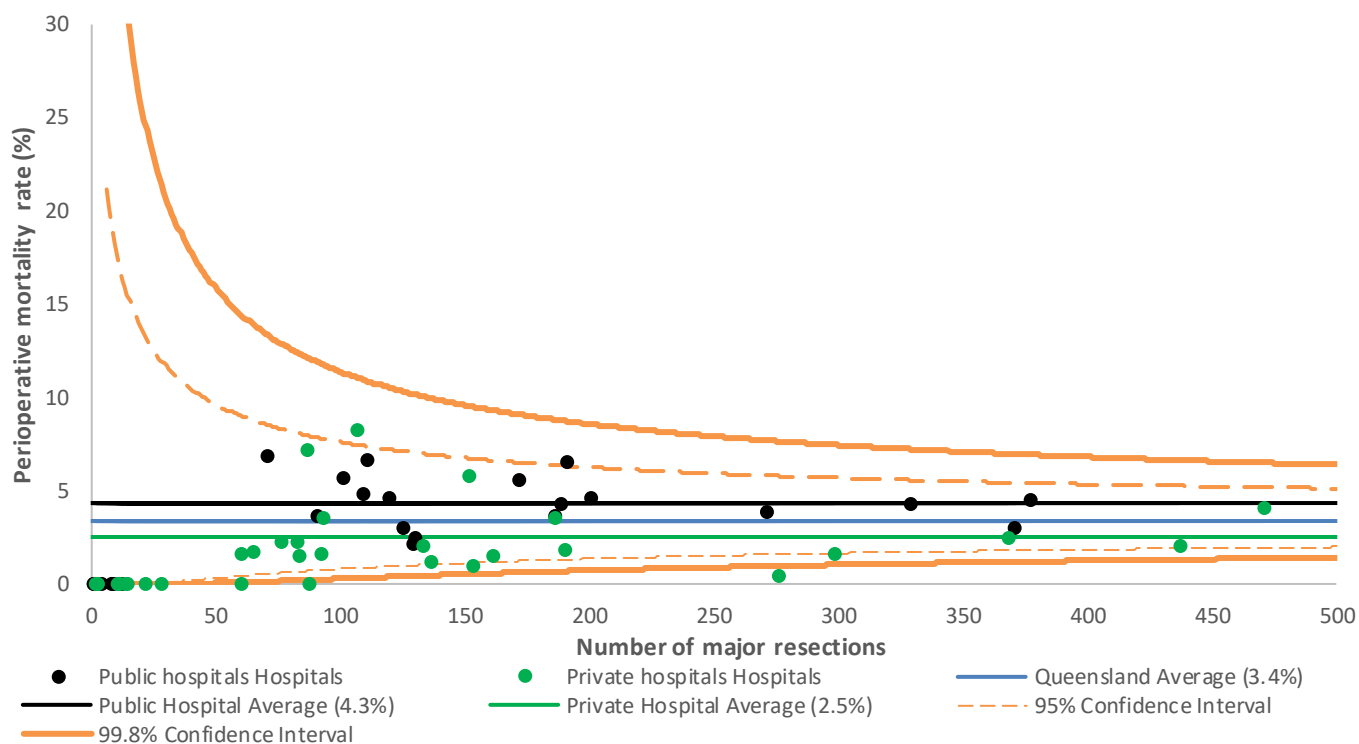
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

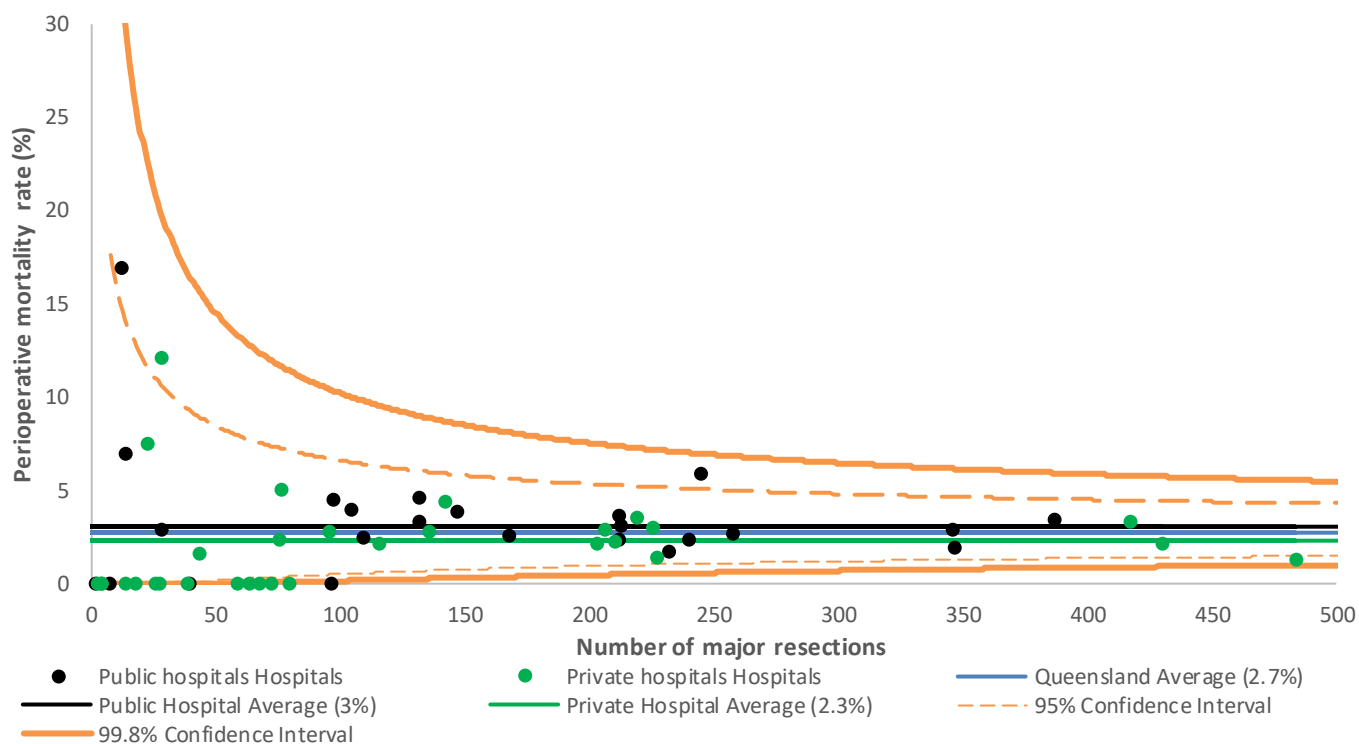
3.3.2 | Patients who died in-hospital or within 30 days of major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

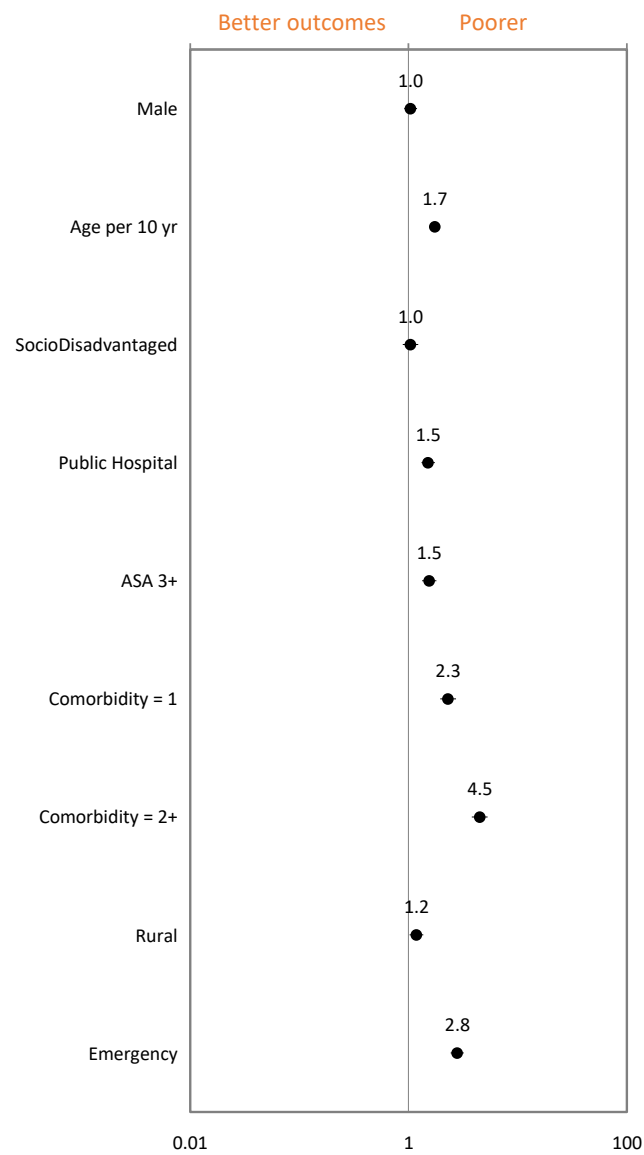
3.3.3 | Patients who died in-hospital or within 30 days of major resection by hospital volume



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.3.4 | Relative risk of perioperative mortality following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.

### 3.4 | 90 day mortality

Diagnosis year 2005 – 2009 and 2010 – 2014

3.4.1 | What percentage of patients die within 90 days from major resection?

**Mortality rate is calculated from facility of last major resection.**

90 day mortality	2005 - 2009	2010 - 2014
(% patients who die ≤ 90 days following major resection)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	7.2% (97/1340) [6.8%, 5-9, 0.088]	5.2% (73/1417) [5%, 4-6, 0.347]
Group A - Public hospitals	7.4% (135/1826) [6.7%, 6-8, 0.082]	5.8% (124/2129) [4.8%, 4-6, 0.451]
Group A - Private hospitals	4.5% (104/2325) [4.7%, 4-6, 0.099]	3.1% (73/2334) [3.6%, 3-5, 0.144]
Group B hospitals	4.6% (41/891) [4.6%, 3-6, 0.214]	4.1% (42/1028) [4.3%, 3-6, 0.919]
Other hospitals	3.6% (33/906) [4.5%, 3-6, 0.214]	3% (21/696) [4.1%, 3-6, 0.739]
<b>Hospital Type</b>		
Public hospitals	7.2% (240/3330) [6.7%*, 6-8, 0.031]	5.6% (210/3780) [4.8%, 4-6, 0.263]
Private hospitals	4.3% (170/3958) [4.6%*, 4-5, 0.025]	3.2% (123/3824) [3.8%, 3-5, 0.165]
<b>Queensland</b>	<b>5.6% (410/7288)</b>	<b>4.4% (333/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

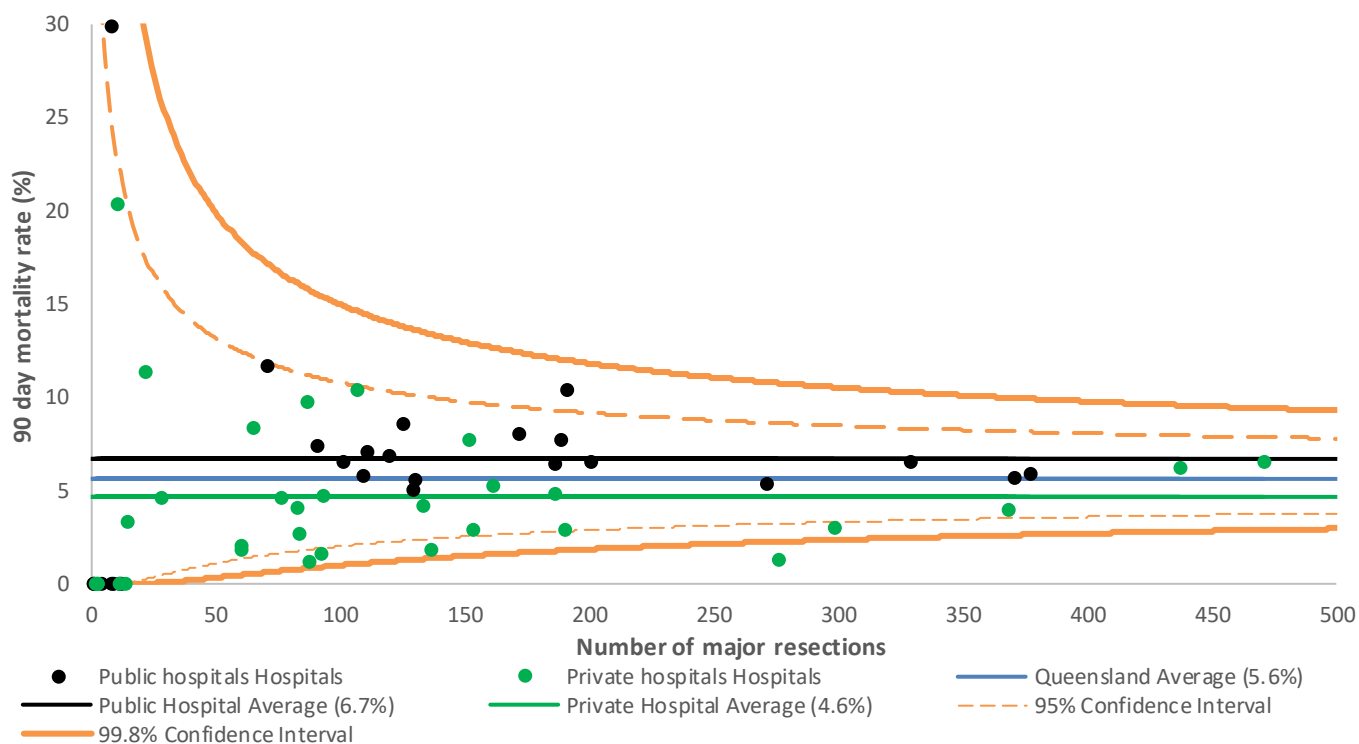
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

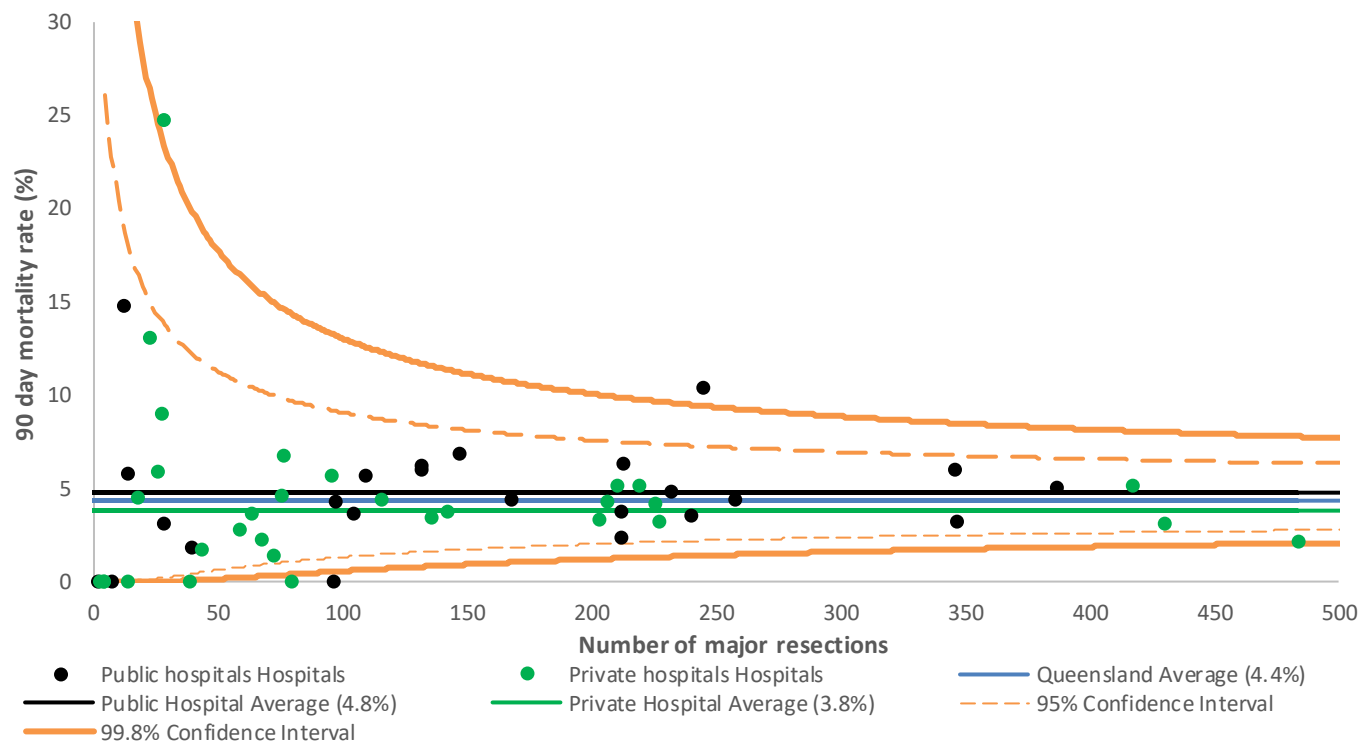
3.4.2 | 90 day mortality following major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

3.4.3 | 90 day mortality following major resection by hospital volume

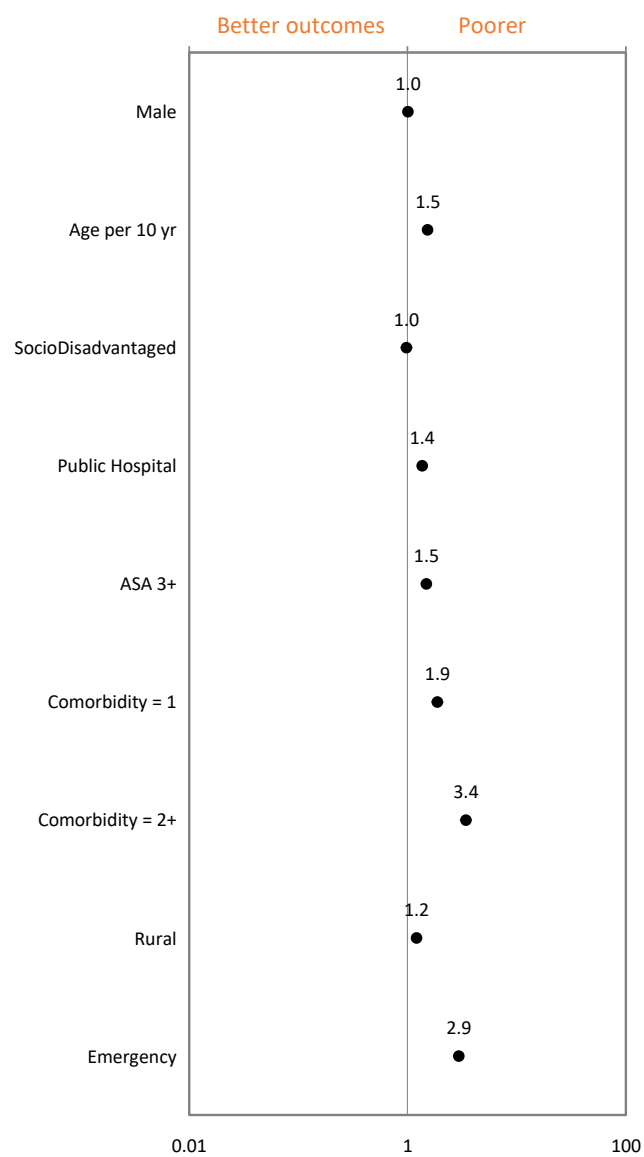




Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.4.4 | Relative risk of 90 day mortality following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.

### 3.5 | 1 year surgical survival

Diagnosis year 2005 – 2009 and 2010 – 2014

3.5.1 | What percentage of patients are alive one year after major resection?

**Survival rate is calculated from facility of last major resection.**

<b>1 year surgical survival</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% patients alive 1 year after major resection)</i>	<b>Diagnosis year</b> <b>Crude rates</b> [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> <b>Crude rates</b> [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	<b>85%</b> [86%, 83-88, 0.183]	<b>87%</b> [88%, 86-90, 0.217]
Group A - Public hospitals	<b>84%</b> [85%*, 83-87, 0.025]	<b>87%</b> [89%, 87-90, 0.544]
Group A - Private hospitals	<b>90%</b> [89%**, 88-91, 0.008]	<b>91%</b> [91%, 89-92, 0.087]
Group B hospitals	<b>89%</b> [89%, 86-91, 0.134]	<b>90%</b> [89%, 87-91, 0.975]
Other hospitals	<b>88%</b> [86%, 83-89, 0.587]	<b>92%</b> [89%, 86-92, 0.974]
<b>Hospital Type</b>		
Public hospitals	<b>84%</b> [85%*, 84-87, 0.019]	<b>87%</b> [88%, 87-90, 0.263]
Private hospitals	<b>89%</b> [89%*, 87-90, 0.018]	<b>91%</b> [90%, 89-91, 0.189]
<b>Queensland</b>	<b>87%</b>	<b>89%</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

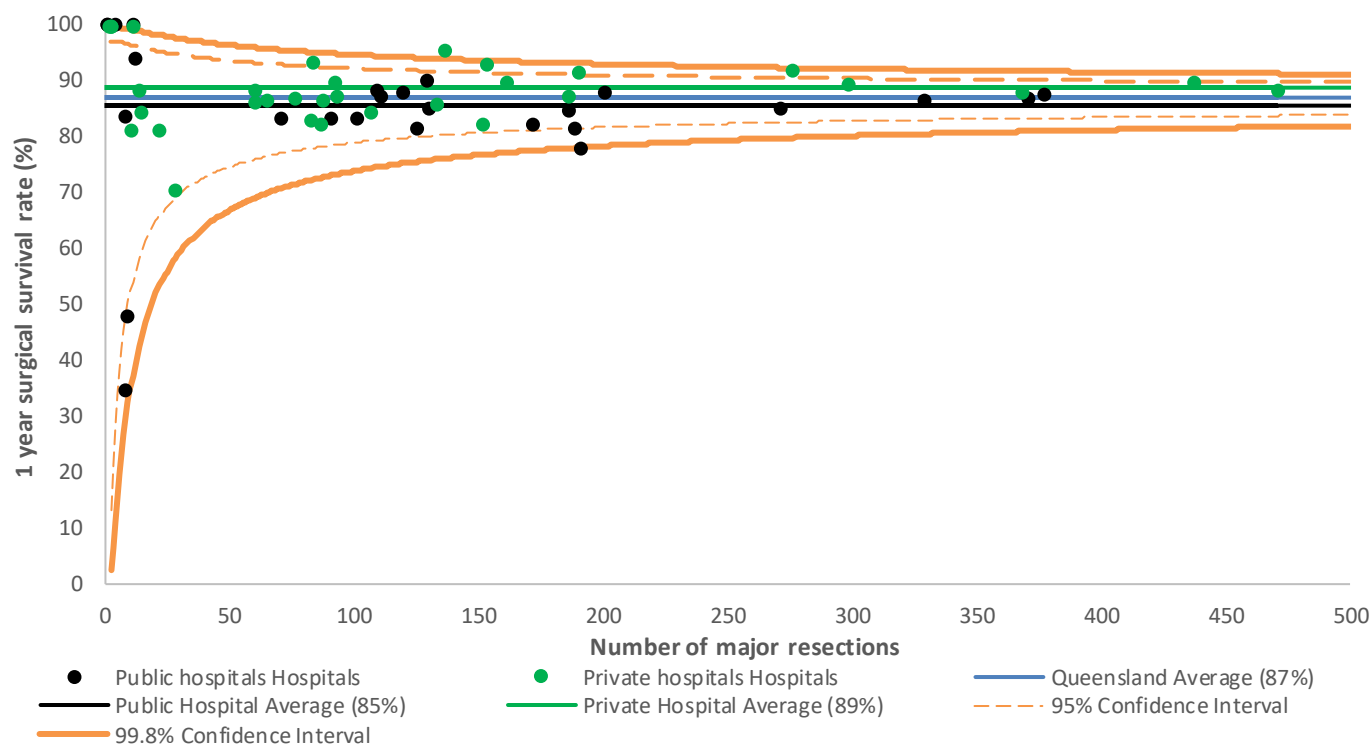
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Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

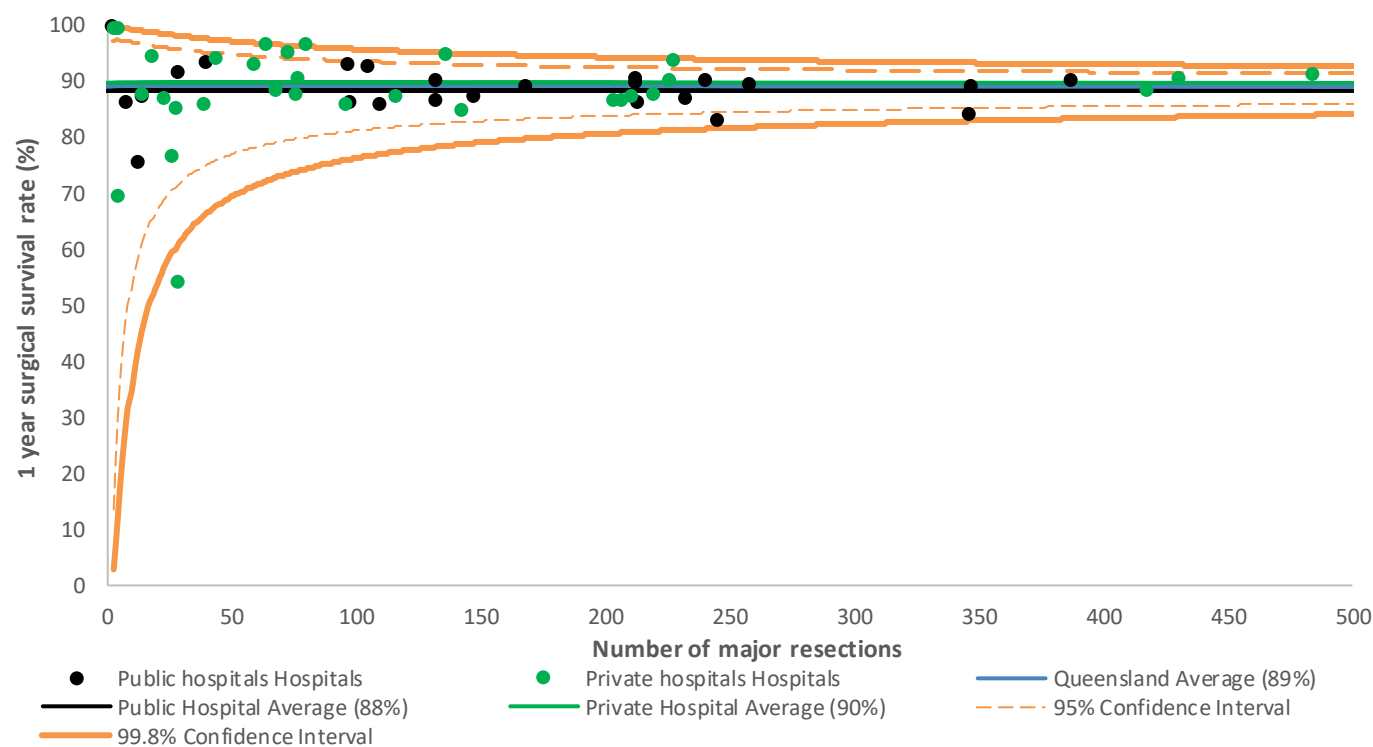
3.5.2 | 1 year surgical survival following major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

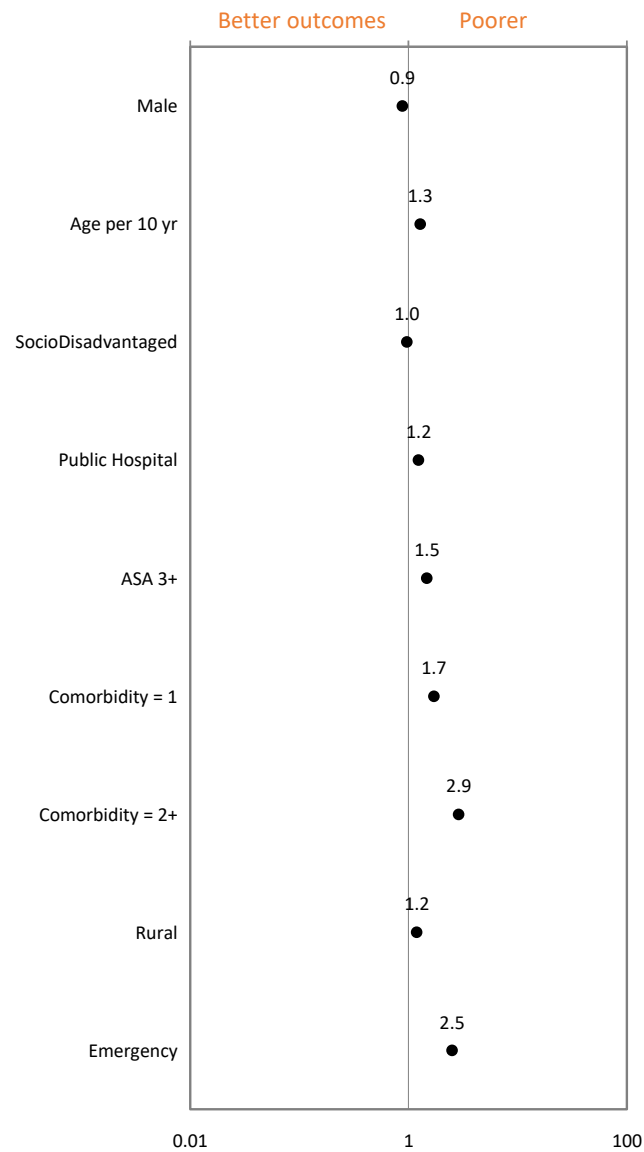
3.5.3 | 1 year surgical survival following major resection by hospital volume



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.5.4 | 1 year surgical survival following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant

### 3.6 | 2 year surgical survival

Diagnosis year 2005 – 2009 and 2010 – 2014

3.6.1 | What percentage of patients are alive two years after major resection?

**Survival rate is calculated from facility of last major resection.**

<b>2 year surgical survival</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% patients alive 2 year after major resection)</i>	<b>Diagnosis year</b>	<b>Diagnosis year</b>
	<b>Crude rates</b>	<b>Crude rates</b>
	[Adjusted rates, CI%, P value]	[Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	<b>75%</b> [76%, 73-79, 0.088]	<b>78%</b> [79%, 77-82, 0.091]
Group A - Public hospitals	<b>73%</b> [75%**, 73-77, 0.001]	<b>79%</b> [81%, 79-83, 0.677]
Group A - Private hospitals	<b>82%</b> [81%**, 79-82, 0.001]	<b>84%</b> [83%, 81-84, 0.092]
Group B hospitals	<b>80%</b> [80%, 78-82, 0.119]	<b>82%</b> [82%, 80-84, 0.502]
Other hospitals	<b>81%</b> [80%, 77-82, 0.208]	<b>86%</b> [83%, 80-87, 0.29]
<b>Hospital Type</b>		
Public hospitals	<b>74%</b> [75%**, 73-77, 0.002]	<b>79%</b> [80%, 78-82, 0.135]
Private hospitals	<b>82%</b> [81%**, 79-82, 0]	<b>84%</b> [83%, 81-85, 0.09]
<b>Queensland</b>	<b>78%</b>	<b>81%</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

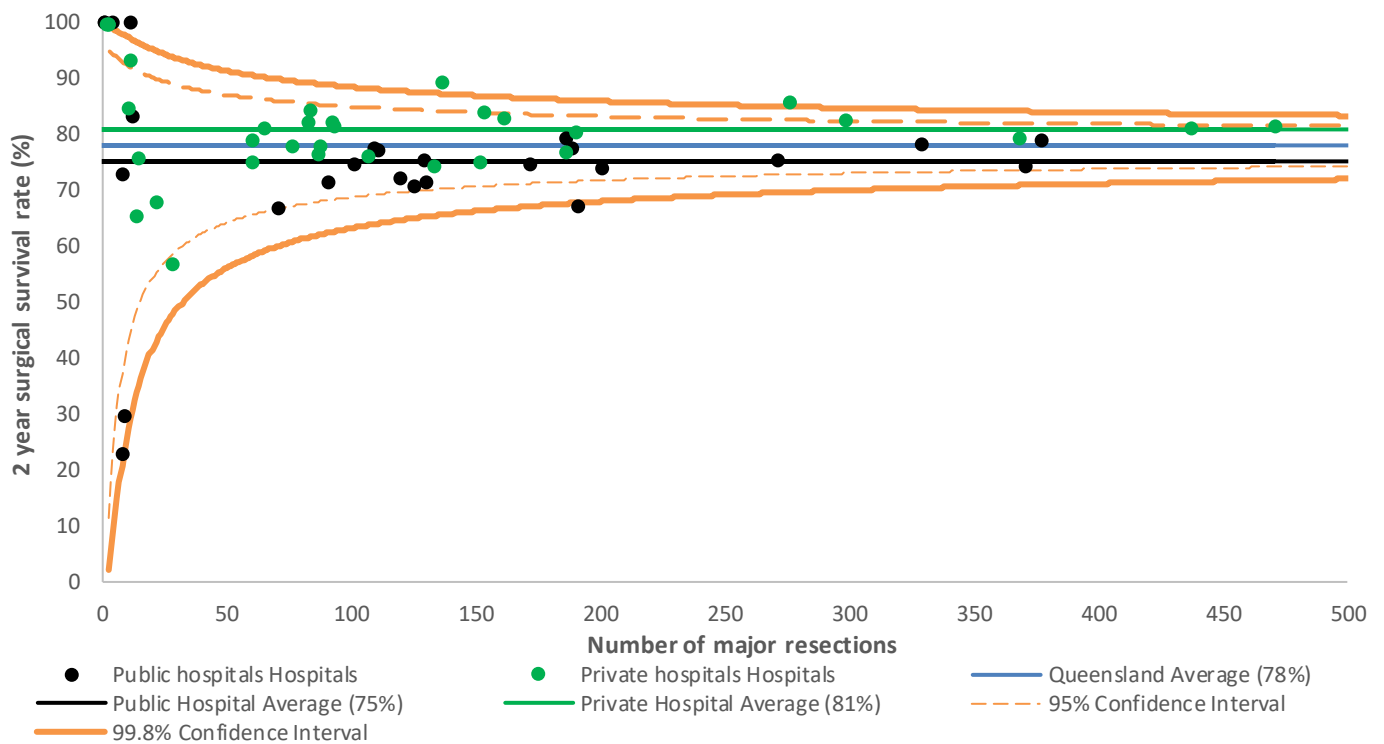
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

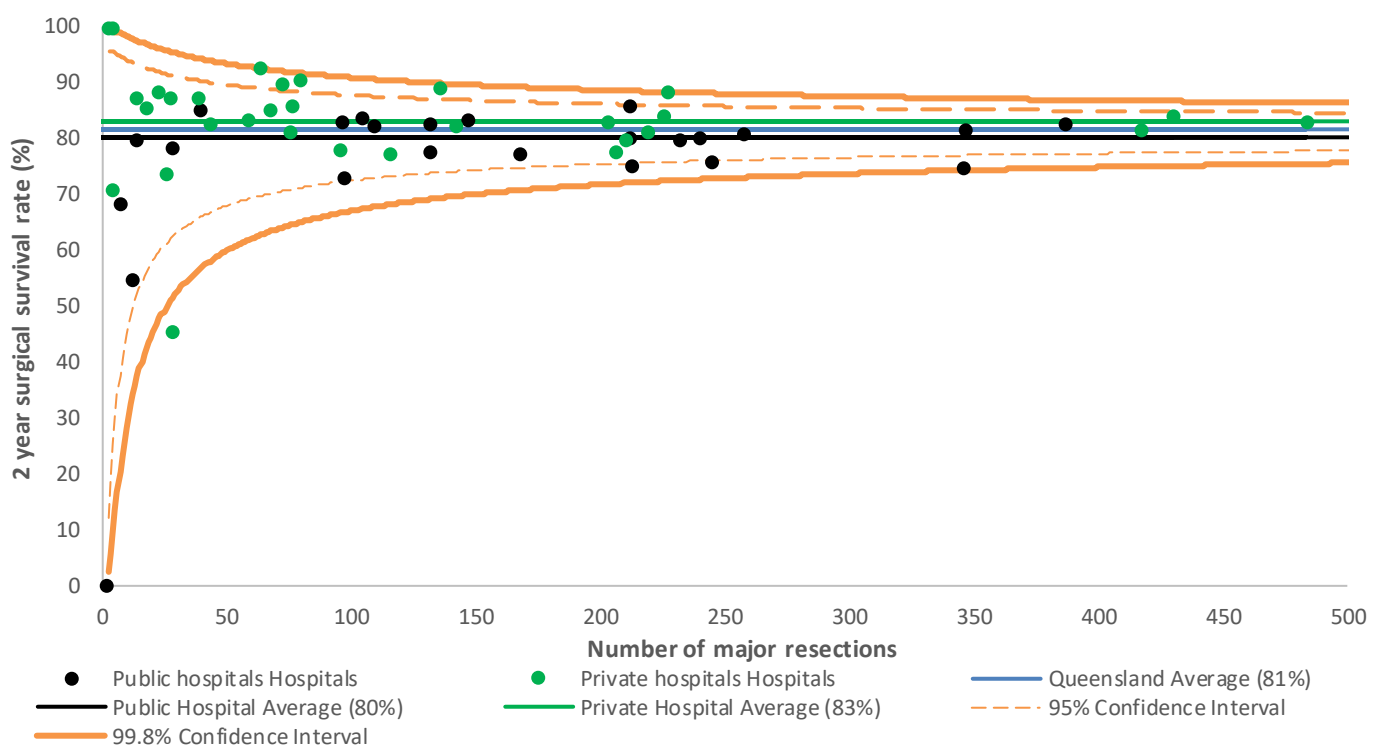
3.6.2 | 2 year surgical survival following major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

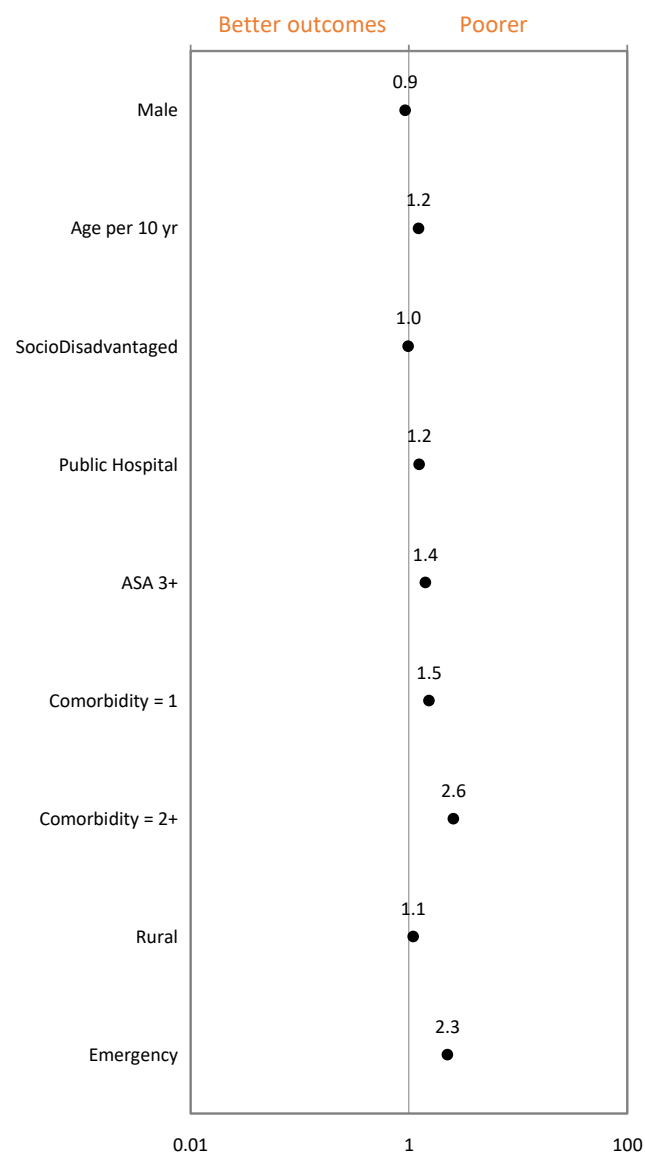
3.6.3 | 2 year surgical survival following major resection by hospital volume



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.6.4 | 2 year surgical survival following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant

### 3.7 | 5 year surgical survival

Diagnosis year 2005 – 2009 and 2010 – 2014

3.7.1 | What percentage of patients are alive five years after major resection?

**Survival rate is calculated from facility of last major resection.**

<b>5 year surgical survival</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% patients alive 5 year after major resection)</i>	<b>Diagnosis year</b>	<b>Diagnosis year</b>
	<b>Crude rates</b>	<b>Crude rates</b>
	[Adjusted rates, CI%, P value]	[Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	59% [59%*, 55-63, 0.016]	59% [60%*, 56-63, 0.046]
Group A - Public hospitals	57% [58%**, 54-61, 0.001]	60% [61%, 58-65, 0.19]
Group A - Private hospitals	68% [68%**, 65-71, 0.001]	66% [66%, 63-69, 0.092]
Group B hospitals	66% [67%, 63-71, 0.119]	66% [65%, 61-69, 0.502]
Other hospitals	68% [66%, 62-70, 0.208]	72% [68%, 63-72, 0.11]
<b>Hospital Type</b>		
Public hospitals	58% [59%**, 56-61, 0]	59% [61%*, 58-63, 0.034]
Private hospitals	68% [68%**, 66-70, 0]	68% [67%*, 64-69, 0.022]
<b>Queensland</b>	<b>64%</b>	<b>64%</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

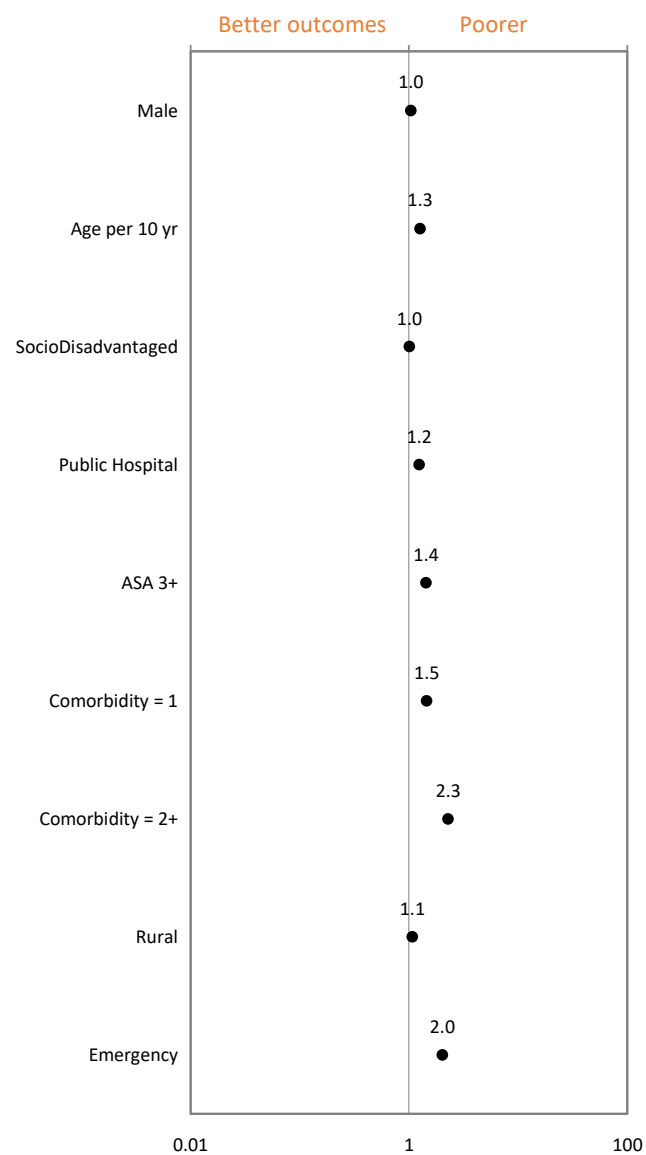
Refer to appendix 1 for hospital grouping definitions



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.7.2 | 5 year surgical survival following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant

3.8 | Prolonged LOS  $\geq$  21 days

Diagnosis year 2005 – 2009 and 2010 – 2014

3.8.1 | What percentage of patients had a length of stay  $\geq$  21 days after major resection?

<b>Prolonged LOS <math>\geq</math> 21 days</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% of patients whose length of stay was <math>\geq</math> 21 days)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	<b>11% (148/1335)</b> [10%, 9-12, 0.904]	<b>9.9% (136/1376)</b> [8.8%, 7-10, 0.54]
Group A - Public hospitals	<b>12% (225/1825)</b> [10%, 9-12, 0.722]	<b>9.6% (206/2154)</b> [8.2%, 7-10, 0.825]
Group A - Private hospitals	<b>9.9% (226/2289)</b> [11%, 9-12, 0.467]	<b>7.3% (168/2315)</b> [8%, 7-9, 0.596]
Group B hospitals	<b>11% (94/893)</b> [11%, 9-13, 0.404]	<b>8.8% (91/1036)</b> [9.6%, 8-12, 0.165]
Other hospitals	<b>5.5% (52/946)</b> [7.1%**, 5-9, 0.008]	<b>4.7% (34/723)</b> [6.7%, 5-9, 0.176]
<b>Hospital Type</b>		
Public hospitals	<b>12% (388/3327)</b> [10%, 9-11, 0.918]	<b>9.5% (359/3769)</b> [8.3%, 7-9, 0.895]
Private hospitals	<b>9% (357/3961)</b> [10%, 9-11, 0.915]	<b>7.2% (276/3835)</b> [8.4%, 7-10, 0.874]
<b>Queensland</b>	<b>10% (745/7288)</b>	<b>8.4% (635/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

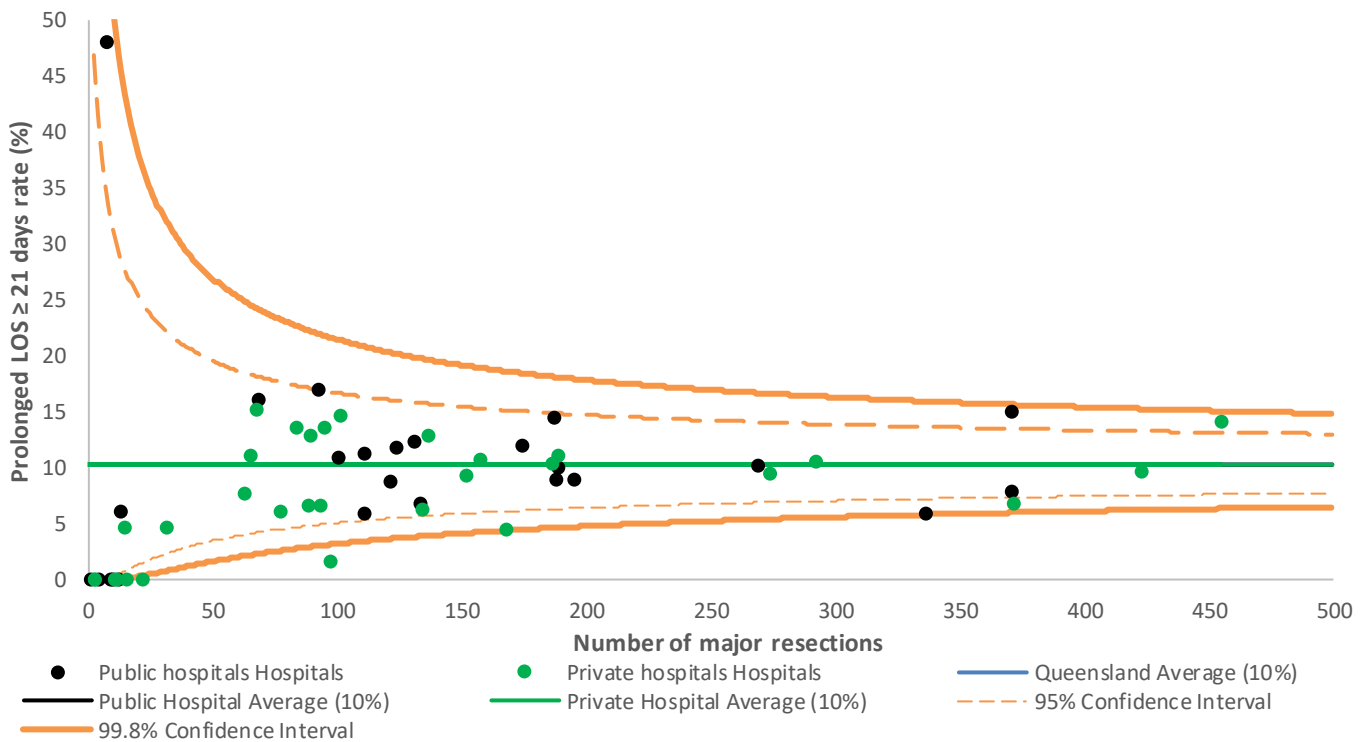
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Refer to appendix 1 for hospital grouping definitions

### Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

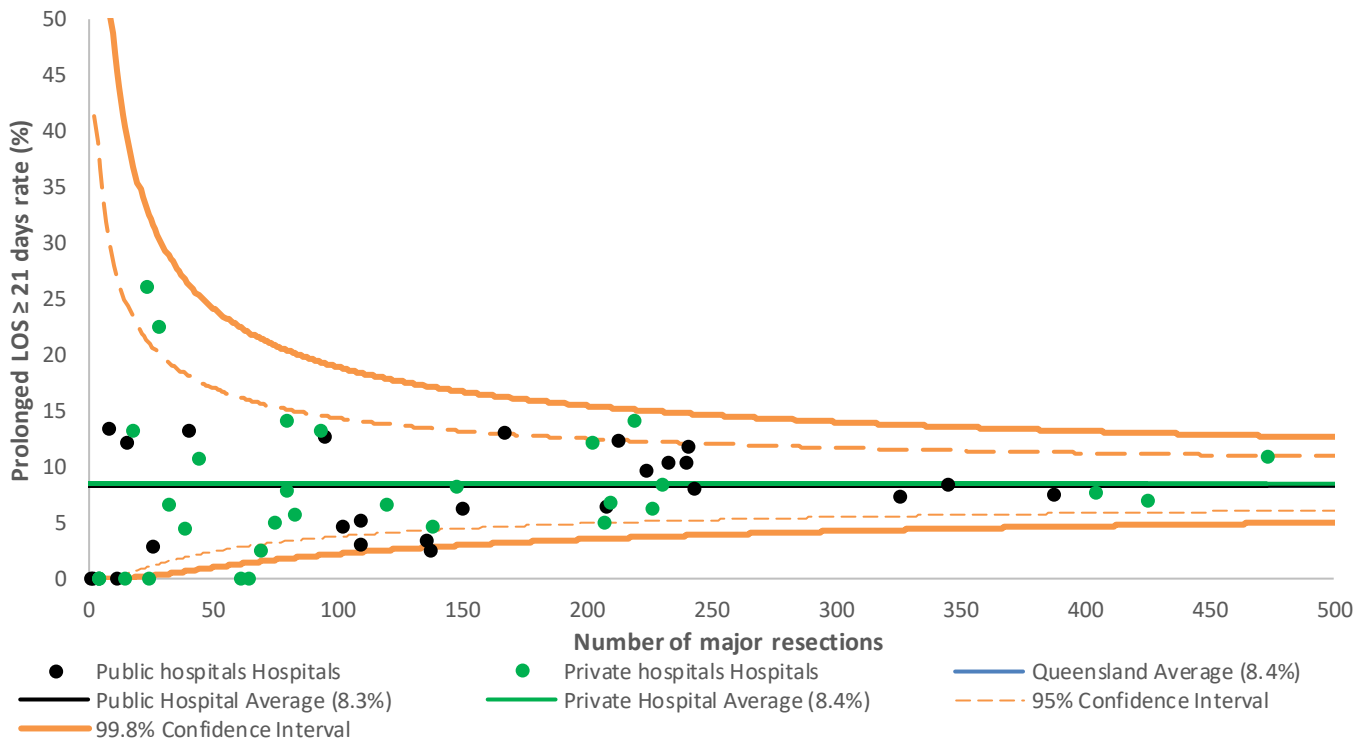
#### 3.8.2 | Patients who had a length of stay $\geq 21$ days by hospital volume



### Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

#### 3.8.3 | Patients who had a length of stay $\geq 21$ days by hospital volume



### 3.9 | Medical interventions within same admission

Diagnosis year 2005 – 2009 and 2010 – 2014

3.9.1 | What percentage of patients had medical interventions within the same admission following major resection?

Had medical interventions within same admission	2005 - 2009	2010 - 2014
(% of patients that had selected medical interventions within the same admission)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	4.9% (66/1335) [4.8%, 4-6, 0.901]	5.7% (79/1376) [5.2%, 4-7, 0.986]
Group A - Public hospitals	6.6% (121/1825) [6%*, 5-7, 0.046]	7.6% (164/2154) [7%***, 6-8, 0.001]
Group A - Private hospitals	4.3% (98/2289) [4.7%, 4-6, 0.755]	3.8% (88/2315) [4.2%*, 3-5, 0.049]
Group B hospitals	4.8% (43/893) [4.5%, 3-6, 0.602]	4.5% (47/1036) [4.6%, 3-6, 0.437]
Other hospitals	3.1% (29/946) [3.3%*, 2-5, 0.039]	2.6% (19/723) [3.1%*, 2-5, 0.024]
<b>Hospital Type</b>		
Public hospitals	5.8% (192/3327) [5.4%, 5-6, 0.284]	6.7% (253/3769) [6.1%*, 5-7, 0.042]
Private hospitals	4.2% (165/3961) [4.4%, 4-5, 0.285]	3.8% (144/3835) [4.2%*, 3-5, 0.016]
<b>Queensland</b>	<b>4.9% (357/7288)</b>	<b>5.2% (397/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

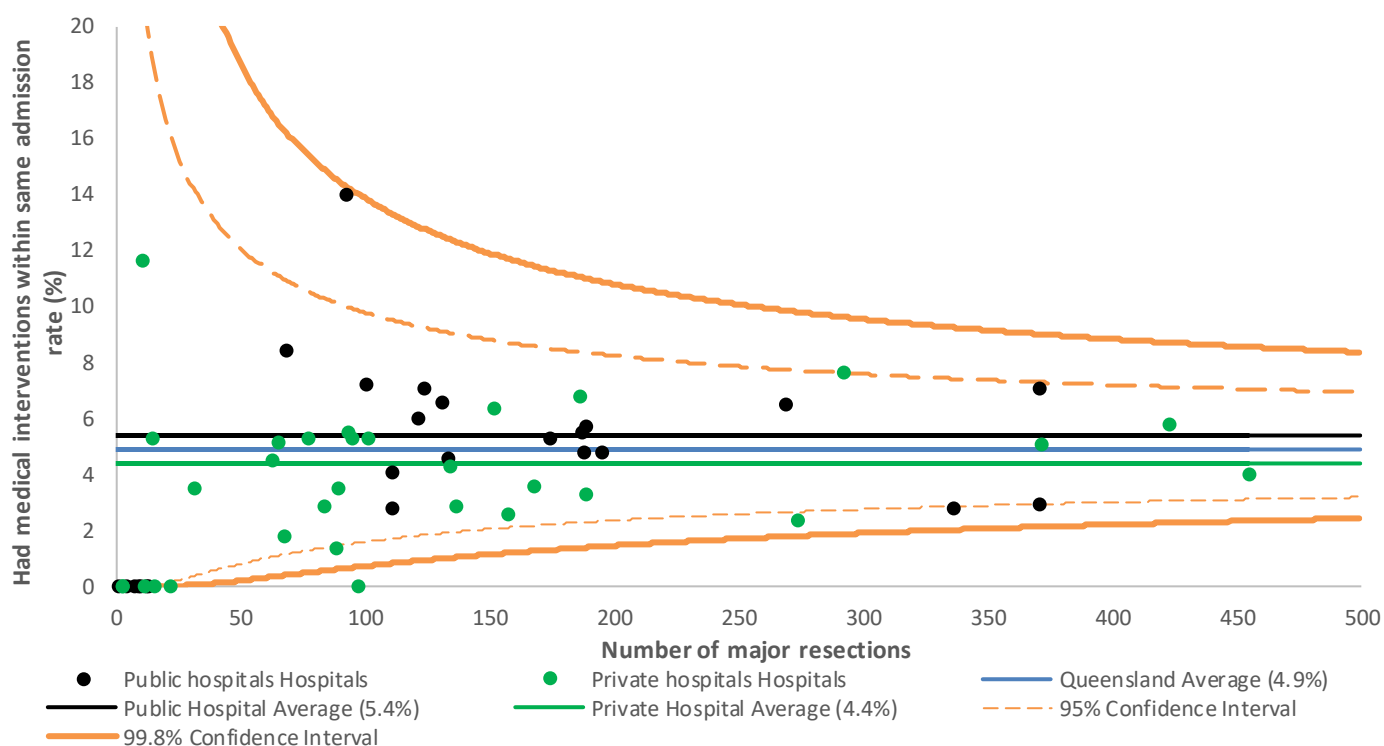
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of medical interventions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

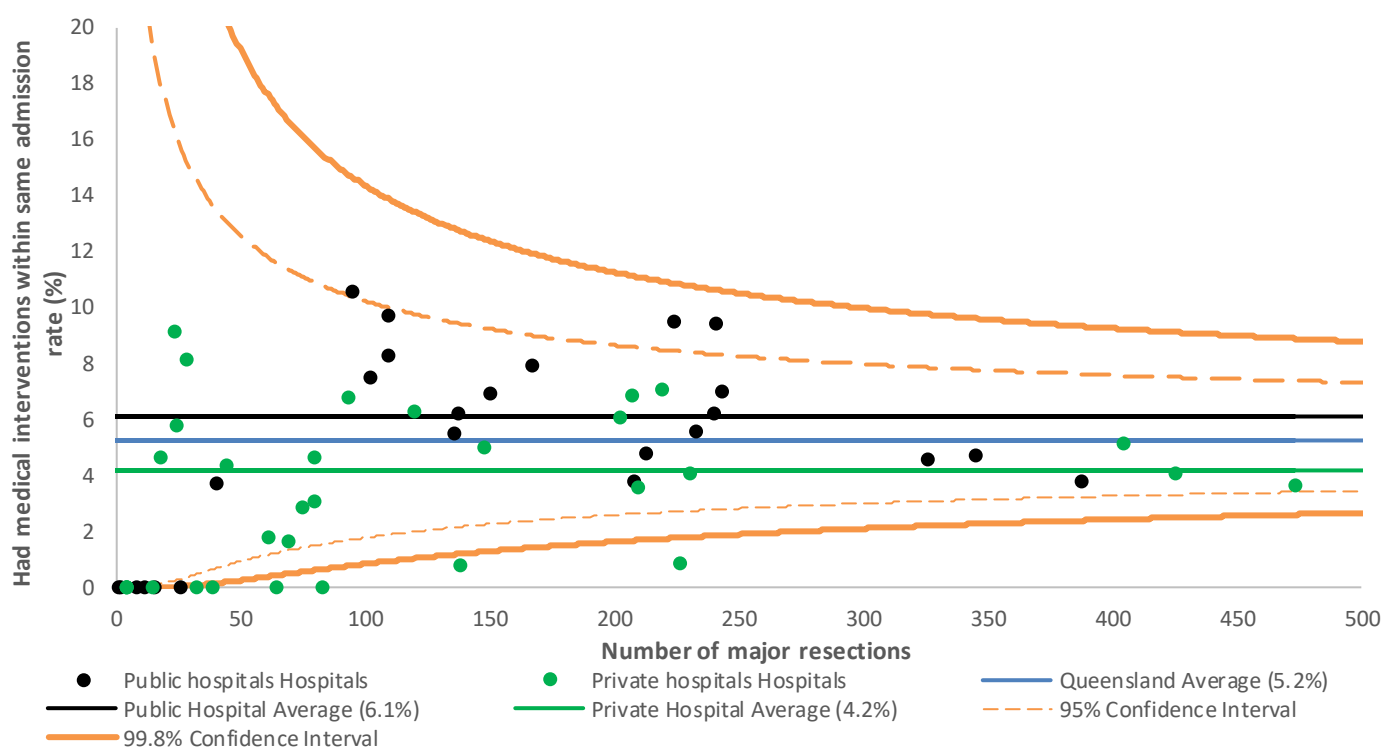
3.9.2 | Patients who had medical interventions within the same admission by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

3.9.3 | Patients who had medical interventions within the same admission by hospital volume



### 3.10 | Medical interventions in subsequent admissions

Diagnosis year 2005 – 2009 and 2010 – 2014

3.10.1 | What percentage of patients had medical interventions in subsequent admissions that occurred within 30 days of discharge following first major resection?

Had medical interventions in subsequent admissions  <i>(% of patients that had selected medical interventions in subsequent admissions)</i>	2005 - 2009  Diagnosis year  Crude rates (n/N)  [Adjusted rates, CI%, P value]	2010 - 2014  Diagnosis year  Crude rates (n/N)  [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	2.2% (30/1335) [2.1%, 1-3, 0.594]	2.4% (33/1376) [2.3%, 2-3, 0.713]
Group A - Public hospitals	2% (37/1825) [2%, 1-3, 0.409]	2.9% (62/2154) [2.9%, 2-4, 0.252]
Group A - Private hospitals	2.4% (54/2289) [2.4%, 2-3, 0.953]	2.1% (49/2315) [2.1%, 2-3, 0.416]
Group B hospitals	2.1% (19/893) [2.2%, 1-4, 0.838]	2.4% (25/1036) [2.4%, 2-4, 0.94]
Other hospitals	3.2% (30/946) [3.5%*, 2-5, 0.049]	2.4% (17/723) [2.5%, 1-4, 0.982]
<b>Hospital Type</b>		
Public hospitals	2.1% (69/3327) [2%, 2-3, 0.283]	2.7% (103/3769) [2.7%, 2-3, 0.45]
Private hospitals	2.5% (101/3961) [2.6%, 2-3, 0.341]	2.2% (83/3835) [2.2%, 2-3, 0.429]
<b>Queensland</b>	<b>2.3% (170/7288)</b>	<b>2.4% (186/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

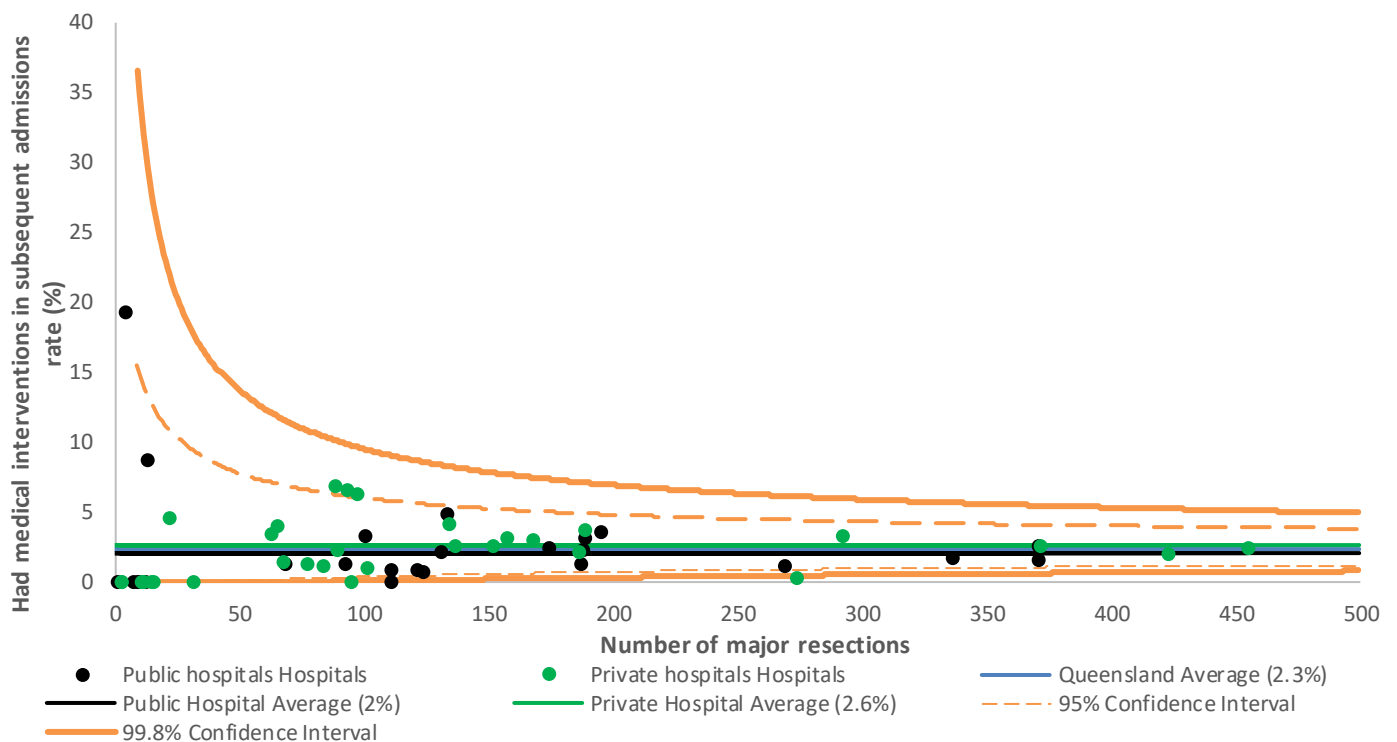
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of medical interventions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

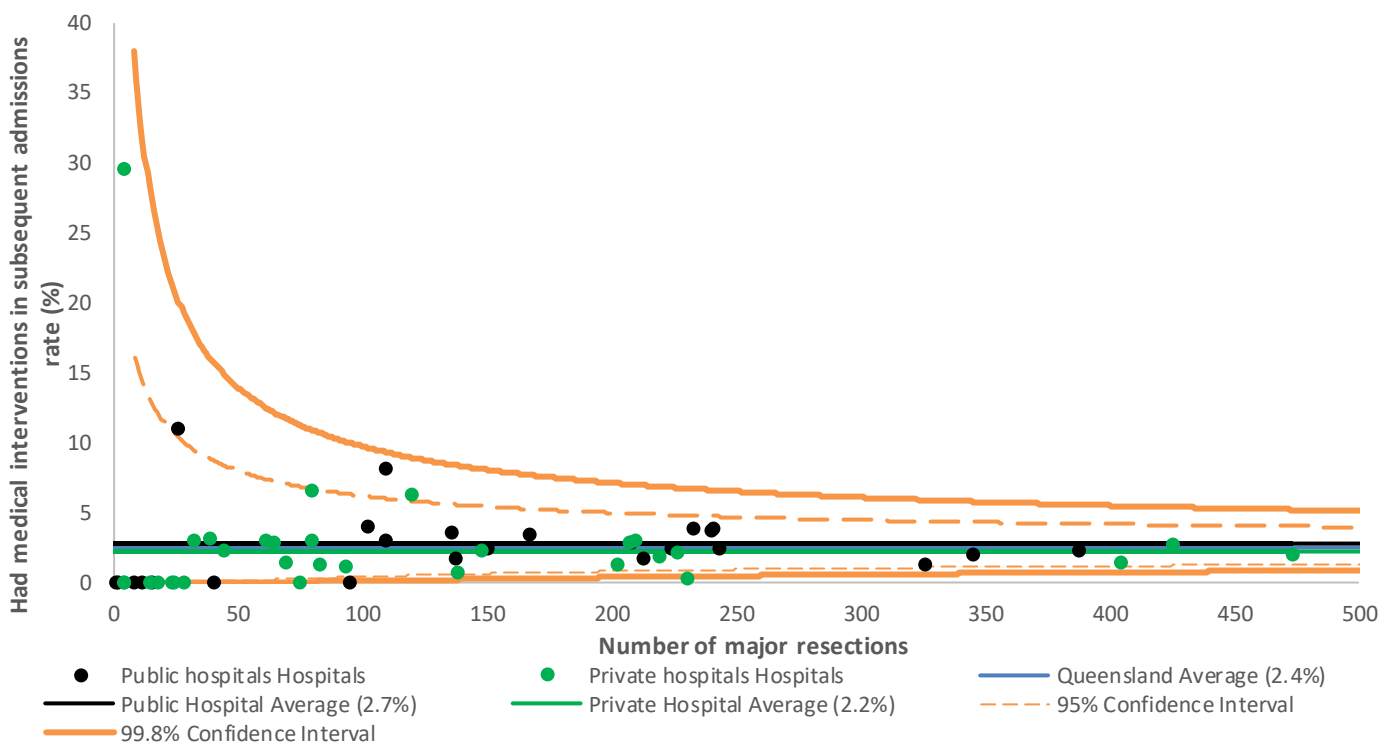
3.10.2 | Patients who had medical interventions within subsequent admissions by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

3.10.3 | Patients who had medical interventions within subsequent admissions by hospital volume



## 3.11 | Had an anastomotic leak

Diagnosis year 2005 – 2009 and 2010 – 2014

## 3.11.1 | What percentage of patients had an anastomotic leak?

Had an anastomotic leak	2005 - 2009	2010 - 2014
(% of patients who had an anastomotic leak)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	2% (26/1280) [2%, 1-3, 0.216]	2.8% (37/1306) [2.5%, 2-4, 0.574]
Group A - Public hospitals	3.9% (67/1721) [3.5%*, 3-5, 0.036]	3.9% (81/2062) [3.7%*, 3-5, 0.032]
Group A - Private hospitals	2.4% (55/2256) [2.7%, 2-4, 0.727]	2.3% (52/2282) [2.4%, 2-3, 0.338]
Group B hospitals	2.2% (19/876) [2%, 1-3, 0.301]	2.1% (21/1006) [2.2%, 1-3, 0.304]
Other hospitals	1.7% (16/936) [1.8%, 1-3, 0.168]	2.1% (15/708) [2.5%, 1-4, 0.634]
<b>Hospital Type</b>		
Public hospitals	3% (95/3161) [2.8%, 2-4, 0.567]	3.4% (123/3593) [3.1%, 3-4, 0.291]
Private hospitals	2.3% (88/3908) [2.4%, 2-3, 0.576]	2.2% (83/3771) [2.4%, 2-3, 0.232]
<b>Queensland</b>	<b>2.6% (183/7069)</b>	<b>2.8% (206/7364)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

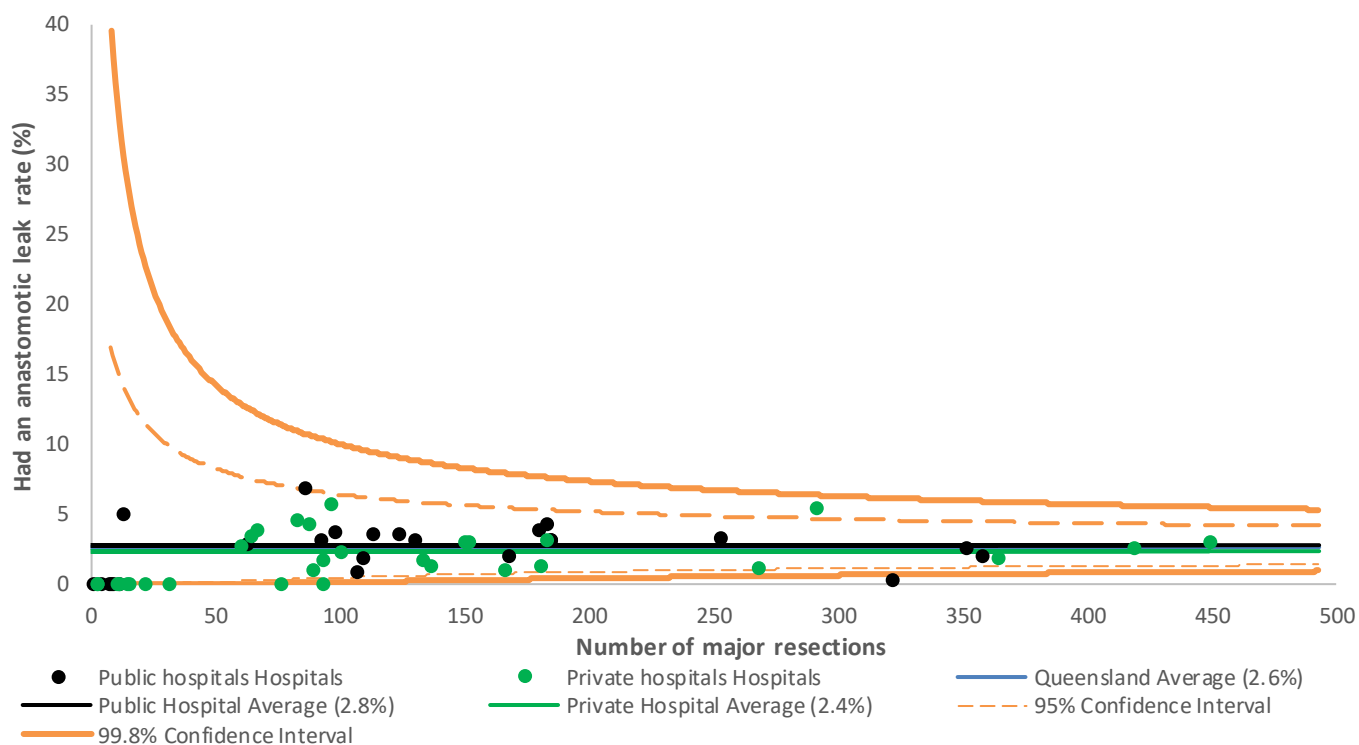
Refer to appendix 3 for definitions of anastomotic leak



### Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

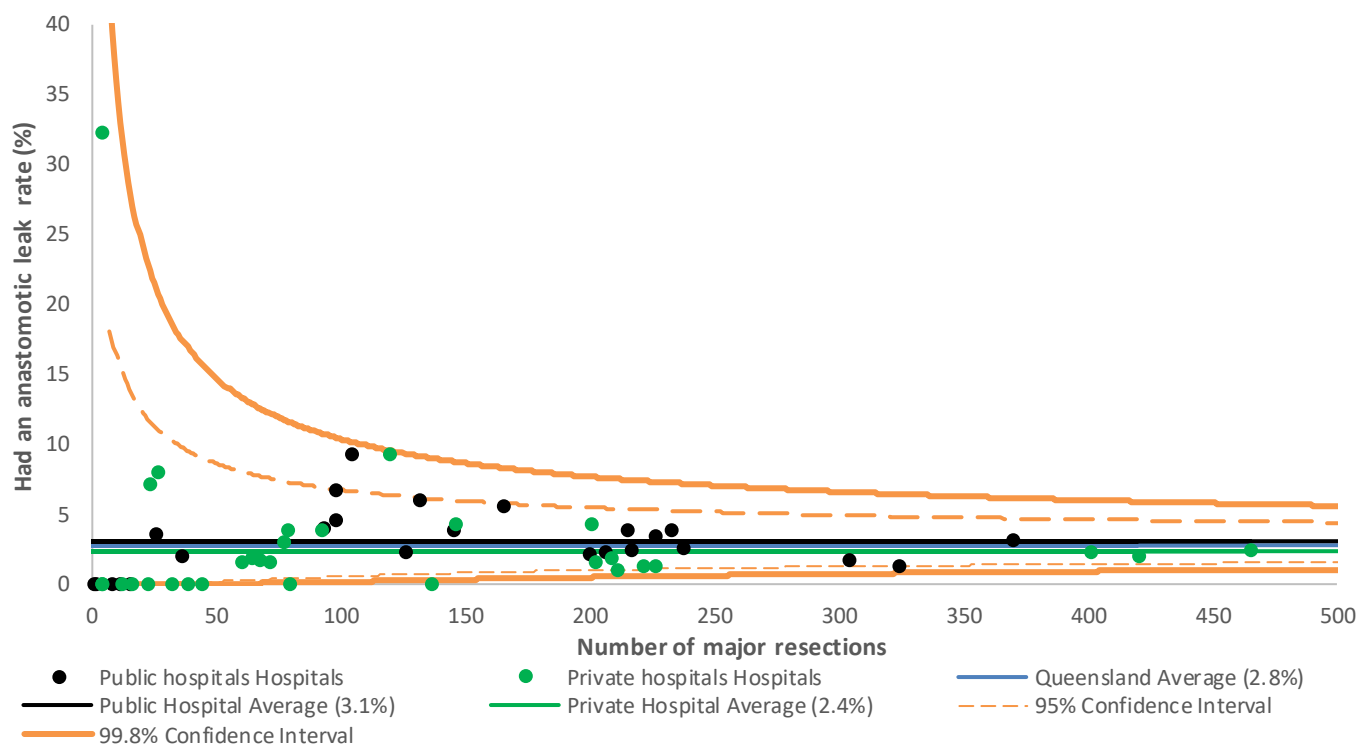
#### 3.11.2 | Patients who had an anastomotic leak by hospital volumes



### Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

#### 3.11.3 | Patients who had an anastomotic leak by hospital volume



### 3.12 | Had an anastomotic leak and died within 90 days of major resection

Diagnosis year 2005 – 2009 and 2010 – 2014

3.12.1 | What percentage of patients had an anastomotic leak and died within 90 days of major resection?

Had an anastomotic leak and died within 90 days of major resection	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
(% of patients who had an anastomotic leak and died within 90 days of major resection)	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	27% (7/26) [26%, 14-48, 0.261]	16% (6/37) [14%, 6-33, 0.719]
Group A - Public hospitals	22% (15/67) [22%, 13-37, 0.518]	15% (12/81) [15%, 8-28, 0.557]
Group A - Private hospitals	15% (8/55) [15%, 7-30, 0.541]	9.6% (5/52) [8.7%, 4-21, 0.452]
Group B hospitals	11% (2/19) [12%, 4-37, 0.442]	0% (0/21) [0%**, 0-0, 0]
Other hospitals	13% (2/16) [11%, 4-34, 0.375]	13% (2/15) [27%, 6-100, 0.282]
<b>Hospital Type</b>		
Public hospitals	23% (22/95) [23%, 15-36, 0.332]	15% (18/123) [14%, 8-25, 0.582]
Private hospitals	14% (12/88) [14%, 8-24, 0.279]	8.4% (7/83) [8.9%, 4-19, 0.431]
<b>Queensland</b>	<b>19% (34/183)</b>	<b>12% (25/206)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of anastomotic leak

## 4 | Accessible

Making health services available in the most suitable setting in a reasonable time.



## 4.1 | Time to first treatment within 30 days

Diagnosis year 2005 – 2009 and 2010 – 2014

### 4.1.1 | What percentage of patients receive their first treatment\* within 30 days of diagnosis?

Received first treatment within 30 days	2005 - 2009	2010 - 2014
<i>(% of patients whose time from diagnosis to first treatment is ≤30 days)</i>	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>Hospital Type</b>		
Public hospitals	73% (2559/3528) [73%** , 71-74, 0]	64% (2580/4034) [64%** , 62-66, 0]
Private hospitals	90% (3714/4128) [90%** , 89-91, 0]	88% (3537/4020) [88%** , 87-89, 0]
<b>Queensland</b>	<b>82% (6273/7658)</b>	<b>76% (6117/8055)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

\*The first treatment the patient had for their cancer – either surgery, radiation therapy or IV systemic therapy.

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.

Refer to appendix 1 for hospital grouping definitions

## 4.2 | Median days from diagnosis to first treatment

Diagnosis year 2005 – 2009 and 2010 – 2014

### 4.2.1 | What is the median number of days from diagnosis to first treatment\*?

Days from diagnosis to first treatment	2005 - 2009	2010 - 2014
<i>(Median number of days from diagnosis to first treatment)</i>	Diagnosis year Median IQR	Diagnosis year Median IQR
<b>Hospital Type</b>		
Public hospitals	14 (0-34)	20 (1-40)
Private hospitals	8 (0-34)	11 (1-40)
<b>Queensland</b>	<b>10</b> <b>(0-24)</b>	<b>14</b> <b>(3-29)</b>

\* The first treatment the patient had for their cancer – either surgery, radiation therapy or IV systemic therapy.

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.

For a description on Interquartile range (IQR) - refer to definitions

### 4.3 | Time to first major resection within 30 days

Diagnosis year 2005 – 2009 and 2010 – 2014

#### 4.3.1 | What percentage of patients receive major resection within 30 days of diagnosis?

##### Where major resection is first treatment received

Received major resection within 30 days  (% patients whose time from diagnosis to major resection is ≤30 days)	2005 - 2009 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2010 - 2014 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	72% (940/1308) [72%**, 69-74, 0]	64% (859/1335) [64%**, 62-67, 0]
Group A - Public hospitals	76% (1380/1808) [76%**, 74-78, 0]	66% (1401/2131) [66%**, 64-68, 0]
Group A - Private hospitals	91% (2064/2257) [91%**, 90-93, 0]	90% (2041/2269) [90%**, 88-92, 0]
Group B hospitals	89% (788/885) [89%**, 87-91, 0]	85% (871/1023) [85%**, 83-88, 0]
Other hospitals	92% (868/943) [92%**, 90-94, 0]	88% (636/721) [88%**, 86-91, 0]
<b>Hospital Type</b>		
Public hospitals	74% (2439/3280) [74%**, 73-76, 0]	66% (2439/3704) [66%**, 64-68, 0]
Private hospitals	92% (3601/3921) [92%**, 91-93, 0]	89% (3369/3775) [89%**, 88-91, 0]
<b>Queensland</b>	<b>84% (6040/7201)</b>	<b>78% (5808/7479)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

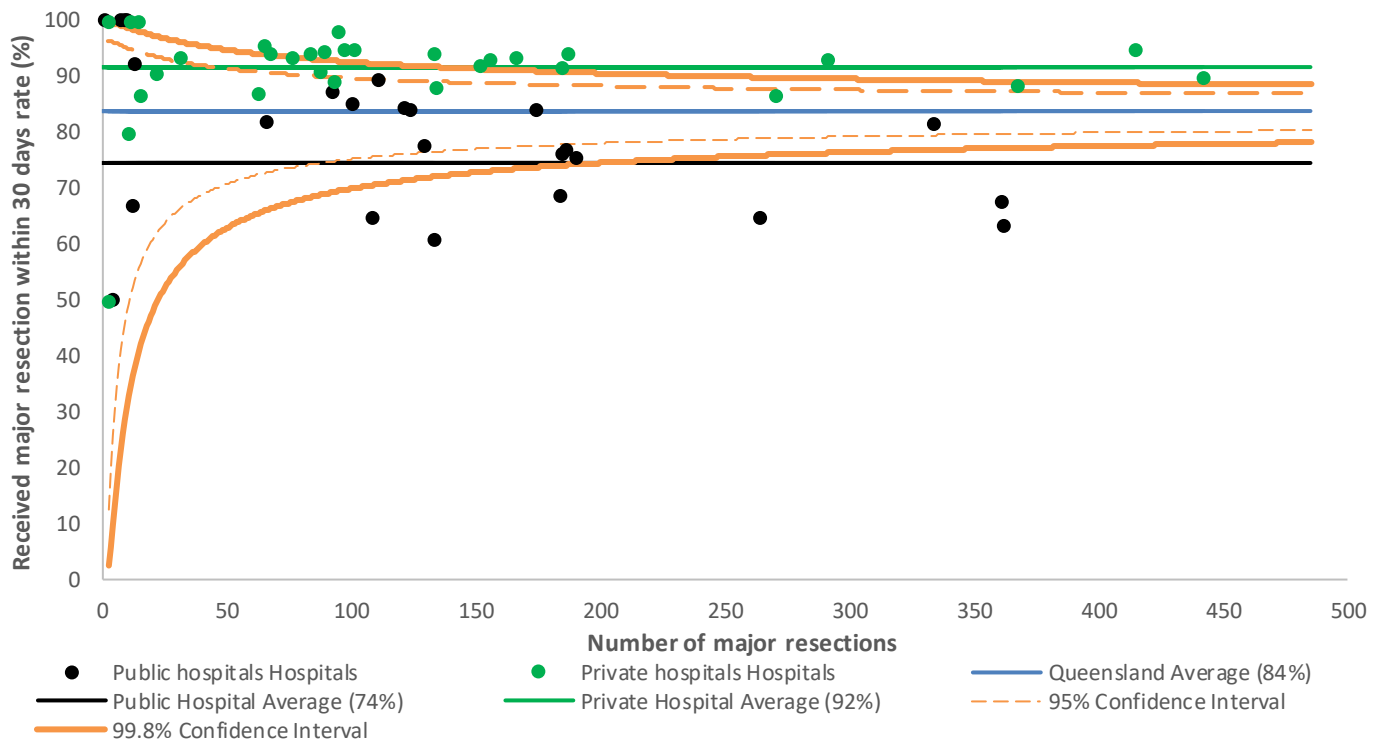
Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

4.3.2 | Patients receiving major resection within 30 days of diagnosis by hospital volume.

Where major resection is first treatment received

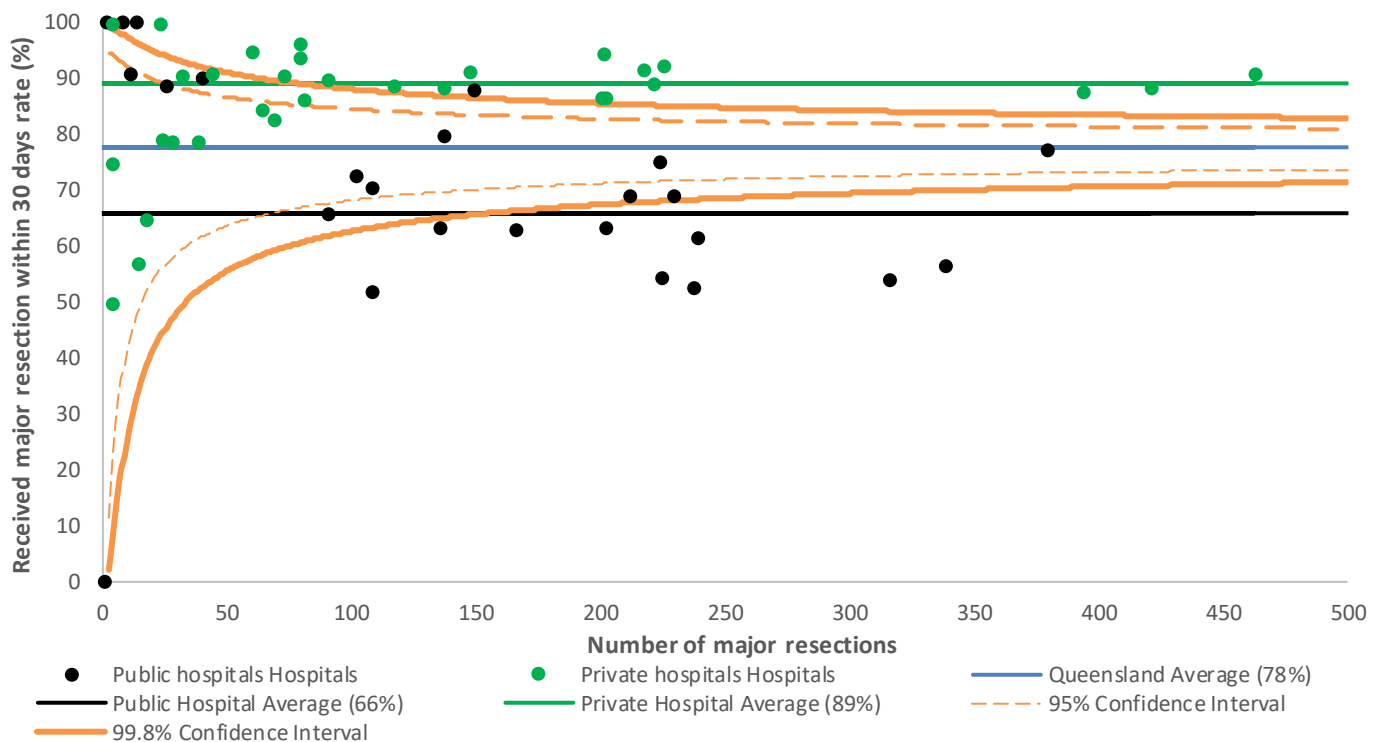


Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

4.3.3 | Patients receiving major resection within 30 days of diagnosis by hospital volume.

Where major resection is first treatment received.



## 4.4 | Median days to first major resection

Diagnosis year 2005 – 2009 and 2010 - 2014

4.4.1 | What is the median number of days from diagnosis to first major resection?

**Where major resection is first treatment received**

Days from diagnosis to first major resection  <i>(Median number of days from diagnosis to first major resection)</i>	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Median IQR	Median IQR
<b>AIHW Peer Group</b>		
Principal referral hospitals	15 (0-34)	21 (1-42)
Group A - Public hospitals	10 (0-29)	19 (1-38)
Group A - Private hospitals	8 (1-16)	10 (3-18)
Group B hospitals	9 (0-20)	11 (2-21)
Other hospitals	7 (0-16)	12 (4-21)
<b>Hospital Type</b>		
Public hospitals	13 (0-31)	19 (1-39)
Private hospitals	8 (0-16)	11 (3-19)
<b>Queensland</b>	<b>9 (0-22)</b>	<b>13 (2-28)</b>

For a description on Interquartile range (IQR) - refer to definitions



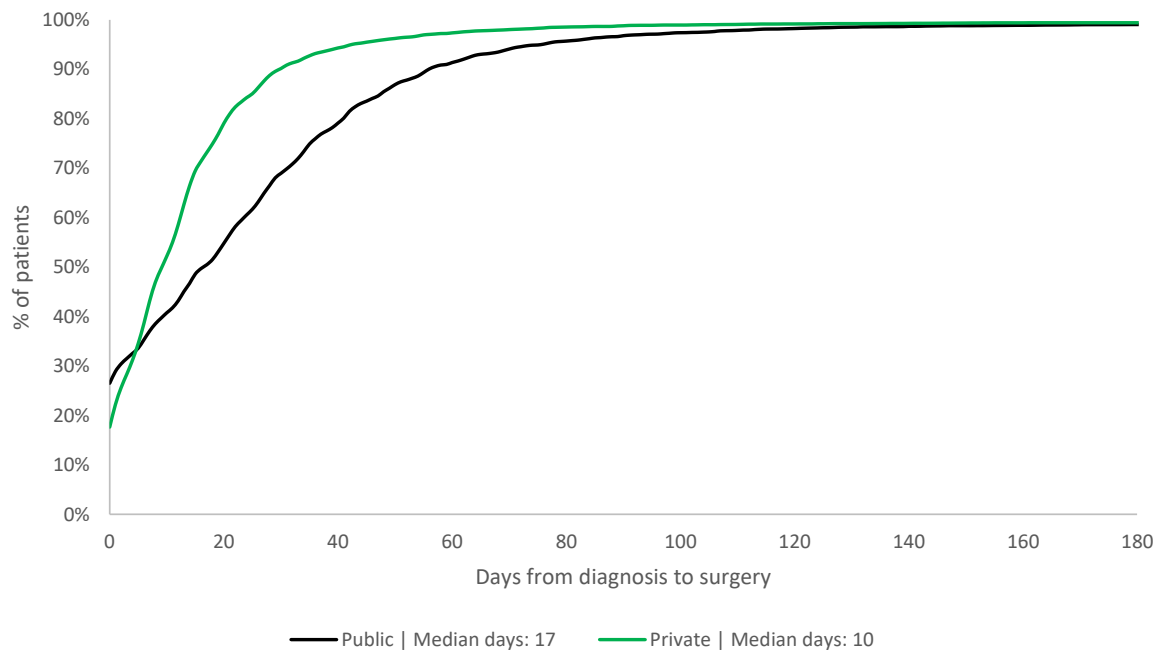
## 4.5 | Time to major resection summary

Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 4.5.1 | Distribution of days from diagnosis to major resection by facility type

Where major resection is first treatment received



## 4.6 | Time to first IV systemic therapy within 30 days

Diagnosis year 2005 – 2009 and 2010 – 2014

4.6.1 | What percentage of patients receive IV systemic therapy within 30 days of diagnosis?

**Where IV systemic therapy is first treatment received**

Received IV systemic therapy within 30 days	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
<i>(% patients whose time from diagnosis to IV systemic therapy is ≤30 days)</i>	Crude rates (n/N)	Crude rates (n/N)
	[Adjusted rates, CI%, P value]	[Adjusted rates, CI%, P value]
<b>Hospital Type</b>		
Public hospitals	55% (104/189) [58%, 48-69, 0.969]	47% (125/268) [47%**, 40-54, 0.003]
Private hospitals	60% (104/172) [60%, 52-70, 0.528]	73% (157/216) [66%, 58-74, 0.053]
<b>Queensland</b>	<b>58% (208/361)</b>	<b>58% (282/484)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.

Refer to appendix 1 for hospital grouping definitions

## 4.7 | Median days to first IV systemic therapy

Diagnosis year 2005 – 2009 and 2010 - 2014

4.7.1 | What is the median number of days from diagnosis to first IV systemic therapy?

**Where IV systemic therapy is first treatment received**

<b>Days from diagnosis to first systemic therapy</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
	<b>Diagnosis year</b>	<b>Diagnosis year</b>
<i>(Median number of days from diagnosis to first systemic therapy)</i>	Median	Median
	IQR	IQR
<b>Hospital Type</b>		
Public hospitals	28 (15-57)	33 (15-54)
Private hospitals	21 (11-53)	15 (7-33)
<b>Queensland</b>	<b>26</b> <b>(13-56)</b>	<b>25</b> <b>(11-45)</b>

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.  
For a description on Interquartile range (IQR) - refer to definitions

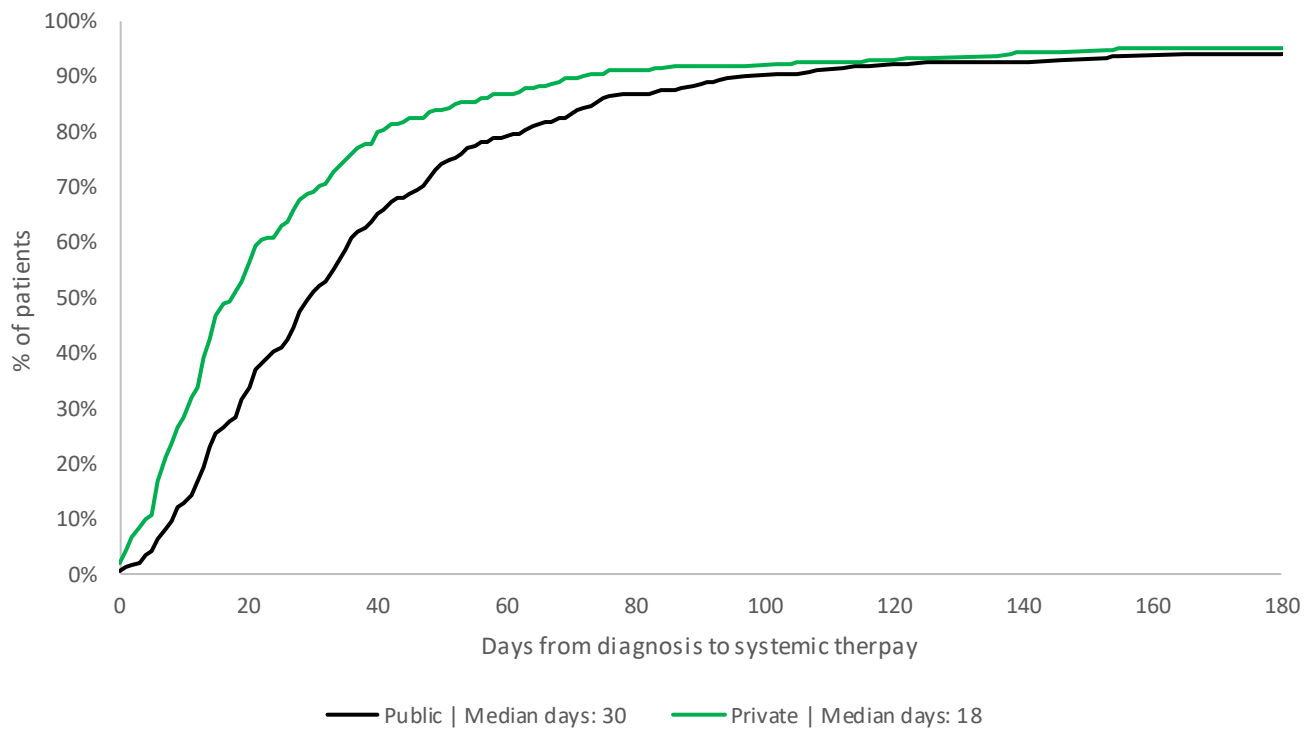
## 4.8 | Time to IV systemic therapy summary

Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 4.8.1 | Distribution of days from diagnosis to IV systemic therapy by facility type

**Where IV systemic therapy is first treatment received**



## 5 | Equitable

Providing care and ensuring health status does not vary in quality because of personal characteristics (social, economic, cultural and demographic).



## 5.1 | Over 75 years

Diagnosis year 2005 – 2009 and 2010 – 2014

5.1.1 | What percentage of patients aged  $\geq 75$  receive major resection within 30 days from diagnosis?

Where major resection is first treatment received

Received major resection within 30 days for those aged $\geq 75$ years	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
(% of patients aged $\geq 75$ whose time from diagnosis to major resection is $\leq 30$ days)	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	74% (378/508) [74%** , 70-78, 0]	63% (307/490) [62%** , 58-67, 0]
Group A - Public hospitals	74% (482/651) [73%** , 70-77, 0]	65% (525/810) [64%** , 61-68, 0]
Group A - Private hospitals	91% (833/916) [91%** , 89-93, 0]	90% (950/1057) [90%** , 87-92, 0]
Group B hospitals	91% (334/369) [91%** , 88-95, 0]	84% (386/462) [84%** , 81-88, 0.001]
Other hospitals	92% (337/366) [94%** , 91-97, 0]	91% (257/282) [94%** , 90-98, 0]
<b>Hospital Type</b>		
Public hospitals	74% (898/1214) [73%** , 71-76, 0]	65% (898/1390) [64%** , 61-67, 0]
Private hospitals	92% (1466/1596) [93%** , 91-95, 0]	89% (1527/1711) [90%** , 88-92, 0]
<b>Queensland</b>	<b>84% (2364/2810)</b>	<b>78% (2425/3101)</b>

Adjusted by sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

## 5.2 | Indigenous

Diagnosis year 2005 – 2009 and 2010 – 2014

5.2.1 | What percentage of Indigenous patients receive major resection within 30 days from diagnosis?

**Where major resection is first treatment received**

Received major resection within 30 days by Indigenous status	2005 - 2009 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2010 - 2014 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<i>(% of Indigenous patients whose time from diagnosis to major resection is ≤30 days)</i>		
<b>AIHW Peer Group</b>		
Principal referral hospitals	65% (15/23) [66%, 46-94, 0.875]	62% (13/21) [62%, 43-88, 0.834]
Group A - Public hospitals	63% (17/27) [69%, 50-96, 0.891]	57% (20/35) [58%, 41-81, 0.539]
Group A - Private hospitals	100% (5/5) [100%, 54-85, 0.983]	100% (2/2) [100%, 44-100, 0.756]
Group B hospitals	50% (1/2) [41%, 17-99, 0.267]	78% (7/9) [77%, 57-100, 0.241]
Other hospitals	100% (2/2) [100%, 61-100, 0.11]	100% (3/3) [100%**, 79-100, 0.004]
<b>Hospital Type</b>		
Public hospitals	64% (34/53) [68%, 52-88, 1]	63% (39/62) [64%, 50-83, 1]
Private hospitals	100% (6/6) [100%, 57-80, 1]	75% (6/8) [64%, 39-100, 1]
<b>Queensland</b>	<b>68% (40/59)</b>	<b>64% (45/70)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

## 5.3 | Socio-economically disadvantaged

Diagnosis year 2005 – 2009

5.3.1 | What percentage of socio-economically disadvantaged patients receive major resection within 30 days from diagnosis?

Where major resection is first treatment received

Received major resection within 30 days by socio-economic status	Diagnosis year: 2005-2009		
	Disadvantaged	Middle	Affluent
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<i>(% of patients whose time from diagnosis to major resection is ≤30 days by socio-economic status)</i>			
<b>AIHW Peer Group</b>			
Principal referral hospitals	68% (149/219) [71%** , 65-77, 0.004]	72% (655/906) [72%** , 69-75, 0]	74% (135/182) [74%** , 67-80, 0]
Group A - Public hospitals	76% (525/689) [74%** , 71-78, 0]	76% (781/1029) [74%** , 71-77, 0]	82% (72/88) [80%, 72-88, 0.05]
Group A - Private hospitals	89% (175/196) [93%** , 88-98, 0]	92% (1360/1486) [93%** , 91-95, 0]	92% (527/573) [93%** , 90-96, 0.002]
Group B hospitals	87% (264/303) [86%* , 82-91, 0.015]	90% (474/527) [91%** , 88-94, 0]	91% (50/55) [90%, 82-98, 0.706]
Other hospitals	91% (234/257) [93%** , 89-97, 0]	92% (554/601) [93%** , 91-96, 0]	95% (80/84) [95%** , 90-100, 0.003]
<b>Hospital Type</b>			
Public hospitals	74% (710/963) [73%** , 70-76, 0]	74% (1518/2043) [73%** , 71-75, 0]	77% (208/271) [76%** , 71-81, 0]
Private hospitals	91% (637/701) [92%** , 89-95, 0]	92% (2306/2506) [93%** , 92-95, 0]	92% (656/711) [93%** , 90-96, 0.001]
<b>Queensland</b>	<b>81% (1347/1664)</b>	<b>84% (3824/4549)</b>	<b>88% (864/982)</b>

Adjusted by age, sex, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions



## Diagnosis year 2010 – 2014

5.3.2 | What percentage of socio-economically disadvantaged patients receive major resection within 30 days from diagnosis?

## Where major resection is first treatment received

Received major resection within 30 days by socio-economic status  (% of patients whose time from diagnosis to major resection is ≤30 days by socio-economic status)	Diagnosis year: 2010-2014		
	Disadvantaged	Middle	Affluent
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>			
Principal referral hospitals	55% (127/231) [55%**, 49-62, 0]	67% (614/917) [66%**, 63-69, 0]	63% (117/185) [62%**, 56-69, 0]
Group A - Public hospitals	67% (509/764) [65%**, 61-68, 0]	65% (811/1254) [63%**, 61-66, 0]	71% (79/111) [69%**, 62-78, 0.001]
Group A - Private hospitals	84% (202/240) [89%**, 84-95, 0]	90% (1320/1465) [91%**, 89-94, 0]	92% (518/563) [93%**, 89-96, 0]
Group B hospitals	85% (249/293) [85%**, 80-90, 0]	85% (573/675) [86%**, 83-89, 0]	89% (49/55) [90%, 82-100, 0.159]
Other hospitals	88% (184/210) [91%**, 86-97, 0]	88% (390/442) [92%**, 88-95, 0]	90% (62/69) [92%*, 84-100, 0.043]
<b>Hospital Type</b>			
Public hospitals	64% (686/1064) [63%**, 60-66, 0]	66% (1548/2331) [65%**, 63-67, 0]	66% (202/305) [65%**, 60-70, 0]
Private hospitals	87% (585/674) [90%**, 86-94, 0]	89% (2160/2422) [92%**, 90-93, 0]	92% (623/678) [93%**, 90-96, 0]
<b>Queensland</b>	<b>73% (1271/1738)</b>	<b>78% (3708/4753)</b>	<b>84% (825/983)</b>

Adjusted by age, sex, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

## 5.4 | Remoteness

### Diagnosis year 2005 – 2009

5.4.1 | What percentage of patients living outside a metropolitan area received major resection within 30 days of diagnosis?

#### Where major resection is first treatment received

Received major resection within 30 days by rurality  (% of patients whose time from diagnosis to major resection is ≤30 days by rurality)	Diagnosis year: 2005-2009		
	Rural	Regional	Metropolitan
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>			
Principal referral hospitals	72% (83/115) [75%*, 67-84, 0.027]	63% (60/95) [63%**, 54-73, 0]	73% (797/1098) [73%**, 70-75, 0]
Group A - Public hospitals	79% (244/308) [78%**, 73-83, 0.004]	76% (498/657) [74%**, 71-78, 0]	76% (638/843) [76%**, 73-79, 0]
Group A - Private hospitals	95% (52/55) [99%**, 92-100, 0]	90% (213/236) [93%**, 89-98, 0]	92% (1799/1966) [92%**, 90-93, 0]
Group B hospitals	93% (140/150) [93%**, 88-98, 0.001]	89% (374/419) [90%**, 86-93, 0]	87% (274/316) [87%, 83-91, 0.156]
Other hospitals	92% (219/238) [92%**, 88-97, 0.001]	90% (298/330) [92%**, 88-96, 0]	94% (351/375) [94%**, 91-96, 0]
<b>Hospital Type</b>			
Public hospitals	78% (358/458) [77%**, 73-82, 0.001]	73% (590/803) [72%**, 69-75, 0]	74% (1491/2019) [74%**, 72-76, 0]
Private hospitals	93% (380/408) [94%**, 91-98, 0]	91% (853/934) [93%**, 90-96, 0]	92% (2368/2579) [92%**, 90-93, 0]
<b>Queensland</b>	<b>85% (738/866)</b>	<b>83% (1443/1737)</b>	<b>84% (3859/4598)</b>

Adjusted by age, sex, socioeconomic status, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

## Diagnosis year 2010 – 2014

## 5.4.2 | What percentage of patients living outside a metropolitan area received major resection within 30 days of diagnosis?

## Where major resection is first treatment received

Received major resection within 30 days by rurality  (% of patients whose time from diagnosis to major resection is ≤30 days by rurality)	Diagnosis year: 2010-2014		
	Rural	Regional	Metropolitan
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>			
Principal referral hospitals	59% (69/116) [61%*, 53-70, 0.016]	51% (62/121) [52%**, 44-62, 0]	66% (728/1098) [66%**, 63-69, 0]
Group A - Public hospitals	58% (231/400) [56%**, 51-61, 0]	67% (490/732) [65%**, 61-68, 0]	68% (680/999) [68%**, 65-71, 0]
Group A - Private hospitals	90% (65/72) [96%**, 88-100, 0]	83% (271/328) [88%**, 83-93, 0]	91% (1705/1869) [91%**, 89-93, 0]
Group B hospitals	90% (157/174) [91%**, 85-97, 0]	88% (348/397) [87%**, 84-91, 0]	81% (366/452) [81%, 77-85, 0.404]
Other hospitals	89% (184/206) [93%**, 87-99, 0]	86% (219/256) [88%**, 83-93, 0]	90% (233/259) [90%**, 86-94, 0]
<b>Hospital Type</b>			
Public hospitals	60% (326/543) [59%**, 54-63, 0]	65% (594/909) [63%**, 60-67, 0]	67% (1519/2252) [67%**, 65-70, 0]
Private hospitals	89% (380/425) [92%**, 88-97, 0]	86% (796/925) [89%**, 86-92, 0]	90% (2193/2425) [90%**, 89-92, 0]
<b>Queensland</b>	<b>73% (706/968)</b>	<b>76% (1390/1834)</b>	<b>79% (3712/4677)</b>

Adjusted by age, sex, socioeconomic status, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

## 5.5 | In-flows

Diagnosis year 2005 – 2009 and 2010 – 2014

## 5.5.1 | What percentage of major resection patients reside outside my HHS?

<b>In-Flows</b>	<b>2005-2009</b>		<b>2010-2014</b>	
<i>(% of patients travelling for surgery)</i>	<b>Diagnosis year</b>		<b>Diagnosis year</b>	
<b>FacilityHHS</b>	Hospital count	Crude rate (n/N)	Hospital count	Crude rate (n/N)
Cairns and Hinterland	3	5% (19/374)	3	4% (15/388)
Central Queensland	6	4% (9/252)	5	3% (8/231)
Central West				
Darling Downs	4	16% (85/517)	4	13% (71/537)
Gold Coast	4	2% (21/868)	5	3% (31/954)
Mackay	3	3% (4/159)	2	1% (2/171)
Metro North	11	25% (444/1777)	11	27% (505/1881)
Metro South	8	18% (290/1589)	9	17% (266/1587)
North West	1	0% (0/10)	1	13% (2/15)
South West	1	22% (2/9)	1	38% (3/8)
Sunshine Coast	6	3% (23/723)	6	4% (32/785)
Townsville	3	19% (73/377)	2	18% (75/410)
West Moreton	2	4% (9/213)	2	3% (8/246)
Wide Bay	5	2% (9/420)	6	1% (4/391)
<b>Queensland</b>	<b>57</b>	<b>14%</b> <b>(988/7288)</b>	<b>57</b>	<b>13%</b> <b>(1022/7604)</b>

## 5.6 | Out-flows

Diagnosis year 2005 – 2009 and 2010 – 2014

5.6.1 | What percentage of patients underwent major resection outside of the HHS that they reside in?

Out-flows  <i>(% of patients receiving surgery outside of their HHS of residence)</i>	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Crude rate (n/N)	Crude rate (n/N)
Cairns and Hinterland	6% (22/377)	7% (30/403)
Central Queensland	21% (64/307)	29% (93/316)
Central West	100% (19/19)	100% (22/22)
Darling Downs	16% (81/513)	19% (106/572)
Gold Coast	6% (51/898)	4% (41/964)
Mackay	28% (61/216)	33% (83/252)
Metro North	9% (129/1462)	5% (79/1455)
Metro South	12% (180/1479)	11% (163/1484)
North West	63% (17/27)	52% (14/27)
South West	84% (36/43)	89% (42/47)
Sunshine Coast	7% (56/756)	7% (60/813)
Torres and Cape	100% (16/16)	100% (11/11)
Townsville	3% (9/313)	1% (5/340)
West Moreton	41% (141/345)	38% (143/381)
Wide Bay	21% (106/517)	25% (130/517)
<b>Queensland</b>	<b>14% (988/7288)</b>	<b>13% (1022/7604)</b>

## 6 | Quality of care

Applying best interventions with greatest effectiveness.



## 6.1 | Had laparoscopic surgery

Diagnosis year 2005 – 2014

## 6.1.1 | What percentage of patients had laparoscopic major resection?

<b>Had laparoscopic surgery</b> (% of patients who had a laparoscopic resection)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>AIHW Peer Group</b>										
Principal referral hospitals	15% (39/257)	22% (55/252)	28% (76/274)	29% (74/256)	33% (99/296)	42% (117/280)	47% (139/296)	43% (118/273)	41% (105/256)	50% (136/273)
Group A - Public hospitals	8% (25/312)	10% (33/346)	14% (53/384)	22% (89/400)	26% (101/383)	32% (146/450)	32% (130/405)	35% (155/437)	39% (164/418)	36% (159/445)
Group A - Private hospitals	33% (146/436)	33% (149/453)	40% (196/491)	49% (227/460)	47% (212/451)	49% (225/459)	52% (246/469)	54% (253/472)	61% (263/428)	70% (345/491)
Group B hospitals	10% (17/166)	20% (32/162)	27% (45/168)	33% (68/206)	36% (68/191)	30% (56/184)	43% (89/207)	41% (89/218)	51% (106/208)	58% (128/219)
Other hospitals	13% (26/194)	14% (27/195)	14% (25/181)	23% (41/181)	30% (59/196)	29% (53/183)	29% (48/168)	22% (29/132)	44% (50/114)	43% (54/126)
<b>Hospital Type</b>										
Public hospitals	11% (65/609)	14% (90/633)	19% (133/686)	25% (172/687)	30% (213/712)	35% (265/750)	38% (281/741)	38% (290/773)	40% (294/735)	41% (317/773)
Private hospitals	25% (188/756)	27% (206/775)	32% (262/812)	40% (327/816)	40% (326/805)	41% (332/806)	46% (371/804)	47% (354/759)	57% (394/689)	65% (505/781)
<b>Queensland</b>	<b>19%</b> (253/1365)	<b>21%</b> (296/1408)	<b>26%</b> (395/1498)	<b>33%</b> (499/1503)	<b>36%</b> (539/1517)	<b>38%</b> (597/1556)	<b>42%</b> (652/1545)	<b>42%</b> (644/1532)	<b>48%</b> (688/1424)	<b>53%</b> (822/1554)

Refer to appendix 3 for definitions of laparoscopic surgery

## 6.2 | Laparoscopic converted to open surgery

Diagnosis year 2014

### 6.2.1 | What percentage of patients had laparoscopic surgery converted to open surgery?

Had laparoscopic surgery  (% of patients who had a laparoscopic resection)	Started as laparoscopic surgery  Crude rate  (n/N)	Started as open surgery  Crude rate  (n/N)	Started as laparoscopic but converted to open surgery  Crude rate  (n/N)
<b>AIHW Peer Group</b>			
Principal referral hospitals	63% (171/273)	37% (102/273)	20% (35/171)
Group A - Public hospitals	56% (249/445)	44% (196/445)	36% (90/249)
Group A - Private hospitals	73% (357/491)	27% (134/491)	3% (12/357)
Group B hospitals	70% (154/219)	30% (65/219)	17% (26/154)
Other hospitals	50% (63/126)	50% (63/126)	14% (9/63)
<b>Hospital Type</b>			
Public hospitals	59% (453/773)	41% (320/773)	30% (136/453)
Private hospitals	69% (541/781)	31% (240/781)	7% (36/541)
<b>Queensland</b>	<b>64%</b> (994/1554)	<b>36%</b> (560/1554)	<b>17%</b> (172/994)

Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of laparoscopic surgery



## 6.3 | Margins involved

### Diagnosis year 2012 & 2014

#### 6.3.1 | What percentage of patients had involved margins at major resection?

<b>Margins involved</b>	<b>2012</b>	<b>2014</b>
<i>(% of patients who had involved margins at major resection)</i>	<b>Diagnosis year</b>	<b>Diagnosis year</b>
	Crude rates (n/N)	Crude rates (n/N)
	[Adjusted rates, CI%, P value]	[Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	5.1% (14/273) [5.8%, 3-10, 0.461]	4% (11/272) [4.4%, 2-8, 0.239]
Group A - Public hospitals	6.4% (28/437) [5.4%, 4-8, 0.501]	2.5% (11/444) [2%, 1-4, 0.243]
Group A - Private hospitals	1.9% (9/472) [2.2%*, 1-4, 0.03]	2.7% (13/489) [3.1%, 2-6, 0.872]
Group B hospitals	6.4% (14/218) [6.2%, 3-11, 0.35]	3.2% (7/219) [3.1%, 1-7, 0.881]
Other hospitals	5.3% (7/132) [5%, 2-11, 0.867]	3.2% (4/126) [3.4%, 1-9, 0.812]
<b>Hospital Type</b>		
Public hospitals	6.1% (47/773) [5.7%, 4-8, 0.272]	3% (23/771) [2.7%, 2-4, 0.688]
Private hospitals	3.3% (25/759) [3.5%, 2-5, 0.195]	3% (23/779) [3.3%, 2-5, 0.663]
<b>Queensland</b>	<b>4.7% (72/1532)</b>	<b>3% (46/1550)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

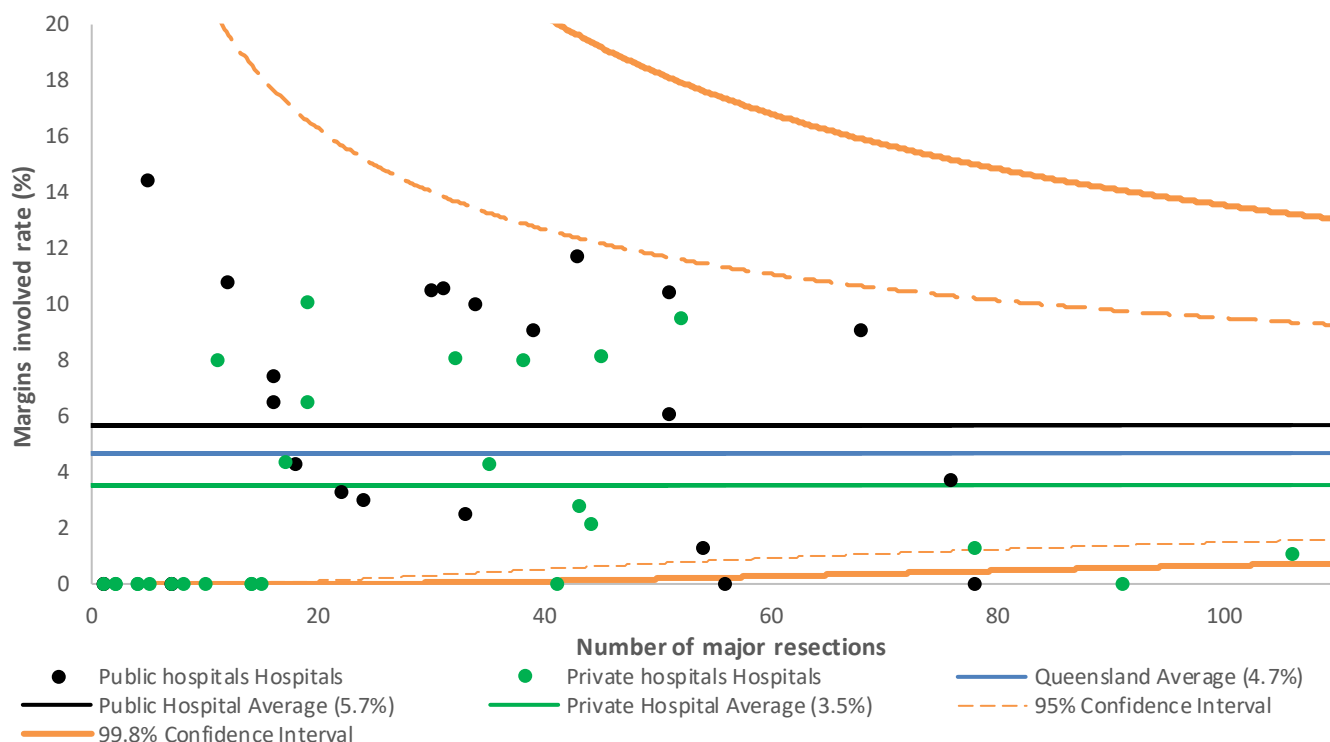
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of margins involved

## Diagnosis year 2012

Adjusted rates

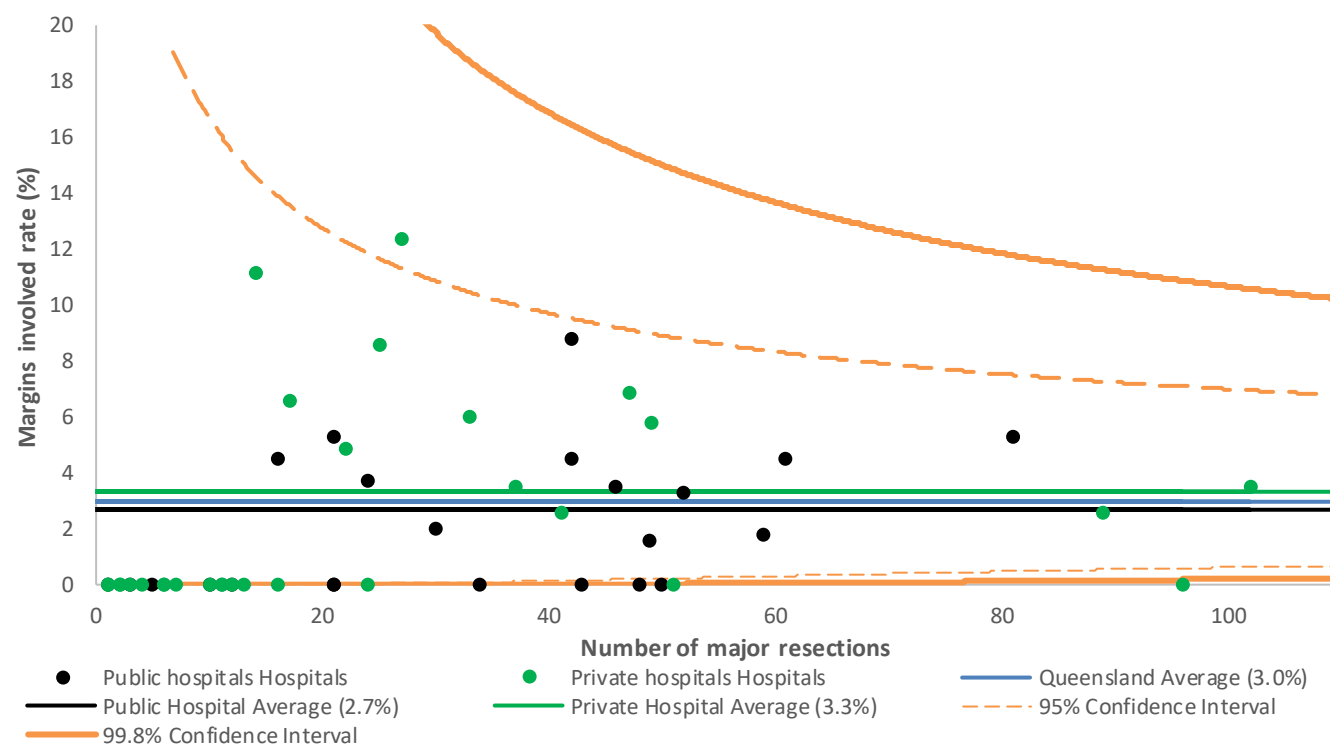
### 6.3.2 | Patients who had involved margins at major resection by hospital volume



## Diagnosis year 2014

Adjusted rates

### 6.3.3 | Patients who had involved margins at major resection by hospital volume



## 6.4 | More than 12 lymph nodes examined

Diagnosis year 2012 &amp; 2014

6.4.1 | What percentage of patients had  $\geq 12$  lymph nodes examined at major resection?

$\geq 12$ lymph nodes examined	2012	2014
<i>(% of patients with <math>\geq 12</math> lymph nodes examined at major resection)</i>	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	87% (238/273) [86%**, 82-91, 0]	79% (215/272) [78%, 73-83, 0.735]
Group A - Public hospitals	78% (342/437) [79%, 75-83, 0.507]	80% (357/444) [81%, 77-86, 0.195]
Group A - Private hospitals	76% (359/472) [75%, 71-80, 0.391]	80% (390/489) [79%, 75-83, 1]
Group B hospitals	72% (156/218) [72%, 66-79, 0.125]	77% (168/219) [78%, 72-85, 0.935]
Other hospitals	68% (90/132) [69%, 62-78, 0.079]	69% (87/126) [71%, 63-80, 0.1]
<b>Hospital Type</b>		
Public hospitals	81% (627/773) [81%*, 78-85, 0.037]	80% (619/771) [80%, 77-84, 0.308]
Private hospitals	74% (558/759) [74%, 70-77, 0.056]	77% (598/779) [77%, 73-80, 0.337]
<b>Queensland</b>	<b>77% (1185/1532)</b>	<b>79% (1217/1550)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

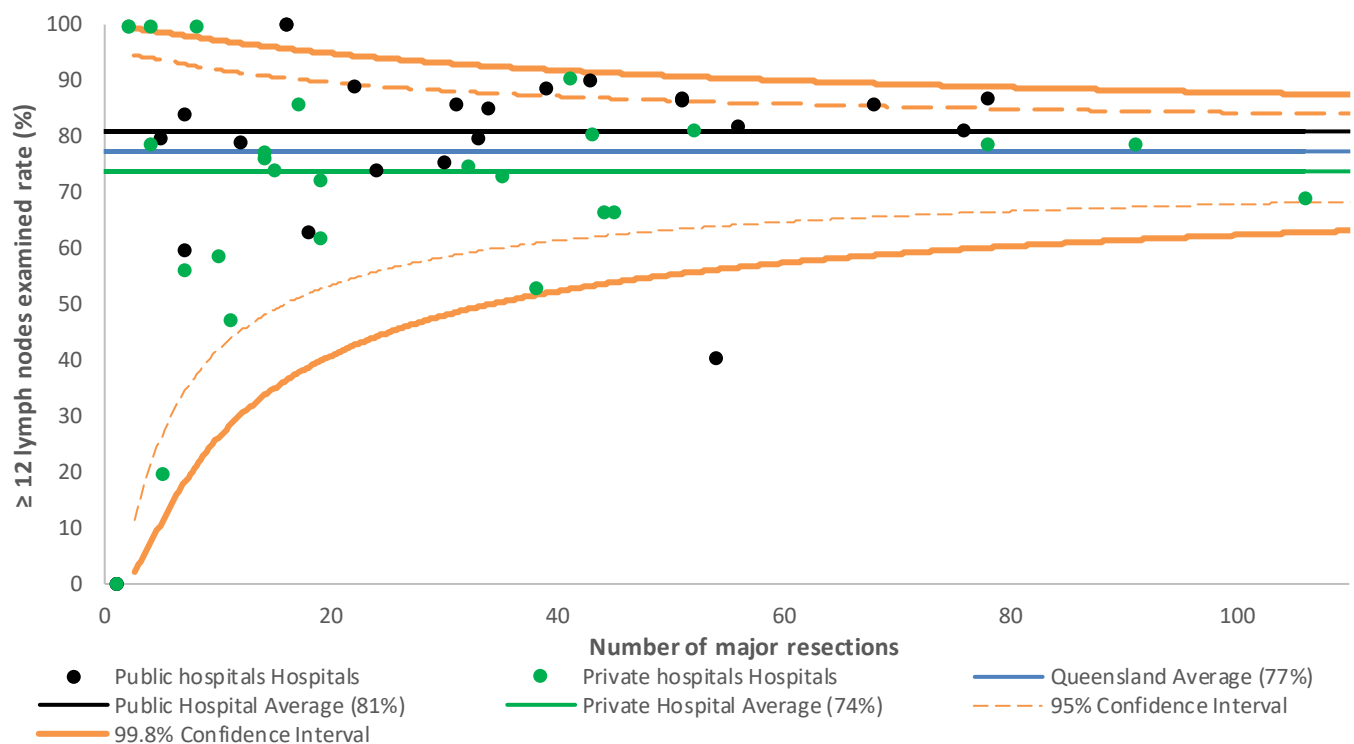
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of lymph nodes examined

Diagnosis year 2012

Adjusted rates

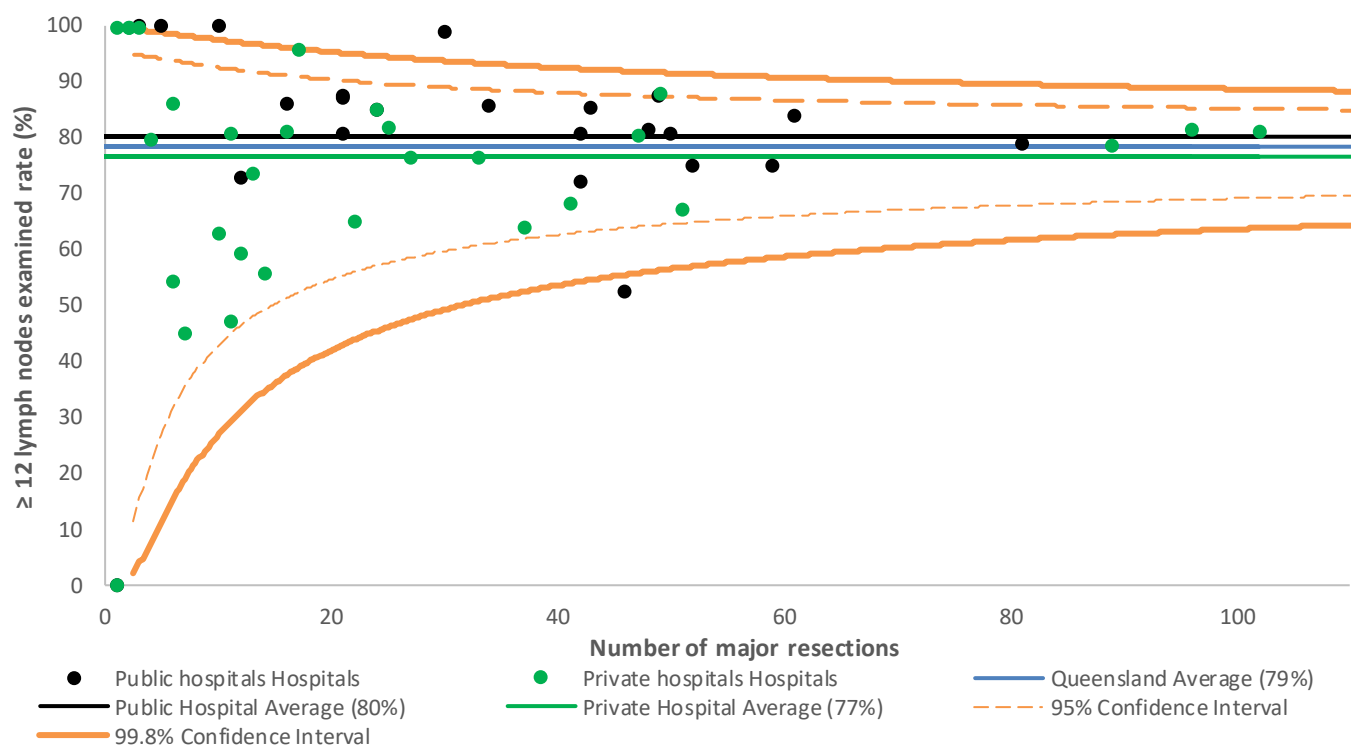
6.4.2 | Patients who had  $\geq 12$  lymph nodes examined at major resection by hospital volume



Diagnosis year 2014

Adjusted rates

6.4.3 | Patients who had  $\geq 12$  lymph nodes examined at major resection by hospital volume



## 6.5 | Stoma at resection

Diagnosis year 2005 – 2009 and 2010 – 2014

## 6.5.1 | What percentage of patients received stoma at first major resection?

<b>Stoma rate at major resection</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% of patients receiving stoma at major resection)</i>	<b>Diagnosis year</b>	<b>Diagnosis year</b>
	Crude rates (n/N)	Crude rates (n/N)
	[Adjusted rates, CI%, P value]	[Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	13% (170/1335) [12%**, 11-14, 0]	12% (170/1376) [11%**, 9-13, 0]
Group A - Public hospitals	15% (275/1825) [11%**, 10-13, 0]	11% (247/2154) [8.6%, 8-10, 0.476]
Group A - Private hospitals	5.2% (119/2289) [6.3%**, 5-8, 0]	4.1% (95/2315) [5.4%**, 4-7, 0]
Group B hospitals	5.9% (53/893) [6.4%*, 5-8, 0.01]	7% (73/1036) [8.1%, 6-10, 0.905]
Other hospitals	4.5% (43/946) [5.6%**, 4-8, 0.002]	5.7% (41/723) [7.8%, 6-11, 0.744]
<b>Hospital Type</b>		
Public hospitals	14% (467/3327) [12%**, 11-13, 0]	12% (445/3769) [9.4%*, 8-11, 0.017]
Private hospitals	4.9% (193/3961) [5.8%**, 5-7, 0]	4.7% (181/3835) [6.3%**, 5-7, 0.001]
<b>Queensland</b>	<b>9.1% (660/7288)</b>	<b>8.2% (626/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

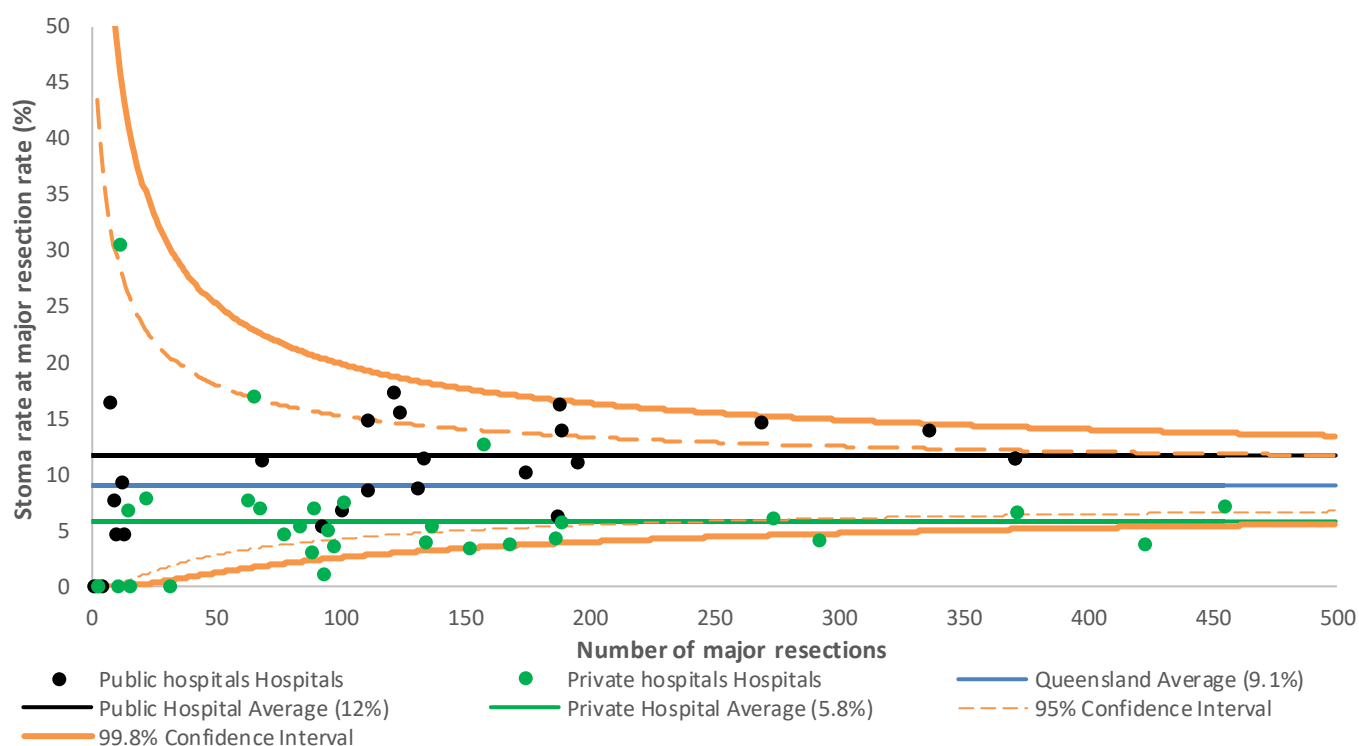
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of stoma at resection

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

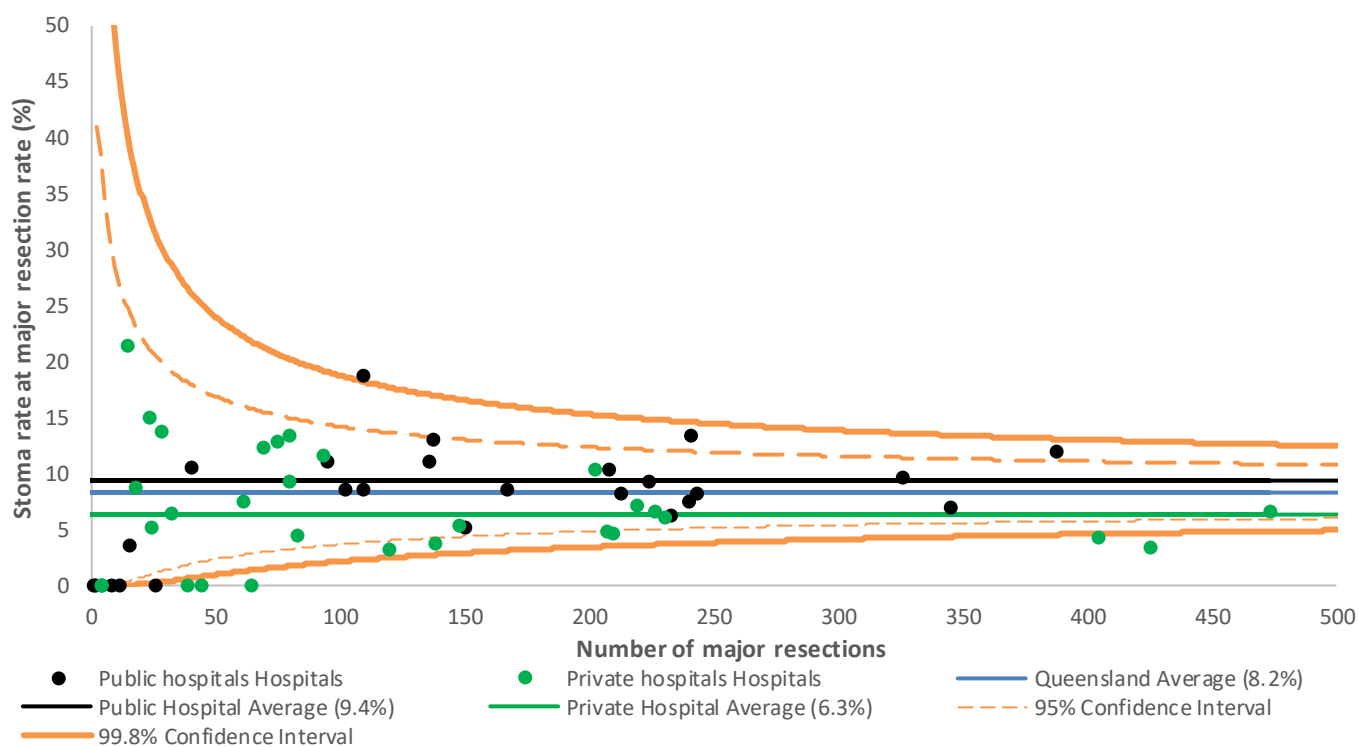
6.5.2 | Patients receiving stoma at resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.5.3 | Patients receiving stoma at resection by hospital volume



## 6.6 | Stoma after resection

Diagnosis year 2005 – 2009 and 2010 – 2014

6.6.1 | What percentage of patients received a stoma in the first 12 months after their first major resection?

<b>Stoma rate within 12 months after first major resection</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% of patients receiving stoma within 12 months after first major resection)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	1.9% (25/1335) [1.8%, 1-3, 0.191]	2.6% (36/1376) [2.3%, 2-3, 0.537]
Group A - Public hospitals	3.6% (66/1825) [3.3%*, 2-4, 0.024]	3.5% (76/2154) [3.4%, 3-4, 0.052]
Group A - Private hospitals	2.1% (47/2289) [2.3%, 2-3, 0.791]	2% (47/2315) [2.1%, 2-3, 0.207]
Group B hospitals	2.4% (21/893) [2.2%, 1-4, 0.784]	2.2% (23/1036) [2.3%, 1-4, 0.561]
Other hospitals	1.5% (14/946) [1.6%, 1-3, 0.161]	2.4% (17/723) [2.7%, 2-4, 0.902]
<b>Hospital Type</b>		
Public hospitals	2.9% (98/3327) [2.7%, 2-3, 0.268]	3.1% (118/3769) [2.9%, 2-4, 0.332]
Private hospitals	1.9% (75/3961) [2%, 2-3, 0.254]	2.1% (81/3835) [2.3%, 2-3, 0.273]
<b>Queensland</b>	<b>2.4% (173/7288)</b>	<b>2.6% (199/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

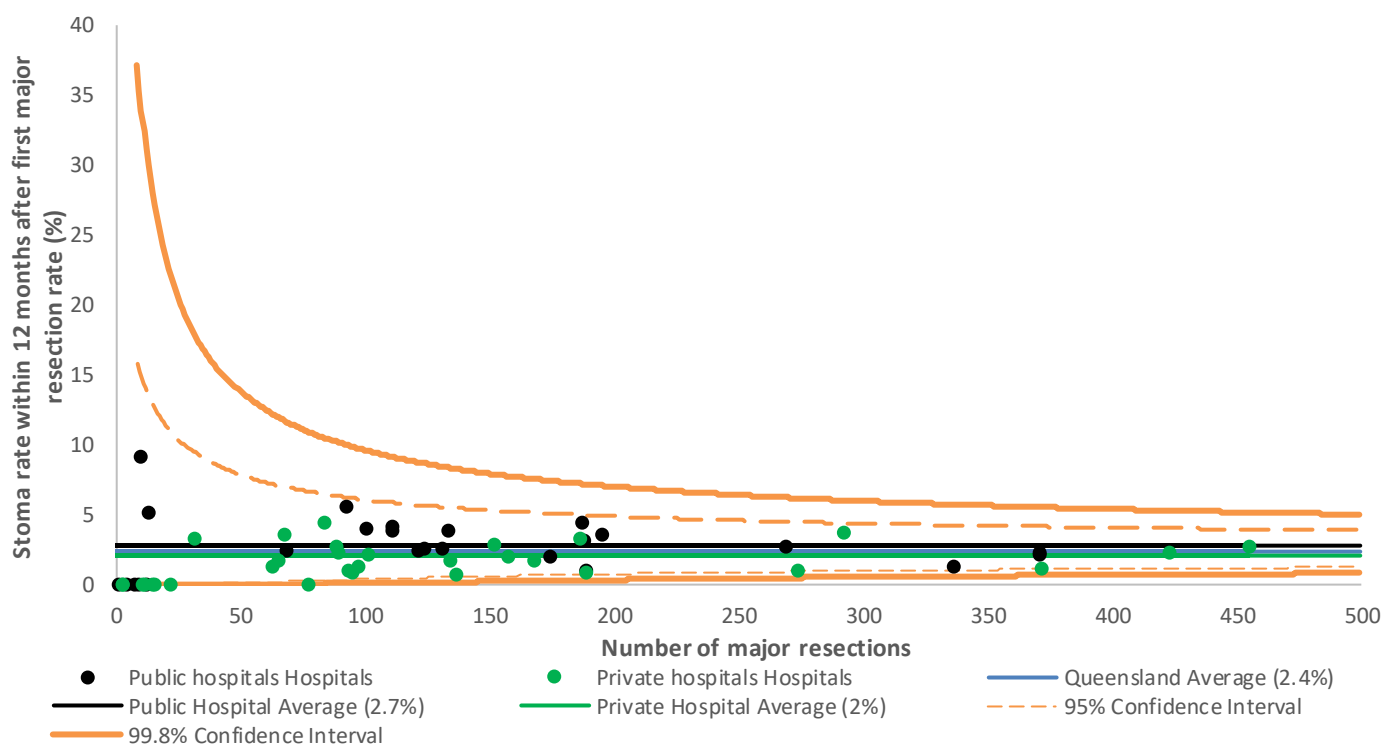
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of stoma after resection

## Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

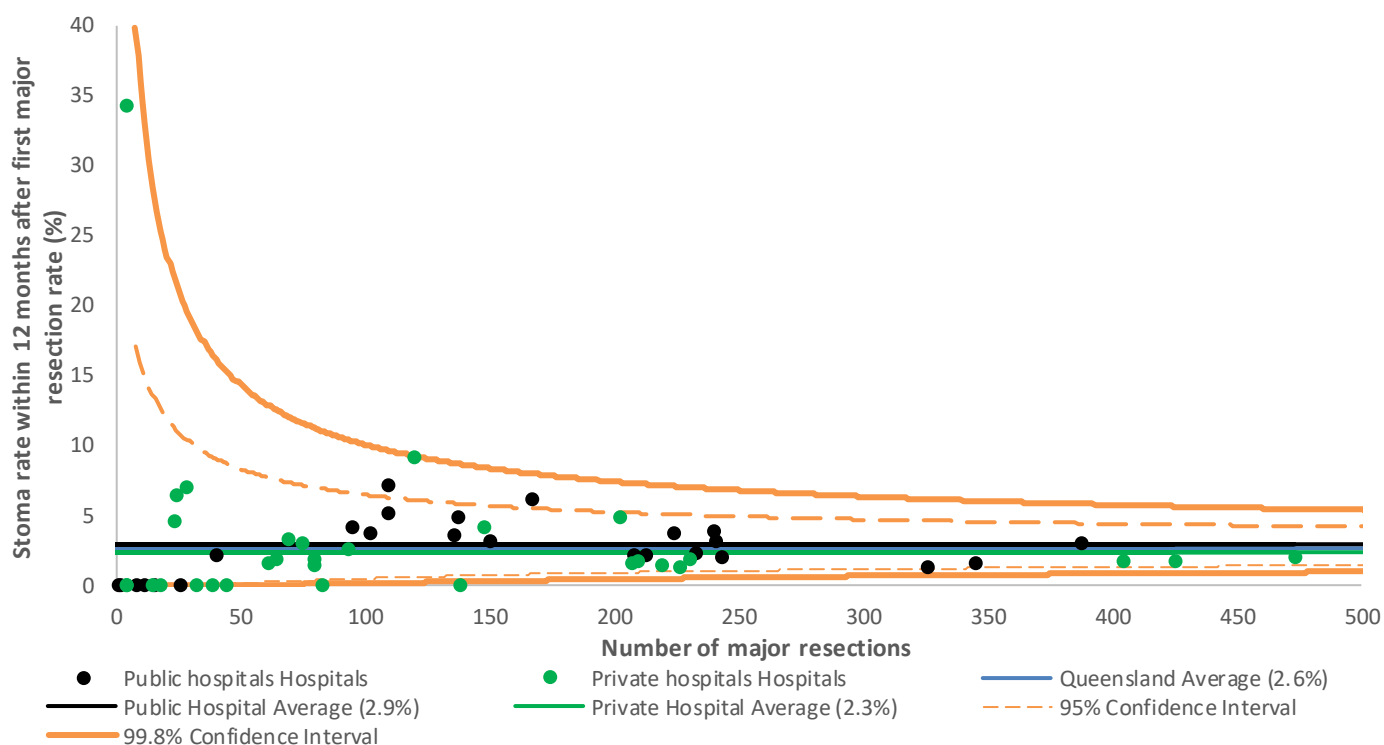
### 6.6.2 | Patients receiving stoma after major resection by hospital volume



## Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

### 6.6.3 | Patients receiving stoma after major resection by hospital volume





## 6.7 | Living with stoma 1 year after formation of stoma by major resection cohort

Diagnosis year 2005 – 2009 and 2010 – 2014

### 6.7.1 | What percentage of patients who received a stoma were living with a stoma 1 year later?

Living with stoma 1 year after formation of stoma by major resection cohort  (% of patients who still have a stoma 1 year after formation of stoma)	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	5.8% (78/1335) [5.7%*, 4-7, 0.024]	6.5% (90/1376) [5.7%, 5-7, 0.118]
Group A - Public hospitals	7.9% (144/1825) [6.3%**, 5-8, 0]	7.3% (158/2154) [5.7%, 5-7, 0.065]
Group A - Private hospitals	1.9% (44/2289) [2.2%**, 2-3, 0]	2.5% (59/2315) [3.2%**, 2-4, 0.004]
Group B hospitals	2.8% (25/893) [2.9%, 2-4, 0.054]	4% (41/1036) [4.6%, 3-6, 0.756]
Other hospitals	2.4% (23/946) [2.8%, 2-4, 0.051]	2.5% (18/723) [3.3%, 2-5, 0.128]
<b>Hospital Type</b>		
Public hospitals	7.2% (240/3327) [6.3%**, 5-7, 0]	7.2% (273/3769) [5.9%**, 5-7, 0.008]
Private hospitals	1.9% (74/3961) [2.1%**, 2-3, 0]	2.4% (93/3835) [3.1%**, 3-4, 0]
<b>Queensland</b>	<b>4.3% (314/7288)</b>	<b>4.8% (366/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

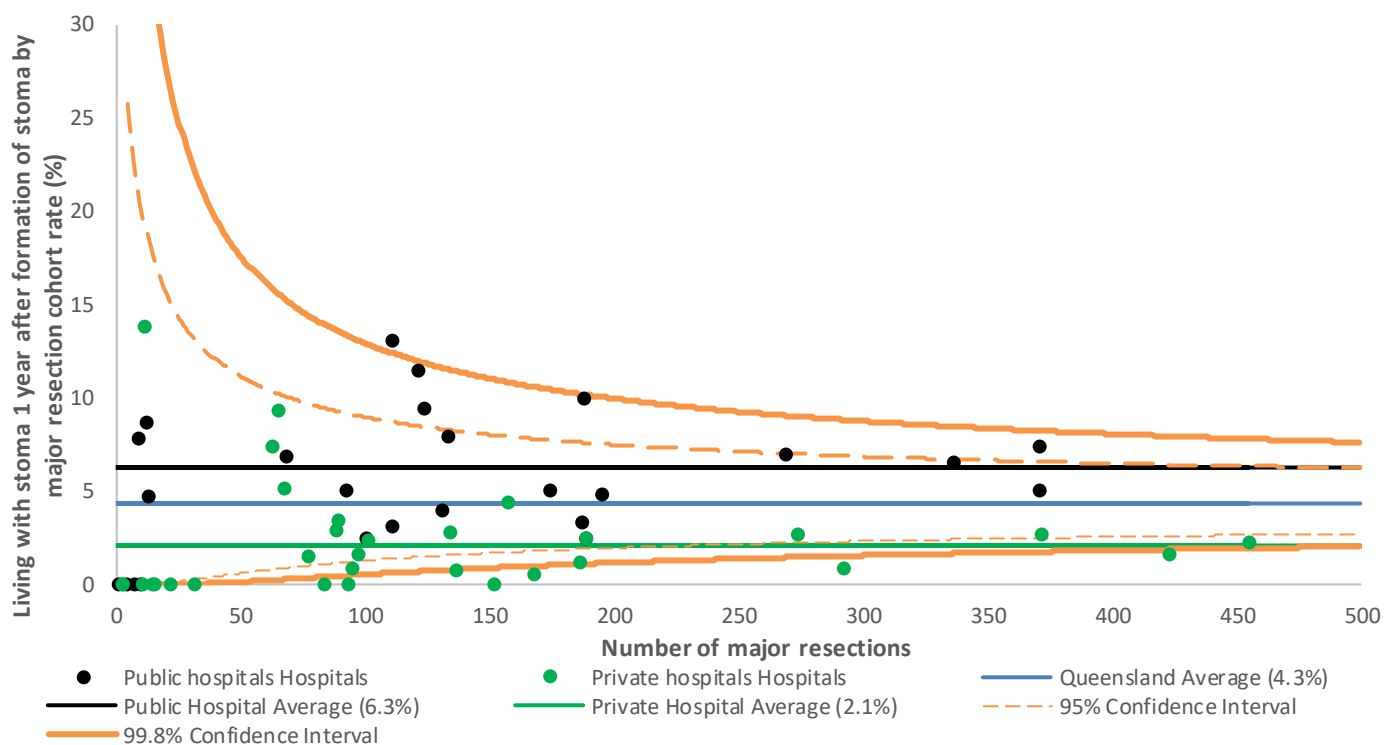
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of stoma prevalence

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

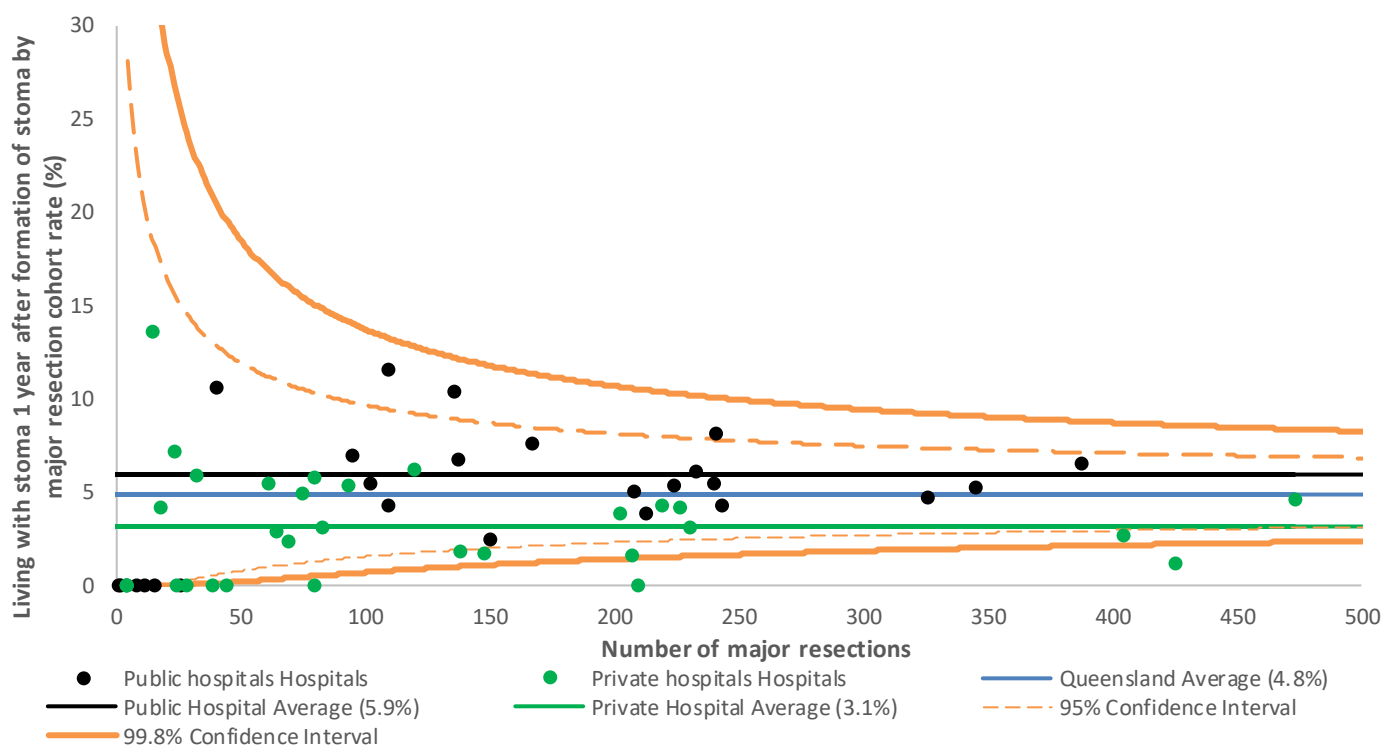
6.7.2 | Patients living with stoma 1 year after formation of stoma by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.7.3 | Patients living with stoma 1 year after formation of stoma by hospital volume



## 6.8 | Living with stoma 1 year after formation of stoma\*

Diagnosis year 2005 – 2009 and 2010 – 2014

## 6.8.1 | What percentage of patients who received a stoma\* were living with a stoma 1 year later?

Living with stoma 1 year after formation of stoma	2005 - 2009	2010 - 2014
<i>(% of patients who still have a stoma 1 year after formation of stoma)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	48% (68/141) [49%, 40-59, 0.972]	61% (86/142) [58%, 50-67, 0.706]
Group A - Public hospitals	57% (141/246) [56%*, 49-64, 0.046]	62% (155/249) [60%, 53-67, 0.379]
Group A - Private hospitals	33% (39/119) [33%**, 26-44, 0.006]	52% (54/104) [55%, 45-66, 0.736]
Group B hospitals	44% (25/57) [45%, 33-61, 0.586]	50% (41/82) [53%, 42-66, 0.514]
Other hospitals	52% (22/42) [55%, 40-74, 0.476]	37% (18/49) [44%, 30-63, 0.172]
<b>Hospital Type</b>		
Public hospitals	56% (227/408) [55%*, 49-62, 0.036]	63% (266/420) [61%, 55-67, 0.122]
Private hospitals	35% (68/197) [35%**, 28-43, 0.002]	43% (88/206) [46%*, 39-55, 0.02]
<b>Queensland</b>	<b>49% (295/605)</b>	<b>57% (354/626)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

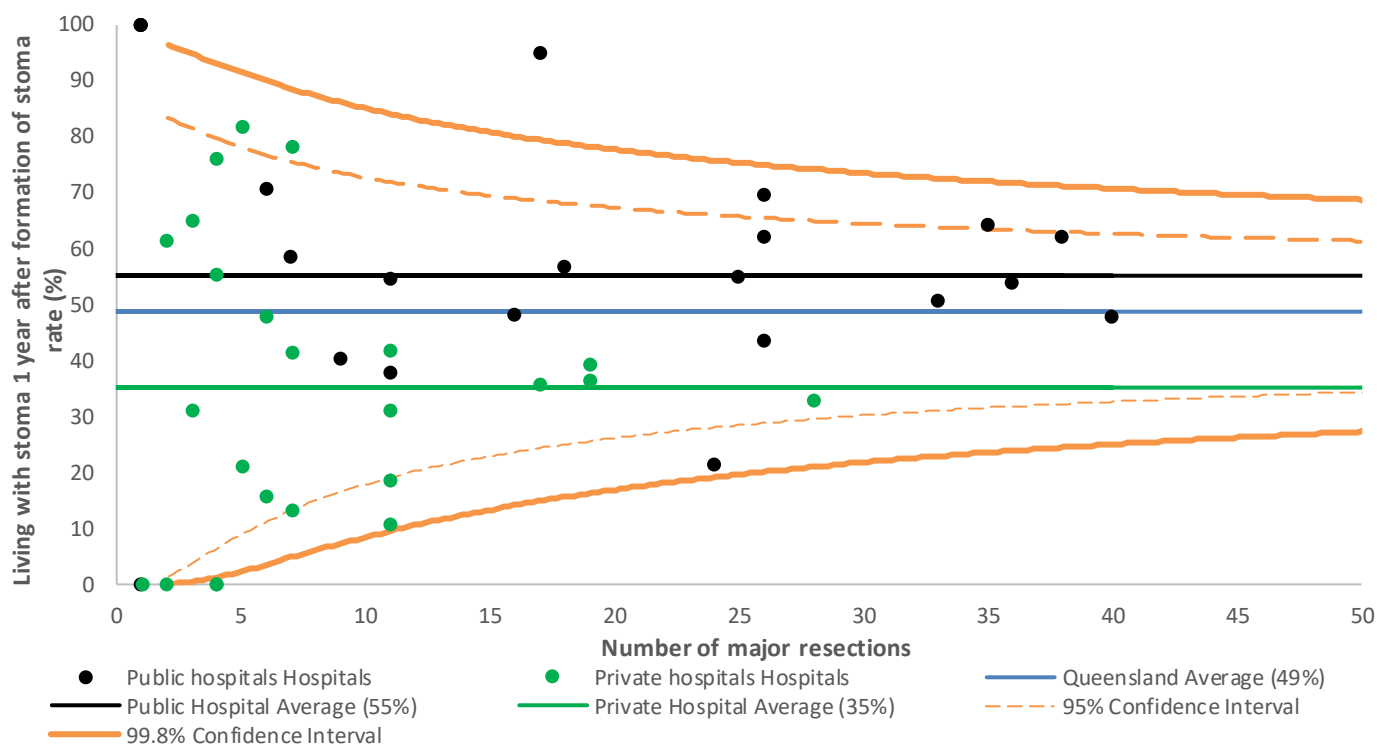
Refer to appendix 3 for definitions of stoma prevalence

\*Excludes abdominoperineal resection and total proctocolectomy with ileostomy procedures

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

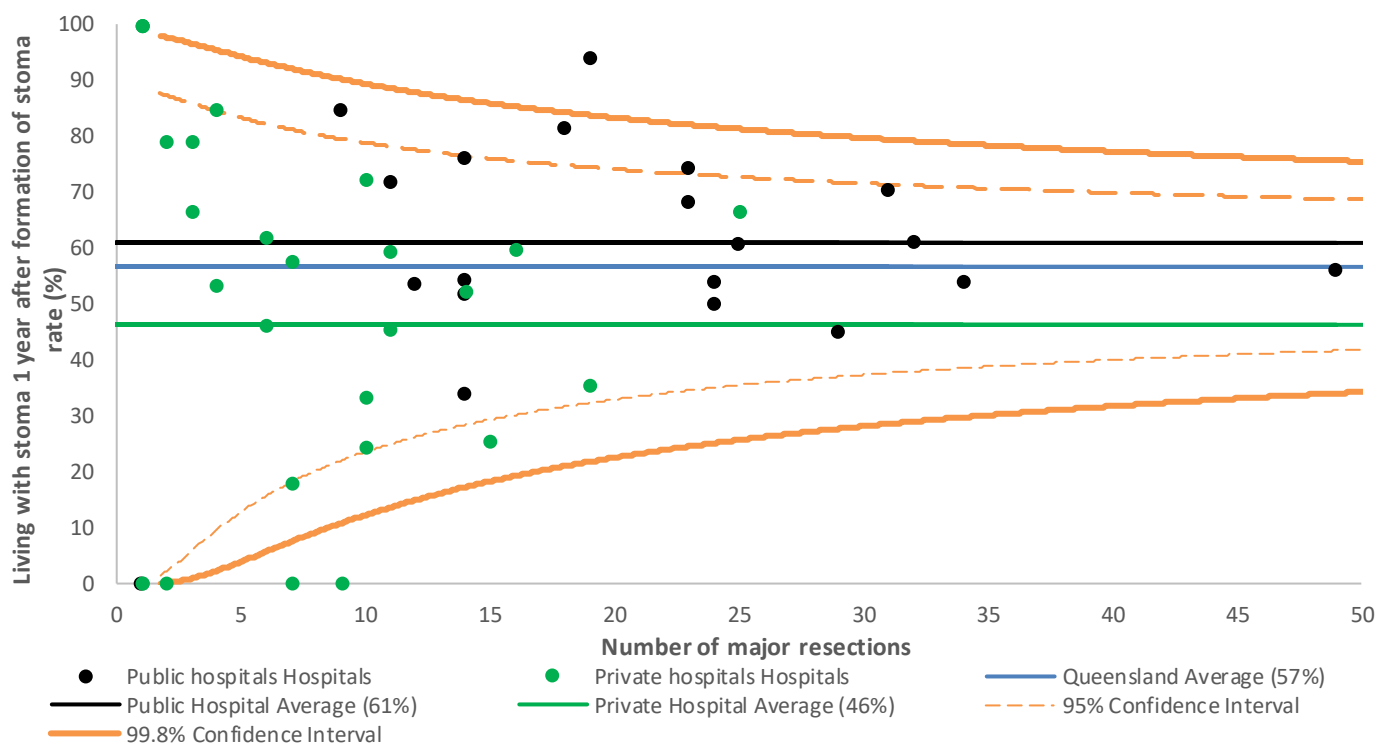
6.8.2 | Patients living with stoma 1 year after stoma formation by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.8.3 | Patients living with stoma 1 year after stoma formation by hospital volume



## 6.9 | Living with stoma 5 years after formation of stoma by major resection cohort

Diagnosis year 2005 – 2009 and 2010 – 2014

### 6.9.1 | What percentage of patients who received a stoma\* were living with a stoma 5 years later?

Living with stoma 5 years after formation of stoma by major resection cohort  (% of patients who still have a stoma 5 years after formation of stoma)	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	1.8% (24/1335) [1.8%, 1-3, 0.51]	2.4% (33/1376) [2.2%, 2-3, 0.928]
Group A - Public hospitals	2.6% (47/1825) [2.4%*, 2-3, 0.012]	2.9% (63/2154) [2.5%, 2-3, 0.3]
Group A - Private hospitals	0.9% (20/2289) [0.9%*, 1-1, 0.028]	1.3% (30/2315) [1.5%, 1-2, 0.06]
Group B hospitals	0.9% (8/893) [0.9%, 0-2, 0.165]	2% (21/1036) [2.2%, 1-4, 0.843]
Other hospitals	1.4% (13/946) [1.4%, 1-3, 0.808]	2.2% (16/723) [2.7%, 2-4, 0.389]
<b>Hospital Type</b>		
Public hospitals	2.3% (77/3327) [2.2%*, 2-3, 0.014]	2.9% (109/3769) [2.5%, 2-3, 0.176]
Private hospitals	0.9% (35/3961) [0.9%***, 1-1, 0.008]	1.4% (54/3835) [1.6%, 1-2, 0.084]
<b>Queensland</b>	<b>1.5% (112/7288)</b>	<b>2.1% (163/7604)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

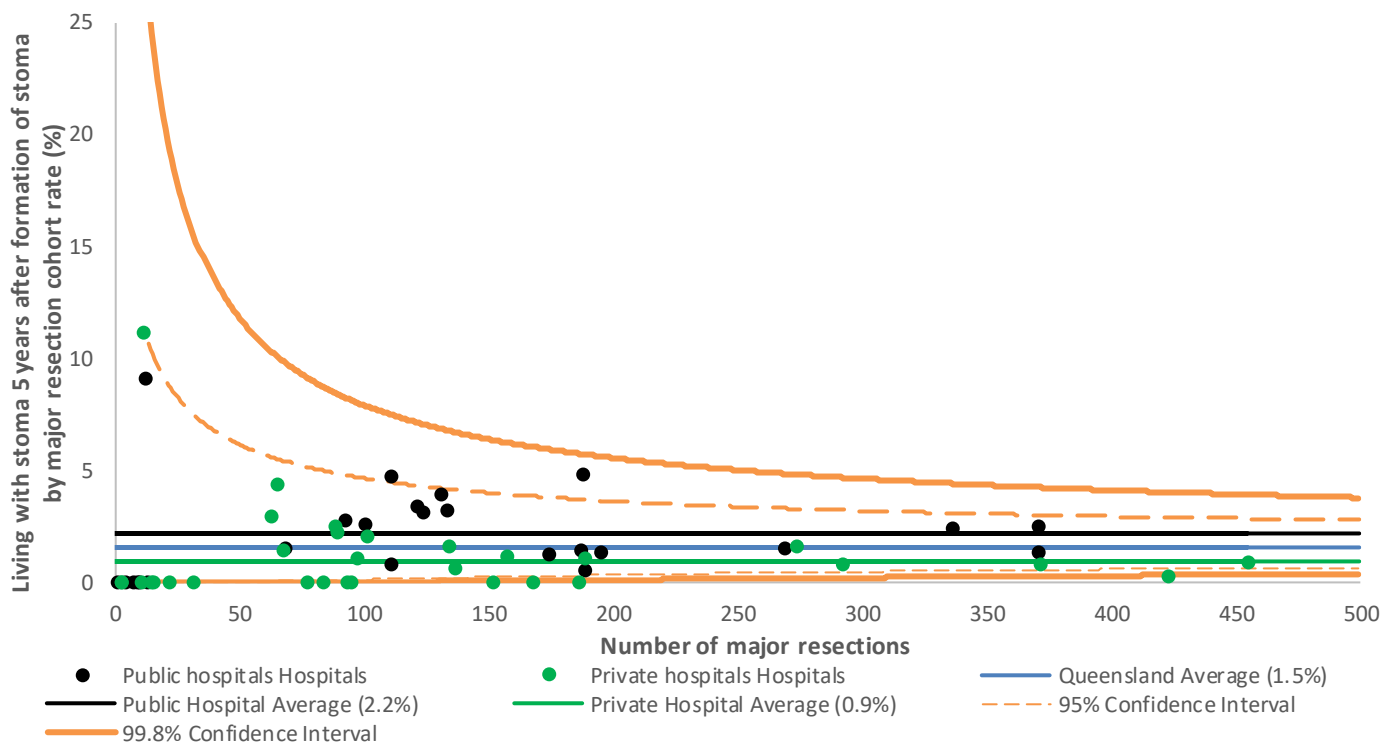
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of stoma prevalence

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

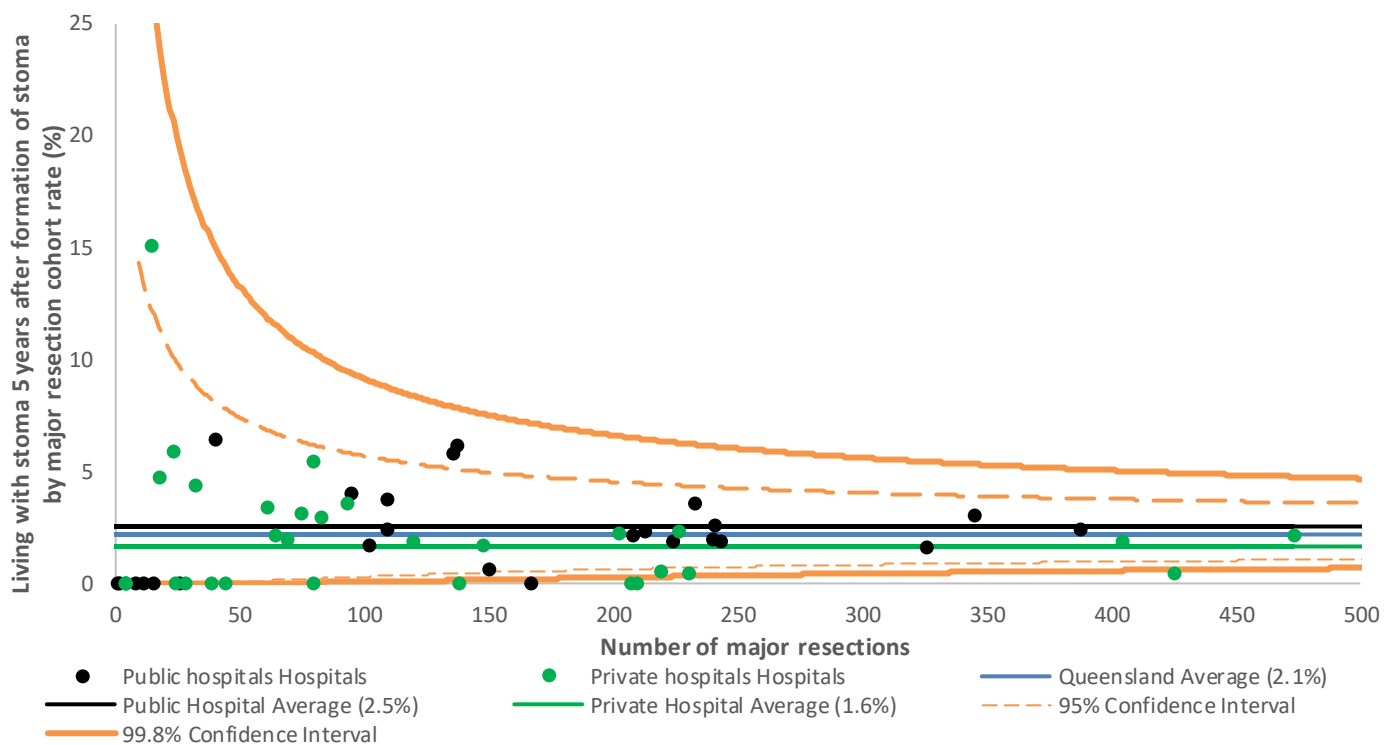
6.9.2 | Patients living with stoma 5 years after formation of stoma by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.9.3 | Patients living with stoma 5 years after formation of stoma by hospital volume



## 6.10 | Living with stoma 5 years after formation of stoma\*

Diagnosis year 2005 – 2009 and 2010 – 2014

## 6.10.1 | What percentage of patients who received a stoma\* were living with a stoma 5 years later?

Living with stoma 5 years after formation of stoma	2005 - 2009	2010 - 2014
(% of patients who still have a stoma 5 years after formation of stoma)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	21% (18/87) [21%, 14-32, 0.355]	34% (31/90) [33%, 24-44, 0.521]
Group A - Public hospitals	31% (44/144) [32%, 24-43, 0.13]	35% (60/170) [35%, 28-44, 0.787]
Group A - Private hospitals	19% (15/77) [18%, 11-28, 0.119]	38% (28/74) [37%, 27-51, 0.884]
Group B hospitals	22% (8/37) [22%, 11-43, 0.648]	38% (21/56) [39%, 27-56, 0.663]
Other hospitals	39% (12/31) [35%, 21-57, 0.231]	39% (16/41) [44%, 30-65, 0.313]
<b>Hospital Type</b>		
Public hospitals	28% (68/245) [29%, 23-38, 0.316]	37% (104/280) [37%, 30-44, 0.873]
Private hospitals	22% (29/131) [20%, 14-29, 0.163]	34% (52/151) [35%, 27-45, 0.814]
<b>Queensland</b>	<b>26% (97/376)</b>	<b>36% (156/431)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

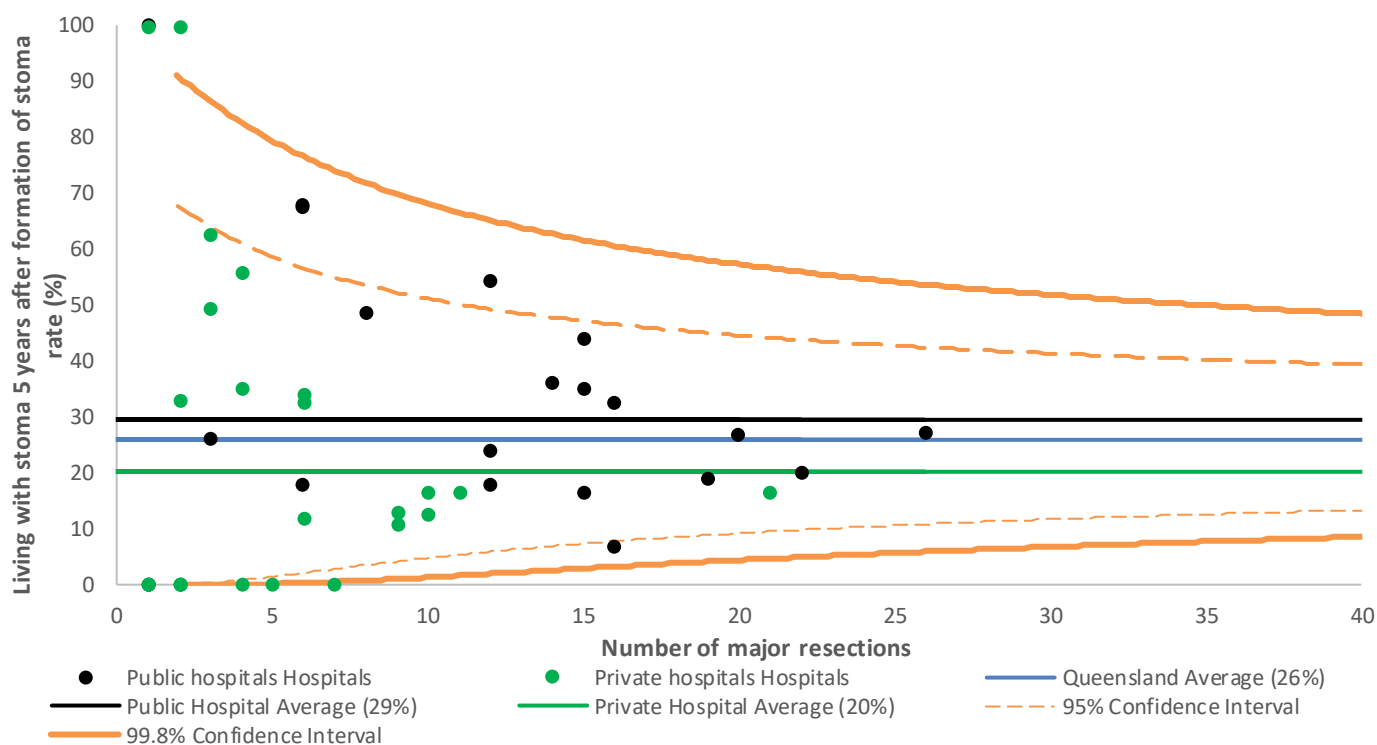
Refer to appendix 3 for definitions of stoma prevalence

\*Excludes abdominoperineal resection and total proctocolectomy with ileostomy procedures

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

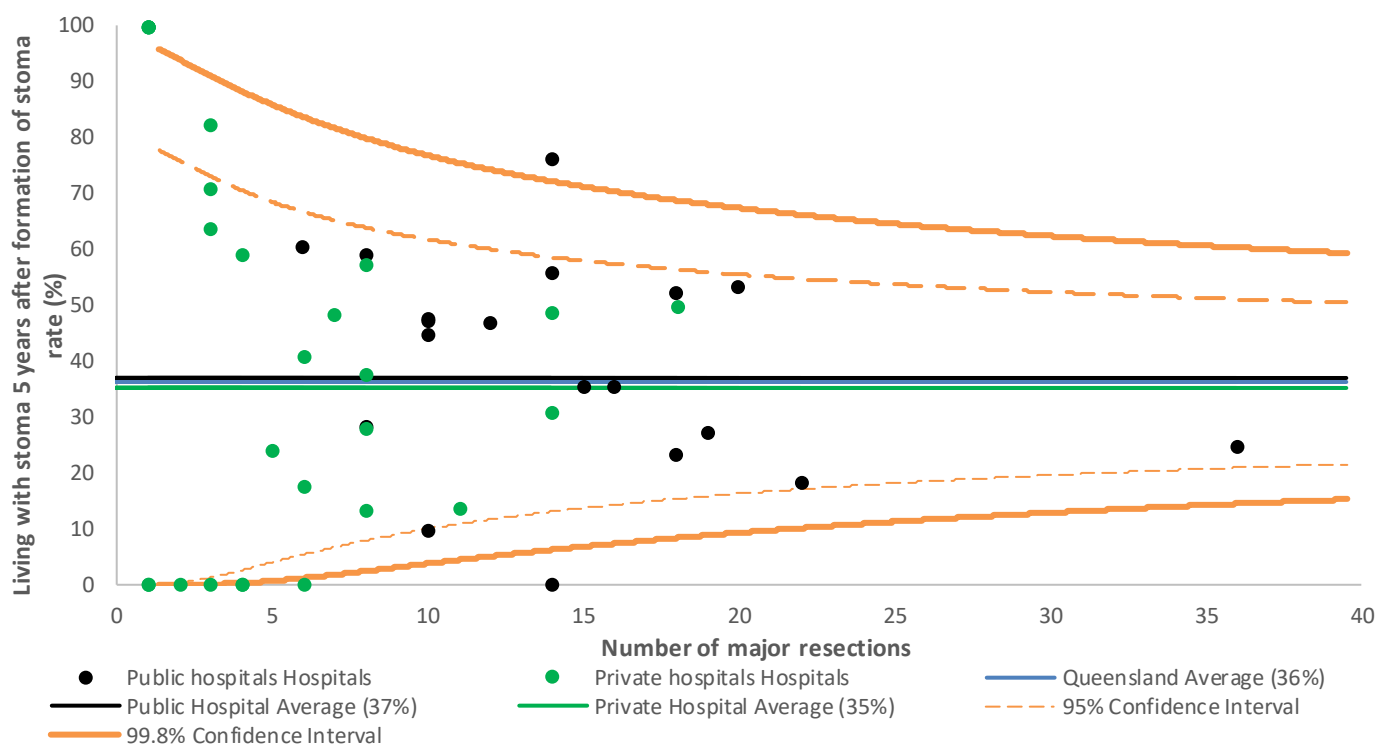
6.10.2 | Patients living with stoma 5 years after stoma formation by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.10.3 | Patients living with stoma 5 years after stoma formation by hospital volume





# Part 2 | Rectal Cancer



## Indicator summary

Indicator summary   Rectal cancer results for 2010-2014	Principal referral hospitals	Group A - Public hospitals	Group A - Private hospitals	Group B hospitals	Other hospitals	Public Hospitals	Private Hospitals	Queensland
<b>Section 1   Effective</b>								
1.7   Neoadjuvant radiation therapy	47% (436/927)	36% (226/627)	28% (327/1166)	35% (127/368)	18% (37/210)	42% (667/1587)	28% (486/1711)	<b>35%</b> (1153/3298)
1.8   Adjuvant radiation therapy	2.6% (24/927)	4.3% (27/627)	1.9% (22/1166)	4.3% (16/368)	3.3% (7/210)	3.3% (52/1587)	2.6% (44/1711)	<b>2.9%</b> (96/3298)
1.9   Adjuvant IV systemic therapy	30% (279/927)	27% (171/627)	36% (414/1166)	34% (125/368)	40% (83/210)	29% (459/1587)	36% (613/1711)	<b>33%</b> (1072/3298)
1.10   Adjuvant IV systemic therapy for stage III patients	53% (164/310)	46% (91/199)	72% (226/316)	63% (57/91)	75% (43/57)	50% (263/526)	71% (318/447)	<b>60%</b> (581/973)
<b>Section 2   Efficient</b>								
2.1   Hospital stay (Median days)	8 (6-14)	9 (7-14)	8 (6-12)	8 (6-12)	7 (5-11)	9 (6-14)	8 (6-12)	<b>8</b> (6-13)
<b>Section 3   Safe</b>								
3.1   In-Hospital mortality	1.2% (11/916)	1.4% (9/626)	1.2% (14/1173)	1.1% (4/365)	0% (0/218)	1.3% (21/1578)	1% (17/1720)	<b>1.2%</b> (38/3298)
3.2   30 day mortality	1.4% (13/916)	1.8% (11/626)	1.2% (14/1173)	1.1% (4/365)	0% (0/218)	1.6% (25/1578)	1% (17/1720)	<b>1.3%</b> (42/3298)
3.3   Perioperative mortality	1.5% (14/916)	1.8% (11/626)	1.4% (16/1173)	1.1% (4/365)	0% (0/218)	1.6% (26/1578)	1.1% (19/1720)	<b>1.4%</b> (45/3298)
3.4   90 day mortality	2.3% (21/916)	3.8% (24/626)	2.6% (30/1173)	2.7% (10/365)	0.9% (2/218)	3% (47/1578)	2.3% (40/1720)	<b>2.6%</b> (87/3298)
3.5   1 year surgical survival	94%	91%	94%	95%	94%	93%	94%	<b>94%</b>
3.6   2 year surgical survival	87%	85%	90%	89%	87%	86%	89%	<b>88%</b>
3.7   5 year surgical survival	69%	62%	72%	70%	74%	66%	72%	<b>70%</b>
3.8   Prolonged LOS ≥ 21 days	11% (99/927)	11% (70/627)	9.3% (109/1166)	6.8% (25/368)	5.2% (11/210)	11% (170/1587)	8.4% (144/1711)	<b>10%</b> (314/3298)
3.9   Had medical interventions within same admission	10% (92/927)	12% (74/627)	6.9% (81/1166)	4.9% (18/368)	5.2% (11/210)	11% (167/1587)	6.4% (109/1711)	<b>8.4%</b> (276/3298)
3.10   Had medical interventions in subsequent admissions	5% (46/927)	3.5% (22/627)	4.1% (48/1166)	4.1% (15/368)	6.2% (13/210)	4.4% (70/1587)	4.3% (74/1711)	<b>4.4%</b> (144/3298)
3.11   Had an anastomotic leak	4.4% (29/664)	6.7% (32/479)	5.7% (54/950)	4.3% (13/301)	3% (5/166)	5.4% (63/1165)	5% (70/1395)	<b>5.2%</b> (133/2560)
3.12   Had an anastomotic leak and died within 90 days of major resection	3.4% (1/29)	6.3% (2/32)	5.6% (3/54)	23% (3/13)	0% (0/5)	4.8% (3/63)	8.6% (6/70)	<b>6.8%</b> (9/133)

## Part 2 | Rectal Cancer

Indicator summary   Rectal cancer results for 2010-2014	Principal referral hospitals	Group A - Public hospitals	Group A - Private hospitals	Group B hospitals	Other hospitals	Public Hospitals	Private Hospitals	Queensland
<b>Section 4   Accessible</b>								
4.1   Received first treatment within 30 days						32% (588/1829)	72% (1391/1920)	<b>53%</b> (1979/3749)
4.3   Received major resection within 30 days	39% (188/484)	48% (189/392)	85% (693/818)	79% (189/239)	84% (142/170)	43% (393/904)	84% (1008/1199)	<b>67%</b> (1401/2103)
4.6   Received IV systemic therapy within 30 days						24% (107/444)	55% (234/422)	<b>39%</b> (341/866)
4.9   Received radiation therapy within 30 days						16% (113/701)	45% (242/539)	<b>29%</b> (355/1240)
<b>Section 5   Equitable</b>								
5.1   Received major resection within 30 days for those aged ≥75 years	42% (59/140)	45% (57/126)	80% (191/238)	80% (70/87)	89% (34/38)	45% (124/278)	82% (287/351)	<b>65%</b> (411/629)
5.2   Received major resection within 30 days by Indigenous status	50% (5/10)	40% (2/5)	100% (5/5)	100% (1/1)	0% (0/1)	50% (8/16)	83% (5/6)	<b>59%</b> (13/22)
5.3   Received major resection within 30 days by disadvantaged status	31% (33/106)	57% (76/133)	81% (87/107)	77% (47/61)	82% (31/38)	46% (115/251)	82% (159/194)	<b>62%</b> (274/445)
5.4   Received major resection within 30 days by rural status	38% (21/55)	39% (29/74)	79% (50/63)	78% (40/51)	83% (33/40)	40% (52/131)	80% (121/152)	<b>61%</b> (173/283)
<b>Section 6   Quality of care</b>								
6.2   Laparoscopic converted to open surgery (2014 only)	14% (13/95)	31% (18/59)	8.4% (9/107)	31% (10/32)	29% (4/14)	21% (34/159)	14% (20/148)	<b>18%</b> (54/307)
6.3   Margins involved (2014 only)	8.2% (16/195)	4.7% (6/128)	7.5% (17/227)	7.1% (5/70)	2.9% (1/35)	7.3% (24/329)	6.4% (21/326)	<b>6.9%</b> (45/655)
6.4   ≥ 12 lymph nodes examined (2014 only)	70% (137/195)	62% (79/128)	72% (164/227)	57% (40/70)	66% (23/35)	67% (220/329)	68% (223/326)	<b>68%</b> (443/655)
6.5   Had abdominoperineal resection	20% (185/927)	17% (105/627)	12% (135/1166)	13% (46/368)	11% (24/210)	19% (295/1587)	12% (200/1711)	<b>15%</b> (495/3298)
6.6   Stoma rate at major resection	65% (600/927)	60% (374/627)	46% (537/1166)	62% (229/368)	43% (91/210)	62% (990/1587)	49% (841/1711)	<b>56%</b> (1831/3298)
6.7   Stoma rate within 12 months after first major resection	2.4% (22/927)	4.6% (29/627)	4.5% (52/1166)	2.7% (10/368)	2.9% (6/210)	3.3% (52/1587)	3.9% (67/1711)	<b>3.6%</b> (119/3298)
6.8   Living with stoma 1 year after formation of stoma by major resection cohort	32% (295/927)	31% (197/627)	17% (194/1166)	18% (66/368)	16% (34/210)	32% (502/1587)	17% (284/1711)	<b>24%</b> (786/3298)
6.9   Living with stoma 1 year after formation of stoma (excludes APR and total proctocolectomy with ileostomy procedures)	28% (110/395)	35% (93/267)	16% (68/423)	15% (27/183)	15% (10/68)	31% (209/673)	15% (99/663)	<b>23%</b> (308/1336)
6.10   Living with stoma 5 years after formation of stoma by major resection cohort	18% (166/927)	19% (122/627)	12% (135/1166)	10% (37/368)	11% (24/210)	19% (294/1587)	11% (190/1711)	<b>15%</b> (484/3298)
6.11   Living with stoma 5 years after formation of stoma (excludes APR and total proctocolectomy with ileostomy procedures )	8.3% (26/313)	21% (44/210)	10% (35/339)	6.1% (9/147)	13% (7/56)	14% (72/530)	9.2% (49/535)	<b>11%</b> (121/1065)

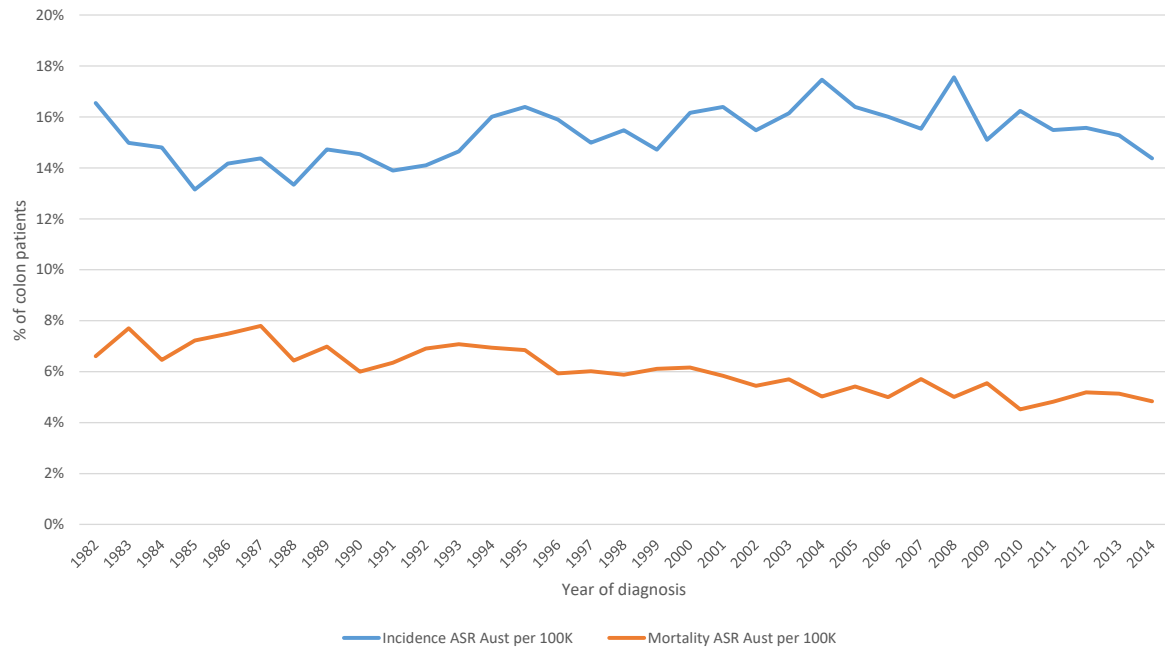
## 1 | Effective

Achieving the best outcomes for Queenslanders with colorectal cancer and providing cancer services based on recommended guidelines.



## 1.1 | Incidence and mortality (age standardised rates)

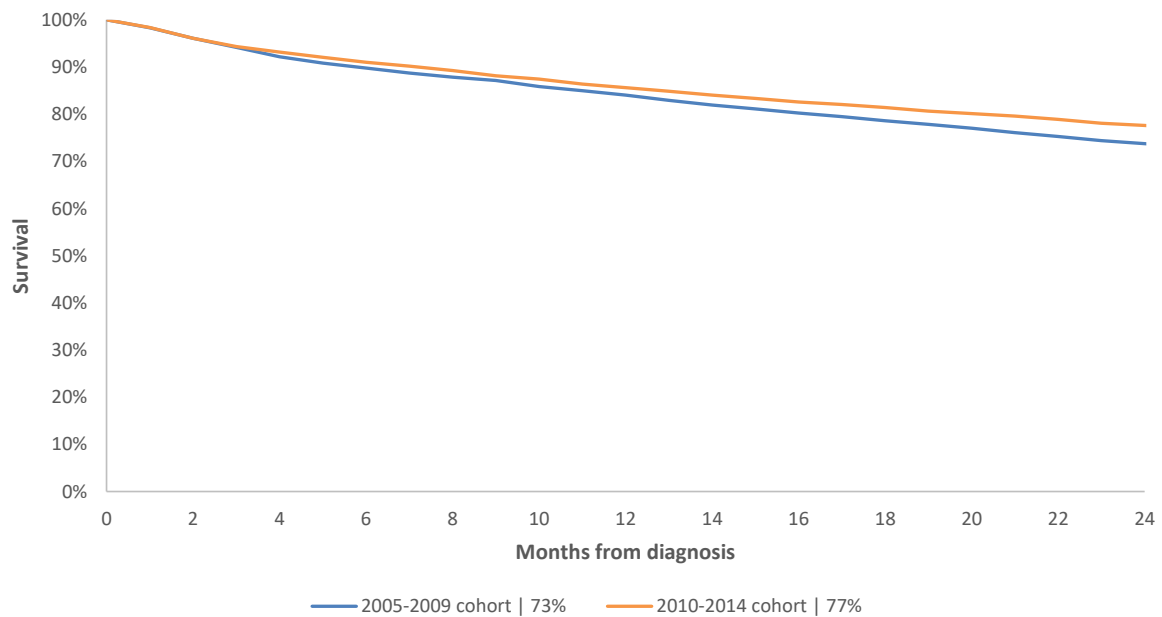
### 1.1.1 | Queensland rectal cancer incidence and mortality trend 1982-2014



## 1.2 | Survival

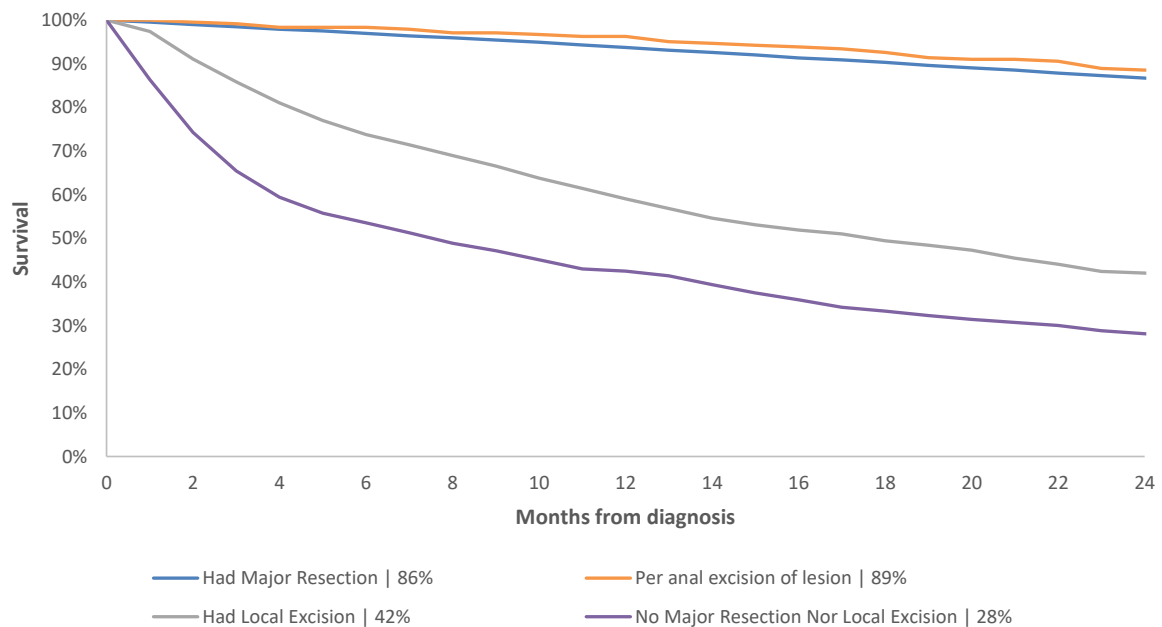
Diagnosis year 2005 – 2014

1.2.1 | What percentage of patients with rectal cancer are living two years after their diagnosis?



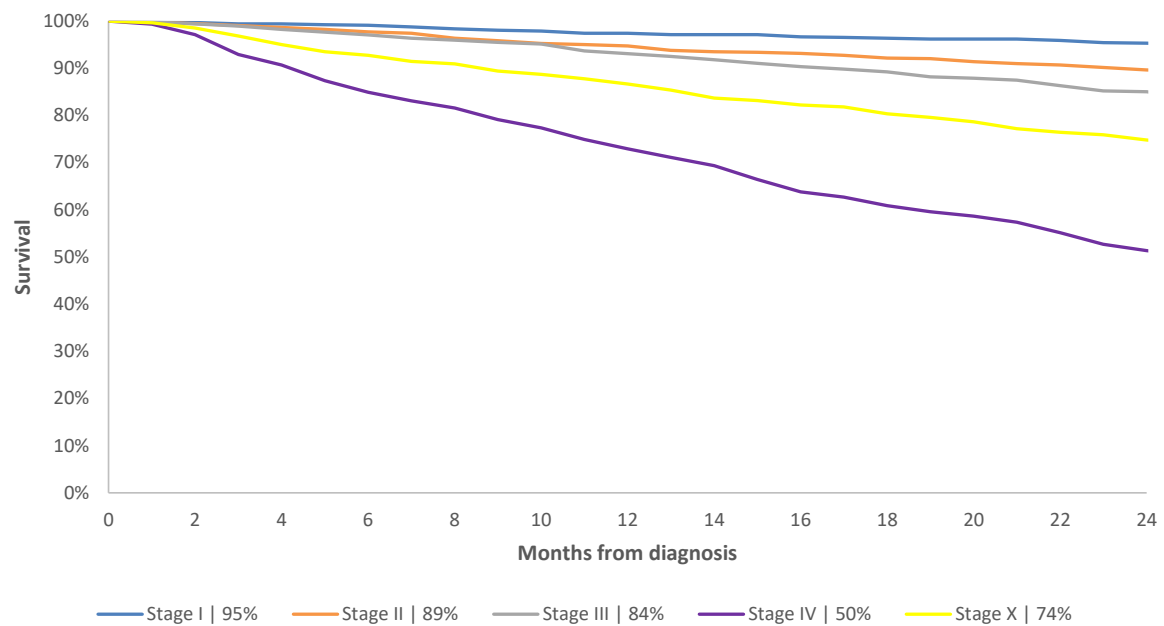
Diagnosis year 2005 – 2014

1.2.2 | What percentage of patients with rectal cancer are living two years after their diagnosis by surgery type?



Diagnosis year 2005 – 2014

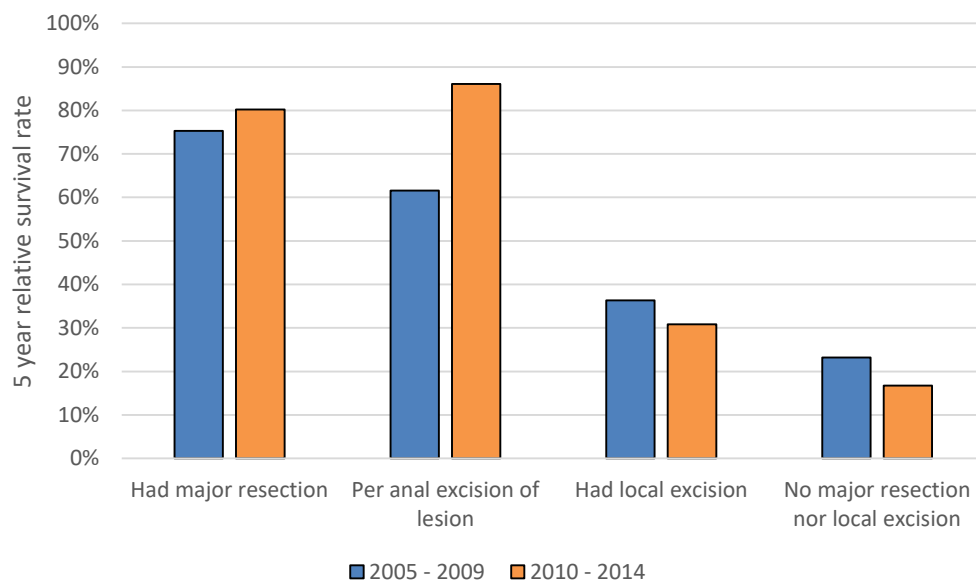
1.2.3 | What percentage of patients with rectal cancer are living two years after their diagnosis by stage?



## Diagnosis year 2005 – 2009 &amp; 2010 – 2014

## 1.2.4 | What percentage of people with rectal cancer are living 5 years after their diagnosis?

Relative Survival (% of people who would have survived if cancer was the only cause of death)	Diagnosis Year	
	2005 - 2009	2010 - 2014
Had major resection	75%	80%
Per anal excision of lesion	62%	86%
Had local excision	36%	31%
No major resection nor local excision	23%	17%





### 1.3 | Queenslanders receiving treatment

Diagnosis year 2005 – 2009 and 2010 – 2014

#### 1.3.1 | How many Queenslanders with rectal cancer receive major resection by HHS of residence?

Major resection number  <i>(% of patients receiving major resection)</i>	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Major resection number (Rate)	Major resection number (Rate)
Cairns and Hinterland	200 (78%)	192 (72%)
Central Queensland	125 (74%)	161 (76%)
Central West	9 (75%)	7 (70%)
Darling Downs	220 (77%)	223 (77%)
Gold Coast	360 (71%)	410 (76%)
Mackay	110 (80%)	125 (81%)
Metro North	634 (80%)	626 (78%)
Metro South	639 (79%)	616 (76%)
North West	9 (56%)	19 (83%)
South West	16 (76%)	17 (68%)
Sunshine Coast	355 (82%)	333 (79%)
Torres and Cape	13 (72%)	7 (70%)
Townsville	174 (85%)	176 (84%)
West Moreton	145 (73%)	165 (73%)
Wide Bay	226 (83%)	221 (72%)
<b>Queensland</b>	<b>3235 (78%)</b>	<b>3298 (77%)</b>

## Diagnosis year 2005 – 2009 and 2010 – 2014

## 1.3.2 | How many Queenslanders with rectal cancer receive IV systemic therapy by HHS of residence?

IV systemic therapy number  <i>(% of patients receiving IV systemic therapy)</i>	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	IV systemic therapy number (Rate)	IV systemic therapy number (Rate)
Cairns and Hinterland	127 (50%)	124 (46%)
Central Queensland	82 (48%)	88 (42%)
Central West	2 (17%)	3 (30%)
Darling Downs	124 (43%)	139 (48%)
Gold Coast	220 (44%)	255 (47%)
Mackay	62 (45%)	66 (43%)
Metro North	330 (42%)	345 (43%)
Metro South	405 (50%)	365 (45%)
North West	9 (56%)	11 (48%)
South West	9 (43%)	10 (40%)
Sunshine Coast	206 (48%)	208 (49%)
Torres and Cape	12 (67%)	5 (50%)
Townsville	51 (25%)	94 (45%)
West Moreton	103 (52%)	121 (54%)
Wide Bay	121 (44%)	128 (42%)
<b>Queensland</b>	<b>1863 (45%)</b>	<b>1962 (46%)</b>

## Diagnosis year 2005 – 2009 and 2010 – 2014

## 1.3.3 | How many Queenslanders with rectal cancer receive radiation therapy by HHS of residence?

Radiation therapy number  (% of patients receiving radiation therapy)	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Radiation therapy number (Rate)	Radiation therapy number (Rate)
Cairns and Hinterland	88 (34%)	134 (50%)
Central Queensland	71 (42%)	84 (40%)
Central West	4 (33%)	1 (10%)
Darling Downs	132 (46%)	136 (47%)
Gold Coast	177 (35%)	179 (33%)
Mackay	46 (34%)	66 (43%)
Metro North	283 (36%)	311 (39%)
Metro South	321 (40%)	332 (41%)
North West	7 (44%)	11 (48%)
South West	9 (43%)	9 (36%)
Sunshine Coast	158 (37%)	187 (44%)
Torres and Cape	9 (50%)	4 (40%)
Townsville	65 (32%)	104 (50%)
West Moreton	91 (46%)	94 (42%)
Wide Bay	109 (40%)	110 (36%)
<b>Queensland</b>	<b>1570 (38%)</b>	<b>1762 (41%)</b>

## 1.4 | Patient characteristics

Diagnosis year 2005 – 2009 and 2010 – 2014

## 1.4.1 | What are the characteristics of patients with rectal cancer who receive major resection?

Rectal   Surgical procedure	Rectal cancer		Had major resection		Per anal excision of lesion*		Local excision or biopsy only		No surgery	
<b>Queensland</b>	4134	4309	3116	3172	119	126	622	709	277	302
<b>Proportion of cancer type</b>	100%	100%	75%	74%	3%	3%	15%	16%	7%	7%
Median age at diagnosis	67	67	71	66	69	70	70	73	76	76
% Male	64%	65%	65%	65%	60%	66%	66%	68%	52%	62%
% ≥75 Age	29%	30%	25%	25%	34%	37%	37%	44%	54%	53%
% Indigenous	1.2%	1.4%	1.2%	1.3%	1.7%	0.8%	1.3%	1.7%	1.4%	2.6%
% Socioeconomically disadvantaged	24%	23%	24%	22%	19%	17%	25%	25%	20%	32%
% Live rural	38%	39%	38%	39%	34%	44%	38%	40%	34%	39%
% With ≥ 1 comorbidity	30%	28%	29%	26%	26%	21%	36%	35%	34%	28%
% ASA ≥ 3	25%	32%	27%	33%	34%	38%	24%	38%	-	-
% Discussed at QOOL MDT	6%	35%	6.7%	37%	3.4%	31%	4.2%	33%	3.6%	25%
1 year survival from diagnosis	83%	85%	92%	95%	96%	94%	57%	57%	39%	44%
2 year survival from diagnosis	73%	77%	83%	89%	87%	90%	42%	41%	25%	30%

<b>Legend</b>	2005-2009	2010-2014
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\*Per anal excision of lesion cohort has been subtracted from major resection cohort

## Part 2 | Rectal Cancer

Diagnosis year 2005 – 2009 and 2010 – 2014

### 1.4.2 | What are the characteristics of patients with rectal cancer who receive major resection by peer group?

Legend	2005-2009	2010-2014
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Rectal   Peer Group	Principal referral hospitals		Group A - Public hospitals		Group A - Private hospitals		Group B hospitals		Other hospital		Public hospitals		Private hospitals		Queensland	
<b>Queensland</b>	752	927	755	627	1095	1166	325	368	308	210	1551	1587	1684	1711	3235	3298
<b>Proportion of QLD total</b>	23%	28%	23%	19%	34%	35%	10%	11%	10%	6%	48%	48%	52%	52%	100%	100%
Median age at diagnosis	66	66	67	66	66	65	66	68	66	66	67	66	66	65	66	66
% Male	65%	65%	64%	63%	67%	66%	65%	60%	59%	70%	64%	64%	65%	65%	65%	65%
% Indigenous	2.1%	1.6%	2.5%	2.9%	0.2%	0.4%	0.3%	0.5%	0%	0.5%	2.3%	2.2%	0.2%	0.4%	1.2%	1.2%
% Socioeconomically disadvantaged	21%	25%	38%	32%	14%	13%	28%	23%	28%	21%	30%	28%	19%	15%	24%	21%
% Live rural	26%	34%	53%	51%	23%	30%	61%	55%	61%	50%	40%	41%	36%	38%	38%	39%
% With ≥ 1 comorbidity	29%	28%	31%	29%	29%	23%	29%	32%	22%	17%	30%	29%	28%	24%	29%	26%
% ASA ≥ 3	48%	45%	42%	45%	47%	47%	55%	47%	32%	39%	45%	44%	46%	47%	45%	46%
% Discussed at QOOL MDT	14%	79%	11%	63%	1%	3%	2%	11%	1%	11%	13%	72%	1%	4%	7%	37%
% Had neo-adjuvant XRT	48%	55%	44%	47%	38%	35%	38%	48%	26%	32%	46%	52%	36%	37%	41%	44%
Median length of stay	9	8	10	9	9	8	9	8	8	7	10	9	9	8	9	8
In-hospital mortality	2.4%	1.4%	2.5%	1.3%	1.9%	1.2%	1.5%	0.8%	1.0%	0%	2.4%	1.3%	1.7%	1%	2%	1.2%
30 day mortality	2.7%	1.6%	2.8%	1.6%	1.7%	1.2%	1.8%	0.8%	1.6%	0%	2.6%	1.6%	1.8%	1%	2.2%	1.3%
90 day mortality	5.1%	2.4%	4.4%	3.7%	3.7%	2.6%	3.4%	2.7%	2.9%	1%	4.6%	2.9%	3.6%	2.4%	4.1%	2.6%
1 year surgical survival	89%	94%	89%	91%	92%	94%	90%	94%	92%	94%	89%	93%	92%	94%	90%	93%
2 year surgical Survival	78%	82%	79%	82%	85%	87%	83%	87%	85%	84%	78%	82%	85%	87%	82%	85%
<b>Only contains 2012 &amp; 2014 values</b>																
Mean number of lymph nodes examined	-	16	-	15	-	16	-	14	-	13	-	16	-	15	-	15
% With ≥ 12 lymph nodes examined	-	70%	-	66%	-	70%	-	57%	-	54%	-	68%	-	66%	-	67%
% With positive lymph nodes	-	32%	-	26%	-	31%	-	34%	-	38%	-	30%	-	32%	-	31%
% With involved surgical margins	-	7%	-	5%	-	8%	-	8%	-	3%	-	6%	-	7%	-	7%
% Late stage (III/IV)	-	41%	-	33%	-	37%	-	39%	-	41%	-	39%	-	37%	-	38%

## Part 2 | Rectal Cancer

Diagnosis year 2012 & 2014

### 1.4.3 | What are the characteristics of patients with rectal cancer who receive major resection by stage?

Legend	2012	2014
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Rectal   Peer Group	Principal referral hospitals		Group A - Public hospitals		Group A - Private hospitals		Group B hospitals		Other hospital		Public hospitals		Private hospitals		Queensland	
Queensland	204	195	129	128	234	227	75	70	36	35	345	329	333	326	678	655
Proportion of QLD total	13%	13%	8%	8%	15%	15%	5%	5%	2%	2%	23%	21%	22%	21%	9%	9%
I	24%	34%	27%	30%	26%	34%	35%	39%	25%	31%	25%	33%	29%	35%	27%	34%
II	23%	27%	33%	26%	24%	23%	17%	17%	17%	23%	26%	26%	22%	22%	24%	24%
III	40%	29%	22%	24%	29%	31%	29%	30%	22%	37%	34%	27%	27%	32%	31%	29%
IV	10%	3.1%	12%	8.6%	9%	4.4%	11%	8.6%	19%	2.9%	11%	5.8%	10%	4.6%	11%	5%
X (T0,N0,M0)	3.4%	5.1%	4.7%	7%	7.3%	1.8%	6.7%	4.3%	13.9%	0%	3.8%	5.8%	8.1%	2.1%	5.9%	4%
O (Tis, N0, M0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Not Known	0.5%	1.5%	1.6%	3.1%	5.1%	4.4%	1.3%	1.4%	2.8%	5.7%	0.9%	2.1%	4.2%	4%	2.5%	3.1%

## 1.5 | Queenslanders receiving major resection

Diagnosis year 2005 – 2009 and 2010 – 2014

### 1.5.1 | How many major resections for rectal cancers are performed by each hospital?

<b>Surgery Number</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
	<b>Diagnosis year</b>	<b>Diagnosis year</b>
<i>(Number of cancer patients receiving a major resection)</i>	<b>N</b>	<b>N</b>
<b>AIHW Peer Group</b>		
Principal referral hospitals	752 (23%)	927 (28%)
Group A - Public hospitals	755 (23%)	627 (19%)
Group A - Private hospitals	1095 (34%)	1166 (35%)
Group B hospitals	325 (10%)	368 (11%)
Other hospitals	308 (10%)	210 (6%)
<b>Hospital Type</b>		
Public hospitals	1551 (48%)	1587 (48%)
Private hospitals	1684 (52%)	1711 (52%)
<b>Queensland</b>	<b>3235</b>	<b>3298</b>

Refer to appendix 1 for hospital grouping definitions

## 1.6 | QOOL\* Multidisciplinary team (MDT) review rate

Diagnosis year 2005 – 2009 and 2010 – 2014

1.6.1 | What percentage of patients with rectal cancer were reviewed by a multidisciplinary team during their cancer management?

QOOL MDT rate  (% of patients who receive MDT review)	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	MDT review number (Rate)	MDT review number (Rate)
Cairns and Hinterland	22 (9%)	155 (58%)
Central Queensland	10 (6%)	70 (33%)
Central West	0 (0%)	2 (20%)
Darling Downs	16 (6%)	103 (36%)
Gold Coast	27 (5%)	209 (39%)
Mackay	1 (1%)	5 (3%)
Metro North	46 (6%)	325 (40%)
Metro South	49 (6%)	275 (34%)
North West	0 (0%)	1 (4%)
South West	0 (0%)	12 (48%)
Sunshine Coast	41 (9%)	183 (43%)
Torres and Cape	6 (33%)	5 (50%)
Townsville	0 (0%)	5 (2%)
West Moreton	6 (3%)	49 (22%)
Wide Bay	24 (9%)	128 (42%)
<b>Queensland</b>	<b>248 (6%)</b>	<b>1527 (35%)</b>

\*MDT Rate is limited to hospitals that use QOOL to capture MDT review.  
See definitions for further description



## 1.7 | Neoadjuvant radiation therapy rate

Diagnosis year 2005 – 2009 and 2010 – 2014

## 1.7.1 | What proportion of patients receive neoadjuvant radiation therapy?

Neoadjuvant radiation therapy	2005 - 2009	2010 - 2014
<i>(% of patients who received neoadjuvant radiation therapy within 3 months of major resection)</i>	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	34% (256/752) [33%**, 30-37, 0]	47% (436/927) [47%**, 43-51, 0]
Group A - Public hospitals	28% (212/755) [29%*, 26-33, 0.021]	36% (226/627) [37%, 33-41, 0.41]
Group A - Private hospitals	24% (264/1095) [23%, 21-26, 0.21]	28% (327/1166) [28%**, 25-31, 0]
Group B hospitals	15% (48/325) [15%**, 11-20, 0]	35% (127/368) [36%, 31-42, 0.643]
Other hospitals	13% (39/308) [13%**, 10-17, 0]	18% (37/210) [17%**, 13-23, 0]
<b>Hospital Type</b>		
Public hospitals	31% (478/1551) [31%**, 28-34, 0]	42% (667/1587) [42%**, 39-46, 0]
Private hospitals	20% (341/1684) [20%**, 18-22, 0]	28% (486/1711) [28%**, 26-31, 0]
<b>Queensland</b>	<b>25% (819/3235)</b>	<b>35% (1153/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

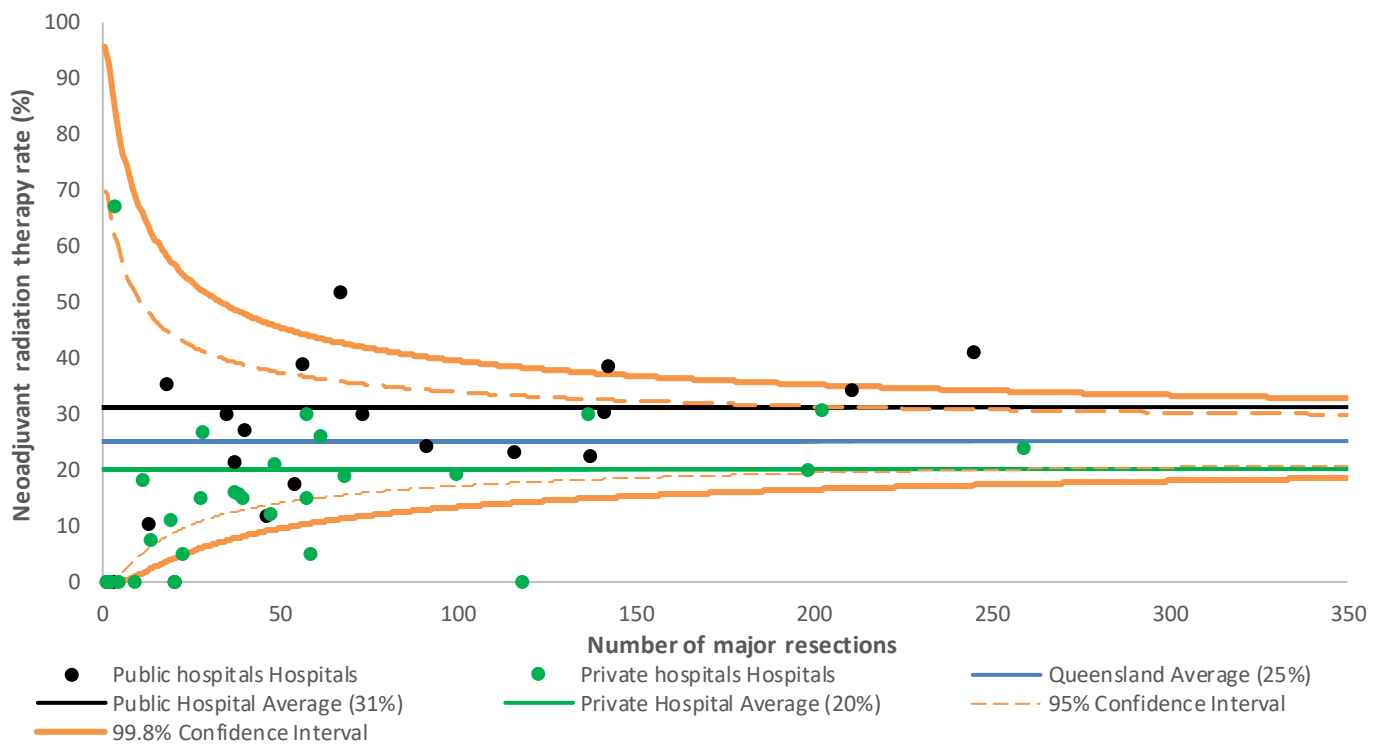
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

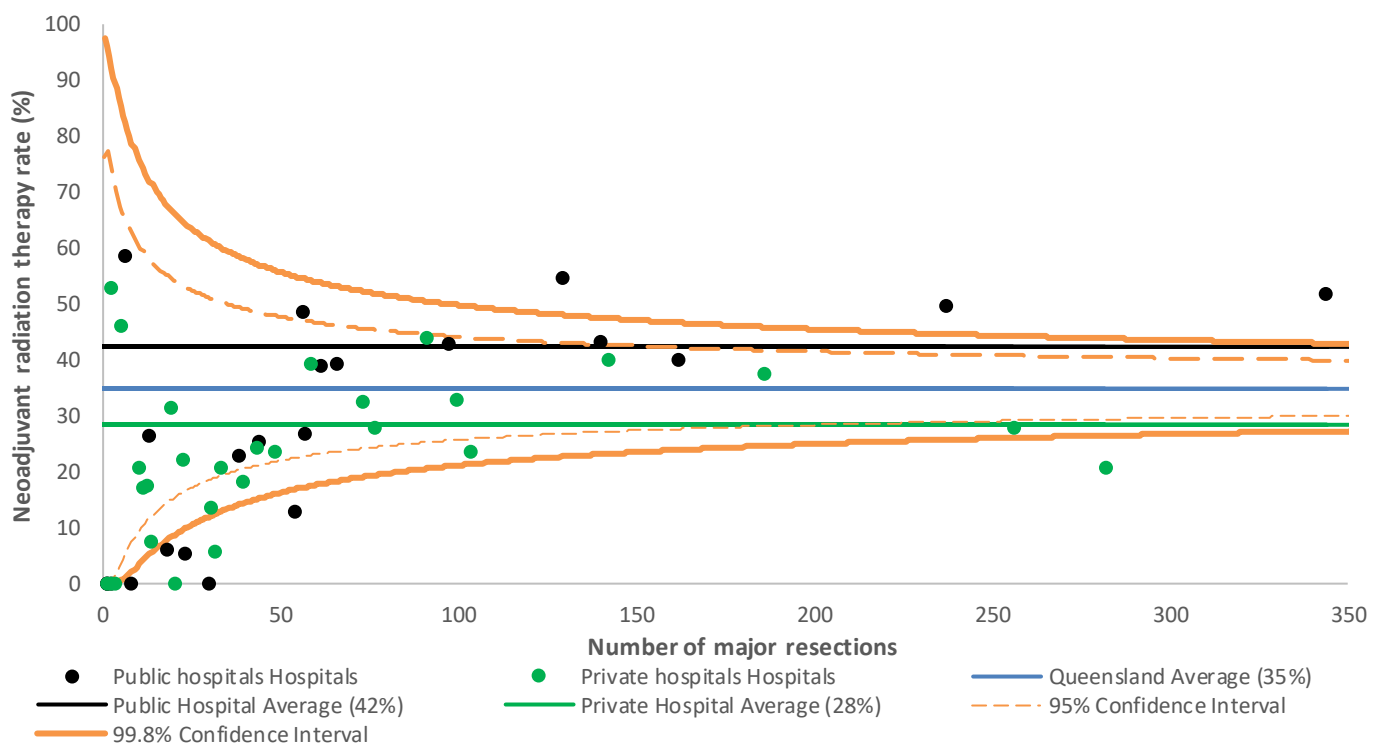
1.7.2 | Patients receiving neoadjuvant radiation therapy by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

1.7.3 | Patients receiving neoadjuvant radiation therapy by hospital volume



## 1.8 | Adjuvant radiation therapy rate

Diagnosis year 2005 – 2009 and 2010 – 2014

1.8.1 | What proportion of patients receive adjuvant radiation therapy within 3 months of their first major resection?

Adjuvant radiation therapy	2005 - 2009	2010 - 2014
(% of patients who received adjuvant radiation therapy)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	3.9% (29/752) [3.8%, 3-6, 0.653]	2.6% (24/927) [2.4%, 2-4, 0.464]
Group A - Public hospitals	5% (38/755) [4.3%, 3-6, 0.923]	4.3% (27/627) [3.7%, 2-6, 0.316]
Group A - Private hospitals	2.9% (32/1095) [3.5%, 2-5, 0.369]	1.9% (22/1166) [2.2%, 1-4, 0.236]
Group B hospitals	8.3% (27/325) [7.7%**, 5-12, 0.004]	4.3% (16/368) [4.4%, 3-8, 0.132]
Other hospitals	3.2% (10/308) [3.2%, 2-6, 0.395]	3.3% (7/210) [3.6%, 2-8, 0.591]
<b>Hospital Type</b>		
Public hospitals	4.6% (71/1551) [4.4%, 3-6, 0.718]	3.3% (52/1587) [3.2%, 2-4, 0.631]
Private hospitals	3.9% (65/1684) [4%, 3-5, 0.716]	2.6% (44/1711) [2.7%, 2-4, 0.621]
<b>Queensland</b>	<b>4.2% (136/3235)</b>	<b>2.9% (96/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

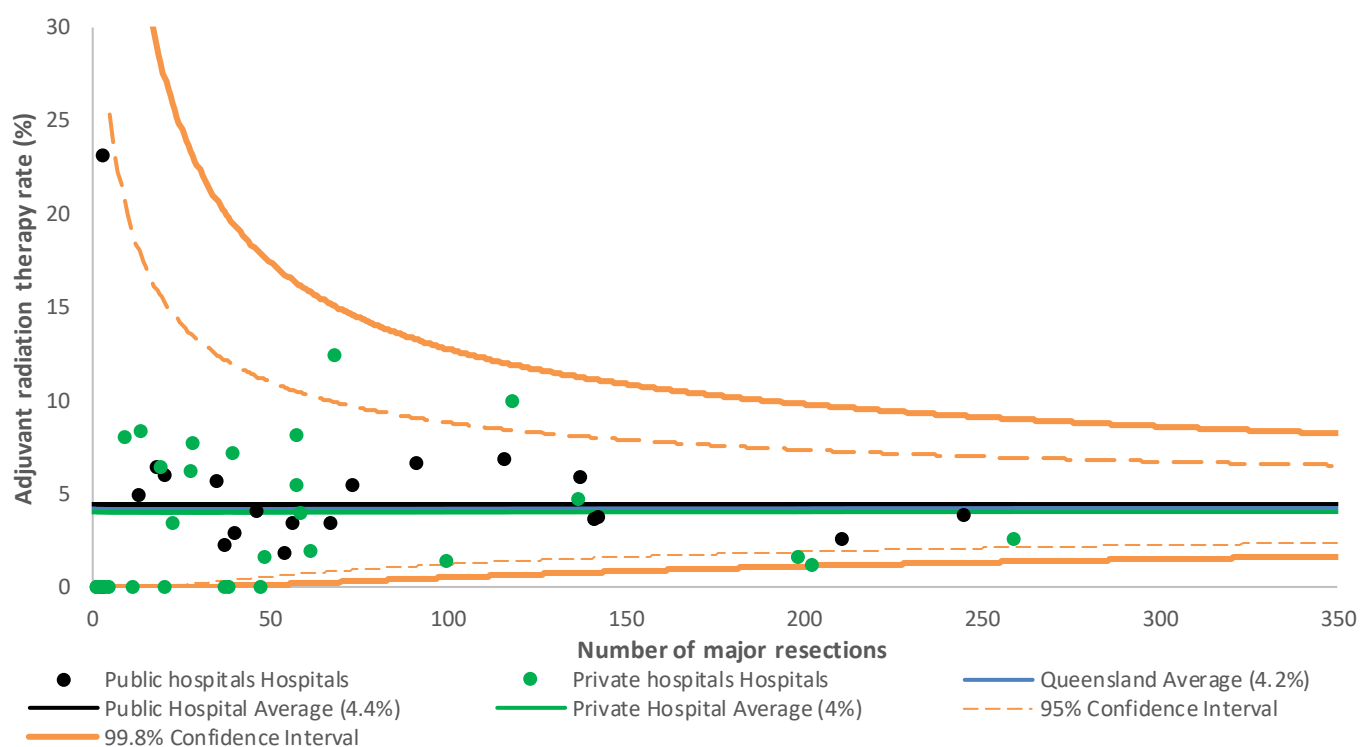
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Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

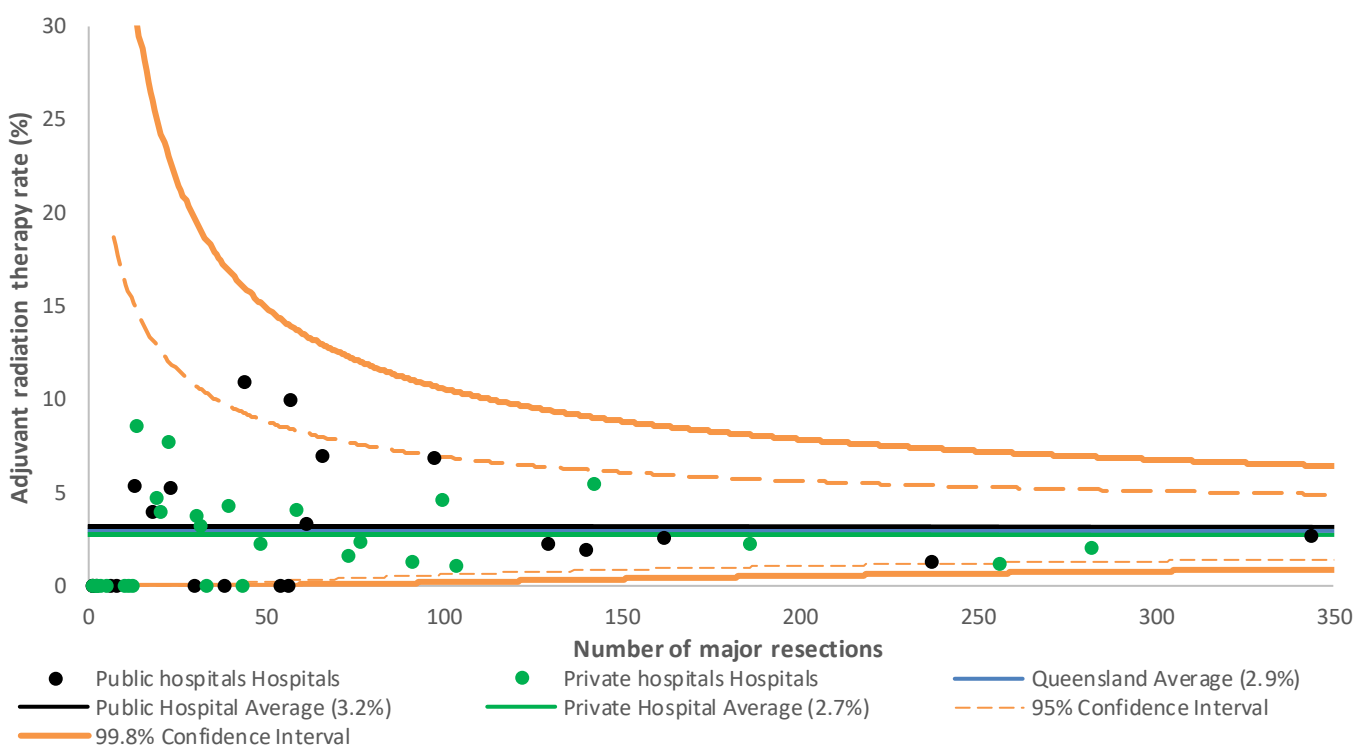
1.8.2 | Patients receiving adjuvant radiation therapy by hospital volume



Diagnosis year 2010 - 2014

Adjusted rates, 5 years combined

1.8.3 | Patients receiving adjuvant radiation therapy by hospital volume



## 1.9 | Adjuvant IV systemic therapy rate

Diagnosis year 2005 – 2009 and 2010 – 2014

1.9.1 | What proportion of patients receive adjuvant IV systemic therapy within 3 months of their first major resection?

Adjuvant IV systemic therapy	2005 - 2009	2010 - 2014
<i>(% of patients who received adjuvant IV systemic therapy within 3 months of major resection)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	24% (179/752) [23%**, 20-27, 0.001]	30% (279/927) [30%, 27-33, 0.079]
Group A - Public hospitals	25% (187/755) [26%, 23-30, 0.119]	27% (171/627) [29%, 25-33, 0.093]
Group A - Private hospitals	36% (389/1095) [35%**, 32-38, 0]	36% (414/1166) [34%, 31-37, 0.292]
Group B hospitals	23% (75/325) [23%*, 19-28, 0.019]	34% (125/368) [37%, 32-43, 0.055]
Other hospitals	34% (104/308) [34%*, 29-40, 0.032]	40% (83/210) [38%, 32-45, 0.066]
<b>Hospital Type</b>		
Public hospitals	24% (370/1551) [24%**, 22-27, 0.001]	29% (459/1587) [29%*, 27-32, 0.025]
Private hospitals	33% (564/1684) [33%**, 30-36, 0.001]	36% (613/1711) [35%*, 33-38, 0.037]
<b>Queensland</b>	<b>29% (934/3235)</b>	<b>33% (1072/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

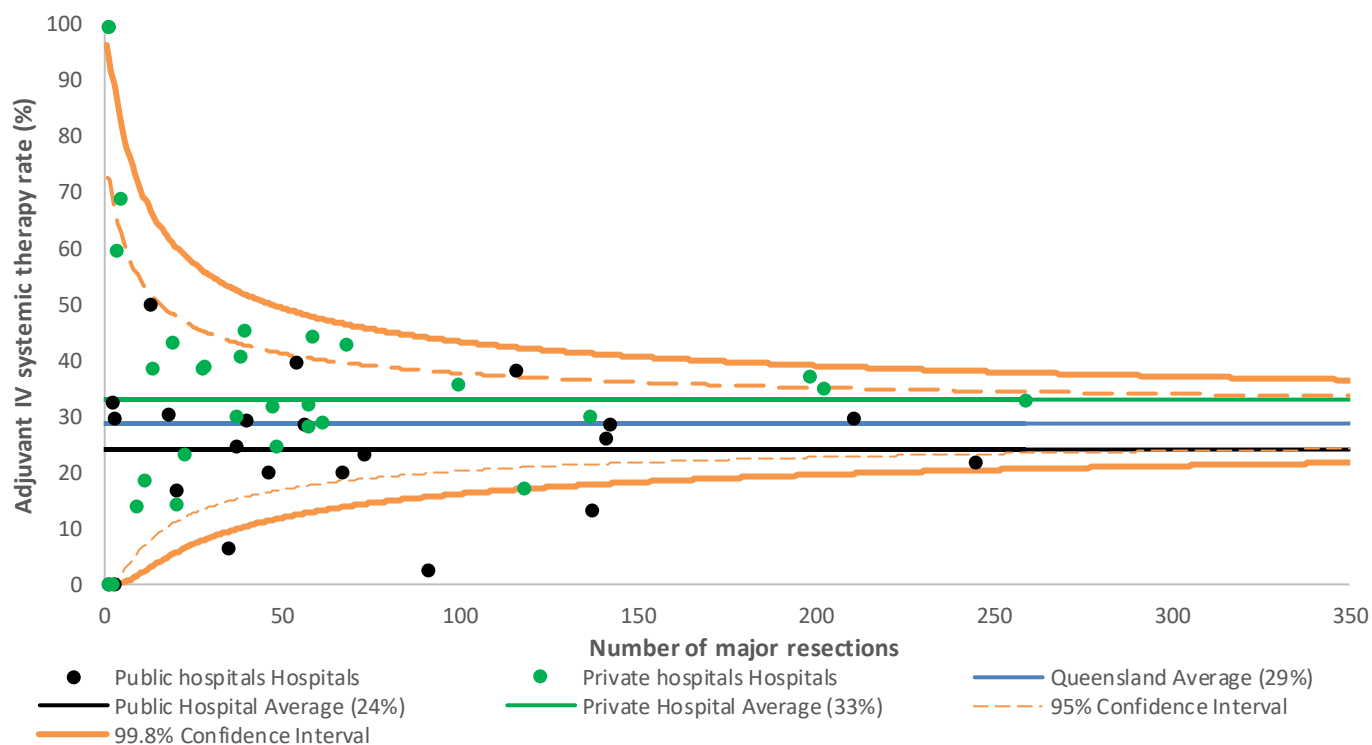
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

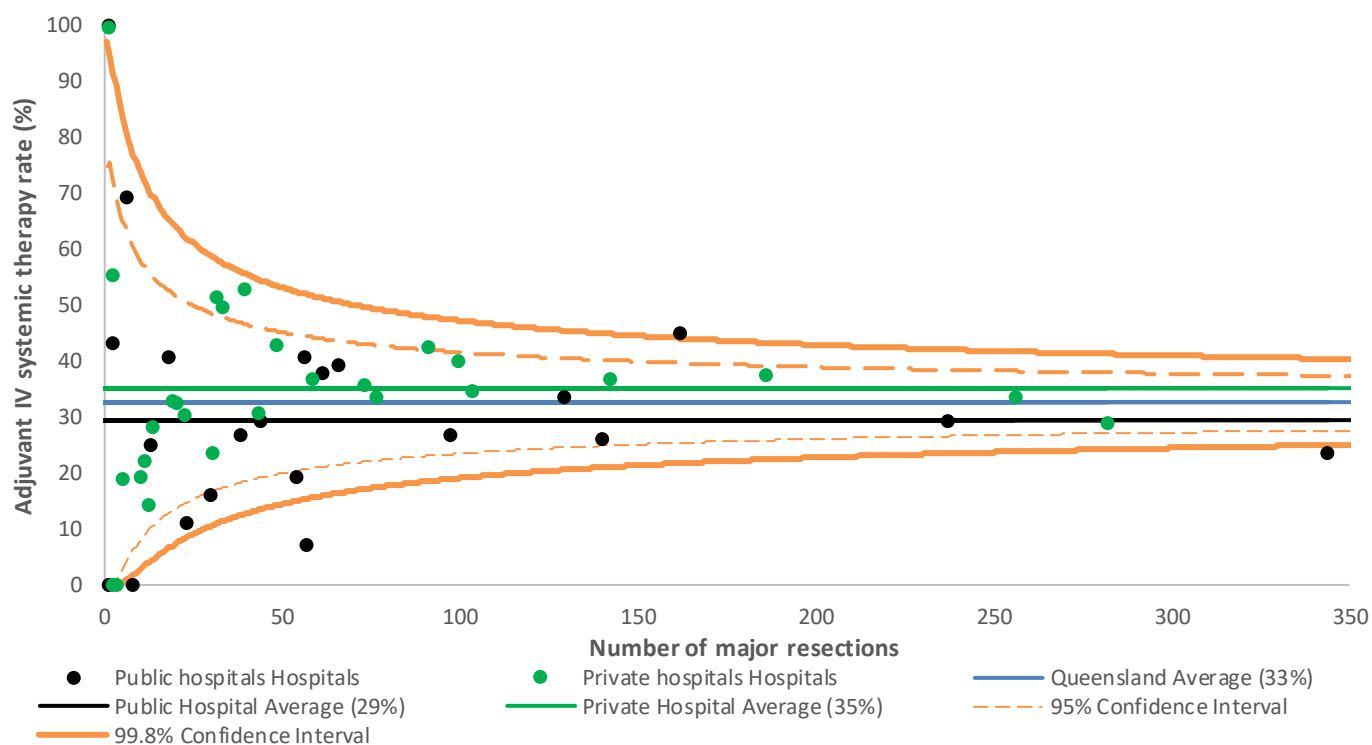
1.9.2 | Patients receiving adjuvant IV systemic therapy by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

1.9.3 | Patients receiving adjuvant IV systemic therapy by hospital volume



## 1.10 | Adjuvant IV systemic therapy for stage III patients

Diagnosis year 2005 – 2009 and 2010 – 2014

1.10.1 | What proportion of stage III patients receive adjuvant IV systemic therapy within 3 months of their first major resection??

Adjuvant IV systemic therapy for stage III patients	2005 - 2009	2010 - 2014
(% of stage III patients who received adjuvant IV systemic therapy)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	38% (77/202) [37%** , 31-45, 0]	53% (164/310) [54%, 48-60, 0.073]
Group A - Public hospitals	44% (92/207) [47%, 40-55, 0.133]	46% (91/199) [48%** , 42-56, 0.004]
Group A - Private hospitals	71% (183/259) [69%** , 62-76, 0]	72% (226/316) [67%** , 62-72, 0.006]
Group B hospitals	43% (37/86) [41%* , 33-53, 0.042]	63% (57/91) [69%, 59-81, 0.058]
Other hospitals	67% (56/84) [68%** , 59-79, 0.001]	75% (43/57) [71%* , 62-81, 0.015]
<b>Hospital Type</b>		
Public hospitals	41% (171/422) [41%** , 37-47, 0]	50% (263/526) [52%** , 47-57, 0.003]
Private hospitals	66% (274/416) [64%** , 59-70, 0]	71% (318/447) [68%** , 63-73, 0]
<b>Queensland</b>	<b>53% (445/838)</b>	<b>60% (581/973)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

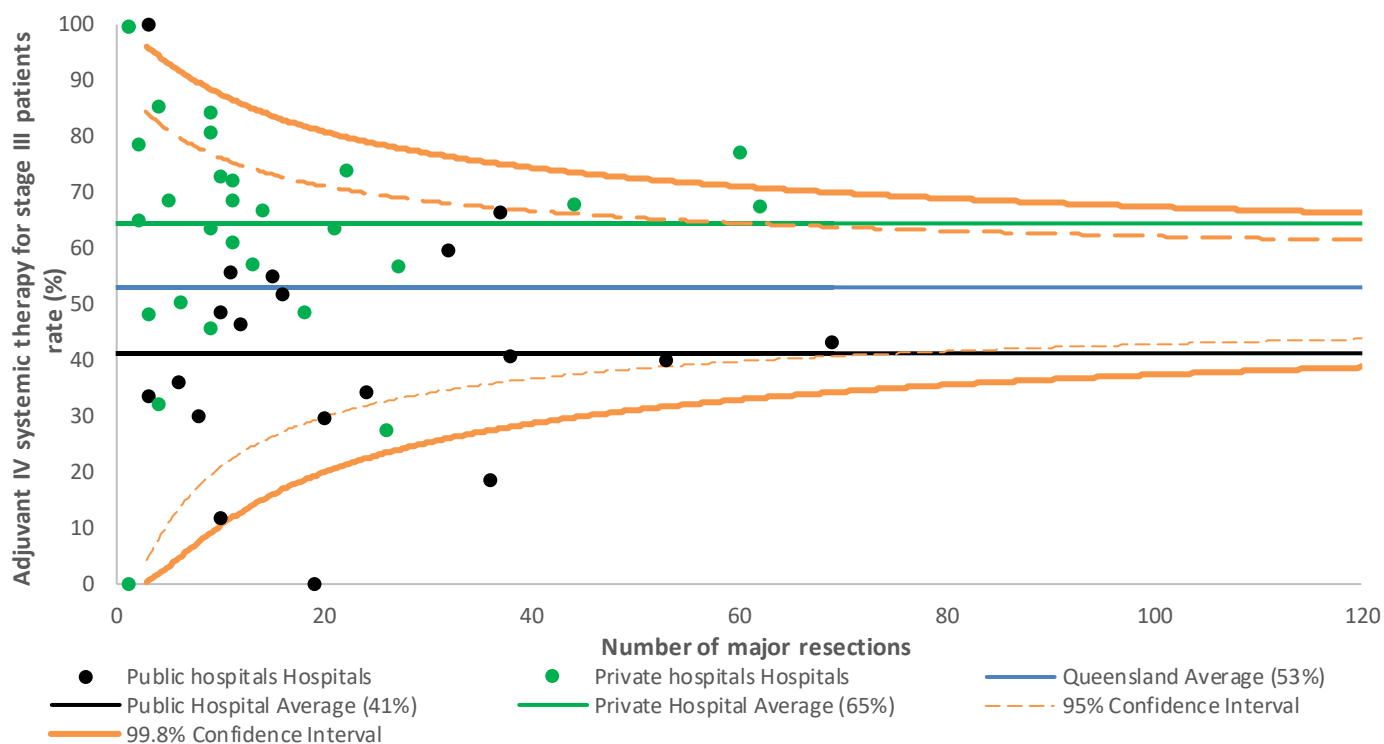
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

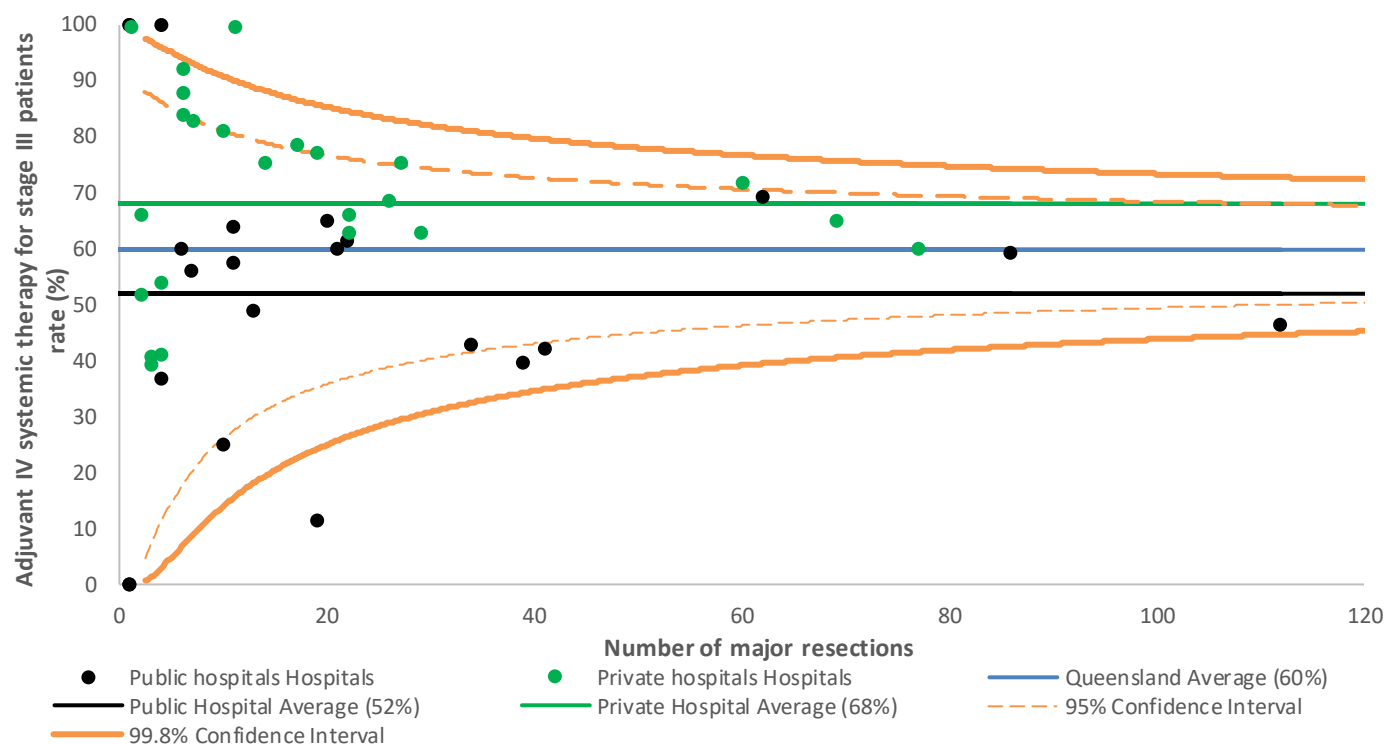
1.10.2 | Stage III patients receiving adjuvant IV systemic therapy by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

1.10.3 | Stage III patients receiving adjuvant IV systemic therapy by hospital volume





## 2 | Efficient

Optimally using resources to achieve desired outcomes.



## 2.1 | Hospital stay

Diagnosis year 2005 – 2009 and 2010 – 2014

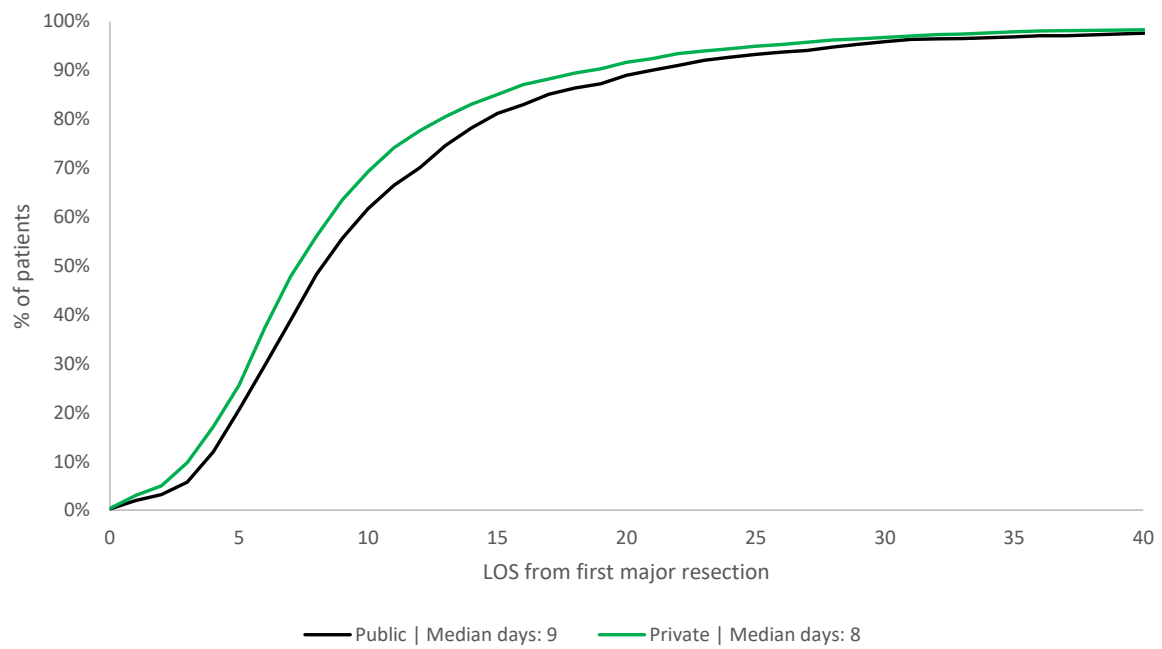
## 2.1.1 | How long do people having major resection stay in hospital?

Length of stay (days)	2005 - 2009	2010 - 2014
<i>(Median time between the admission and discharge date of major resection)</i>	Diagnosis year Median IQR	Diagnosis year Median IQR
<b>AIHW Peer Group</b>		
Principal referral hospitals	9 (6-14)	8 (6-14)
Group A - Public hospitals	10 (8-14)	9 (7-14)
Group A - Private hospitals	9 (6-13)	8 (6-12)
Group B hospitals	9 (6-13)	8 (6-12)
Other hospitals	8 (6-12)	7 (5-11)
<b>Hospital Type</b>		
Public hospitals	10 (7-14)	9 (6-14)
Private hospitals	9 (6-12)	8 (6-12)
<b>Queensland</b>	<b>9</b> <b>(6-13)</b>	<b>8</b> <b>(6-13)</b>

For a description on Interquartile range (IQR) - refer to definitions  
Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2014

2.1.2 | Distribution of length of stay from first major resection



## 3 | Safe

Avoiding and preventing adverse outcomes or injuries during healthcare management.



### 3.1 | In-hospital mortality

Diagnosis year 2005 – 2009 and 2010 – 2014

#### 3.1.1 | What percentage of patients die in hospital after major resection?

**Mortality rate is calculated from facility of last major resection.**

<b>In-Hospital mortality</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% patients who die in hospital following major resection)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	<b>2.4% (18/759)</b> [2.4%, 1-4, 0.521]	<b>1.2% (11/916)</b> [1.2%, 1-2, 0.908]
Group A - Public hospitals	<b>2.5% (19/750)</b> [2.2%, 1-4, 0.761]	<b>1.4% (9/626)</b> [1.2%, 1-3, 0.85]
Group A - Private hospitals	<b>2.1% (23/1119)</b> [2.2%, 1-3, 0.822]	<b>1.2% (14/1173)</b> [1.3%, 1-2, 0.695]
Group B hospitals	<b>1.3% (4/317)</b> [1.5%, 1-4, 0.52]	<b>1.1% (4/365)</b> [0.9%, 0-3, 0.698]
Other hospitals	<b>0.7% (2/290)</b> [0.4%, 0-3, 0.112]	<b>0% (0/218)</b> [0%, 0-100, 1]
<b>Hospital Type</b>		
Public hospitals	<b>2.4% (38/1558)</b> [2.3%, 2-3, 0.516]	<b>1.3% (21/1578)</b> [1.2%, 1-2, 0.769]
Private hospitals	<b>1.7% (28/1677)</b> [1.7%, 1-3, 0.482]	<b>1% (17/1720)</b> [1.1%, 1-2, 0.756]
<b>Queensland</b>	<b>2% (66/3235)</b>	<b>1.2% (38/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

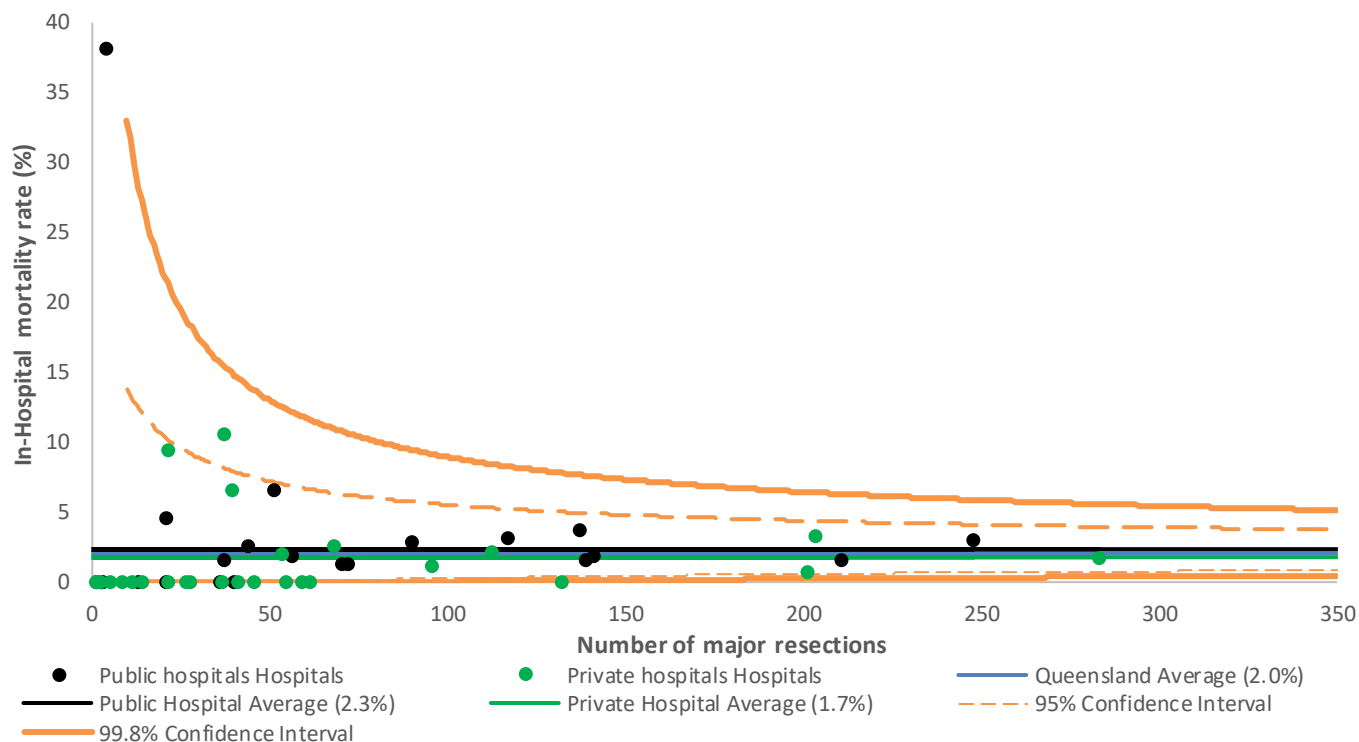
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

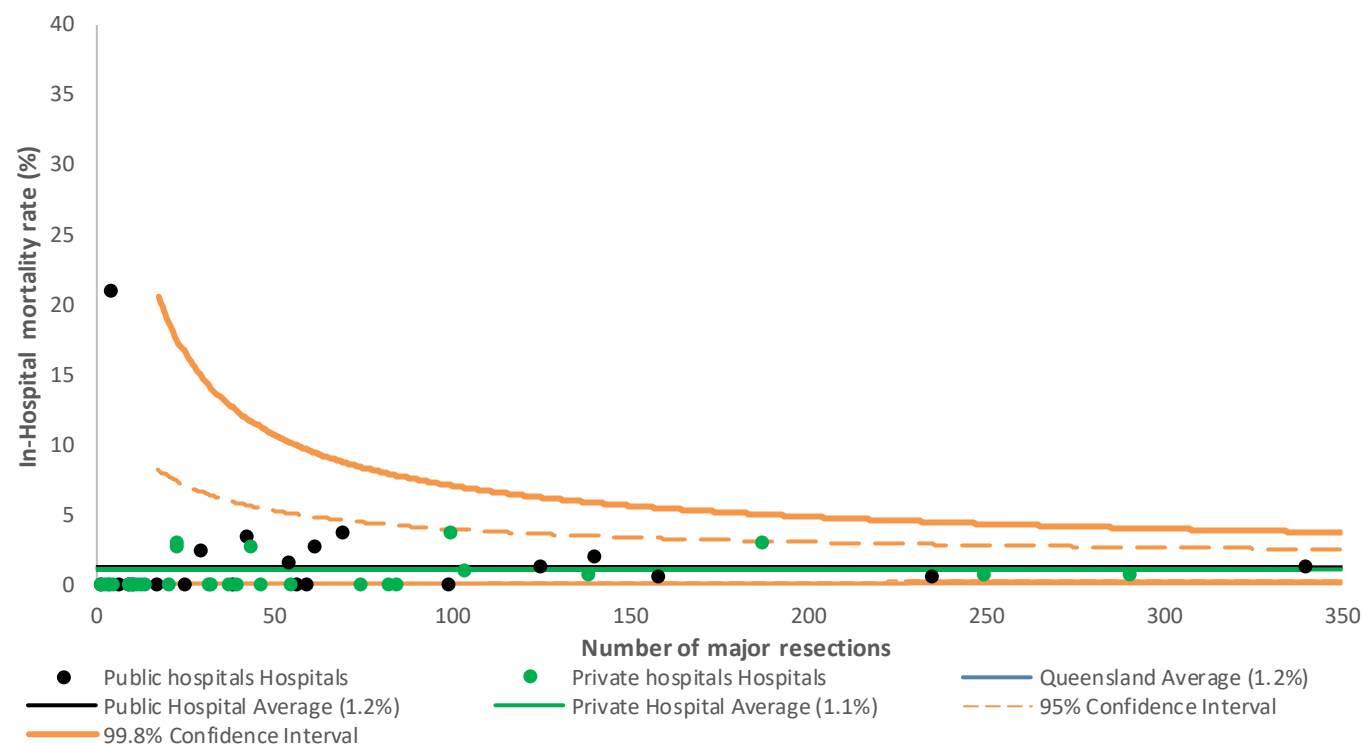
3.1.2 | In-hospital mortality following major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

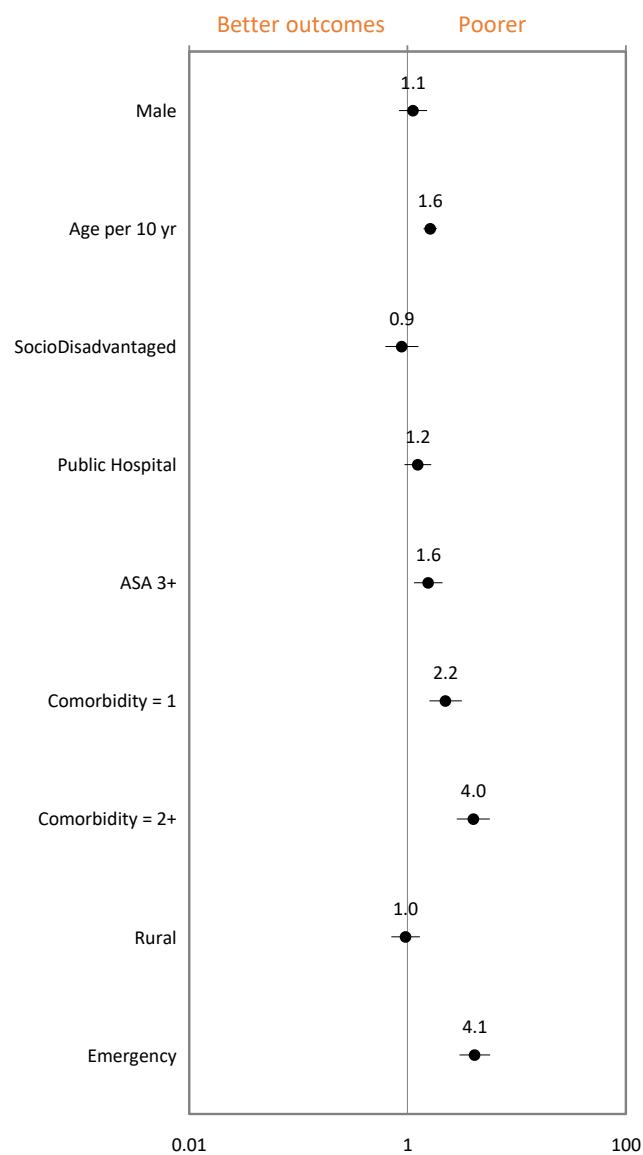
3.1.3 | In-hospital mortality following major resection by hospital volume



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.1.4 | Relative risk of in-hospital mortality following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.

## 3.2 | 30 day mortality

Diagnosis year 2005 – 2009 and 2010 – 2014

### 3.2.1 | What percentage of patients die within 30 days of major resection?

**Mortality rate is calculated from facility of last major resection.**

<b>30 day mortality</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% patients who die ≤ 30 days following major resection)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	<b>2.6% (20/759)</b> [2.7%, 2-4, 0.397]	<b>1.4% (13/916)</b> [1.4%, 1-3, 0.739]
Group A - Public hospitals	<b>2.8% (21/750)</b> [2.4%, 1-4, 0.776]	<b>1.8% (11/626)</b> [1.5%, 1-3, 0.678]
Group A - Private hospitals	<b>1.9% (21/1119)</b> [2%, 1-3, 0.709]	<b>1.2% (14/1173)</b> [1.3%, 1-2, 0.978]
Group B hospitals	<b>1.3% (4/317)</b> [1.5%, 1-4, 0.489]	<b>1.1% (4/365)</b> [1%, 0-3, 0.634]
Other hospitals	<b>1.7% (5/290)</b> [1.6%, 1-4, 0.525]	<b>0% (0/218)</b> [0%, 0-100, 1]
<b>Hospital Type</b>		
Public hospitals	<b>2.7% (42/1558)</b> [2.5%, 2-4, 0.461]	<b>1.6% (25/1578)</b> [1.5%, 1-2, 0.576]
Private hospitals	<b>1.7% (29/1677)</b> [1.8%, 1-3, 0.413]	<b>1% (17/1720)</b> [1.1%, 1-2, 0.524]
<b>Queensland</b>	<b>2.2% (71/3235)</b>	<b>1.3% (42/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

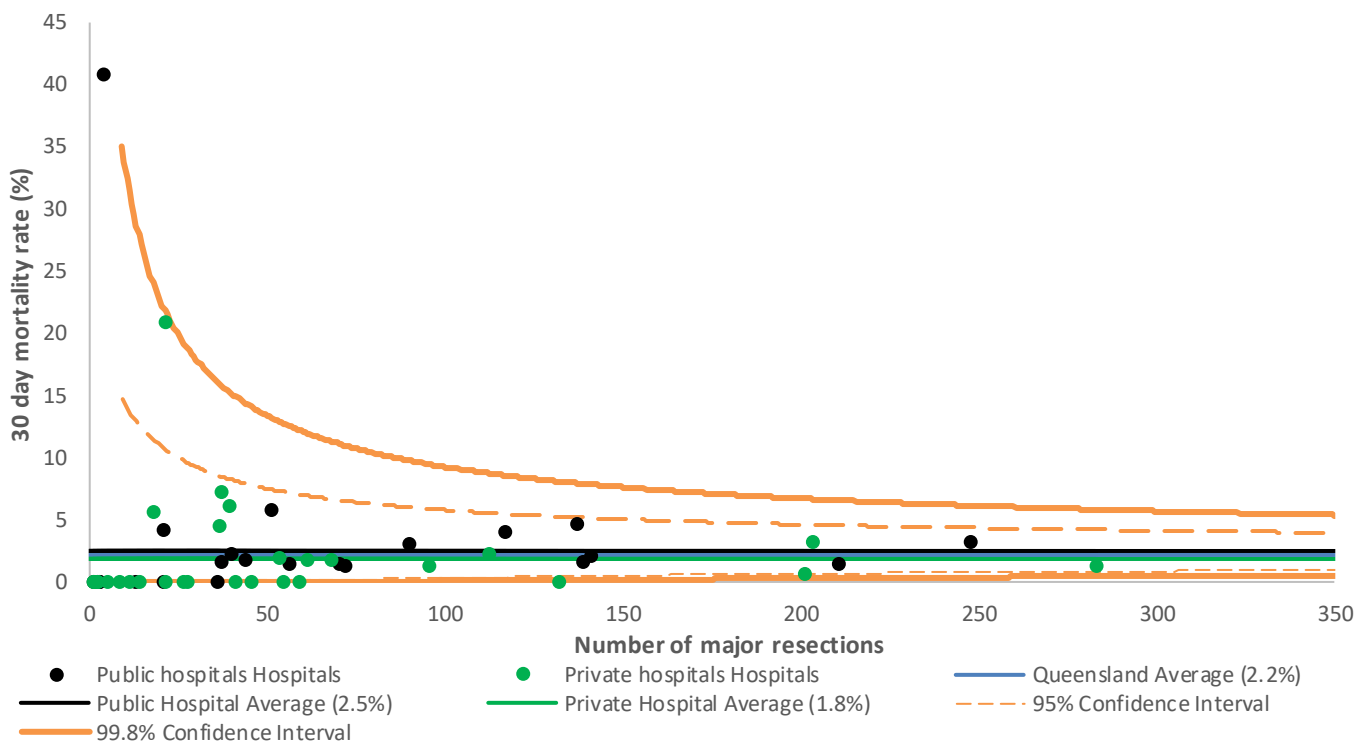
Refer to appendix 1 for hospital grouping definitions



### Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

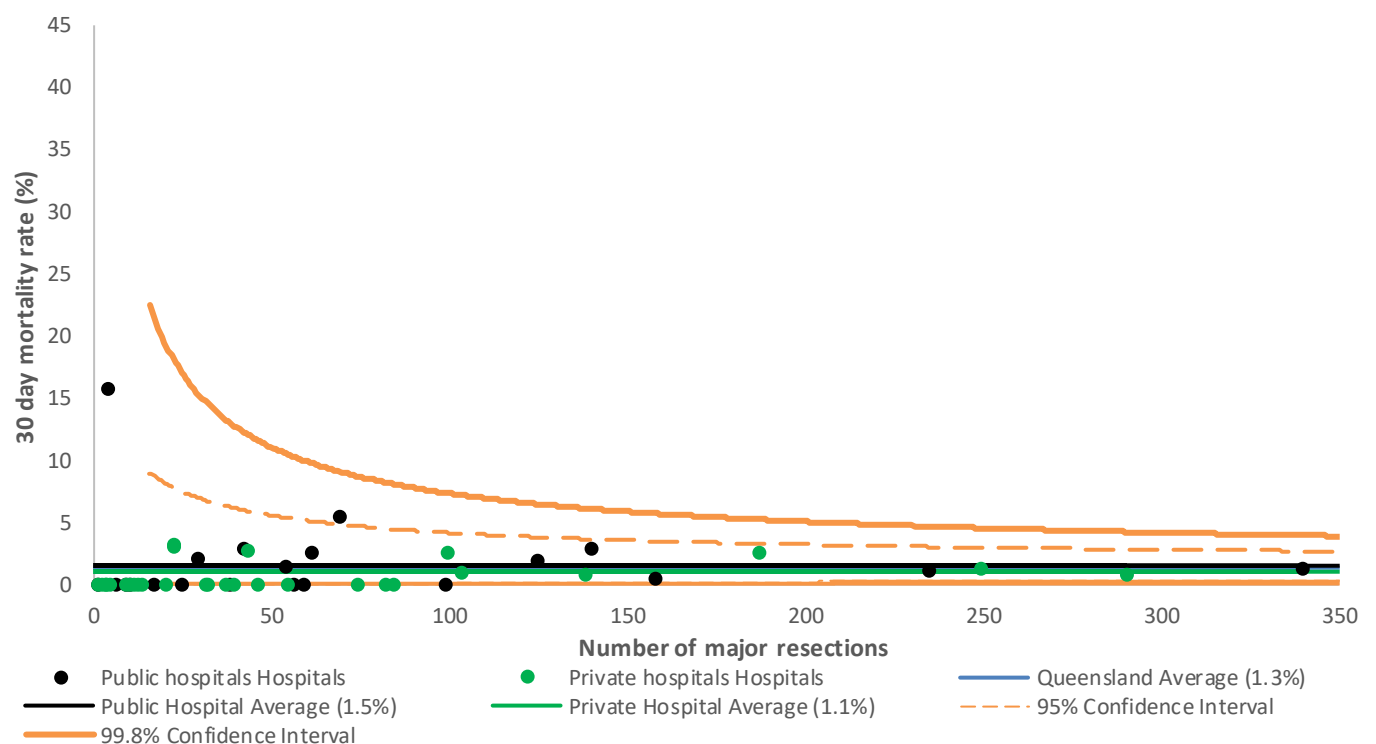
#### 3.2.2 | 30 day mortality following major resection by hospital volume



### Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

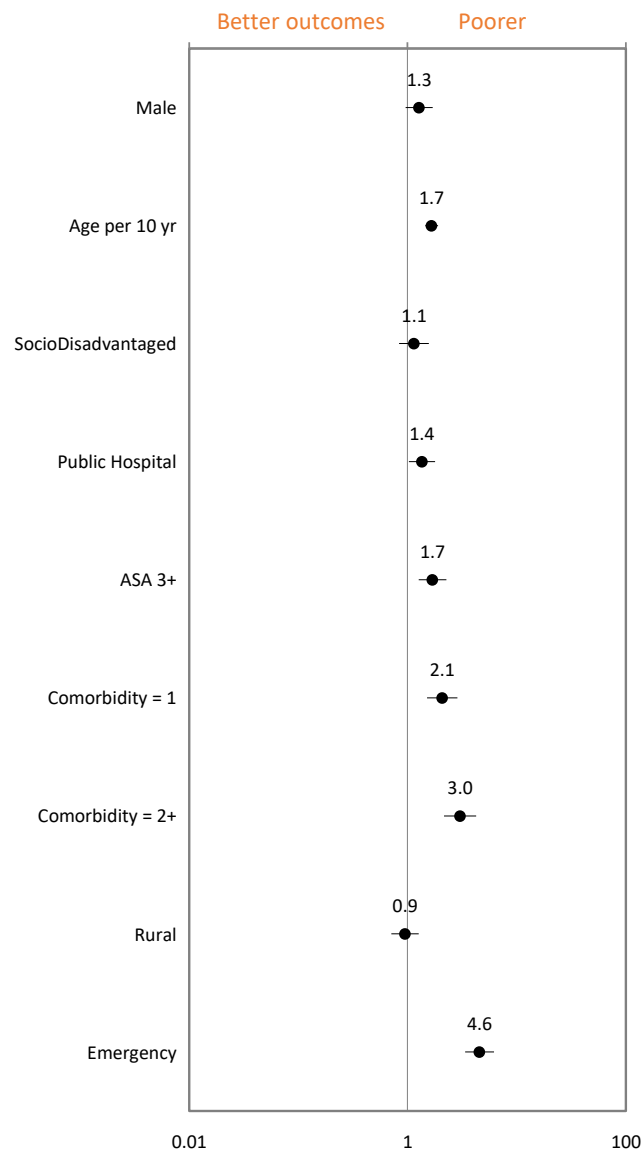
#### 3.2.3 | 30 day mortality following major resection by hospital volume



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.2.4 | Relative risk of 30 day mortality following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.

### 3.3 | Perioperative mortality

Diagnosis year 2005 – 2009 and 2010 – 2014

3.3.1 | What percentage of patients died in-hospital or within 30 days of major resection?

**Mortality rate is calculated from facility of last major resection.**

Perioperative mortality	2005 - 2009	2010 - 2014
<i>(% patients who die in hospital or within 30 days of major resection)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	2.8% (21/759) [2.9%, 2-5, 0.563]	1.5% (14/916) [1.5%, 1-3, 0.71]
Group A - Public hospitals	2.9% (22/750) [2.5%, 2-4, 0.968]	1.8% (11/626) [1.5%, 1-3, 0.803]
Group A - Private hospitals	2.4% (27/1119) [2.5%, 2-4, 0.901]	1.4% (16/1173) [1.5%, 1-3, 0.808]
Group B hospitals	1.6% (5/317) [1.9%, 1-5, 0.551]	1.1% (4/365) [1%, 0-3, 0.54]
Other hospitals	1.7% (5/290) [1.6%, 1-4, 0.401]	0% (0/218) [0%, 0-100, 1]
<b>Hospital Type</b>		
Public hospitals	2.8% (44/1558) [2.7%, 2-4, 0.685]	1.6% (26/1578) [1.5%, 1-3, 0.632]
Private hospitals	2.1% (36/1677) [2.3%, 2-3, 0.663]	1.1% (19/1720) [1.2%, 1-2, 0.593]
<b>Queensland</b>	<b>2.5% (80/3235)</b>	<b>1.4% (45/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

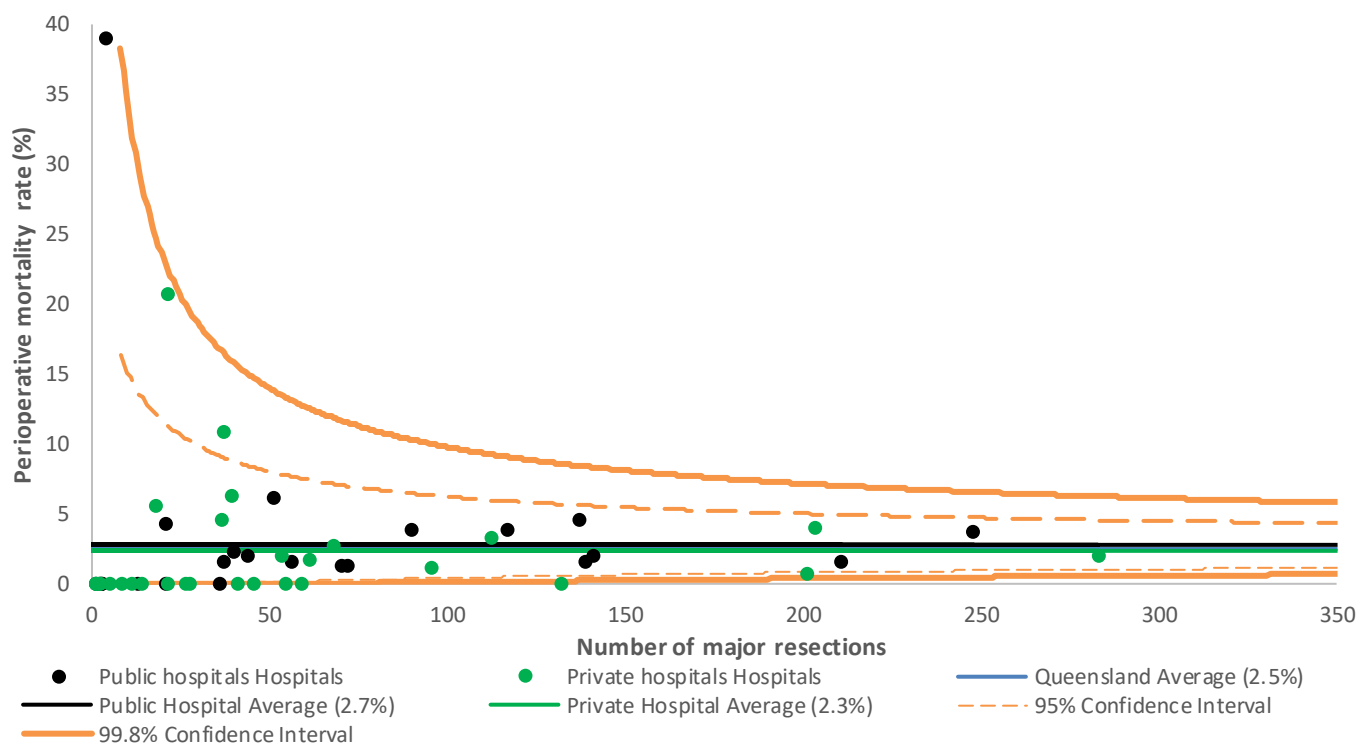
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

### Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

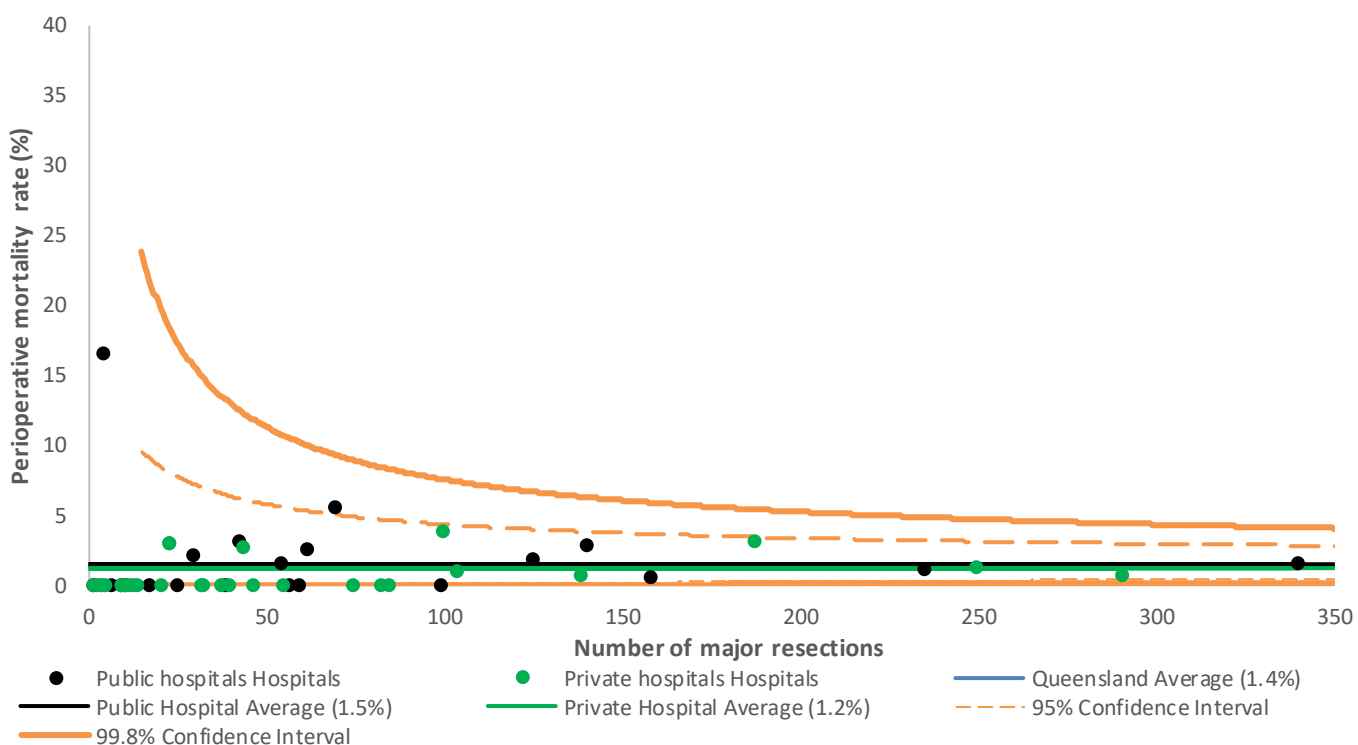
#### 3.3.2 | Patients who died in-hospital or within 30 days of major resection by hospital volume



### Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

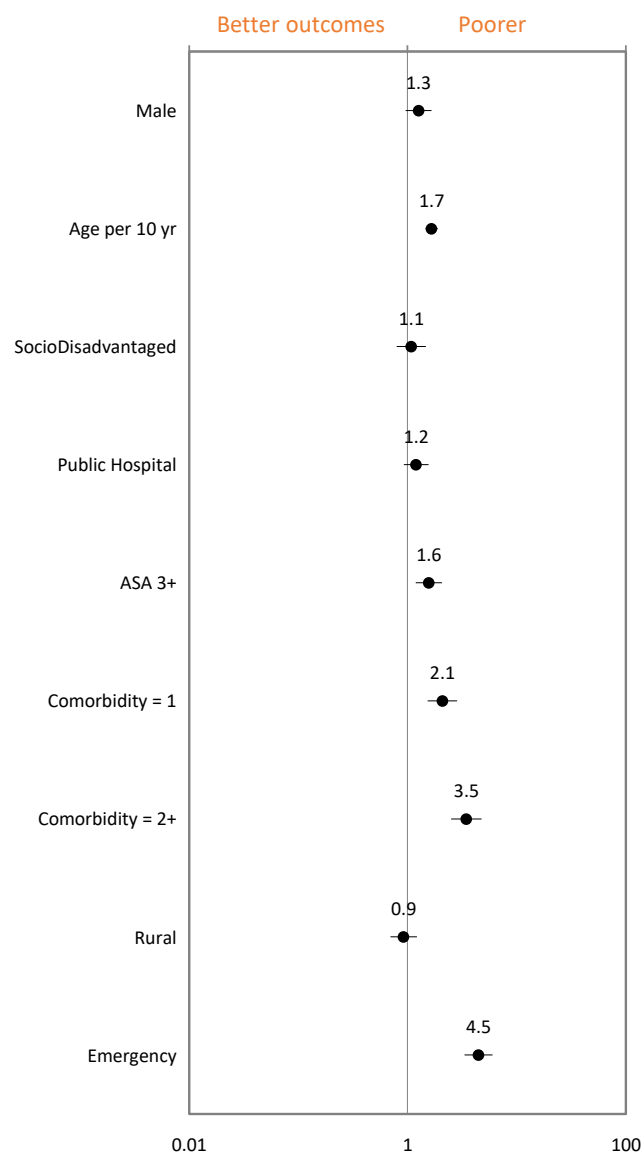
#### 3.3.3 | Patients who died in-hospital or within 30 days of major resection by hospital volume



## Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.3.4 | Relative risk of perioperative mortality following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.

### 3.4 | 90 day mortality

Diagnosis year 2005 – 2009 and 2010 – 2014

3.4.1 | What percentage of patients die within 90 days from major resection?

**Mortality rate is calculated from facility of last major resection.**

90 day mortality	2005 - 2009	2010 - 2014
<i>(% patients who die ≤ 90 days following major resection)</i>	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	4.9% (37/759) [4.8%, 3-7, 0.374]	2.3% (21/916) [2.2%, 1-4, 0.475]
Group A - Public hospitals	4.5% (34/750) [4.1%, 3-6, 0.94]	3.8% (24/626) [3.4%, 2-5, 0.281]
Group A - Private hospitals	3.9% (44/1119) [4%, 3-6, 0.867]	2.6% (30/1173) [2.8%, 2-4, 0.844]
Group B hospitals	2.8% (9/317) [3.4%, 2-7, 0.605]	2.7% (10/365) [2.5%, 1-5, 0.896]
Other hospitals	2.8% (8/290) [2.8%, 1-6, 0.35]	0.9% (2/218) [1.3%, 0-5, 0.317]
<b>Hospital Type</b>		
Public hospitals	4.6% (72/1558) [4.4%, 3-6, 0.575]	3% (47/1578) [2.8%, 2-4, 0.786]
Private hospitals	3.6% (60/1677) [3.7%, 3-5, 0.557]	2.3% (40/1720) [2.5%, 2-4, 0.771]
<b>Queensland</b>	<b>4.1% (132/3235)</b>	<b>2.6% (87/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

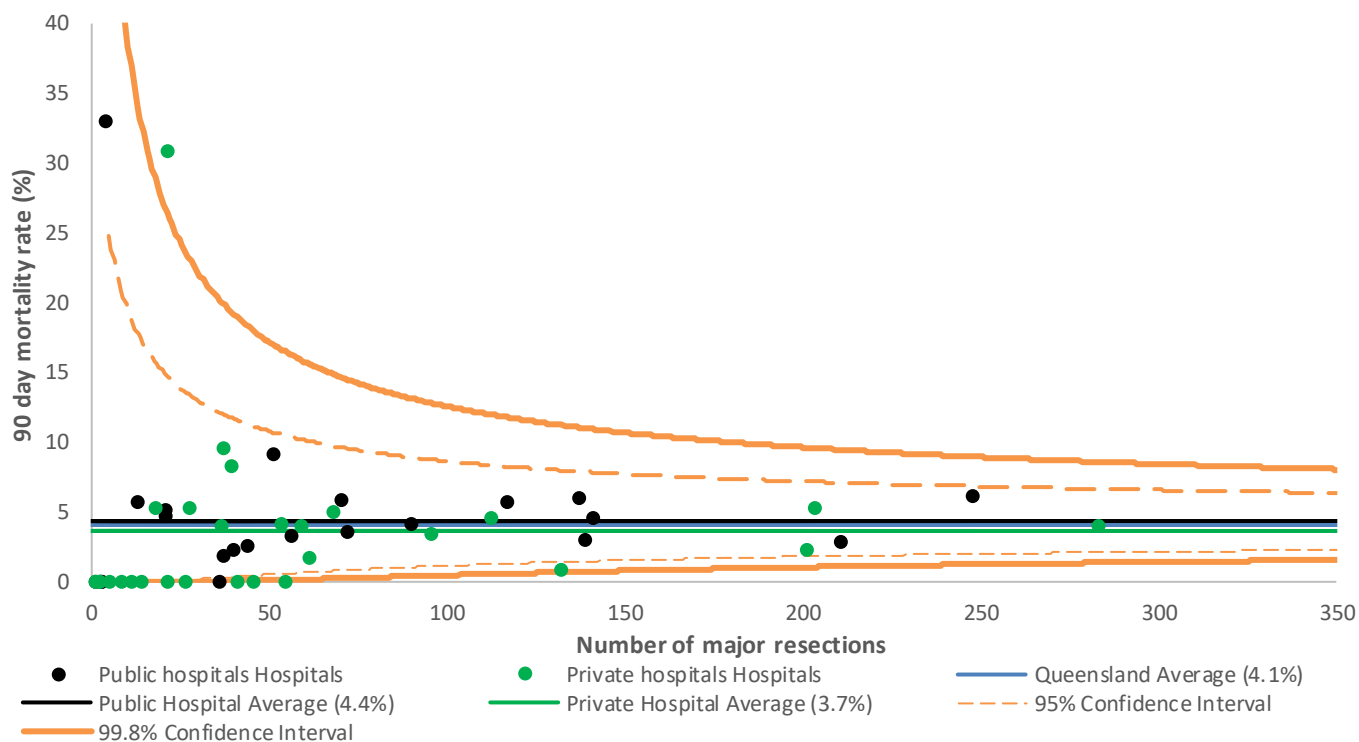
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

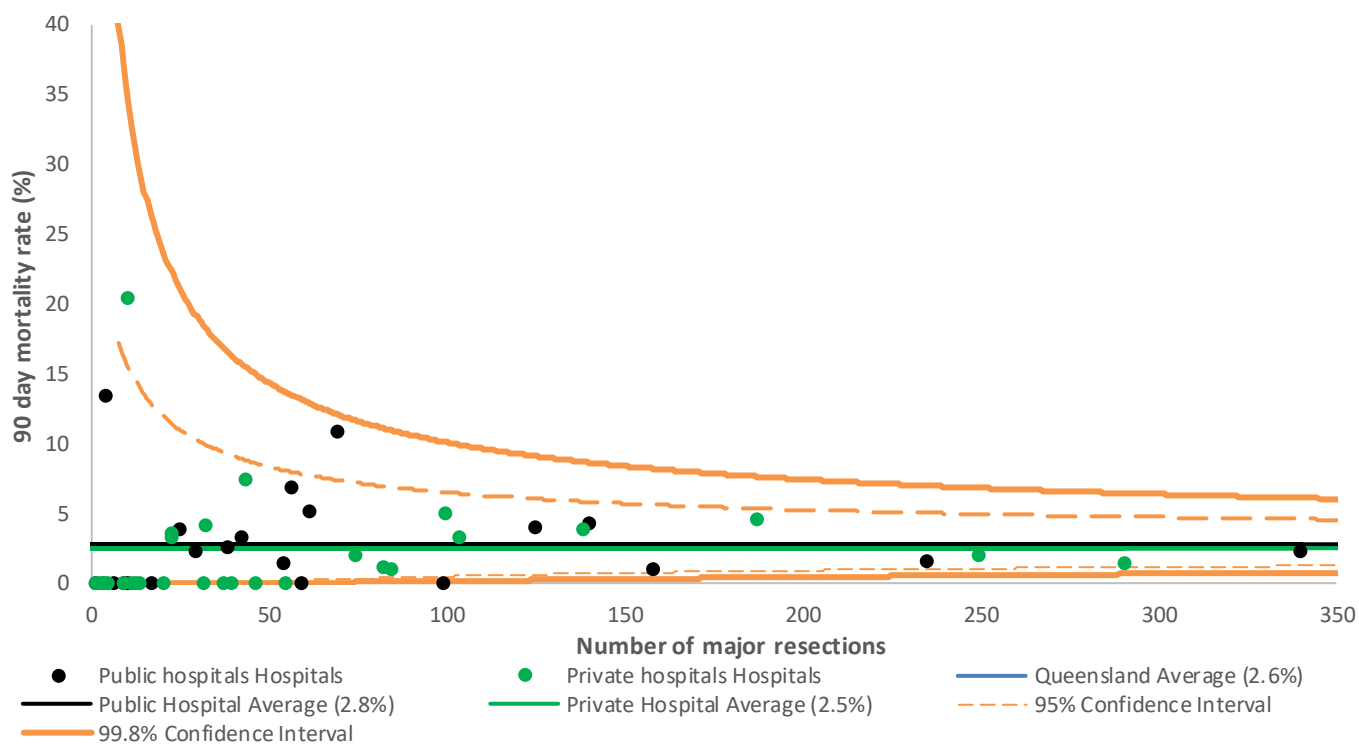
3.4.2 | 90 day mortality following major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

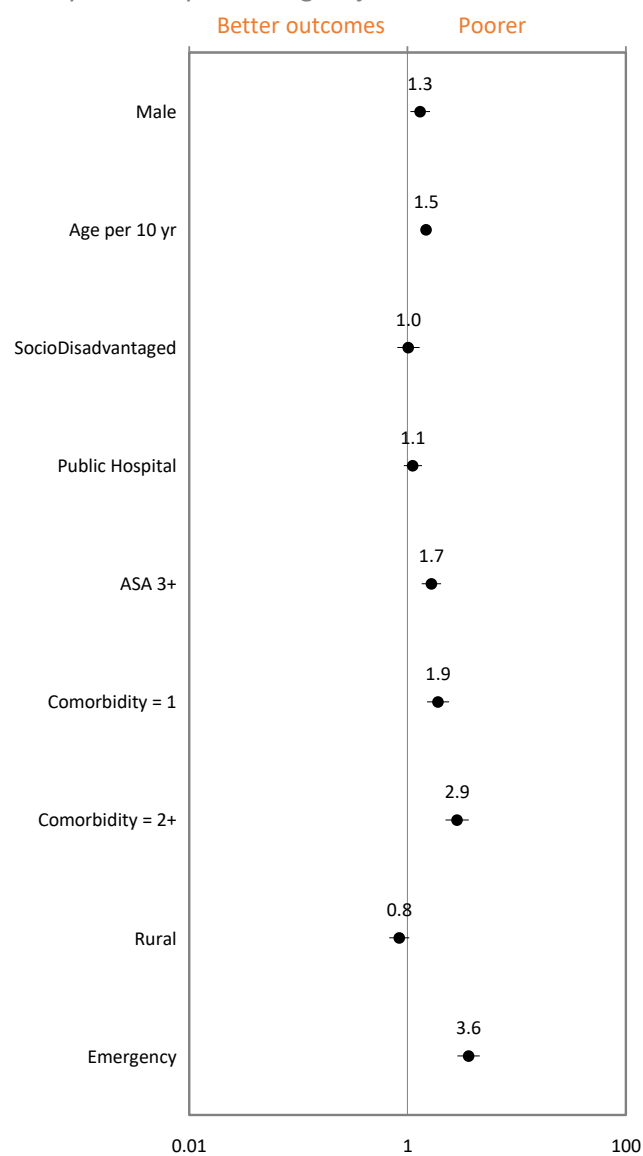
3.4.3 | 90 day mortality following major resection by hospital volume



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.4.4 | Relative risk of 90 day mortality following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.



## 3.5 | 1 year surgical survival

Diagnosis year 2005 – 2009 and 2010 – 2014

3.5.1 | What percentage of patients are alive one year after major resection?

**Survival rate is calculated from facility of last major resection.**

<b>1 year surgical survival</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% patients alive 1 year after major resection)</i>	<b>Diagnosis year</b> <b>Crude rates</b> [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> <b>Crude rates</b> [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	<b>89%</b> [90%, 87-92, 0.456]	<b>94%</b> [94%, 92-96, 0.609]
Group A - Public hospitals	<b>89%</b> [90%, 87-92, 0.747]	<b>91%</b> [93%, 90-95, 0.37]
Group A - Private hospitals	<b>92%</b> [92%, 90-94, 0.242]	<b>94%</b> [94%, 91-95, 0.982]
Group B hospitals	<b>90%</b> [89%, 85-93, 0.554]	<b>95%</b> [95%, 92-97, 0.322]
Other hospitals	<b>91%</b> [91%, 86-94, 0.956]	<b>94%</b> [92%, 86-95, 0.439]
<b>Hospital Type</b>		
Public hospitals	<b>89%</b> [90%, 88-91, 0.407]	<b>93%</b> [93%, 92-95, 0.835]
Private hospitals	<b>92%</b> [91%, 89-93, 0.38]	<b>94%</b> [94%, 92-95, 0.821]
<b>Queensland</b>	<b>90%</b>	<b>94%</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

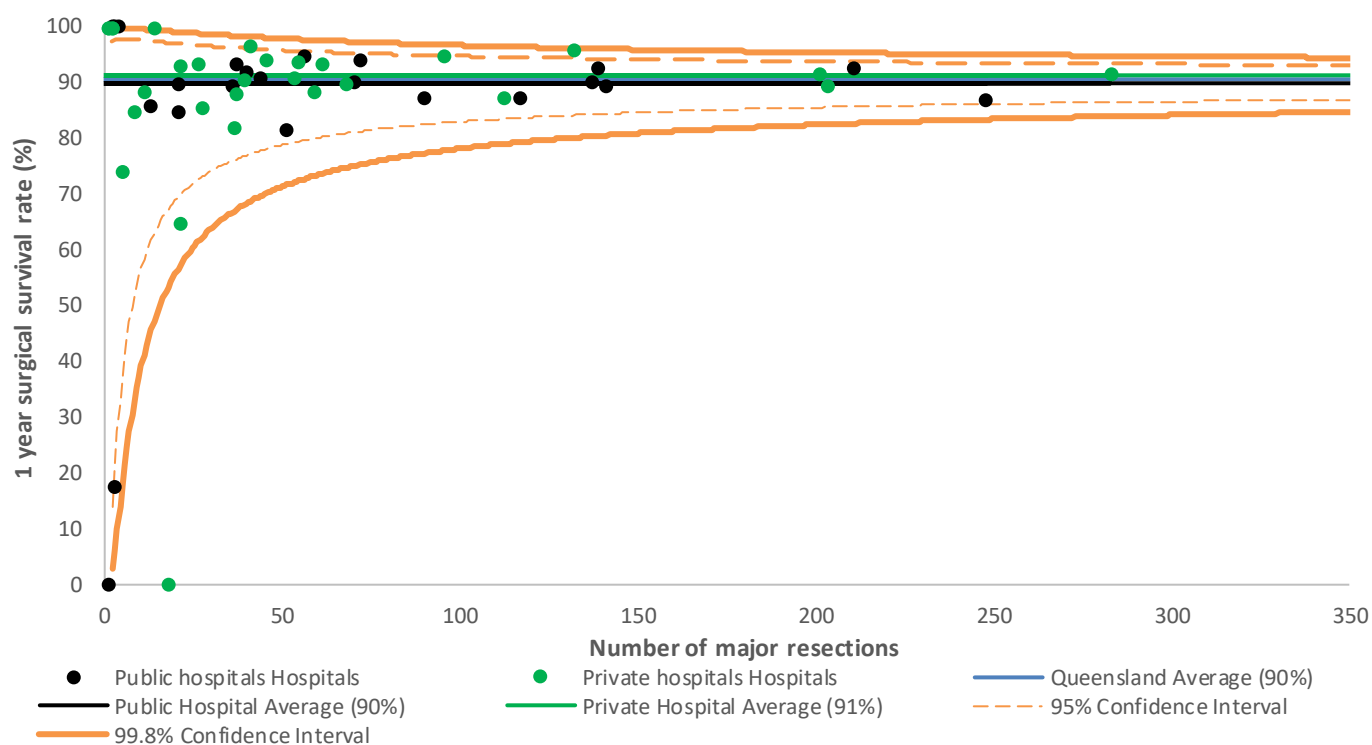
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

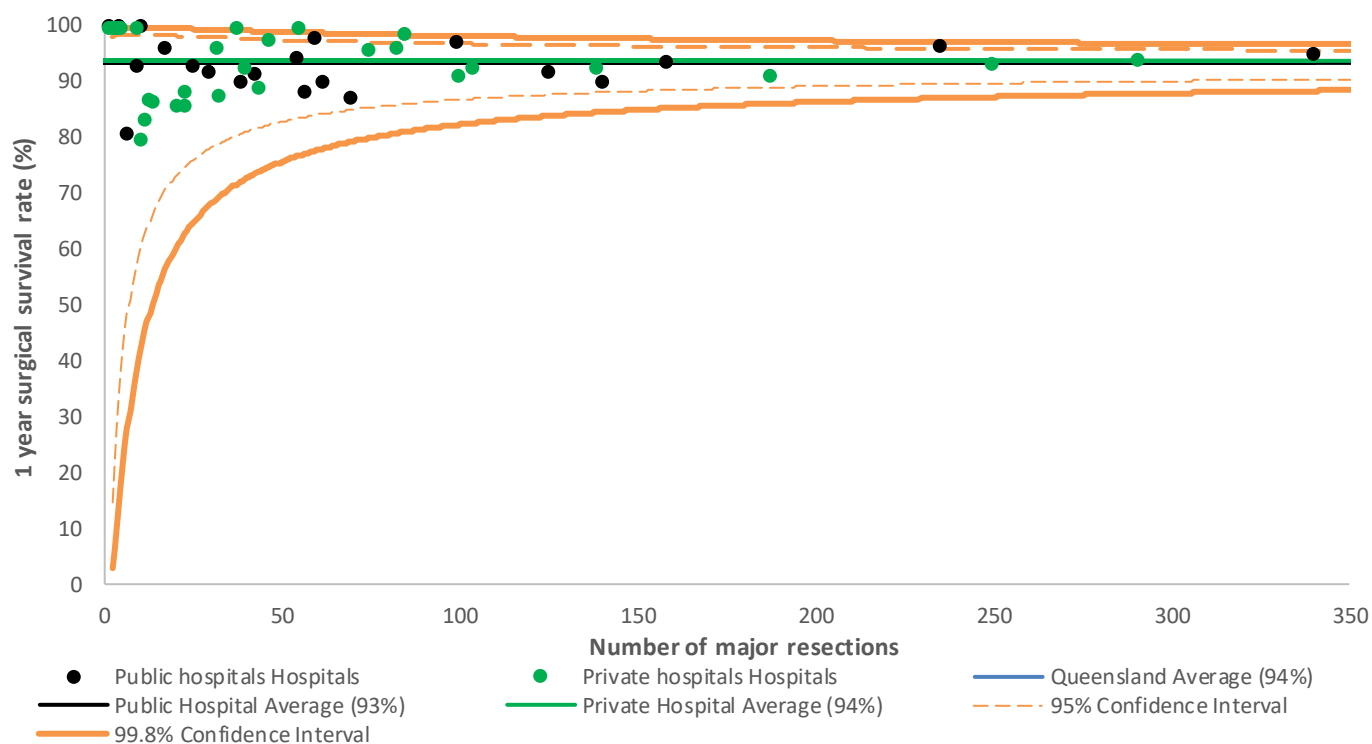
3.5.2 | 1 year surgical survival following major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

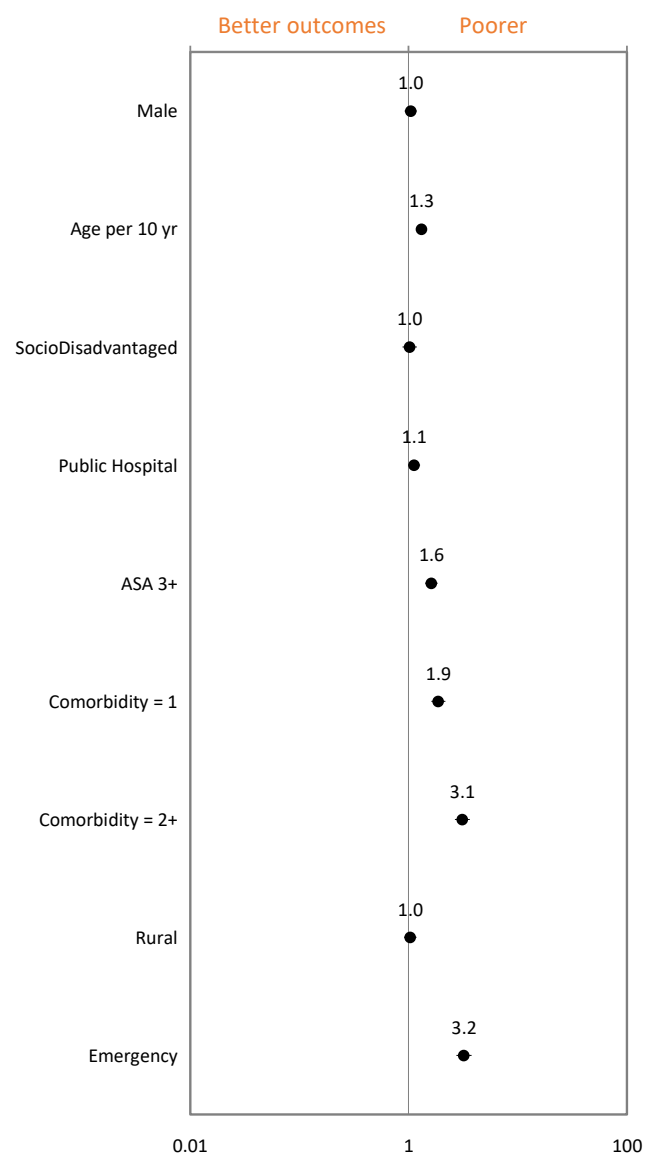
3.5.3 | 1 year surgical survival following major resection by hospital volume



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.5.4 | 1 year surgical survival following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.

### 3.6 | 2 year surgical survival

Diagnosis year 2005 – 2009 and 2010 – 2014

3.6.1 | What percentage of patients are alive two years after major resection?

**Survival rate is calculated from facility of last major resection.**

2 year surgical survival	2005 - 2009	2010 - 2014
(% patients alive 2 year after major resection)	Diagnosis year Crude rates [Adjusted rates, CI%, P value]	Diagnosis year Crude rates [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	78% [78%*, 74-82, 0.042]	87% [88%, 85-90, 0.844]
Group A - Public hospitals	79% [81%, 77-84, 0.606]	85% [86%, 83-89, 0.278]
Group A - Private hospitals	86% [84%*, 82-86, 0.032]	90% [88%, 87-90, 0.41]
Group B hospitals	83% [82%, 76-86, 0.92]	89% [90%, 86-92, 0.337]
Other hospitals	83% [81%, 75-86, 0.804]	87% [83%, 75-88, 0.088]
<b>Hospital Type</b>		
Public hospitals	79% [79%, 76-82, 0.059]	86% [87%, 85-89, 0.542]
Private hospitals	85% [84%*, 82-87, 0.047]	89% [88%, 86-90, 0.515]
<b>Queensland</b>	<b>82%</b>	<b>88%</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

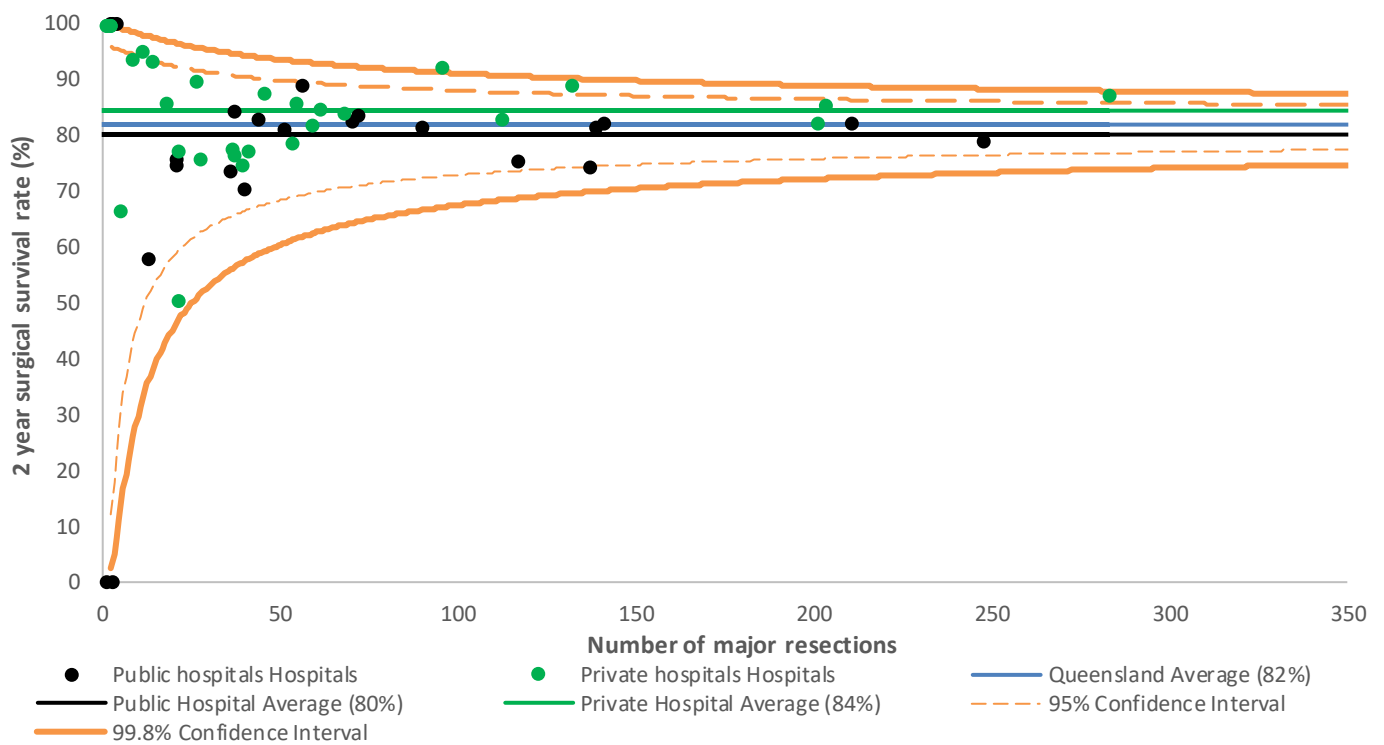
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

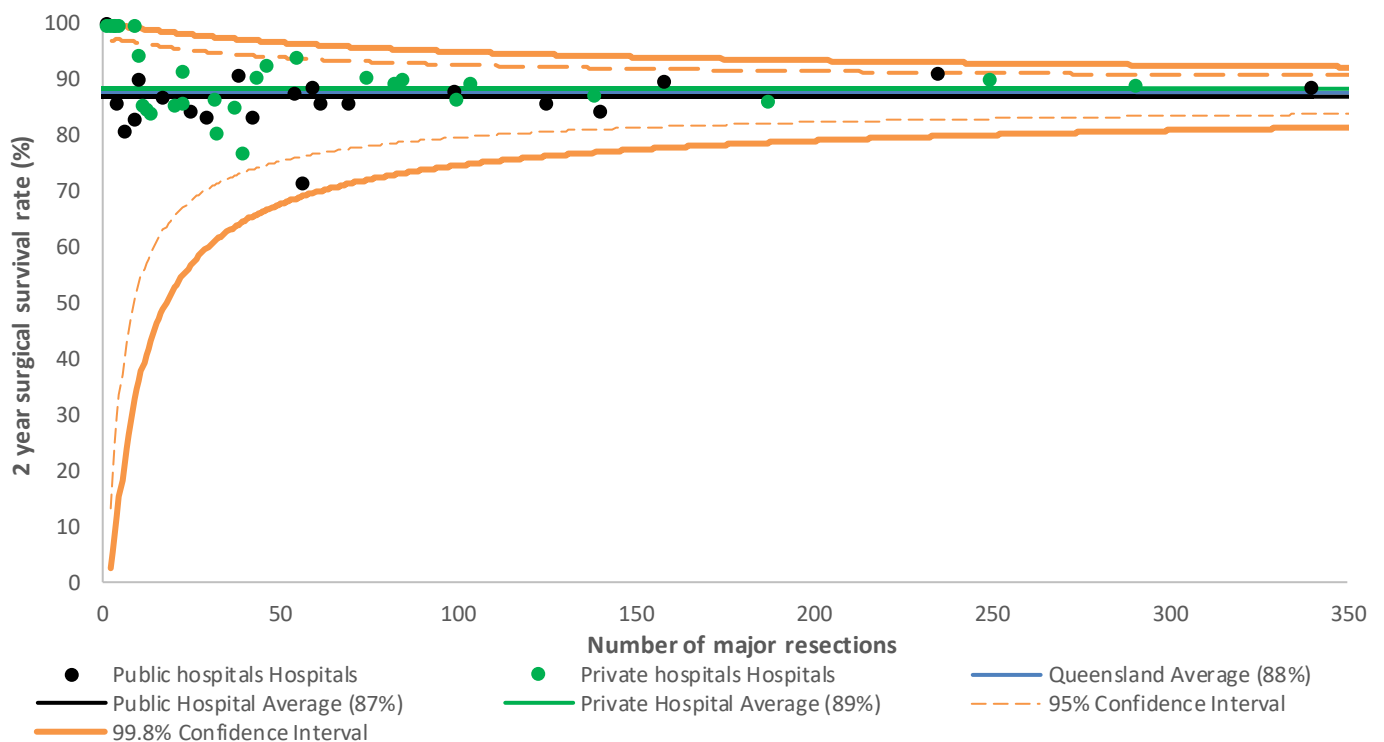
3.6.2 | 2 year surgical survival following major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

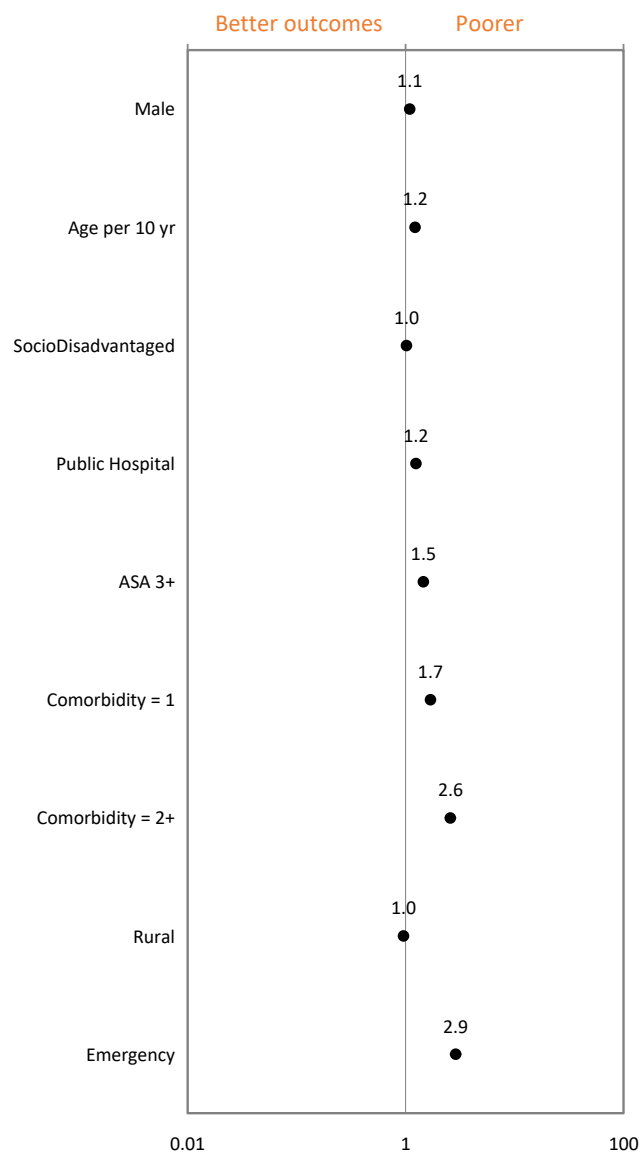
3.6.3 | 2 year surgical survival following major resection by hospital volume



Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 3.6.4 | 2 year surgical survival following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.

### 3.7 | 5 year surgical survival

Diagnosis year 2005 – 2009 and 2010 – 2014

3.7.1 | What percentage of patients are alive five years after major resection?

**Survival rate is calculated from facility of last major resection.**

<b>5 year surgical survival</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% patients alive 5 year after major resection)</i>	<b>Diagnosis year</b>	<b>Diagnosis year</b>
	<b>Crude rates</b>	<b>Crude rates</b>
	[Adjusted rates, CI%, P value]	[Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	<b>63%</b> [63%, 58-68, 0.112]	<b>69%</b> [70%, 65-74, 0.921]
Group A - Public hospitals	<b>62%</b> [64%, 60-69, 0.298]	<b>62%</b> [64%*, 58-70, 0.046]
Group A - Private hospitals	<b>72%</b> [71%*, 67-75, 0.032]	<b>72%</b> [71%, 67-75, 0.41]
Group B hospitals	<b>65%</b> [62%, 54-69, 0.179]	<b>70%</b> [73%, 67-79, 0.235]
Other hospitals	<b>73%</b> [72%, 65-78, 0.15]	<b>74%</b> [68%, 58-76, 0.769]
<b>Hospital Type</b>		
Public hospitals	<b>63%</b> [64%, 60-67, 0.059]	<b>66%</b> [67%, 63-71, 0.226]
Private hospitals	<b>71%</b> [70%, 67-73, 0.056]	<b>72%</b> [72%, 68-75, 0.227]
<b>Queensland</b>	<b>67%</b>	<b>70%</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

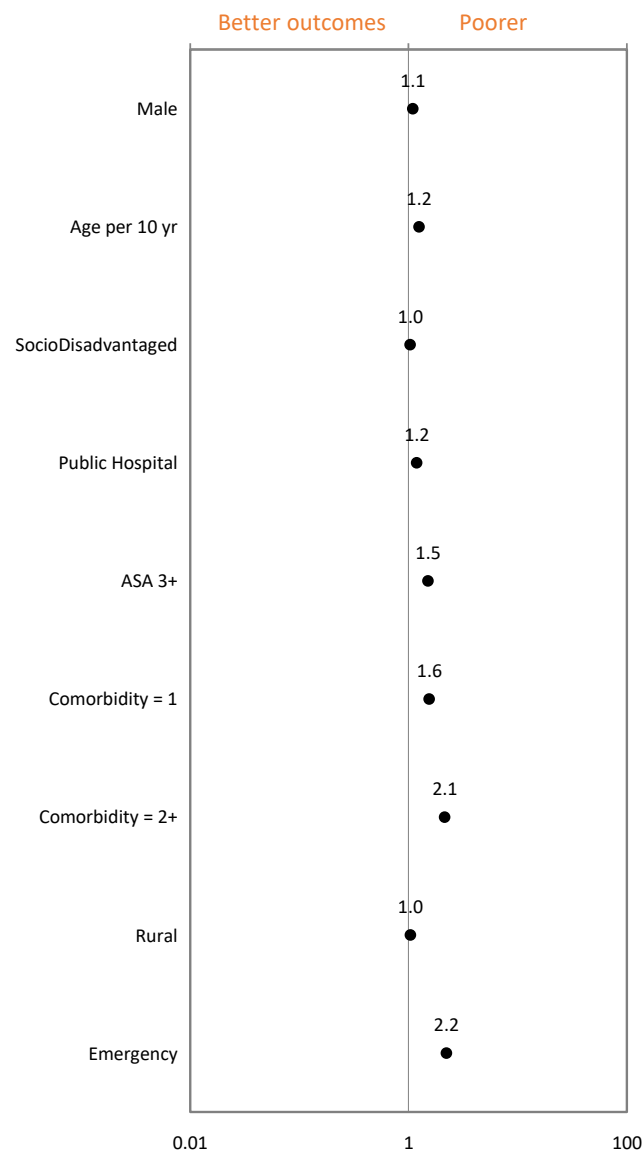
Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2014

Crude rates, 10 years combined

3.7.2 | 5 year surgical survival following major resection



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant.



3.8 | Prolonged LOS  $\geq$  21 days

Diagnosis year 2005 – 2009 and 2010 – 2014

3.8.1 | What percentage of patients had a length of stay  $\geq$  21 days after major resection?

<b>Prolonged LOS <math>\geq</math> 21 days</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% of patients whose length of stay was <math>\geq</math> 21 days)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	<b>9.8% (74/752)</b> [9.8%, 8-12, 0.563]	<b>11% (99/927)</b> [10%, 8-13, 0.407]
Group A - Public hospitals	<b>12% (94/755)</b> [11%, 9-14, 0.564]	<b>11% (70/627)</b> [9.9%, 8-13, 0.749]
Group A - Private hospitals	<b>11% (123/1095)</b> [11%, 10-14, 0.328]	<b>9.3% (109/1166)</b> [10%, 8-12, 0.511]
Group B hospitals	<b>9.8% (32/325)</b> [11%, 8-15, 0.917]	<b>6.8% (25/368)</b> [6.3%*, 4-9, 0.03]
Other hospitals	<b>5.2% (16/308)</b> [6%*, 4-10, 0.019]	<b>5.2% (11/210)</b> [6.4%, 4-11, 0.173]
<b>Hospital Type</b>		
Public hospitals	<b>11% (174/1551)</b> [11%, 9-13, 0.84]	<b>11% (170/1587)</b> [10%, 8-12, 0.574]
Private hospitals	<b>9.8% (165/1684)</b> [10%, 9-12, 0.835]	<b>8.4% (144/1711)</b> [9%, 8-11, 0.548]
<b>Queensland</b>	<b>10% (339/3235)</b>	<b>9.5% (314/3298)</b>

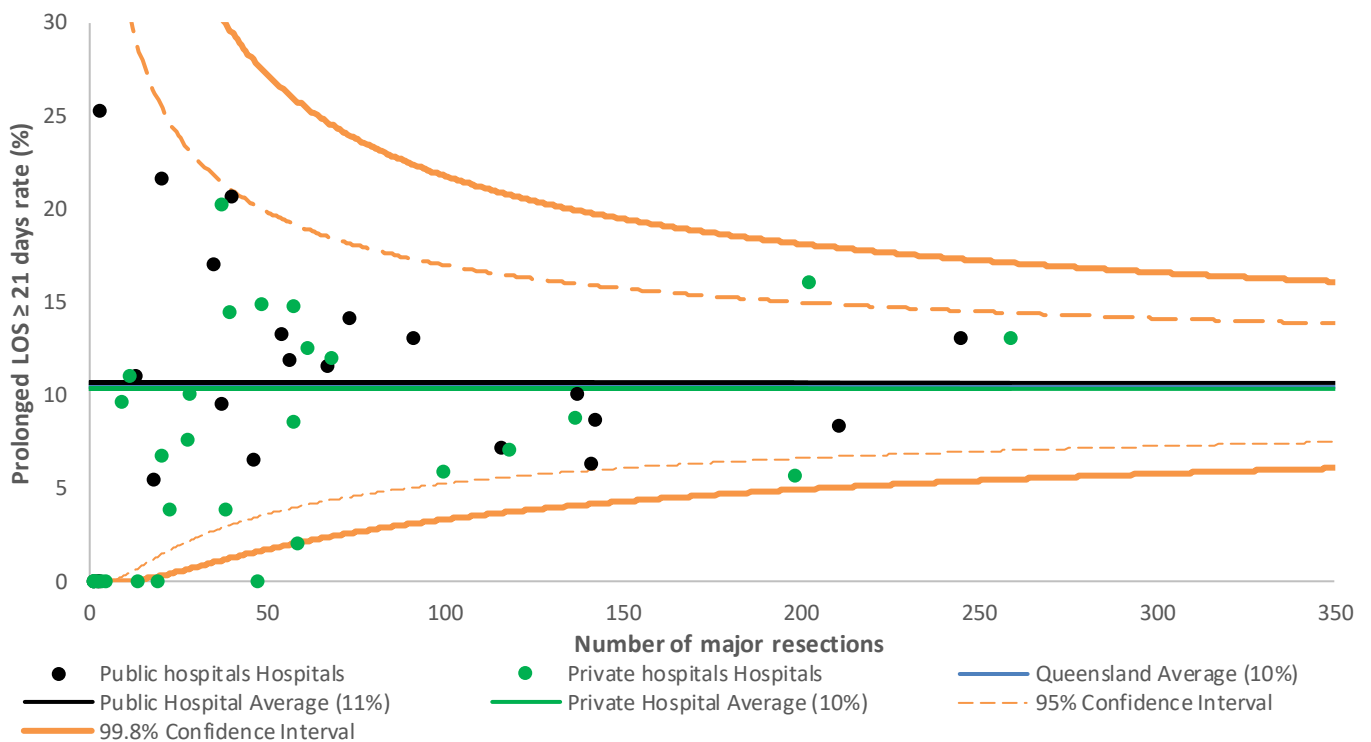
Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency. Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

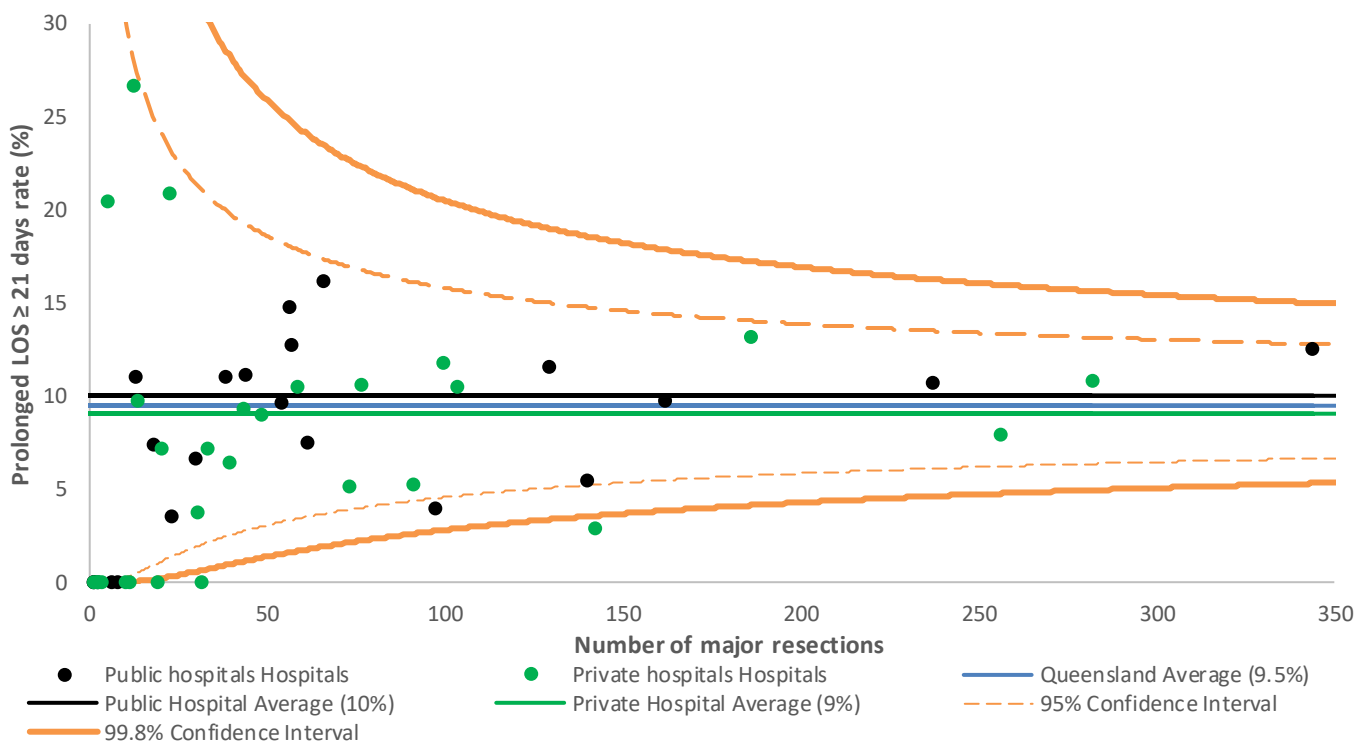
3.8.2 | Patients who had a length of stay  $\geq 21$  days by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

3.8.3 | Patients who had a length of stay  $\geq 21$  days by hospital volume



### 3.9 | Medical interventions within same admission

Diagnosis year 2005 – 2009 and 2010 – 2014

3.9.1 | What percentage of patients had medical interventions within the same admission following major resection?

Had medical interventions within same admission	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
(% of patients that had selected medical interventions within the same admission)	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	5.1% (38/752) [4.9%, 3-7, 0.789]	9.9% (92/927) [9.5%, 8-12, 0.27]
Group A - Public hospitals	6.5% (49/755) [6.3%, 5-9, 0.182]	12% (74/627) [11%*, 9-14, 0.017]
Group A - Private hospitals	5.3% (58/1095) [5.3%, 4-7, 0.796]	6.9% (81/1166) [7.3%, 6-9, 0.252]
Group B hospitals	4% (13/325) [4.3%, 2-7, 0.531]	4.9% (18/368) [4.9%*, 3-8, 0.025]
Other hospitals	2.3% (7/308) [2.5%, 1-5, 0.065]	5.2% (11/210) [5.8%, 3-10, 0.21]
<b>Hospital Type</b>		
Public hospitals	5.6% (87/1551) [5.4%, 4-7, 0.622]	11% (167/1587) [10%, 8-12, 0.053]
Private hospitals	4.6% (78/1684) [4.8%, 4-6, 0.62]	6.4% (109/1711) [6.7%*, 5-8, 0.039]
<b>Queensland</b>	<b>5.1% (165/3235)</b>	<b>8.4% (276/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

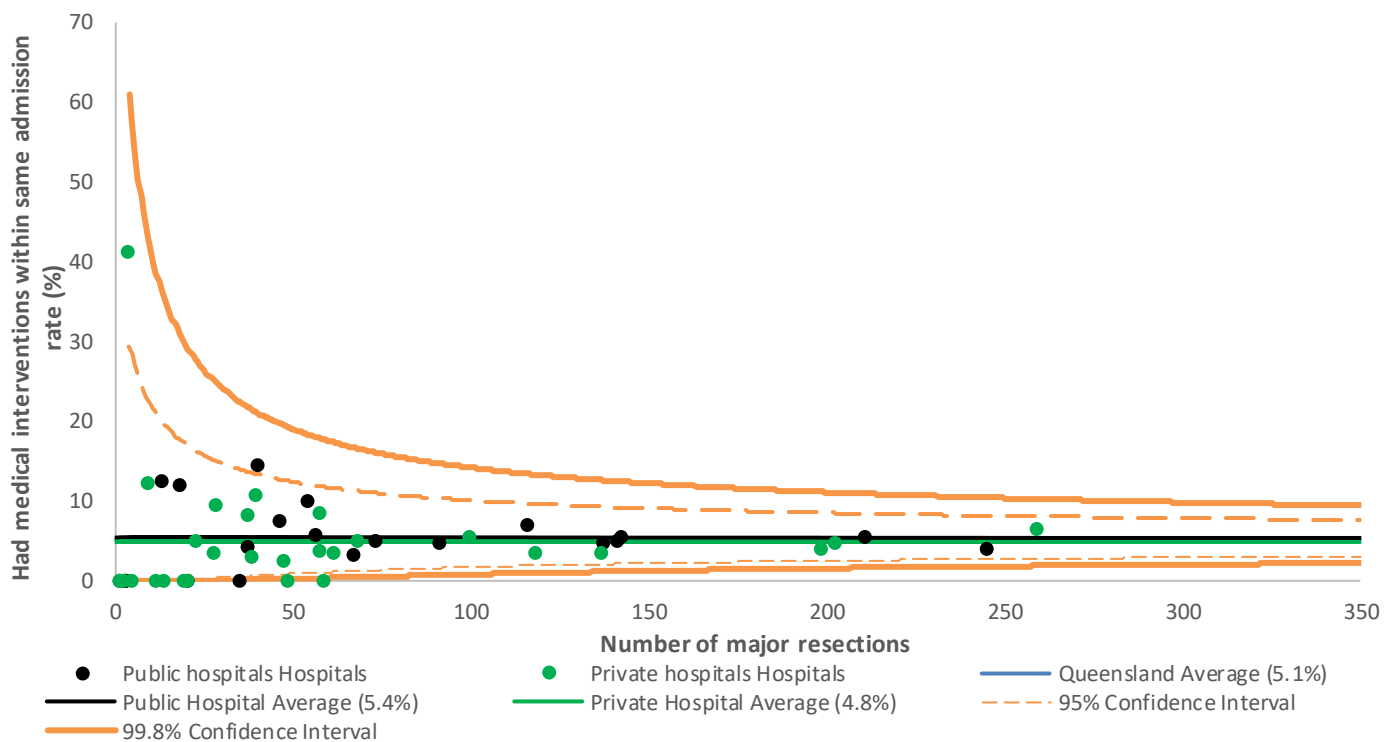
Refer to appendix 3 for definitions of medical interventions.

## Part 2 | Rectal Cancer

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

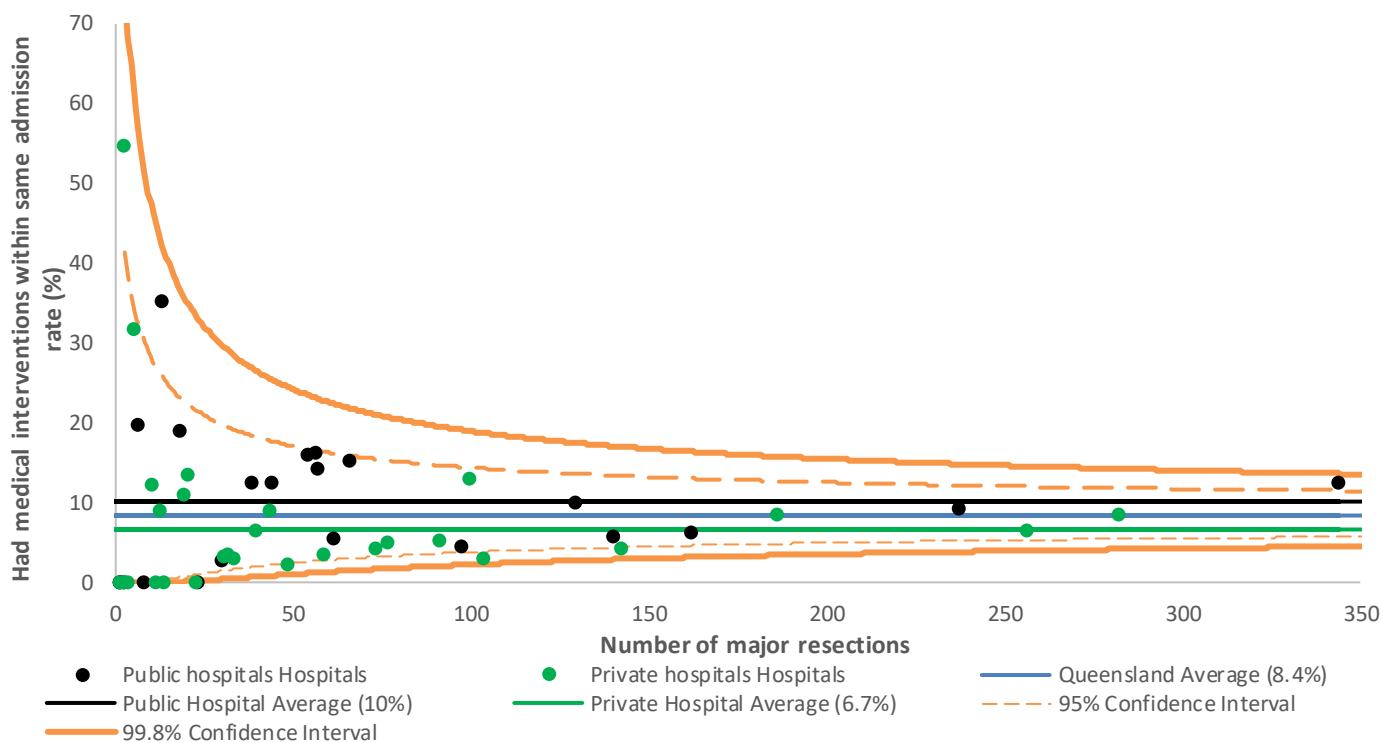
3.9.2 | Patients who had medical interventions within the same admission by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

3.9.3 | Patients who had medical interventions within the same admission by hospital volume



### 3.10 | Medical interventions in subsequent admissions

Diagnosis year 2005 – 2009 and 2010 – 2014

3.10.1 | What percentage of patients had medical interventions in subsequent admissions that occurred within 30 days of discharge following first major resection?

Had medical interventions in subsequent admissions <i>(% of patients that had selected medical interventions in subsequent admissions)</i>	2005 - 2009 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2010 - 2014 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	3.9% (29/752) [3.8%, 3-6, 0.787]	5% (46/927) [4.8%, 3-7, 0.543]
Group A - Public hospitals	2.9% (22/755) [3%, 2-5, 0.398]	3.5% (22/627) [3.3%, 2-5, 0.222]
Group A - Private hospitals	3.7% (40/1095) [3.5%, 2-5, 0.909]	4.1% (48/1166) [4.3%, 3-6, 0.928]
Group B hospitals	3.7% (12/325) [3.8%, 2-7, 0.892]	4.1% (15/368) [4.1%, 2-7, 0.835]
Other hospitals	4.5% (14/308) [4.8%, 3-8, 0.29]	6.2% (13/210) [6.4%, 4-11, 0.177]
<b>Hospital Type</b>		
Public hospitals	3.5% (54/1551) [3.5%, 3-5, 0.847]	4.4% (70/1587) [4.3%, 3-6, 0.857]
Private hospitals	3.7% (63/1684) [3.7%, 3-5, 0.858]	4.3% (74/1711) [4.5%, 3-6, 0.859]
<b>Queensland</b>	<b>3.6% (117/3235)</b>	<b>4.4% (144/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

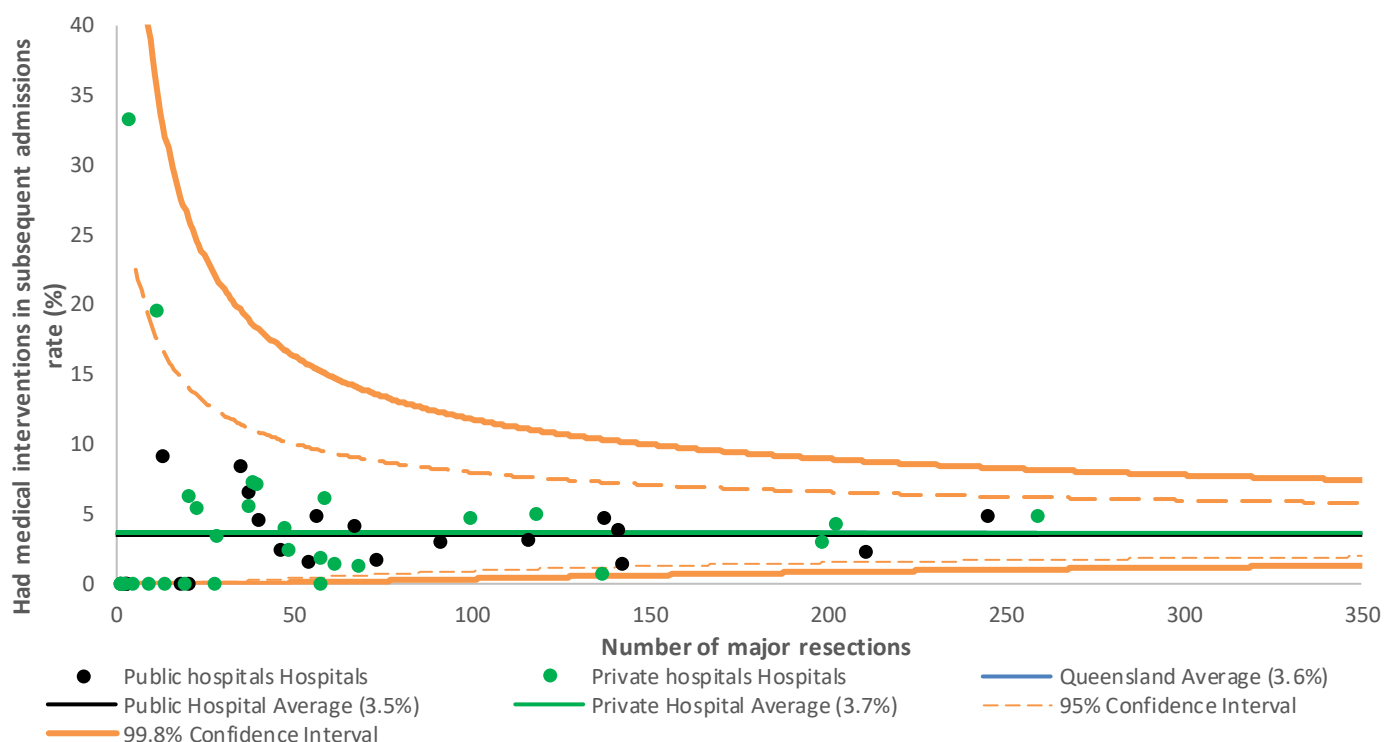
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of medical interventions.

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

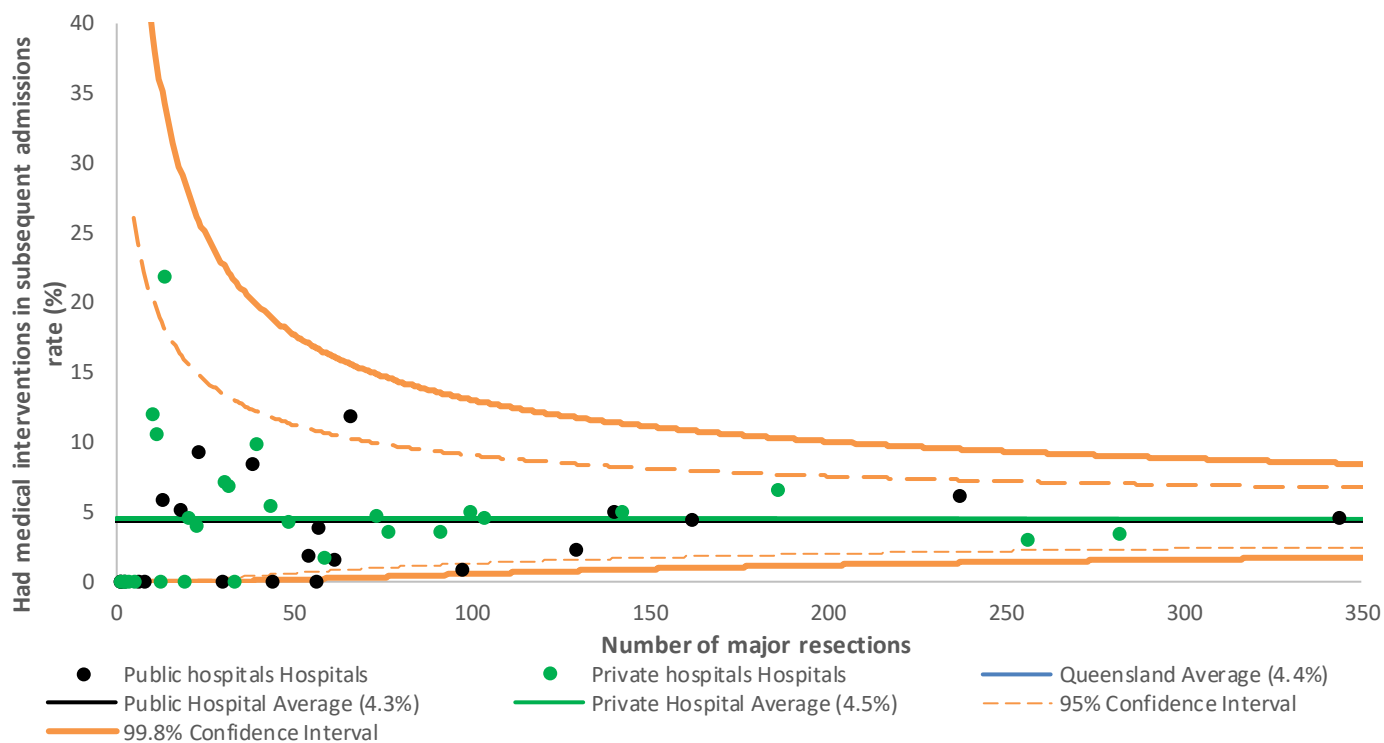
3.10.2 | Patients who had medical interventions within subsequent admissions by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

3.10.3 | Patients who had medical interventions within subsequent admissions by hospital volume



## 3.11 | Had an anastomotic leak

Diagnosis year 2005 – 2009 and 2010 – 2014

## 3.11.1 | What percentage of patients had an anastomotic leak?

Had an anastomotic leak	2005 - 2009	2010 - 2014
(% of patients who had an anastomotic leak)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	4% (22/554) [3.8%, 2-6, 0.739]	4.4% (29/664) [4.1%, 3-6, 0.258]
Group A - Public hospitals	3.9% (22/561) [4.1%, 3-6, 0.995]	6.7% (32/479) [6.5%, 4-9, 0.25]
Group A - Private hospitals	4.6% (41/898) [4.3%, 3-6, 0.792]	5.7% (54/950) [6%, 4-8, 0.373]
Group B hospitals	4.2% (11/263) [4.5%, 2-8, 0.753]	4.3% (13/301) [4.3%, 2-7, 0.495]
Other hospitals	3.2% (8/252) [3.6%, 2-7, 0.705]	3% (5/166) [3.2%, 1-8, 0.279]
<b>Hospital Type</b>		
Public hospitals	3.9% (44/1141) [3.9%, 3-5, 0.723]	5.4% (63/1165) [5.2%, 4-7, 0.961]
Private hospitals	4.3% (60/1387) [4.3%, 3-6, 0.761]	5% (70/1395) [5.2%, 4-7, 0.964]
<b>Queensland</b>	<b>4.1% (104/2528)</b>	<b>5.2% (133/2560)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

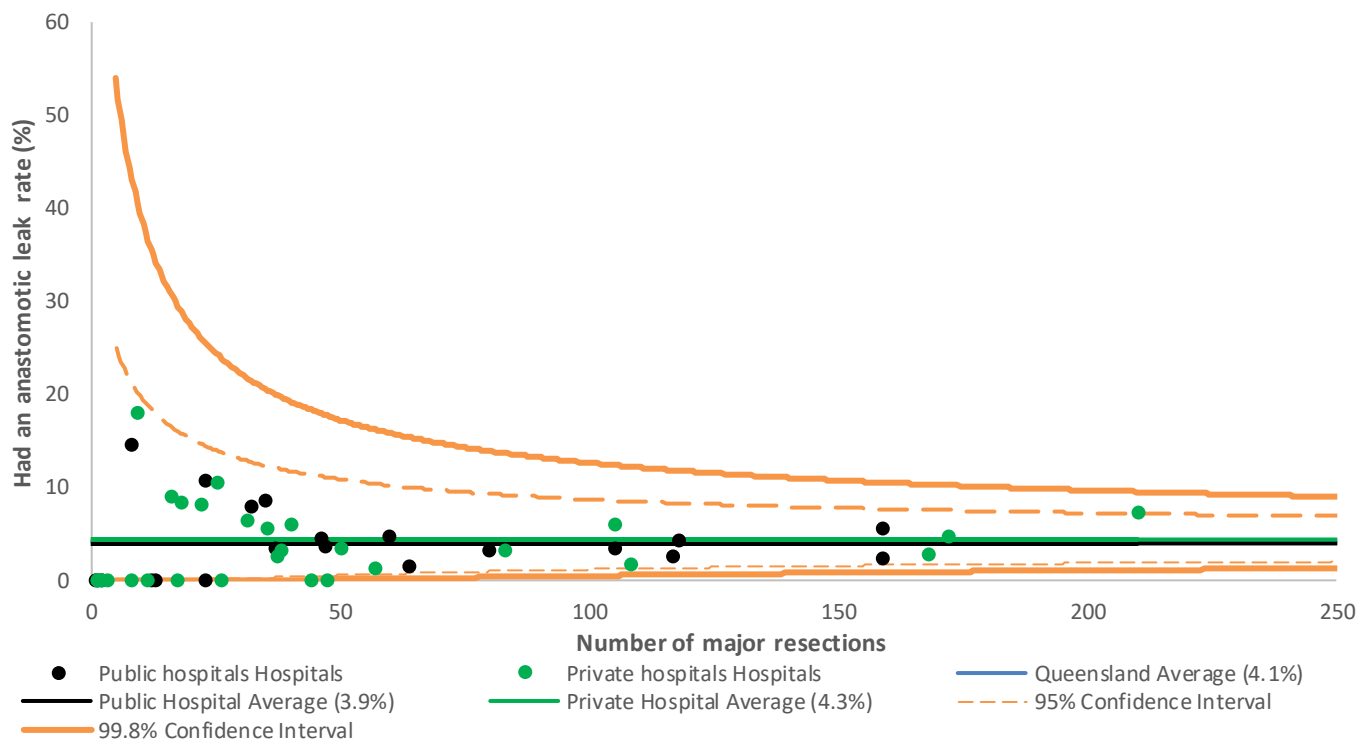
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of anastomotic leak

### Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

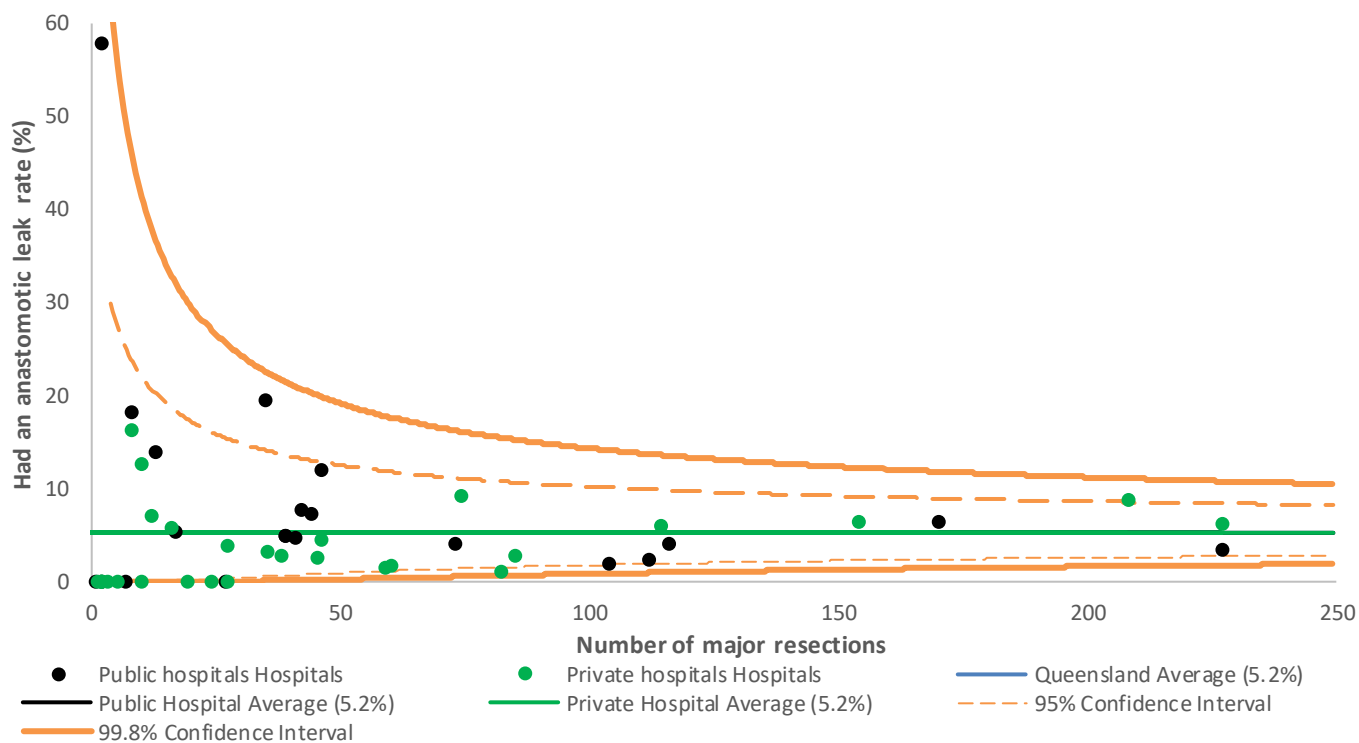
#### 3.11.2 | Patients who had an anastomotic leak by hospital volume



### Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

#### 3.11.3 | Patients who had an anastomotic leak by hospital volume





### 3.12 | Had an anastomotic leak and died within 90 days of major resection

Diagnosis year 2005 – 2009 and 2010 – 2014

3.12.1 | What percentage of patients had an anastomotic leak and died within 90 days of major resection?

Had an anastomotic leak and died within 90 days of major resection	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
(% of patients who had an anastomotic leak and died within 90 days of major resection)	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	4.5% (1/22) [4.4%, 1-28, 0.474]	3.4% (1/29) [2.4%, 0-15, 0.264]
Group A - Public hospitals	14% (3/22) [14%, 4-55, 0.468]	6.3% (2/32) [5.5%, 1-24, 0.781]
Group A - Private hospitals	7.3% (3/41) [6.8%, 2-20, 0.667]	5.6% (3/54) [9.2%, 3-30, 0.599]
Group B hospitals	9.1% (1/11) [13%, 1-100, 0.728]	23% (3/13) [15%, 5-50, 0.175]
Other hospitals	13% (1/8) [12%, 2-75, 0.726]	0% (0/5) [0%**, 0-0, 0]
<b>Hospital Type</b>		
Public hospitals	9.1% (4/44) [9%, 3-29, 0.943]	4.8% (3/63) [3.6%, 1-12, 0.286]
Private hospitals	8.3% (5/60) [8.4%, 3-21, 0.945]	8.6% (6/70) [12%, 5-28, 0.179]
<b>Queensland</b>	<b>8.7% (9/104)</b>	<b>6.8% (9/133)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of anastomotic leak

## 4 | Accessible

Making health services available in the most suitable setting in a reasonable time.



## 4.1 | Time to first treatment within 30 days

Diagnosis year 2005 – 2009 and 2010 – 2014

### 4.1.1 | What percentage of patients receive their first treatment\* within 30 days of diagnosis?

Received first treatment within 30 days	2005 - 2009	2010 - 2014
(% of patients whose time from diagnosis to first treatment is ≤30 days)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>Hospital Type</b>		
Public hospitals	41% (756/1823) [41%**, 39-44, 0]	32% (588/1829) [32%**, 30-35, 0]
Private hospitals	78% (1389/1780) [78%**, 75-81, 0]	72% (1391/1920) [72%**, 70-75, 0]
<b>Queensland</b>	<b>60% (2146/3604)</b>	<b>53% (1979/3749)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

\*The first treatment the patient had for their cancer – either surgery, radiation therapy or IV systemic therapy.

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.

Refer to appendix 1 for hospital grouping definitions

## 4.2 | Median days from diagnosis to first treatment

Diagnosis year 2005 – 2009 and 2010 – 2014

### 4.2.1 | What is the median number of days from diagnosis to first treatment\*?

<b>Days from diagnosis to first treatment</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(Median number of days from diagnosis to first treatment)</i>	<b>Diagnosis year</b>	<b>Diagnosis year</b>
	Median	Median
	IQR	IQR
<b>Hospital Type</b>		
Public hospitals	35 (17-54)	42 (26-60)
Private hospitals	15 (6-27)	20 (11-32)
<b>Queensland</b>	<b>25</b> <b>(10-43)</b>	<b>28</b> <b>(15-49)</b>

\*The first treatment the patient had for their cancer – either surgery, radiation therapy or IV systemic therapy.

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.

For a description on Interquartile range (IQR) - refer to definitions

### 4.3 | Time to first major resection within 30 days

Diagnosis year 2005 – 2009 and 2010 – 2014

#### 4.3.1 | What percentage of patients receive major resection within 30 days of diagnosis?

##### Where major resection is first treatment received

Received major resection within 30 days  (% patients whose time from diagnosis to major resection is ≤30 days)	2005 - 2009  Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2010 - 2014  Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	49% (240/486) [49%** , 45-54, 0]	39% (188/484) [39%** , 35-44, 0]
Group A - Public hospitals	58% (306/527) [58%** , 54-63, 0]	48% (189/392) [48%** , 43-54, 0]
Group A - Private hospitals	87% (709/813) [87%** , 84-90, 0]	85% (693/818) [85%** , 81-88, 0]
Group B hospitals	80% (214/268) [80%** , 75-85, 0.002]	79% (189/239) [79%** , 74-85, 0]
Other hospitals	87% (231/267) [87%** , 82-91, 0]	84% (142/170) [84%** , 78-90, 0]
<b>Hospital Type</b>		
Public hospitals	54% (565/1047) [54%** , 51-57, 0]	43% (393/904) [43%** , 40-47, 0]
Private hospitals	86% (1135/1314) [86%** , 84-89, 0]	84% (1008/1199) [84%** , 81-87, 0]
<b>Queensland</b>	<b>72% (1700/2361)</b>	<b>67% (1401/2103)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

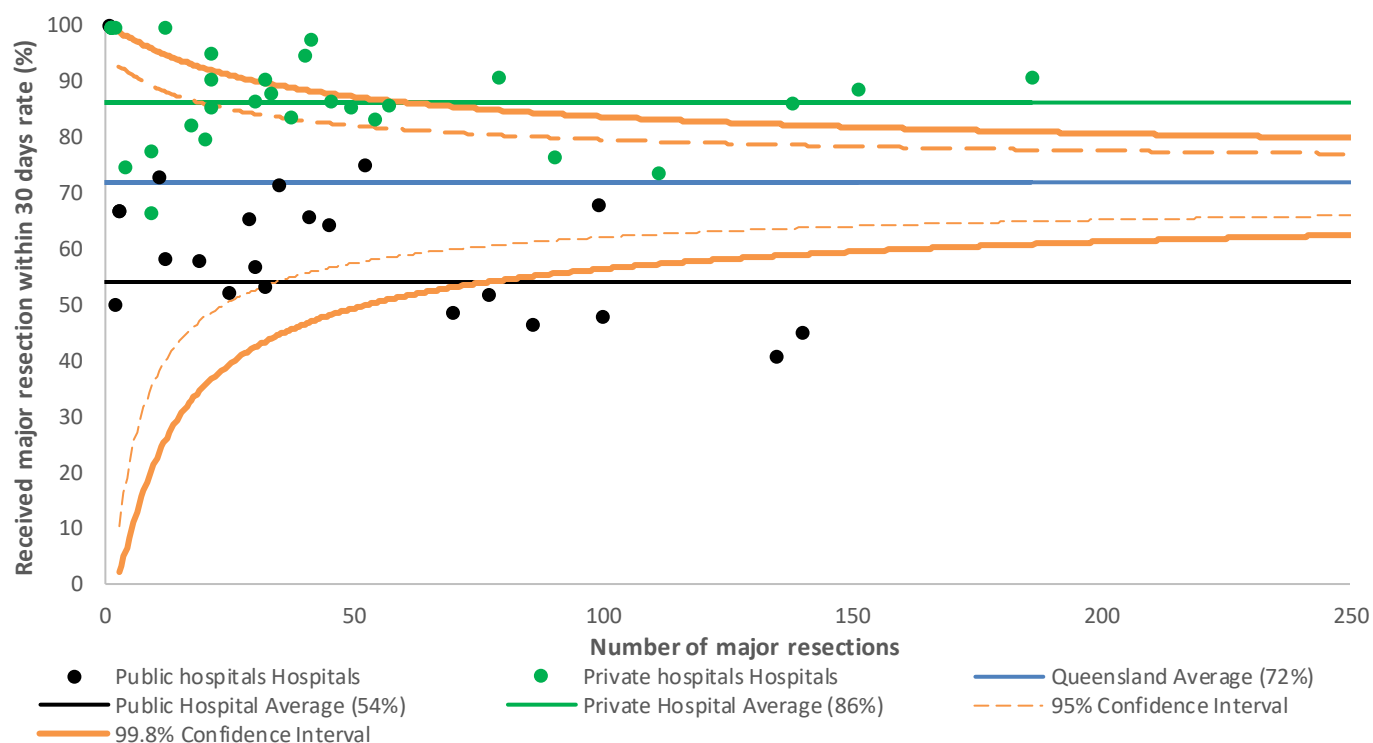
Refer to appendix 1 for hospital grouping definitions

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

4.3.2 | Patients receiving major resection within 30 days of diagnosis by hospital volume.

Where major resection is first treatment received

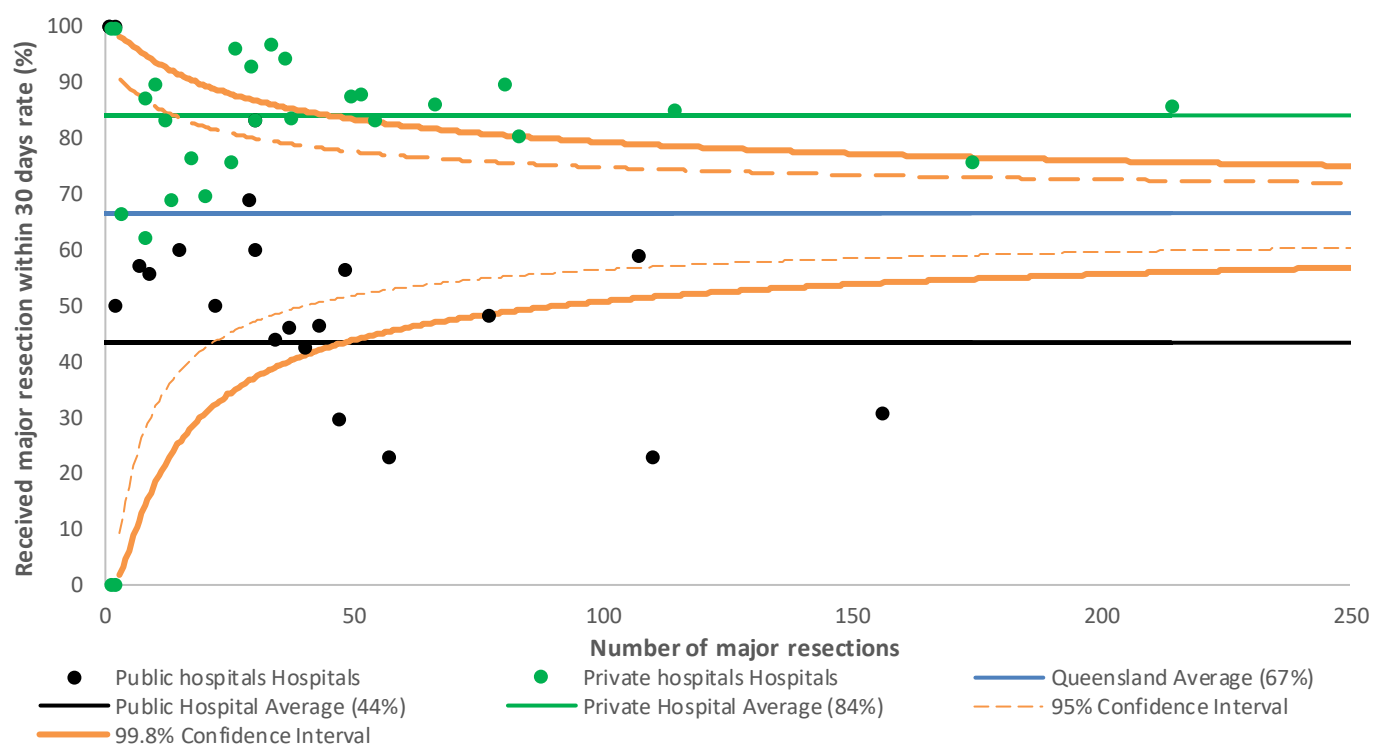


Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

4.3.3 | Patients receiving major resection within 30 days of diagnosis by hospital volume.

Where major resection is first treatment received



## 4.4 | Median days to first major resection

Diagnosis year 2005 – 2009 and 2010 - 2014

4.4.1 | What is the median number of days from diagnosis to first major resection?

Where major resection is first treatment received

Days from diagnosis to first major resection	2005 - 2009	2010 - 2014
<i>(Median number of days from diagnosis to first major resection)</i>	Diagnosis year Median IQR	Diagnosis year Median IQR
<b>AIHW Peer Group</b>		
Principal referral hospitals	31 (15-54)	40 (20-68)
Group A - Public hospitals	25 (7-43)	31 (14-49)
Group A - Private hospitals	13 (5-22)	15 (8-24)
Group B hospitals	15 (5-28)	17 (7-28)
Other hospitals	11 (2-21)	15 (6-25)
<b>Hospital Type</b>		
Public hospitals	28 (11-49)	35 (16-56)
Private hospitals	13 (5-23)	15 (8-25)
<b>Queensland</b>	<b>17</b> <b>(6-34)</b>	<b>21</b> <b>(10-38)</b>

For a description on Interquartile range (IQR) - refer to definitions

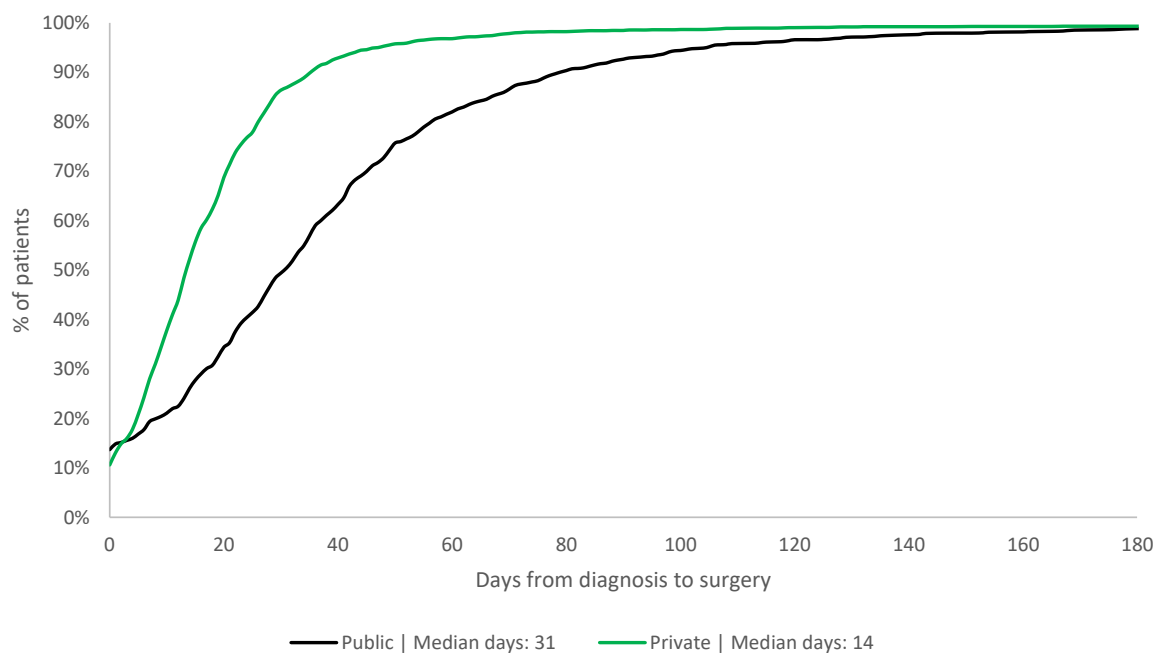
## 4.5 | Time to major resection summary

Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 4.5.1 | Distribution of days from diagnosis to major resection by facility type

Where major resection is first treatment received





## 4.6 | Time to first IV systemic therapy within 30 days

Diagnosis year 2005 – 2009 and 2010 – 2014

### 4.6.1 | What percentage of patients receive IV systemic therapy within 30 days of diagnosis?

#### Where IV systemic therapy is first treatment received

Received IV systemic therapy within 30 days	2005 - 2009	2010 - 2014
<i>(% patients whose time from diagnosis to IV systemic therapy is ≤30 days)</i>	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>Hospital Type</b>		
Public hospitals	30% (130/430) [30%** , 26-36, 0.002]	24% (107/444) [24%** , 20-29, 0]
Private hospitals	54% (149/275) [54%** , 47-62, 0]	55% (234/422) [55%** , 49-62, 0]
<b>Queensland</b>	<b>40% (279/705)</b>	<b>39% (341/866)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.

Refer to appendix 1 for hospital grouping definitions

## 4.7 | Median days to first IV systemic therapy

Diagnosis year 2005 – 2009 and 2010 - 2014

4.7.1 | What is the median number of days from diagnosis to first IV systemic therapy?

**Where IV systemic therapy is first treatment received**

Days from diagnosis to first systemic therapy  <i>(Median number of days from diagnosis to first systemic therapy)</i>	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Median IQR	Median IQR
<b>Hospital Type</b>		
Public hospitals	41 (27-57)	45 (32-62)
Private hospitals	28 (17-42)	28 (18-42)
<b>Queensland</b>	<b>36</b> <b>(21-53)</b>	<b>36</b> <b>(22-54)</b>

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.  
For a description on Interquartile range (IQR) - refer to definitions

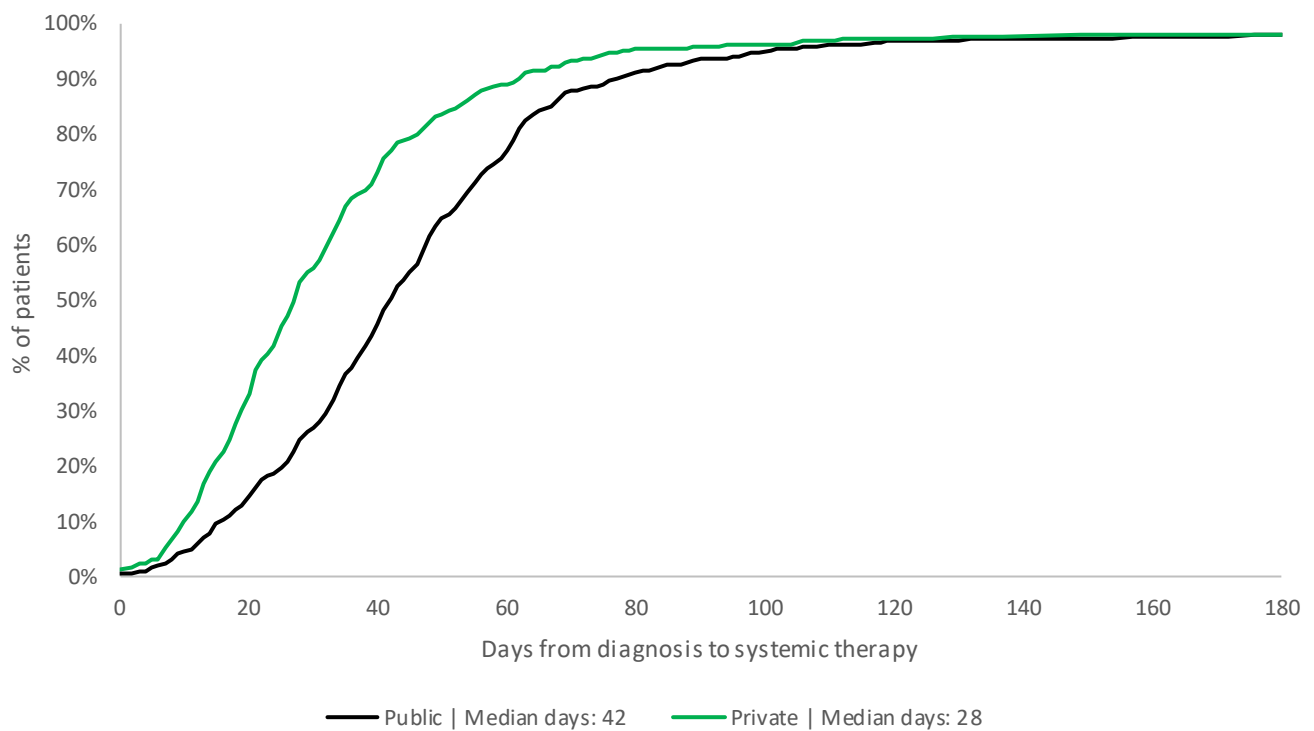
## 4.8 | Time to IV systemic therapy summary

Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 4.8.1 | Distribution of days from diagnosis to IV systemic therapy by facility type

**Where IV systemic therapy is first treatment received**



## 4.9 | Time to radiation therapy within 30 days

Diagnosis year 2005 – 2009 and 2010 – 2014

### 4.9.1 | What percentage of patients receive radiation therapy within 30 days of diagnosis?

#### Where radiation therapy is first treatment received

Received radiation therapy within 30 days	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
<i>(% patients whose time from diagnosis to radiation therapy is ≤30 days)</i>	Crude rates (n/N)	Crude rates (n/N)
	[Adjusted rates, CI%, P value]	[Adjusted rates, CI%, P value]
Hospital Type		
Public hospitals	17% (92/552) [18%**, 14-22, 0]	16% (113/701) [16%**, 13-20, 0]
Private hospitals	54% (166/310) [47%**, 40-55, 0]	45% (242/539) [45%**, 39-51, 0]
<b>Queensland</b>	<b>30% (259/863)</b>	<b>29% (355/1240)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.

Refer to appendix 1 for hospital grouping definitions

## 4.10 | Median days to first radiation therapy

Diagnosis year 2005 – 2009 and 2010 - 2014

4.10.1 | What is the median number of days from diagnosis to first radiation therapy?

**Where radiation therapy is first treatment received**

<b>Days from diagnosis to first radiation therapy</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
	<b>Diagnosis year</b>	<b>Diagnosis year</b>
<i>(Median number of days from diagnosis to first radiation therapy)</i>	Median	Median
	IQR	IQR
<b>Hospital Type</b>		
Public hospitals	47 (35-62)	49 (35-62)
Private hospitals	28 (19-42)	33 (22-49)
<b>Queensland</b>	<b>41</b> <b>(27-58)</b>	<b>42</b> <b>(28-60)</b>

AIHW peer grouping has been omitted from the above table as it is not applicable to non-surgical treatments.  
For a description on Interquartile range (IQR) - refer to definitions

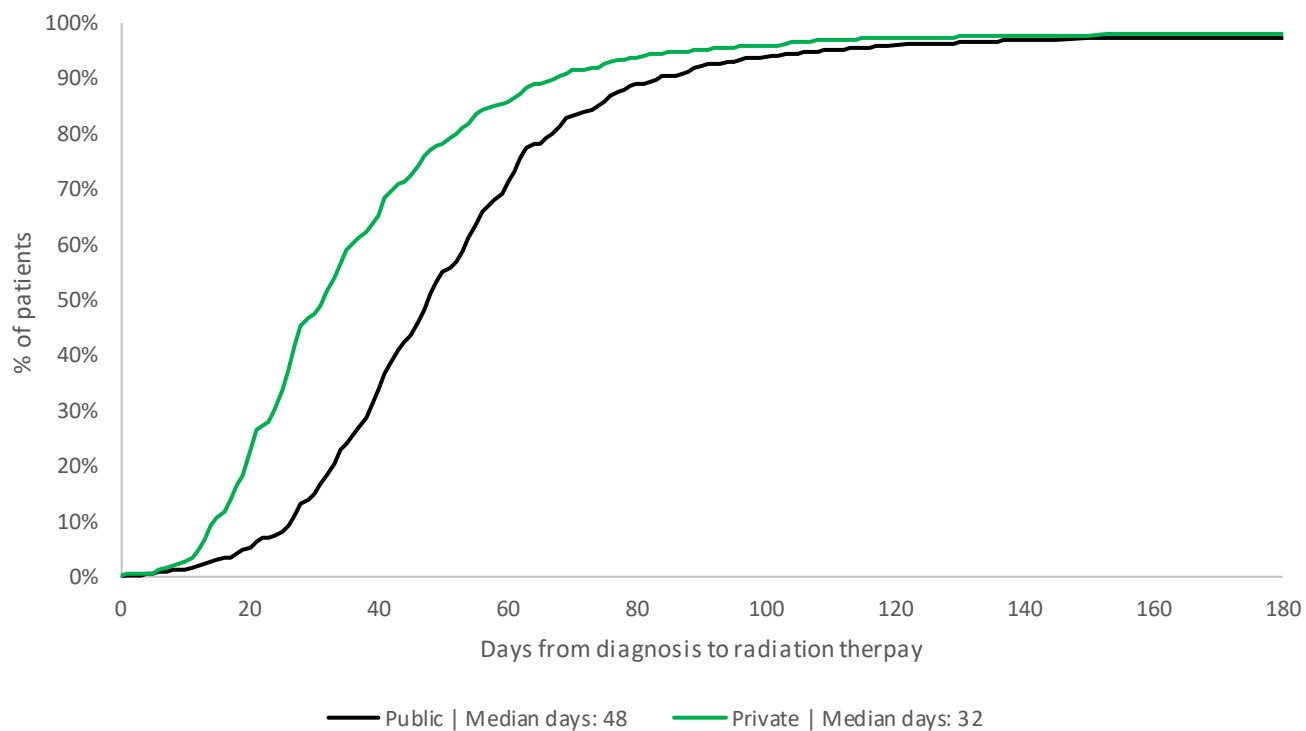
## 4.11 | Time to radiation therapy summary

Diagnosis year 2005 – 2014

Crude rates, 10 years combined

### 4.11.1 | Distribution of days from diagnosis to radiation therapy by facility type

**Where radiation therapy is first treatment received**



## 5 | Equitable

Providing care and ensuring health status does not vary in quality because of personal characteristics (social, economic, cultural and demographic).



## 5.1 | Over 75 years

### Diagnosis year 2005 – 2009 and 2010 – 2014

5.1.1 | What percentage of patients aged  $\geq 75$  receive major resection within 30 days from diagnosis?

#### Where major resection is first treatment received

Received major resection within 30 days for those aged $\geq 75$ years	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
(% of patients aged $\geq 75$ whose time from diagnosis to major resection is $\leq 30$ days)	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	50% (69/137) [50%**, 42-59, 0]	42% (59/140) [42%**, 34-50, 0]
Group A - Public hospitals	57% (89/157) [58%**, 50-66, 0.008]	45% (57/126) [44%**, 36-53, 0]
Group A - Private hospitals	84% (184/220) [83%**, 76-89, 0]	80% (191/238) [82%**, 75-90, 0]
Group B hospitals	81% (60/74) [81%*, 72-91, 0.018]	80% (70/87) [81%**, 72-91, 0]
Other hospitals	83% (58/70) [85%**, 75-95, 0.001]	89% (34/38) [91%**, 79-100, 0]
<b>Hospital Type</b>		
Public hospitals	54% (163/302) [54%**, 48-61, 0]	45% (124/278) [43%**, 38-50, 0]
Private hospitals	83% (297/356) [83%**, 78-89, 0]	82% (287/351) [84%**, 77-90, 0]
<b>Queensland</b>	<b>70% (460/658)</b>	<b>65% (411/629)</b>

Adjusted by sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions



## 5.2 | Indigenous

Diagnosis year 2005 – 2009 and 2010 – 2014

5.2.1 | What percentage of Indigenous patients receive major resection within 30 days from diagnosis?

**Where major resection is first treatment received**

Received major resection within 30 days by Indigenous status	2005 - 2009 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2010 - 2014 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<i>(% of Indigenous patients whose time from diagnosis to major resection is ≤30 days)</i>		
<b>AIHW Peer Group</b>		
Principal referral hospitals	54% (7/13) [54%, 28-100, 0.991]	50% (5/10) [57%, 32-100, 0.923]
Group A - Public hospitals	44% (4/9) [55%, 23-100, 0.988]	40% (2/5) [64%, 26-100, 0.869]
Group A - Private hospitals	100% (1/1) [100%, 33-81, 0.843]	100% (5/5) [100%, 42-100, 0.67]
Group B hospitals	100% (1/1) [100%, 35-92, 0.849]	100% (1/1) [100%, 59-59, 1]
Other hospitals		0% (0/1) [0%** , 0-0, 0]
<b>Hospital Type</b>		
Public hospitals	50% (11/22) [54%, 31-94, 1]	50% (8/16) [59%, 36-96, 1]
Private hospitals	100% (2/2) [100%, 51-58, 1]	83% (5/6) [59%, 36-97, 1]
<b>Queensland</b>	<b>54% (13/24)</b>	<b>59% (13/22)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

### 5.3 | Socio-economically disadvantaged

Diagnosis year 2005 – 2009

5.3.1 | What percentage of socio-economically disadvantaged patients receive major resection within 30 days from diagnosis?

Where major resection is first treatment received

Received major resection within 30 days by socio-economic status	Diagnosis year: 2005-2009		
	Disadvantaged	Middle	Affluent
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<i>(% of patients whose time from diagnosis to major resection is ≤30 days by socio-economic status)</i>			
<b>AIHW Peer Group</b>			
Principal referral hospitals	42% (39/93) [41%** , 32-52, 0]	52% (165/317) [52%** , 47-58, 0]	47% (36/76) [47%** , 37-60, 0]
Group A - Public hospitals	63% (131/207) [62%, 55-69, 0.079]	55% (161/291) [55%** , 49-61, 0]	48% (14/29) [47%* , 32-69, 0.01]
Group A - Private hospitals	88% (98/112) [91%** , 83-100, 0]	87% (430/494) [87%** , 83-91, 0]	87% (179/205) [88%** , 81-95, 0.001]
Group B hospitals	81% (64/79) [81%* , 71-92, 0.011]	77% (131/170) [78%, 71-85, 0.104]	100% (19/19) [100%** , 91-100, 0]
Other hospitals	75% (59/79) [76%, 66-88, 0.135]	90% (142/157) [92%** , 86-98, 0]	97% (30/31) [95%** , 87-100, 0]
<b>Hospital Type</b>			
Public hospitals	57% (177/310) [56%** , 50-62, 0]	53% (337/631) [53%** , 49-57, 0]	48% (51/106) [48%** , 39-59, 0]
Private hospitals	82% (214/260) [84%** , 78-92, 0]	87% (692/798) [87%** , 84-91, 0]	89% (227/254) [90%** , 84-96, 0]
<b>Queensland</b>	<b>69% (391/570)</b>	<b>72% (1029/1429)</b>	<b>77% (278/360)</b>

Adjusted by age, sex, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

## Diagnosis year 2010 – 2014

5.3.2 | What percentage of socio-economically disadvantaged patients receive major resection within 30 days from diagnosis?

## Where major resection is first treatment received

Received major resection within 30 days by socio-economic status	Diagnosis year: 2010-2014		
	Disadvantaged	Middle	Affluent
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>			
Principal referral hospitals	31% (33/106) [31%** , 24-42, 0]	41% (131/317) [40%** , 35-46, 0]	39% (24/61) [39%** , 28-53, 0]
Group A - Public hospitals	57% (76/133) [55% , 47-64, 0.151]	42% (97/231) [42%** , 36-49, 0]	54% (14/26) [56% , 39-80, 0.103]
Group A - Private hospitals	81% (87/107) [84%** , 74-95, 0]	85% (454/536) [86%** , 81-90, 0]	87% (152/175) [87%** , 80-95, 0.001]
Group B hospitals	77% (47/61) [77%** , 66-90, 0.004]	79% (126/159) [80%** , 73-88, 0]	84% (16/19) [82% , 67-100, 0.362]
Other hospitals	82% (31/38) [84%** , 70-100, 0.001]	81% (88/108) [84%** , 76-93, 0]	96% (23/24) [95%** , 85-100, 0]
<b>Hospital Type</b>			
Public hospitals	46% (115/251) [45%** , 39-52, 0]	42% (238/564) [41%** , 37-46, 0]	44% (38/87) [44%** , 34-56, 0]
Private hospitals	82% (159/194) [84%** , 76-93, 0]	84% (658/787) [85%** , 81-89, 0]	88% (191/218) [87%** , 81-95, 0]
<b>Queensland</b>	<b>62% (274/445)</b>	<b>66% (896/1351)</b>	<b>75% (229/305)</b>

Adjusted by age, sex, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

## 5.4 | Remoteness

### Diagnosis year 2005 – 2009

5.4.1 | What percentage of patients living outside a metropolitan area received major resection within 30 days of diagnosis?

#### Where major resection is first treatment received

Received major resection within 30 days by rurality  (% of patients whose time from diagnosis to major resection is ≤30 days by rurality)	Diagnosis year: 2005-2009		
	Rural	Regional	Metropolitan
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>			
Principal referral hospitals	50% (30/60) [49%** , 38-63, 0.008]	23% (14/62) [23%** , 14-36, 0]	54% (196/364) [54%** , 49-60, 0]
Group A - Public hospitals	56% (64/114) [56%* , 47-66, 0.016]	65% (113/173) [63% , 56-71, 0.054]	54% (129/240) [54%** , 48-61, 0]
Group A - Private hospitals	76% (26/34) [78% , 64-95, 0.192]	86% (118/138) [88%** , 80-96, 0]	88% (565/641) [88%** , 85-92, 0]
Group B hospitals	86% (62/72) [87%** , 76-98, 0]	80% (77/96) [81%* , 72-91, 0.025]	75% (75/100) [75% , 67-84, 0.677]
Other hospitals	82% (65/79) [84%** , 74-95, 0.002]	85% (71/84) [85%** , 77-95, 0.001]	91% (95/104) [91%** , 85-98, 0]
<b>Hospital Type</b>			
Public hospitals	54% (97/179) [53%** , 46-62, 0.001]	53% (133/249) [52%** , 46-59, 0]	54% (335/619) [54%** , 50-59, 0]
Private hospitals	83% (150/180) [85%** , 77-93, 0]	86% (260/304) [87%** , 81-94, 0]	87% (725/830) [87%** , 84-91, 0]
<b>Queensland</b>	<b>69% (247/359)</b>	<b>71% (393/553)</b>	<b>73% (1060/1449)</b>

Adjusted by age, sex, socioeconomic status, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

## Diagnosis year 2010 – 2014

5.4.2 | What percentage of patients living outside a metropolitan area received major resection within 30 days of diagnosis?

## Where major resection is first treatment received

Received major resection within 30 days by rurality  (% of patients whose time from diagnosis to major resection is ≤30 days by rurality)	Diagnosis year: 2010-2014		
	Rural	Regional	Metropolitan
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>			
Principal referral hospitals	38% (21/55) [37%** , 26-52, 0.004]	21% (17/80) [22%** , 14-33, 0]	43% (150/349) [43%** , 38-49, 0]
Group A - Public hospitals	39% (29/74) [38%** , 29-51, 0.002]	47% (53/112) [47%** , 38-57, 0.005]	52% (107/206) [52%** , 45-60, 0]
Group A - Private hospitals	79% (50/63) [83%** , 71-98, 0]	81% (141/174) [83%** , 75-92, 0]	86% (502/581) [86%** , 82-91, 0]
Group B hospitals	78% (40/51) [77%* , 65-91, 0.01]	78% (60/77) [75%* , 65-86, 0.012]	80% (89/111) [80%** , 73-89, 0.004]
Other hospitals	83% (33/40) [86%** , 72-100, 0]	76% (31/41) [73% , 61-89, 0.099]	88% (78/89) [88%** , 80-95, 0]
<b>Hospital Type</b>			
Public hospitals	40% (52/131) [39%** , 31-48, 0]	38% (76/201) [38%** , 31-45, 0]	46% (265/572) [46%** , 42-51, 0]
Private hospitals	80% (121/152) [82%** , 72-92, 0]	80% (226/283) [80%** , 73-88, 0]	87% (661/764) [87%** , 83-91, 0]
<b>Queensland</b>	<b>61% (173/283)</b>	<b>62% (302/484)</b>	<b>69% (926/1336)</b>

Adjusted by age, sex, socioeconomic status, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

## 5.5 | In-flows

Diagnosis year 2005 – 2009 and 2010 – 2014

## 5.5.1 | What percentage of major resection patients reside outside my HHS?

<b>In-Flows</b>	<b>2005-2009</b>		<b>2010-2014</b>	
<i>(% of patients travelling for surgery)</i>	<b>Diagnosis year</b>		<b>Diagnosis year</b>	
<b>FacilityHHS</b>	Hospital count	Crude rate (n/N)	Hospital count	Crude rate (n/N)
Cairns and Hinterland	3	7% (12/177)	2	4% (5/136)
Central Queensland	3	2% (2/86)	5	10% (3/29)
Central West				
Darling Downs	4	9% (14/158)	3	14% (21/146)
Gold Coast	4	2% (7/347)	5	5% (20/409)
Mackay	3	6% (2/34)	2	0% (0/11)
Metro North	11	37% (351/939)	9	47% (524/1124)
Metro South	8	22% (160/724)	9	23% (154/676)
North West	1	0% (0/2)	1	0% (0/6)
South West				
Sunshine Coast	6	4% (13/329)	6	5% (14/299)
Townsville	3	33% (85/256)	2	39% (110/282)
West Moreton	2	7% (5/75)	2	7% (7/94)
Wide Bay	5	3% (3/108)	5	1% (1/86)
<b>Queensland</b>	<b>53</b>	<b>20%</b> <b>(654/3235)</b>	<b>51</b>	<b>26%</b> <b>(859/3298)</b>

## 5.6 | Out-flows

Diagnosis year 2005 – 2009 and 2010 – 2014

5.6.1 | What percentage of patients underwent major resection outside of the HHS that they reside in?

<b>Out-flows</b>	<b>2005 - 2009</b>	<b>2010 - 2014</b>
<i>(% of patients receiving surgery outside of their HHS of residence)</i>	<b>Diagnosis year</b>	<b>Diagnosis year</b>
	Crude rate	Crude rate
	(n/N)	(n/N)
Cairns and Hinterland	6% (22/377)	7% (30/403)
Central Queensland	21% (64/307)	29% (93/316)
Central West	100% (19/19)	100% (22/22)
Darling Downs	16% (81/513)	19% (106/572)
Gold Coast	6% (51/898)	4% (41/964)
Mackay	28% (61/216)	33% (83/252)
Metro North	9% (129/1462)	5% (79/1455)
Metro South	12% (180/1479)	11% (163/1484)
North West	63% (17/27)	52% (14/27)
South West	84% (36/43)	89% (42/47)
Sunshine Coast	7% (56/756)	7% (60/813)
Torres and Cape	100% (16/16)	100% (11/11)
Townsville	3% (9/313)	1% (5/340)
West Moreton	41% (141/345)	38% (143/381)
Wide Bay	21% (106/517)	25% (130/517)
<b>Queensland</b>	<b>20% (654/3235)</b>	<b>26% (859/3298)</b>

## 6 | Quality of care

Applying best interventions with greatest effectiveness.





## 6.1 | Had laparoscopic surgery

Diagnosis year 2005 - 2014

## 6.1.1 | What percentage of patients had laparoscopic major resection?

<b>Had laparoscopic surgery</b>	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<i>(% of patients who had a laparoscopic resection)</i>										
<b>AIHW Peer Group</b>										
Principal referral hospitals	28% (40/145)	29% (43/148)	32% (50/154)	32% (49/151)	43% (66/154)	51% (96/189)	51% (91/180)	57% (117/204)	46% (73/159)	42% (82/195)
Group A - Public hospitals	5% (7/155)	10% (14/142)	17% (24/145)	25% (38/154)	27% (43/159)	28% (30/108)	40% (46/114)	41% (53/129)	32% (48/148)	32% (41/128)
Group A - Private hospitals	22% (41/185)	32% (75/237)	35% (85/244)	51% (118/232)	54% (107/197)	50% (124/249)	54% (126/234)	52% (122/234)	50% (112/222)	43% (98/227)
Group B hospitals	26% (17/66)	29% (23/79)	25% (17/69)	31% (18/58)	36% (19/53)	37% (25/67)	45% (37/82)	43% (32/75)	51% (38/74)	31% (22/70)
Other hospitals	17% (13/76)	9% (7/75)	17% (9/54)	24% (13/54)	10% (5/49)	31% (16/52)	18% (8/45)	14% (5/36)	24% (10/42)	29% (10/35)
<b>Hospital Type</b>										
Public hospitals	15% (47/307)	19% (57/304)	24% (74/311)	29% (90/310)	35% (112/319)	42% (127/300)	46% (138/300)	50% (173/345)	39% (123/313)	38% (125/329)
Private hospitals	22% (71/320)	28% (105/377)	31% (111/355)	43% (146/339)	44% (128/293)	45% (164/365)	48% (170/355)	47% (156/333)	48% (158/332)	39% (128/326)
<b>Queensland</b>	19% (118/627)	24% (162/681)	28% (185/666)	36% (236/649)	39% (240/612)	44% (291/665)	47% (308/655)	49% (329/678)	44% (281/645)	39% (253/655)

Refer to appendix 3 for definitions of laparoscopic surgery

## 6.2 | Laparoscopic converted to open surgery

Diagnosis year 2014

## 6.2.1 | What percentage of patients had laparoscopic surgery converted to open surgery?

Had laparoscopic surgery  (% of patients who had a laparoscopic resection)	Started as laparoscopic surgery  Crude rate  (n/N)	Started as open surgery  Crude rate  (n/N)	Started as laparoscopic but converted to open surgery  Crude rate  (n/N)
<b>AIHW Peer Group</b>			
Principal referral hospitals	49% (95/195)	51% (100/195)	14% (13/95)
Group A - Public hospitals	46% (59/128)	54% (69/128)	31% (18/59)
Group A - Private hospitals	47% (107/227)	53% (120/227)	8% (9/107)
Group B hospitals	46% (32/70)	54% (38/70)	31% (10/32)
Other hospitals	40% (14/35)	60% (21/35)	29% (4/14)
<b>Hospital Type</b>			
Public hospitals	48% (159/329)	52% (170/329)	21% (34/159)
Private hospitals	45% (148/326)	55% (178/326)	14% (20/148)
<b>Queensland</b>	<b>47%</b> (307/655)	<b>53%</b> (348/655)	<b>18%</b> (54/307)

Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of laparoscopic surgery

## 6.3 | Margins involved

### Diagnosis year 2012 & 2014

#### 6.3.1 | What percentage of patients had involved margins at major resection?

Margins involved  (% of patients who had involved margins at major resection)	2012	2014
	Diagnosis year	Diagnosis year
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	4.9% (10/204) [5.1%, 3-10, 0.374]	8.2% (16/195) [7.9%, 5-13, 0.625]
Group A - Public hospitals	6.2% (8/129) [5.7%, 3-12, 0.604]	4.7% (6/128) [4.1%, 2-10, 0.239]
Group A - Private hospitals	9% (21/234) [9.2%, 6-15, 0.255]	7.5% (17/227) [8.1%, 5-14, 0.548]
Group B hospitals	9.3% (7/75) [8.8%, 4-19, 0.547]	7.1% (5/70) [7.6%, 3-18, 0.83]
Other hospitals	2.8% (1/36) [2.8%, 0-20, 0.365]	2.9% (1/35) [3.4%, 0-23, 0.467]
<b>Hospital Type</b>		
Public hospitals	5.5% (19/345) [5.5%, 3-9, 0.373]	7.3% (24/329) [6.8%, 4-11, 0.973]
Private hospitals	8.4% (28/333) [8.5%, 5-13, 0.388]	6.4% (21/326) [6.9%, 4-11, 0.971]
<b>Queensland</b>	<b>6.9% (47/678)</b>	<b>6.9% (45/655)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

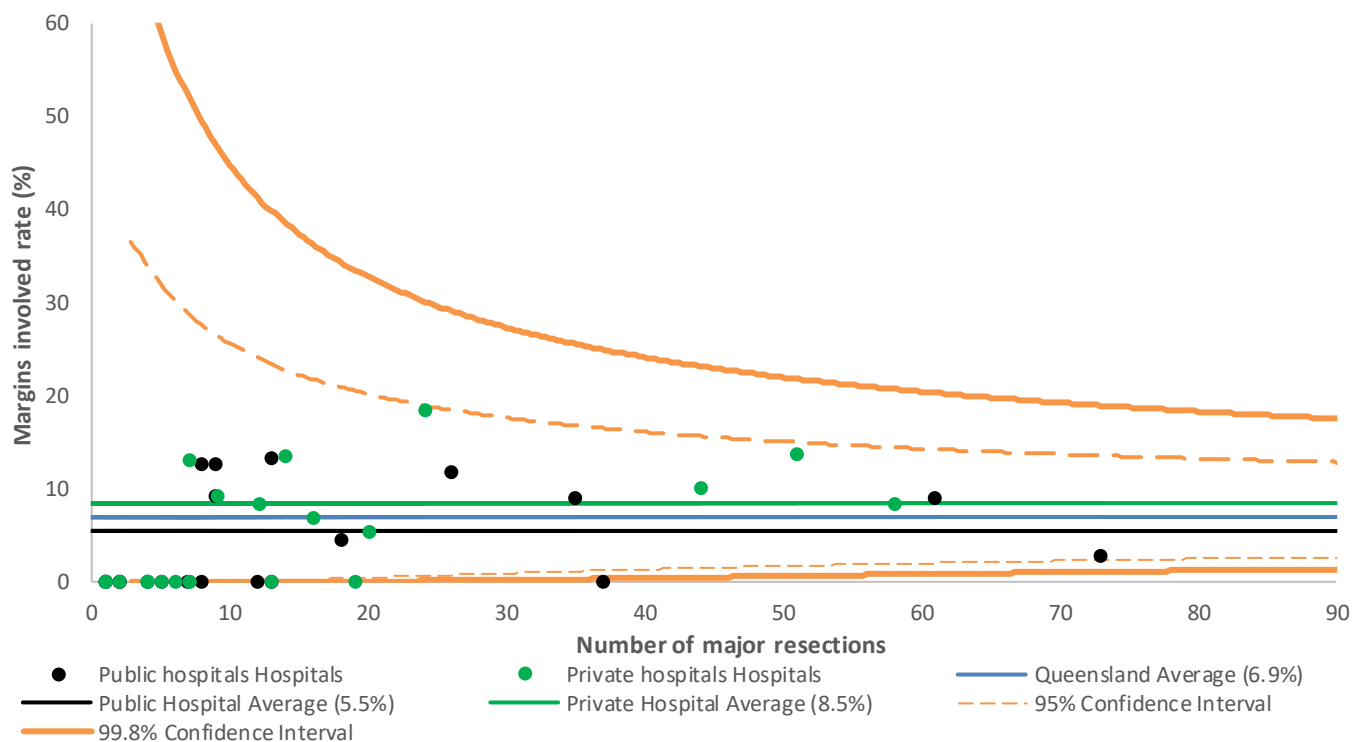
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of margins involved

## Diagnosis year 2012

Adjusted rates

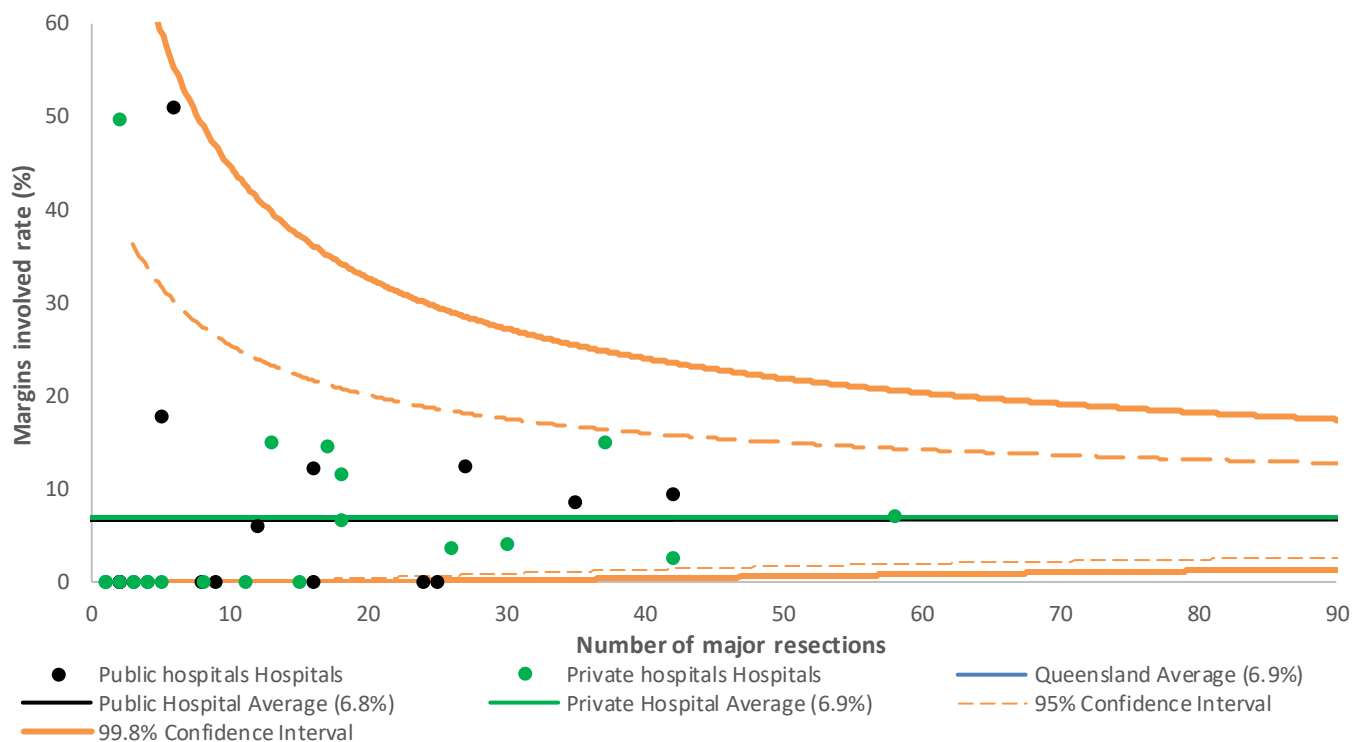
### 6.3.2 | Patients who had involved margins at major resection by hospital volume



## Diagnosis year 2014

Adjusted rates

### 6.3.3 | Patients who had involved margins at major resection by hospital volume



## 6.4 | More than 12 lymph nodes examined

Diagnosis year 2012 &amp; 2014

6.4.1 | What percentage of patients had  $\geq 12$  lymph nodes examined at major resection?

$\geq 12$ lymph nodes examined	2012	2014
<i>(% of patients with <math>\geq 12</math> lymph nodes examined at major resection)</i>	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	70% (143/204) [69%, 62-77, 0.472]	70% (137/195) [71%, 64-79, 0.39]
Group A - Public hospitals	71% (91/129) [73%, 65-83, 0.129]	62% (79/128) [62%, 54-72, 0.25]
Group A - Private hospitals	68% (159/234) [67%, 60-74, 0.914]	72% (164/227) [71%, 65-78, 0.305]
Group B hospitals	57% (43/75) [59%, 48-73, 0.261]	57% (40/70) [58%, 47-72, 0.164]
Other hospitals	42% (15/36) [41%*, 28-60, 0.014]	66% (23/35) [65%, 51-84, 0.8]
<b>Hospital Type</b>		
Public hospitals	70% (240/345) [70%, 64-76, 0.268]	67% (220/329) [67%, 61-74, 0.93]
Private hospitals	63% (211/333) [63%, 57-69, 0.282]	68% (223/326) [68%, 62-74, 0.929]
<b>Queensland</b>	<b>67% (451/678)</b>	<b>68% (443/655)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

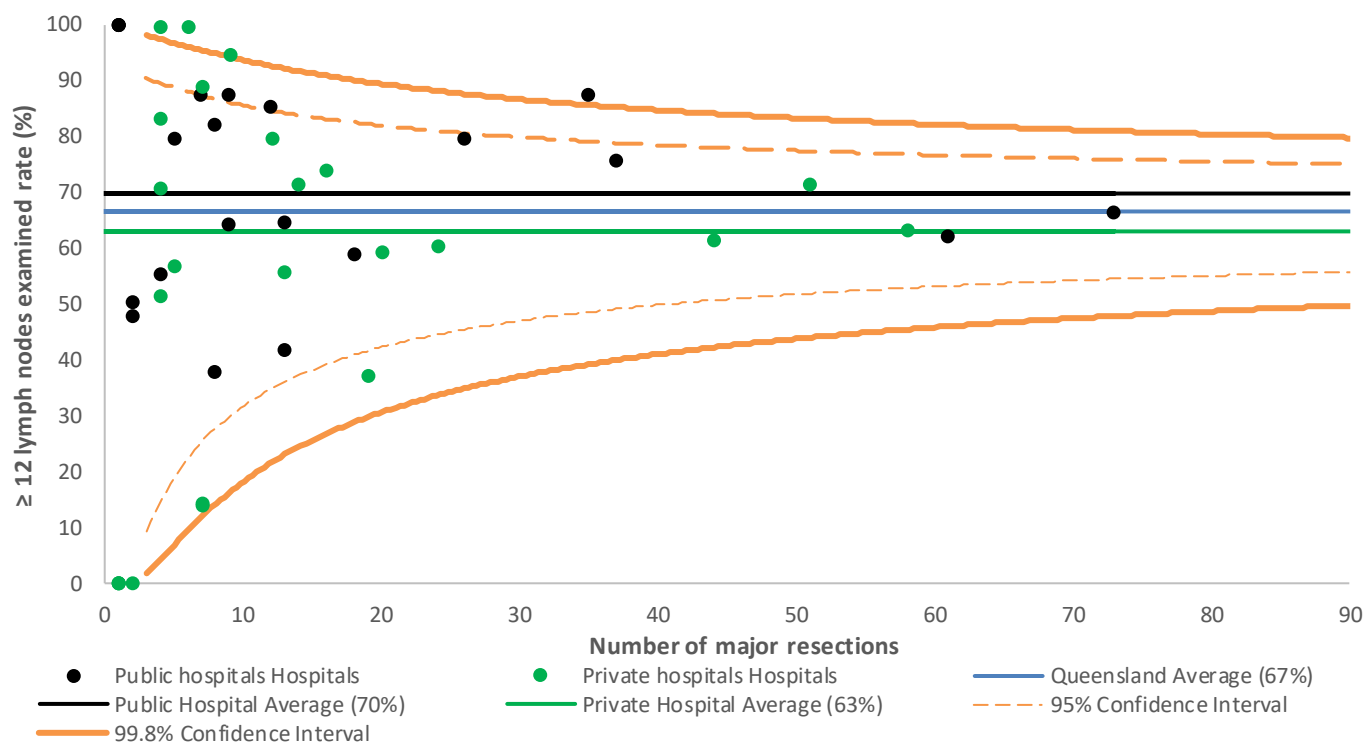
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of lymph nodes examined

Diagnosis year 2012

Adjusted rates

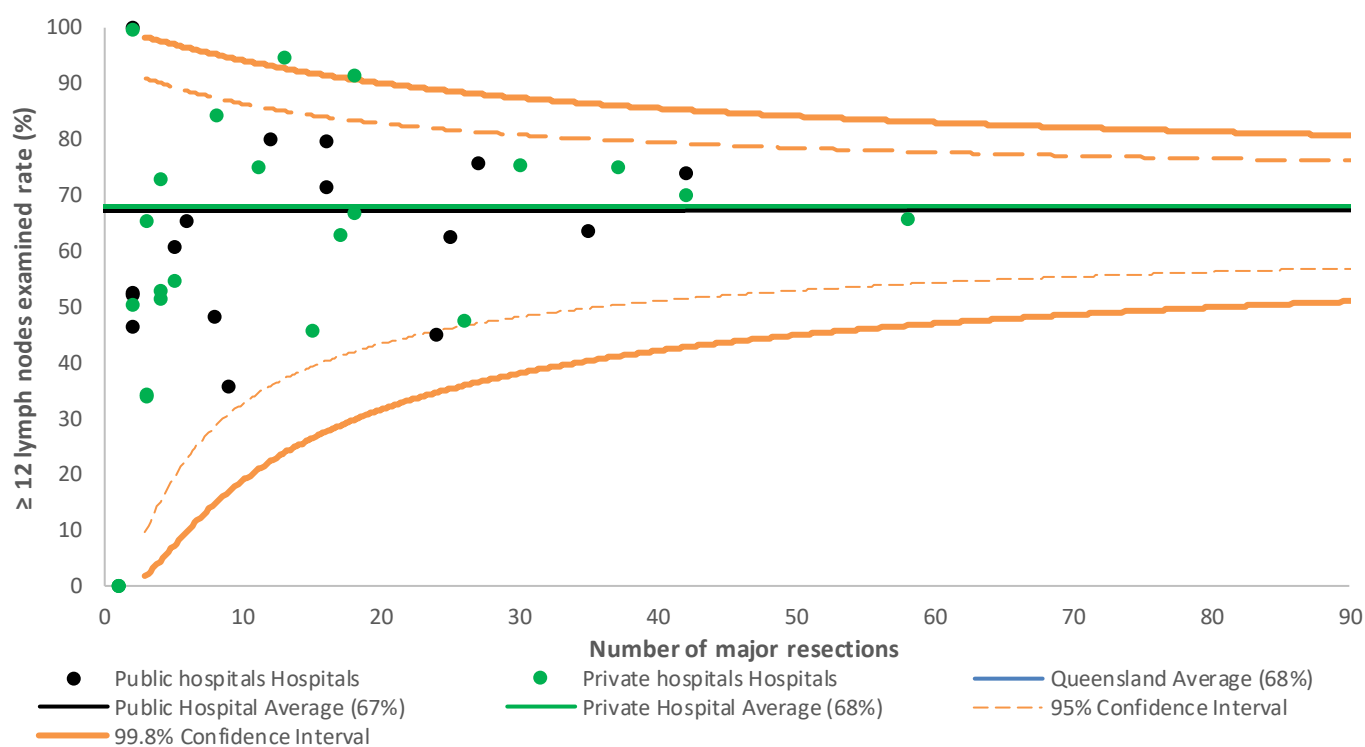
6.4.2 | Patients who had  $\geq 12$  lymph nodes examined at major resection by hospital volume



Diagnosis year 2014

Adjusted rates

6.4.3 | Patients who had  $\geq 12$  lymph nodes examined at major resection by hospital volume



## 6.5 | Had abdominoperineal resection

Diagnosis year 2005 – 2009 and 2010 – 2014

6.5.1 | What percentage of patients had an abdominoperineal resection as their first major resection?

Had abdominoperineal resection	2005 - 2009	2010 - 2014
<i>(% of patients who had abdominoperineal resection)</i>	Diagnosis year	Diagnosis year
	Crude rate	Crude rate
	(n/N)	(n/N)
<b>AIHW Peer Group</b>		
Principal referral hospitals	18% (133/752)	20% (185/927)
Group A - Public hospitals	16% (121/755)	17% (105/627)
Group A - Private hospitals	10% (111/1095)	12% (135/1166)
Group B hospitals	14% (44/325)	13% (46/368)
Other hospitals	9.1% (28/308)	11% (24/210)
<b>Hospital Type</b>		
Public hospitals	17% (264/1551)	19% (295/1587)
Private hospitals	10% (173/1684)	12% (200/1711)
<b>Queensland</b>	<b>14%</b> <b>(437/3235)</b>	<b>15%</b> <b>(495/3298)</b>

Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of abdominoperineal resection

## 6.6 | Stoma at resection

Diagnosis year 2005 – 2009 and 2010 – 2014

## 6.6.1 | What percentage of patients received stoma at first major resection?

Stoma rate at major resection	2005 - 2009	2010 - 2014
(% of patients receiving stoma at major resection)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	65% (487/752) [65%**, 61-69, 0]	65% (600/927) [65%**, 61-68, 0]
Group A - Public hospitals	63% (479/755) [63%**, 59-67, 0]	60% (374/627) [59%, 55-63, 0.106]
Group A - Private hospitals	45% (490/1095) [45%**, 42-49, 0]	46% (537/1166) [47%**, 43-50, 0]
Group B hospitals	56% (183/325) [56%, 50-62, 0.666]	62% (229/368) [62%*, 57-68, 0.01]
Other hospitals	41% (127/308) [41%**, 36-47, 0]	43% (91/210) [43%**, 37-50, 0.002]
<b>Hospital Type</b>		
Public hospitals	64% (987/1551) [63%**, 60-67, 0]	62% (990/1587) [62%**, 59-65, 0]
Private hospitals	46% (779/1684) [47%**, 44-49, 0]	49% (841/1711) [49%**, 47-52, 0]
<b>Queensland</b>	<b>55% (1766/3235)</b>	<b>56% (1831/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

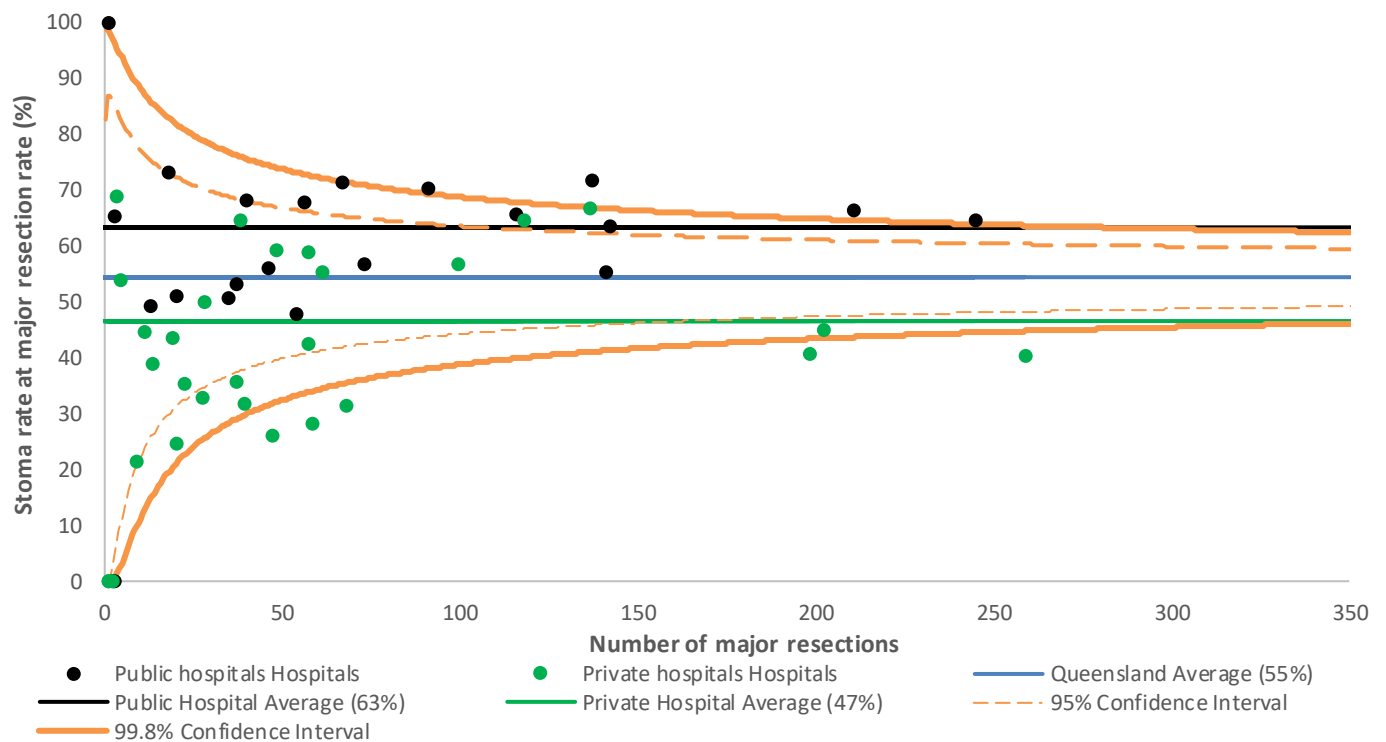
Refer to appendix 3 for definitions of stoma at resection



Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

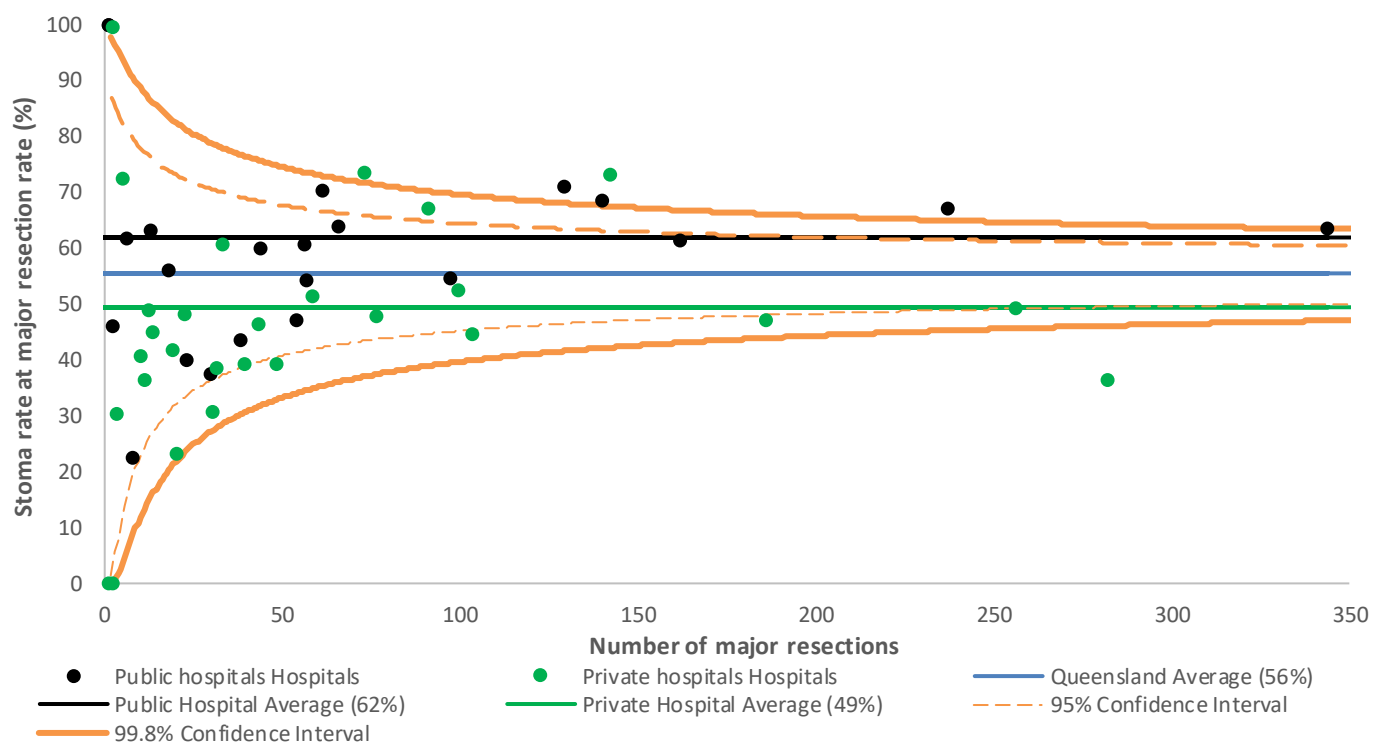
6.6.2 | Patients receiving stoma at resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.6.3 | Patients receiving stoma at resection by hospital volume



## 6.7 | Stoma after resection

Diagnosis year 2005 – 2009 and 2010 – 2014

6.7.1 | What percentage of patients received a stoma in the first 12 months after their first major resection?

Stoma rate within 12 months after first major resection	2005 - 2009	2010 - 2014
(% of patients receiving stoma within 12 months after first major resection)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	2.8% (21/752) [2.7%, 2-4, 0.759]	2.4% (22/927) [2.3%*, 1-4, 0.04]
Group A - Public hospitals	2.1% (16/755) [2.1%, 1-4, 0.258]	4.6% (29/627) [4.5%, 3-7, 0.298]
Group A - Private hospitals	3.4% (37/1095) [3.3%, 2-5, 0.476]	4.5% (52/1166) [4.7%, 3-6, 0.112]
Group B hospitals	2.5% (8/325) [2.6%, 1-5, 0.794]	2.7% (10/368) [2.8%, 1-5, 0.41]
Other hospitals	3.6% (11/308) [4.1%, 2-8, 0.271]	2.9% (6/210) [3.1%, 1-7, 0.705]
<b>Hospital Type</b>		
Public hospitals	2.4% (37/1551) [2.3%, 2-3, 0.286]	3.3% (52/1587) [3.1%, 2-4, 0.371]
Private hospitals	3.3% (56/1684) [3.4%, 2-5, 0.333]	3.9% (67/1711) [4.1%, 3-6, 0.386]
<b>Queensland</b>	<b>2.9% (93/3235)</b>	<b>3.6% (119/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

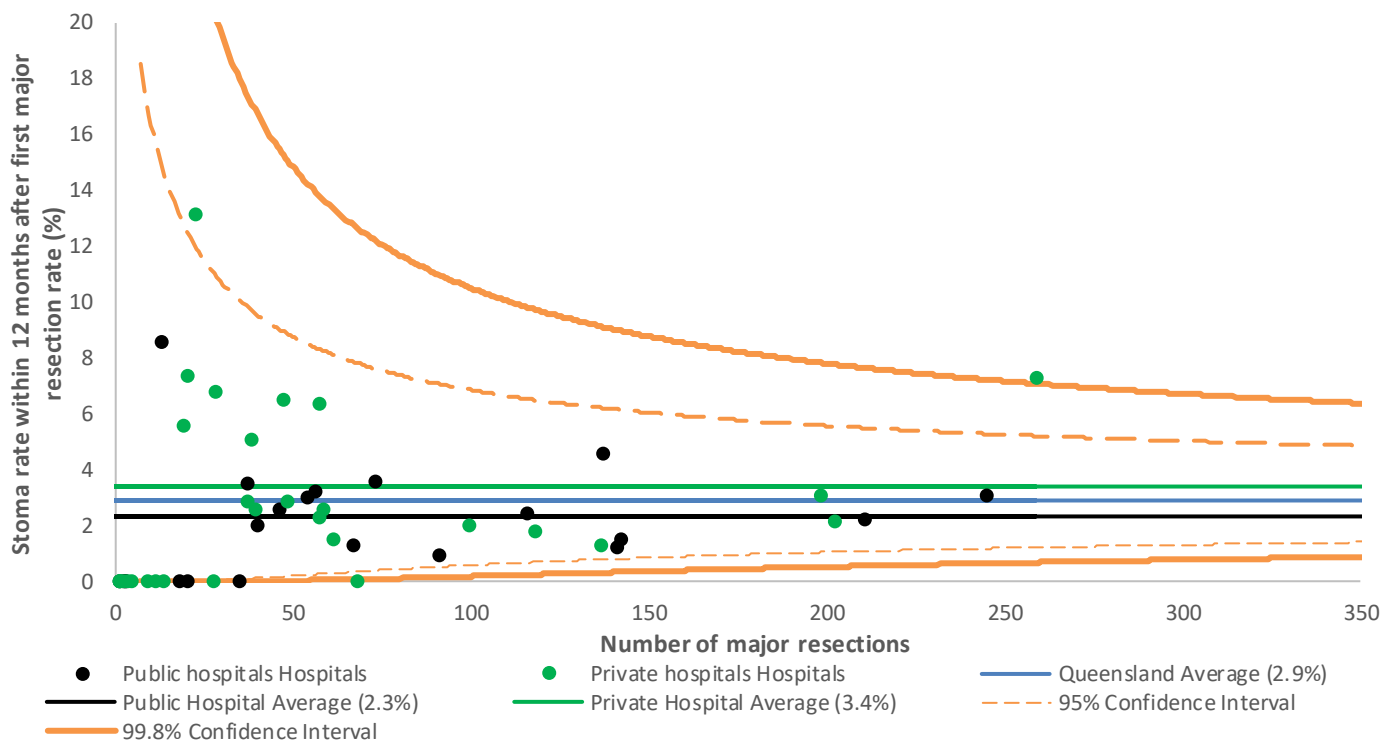
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of stoma after resection

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

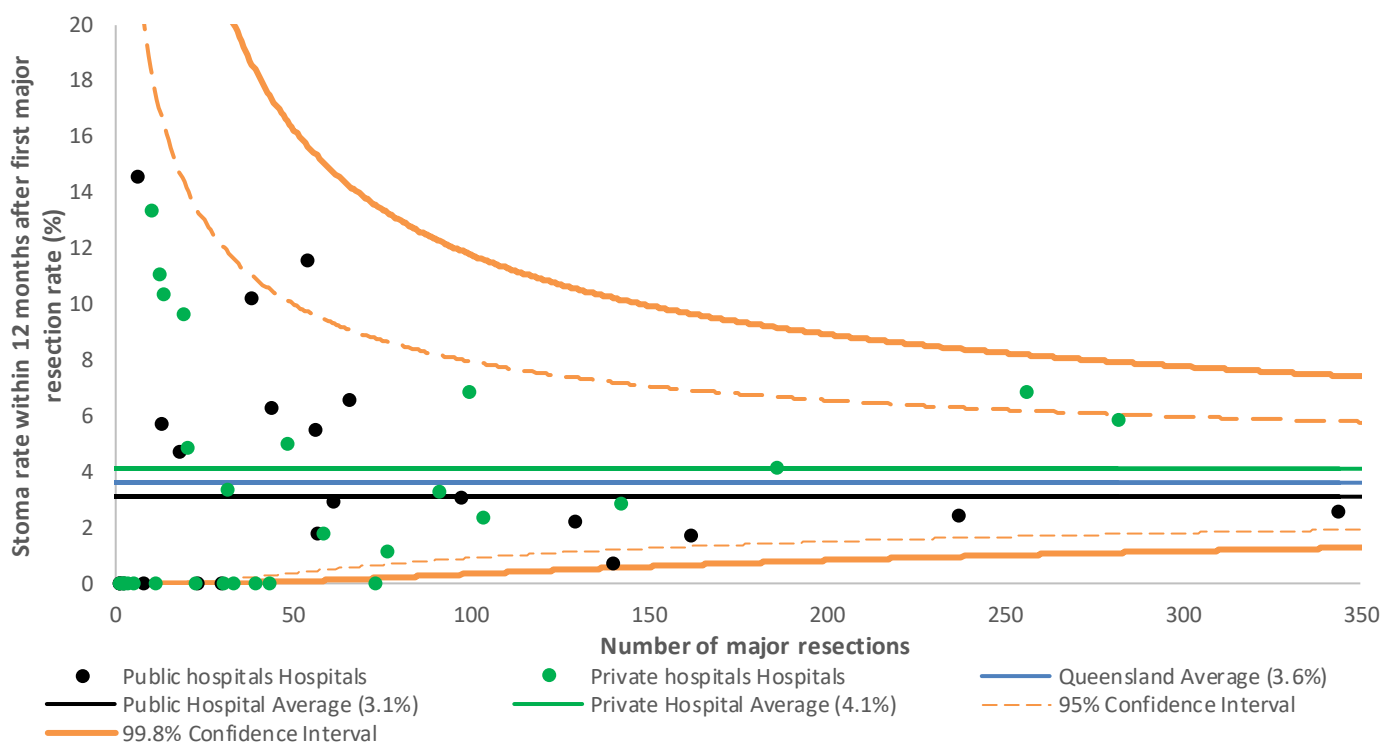
6.7.2 | Patients receiving stoma after major resection by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.7.3 | Patients receiving stoma after major resection by hospital volume



## 6.8 | Living with stoma 1 year after formation of stoma by major resection cohort

Diagnosis year 2005 – 2009 and 2010 – 2014

### 6.8.1 | What percentage of patients who received a stoma were living with a stoma 1 year later?

Living with stoma 1 year after formation of stoma by major resection cohort  (% of patients who still have a stoma 1 year after formation of stoma)	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	26% (198/752) [26%** , 23-30, 0]	32% (295/927) [31%** , 28-35, 0]
Group A - Public hospitals	26% (197/755) [25%** , 22-29, 0.001]	31% (197/627) [29%** , 26-33, 0.002]
Group A - Private hospitals	13% (140/1095) [13%** , 11-16, 0]	17% (194/1166) [17%** , 15-20, 0]
Group B hospitals	19% (62/325) [19%, 15-24, 0.821]	18% (66/368) [18%** , 14-22, 0.009]
Other hospitals	13% (41/308) [14%* , 10-18, 0.013]	16% (34/210) [17%* , 12-23, 0.024]
<b>Hospital Type</b>		
Public hospitals	27% (413/1551) [26%** , 23-29, 0]	32% (502/1587) [31%** , 28-34, 0]
Private hospitals	13% (225/1684) [14%** , 12-16, 0]	17% (284/1711) [17%** , 15-19, 0]
<b>Queensland</b>	<b>20% (638/3235)</b>	<b>24% (786/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

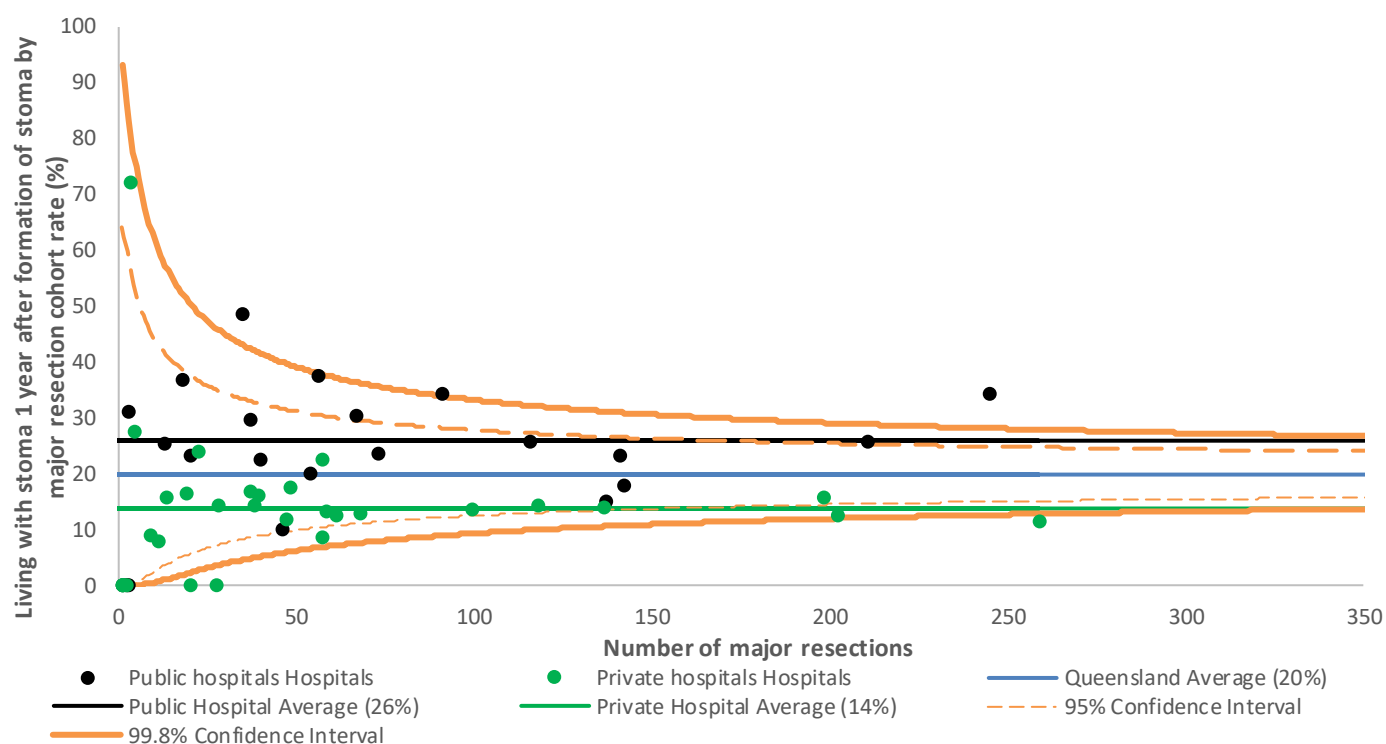
Refer to appendix 1 for hospital grouping definitions

Refer to appendix 3 for definitions of stoma prevalence

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

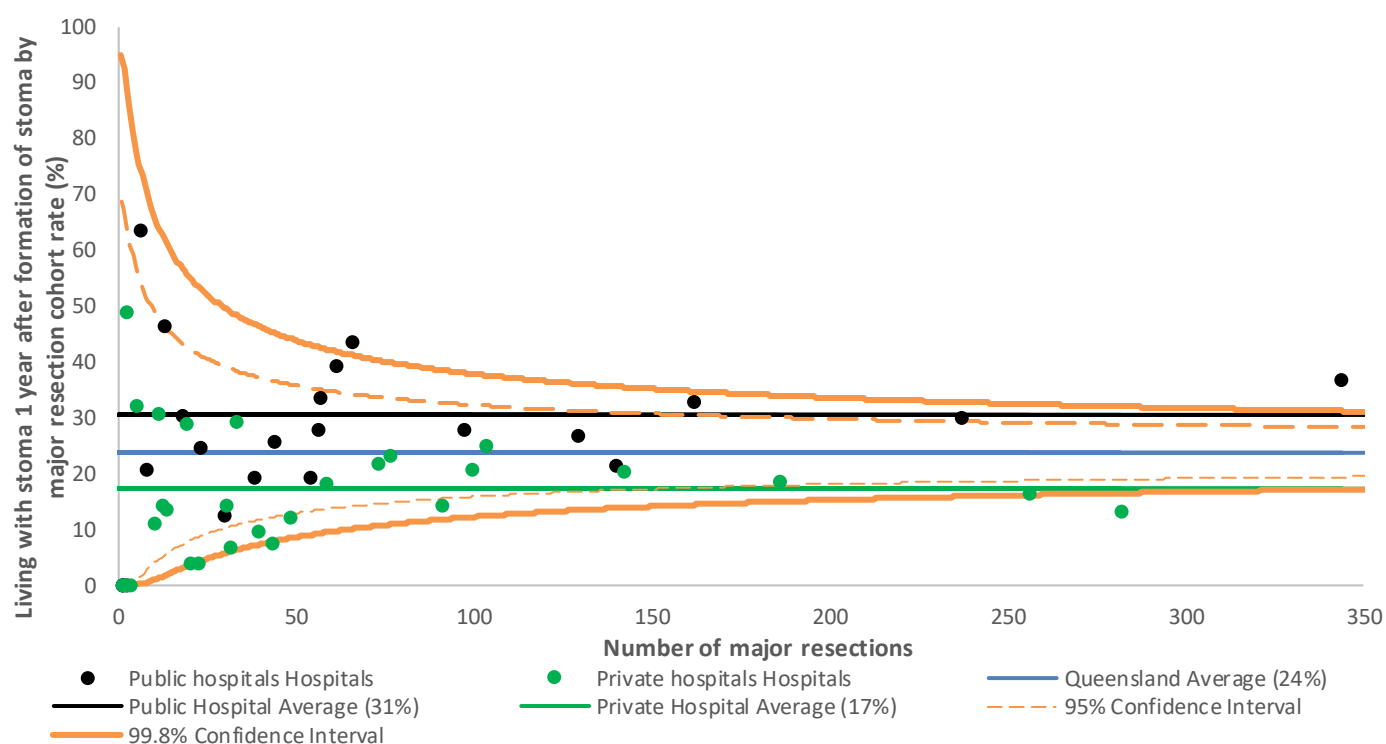
6.8.2 | Patients living with stoma 1 year after formation of stoma by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.8.3 | Patients living with stoma 1 year after formation of stoma by hospital volume



## 6.9 | Living with stoma 1 year after formation of stoma\*

Diagnosis year 2005 – 2009 and 2010 – 2014

## 6.9.1 | What percentage of patients who received a stoma\* were living with a stoma 1 year later?

Living with stoma 1 year after formation of stoma	2005 - 2009	2010 - 2014
<i>(% of patients who still have a stoma 1 year after formation of stoma)</i>	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]	<b>Diagnosis year</b> Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	21% (66/320) [20%, 16-26, 0.327]	28% (110/395) [27%, 22-32, 0.099]
Group A - Public hospitals	27% (84/316) [23%*, 19-29, 0.016]	35% (93/267) [30%***, 25-36, 0.006]
Group A - Private hospitals	9.4% (36/381) [10%***, 7-14, 0.001]	16% (68/423) [18%*, 14-23, 0.046]
Group B hospitals	19% (25/135) [20%, 14-29, 0.601]	15% (27/183) [15%*, 11-22, 0.023]
Other hospitals	14% (14/99) [16%, 9-26, 0.567]	15% (10/68) [16%, 9-28, 0.186]
<b>Hospital Type</b>		
Public hospitals	25% (158/644) [23%***, 19-27, 0.008]	31% (209/673) [29%***, 25-33, 0.004]
Private hospitals	11% (67/607) [12%***, 9-15, 0.002]	15% (99/663) [16%***, 13-20, 0.001]
<b>Queensland</b>	<b>18% (225/1251)</b>	<b>23% (308/1336)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

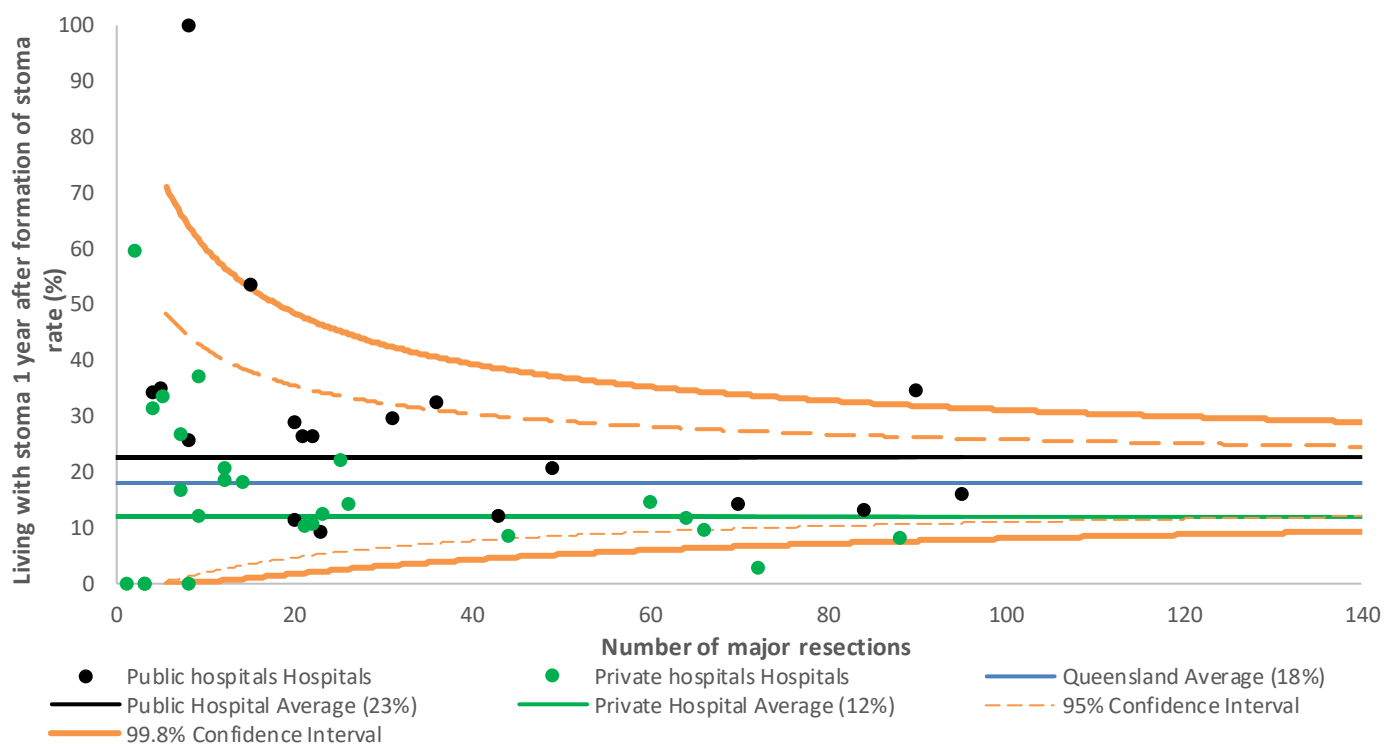
Refer to appendix 3 for definitions of stoma prevalence

\*Excludes abdominoperineal resection and total proctocolectomy with ileostomy procedures

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

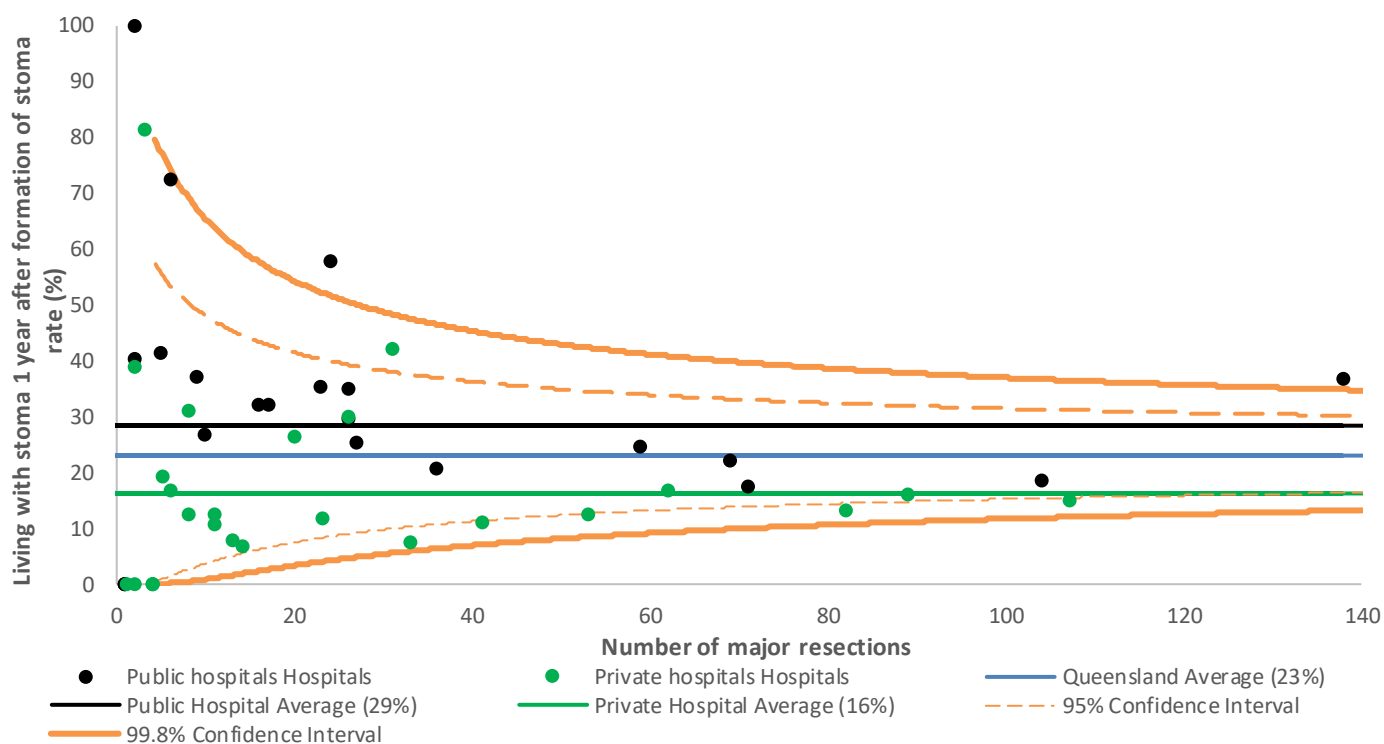
6.9.2 | Patients living with stoma 1 year after stoma formation by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.9.3 | Patients living with stoma 1 year after stoma formation by hospital volume



## 6.10 | Living with stoma 5 years after formation of stoma by major resection cohort

Diagnosis year 2005 – 2009 and 2010 – 2014

### 6.10.1 | What percentage of patients who received a stoma were living with a stoma 5 years later?

Living with stoma 5 years after formation of stoma by major resection cohort  (% of patients who still have a stoma 5 years after formation of stoma)	2005 - 2009	2010 - 2014
	Diagnosis year	Diagnosis year
	Crude rates (n/N) [Adjusted rates, CI%, P value]	Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	13% (99/752) [13%*, 11-16, 0.032]	18% (166/927) [18%*, 15-21, 0.012]
Group A - Public hospitals	12% (94/755) [12%, 10-15, 0.207]	19% (122/627) [18%*, 15-22, 0.014]
Group A - Private hospitals	8.8% (96/1095) [9%, 7-11, 0.148]	12% (135/1166) [12%*, 10-14, 0.036]
Group B hospitals	8.9% (29/325) [8.8%, 6-13, 0.323]	10% (37/368) [9.7%*, 7-13, 0.01]
Other hospitals	7.5% (23/308) [7.3%, 5-11, 0.079]	11% (24/210) [11%, 8-16, 0.149]
<b>Hospital Type</b>		
Public hospitals	13% (201/1551) [13%*, 11-15, 0.019]	19% (294/1587) [18%***, 16-21, 0.002]
Private hospitals	8.3% (140/1684) [8.4%*, 7-10, 0.017]	11% (190/1711) [11%***, 10-13, 0.001]
<b>Queensland</b>	<b>11% (341/3235)</b>	<b>15% (484/3298)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

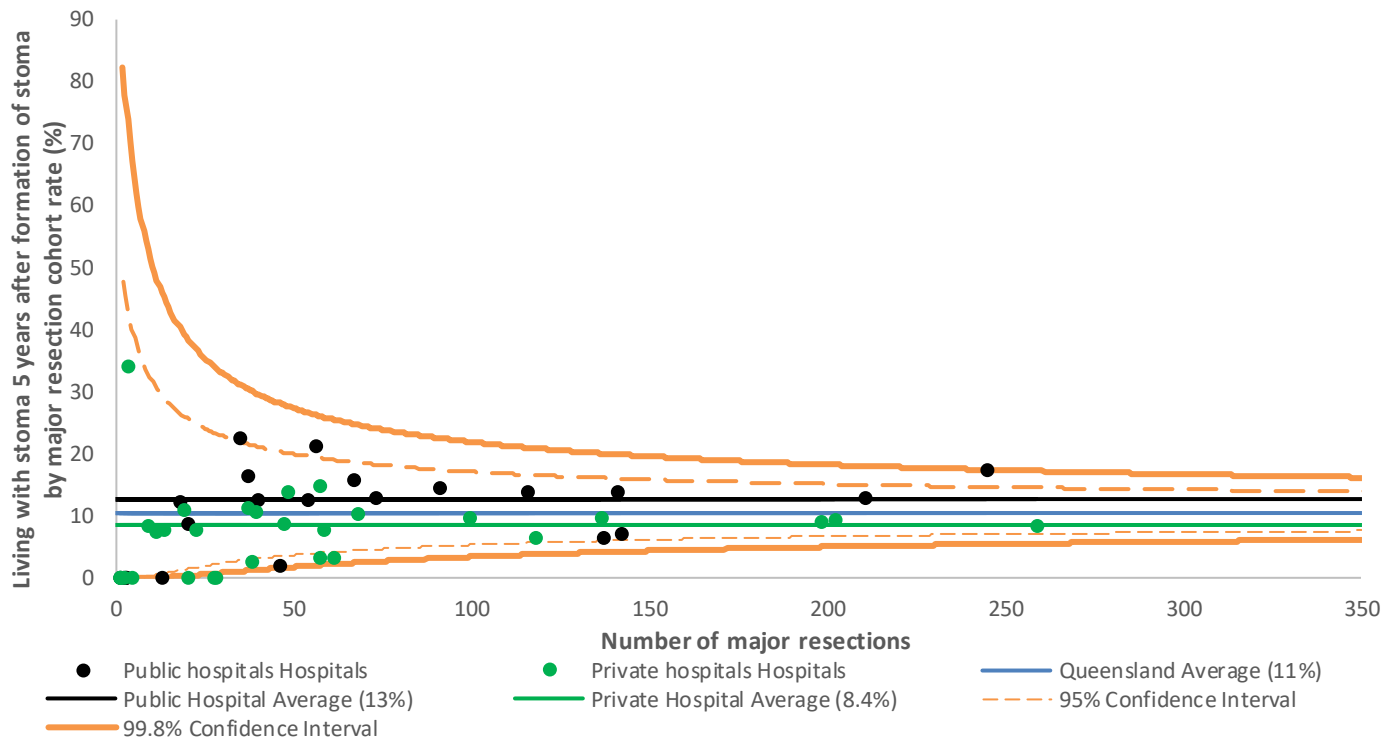
Refer to appendix 3 for definitions of stoma prevalence



Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

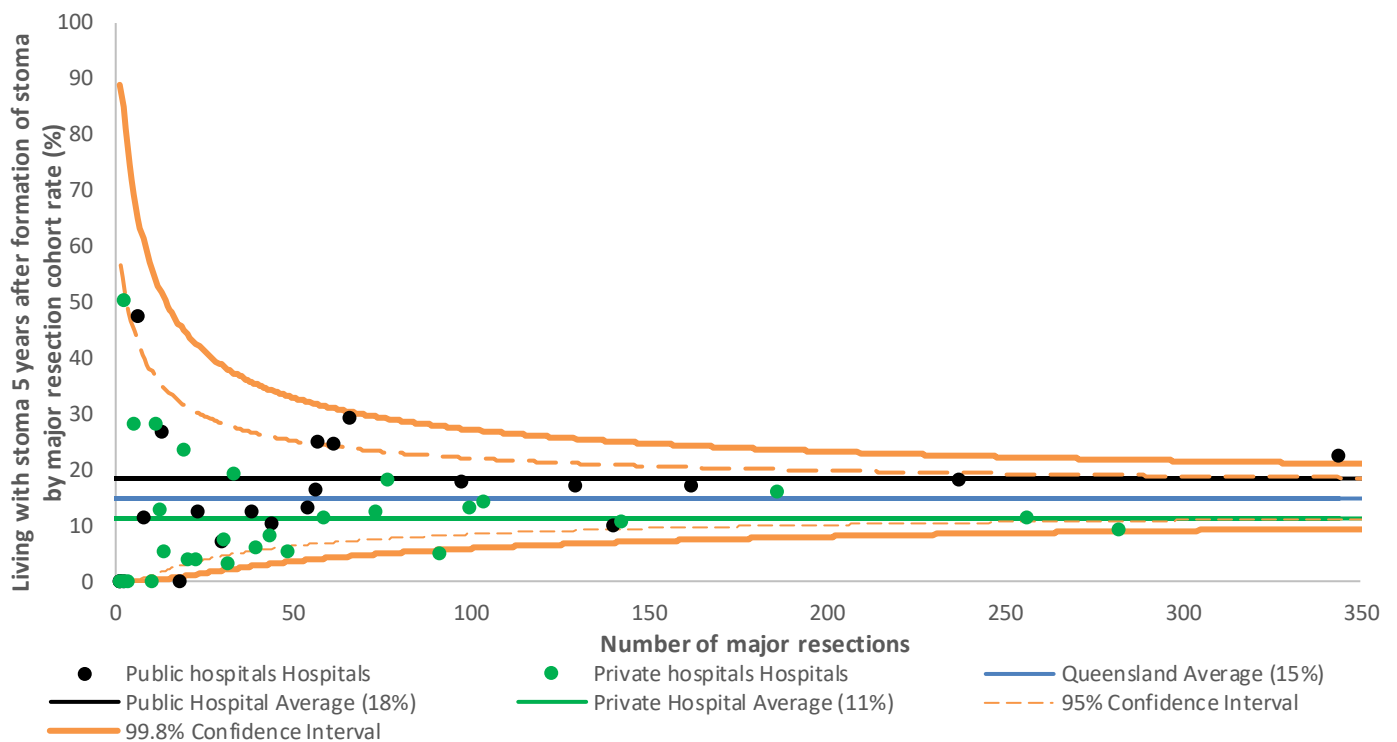
6.10.2 | Patients living with stoma 5 years after formation of stoma by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.10.3 | Patients living with stoma 5 years after formation of stoma by hospital volume



## 6.11 | Living with stoma 5 years after formation of stoma\*

Diagnosis year 2005 – 2009 and 2010 – 2014

## 6.11.1 | What percentage of patients who received a stoma\* were living with a stoma 5 years later?

Living with stoma 5 years after formation of stoma	2005 - 2009	2010 - 2014
(% of patients who still have a stoma 5 years after formation of stoma)	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
<b>AIHW Peer Group</b>		
Principal referral hospitals	9.1% (21/232) [8.5%, 5-13, 0.701]	8.3% (26/313) [8.2%, 6-12, 0.095]
Group A - Public hospitals	9.5% (21/221) [8.6%, 5-14, 0.681]	21% (44/210) [18%**, 13-24, 0.004]
Group A - Private hospitals	6.3% (19/301) [6.8%, 4-11, 0.587]	10% (35/339) [12%, 8-17, 0.777]
Group B hospitals	6.5% (6/93) [7.3%, 3-17, 0.873]	6.1% (9/147) [5.9%*, 3-11, 0.043]
Other hospitals	6.8% (5/74) [7%, 3-16, 0.795]	13% (7/56) [13%, 6-25, 0.77]
<b>Hospital Type</b>		
Public hospitals	9.6% (44/456) [8.9%, 6-13, 0.459]	14% (72/530) [12%, 10-16, 0.488]
Private hospitals	6% (28/465) [6.5%, 4-10, 0.401]	9.2% (49/535) [10%, 7-14, 0.443]
<b>Queensland</b>	<b>7.8% (72/921)</b>	<b>11% (121/1065)</b>

Adjusted by age, sex, socioeconomic status, rurality, comorbidity, ASA and emergency.

Adjusted results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1% for those marked \*\* and less than 5% for those marked \*.

Refer to appendix 1 for hospital grouping definitions

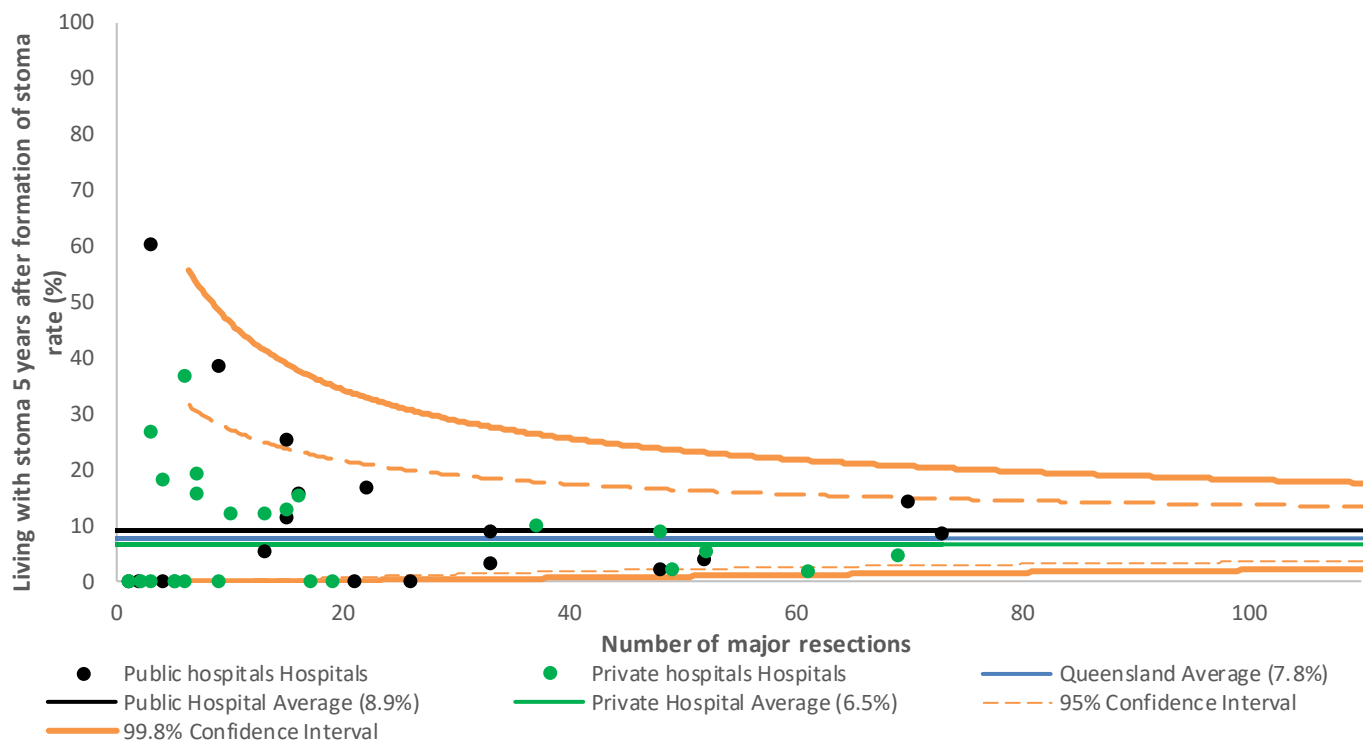
Refer to appendix 3 for definitions of stoma prevalence

\*Excludes abdominoperineal resection and total proctocolectomy my with ileostomy procedures

Diagnosis year 2005 – 2009

Adjusted rates, 5 years combined

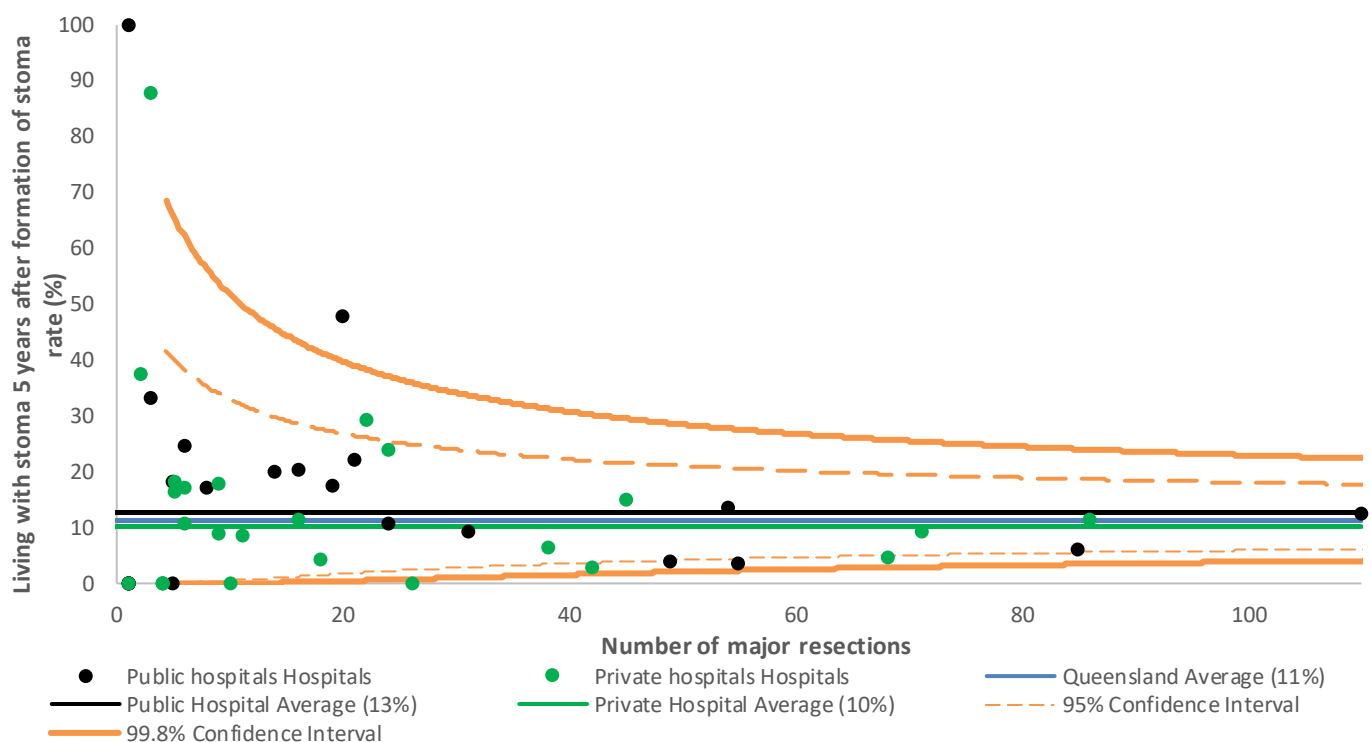
6.11.2 | Patients living with stoma 5 years after stoma formation by hospital volume



Diagnosis year 2010 – 2014

Adjusted rates, 5 years combined

6.11.3 | Patients living with stoma 5 years after stoma formation by hospital volume



# Appendix



## Appendix 1: AIHW Hospital Peer Groups

### Principal referral hospitals

*Principal referral hospitals* are public acute hospitals that provide a very broad range of services, have a range of highly specialised service units, and have very large patient volumes. The term 'referral' recognises that these hospitals have specialist facilities not typically found in smaller hospitals.

#### Hospital list

Gold Coast University Hospital	Princess Alexandra Hospital
Royal Brisbane & Women's Hospital	The Prince Charles Hospital
The Townsville Hospital	

### Public acute group A hospitals (Group A hospitals – Public)

*Public acute group A hospitals* are public acute hospitals that provide a wide range of services typically including a 24-hour emergency department, intensive care unit, coronary care unit and oncology unit, but do not provide the breadth of services provided by *Principal referral hospitals*.

#### Hospital list

Bundaberg Base Hospital	Cairns Hospital
Hervey Bay Hospital	Ipswich Hospital
Logan Hospital	Mackay Base Hospital
Mater Hospital Brisbane	Nambour General Hospital
Queen Elizabeth II Jubilee Hospital	Redcliffe Hospital
Rockhampton Hospital	Toowoomba Hospital

### Private acute group A hospitals (Group A hospitals – Private)

*Private acute group A hospitals* are private acute hospitals that have a 24-hour emergency department and an intensive care unit, and provide a number of other specialised services such as coronary care, special care nursery, cardiac surgery and neurosurgery.

#### Hospital list

Gold Coast Private Hospital	Greenslopes Private Hospital
Holy Spirit Northside	John Flynn Private Hospital
Mater Private Hospital Brisbane	Noosa Hospital
Pindara Private Hospital	St Andrew's War Memorial Hospital
The Wesley Hospital	

**Public acute group B hospitals (Group B hospitals)**

*Public acute group B hospitals* are those public acute hospitals that do not have the service profile of the *Principal referral hospitals and Group A hospitals*, but do have 24-hour emergency department; they typically provide elective surgery and have specialised service units such as obstetric, paediatric and psychiatric units.

Hospital list	
Caboolture Hospital	Gladstone Hospital
Gympie Hospital	Mount Isa Base Hospital
Redland Hospital	Robina Hospital

**Private acute group B hospitals (Group B hospitals)**

*Private acute group B hospitals* are private acute hospitals that do not have a 24-hour emergency department, but do have an intensive care unit and a number of other specialised services including coronary care, special care nursery, cardiac surgery and neurosurgery.

Hospital list	
Friendly Society Private Hospital	Mater Hospital Pimlico
St Andrew's Toowoomba Hospital	St Vincent's Hospital Toowoomba
Sunshine Coast University Private Hospital	The Sunshine Coast Private Hospital

**Public acute group C hospitals (Other hospitals)**

*Public acute group C hospitals* include those public acute hospitals that provide a more limited range of services than *Principal referral hospitals* or *Public acute group A and B hospitals*, but do have an obstetric unit, provide surgical services and/or some form of emergency facility (emergency department, or accident and emergency service).

Hospital list	
Atherton Hospital	Emerald Hospital
Roma Hospital	

**Private acute group C hospitals (Other hospitals)**

*Private acute group C hospitals* are those private acute hospitals that do not provide emergency department services or have an intensive care unit, but do provide specialised services in a range of clinical specialities.

Hospital list	
Brisbane Private Hospital	Cairns Private Hospital
Hillcrest - Rockhampton Private Hospital	Mater Misericordiae Hospital Gladstone
Mater Misericordiae Hospital Mackay	Mater Misericordiae Hospital Rockhampton
Mater Women's and Children's Hospital Hyde Park	North West Private Hospital
St Andrew's - Ipswich Private Hospital	Sunnybank Private Hospital

**Public acute group D hospitals (Other hospitals)\***

*Public acute group D hospitals* are acute public hospitals that offer a smaller range of services relative to other public acute hospitals, and provide 200 or more separations per year. They are mostly situated in regional and remote areas.

\*No hospitals applicable to colorectal major resection

**Private acute group D hospitals (Other hospitals)**

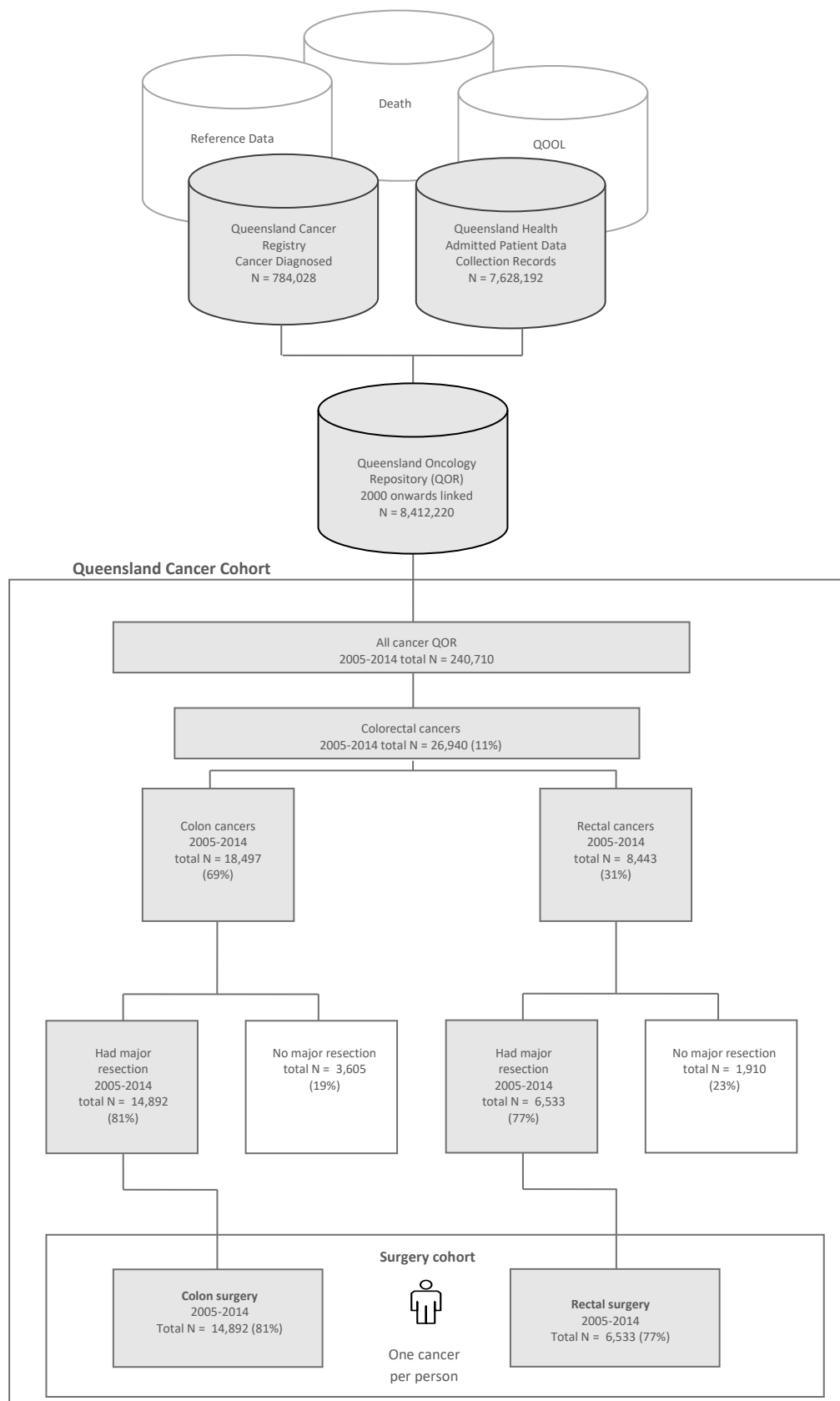
*Private acute group D hospitals* are those private acute hospitals that do not provide emergency department services or have an intensive care unit, do not provide specialised services in a range of clinical specialities, but had 200 or more separations.

Hospital list	
Caboolture Private Hospital	Caloundra Private Clinic
Lady Bjelke-Petersen Community Hospital	Mater Misericordiae Hospital Bundaberg
Nambour Selangor Private Hospital	Peninsula Private Hospital
Pioneer Valley Hospital	St Stephen's Private Hospital Maryborough

Sourced from the Australian Institute of Health and Welfare 2015. Australian hospital peer groups. Health services series no. 66. Cat. no. HSE 170. Canberra: AIHW. <http://www.aihw.gov.au>

## Appendix 2: How the cohorts were defined

### PUBLIC & PRIVATE HOSPITAL PATIENTS



**Queensland Oncology Repository**  
QOR consolidates patient information for Queensland and contains data on invasive, benign and uncertain cancers, patient demographics, surgery, systemic therapy, radiotherapy and death. QOR also contains data collected by clinicians at MDT meetings

Sophisticated matching and linking is performed to identify all persons with cancer who had surgery

**Queensland Cancer Cohort**  
Includes: Queensland Invasive Cancer incidence  
Discharged patients from public or private hospitals  
Queensland residents  
All ages



## Appendix 3: Indicator descriptions

### 1 | Effective

#### **Neoadjuvant radiation therapy rate**

n – The number of rectal patients who had a major resection, who started a course of radiation therapy treatment between their diagnosis date and their first major resection date.

N – The number of rectal patients who had a major resection.

#### **Adjuvant radiation therapy rate**

n – The number of colorectal patients who had a major resection, who started a course of radiation therapy treatment within 3 months of their first major resection date.

N – The number of colorectal patients who had a major resection.

#### **Adjuvant IV systemic therapy rate**

n – The number of colorectal patients who had a major resection, who started a course of IV systemic therapy treatment within 3 months of their first major resection date.

N – The number of colorectal patients who had a major resection.

#### **Adjuvant IV systemic therapy rate for stage III patients**

n – The number of stage III colorectal patients who had a major resection, who started a course of IV systemic therapy treatment within 3 months of their first major resection date.

N – The number of stage III colorectal patients who had a major resection.

### 2 | Efficient

#### **Hospital stay**

**Interquartile range (IQR):** a measure of variability, based on dividing a data set into quartiles.

Quartiles divide a rank-ordered data set into four equal parts. The values that separate these parts are called the first, second, and third quartiles; and they are denoted by  $Q_1$ ,  $Q_2$  (median), and  $Q_3$ , respectively. The IQR is the distance between the 75<sup>th</sup> and 25<sup>th</sup> percentiles,  $IQR = Q_3 - Q_1$ .

**Median length of stay:** the midpoint between the top half and bottom half of the observed length of stay, in days.

### 3 | Safe

#### **In-hospital mortality**

n – The number of colorectal patients who had a major resection, who died during their **last** major resection admission.

N – The number of colorectal patients who had a major resection.

### **30 day mortality**

n – The number of colorectal patients who had a major resection, who died within 30 days of their **last** major resection.

N – The number of colorectal patients who had a major resection.

### **Perioperative mortality**

n – The number of colorectal patients who had a major resection, who died during their **last** major resection admission or within 30 days of their **last** major resection.

N – The number of colorectal patients who had a major resection.

### **90 day mortality**

n – The number of colorectal patients who had a major resection, who died within 90 days of their **last** major resection.

N – The number of colorectal patients who had a major resection.

### **1 year surgical survival**

n – The number of colorectal patients who had a major resection, still alive 1 year from their **first** major resection.

N – The number of colorectal patients who had a major resection.

### **2 year surgical survival**

n – The number of colorectal patients who had a major resection, still alive 2 years from their **first** major resection.

N – The number of colorectal patients who had a major resection.

### **5 year surgical survival**

n – The number of colorectal patients who had a major resection, still alive 5 years from their **first** major resection.

N – The number of colorectal patients who had a major resection and who had follow up to December 2016.

### **Prolonged LOS $\geq$ 21 days**

n – The number of colorectal patients who had a major resection, whose length of stay for their first major resection admission was  $\geq$  21 days.

N – The number of colorectal patients who had a major resection.

### **Medical interventions within same admission**

n – The number of colorectal patients who had a major resection, whose first major resection was followed by a selected medical intervention, and the selected medical intervention took place 1 or more days after the first major resection, and within the same admission.

N – The number of colorectal patients who had a major resection.

### Medical interventions in subsequent admissions

n – The number of colorectal patients who had a major resection, whose first major resection was followed by a selected medical intervention, and the selected medical intervention took place within a subsequent admission, and the admission date of the subsequent admission was within 30 days of discharge from the first major resection admission.

N – The number of colorectal patients who had a major resection.

NOTE: a patient who has a selected medical intervention within the same admission, and a selected medical intervention within a subsequent admission, is only counted within the same admission indicator.

The morbidities and procedures listed below, plus the 'formation of stoma' procedures, are used to identify patients with a 'selected medical intervention' for both the within same admission and within subsequent admission indicators.

ICD Code	ICD Name
I26	Pulmonary embolism
I260	Pulmonary embolism with mention of acute cor pulmonale
I269	Pulmonary embolism without mention of acute cor pulmonale
I82	Other venous embolism and thrombosis
I822	Embolism and thrombosis of vena cava
I823	Embolism and thrombosis of renal vein
I828	Embolism and thrombosis of other specified veins
I829	Embolism and thrombosis of unspecified vein
3002300	Excisional debridement of soft tissue
3005801	Control of postoperative haemorrhage, not elsewhere classified
3021601	Aspiration of abscess of skin and subcutaneous tissue
3022300	Incision and drainage of haematoma of skin and subcutaneous tissue
3022301	Incision and drainage of abscess of skin and subcutaneous tissue
3022303	Incision and drainage of abscess of soft tissue
3022400	Percutaneous drainage of abscess of soft tissue
3022401	Percutaneous drainage of intra-abdominal abscess, haematoma or cyst
3022402	Percutaneous drainage of retroperitoneal abscess, haematoma or cyst
3037300	Exploratory laparotomy
3037501	Other enterostomy
3037504	Other colostomy
3037519	Other repair of small intestine
3037524	Suture of small intestine
3037525	Suture of laceration of large intestine
3037528	Temporary colostomy
3037529	Temporary ileostomy
3037800	Division of abdominal adhesions
3038200	Radical repair of enterocutaneous fistula of small intestine
3038500	Postoperative reopening of laparotomy site
3039000	Laparoscopy
3039300	Laparoscopic division of abdominal adhesions
3039400	Drainage of intra-abdominal abscess, haematoma or cyst
3039401	Laparoscopic drainage of intra-abdominal abscess, haematoma or cyst
3039600	Debridement and lavage of peritoneal cavity
3039700	Laparostomy via previous surgical wound
3040200	Drainage of retroperitoneal abscess, haematoma or cyst
3040300	Repair of incisional hernia

3040303	Reclosure of postoperative disruption of abdominal wall
3040304	Delayed closure of granulating abdominal wound
3047805	Percutaneous endoscopic jejunostomy [PEJ]
3051501	Enterocolostomy
3056300	Revision of stoma of small intestine
3056301	Revision of stoma of large intestine
3056302	Repair of parastomal hernia
3206900	Formation of ileostomy reservoir
3217401	Drainage of perianal abscess
3533000	Percutaneous insertion of inferior vena cava filter
3533100	Percutaneous removal of inferior vena cava filter
3662400	Percutaneous nephrostomy
3681800	Endoscopic ureteric catheterisation with fluoroscopic imaging of upper urinary tract, unilateral
3681801	Endoscopic ureteric catheterisation with fluoroscopic imaging of upper urinary tract, bilateral
3682101	Endoscopic insertion of ureteric stent
9032900	Other repair of abdomen
9034500	Control of haemorrhage of rectum or anus
9066500	Excisional debridement of skin and subcutaneous tissue
9095200	Incision of abdominal wall

### Had an anastomotic leak

n – The number of colorectal patients who had a major resection, whose first major resection included an anastomosis, who had an anastomotic leak treated within the same admission or treated within a subsequent admission.

N – The number of colorectal patients who had a major resection, whose first major resection included an anastomosis.

### Had an anastomotic leak and died within 90 days of major resection

n – The number of colorectal patients who had a major resection, whose first major resection included an anastomosis, who had an anastomotic leak treated within the same admission or treated within a subsequent admission, who died during their first major resection admission or within 90 days of their first major resection.

N – The number of colorectal patients who had a major resection, whose first major resection included an anastomosis.

The procedures listed below, plus the ‘formation of stoma’ procedures, are used to identify patients with a ‘medical intervention suggesting an anastomotic leak’ for both same admission and within subsequent admission indicators.

ICD Code	ICD Name
3022401	Percutaneous drainage of intra-abdominal abscess, haematoma or cyst
3022402	Percutaneous drainage of retroperitoneal abscess, haematoma or cyst
3037501	Other enterostomy
3037504	Other colostomy
3037528	Temporary colostomy
3037529	Temporary ileostomy
3039400	Drainage of intra-abdominal abscess, haematoma or cyst
3039401	Laparoscopic drainage of intra-abdominal abscess, haematoma or cyst
3040200	Drainage of retroperitoneal abscess, haematoma or cyst
3206900	Formation of ileostomy reservoir

## 4 | Accessible

### **Time to first treatment within 30 days**

n – For colorectal patients who had a major resection, the number of days from their date of diagnosis to their date of first treatment, where the treatment was either a major resection, radiation therapy, or IV systemic therapy.

N – The number of colorectal patients who had a major resection.

### **Time to first major resection within 30 days**

n – The number of colorectal patients who had a major resection as their first treatment, who had the major resection within 30 days of diagnosis.

N – The number of colorectal patients who had a major resection as their first treatment.

### **Time to first IV systemic therapy within 30 days**

n – The number of colorectal patients who had IV systemic therapy as their first treatment, who had IV systemic therapy within 30 days of diagnosis.

N – The number of colorectal patients who had IV systemic therapy as their first treatment.

### **Time to radiation therapy within 30 days**

n – The number of colorectal patients who had radiation therapy as their first treatment, who had the radiation therapy within 30 days of diagnosis.

N – The number of colorectal patients who had radiation therapy as their first treatment.

## 6 | Quality of care

### **Had laparoscopic surgery**

n – The number of colorectal patients who had a major resection, whose first major resection was performed laparoscopically.

A first major resection is performed laparoscopically when the description of the first major resection includes 'laparoscopic' or the first major resection is accompanied by the procedure "Laparoscopy". In addition, the first major resection is NOT accompanied by the procedure "Laparoscopic procedure proceeding to open procedure".

N – The number of colorectal patients who had a major resection.

### **Laparoscopic converted to open surgery**

n – The number of colorectal patients who had a major resection, whose first major resection was NOT a laparoscopic resection, whose first major resection proceeded from a laparoscopic resection to an open resection.

A first major resection is NOT performed laparoscopically when the description of the first major resection does NOT include 'laparoscopic' and the first major resection is NOT accompanied by the procedure "Laparoscopy".

In addition, the first major resection is accompanied by the procedure "Laparoscopic procedure proceeding to open procedure".

N – The number of colorectal patients who had a major resection, whose first major resection commenced as a laparoscopic resection.

#### **Margins involved**

n – The number of colorectal patients who had a major resection, who had at least one surgical margin that was  $\leq 1$ mm.

N – The number of colorectal patients who had a major resection.

#### **$\geq 12$ lymph nodes examined**

n – The number of colorectal patients who had a major resection, who had 12 or more lymph nodes examined.

N – The number of colorectal patients who had a major resection.

#### **Had abdominoperineal resection**

n – The number of colorectal patients who had a major resection, whose first major resection was an abdominoperineal proctectomy (APR) – procedure code 3203900.

N – The number of colorectal patients who had a major resection.

#### **Stoma at resection**

n – The number of colorectal patients who had a major resection, whose first major resection included the formation of a stoma.

A first major resection includes the formation of a stoma when the description of the first major resection includes 'with formation of stoma' (or similar), or the first major resection is accompanied by a stoma creation procedure. That is, the first major resection is: a colectomy with formation of stoma, or an anterior resection accompanied by a stoma creation procedure, or an 'APR', or a total proctocolectomy with a (permanent) ileostomy or the formation of a temporary ileostomy, or a 'Hartmanns'.

N – The number of colorectal patients who had a major resection.

#### **Stoma after resection**

n – The number of colorectal patients who had a major resection, whose first major resection did NOT include the formation of a stoma, but had a subsequent formation of a stoma as the result of a major resection or a standalone surgery.

A first major resection does NOT include the formation of a stoma when the description of the first major resection does NOT include 'with formation of stoma' (or similar) AND the first major

resection is NOT accompanied by a stoma creation procedure. That is, the first major resection is: a colectomy with anastomosis, or an anterior resection NOT accompanied by a stoma creation procedure, or a total proctocolectomy with an ileo-anal anastomosis.

A subsequent formation of a stoma as the result of a major resection or standalone surgery occurs when the description of the major resection includes 'with formation of stoma' (or similar), or the major resection is accompanied by a stoma creation procedure, or the standalone surgery is the formation of a stoma. That is, the subsequent major resection is: a colectomy with formation of stoma, or an anterior resection accompanied by a stoma creation procedure, or an 'APR', or a total proctocolectomy with an ileostomy or the formation of a temporary ileostomy, or a 'Hartmanns' OR the subsequent standalone surgery is: an enterostomy, a colostomy, an ileostomy, or an ileostomy reservoir.

The subsequent major resection or standalone surgery has to occur between 1 and 365 days after the first major resection.

N – The number of colorectal patients who had a major resection.

NOTE: a patient who has a stoma at first major resection, and a stoma after first major resection, is counted in only the stoma at first major resection indicator.

### Stoma all

n – The number of colorectal patients who had a major resection, who had a stoma at first major resection, or who had a stoma after first major resection.

N – The number of colorectal patients who had a major resection.

The procedures listed below are used as the 'formation of stoma' procedures for both the stoma during first major resection and stoma after first major resection indicators.

ICD Code	ICD Name
3037501	Other enterostomy
3037504	Other colostomy
3037528	Temporary colostomy
3037529	Temporary ileostomy
3206900	Formation of ileostomy reservoir
3051505	Ileocolic resection with formation of stoma
3051506	Laparoscopic ileocolic resection with formation of stoma
3056500	Resection of small intestine with formation of stoma
3200000	Limited excision of large intestine with formation of stoma
3200001	Right hemicolectomy with formation of stoma
3200002	Laparoscopic limited excision of large intestine with formation of stoma
3200003	Laparoscopic right hemicolectomy with formation of stoma
3200400	Subtotal colectomy with formation of stoma
3200401	Extended right hemicolectomy with formation of stoma
3200402	Laparoscopic subtotal colectomy with formation of stoma
3200403	Laparoscopic extended right hemicolectomy with formation of stoma
3200601	Left hemicolectomy with formation of stoma
3200603	Laparoscopic left hemicolectomy with formation of stoma
3200900	Total colectomy with ileostomy
3200901	Laparoscopic total colectomy with ileostomy

3201500	Total proctocolectomy with ileostomy
3203000	Rectosigmoidectomy with formation of stoma ('Hartmanns')
3203001	Laparoscopic rectosigmoidectomy with formation of stoma ('Hartmanns')
3203900	Abdominoperineal proctectomy ('APR')
3205101	Total proctocolectomy with ileo-anal anastomosis and formation of temporary ileostomy

### **Living with stoma 1 year after formation of stoma by major resection cohort**

n – The number of colorectal patients who had a formation of a stoma, who have not had a closure of the stoma within 1 year of its formation.

N – The number of colorectal patients who had a major resection

### **Living with stoma 1 year after formation of stoma**

n – The number of colorectal patients who had a formation of a stoma, who have not had a closure of the stoma within 1 year of its formation.

N – The number of colorectal patients who had a major resection, who had a formation of a stoma.

As the result of an abdominoperineal proctectomy (APR) or a total proctocolectomy with ileostomy (procedure codes 3203900 and 3201500 respectively) is the formation of a permanent stoma, patients who had these major resections are excluded from both the 'n' and 'N'.

### **Living with stoma 5 years after formation of stoma by major resection cohort**

n – The number of colorectal patients who had a formation of a stoma, who have not had a closure of the stoma within 5 years of its formation.

N – The number of colorectal patients who had a major resection

### **Living with stoma 5 years after formation of stoma**

n – The number of colorectal patients who had a formation of a stoma, who have not had a closure of the stoma within 5 year of its formation.

N – The number of colorectal patients who had a major resection, who had a formation of a stoma.

As the result of an abdominoperineal proctectomy (APR) or a total proctocolectomy with ileostomy (procedure codes 3203900 and 3201500 respectively) is the formation of a permanent stoma, patients who had these major resections are excluded from both the 'n' and 'N'.



## Method

### Adjusted rates

The following indicators report both crude and adjusted rates. Adjusting is used to account for the effect of differences in composition of the various populations.

- Inpatient mortality rate
- 30 day mortality rate
- 90 day mortality rate
- 1-yr surgical survival
- 2-yr surgical survival
- 5-yr surgical survival
- Time from diagnosis to treatment, surgery, IV systemic therapy or radiation therapy  $\leq 30$  days

Where appropriate indicators have been adjusted by a combination of age, sex, socioeconomic status (disadvantaged Y/N), rurality (urban/rural), comorbidity (Y/N), ASA, emergency status (Y/N).

Results highlighted with \* and \*\* are deemed to be statistically significantly different to the whole of Queensland result. The likelihood the observed difference is due to chance alone is less than 1 for those marked \*\* and less than 5 for those marked \*.

Statistical significance is determined from the results of Poisson regression. The displayed confidence intervals are intended to show the level of precision of the adjusted rate estimate and on occasion may not accurately reflect significance.

### Assigning a surgery record to a person

To assign a surgery record to a person with cancer, the earliest diagnosis in the cancer group is used. For example, if a person was diagnosed with colorectal cancer in 2005 and 2008, the surgery record linked to the colorectal cancer diagnosed in 2005 where the surgery occurred within 30 days prior to diagnosis date and up to 365 days after diagnosis date will be counted.

### Diagnosis year

This report is structured around diagnosis years as reported by the Queensland Cancer Registry, the latest incident year being 2014. Only patients diagnosed between 2005 and 2014 will be included in this report. Patients that had surgery in 2005 but were diagnosed in an earlier year are excluded from the report.

## Definitions

### ASA score

American Society of Anaesthetic (ASA) physical status classification system for assessing the fitness of a patient prior to surgery.

Hierarchies by ASA Group

Normal/Mild Disease: ASA 1-2

Severe Disease: ASA 3-6

When two or more different ASA scores are coded on the same date in the admissions data, only one ASA score is chosen. The choice of the ASA score is based on the type of anaesthesia in the following order of selection: General > Sedation > Neuraxial > Regional > Intravenous Regional > Infiltration > Local. For example, if General Anaesthesia ASA 2 and Sedation ASA 3, are coded on the same date, the General Anaesthesia score of 2 is chosen.

### Colorectal procedures

ICD Code	ICD Name	Group
3200501	Extended right hemicolectomy with anastomosis	Colectomy
3200401	Extended right hemicolectomy with formation of stoma	Colectomy
3051503	Ileocolic resection with anastomosis	Colectomy
3051505	Ileocolic resection with formation of stoma	Colectomy
3200503	Laparoscopic extended right hemicolectomy with anastomosis	Colectomy
3200403	Laparoscopic extended right hemicolectomy with formation of stoma	Colectomy
3051504	Laparoscopic ileocolic resection with anastomosis	Colectomy
3051506	Laparoscopic ileocolic resection with formation of stoma	Colectomy
3200602	Laparoscopic left hemicolectomy with anastomosis	Colectomy
3200603	Laparoscopic left hemicolectomy with formation of stoma	Colectomy
3200302	Laparoscopic limited excision of large intestine with anastomosis	Colectomy
3200002	Laparoscopic limited excision of large intestine with formation of stoma	Colectomy
3200303	Laparoscopic right hemicolectomy with anastomosis	Colectomy
3200003	Laparoscopic right hemicolectomy with formation of stoma	Colectomy
3200502	Laparoscopic subtotal colectomy with anastomosis	Colectomy
3200402	Laparoscopic subtotal colectomy with formation of stoma	Colectomy
3201201	Laparoscopic total colectomy with ileorectal anastomosis	Colectomy
3200901	Laparoscopic total colectomy with ileostomy	Colectomy
3200600	Left hemicolectomy with anastomosis	Colectomy
3200601	Left hemicolectomy with formation of stoma	Colectomy
3200300	Limited excision of large intestine with anastomosis	Colectomy
3200000	Limited excision of large intestine with formation of stoma	Colectomy
3056600	Resection of small intestine with anastomosis	Colectomy
3056500	Resection of small intestine with formation of stoma	Colectomy
3200301	Right hemicolectomy with anastomosis	Colectomy
3200001	Right hemicolectomy with formation of stoma	Colectomy
3200500	Subtotal colectomy with anastomosis	Colectomy
3200400	Subtotal colectomy with formation of stoma	Colectomy
3201200	Total colectomy with ileorectal anastomosis	Colectomy
3200900	Total colectomy with ileostomy	Colectomy
3203900	Abdominoperineal proctectomy	APR
3205100	Total proctocolectomy with ileo-anal anastomosis	Total Proctocolectomy
3205101	Total proctocolectomy with ileo-anal anast and fmt of temp ileostomy	Total Proctocolectomy

## Appendix

3201500	Total proctocolectomy with ileostomy	Total Proctocolectomy
9220800	Anterior resection of rectum, level unspecified	Anterior Resection
3202400	High anterior resection of rectum	Anterior Resection
3202500	Low anterior resection of rectum	Anterior Resection
3202600	Ultra low anterior resection of rectum	Anterior Resection
3202800	Ultra low anterior resection of rectum with hand sutured coloanal anastomosis	Anterior Resection
3203001	Laparoscopic rectosigmoidectomy with formation of stoma (Hartmanns)	Hartmanns
3203000	Rectosigmoidectomy with formation of stoma (Hartmanns)	Hartmanns
3206900	Formation of ileostomy reservoir	Stoma
3037504	Other colostomy	Stoma
3037501	Other enterostomy	Stoma
3037528	Temporary colostomy	Stoma
3037529	Temporary ileostomy	Stoma
3056203	Closure of colostomy with restoration of bowel continuity	Stoma Closures
3056201	Closure of ileostomy with restoration of bowel continuity, without resection	Stoma Closures
3056202	Closure of loop colostomy	Stoma Closures
3056200	Closure of loop ileostomy	Stoma Closures
3056205	Closure of other stoma of large intestine	Stoma Closures
3056204	Closure of other stoma of small intestine	Stoma Closures
3203300	Restoration of bowel continuity after Hartmanns procedure	Stoma Closures
3206000	Restorative proctectomy	Stoma Closures
3202901	Revision of colonic reservoir	Stoma Revision
3056301	Revision of stoma of large intestine	Stoma Revision
3056300	Revision of stoma of small intestine	Stoma Revision
3051501	Enterocolostomy	Entero/Enterocolostomy
3051502	Enteroenterostomy	Entero/Enterocolostomy
3039300	Laparoscopic division of abdominal adhesions	Laparoscopy
3039000	Laparoscopy	Laparoscopy
3007534	Biopsy of anus	Local Excision Polypectomy
3007514	Biopsy of large intestine	Local Excision Polypectomy
3007513	Biopsy of small intestine	Local Excision Polypectomy
9031500	Endoscopic excision of lesion or tissue of anus	Local Excision Polypectomy
9029702	Endoscopic mucosal resection of large intestine	Local Excision Polypectomy
3214201	Excision of anal polyp	Local Excision Polypectomy
9095900	Excision of other lesion of large intestine	Local Excision Polypectomy
9031501	Excision of other lesion or tissue of anus	Local Excision Polypectomy
3209001	Fibreoptic colonoscopy to caecum, with biopsy	Local Excision Polypectomy
3209300	Fibreoptic colonoscopy to caecum, with polypectomy	Local Excision Polypectomy
3208401	Fibreoptic colonoscopy to hepatic flexure, with biopsy	Local Excision Polypectomy
3208700	Fibreoptic colonoscopy to hepatic flexure, with polypectomy	Local Excision Polypectomy
3209600	Full thickness biopsy of rectum	Local Excision Polypectomy
9034100	Other excision of lesion of rectum	Local Excision Polypectomy
3210300	Per anal excision of lesion or tissue of rectum via stereoscopic rectoscopy	Local Excision Polypectomy
3210500	Per anal full thickness excision of anorectal lesion or tissue	Local Excision Polypectomy
3209900	Per anal submucosal excision of lesion of tissue of rectum	Local Excision Polypectomy
3207501	Rigid sigmoidoscopy with biopsy	Local Excision Polypectomy
3207800	Rigid sigmoidoscopy with polypectomy involving removal of <= 9 polyps	Local Excision Polypectomy
3208100	Rigid sigmoidoscopy with polypectomy involving removal of >= 10 polyps	Local Excision Polypectomy
3210800	Trans-sphincteric excision of lesion or tissue of rectum	Local Excision Polypectomy

## Major resection

A 'major resection' is a colectomy, APR, total proctocolectomy, anterior resection, or Hartmanns.

In addition, a per anal excision of lesion or tissue is regarded as being equivalent to a major resection (in that it is a 'treatment' procedure) if there has been no preceding major resection nor a following major resection with 30 days.

## Comorbidity

A clinical condition that has the potential to significantly affect a cancer patient's prognosis.

Comorbidity is derived from hospital admissions data following the Quan algorithm for classifying ICD-10 coded conditions, modified to exclude metastasis, which is represented by a separate and distinct metastasis dimension.

Comorbidity is limited to conditions coded in any admission episode between 12 months before and 12 months after the date of cancer diagnosis.

For any given cancer diagnosis, comorbidity is restricted to conditions other than the primary cancer. E.g. A rectum cancer can be a comorbidity to a colon cancer diagnosis and vice versa, if they are diagnosed within 12 months of each other.

Benign tumours are not considered comorbidities.

### Co-morbidity list:

AIDS	Acute myocardial	Cancer
Cerebrovascular disease	Congestive heart failure	Chronic obstructive pulmonary disease
Dementia	Diabetes	Diabetes + complications
Hemiplegia or Paraplegia	Mild liver disease	Moderate/severe liver disease
Peptic ulcer	Peripheral vascular disease	Renal disease
Rheumatoid disease		

## Confidence interval (CI)

The confidence interval represents the probability that a population parameter will fall between two set values. A very wide interval may indicate that more data should be collected before anything very definite can be said about the parameter.

## Flows

### *In-flows*

In-flows show the distribution of residence for the total group of patients who were operated on by a hospital, group of hospitals or HHS.

### *Out-flows*

Out-flows shows the proportion of patients residing in a given HHS who receive their surgery in a different HHS.

### **Forest plots**

The forest plot is a graphical display of the results from a regression model, illustrating the hazard ratios for each covariate included in the regression model. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. A central vertical line representing no effect is also plotted, and if the confidence intervals for an estimate cross this line then the effect is considered not to be statistically significant.

### **Funnel plots**

Funnel plots have been created by plotting the observed result for each hospital result against the surgical volume of the hospital. Confidence limit intervals of 95% (~2 standard deviations) and 99% (~3 standard deviations) have been superimposed around the overall Queensland result.

### **Hazard ratio**

Describes the ratio of the hazard rates corresponding to post-operative mortality for the different hospital volume groups, where medium volume hospitals are the control group.

### **Hospital peer groups**

The Australian Institute of Health and Welfare (AIHW) have published The Australian hospital peer groups report that groups public and private hospitals that share similar characteristics, providing a basis for meaningful comparisons. There are thirty peer groups, nine of which are relevant to this report. Peer group definitions and groupings used in this report are defined in Appendix 1.

### **Indigenous status**

A measure of whether a person identifies as being of Aboriginal or Torres Strait Islander origin.

### **MDT Review**

Cancer patients are discussed by a Multidisciplinary Team (MDT) to ensure all available treatment options are considered.

### **Number of surgeries**

Includes Queensland residents of all ages diagnosed with invasive cancer in the surgical cohort time period who underwent major resection.

### **Private hospital**

All hospitals that are not Queensland Health hospitals.

### **Public hospital**

Queensland Health hospitals.

## QOOL

QOOL supports cancer multidisciplinary teams by assisting meeting preparation, communication and documentation of essential clinical information such as diagnosis, cancer stage and recommended treatment plans. QOOL provides continuity of care and state-wide multidisciplinary team linkage and provides access to clinical outcomes and system performance data for quality improvement. The system provides a central view of patient data for multiple users, accessible at multiple locations.

## Radiation therapy

Any form of radiation therapy treatment

## Relative survival (5 year)

Relative survival is a net survival measure representing cancer survival in the absence of other causes of death. Relative survival is defined as the ratio of the proportion of observed survivors in a cohort of cancer patients to the proportion of expected survivors in a comparable set of cancer free individuals.

## Remoteness

The relative remoteness of residence at time of diagnosis, derived from the Australian Standard Geographical Classification (ASGC). In this report, remoteness is classified into three groups based on the original ASGC grouping.

ASGC classifications	Modified ASGC classification	Rurality classification
Major City	Metropolitan	Urban
Inner Regional	Regional	Rural
Outer Regional	Rural and Remote	
Remote		
Very Remote		

An exception to this grouping is the metropolitan area of Townsville (originally classified as Rural). Townsville has been classified as Metropolitan because of the availability of tertiary level cancer services.

## Sex

Refers to the biological and physiological characteristics that define men and women.

## Socioeconomic status

Socioeconomic status is based on the Socio-Economic Indexes for Areas (SEIFA), a census-based measure of social and economic well-being developed by the Australian Bureau of Statistics (ABS) and aggregated at the level of Statistical Local Areas (SLA).

The ABS uses SEIFA scores to rank regions into ten groups or deciles numbered one to ten, with one being the most disadvantaged and ten being the most affluent group. This ranking is useful at the national level, but the number of people in each decile often becomes too small for meaningful

comparisons when applied to a subset of the population. For this reason, this document further aggregates SEIFA deciles into 3 socioeconomic groups.

SEIFA Group	Decile	Percentage of population (approximate)
Disadvantaged	1-2	20%
Middle	3-8	60%
Affluent	9-10	20%

### **Surgical survival**

#### *One Year Surgical Survival*

All-cause crude survival: the percentage of cases still alive one year after surgery.

#### *Two Year Surgical Survival*

All-cause crude survival: the percentage of cases still alive two years after surgery.

### **Time to surgery from histological diagnosis**

Time from histological diagnosis to surgery was measured for patients whose first treatment was major resection (no neo-adjuvant therapy). Time periods were reported as being  $\leq 30$  days.

## FOR MORE INFORMATION

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