Queensland Oesophagogastric Surgery Quality Index

Indicators of safe, quality cancer care

Oesophagogastric cancer care in public and private hospitals

2007-2016

cancer alliance queensland

the Partnership

qccat

qcr

Queensland Government

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Message from the chair

Across Australia all states are examining the results from complex surgical procedures with the aim to ensure the best outcomes for patients. We present the latest - "Queensland Oesophagogastric Surgery Quality Index: Indicators of safe, quality cancer care. Cancer surgery in public and private hospital 2007-2016". This new look report continues to monitor the patterns of surgery for patients with gastric and oesophageal cancer at public and private, teaching and non-teaching, metropolitan and regional hospitals between 2007-2016. Gastric and oesophageal cancer are not common cancers and the management of patients with these diseases is complex.

Patients require care from a multidisciplinary team to ensure they receive the appropriate treatment that will lead to the best outcomes. There are many factors that influence the clinician and patient choice of treatment for gastric and oesophageal cancer, including where treatment is best provided. By providing information on the patterns of surgery and outcomes, this report should help guide these decisions.

This report reveals differences between hospitals which may not be obvious in daily clinical practice but become clear with this type of analysis. Patients undergoing a gastrectomy or an oesophagectomy for cancer when they had their surgery in hospitals that perform higher volumes of these operations continue to have better outcomes. The issue of volume of surgery and outcome is complex and not purely about the number of cases. However, this information offers insights to guide recommendations and future practice.

I encourage you to consider how this information will inform just how gastric and oesophageal cancer is managed in your jurisdiction in Queensland. Gastrectomy and oesophagectomy surgery in Queensland will continue to be monitored with a focus on ensuring the best possible outcomes for our patients.

I wish to acknowledge the commitment of the members of Cancer Alliance Queensland in providing the information, analysis, statistics and engagement of the clinicians that have led to this report. As well it is important to recognise the input of the many clinicians that have been involved in the discussion and development of the recommendations in the management of these diseases.

Professor Mark Smithers AM
Chair, Queensland Oesophago Gastric Cancer Collaborative
Queensland Cancer Control Safety and Quality Partnership

Key findings

Epidemiological overview:

- 5-year relative survival is between 50%-57% for those receiving surgery compared to an average of 28% for all oesophagogastric patients (section 0.2)
- An average of 28% of patients diagnosed with oesophagogastric cancer receive surgery (section 0.3)
- The number of facilities performing oesophagogastric surgery has decreased from 2000-2016 (Appendix B)
- A decreasing number of surgeries are being performed in very low volume facilities while low and medium volume facilities are increasing the number of surgeries performed

Part 1 - Oesophagectomy cohort:

- 94% of oesophagectomies occur in principal referral & group A private hospitals* (section 1.1)
- There is an equal number of patients in public and private facilities within high volume facilities
- The proportion of oesophagectomies performed in very low volume facilities has decreased from 9% to 2% (section 1.1)
- 3.1% of patients diagnosed between 2012-2016 who receive oesophagectomy die within 90 days (section 3.3)
- Between 2007-2011 and 2012-2016 the proportion of patients receiving oesophagectomy who are discussed at MDT has increased from 33% to 63% (section 4.1)
- There appears to be equitable access to MDT review for patients across Queensland regardless of characteristic (section 4.2)
- 40% of patients diagnosed between 2012-2016 travel to another HHS to receive oesophagectomy (section 5.2)

Part 2 - Gastrectomy cohort:

- 83% of gastrectomies occur in principal referral & group A private hospitals (section 1.1)
- The proportion of gastrectomies performed in very low volume facilities has decreased from 21% to 12% (section 1.1)
- 4.6% of patients diagnosed between 2012-2016 who receive gastrectomy die within 90 days (section 3.3)
- Between 2007-2011 and 2012-2016 the amount of MDT reviews for patients who receive a gastrectomy has increased from 20% to 49% (section 4.1)
- There appears to be equitable access to MDT review for patients across Queensland regardless of characteristics (section 4.2)
- 35% of patients diagnosed between 2012-2016 travel to another HHS to receive gastrectomy (section 5.2)

What is the Queensland Oesophagogastric Surgery Quality Index?

The Queensland Oesophagogastric Surgery Quality Index has been developed for public and private cancer services. It is an initiative of the Oesophagogastric Cancer Collaborative, 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://canceralliancеqld.health.qld.gov.au). The report tracks Queensland's progress delivering safe, quality cancer care and will be provided to all relevant public and private hospitals. The Queensland Oesophagogastric Surgery Quality Index highlights areas for improvement and identifies the areas where cancer services are performing well.

The Queensland Oesophagogastric Surgery Quality Index reports on 10 years of data from 2007-2016, however there may have been changes more recently that are not captured by the time periods reported. Regardless, the Queensland Oesophagogastric Surgery Quality Index provides an important tool for monitoring current investments in cancer care and changes in clinical practice. It also enables us to reflect on past improvement programs and identify areas where a renewed effort or new approach may be required.

Why develop the Queensland Oesophagogastric Surgery 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 Oesophagogastric Surgery Quality Index has been developed by the Cancer Alliance Queensland, lead clinicians and relevant persons under the auspices of 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 Oesophagogastric Surgery Quality Index is a tool for reviewing and comparing information on the safety and quality of cancer treatment and outcomes. The Partnership has prepared the 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 Oesophagogastric Surgery Quality Index includes public and private cancer care services.

The following quality dimensions are included in the Index and are developed by Cancer Alliance Queensland with clinical leadership. (Walpole, Theile, Philpot et al. 2019)

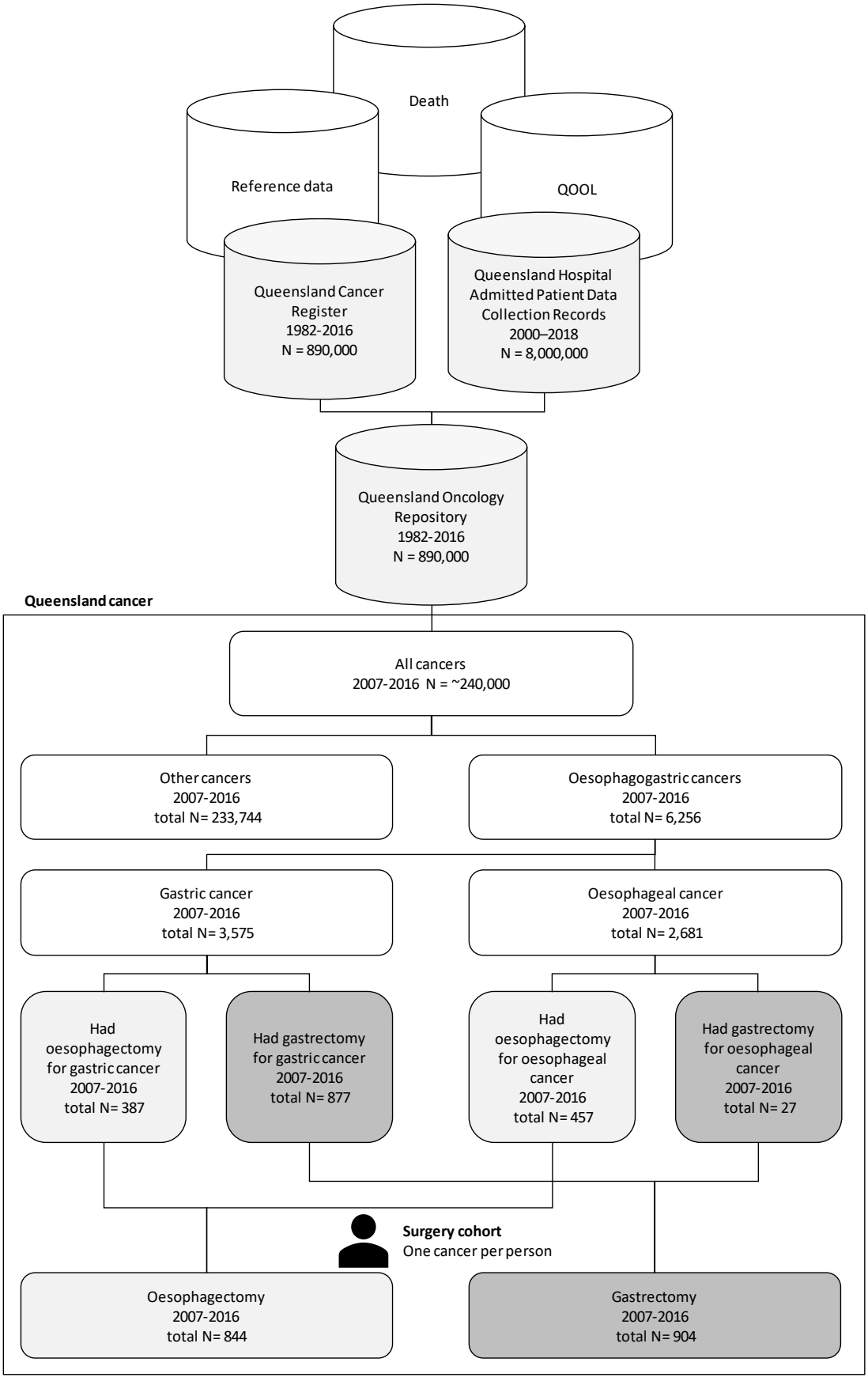
Quality Dimension	Description
1 | Effective	Achieving the best outcomes for Queenslanders with cancer
2 | Efficient	Optimally using resources to achieve desired outcomes
3 | Safe	Avoiding and preventing adverse outcomes or injuries caused by healthcare management
4 | Accessible	Making health services 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
6 | Surgical survival	Understanding the outcomes of oncological surgery

Where has the data come from?

Since 2004 QCCAT have compiled and analysed a vast amount of information about cancer incidence, mortality, treatment, and survival. 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 Register, private and public hospital admissions data, death data, treatment systems, public and private pathology, hospital clinical data systems and QOOL. QOR contains approximately 50 million records between 1982–2016. Our matching and linking processes provide the 570,000+ matched and linked records of cancer patients between 1982–2016 which provide the data for The Queensland Oesophagogastric Surgery Quality Index.

The Queensland Oesophagogastric Surgery Quality Index should be interpreted in the context of the previous publications by The Partnership. To access previous publication, go to https://cancerallianceqld.health.qld.gov.au/reports-publications

Patient cohort definition



Hospital Peer Grouping

The Queensland Oesophagogastric Surgery Quality Index uses the Australian hospital peer groups defined by the Australian Institute of Health and Welfare (AIHW), see Appendix A for definitions.

Hospital peer groupings define groups of similar hospitals based on shared characteristics and allow a better understanding of the organisation and provision of hospital services. For hospitals, a peer grouping supports comparisons that reflect the purpose, resources and role of each hospital. The AIHW peer grouping is assigned on a broad range of factors and is not specific to oncological practice.

Based on clinical feedback, the AIHW hospital peer groups have been further aggregated into a report peer group detailed in the table below.

AIHW peer group	Report peer group
Principal referral hospitals	Principal referral and Group A private hospitals
Private acute group A hospitals	
Public acute group A hospitals	Group A public hospitals
Public acute group B hospitals	Group B hospitals
Private acute group B hospitals	
Private acute group C hospitals	Other hospitals
Private acute group D hospitals	
Children's hospitals	

Queensland Oesophagogastric Surgery Quality Index report peer group definitions

The table below details the number of oesophagogastric surgical facilities that belong to each peer group.

Surgical facility	AIHW Peer Group	Report Peer Group
Gold Coast University Hospital	Principal referral hospitals	Principal referral and Group A private hospitals
Princess Alexandra Hospital		
Royal Brisbane & Women's Hospital		
The Prince Charles Hospital		
The Townsville Hospital		
Gold Coast Private Hospital	Private acute group A hospitals	
Greenslopes Private Hospital		
John Flynn Private Hospital		
Mater Private Hospital Brisbane		
Noosa Hospital		
Pindara Private Hospital		
St Andrew's War Memorial Hospital		
St Vincent's Private Hospital Northside		
The Wesley Hospital		
Cairns Hospital	Public acute group A hospitals	Group A public hospitals
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		
Buderim Private Hospital	Private acute group B hospitals	Group B hospitals
Friendly Society Private Hospital		
Mater Hospital Pimlico		
St Andrew's Toowoomba Hospital		
St Vincent's Hospital Toowoomba		
Sunshine Coast University Private Hospital		
Mount Isa Base Hospital		
Robina Hospital		
Brisbane Private Hospital	Private acute group C hospitals	Other hospitals
Mater Hospital Mackay		
Mater Hospital Rockhampton		
North West Private Hospital		
St Andrew's Ipswich Private Hospital		
Sunnybank Private Hospital		
Nambour Selangor Private Hospital		
Queensland Children's Hospital	Children’s hospitals	

Volume groups

Previous reports, such as the Queensland Oesophagogastric Surgery Quality Index 2004 -2013 (Queensland Government, 2017), have observed associations between the surgical volume of a hospital and postoperative outcomes. This report has used the three volume groups presented below to allow for further comparisons of outcomes between hospital volume groups.

Volume group cut-offs were chosen by calculating the annual average volumes of each hospital over a five year period and dividing the hospitals into groups (tertiles) at the 33rd and 67th percentile according to annual volume. Post-hoc inspection and re-allocation were undertaken in a small number of cases to avoid heterogeneity in annual volumes within each tertile.

Very low volume hospital

A hospital that performed < 3 surgeries per year on patients diagnosed between 2007-2016.

Low volume hospital

A hospital that performed between 3 and 5 surgeries per year on patients diagnosed between 2007-2016.

Medium volume hospital

A hospital that performed ≥ 6 surgeries per year on patients diagnosed between 2007-2016.

How to interpret report objects

The Queensland Oesophagogastric Surgery 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 the analysis in two standardised elements, the indicator data table and the funnel plot. A breakdown of both is presented below.

Indicator data table

The indicator data table splits the same cohort of patients across three main groups, the report peer group, the hospital type and the volume group. This allows for comparison of results across groups.

Example data table:

	2007-2011 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2012-2016 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospita	31% (111/363) [31%, 25-38, 0.974]	30% (110/363) [30%, 25-37, 0.437]
Group A public hospitals	30% (18/60) [30%, 20-45, 0.941]	45% (18/40) [45%, 31-65, 0.095]
Group B hospitals	23% (7/30) [23%, 12-45, 0.43]	50% (14/28) [50%*, 34-74, 0.037]
Other hospitals	46% (6/13) [46%, 25-84, 0.177]	29% (2/7) [29%, 9-93, 0.816]
Hospital type		
Public hospitals	28% (61/217) [28%, 22-36, 0.532]	33% (78/240) [33%, 26-41, 0.92]
Private hospitals	33% (81/249) [33%, 26-41, 0.57]	33% (66/198) [33%, 26-42, 0.91]
Volume group		
Very low volume (<3)	33% (33/99) [33%, 24-45, 0.571]	40% (21/53) [40%, 28-57, 0.308]
Low volume (3 - <6)	32% (39/123) [32%, 24-43, 0.791]	36% (47/131) [36%, 28-47, 0.519]
Medium volume (≥6)	29% (70/244) [29%, 23-37, 0.624]	30% (76/254) [30%, 24-38, 0.424]
Queensland	**30% (142/466)**	**33% (144/438)**

Cohort of patients split across report peer groups

Cohort of patients split between public and private hospitals

Cohort of patients split across volume groups

Crude rate:
The actual observed rate

Adjusted rate:
This rate attempts to account for differences in patient characteristics between populations

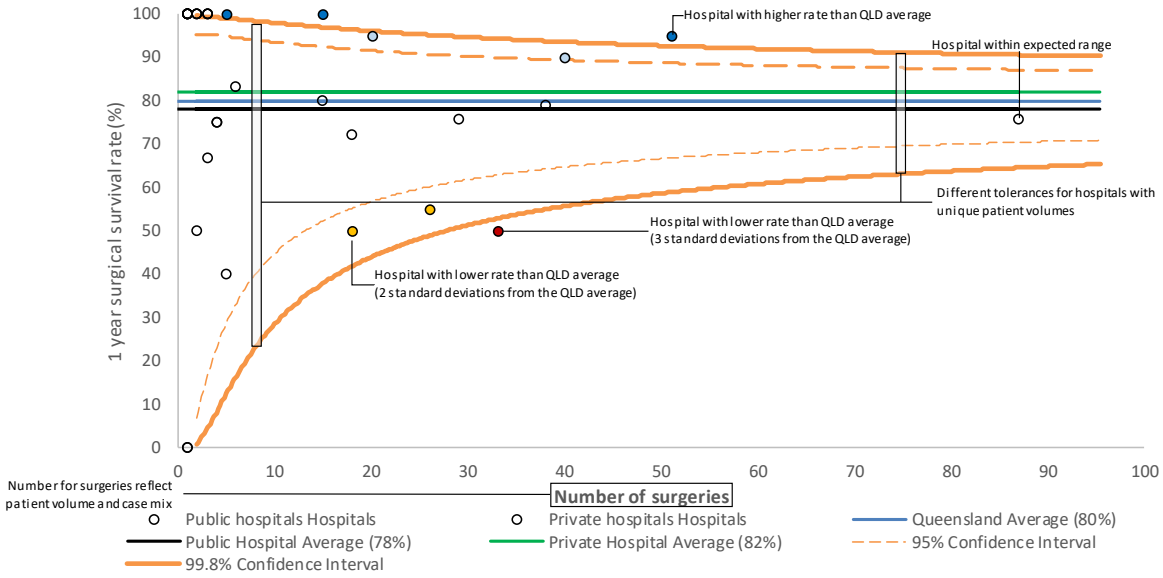
Rates are adjusted by age, sex, socioeconomic status (disadvantaged Y/N), rurality (urban/rural), comorbidity (Y/N), ASA and emergency status (Y/N).

See method for further details

Funnel plot

The funnel plot provides a graphical representation of individual hospital rates and where they sit in relation to the Queensland average. A hospital rate outside either of the "funnel" curves of the confidence interval lines is deemed to be statistically significant from the Queensland average.

Example funnel plot:

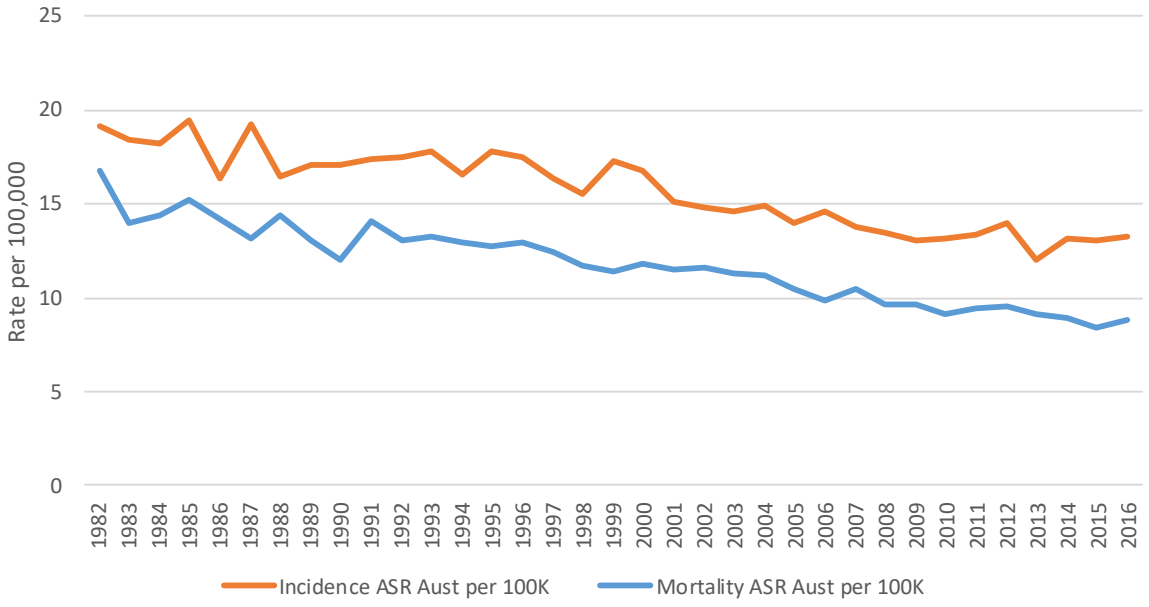


Epidemiological overview

0.1 | Incidence and mortality (age standardised rate)

Diagnosis years 2007-2016

0.1.1 | Queensland oesophagogastric cancer incidence and mortality trend between 1982-2016

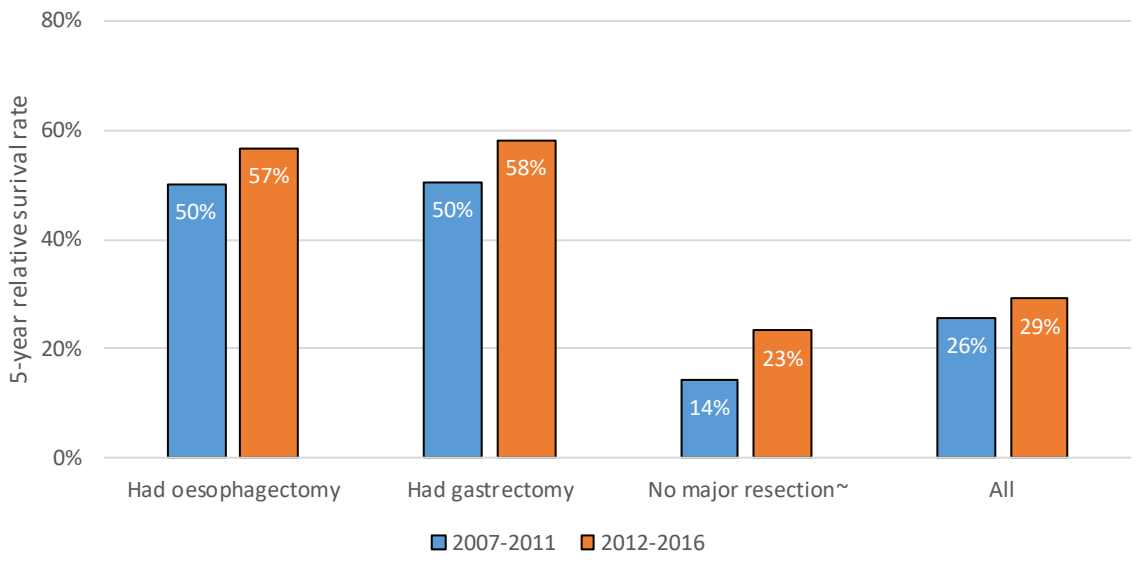


0.2 | Relative survival

Diagnosis years 2007-2016

0.2.1 | What is the rate of Queenslanders with oesophagogastric cancer living 5 years after diagnosis?

	Diagnosis year	
	2007-2011	**2012-2016**
Had major resection		
Had oesophagectomy	50%	57%
Had gastrectomy	50%	58%
No major resection~	14%	23%
All	26%	29%



~Patients could have had either radiotherapy, systemic therapy, both treatments or neither

0.3 | Queenslanders receiving treatment

Diagnosis years 2007-2011

0.3.1 | How many Queenslanders with oesophagogastric cancer receive surgery by HHS of residence?

HHS of residence	Cancer incidence	Oesophagectomies	Gastrectomies	Surgery number (rate)
Cairns and Hinterland	147	14	21	35 24%
Central Queensland	132	14	17	31 23%
Central West	7	0	2	2 29%
Darling Downs	195	24	27	51 26%
Gold Coast	342	35	56	91 27%
Mackay	99	21	10	31 31%
Metro North	522	64	101	165 32%
Metro South	641	105	112	217 34%
North West	10	0	2	2 20%
South West	14	3	0	3 21%
Sunshine Coast	278	40	37	77 28%
Torres and Cape	19	1	1	2 11%
Townsville	151	22	24	46 30%
West Moreton	154	14	26	40 26%
Wide Bay	208	28	30	58 28%
Queensland	**2919**	**385**	**466**	**851 29%**

Diagnosis years 2012-2016

0.3.2 | How many Queenslanders with oesophagogastric cancer receive surgery by HHS of residence?

HHS of residence	Cancer incidence	Oesophagectomies	Gastrectomies	Surgery number (rate)
Cairns and Hinterland	203	31	18	49 24%
Central Queensland	120	18	11	29 24%
Central West	5	0	0	0 0%
Darling Downs	236	30	23	53 22%
Gold Coast	390	63	44	107 27%
Mackay	110	12	16	28 25%
Metro North	628	75	102	177 28%
Metro South	698	97	95	192 28%
North West	16	1	1	2 13%
South West	14	0	0	0 0%
Sunshine Coast	348	57	49	106 30%
Torres and Cape	17	2	2	4 24%
Townsville	171	20	27	47 27%
West Moreton	155	19	23	42 27%
Wide Bay	226	34	27	61 27%
Queensland	**3337**	**459**	**438**	**897** **27%**

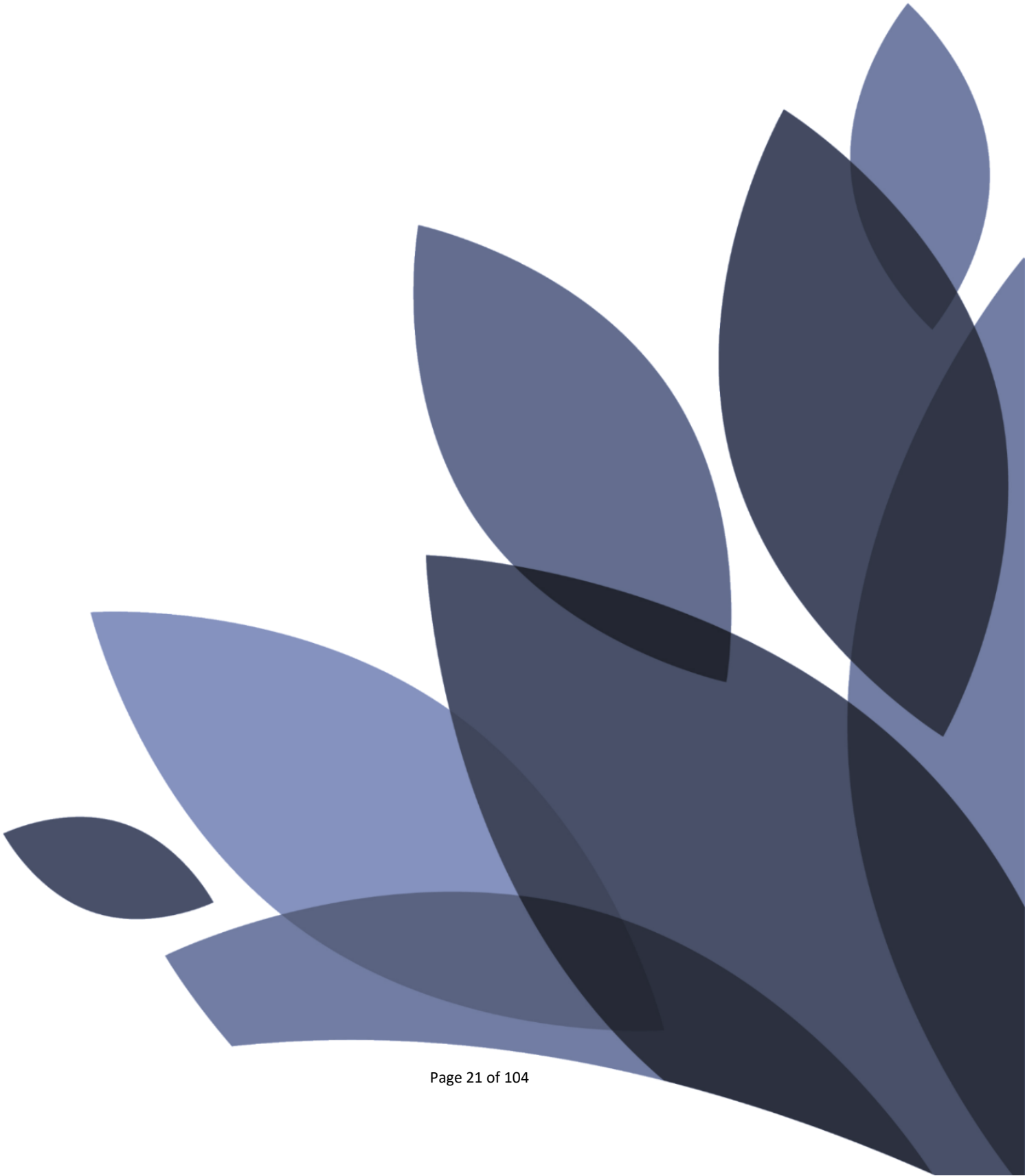
0.4 | Queenslanders receiving treatment by status

Diagnosis years 2007-2016

0.4.1 | How many Queenslanders with oesophagogastric cancer receive surgery by status?

Patient status	2007-2011 Diagnosis year	2012-2016 Diagnosis year
≥75 Age	19% (205/1091)	15% (189/1235)
<75 Age	35% (646/1828)	34% (708/2102)
Indigenous	27% (23/86)	20% (24/118)
Non-Indigenous	29% (828/2828)	27% (873/3214)
Disadvantaged status	26% (182/708)	25% (190/769)
Middle status	29% (546/1854)	27% (572/2115)
Affluent status	34% (123/357)	30% (135/453)
Urban status	31% (558/1815)	27% (568/2077)
Rural status	27% (293/1104)	26% (329/1260)
Queensland	**29%** **(851/2919)**	**27%** **(897/3337)**

Part 1:
Oesophagectomy cohort



Indicator Summary

Diagnosis years 2007-2011

	Principal referral and Group A private hospitals	Group A public hospitals	Group B hospitals	Public hospitals	Private hospitals	Queensland
Section 1 | Effective						
1.1 | Queenslanders receiving surgery	363 94%	8 2%	14 4%	176 46%	209 54%	**385** **100%**
Section 2 | Efficient						
2.1 | Length of stay (IQR days)	15 (13-23)	22 (19-27)	14 (12-21)	16 (13-26)	15 (12-22)	**15** **(13-23)**
2.2 | Readmitted for emergency between 1 and 30 days	9.9% (36/363)	13% (1/8)	14% (2/14)	13% (23/176)	7.7% (16/209)	**10%** **(39/385)**
Section 3 | Safe						
3.1 | In-Hospital mortality	0.6% (2/363)	0% (0/8)	0% (0/14)	0.6% (1/176)	0.5% (1/209)	**0.5%** **(2/385)**
3.2 | 30-day mortality	0% (0/363)	0% (0/8)	0% (0/14)	0% (0/176)	0% (0/209)	**0%** **(0/385)**
3.3 | 90-day mortality	2.5% (9/363)	0% (0/8)	0% (0/14)	2.8% (5/176)	1.9% (4/209)	**2.3%** **(9/385)**
Section 4 | Accessible						
4.1 | MDT rate*	34% (124/363)	50% (4/8)	0% (0/14)	56% (98/176)	14% (30/209)	**33%** **(128/385)**
Section 6 | Surgical survival						
6.1 | 1-year surgical survival	80%	88%	93%	75%	86%	**81%**
6.2 | 2-year surgical survival	68%	25%	79%	63%	71%	**68%**

*MDT rate includes facilities that use QOOL to capture MDT review

Diagnosis years 2012-2016

	Principal referral and Group A private hospitals	Group A public hospitals	Group B hospitals	Public hospitals	Private hospitals	Queensland
Section 1 | Effective						
1.1 | Queenslanders receiving surgery	431 94%	18 4%	10 2%	229 50%	230 50%	**459** **100%**
Section 2 | Efficient						
2.1 | Length of stay (IQR days)	14 (11-20)	21 (14-28)	13 (11-15)	15 (11-22)	13 (11-18)	**14** **(11-20)**
2.2 | Readmitted for emergency between 1 and 30 days	15% (66/431)	28% (5/18)	20% (2/10)	22% (50/229)	10% (23/230)	**16%** **(73/459)**
Section 3 | Safe						
3.1 | In-Hospital mortality	1.4% (6/431)	0% (0/18)	0% (0/10)	1.3% (3/229)	1.3% (3/230)	**1.3%** **(6/459)**
3.2 | 30-day mortality	1.6% (7/431)	0% (0/18)	0% (0/10)	1.7% (4/229)	1.3% (3/230)	**1.5%** **(7/459)**
3.3 | 90-day mortality	3.2% (14/431)	0% (0/18)	0% (0/10)	3.1% (7/229)	3% (7/230)	**3.1%** **(14/459)**
Section 4 | Accessible						
4.1 | MDT rate*	62% (269/431)	100% (18/18)	10% (1/10)	88% (202/229)	37% (86/230)	**63%** **(288/459)**
Section 6 | Surgical survival						
6.1 | 1-year surgical survival	82%	94%	80%	81%	84%	**82%**
6.2 | 2-year surgical survival	67%	78%	80%	65%	71%	**68%**

*MDT rate includes facilities that use QOOL to capture MDT review

1| Effective

Achieving the best outcomes for Queenslanders with cancer.

1.1 | Queenslanders receiving surgery

Diagnosis years 2007-2016

1.1.1 | Where do Queenslanders with oesophagogastric cancer receive surgery?

	2007-2011 Diagnosis year Surgery number % proportion of QLD	2012-2016 Diagnosis year Surgery number % proportion of QLD
Report peer group		
Principal referral and Group A private hospitals	363 94%	431 94%
Group A public hospitals	8 2%	18 4%
Group B hospitals	14 3.6%	10 2.2%
Hospital type		
Public hospitals	176 46%	229 50%
Private hospitals	209 54%	230 50%
Volume group		
Very low volume (<3)	34 9%	10 2%
Low volume (3-<6)	79 21%	83 18%
Medium volume (≥6)	272 71%	366 80%
Queensland	**385**	**459**

Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

1.2 | Patient characteristics

Diagnosis years 2007-2016

1.2.1 | What are the characteristics of patients who receive oesophagectomy?

Patient characteristics	Had oesophagectomy	
Queensland	385	459
Median age at diagnosis	62	66
% Male	82%	85%
% ≥75 Age	8.1%	12%
% Indigenous	2.1%	2.4%
% Socioeconomically disadvantaged	23%	20%
% Rural residence	38%	39%
% With ≥1 comorbidity	37%	46%
% ASA ≥3	36%	47%
% Discussed at MDT*	33%	63%

2007-2011	2012-2016

*MDT rate includes facilities that use QOOL to capture MDT review

Diagnosis years 2007-2016

1.2.2 | What are the characteristics of patients who receive oesophagectomy by peer group?

Patient characteristics	Principal referral and Group A private hospitals		Group A public hospitals		Group B hospitals		Public hospitals		Private hospitals		**Queensland**	
Queensland	363	431	8	18	14	10	176	229	209	230	385	459
Proportion of QLD total	94%	94%	2%	4%	4%	2%	46%	50%	54%	50%		
Median age at diagnosis	62	66	58	64	62	65	61	64	63	66	62	66
% Male	81%	85%	75%	78%	93%	90%	81%	87%	82%	82%	82%	85%
% ≥75 Age	8.5%	12%	0%	11%	0%	20%	5.1%	10%	11%	14%	8.1%	12%
% Indigenous	2.2%	2.6%	0%	0%	0%	0%	1.7%	3.9%	2.4%	0.9%	2.1%	2.4%
% Socioeconomically disadvantaged	23%	19%	25%	44%	21%	40%	30%	26%	17%	15%	23%	20%
% Rural residence	37%	39%	63%	33%	57%	30%	41%	44%	35%	34%	38%	39%
% With ≥ 1 comorbidity	37%	45%	25%	61%	43%	60%	34%	48%	39%	43%	37%	46%
% ASA ≥ 3	37%	48%	50%	67%	7.1%	0%	51%	70%	23%	25%	36%	47%
% Discussed at MDT*	34%	62%	50%	100%	0%	10%	56%	88%	14%	37%	33%	63%

2007-2011	2012-2016

*MDT rate includes facilities that use QOOL to capture MDT review

Diagnosis years 2007-2016

1.2.3 | What are the characteristics of patients who receive oesophagectomy by volume group?

Patient characteristics	Very low volume (<3)		Low volume (3-<6)		Medium volume (≥6)		**Queensland**	
Queensland	34	10	79	83	272	366	385	459
Proportion of QLD total	9%	2%	21%	18%	71%	80%		
Median age at diagnosis	61	65	61	66	63	66	62	66
% Male	79%	90%	86%	83%	81%	85%	82%	85%
% ≥75 Age	2.9%	20%	7.6%	13%	8.8%	11%	8.1%	12%
% Indigenous	0%	0%	0%	0%	2.9%	3%	2.1%	2.4%
% Socioeconomically disadvantaged	21%	40%	13%	18%	26%	20%	23%	20%
% Rural residence	44%	30%	28%	22%	40%	43%	38%	39%
% With ≥ 1 comorbidity	41%	60%	41%	49%	35%	44%	37%	46%
% ASA ≥ 3	24%	0%	48%	63%	34%	45%	36%	47%
% Discussed at MDT*	26%	10%	13%	69%	40%	63%	33%	63%

2007-2011	2012-2016

*MDT rate includes facilities that use QOOL to capture MDT review

2| Efficient

Optimally using resources to achieve desired outcomes.

2.1 | Hospital stay

Diagnosis years 2007-2016

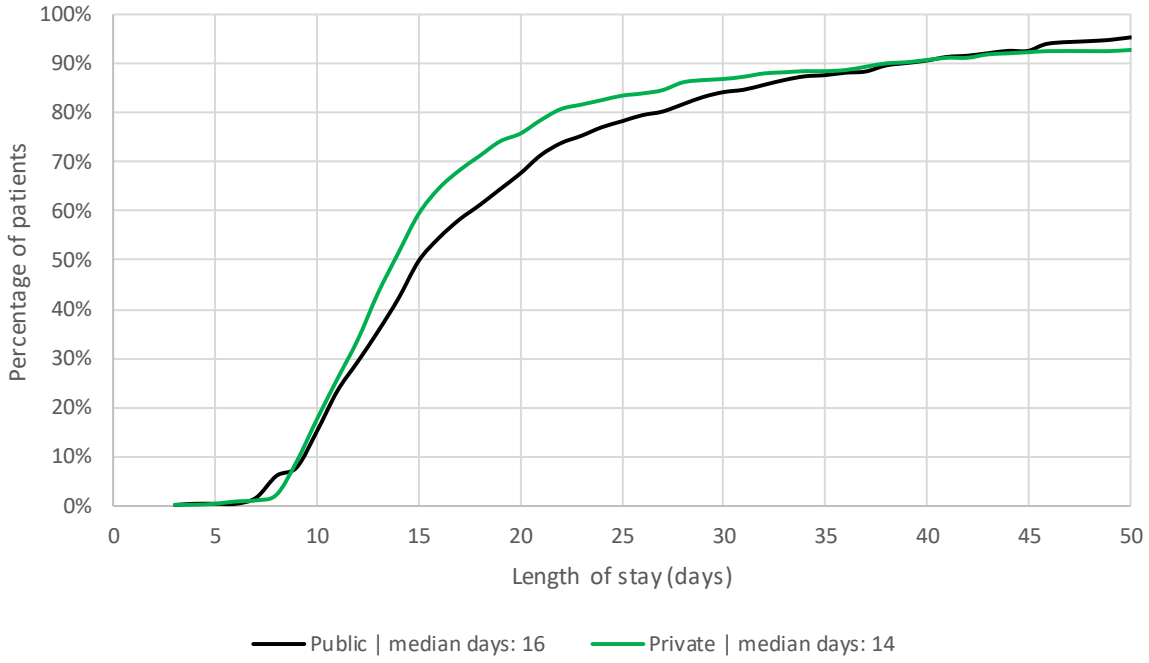
2.1.1 | How long do patients having oesophagectomy stay in hospital?

	2007-2011 **Diagnosis year** Median days (IQR)	**2012-2016** **Diagnosis year** Median days (IQR)
Report peer group		
Principal referral and Group A private hospitals	15 (13-23)	14 (11-20)
Group A public hospitals	22 (19-27)	21 (14-28)
Group B hospitals	14 (12-21)	13 (11-15)
Hospital type		
Public hospitals	16 (13-26)	15 (11-22)
Private hospitals	15 (12-22)	13 (11-18)
Volume group		
Very low volume (<3)	18 (13-28)	13 (11-15)
Low volume (3-<6)	14 (11-21)	16 (11-24)
Medium volume (≥6)	16 (13-23)	14 (10-19)
Queensland	**15** **(13-23)**	**14** **(11-20)**

Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

Diagnosis years 2007-2016

2.1.3 | What is the distribution of length of stay?



Due to the skewed nature of the distribution the x-axis has been capped at 50 in order to better illustrate most patients in the graph.

2.2 | Readmission for acute emergency care between 1-30 days

Diagnosis years 2007-2016

2.2.1 | What percentage of patients are readmitted for acute emergency care between 1-30 days of discharge from oesophagectomy?

	2007-2011 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2012-2016 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	9.9% (36/363) [9.9%, 6-15, 0.923]	15% (66/431) [15%, 11-21, 0.808]
Group A public hospitals	13% (1/8) [12%, 2-80, 0.825]	28% (5/18) [28%, 13-60, 0.158]
Group B hospitals	14% (2/14) [14%, 4-53, 0.609]	20% (2/10) [20%, 6-70, 0.721]
Hospital type		
Public hospitals	13% (23/176) [13%, 8-21, 0.302]	22% (50/229) [22%, 16-30, 0.055]
Private hospitals	7.7% (16/209) [7.7%, 4-13, 0.325]	10% (23/230) [10%*, 6-16, 0.039]
Volume group		
Very low volume (<3)	15% (5/34) [15%, 6-35, 0.397]	20% (2/10) [20%, 6-70, 0.721]
Low volume (3-<6)	6.3% (5/79) [6.3%, 3-16, 0.305]	19% (16/83) [19%, 12-31, 0.44]
Medium volume (≥6)	11% (29/272) [11%, 7-17, 0.826]	15% (55/366) [15%, 11-21, 0.73]
Queensland	**10% (39/385)**	**16% (73/459)**

Details on an emergency admission are described Queensland Hospital Admitted Patient Data Collection (QHAPDC) Manual (State of Queensland (Queensland Health), 2019) and in the glossary of this report.

Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

3| Safe

Avoiding and preventing adverse outcomes or injuries caused by healthcare management.

3.1 | In-hospital mortality

Diagnosis years 2007-2016

3.1.1 | What percentage of patients die in hospital following oesophagectomy?

	2007-2011 **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]	**2012-2016** **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	0.6% (2/363) [0.6%, 0-4, 0.953]	1.4% (6/431) [1.4%, 0-4, 0.912]
Group A public hospitals	0% (0/8) [0%, 0-100, 1]	0% (0/18) [0%, 0-100, 1]
Group B hospitals	0% (0/14) [0%, 0-100, 1]	0% (0/10) [0%, 0-100, 1]
Hospital type		
Public hospitals	0.6% (1/176) [0.8%, 0-9, 0.742]	1.3% (3/229) [1.6%, 0-7, 0.773]
Private hospitals	0.5% (1/209) [0.4%, 0-4, 0.812]	1.3% (3/230) [1.1%, 0-4, 0.809]
Volume group		
Very low volume (<3)	2.9% (1/34) [10%, 0-100, 0.087]	0% (0/10) [0%, 0-100, 1]
Low volume (3-<6)	0% (0/79) [0%, 0-100, 1]	2.4% (2/83) [2.7%, 1-14, 0.384]
Medium volume (≥6)	0.4% (1/272) [0.4%, 0-4, 0.775]	1.1% (4/366) [1.1%, 0-4, 0.774]
Queensland	**0.5% (2/385)**	**1.3% (6/459)**

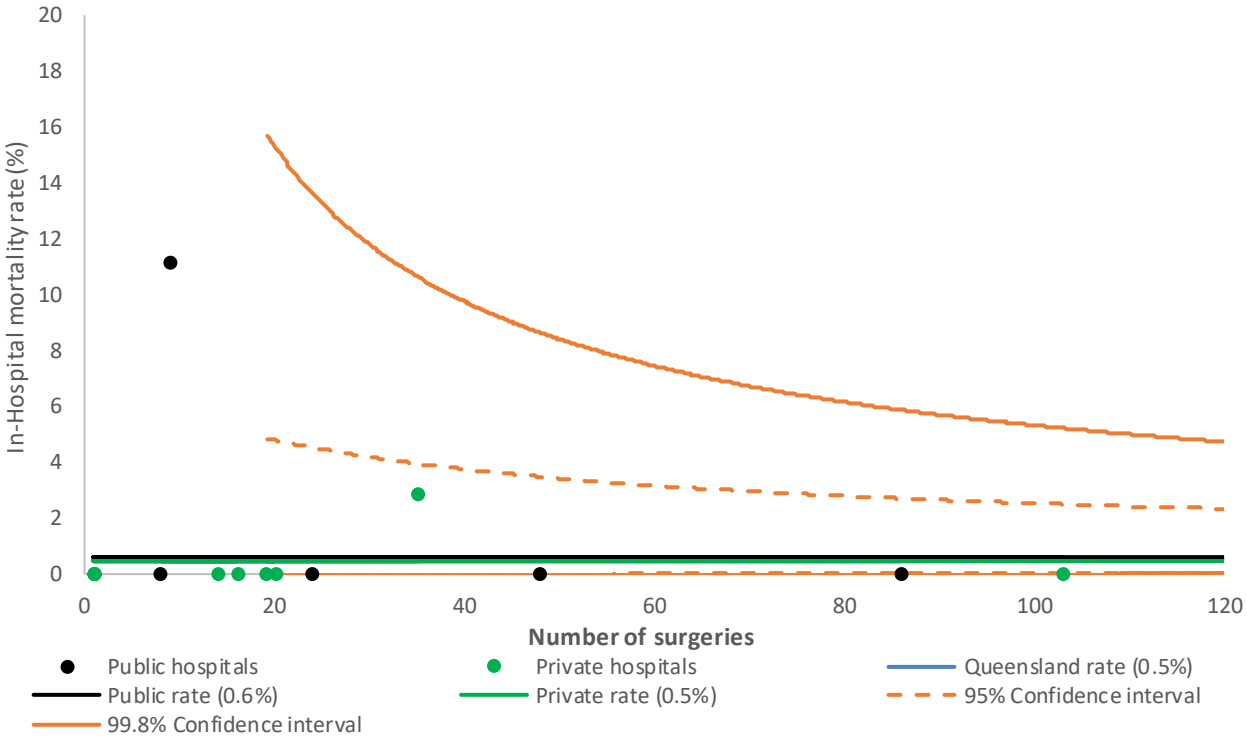
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2007-2011

Crude rate 5 years combined

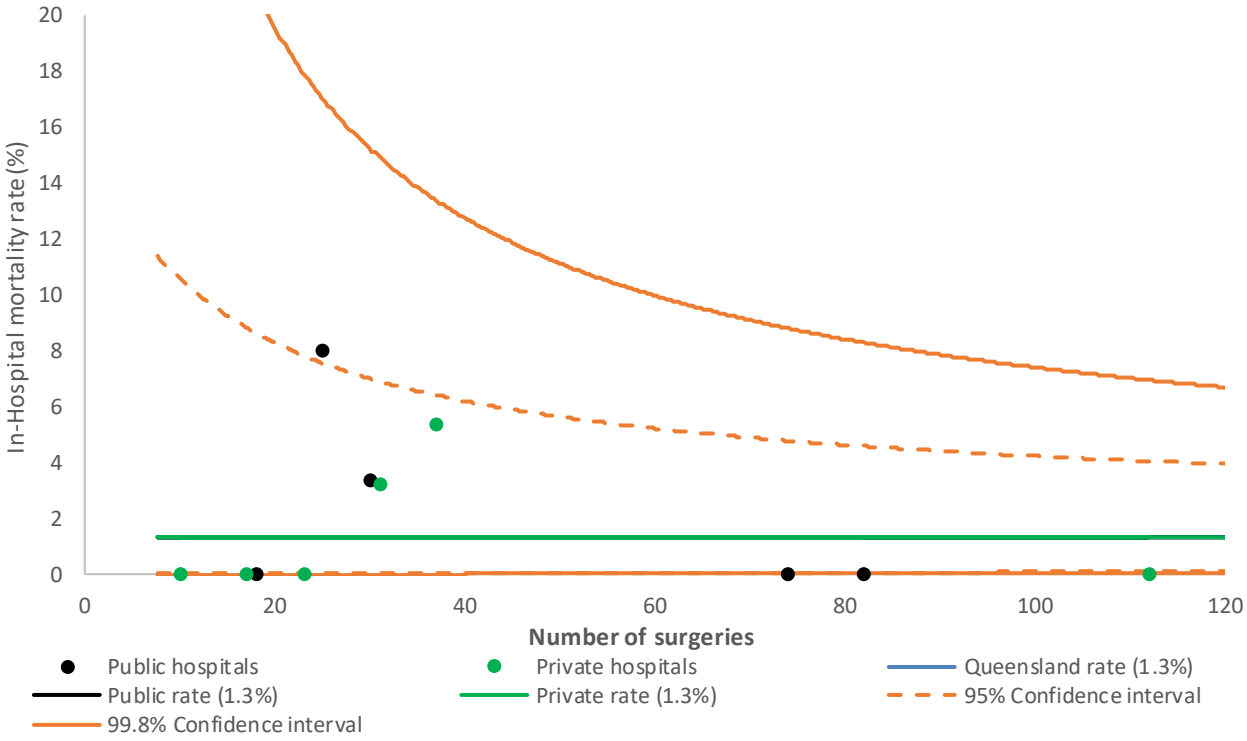
3.1.2 | In-hospital mortality following oesophagectomy by hospital volume



Diagnosis years 2012-2016

Crude rate 5 years combined

3.1.3 | In-hospital mortality following oesophagectomy by hospital volume



3.2 | 30-day mortality

Diagnosis years 2007-2016

3.2.1 | What percentage of patients die within 30 days of oesophagectomy?

	2007-2011 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2012-2016 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	0% (0/363) [0%, 0-100, 1]	1.6% (7/431) [1.6%, 1-5, 0.905]
Group A public hospitals	0% (0/8) [0%, 0-100, 1]	0% (0/18) [0%, 0-100, 1]
Group B hospitals	0% (0/14) [0%, 0-100, 1]	0% (0/10) [0%, 0-100, 1]
Hospital type		
Public hospitals	0% (0/176) [0%, 0-100, 1]	1.7% (4/229) [1.6%, 0-6, 0.915]
Private hospitals	0% (0/209) [0%, 0-100, 1]	1.3% (3/230) [1.4%, 0-6, 0.905]
Volume group		
Very low volume (<3)	0% (0/34) [0%, 0-100, 1]	0% (0/10) [0%, 0-100, 1]
Low volume (3-<6)	0% (0/79) [0%, 0-100, 1]	1.2% (1/83) [1.3%, 0-11, 0.907]
Medium volume (≥6)	0% (0/272) [0%, 0-100, 1]	1.6% (6/366) [1.6%, 1-5, 0.93]
Queensland	**0% (0/385)**	**1.5% (7/459)**

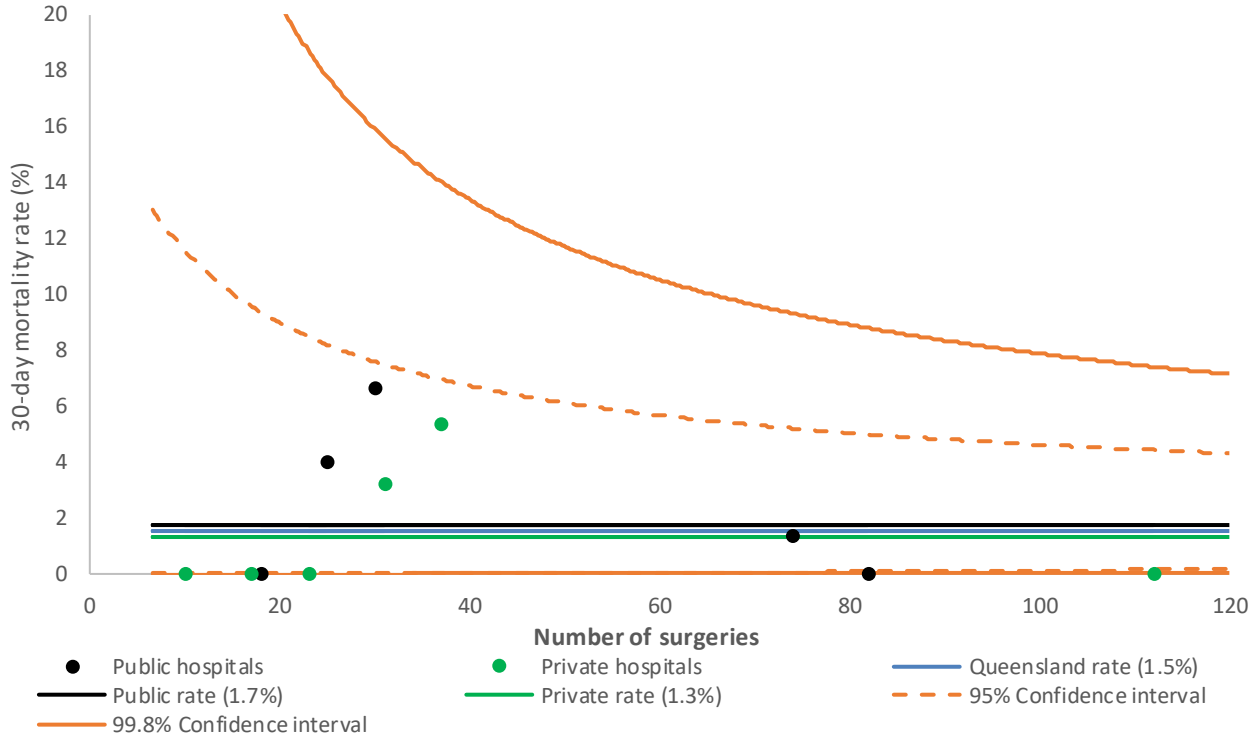
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2012-2016

Crude rate 5 years combined

3.2.2 | 30-day mortality following oesophagectomy by hospital volume



3.3 | 90-day mortality

Diagnosis years 2007-2016

3.3.1 | What percentage of patients die within 90 days of oesophagectomy?

	2007-2011 **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]	**2012-2016** **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	2.5% (9/363) [2.5%, 1-6, 0.899]	3.2% (14/431) [3.3%, 2-7, 0.864]
Group A public hospitals	0% (0/8) [0%, 0-100, 1]	0% (0/18) [0%, 0-100, 1]
Group B hospitals	0% (0/14) [0%, 0-100, 1]	0% (0/10) [0%, 0-100, 1]
Hospital type		
Public hospitals	2.8% (5/176) [3.2%, 1-10, 0.575]	3.1% (7/229) [3.3%, 1-8, 0.87]
Private hospitals	1.9% (4/209) [1.7%, 1-6, 0.626]	3% (7/230) [2.8%, 1-7, 0.878]
Volume group		
Very low volume (<3)	2.9% (1/34) [3.1%, 0-26, 0.79]	0% (0/10) [0%, 0-100, 1]
Low volume (3-<6)	2.5% (2/79) [2.3%, 0-11, 0.974]	2.4% (2/83) [2.9%, 1-13, 0.956]
Medium volume (≥6)	2.2% (6/272) [2.3%, 1-6, 0.951]	3.3% (12/366) [3.2%, 1-7, 0.934]
Queensland	**2.3% (9/385)**	**3.1% (14/459)**

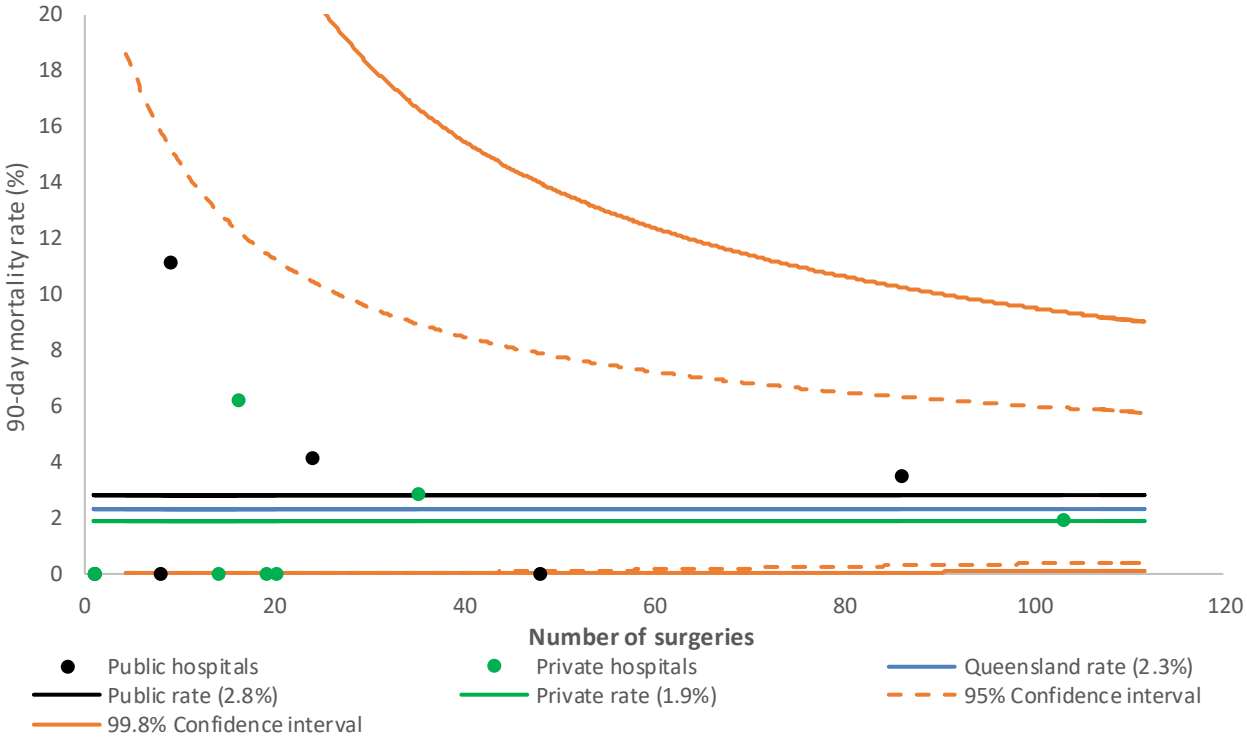
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2007-2011

Crude rate 5 years combined

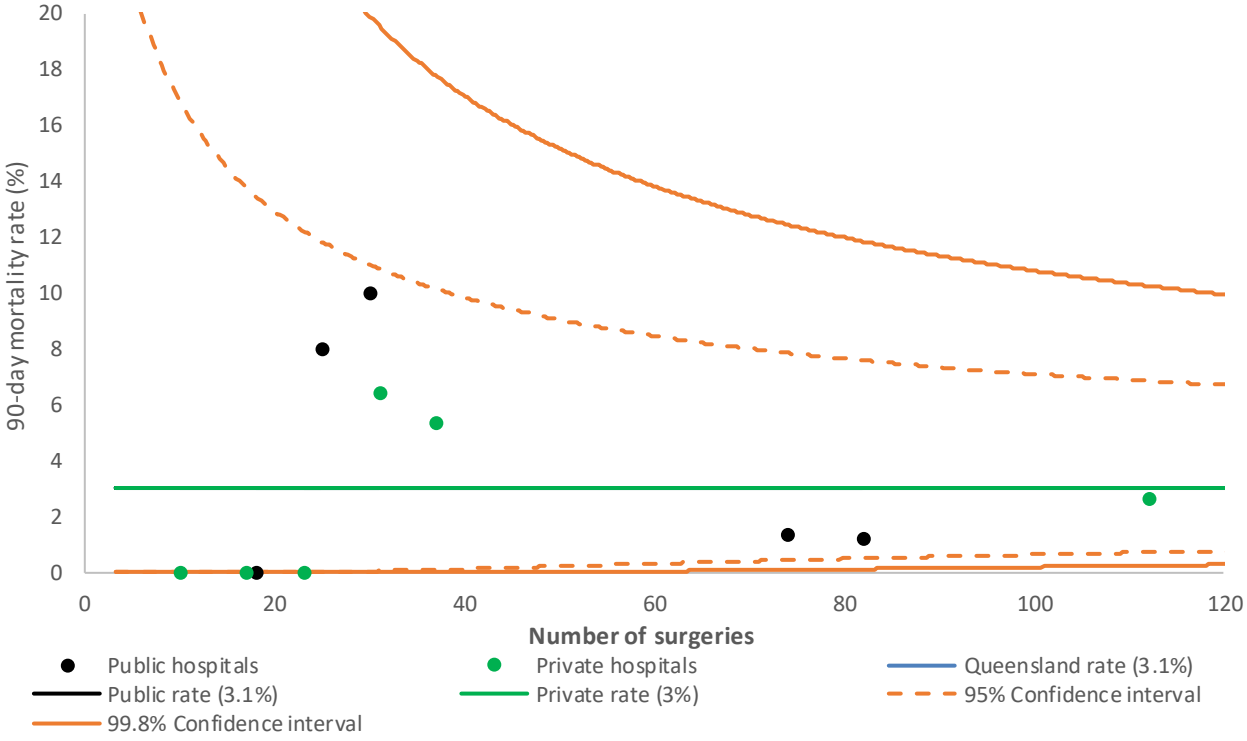
3.3.2 | 90-day mortality following oesophagectomy by hospital volume



Diagnosis years 2012-2016

Crude rate 5 years combined

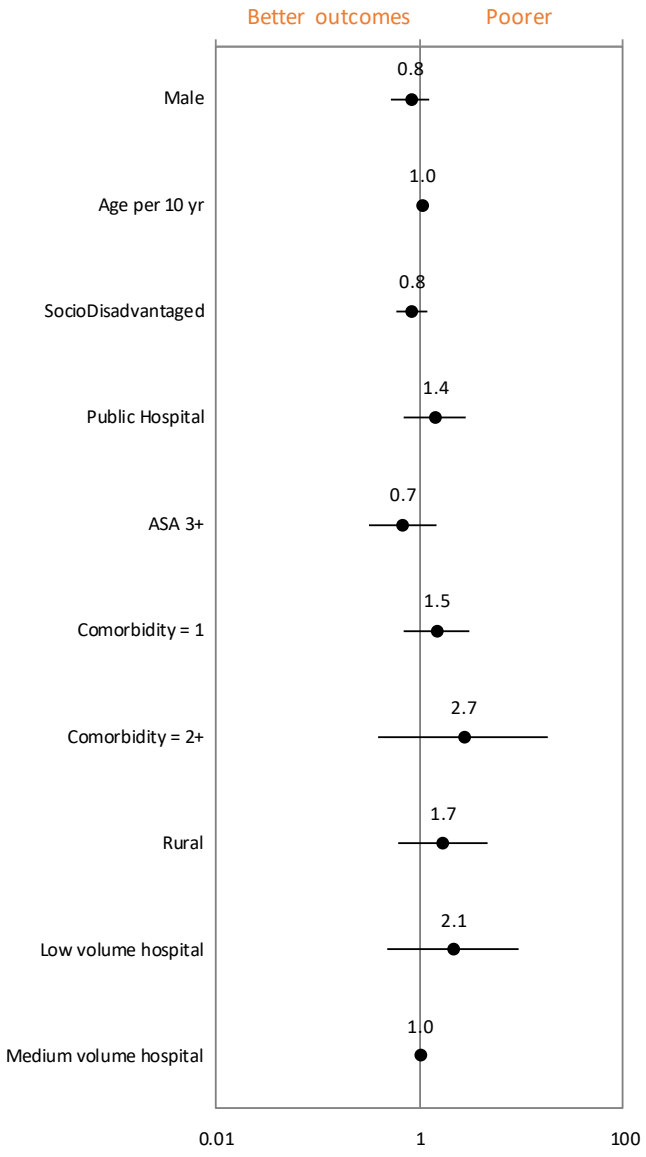
3.3.3 | 90-day mortality following oesophagectomy by hospital volume



Diagnosis years 2007-2016

10 years combined

3.3.4 | Relative risk of 90 days mortality following oesophagectomy



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

Risk factors of emergency and very low volume hospitals have been removed from this forest plot as they could not be calculated.

4| Accessible

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

4.1 | Multi-Disciplinary Team (MDT) rate

Diagnosis years 2007-2016

4.1.1 | How many patients who receive oesophagectomy are discussed at MDT*?

	2007-2011 **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]	**2012-2016** **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	34% (124/363) [34%, 28-42, 0.792]	62% (269/431) [62%, 56-69, 0.919]
Group A public hospitals	50% (4/8) [50%, 25-100, 0.258]	100% (18/18) [100%**, 93-100, 0]
Group B hospitals	0% (0/14) [0%**, 0-0, 0]	10% (1/10) [10%, 2-64, 0.053]
Hospital type		
Public hospitals	56% (98/176) [56%**, 46-68, 0]	88% (202/229) [88%**, 81-96, 0]
Private hospitals	14% (30/209) [14%**, 10-21, 0]	37% (86/230) [37%**, 31-45, 0]
Volume group		
Very low volume (<3)	26% (9/34) [26%, 15-47, 0.44]	10% (1/10) [10%, 2-64, 0.053]
Low volume (3-<6)	13% (10/79) [13%**, 7-23, 0.002]	69% (57/83) [69%, 58-81, 0.273]
Medium volume (≥6)	40% (109/272) [40%, 33-49, 0.071]	63% (230/366) [63%, 57-70, 0.977]
Queensland	**33% (128/385)**	**63% (288/459)**

Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

*MDT rate includes facilities that use QOOL to capture MDT review

4.2 | MDT review characteristics

Diagnosis years 2007-2011

4.2.1 | What are the characteristics of patients who receive oesophagectomy and are discussed at MDT*?

Peer group	Principal referral and Group A private hospitals			Group A public hospitals			Group B hospitals			Public hospitals			Private hospitals			**Queensland**		
	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate
Total	124	363	34%	4	8	50%		14		98	176	56%	30	209	14%	128	385	33%
% Male	102	295	35%	3	6	50%		13		82	143	57%	23	171	13%	105	314	33%
% Female	22	68	32%	1	2	50%		1		16	33	48%	7	38	18%	23	71	32%
% ≥75 Age	5	31	16%							3	9	33%	2	22	9%	5	31	16%
% <75 Age	119	332	36%	4	8	50%		14		95	167	57%	28	187	15%	123	354	35%
% Indigenous	3	8	38%							1	3	33%	2	5	40%	3	8	38%
% Socioeconomically disadvantaged	31	84	37%	2	2	100%		3		31	53	58%	2	36	6%	33	89	37%
% Socioeconomically middle	75	230	33%	2	5	40%		11		57	106	54%	20	140	14%	77	246	31%
% Socioeconomically affluent	18	49	37%		1					10	17	59%	8	33	24%	18	50	36%
% Live rural	81	230	35%	2	3	67%		6		61	104	59%	22	135	16%	83	239	35%
% Live regional	43	133	32%	2	5	40%		8		37	72	51%	8	74	11%	45	146	31%
% With ≥ 1 comorbidity	44	133	33%	1	2	50%		6		32	60	53%	13	81	16%	45	141	32%
% ASA ≥ 3	56	134	42%	3	4	75%		1		54	90	60%	5	49	10%	59	139	42%

*MDT rate includes facilities that use QOOL to capture MDT review

Diagnosis years 2012-2016

4.2.2 | What are the characteristics of patients who receive oesophagectomy and are discussed at MDT*?

Peer group	Principal referral and Group A private hospitals			Group A public hospitals			Group B hospitals			Public hospitals			Private hospitals			**Queensland**		
	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate
Total	269	431	62%	18	18	100%	1	10	10%	202	229	88%	86	230	37%	288	459	63%
% Male	235	365	64%	14	14	100%	1	9	11%	175	200	88%	75	188	40%	250	388	64%
% Female	34	66	52%	4	4	100%		1		27	29	93%	11	42	26%	38	71	54%
% ≥75 Age	29	51	57%	2	2	100%		2		20	23	87%	11	32	34%	31	55	56%
% <75 Age	240	380	63%	16	16	100%	1	8	13%	182	206	88%	75	198	38%	257	404	64%
% Indigenous	9	11	82%							8	9	89%	1	2	50%	9	11	82%
% Socioeconomically disadvantaged	59	82	72%	8	8	100%		4		55	59	93%	12	35	34%	67	94	71%
% Socioeconomically middle	166	278	60%	10	10	100%	1	5	20%	124	144	86%	53	149	36%	177	293	60%
% Socioeconomically affluent	44	71	62%					1		23	26	88%	21	46	46%	44	72	61%
% Live rural	160	262	61%	12	12	100%	1	7	14%	118	129	91%	55	152	36%	173	281	62%
% Live regional	109	169	64%	6	6	100%		3		84	100	84%	31	78	40%	115	178	65%
% With ≥ 1 comorbidity	123	192	64%	11	11	100%	1	6	17%	95	109	87%	40	100	40%	135	209	65%
% ASA ≥ 3	151	206	73%	12	12	100%				144	161	89%	19	57	33%	163	218	75%

*MDT rate includes facilities that use QOOL to capture MDT review

5| Equitable

Providing care and ensuring health status does not vary in quality because of personal characteristics.

5.1 | In-flows

Diagnosis years 2007-2016

5.1.1 | What percent of patients who receive oesophagectomy reside outside my HHS?

	2007-2011 Diagnosis year		2012-2016 Diagnosis year	
	# of hospitals performing surgery	% (n/N)	# of hospitals performing surgery	% (n/N)
Gold Coast	3	7% (2/29)	2	3% (2/62)
Metro North	5	50% (52/105)	3	53% (68/128)
Metro South	3	53% (108/205)	3	57% (121/211)
Sunshine Coast	1	0% (0/8)	1	0% (0/18)
Townsville	2	50% (19/38)	2	53% (21/40)
Queensland	**14**	**47% (181/385)**	**11**	**39% (212/459)**

In-flows represent the number of patients who travelled from another HHS to receive surgery in my HHS.

The denominator (N) is the number of patients who received surgery in my HHS.
The numerator (n) is the number of patients who reside outside my HHS.

5.2 | Out-flows

Diagnosis years 2007-2016

5.2.1 | What percentage of patients underwent oesophagectomy outside of the HHS that they reside in?

	2007-2011 Diagnosis year % (n/N)	2012-2016 Diagnosis year % (n/N)
Cairns and Hinterland	100% (14/14)	100% (31/31)
Central Queensland	100% (14/14)	100% (18/18)
Darling Downs	100% (24/24)	100% (30/30)
Gold Coast	23% (8/35)	5% (3/63)
Mackay	100% (21/21)	100% (12/12)
Metro North	17% (11/64)	20% (15/75)
Metro South	8% (8/105)	7% (7/97)
North West		100% (1/1)
South West	100% (3/3)	
Sunshine Coast	80% (32/40)	68% (39/57)
Torres and Cape	100% (1/1)	100% (2/2)
Townsville	14% (3/22)	5% (1/20)
West Moreton	100% (14/14)	100% (19/19)
Wide Bay	100% (28/28)	100% (34/34)
Queensland	**47%** **(181/385)**	**39%** **(212/459)**

Out-flows describe the number of HHS residents receiving surgery for their cancer diagnosis who travelled externally for their surgery.

The denominator (N) is the number of HHS residents receiving surgery.

The numerator (n) is the number of patients travelling to a different HHS for surgery.

6| Surgical survival

Understanding the outcomes of oncological surgery.

6.1 | 1-year surgical survival

Diagnosis years 2007-2016

6.1.1 | What percentage of patients are alive one year after oesophagectomy?

	2007-2011 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2012-2016 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	80% [80%, 73-86, 0.841]	82% [82%, 75-87, 0.846]
Group A public hospitals	88% [87%, 9-98, 0.685]	94% [95%, 64-99, 0.206]
Group B hospitals	93% [93%, 52-99, 0.303]	80% [80%, 20-95, 0.882]
Hospital type		
Public hospitals	75% [76%, 65-84, 0.263]	81% [81%, 72-87, 0.719]
Private hospitals	86% [85%, 77-91, 0.242]	84% [84%, 76-89, 0.707]
Volume group		
Very low volume (<3)	91% [92%, 75-98, 0.131]	80% [79%, 14-95, 0.814]
Low volume (3-<6)	81% [82%, 68-90, 0.914]	76% [79%, 65-87, 0.436]
Medium volume (≥6)	80% [79%, 70-85, 0.609]	84% [83%, 77-88, 0.709]
Queensland	**81%**	**82%**

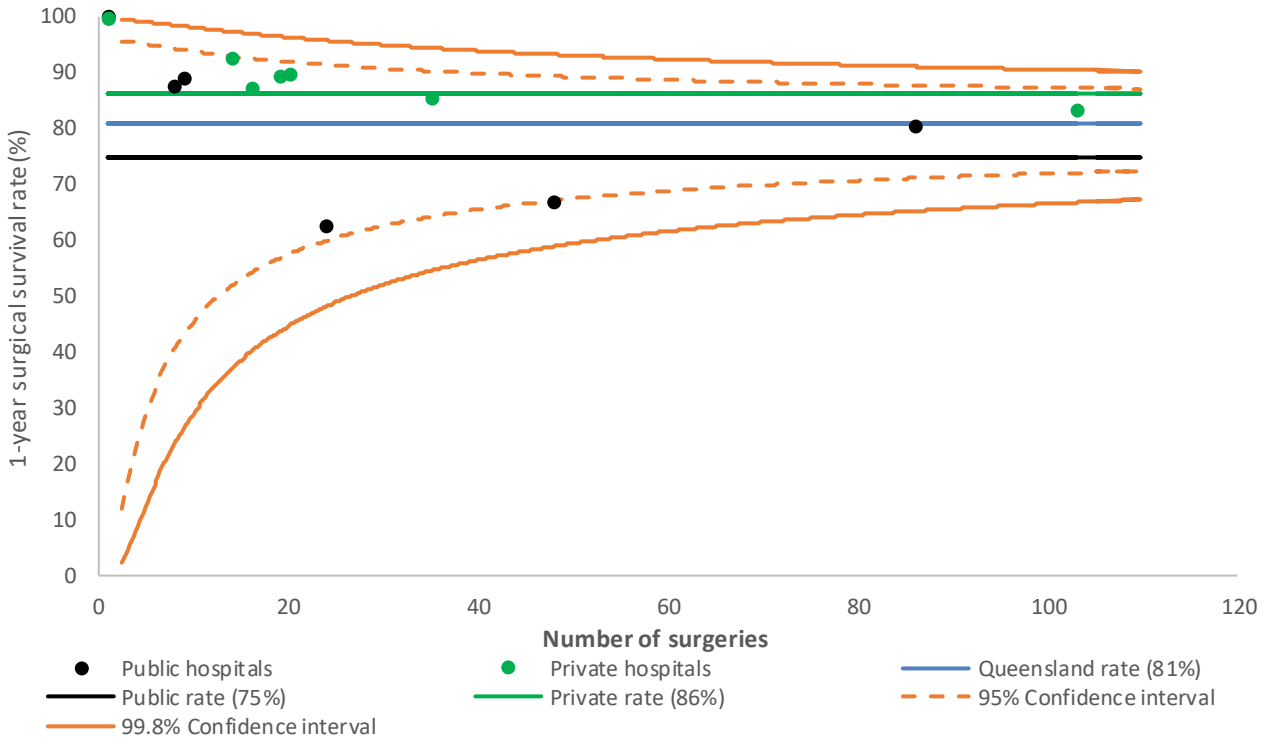
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2007-2011

Crude rate, 5 years combined

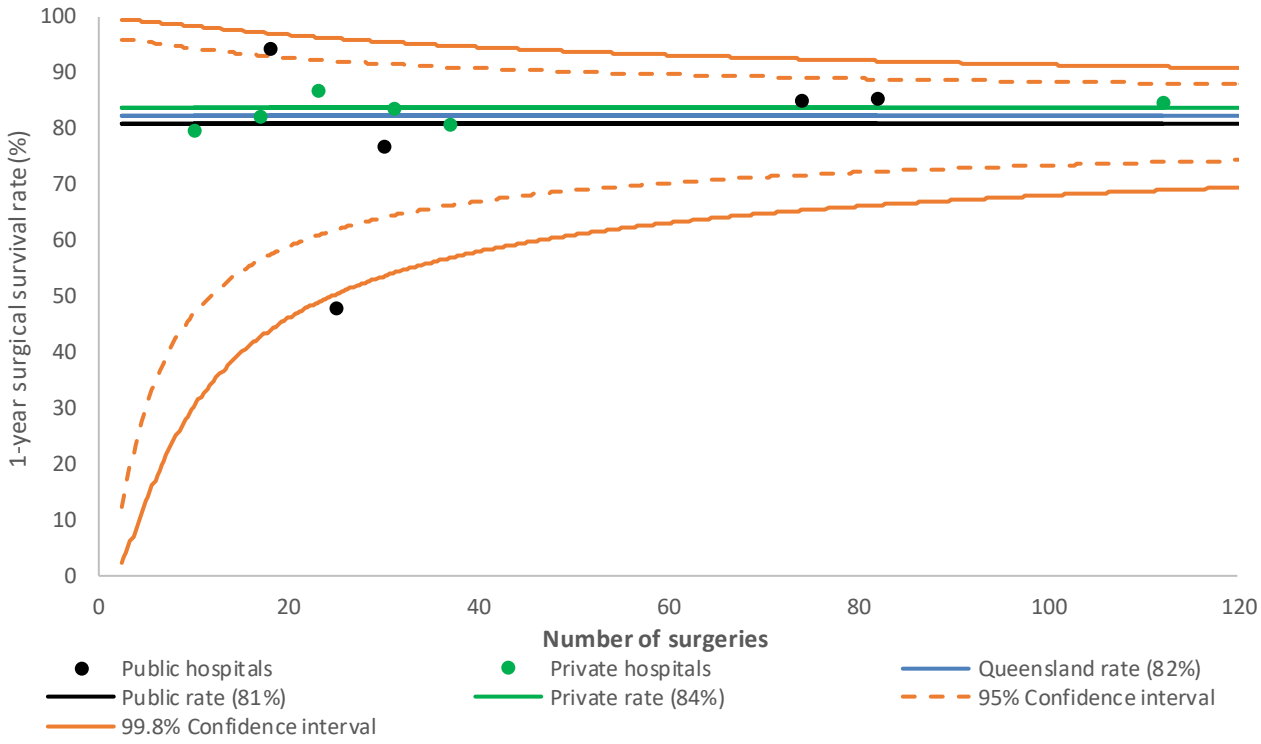
6.1.2 | 1 year surgical survival following oesophagectomy by hospital volume



Diagnosis years 2012-2016

Crude rate, 5 years combined

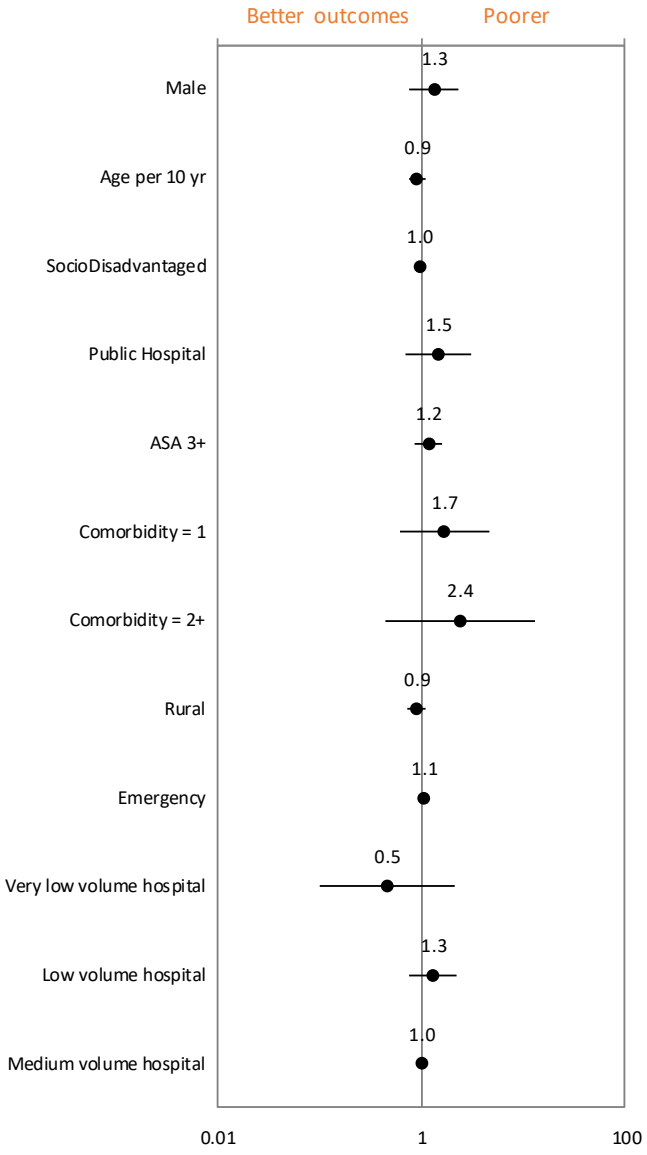
6.1.3 | 1 year surgical survival following oesophagectomy by hospital volume



Diagnosis years 2007-2016

10 years combined

6.1.4 | 1 year surgical survival following oesophagectomy



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.

6.2 | 2-year surgical survival

Diagnosis years 2007-2016

6.2.1 | What percentage of patients are alive two years after oesophagectomy?

	2007-2011 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2012-2016 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	68% [68%, 59-75, 0.916]	67% [67%, 58-74, 0.779]
Group A public hospitals	25% [15%*, 0-63, 0.022]	78% [79%, 56-90, 0.261]
Group B hospitals	79% [81%, 40-94, 0.361]	80% [81%, 23-95, 0.462]
Hospital type		
Public hospitals	63% [62%, 51-70, 0.21]	65% [65%, 54-73, 0.514]
Private hospitals	71% [72%, 61-79, 0.41]	71% [69%, 61-76, 0.72]
Volume group		
Very low volume (<3)	68% [73%, 49-85, 0.577]	80% [81%, 22-95, 0.473]
Low volume (3-<6)	67% [67%, 54-77, 0.947]	63% [66%, 52-76, 0.726]
Medium volume (≥6)	68% [66%, 56-75, 0.821]	69% [69%, 61-74, 0.861]
Queensland	**68%**	**68%**

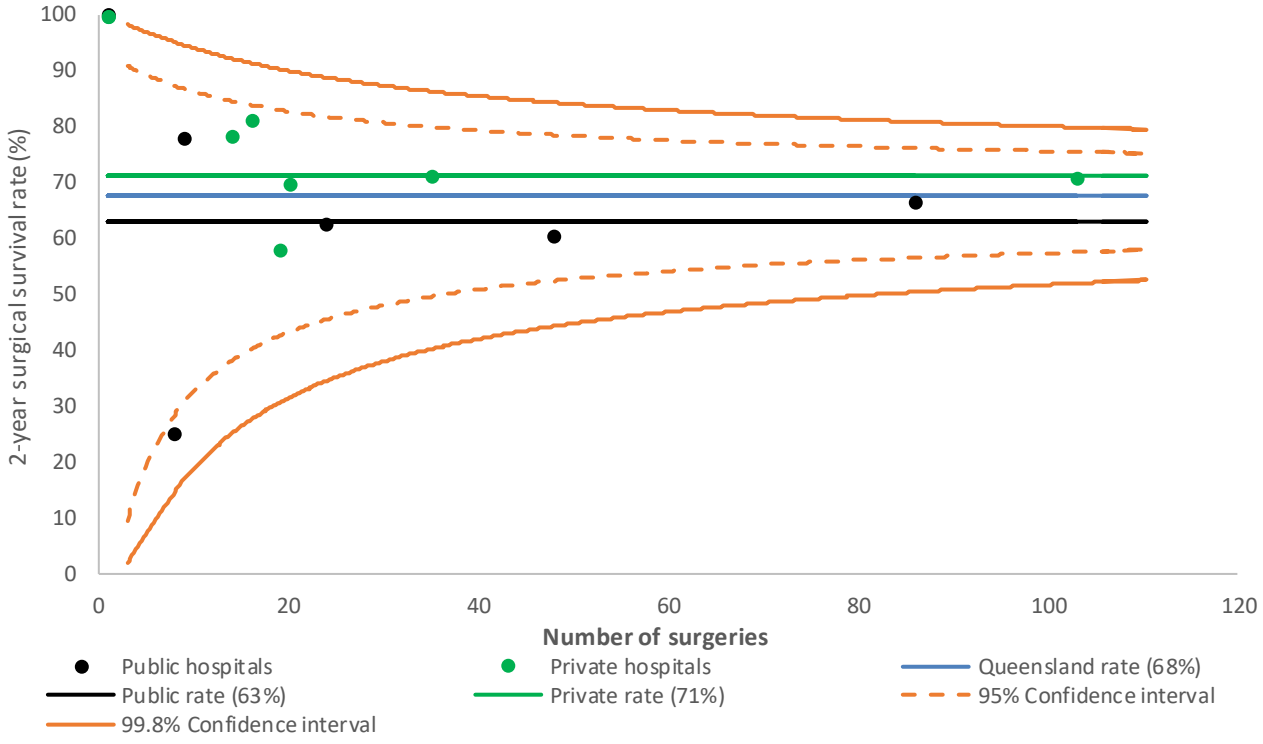
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2007-2011

Crude rate, 5 years combined

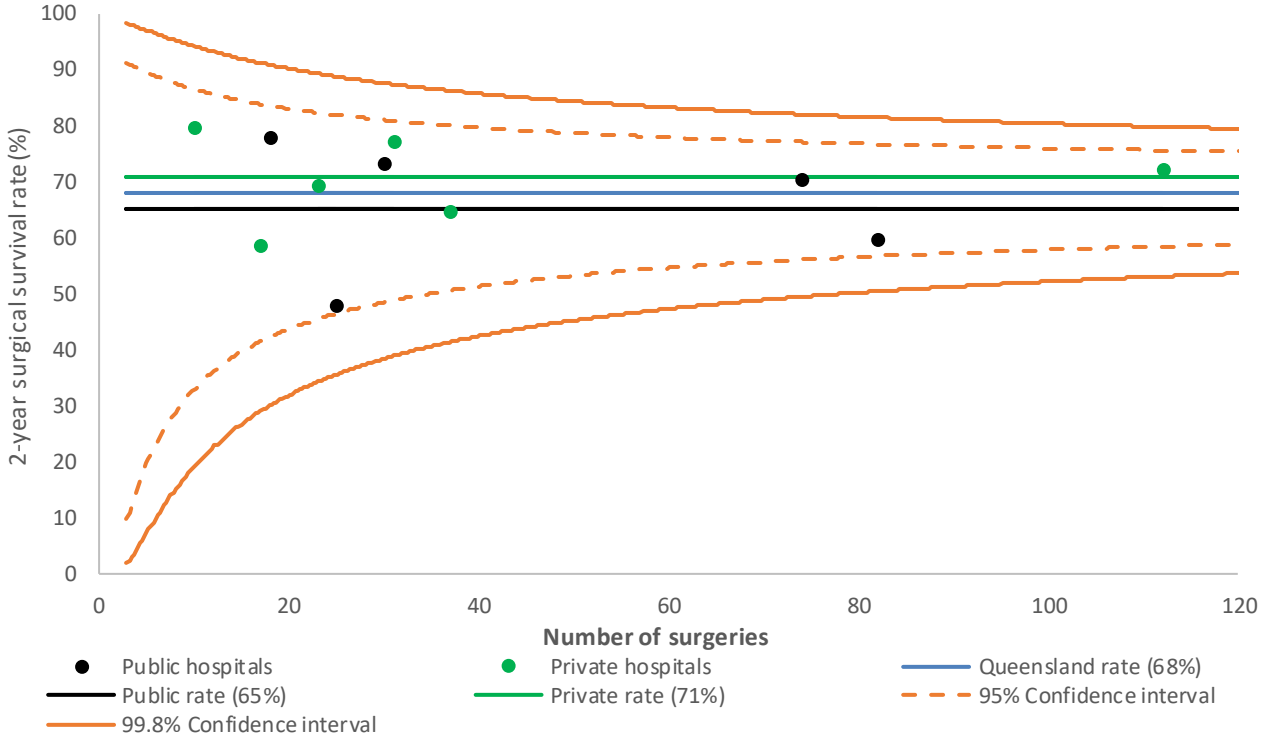
6.2.2 | 2 year surgical survival following oesophagectomy by hospital volume



Diagnosis years 2012-2016

Crude rate, 5 years combined

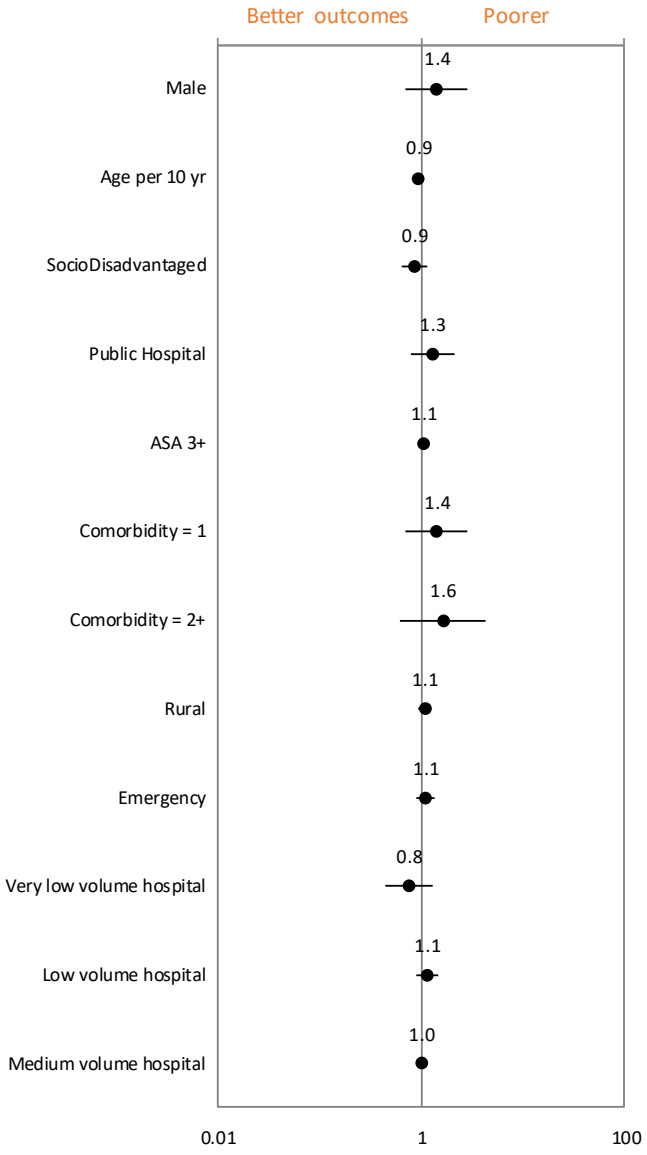
6.2.3 | 2 year surgical survival following oesophagectomy by hospital volume



Diagnosis years 2007-2016

10 years combined

6.2.4 | 2 year surgical survival following oesophagectomy



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.

Part 2:
Gastrectomy cohort

Indicator Summary

Diagnosis years 2007-2011

	Principal referral and Group A private hospitals	Group A public hospitals	Group B hospitals	Other hospitals	Public hospitals	Private hospitals	Queensland
Section 1 | Effective							
1.1 | Queenslanders receiving surgery	363 78%	60 13%	30 6%	13 3%	217 47%	249 53%	**466** **100%**
Section 2 | Effectiveness							
2.1 | Length of stay (IQR days)	12 (9-19)	14 (9-24)	14 (11-20)	9 (7-17)	13 (9-22)	12 (9-18)	**13** **(9-20)**
2.2 | Readmitted for emergency between 1 and 30 days	11% (40/363)	12% (7/60)	10% (3/30)	15% (2/13)	14% (31/217)	8.4% (21/249)	**11%** **(52/466)**
Section 3 | Safe							
3.1 | In-Hospital mortality	2.5% (9/363)	3.3% (2/60)	6.7% (2/30)	0% (0/13)	3.2% (7/217)	2.4% (6/249)	**2.8%** **(13/466)**
3.2 | 30-day mortality	2.5% (9/363)	3.3% (2/60)	6.7% (2/30)	0% (0/13)	3.2% (7/217)	2.4% (6/249)	**2.8%** **(13/466)**
3.3 | 90-day mortality	5% (18/363)	5% (3/60)	6.7% (2/30)	0% (0/13)	6.5% (14/217)	3.6% (9/249)	**4.9%** **(23/466)**
Section 4 | Accessible							
4.1 | MDT rate*	21% (77/363)	27% (16/60)	0% (0/30)	0% (0/13)	40% (87/217)	2.4% (6/249)	**20%** **(93/466)**
Section 6 | Surgical survival							
6.1 | 1-year surgical survival	76%	78%	83%	92%	73%	81%	**77%**
6.2 | 2-year surgical survival	60%	63%	73%	77%	59%	64%	**62%**

*MDT rate includes facilities that use QOOL to capture MDT review

Diagnosis years 2012-2016

	Principal referral and Group A private hospitals	Group A public hospitals	Group B hospitals	Other hospitals	Public hospitals	Private hospitals	Queensland
Section 1 | Effective							
1.1 | Queenslanders receiving surgery	363 83%	40 9%	28 6%	7 2%	240 55%	198 45%	**438** **100%**
Section 2 | Effectiveness							
2.1 | Length of stay (IQR days)	10 (7-15)	12 (8-16)	14 (11-33)	12 (10-14)	10 (7-15)	11 (8-16)	**11** **(8-15)**
2.2 | Readmitted for emergency between 1 and 30 days	11% (40/363)	28% (11/40)	11% (3/28)	0% (0/7)	17% (40/240)	7.1% (14/198)	**12%** **(54/438)**
Section 3 | Safe							
3.1 | In-Hospital mortality	3.3% (12/363)	2.5% (1/40)	0% (0/28)	0% (0/7)	2.1% (5/240)	4% (8/198)	**3%** **(13/438)**
3.2 | 30-day mortality	3.6% (13/363)	2.5% (1/40)	0% (0/28)	0% (0/7)	2.9% (7/240)	3.5% (7/198)	**3.2%** **(14/438)**
3.3 | 90-day mortality	5.2% (19/363)	2.5% (1/40)	0% (0/28)	0% (0/7)	4.6% (11/240)	4.5% (9/198)	**4.6%** **(20/438)**
Section 4 | Accessible							
4.1 | MDT rate*	48% (176/363)	88% (35/40)	11% (3/28)	14% (1/7)	79% (189/240)	13% (26/198)	**49%** **(215/438)**
Section 6 | Surgical survival							
6.1 | 1-year surgical survival	80%	88%	89%	100%	81%	82%	**81%**
6.2 | 2-year surgical survival	67%	78%	82%	71%	68%	71%	**69%**

*MDT rate includes facilities that use QOOL to capture MDT review

1| Effective

Achieving the best outcomes for Queenslanders with cancer.

1.1 | Queenslanders receiving surgery

Diagnosis years 2007-2016

1.1.1 | Where do Queenslanders with oesophagogastric cancer receive gastrectomy?

	2007-2011 Diagnosis year Surgery number % proportion of QLD	2012-2016 Diagnosis year Surgery number % proportion of QLD
Report peer group		
Principal referral and Group A private hospitals	363 78%	363 83%
Group A public hospitals	60 13%	40 9%
Group B hospitals	30 6.4%	28 6.4%
Other hospitals	13 2.8%	7 2%
Hospital type		
Public hospitals	217 47%	240 55%
Private hospitals	249 53%	198 45%
Volume group		
Very low volume (<3)	99 21%	53 12%
Low volume (3-<6)	123 26%	131 30%
Medium volume (≥6)	244 52%	254 58%
Queensland	**466**	**438**

Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

1.2 | Patient characteristics

Diagnosis years 2007-2016

1.2.1 | What are the characteristics of patients who receive gastrectomy?

Patient characteristics	Had gastrectomy	
Queensland	466	438
Median age at diagnosis	70	68
% Male	63%	63%
% ≥75 Age	37%	31%
% Indigenous	3.2%	3%
% Socioeconomically disadvantaged	20%	22%
% Rural residence	32%	34%
% With ≥1 comorbidity	50%	54%
% ASA ≥3	48%	53%
% Discussed at MDT*	20%	49%

2007-2011	2012-2016

*MDT rate includes facilities that use QOOL to capture MDT review

Diagnosis years 2007-2016

1.2.2 | What are the characteristics of patients who receive gastrectomy by peer group?

Patient characteristics	Principal referral and Group A private hospitals		Group A public hospitals		Group B hospitals		Other hospitals		Public hospitals		Private hospitals		**Queensland**	
Queensland	363	363	60	40	30	28	13	7	217	240	249	198	466	438
Proportion of QLD total	78%	83%	13%	9%	6%	6%	3%	2%	47%	55%	53%	45%		
Median age at diagnosis	70	69	69	67	71	66	79	62	69	68	71	69	70	68
% Male	63%	62%	70%	70%	60%	61%	62%	86%	66%	65%	61%	62%	63%	63%
% ≥75 Age	37%	31%	32%	28%	37%	29%	62%	29%	34%	28%	40%	33%	37%	31%
% Indigenous	3%	1.9%	6.7%	5%	0%	11%	0%	14%	5.5%	3.8%	1.2%	2%	3.2%	3%
% Socioeconomically disadvantaged	18%	21%	32%	33%	23%	21%	7.7%	0%	28%	27%	13%	16%	20%	22%
% Rural residence	29%	30%	33%	63%	57%	54%	38%	29%	37%	36%	27%	32%	32%	34%
% With ≥ 1 comorbidity	50%	53%	53%	55%	53%	61%	46%	29%	52%	54%	49%	54%	50%	54%
% ASA ≥ 3	50%	53%	40%	63%	37%	29%	31%	100%	52%	60%	44%	44%	48%	53%
% Discussed at MDT*	21%	48%	27%	88%	0%	11%	0%	14%	40%	79%	2.4%	13%	20%	49%

2007-2011	2012-2016

*MDT rate includes facilities that use QOOL to capture MDT review

Diagnosis years 2007-2016

1.2.3 | What are the characteristics of patients who receive gastrectomy by volume group?

Patient characteristics	Very low volume (<3)		Low volume (3-<6)		Medium volume (≥6)		**Queensland**	
Queensland	99	53	123	131	244	254	466	438
Proportion of QLD total	21%	12%	26%	30%	52%	58%		
Median age at diagnosis	71	70	71	68	69	68	70	68
% Male	66%	60%	63%	69%	62%	61%	63%	63%
% ≥75 Age	39%	45%	40%	29%	35%	28%	37%	31%
% Indigenous	6.1%	9.4%	4.9%	3.8%	1.2%	1.2%	3.2%	3%
% Socioeconomically disadvantaged	17%	23%	18%	18%	22%	24%	20%	22%
% Rural residence	37%	38%	24%	37%	33%	32%	32%	34%
% With ≥ 1 comorbidity	48%	60%	57%	51%	48%	54%	50%	54%
% ASA ≥ 3	48%	66%	49%	52%	47%	51%	48%	53%
% Discussed at MDT*	13%	28%	15%	40%	25%	58%	20%	49%

2007-2011	2012-2016

*MDT rate includes facilities that use QOOL to capture MDT review

2| Efficient

Optimally using resources to achieve desired outcomes.

2.1 | Hospital stay

Diagnosis years 2007-2016

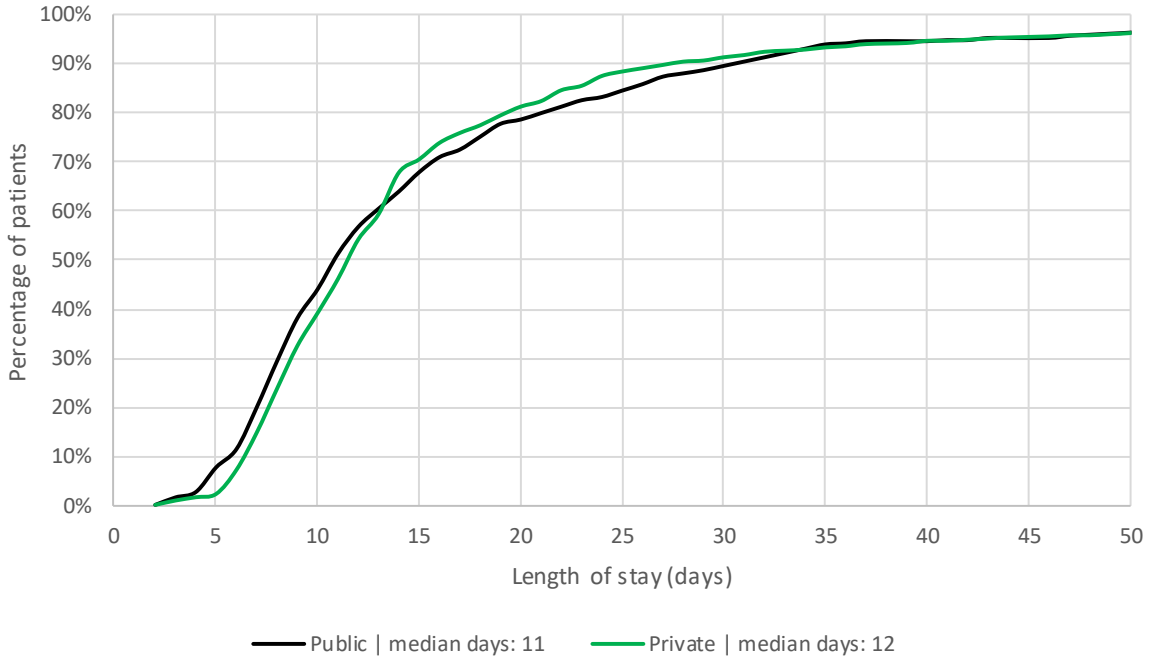
2.1.1 | How long do patients having gastrectomy stay in hospital?

	2007-2011 **Diagnosis year** Median days (IQR)	**2012-2016** **Diagnosis year** Median days (IQR)
Report peer group		
Principal referral and Group A private hospitals	12 (9-19)	10 (7-15)
Group A public hospitals	14 (9-24)	12 (8-16)
Group B hospitals	14 (11-20)	14 (11-33)
Other hospitals	9 (7-17)	12 (10-14)
Hospital type		
Public hospitals	13 (9-22)	10 (7-15)
Private hospitals	12 (9-18)	11 (8-16)
Volume group		
Very low volume (<3)	12 (9-21)	11 (9-15)
Low volume (3-<6)	12 (9-19)	11 (8-17)
Medium volume (≥6)	13 (10-21)	10 (7-14)
Queensland	**13** **(9-20)**	**11** **(8-15)**

Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

Diagnosis years 2007-2016

2.1.3 | What is the distribution of length of stay?



Due to the skewed nature of the distribution the x-axis has been capped at 50 in order to better illustrate most patients in the graph.

2.2 | Readmission for acute emergency care between 1-30 days

Diagnosis years 2007-2016

2.2.1 | What percentage of patients are readmitted for acute emergency care between 1-30 days of discharge from gastrectomy?

	2007-2011 **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]	**2012-2016** **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	11% (40/363) [11%, 7-16, 0.949]	11% (40/363) [11%, 8-16, 0.567]
Group A public hospitals	12% (7/60) [12%, 6-25, 0.906]	28% (11/40) [28%**, 16-48, 0.005]
Group B hospitals	10% (3/30) [10%, 3-30, 0.846]	11% (3/28) [11%, 4-32, 0.802]
Other hospitals	15% (2/13) [15%, 4-57, 0.629]	0% (0/7) [0%**, 0-0, 0]
Hospital type		
Public hospitals	14% (31/217) [14%, 9-22, 0.243]	17% (40/240) [17%, 11-24, 0.118]
Private hospitals	8.4% (21/249) [8.4%, 5-14, 0.256]	7.1% (14/198) [7.1%, 4-12, 0.053]
Volume group		
Very low volume (<3)	13% (13/99) [13%, 7-23, 0.574]	11% (6/53) [11%, 5-25, 0.833]
Low volume (3-<6)	11% (13/123) [11%, 6-19, 0.853]	17% (22/131) [17%, 11-26, 0.184]
Medium volume (≥6)	11% (26/244) [11%, 7-17, 0.839]	10% (26/254) [10%, 7-16, 0.409]
Queensland	**11% (52/466)**	**12% (54/438)**

Details on an emergency admission are described Queensland Hospital Admitted Patient Data Collection (QHAPDC) Manual (State of Queensland (Queensland Health), 2019) and in the glossary of this report.

Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

3| Safe

Avoiding and preventing adverse outcomes or injuries caused by healthcare management.

3.1 | In-hospital mortality

Diagnosis years 2007-2016

3.1.1 | What percentage of patients die in hospital following gastrectomy?

	2007-2011 **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]	**2012-2016** **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	2.5% (9/363) [2.5%, 1-6, 0.786]	3.3% (12/363) [3.3%, 2-7, 0.785]
Group A public hospitals	3.3% (2/60) [3.3%, 1-15, 0.816]	2.5% (1/40) [2.5%, 0-19, 0.868]
Group B hospitals	6.7% (2/30) [6.8%, 2-30, 0.243]	0% (0/28) [0%, 0-100, 1]
Other hospitals	0% (0/13) [0%, 0-100, 1]	0% (0/7) [0%, 0-100, 1]
Hospital type		
Public hospitals	3.2% (7/217) [3.5%, 1-9, 0.641]	2.1% (5/240) [2%, 1-6, 0.468]
Private hospitals	2.4% (6/249) [2.3%, 1-6, 0.675]	4% (8/198) [4.2%, 2-10, 0.446]
Volume group		
Very low volume (<3)	3% (3/99) [2.9%, 1-10, 0.942]	3.8% (2/53) [2.8%, 1-12, 0.928]
Low volume (3-<6)	3.3% (4/123) [3.1%, 1-10, 0.846]	1.5% (2/131) [1.4%, 0-6, 0.313]
Medium volume (≥6)	2.5% (6/244) [2.6%, 1-7, 0.857]	3.5% (9/254) [4.1%, 2-10, 0.464]
Queensland	**2.8% (13/466)**	**3% (13/438)**

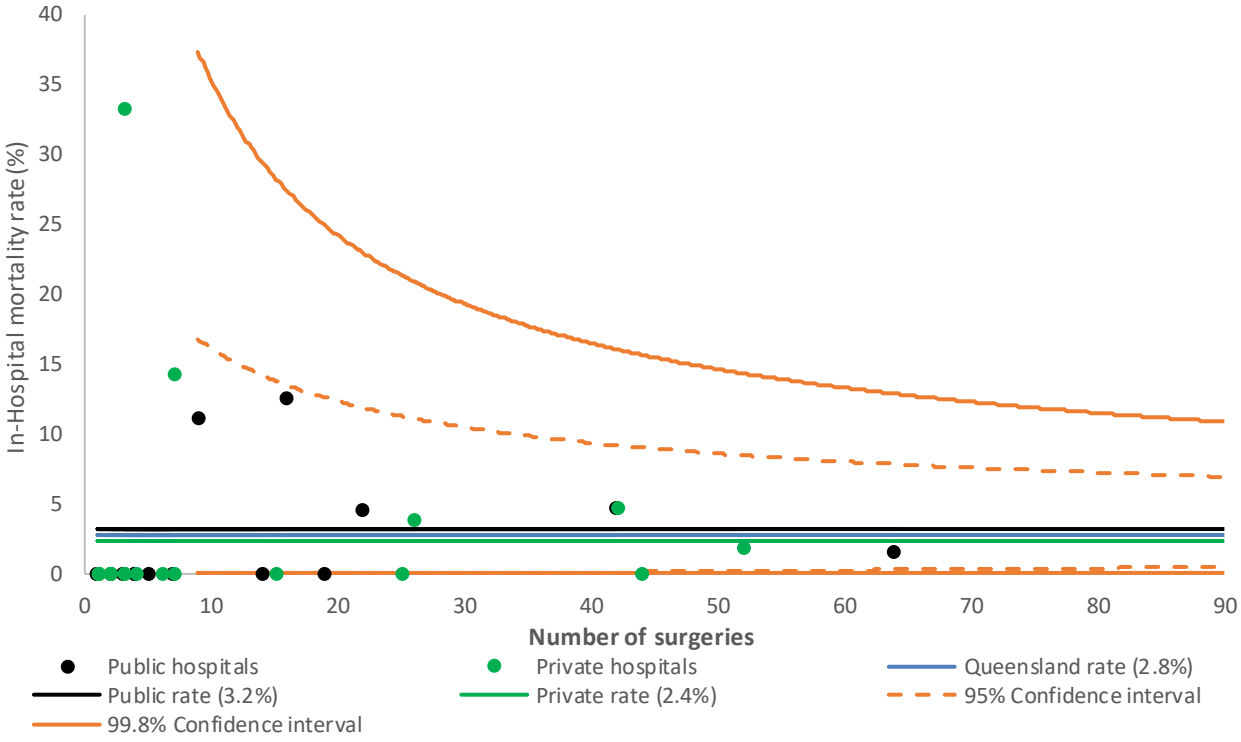
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2007-2011

Crude rate 5 years combined

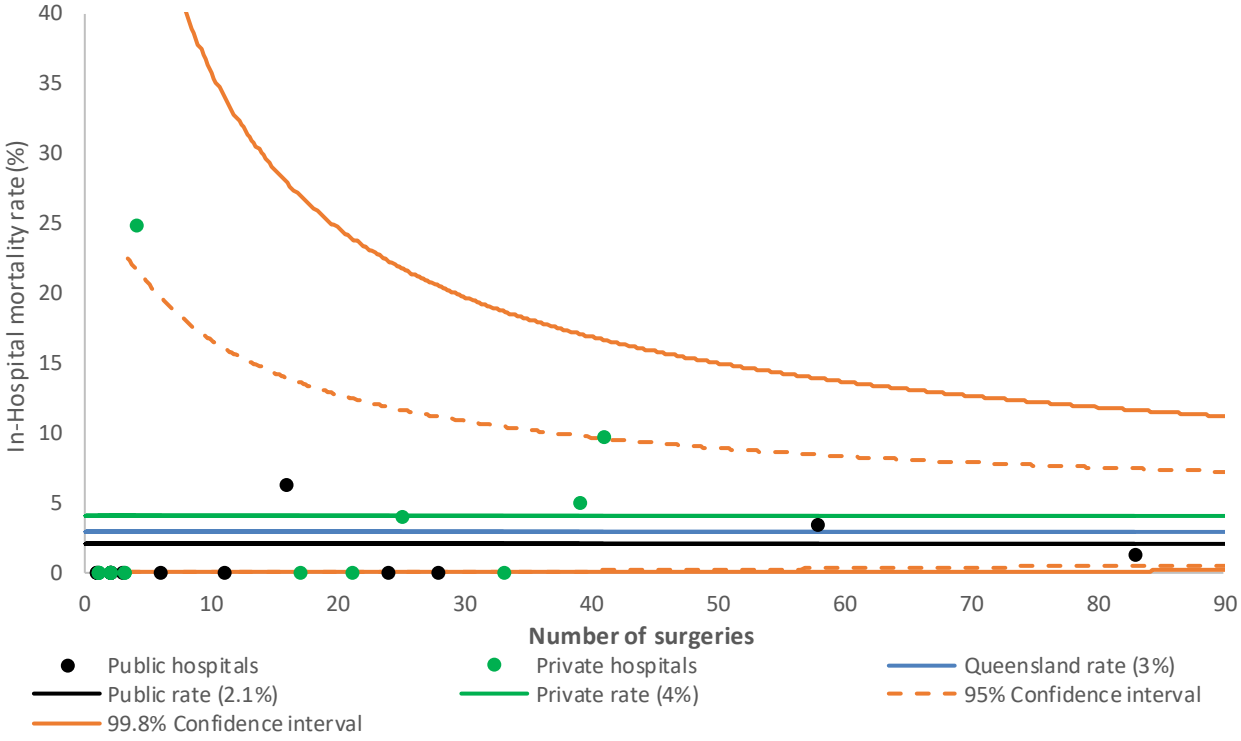
3.1.2 | In-hospital mortality following gastrectomy by hospital volume



Diagnosis years 2012-2016

Crude rate 5 years combined

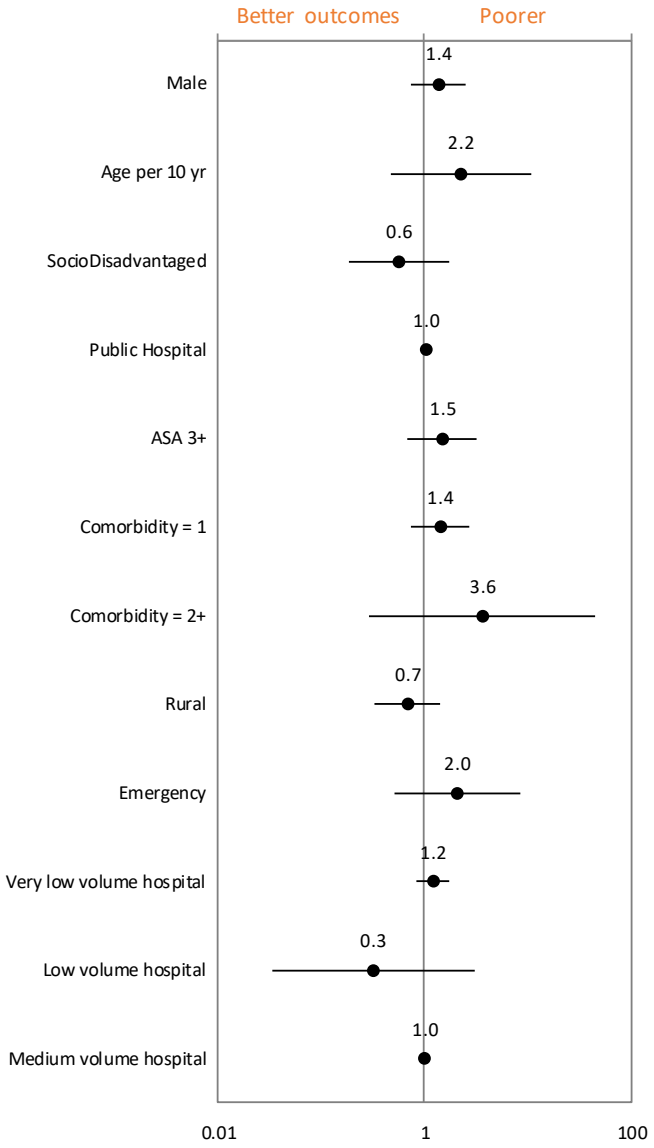
In-hospital mortality following gastrectomy by hospital volume



Diagnosis years 2007-2016

10 years combined

3.1.3 | Relative risk of in-hospital mortality following gastrectomy



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

Risk factors of emergency and very low volume hospitals have been removed from this forest plot as they could not be calculated.

3.2 | 30-day mortality

Diagnosis years 2007-2016

3.2.1 | What percentage of patients die within 30 days of gastrectomy?

	2007-2011 **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]	**2012-2016** **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	2.5% (9/363) [2.5%, 1-6, 0.786]	3.6% (13/363) [3.6%, 2-8, 0.765]
Group A public hospitals	3.3% (2/60) [3.3%, 1-15, 0.816]	2.5% (1/40) [2.5%, 0-19, 0.812]
Group B hospitals	6.7% (2/30) [6.8%, 2-30, 0.243]	0% (0/28) [0%, 0-100, 1]
Other hospitals	0% (0/13) [0%, 0-100, 1]	0% (0/7) [0%, 0-100, 1]
Hospital type		
Public hospitals	3.2% (7/217) [3.5%, 1-9, 0.641]	2.9% (7/240) [2.9%, 1-7, 0.848]
Private hospitals	2.4% (6/249) [2.3%, 1-6, 0.675]	3.5% (7/198) [3.5%, 1-9, 0.834]
Volume group		
Very low volume (<3)	3% (3/99) [2.9%, 1-10, 0.942]	3.8% (2/53) [3%, 1-13, 0.928]
Low volume (3-<6)	3.3% (4/123) [3.1%, 1-10, 0.846]	2.3% (3/131) [2%, 1-7, 0.487]
Medium volume (≥6)	2.5% (6/244) [2.6%, 1-7, 0.857]	3.5% (9/254) [4%, 2-9, 0.599]
Queensland	**2.8% (13/466)**	**3.2% (14/438)**

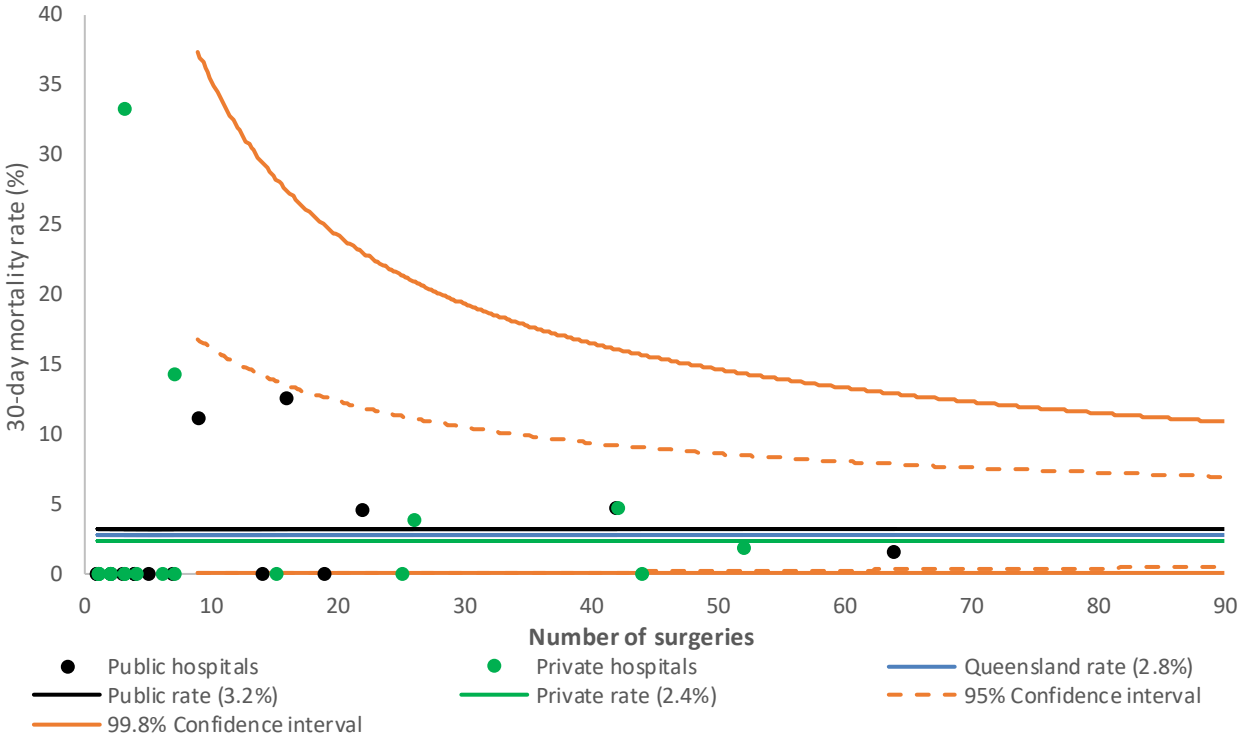
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2007-2011

Crude rate 5 years combined

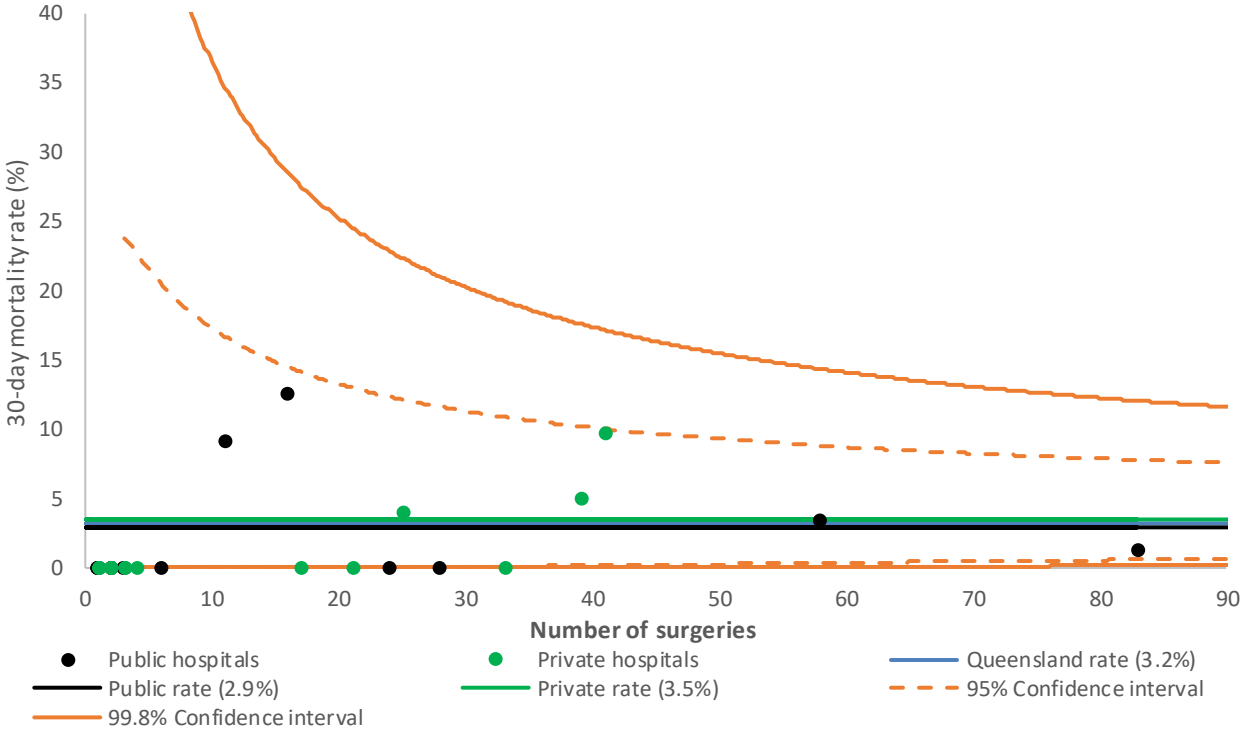
3.2.2 | 30-day mortality following gastrectomy by hospital volume



Diagnosis years 2012-2016

Crude rate 5 years combined

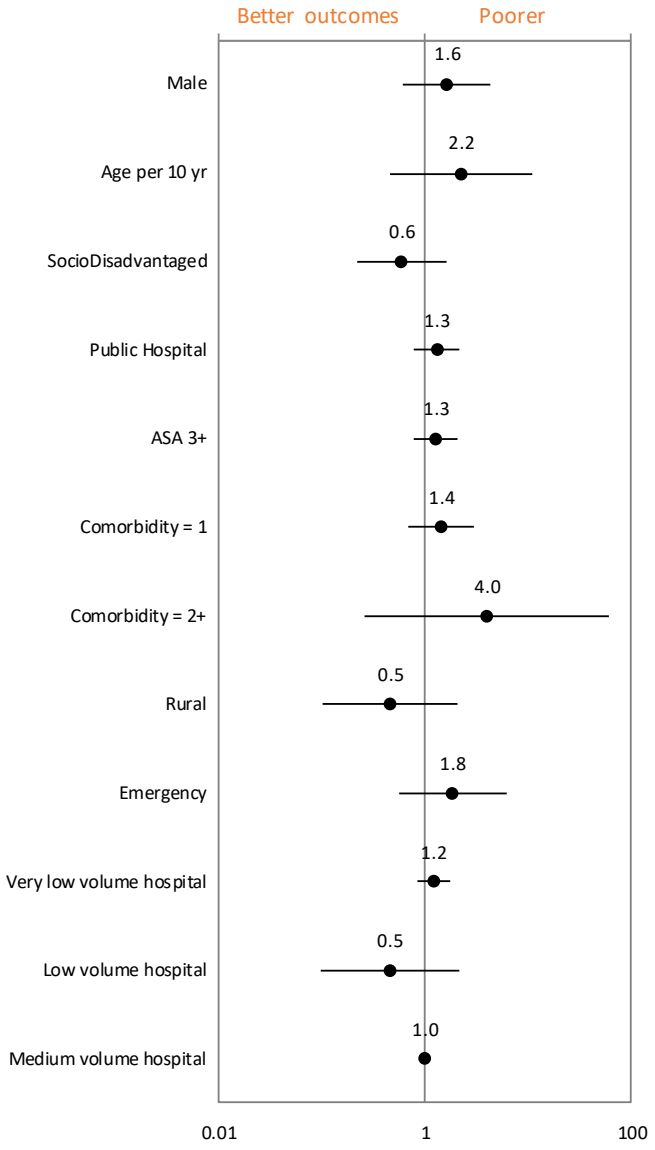
3.2.3 | 30-day mortality following gastrectomy by hospital volume



Diagnosis years 2007-2016

10 years combined

3.2.4 | Relative risk of 30 days mortality following gastrectomy



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

Risk factors of emergency and very low volume hospitals have been removed from this forest plot as they could not be calculated.

3.3 | 90-day mortality

Diagnosis years 2007-2016

3.3.1 | What percentage of patients die within 90 days of gastrectomy?

	2007-2011 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]	2012-2016 Diagnosis year Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	5% (18/363) [5%, 3-9, 0.991]	5.2% (19/363) [5.2%, 3-10, 0.663]
Group A public hospitals	5% (3/60) [5%, 2-17, 0.98]	2.5% (1/40) [2.5%, 0-19, 0.553]
Group B hospitals	6.7% (2/30) [6.8%, 2-29, 0.661]	0% (0/28) [0%, 0-100, 1]
Other hospitals	0% (0/13) [0%, 0-100, 1]	0% (0/7) [0%, 0-100, 1]
Hospital type		
Public hospitals	6.5% (14/217) [6.4%, 3-13, 0.443]	4.6% (11/240) [4.6%, 2-10, 0.985]
Private hospitals	3.6% (9/249) [3.6%, 2-8, 0.437]	4.5% (9/198) [4.5%, 2-10, 0.983]
Volume group		
Very low volume (<3)	5.1% (5/99) [4.4%, 2-12, 0.809]	5.7% (3/53) [4.3%, 1-15, 0.923]
Low volume (3-<6)	5.7% (7/123) [5.8%, 2-13, 0.718]	3.1% (4/131) [2.8%, 1-8, 0.379]
Medium volume (≥6)	4.5% (11/244) [4.8%, 2-10, 0.928]	5.1% (13/254) [5.7%, 3-12, 0.521]
Queensland	**4.9% (23/466)**	**4.6% (20/438)**

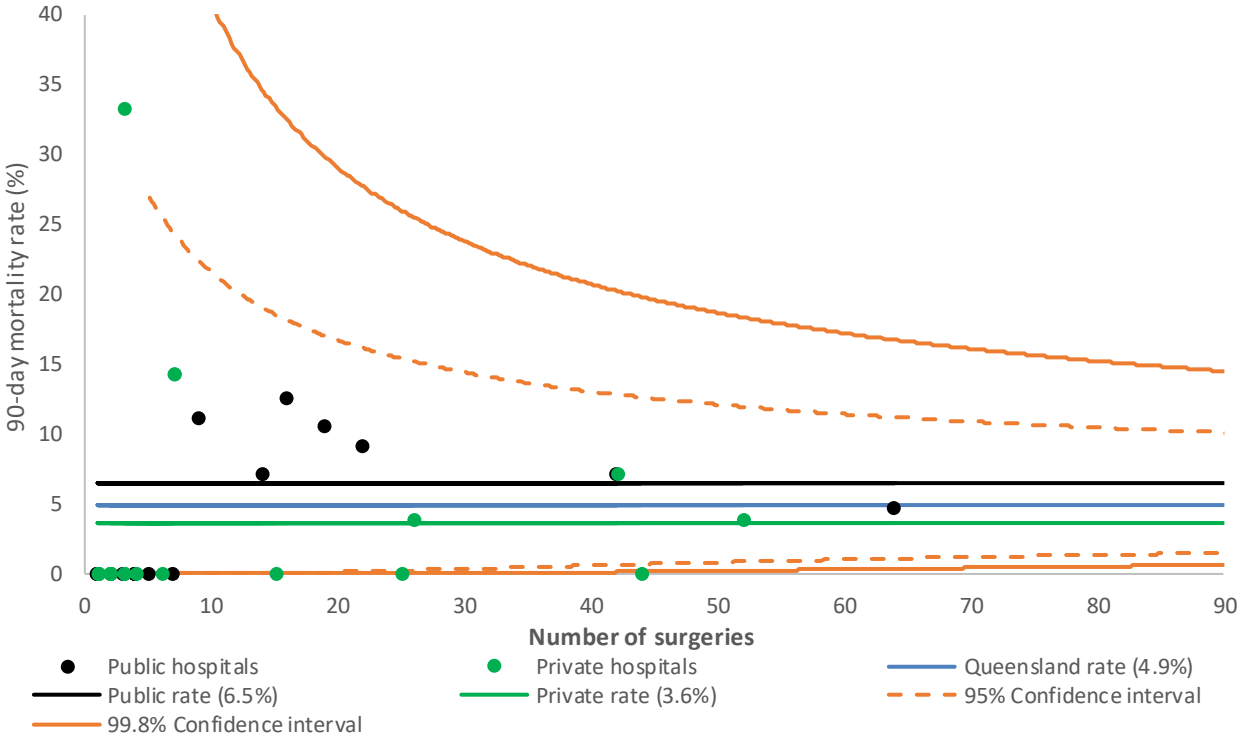
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2007-2011

Crude rate 5 years combined

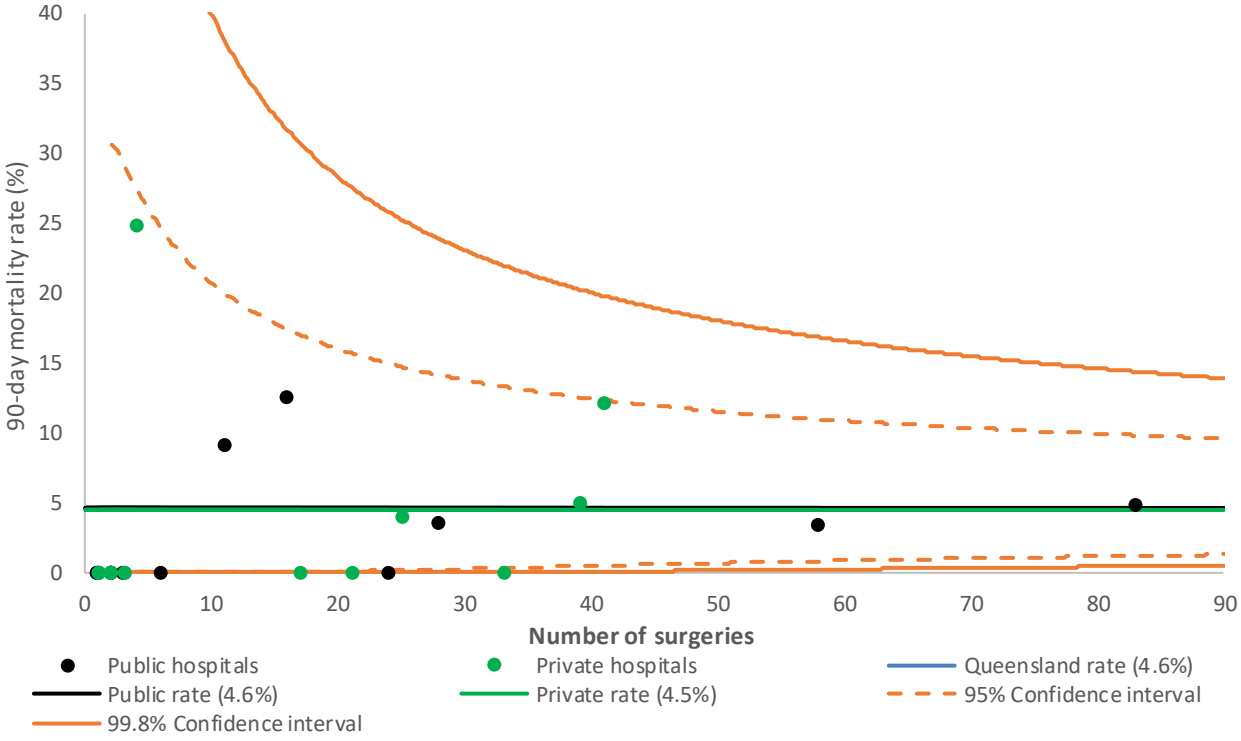
3.3.2 | 90-day mortality following gastrectomy by hospital volume



Diagnosis years 2012-2016

Crude rate 5 years combined

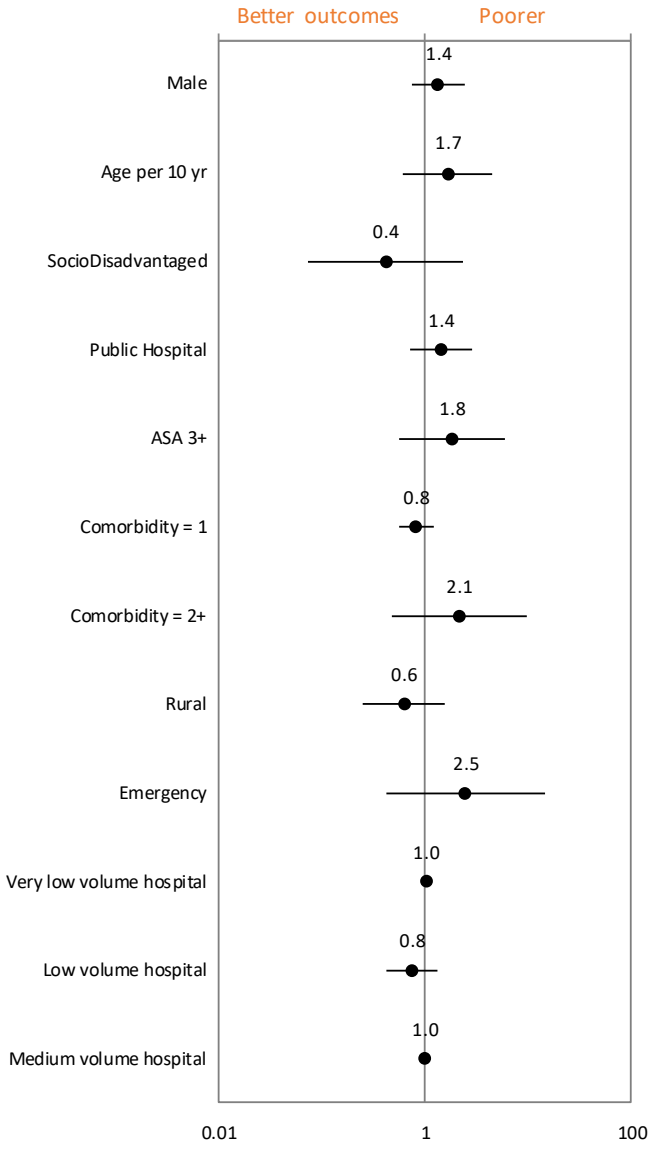
3.3.3 | 90-day mortality following gastrectomy by hospital volume



Diagnosis years 2007-2016

10 years combined

3.3.4 | Relative risk of 90 days mortality following gastrectomy



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

Risk factors of emergency and very low volume hospitals have been removed from this forest plot as they could not be calculated.

4| Accessible

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

4.1 | Multi-Disciplinary Team (MDT) rate

Diagnosis years 2007-2016

4.1.1 | How many patients who receive gastrectomy are discussed at MDT*?

	2007-2011 **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]	**2012-2016** **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	21% (77/363) [21%, 16-28, 0.657]	48% (176/363) [48%, 42-56, 0.865]
Group A public hospitals	27% (16/60) [27%, 17-42, 0.214]	88% (35/40) [87%**, 75-100, 0]
Group B hospitals	0% (0/30) [0%**, 0-0, 0]	11% (3/28) [11%**, 4-31, 0.005]
Other hospitals	0% (0/13) [0%**, 0-0, 0]	14% (1/7) [14%, 2-88, 0.183]
Hospital type		
Public hospitals	40% (87/217) [40%**, 31-51, 0]	79% (189/240) [79%**, 70-88, 0]
Private hospitals	2.4% (6/249) [2.4%**, 1-5, 0]	13% (26/198) [13%**, 9-19, 0]
Volume group		
Very low volume (<3)	13% (13/99) [13%, 8-23, 0.128]	28% (15/53) [28%*, 18-44, 0.014]
Low volume (3-<6)	15% (18/123) [15%, 9-23, 0.19]	40% (52/131) [40%, 31-50, 0.072]
Medium volume (≥6)	25% (62/244) [25%, 19-34, 0.093]	58% (148/254) [58%*, 51-67, 0.017]
Queensland	**20% (93/466)**	**49% (215/438)**

Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

*MDT rate includes facilities that use QOOL to capture MDT review

4.2 | MDT review characteristics

Diagnosis years 2007-2011

4.2.1 | What are the characteristics of patients who receive gastrectomy and are discussed at MDT*?

Peer group	Principal referral and Group A private hospitals			Group A public hospitals			Group B hospitals			Other hospitals			Public hospitals			Private hospitals			**Queensland**		
	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate
Total	77	363	21%	16	60	27%	30			13			87	217	40%	6	249	2%	93	466	20%
% Male	46	227	20%	9	42	21%	18			8			54	143	38%	1	152	1%	55	295	19%
% Female	31	136	23%	7	18	39%	12			5			33	74	45%	5	97	5%	38	171	22%
% ≥75 Age	29	136	21%	4	19	21%	11			8			32	74	43%	1	100	1%	33	174	19%
% <75 Age	48	227	21%	12	41	29%	19			5			55	143	38%	5	149	3%	60	292	21%
% Indigenous	1	11	9%	1	4	25%							2	12	17%		3		2	15	13%
% Socioeconomically disadvantaged	20	66	30%	4	19	21%	7			1			24	61	39%		32		24	93	26%
% Socioeconomically middle	51	228	22%	11	39	28%	22			11			57	139	41%	5	161	3%	62	300	21%
% Socioeconomically affluent	6	69	9%	1	2	50%	1			1			6	17	35%	1	56	2%	7	73	10%
% Live rural	52	258	20%	11	40	28%	13			8			59	137	43%	4	182	2%	63	319	20%
% Live regional	25	105	24%	5	20	25%	17			5			28	80	35%	2	67	3%	30	147	20%
% With ≥ 1 comorbidity	35	181	19%	6	32	19%	16			6			39	113	35%	2	122	2%	41	235	17%
% ASA ≥ 3	38	183	21%	8	24	33%	11			4			44	113	39%	2	109	2%	46	222	21%

*MDT rate includes facilities that use QOOL to capture MDT review

Diagnosis years 2012-2016

4.2.2 | What are the characteristics of patients who receive gastrectomy and are discussed at MDT?

Peer group	Principal referral and Group A private hospitals			Group A public hospitals			Group B hospitals			Other hospitals			Public hospitals			Private hospitals			**Queensland**		
	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate	Reviewed at MDT	Surgical cohort	MDT rate
Total	176	363	48%	35	40	88%	3	28	11%	1	7	14%	189	240	79%	26	198	13%	215	438	49%
% Male	106	226	47%	25	28	89%	1	17	6%	1	6	17%	118	155	76%	15	122	12%	133	277	48%
% Female	70	137	51%	10	12	83%	2	11	18%		1		71	85	84%	11	76	14%	82	161	51%
% ≥75 Age	45	113	40%	9	11	82%	2	8	25%		2		51	68	75%	5	66	8%	56	134	42%
% <75 Age	131	250	52%	26	29	90%	1	20	5%	1	5	20%	138	172	80%	21	132	16%	159	304	52%
% Indigenous	3	7	43%	1	2	50%		3			1		4	9	44%		4		4	13	31%
% Socioeconomically disadvantaged	40	77	52%	13	13	100 %		6					52	64	81%	1	32	3%	53	96	55%
% Socioeconomically middle	111	225	49%	22	27	81%	3	21	14%	1	6	17%	119	152	78%	18	127	14%	137	279	49%
% Socioeconomically affluent	25	61	41%					1			1		18	24	75%	7	39	18%	25	63	40%
% Live rural	122	254	48%	12	15	80%	3	13	23%	1	5	20%	121	153	79%	17	134	13%	138	287	48%
% Live regional	54	109	50%	23	25	92%		15			2		68	87	78%	9	64	14%	77	151	51%
% With ≥ 1 comorbidity	92	194	47%	19	22	86%	2	17	12%	1	2	50%	103	129	80%	11	106	10%	114	235	49%
% ASA ≥ 3	97	193	50%	22	25	88%	1	8	13%	1	7	14%	113	145	78%	8	88	9%	121	233	52%

*MDT rate includes facilities that use QOOL to capture MDT review

5| Equitable

Providing care and ensuring health status does not vary in quality because of personal characteristics.

5.1 | In-flows

Diagnosis years 2007-2016

5.1.1 | What percent of patients who receive gastrectomy reside outside my HHS?

	2007-2011 Diagnosis year		2012-2016 Diagnosis year	
	# of hospitals performing surgery	% (n/N)	# of hospitals performing surgery	% (n/N)
Cairns and Hinterland	1	0% (0/4)	1	17% (1/6)
Central Queensland	2	0% (0/2)		
Children's Health Queensland			1	100% (2/2)
Darling Downs	3	13% (1/8)	3	0% (0/5)
Gold Coast	4	6% (3/54)	4	5% (2/41)
Mackay	1	0% (0/1)	1	0% (0/1)
Metro North	8	40% (58/146)	6	38% (56/148)
Metro South	7	42% (72/171)	6	45% (67/150)
North West	1	0% (0/1)		
Sunshine Coast	4	4% (1/27)	5	3% (1/35)
Townsville	2	49% (18/37)	2	40% (18/45)
West Moreton	2	0% (0/9)	2	0% (0/3)
Wide Bay	2	0% (0/6)	1	0% (0/2)
Queensland	**37**	**33% (153/466)**	**32**	**35% (147/438)**

In-flows represent the number of patients who travelled from another HHS to receive surgery in my HHS.

The denominator (N) is the number of patients who received surgery in my HHS.
The numerator (n) is the number of patients who reside outside my HHS.

5.2 | Out-flows

Diagnosis years 2007-2016

5.2.1 | What percentage of patients underwent gastrectomy outside of the HHS that they reside in?

	2007-2011 Diagnosis year % (n/N)	2012-2016 Diagnosis year % (n/N)
Cairns and Hinterland	81% (17/21)	72% (13/18)
Central Queensland	88% (15/17)	100% (11/11)
Central West	100% (2/2)	
Darling Downs	74% (20/27)	78% (18/23)
Gold Coast	9% (5/56)	11% (5/44)
Mackay	90% (9/10)	94% (15/16)
Metro North	13% (13/101)	10% (10/102)
Metro South	12% (13/112)	13% (12/95)
North West	50% (1/2)	100% (1/1)
Sunshine Coast	30% (11/37)	31% (15/49)
Torres and Cape	100% (1/1)	100% (2/2)
Townsville	21% (5/24)	0% (0/27)
West Moreton	65% (17/26)	87% (20/23)
Wide Bay	80% (24/30)	93% (25/27)
Queensland	**33%** **(153/466)**	**35%** **(147/438)**

Out-flows describe the number of HHS residents receiving surgery for their cancer diagnosis who travelled externally for their surgery.

The denominator (N) is the number of HHS residents receiving surgery.

The numerator (n) is the number of patients travelling to a different HHS for surgery.

6| Surgical survival

Understanding the outcomes of oncological surgery.

6.1 | 1-year surgical survival

Diagnosis years 2007-2016

6.1.1 | What percentage of patients are alive one year after gastrectomy?

	2007-2011 **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]	**2012-2016** **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	76% [76%, 68-82, 0.671]	80% [79%, 72-85, 0.551]
Group A public hospitals	78% [79%, 62-88, 0.82]	88% [88%, 70-95, 0.336]
Group B hospitals	83% [84%, 60-93, 0.452]	89% [90%, 68-97, 0.301]
Other hospitals	92% [93%, 50-99, 0.243]	100% [100%, 0-100, 1]
Hospital type		
Public hospitals	73% [72%, 61-80, 0.211]	81% [82%, 73-87, 0.939]
Private hospitals	81% [82%, 74-87, 0.235]	82% [81%, 72-87, 0.928]
Volume group		
Very low volume (<3)	82% [84%, 73-90, 0.177]	79% [82%, 67-91, 0.871]
Low volume (3-<6)	76% [76%, 65-84, 0.876]	85% [86%, 77-91, 0.271]
Medium volume (≥6)	76% [74%, 65-81, 0.472]	80% [78%, 70-85, 0.433]
Queensland	**77%**	**81%**

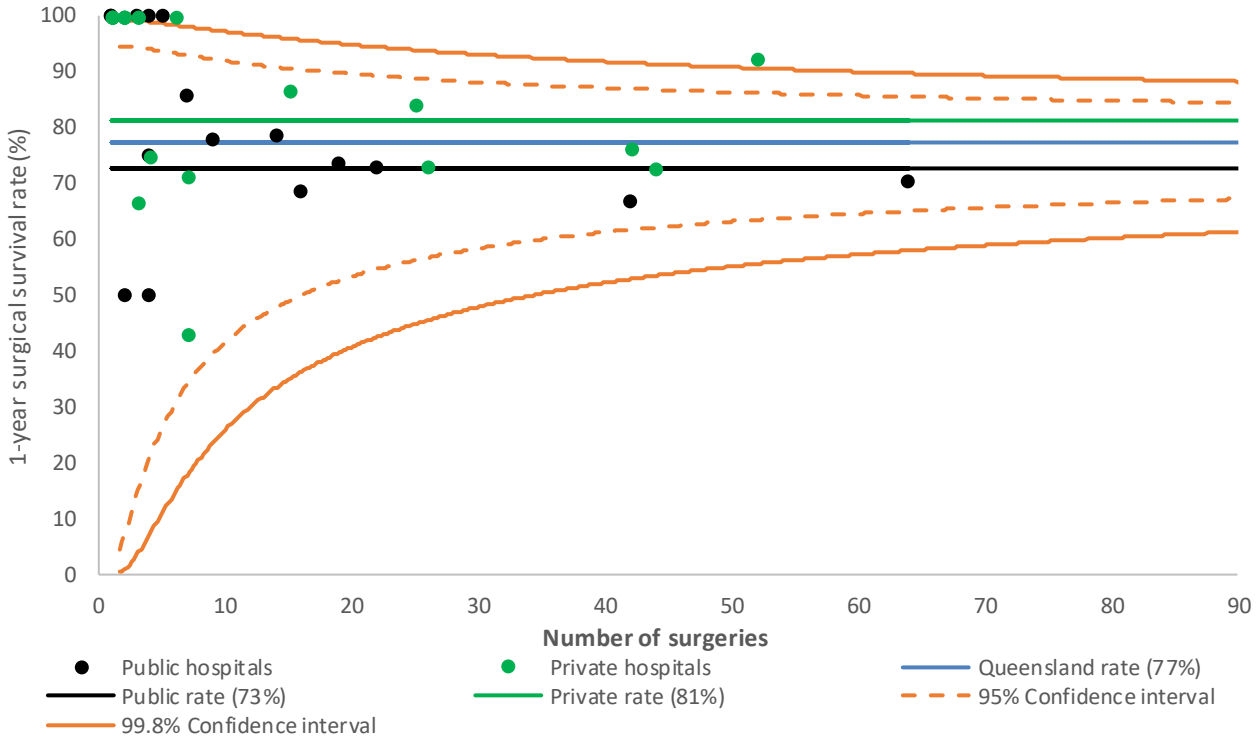
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2007-2011

Crude rate, 5 years combined

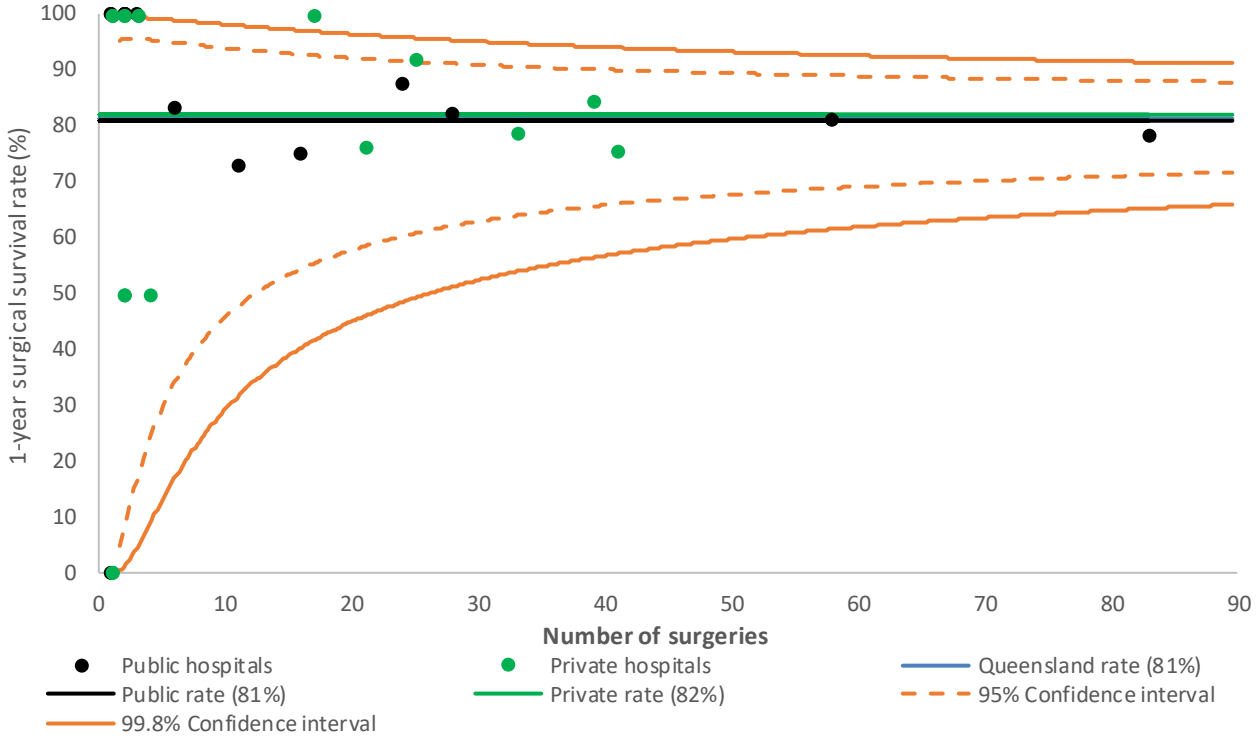
6.1.2 | 1-year surgical survival following gastrectomy by hospital volume



Diagnosis years 2012-2016

Crude rate, 5 years combined

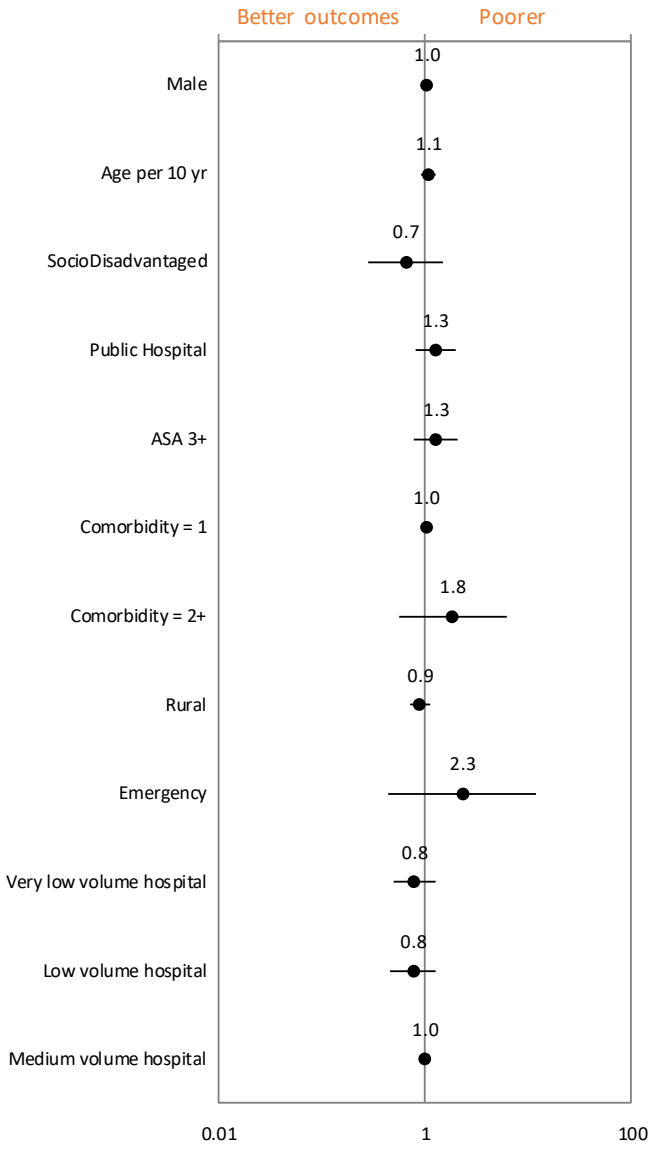
6.1.3 | 1-year surgical survival following gastrectomy by hospital volume



Diagnosis years 2007-2016

10 years combined

6.1.4 | 1 year surgical survival following gastrectomy



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6.2 | 2-year surgical survival

Diagnosis years 2007-2016

6.2.1 | What percentage of patients are alive two years after gastrectomy?

	2007-2011 **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]	**2012-2016** **Diagnosis year** Crude rates (n/N) [Adjusted rates, CI%, P value]
Report peer group		
Principal referral and Group A private hospitals	60% [60%, 53-67, 0.757]	67% [67%, 58-74, 0.528]
Group A public hospitals	63% [61%, 45-73, 0.938]	78% [75%, 58-85, 0.482]
Group B hospitals	73% [69%, 48-82, 0.399]	82% [84%, 60-93, 0.17]
Other hospitals	77% [73%, 40-88, 0.382]	71% [84%, 34-96, 0.384]
Hospital type		
Public hospitals	59% [56%, 46-65, 0.232]	68% [68%, 60-75, 0.752]
Private hospitals	64% [65%, 55-73, 0.47]	71% [70%, 59-78, 0.867]
Volume group		
Very low volume (<3)	65% [67%, 55-75, 0.352]	68% [77%, 64-85, 0.231]
Low volume (3-<6)	63% [62%, 50-71, 0.949]	72% [73%, 61-81, 0.53]
Medium volume (≥6)	60% [58%, 46-67, 0.444]	69% [67%, 56-75, 0.522]
Queensland	**62%**	**69%**

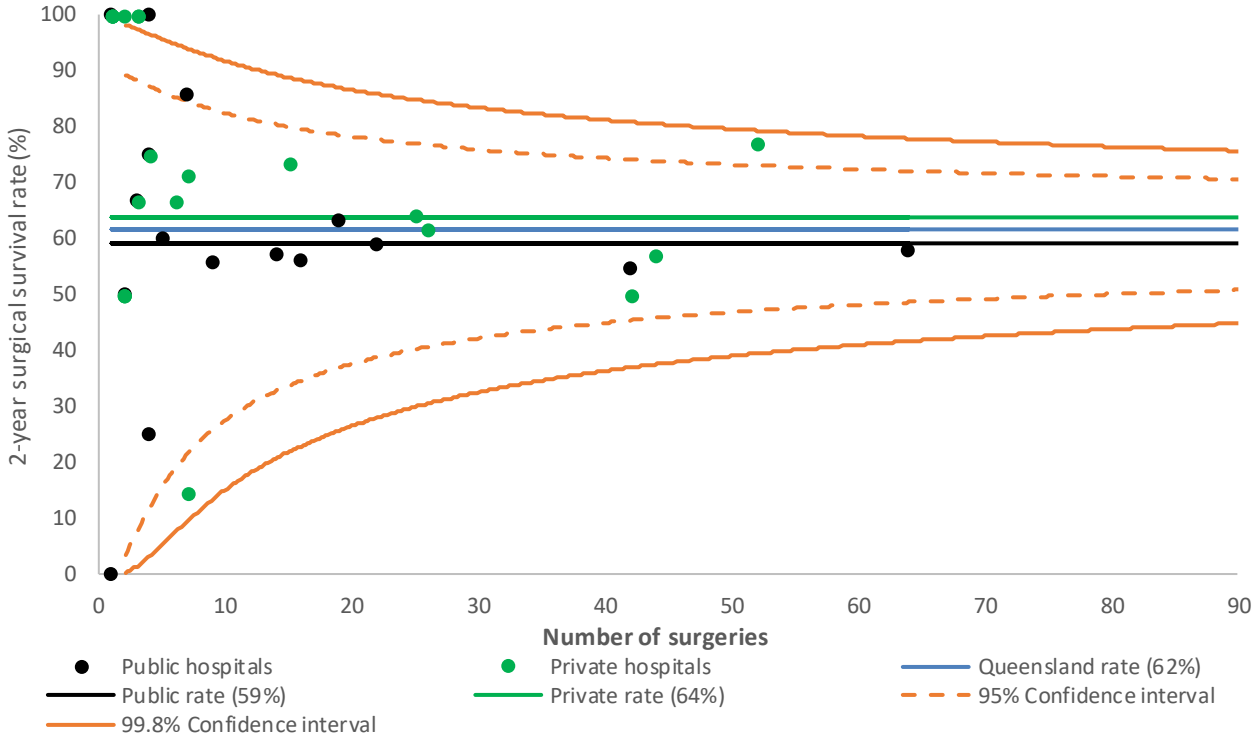
Annual average volume groups: Medium (≥6 surgeries per year), Low (3-<6 surgeries per year), Very low (<3 surgeries per year).

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 *.

Diagnosis years 2007-2011

Crude rate, 5 years combined

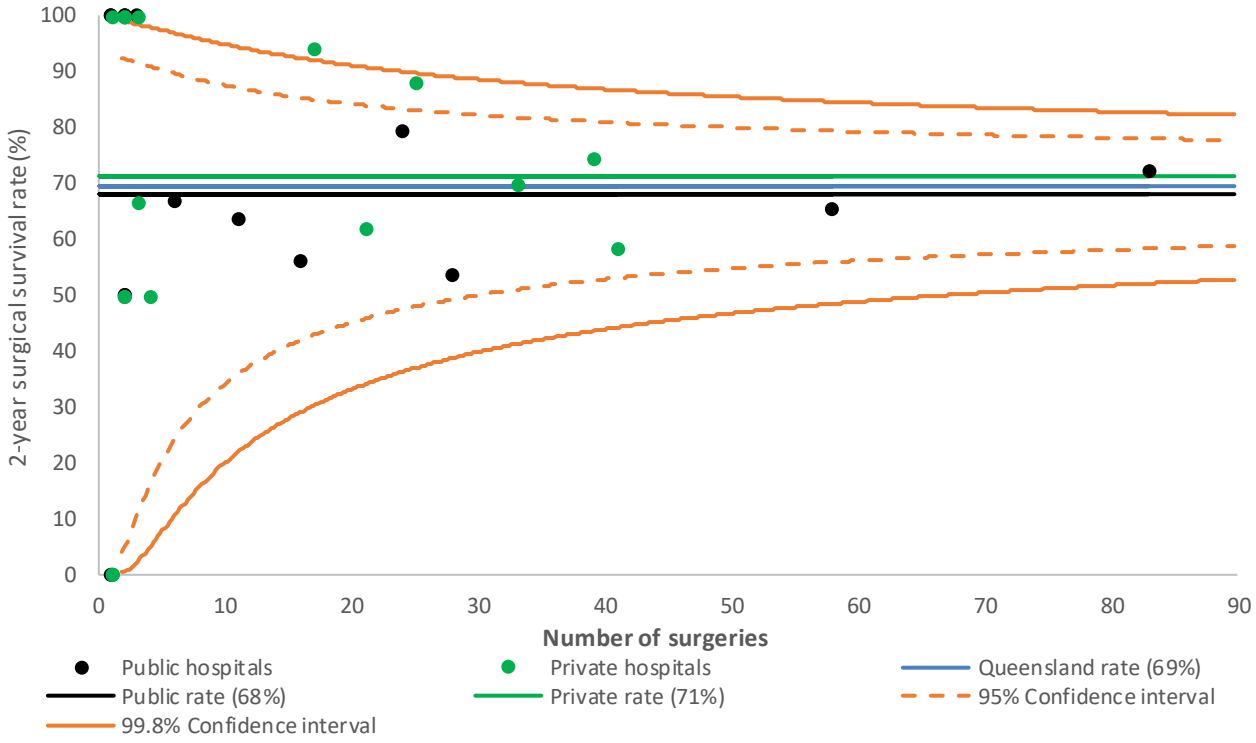
6.2.2 | 2-year surgical survival following gastrectomy by hospital volume



Diagnosis years 2012-2016

Crude rate, 5 years combined

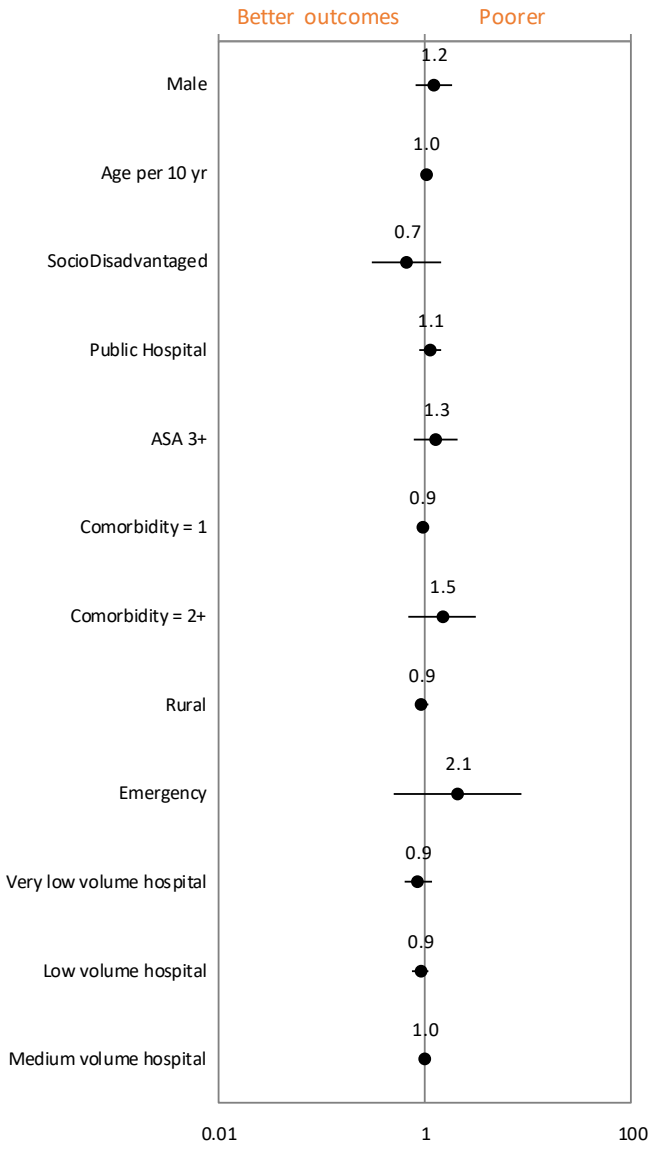
6.2.3 | 2-year surgical survival following gastrectomy by hospital volume



Diagnosis years 2007-2016

10 years combined

6.2.4 | 2 year surgical survival following gastrectomy



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Appendix

Appendix A | AIHW Peer Group definitions

The following definitions are sourced directly from Australian Institute of Health and Welfare (2015).

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.

Selection methodology:
The selection of Principal referral hospitals was guided by evidence of the following service units:
• 24-hour emergency department
• ICU
• all or most of the following specialised units: cardiac surgery, neurosurgery, infectious diseases, bone marrow transplant, organ (kidney, liver, heart, lung or pancreas) transplant and burns units.

Public acute group A hospitals
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.*

Selection methodology:
Public acute group A hospitals include those public acute hospitals that do not qualify as Principal referral hospitals, and possess all or most of the following characteristics:
• 24-hour emergency department
• ICU
• coronary care unit
• oncology unit
• more than 10% of acute weighted separations having a DRG with a cost weight greater than 4
• more than 200 DRGs with at least 5 separations

Private acute group A hospitals
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.

Selection methodology:
The selection of Private acute group A hospitals was guided by the presence of both of the following characteristics:
• 24-hour emergency department
• ICU

Selection was also guided by the presence of all or most of the following facilities:
• special care nursery unit
• coronary care unit
• cardiac surgery unit
• neurosurgery unit

Public acute 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.

Selection methodology:

Public acute group B hospitals do not have the high-end specialised service units that are in the Principal referral hospitals and the Public acute group A hospitals but have a 24-hour emergency department.

Private acute 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.

Selection methodology:

The selection of private acute hospitals for Group B hospitals was guided by the presence of an ICU and all or most of the following characteristics:

- special care nursery unit
- coronary care unit
- cardiac surgery unit
- neurosurgery unit.

The selection process was essentially the same as for the Private acute group A hospitals except without the 24-hour emergency department component.

Public acute group C 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).

Selection methodology:

Public acute group C hospitals consist of public acute hospitals that do not meet the service characteristics of the Principal referral hospitals, Public acute group A hospitals and Public acute group B hospitals, but possess all or most of the following characteristics:

- proportion of separations with surgery greater than 4%
- obstetric unit
- emergency department, or accident and emergency service.

Hospitals with a high proportion of surgical separations with low cost weights are excluded from this group.

Private acute group C 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.

Selection methodology:

The selection of Private acute group C hospitals was based on those private acute hospitals that:

- do not meet the service characteristics of Private acute group A hospitals and Private acute group B hospitals
- had at least 200 separations in 7 or more of the following 19 selected SRGs: Acute psychiatry; Breast surgery; Cardiology; Cardiothoracic surgery; Chemotherapy; Colorectal surgery; Ear, nose, throat, head and neck; Gastroenterology; Gynaecology; Neurology; Neurosurgery; Obstetrics;

Oncology; Ophthalmology; Orthopaedics; Plastic and reconstructive surgery; Qualified neonate; Rehabilitation and Respiratory medicine.

Public acute group D 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.

Selection methodology:

Public acute group D hospitals consist of public acute hospitals that do not meet the service characteristics of the other public acute hospital groups, but have 200 or more separations per year. Hospitals with fewer than 200 separations were allocated to the Very small hospitals group.

Private acute group D hospitals

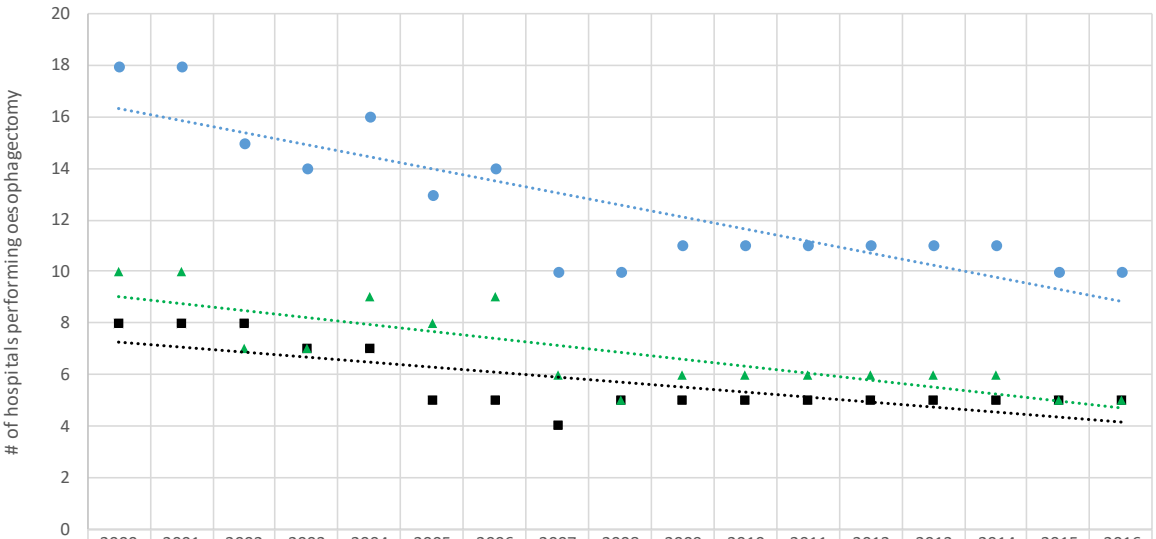
Private acute group D hospitals are those private acute hospitals that do not provide emergency department services or have an intensive care unit, do not provide specialised services in a range of clinical specialities, but had 200 or more separations

Appendix B | Facilities performing surgery over time

Oesophagectomy

Diagnosis year 2000-2016

Number of hospitals performing oesophagectomy by year



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All	18	18	15	14	16	13	14	10	10	11	11	11	11	11	11	10	10
Public	8	8	8	7	7	5	5	4	5	5	5	5	5	5	5	5	5
Private	10	10	7	7	9	8	9	6	5	6	6	6	6	6	6	5	5

Linear trend lines have been used to approximate the slope and direction of hospital numbers over time.

Total unique facilities: 25

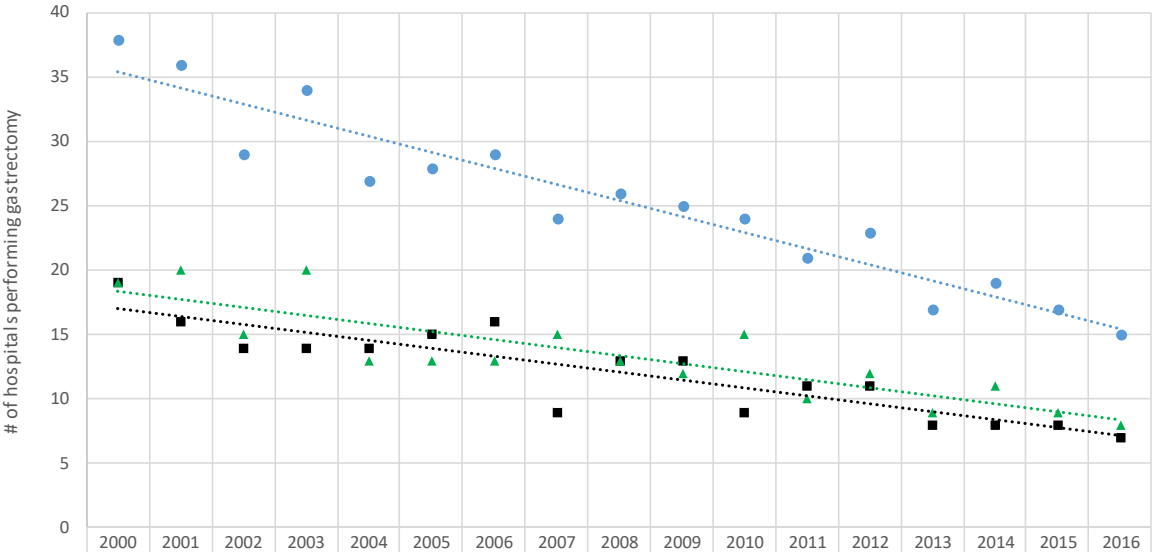
Total unique public facilities: 13

Total unique private facilities: 12

Gastrectomy

Diagnosis year 2000-2016

Number of hospitals performing gastrectomy by year



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All	38	36	29	34	27	28	29	24	26	25	24	21	23	17	19	17	15
Public	19	16	14	14	14	15	16	9	13	13	9	11	11	8	8	8	7
Private	19	20	15	20	13	13	13	15	13	12	15	10	12	9	11	9	8

Linear trend lines have been used to approximate the slope and direction of hospital numbers over time.

Total unique facilities: 54

Total unique public facilities: 24

Total unique private facilities: 30

Appendix C | Patient cohort ICD-10-AM codes

What are the exact ICD codes that define the patient cohort?

Procedure group	Procedure code	Procedure name
Oesophagectomy	3029400	Cervical oesophagectomy
	3053500	Oesophagectomy by abdominal and transthoracic mobilisation with thoracic oesophagogastric anastomosis
	3053600	Oesophagectomy by abdominal and transthoracic mobilisation with cervical oesophagogastric anastomosis
	3053601	Oesophagectomy by abdominal and transthoracic mobilisation with cervical oesophagostomy
	3054100	Trans-hiatal oesophagectomy by abdominal and cervical mobilisation with oesophagogastric anastomosis
	3054101	Trans-hiatal oesophagectomy by abdominal and cervical mobilisation with oesophagojejunal anastomosis
	3054500	Oesophagectomy by abdominal and thoracic mobilisation with thoracic anastomosis large intestine interposition and anastomosis
	3054501	Oesophagectomy by abdominal and thoracic mobilisation with thoracic anastomosis using Roux-en-Y reconstruction
	3055000	Oesophagectomy by abdominal and thoracic mobilisation with cervical anastomosis large intestine interposition and anastomosis
	3055001	Oesophagectomy by abdominal and thoracic mobilisation with cervical anastomosis using Roux-en-Y reconstruction
	3055400	Oesophagectomy with reconstruction by free jejunal flap
	3055401	Oesophagectomy with reconstruction by other free flap
Gastrectomy	3051800	Partial distal gastrectomy with gastroduodenal anastomosis
	3051801	Partial distal gastrectomy with gastrojejunal anastomosis
	3051802	Partial proximal gastrectomy with oesophagogastric anastomosis
	3052100	Total gastrectomy
	3052300	Subtotal gastrectomy
	3052400	Radical gastrectomy

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3. Australian Institute of Health and Welfare. Australian hospital peer groups [Internet]. Canberra; 2015 p. 17-28. Available from: https://www.aihw.gov.au/getmedia/79e7d756-7cfe-49bf-b8c0-0bbb0daa2430/14825.pdf.aspx?inline=true

4. State of Queensland (Queensland Health). Queensland Hospital Admitted Patient Data Collection (QHAPDC) Manual 2019-2020 Collection Year [Internet]. 2019. Available from: https://www.health.qld.gov.au/hsu/collections/qhapdc

Method

Adjusted rates

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

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 cancer in 2010 and 2015, the surgery record linked to the cancer diagnosed in 2010 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 recorded in the Queensland Cancer Register, the latest incident year being 2016. Only patients diagnosed between 2007 and 2016 will be included in this report. Patients that had surgery in 2007 but were diagnosed in an earlier year are excluded from the report.

Changes in historical incidence

Cancer incidence has increased slightly due to an increased number of sources notifying cancer, improved processes within the Queensland Cancer Register, and an increase in electronic notifications from public and private pathology laboratories (around 2-3% annually from 2010). Caution should be used when comparing this report to previous editions.

Glossary

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.

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 infarction	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.

Aboriginal and Torres Strait Islander status

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

MDT Review

Cancer patients are discussed by a Multidisciplinary Team (MDT) to ensure all available treatment options are considered. In this report, MDT rate includes facilities that use QOOL to capture MDT review.

Number of surgeries

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

Private hospital

All hospitals that are not 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, 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.

Readmission for acute emergency care
An emergency admission is an admission of a patient for care or treatment. Although the following list is not definitive an emergency patient would qualify as one of the below:

- at risk of serious morbidity or mortality and requiring urgent assessment and/or resuscitation
- suffering from suspected acute organ or system failure
- suffering from an illness or injury where the viability or function of a body part or organ is acutely threatened
- suffering from a drug overdose, toxic substance or toxin effect
- experiencing severe psychiatric disturbance whereby the health of the patient or other people is at immediate risk
- suffering severe pain where the viability or function of a body part or organ is suspected to be acutely threatened
- suffering acute significant haemorrhage and requiring urgent assessment and treatment
- suffering gynaecological or obstetric complications
- suffering an acute condition which represents a significant threat to the patients physical or psychological wellbeing
- suffering a condition which represents a significant threat to public health.

For further information please refer to the Queensland Hospital Admitted Patient Data Collection (QHAPDC) Manual (State of Queensland (Queensland Health), 2019).

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
Major City	Metropolitan
Inner Regional	Regional
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 use 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%

FOR MORE INFORMATION

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