

Victorian Cancer Performance Monitoring Framework (VCPMF)

Phase II Pilot

Cancer Performance Indicator Results

2015 Data

September 2017

Table of Contents

Table of Figures	3
Table of Tables	4
Invitation to review 2015 results	5
What's new?	6
- ICS requests for follow-up data	7
Introduction	8
- Indicator identification, selection & development	9
- Data collection statement	9
- Use of information	10
Cancer performance indicator results	12
- Performance Indicator 1: Emergency presentation and new cancer diagnosis	12
- Performance Indicator 4b: Pathological diagnosis	21
- Performance Indicator 6: Registry-derived stage at diagnosis	23
- Performance Indicator 8: Reporting ECOG performance status	29
- Performance Indicator 13: Timeliness of initial treatment after cancer diagnosis	33
- Performance Indicator 16: Timeliness of adjuvant chemo for stage III colon cancer	49
- Performance Indicator 17: No. of lymph nodes examined during colon cancer surgery	52
- Performance Indicator 19: Deaths following cancer surgery	55
- Performance Indicator 26: Length of stay following cancer surgery	57
Data	63
- The Victorian Cancer Registry (VCR)	63
- Administrative data	63
- Data linkage	63
Glossary	65
References	66
Appendices	69
- <i>Appendix 1: ICS results by health service (PI-13)</i>	
- <i>Appendix 2: ICS results by health service (PI-17)</i>	
- <i>Appendix 3: ICD-10-AM surgery procedure codes</i>	

Table of Figures

- Figure 1: Emergency presentation and new diagnosis for all tumour streams	14
- Figure 2: Emergency presentation and new diagnosis for genitourinary cancers	15
- Figure 3: Emergency presentation and new diagnosis for upper gastrointestinal cancers	15
- Figures 4-7: Emergency presentation and new diagnosis by ICS of residence	17
- Figure 8: Pathological diagnosis (lung) by ICS of residence	22
- Figure 9: Recorded RD-Stage at cancer diagnosis (breast, colorectal, prostate cancer)	25
- Figures 10-12: Recorded RD-Stage at cancer diagnosis (breast, colorectal, prostate cancer) by ICS of residence	26
- Figure 13: ECOG performance status recorded for all tumour streams	30
- Figure 14: ECOG performance status recorded by ICS of residence	32
- Figure 15: Proportion of patients that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis for all tumour streams	35
- Figure 16: Proportion of patients that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis for all tumour streams by ICS of patient residence	37
- Figures 17-27: Proportion of patients that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis for each tumour stream by ICS of patient residence	38
- Figure 28: Proportion of patients who did receive adjuvant chemotherapy parenterally within 8 weeks of surgery for RD-Stage III colon cancer by ICS surgery hospital	51
- Figure 29: Proportion of colon cancer surgeries for patients with RD-Stage between I-III that had 12 or more lymph nodes examined by ICS surgery hospital	54
- Figure 30: LOS for oesophagogastric, pancreatic and lung cancer patients who undergo cancer surgery	59
- Figure 31: LOS for oesophagogastric cancer patients who received an oesophagectomy by ICS surgery hospital	60
- Figure 32: LOS for pancreatic cancer patients who received a pancreaticoduodenectomy by ICS surgery hospital	60
- Figure 33: LOS for lung cancer patients who received a lobectomy by ICS surgery Hospital	61
- Figure 34: LOS for lung cancer patients who received a pneumonectomy by ICS surgery hospital	61
- Figure 35: LOS for lung cancer patients who received a sub-lobar resection by ICS surgery hospital	62

Table of Tables

- Table 1: Summary of changes to 2014 & 2015 cancer performance indicators	6
- Table 2: VCPMF Cancer Performance Indicators 2015 – A summary	8
- Table 3: Tumour stream and cancer type abbreviations	10
- Table 4: ICS abbreviations used in this report	11
- Table 5: ED presentation and new breast cancer diagnosis by stage	16
- Table 6: ED presentation and new colorectal cancer diagnosis by stage	16
- Table 7: ED presentation and new prostate cancer diagnosis by stage	16
- Table 8: The ECOG scale of performance status	31
- Table 9: ECOG performance status by tumour stream	31
- Table 10: ECOG performance status by ICS of residence	32
- Table 11: The proportion of oesophagogastric, pancreatic and lung cancer patients who died within 30 or 90 days of their first cancer surgery	56
- Table 12: Tumour stream definitions by International Classification of Disease (ICD)	64

Invitation to review 2015 results

5 September 2017

Dear VICS Directors, Managers and Victorian cancer stakeholders

Re: VCPMF Phase II Pilot: Cancer Performance Indicator Results – 2015 Data

Following on from the release of the 2013 and 2014 data, we are pleased to provide the results for the pilot cancer performance indicators for 2015 (See: *What's New?*, p. 6.).

A summary table highlighting the changes to indicators from the 2013 results has been prepared for quick reference (Table 1). The indicators for the 2015 results are the same as for the recently disseminated 2014 results.

The Optimal Care Pathways (OCPs) remain central to structuring our approach to the selection, development and interpretation of the indicators and data results.

We invite you to examine the results and share them with cancer stakeholders in and across your ICS and respective health services.

It is our hope that with each set of results the data quality, indicators and underlying VCPM framework will become more robust and useful for decision makers engaged in quality improvement. It is planned that future VCPMF results will be made available twice yearly.

We remain interested in identifying relevant patterns in the data, commonalities and trends or anomalies and variations, and in particular what your local analyses will reveal about what is happening at a patient, clinical and organisational level. Are there any notable differences between the 2013, 2014 and 2015 data with respect to timeliness of initial treatment after cancer diagnosis? Do the data correlate with any service delivery or other changes implemented, or that have taken place?

The dissemination of the 2015 results provides a further opportunity for comparative analyses across years.

All health service specific data relevant to your ICS have been provided in the appendices (Appendix 1 & 2). We believe the results present opportunities for each of the ICS to work with health services to examine areas that warrant further investigation.

Once again, a **Guide to use of information** (Guide) is the companion document to these results. The Guide provides an overview of the project's framework for quality and performance improvement and charts the flow of information across organisations involved in the analysis of the cancer data. In response to your feedback, an updated *Report on Findings* template (Guide, Attachment 4) to help guide the written responses has been provided. A simple step-by-step summary of the key tasks, timelines and deliverables has also been included (Guide, Attachment 3).

We hope you find the results of interest and valuable, and we look forward to receiving your ICS report on the findings.

Yours sincerely

Dr Peter Briggs
Chair, VCPMF Steering Group
 Clinical Director
 Southern Metropolitan Integrated Cancer Service

What's new?

The most significant change is access to the 2014 and 2015 data which we anticipate will enhance engagement amongst clinicians, health services, executives, administrators and consumers alike.

There are also **three new cancer performance indicators** to supplement the initial suite of six indicators used for the 2013 results. The new indicators for the 2014 and 2015 results are:

- Performance Indicator 4b: Pathological diagnosis
- Performance Indicator 19: Deaths following cancer surgery
- Performance Indicator 26: Length of stay (LOS) following cancer surgery

A number of other changes have been made to the initial suite of indicators in response to suggestions arising from the 2013 results. The indicators for the 2014 and 2015 results are the same.

Table 1: Summary of changes to the 2014 and 2015 cancer performance indicators

No.	Name	Changes / modifications
1.	Emergency presentation and new cancer diagnosis	<ul style="list-style-type: none"> Data for prostate, bladder, kidney and other cancers are specified within the genitourinary stream Data for oesophagogastric, pancreas and other cancers are specified within the upper gastrointestinal tumour stream Stage at diagnosis is provided for breast, colorectal & prostate cancers for 2014 and 2015 for comparison Access to data by ICS of the proportion of ED presentations by patients from within the ICS catchment area and from outside the ICS catchment area is available upon request
6.	Registry-derived stage (RD-Stage) at diagnosis	<ul style="list-style-type: none"> Staging data for prostate has been added
8.	Reporting ECOG performance status	<ul style="list-style-type: none"> More data available
13.	Timeliness of initial treatment after cancer diagnosis	<ul style="list-style-type: none"> Inclusion of radiotherapy data (VRMDS) for initial treatment Updated procedural codes (ICD-10-AM) Data presented to health service level by campus for breast, and head and neck (in addition to colorectal and lung) Colorectal data now available specifically for colon and rectal cancer
16.	Timeliness of parenteral adjuvant chemotherapy for Stage III colon cancer	<ul style="list-style-type: none"> Data by ICS surgery health service (not ICS of patient residence) Some supporting data by same health service for timeliness of adjuvant chemotherapy (parenterally) after surgery, or a secondary health service Patients who receive surgery but do not have chemotherapy are not included in the denominator as in the 2013 results (December 2016) [See: p. 49]
17.	Number of lymph nodes examined during colon cancer surgery	<ul style="list-style-type: none"> Data by ICS surgery health service (not ICS of patient residence) Data on the nodes examined are presented in Appendix 2 by range (0-6, 7-11 & 12 and more examined) Available as health service by campus, cross referenced with the VAED

In response to feedback, the quantum of data available to the health service by campus level has been increased.

The anticipated shift to the use of digital platforms for access to results will greatly increase the availability of health service level data. It will also provide for a more user-led and -friendly results analysis process.

Updated version of Cancer Performance Indicator Results (2013 Data) forthcoming

In consideration of revisions to indicators, changes to procedure codes and modifications to other data collection methods utilised in the 2013 results (December 2016), an updated version will be made available subsequent to the dissemination of the 2014 and 2015 results.

In particular, there was an error in how PI-16 (Timeliness of adjuvant chemotherapy for stage III colon cancer) was calculated for the 2013 results (See, p. 49).

ICS requests for follow up data

Additional health service data by campus is available for certain indicators, tumour streams and cancer types. Where this is available upon request for particular indicators, it has been notated.

Other queries for extra layers of data will be considered favourably where it is readily available and the supporting resources exist.

These requests should be made in writing to marita.reed@dhhs.vic.gov.au.

Introduction

The Victorian Cancer Performance Monitoring project is a joint undertaking between the Victorian Integrated Cancers Services (VICS) and Cancer Strategy and Development, Department of Health and Human Services (DHHS).

The purpose of the project is the development of a cancer performance monitoring framework for evaluating the quality and outcomes of cancer care.

This document presents the pilot results of the second tranche of **nine cancer performance indicators** using 2015 data.

Table 2: VCPMF Cancer Performance Indicators (2015 Data) – A summary of specifications

No.	Name	OCP Step(s)	Domain	Tumour stream / cancer types
1.	Emergency presentation and new cancer diagnosis	[2 & 3]	Process, Outcome	Breast, Central Nervous System, Colorectal, Endocrine-Thyroid, Genitourinary [Prostate, Bladder, Kidney, Other], Gynaecological, Haematological, Head & Neck, Lung, Skin, Upper GI [Oesophagogastric, Pancreas, Other]
4b.	Pathological diagnosis	[3]	Process	Lung
6.	Registry-derived stage (RD-Stage) at diagnosis	[3]	Process, Outcome	Breast, Colorectal, Prostate
8.	Reporting ECOG performance status	[3]	Process	Breast, Central Nervous System, Colorectal, Endocrine-Thyroid, Genitourinary, Gynaecological, Haematological, Head & Neck, Lung, Skin, Upper GI
13.	Timeliness of initial treatment after cancer diagnosis	[3 & 4]	Process	Breast, Central Nervous System, Colorectal [Colon, Rectal], Endocrine-Thyroid, Genitourinary, Gynaecological, Haematological, Head & Neck, Lung, Oesophagogastric, Skin
16.	Timeliness of adjuvant chemotherapy (parenteral) for stage III colon cancer	[4]	Process	Colon cancer
17.	Number of lymph nodes examined during colon cancer surgery	[4]	Process, Outcome	Colon cancer
19.	Deaths following cancer surgery	[4]	Outcome	Upper GI [Oesophagectomy, Pancreatico-duodenectomy] Lung [Lobectomy, Pneumonectomy, Sub-lobar resection]
26.	Length of stay (LOS) following cancer surgery	[4]	Outcome	Upper GI [Oesophagectomy, Pancreatico-duodenectomy] Lung [Lobectomy, Pneumonectomy, Sub-lobar resection]

New indicators for 2014 & 2015 data

Indicator identification, selection & development

The indicator selection and development was a multi-staged process which drew on both evidence-based research and a range of alternative advice gathered through clinician engagement, stakeholder input and expert opinion.

A key component of Phase I involved the identification of potential issues and areas for indicator development, and the specification and initial testing of measures. A set of seven criteria was established to guide the comparison, ranking and assessment of candidate indicator areas for selection by the VCPMF Steering Group.

From an initial pool of around 500 potential indicator areas, six cancer performance indicators were shortlisted for development, specification and testing. An approved shortlist of 28 indicator areas was prioritised into three developmental waves for specification and testing. The indicator areas in each of the waves were reviewed for data collection feasibility and practicality.

The final six shortlisted indicators for fast-track testing underwent a process of development and specification. This initial tranche of indicators was used for the 2013 results. In phase II of the project, a subsequent indicator selection process developed a **further three indicators** for the 2014 and 2015 results.

Data collection statement

The enclosed results relate to Victorians diagnosed in the calendar year 2015. These are identified via the Victorian Cancer Registry (VCR).

The new 2015 data linkage also includes the full Victorian Radiotherapy Minimum Data Set (VRMDS).

The data is collected in accordance with the *Australian Coding Standards for the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification* (ICD-10-AM).

Steps are underway to incorporate the conventions and definitions of the International Classification of Childhood Cancer (ICCC) based on tumour morphology (coded according to ICD-O-3) for paediatric indicators.

Cross-border service delivery and data limitations

The treatment data used in the results of this report were mainly derived from the Victorian Admitted Episodes Dataset (VAED). These datasets only capture treatment provided in Victorian hospitals. Data on cancer treatment for patients that receive treatment in a state other than Victoria is not captured.

As a result, treatment utilisation could be underestimated and bias could be introduced in the results if specific types of patients are treated interstate (for example, if most complex cases are treated interstate while less complex cases are treated locally).

This particularly affects the treatment data for patients in the Hume Regional Integrated Cancer Service (HRICS) area who regularly undergo their treatment in Albury, New South Wales.

Interstate radiotherapy treatment is less common simply because no radiotherapy providers exist close to Victorian borders. Hence, the radiotherapy data captured in the Victorian Radiotherapy Minimum Data Set (VRMDS) is believed to provide a complete picture in terms of radiotherapy utilisation for Victorians diagnosed with cancer.

This report relies on all Victorians diagnosed with cancer to be captured in the VCR. Although the VCR has made data sharing arrangements with the NSW cancer registry regarding pathology reports on patients with a Victorian residential post code, it is unlikely that the 2014 and 2015 data is supplemented

with the NSW pathology information. However, if a patient diagnosed in NSW presents to a Victorian health service, the Victorian health service will notify the VCR. In this case, the date of diagnosis can be incorrect. Similar data sharing arrangements are in place with other states. Finally, although a significant component of health service delivery can be devoted to care for interstate patients, this report only reports on treatment provided to Victorians.

Development of this document

A VCPMF Performance Monitoring Working Party met regularly to attend to issues surrounding data collection and the reporting of results. The composition of the group included the Chair of the VCPMF Steering Group, a regional ICS Manager, Cancer Strategy and Development quality and data personnel, a representative metropolitan ICS data analyst, and the VCPMF project manager.

Use of the information

The aim of VCPMF Phase II is to pilot the ‘use’ of cancer quality and performance information to identify aspects of cancer care in need of further analysis, investigation and quality intervention. The dissemination of these results is a first step to developing the systematic reporting, analysis and ‘use’ of cancer data on a state-wide basis. The data are intended to be used by each of the Integrated Cancer Services (ICS) for internal review and analysis in accordance with their own governance processes.

The accompanying *Guide to use of information* is a companion document to these results. The guide provides for an overview of the project’s framework for quality and performance improvement and charts the proposed flow of information across organisations involved in the analysis of the cancer performance data. A simple step-by-step summary of the key tasks and deliverables has been included (Guide, Attachment 3). A detailed template, *Report on findings: data analysis, clinical insight and organisational guidance for quality improvement*, is provided to guide the ICS report on findings (Guide, Attachment 4).

Tumour stream and cancer type abbreviations

Table 3: Tumour stream and cancer type abbreviations

Tumour stream / cancer type	Diagram abbreviation
Breast	Breast
Central Nervous System	CNS
Colorectal	CRC
- Colon	Colon
- Rectal	Rectal
Endocrine-Thyroid	ET
Genitourinary	GU
- Bladder	Bladder
- Kidney	Kidney
- Prostate	Prostate
- Other	Other
Gynaecological	Gyn
Haematological	Haem
Head and Neck	HN
Lung	Lung
Skin	Skin
Upper Gastrointestinal	UGI
- Oesophagogastric	OG
- Pancreas	Pancreas
- Other	Other

Integrated Cancer Service abbreviations

Table 4: ICS abbreviations used in this report

Integrated Cancer Service (ICS)	Diagram abbreviation
Barwon South Western Regional Integrated Cancer Service (BSWRICS)	BSW
Gippsland Regional Integrated Cancer Service (GRICS)	GR
Grampians Regional Integrated Cancer Service (GICS)	GI
Hume Regional Integrated Cancer Service (HRICS)	HR
Loddon Mallee Integrated Cancer Service (LMICS)	LM
North Eastern Melbourne Integrated Cancer Service (NEMICS)	NEM
Paediatric Integrated Cancer Service (PICS)	PICS
Southern Melbourne Integrated Cancer Service (SMICS)	SM
Western & Central Melbourne Integrated Cancer Service (WCMICS)	WCM

Cancer performance indicator results

Performance indicator (PI) – 1: Emergency presentation and new cancer diagnosis

Summary specifications

OCP Step(s):	[2] – Presentation, initial investigations and referral [3] – Diagnosis and treatment planning
Description / definition:	Proportion of patients newly diagnosed with cancer during and following presentation to an emergency department (ED)
Rationale:	Emergency department presentation can be a surrogate for late diagnosis and has implications for access to health services. Even in countries with high performing health care systems up to one in four patients with cancer are diagnosed in emergency (NHS England 2015). Emergency diagnosis is associated with poorer outcomes (One-year relative survival) for almost all cancer types, and may be particularly stressful for patients (Elliss-Brookes 2012). Two key factors determining outcomes for many cancers are the route to diagnosis and stage at diagnosis. This indicator builds on an identified opportunity for action from the 2016 Victorian Tumour Stream Summit (Oesophagogastric).
Numerator:	<i>The number of patients who presented to an emergency department within the 4 weeks prior to cancer diagnosis (including date of diagnosis)</i>
Denominator:	<i>Total number of patients with a new cancer diagnosis</i>
Tumour streams / cancer types:	Breast, Central Nervous System, Colorectal, Endo-Thyroid, Genitourinary (prostate, bladder, kidney, other), Gynaecological, Haematological, Head & Neck, Lung, Skin and Upper Gastrointestinal (oesophagogastric, pancreas, other)
Stratifications:	Overall Victoria by tumour stream Overall Victoria by cancer type [Genitourinary (prostate, bladder, kidney, other) and Upper Gastrointestinal (oesophagogastric, pancreas, other)] Overall Victoria by cancer stage (breast, colorectal, prostate) ICS of residence*

* As it is not possible to assign diagnosis to a particular health service within the parameters or intent of this indicator, data has not been provided to the health service level by campus.

Data collection statement

For each of the newly diagnosed cancer patients in 2015, a patient was flagged as having an ED presentation if the arrival date at the ED (as recorded in the VEMD) fell within 28 days prior to their diagnosis date (as recorded in the VCR; including date of diagnosis).

The indicator takes into account any presentation to any designated emergency department whether it was within or outside the ICS of patient residence catchment area. It also does not tell us about the place of diagnosis, and whether this was within or outside the ICS of patient residence.

The presentation to the ED is registered irrespective of its relation to the cancer diagnosis. It is possible that a patient admitted to ED due to an unrelated matter was newly diagnosed with cancer.

Not all health services in rural and regional areas that receive emergency patients are accredited EDs, and as such do not contribute to the VEMD. Emergency presentation for patients at a hospital without a designated ED, and not recorded in the VEMD, is not included in this indicator.

Note that Victorian residents presenting to the ED of the Albury campus of Albury Wodonga Health (or any other interstate ED presentation) will not be captured in the VEMD. This can lead to an underestimation in the results, particularly for HRICS residents.

The incomplete data for HRICS will impact the cohort and potentially limit the value of the data for use in service planning.

Data sources

VCR, VEMD

Modifications to indicator for 2015 results

Emergency presentation and new cancer diagnosis is presented by cancer stage (Tables 5-7) for breast, colorectal and prostate cancers in 2014 and 2015. This is presented to confirm this indicator as a proxy for late stage diagnosis.

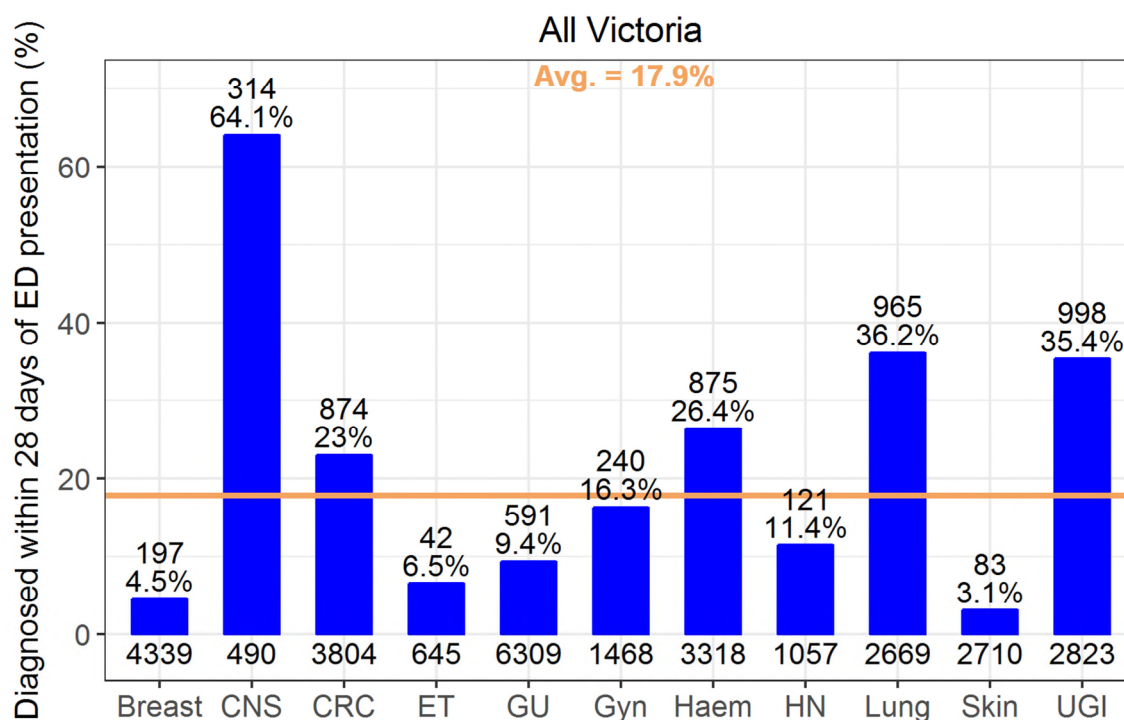
Supplementary data available upon request

The proportion of ED presentations by patients within the ICS catchment, and by patients residing outside the ICS catchment, is available upon request.

Overall Victoria by tumour stream

PI – 1: Emergency presentation and new cancer diagnosis (2015)

Figure 1: Emergency presentation and new cancer diagnosis (PI - 1) for all tumour streams over all Victoria in calendar year 2015.



Comment

This top line indicator can be a surrogate for late diagnosis. It provides a general picture of what is happening across the state.

The number of cases with ED presentation is displayed on top of the blue bars and the total number of diagnoses in 2015 under the blue bars. The Victorian average is depicted by the orange line.

For each of the newly diagnosed cancer patients in 2015, a patient was flagged as having an emergency department (ED) presentation if the arrival date at the ED (recorded in the VEMD) fell within 28 days of the diagnosis date (recorded in the VCR, and inclusive of date of diagnosis). It includes any presentation to the ED regardless of its relation to cancer diagnosis (i.e., even if admission is not cancer-related but there is a new cancer diagnosis). It should be noted that some tumour streams and cancer types manifest symptoms more acutely and therefore result in emergency presentation.

Overall, 17.9% of Victorians diagnosed with a primary cancer had ED presentation in the 28 days prior to their diagnosis. Marked variation exists among tumour streams, ranging from with 64.1% (CNS) to 3.1% (Skin).

Because not all presentations to an ED result in its reporting to the Victorian Emergency Minimum Dataset (VEMD), especially in rural areas where functioning EDs might not be accredited as such, the indicator could result in an underestimation of ED presentations in some areas.

Overall Victoria by cancer type

PI – 1: Emergency presentation and new cancer diagnosis (2015)

Figure 2: Emergency presentation and new cancer diagnosis (PI – 1) for **genitourinary** cancers over all Victoria in calendar year 2015.

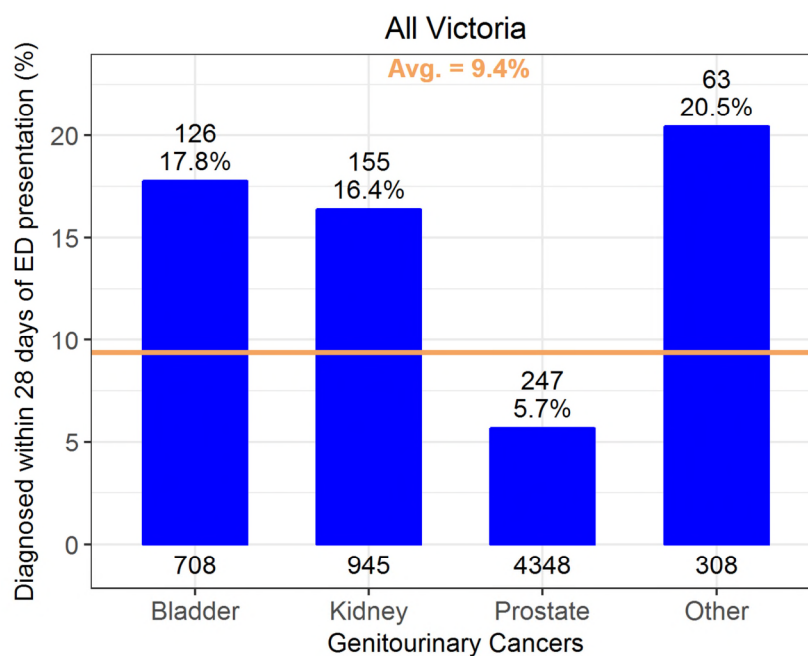
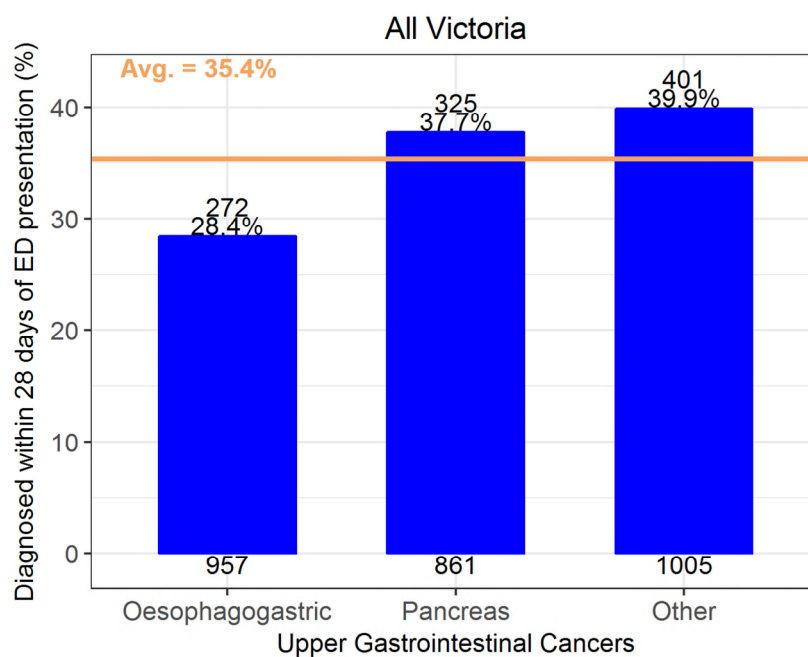


Figure 3: Emergency presentation and new cancer diagnosis (PI – 1) for **upper gastrointestinal** cancers over all Victoria in calendar year 2015.



Comment

Please note the **variation in scale** on the vertical axis for each of the tumour streams and cancer types.

Overall Victoria by cancer stage

PI – 1: Emergency presentation and new cancer diagnosis (2014 and 2015)

Table 5: Emergency presentation and new **breast cancer** diagnosis by **cancer stage** (2014 and 2015).

Stage	Diagnosed w/i 28d of ED presentation (%)	
	2014	2015
1	1.6	1.6
2	2.7	2.3
3	4.5	6.0
4	32.1	37.4
Unknown	10.0	7.5

Table 6: Emergency presentation and new **colorectal cancer** diagnosis by **cancer stage** (2014 and 2015).

Stage	Diagnosed w/i 28d of ED presentation (%)	
	2014	2015
1	8.8	8.3
2	21.6	19.7
3	23.8	24.9
4	38.0	38.8
Unknown	32.1	25.8

Table 7: Emergency presentation and new **prostate cancer** diagnosis by **cancer stage** (2014 and 2015).

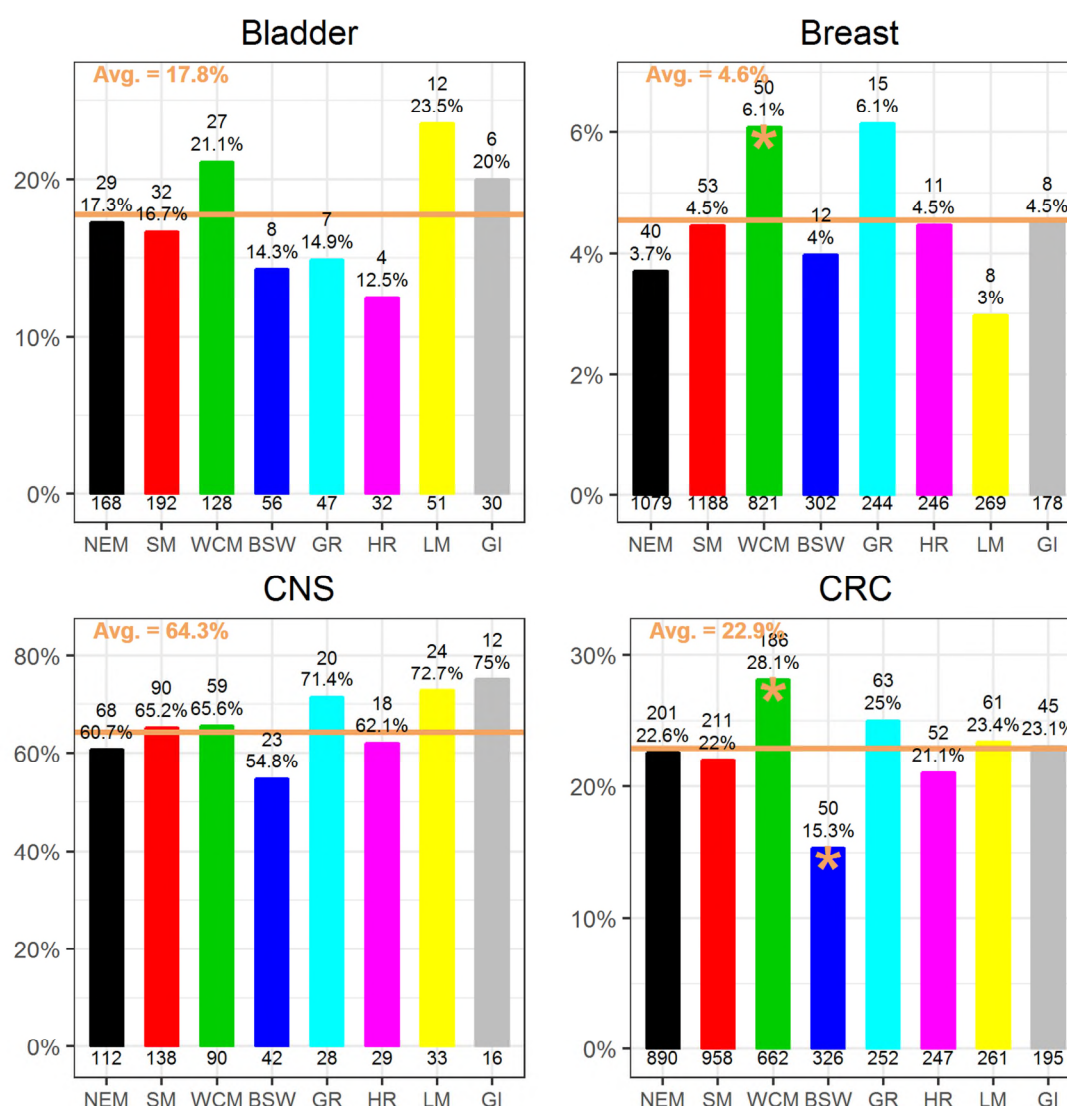
Stage	Diagnosed w/i 28d of ED presentation (%)	
	2014	2015
1	5.6	5.8
2	3.6	3.6
3	1.1	1.6
4	25.2	26.8
Unknown	26.9	23.5

Integrated Cancer Service

PI – 1: Emergency presentation and new cancer diagnosis (2015)

The Figures 4-7 display the same 2015 data as in Figure 1 but stratified by **ICS of patient residence**.

Figure 4: Emergency presentation and new cancer diagnosis (PI - 1) for bladder, breast, central nervous system and colorectal tumour streams and cancer types for each **ICS of patient residence** in calendar year 2015 (the **orange line** is the Victorian average).



Note: HRICS data limitation (See: p. 9)

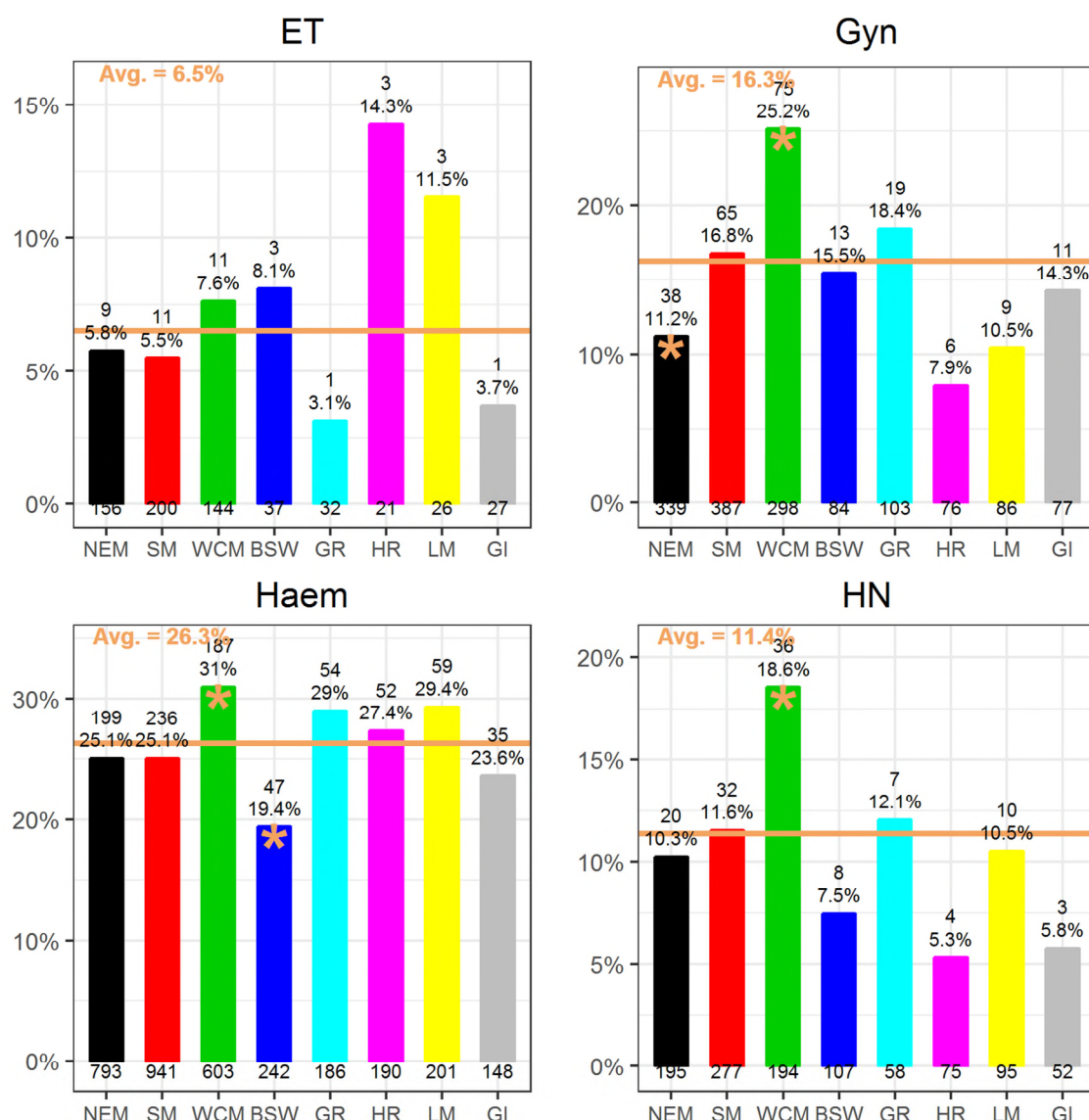
* Data is statistically significant at the 0.05 level (comparing the ICS to the state average, less the ICS concerned).

Comment

Please note the **variation in scale** (on the vertical axis) and **number of cases** for each of the ICS, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Regional variation might be associated with variation in access to EDs.

Figure 5: Emergency presentation and new cancer diagnosis (PI - 1) for endocrine-thyroid, gynaecological, haematological, and head and neck tumour streams for each ICS of patient residence in calendar year 2015 (the orange line is the Victorian average).



Note: HRICS data limitation (See: p. 9)

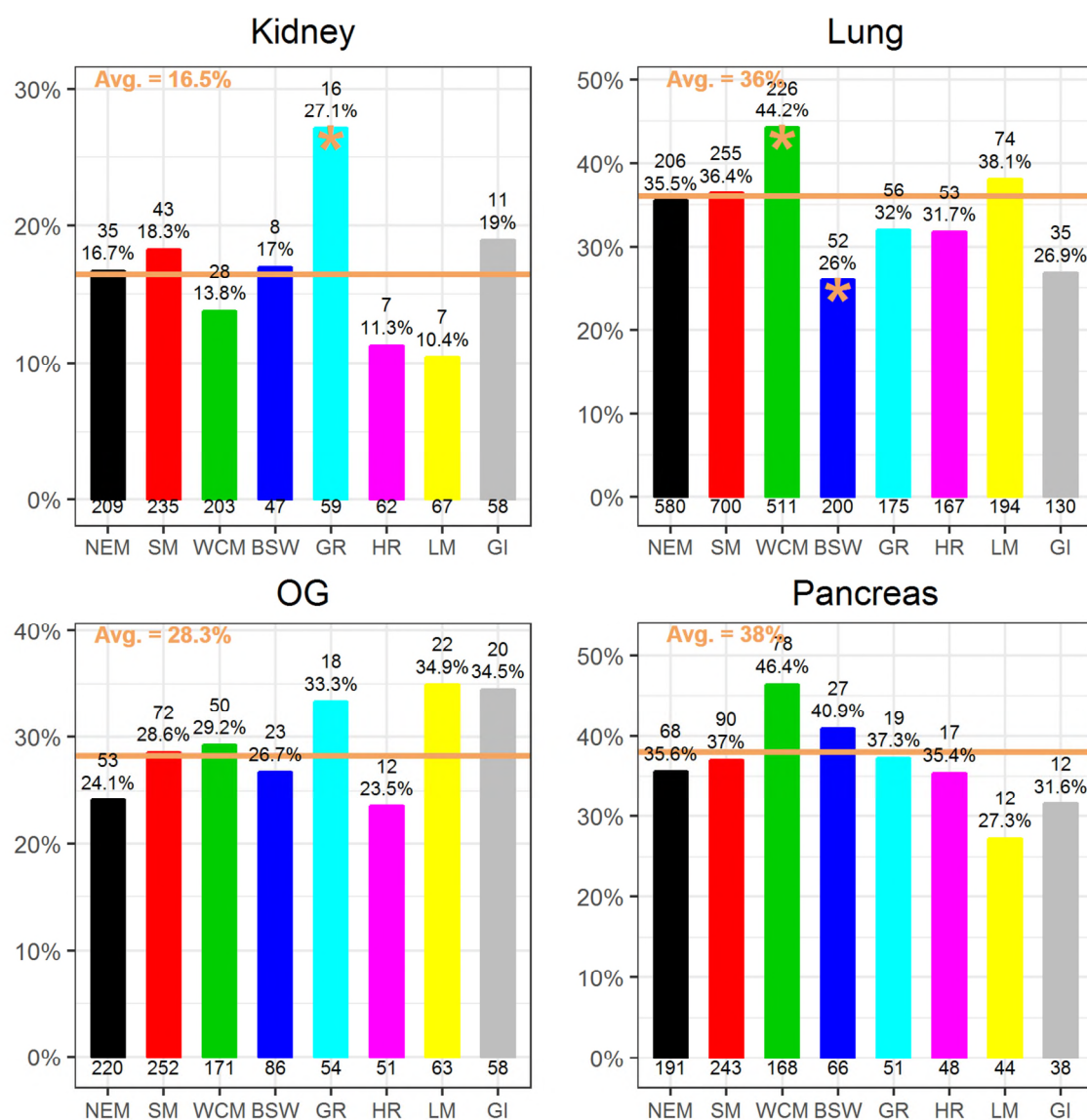
* Data is statistically significant at the 0.05 level (comparing the ICS to the state average, less the ICS concerned).

Comment

Please note the **variation in scale** (on the vertical axis) and **number of cases** for each of the ICS, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Regional variation might be associated with variation in access to EDs.

Figure 6: Emergency presentation and new cancer diagnosis (PI - 1) for kidney, lung, oesophagogastric and pancreas tumour streams and cancer types for each ICS of patient residence in calendar year 2015 (the orange line is the Victorian average).



Note: HRICS data limitation (See: p. 9)

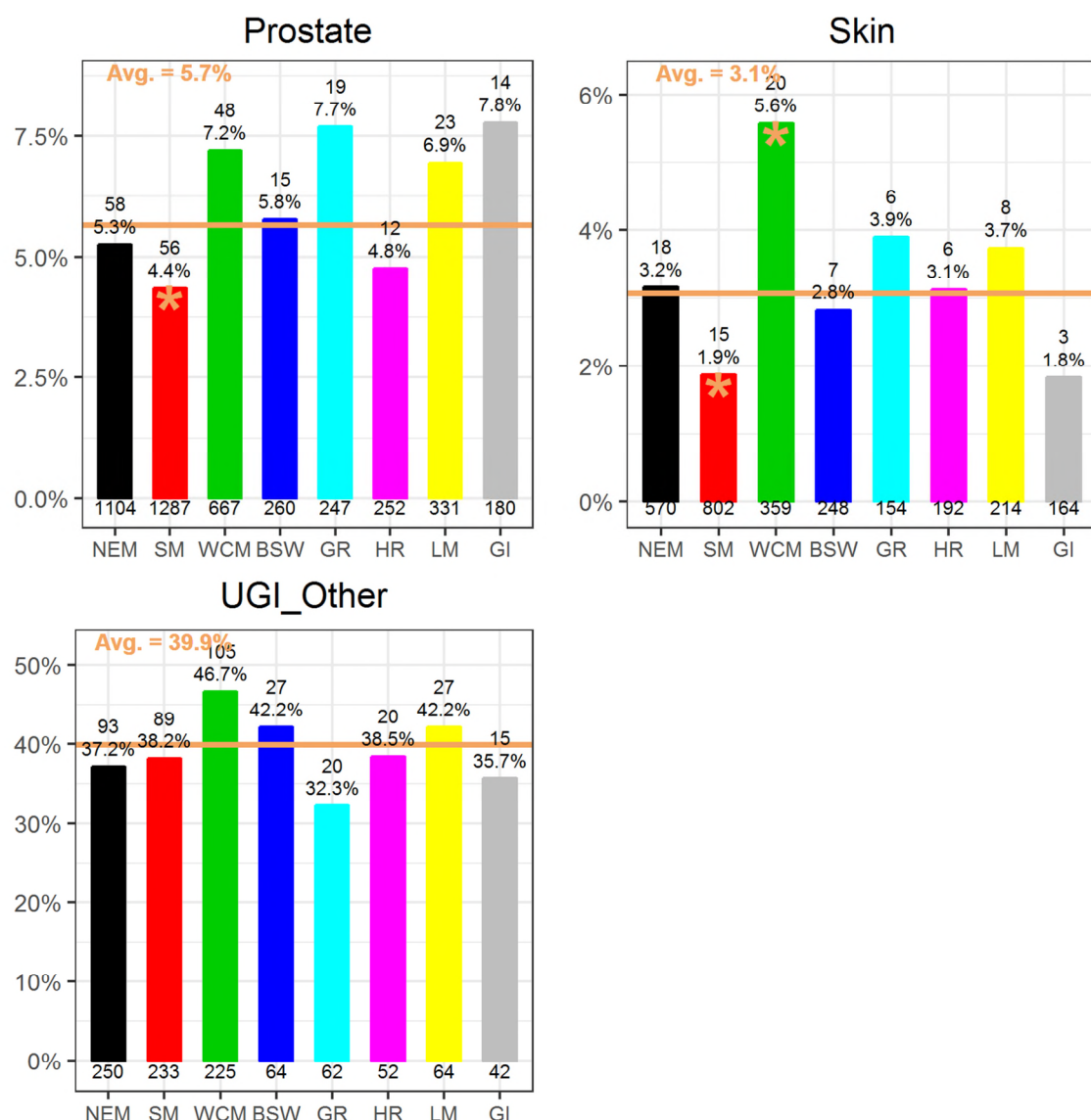
* Data is statistically significant at the 0.05 level (comparing the ICS to the state average, less the ICS concerned).

Comment

Please note the **variation in scale** (on the vertical axis) and **number of cases** for each of the ICS, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Regional variation might be associated with variation in access to EDs.

Figure 7: Emergency presentation and new cancer diagnosis (PI - 1) for prostate, skin and UGI other, tumour streams for each ICS of patient residence in calendar year 2015 (the orange line is the Victorian average).



Note: HRICS data limitation (See: p. 9)

* Data is statistically significant at the 0.05 level (comparing the ICS to the state average, less the ICS concerned).

Comment

Please note the **variation in scale** (on the vertical axis) and **number of cases** for each of the ICS, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Regional variation might be associated with variation in access to EDs.

Performance indicator (PI) – 4b: Pathological diagnosis

Summary specifications

OCP Step(s):	[3] – Diagnosis and treatment planning
Description / definition:	Proportion of new lung cancer diagnoses with a pathological diagnosis
Rationale:	<p>A definitive diagnosis is important to ascertain the nature of the disease for patients and carers alike (SCT 2015). It is also of key prognostic and choice of treatment importance. The appropriate choice of treatment depends upon accurate diagnosis and the distinction between histological types of lung cancer (NHS Scotland 2008).</p> <p>Where possible, patients should undergo a pathological diagnosis for lung cancer (SCT 2017). There is a variety of techniques to assist physicians in obtaining an accurate lung cancer diagnosis (Collins 2007; Rivera 2013). Diagnosis may be obtained from bronchoscopy including endobronchial ultrasound (EBUS), CT-guided biopsy, excisional biopsy or biopsy of metastasis, or sputum cytology (OCP 2015).</p>
Numerator:	<i>Number of new lung cancer diagnoses with a pathological diagnosis</i>
Denominator:	<i>Total number of new lung cancer diagnoses</i>
Tumour streams / cancer types:	Lung
Stratifications:	ICS of residence

Data collection statement

The basis of diagnosis of a cancer is the microscopic or non-microscopic or death certificate source of the diagnosis, recorded by the VCR.

In the VCR basis of diagnosis variable, microscopic diagnosis sources have been classified as 'pathological'. These are counted in the numerator and the denominator, and include: specific tumour markers; cytology or haematology; histology of primary tumour; histology of metastasis; and histology not otherwise specified (unknown primary or metastases).

Non-microscopic or death certificate only sources of diagnosis have been classified as 'non-pathological'. These are counted in the denominator only, and include: death certificate only; clinical only; clinical investigation (X-ray, ultrasound, exploratory surgery/autopsy); and unknown.

The most valid basis of diagnosis is that accepted by the VCR as the most reliable diagnostic source of the death certificate, non-microscopic or microscopic sources available.

Data sources

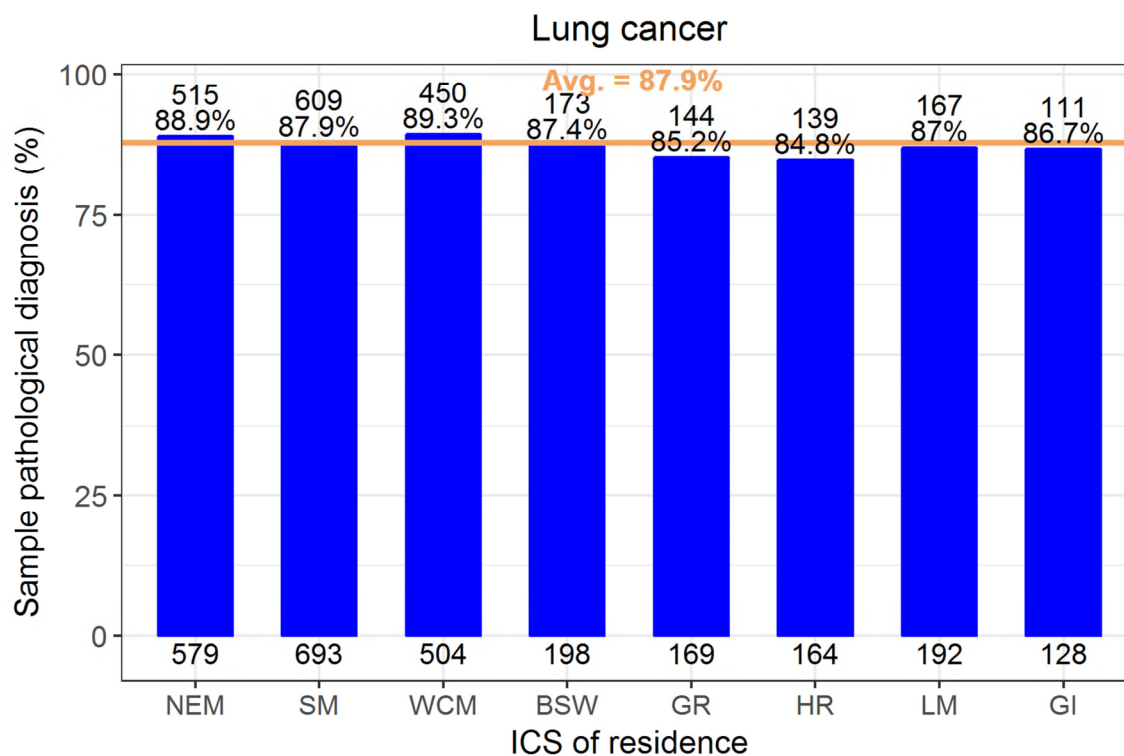
VCR

Modifications to indicator for 2014 and 2015 results

This is a **new indicator** for 2014 and 2015 results and was not utilised for the 2013 results.

Overall Victoria

PI – 4b: Pathological diagnosis (2015)

Figure 8: Pathological diagnosis for lung cancer patients by ICS of residence in calendar year 2015*Comment*

The number of lung cancer cases diagnosed by a pathology sample is displayed on top of the blue bars and the total number of lung cancer diagnoses in 2015 under the blue bars.

For each of the newly diagnosed lung cancer patients in 2015, the basis of diagnosis to the VCR was reviewed and categorised as being pathological or non-pathological.

Overall 87.9% of Victorians were diagnosed with lung cancer by a pathological diagnosis. There was variation between ICS of residence, ranging from 84.8% (HRICS) to 89.3% (WCMICS).

Performance indicator (PI) – 6: Registry-derived stage at diagnosis

Summary specifications

OCP Step(s):	[3] – Diagnosis and treatment planning
Description / definition:	i) The proportion of new cancer diagnoses missing a registry-derived stage (RD-Stage) ii) RD-Stage at diagnosis
Rationale:	Cancer stage at diagnosis is critical in determining a prognosis and is important for making treatment decisions (Brierley 2013). Information on stage is also used for planning and managing cancer services, and for evaluating, measuring and reporting on cancer treatment patterns and outcomes (CQCO 2016). Identifying stage at diagnosis from the linked Victorian Cancer Registry – Victorian Admitted Episode Dataset is a recommendation from the 2014 Victorian Colorectal Cancer Summit (VICS 2015). From 1 July 2013, the revised <i>Cancer (Reporting) Regulations 2012</i> mandate the reporting of cancer stage or extent of disease at diagnosis, when known (State of Victoria 2012).
Numerators:	i) <i>Number of diagnoses with missing RD-Stage</i> ii) <i>RD-Stage at diagnosis</i>
Denominators:	i) <i>Total number of new cancer diagnoses</i> ii) <i>Total number of new cancer diagnoses with non-missing stage at diagnosis</i>
Tumour streams / cancer types:	Breast, Colorectal, Prostate
Stratifications:	Overall Victoria Integrated Cancer Service

Data collection statement

Victorian Cancer Registry derived stage (RD-Stage) is currently only extracted from notifications regarding breast, colorectal and prostate cancer. Exclusions include: non-stageable incident cancer cases, non-incident cases, Paget disease and intraductal carcinoma of breast (morphology 8543), staging after neo-adjuvant therapy and patients diagnosed by death certificate only (DCO).

There is a potential data bias favouring early disease as radiological evidence of advanced disease is not necessarily available.

VCR- or Registry-derived stage (RD-Stage)

There are multiple classification systems of cancer staging. The VCR derives stage at diagnosis by applying the American Joint Committee on Cancer (AJCC) TNM staging principles. The information to inform the specific T, N and M components for staging is a best estimate derived from summary sources at time of diagnosis (defined as the four month period following the first notification of cancer diagnosis). Hence, a combination of clinical and pathological data is used for deriving stage according to established business rules. Occasionally, hospital notifications are the only source of information regarding distant metastases, which may result in an underreporting of stage IV. Preliminary validation work undertaken by

the VCR has demonstrated that the staging dataset is suitable for use in population analysis (Thursfield 2016).

Data sources

VCR

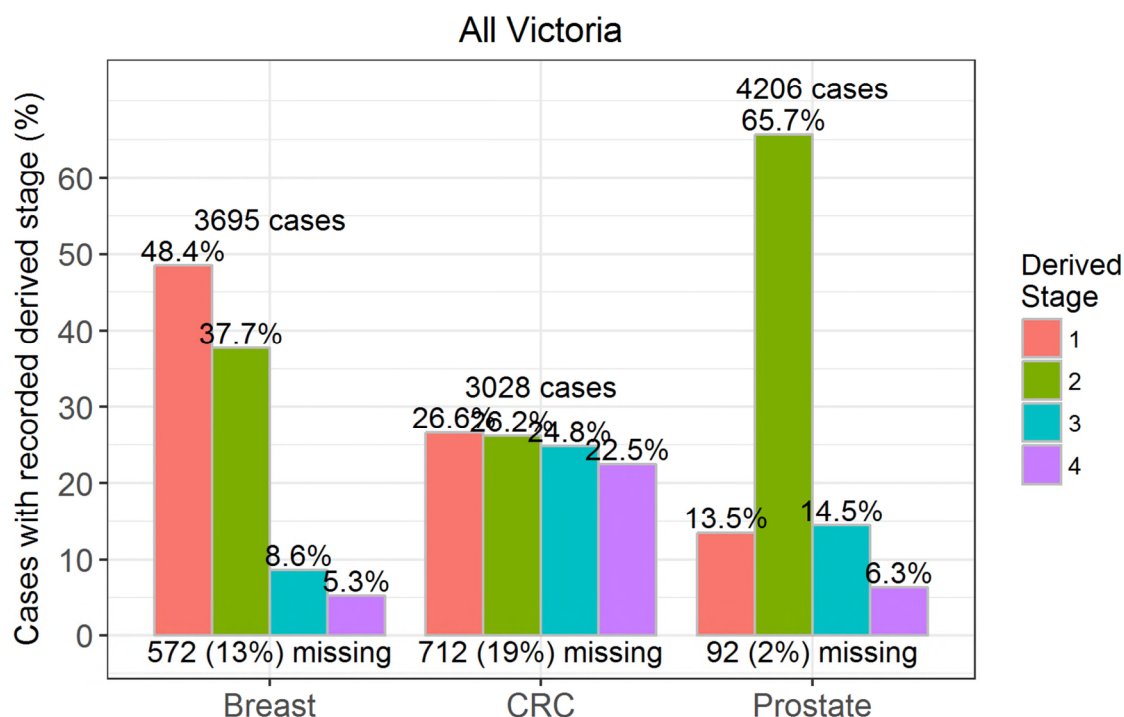
Modifications to indicator for 2014 and 2015 results

RD-Stage for prostate cancer has been added to the results provided for breast and colorectal cancer.

Overall Victoria

PI – 6: RD-Stage at diagnosis (2015)

Figure 9: Recorded RD-Stage at cancer diagnosis (PI - 6) for Victorians diagnosed with breast, colorectal and prostate cancer in calendar year 2015.



Comment

In rectal cancer, staging may not be adequately captured until definitive surgery (after initial biopsy and neoadjuvant therapy).

Also, there is potential for the 'recorded stage at diagnosis for prostate cancer' to be impacted by cases where immediate surgery leads to the classification of stage *at surgery*, instead of recorded stage at diagnosis as specified in the indicator.

Note that factors other than stage are relevant to treatment planning. For example, HER2, hormone receptors and molecular variants.

Above the bars is the total number of diagnoses with a recorded stage that was derived by VCR. For example, in 2015 there was a total of 3,695 breast cancer diagnoses that had a recorded stage derived by VCR of which approximately 48.4% were deemed as stage I, 37.7% as stage II and so on.

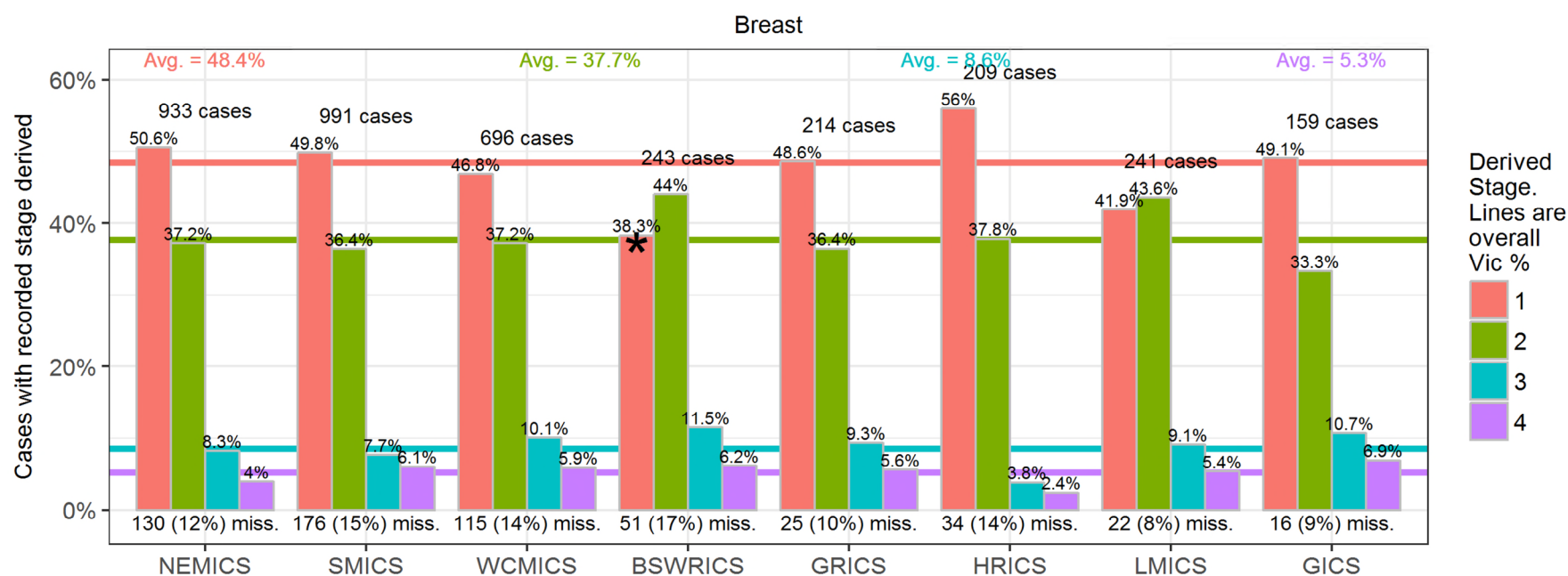
The percentages above the bar add up to 100% for each tumour type. Below the bars is the number of diagnoses that were missing recorded stage and its percentage of the total number where total in this instance means the number with and without recorded staging. For example 572 is 13% of 3,695 + 572.

Integrated Cancer Services

PI – 6: RD-Stage at diagnosis (2015)

Figures 10, 11 and 12 display the same 2015 data as in Figure 9 but stratified by ICS of patient residence. The horizontal lines in Figures 10, 11 and 12 pertain to the overall Victorian percentage for each stage category signified by the colour of the line. Similar to Figure 9, below the bars is displayed the number of diagnoses that were missing RD-Stage and its percentage in total with the missing included with the number of cases. Please note the **variation in scale** (on the vertical axes) and the **number of cases** for each ICS. Note also: **miss.** is an abbreviation for missing.

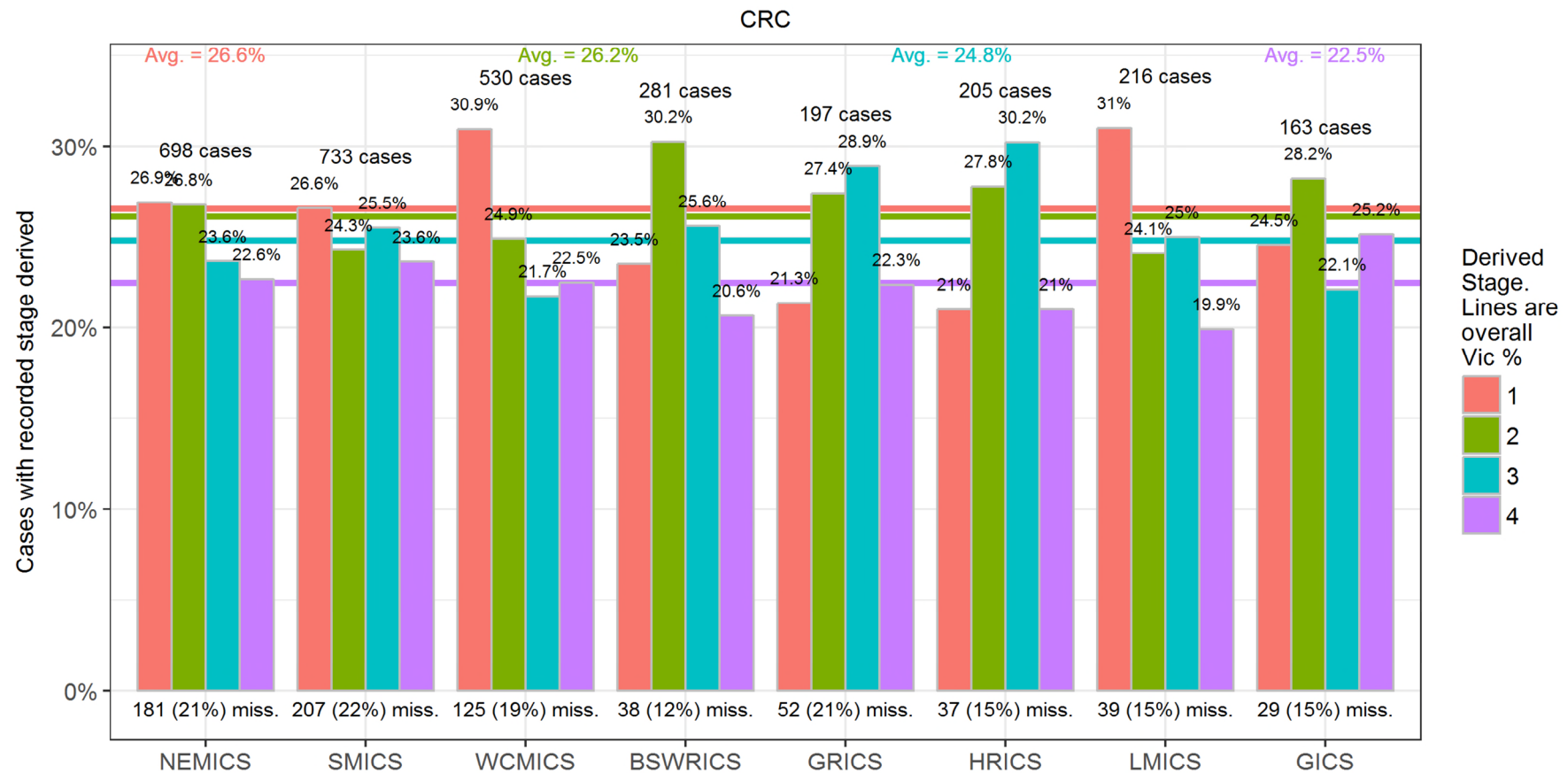
Figure 10: RD-Stage at diagnosis (PI - 6) for patients diagnosed with **breast cancer** in 2015 according to **ICS of patient residence**. The horizontal lines pertain to the Victorian overall percentage for each stage and are coloured accordingly.



Note: HRICS data limitation (See: p. 9)

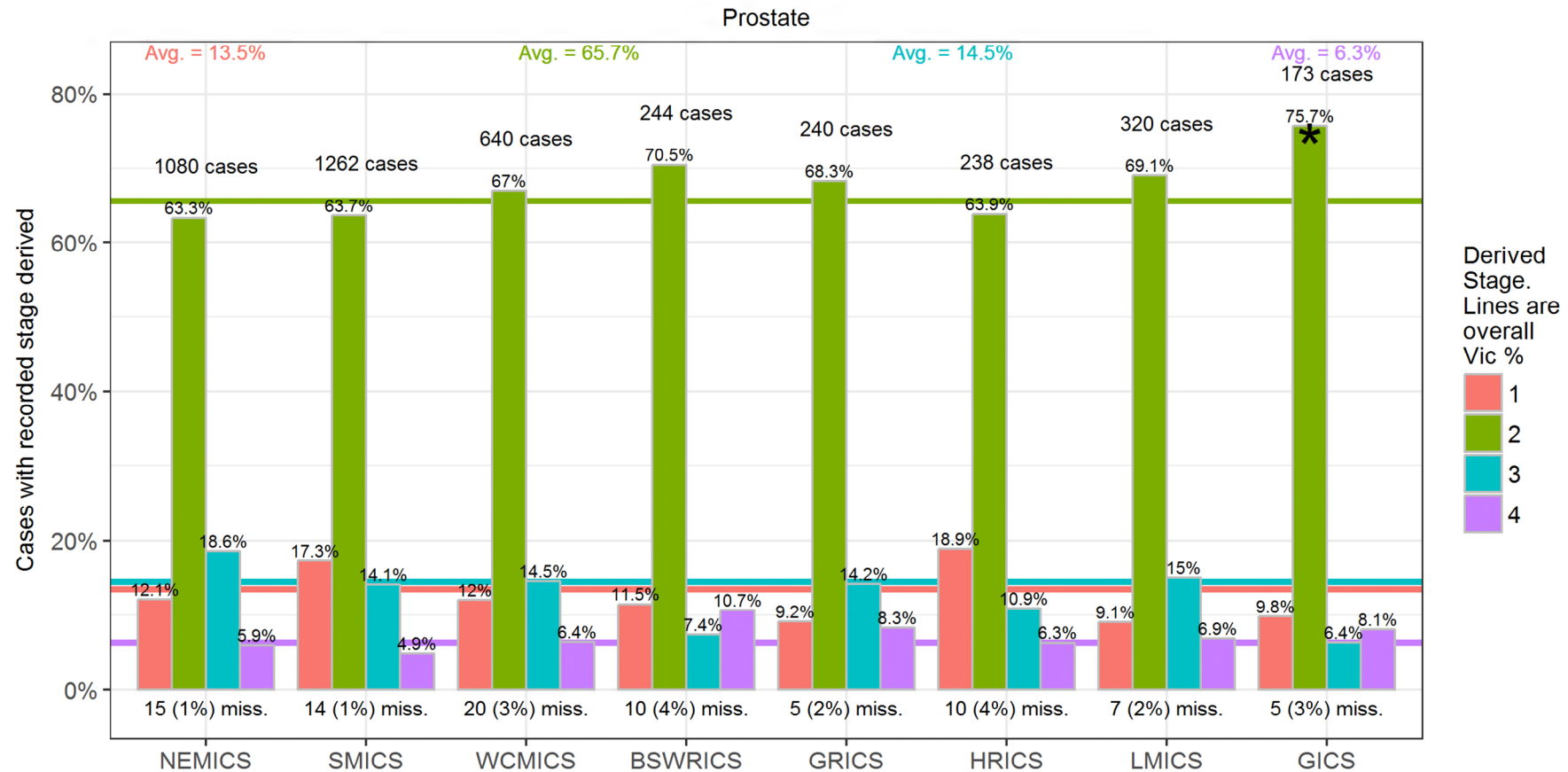
* The proportion of BSWRICS residents diagnosed with RD-Stage I breast cancer was lower compared to the Victorian average ($p < 0.05$).

Figure 11: RD-Stage at diagnosis (PI - 6) for patients diagnosed with colorectal cancer in 2015 according to ICS of patient residence. The horizontal lines pertain to the Victorian overall percentage for each stage and are coloured accordingly.



Note: HRICS data limitation (See: p. 9)

Figure 12: RD-Stage at diagnosis (PI - 6) for patients diagnosed with **prostate cancer** in 2015 according to **ICS of patient residence**. The horizontal lines pertain to the Victorian overall percentage for each stage and are coloured accordingly.



Note: HRICS data limitation (See: p. 9)

* The proportion of GICS residents diagnosed with RD-Stage II prostate cancer was higher compared to the Victorian average ($p < 0.05$).

Performance indicator (PI) – 8: Reporting ECOG performance status

Summary specifications

OCP Step(s):	[3] – Diagnosis
Description / definition:	Proportion of newly diagnosed patients with documented Eastern Cooperative Oncology Group (ECOG) performance status
Rationale:	ECOG performance status is one of the most important predictors of cancer outcomes and a key determinant of treatment. (Davidoff 2010; Oken 1982). Changes to the <i>Cancer (Reporting) Regulations 2012</i> that amend Schedule 2 stipulate the reporting of ECOG performance status score (if known) at the time of diagnosis to the Victorian Cancer Registry.
Numerator:	<ul style="list-style-type: none"> i) <i>Number of new diagnoses with ECOG performance status recorded</i> ii) <i>Recorded ECOG performance status</i>
Denominator:	<ul style="list-style-type: none"> i) <i>Total number of new cancer diagnoses</i> ii) <i>Total number of new cancer diagnoses with ECOG performance status recorded</i>
Tumour streams / cancer types:	Breast, Central Nervous System, Colorectal, Endocrine-Thyroid, Genitourinary, Gynaecological, Haematological, Head & Neck, Lung, Skin and Upper Gastrointestinal
Stratifications:	Overall Victoria – Non-missing / ECOG Grades [0-5] Integrated Cancer Service – Non-missing / ECOG Grades [0-5]

Data collection statement

ECOG performance status has only been required for collection by the VCR in the last few years. It is an important predictor of mortality related patient outcomes.

The availability of ECOG performance status for statistical analysis allows mortality related patient outcomes to be risk-adjusted for differences in general health status between health services or ICS.

The completeness of the ECOG performance status data will become important as work in the field of survivorship develops.

Data sources

VCR

Modifications to indicator for 2014 and 2015 results

There is data for 2014 and 2015.

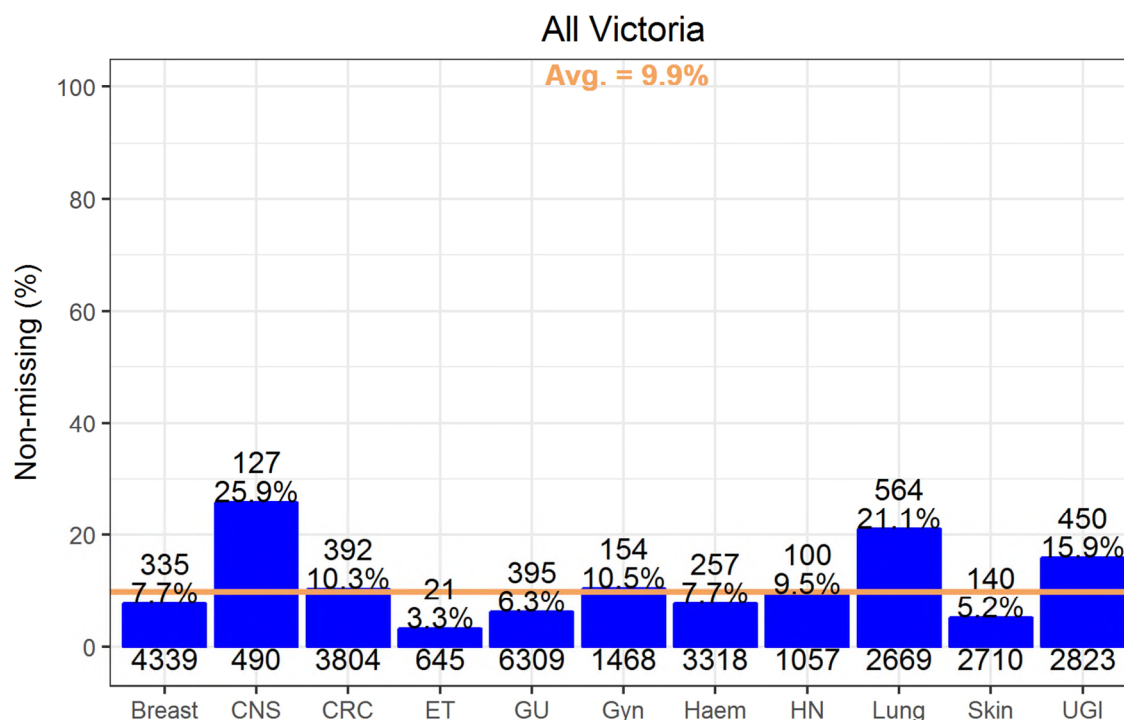
Supplementary data available upon request

Notwithstanding the small numbers, a breakdown of the recorded ECOG performance grades by tumour stream and by ICS is available upon request.

Overall Victoria

PI – 8: Reporting ECOG performance status (2015)

Figure 13: ECOG performance status recorded for patients diagnosed in 2015.



Comment

This is the first data collected for the recording of ECOG status for newly diagnosed patients.

Please note the low numbers of newly diagnosed patients with a (non-missing) recorded ECOG performance status for each of the tumour streams.

For this indicator, unknown ECOG status was considered missing.

Overall ECOG status was non-missing for 9.9% of Victorians diagnosed with a primary cancer in 2015. Marked variation of ECOG completeness exists among tumour streams, ranging from with 25.9% (CNS) to 3.3% (Endocrine-Thyroid).

In compliance with changes to the *Cancer (Reporting) Regulations 2012*, the target for recording ECOG performance status at diagnosis (if known) is 100 per cent.

PI – 8: Reporting ECOG performance status (2015)**Table 8:** The ECOG scale of performance status (Oken 1982).

Grade	Description
0	Fully active, able to carry on all pre-disease performance without restriction
1	Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g., light house work, office work
2	Ambulatory and capable of all selfcare but unable to carry out any work activities; up and about more than 50% of waking hours
3	Capable of only limited selfcare, confined to bed or chair more than 50% of waking hours
4	Completely disabled; cannot carry on any selfcare, totally confined to bed or chair
5	Dead

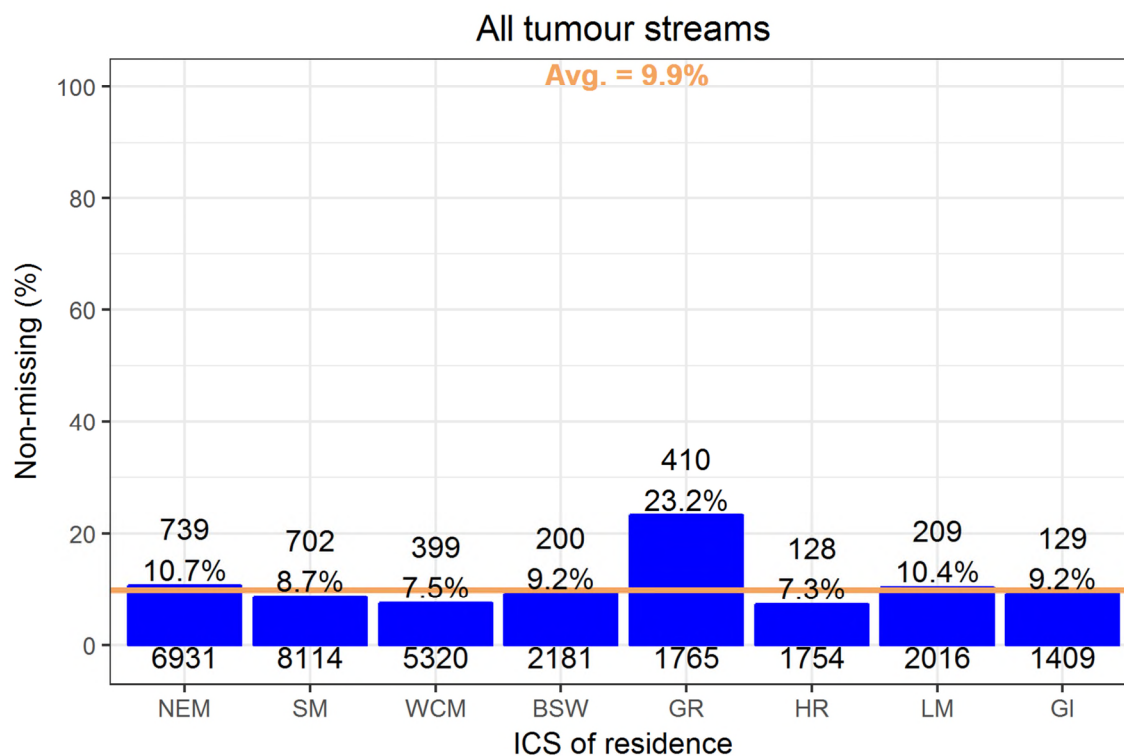
Table 9: ECOG performance status by tumour stream for patients diagnosed in 2015.

Tumour stream	ECOG						
	0	1	2	3	4	5	Unknown
Breast	208 (62%)	71 (21%)	29 (9%)	11 (3%)	6 (2%)	10 (3%)	4004
CNS	6 (5%)	52 (41%)	20 (16%)	22 (17%)	5 (4%)	22 (17%)	363
CRC	122 (31%)	66 (17%)	58 (15%)	52 (13%)	5 (1%)	89 (23%)	3412
ET	8 (38%)	4 (19%)	4 (19%)	3 (14%)	0 (0%)	2 (10%)	624
GU	202 (51%)	68 (17%)	30 (8%)	42 (11%)	7 (2%)	46 (12%)	5914
Gyn	67 (44%)	26 (17%)	16 (10%)	16 (10%)	2 (1%)	27 (18%)	1314
Haem	75 (29%)	57 (22%)	26 (10%)	29 (11%)	5 (2%)	65 (25%)	3061
HN	27 (27%)	33 (33%)	12 (12%)	15 (15%)	1 (1%)	12 (12%)	957
Lung	42 (7%)	157 (28%)	65 (12%)	90 (16%)	13 (2%)	197 (35%)	2105
Skin	100 (71%)	12 (9%)	8 (6%)	9 (6%)	1 (1%)	10 (7%)	2570
UGI	48 (11%)	92 (20%)	43 (10%)	72 (16%)	7 (2%)	188 (42%)	2373

Integrated Cancer Services

PI – 8: Reporting ECOG performance status (2015)

Figure 14: ECOG performance status recorded by ICS of residence for patients diagnosed in 2015.



Note: HRICS data limitation (See: p. 9)

Comment

Please note the low numbers of newly diagnosed patients with a (non-missing) recorded ECOG performance status for each of the tumour streams.

Table 10: ECOG performance status by ICS of residence for patients diagnosed in 2015.

ICS of residence	ECOG						
	0	1	2	3	4	5	Unknown
NEMICS	313 (42%)	107 (14%)	66 (9%)	48 (6%)	11 (1%)	194 (26%)	6192
SMICS	170 (24%)	171 (24%)	83 (12%)	104 (15%)	20 (3%)	154 (22%)	7412
WCMICS	117 (29%)	66 (17%)	50 (13%)	87 (22%)	6 (2%)	73 (18%)	4921
BSWRICS	50 (25%)	28 (14%)	20 (10%)	12 (6%)	5 (2%)	85 (42%)	1981
GRICS	124 (30%)	171 (42%)	42 (10%)	31 (8%)	5 (1%)	37 (9%)	1355
HRICS	30 (23%)	31 (24%)	16 (12%)	16 (12%)	1 (1%)	34 (27%)	1626
LMICS	57 (27%)	26 (12%)	16 (8%)	44 (21%)	1 (0%)	65 (31%)	1807
GICS	38 (29%)	35 (27%)	17 (13%)	19 (15%)	3 (2%)	17 (13%)	1280

Note: HRICS data limitation (See: p. 9)

Performance indicator (PI) – 13: Timeliness of initial treatment after cancer diagnosis

Summary specifications

OCP Step(s):	[3] – Diagnosis and treatment planning [4] – Treatment
Description / definition:	Timeliness of initial cancer treatment from date of diagnosis to date of initial treatment
Rationale:	Waiting times are clinically relevant and should be informed by evidence-based guidelines where they exist (CCV 2015). The OCPs for cancer care recognise that shorter timeframes for appropriate consultations and treatment can reduce patient distress (DHHS 2015). Wait times can serve as a gauge of how well the cancer system is working (Evans 2016).
Numerator:	<ul style="list-style-type: none"> i) Proportion of newly diagnosed patients with time (days) from date of diagnosis to day one (1) of surgery, parenteral chemotherapy and/or radiotherapy (whichever occurred first) within 4 weeks ii) Proportion of newly diagnosed patients with time (days) from date of diagnosis to date of surgery within 4 weeks (where surgery is the 1st treatment) iii) Proportion of newly diagnosed patients with time (days) from date of diagnosis to day one (1) of parenteral chemotherapy within 4 weeks (where parenteral chemotherapy is the 1st treatment) iv) Proportion of newly diagnosed patients with time (days) from date of diagnosis to day one (1) of radiotherapy within 4 weeks (where radiotherapy is the 1st treatment)
Denominator:	Total number of patients with new cancer diagnosis who commence initial treatment (surgery, parenteral chemotherapy and/or radiotherapy) within six (6) months.
Tumour streams / cancer types:	Breast, CNS, Colorectal, Endocrine-Thyroid, Genitourinary, Gynaecological, Haematological, Head & Neck, Lung, Oesophagogastric and Skin
Stratifications:	Overall Victoria Integrated Cancer Service Health service (Breast, Colorectal [colon, rectal], Lung, Head & Neck) [Appendix 1]

Data collection statement

Neo-adjuvant therapy is considered as a first treatment.

The data does not capture oral chemotherapy.

The date of diagnosis is taken as a proxy for 'initial referral', establishment of a 'management plan', 'decision to treat' or 'ready for care' as is recommended by the OCPs for specific tumour streams, types of treatment and cancer types.

There are shortcomings associated with both this proxy and the use of a 'four week' optimal time interval across all tumour streams and cancer types, as there are particularities associated with specific OCP recommendations not currently captured in this indicator.

For example, the OCP for lung recommends the 'time from initial referral to initial treatment should be no more than 6 weeks' (CCV 2015).

The optimal care pathway for people with head and neck cancers recommends treatment 'within four weeks of decision to treat' (CCV 2015).

The accuracy of the date of diagnosis recorded in the VCR is a potential issue for those patients diagnosed interstate, where date of admission could be recorded for date of diagnosis.

There are also variations across the OCP recommendations between the types of treatment. In colorectal cancer, for example, the OCP recommends 'neoadjuvant radiation therapy should commence within 3 weeks of the management plan' (CCV 2015).

And there are particularities associated with both the OCPs and the *Guidelines for timely initiation of chemotherapy* (Guidelines), and within tumour streams and across cancer types. The Guidelines recommend commencing treatment ≤ 3 weeks of the ready for care date for non-small cell lung cancer and ≤ 2 weeks of the ready for care date for small cell lung cancer (DHHS, 2015).

There are also particularities relating to clinical practice. For example, there are some patients who would be more likely to have excisional biopsies. In these cases, the time from diagnosis to treatment would be zero (0) days.

The date of diagnosis may also coincide with the initial referral date depending upon the cancer type.

Given these limitations, apparent delay in initial treatment may not, in particular cases, indicate sub-optimal practice.

It is planned that future results will specify indicator time intervals more closely aligned with the OCP recommendations for each respective tumour stream and cancer type.

Data sources

VCR, VAED

Modifications to indicator for 2014 and 2015 results

Radiotherapy data from the VRMDS has been included in the 2014 and 2015 results for PI-13 for the first time. This could have an impact on the data for the timeliness of initial treatments across all modalities when compared to the 2013 results.

It could also impact the data and its interpretation for specific tumour streams and cancer types. For example, in the case where either definitive or neo-adjuvant radiotherapy is commonly used for prostate, bladder, oesophagogastric, head and neck, lung and rectal cancer.

The addition of data for breast, and head and neck, to the health service by campus level is new for 2014 and 2015.

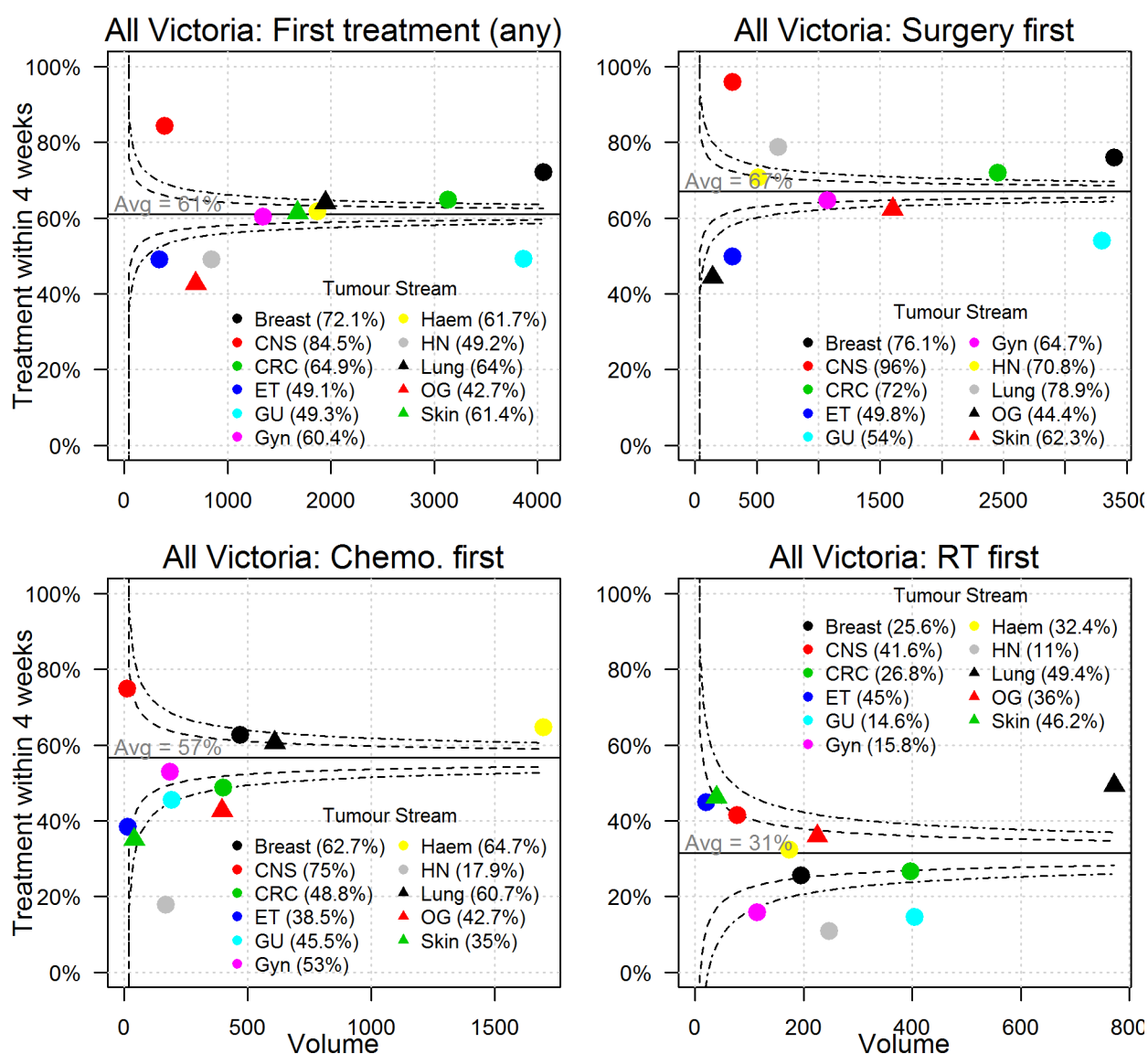
Supplementary data available upon request

In response to ICS requests, we now provide data by small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC) upon request.

Overall Victoria

PI-13: Timeliness of initial treatment after cancer diagnosis (2015)

Figure 15: Proportion of patients that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for all tumour streams in 2015.



Comment

Please note the **variation in scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Over all tumour streams, 61% of patients started their initial treatment (surgery, parenteral chemotherapy or radiotherapy) within 4 weeks of diagnosis.

For all tumour streams, where parenteral chemotherapy was the initial treatment, 57% commenced within 4 weeks of diagnosis. Where surgery was the initial treatment, 67% commenced within 4 weeks of diagnosis. Where radiotherapy was the initial treatment, 31% commenced within 4 weeks of diagnosis.

Variation between tumour streams exists, ranging from 42.7% (OG) to 84.5% (CNS) irrespective of initial treatment.

Among the tumour streams, endocrine-thyroid, genitourinary, head and neck, and oesophagogastric cancers were much less likely to have had initial treatment within 4 weeks of diagnosis. The variation for these tumour streams is statistically highly significant ($p < 0.001$).

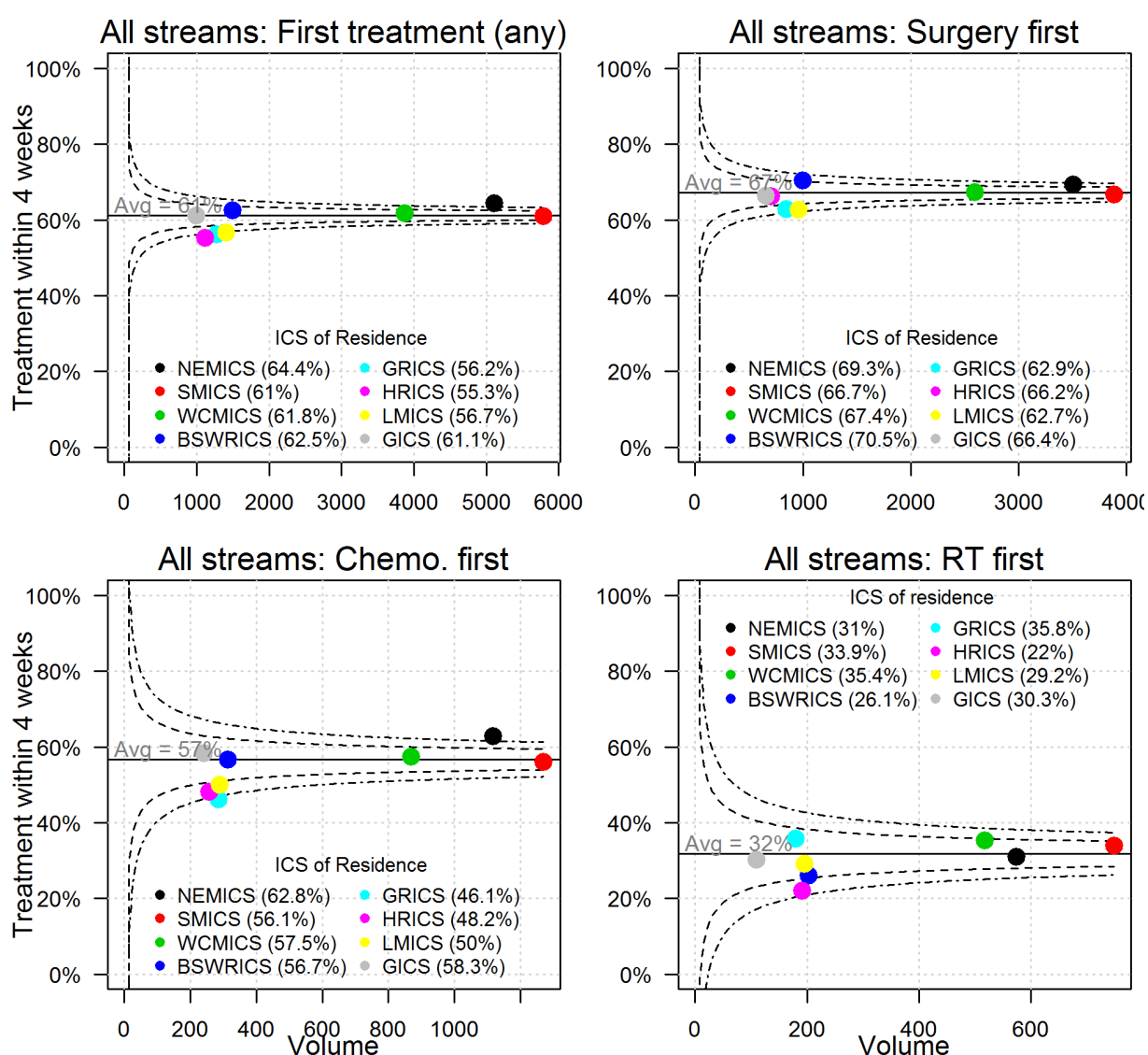
Integrated Cancer Services

PI – 13: Timeliness of initial treatment after cancer diagnosis (2015)

Figures 16 to 27 display the same data as in Figure 15 but stratified by **ICS of patient residence**.

The graph for **all tumour streams** is presented in Figure 16. This is followed by each tumour stream separately (Figures 17-27). Each tumour stream has been stratified for all patients that received surgery, parenteral chemotherapy or radiotherapy (First treatment (any)), those that had surgery as their first treatment (Surgery first), those that had parenteral chemotherapy as their first treatment (Chemo. first), and those that had radiotherapy as their first treatment (RT first).

Figure 16: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **all tumour streams** in 2015.

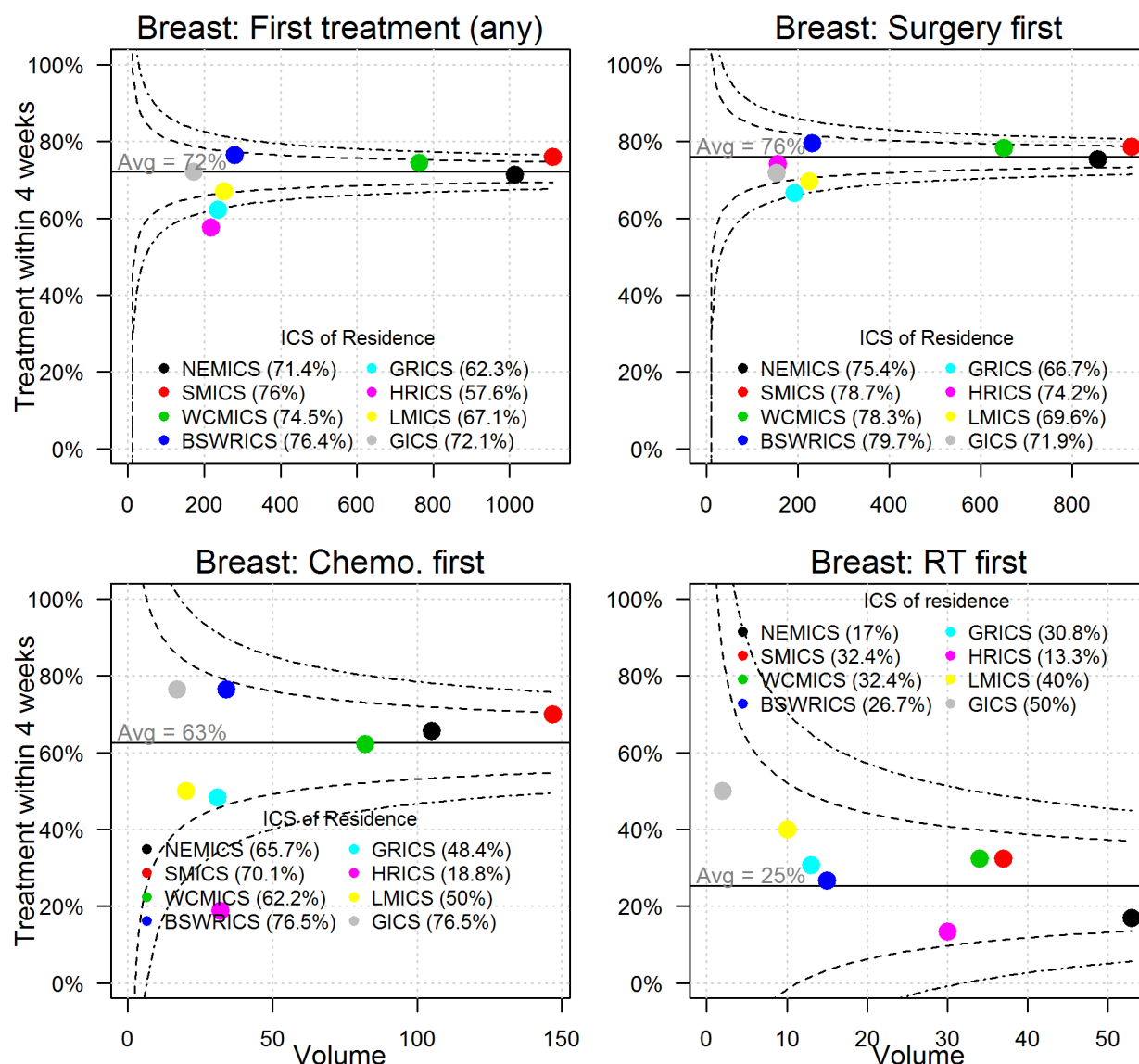


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS and treatment modalities. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 17: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **breast cancer** in 2015.

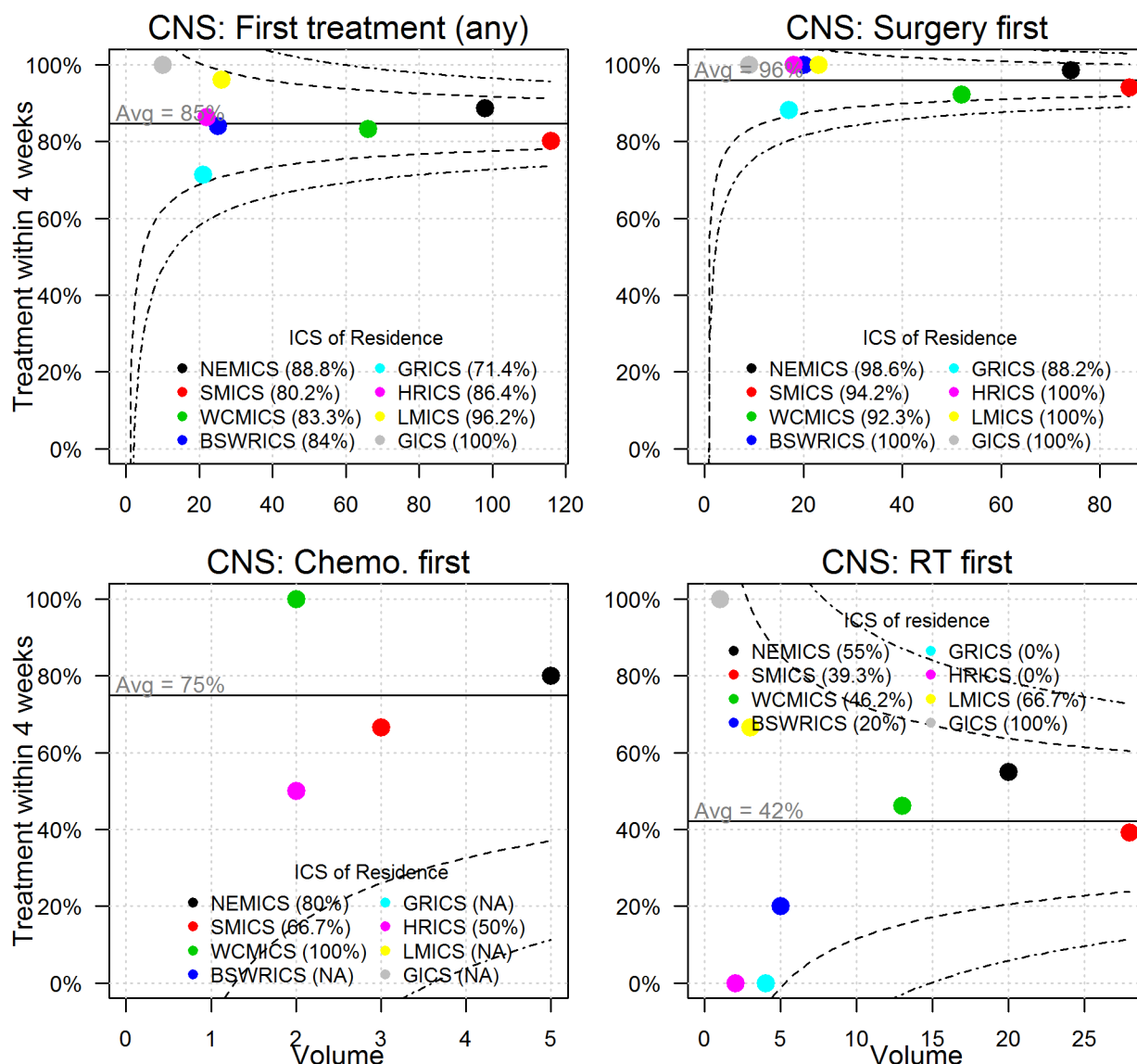


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 18: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **CNS cancer** in 2015.

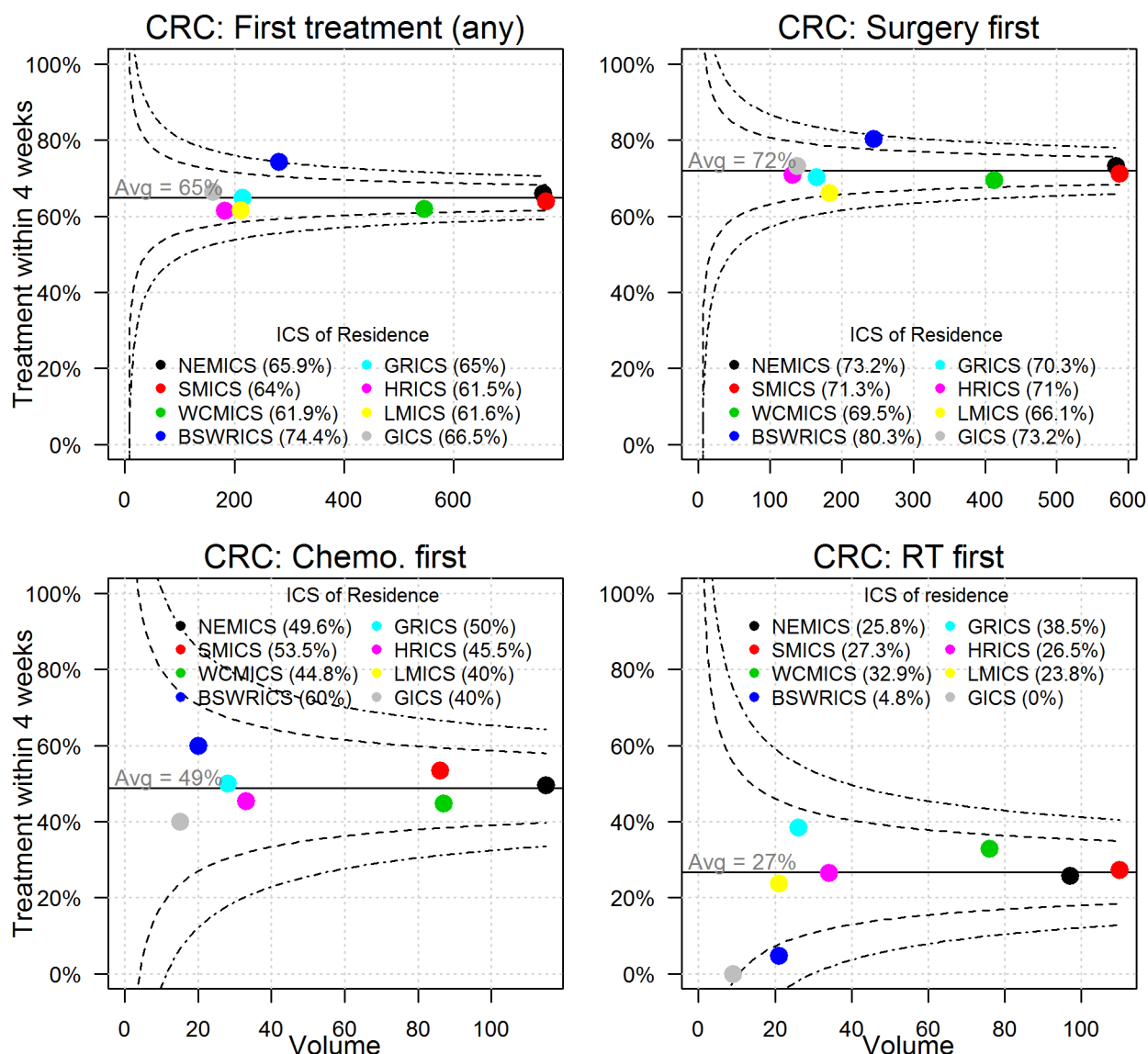


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 19: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **colorectal cancer** in 2015.

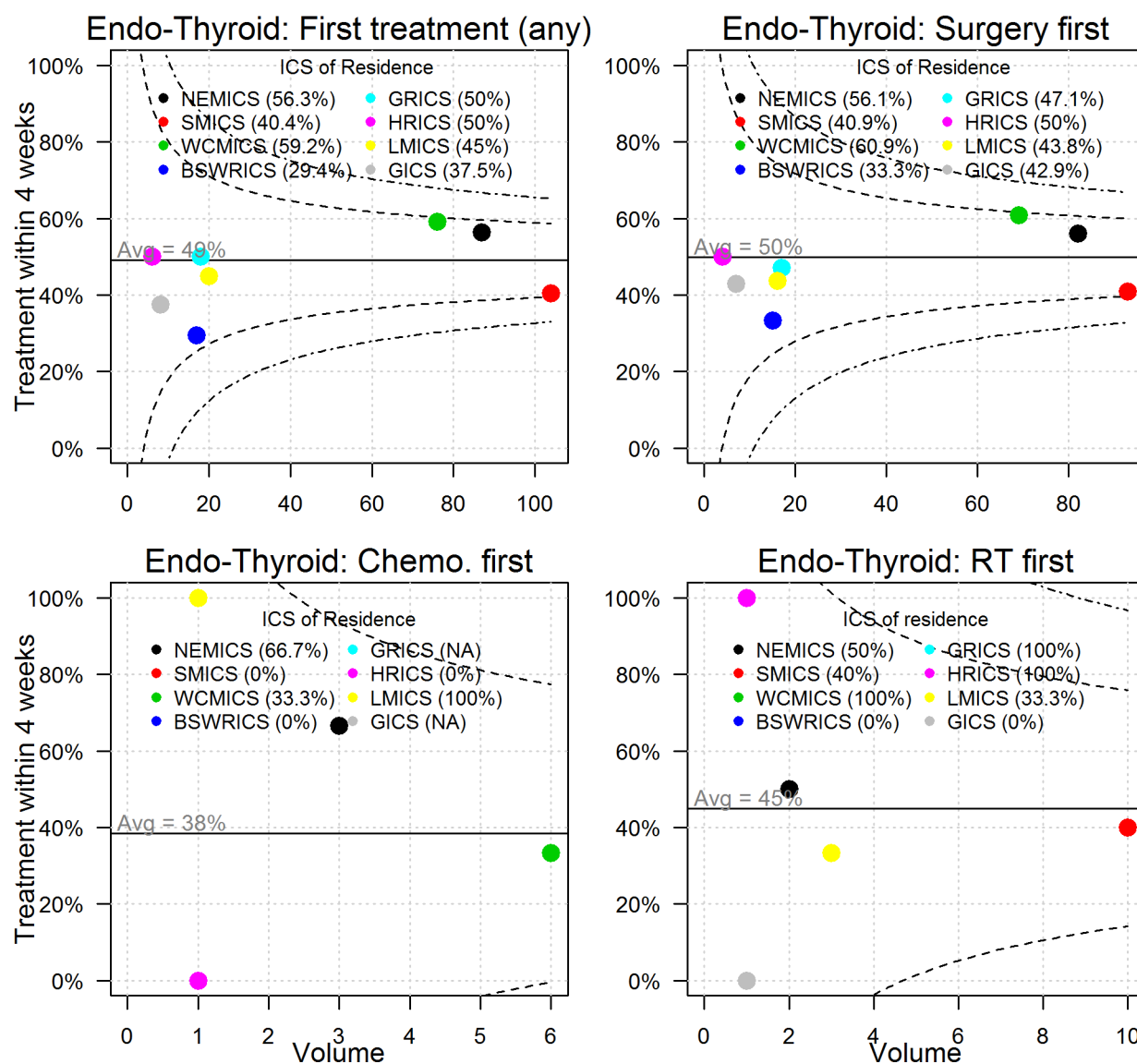


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 20: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **endocrine-thyroid cancer** in 2015.

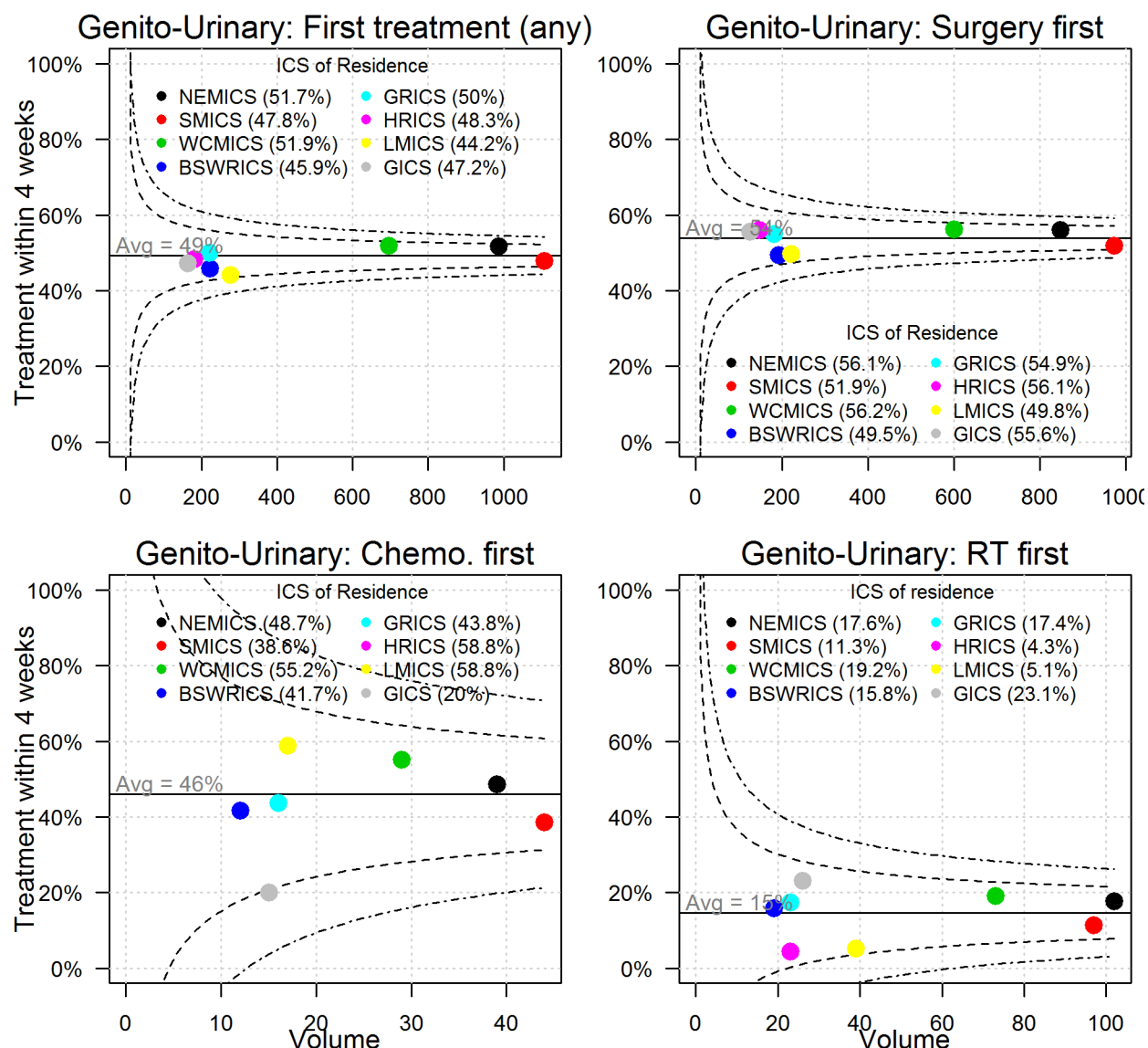


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 21: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **genitourinary cancer** in 2015.

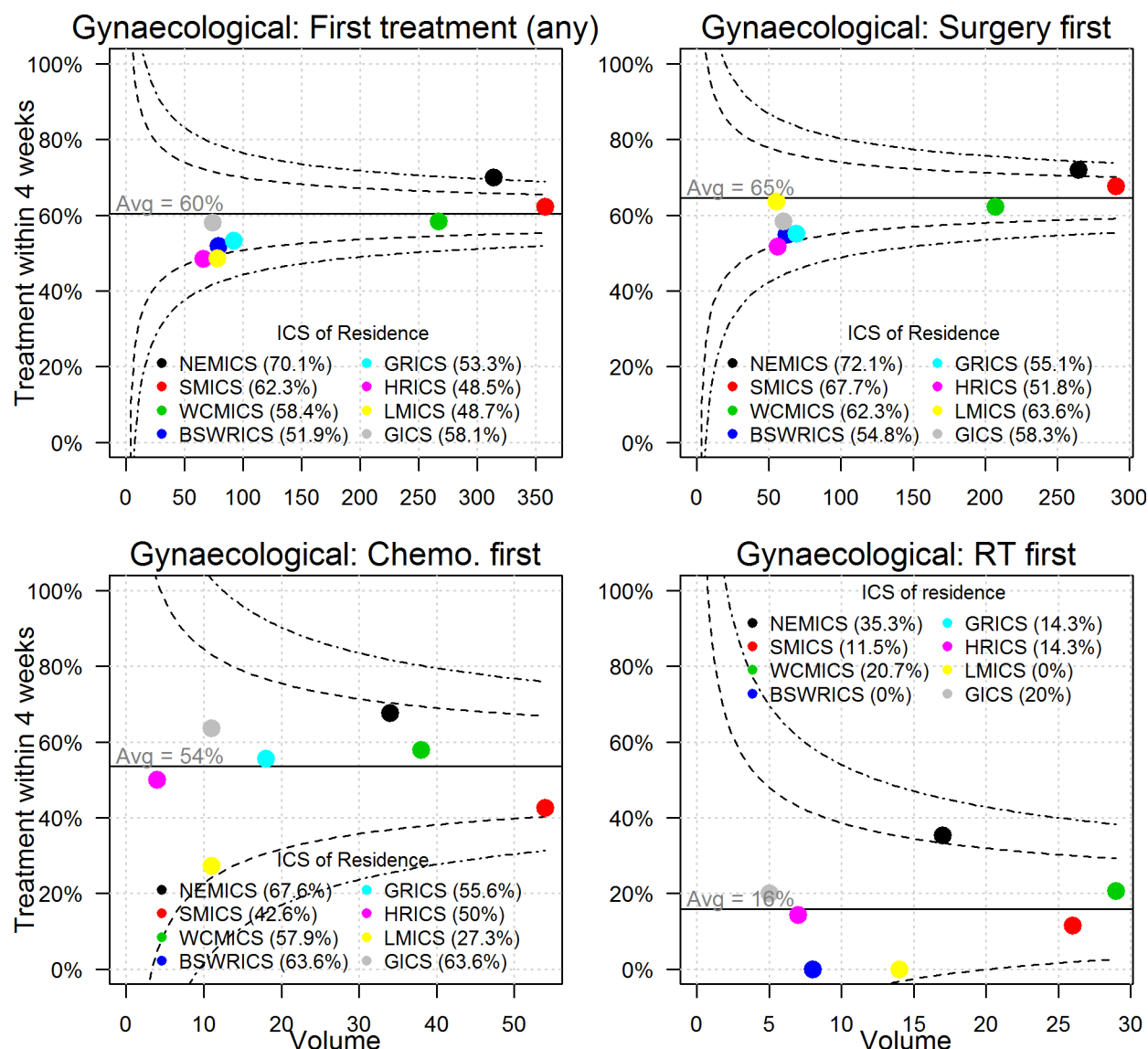


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 22: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **gynaecological cancer** in 2015.

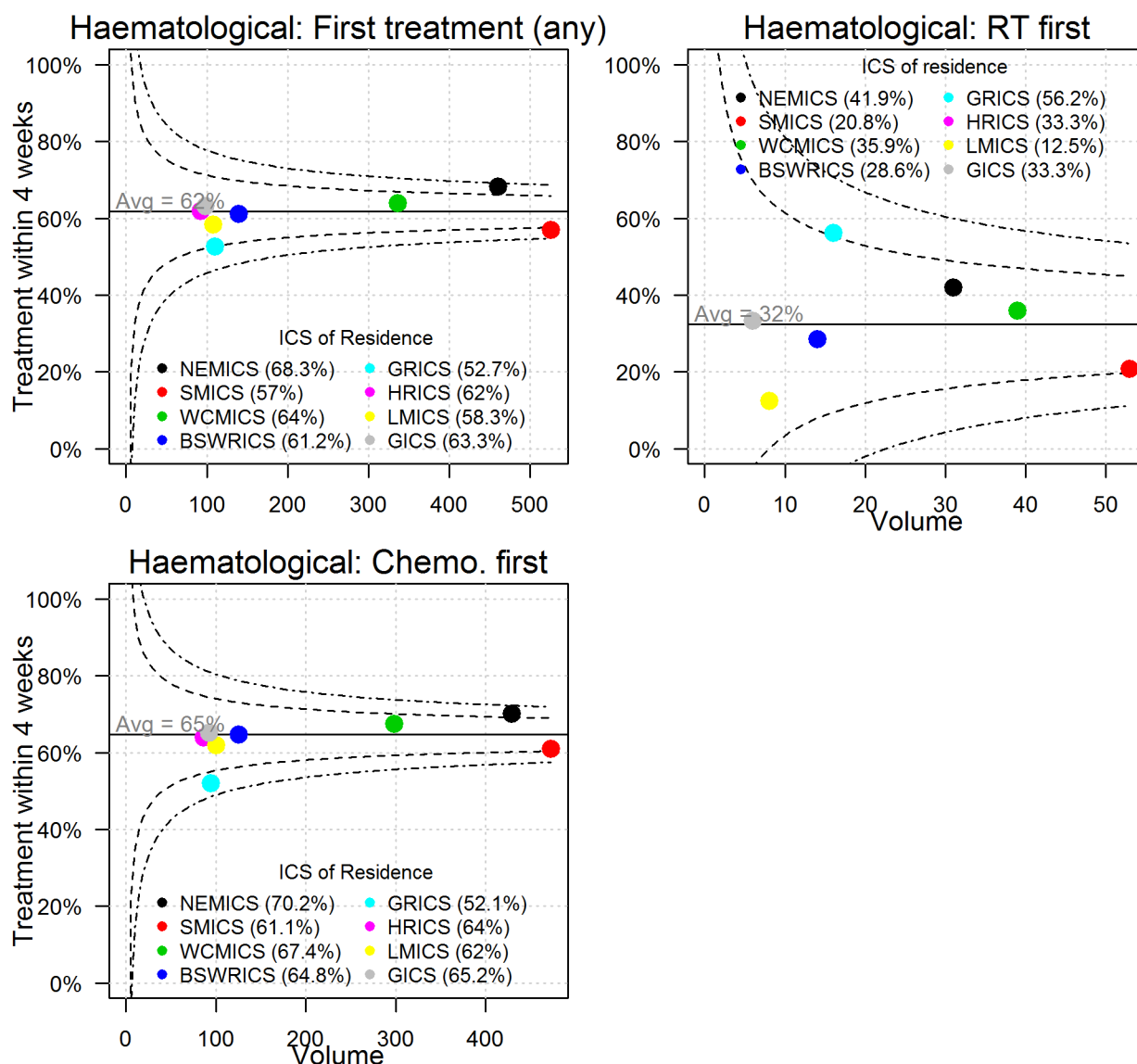


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 23: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **haematological cancer** in 2015.



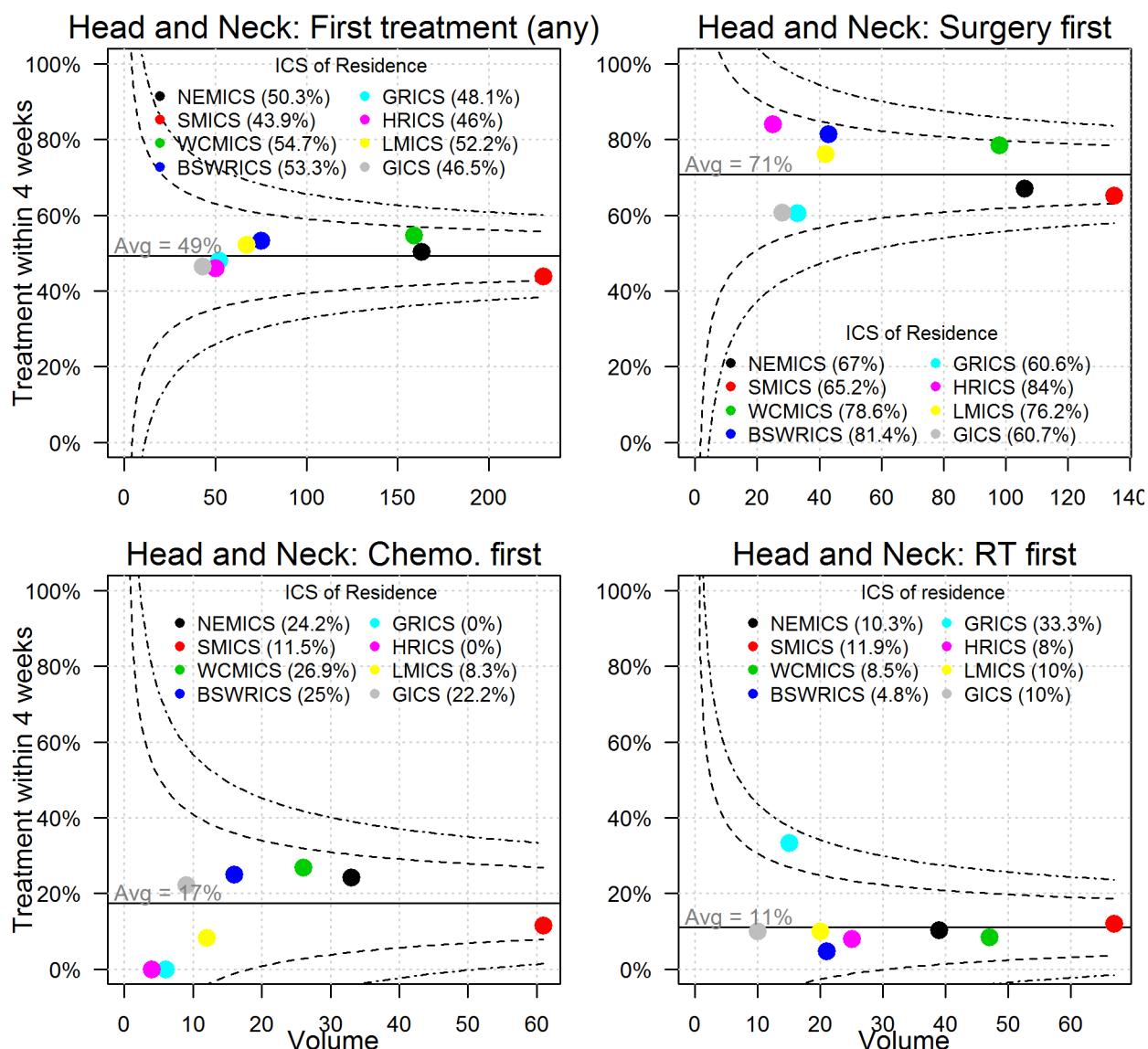
Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

There were no surgery data for this tumour stream.

Figure 24: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **head and neck cancer** in 2015.

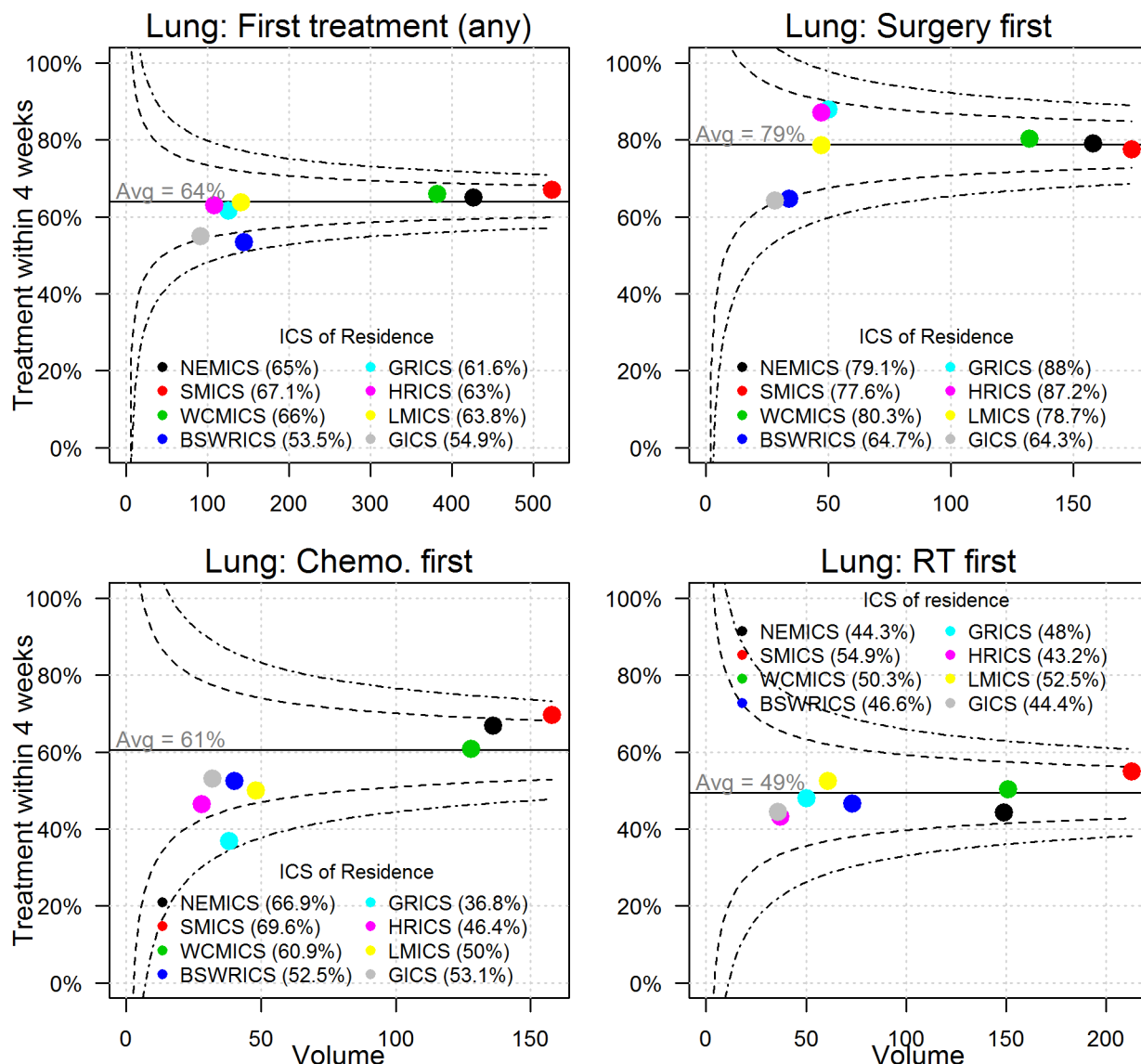


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 25: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **lung cancer** in 2015.

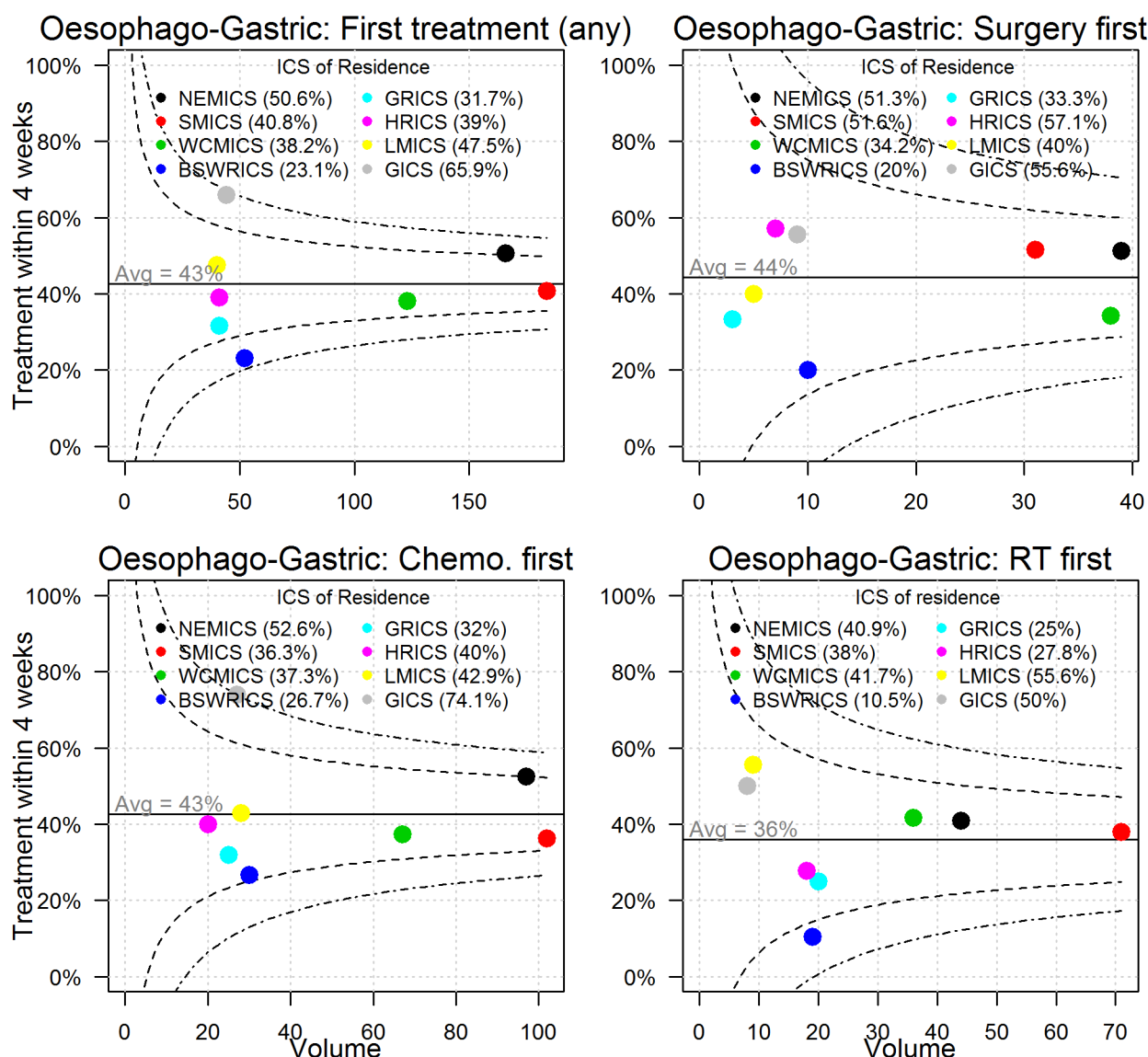


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 26: The proportion of patients within their ICS of residence that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **oesophagogastric cancer** in 2015.

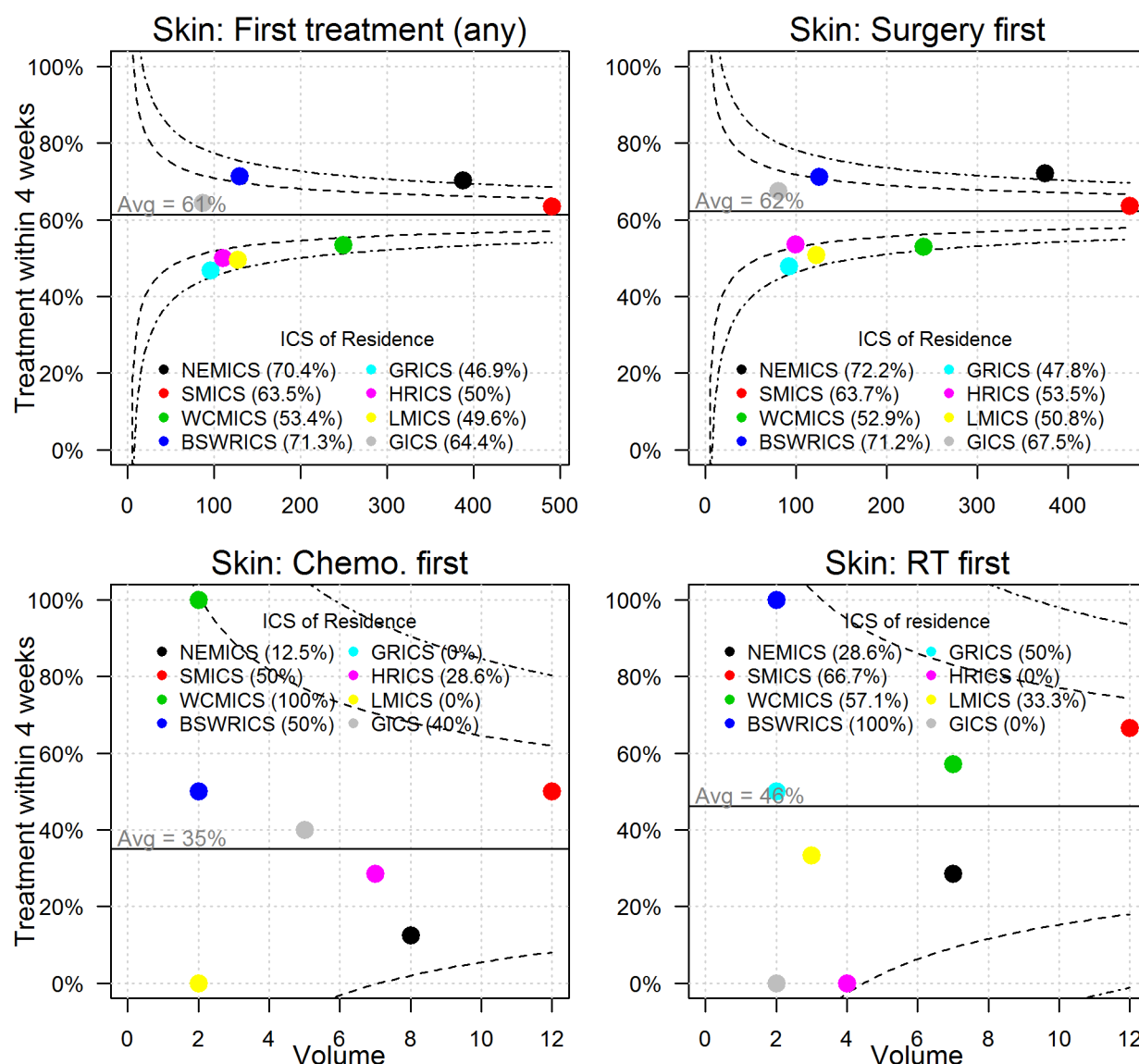


Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Figure 27: The proportion of patients within their **ICS of residence** that received surgery, parenteral chemotherapy or radiotherapy within 4 weeks of diagnosis (PI - 13) for **skin cancer** in 2015.



Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each of the ICS, treatment modalities, tumour streams and cancer types. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Performance indicator (PI) – 16: Timeliness of adjuvant chemotherapy for stage III colon cancer

Summary specifications

OCP Step(s):	[4] – Treatment
Description / definition:	The proportion of newly diagnosed patients who did receive adjuvant chemotherapy parenterally within 8 weeks of surgery for RD-Stage III colon cancer
Rationale:	Adjuvant chemotherapy improves outcomes for patients with colon cancer (Bayraktar 2010). Waiting times are clinically relevant and also significant from a patient perspective. The Optimal Care Pathway (OCP) for colorectal cancer recommends adjuvant chemotherapy should commence within 8 weeks of surgery (CCV 2015). The <i>Guidelines for timely initiation of chemotherapy</i> recommends adjuvant chemotherapy should commence as soon as the patient is medically fit following surgery and within 8 weeks of the date of surgery (DHHS 2015) [Evidence level-grade III-C]. It is a recommendation of the 2014 Victorian Colorectal Cancer Summit to report on this (VICS 2015).
Numerator:	<i>Number of newly diagnosed patients who received adjuvant chemotherapy parenterally within 8 weeks of surgery.</i>
Denominator:	<i>Total number of patients newly diagnosed with RD-Stage III colon cancer who had surgery within 90 days and started parenteral chemotherapy within 182 days of their surgery.</i>
Tumour streams / cancer types:	Colon cancer
Stratifications:	Integrated Cancer Service surgery health service

Data collection statement

The time to adjuvant therapy is defined as the time from the date of surgery (VAED) to admission date of the first parenteral chemotherapy start date (VAED).

The data does not exclude patients where there was a deliberate decision not to treat with chemotherapy. For example, where the patient may be considered too frail or not fit for treatment.

Data sources

VCR, VAED

Modifications to indicator for 2014 and 2015 results

There was an error in how this indicator was calculated for the 2013 results disseminated in December 2016. Patients who received surgery but did not have chemotherapy were included in the denominator. Therefore rates of chemotherapy were underestimated in the 2013 results.

Patients whose stage was determined post neoadjuvant treatment are now excluded from this indicator.

The surgical procedure codes utilised in the 2014 and 2015 data collection have been reviewed and updated to remove codes for diagnostic procedures (Appendix 3). The aim was to include only true cancer removing operations in the data.

For example, the inclusion of codes for some ‘-oscopies with polyp removal’ that were included in the 2013 results, have been removed. As a result, the 2013 results potentially underestimated the proportion of patients that received adjuvant chemotherapy within 8 weeks of surgery.

The 2014 and 2015 results represent the data by ICS surgery hospital not by ICS of patient residence.

Data for those patients who received surgery and chemotherapy at a hospital within the same ICS, and those patients who received parenteral chemotherapy at a hospital within a different ICS to their surgery has also been provided.

Supplementary data available upon request

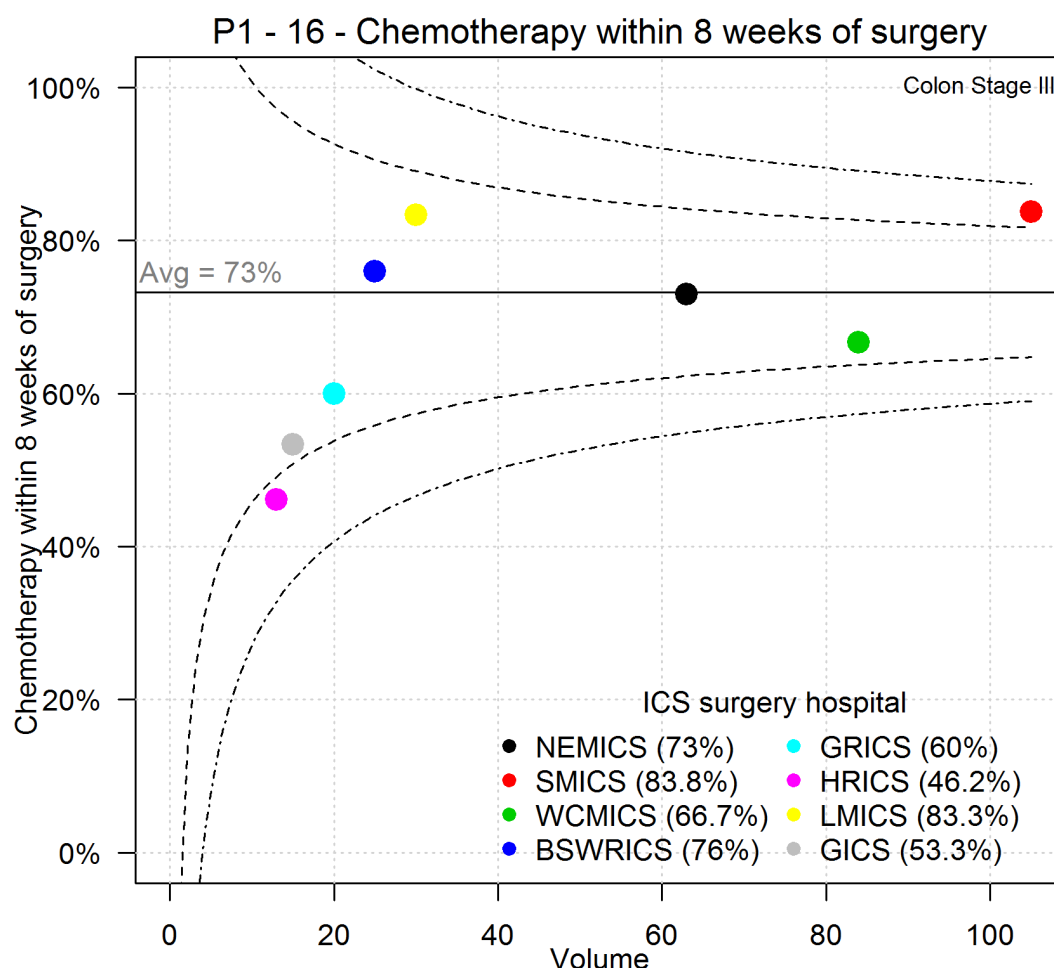
The data for timeliness to adjuvant chemotherapy (parenterally) for each ICS health service by campus code is available upon request.

The recalculated 2013 results for this indicator will be made available subsequent to the dissemination of the 2014 and 2015 results.

Integrated Cancer Services

PI – 16: Timeliness of adjuvant chemotherapy (parenterally) for RD-Stage III colon cancer (2015)

Figure 28: Proportion of patients who did receive adjuvant chemotherapy parenterally within 8 weeks of surgery (PI – 16) for RD-Stage III colon cancer by ICS surgery hospital in 2015.



Note: HRICS data limitation (See: p. 9)

Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each ICS surgery hospital. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

This plot includes only patients with RD-Stage III colon cancer at diagnosis. Of the patients with parenteral chemotherapy following surgery, 73% received their first chemotherapy round within 8 weeks of surgery. The percentage of patients receiving parenteral chemotherapy within 8 weeks by ICS surgery hospital varied between 46.2% and 83.8% for HRICS and SMICS respectively. There were 326 out of 355 patients who received surgery and parenteral chemotherapy at a hospital within the same ICS. 73.9% of these patients received parenteral chemotherapy within 8 weeks of surgery.

There was 29 out of 355 patients who received parenteral chemotherapy at a hospital within a different ICS to the hospital where they received surgery. 65.5% of this patient group received parenteral chemotherapy within 8 weeks of surgery.

Performance indicator (PI) – 17: Number of lymph nodes examined during colon cancer surgery

Summary specifications

OCP Step(s):	[4] – Treatment
Description / definition:	The proportion of newly diagnosed patients with colon cancer (RD-Stage I, II or III) who undergo surgical resection where 12 or more lymph nodes are pathologically examined
Rationale:	Examining sufficient lymph nodes at the time of surgery assists in the assessment of the extent of cancer and the appropriate use of adjuvant therapy for node-positive patients (Chang 2007; Wong 2009). Maximising the number of lymph nodes resected and analysed enables reliable staging which influences decision making [NHS Quality Improvement Scotland 2015: Evidence level – Grade: III-2]. Routine reporting (by region and health service) of the number of nodes examined during major colorectal cancer surgery is a recommendation of the 2014 Victorian Colorectal Cancer Summit (VICS 2015).
Numerator:	<i>Number of patients diagnosed with 12 or more lymph nodes removed and examined</i>
Denominator:	<i>Total number of newly diagnosed patients with RD-Stage I, II or III colon cancer who undergo surgical resection for which lymph node data is available</i>
Tumour streams / cancer types:	Colon cancer
Stratifications:	Integrated Cancer Service surgery hospital Nodes examined by range (0-6, 7-11 & 12 and more) Health service (by campus) [Appendix 2]

Data collection statement

While the number of lymph nodes sampled during surgery is collected in the VCR, it is not possible to ascertain the number of cases where the nodes are not reported.

To identify the health service responsible for lymph node collection, patient lymph node data has been assigned to the respective patient's closest admission for surgery (restricted to surgeries within 120 days of diagnosis date) recorded in the VAED.

RD-Stage IV colon cancer, patients whose stage was determined after neoadjuvant treatment and those patients unstaged have been excluded.

The percentage of newly diagnosed patients with multiple surgeries was 0.76%. In this case the first surgery campus was used. Sixty-three out of 1758 colon cancer patients (3.6%, of which 33 are HRICS residents) with lymph node data reported to the VCR did not have a matching surgery within 120 days of diagnosis and were excluded.

Data sources

VCR, VAED

Modifications to indicator for 2014 and 2015 results

This indicator centres around the ICS surgery hospital and not ICS patient residence.

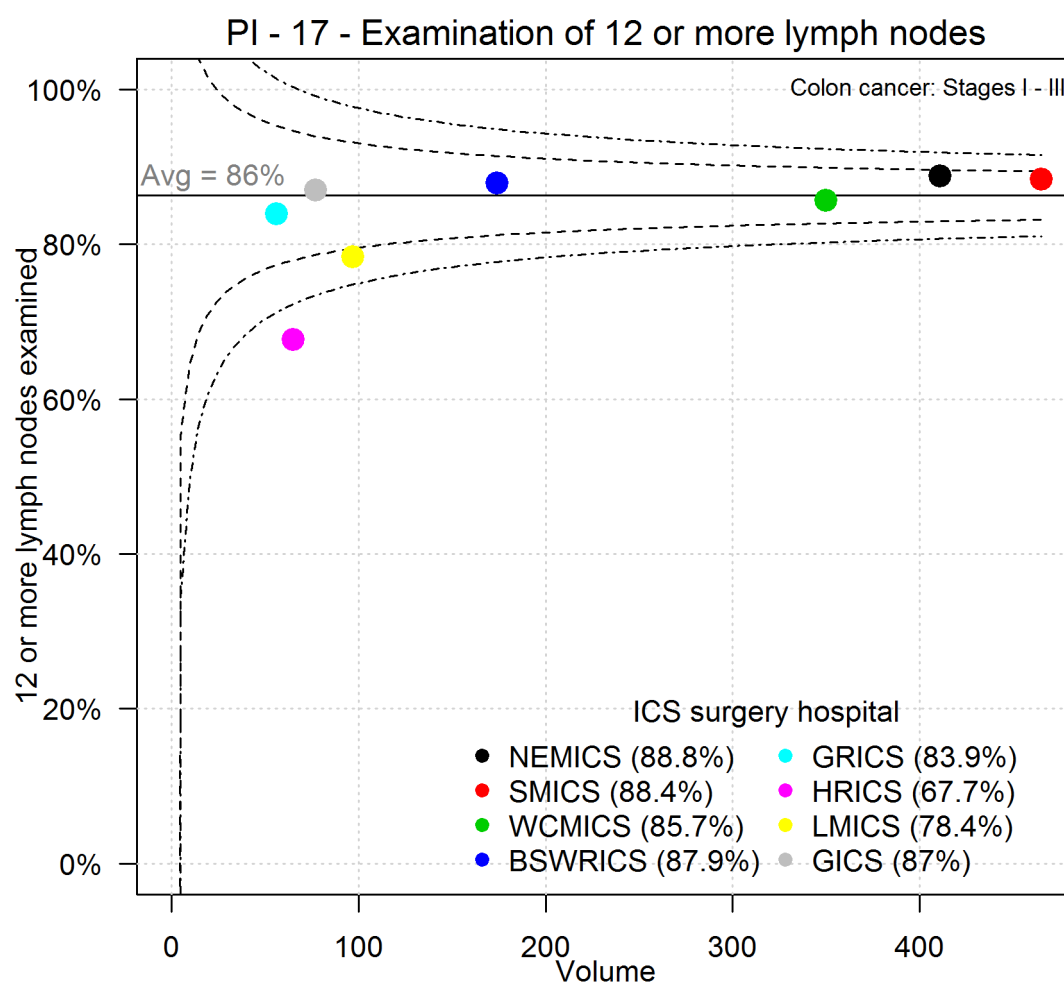
The numbers of nodes examined have been presented in a table by range (0-6, 7-11 & 12 and more) to provide detail about the patterns of removal and examination.

The data for each ICS health service by campus code is also provided (Appendix 2).

Integrated Cancer Services

PI – 17: Number of lymph nodes examined during colon cancer surgery for RD-Stages I – III (2015)

Figure 29: The proportion of colon cancer surgeries for patients with RD-Stage between I – III that had 12 or more lymph nodes examined by ICS surgery hospital in 2015.



Comment

Please note the **scale** (on the vertical axis) and **number of cases** for each ICS surgery hospital. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Overall, 86% of RD-Stage I, II, or III colon cancer patients with a reported number of lymph nodes taken had 12 or more lymph nodes taken.

The percentage within ICS of hospital varied between 67.7% to 88.8% for HRICS and NEMICS respectively.

Performance indicator (PI) – 19: Death following cancer surgery

Summary specifications

OCP Step(s):	[4] – Treatment
Description / definition:	Proportion patients with new cancer diagnoses who die within 30 / 90 days of surgery
Rationale:	<p>Treatment-related mortality is a marker of safety and quality (Scottish Cancer Taskforce 2017). Outcomes of treatment should be regularly assessed. Disease specific treatments should not be undertaken in futile situations. Treatment should only be undertaken in those patients that may benefit. 30-day mortality may serve as a benchmark for overall quality of surgical intervention and the appropriate selection of patients for treatment (SCT 2017). Survival after surgery is conventionally estimated from either in-hospital mortality or the 30-day mortality. It is generally accepted that deaths occurring within 30 days after surgery are attributable to complications following surgery (Strand 2006; Schneider 2015; Schneider 2014).</p> <p>Others have suggested that 90 days may be a more appropriate period to capture deaths attributable to cancer surgery (Bryant 2010; Powell 2013; Damhuis 2012), and that 90-day mortality be included for routine data collection (McMillan 2014; Talsma 2014).</p>
Numerator:	<i>Number of patients who undergo specified surgery who die within 30 / 90 days of date of treatment</i>
Denominator:	<i>Total number of newly diagnosed patients with specified cancer who undergo surgery for specified cancer</i>
Tumour streams / cancer types / specified surgical procedure:	<p>Oesophagogastric - Oesophagectomy</p> <p>Pancreas - Pancreatico-duodenectomy (Whipple procedure)</p> <p>Lung - Lobectomy, Pneumonectomy and Sub-lobar resection</p>
Stratifications:	Overall Victoria

Data collection statement

The admission date of the *first* surgery for each patient undergoing the relevant procedures was recorded. Patients were flagged if their date of death was within 30 or 90 days of the surgery admission date. Death from any cause was included.

Data sources

VCR, VAED, VDI

Modifications to indicator for 2014 and 2015 results

This is a **new indicator** for 2014 and 2015 results and was not utilised for the 2013 results.

Supplementary data available upon request

Data for each ICS by surgery hospital is available upon request.

Overall Victoria

PI – 19: Deaths following cancer surgery (2015)

Table 11: The proportion of **oesophagogastric**, **pancreatic** and **lung cancer** patients who died within 30 days and 90 days of their first cancer surgery in calendar year 2015.

Cancer	Surgery	Time (Days)	n/N (%)
Oesophagogastric	Oesophagectomy	30	3/141 (2%)
		90	8/141 (6%)
Pancreatic	Whipples Procedure	30	2/100 (2%)
		90	3/100 (3%)
Lung	Lobectomy	30	5/345 (1%)
		90	9/345 (3%)
	Pneumonectomy	30	2/33 (6%)
		90	2/33 (6%)
	Sub-lobar Resection	30	10/333 (3%)
		90	23/333 (7%)

Comment

Please note the **number of cases** for each of the surgical procedures for 30 days and 90 days. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Due to the low number of deaths, no formal statistical analysis was performed comparing ICS of treatment.

Performance indicator (PI) – 26: Length of stay (LOS) following cancer surgery

Summary specifications

OCP Step(s):	[4] – Treatment
Description / definition:	The length of stay (LOS) for newly diagnosed patients who undergo specified cancer surgery
Rationale:	<p>Length of stay (LOS) is an indicator of health service efficiency (NHS 2002). LOS following surgery acts as a surrogate measure of quality of surgery and post-operative factors for patients undergoing surgical resection for cancer. It is intended as a marker to address various issues of quality of care including surgery, post-operative care and complications, and access to community services. (Scottish Cancer Taskforce, Upper GI, QPI.9, 2015)</p> <p>Various initiatives aimed at reducing LOS have been instigated around the world (Coffey 1992; Pearson 2001; Clarke 1996; Kehlet 2008). There are many studies that show quality of care and health outcomes do not appear to be compromised by reductions in LOS (Cleary 1991; Clarke 1996; Bundred 1998). The National Health Service (NHS) and the Scottish Cancer Taskforce (SCT) have included LOS as an index of efficiency in performance indicators.</p> <p>The relationship between length of in-hospital stay and quality of care however is difficult. A concern for attempts to reduce LOS beyond a certain limit is that it may compromise patient safety and lead to increased admissions (Clarke 2001; Hendren 2011; Kossovsky 2002). The optimum LOS for any one condition may range depending upon supply, demand, safety and quality factors including the individual patient's needs and the availability of relevant supportive services in the community (Clarke 2002; Kossovsky 2002).</p>
Numerator:	<i>The LOS for newly diagnosed cancer patients who undergo specified cancer surgery</i>
Denominator:	N/A
Tumour streams / cancer types / specified surgical procedure:	<p>Oesophagogastric - Oesophagectomy</p> <p>Pancreas - Pancreatico-duodenectomy (Whipple procedure)</p> <p>Lung - Lobectomy, Pneumonectomy and Sub-lobar resection</p>
Stratifications:	<p>Overall Victoria</p> <p>Integrated Cancer Service of surgery hospital (Mean LOS)</p>

Data collection statement

The LOS for the patients first surgery admission was extracted from the VAED. It is calculated as the number of days from the admission date to the separation date.

Data sources

VCR, VAED

Modifications to indicator for 2014 and 2015 results

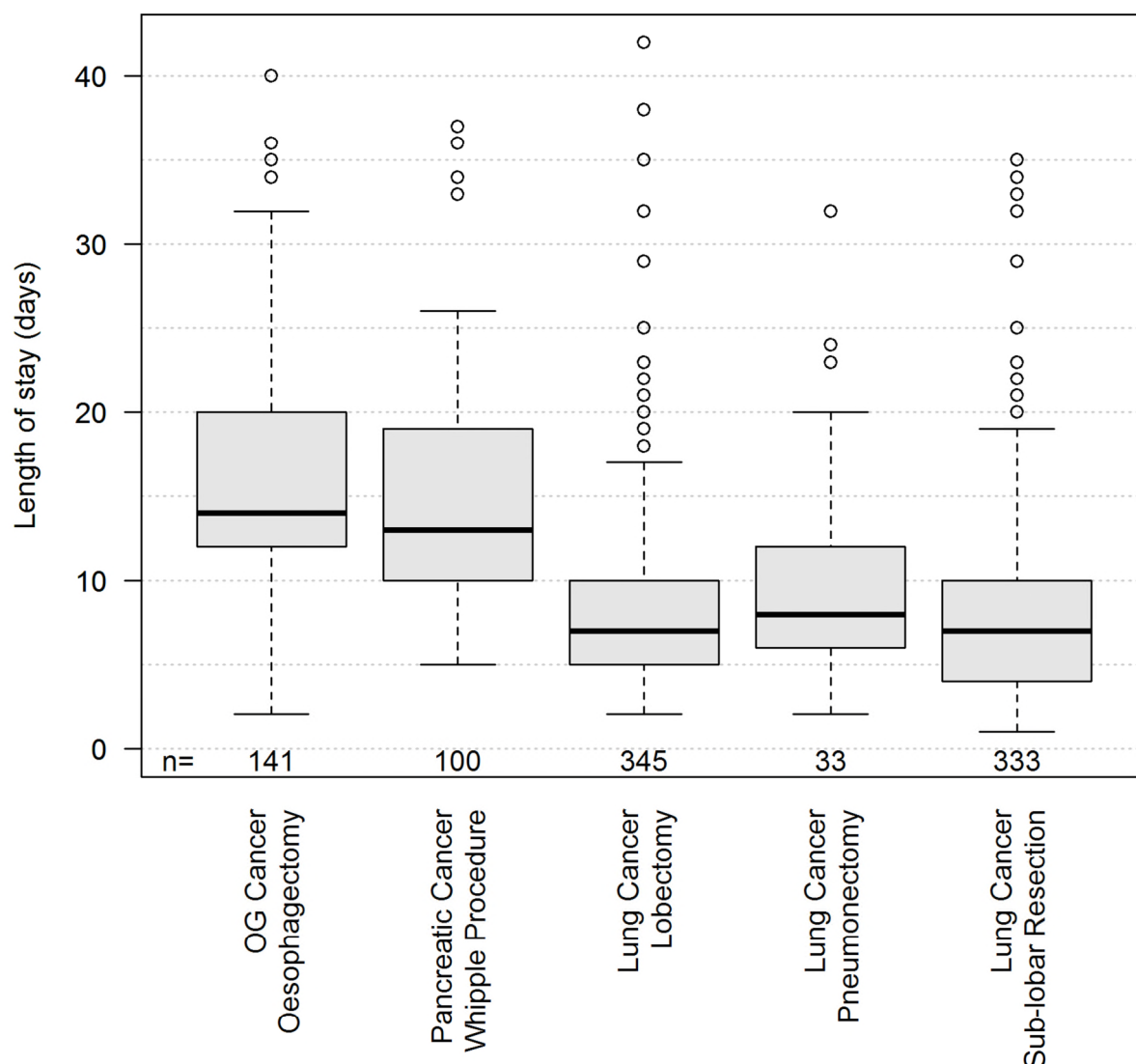
This is a **new indicator** for the 2014 and 2015 results and was not utilised for the 2013 results.

Supplementary data available upon request

Median LOS data for each surgery hospital by campus is available upon request.

Overall Victoria

PI – 26: Length of stay (LOS) following cancer surgery (2015)

Figure 30: Length of stay for oesophagogastric, pancreatic and lung cancer patients who undergo cancer surgery in calendar year 2015.*Comment:*

Please note the **scale** in days (on the vertical axis) for length of stay and the **number of cases** for each of the cancer types and surgical procedures. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

The solid black line represents the median length of stay. The grey box includes 50% of LOS values with the lower line of the grey box representing the lower quartile and the upper line of the grey box representing the upper quartile. The dashed lines extending from the grey box represent LOS values outside the middle 50%. Unfilled circles represent extreme values of length of stay.

The median length of stay was greatest for patients who underwent an oesophagectomy and lowest for patients who underwent a lobectomy. The total number of patients receiving cancer surgery is displayed below the box and whisker plot.

Integrated Cancer Services

PI – 26: Length of stay (LOS) following cancer surgery (2015)

Figure 31: Length of stay for **oesophagogastric** cancer patients diagnosed in 2015 who received an oesophagectomy by **ICS of surgery hospital**.

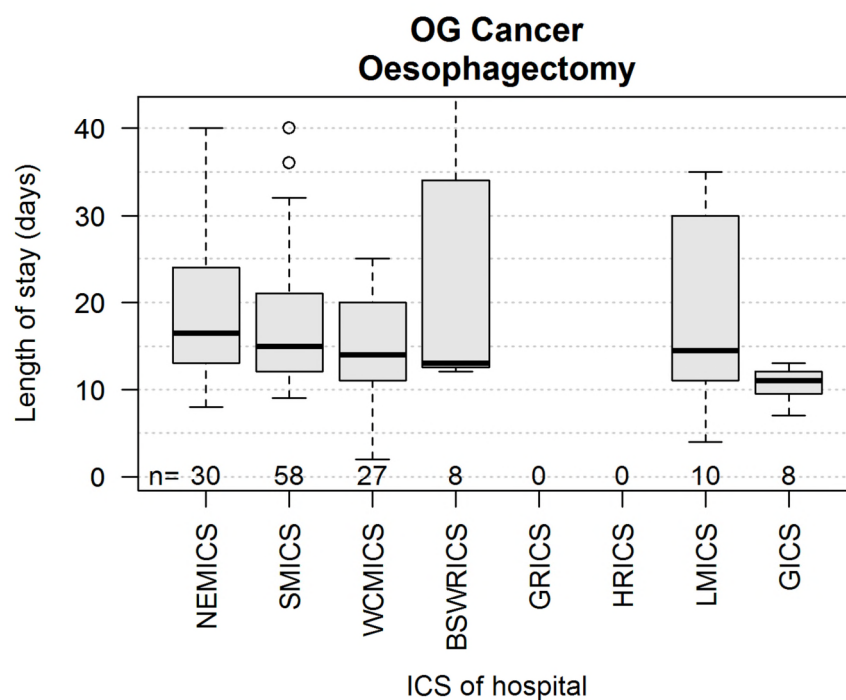


Figure 32: Length of stay for **pancreatic cancer** patients diagnosed in 2015 who received a pancreatico-duodenectomy (Whipple procedure) by **ICS of surgery hospital**.

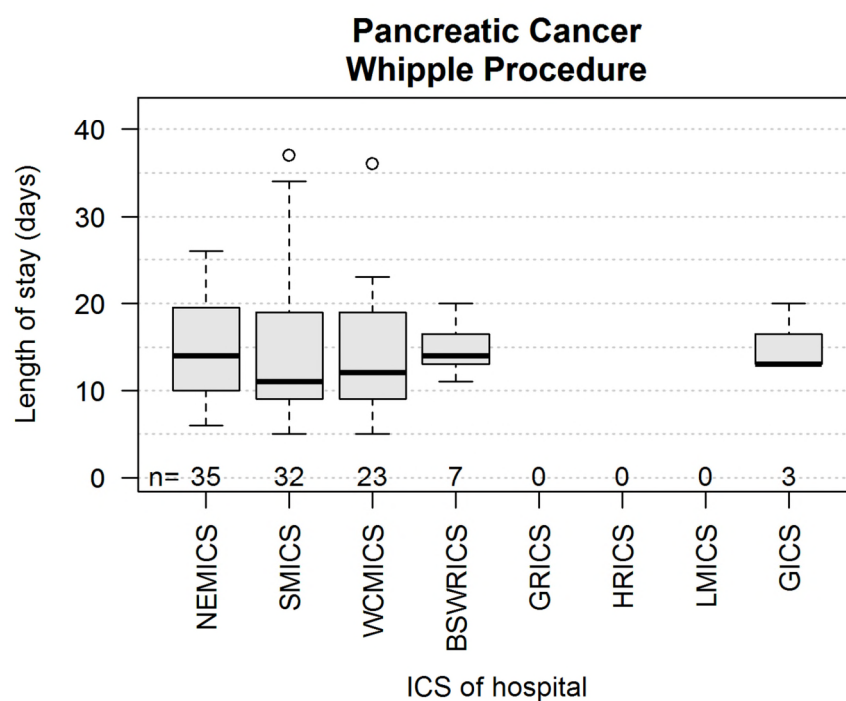


Figure 33: Length of stay for **lung cancer** patients diagnosed in 2015 who received a **lobectomy** by ICS of surgery hospital.

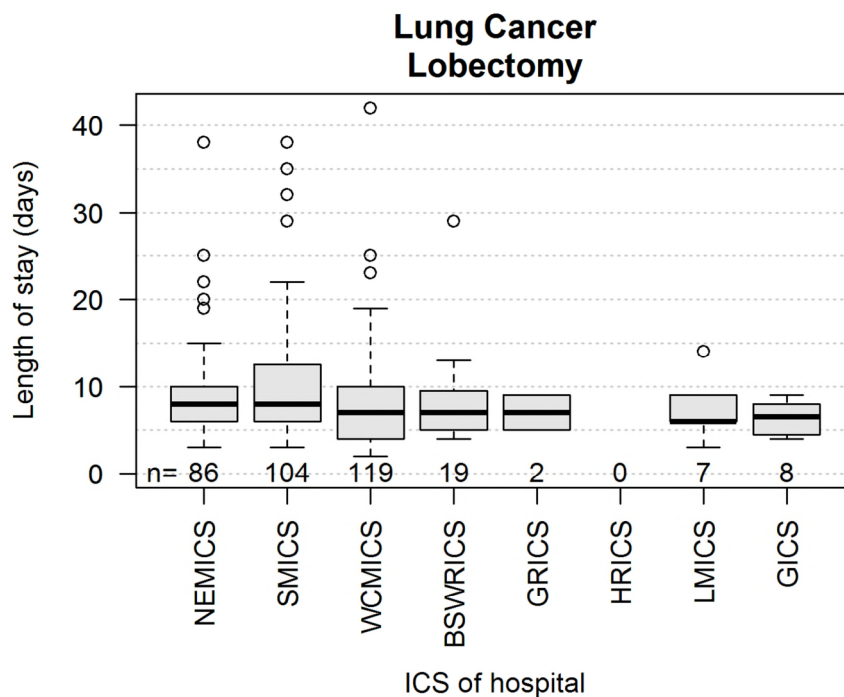


Figure 34: Length of stay for **lung cancer** patients diagnosed in 2015 who received a **pneumonectomy** by ICS of surgery hospital.

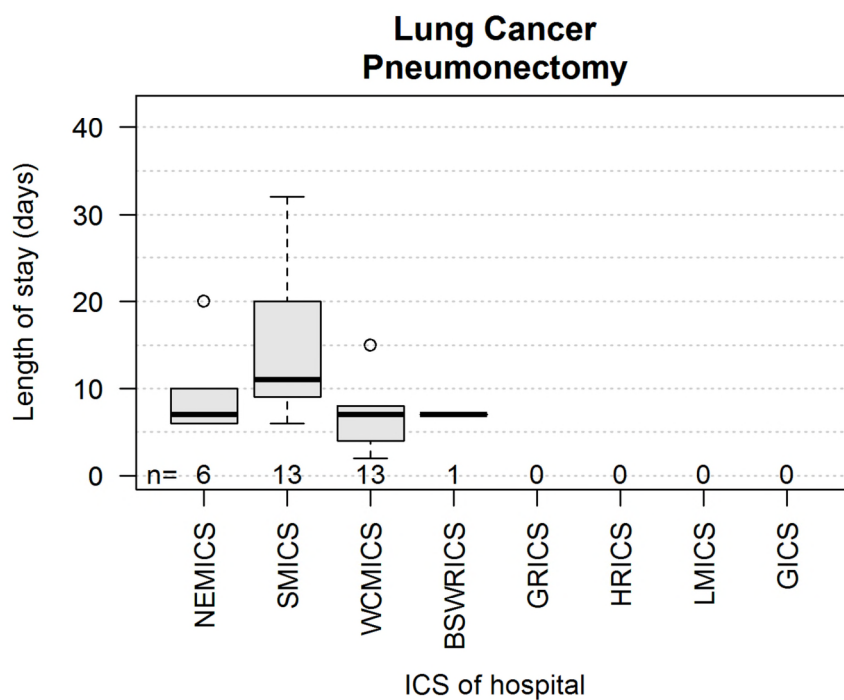
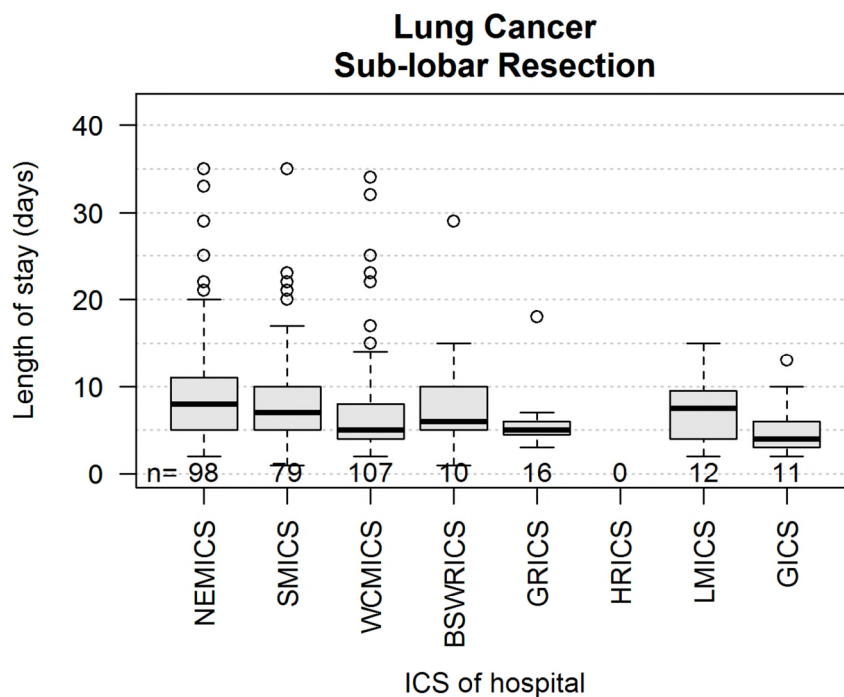


Figure 35: Length of stay for **lung cancer** patients diagnosed in 2015 who received a **sub-lobar resection** by ICS of surgery hospital.



Comment:

Please note the **scale** in days (on the vertical axis) for length of stay and the **number of cases** for each of the ICS. A low number of cases could suggest an insufficient sample size for conclusions to be drawn.

Data

The Victorian Cancer Registry (VCR)

The Victorian Cancer Registry (VCR) is a population-based cancer registry aiming to provide comprehensive, accurate and timely information for cancer control. Hospitals, pathology laboratories and cancer screening registers are required to notify the VCR of all cancers. These notifications are consolidated into individual tumour records.

The VCR data collection started in 1982, and the subset of data that is linked includes any Victorian diagnosed between 2008-2015.

Administrative data

Administrative datasets refer to those data collections made up of information routinely collected by departments and agencies, often mandated by statute, during the delivery of a service. These data are often collected for the purposes of reimbursement of activities, research, policy, planning, monitoring and evaluation (Allen 2013).

Data sets used for these indicators are:

- Victorian Admitted Episodes Dataset (VAED) – provides a comprehensive dataset of the causes, effects and nature of illness, and the use of health services in Victoria. All Victorian public and private hospitals, including rehabilitation centres, extended care facilities and day procedure centres, report a minimum set of data for each admitted patient episode.
- Victorian Emergency Minimum Dataset (VEMD) – comprises de-identified demographic, administrative and clinical data detailing presentations at designated emergency departments in Victorian public hospitals.
- Victorian Radiotherapy Minimum Data Set (VRMDS) – contains demographic, administrative and clinical data for admitted and non-admitted patients treated in Victorian Radiotherapy facilities in the private and public sector.
- Victorian Death Index (VDI) – The Victorian Death Index is administered under the Births, Deaths and Marriages Registration Act 1996 by the Vic Registrar of Births, Deaths and Marriages of the Department of Justice, Victoria. The Register includes all deaths that occur in Victoria. The Death Registration Statement contains the details prescribed by Regulation, including but not limited to: demographic details such as name at birth, Aboriginal/Torres Strait Islander status, sex, occupation, date and place of birth; age at death; date of death; place of death; cause of death; marital status; details of parents; details of children; Coroner details; and funeral director details.

Data linkage

Data linkage is a method of bringing together information about people, places and events in a way that protects the privacy of individuals. It is used to link different health and health-related data collections for a range of population-based studies and performance monitoring and evaluation activities.

Victorian Data Linkages (DHHS-VDL) provides population-wide linked data for research and quality improvement while adhering to Victorian privacy principles. Additional information on the linkage process is available upon request.

Data linkage validation

Linked data may create additional concerns about error if cases are not linked accurately. It is important that data linkage validation is undertaken wherever possible to identify factors able to compromise the quality of data. The validation of data linkages is an ongoing effort to accurately appraise the quality of results.

Data resources and support

The VCPMF project would like to acknowledge the support and resources of the Department of Health and Human Services as custodians of the linked data.

Tumour stream definitions

Table 12: Tumour stream definitions by International Classification of Disease (ICD)

Tumour Stream	ICD10
Breast	C50
Central Nervous System (CNS)	C70, C71, C72
Colorectal Cancer (CRC)	C18, C19, C20
Endocrine-Thyroid (ET)	C73, C74, C75
Genitourinary (GU)	C60, C61, C62, C63, C64, C65, C66, C67, C68
Gynaecological (Gyn)	C51, C52, C53, C54, C55, C56, C57, C58
Haematological (Haem)	C81, C82, C83, C84, C85, C86, C88, C90, C91, C92, C93, C94, C95, C96
Head and Neck (HN)	C00, C01, C02, C03, C04, C05, C06, C07, C08, C09, C10, C11, C12, C13, C14, C30, C31, C32
Lung	C33, C34
Skin (Skin)	C43
Upper Gastrointestinal (UGI)	C15, C16, C17, C22, C23, C24, C25, C26
Cancer types	ICD10
Bladder	C67
Colon	C18, C19
Kidney	C64, C65
Oesophagogastric (OG)	C15, C16
Ovarian	C481, C482, C569, C570, C578, C579
Pancreas	C25
Prostate	C61
Rectal	C20

ICD-10-AM procedural codes utilised

See Appendix 3.

Glossary

Adjuvant chemotherapy – Parenteral chemotherapy given after surgery.

Chemotherapy start date – The date of commencement of the first day of the first cycle of (adjuvant) parenteral chemotherapy given to a patient who is receiving care for cancer.

Date of diagnosis – The earliest date of evidence of cancer according to site and morphology. In most cases the date of diagnosis would be the date of biopsy or date of surgery which led to the specimen in which cancer was detected.

Date of surgery – The date of admission of the hospitalisation in which cancer related surgery was performed on a patient.

Initial cancer treatment – where parenteral chemotherapy, surgery or radiotherapy is the first treatment.

Optimal cancer care pathway – the key principles and practices required at each stage of the care pathway to guide the delivery of consistent, safe, high-quality and evidence-based care.

Performance status – A measure of how well a patient is able to perform ordinary tasks and carry out day-to-day activities.

Registry-derived stage (RD-Stage) – Registry-derived stage (RD-Stage) is defined as the best estimate of summary TNM stage at time of diagnosis as derived by cancer registries (e.g. Victorian Cancer Registry) from available data sources for use in population data analysis.

References

- Allen J, Holman CD, Meslin EM, Stanley F. 2013. Privacy protectionism and health information: is there any redress for harms to health? *Journal of Law and Medicine*: 21(2); 473-485.
- Bayraktar S, Bayraktar UD, Rocha-Lima CM. 2010. [Timing of adjuvant and neoadjuvant therapy in colorectal cancers](#). *Clinical Colorectal Cancer*; 9:144-149.
- Brierley JD, et al. 2013. [The value of collecting population-based cancer stage data to support decision-making at organisational, regional and population levels](#). *Healthcare Quarterly*: 16(3): 27-33.
- Bryant AS, Rudemiller RJ & Cerfolio RJ. The 30- versus 90-day operative mortality after pulmonary resection. *Ann Thorac Surg*. 2010; 89, pp.1717-1723. Accessed on 3 May 2017 at: <http://www.sciencedirect.com/science/article/pii/S0003497510002481>
- Bundred N, Maguire P, Reynolds J. Randomised controlled trial of effects of early discharge after surgery for breast cancer. *BMJ* 1998;317:1275–9.
- Cancer Council Victoria. 2015. [Optimal Cancer Pathways](#). Accessed on 26 October 2016.
- Thursfield V, Farrugia H. Cancer in Victoria: Statistics & Trends 2015. Cancer Council Victoria, Melbourne 2016: p. 25.
- Cancer Quality Council of Ontario (CQCO). Reporting of Cancer Stage at Diagnosis. Accessed on 26 October 2016, at: http://www.csqi.on.ca/by_patient_journey/diagnosis/reporting_of_cancer_stage_at_diagnosis/
- Chang GJ, Rodriguez-Bigas MA, Skibber JM, Moyer VA. 2007. [Lymph node evaluation and survival after curative resection of colon cancer: systematic review](#). *Journal of the National Cancer Institute*: 99(6); 433-41.
- Clarke A: Why are we trying to reduce length of stay? evaluation of the costs and benefits of reducing time in hospital must start from the objectives that govern change. *Br Med J*. 1996, 5 (3): 172.
- Clarke A, Rosen R. Length of stay: how short should hospital care be? *Eur J Public Health*. 2001;11:166-170. Accessed on 2 May 2017 at: <https://www.ncbi.nlm.nih.gov/pubmed/11420803>
- Clarke A. Length of in-hospital stay and its relationship to quality of care. *Qual Saf Health Care* 2002; 11:209-210. Accessed on 2 May 2017 at: <http://qualitysafety.bmj.com/content/qhc/11/3/209.full.pdf>
- Cleary PD, Greenfield S, Mulley SAG, et al. Variations in length of stay and outcomes for six medical and surgical conditions in Massachusetts and California. *JAMA* 1991;266:73–9
- Coffey RJ, Richards JS, Remmert CS, LeRoy SS, Schoville RR, Baldwin PJ: An introduction to critical paths. *Qual Manag Healthcare*. 1992, 1 (1): 45. Accessed on 2 May 2017 at: <https://www.ncbi.nlm.nih.gov/pubmed/10131646>
- Collins LG, Haines C, Perkel R, & Enck RE. Lung Cancer: Diagnosis and Management. *American Family Physician*. Vol.75(1), 1 January 2007, pp. 56-63. Accessed on 3 May 2017 at: <http://www.aafp.org/afp/2007/0101/p56.html>

Damhuis RA, Winhoven BP, Plaiser PW, et al. Comparison of 30-day, 90-day and in-hospital postoperative mortality for eight different cancer types. *Br J Surg*. 2012;99:pp. 1149-1154. Accessed on 3 May 2017 at: <http://onlinelibrary.wiley.com/doi/10.1002/bjs.8813/abstract>

Davidoff AJ, et al. 2010. Development of a performance status prediction model for use in administrative data analyses. *Journal of Clinical Oncology* 28:15s (Suppl;abstr 6006).

Department of Health and Human Services. 2015. [Guidelines for timely initiation of chemotherapy](#). A proposed framework for access to medical oncology and haematology cancer clinics and chemotherapy services in Victoria.

Elliss-Brookes, L et. al. 2012. [Routes to diagnosis for cancer – determining the patient journey using multiple routine data sets](#). *British Journal of Cancer*: 107(8):1220-1226.

Evans SM, Earnest A, Bower W, Senthuren M, McGlauglin P, Stirling R. 2016. [Timeliness of lung cancer care in Victoria: a retrospective cohort study](#). *The Medical Journal of Australia*: 204(2); 75

Green A, Hauge J, Iachina M & Jakobsen E. The mortality after surgery in primary lung cancer: results from the Danish Lung Cancer Registry. *European Journal of cardio-Thoracic Surgery*. 2016;49:589-594. Accessed on 3 may 2017 at: <https://academic.oup.com/ejcts/article-lookup/doi/10.1093/ejcts/ezv107>

Hendren S, Morris AM, Zhang W & Dimick J. Early discharge and hospital readmission after colectomy for cancer. *Dis Colon Rectum*. 2011; Nov; 54(11):1362-7. doi: 10.1097/DCR.0b013e31822b72d3. Accessed on 2 may 2017 at: <https://www.ncbi.nlm.nih.gov/pubmed/21979179>

Kehlet H, Wilmore DW: Evidence-based surgical care and the evolution of fast-track surgery. *Ann Surg*. 2008, 248 (2): 189-10.1097/SLA.0b013e31817f2c1a.

Kossovsky MP, Sarasin FP, Chopard P, et al. Relationship between hospital length of stay and quality of care in patients with congestive heart failure. *Qual Saf Health Care* 2002;11:219–23. Accessed on 2 may 2017 at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1743633/pdf/v011p00219.pdf>

McMillan R, Berger A, Sima CS, Lou F, Dycoco J, Rusch V, Rizk NP, Jones DR & Huang J. Thirty-day mortality underestimates the risk of early death after major resections for thoracic malignancies. *Ann Thorac Surg*. 2014;98:pp. 1769-1775. Accessed on 3 may 2017 at: <http://www.sciencedirect.com/science/article/pii/S0003497514013071>

NHS Quality Improvement Scotland (2008). Management of Lung Cancer Services [online]. Accessed 3 May 2017 from: <http://www.healthcareimprovementscotland.org/his/doc.ashx?docid=b3c9ed90-ad73-4ddf-b46c-c37da71deab4&version=-1>

NHS England and Public Health England. 2015. [Progress in improving cancer services and outcomes in England](#). A report by the Comptroller and Auditor General. National Audit Office: 60-61.

NHS Scotland. Scottish Cancer Taskforce. (2015 v2.1) [Colorectal Cancer Clinical Quality Performance Indicators](#).

NHS Scotland. Scottish Cancer Taskforce (SCT), Quality Indicator 2 – Lung, H&N, pancreatic & sarcomas (24 February 2017, V3) Access at: www.healthcareimprovementscotland.org/our_work/cancer_care_improvement/cancer_qpis

NHSE (2002) NHS Performance Indicators. February 2002.

Oken M, Creech R, Tormey D, et al. 1982. Toxicity and response criteria of the Eastern Cooperative Oncology Group. *American Journal of Clinical Oncology*.: 5; 649-655.

Pearson SD, Kleeefield SF, Soukop JR, Cook EF, Lee TH: Critical pathways intervention to reduce length of hospital stay* 1. Am J Med. 2001, 110 (3): 175-180. 10.1016/S0002-9343(00)00705-1.

Powell HA, Tata LJ Baldwin DR et. al. Early mortality after surgical resection for lung cancer: an analysis of the English National Lung Cancer Audit. Thorax, 2013;68:pp. 826-834. Accessed on 3 May 2017 at: <http://thorax.bmj.com/content/68/9/826>

Rivera PM, Mehta AC & Wahidi MM. Establishing the diagnosis of lung cancer: Diagnosis and management of lung cancer. 3rd Ed. American College of Chest Physicians Evidence-based Clinical Practice Guidelines. Chest. 2013;145(5_Suppl):e142S-e165S. Accessed on 3 May 2017 at: <http://journal.publications.chestnet.org/article.aspx?articleid=1685797>

Schneider L, Farrokhyar F, Schieman C, Shargall Y, D'Souza J, Camposilvan I, Hanna WC, & Finley CJ. Pneumonectomy: the burden of death after discharge and predictors of surgical mortality. Ann Thorac Surg. 2014 Dec;98(6):1976-81. Accessed on 3 May 2017 at: <https://www.ncbi.nlm.nih.gov/pubmed/25282164>

Schneider L, Farrokhyar F, Schieman, Hanna WC, Shargall Y & Finley CJ. The burden of death following discharge after lobectomy. Eur J Cardiothor Surg. 2015 Jul;48(1):65-70. Accessed on 3 May 2017 at: <https://www.ncbi.nlm.nih.gov/pubmed/25422293>

State of Victoria. [Cancer \(Reporting\) Regulations 2012](#). S.R. No. No8/2012. Accessed on 26 October 2016.

Strand TE, Rostad H, Møller B & Norstein J. Survival after resection for primary lung cancer: a population based study of 3211 resected patients. Thorax. 2006; 61: 710-715.

Talsma AK, Lingsma HF, Steyerberg EW, Wijnhoven BP & Van Lanschot JJ. The 30-day versus in-hospital and 90-day mortality after esophagectomy as indicators for quality of care. August 2014. Annals of Surgery;260(2): pp. 267-273. Accessed on 3 May 2017 at: <https://www.ncbi.nlm.nih.gov/pubmed/25350650>

Victorian Integrated Cancer Services (VICS). [2014 Victorian Colorectal Cancer Summit Newsletter](#) (June 2015).

Welch HG, Black WC. Are deaths within 1 month of cancer-directed surgery attributed to cancer? J Natl Cancer Inst. 2002;94:1066-1070.

Wong SL. 2009. [Lymph node counts and survival rates after resection for colon and rectal cancer](#). Gastrointestinal Cancer Research: 3(2 Suppl 1; S33-S35)

Appendices

Appendix 1: ICS results by health service (PI-13)

Appendix 2: ICS results by health service (PI-17)

Appendix 3: ICD-10AM surgery procedure codes

Appendix 1

Grampians Integrated Cancer Service (GICS)

Integrated Cancer Service by health service (campus)

PI-13 – Timeliness of initial treatment after cancer diagnosis (2015)

The results for Performance Indicator–13 are represented by campus.

The following graphs (Figures 36-55) show the proportion of patients within each Victorian health service that received surgery, parenteral chemotherapy or radiotherapy first within 4 weeks of diagnosis (PI – 13).

The health service (by campus) data are provided for the following cancers:

- Breast
- Colon
- Head and neck
- Lung
- Rectal

For each Integrated Cancer Service there are four funnel plots presented for each of the represented tumour streams.

1. The proportion of patients that had **surgery, parenteral chemotherapy or radiotherapy** as a first treatment within 4 weeks of diagnosis
2. The proportion of patients that had **surgery** as their first treatment within 4 weeks of diagnosis
3. The proportion of patients that had **parenteral chemotherapy** as their first treatment within 4 weeks of diagnosis
4. The proportion of patients that had **radiotherapy** as their first treatment within 4 weeks of diagnosis

Each **light grey lined circle** within the funnel plot represents a health service across the state. Each ICS will receive the same graph, except that the version received by an ICS will have their respective health services block coloured with the campus number identified.

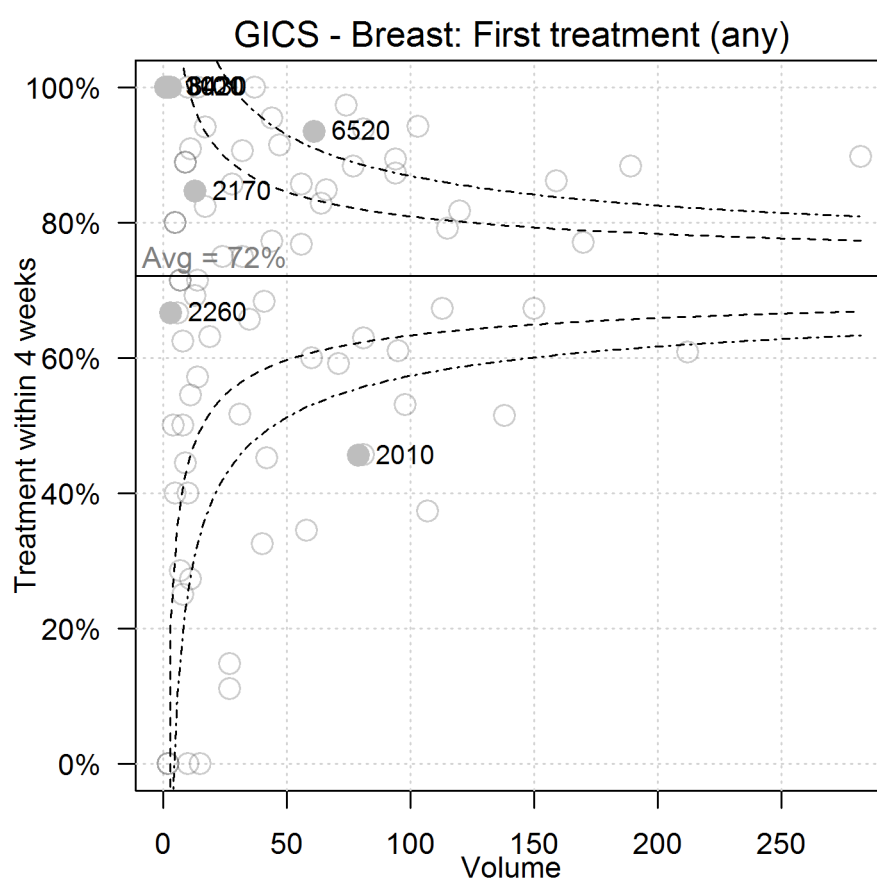
A particular ICS will only see their health services **solid coloured** and numbered. The health services in other ICSs are differentiated by the **light grey lined circle** but are not identifiable.

Where there is no applicable health service this is marked. The light grey lined circles representing the campuses across the state are still shown.

There are cases where two or more campuses are displayed in close proximity on the funnel plot and the campus numbers are obscured. These can be identified by a process of elimination or with reference to the tables.

Where there is no agreement with a particular private health service to release their data, references to that health service have been removed from the tables and their results have been de-identified in the funnel plots.

GICS - Figure 36: The proportion of patients that received **first treatment** (surgery, parenteral chemotherapy or radiotherapy) within 4 weeks of diagnosis (PI - 13) for **breast cancer** by ICS of treatment (2015).

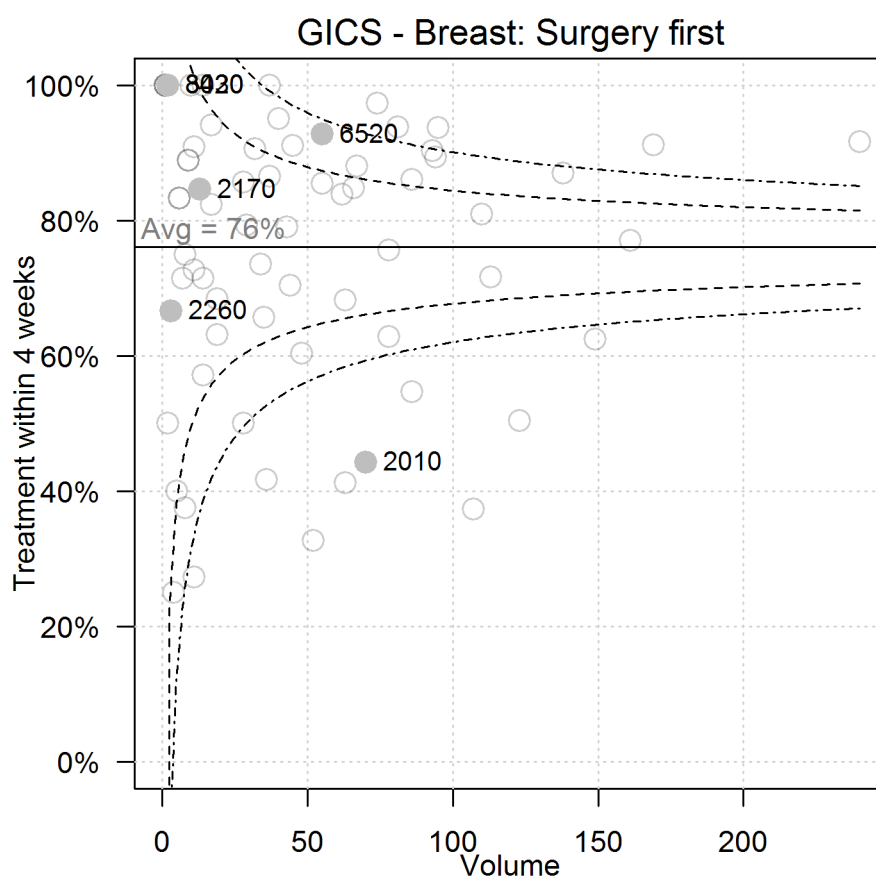


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	1101	East Grampians Health Service [Ararat]	1/1 (100%)
GICS	2010	Ballarat Health Services [Base Campus]	36/79 (45.6%)
GICS	2170	Wimmera Base Hospital [Horsham]	11/13 (84.6%)
GICS	2260	Stawell Regional Health	2/3 (66.7%)
GICS	3020	Djerriwarrh Health Service [Bacchus Marsh]	2/2 (100%)
GICS	6520	St John of God Hospital Ballarat	57/61 (93.4%)
GICS	8430	Ballarat Day Procedure Centre	3/3 (100%)

GICS - Figure 37: The proportion of patients that received **surgery first** within 4 weeks of diagnosis (PI - 13) for **breast cancer** by ICS of treatment (2015).

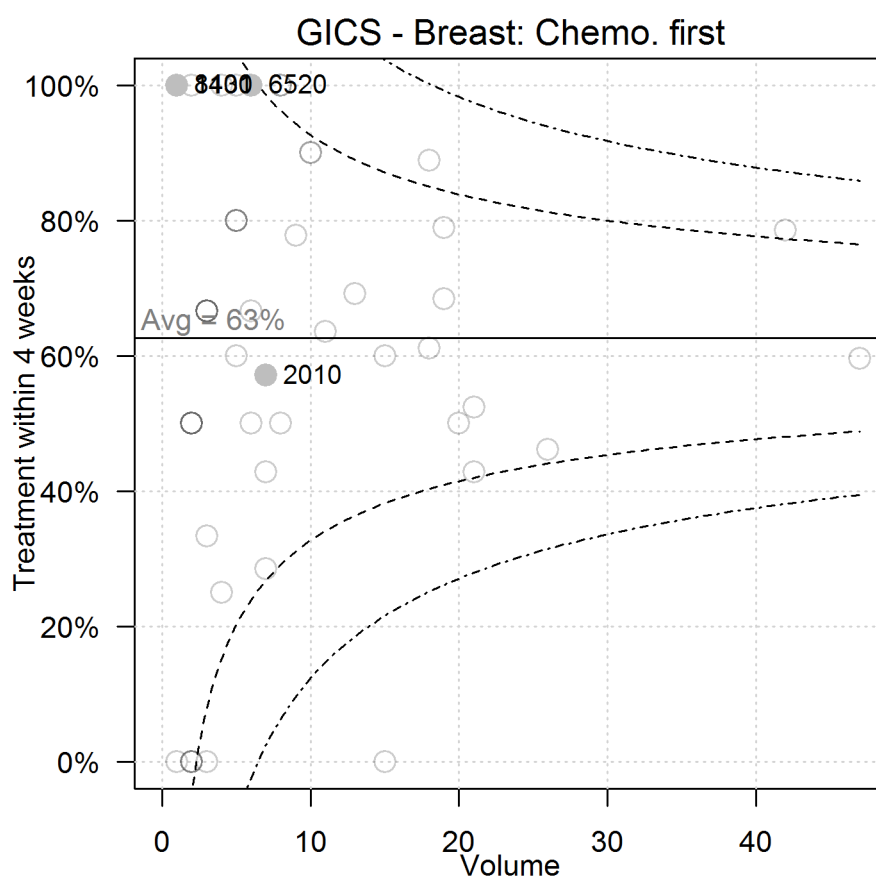


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	31/70 (44.3%)
GICS	2170	Wimmera Base Hospital [Horsham]	11/13 (84.6%)
GICS	2260	Stawell Regional Health	2/3 (66.7%)
GICS	3020	Djerriwarrh Health Service [Bacchus Marsh]	2/2 (100%)
GICS	6520	St John of God Hospital Ballarat	51/55 (92.7%)
GICS	8430	Ballarat Day Procedure Centre	2/2 (100%)

GICS - Figure 38: The proportion of patients that received **parenteral chemotherapy first** within 4 weeks of diagnosis (PI - 13) for **breast cancer** by ICS of treatment (2015).

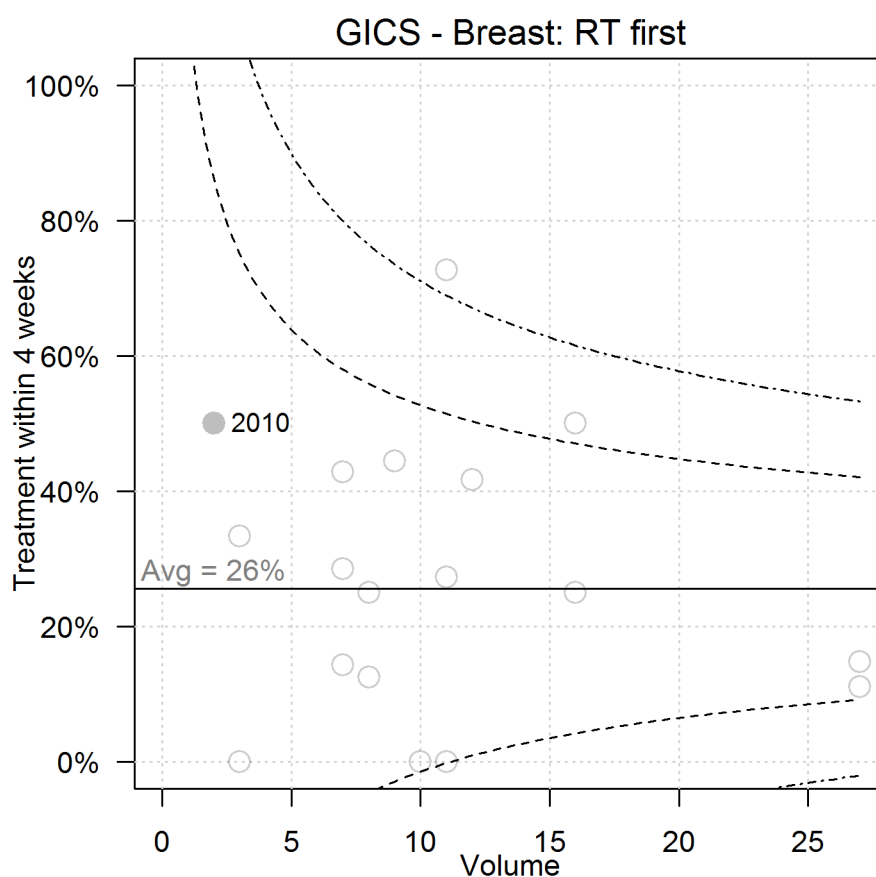


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	1101	East Grampians Health Service [Ararat]	1/1 (100%)
GICS	2010	Ballarat Health Services [Base Campus]	4/7 (57.1%)
GICS	6520	St John of God Hospital Ballarat	6/6 (100%)
GICS	8430	Ballarat Day Procedure Centre	1/1 (100%)

GICS - Figure 39: The proportion of patients that received **radiotherapy first** within 4 weeks of diagnosis (PI - 13) for **breast cancer** by ICS of treatment (2015).

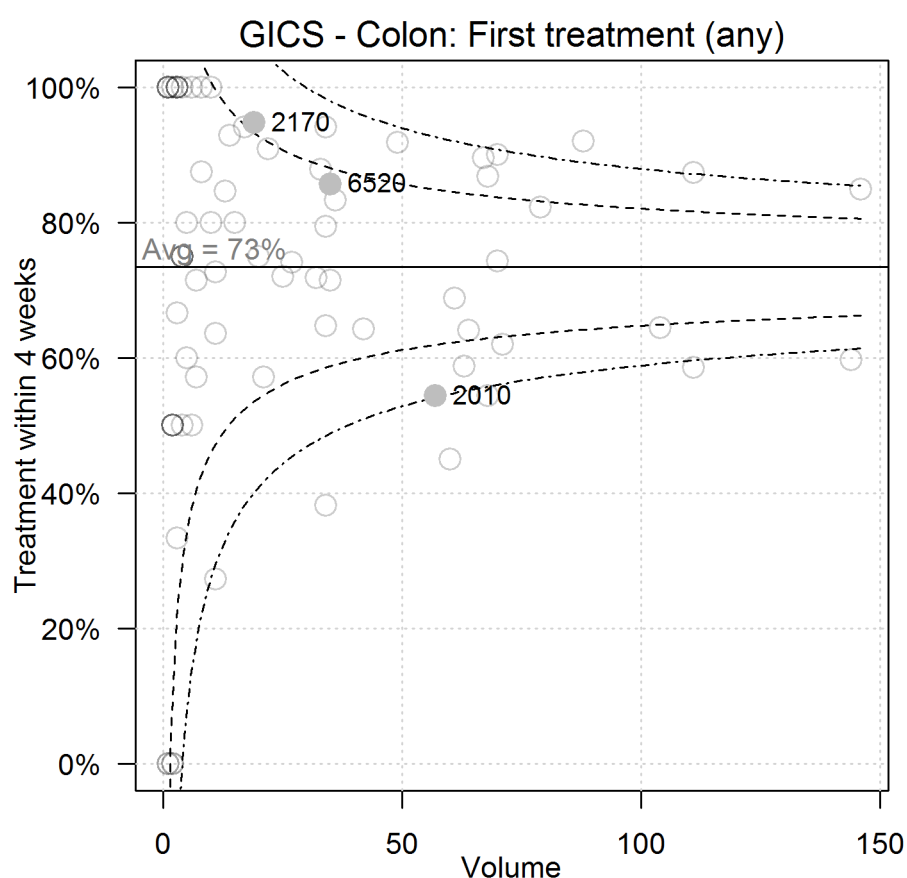


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	1/2 (50.0%)

GICS - Figure 40: The proportion of patients that received **first treatment** (surgery, parenteral chemotherapy or radiotherapy) within 4 weeks of diagnosis (PI - 13) for **colon cancer** by ICS of treatment (2015).

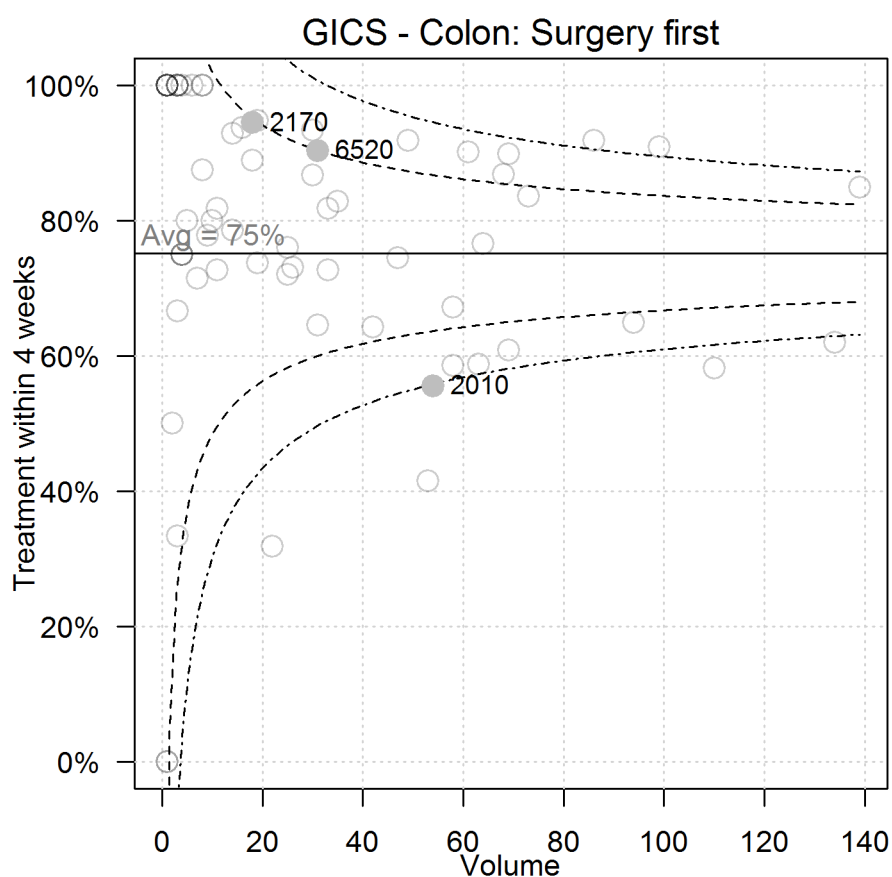


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	31/57 (54.4%)
GICS	2170	Wimmera Base Hospital [Horsham]	18/19 (94.7%)
GICS	6520	St John of God Hospital Ballarat	30/35 (85.7%)

GICS - Figure 41: The proportion of patients that received **surgery first** within 4 weeks of diagnosis (PI - 13) for **colon cancer** by ICS of treatment (2015).

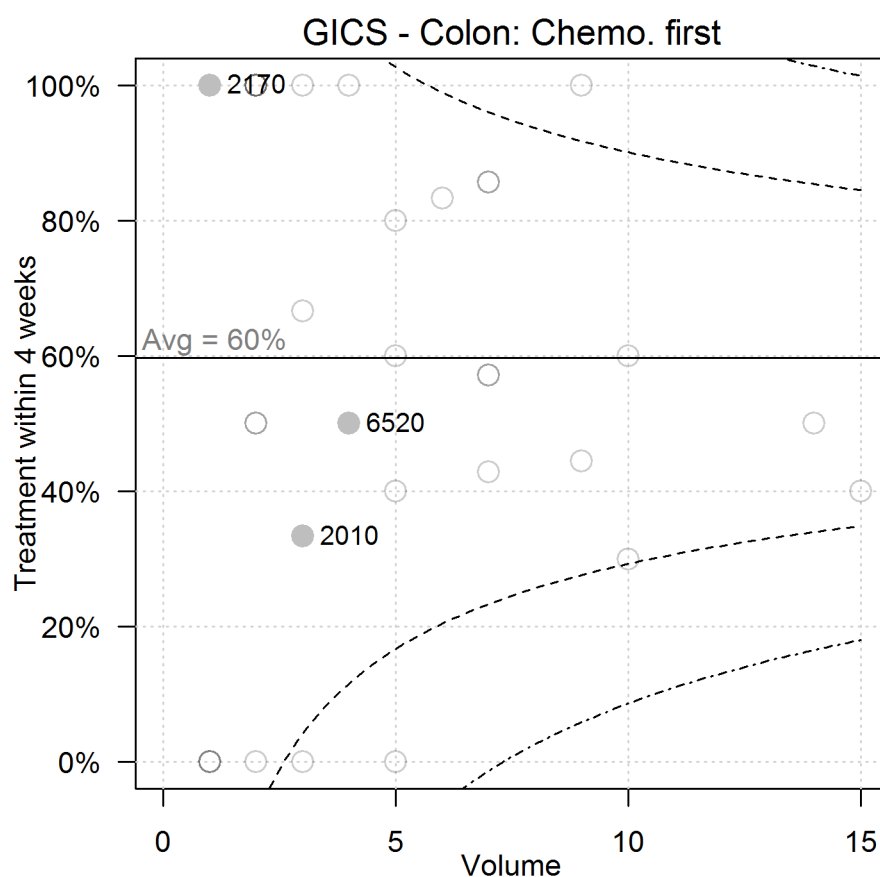


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	30/54 (55.6%)
GICS	2170	Wimmera Base Hospital [Horsham]	17/18 (94.4%)
GICS	6520	St John of God Hospital Ballarat	28/31 (90.3%)

GICS - Figure 42: The proportion of patients that received **parenteral chemotherapy first** within 4 weeks of diagnosis (PI - 13) for **colon cancer** by ICS of treatment (2015).

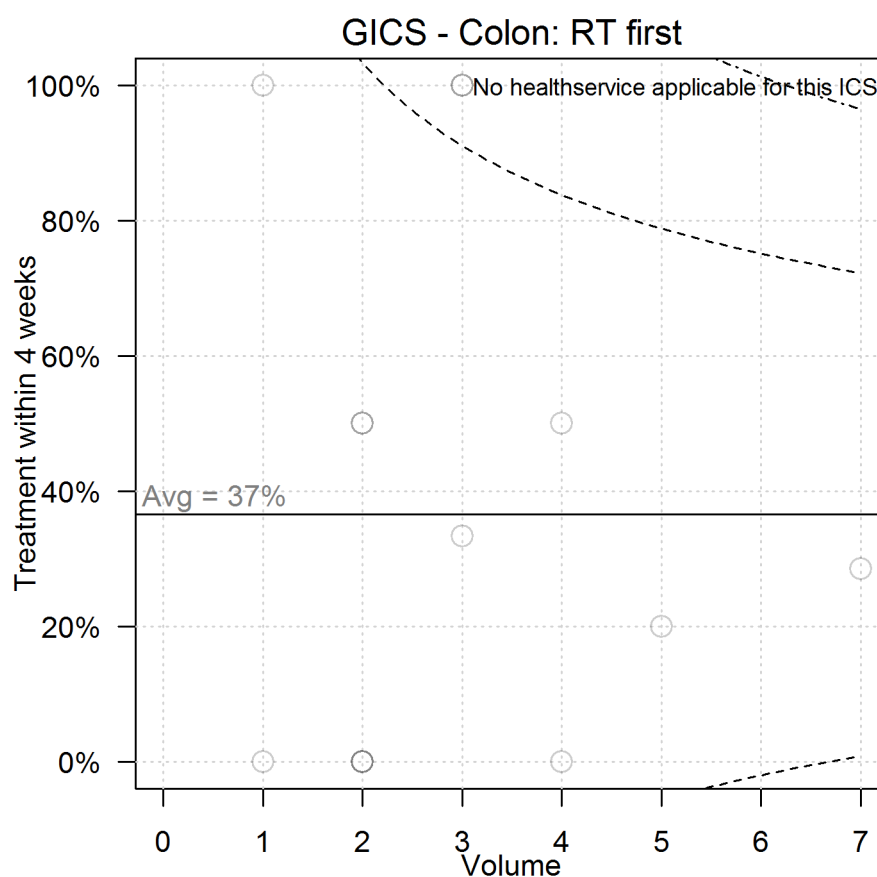


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	1/3 (33.3%)
GICS	2170	Wimmera Base Hospital [Horsham]	1/1 (100%)
GICS	6520	St John of God Hospital Ballarat	2/4 (50.0%)

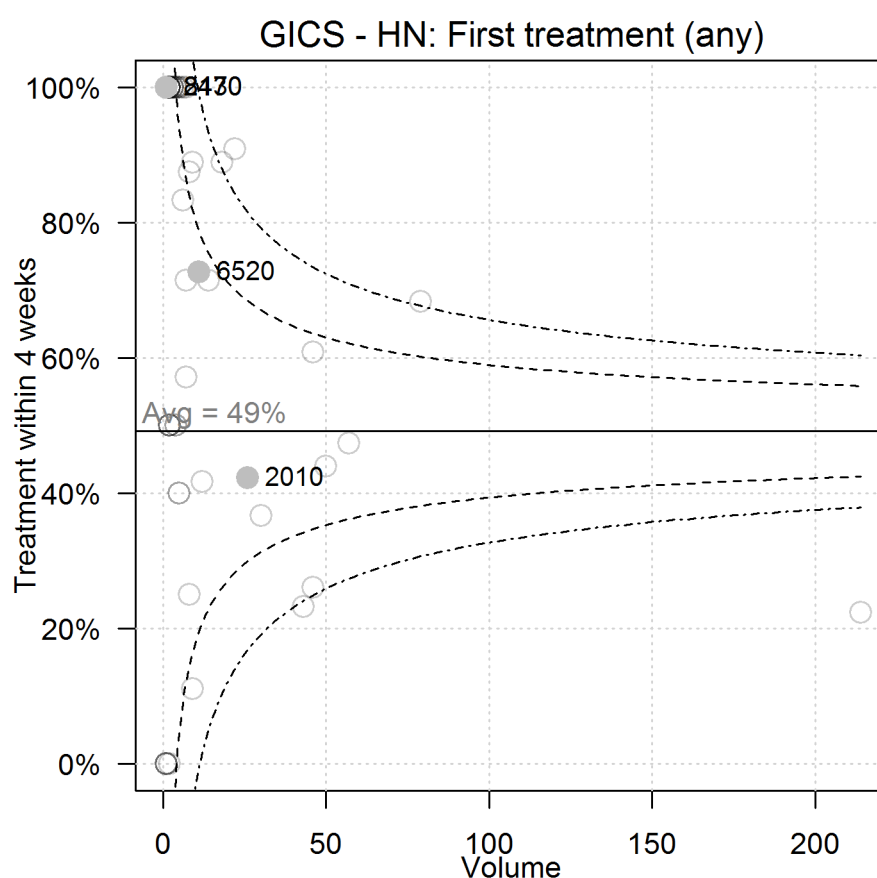
GICS - Figure 43: The proportion of patients that received **radiotherapy first** within 4 weeks of diagnosis (PI - 13) for **colon cancer** by ICS of treatment (2015).



Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

GICS - Figure 44: The proportion of patients that received **first treatment** (surgery, parenteral chemotherapy or radiotherapy) within 4 weeks of diagnosis (PI - 13) for **head and neck cancer** by ICS of treatment (2015).

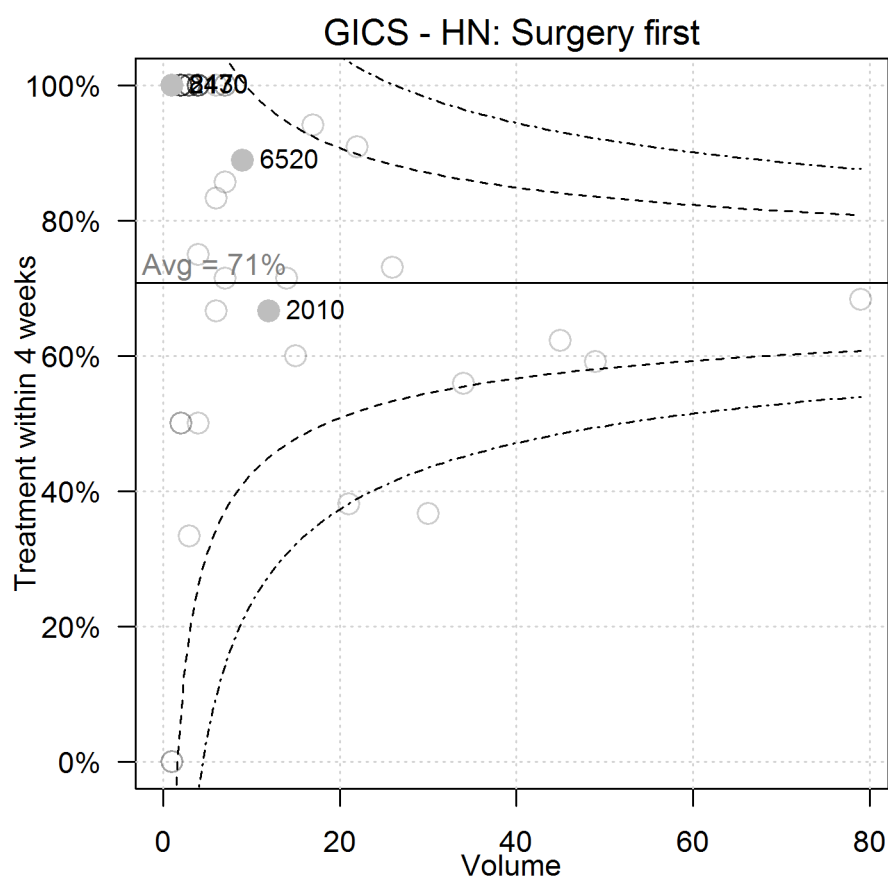


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	11/26 (42.3%)
GICS	2170	Wimmera Base Hospital [Horsham]	1/1 (100%)
GICS	6520	St John of God Hospital Ballarat	8/11 (72.7%)
GICS	8430	Ballarat Day Procedure Centre	1/1 (100%)

GICS - Figure 45: The proportion of patients that received **surgery first** within 4 weeks of diagnosis (PI - 13) for **head and neck cancer** by ICS of treatment (2015).

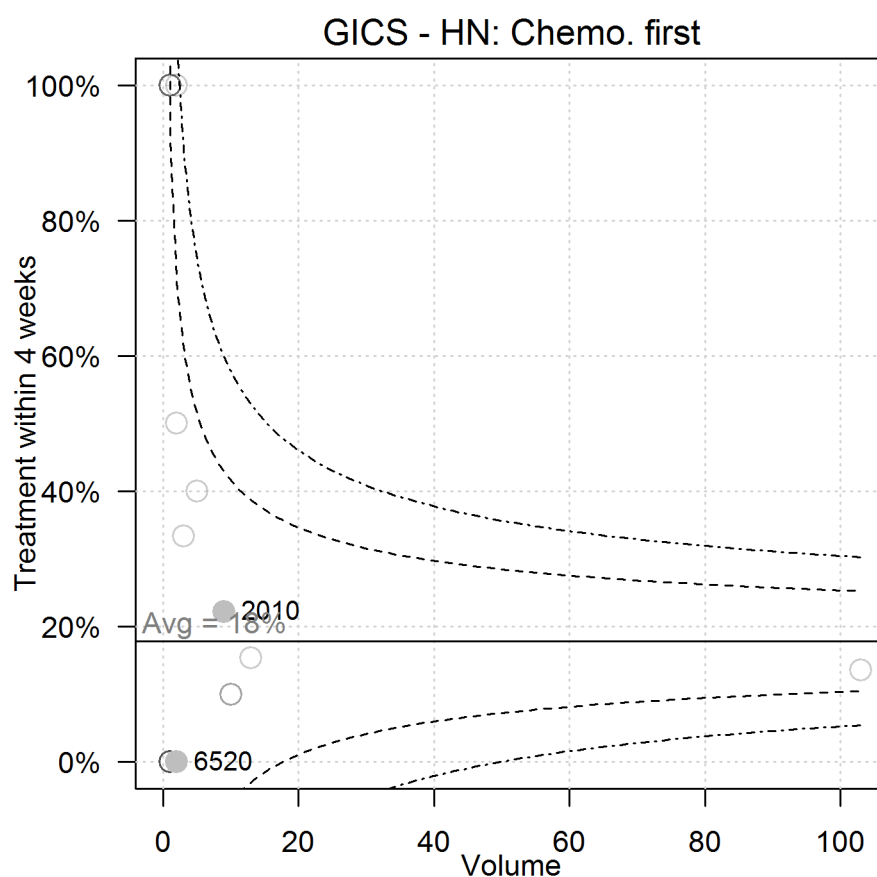


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	8/12 (66.7%)
GICS	2170	Wimmera Base Hospital [Horsham]	1/1 (100%)
GICS	6520	St John of God Hospital Ballarat	8/9 (88.9%)
GICS	8430	Ballarat Day Procedure Centre	1/1 (100%)

GICS - Figure 46: The proportion of patients that received **parenteral chemotherapy first** within 4 weeks of diagnosis (PI - 13) for **head and neck cancer** by ICS of treatment (2015).

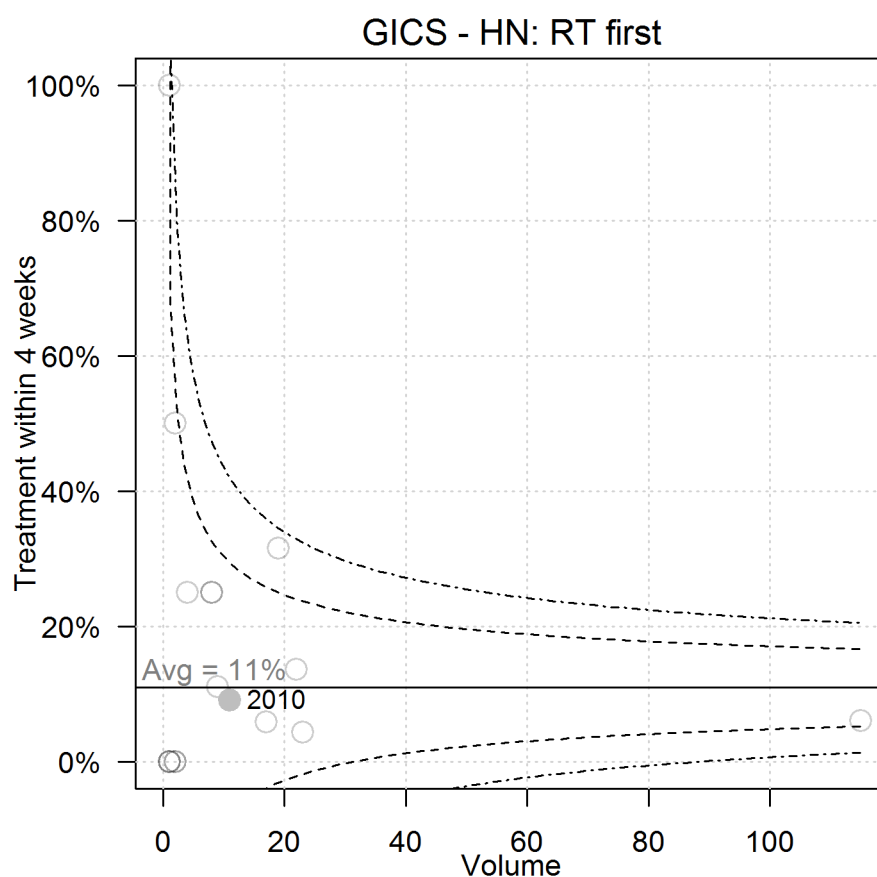


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	2/9 (22.2%)
GICS	6520	St John of God Hospital Ballarat	0/2 (0.0%)

GICS - Figure 47: The proportion of patients that received **radiotherapy first** within 4 weeks of diagnosis (PI - 13) for **head and neck cancer** by ICS of treatment (2015).

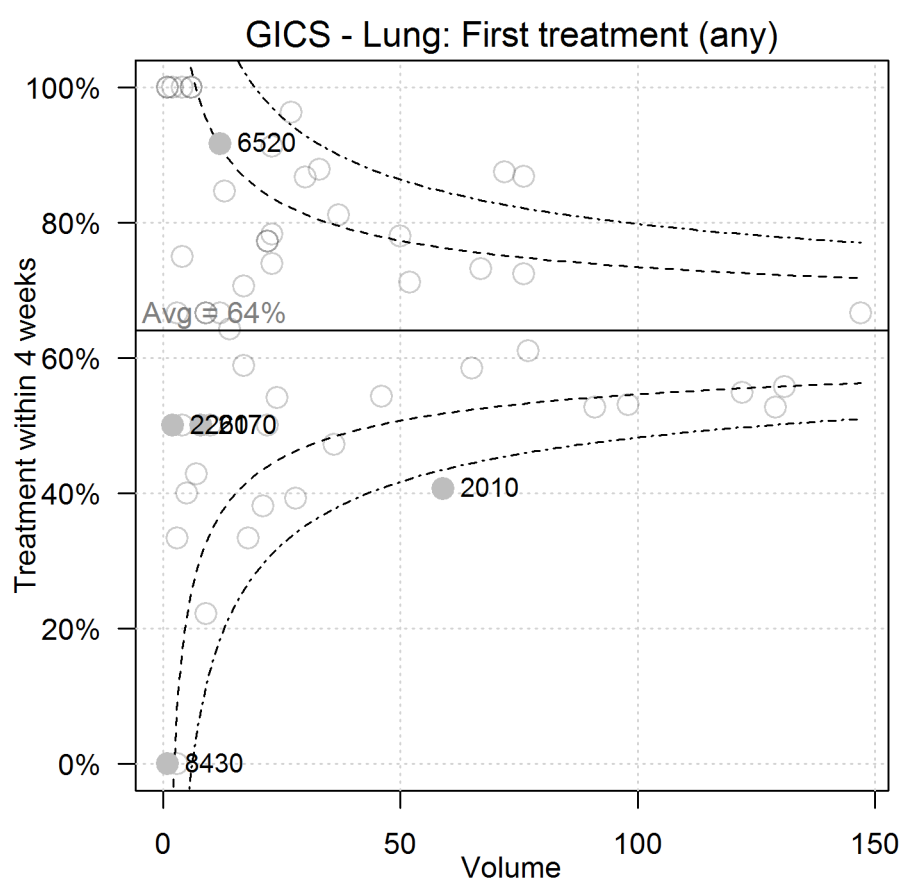


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	1/11 (9.1%)

GICS - Figure 48: The proportion of patients that received **first treatment** (surgery, parenteral chemotherapy or radiotherapy) within 4 weeks of diagnosis (PI - 13) for **lung cancer** by ICS of treatment (2015).

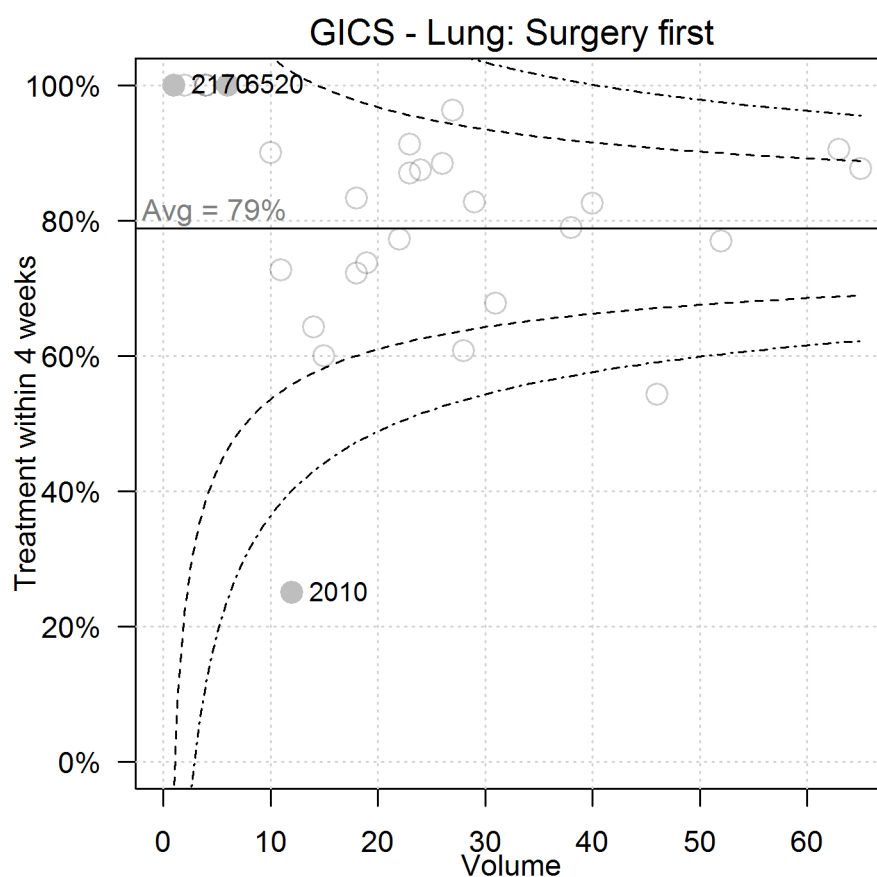


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	24/59 (40.7%)
GICS	2170	Wimmera Base Hospital [Horsham]	4/8 (50.0%)
GICS	2260	Stawell Regional Health	1/2 (50.0%)
GICS	6520	St John of God Hospital Ballarat	11/12 (91.7%)
GICS	8430	Ballarat Day Procedure Centre	0/1 (0.0%)

GICS - Figure 49: The proportion of patients that received **surgery first** within 4 weeks of diagnosis (PI - 13) for **lung cancer** by ICS of treatment (2015).

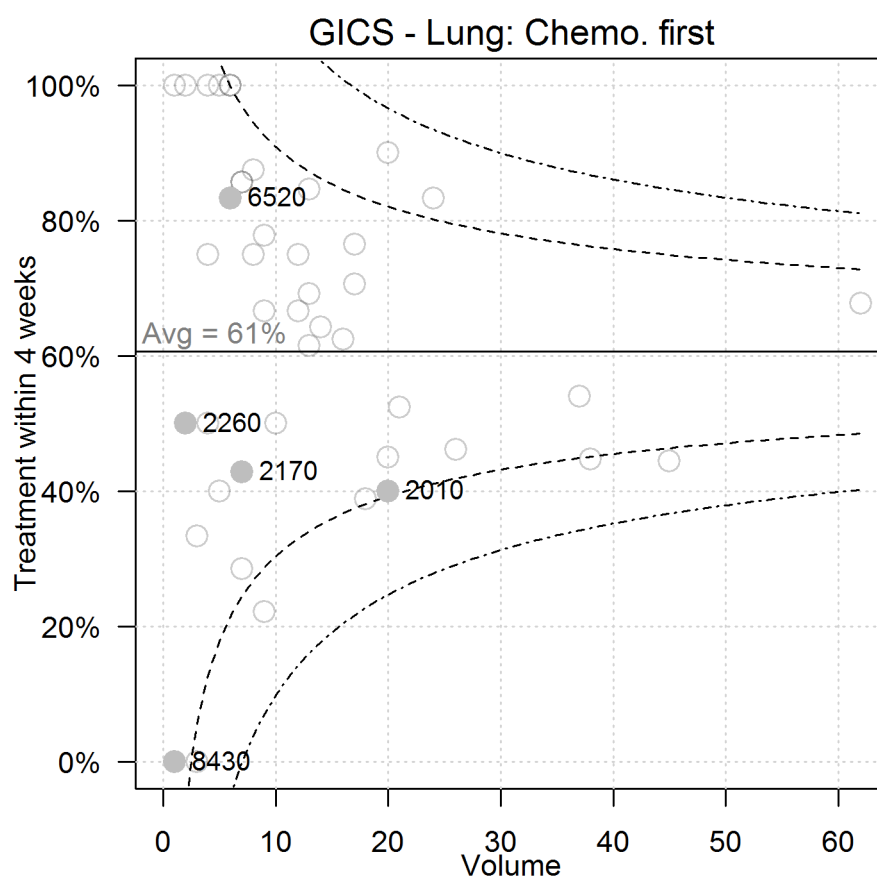


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	3/12 (25.0%)
GICS	2170	Wimmera Base Hospital [Horsham]	1/1 (100%)
GICS	6520	St John of God Hospital Ballarat	6/6 (100%)

GICS - Figure 50: The proportion of patients that received **parenteral chemotherapy first** within 4 weeks of diagnosis (PI - 13) for **lung cancer** by ICS of treatment (2015).

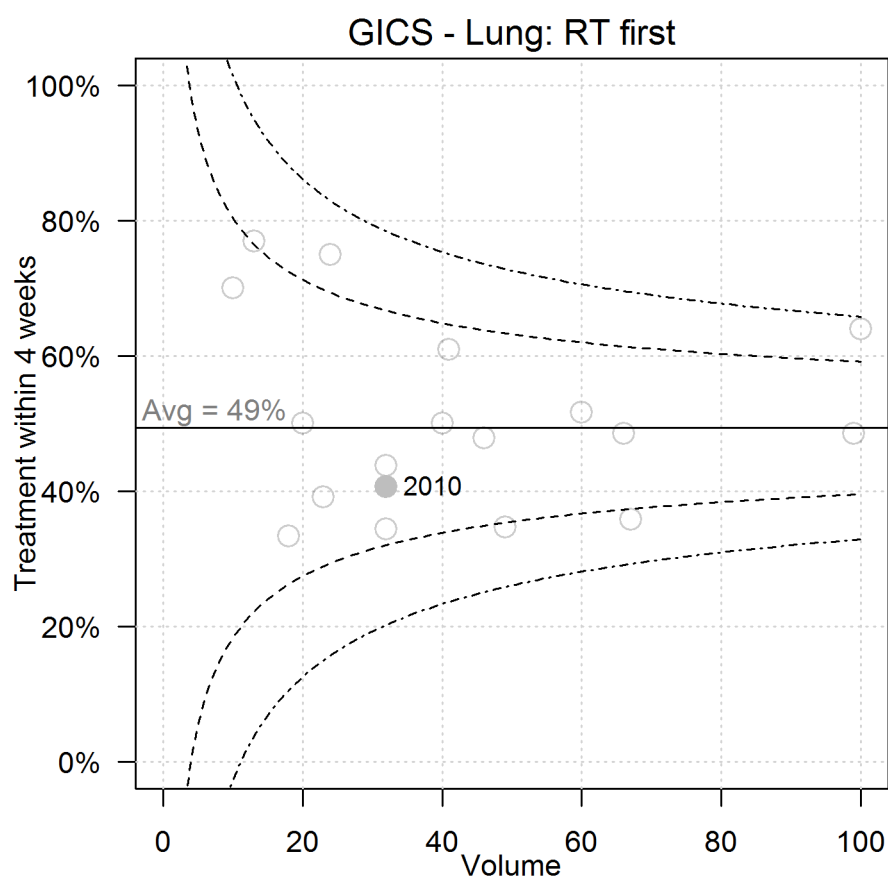


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	8/20 (40.0%)
GICS	2170	Wimmera Base Hospital [Horsham]	3/7 (42.9%)
GICS	2260	Stawell Regional Health	1/2 (50.0%)
GICS	6520	St John of God Hospital Ballarat	5/6 (83.3%)
GICS	8430	Ballarat Day Procedure Centre	0/1 (0.0%)

GICS - Figure 51: The proportion of patients that received **radiotherapy first** within 4 weeks of diagnosis (PI - 13) for **lung cancer** by ICS of treatment (2015).

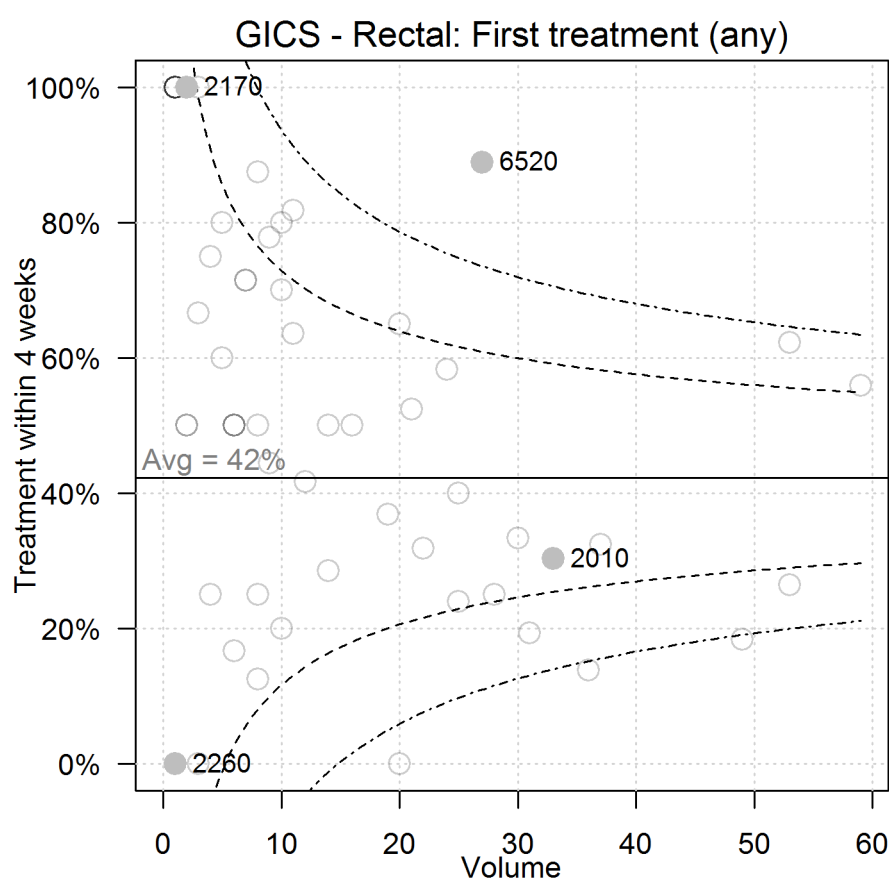


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	13/32 (40.6%)

GICS - Figure 52: The proportion of patients that received **first treatment** (surgery, parenteral chemotherapy or radiotherapy) within 4 weeks of diagnosis (PI - 13) for **rectal cancer** by ICS of treatment (2015).

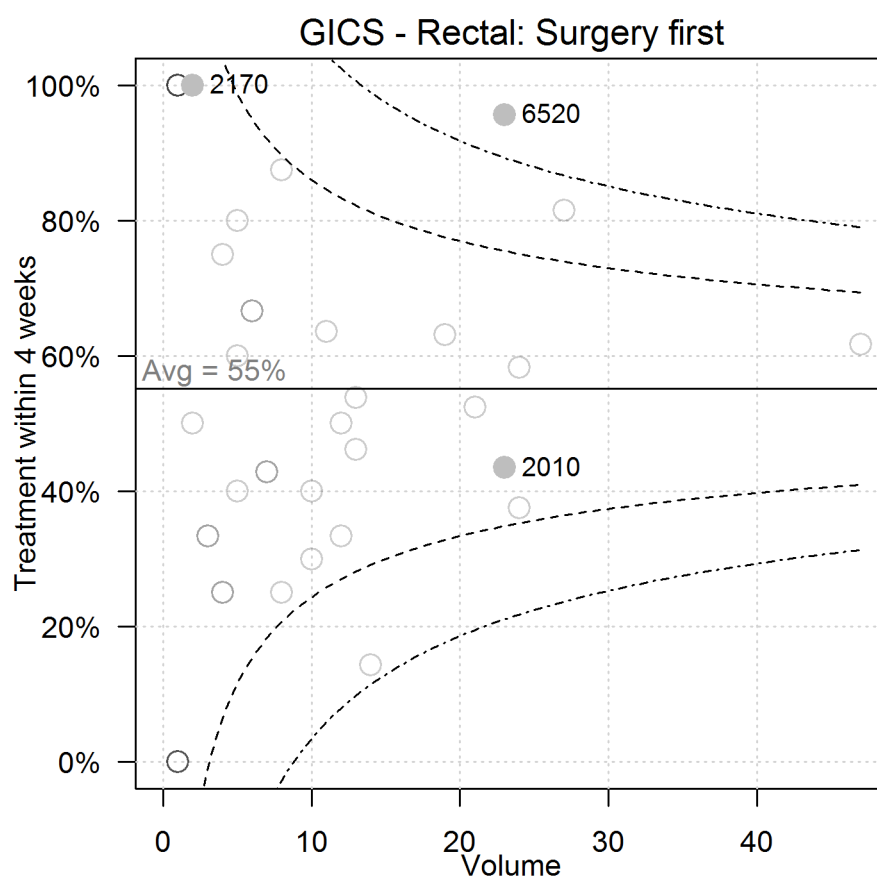


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	10/33 (30.3%)
GICS	2170	Wimmera Base Hospital [Horsham]	2/2 (100%)
GICS	2260	Stawell Regional Health	0/1 (0.0%)
GICS	6520	St John of God Hospital Ballarat	24/27 (88.9%)

GICS - Figure 53: The proportion of patients that received **surgery first** within 4 weeks of diagnosis (PI - 13) for **rectal cancer** by ICS of treatment (2015).

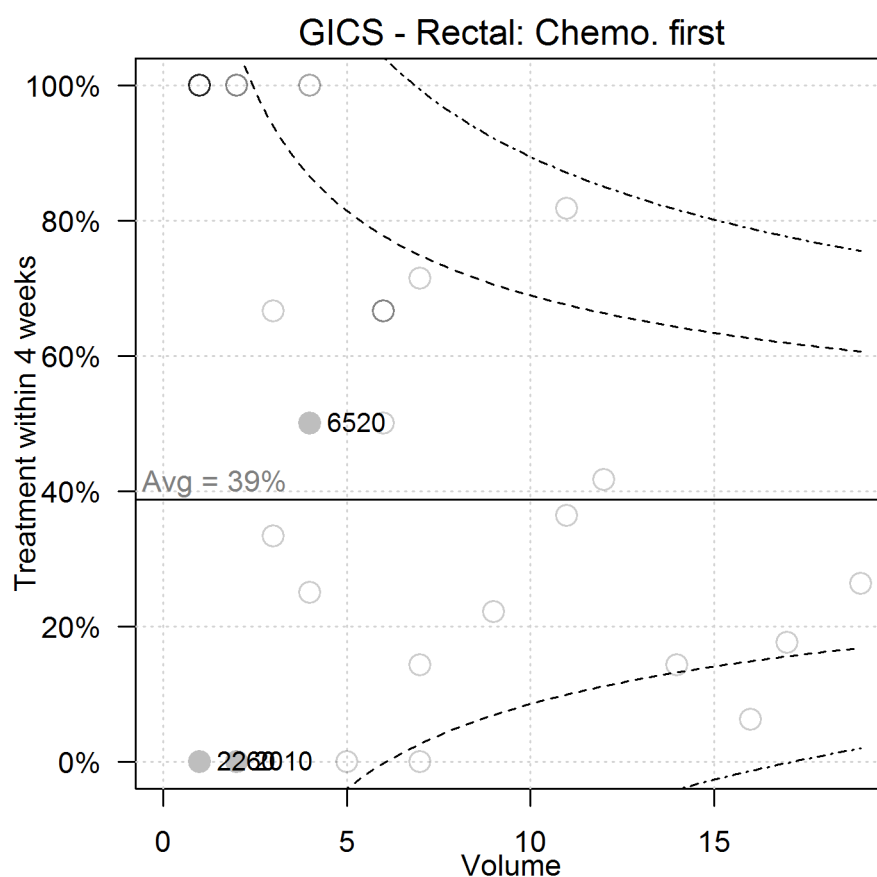


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	10/23 (43.5%)
GICS	2170	Wimmera Base Hospital [Horsham]	2/2 (100%)
GICS	6520	St John of God Hospital Ballarat	22/23 (95.7%)

GICS - Figure 54: The proportion of patients that received **parenteral chemotherapy first** within 4 weeks of diagnosis (PI - 13) for **rectal cancer** by ICS of treatment (2015).

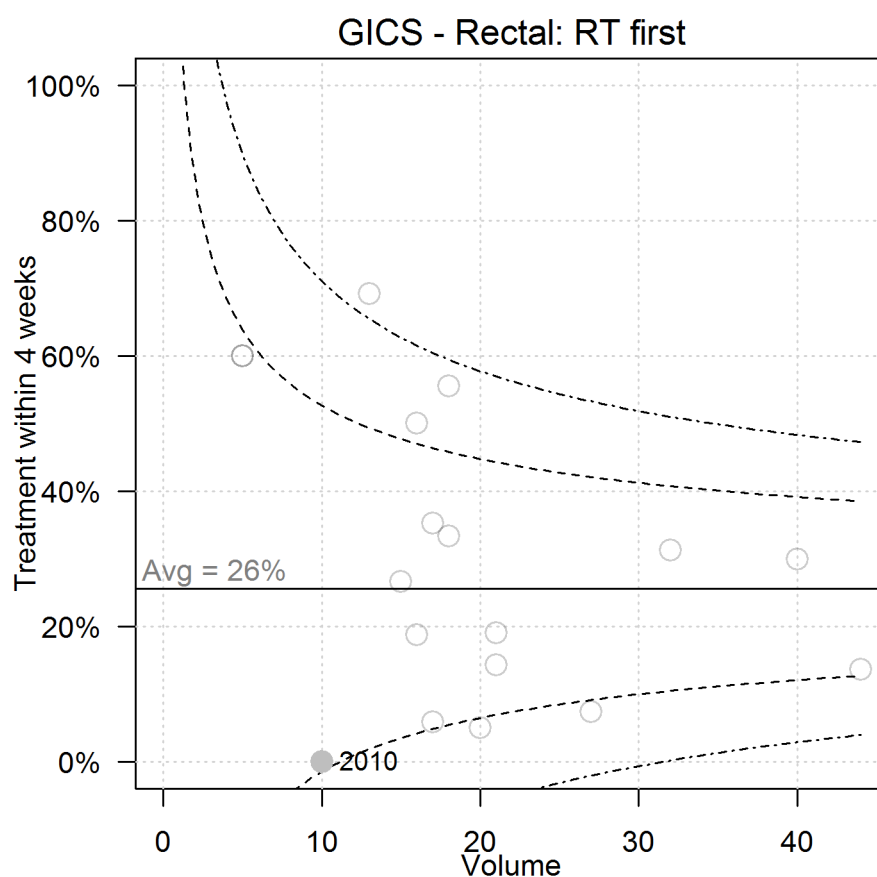


Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	0/2 (0.0%)
GICS	2260	Stawell Regional Health	0/1 (0.0%)
GICS	6520	St John of God Hospital Ballarat	2/4 (50.0%)

GICS - Figure 55: The proportion of patients that received **radiotherapy first** within 4 weeks of diagnosis (PI - 13) for **rectal cancer** by ICS of treatment (2015).



Comment:

The GICS campuses are **coloured in solid grey** with specific campuses numbered. Each **light grey lined circle** within the funnel plot represents a de-identified health service in another ICS.

ICS	Hospital code	Hospital name	n/N (%)
GICS	2010	Ballarat Health Services [Base Campus]	/10 (0%)

Appendix 2

Grampians Integrated Cancer Service (GICS)

Integrated Cancer Service by health service (campus)

The results for Performance Indicator–17 are presented by the number of nodes (in the ranges 0-6, 7-11 & 12 and more) by surgery hospital (campus).

PI-17 – Number of lymph nodes examined during colon cancer surgery (2015)

GICS - Figure 1: The number of lymph nodes examined during colon cancer surgery in 2015.

ICS	Hospital code	Hospital name	n/N (%)		
			0 - 6	7 - 11	12+
GICS	2010	Ballarat Health Services [Base Campus]	3/39 (8%)	5/39 (13%)	31/39 (79%)
GICS	2170	Wimmera Base Hospital [Horsham]	0/16 (0%)	0/16 (0%)	16/16 (100%)
GICS	6520	St John of God Hospital Ballarat	1/22 (5%)	1/22 (5%)	20/22 (91%)
Victoria			49/1760 (3%)	193/1760 (11%)	1518/1760 (86%)

Comment: