



**Australian Government**

**Australian Institute of  
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# **Radiotherapy in Australia**

**Report on a pilot data collection 2013–14**





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*Authoritative information and statistics  
to promote better health and wellbeing*

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**Report on a pilot data collection**

**2013–14**

Australian Institute of Health and Welfare  
Canberra

Cat. no. HSE 167

**The Australian Institute of Health and Welfare is a major national agency which provides reliable, regular and relevant information and statistics on Australia's health and welfare. The Institute's mission is authoritative information and statistics to promote better health and wellbeing.**

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# Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, 10 <sup>th</sup> Revision, Australian Modification
LINAC	Linear accelerator
METeOR	Metadata Online Registry
NSW	New South Wales
NT	Northern Territory
SA	South Australia
SA2	ABS Statistical Area Level 2, 2011
WA	Western Australia

# Symbols

..	not applicable
n.a.	not available
n.p.	not published because of small numbers, confidentiality or other concerns about the quality of the data

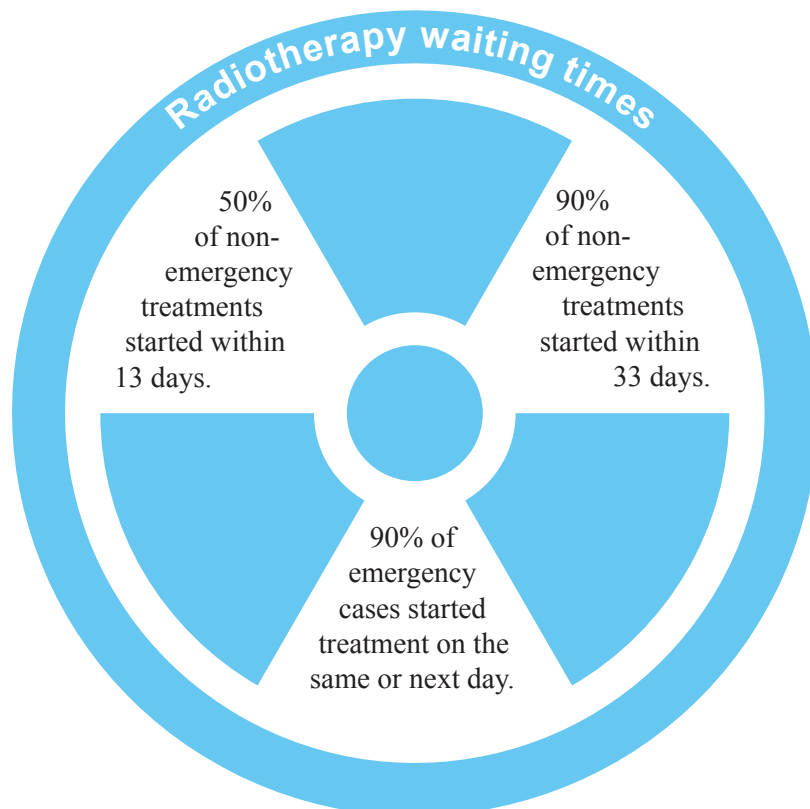
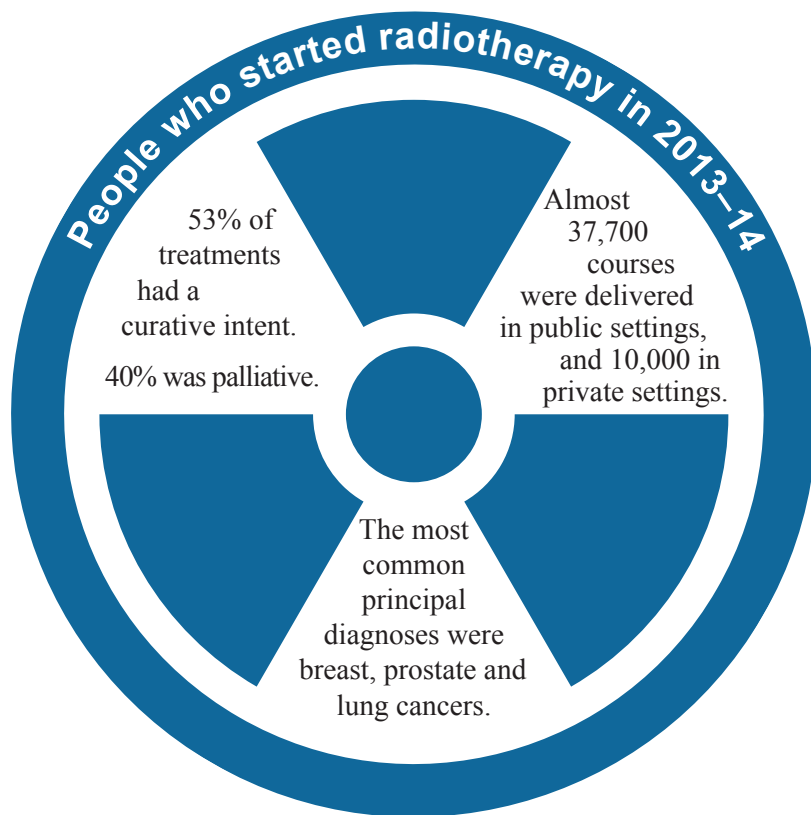
# Summary

This report examines the pilot year collection of radiotherapy waiting times for 2013–14.

In 2013–14, radiotherapy was delivered at 72 different locations across Australia:

- 53 of these reported data to this collection
- 37 out of 38 public radiotherapy providers contributed.

These service providers reported almost 47,700 courses of radiotherapy that started in 2013–14.



41 of the 53 services participated (almost 38,700 courses).

Waiting time is the number of days between when the patient was ready-for-care, and when the radiotherapy started.

50% of palliative patients started treatment within 7 days (90% within 21 days).

50% of curative patients started treatment within 18 days (90% within 35 days).



# 1 Introduction

Radiotherapy is an important type of cancer treatment (Box 1.1). Radiotherapy can be given with the intention to cure or control cancer, or may be given to relieve symptoms. The focus of this report is megavoltage external beam radiotherapy (that is, radiotherapy provided by a linear accelerator) which is the most common form of radiotherapy in Australia.

## **Box 1.1: What is radiotherapy?**

Radiotherapy uses radiation directed at a localised area to kill or damage cancer cells. It is a well-established, effective and safe way to treat cancer and a small number of other conditions. It is a highly specialised treatment delivered by radiation therapists, supervised by a radiation oncologist (in consultation with a multidisciplinary team including other medical and allied health practitioners), and requiring specialised equipment. Radiotherapy may be used in conjunction with other treatments such as surgery or chemotherapy, or may be used on its own (RANZCR 2015).

Radiotherapy is usually given as one, or a series of, outpatient treatments over a defined period, though under some circumstances patients may be treated as admitted patients. The optimal timeframe for treatment is influenced by whether it is delivered with a curative, prophylactic (preventive) or palliative intent (see Box 2.1).

Approximately one-half of all patients with cancer would benefit from external beam radiotherapy (RANZCR 2015). Delays in treatment can lead to poorer clinical outcomes, and as a result there has been interest in collecting data about waiting times for radiotherapy services in Australia for many years.

In 2002, *A vision for radiotherapy*, the report of the Radiation Oncology Inquiry (ROI 2002), found that waiting times for radiotherapy were high (4–12 weeks for some hospitals), and that clinical outcomes may, therefore, have been compromised – though this assessment was based on data from just a few hospitals, together with anecdotal evidence. There were also concerns that patients who may benefit from treatment may be missing out, as a range of barriers (including geographic and cost barriers) may have led patients to choose other treatment pathways. The Inquiry noted that the extent to which this may have been occurring was difficult to assess accurately due to the lack of a dataset that captured information on all patients treated by radiotherapy services (and including both public and private patients).

In 2009, in recognition of the information gap in collection and reporting of nationally comparable data on radiotherapy waiting times, Australian Health Ministers requested that a suitable data source be developed, for use in both public and private settings, to enable all jurisdictions to report comparable wait times for access to megavoltage external beam radiotherapy treatment at the jurisdictional level.

Following the Health Ministers' request, the AIHW has been working with jurisdictions and private sector stakeholders to develop specifications for a new national data collection on radiotherapy waiting times. This report presents data for 2013–14, the first collection of full-year data, undertaken as a pilot collection. (See Box 1.2 for more information.)

This new radiotherapy waiting times data collection seeks to provide information about how long patients wait for radiotherapy treatment once they are ready-for-care, and includes data provided by most public radiotherapy services and a small proportion of private providers

across Australia. The dataset also provides important information on the number of radiotherapy courses delivered to patients by participating providers and describes some of the key characteristics of patients who received treatment.

The states and territories have agreed to implement this dataset as a mandatory data collection from 1 July 2015. It will apply to all public providers of radiotherapy in Australia, and some private providers that have a contract or partnership arrangement in place to provide services to public patients; other private providers have been invited to participate on a voluntary basis (see Sector, page 5). This will allow ongoing monitoring of the extent of provision of radiotherapy treatment in Australia, and information on waiting times. This ongoing monitoring is important in the context of an expected rise in the number of cancer cases in the near future (AIHW 2012), and will contribute to the evaluation and planning of future radiotherapy services.

### **Box 1.2: Pilot collection**

This collection was undertaken as a pilot collection, for which there was high (but not complete) participation.

Data were collected retrospectively, and therefore full compliance with agreed definitions cannot be guaranteed – but this aspect is likely to improve in the future, especially from 2015–16, when the mandatory data collection is implemented.

For these reasons, the results presented in this report should be viewed with some caution.

## **The National Radiotherapy Waiting Times Database**

The National Radiotherapy Waiting Times Database (NRWTD) collates data provided to the AIHW by state and territory health authorities, and some private radiotherapy providers, based on the data set specification (DSS) for Radiotherapy waiting times. The metadata for data items included are documented in the AIHW's metadata registry, METeOR (<meteor.aihw.gov.au>). The data items included in the Radiotherapy waiting times DSS (and their METeOR identifiers) are listed in Table 1.1.

The NRWTD provides key information about patients who began a course of radiotherapy between 1 July 2013 and 30 June 2014, including their waiting times (see Box 1.3 for more information on how waiting times are measured).

As the primary purpose of the collection is to obtain data on waiting times, records reported to the collection represent courses of radiotherapy that began in 2013–14 (the waiting periods for which ended in the reporting period). Records for patients who were already receiving treatment at the start of the reporting period are not included in this collection, and neither are records for patients who waited for treatment at some time in 2013–14 and who were still waiting to begin treatment at the end of the reporting period or died while waiting. No further information about the course of radiotherapy (for example, dosage, number of treatments, or end date of the treatment) is collected.

**Table 1.1: Radiotherapy waiting times DSS data elements**

Data element name	Description	METeOR identifier
Establishment identifier	Identifies the individual service at which the treatment occurred	269973
Establishment location	Location of the radiotherapy site	457289
Ready-for-care date	The date, in the opinion of the treating clinician, on which a patient is ready to commence treatment	448141
Radiotherapy start date	The date on which a patient commences a course of radiotherapy treatment	448147
Person identifier	Person identifier unique within an establishment or agency	290046
Emergency status	An indicator of whether the treatment required for the patient is clinically assessed as an emergency	448126
Intention of treatment	The reason treatment is provided to a patient (prophylactic, curative or palliative)	448134
Principal diagnosis	The diagnosis established after study to be chiefly responsible for occasioning a patient's service event or episode	514304
Sex	The biological distinction between male and female	287316
Date of birth	The date of birth of the person	287007
Indigenous status	Whether a person identifies as being of Aboriginal or Torres Strait Islander origin	291036
Patient area of usual residence	The geographical region in which the patient usually resides	469909

**Box 1.3: Waiting time from ready-for-care date**

The **waiting time** is the number of days from when the patient is ready to be treated with radiotherapy in the opinion of the treating clinician (or are 'ready-for-care') until the day the patient first receives radiotherapy treatment – that is, the number of days between the *Ready-for-care date* and the *Radiotherapy start date*. Reported waiting times include 'non-working days' (such as weekends or public holidays) and would include days on which a service was not able to provide services (such as when key staff are unavailable or where there has been equipment failure).

Other waiting periods, such as the time between a person's contact with their general practitioner and their first appointment with a medical oncologist, and the time between receipt of the patient's first referral to a radiation oncologist to the date of that patient's first consultation with the radiation oncologist, are not collected in this dataset. Appendix 3 provides a diagram of different points in a typical treatment pathway for radiotherapy patients to show how the waiting times reported here relate to these different components of the treatment pathway.

The **ready-for-care date** is set by the treating clinician and takes into account things such as the need for prior treatment or post-operative healing. If the patient is not ready-for-care on this date for personal reasons, the ready-for-care date will be set at a later time, when the patient states they are ready. Service bottlenecks or peak periods of demand that may affect ease of access to radiotherapy services should not influence clinical decisions around the setting of ready-for-care dates. Treatment may be delayed due to waiting times in pre-treatment imaging or testing, treatment service availability, staff shortages, equipment breakdown or even a lack of available accommodation for a patient travelling for treatment. Factors that are, and are not, expected to influence the ready-for-care date are described in the metadata for 'Ready-for-care date' available in the Metadata Online Registry (METeOR), METeOR ID: 448141 (<meteor.aihw.gov.au>).

## Courses of radiotherapy

For this collection, the unit of collection is a course of radiotherapy started in the reporting period (see Box 1.4). Numbers of patients cannot be counted, because individuals may have more than one course of radiotherapy in a year.

### **Box 1.4: What is a course of radiotherapy in this collection?**

A course of radiotherapy is a series of one or more external beam radiotherapy treatments prescribed by a radiation oncologist.

A course of radiotherapy should have an associated ready-for-care date and, when treatment starts, a radiotherapy start date.

A patient can receive more than one course of radiotherapy at the same time (courses that are simultaneous or overlap). These courses may have the same or different ready-for-care dates and the same or different radiotherapy start dates.

Only a radiation oncologist can prescribe a course of radiotherapy. A prescription is not equal to a course of radiotherapy. A prescription may be for one or more courses of radiotherapy. A prescription outlines the anatomical region/sites to be treated and is for a prescribed dose at a defined volume (fractionation) over a defined period.

One course of radiotherapy may cover multiple phases and multiple treatment plans.

(METeOR ID for Course of radiotherapy treatment: 448151.)

## Collection scope and coverage

This pilot collection was open to all healthcare establishments that provide megavoltage external beam radiotherapy treatment, and both public and private providers were invited to participate. Fifty-three radiotherapy treatment sites provided data relating to treatment that began in 2013–14 (Table 1.2, see details at Appendix 1), representing almost two-thirds of radiotherapy sites operating in Australia. Thirty-seven of the 38 public treatment sites in Australia participated. Thirty-six of these provided waiting times data.

Only 16 out of 34 private sites are included in the collection – therefore, the reported data may not be representative of the private sector as a whole. Five private provider sites reported both waiting times and activity data (New South Wales and Queensland sites), while 11 sites provided activity data only (Victorian and South Australian sites).

**Table 1.2: Radiotherapy services participating in the 2013–14 pilot collection, states and territories and sector**

	No. of participating sites/providers			Not providing data this time		
	Public sites <sup>(a)</sup>	Private sites	Private providers	Public sites	Private sites	Private providers
NSW	18	1	1	0	8	2
Vic	10	7 <sup>(b)</sup>	2	0	0	0
Qld	3	4	2	0	5	1
WA	1	0	0	1	5	1
SA	1 <sup>(b)</sup>	4 <sup>(b)</sup>	1	0	0	0
Tas	2	0	0	0	0	0
ACT	1	0	0	0	0	0
NT	1	0	0	0	0	0
<b>Australia</b>	<b>37</b>	<b>16</b>	<b>5<sup>(c)</sup></b>	<b>1</b>	<b>18</b>	<b>3<sup>(c)</sup></b>

(a) Includes private providers that deliver services to public patients only.

(b) These sites all provided information on radiotherapy activity, but were unable to contribute waiting times information for this year.

(c) Totals are not the sum of the rows because some private providers operate across jurisdictions and deliver services at more than one site.

## Sector

In this report, ‘sector’ relates to whether the service provider site (facility or individual service location) is publicly or privately owned. Some sites are managed by private providers under contract to deliver services to public patients exclusively; these are considered to be public providers for the purposes of this report. Some private sites have a contract or partnership arrangement in place to provide services to public patients, but they do not exclusively provide services to them – they have a public/private mix. In this report these services are characterised as private, along with services that provide services to private patients only. This collection does not include information on the source of funding for the patient (that is, whether they are a public or private patient).

## Data quality

The data collected for this pilot data set were retrospective (that is, data were requested after the reporting period), so some providers may not have recorded all data items or may not have recorded items according to the agreed definition – this may particularly affect assignment of ready-for-care dates (see Chapter 3 for more information). This should be taken into account when considering the reported results.

Some service providers had difficulty providing some data (for example, geographic codes to denote the area the patient usually lives in), so there are high rates of missing data for some items, as shown in Chapter 2.

WA noted that because they had excluded records missing ready-for-care data from their 2013–14 submission, this may have led to a potential undercounting of approximately 180 courses. WA also noted that the number of ‘emergency’ patients is low and does not reflect the true count.

Further details on data quality are available in Appendix 2.

## Methods

Numbers and percentages for radiotherapy activity and patients, for all courses of activity reported to the database, by the variables available in the NRWTD, are reported in Chapter 2.

Waiting times, using suitable available data, are reported in Chapter 3. (Waiting times are further explained in Box 1.3).

In some cases, cells have been suppressed to protect confidentiality where the presentation could identify a patient or a service provider; for example, waiting times data for Western Australia has been suppressed for this reason. Cells may also be suppressed in some cases where rates are likely to be highly volatile. For these cases, the following rule was applied – waiting times at the 50<sup>th</sup> percentile and at the 90<sup>th</sup> percentile were suppressed where the number of records was less than 20.

Northern Territory required that all cells where the number of records was less than 5 were suppressed.

Waiting times for South Australia were not able to be included in 2013–14 due to concerns regarding the quality of ready-for-care data.

## Use of the data to support performance measurement

Waiting times data provide information on access to health services – an important aspect of the performance of services. The waiting times are usually viewed as part of the performance of the health system as a whole rather than necessarily being wholly attributable to the capacity of the service provider. For example, waiting times for patients living in rural and remote areas may be affected by access to accommodation for the period of treatment.

As noted above, the NRWTD has been developed following a request by Australian Health Ministers in 2009 for comparable radiotherapy waiting times data. Radiotherapy waiting times were also proposed as a potential National Healthcare Agreement performance indicator (COAG 2012) for Outcome 3: *Australians receive appropriate high quality and affordable hospital and hospital related care*, once a suitable data source became available.

As a result, draft performance indicators for waiting times for radiotherapy have been developed, based on the data that are becoming available in the NRWTD. The two indicators proposed are:

- **Proportion of emergency radiotherapy treatment started within 24 hours**

This indicator aims to report on the percentage of radiotherapy patients, whose treatment was clinically assessed as an emergency, who started treatment within 24 hours of being ready-for-care. However, as only the date the patient was ready-for-care and the date they started the associated course of radiotherapy are collected (and information about the time of day is not available), this indicator is expected to be reported as the proportion of patients who were treated either on the same day or the day after they were ready-for-care (METeOR ID: 595028).

- **Waiting times for non-emergency radiotherapy**

This indicator measures the length of time that a patient, whose treatment is not clinically assessed as an emergency, waits for radiotherapy treatment once they are ready-for-care, reported at the 50th and 90th percentile (METeOR ID: 594454).

There are no official national performance benchmarks for these indicators. However, the Royal Australian and New Zealand College of Radiologists (RANZCR) has outlined maximum acceptable delays in the provision of radiotherapy. The RANZCR benchmark for 'emergency care' – which is that care should be provided within 24 hours – is reflected in the first performance indicator above.

Internationally, there are other examples where countries have adopted performance benchmarks in relation to radiotherapy treatment, and for some the measures used to record waiting times are comparable to those used in this collection.

For instance, Canada reports waiting times for radiotherapy from ready-for-care (for patients over 18 years) and have a performance benchmark that all patients should receive treatment within 28 days (CIHI 2014a). They also report waiting times at the 50<sup>th</sup> and 90<sup>th</sup> percentiles (CIHI 2014b).

The New Zealand Ministry of Health has established a target that 'everyone needing radiation treatment will have this within 4 weeks of the first specialist radiation oncology assessment...' (NHB & MOH 2011).

## **Governance and ethical considerations**

This pilot year of collection was managed by the AIHW with the support of the Radiotherapy Waiting Times Working Group, which comprises representatives from each state and territory, the Commonwealth Government, the Australian Association of Private Radiation Oncology Practices (AAPROP), RANZCR and Cancer Australia. The Working Group is a sub-group of Australian Health Ministers' Advisory Council's National Health Information Standards and Statistics Committee.

This data collection was approved by the AIHW Ethics Committee, confirming that the project conforms with the Information Privacy Principles set out in the *Privacy Act 1988*, and with requirements outlined in the National Statement on Ethical Conduct in Human Research (2007), the Australian Code for the Responsible Conduct of Research (2007), and the strict data confidentiality requirements set out in the *Australian Institute of Health and Welfare Act 1987*.

## 2 Radiotherapy activity and patients

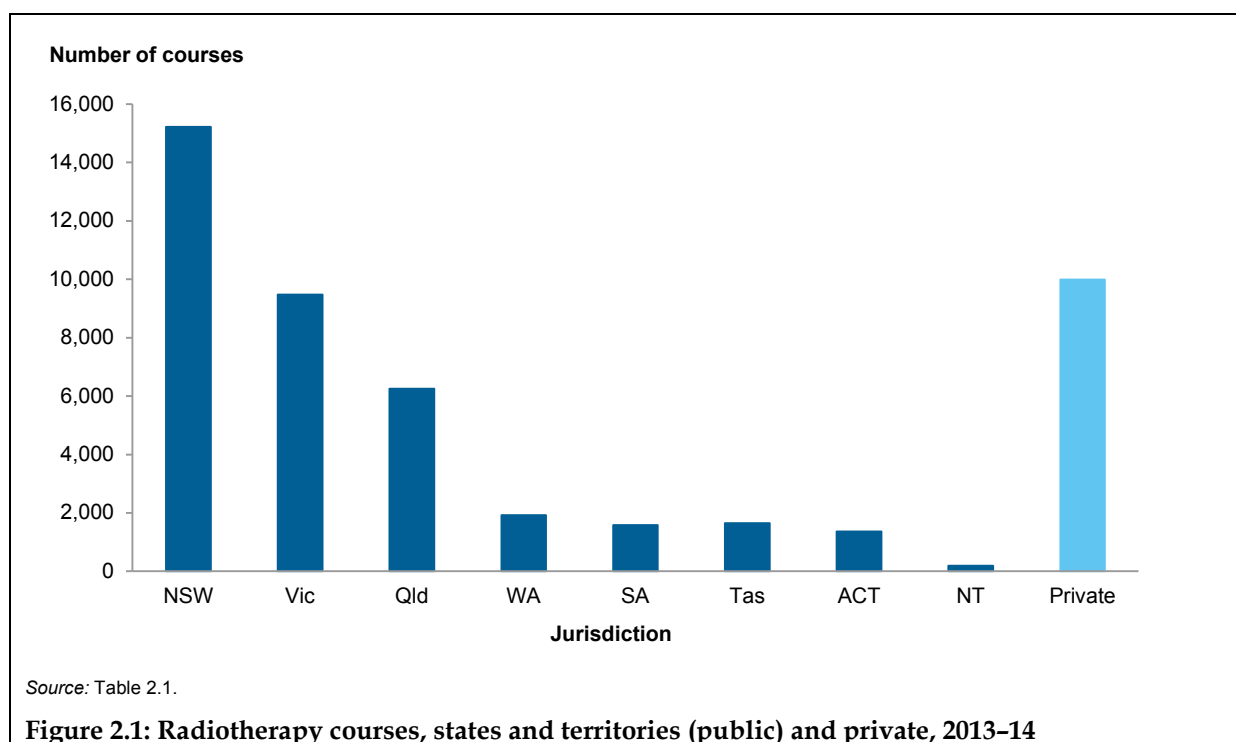
This chapter presents information about all courses of radiotherapy that began in 2013–14 that were reported to the database. Data are presented by state or territory for public providers, and as totals for each sector and for Australia. The public and private data are not strictly comparable because coverage was much higher for the public sector (35 of 36 sites) than the private sector (16 of 34 sites). Further data tables can be found in Appendix 4.

### 2.1 Overview of radiotherapy activity

In 2013–14, participating service providers reported almost 47,700 courses of radiotherapy (Table 2.1). Figure 2.1 shows the distribution of courses across states and territories for public providers, together with the total reported as delivered in the private sector.

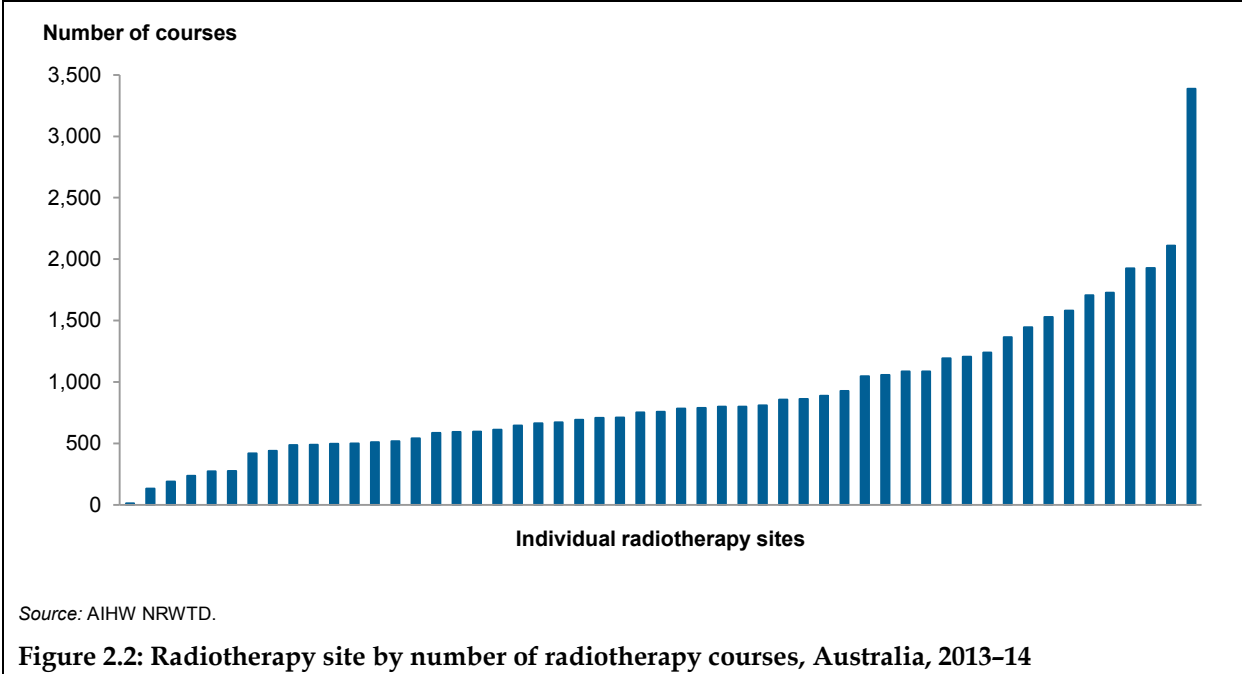
**Table 2.1: Radiotherapy courses, states and territories (public) and sector, 2013–14**

	Public sector providers							Sector		Australia	
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Public (total)		Private
Number	15,226	9,480	6,254	1,924	1,581	1,647	1,364	189	37,665	9,992	<b>47,657</b>
Per cent	31.9	19.9	13.1	4.0	3.3	3.5	2.9	0.4	79.0	21.0	<b>100.0</b>





The 53 individual sites that provided activity data varied greatly in their treatment volume, reporting between 14 and almost 3,400 courses of radiotherapy that started in 2013–14 (note, however, that the service that provided 14 courses of radiotherapy closed early in the reporting period for an equipment upgrade). The majority of sites provided between 500 and 1,000 courses (Figure 2.2).



## 2.2 Clinical characteristics of patients

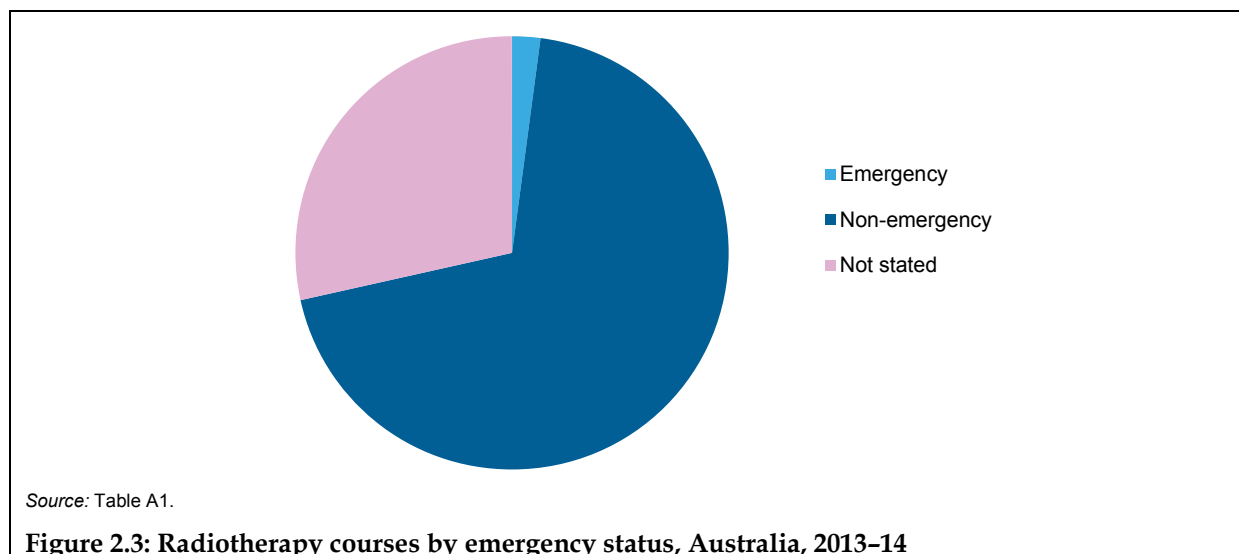
This section presents the number and proportion of courses by the following clinical variables collected for each course:

- emergency status
- intention of treatment
- principal diagnosis.

### Emergency status

Overall, 2% of courses of radiotherapy that began in 2013–14 were clinically assessed to be emergency cases, that is, the radiation oncologist had assessed that radiation treatment should begin within 24 hours (Figure 2.3). Emergency status, however, was not reported by Victoria for this period, and Western Australia advised that it is likely that emergency status was under-reported for their service provider reporting in this period. If Victorian data are excluded (therefore accounting for all records for which emergency status is not stated) the percentage of radiotherapy courses that should be considered as emergency treatment increased to 3%.

The proportion of emergency radiotherapy in the public sector varied from no emergency treatment in the Northern Territory to almost 5% of courses in the Australian Capital Territory (Table A1).



## Intention of treatment

Radiotherapy can be provided to patients with the aim of preventing or curing disease, or to offer palliation (see Box 2.1).

### Box 2.1: Intention of treatment

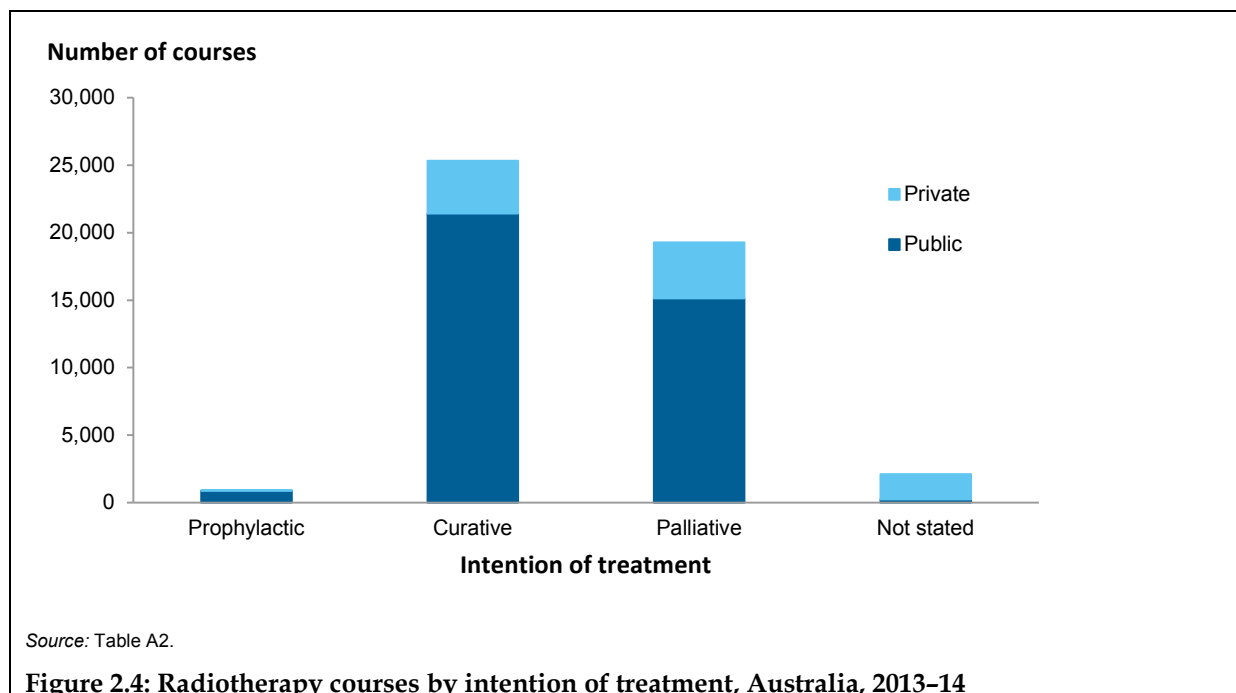
The intention of treatment is the reason treatment is provided to a patient, as follows:

- *Prophylactic treatment* is given to prevent the occurrence of disease at a site that exhibits no sign of active disease but is considered to be at risk.
- *Curative* describes when treatment is given with the intention of curing disease.
- *Palliative treatment* is given primarily for the purpose of pain or other symptom control. Consequent benefits of the treatment are considered secondary contributions to quality of life.

(METeOR ID for Intention of treatment: 583857.)

Over one-half of the radiotherapy courses that began in 2013–14 were identified as having curative intent (53%), while 40% were palliative and 2% were prophylactic (Figure 2.4). For the remainder, intention of treatment was not reported. The proportion of different care types varied by state – curative varied from 52% in the Northern Territory and South Australia to 68% in Western Australia; palliative ranged from 32% in Western Australia and Queensland to 48% in the Northern Territory; and prophylactic was reported at 0% in a number of states to a high of 6% in South Australia.

If courses where the *intention of treatment* is not reported are excluded from the analysis, a greater proportion of treatment provided by public radiotherapy providers was curative compared with the proportion for private providers (57% of courses in public settings, 48% of courses in private settings). In contrast, a lower proportion of treatment provided by public providers was palliative compared with the proportion for private providers (40% of courses in public settings, 51% of courses in private settings). These results should, however, be treated with some caution as the intention of treatment was not reported for 19% of courses delivered by private providers (Table A2), and private sector reporting was not as complete as public sector reporting, as noted previously.



## Relationship between Emergency status and Intention of treatment

There is a clear relationship between the intention of treatment and the emergency status of cases. Around 6 in every 10 non-emergency courses of radiotherapy were administered with the intention of curing disease (59%), while most emergency courses (92%) were palliative (Table 2.2).

**Table 2.2: Radiotherapy courses by intention of treatment and emergency status, 2013–14**

Intention of treatment	Emergency status			Australia
	Emergency	Non-emergency	Not stated	
<b>Number</b>				
Prophylactic	5	882	35	<b>922</b>
Curative	69	19,495	5,777	<b>25,341</b>
Palliative	922	12,461	5,892	<b>19,275</b>
Not stated	4	259	1,856	<b>2,119</b>
<b>Total</b>	<b>1,000</b>	<b>33,097</b>	<b>13,560</b>	<b>47,657</b>
<b>Per cent</b>				
Prophylactic	0.5	2.7	0.3	<b>1.9</b>
Curative	6.9	58.9	42.6	<b>53.2</b>
Palliative	92.2	37.6	43.5	<b>40.4</b>
Not stated	0.4	0.8	13.7	<b>4.4</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

## Principal diagnosis

The principal diagnosis is the diagnosis established after study to be chiefly responsible for occasioning a patient's need for treatment. It is most typically a type of cancer in the case of radiotherapy treatment. The principal diagnosis does not necessarily reflect the primary site of cancer – it may reflect the site of a secondary, or metastatic, cancer. There were also a small number of non-cancer diagnoses treated by radiotherapy in 2013–14 (99 courses, 0.2%) (Tables 2.3 and 2.4). The most common of these were fibroblastic disorders and arteriovenous malformation of cerebral vessels.

Table 2.3 shows the proportion of courses of radiotherapy associated with the top 5 cancers most commonly reported to the NRWTD in 2013–14 for males, as well as records that were either *Other cancer*, *Non cancer* or *Not stated* for males. Table 2.4 presents equivalent data for females. Prostate cancer was recorded as the principal diagnosis for one-quarter of all males who began radiotherapy in 2013–14 (25%), although this varied greatly across states and territories, from 15% in South Australia to 34% in the Australian Capital Territory. The next most common diagnosis for males was lung cancer (14%). In 4% of cases for males, a principal diagnosis was not reported.

**Table 2.3: Radiotherapy courses, males, by top 5 cancers<sup>(a)</sup> for which radiotherapy is provided, males, states and territories (public) and sector, 2013–14**

	Public sector providers								Sector		
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Public (total)	Private	Australia
<b>Number</b>											
Prostate cancer	2,229	1,034	627	400	125	138	222	29	4,804	1,335	<b>6,139</b>
Lung cancer	1,220	898	411	90	78	63	85	15	2,860	492	<b>3,352</b>
Head and neck cancers	627	404	317	53	96	33	50	16	1,596	209	<b>1,805</b>
Colorectal cancer	505	321	125	26	37	50	45	4	1,113	295	<b>1,408</b>
Lymphoma	288	209	73	31	31	30	24	4	690	148	<b>838</b>
Other cancer	2,786	1,753	1,114	429	494	520	229	27	7,352	2,219	<b>9,571</b>
Non cancer	16	4	4	2	0	0	2	0	28	21	<b>49</b>
Not stated	53	58	668	34	4	23	1	1	842	225	<b>1,067</b>
<b>Total</b>	<b>7,724</b>	<b>4,681</b>	<b>3,339</b>	<b>1,065</b>	<b>865</b>	<b>857</b>	<b>658</b>	<b>96</b>	<b>19,285</b>	<b>4,944</b>	<b>24,229</b>
<b>Per cent</b>											
Prostate cancer	28.9	22.1	18.8	37.6	14.5	16.1	33.7	30.2	24.9	27.0	<b>25.3</b>
Lung cancer	15.8	19.2	12.3	8.5	9.0	7.4	12.9	15.6	14.8	10.0	<b>13.8</b>
Head and neck cancers	8.1	8.6	9.5	5.0	11.1	3.9	7.6	16.7	8.3	4.2	<b>7.4</b>
Colorectal cancer	6.5	6.9	3.7	2.4	4.3	5.8	6.8	4.2	5.8	6.0	<b>5.8</b>
Lymphoma	3.7	4.5	2.2	2.9	3.6	3.5	3.6	4.2	3.6	3.0	<b>3.5</b>
Other cancer	36.1	37.4	33.4	40.3	57.1	60.7	34.8	28.1	38.1	44.9	<b>39.5</b>
Non cancer	0.2	0.1	0.1	0.2	0.0	0.0	0.3	0.0	0.1	0.4	<b>0.2</b>
Not stated	0.7	1.2	20.0	3.2	0.5	2.7	0.2	1.0	4.4	4.6	<b>4.4</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

(a) ICD-10-AM principal diagnosis codes—Prostate cancer (C61), Lung cancer (C33–C34), Head and neck cancer (C00–C14, C30–C32), Colorectal cancer (C18–C20), Lymphoma (C81–C85).

Almost one-half of all courses of radiotherapy that began in 2013–14 for females were for breast cancer (46%), ranging from 32% in Tasmania to 57% in the ACT. The second most common cancer treated for females was lung cancer (10%). In 4% of cases for females, a principal diagnosis was not reported.

**Table 2.4: Radiotherapy courses, females, by top 5 cancers<sup>(a)</sup> for which radiotherapy is provided, females, states and territories (public) and sector, 2013–14**

	Public sector providers								Sector		
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Public (total)	Private	Australia
<b>Number</b>											
Breast cancer	3,578	2,418	1,203	428	246	255	403	45	8,576	2,255	<b>10,831</b>
Lung cancer	906	618	252	65	45	50	58	15	2,009	357	<b>2,366</b>
Colorectal cancer	290	201	52	19	25	19	31	0	637	206	<b>843</b>
Uterine cancer	213	120	76	2	14	10	26	1	462	112	<b>574</b>
Lymphoma	210	142	47	21	14	21	17	2	474	100	<b>574</b>
Other cancer	2,258	1,237	758	300	370	426	169	30	5,548	1,750	<b>7,298</b>
Non cancer	12	6	4	1	0	0	2	0	25	25	<b>50</b>
Not stated	33	57	523	23	2	9	0	0	647	200	<b>847</b>
<b>Total</b>	<b>7,500</b>	<b>4,799</b>	<b>2,915</b>	<b>859</b>	<b>716</b>	<b>790</b>	<b>706</b>	<b>93</b>	<b>18,378</b>	<b>5,005</b>	<b>23,383</b>
<b>Per cent</b>											
Breast cancer	47.7	50.4	41.3	49.8	34.4	32.3	57.1	48.4	46.7	45.1	<b>46.3</b>
Lung cancer	12.1	12.9	8.6	7.6	6.3	6.3	8.2	16.1	10.9	7.1	<b>10.1</b>
Colorectal cancer	3.9	4.2	1.8	2.2	3.5	2.4	4.4	0.0	3.5	4.1	<b>3.6</b>
Uterine cancer	2.8	2.5	2.6	0.2	2.0	1.3	3.7	1.1	2.5	2.2	<b>2.5</b>
Lymphoma	2.8	3.0	1.6	2.4	2.0	2.7	2.4	2.2	2.6	2.0	<b>2.5</b>
Other cancer	30.1	25.8	26.0	34.9	51.7	53.9	23.9	32.3	30.2	35.0	<b>31.2</b>
Non cancer	0.2	0.1	0.1	0.1	0.0	0.0	0.3	0.0	0.1	0.5	<b>0.2</b>
Not stated	0.4	1.2	17.9	2.7	0.3	1.1	0.0	0.0	3.5	4.0	<b>3.6</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

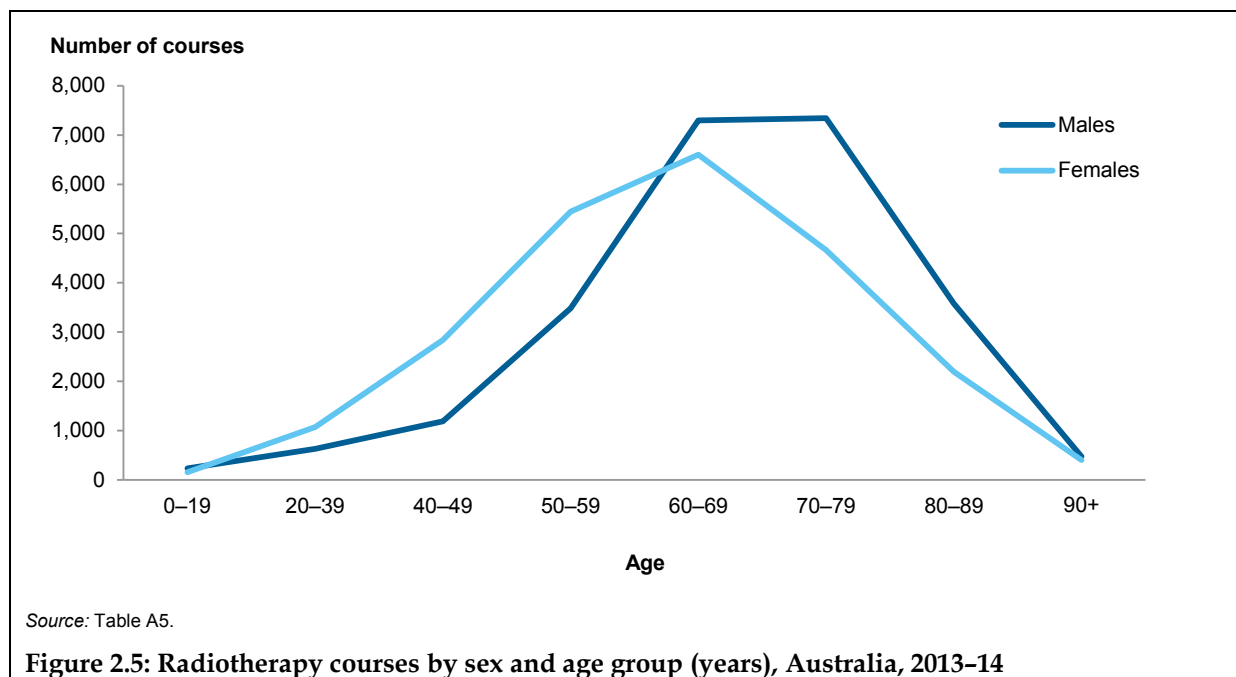
(a) ICD-10-AM principal diagnosis codes—Breast cancer (C50), Lung cancer (C33–C34), Colorectal cancer (C18–C20), Uterine cancer (C54–C55) and Lymphoma (C81–C85).

## 2.3 Patient demographics

### Sex and age of patients

Just over one-half of all courses of radiotherapy that began in 2013–14 were provided to males (51%) (Table A3), and over two-thirds of all radiotherapy courses were delivered to patients aged 60 or over (68%) (Table A4). One per cent of courses were delivered to patients aged under 20. Sex and age was reported for almost 100% of courses.

Figure 2.5 shows the distribution of courses delivered across age groups for males and females. For people aged less than 60 years more radiotherapy courses are delivered to females but for those aged over 60, more courses are delivered to males.



## Indigenous status

Nationally, 1% of radiotherapy courses were delivered to patients who were reported as identifying as being Indigenous (Table 2.5). However, there was a high proportion of courses for which the Indigenous status of the patient was not reported (47%, including for all cases reported by Victoria and the Australian Capital Territory), and the quality of the data where the Indigenous status was reported is unknown. Excluding cases where Indigenous status was not reported, the proportion of courses provided to Indigenous patients overall was 2%. Indigenous people comprise 3% of the Australian population (ABS 2014a), but as radiotherapy data are not age-standardised, some caution needs to be taken in comparing these figures.

**Table 2.5: Radiotherapy courses by Indigenous status, states and territories (public) and sector, 2013-14**

	Public sector providers								Sector		
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Public (total)	Private	Australia
<b>Number</b>											
Indigenous	176	n.a.	76	21	20	16	n.a.	37	346	57	n.a.
Non-Indigenous	13,413	n.a.	4,164	1,891	1,548	1,609	n.a.	152	22,777	1,999	n.a.
Not stated	1,637	9,480	2,014	12	13	22	1,364	0	14,542	7,936	22,478
<b>Total</b>	<b>15,226</b>	<b>9,480</b>	<b>6,254</b>	<b>1,924</b>	<b>1,581</b>	<b>1,647</b>	<b>1,364</b>	<b>189</b>	<b>37,665</b>	<b>9,992</b>	<b>47,657</b>
<b>Per cent</b>											
Indigenous	1.2	..	1.2	1.1	1.3	1.0	..	19.6	0.9	0.6	0.8
Non-Indigenous	88.1	..	66.6	98.3	97.9	97.7	..	80.4	60.5	20.0	52.0
Not stated	10.8	100.0	32.2	0.6	0.8	1.3	100.0	0.0	38.6	79.4	47.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

## Area of usual residence of the patient

Area-of-residence data available in this collection enables reporting on the remoteness and socioeconomic status of the area where a patient usually resides. Information on the area of usual residence of the patient was not available for all courses provided in South Australia, 95% of courses provided in Victoria, and 25% of courses provided in the Northern Territory (Table A6 and A8); in total 39% of all courses reported were missing area-of-residence information.

Area-of-residence data also enable analysis of the number of patients who seek treatment in a state or territory other than the one in which they usually live, which is important for planning purposes, although caution should be taken when interpreting results in jurisdictions where there is a high proportion of missing values for usual residence of patients ('not stated'). The Australian Capital Territory was the most affected by cross-border flows – 40% of treatment provided in the Australian Capital Territory is delivered to people who usually reside in New South Wales (544 people who usually live in New South Wales were treated in the Australian Capital Territory, Table 2.6).

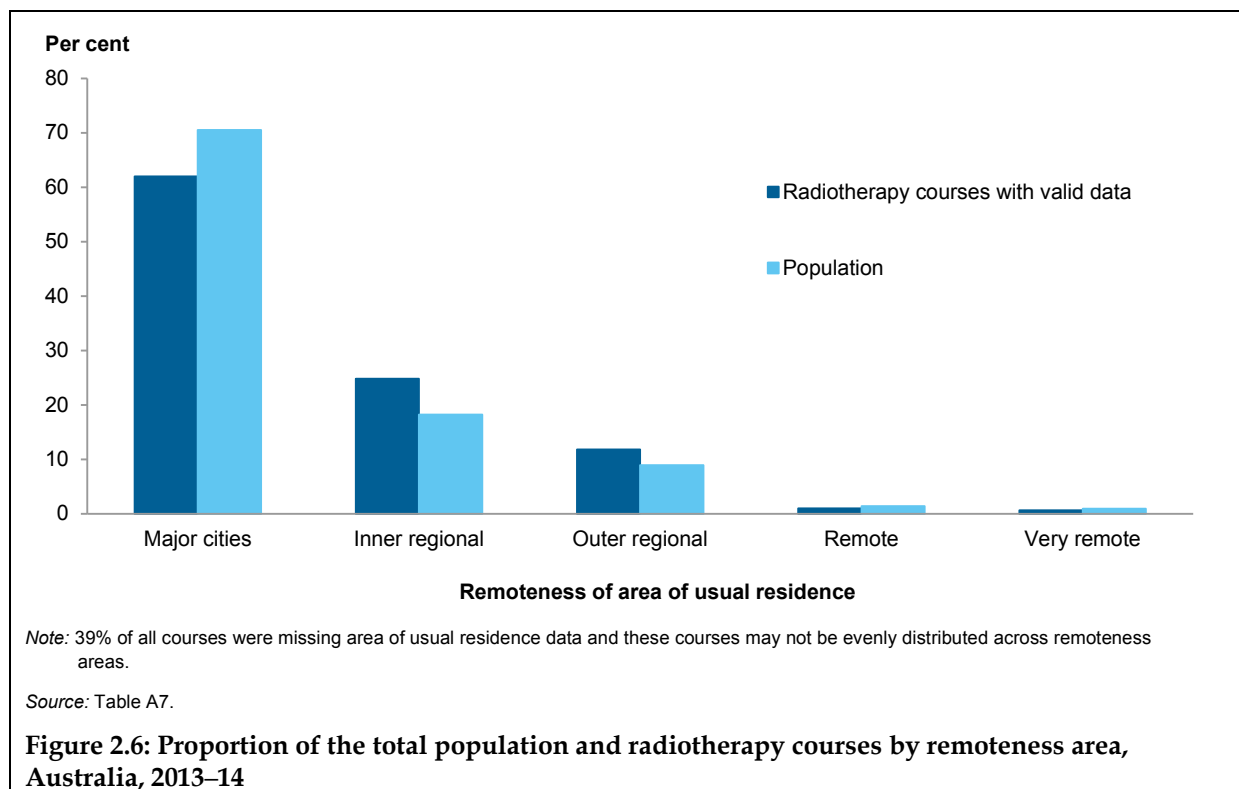
**Table 2.6: Public radiotherapy courses by state/territory of usual residence of the patient and treatment location, states and territories, 2013–14**

Patient's usual residence	State where treatment was provided (public sector providers)								Australia
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	
NSW	15,117	n.a.	73	0	n.a.	2	544	0	15,736
Vic	8	n.a.	4	8	n.a.	0	4	0	467
Qld	33	n.a.	6,158	0	n.a.	0	1	0	6,192
WA	4	n.a.	0	1,910	n.a.	0	0	0	1,914
SA	8	n.a.	2	0	n.a.	0	0	0	11
Tas	4	n.a.	2	0	n.a.	1,645	1	0	1,652
ACT	20	n.a.	0	0	n.a.	0	813	0	833
NT	3	n.a.	4	0	n.a.	0	1	141	149
Other	29	n.a.	0	1	n.a.	0	0	0	30
Not stated	0	9,036	11	5	1,581	0	0	48	10,681
<b>Australia</b>	<b>15,226</b>	<b>9,480</b>	<b>6,254</b>	<b>1,924</b>	<b>1,581</b>	<b>1,647</b>	<b>1,364</b>	<b>189</b>	<b>37,665</b>

## Remoteness areas

Figure 2.6 shows the remoteness area in which patients lived, where valid geographic data was reported (that is, excluding the 39% of cases where area of usual residence was not reported), compared with the proportions living in these areas for the Australian population as a whole (see Box 2.2 for a description of the remoteness areas used).

Figure 2.6 suggests that, nationally, residents of *Major cities* appeared to be under-represented, and residents of *Inner regional* and *Outer regional* areas are more likely to access radiotherapy services than those who live in other remoteness areas. However, as geographic data on area of usual residence are not age-standardised and were not supplied for 39% of all courses (Table A6), caution should be taken in interpreting these results.



### Box 2.2: Remoteness areas

Australia can be divided into several types of regions based on their distance from urban centres, when the population size of the urban centre is considered to determine the range and types of services available. In the ABS Australian Statistical Geography Standard, these regions are classified in each Census year as being in one of the following 5 categories:

*Major cities, Inner regional, Outer regional, Remote or Very remote* (ABS 2013a). Examples of urban centres in each remoteness area are:

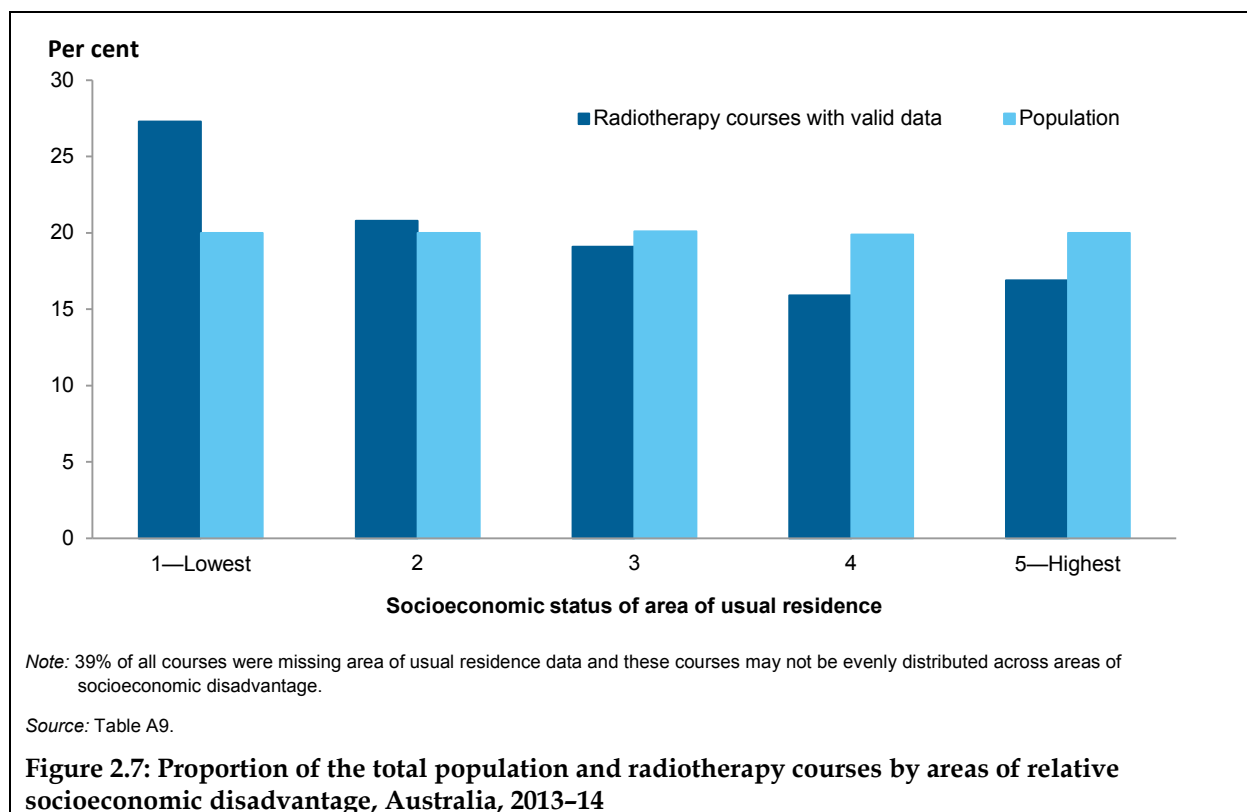
- *Major cities:* Sydney, Geelong, Gold Coast
- *Inner regional:* Hobart, Ballarat, Coffs Harbour
- *Outer regional:* Darwin, Cairns, Coonabarabran
- *Remote:* Alice Springs, Broome, Strahan
- *Very remote:* Coober Pedy, Longreach, Exmouth



## Socioeconomic status

Figure 2.7 provides information on the socioeconomic status of the areas in which radiotherapy patients lived compared with the distribution of the Australian population as a whole (see Box 2.3 for information on the way this information is derived). As the socioeconomic status of the area of usual residence of 39% of patients could not be determined (including for all patients in South Australia and a high proportion of patients treated in Victoria and the Northern Territory), these figures should be treated with caution (see Table A8).

In 2013–14, patients who began receiving radiotherapy were more likely to be living in areas classified as being in areas of low (most disadvantaged) socioeconomic status than in areas of high (least disadvantaged) socioeconomic status. Overall, 27% of courses of radiotherapy that began in the period were provided to patients who lived in areas classified as being of the lowest socioeconomic status compared to 17% who lived in areas classified as being of the highest socioeconomic status.



This may reflect differences in the risk of developing cancer for people in different socioeconomic groups, or may reflect the likelihood that people who live in areas with a higher socioeconomic status are more likely to attend a private radiotherapy service, where collection coverage was low. Separate analysis by the AIHW found that between 2006 and 2009, the age-standardised incidence rate for all cancers combined was slightly higher for those living in the three most disadvantaged (quintile 1, 2 and 3) areas and slightly lower for those living in the least disadvantaged (quintile 4 and 5) areas (AIHW 2014). Note that data presented in this publication are not age-standardised.

### **Box 2.3: Socioeconomic status**

Data on socioeconomic status groups are defined using the ABS's Socio-Economic Indexes For Areas (SEIFA) 2011 (ABS 2013b).

The SEIFA 2011 data are generated by the ABS using a combination of 2011 Census data such as income, education, health problems/disability, access to Internet, occupation/unemployment, wealth and living conditions, dwellings without motor vehicles, rent paid, mortgage repayments, and dwelling size. Composite scores are averaged across all people living in Census collection districts and also compiled for higher levels of aggregation. The SEIFAs are described in detail on the ABS website <[www.abs.gov.au](http://www.abs.gov.au)>.

The SEIFA Index of Relative Socio-Economic Disadvantage (IRSD) is one of the ABS's SEIFA indexes. The relative disadvantage scores indicate the collective socioeconomic status of the people living in an area, with reference to the situation and standards applying in the wider community at a given point in time. A relatively disadvantaged area is likely to have a high proportion of relatively disadvantaged people. However, such an area is also likely to contain people who are not disadvantaged, as well as people who are relatively advantaged.

Each socioeconomic group contains 20% of the national population – however this distribution is not even within each state and territory.

Disaggregation by SES group is based on the area of usual residence of the patient, not the location of the radiotherapy service.

Socioeconomic status groups are as follows:

- |             |                            |
|-------------|----------------------------|
| 1 – Lowest  | Most disadvantaged         |
| 2           | Second most disadvantaged  |
| 3           | Middle                     |
| 4           | Second least disadvantaged |
| 5 – Highest | Least disadvantaged.       |

### 3 Radiotherapy waiting times

This chapter examines waiting times by state and territory for public providers, and for Australia. A waiting time was calculated for every record with a valid ready-for-care date and radiotherapy start date reported to the NRWTD, representing courses of radiotherapy that began in 2013–14. Forty-one of the 53 sites that participated in this pilot year were able to provide waiting times data for 2013–14 (Table 1.2). These 41 providers contributed almost 38,700 records (Table A10) representing 81% of all records submitted. See Box 3.1 for details of data exclusions for this chapter.

Data are not disaggregated by public and private sector in this chapter due to a lack of comparability between sectors for this pilot year, for 2 reasons:

- Firstly, coverage for private providers was low – only 5 private providers, out of the 16 who reported to the collection and 34 private sites nationally, reported waiting times data to the NRWTD. Data from these 5 private providers are included in the total for Australia throughout this chapter.
- Secondly, some practices may differ across sectors, particularly in the setting of ready-for-care dates, which cannot be rectified or compensated for in this retrospective collection, and may reflect differing service provision arrangements between the public and private sectors.

Results are generally presented as waiting times (in days) at the 50<sup>th</sup> and 90<sup>th</sup> percentiles (rounded to the nearest number of whole days). The 50<sup>th</sup> percentile (the median waiting time or the middle value in a group of data arranged from lowest to highest for days waited) represents the number of days within which 50% of patients commenced radiotherapy treatment. The 90<sup>th</sup> percentile data represent the number of days within which 90% of patients began treatment.

One exception is in the presentation of information on *emergency* courses. For emergency courses, data are presented by the proportion of courses where treatment commenced, either on the same day or the next day (as a proxy for within the accepted emergency timeframe) or longer.

Waiting times and ready-for-care dates are further explained in Box 1.3.

### **Box 3.1: Data exclusions and suppressions for waiting times analysis**

#### **Exclusion of South Australian data**

South Australia waiting times data have not been included in 2013–14 waiting times data due to concerns regarding the quality of ready-for-care data. As a result South Australian data are not included in any totals for waiting times.

#### **Suppression of Western Australia data**

To protect the confidentiality of patients and service providers who provide data to the collection, the AIHW suppresses certain analyses in some circumstances. For this report, permission was sought to report by jurisdiction for states and territories where numbers of providers were low. Western Australia requested that their waiting times data be treated confidentially as they had only 1 participating provider. However, waiting times data for Western Australia are included in the totals for public providers and the overall totals for Australia where data for Western Australia cannot be derived.

#### **Private providers**

Data from private sector providers where the waiting times data were of sufficient quality are included in the totals for Australia in this chapter, and overall waiting times data are provided in Section 3.1 below. However, as this represents a low proportion of the sector, data for the private sector are not further disaggregated and so are not presented separately in the remainder of this chapter.

For those providers where data quality was assessed as poor for a high proportion of records, waiting times data were not included in the analysis in this chapter (Chapter 3), although their activity data are included in the Chapter 2 analysis.

#### **Exclusion of missing data**

In this chapter, waiting times for records where the variable being analysed was 'not stated' are not included as part of the disaggregations. For example, if the 'intention of treatment' is not stated, there are no waiting times published for these records in the intention-of-treatment disaggregation (Figure 3.5).

#### **Suppression of data with small numbers of courses**

In this report, waiting times are suppressed for calculation where the number of courses of radiotherapy was less than 20 for the 50<sup>th</sup> and the 90<sup>th</sup> percentile. This is because the waiting times reported are likely to be highly volatile when the number of courses of radiotherapy is small.

## **3.1 Overview of waiting times**

Overall, from the available data, in 2013–14, 50% of patients waited for 12 days or less and 90% of patients waited for 31 days or less (Table A10). In general, states and territories with lower waiting times at the 50<sup>th</sup> percentile also had lower waiting times for the majority of patients (as represented by the 90<sup>th</sup> percentile) (Figure 3.1). Waiting times for states and territories at the 50<sup>th</sup> percentile varied from 7 days in the Northern Territory to 16 days in Queensland. At the 90<sup>th</sup> percentile, results varied from 22 days in the Northern Territory to 34 days in Queensland.

Private providers that reported waiting times for 2013–14 reported a waiting time of 12 days at the 50<sup>th</sup> percentile, and 28 days at the 90<sup>th</sup> percentile. While these results are very similar to

the results for public providers, they should nevertheless be treated with caution as the data were sourced from a small number of private providers (5 of 34 sites) and comparability across sectors may be problematic, as outlined previously. Data for private providers are included in the total figures for Australia.

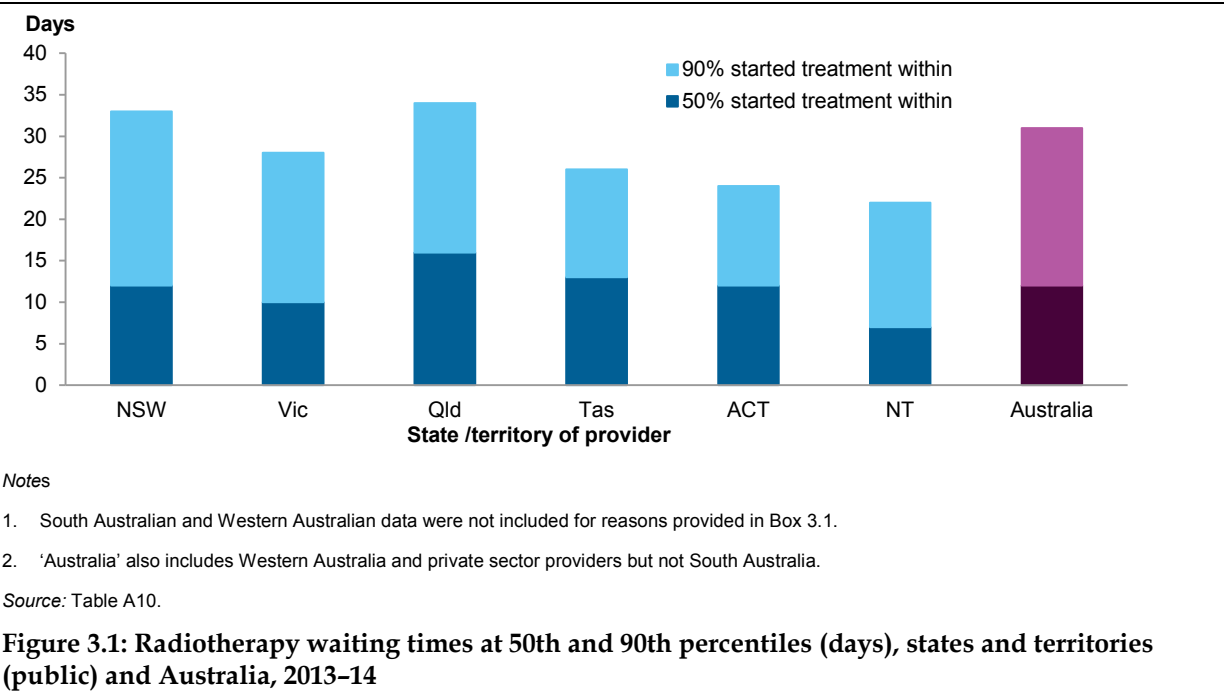
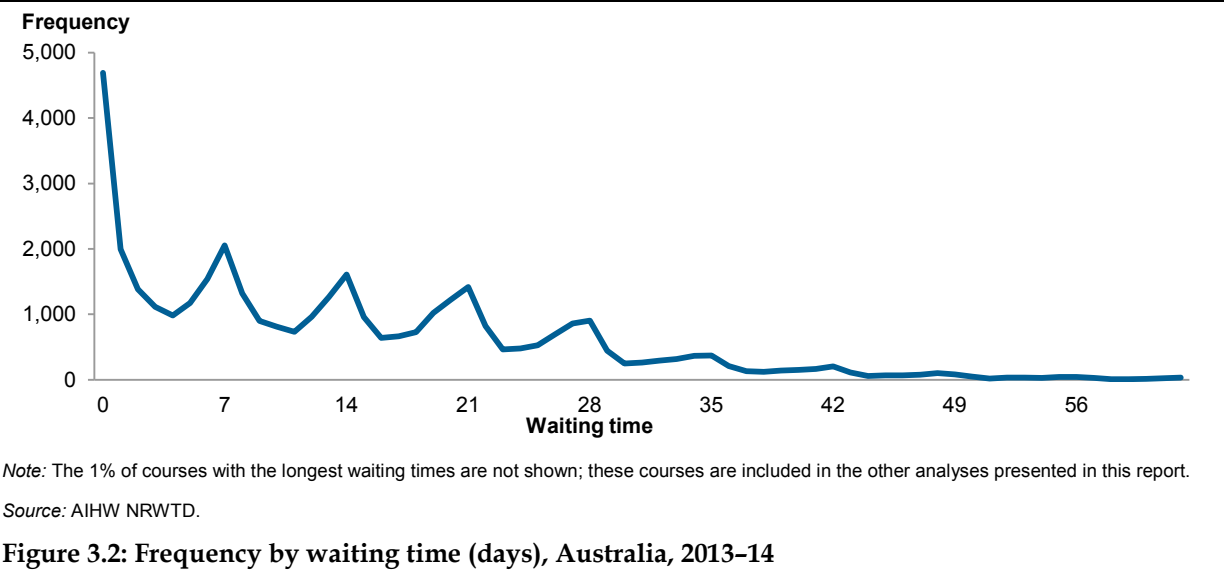


Figure 3.2 shows the frequency of waiting times (in days) reported in 2013-14 across Australia. Waiting times peak each 7 days reflecting the fact that most services are closed on the weekend, and that patients who start a course of radiotherapy are usually scheduled to start towards the beginning of a working week. Ninety-nine per cent of patients are treated within 62 days. The remaining 1% of courses (not shown in Figure 3.2) had waiting times substantially greater than 62 days (up to 412 days). These instances may indicate data quality issues associated with reporting of data for some courses of radiotherapy.



## 3.2 Clinical characteristics of patients

This section presents waiting times from the available data by the following clinical variables collected for each course:

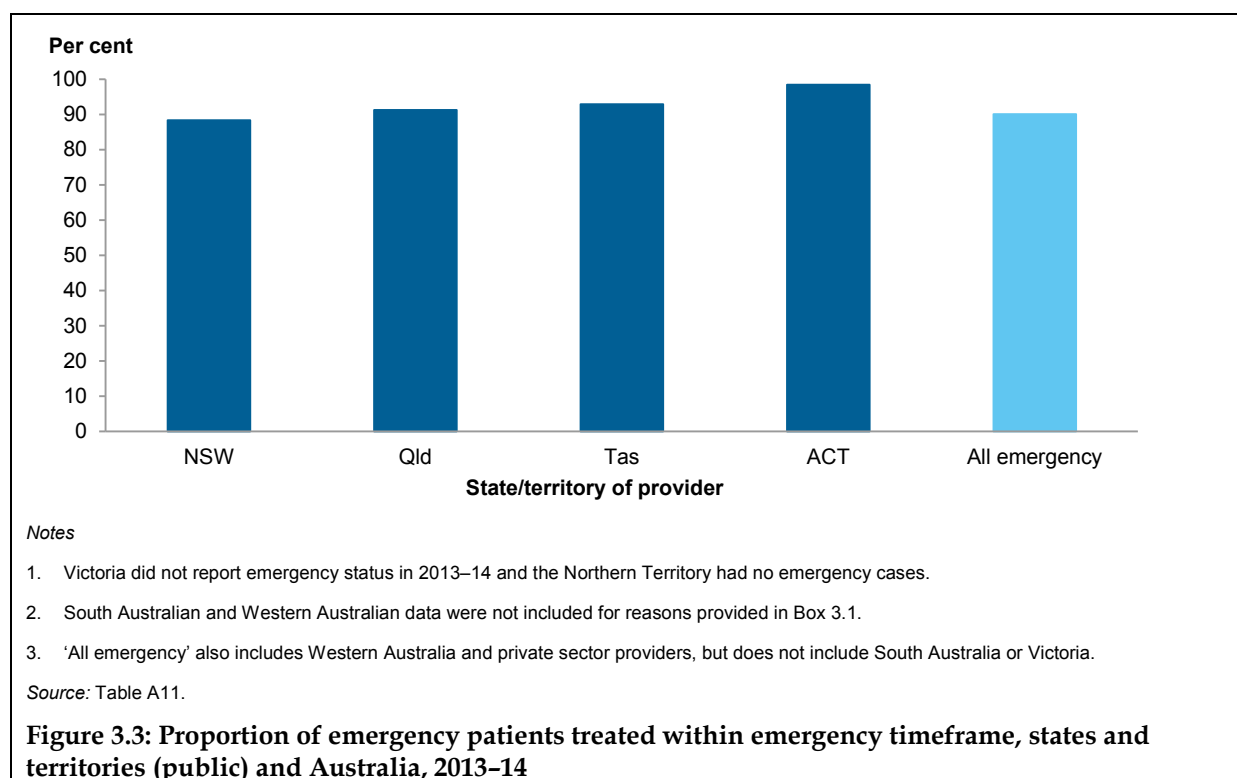
- emergency status
- intention of treatment
- principal diagnosis.

### Emergency status

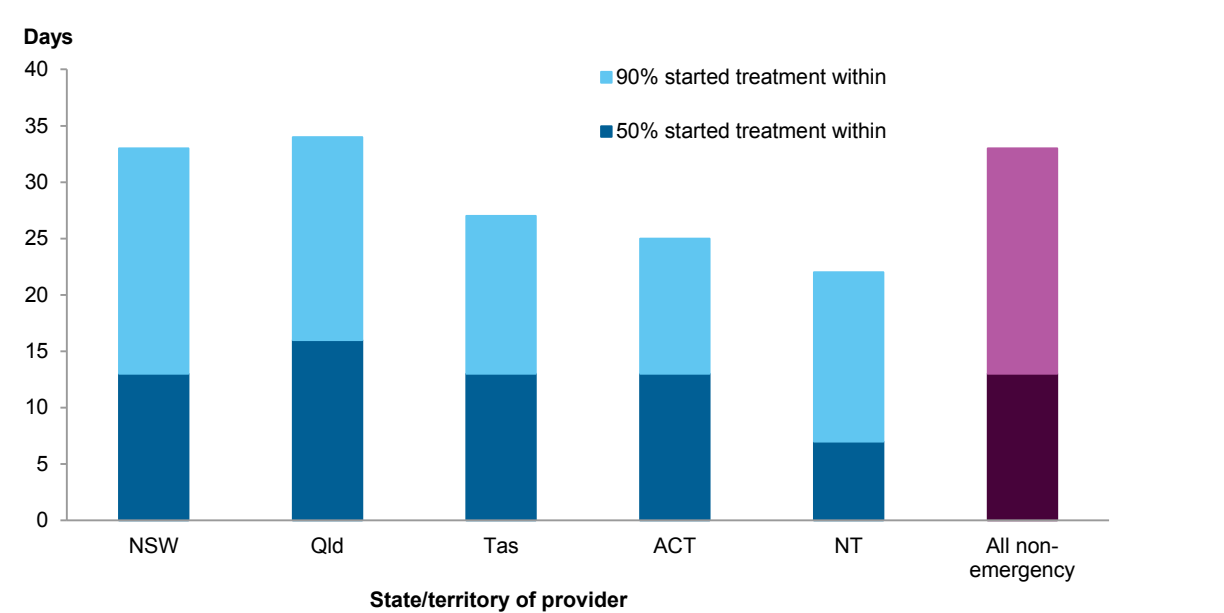
Patients who require emergency treatment are those for whom the treating clinician has assessed that the waiting time for treatment should not exceed 24 hours. However, as this collection does not measure waiting times in terms of hours, only in days, in this report patients needing emergency treatment are reported as having had treatment 'on time' if they had their treatment either on the same day they were ready-for-care, or the following day. Victoria did not report emergency status in 2013–14 as this information was not recorded in their information systems.

For patients clinically assessed as an emergency case, treatment usually does not rely on radiotherapy alone; a patient is likely to begin other treatments (for example, medication or chemotherapy) almost immediately after being recognised as needing emergency treatment, with the intention that radiotherapy will follow within 24 hours.

For those who needed emergency treatment in 2013–14, 90% began treatment within the emergency timeframe and 10% waited 2 days or longer (Table A11). The proportion treated within the emergency timeframe varied from 88% in New South Wales to 99% in the Australian Capital Territory. Note that in some jurisdictions the number of emergency courses was small.



In 2013–14, 50% of non-emergency patients waited for 13 days or less and 90% of patients waited for 33 days or less (Figure 3.4). As emergency patients make up a very small number of radiotherapy cases, the results for non-emergency patients are similar to the results for all courses. The median waiting times across jurisdictions varied from 7 days in the Northern Territory to 16 days in Queensland, and 90% of non-emergency courses started within a range of 22 days in the Northern Territory to 34 days in Queensland (Table A12).



**Notes**

1. Victoria did not report emergency status in 2013–14 as this information was not recorded in their information systems.
2. South Australian and Western Australian data were not included for reasons provided in Box 3.1.
3. 'All non-emergency' also includes Western Australia and private sector providers, but does not include South Australia or Victoria.

Source: Table A12.

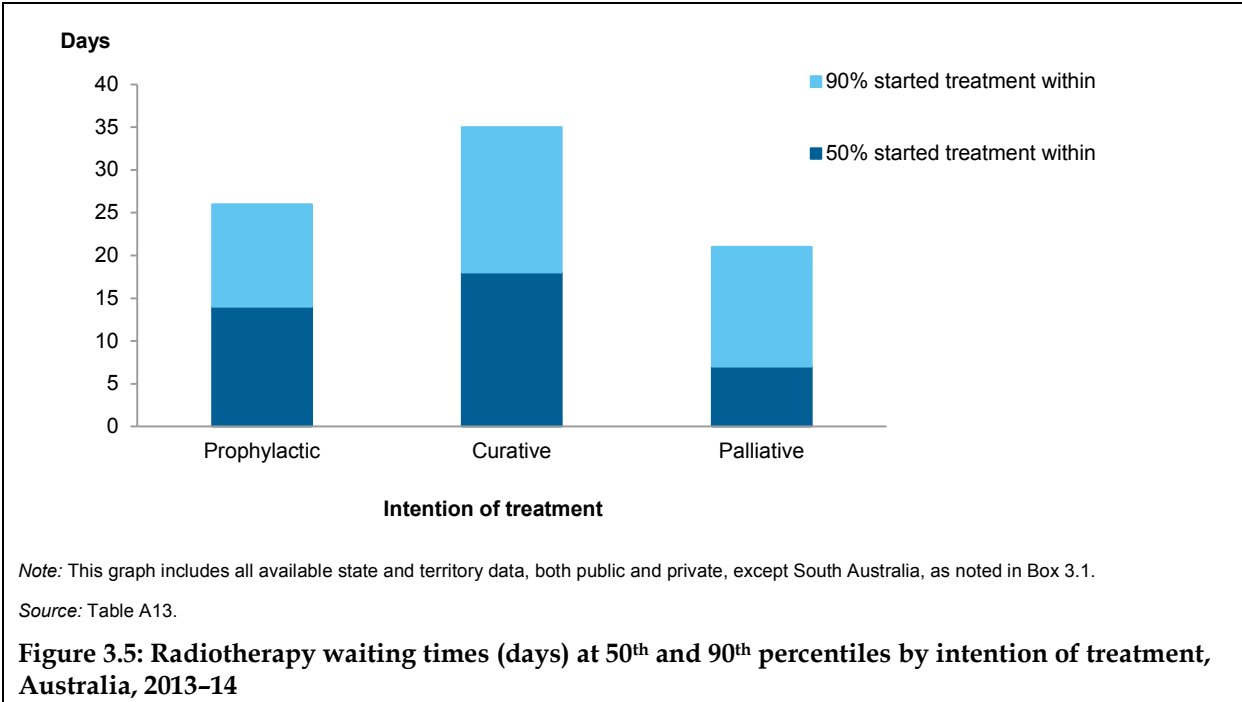
**Figure 3.4: Radiotherapy waiting times (days) at 50th and 90th percentiles for non-emergency treatment, states and territories (public) and Australia, 2013–14**

**Intention of treatment**

The intention of treatment may be prophylactic, curative or palliative (as described in Box 2.1). There may be a change in intent during the course of treatment following additional diagnostic information. For example, this is not uncommon in cases of lung cancer where patients may have commenced curative treatment when additional results become available that lead to the re-classification of the treatment as palliative. At this time their treatment plan should be modified based on the most recent results, the patient’s ready-for-care date should be reviewed, and (potentially) a new course of radiotherapy would begin. However, this may not be current practice in all services, and therefore is likely to affect some reported waiting times and data quality overall in this pilot collection.

Fifty per cent of patients who received palliative radiotherapy started treatment within 7 days, and 90% within 21 days (Table A13). Where the intent was to cure disease, 50% started treatment within 18 days and 90% within 35 days. For those who were treated to prevent further disease (prophylactic), 50% of patients began treatment within 14 days, and 90% within 26 days (Figure 3.5).

When considering relative waiting times for intent, note that in most (but not all) cases, palliative patients require less complex treatment techniques and therefore it is 'often relatively simple to fit in a short palliative schedule without causing significant delay to other patients' (RANZCR 2013).



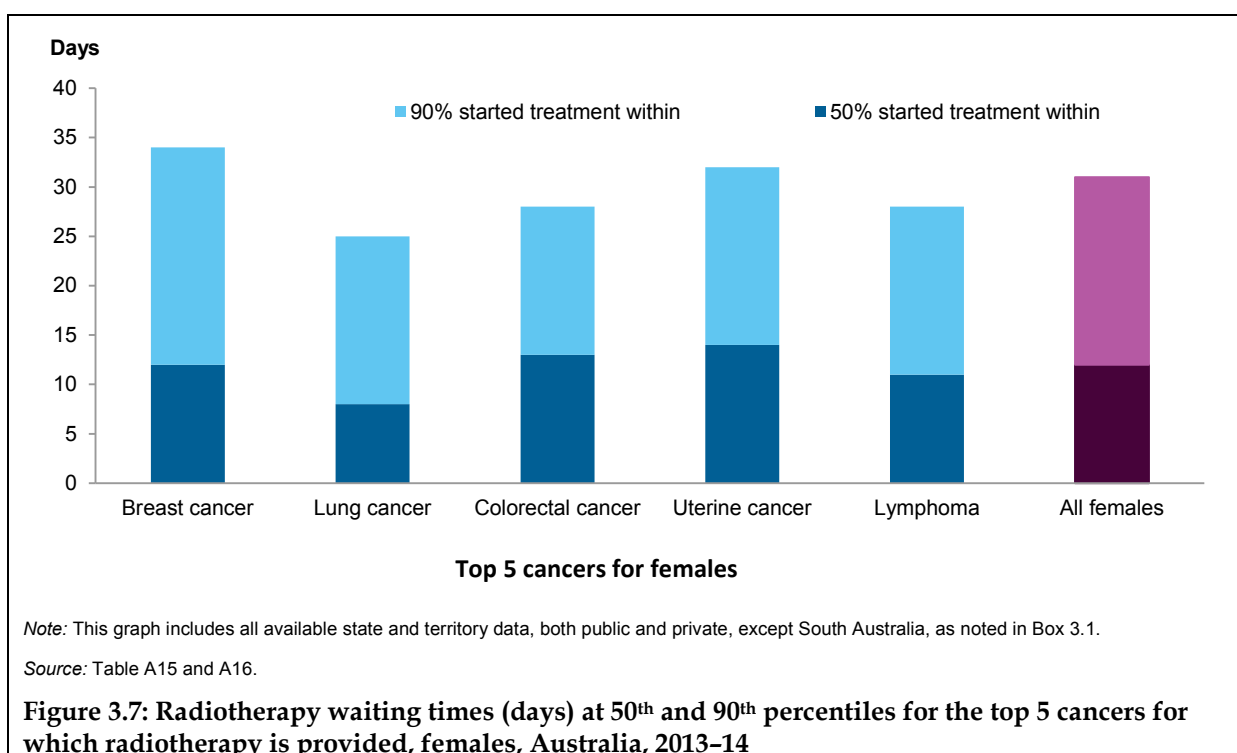
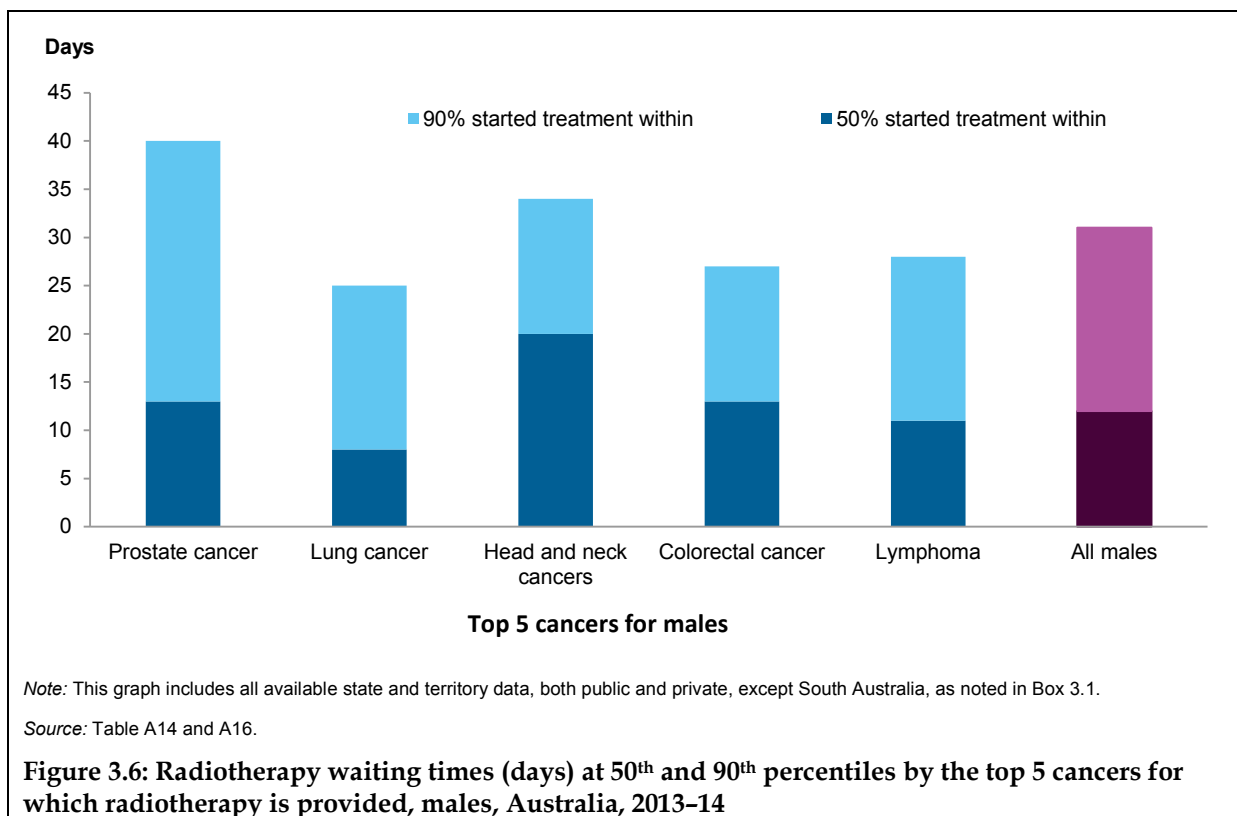
### Principal diagnosis

The majority of radiotherapy treatment is delivered to treat cancer. However, as noted in Chapter 2, there are a few other conditions which are treated. Fifty per cent of these non-cancer cases started treatment within 15 days and 90% within 33 days.

Figure 3.6 presents waiting times for radiotherapy for the top 5 most frequently reported cancers in the NRWTD for males. Figure 3.7 presents the same for females. For those cancers that appear in the top 5 for both males and females (lung cancer, colorectal cancer and lymphoma) there is little difference between waiting times for males and females.

For males, the longest waiting times at the 50<sup>th</sup> percentile were for head and neck cancer (20 days); the principal diagnosis associated with the longest waiting times at the 90<sup>th</sup> percentile was prostate cancer (40 days). For females, the longest waiting times at the 50<sup>th</sup> percentile were for uterine cancers (14 days), and at the 90<sup>th</sup> percentile, breast cancer (34 days).



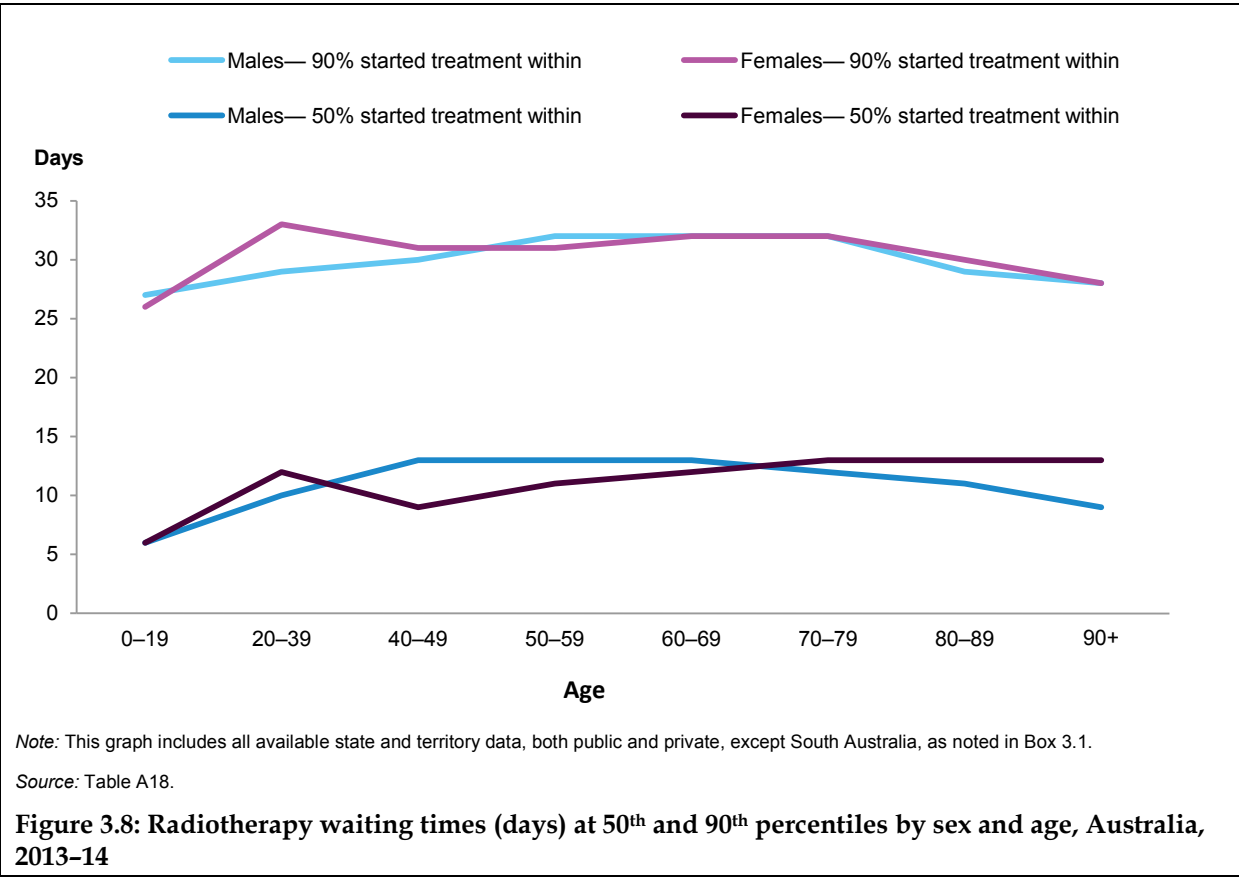


### 3.3 Patient demographics

#### Sex and age of patients

Figure 3.8 shows waiting times by sex and age in Australia. Nationally, males and females were treated within the same timeframes, with some variation across states and territories (Table A16). The differences that do occur for males and females across states and territories may reflect differences in the types of cancers being treated.

Although there were variations in waiting times across the age groups (Table A17), children and adolescents usually waited for shorter periods than older people, with 50% of those under 20 starting treatment within 6 days (compared with 12 days for all patients), and 90% within 27 days (compared with 31 days for all patients).



#### Indigenous status

Overall, waiting times for patients who were of Aboriginal or Torres Strait Islander origin were similar to those for non-Indigenous patients – 50% of Indigenous patients waited 12 days or less (compared to 13 days or less for non-Indigenous patients) and 90% of Indigenous patients waited 29 days or less (compared to 33 days for non-Indigenous patients). Because of the extent of missing data, as well as data quality concerns, these results should be interpreted with caution (as outlined in Chapter 2, Table 2.5). For similar reasons, no further breakdowns of these data are presented.

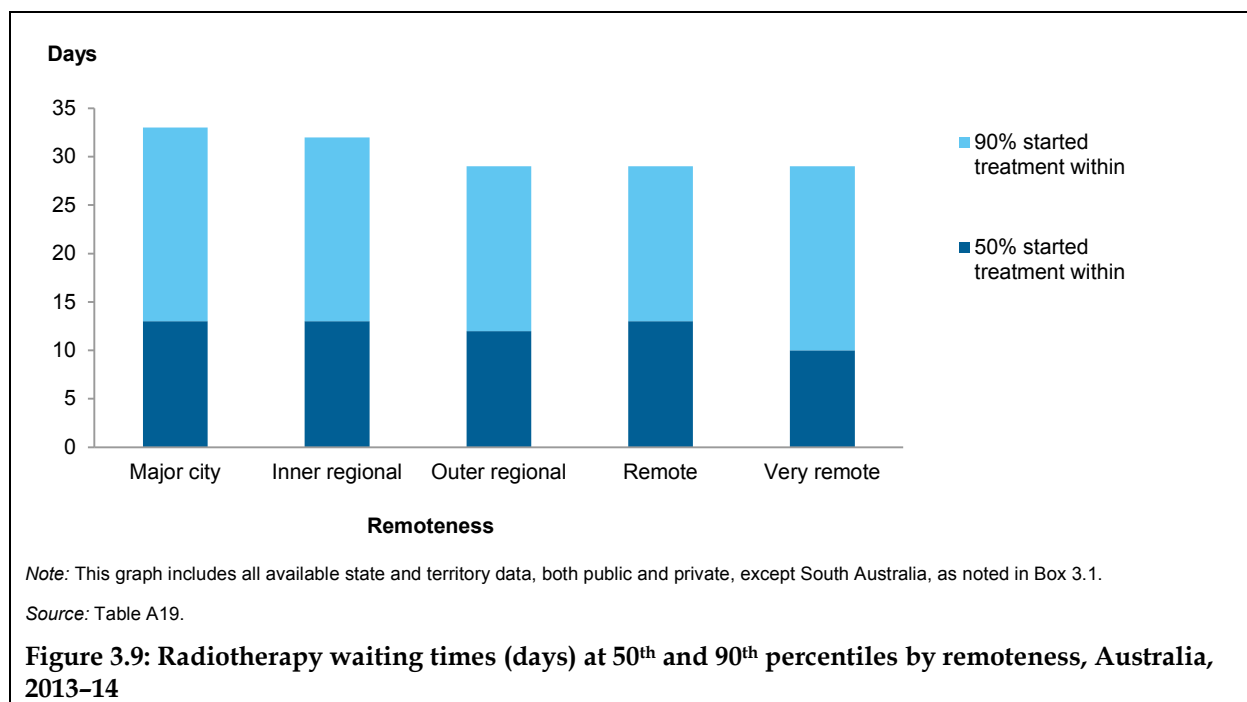
## Area of usual residence of the patient

Area-of-usual-residence data can be used to calculate remoteness and socioeconomic status of the area where a patient usually resides. Due to high levels of missing data some caution is advised when interpreting these results.

### Remoteness areas

Figure 3.9 shows waiting times for patients based on the remoteness area in which they usually live (see Box 2.2 for a description of the remoteness area categories). People who live in *Remote* or *Very remote* areas have similar or lower reported waiting times compared with those living in *Major cities* or *Inner regional* or *Outer regional* areas, at both the 50<sup>th</sup> and 90<sup>th</sup> percentiles. At the 50<sup>th</sup> percentile, waiting times varied from 10 to 13 days, and at the 90<sup>th</sup> percentile, waiting times varied from 29 to 33 days. However, it is possible that for those who live remotely, these data do not give a comparable picture of how long they wait for radiotherapy – there may be different treatment pathways, possibly involving waiting for radiation oncologists who visit remote areas on a regular basis, or having to make arrangements to visit treatment sites elsewhere.

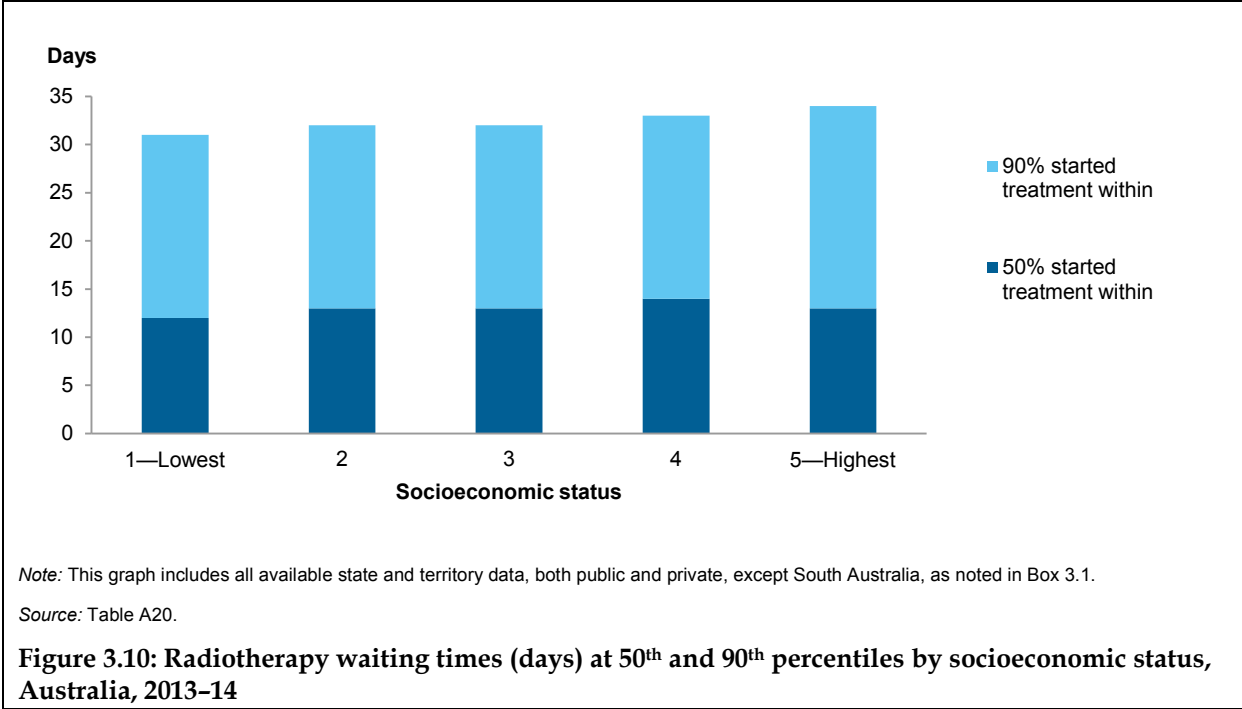
Some records, primarily in Victoria, were missing patient geographical information, meaning that remoteness could not be determined for these patients.



**Socioeconomic status**

Waiting times by socioeconomic status are presented in Figure 3.10. Quintile 1 represents the most disadvantaged areas in Australia, and quintile 5 the least disadvantaged. (For an explanation of socioeconomic status, see Box 2.3.) Nationally, waiting times across the socioeconomic status areas were similar (12–14 days at the 50<sup>th</sup> percentile and 31–34 days at the 90<sup>th</sup> percentile).

Some records, primarily in Victoria, were missing patient geographical information, meaning that socioeconomic status could not be presented for these patients.



# Appendix 1: Participating radiotherapy providers

Radiotherapy service providers who contributed data to the 2013–14 pilot collection:

- **New South Wales, Public providers**
  - St Vincent's Hospital, Darlinghurst
  - Royal Prince Alfred Hospital (*Note: This hospital changed to private provider 'Chris O'Brien Lifehouse' in November 2013. In this report this hospital is included in 'public providers'*)
  - Liverpool Cancer Therapy Centre
  - Macarthur Cancer Therapy Centre
  - Prince Of Wales Hospital
  - St George Cancer Care Centre
  - Shoalhaven Cancer Care Centre
  - Illawarra Cancer Care Centre
  - Crown Princess Mary Cancer Centre
  - Nepean Cancer Care Centre
  - Royal North Shore Hospital
  - Central Coast Cancer Centre
  - North West Cancer Centre
  - Calvary Mater Newcastle
  - North Coast Cancer Institute, Lismore
  - North Coast Cancer Institute, Coffs Harbour
  - North Coast Cancer Institute, Port Macquarie
  - Central West Cancer Service
- **New South Wales, Private provider**
  - Riverina Cancer Care Centre
- **Victoria, public providers**
  - William Buckland Radiotherapy Centre, The Alfred Hospital
  - William Buckland Radiotherapy, Gippsland
  - Austin Radiation Oncology Centre, Olivia Newton-John Cancer & Wellness Centre
  - Austin Radiation Oncology Centre, Ballarat
  - Barwon Health—Geelong Hospital, Andrew Love Cancer Centre
  - Bendigo Radiotherapy Centre—Peter MacCallum at Bendigo Health
  - Peter MacCallum Cancer Centre, East Melbourne
  - Peter MacCallum Box Hill Campus, Epworth Eastern Medical Centre
  - Peter MacCallum Moorabbin Campus, Monash Medical Centre

- Sunshine Hospital Radiation Therapy Centre, Peter MacCallum Cancer Centre
- **Victoria**, *Private providers*
  - Radiation Oncology Victoria (ROV), Western Private Hospital
  - ROV, Ringwood Private Hospital
  - ROV, Frankston Private
  - ROV, Epping Medical and Specialist Centre
  - ROV, Murray Valley Private Hospital
  - Epworth Radiation Oncology – Richmond
  - Epworth Radiation Oncology – Freemasons
- **Queensland**, *Public providers*
  - Princess Alexandra Hospital
  - Townsville Hospital
  - Royal Brisbane and Women’s Hospital
- **Queensland**, *Private providers*
  - Radiation Oncology Queensland (ROQ), Toowoomba
  - ROQ, Cairns
  - ROQ, Gold Coast
  - Oceania, Maroochydore
- **Western Australia**, *Public provider*
  - Sir Charles Gardiner Hospital, Perth
- **South Australia**, *Public provider*
  - Royal Adelaide Hospital
- **South Australia**, *Private providers*
  - GenesisCare, Kurralta Park Tennyson Centre
  - GenesisCare, Bedford Park Flinders Private Hospital
  - GenesisCare, South Terrace, Adelaide
  - GenesisCare, Elizabeth Vale, Calvary Central Districts Hospital
- **Tasmania**, *public providers*
  - Royal Hobart Hospital
  - Launceston General Hospital
- **Australian Capital Territory**, *public provider*
  - The Canberra Hospital
- **Northern Territory**, *public provider*
  - Alan Walker Cancer Care Centre

# Appendix 2: Data quality summary

## National Radiotherapy Waiting Times Database (NRWTD), 2013–14 (pilot collection)

The NRWTD (METeOR ID: 598445) is a compilation of data supplied to the AIHW based on the Radiotherapy waiting times data set specification (DSS) (METeOR ID: 517220) which was collected from participating radiotherapy providers for the period 2013–14 as a pilot collection. Each record provides information relating to a course of radiotherapy that began in the reference period (that is, the waiting period associated with the course of radiotherapy ended in the reference period). Other data collected includes administrative details, patient demographic characteristics and some clinical information, as follows:

- Establishment identifier
- Establishment location (Australian Statistical Geography Standard 2011, SA2)
- Ready-for-care date
- Radiotherapy start date
- Person identifier
- Emergency status (yes, no)
- Intention of treatment (prophylactic, curative, palliative)
- Principal diagnosis (ICD-10-AM 8th edition)
- Sex
- Date of birth
- Indigenous status
- Patient area of usual residence (SA2).

### Summary of key issues:

- The 2013–14 pilot year of collection was not mandatory.
- The retrospective and pilot nature of this collection increases the likelihood that definitions such as the ready-for-care date and radiotherapy start date, as used by clinicians and providers, may vary from the agreed DSS definition.
- Waiting times data could not be reported separately for private providers for this pilot year because:
  - coverage for private providers was low – only 5 private providers, out of the 16 who reported to the collection, and the 34 private sites nationally, reported waiting times data to the NRWTD
  - some practices may differ across sectors, particularly in setting of ready-for-care dates, which cannot be resolved or compensated for in this retrospective collection.
- Victoria was unable to supply data on emergency status for this pilot collection as this information was not recorded in their information systems.
- Many providers had difficulties coding patient’s area of usual residence as an SA2 code; in many cases, SA2 was derived from postcode. This may affect the accuracy of

socioeconomic and remoteness calculations. There was also a high degree of missing data for this item (39% of all records did not have these data).

- There was also a high degree of missing data for Indigenous status—47% of all records were missing this information and reported data were of unknown quality.
- Western Australia noted that erroneous data were not corrected at source by the provider for this pilot collection and this included, for example, cases where the *Ready-for-care date* was incorrectly reported as a date after the *Radiotherapy start date*, resulting in negative waiting times. (Note that negative waiting times were not included in the calculation of waiting times.) Western Australia also noted that the number of courses reported may have been decreased when records missing ready-for-care data were excluded from the 2013–14 submission, estimating that this may have led to a potential undercounting of approximately 180 courses. They also noted that the number of ‘emergency’ patients is low and does not reflect the true count.
- Waiting times for South Australia were not able to be included in 2013–14 due to concerns regarding the quality of ready-for-care data.

## Institutional environment

The AIHW is a major national agency set up by the Australian Government under the *Australian Institute of Health and Welfare Act 1987* to provide reliable, regular and relevant information and statistics on Australia’s health and welfare. It is an independent corporate Commonwealth entity governed by a management board, and accountable to the Australian Parliament through the Health portfolio.

The AIHW aims to improve the health and wellbeing of Australians through better health and welfare information and statistics. It collects and reports information on a wide range of topics and issues, ranging from health and welfare expenditure, hospitals, disease and injury, and mental health, to ageing, homelessness, disability and child protection.

The Institute also plays a role in developing and maintaining national metadata standards. This work contributes to improving the quality and consistency of national health and welfare statistics. The Institute works closely with governments and non-government organisations to achieve greater adherence to these standards in administrative data collections to promote national consistency and comparability of data and reporting.

One of the main functions of the AIHW is to work with the states and territories to improve the quality of administrative data and, where possible, to compile national datasets based on data from each jurisdiction, to analyse these datasets and disseminate information and statistics.

The *Australian Institute of Health and Welfare Act 1987*, in conjunction with compliance to the *Privacy Act 1988* (Commonwealth), ensures that the data collections managed by the AIHW are kept securely and under the strictest conditions with respect to privacy and confidentiality.

For further information see the AIHW website <[www.aihw.gov.au](http://www.aihw.gov.au)>.

The state and territory health authorities received the data used in this report from public radiotherapy providers. States and territories use these data for service planning, monitoring and internal and public reporting. Radiotherapy providers may be required to provide data to states and territories through a variety of administrative arrangements, contractual requirements or legislation.



Some private providers that have a contract or partnership arrangement in place to provide services to public patients were required to participate, while other private providers participated voluntarily. Some private providers submitted data directly to the AIHW while others submitted through their state or territory health authority.

## Timeliness

The reference period for this data set is 2013–14. This includes records for all patients who started a course of radiotherapy between 1 July 2013 and 30 June 2014. These data are being first published in November 2015.

## Accessibility

The AIHW publishes data from this collection on the AIHW website at <[www.aihw.gov.au](http://www.aihw.gov.au)>.

## Interpretability

Metadata information for the RWT DSS is published in the AIHW's Metadata Online Registry (METeOR) and the *National health data dictionary*.

METeOR and the *National health data dictionary* can be accessed at the following AIHW web addresses, respectively:

<<http://meteor.aihw.gov.au/content/index.phtml/itemId/517220>>

<<http://www.aihw.gov.au/publication-detail/?id=10737422826>>.

## Relevance

The purpose of the DSS for radiotherapy waiting times is to collect information about the times that patients wait for radiotherapy in Australia, and the factors that affect waiting times. Information is also collected on the courses of radiotherapy provided. The scope of the DSS is patients who began a course of radiotherapy in the reporting period in Australia.

## Accuracy

For 2013–14, all but one public radiotherapy centre provided data for the RWT DSS. Only a small subset of all private providers are included in this collection, and therefore the reported data may not be representative of that sector as a whole.

This is a pilot collection – and the data were requested retrospectively, so some providers may not have recorded all data items or may not have recorded items according to agreed definitions – this may particularly affect assignment of ready-for-care dates.

Providers are primarily responsible for the quality of the data they provide. However, the AIHW undertakes extensive validations on receipt of data. Data are checked for valid values and logical consistency. Potential errors are queried with jurisdictions at the time data are loaded, and corrections and resubmissions may be made in response to these edit queries. The AIHW does not adjust data to account for possible data errors or missing or incorrect values.

Some codes have been mapped from local coding systems – for example, for *Intention of treatment*, many providers use a code for 'radical' treatment which is not supported in this collection.

Many providers had difficulties coding patient's area of usual residence as an SA2 code; in many cases, SA2 was derived from postcode. This may affect the accuracy of socioeconomic and remoteness calculations. There was also a high degree of missing data for this item (39% of all records did not have these data).

Data on Indigenous Australians should be interpreted with caution as there was a high proportion of courses of radiotherapy for which the Indigenous status of the patient was not reported, and where Indigenous status was reported, the quality of the data is unknown.

Victoria was unable to supply data on emergency status for this pilot collection as this information was not recorded in their information systems.

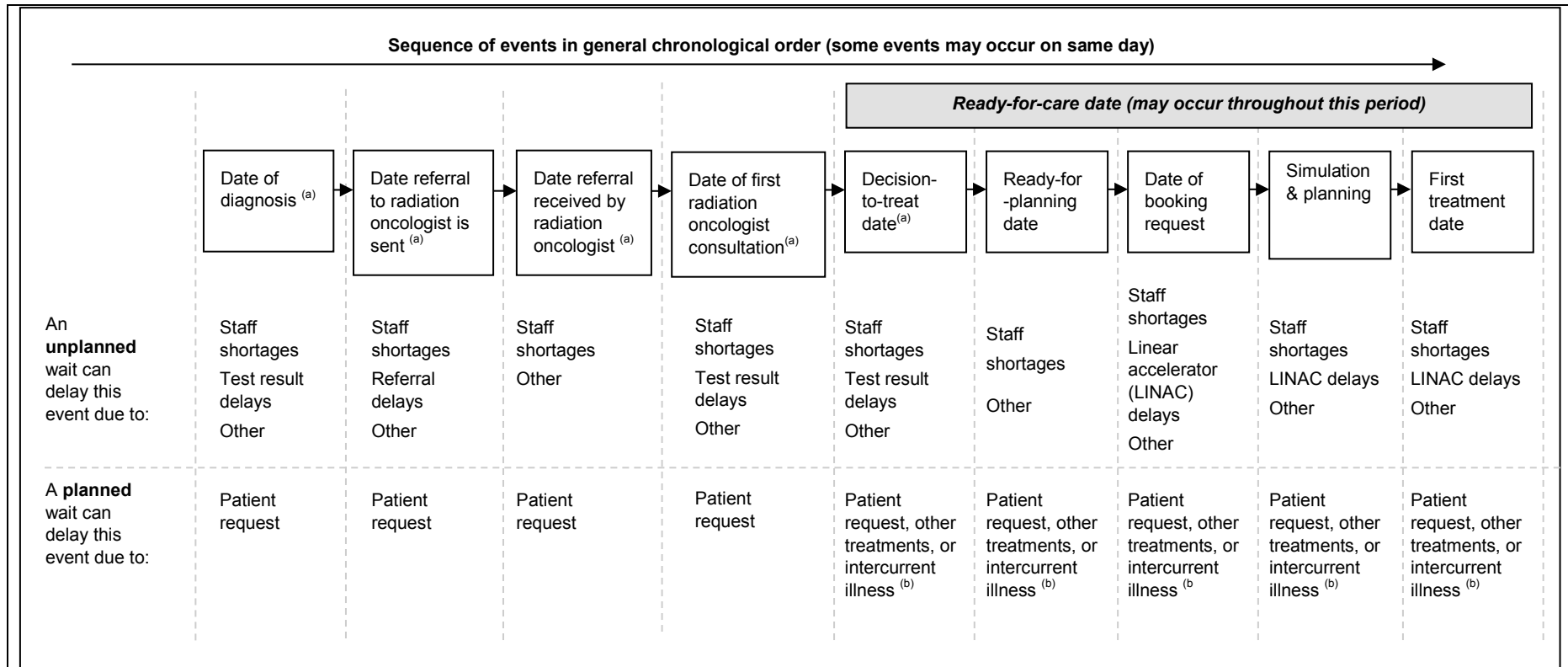
Waiting times for South Australia were not able to be included in 2013–14 due to concerns regarding the quality of ready-for-care data.

## **Coherence**

2013–14 is the first pilot year of collection of radiotherapy waiting times data.

# Appendix 3: A typical radiotherapy treatment pathway

Figure A3.1 displays many of the dates which occur through a typical radiotherapy treatment pathway. There are many components of this treatment pathway that could be viewed as contributing to a patient’s waiting times.



(a) Referral to, and treatment by, other specialists may also occur at this time.

(b) Planned delays should generally occur prior to the ready-for-care date.

Note: Although this pathway is 'typical', other pathways can also apply.

**Figure A3.1: Types of delays captured according to waiting period start date**

# Appendix 4: Detailed statistical tables

## Radiotherapy activity and patients

Table A1: Radiotherapy courses by emergency status, states and territories (public) and sector, 2013–14

	Public sector providers								Sector		
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Public (total)	Private	Australia
<b>Number</b>											
Emergency	552	n.a.	149	7	51	70	67	0	896	104	<b>1,000</b>
Non-emergency	14,674	n.a.	6,105	1,917	1,530	1,577	1,297	189	27,289	5,808	<b>33,097</b>
Not stated	0	9,480	0	0	0	0	0	0	9,480	4,080	<b>13,560</b>
<b>Total</b>	<b>15,226</b>	<b>9,480</b>	<b>6,254</b>	<b>1,924</b>	<b>1,581</b>	<b>1,647</b>	<b>1,364</b>	<b>189</b>	<b>37,665</b>	<b>9,992</b>	<b>47,657</b>
<b>Per cent</b>											
Emergency	3.6	..	2.4	0.4	3.2	4.3	4.9	0.0	2.4	1.0	<b>2.1</b>
Non-emergency	96.4	..	97.6	99.6	96.8	95.7	95.1	100.0	72.5	58.1	<b>69.4</b>
Not stated	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	25.2	40.8	<b>28.5</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Table A2: Radiotherapy courses by intention of treatment, states and territories (public) and sector, 2013–14

	Public sector providers								Sector		
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Public (total)	Private	Australia
<b>Number</b>											
Prophylactic	767	22	10	3	87	0	0	0	889	33	<b>922</b>
Curative	8,076	5,140	4,175	1,313	820	975	810	98	21,407	3,934	<b>25,341</b>
Palliative	6,246	4,318	1,989	607	674	647	554	91	15,126	4,149	<b>19,275</b>
Not stated	137	0	80	1	0	25	0	0	243	1,876	<b>2,119</b>
<b>Total</b>	<b>15,226</b>	<b>9,480</b>	<b>6,254</b>	<b>1,924</b>	<b>1,581</b>	<b>1,647</b>	<b>1,364</b>	<b>189</b>	<b>37,665</b>	<b>9,992</b>	<b>47,657</b>
<b>Per cent</b>											
Prophylactic	5.0	0.2	0.2	0.2	5.5	0.0	0.0	0.0	2.4	0.3	<b>1.9</b>
Curative	53.0	54.2	66.8	68.2	51.9	59.2	59.4	51.9	56.8	39.4	<b>53.2</b>
Palliative	41.0	45.5	31.8	31.5	42.6	39.3	40.6	48.1	40.2	41.5	<b>40.4</b>
Not stated	0.9	0.0	1.3	0.1	0.0	1.5	0.0	0.0	0.6	18.8	<b>4.4</b>
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

**Table A3: Radiotherapy courses by sex of patient, states and territories (public) and sector, 2013–14**

	Public sector providers								Sector		Australia
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Public (total)	Private	
<b>Number</b>											
Males	7,724	4,681	3,339	1,065	865	857	658	96	19,285	4,944	<b>24,229</b>
Females	7,500	4,799	2,915	859	716	790	706	93	18,378	5,005	<b>23,383</b>
Not stated	2	0	0	0	0	0	0	0	2	43	<b>45</b>
<b>Total</b>	<b>15,226</b>	<b>9,480</b>	<b>6,254</b>	<b>1,924</b>	<b>1,581</b>	<b>1,647</b>	<b>1,364</b>	<b>189</b>	<b>37,665</b>	<b>9,992</b>	<b>47,657</b>
<b>Per cent</b>											
Males	50.7	49.4	53.4	55.4	54.7	52.0	48.2	50.8	51.2	49.5	<b>50.8</b>
Females	49.3	50.6	46.6	44.6	45.3	48.0	51.8	49.2	48.8	50.1	<b>49.1</b>
Not stated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	<b>0.1</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

**Table A4: Radiotherapy courses by age group (years), states and territories (public) and sector, 2013–14**

	Public sector providers								Sector		Australia
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Public (total)	Private	
<b>Number</b>											
0–19	131	79	107	46	17	2	0	0	382	9	<b>391</b>
20–39	541	370	278	70	46	42	34	5	1,386	318	<b>1,704</b>
40–49	1,276	833	620	164	137	114	150	24	3,318	717	<b>4,035</b>
50–59	2,853	1,757	1,262	373	300	319	260	47	7,171	1,763	<b>8,934</b>
60–69	4,467	2,717	1,874	546	425	510	408	66	11,013	2,904	<b>13,917</b>
70–79	3,856	2,346	1,446	486	423	426	353	32	9,368	2,649	<b>12,017</b>
80–89	1,837	1,195	592	208	201	210	140	15	4,398	1,384	<b>5,782</b>
90+	265	183	75	31	32	24	19	0	629	245	<b>874</b>
Not stated	0	0	0	0	0	0	0	0	0	3	<b>3</b>
<b>Total</b>	<b>15,226</b>	<b>9,480</b>	<b>6,254</b>	<b>1,924</b>	<b>1,581</b>	<b>1,647</b>	<b>1,364</b>	<b>189</b>	<b>37,665</b>	<b>9,992</b>	<b>47,657</b>
<b>Per cent</b>											
0–19	0.9	0.8	1.7	2.4	1.1	0.1	0.0	0.0	1.0	0.1	<b>0.8</b>
20–39	3.6	3.9	4.4	3.6	2.9	2.6	2.5	2.6	3.7	3.2	<b>3.6</b>
40–49	8.4	8.8	9.9	8.5	8.7	6.9	11.0	12.7	8.8	7.2	<b>8.5</b>
50–59	18.7	18.5	20.2	19.4	19.0	19.4	19.1	24.9	19.0	17.6	<b>18.7</b>
60–69	29.3	28.7	30.0	28.4	26.9	31.0	29.9	34.9	29.2	29.1	<b>29.2</b>
70–79	25.3	24.7	23.1	25.3	26.8	25.9	25.9	16.9	24.9	26.5	<b>25.2</b>
80–89	12.1	12.6	9.5	10.8	12.7	12.8	10.3	7.9	11.7	13.9	<b>12.1</b>
90+	1.7	1.9	1.2	1.6	2.0	1.5	1.4	0.0	1.7	2.5	<b>1.8</b>
Not stated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

**Table A5: Radiotherapy courses by sex and age group (years), 2013–14**

	Number			Per cent		
	Males	Females	Australia <sup>(a)</sup>	Males	Females	Australia
0–19	234	157	<b>391</b>	0.5	0.3	<b>0.8</b>
20–39	633	1,071	<b>1,704</b>	1.3	2.2	<b>3.6</b>
40–49	1,188	2,841	<b>4,035</b>	2.5	6	<b>8.5</b>
50–59	3,482	5,445	<b>8,934</b>	7.3	11.4	<b>18.7</b>
60–69	7,295	6,604	<b>13,917</b>	15.3	13.9	<b>29.2</b>
70–79	7,341	4,667	<b>12,017</b>	15.4	9.8	<b>25.2</b>
80–89	3,582	2,196	<b>5,782</b>	7.5	4.6	<b>12.1</b>
90+	473	400	<b>874</b>	1	0.8	<b>1.8</b>
Not stated	1	2	<b>3</b>	0.0	0.0	<b>0.0</b>
<b>Australia</b>	<b>24,229</b>	<b>23,383</b>	<b>47,657</b>	<b>50.8</b>	<b>49.1</b>	<b>100.0</b>

(a) The total for Australia is more than the sum of males and females as 45 courses did not record sex for the patient.

**Table A6: Radiotherapy courses by remoteness area of usual residence, states and territories (public) and sector, 2013–14**

	Public sector providers								Sector		
	NSW	Vic <sup>(a)</sup>	Qld	WA	SA	Tas	ACT	NT <sup>(a)</sup>	Public (total)	Private	Australia
<b>Number</b>											
Major city	10,955	203	4,155	1,484	n.a.	1	907	0	17,705	262	<b>17,967</b>
Inner regional	3,430	200	1,195	130	n.a.	1,097	291	0	6,342	841	<b>7,183</b>
Outer regional	755	40	768	190	n.a.	521	164	109	2,546	863	<b>3,408</b>
Remote	46	0	80	75	n.a.	25	2	16	244	46	<b>290</b>
Very remote	8	0	45	41	n.a.	3	0	16	114	50	<b>165</b>
Not stated	33	9,036	11	5	1,581	0	0	48	10,714	7,930	<b>18,644</b>
<b>Total</b>	<b>15,226</b>	<b>9,480</b>	<b>6,254</b>	<b>1,924</b>	<b>1,581</b>	<b>1,647</b>	<b>1,364</b>	<b>189</b>	<b>37,665</b>	<b>9,992</b>	<b>47,657</b>
<b>Per cent</b>											
Major city	71.9	2.1	66.4	77.1	..	0.1	66.5	0.0	47.0	2.6	<b>37.7</b>
Inner regional	22.5	2.1	19.1	6.7	..	66.6	21.4	0.0	16.8	8.4	<b>15.1</b>
Outer regional	5.0	0.4	12.3	9.9	..	31.6	12.0	57.7	6.8	8.6	<b>7.2</b>
Remote	0.3	0.0	1.3	3.9	..	1.5	0.1	8.3	0.6	0.5	<b>0.6</b>
Very remote	0.1	0.0	0.7	2.1	..	0.2	0.0	8.7	0.3	0.5	<b>0.3</b>
Not stated	0.2	95.3	0.2	0.3	100.0	0.0	0.0	25.4	28.4	79.4	<b>39.1</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

(a) Caution should be taken when comparing results where there is a high proportion of missing values.

**Table A7: Proportion of the total population and radiotherapy courses with valid data on area of usual residence<sup>(a)</sup>, by remoteness area, 2013–14 (per cent)**

	Australian population distribution									Radiotherapy courses with valid data <sup>(a)</sup>
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia	
Major cities	74.2	76.5	62.0	76.7	73.4	..	99.8	..	<b>70.5</b>	62.0
Inner regional	19.3	19.1	20.3	9.0	10.8	65.6	0.2	..	<b>18.2</b>	24.8
Outer regional	6.0	4.3	14.7	7.5	12.1	32.3	..	56.6	<b>8.9</b>	11.8
Remote	0.4	0.1	1.7	4.1	2.7	1.6	..	20.6	<b>1.4</b>	1.0
Very remote	0.1	..	1.3	2.7	0.9	0.5	..	22.8	<b>0.9</b>	0.6
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

(a) Those courses for which the patient's area of usual residence was provided, that is, not including courses where the response was *Not stated*.

Source: For Australian population data—ABS unpublished data (for 2014).

**Table A8: Radiotherapy courses by socioeconomic status of usual residence, states and territories (public) and sector, 2013–14**

Socioeconomic status of usual residence	Public sector providers								Sector		
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Public (total)	Private	Australia
<b>Number</b>											
1—Lowest	4,321	104	1,570	256	0	737	148	33	7,169	732	<b>7,901</b>
2	3,424	82	1,117	327	0	259	163	24	5,396	643	<b>6,039</b>
3	2,764	138	1,368	399	0	301	185	20	5,175	352	<b>5,527</b>
4	2,036	99	1,292	291	0	307	309	38	4,372	244	<b>4,616</b>
5—Highest	2,646	21	895	623	0	43	557	26	4,811	89	<b>4,900</b>
Not stated	35	9,036	12	28	1,581	0	2	48	10,742	7,932	<b>18,674</b>
<b>Total</b>	<b>15,226</b>	<b>9,480</b>	<b>6,254</b>	<b>1,924</b>	<b>1,581</b>	<b>1,647</b>	<b>1,364</b>	<b>189</b>	<b>37,665</b>	<b>9,992</b>	<b>47,657</b>
<b>Per cent</b>											
1—Lowest	28.4	1.1	25.1	13.3	0.0	44.7	10.9	17.5	19.0	7.3	<b>16.6</b>
2	22.5	0.9	17.9	17.0	0.0	15.7	12.0	12.7	14.3	6.4	<b>12.7</b>
3	18.2	1.5	21.9	20.7	0.0	18.3	13.6	10.6	13.7	3.5	<b>11.6</b>
4	13.4	1.0	20.7	15.1	0.0	18.6	22.7	20.1	11.6	2.4	<b>9.7</b>
5—Highest	17.4	0.2	14.3	32.4	0.0	2.6	40.8	13.8	12.8	0.9	<b>10.3</b>
Not stated	0.2	95.3	0.2	1.5	100.0	0.0	0.1	25.4	28.5	79.4	<b>39.2</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

**Table A9: Proportion of the total population, 2013, and radiotherapy courses with valid data on area of usual residence<sup>(a)</sup> 2013–14, by socioeconomic status of usual residence (per cent)**

	Australian population distribution									Radiotherapy courses with valid data <sup>(a)</sup>
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia	
1—Lowest	24.8	16.4	19.0	9.7	25.3	43.8	0.2	32.7	20.0	27.3
2	22.1	18.0	18.8	18.6	28.5	16.1	1.3	14.4	20.0	20.8
3	17.2	22.0	24.6	22.6	15.1	18.6	3.0	13.8	20.1	19.1
4	14.0	24.4	22.1	20.2	21.1	19.4	32.3	23.5	19.9	15.9
5—Highest	21.9	19.3	15.4	29.0	10.0	2.2	63.2	15.6	20.0	16.9
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

(a) Those courses for which area of usual residence was provided, that is, not including courses where the response was *Not stated*.

Source: For Australian population—ABS 2013b and ABS 2014b.

## Radiotherapy waiting times

**Table A10: Radiotherapy waiting times at 50th and 90th percentiles (days), states and territories (public), 2013–14**

	Public sector providers									Australia <sup>(a)</sup>
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT		
50% started treatment within	12	10	16	n.p.	n.a.	13	12	7	12	
90% started treatment within	33	28	34	n.p.	n.a.	26	24	22	31	
<i>Number of courses with valid waiting times data</i>	15,226	9,480	6,254	1,924	0	1,647	1,364	189	38,649	

(a) 'Australia' also includes Western Australia and private sector providers but not South Australia.

**Table A11: Proportion of emergency patients treated within emergency timeframe, states and territories (public), 2013–14 (per cent)**

	Public sector providers									Australia <sup>(c)</sup>
	NSW	Vic <sup>(a)</sup>	Qld	WA	SA	Tas	ACT	NT <sup>(b)</sup>		
<b>Total within emergency timeframe</b>	<b>88.4</b>	<b>n.a.</b>	<b>91.3</b>	<b>n.p.</b>	<b>n.a.</b>	<b>92.9</b>	<b>98.5</b>	<b>..</b>	<b>90.1</b>	
Longer	11.6	n.a.	8.7	n.p.	n.a.	7.1	1.5	..	9.9	

(a) Victoria did not report emergency status in 2013–14 as this information was not recorded.

(b) Northern Territory reported all care as non-emergency.

(c) 'Australia' also includes Western Australia and private sector providers but not South Australia.

**Table A12: Radiotherapy waiting times (days) at 50th and 90th percentiles for non-emergency treatment, states and territories (public), 2013–14**

	Public sector providers									Australia <sup>(b)</sup>
	NSW	Vic <sup>(a)</sup>	Qld	WA	SA	Tas	ACT	NT		
50% started treatment within	13	n.a.	16	n.p.	n.a.	13	13	7	13	
90% started treatment within	33	n.a.	34	n.p.	n.a.	27	25	22	33	

(a) Victoria did not report emergency status in 2013–14 as this information was not recorded in their information systems.

(b) 'Australia' also includes Western Australia and private sector providers but not South Australia.



**Table A13: Radiotherapy waiting times (days) at 50<sup>th</sup> and 90<sup>th</sup> percentiles, by intention of treatment, states and territories (public), 2013–14**

	Public sector providers								Australia <sup>(a)</sup>
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	
<b>Prophylactic</b>									
50% started treatment within	15	7	n.p.	n.p.	n.a.	..	..	..	<b>14</b>
90% started treatment within	26	16	n.p.	n.p.	n.a.	..	..	..	<b>26</b>
<b>Curative</b>									
50% started treatment within	18	16	20	n.p.	n.a.	14	17	13	<b>18</b>
90% started treatment within	39	32	36	n.p.	n.a.	28	27	21	<b>35</b>
<b>Palliative</b>									
50% started treatment within	7	6	7	n.p.	n.a.	10	7	5	<b>7</b>
90% started treatment within	21	16	24	n.p.	n.a.	21	15	27	<b>21</b>

(a) 'Australia' also includes Western Australia and private sector providers but not South Australia.

**Table A14: Radiotherapy waiting times (days) at 50<sup>th</sup> and 90<sup>th</sup> percentiles by the top 5 cancers for which radiotherapy is provided, males, states and territories (public), 2013–14**

Principal diagnosis <sup>(a)</sup>	Public sector providers								Australia <sup>(b)</sup>
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	
<b>50% started treatment within</b>									
Prostate cancer	14	10	13	n.p.	n.a.	18	14	15	<b>13</b>
Lung cancer	8	7	9	n.p.	n.a.	13	9	n.p.	<b>8</b>
Head and neck cancers	19	20	26	n.p.	n.a.	17	20	n.p.	<b>20</b>
Colorectal cancer	13	13	15	n.p.	n.a.	17	19	n.p.	<b>13</b>
Lymphoma	9	11	14	n.p.	n.a.	13	6	n.p.	<b>11</b>
<b>90% started treatment within</b>									
Prostate cancer	43	41	35	n.p.	n.a.	30	28	21	<b>40</b>
Lung cancer	26	21	28	n.p.	n.a.	24	19	n.p.	<b>25</b>
Head and neck cancers	34	28	36	n.p.	n.a.	21	26	n.p.	<b>34</b>
Colorectal cancer	28	25	32	n.p.	n.a.	23	23	n.p.	<b>27</b>
Lymphoma	27	29	33	n.p.	n.a.	28	26	n.p.	<b>28</b>

(a) ICD-10-AM principal diagnosis codes—Prostate cancer (C61), Lung cancer (C33–C34), Head and neck cancer (C00–C14, C30–C32), Colorectal cancer (C18–C20), Lymphoma (C81–C85).

(b) 'Australia' also includes Western Australia and private sector providers but not South Australia.

**Table A15: Radiotherapy waiting times (days) at 50<sup>th</sup> and 90<sup>th</sup> percentiles by top 5 cancers for which radiotherapy is provided, females, states and territories (public), 2013–14**

Principal diagnosis <sup>(a)</sup>	Public sector providers								Australia <sup>(b)</sup>
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	
<b>50% started treatment within</b>									
Breast cancer	13	10	17	n.p.	n.a.	13	8	7	<b>12</b>
Lung cancer	8	7	9	n.p.	n.a.	14	6	n.p.	<b>8</b>
Colorectal cancer	14	9	18	n.p.	n.a.	n.p.	12	..	<b>13</b>
Uterine cancer	13	16	20	n.p.	n.a.	n.p.	18	n.p.	<b>14</b>
Lymphoma	11	9	19	n.p.	n.a.	13	n.p.	n.p.	<b>11</b>
<b>90% started treatment within</b>									
Breast cancer	36	28	38	n.p.	n.a.	27	22	24	<b>34</b>
Lung cancer	26	22	27	n.p.	n.a.	27	16	n.p.	<b>25</b>
Colorectal cancer	31	25	30	n.p.	n.a.	n.p.	21	..	<b>28</b>
Uterine cancer	31	31	33	n.p.	n.a.	n.p.	24	n.p.	<b>32</b>
Lymphoma	25	25	42	n.p.	n.a.	33	n.p.	n.p.	<b>28</b>

(a) ICD-10-AM principal diagnosis codes—Breast cancer (C50), Lung cancer (C33–C34), Colorectal cancer (C18–C20), Uterine cancer (C54–C55) and Lymphoma (C81–C85)

(b) 'Australia' also includes Western Australia and private sector providers but not South Australia.

**Table A16: Radiotherapy waiting times (days) at 50<sup>th</sup> and 90<sup>th</sup> percentiles by sex, states and territories (public), 2013–14**

	Public sector providers								Australia <sup>(a)</sup>
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	
<b>50% started treatment within</b>									
Male	12	10	16	n.p.	n.a.	13	13	8	<b>12</b>
Female	12	10	15	n.p.	n.a.	12	10	7	<b>12</b>
<b>90% started treatment within</b>									
Male	32	28	34	n.p.	n.a.	26	27	21	<b>31</b>
Female	33	27	35	n.p.	n.a.	27	22	24	<b>31</b>

(a) 'Australia' also includes Western Australia and private sector providers but not South Australia. 'Australia' also only includes those courses where the person's sex was reported as either male or female.

**Table A17: Radiotherapy waiting times (days) at 50<sup>th</sup> and 90<sup>th</sup> percentiles by age, 2013–14**

Age group	Public sector providers								Australia <sup>(a)</sup>
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	
<b>50% started treatment within</b>									
0–19	5	8	5	n.p.	n.a.	n.p.	..	..	<b>6</b>
20–39	9	9	17	n.p.	n.a.	13	8	n.p.	<b>12</b>
40–49	10	10	18	n.p.	n.a.	9	8	6	<b>11</b>
50–59	12	10	16	n.p.	n.a.	11	10	7	<b>12</b>
60–69	13	10	17	n.p.	n.a.	13	11	11	<b>13</b>
70–79	12	10	15	n.p.	n.a.	13	13	9	<b>13</b>
80–89	12	9	15	n.p.	n.a.	13	14	n.p.	<b>12</b>
90+	11	8	13	n.p.	n.a.	15	n.p.	..	<b>11</b>
<b>90% started treatment within</b>									
0–19	22	22	27	n.p.	n.a.	n.p.	..	..	<b>27</b>
20–39	32	28	35	n.p.	n.a.	28	23	n.p.	<b>31</b>
40–49	32	27	34	n.p.	n.a.	27	21	34	<b>30</b>
50–59	33	28	35	n.p.	n.a.	26	22	20	<b>31</b>
60–69	34	28	34	n.p.	n.a.	27	25	20	<b>32</b>
70–79	34	28	34	n.p.	n.a.	26	27	27	<b>32</b>
80–89	31	27	33	n.p.	n.a.	26	24	n.p.	<b>29</b>
90+	28	21	35	n.p.	n.a.	29	n.p.	..	<b>28</b>

(a) 'Australia' also includes Western Australia and private sector providers but not South Australia.

**Table A18: Radiotherapy waiting times (days) at 50<sup>th</sup> and 90<sup>th</sup> percentiles, by sex and age, Australia, 2013–14**

Age group	50% started treatment within			90% started treatment within		
	Male	Female	Australia <sup>(a)</sup>	Male	Female	Australia <sup>(a)</sup>
0–19	6	6	<b>6</b>	27	26	<b>27</b>
20–39	10	12	<b>12</b>	29	33	<b>31</b>
40–49	13	9	<b>11</b>	30	31	<b>30</b>
50–59	13	11	<b>12</b>	32	31	<b>31</b>
60–69	13	12	<b>13</b>	32	32	<b>32</b>
70–79	12	13	<b>13</b>	32	32	<b>32</b>
80–89	11	13	<b>12</b>	29	30	<b>29</b>
90+	9	13	<b>11</b>	28	28	<b>28</b>

(a) 'Australia' only includes those courses where the person's sex was reported as either male or female.

**Table A19: Radiotherapy waiting times at 50th and 90th percentile (days) by remoteness, states and territories (public), 2013–14**

	Public sector providers								Australia <sup>(b)</sup>
	NSW	Vic <sup>(a)</sup>	Qld	WA	SA <sup>(a)</sup>	Tas	ACT	NT	
<b>50% started treatment within</b>									
Major city	12	n.a.	16	n.p.	n.a.	n.p.	12	..	<b>13</b>
Inner regional	13	n.a.	16	n.p.	n.a.	13	10	..	<b>13</b>
Outer regional	11	n.a.	14	n.p.	n.a.	12	12	8	<b>12</b>
Remote	14	n.a.	15	n.p.	n.a.	12	n.p.	n.p.	<b>13</b>
Very remote	n.p.	n.a.	11	n.p.	n.a.	n.p.	..	n.p.	<b>10</b>
<b>90% started treatment within</b>									
Major city	33	n.a.	35	n.p.	n.a.	n.p.	25	..	<b>33</b>
Inner regional	34	n.a.	34	n.p.	n.a.	27	23	..	<b>32</b>
Outer regional	31	n.a.	34	n.p.	n.a.	26	25	21	<b>29</b>
Remote	34	n.a.	30	n.p.	n.a.	27	n.p.	n.p.	<b>29</b>
Very remote	n.p.	n.a.	28	n.p.	n.a.	n.p.	..	n.p.	<b>29</b>

(a) 95% of courses for Victoria were missing geographical information in 2013–14. Remoteness cannot be derived for courses without patient geographic information.

(b) 'Australia' also includes Western Australia and private sector providers but not South Australia.

**Table A20: Radiotherapy waiting times at 50th and 90th percentile (days) by socioeconomic status, states and territories (public), 2013–14**

	Public sector providers								Australia <sup>(b)</sup>
	NSW	Vic <sup>(a)</sup>	Qld	WA	SA <sup>(a)</sup>	Tas	ACT	NT	
<b>50% started treatment within</b>									
1—Lowest	12	n.a.	16	n.p.	n.a.	12	10	6	<b>12</b>
2	12	n.a.	15	n.p.	n.a.	13	14	10	<b>13</b>
3	12	n.a.	15	n.p.	n.a.	12	10	12	<b>13</b>
4	12	n.a.	16	n.p.	n.a.	14	12	8	<b>14</b>
5—Highest	12	n.a.	17	n.p.	n.a.	12	11	7	<b>13</b>
<b>90% started treatment within</b>									
1—Lowest	30	n.a.	34	n.p.	n.a.	27	24	15	<b>31</b>
2	33	n.a.	34	n.p.	n.a.	26	25	19	<b>32</b>
3	31	n.a.	34	n.p.	n.a.	26	23	26	<b>32</b>
4	34	n.a.	34	n.p.	n.a.	27	25	24	<b>33</b>
5—Highest	36	n.a.	34	n.p.	n.a.	24	25	20	<b>34</b>

(a) 95% of courses for Victoria were missing geographical information in 2013–14. Socioeconomic status cannot be derived for records without patient geographic information.

(b) 'Australia' also includes Western Australia and private sector providers but not South Australia.

# Glossary

Many definitions used in this report can be found in the Radiotherapy waiting times DSS 2013-15, available on the METeOR website < meteor.aihw.gov.au> (METeOR ID: 517220).

**Age-standardisation:** A method of removing the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure; then the disease rates that would have occurred with that structure are calculated and compared.

**Cancer (malignant neoplasm):** A large range of diseases in which some of the body's cells become defective, begin to multiply out of control, can invade and damage the area around them, and can also spread to other parts of the body to cause further damage.

**Chemotherapy:** The use of drugs (chemicals) to prevent or treat disease, with the term being applied for treatment of cancer rather than for other uses.

**Course of radiotherapy:** A course of radiotherapy treatment is a series of one or more external beam radiotherapy treatments prescribed by a radiation oncologist.

**Curative:** Curative treatment describes when treatment is given with the intention of curing disease. See also **Intention of treatment**.

**Emergency status:** An indicator of whether the treatment required for the patient is clinically assessed as an emergency. An emergency is where the treating clinician has assessed the waiting time for treatment cannot exceed 24 hours (METeOR ID: 448126).

**Indigenous:** A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander (METeOR ID: 291036).

**Intention of treatment:** The reason treatment is provided to a patient (METeOR ID: 583857).

**International Statistical Classification of Diseases and Related Health Problems:** The World Health Organization's internationally accepted classification of death and disease. The Tenth Revision (ICD-10) is currently in use. The ICD-10-AM is the Australian modification of the ICD-10; it is used for diagnoses and procedures recorded for patients admitted to hospitals.

**Metastasis:** See **Secondary site cancer**.

**Palliative treatment:** Treatment given primarily for the purpose of pain or other symptom control. Consequent benefits of the treatment are considered secondary contributions to quality of life. See also **Intention of treatment**.

**Primary cancer:** A tumour that is at the site where it first formed (see also **Secondary site cancer**).

**Primary site of cancer:** The site of origin of the tumour, as opposed to the secondary or metastatic sites (METeOR ID: 391340).

**Principal diagnosis:** The diagnosis established after study to be chiefly responsible for occasioning a patient's service event or episode (METeOR ID: 433356).

**Prophylactic treatment:** Treatment given to prevent the occurrence of disease at a site that exhibits no sign of active disease but is considered to be at risk. See also **Intention of treatment**.

**Radiotherapy:** Radiotherapy uses radiation directed at a localised area to kill or damage cancer cells. (See also Box 1.1.)

**Ready-for-care:** The date, in the opinion of the treating clinician, on which a patient is ready to commence treatment (METeOR ID: 448141).

**Secondary site cancer:** A tumour that originated from a cancer elsewhere in the body. Also referred to as a metastasis.

**Waiting time:** Is the number of days between when the patient was ready for care, and when the radiotherapy started (METeOR ID: 517220).

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In this report on the first pilot year collection of national radiotherapy data, data were received from 53 (out of 72) service locations across Australia. These services contributed information about 47,700 courses of radiotherapy delivered in 2013–14.

For non-emergency treatment, 50% of patients started treatment within 13 days and 90% started within 33 days. For those who needed emergency treatment, 90% began treatment within the emergency timeframe.