International Cancer Benchmarking Partnership

ICBP
International Cancer
Benchmarking Partnership

Scottish Cancer Network Event

David Cameron & Harriet Hall

What is the ICBP?

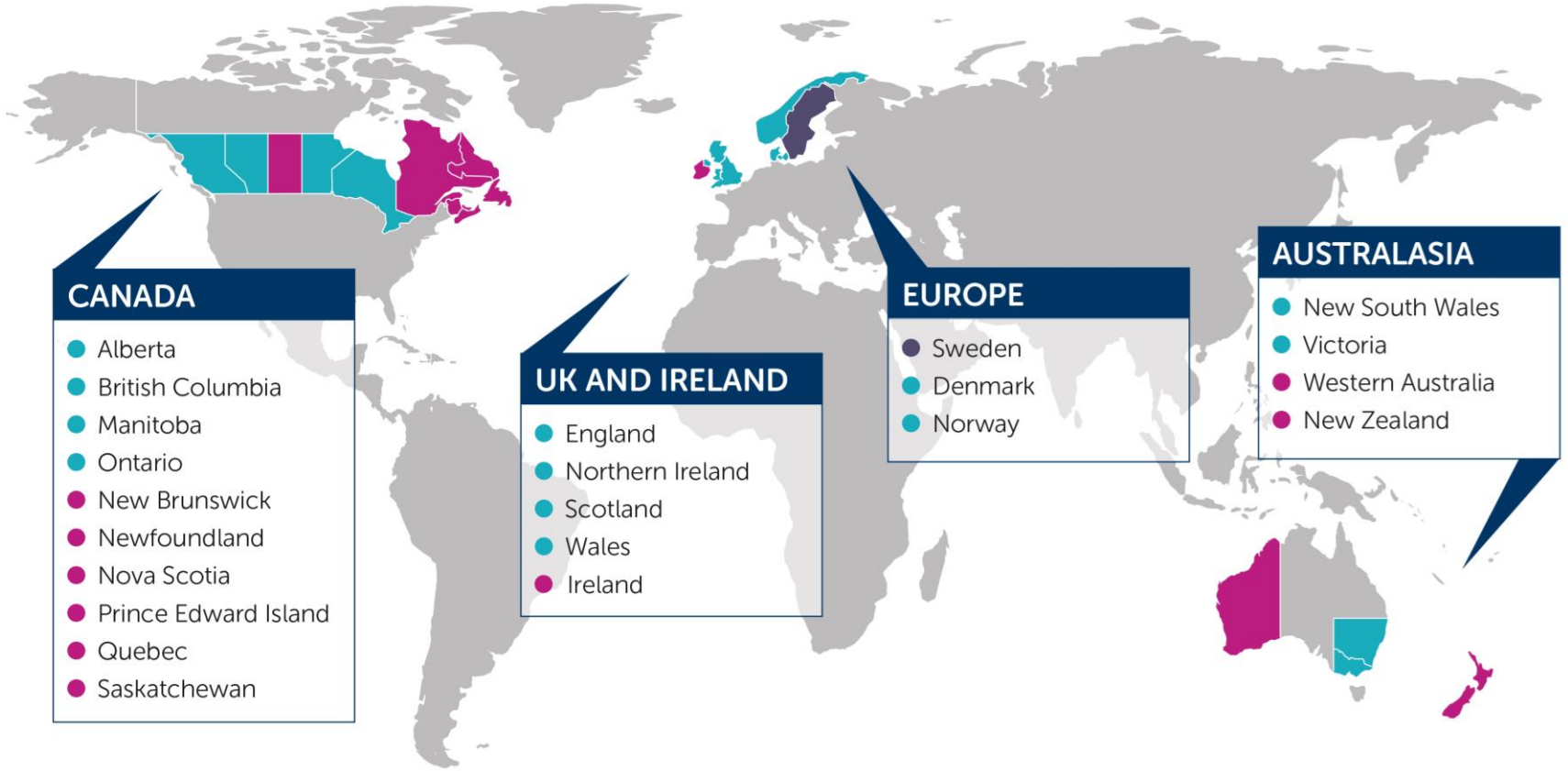
Harriet Hall, Senior Programme Manager
CRUK

Overview of the ICBP

Partnership of clinicians, researchers, policy makers and data experts.

Explores differences in cancer survival and outcomes and factors that may be contributing.

Provides evidence for policy and practice change – to improve patient outcomes.



Phase 1 only

Phase 1 and 2

Phase 2 only

Members of the ICBP have:

- Population-based cancer registries.
- Similar spending on healthcare.
- Universal access to healthcare.

The Cancer sites chosen:

- Include relatively common cancers and cancers that are hard to treat in high-income countries.
- Experience significant variation in cancer survival.
- Contribute to the overall burden of disease in high-income countries.

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The ICBP includes partners with a broad range of expertise

Policy and Government

HSE Seirbhís Sláinte Níos Fearr á Forbairt | Building a Better Health Service

GIG CYMRU NHS WALES

TE AHO O TE KAHU CANCER CONTROL AGENCY

Government of Western Australia Department of Health

VICTORIA State Government | Health and Human Services

HSC Public Health Agency

The Scottish Government Riaghaltas na h-Alba

NSW Government | cancer institute NSW

CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

Charitable organisations

Cancer Society
Te Kāhui Matepukupuku o Aotearoa

Peter Mac
Peter MacCallum Cancer Centre
Victoria Australia

Danish Cancer Society

VICTORIAN COMPREHENSIVE CANCER CENTRE

CANCER RESEARCH UK

Data and registry experts

N. IRELAND Cancer Registry

National Cancer Registry Ireland

Clinical and Academic institutions

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND
SAPERE AUDE

THE UNIVERSITY of EDINBURGH

The ROYAL MARSDEN

QUEEN'S UNIVERSITY BELFAST

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Who are our Scotland Programme Board Members

- Scotland joined during Phase 1 Module 4 (time intervals) in 2012
- Noelle O'Rourke is the Scotland Programme Board member
  - Lisa McLeod (Maternity cover for Seonaid McLachlan) deputises
- David Cameron appointed as Deputy Chair since late 2019

Noelle O'Rourke, National Clinical Lead, Scottish Cancer Network

David Cameron, Principal Investigator and Professor of Oncology at Edinburgh University (Vice-chair)

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ICBP Research Modules

PHASE 1: 2009 - 2015

- International cancer survival benchmark (patients diagnosed 1995-2007) for 4 cancer types
- Public awareness, beliefs and attitudes to cancer
- Role of primary care doctors and health systems in diagnosis
- Measuring time intervals and pathways from symptoms to diagnosis and treatment
- Impact of registry processes and comorbidities on short term outcomes

PHASE 2: 2015 - 2021

- International cancer survival benchmark (patients diagnosed 1995-2014) for 8 cancer types
- Access to primary care and post-diagnostic tests
- Access to optimal treatments
- Cancer patient pathways
- Organisation and structure of health systems

TRANSITION PHASE: 2021 - 2023

- Collect intelligence on the impact of COVID-19 on international cancer services and outcomes

PHASE 3: 2023 - 2028

- Updated International cancer survival benchmark
- Cancer care pathways
- Models of care
- Cancer workforce
- Treatment

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ICBP Phase 1 – UK & Scotland Headlines

International cancer survival benchmark (patients diagnosed 1995-2007) for 4 cancer types

- UK had amongst the lowest survival for all cancer sites
- Stage analyses show both differences in early diagnosis and access to treatment are contributing to variation seen
- Scotland were not included in the analyses

Public awareness, beliefs and attitudes to cancer

- Development of validated international survey
- UK public report more barriers to seeing their GP with suspected cancer symptoms than all other ICBP countries and recognised the least cancer symptoms
- UK public awareness of risk with age is the lowest of all ICBP countries

Role of primary care doctors and health systems in diagnosis

- Development of a survey to examine GP practice and wider system factors
- GPs in the UK were amongst the least likely to refer straight away & report having high access to blood tests and some endoscopies, but much lower access to whole body CT and MRI scans
- Reported lowest access to specialist investigation or referral advice within 48 hours, and the lowest access to expedited tests

Measuring time intervals and pathways from symptoms to diagnosis and treatment

- Data collected via patient, GP and secondary surveys
- Scotland reported relatively shorter time intervals from symptom awareness to treatment for colorectal and lung cancer,, but longer intervals for ovarian cancer

Impact of registry processes and comorbidities on short term outcomes

- In-depth work to assess differences in cancer registration practices and estimate contribution to survival variation seen
- Small differences in cancer registration noted, very small impact on survival estimates
- Comorbidities data collection and analyses attempted for the first time. Data internationally not comparable – calls for data improvements made

ICBP Phase 2 – Scotland

International cancer survival benchmark (patients diagnosed 1995-2014) for 8 cancer types

- Survival improving for all, Scotland had amongst the lowest survival for most cancer sites
- Stage analyses show differences in early treatment and management of care may be contributing to variation – Scotland had lower survival by stage
- Continued sensitivity analyses to assess data quality

Access to diagnostic and post-diagnostic tests

- Differences in the collection and quality of diagnostic data
- Dedicated referral pathways for non-specific symptoms reducing pathway complexity in Scotland
- Access to PET CTs was amongst the lowest in Scotland compared to other ICBP jurisdictions

Access to optimal treatments

- Comparison of treatment guidelines and patterns of care for ovarian cancer
- UK clinicians were amongst the most likely to report inadequate hospital staffing & treatment delays as barriers to optimal ovarian cancer treatment

Cancer patient pathways

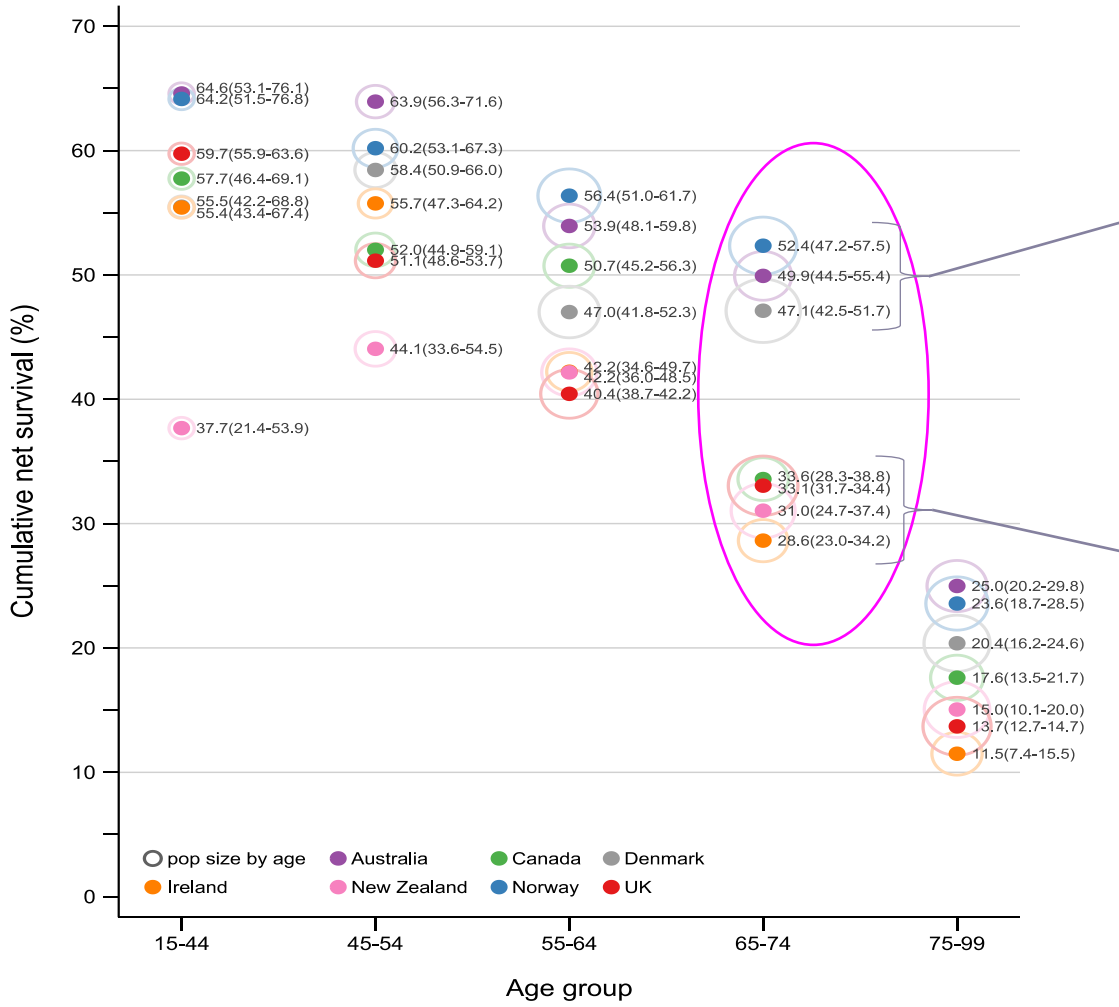
- Unique comparisons of emergency presentations data
- Scotland had amongst the largest proportion of emergency presentations for pancreatic, lung, ovarian, liver and colon cancers

Organisation and structure of health systems

- In-depth assessment of macro health system differences
- Investment in diagnostic equipment and increasing the workforce & hospital capacity cited as important for survival improvement
- Cancer strategies/policies scored lower due to a lack of an implementation plan, formal evaluations or published progress reports in Scotland

Unique triangulation of findings

Ovarian cancer survival by age and 'distant' stage



Majority of these women are treated with **surgery and chemotherapy**

Higher performers:

- More likely to primarily operate on advanced disease patients
- More likely to agree with extensive/ 'ultra-radical' surgical approach
- Greater access to expensive drugs
- Less likely to report health system barriers

Lower performers:

- More likely to operate after giving chemotherapy
- More likely to express disagreement with extensive/'ultra-radical' surgical approach
- Reduced access to expensive drugs
- More likely to report health system barriers e.g. lack of ICU beds; lack of performance monitoring

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Where next? Phase 3

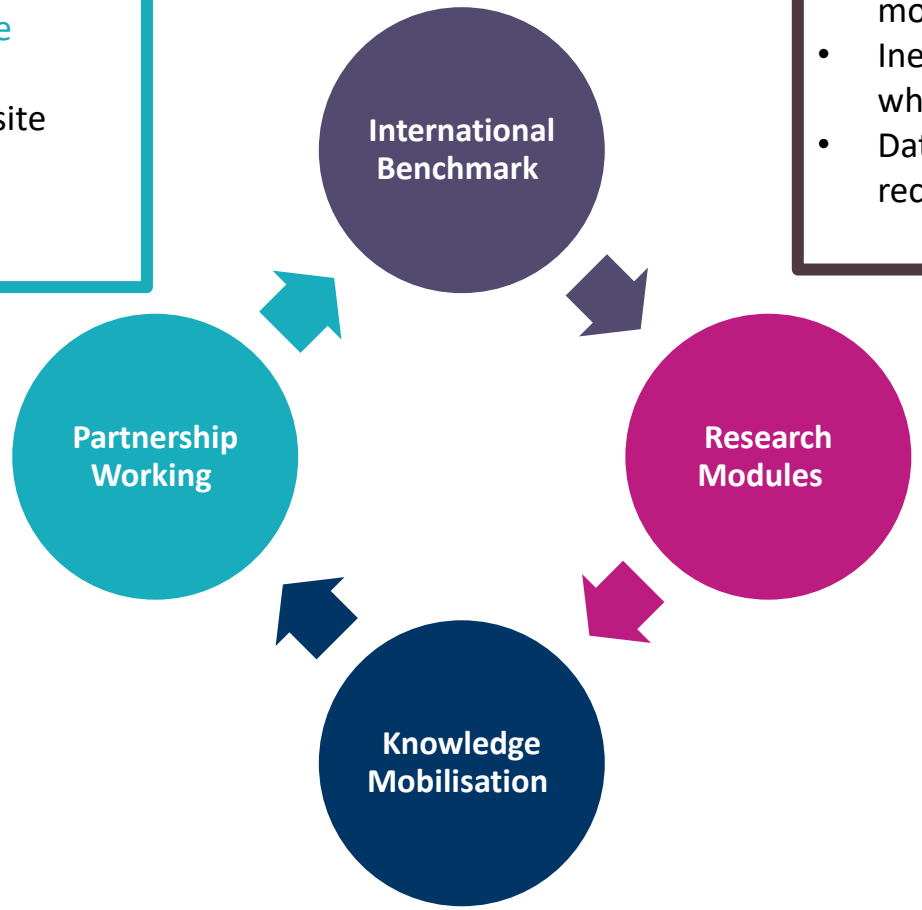
Share and learn with others in this space to improve outcomes for as many cancer patients as possible

Activities:

- Engaging new stakeholders (patient groups, site specific orgs, LMIC groups)
- Increasing knowledge dissemination
- Specific projects and areas of working

Conduct an International Benchmark

- Epidemiological core benchmark (survival, incidence, mortality, stage)
- Inequalities analysis (patient characteristic data, where available, may include linked patient data)
- Data Quality (registry practice, coding recommendations)



Sharing our knowledge and insights with diverse audiences

Activities:

- Triangulating findings to generate insights
- Infographics
- Facilitation of knowledge sharing
- Networks
- Showcases
- Communications and knowledge dissemination

A mixture of in-house and commissioned research

Potential Modules:

- Cancer patient pathways
- Models of care
- Cancer Workforce
- Treatment

Cross-cutting themes:

- Understanding Differences
- Optimising Care
- Adopting Innovations
- Addressing Inequalities

CANCER RESEARCH UK

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What has Scotland learned?

David Cameron, Professor of Oncology

Edinburgh University

Are we as good as we think we are?

- Overall national statistics
  - Incidence, Survival
  - Some demographic (deprivation or otherwise) analyses
  - We don’t measure recurrence....toxicity
- Granular detail
  - Individual patient relapses or doesn’t....
- Time patterns within Scotland
  - Things are getting better....

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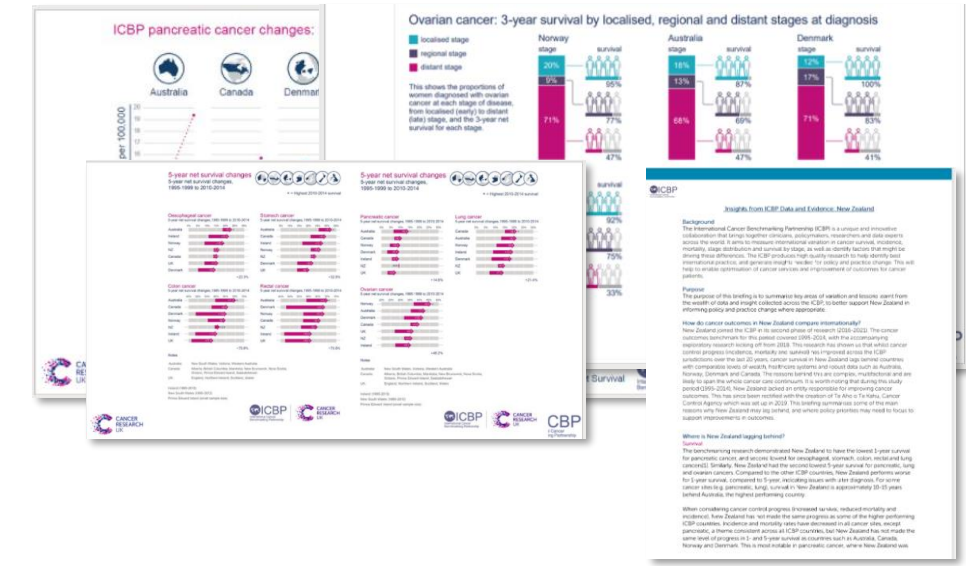
Scotland Overview

- Cancer incidence and outcomes (stage, survival, mortality) benchmark:
  - Improved survival across all cancer sites but lower survival compared to the other countries
  - Lowest 1-year rectal cancer survival, lowest 5-year ovarian and oesophageal cancer survival
  - Mixed stage distribution and survival by stage for certain cancers suggesting different priority focus areas warranted in early diagnosis and/or treatment

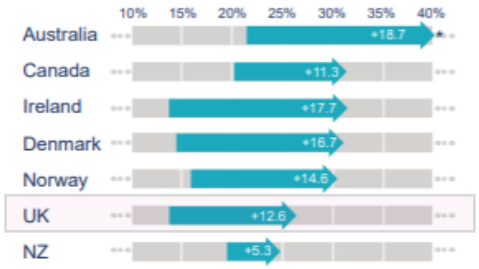
- ICBP data has identified some areas where further research and policy focus may be warranted to ensure Scotland continues to improve cancer outcomes:

1. **Improve survival for ovarian, oesophageal, rectal cancers**
2. **Address low survival at early stage**
3. **Improve staging data**
4. **Address age variation**



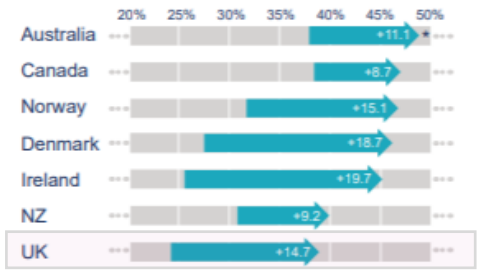
Int'l Survival Comparisons – How Does Scotland Stack Up

Pancreatic cancer
1-year net survival changes, 1995-1999 to 2010-2014



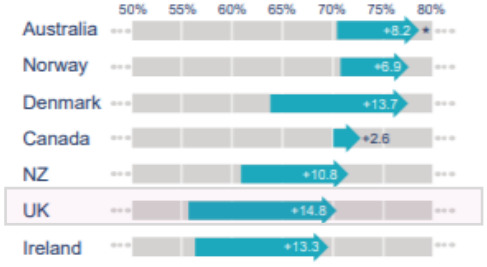
*40.1%

Lung cancer
1-year net survival changes, 1995-1999 to 2010-2014



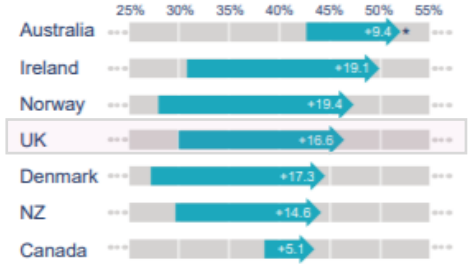
*48.9%

Ovarian cancer
1-year net survival changes, 1995-1999 to 2010-2014



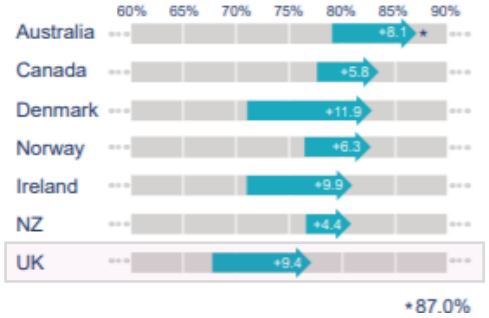
*78.5%

Oesophageal cancer
1-year net survival changes, 1995-1999 to 2010-2014



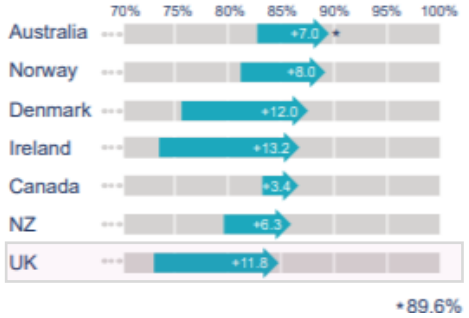
*52.0%

Colon cancer
1-year net survival changes, 1995-1999 to 2010-2014



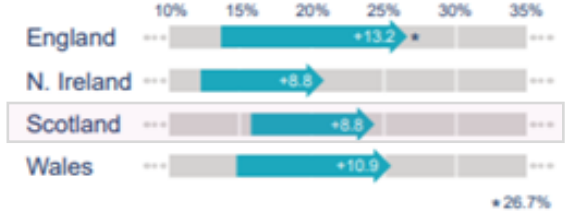
*87.0%

Rectal cancer
1-year net survival changes, 1995-1999 to 2010-2014



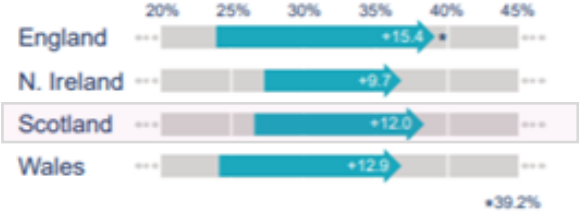
*89.6%

Pancreatic cancer
1-year survival changes, 1995-2014



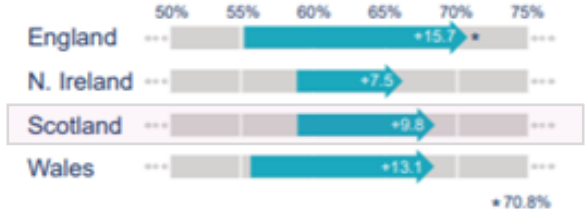
*26.7%

Lung cancer
1-year survival changes, 1995-2014



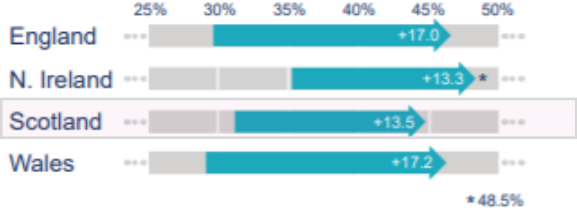
*39.2%

Ovarian cancer
1-year survival changes, 1995-2014



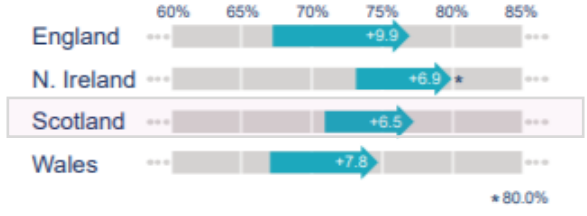
*70.8%

Oesophageal cancer
1-year survival changes, 1995-2014



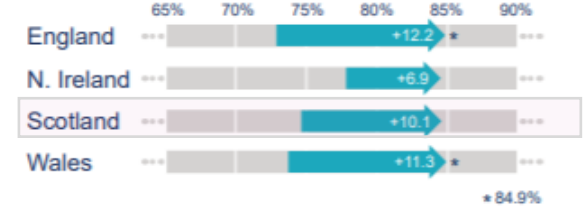
*48.5%

Colon cancer
1-year survival changes, 1995-2014



*80.0%

Rectal cancer
1-year survival changes, 1995-2014



*84.9%

UK lags behind other countries but Scotland not the bottom of the UK pack.

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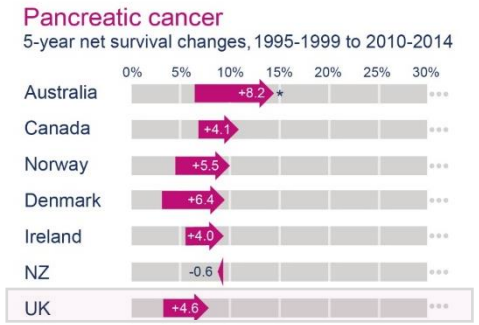
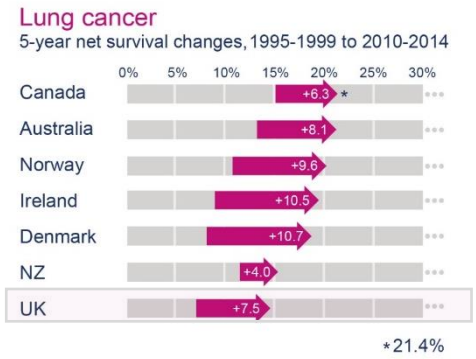
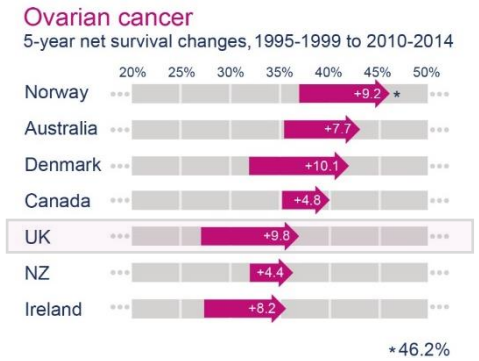
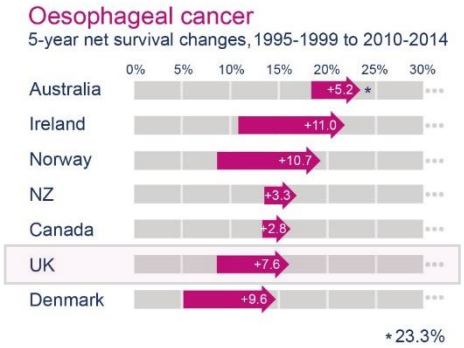
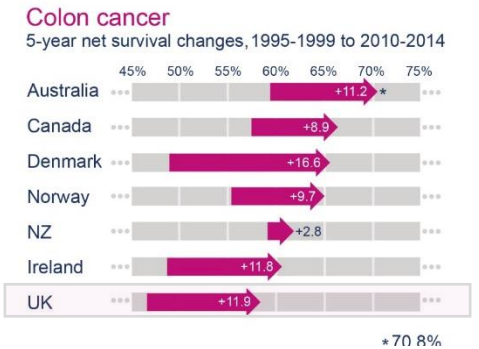
Int'l Survival Comparisons – How Does Scotland Stack Up

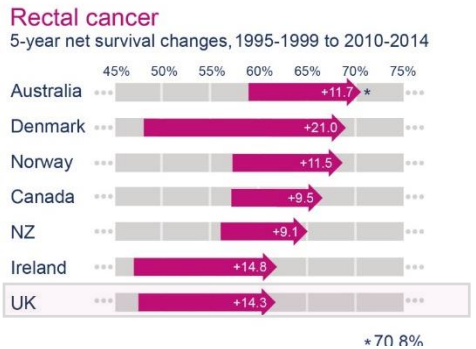


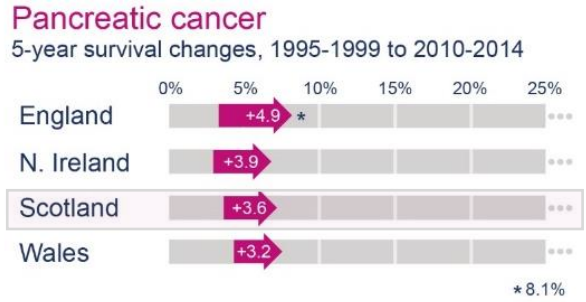


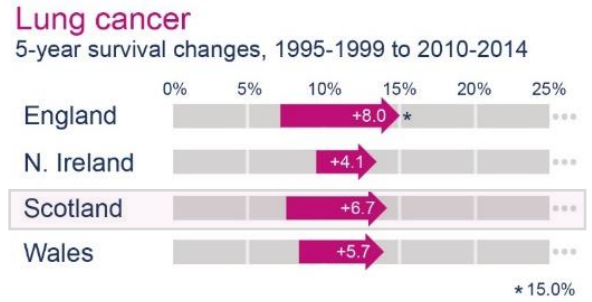


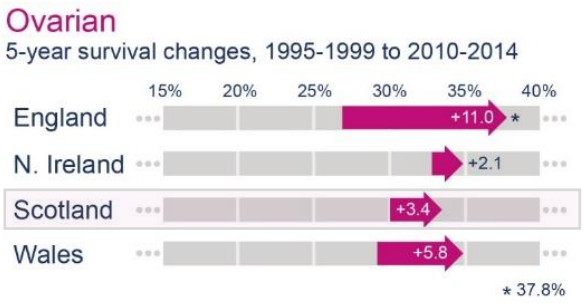


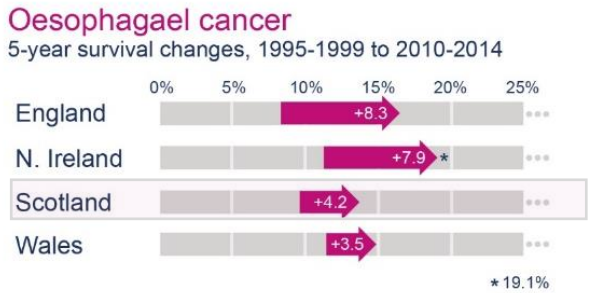


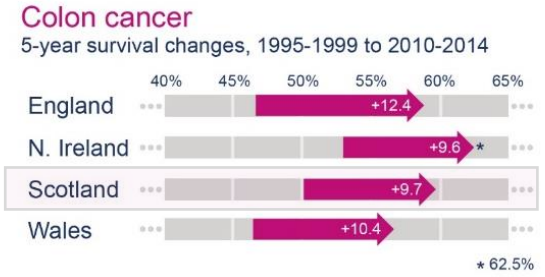


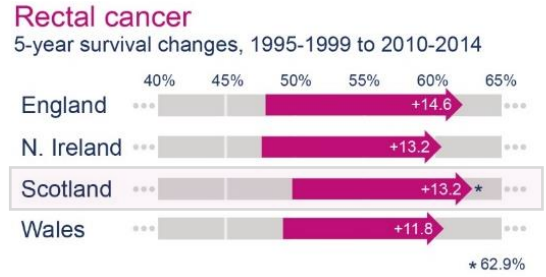












UK lags behind other countries. Within the UK, Scotland has highest 5-yr survival for rectal cancer and lowest for ovarian and oesophageal cancers.

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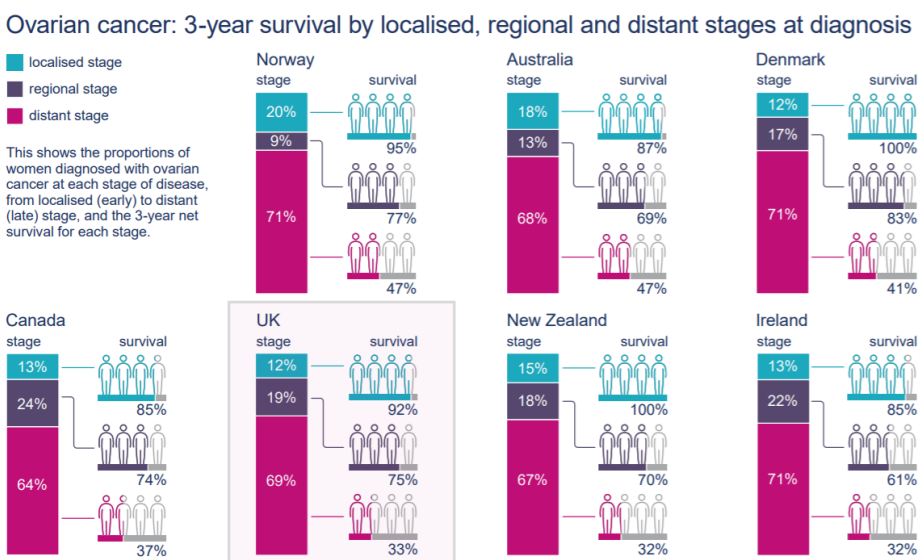
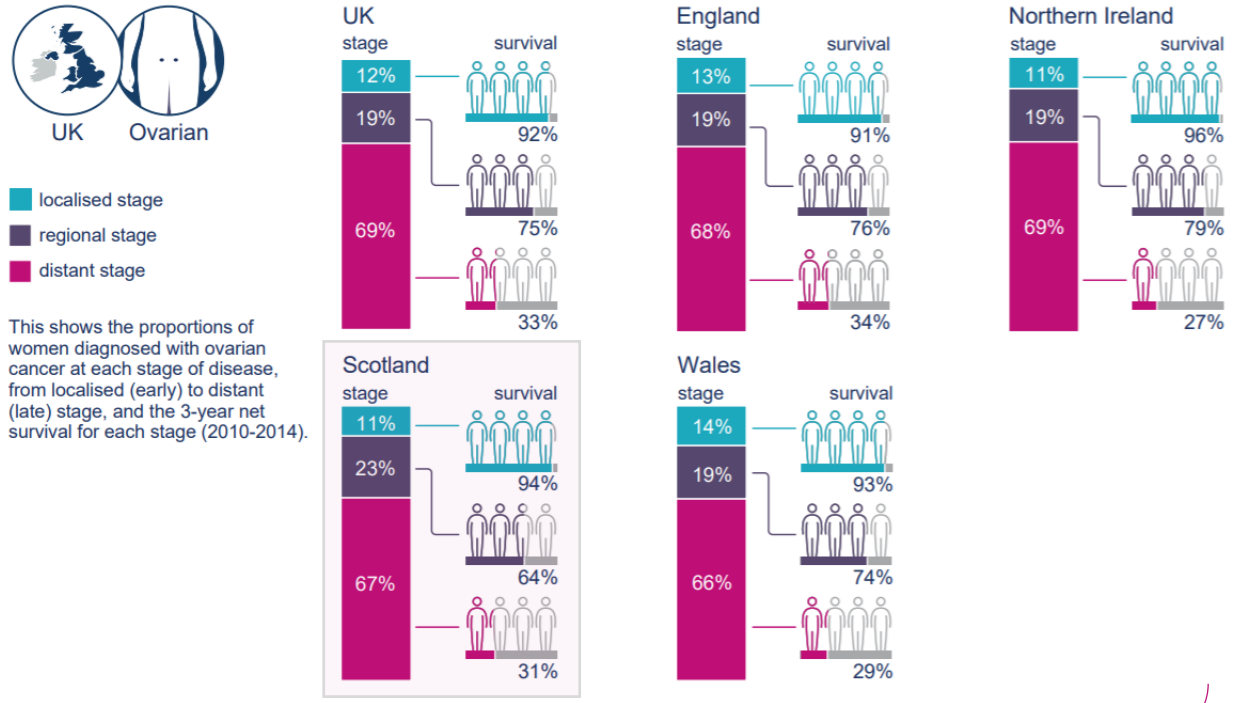
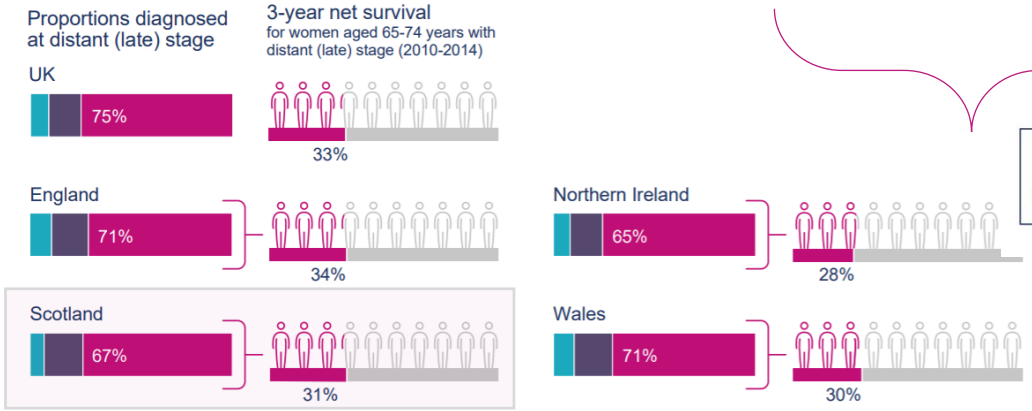
What is the Stage and Survival Distribution?







The majority of women with ovarian cancer are diagnosed at an older age (60+) and with late stage disease

Stage at diagnosis and survival for patients aged 65-74 with late stage disease

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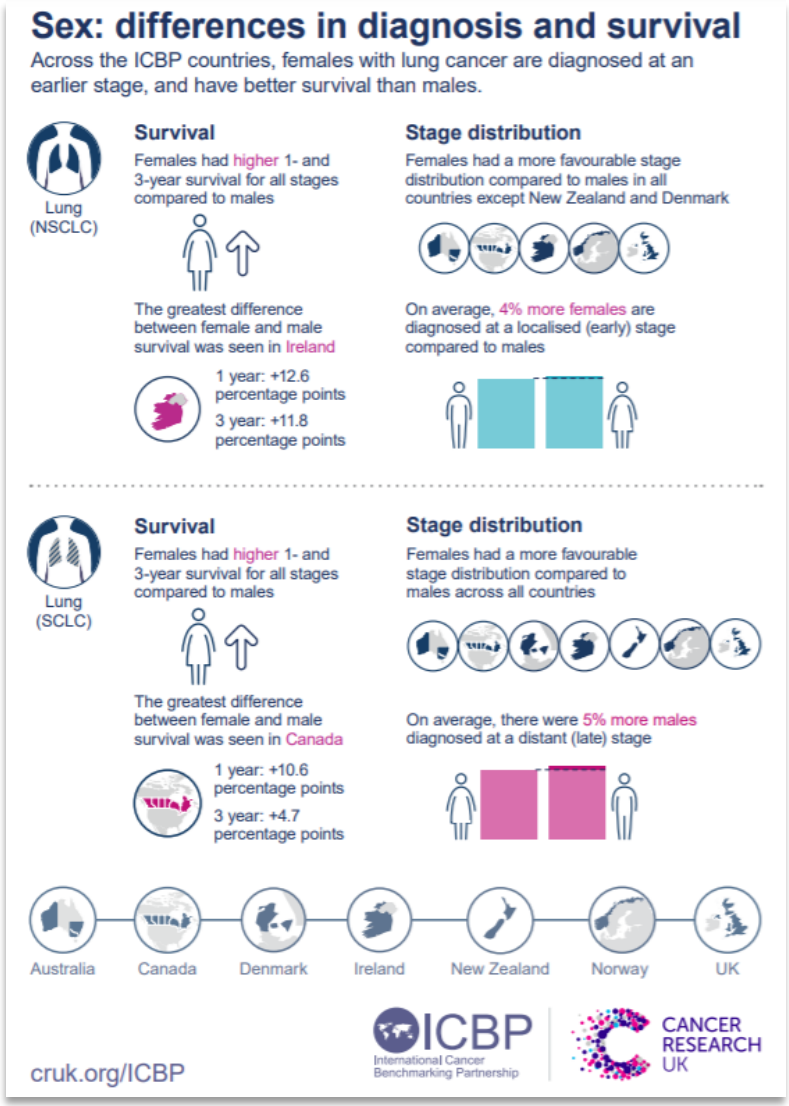
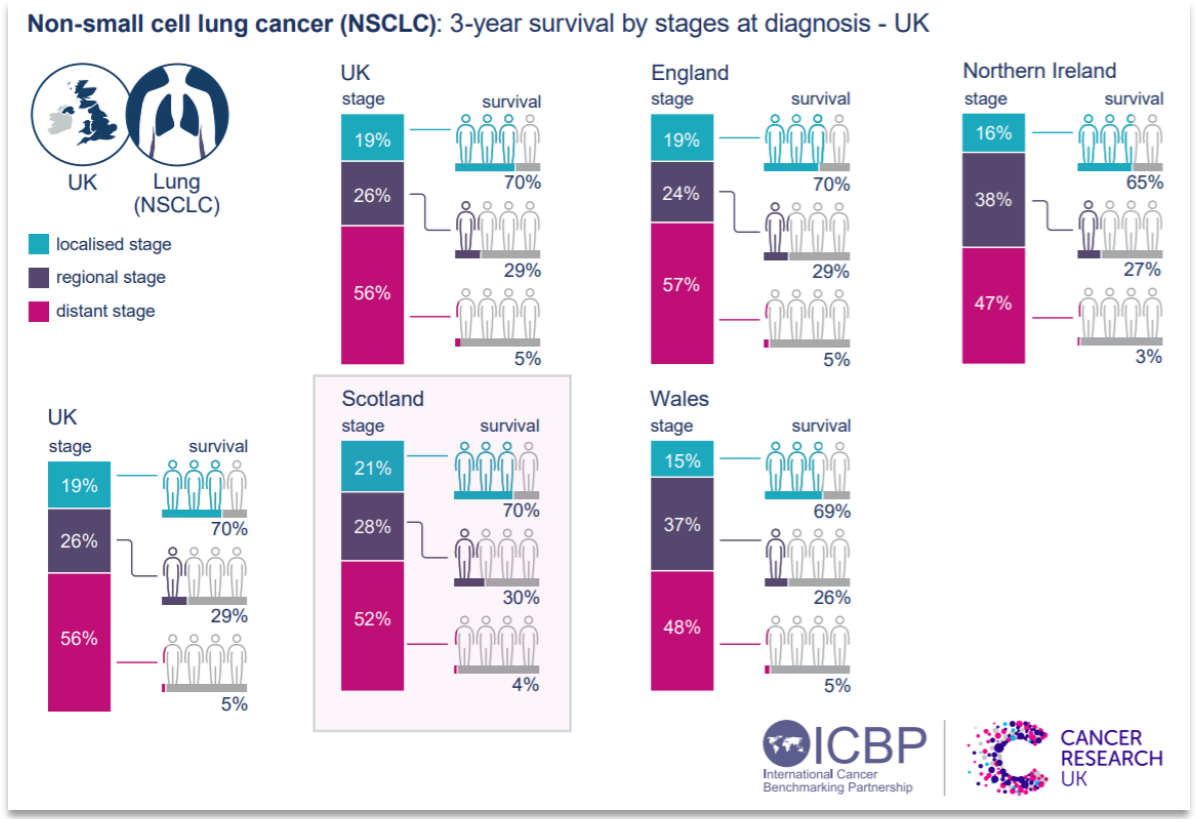
Demographic data by site – Identify areas for research and action





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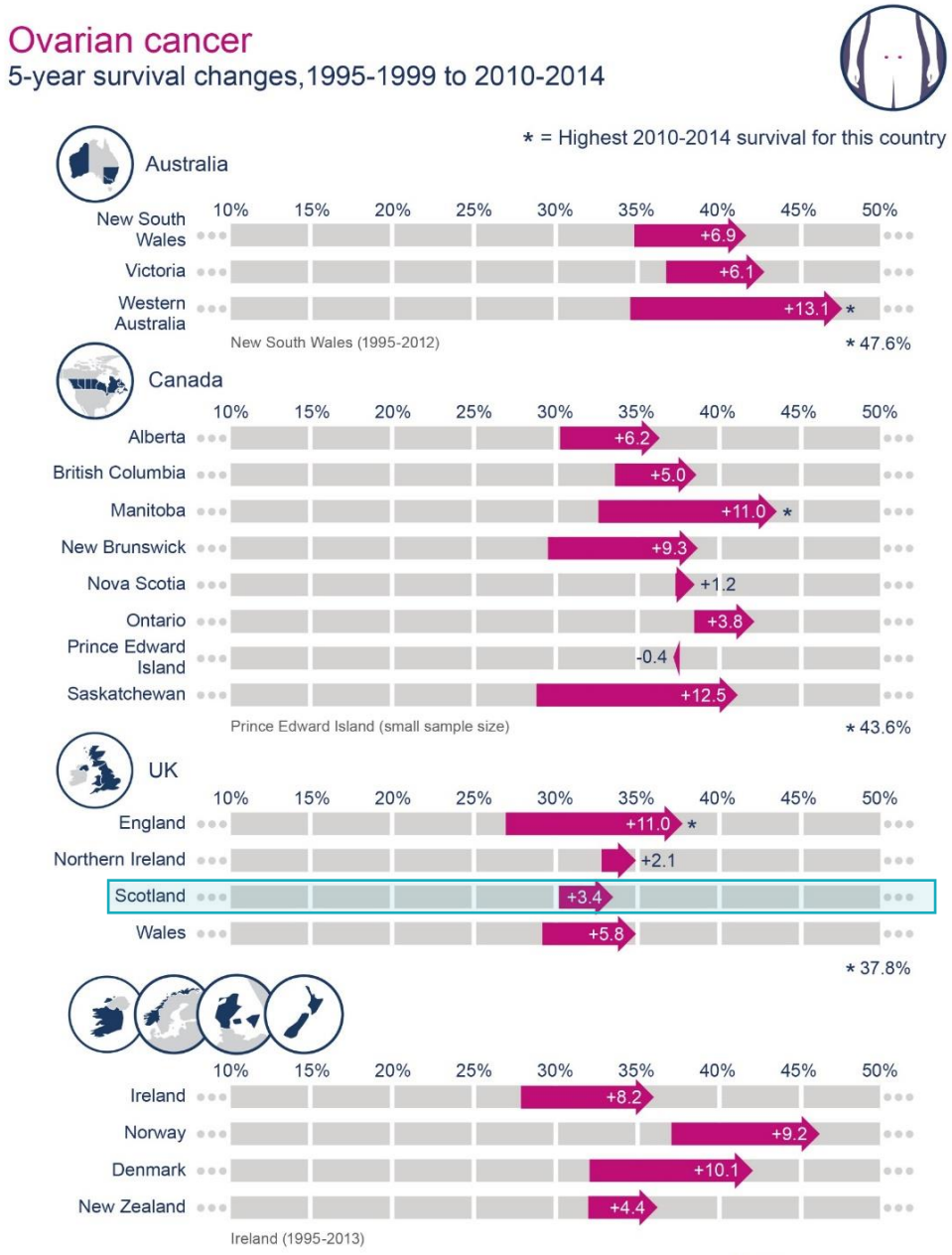
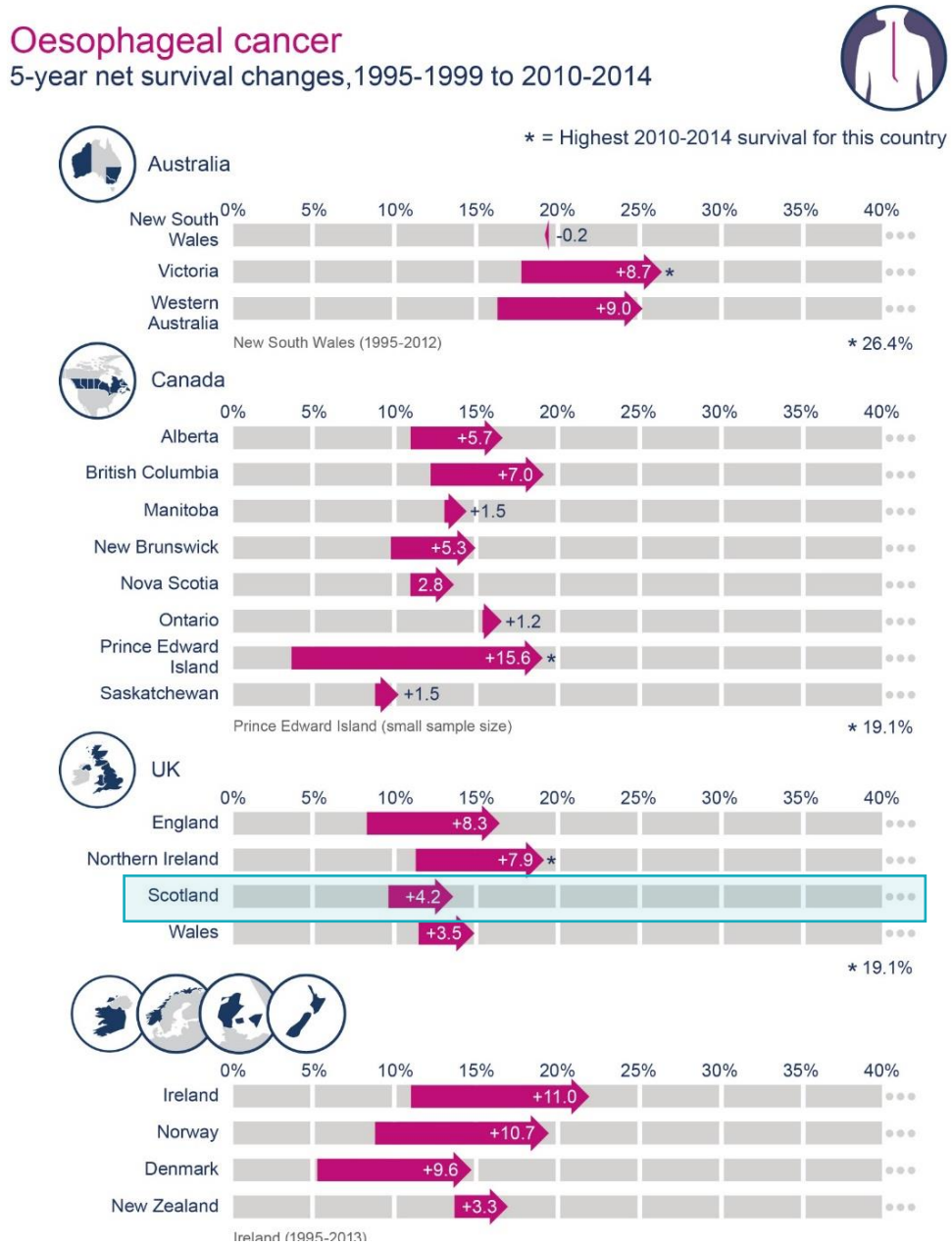
Focus on Ovarian & Oesophageal Cancers





Survival is improving but lags behind comparable jurisdictions

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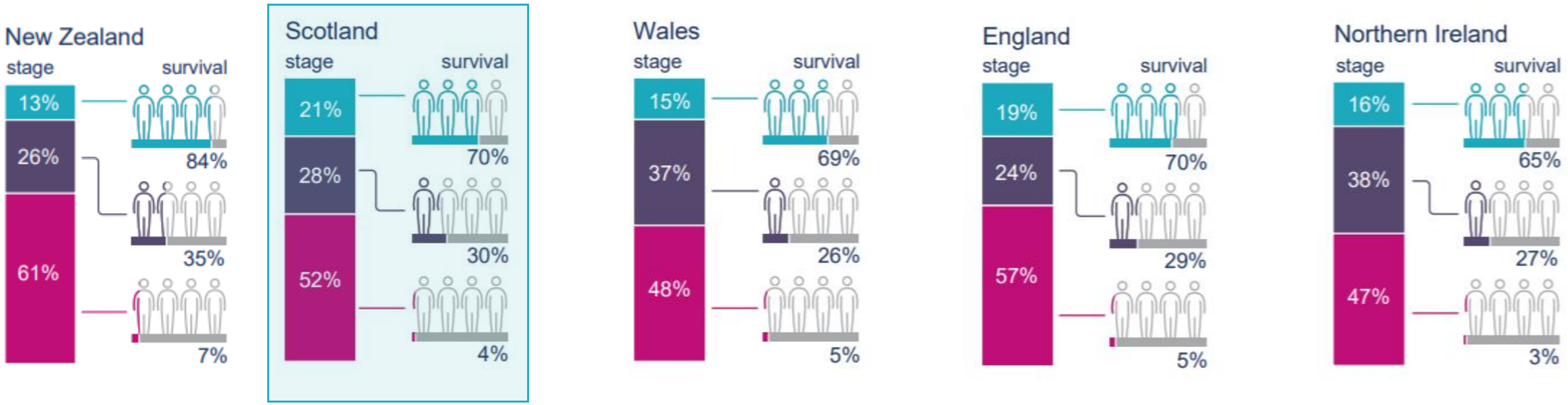
Address Lower Survival at Early Stage

Scotland has generally more favourable distribution for lung and colorectal cancers but more adverse outcomes

Non-small cell lung cancer (NSCLC): 3-year survival by localised, regional, distant stages at diagnosis



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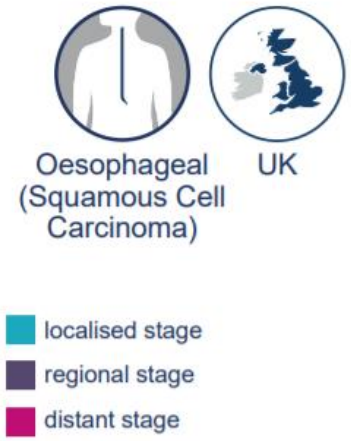
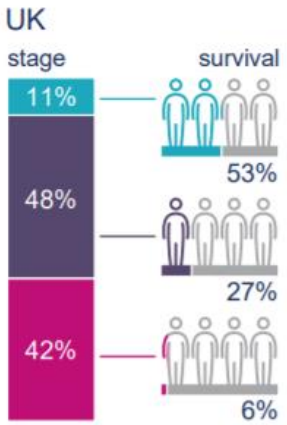
Focus on Stage Data

50% of the cancer registry data is missing for pancreatic, oesophageal and gastric cancers

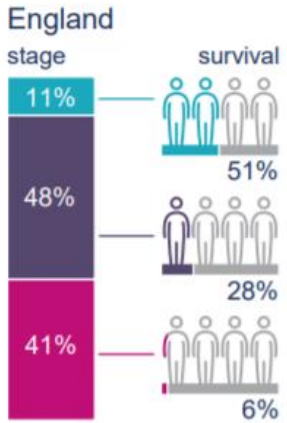
Oesophageal cancer (Squamous Cell Carcinoma): 3-year survival by stages at diagnosis - UK

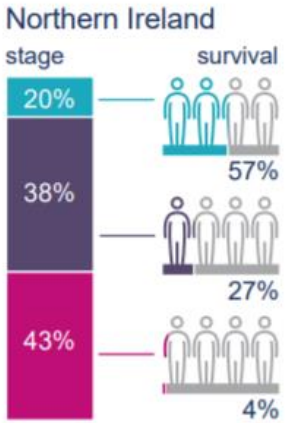


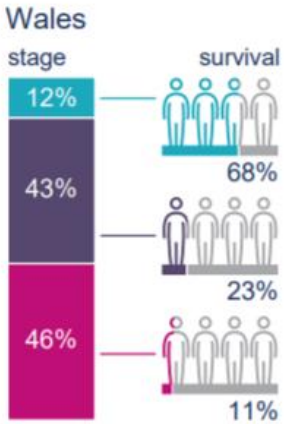


Scotland

Missing







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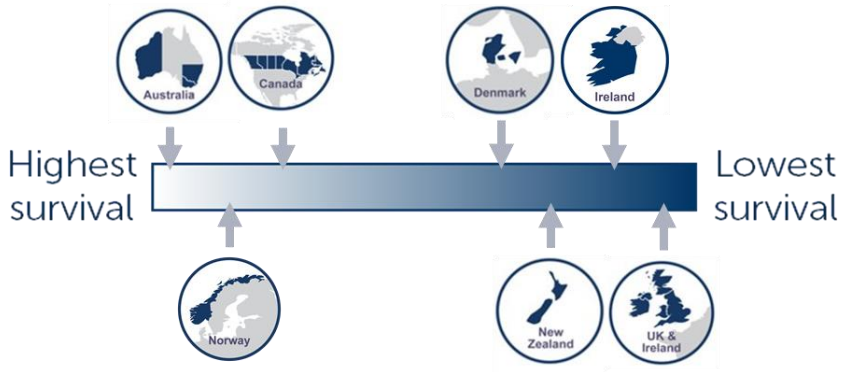
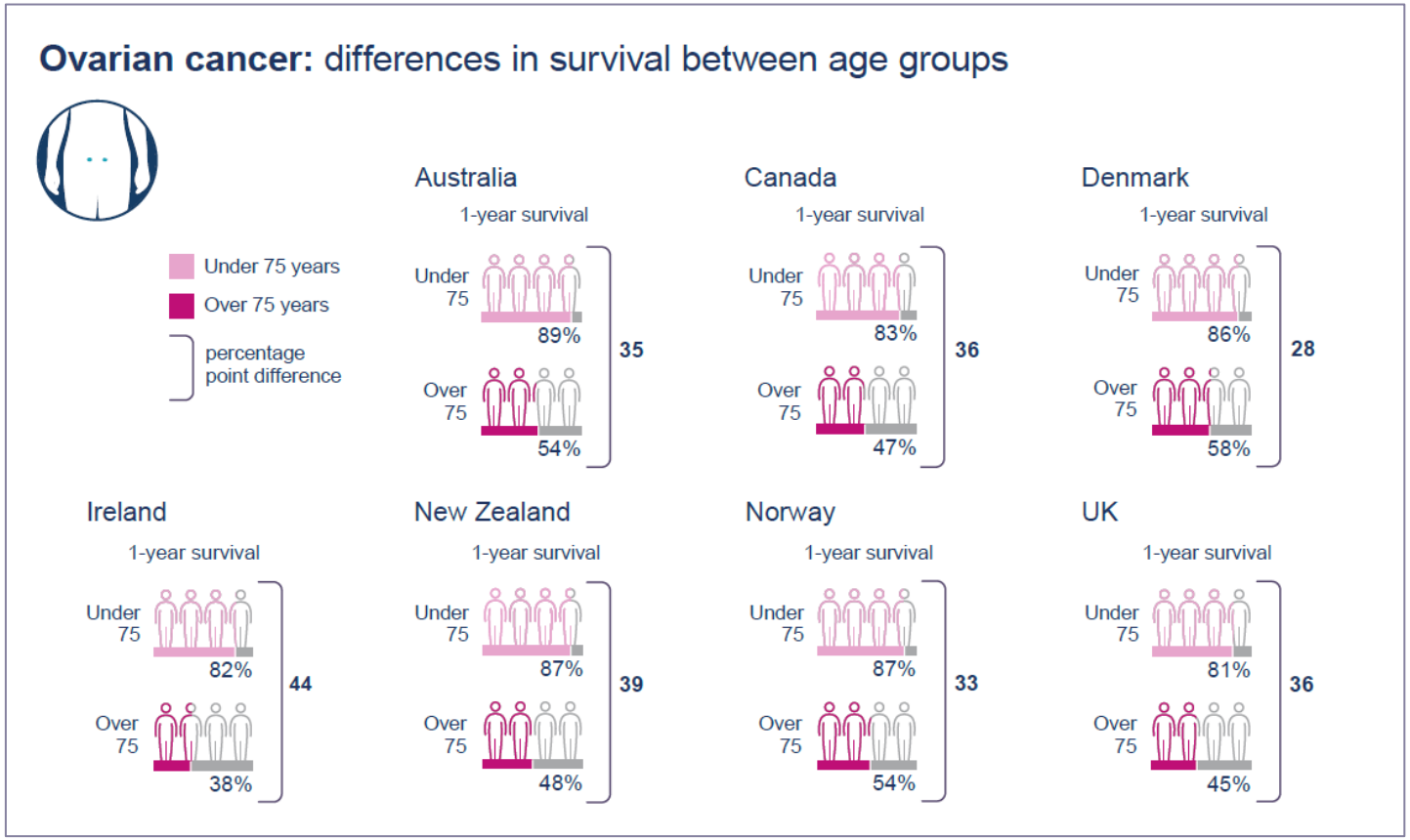
Address Survival variation for different Age Groups



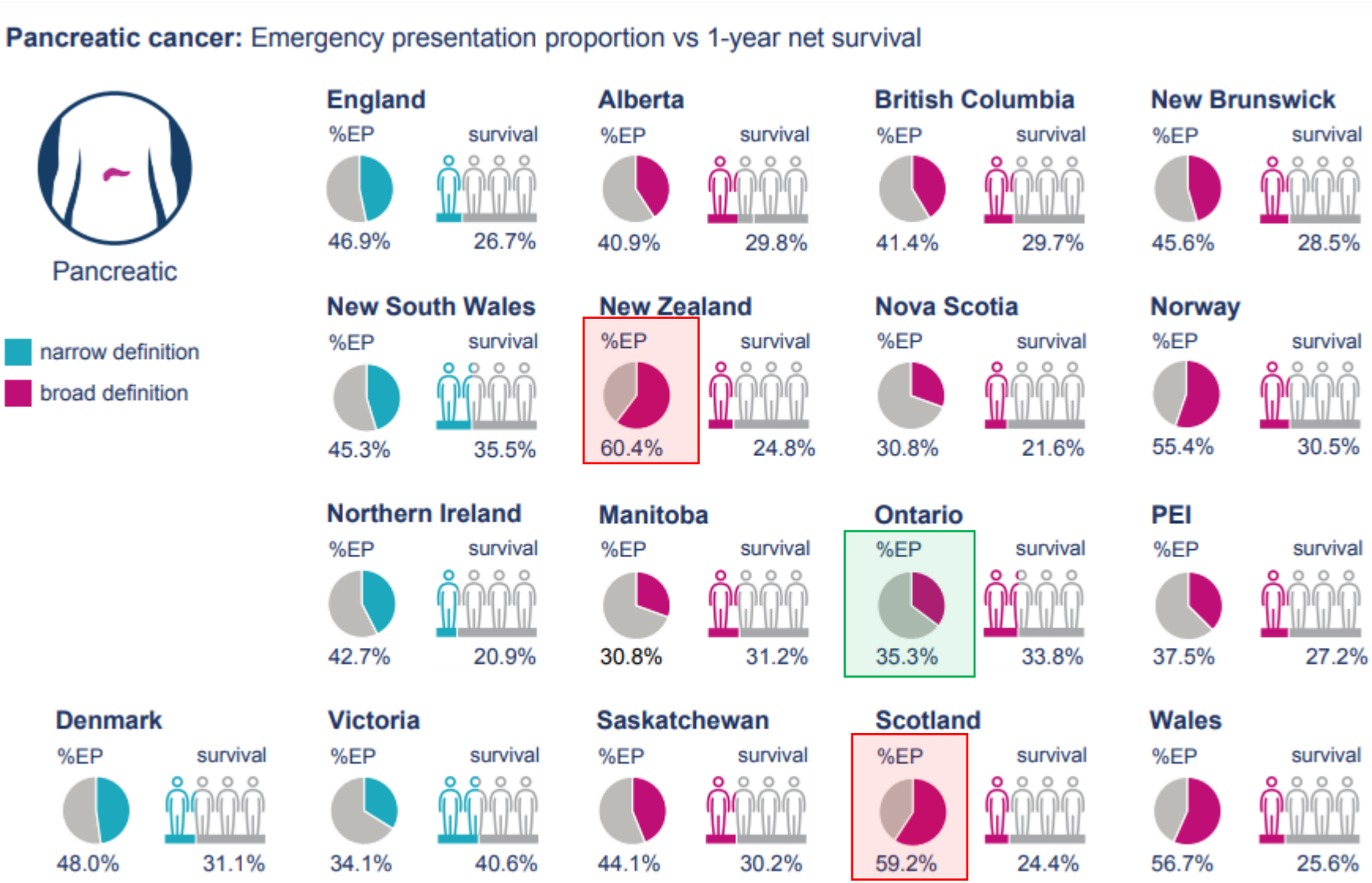
Canada and Australia had some of the highest survival for the oldest age groups
UK, Ireland and New Zealand had some of the lowest survival



Scotland Age Disparities

- Tends to have low survival comparatively across all cancers
  - Exception: High survival for rectal cancer, and highest 80+ survival for advanced rectal cancer

Emergency Presentations (EPs)



Emergency presentation (broad) – emergency hospital admission in the 30 days before the date of cancer diagnosis (used in Canadian provinces, Norway, New Zealand, Wales, Scotland)

Emergency presentation (narrow) – additionally requiring that emergency hospitalisations (in the 30-days pre-diagnosis of cancer) occurred without an intervening elective (used in Denmark, England, Northern Ireland, New South Wales)

Scotland and Wales reporting amongst the highest EP%s, alongside New Zealand.

- First international comparison of cancer EPs using linked cancer registry and hospital admissions data.
- International variation in the proportion of EPs is a possible contributor to international variation in cancer survival (association found for colon, stomach, lung, liver, ovarian, and pancreatic cancers).

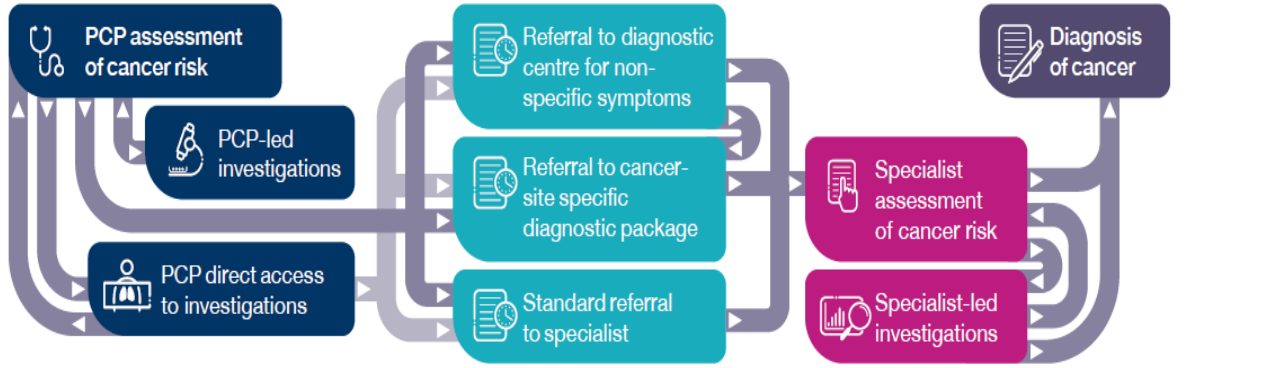
Referral Pathways

Key barriers across the ICBP in the management of suspected cancer include:

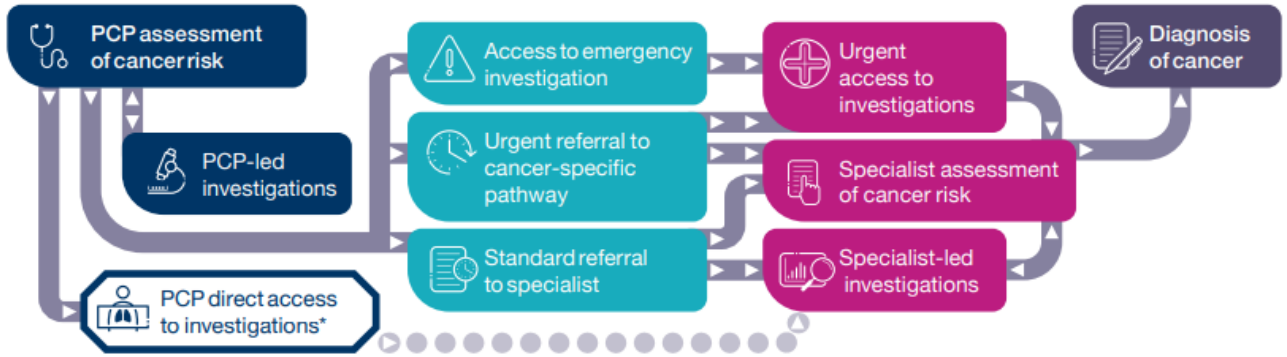
- GP autonomy
- Ease of access to investigations
- Existence of restrictive pathways and referral criteria

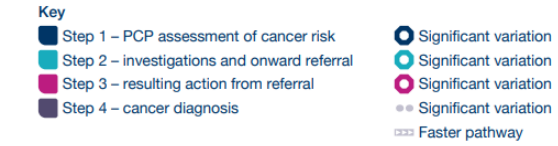
Flexibility of referral pathways and less complex primary care structure help to drive timely diagnosis

Referral pathways – Norway



Referral pathways – Scotland





Module 8 – Exploring the Link between Cancer Policies and Cancer Survival

- First study to develop an *index of cancer policy consistency* over time and link this to cancer survival 1995-2014 in 10 ICBP jurisdictions
- All jurisdictions had structures in place to oversee or deliver cancer control policies and had published at least one major cancer plan. Few cancer plans had explicit budgets for implementation or mandated external evaluations
- Generally, jurisdictions with greater cancer policy consistency over time also saw greater cancer survival improvements (e.g., Denmark)

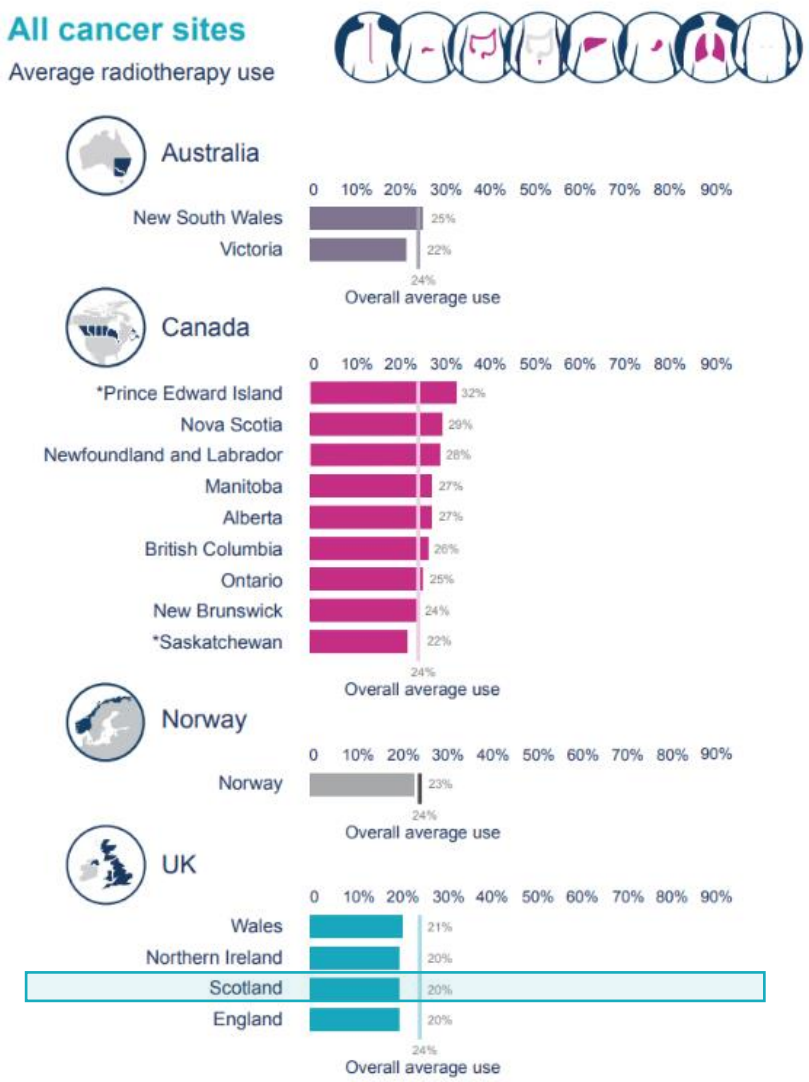
	Denmark	Ontario	New South Wales	Norway	Ireland	Scotland	England	New Zealand	Wales	Northern Ireland
Dedicated institute/ oversight group	1	1	1	0.75	1	1	0.75	1	1	0.75
Successive cancer plans that build on each other	1.25	1.25	1.25	0.75	0.5	0.75	0.75	0.25	0.5	0.25
Cancer plan is accompanied by action/ implementation plan	0.3125	0	0	0.9375	0	0.3125	0.3125	0.625	0	0
Cancer plan includes explicit budget for implementation	1.25	1.25	0.5	0.25	0.25	0.75	0.25	0	0	0
Cancer plan is regularly evaluated/progress report	0.9375	0	0.25	0.3125	0.9375	0	0.5	0.25	0.5	0
Total score	**4.75**	**3.5**	**3.0**	**3.0**	**2.69**	**2.81**	**2.56**	**2.13**	**2.0**	**1.0**

- Cancer control policies characterised by consistent oversight, plan development that successively and strategically builds on what has come before and is linked to clear and transparent investment and implementation over time are associated with improved cancer survival

Module 9 – Recent Publications

Use of chemotherapy/radiotherapy in patients with oesophageal, stomach, colon, rectal, liver, pancreatic, lung and ovarian cancer: An International Cancer Benchmarking Partnership (ICBP) population-based study published in ***The Lancet Oncology Journal.***

Module 9 – Average use of Radiotherapy and Chemotherapy



'Overall average use' relates to the average radiotherapy use (%) across all jurisdictions included in the meta-analysis. Those not included in the meta-analysis are marked with an asterisk (*).

The use of radiotherapy is low in patients with colon, liver, pancreatic, and ovarian cancers in accordance with clinical practice guidelines.

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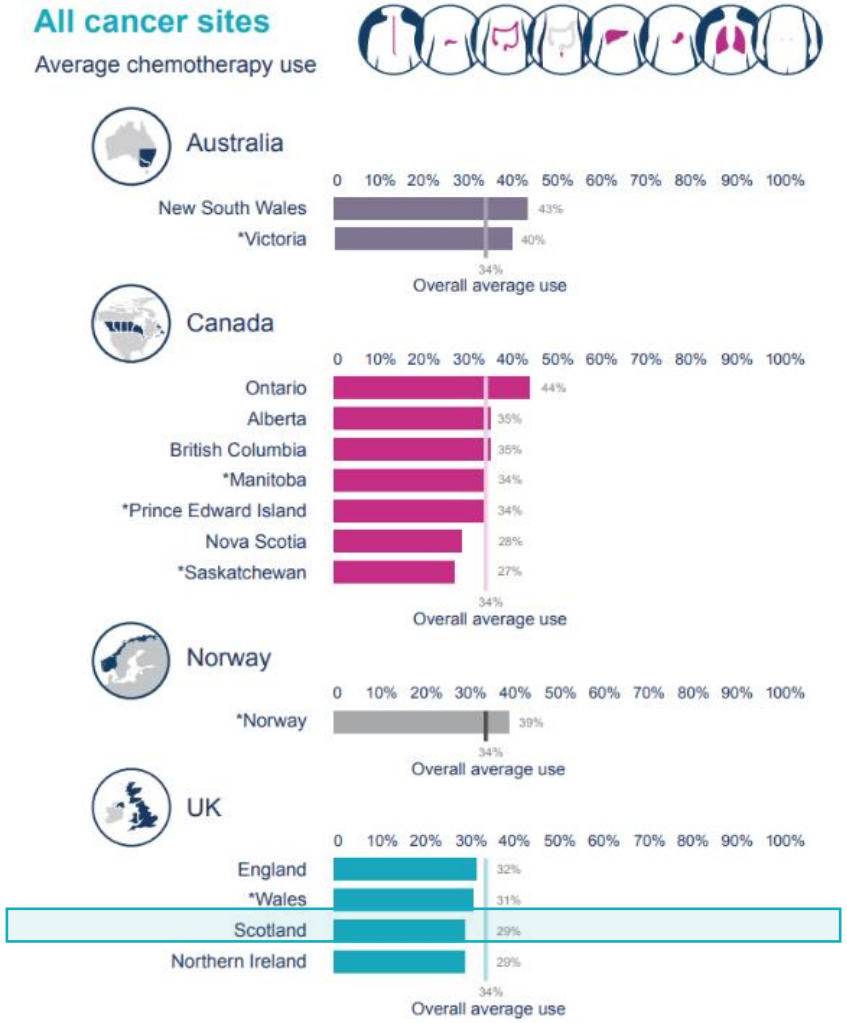

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Jurisdictions with incomplete data were excluded.

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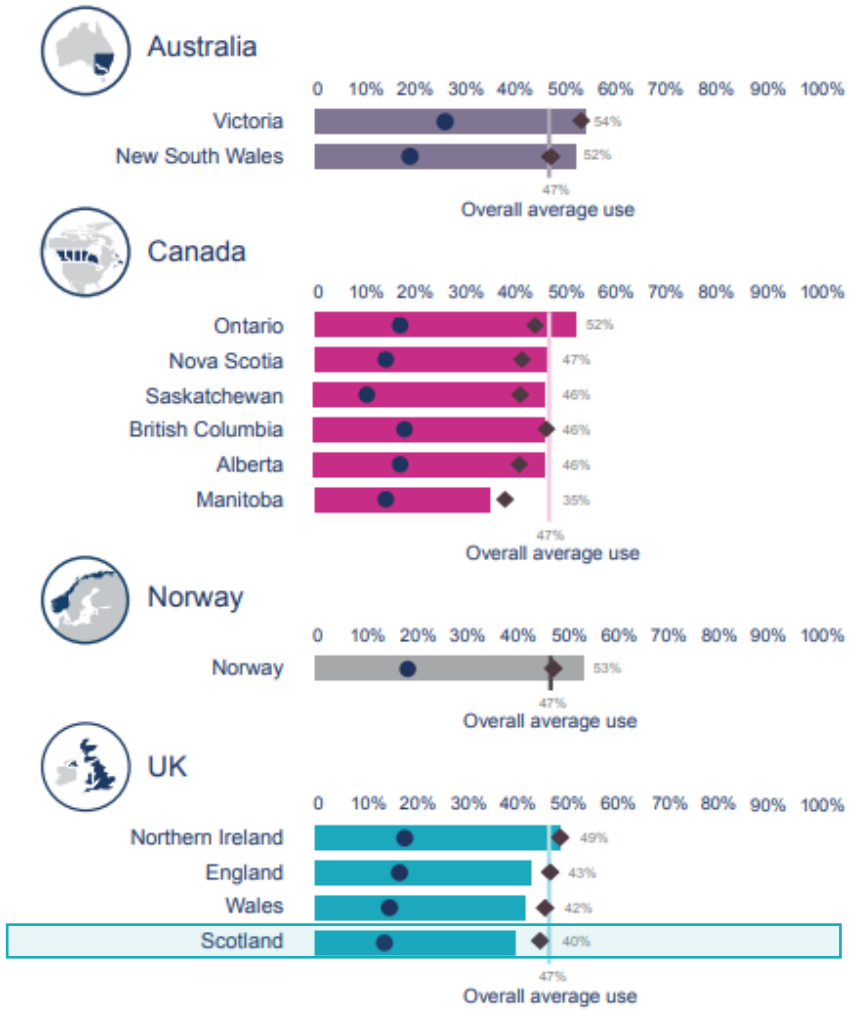
Oesophageal cancer

Average chemotherapy use vs 1- and 5- year net survival



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'Overall average use' relates to the average chemotherapy use (%) across all jurisdictions included in the meta-analysis.
Jurisdictions with incomplete data or less than 100 patients were excluded.

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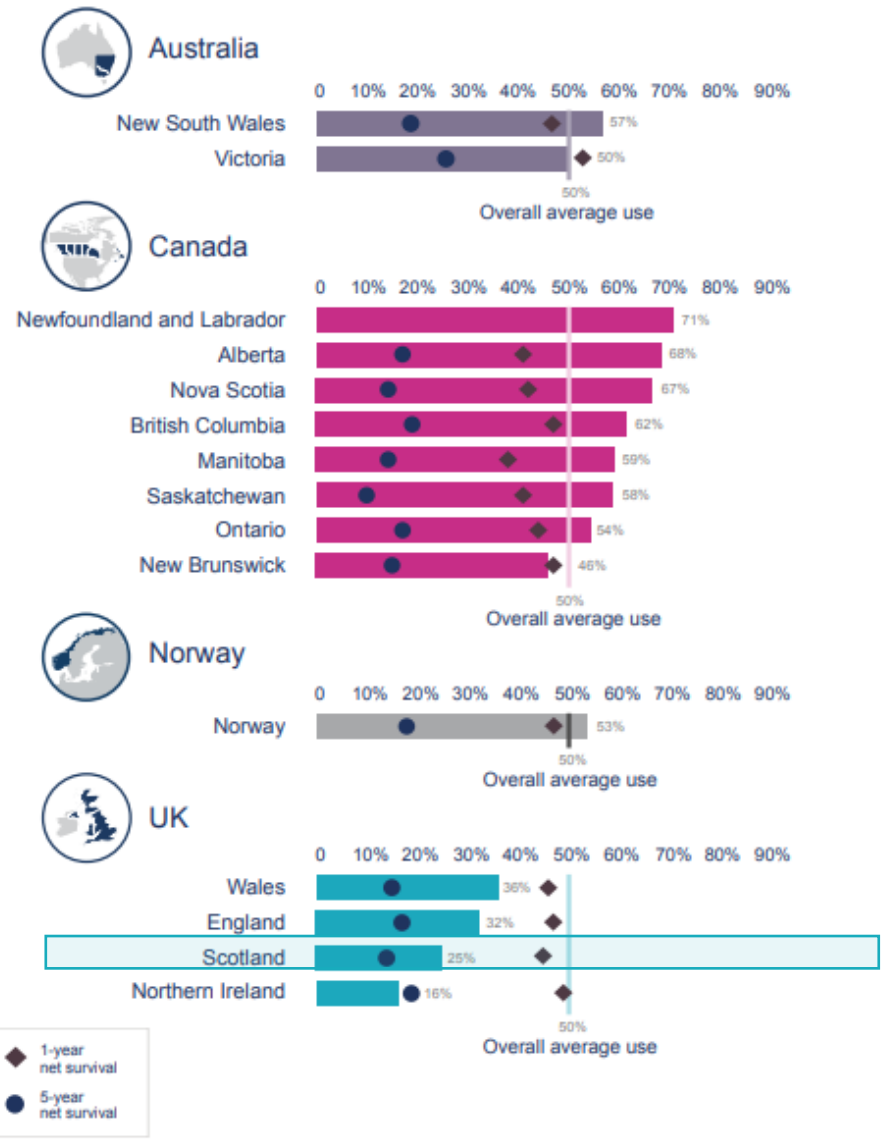
Oesophageal cancer

Average radiotherapy use vs 1- and 5- year net survival



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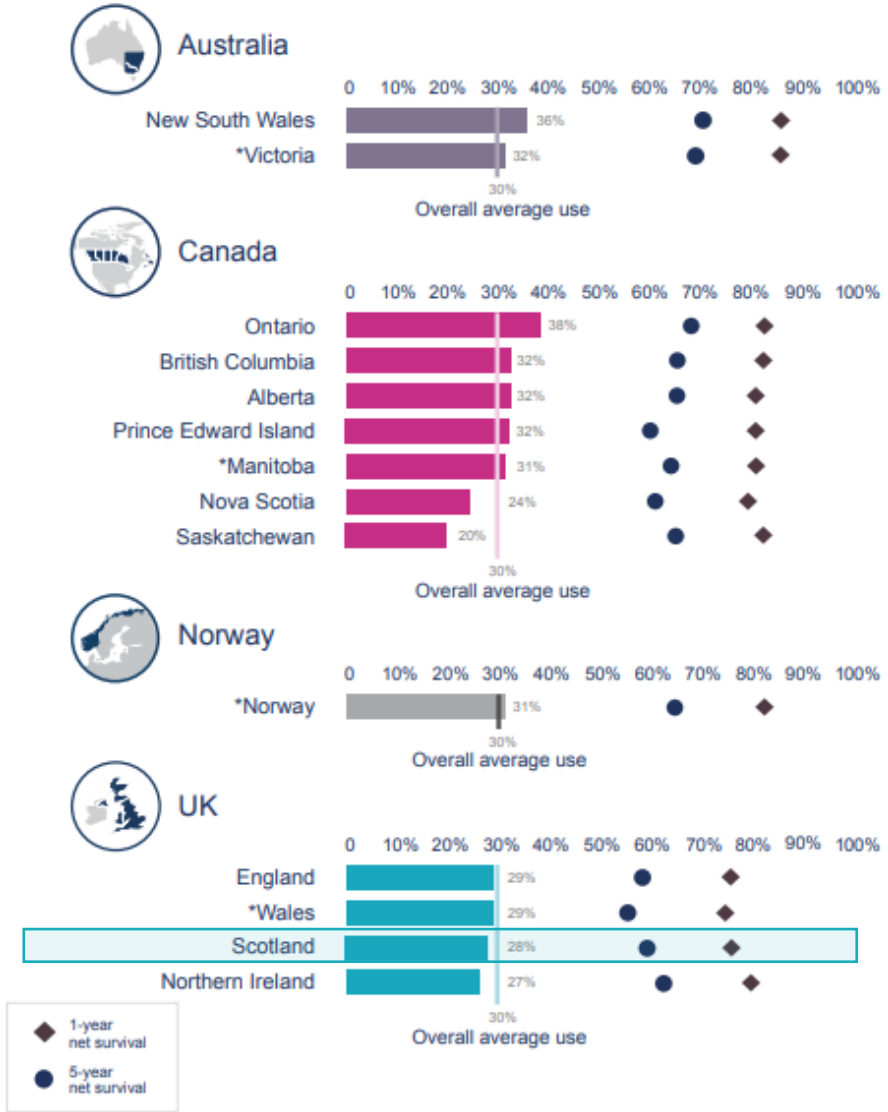
Colon cancer

Average chemotherapy use vs 1- and 5- year net survival



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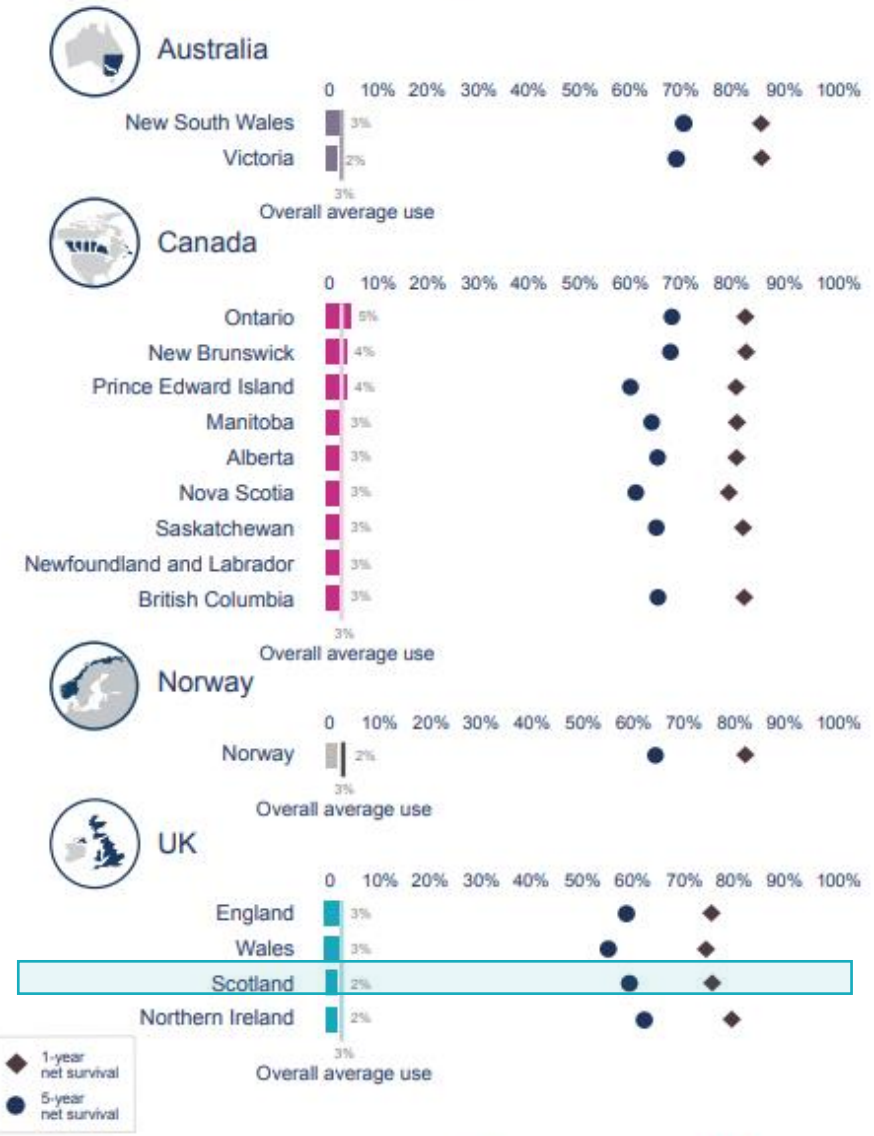
Colon cancer

Average radiotherapy use vs 1- and 5- year net survival



Average radiotherapy use data (2012-2017) and survival data (2010-2014) cover different time periods.

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The use of radiotherapy is low in patients with colon cancer in accordance with clinical practice guidelines.

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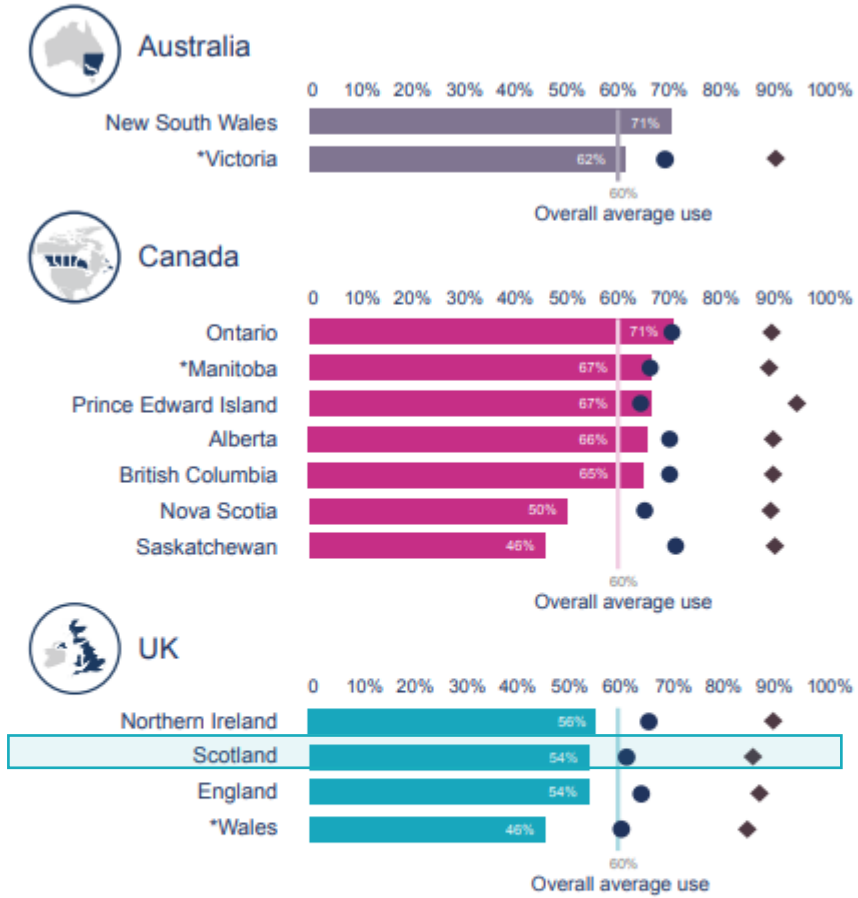
Colon stage III cancer

Average chemotherapy use vs 1- and 5- year net survival



1-year net survival

5-year net survival

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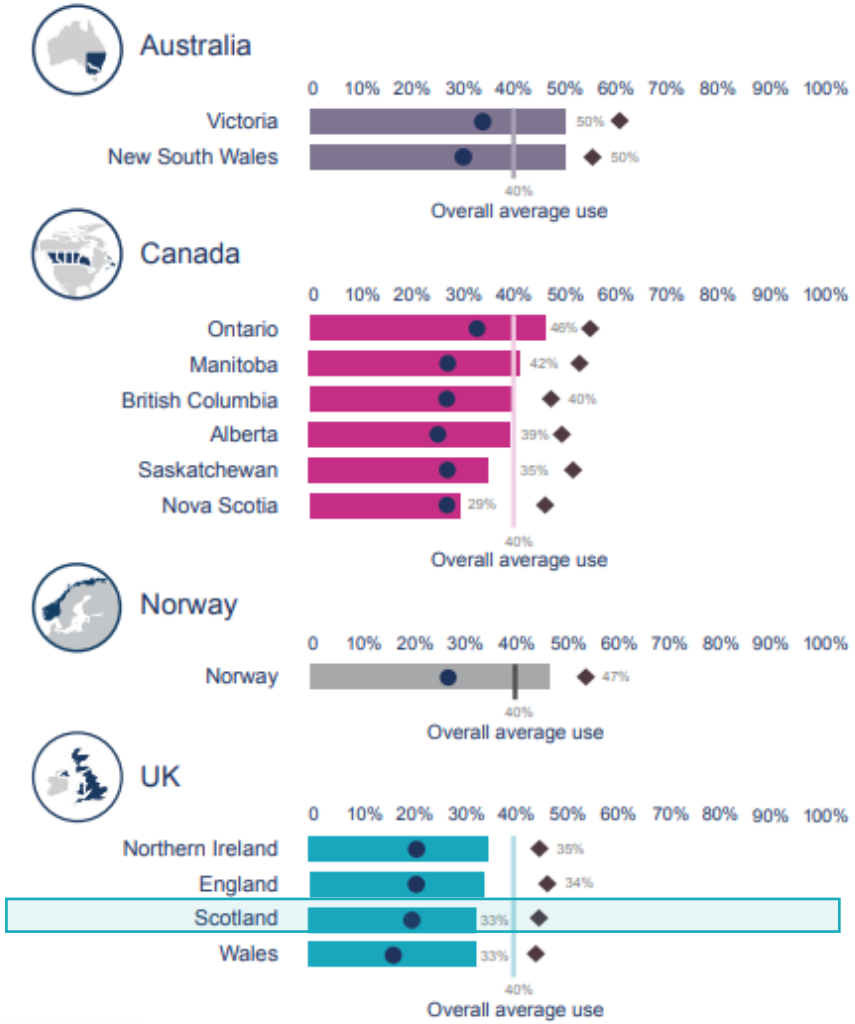
Stomach cancer

Average chemotherapy use vs 1- and 5- year net survival



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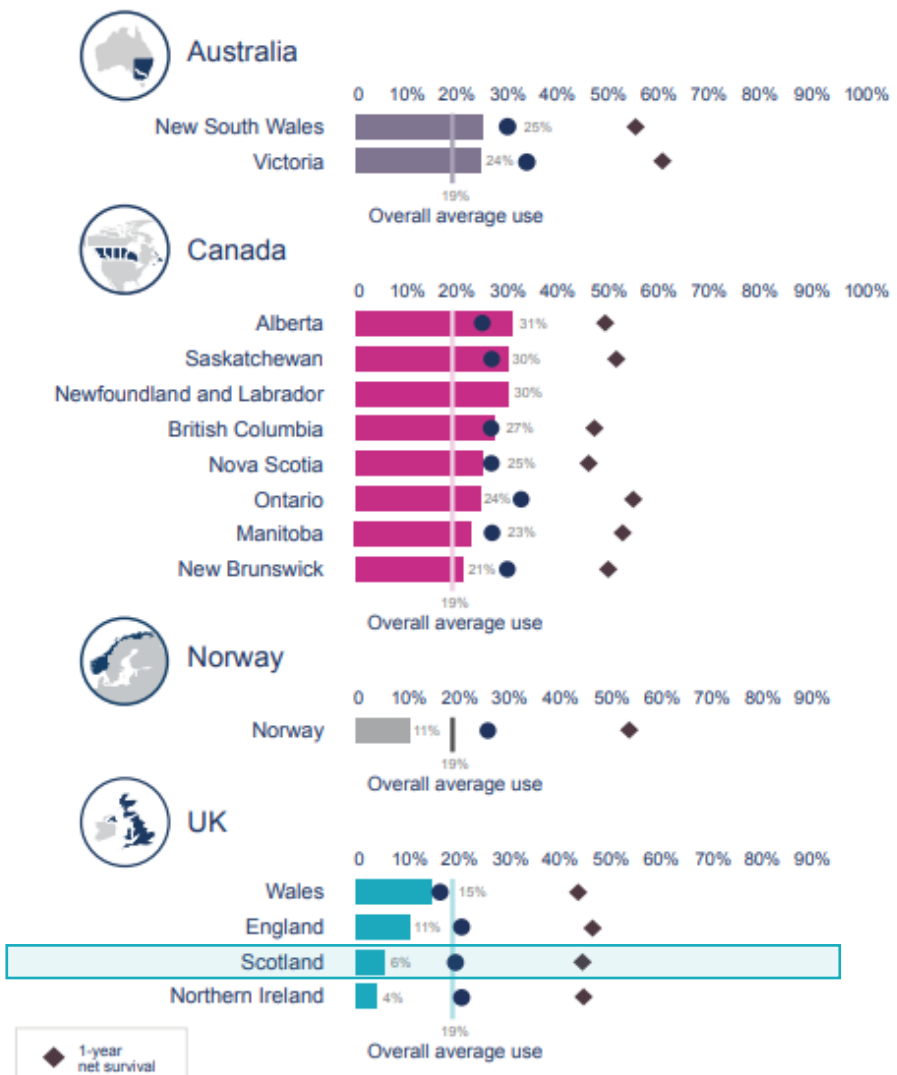
Stomach cancer

Average radiotherapy use vs 1- and 5- year net survival



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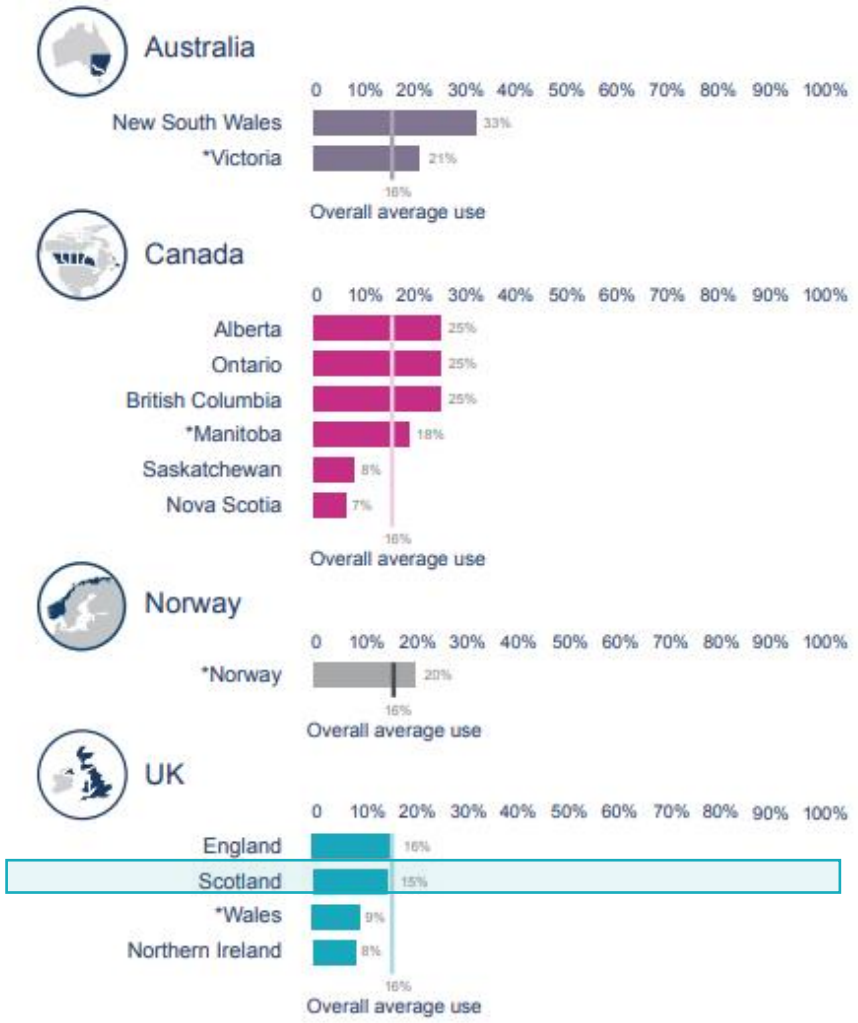
Liver cancer

Average chemotherapy use



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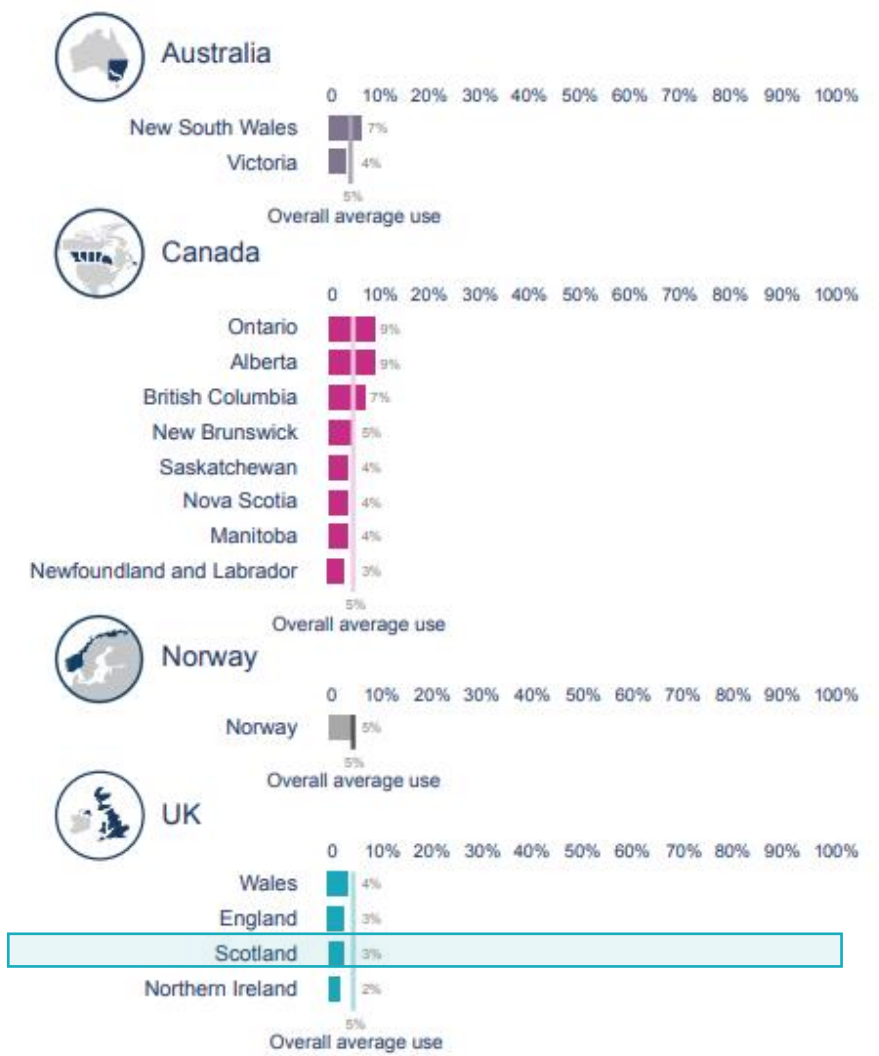
Liver cancer

Average radiotherapy use



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The use of radiotherapy is low in patients with liver cancer in accordance with clinical practice guidelines.

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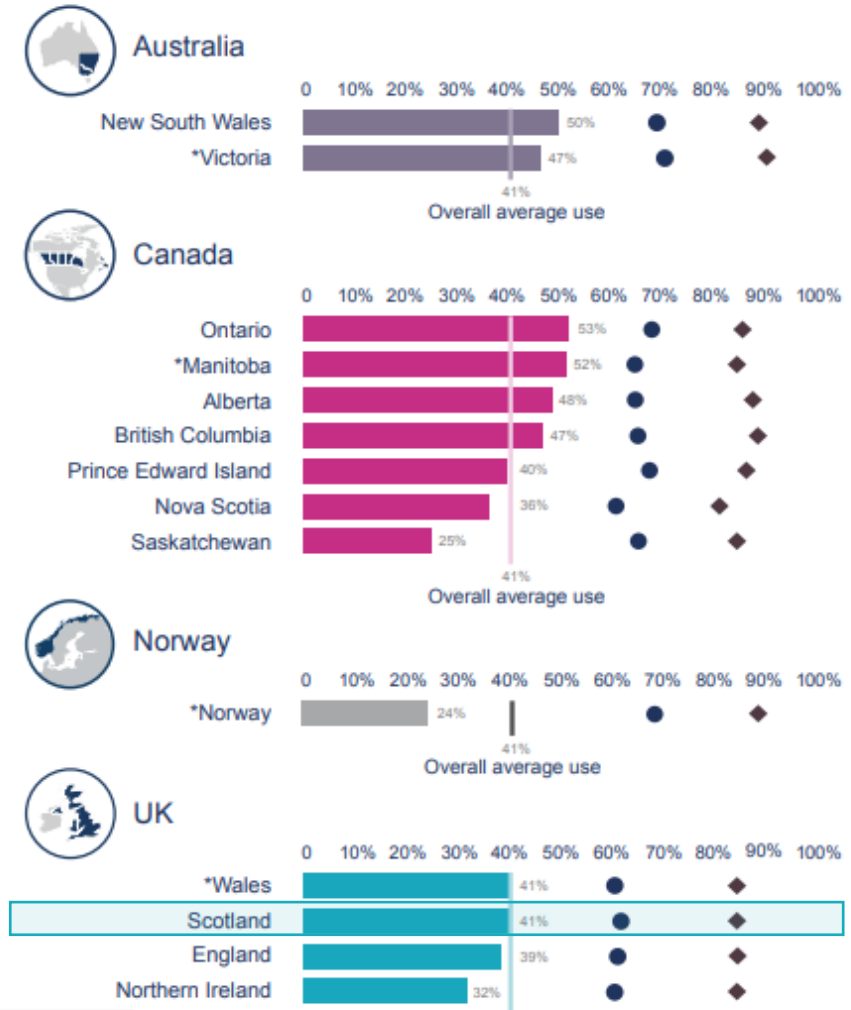
Rectal cancer

Average chemotherapy use vs 1- and 5- year net survival



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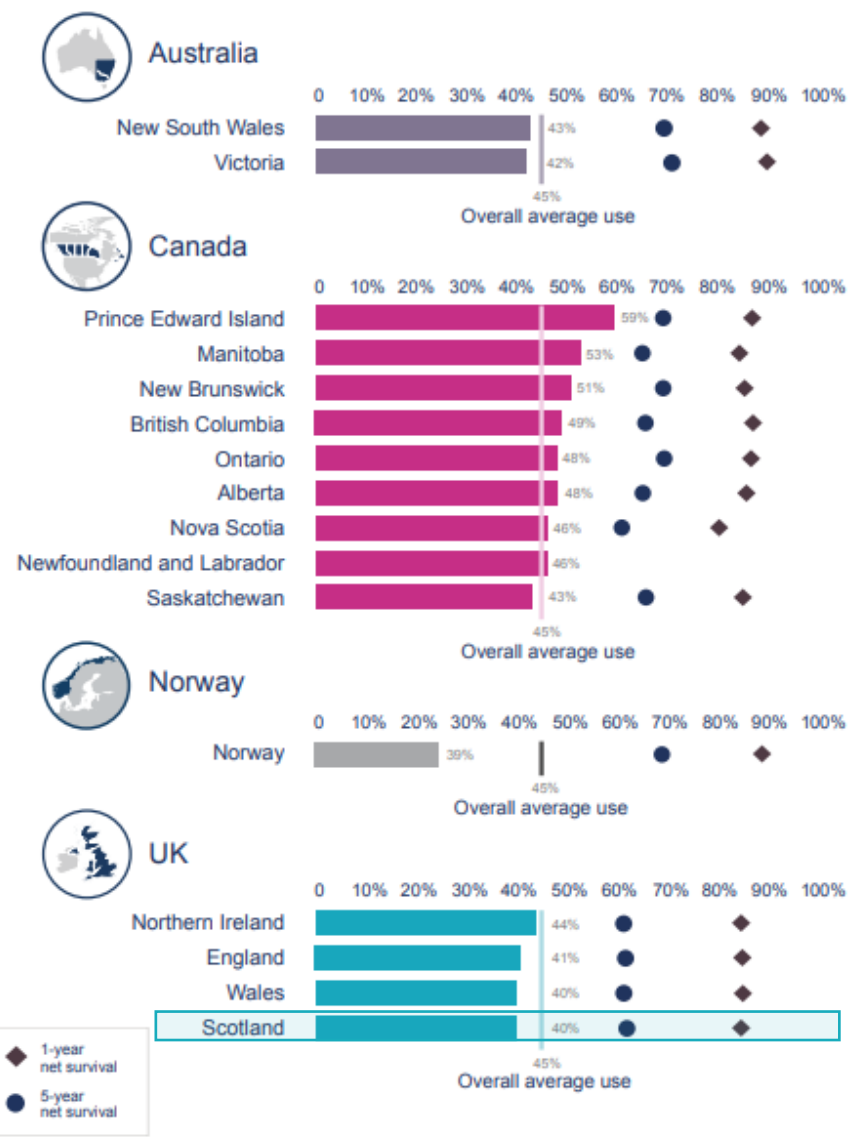
Rectal cancer

Average radiotherapy use vs 1- and 5- year net survival



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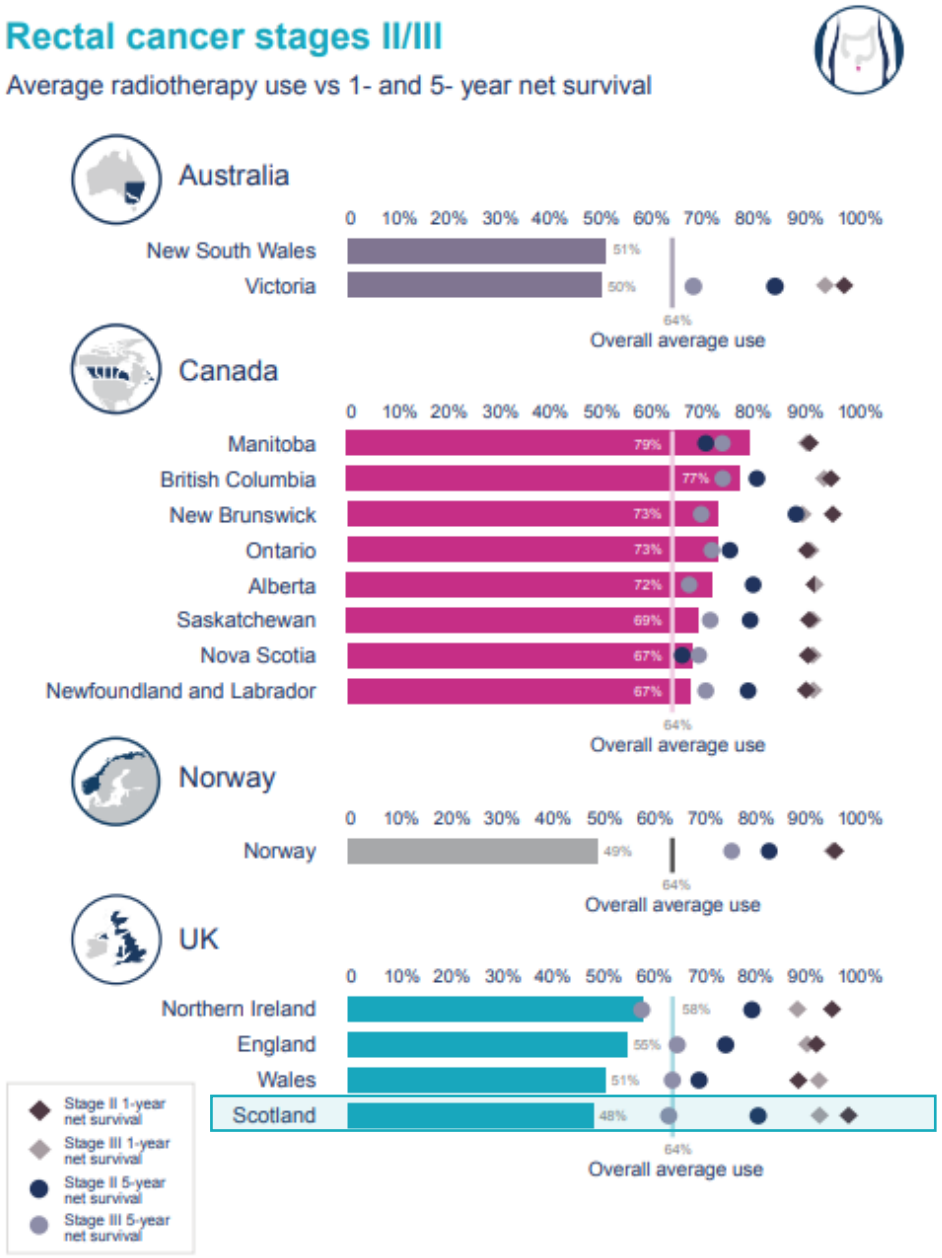
Rectal cancer stages II/III

Average radiotherapy use vs 1- and 5- year net survival



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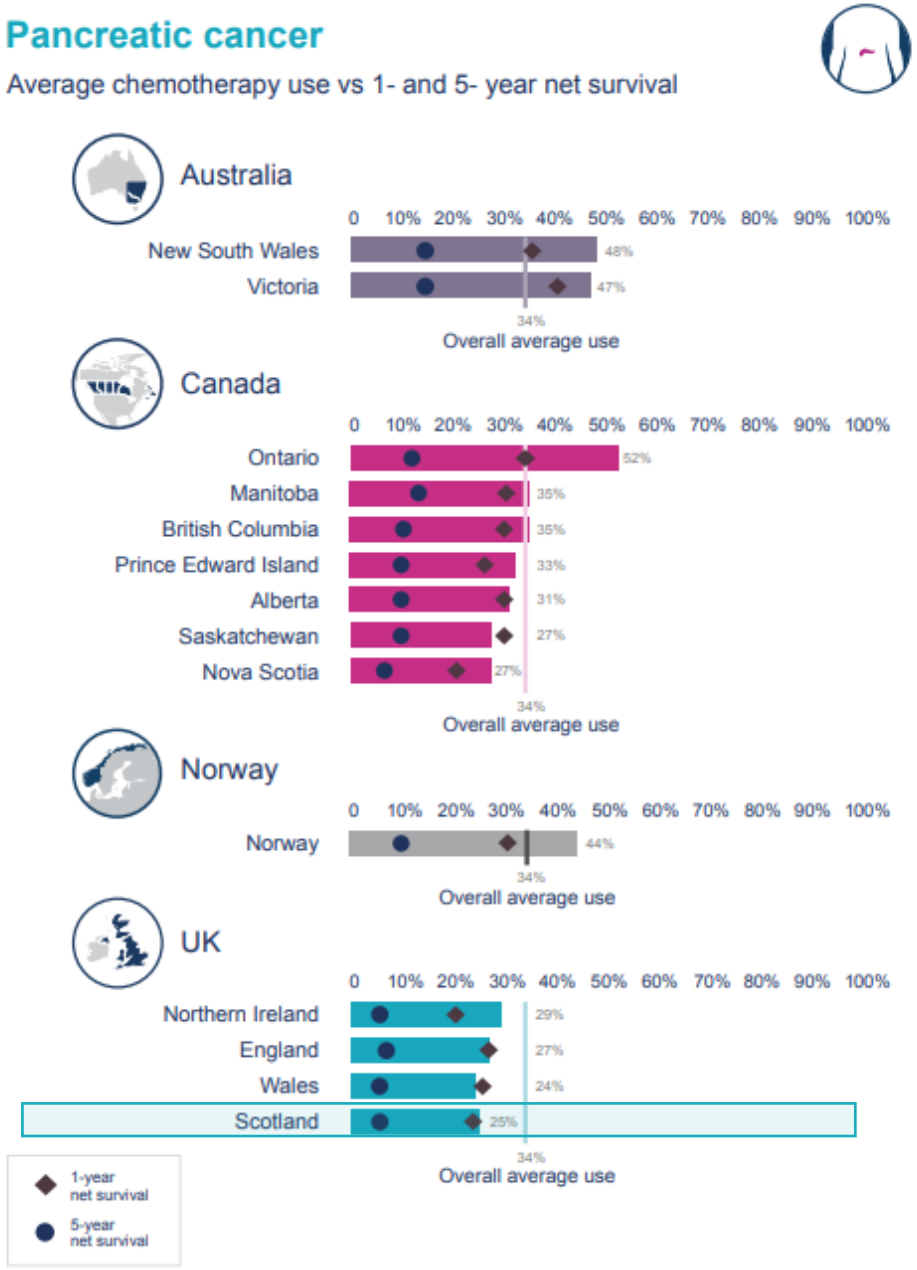
Pancreatic cancer

Average chemotherapy use vs 1- and 5- year net survival



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Pancreatic cancer

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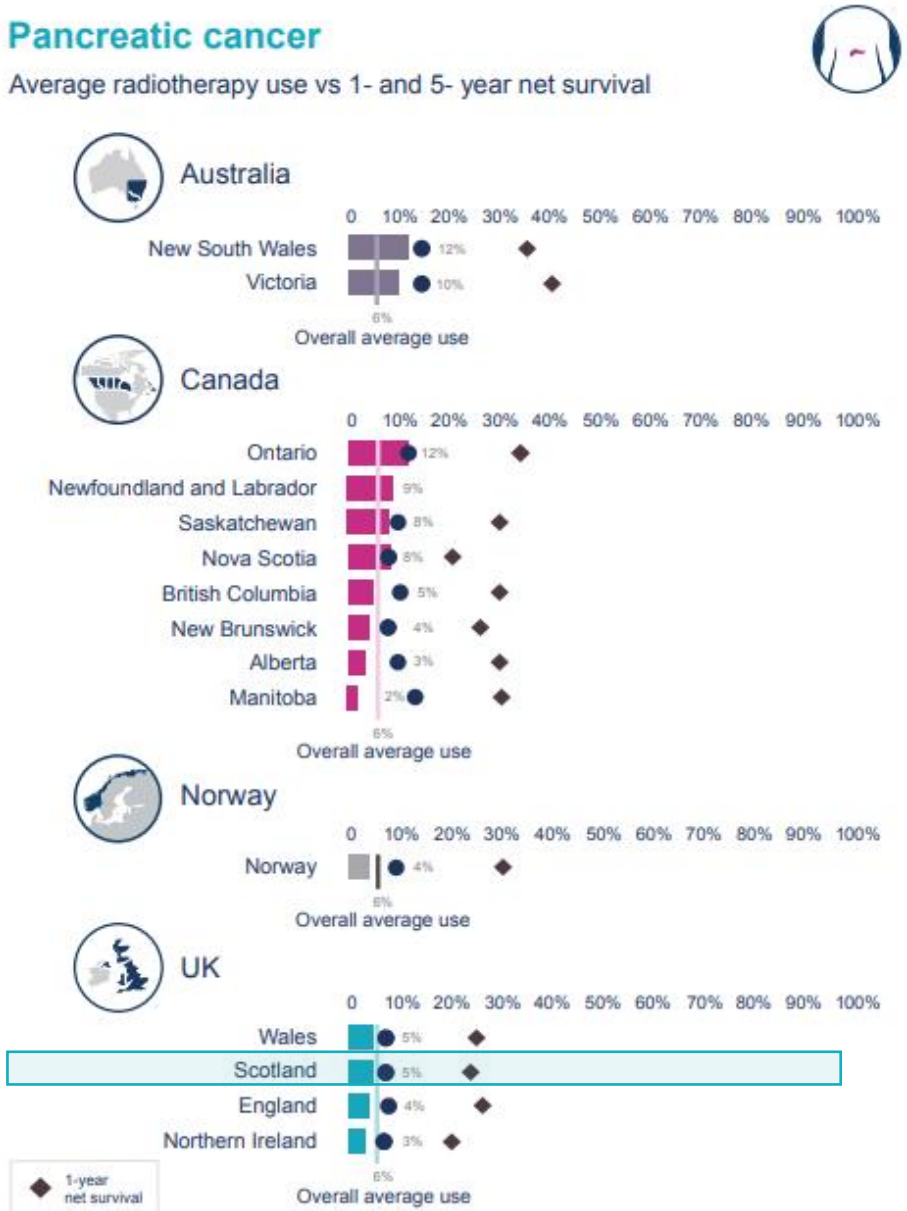

Average radiotherapy use data (2012-2017) and survival data (2010-2014) cover different time periods.
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The use of radiotherapy is low in patients with pancreatic cancer in accordance with clinical practice guidelines.

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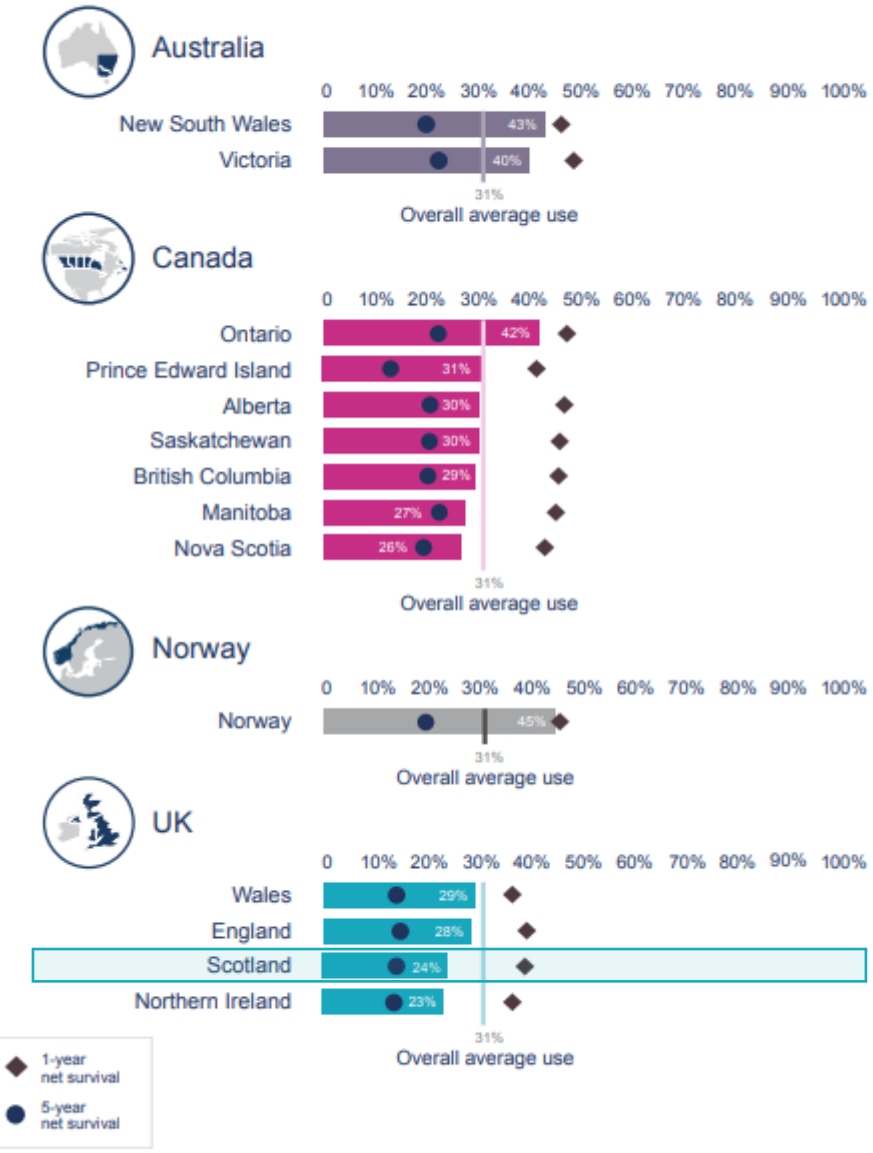
Lung cancer

Average chemotherapy use vs 1- and 5- year net survival



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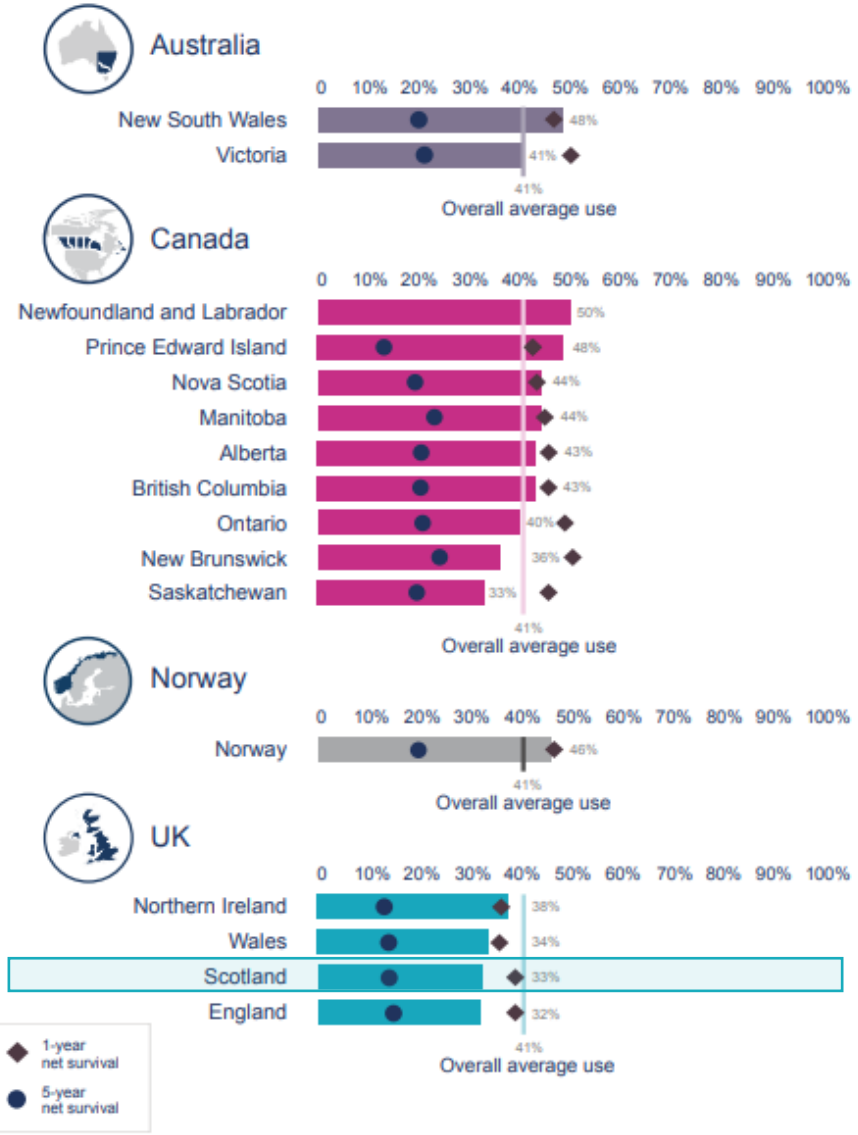
Lung cancer

Average radiotherapy use vs 1- and 5- year net survival



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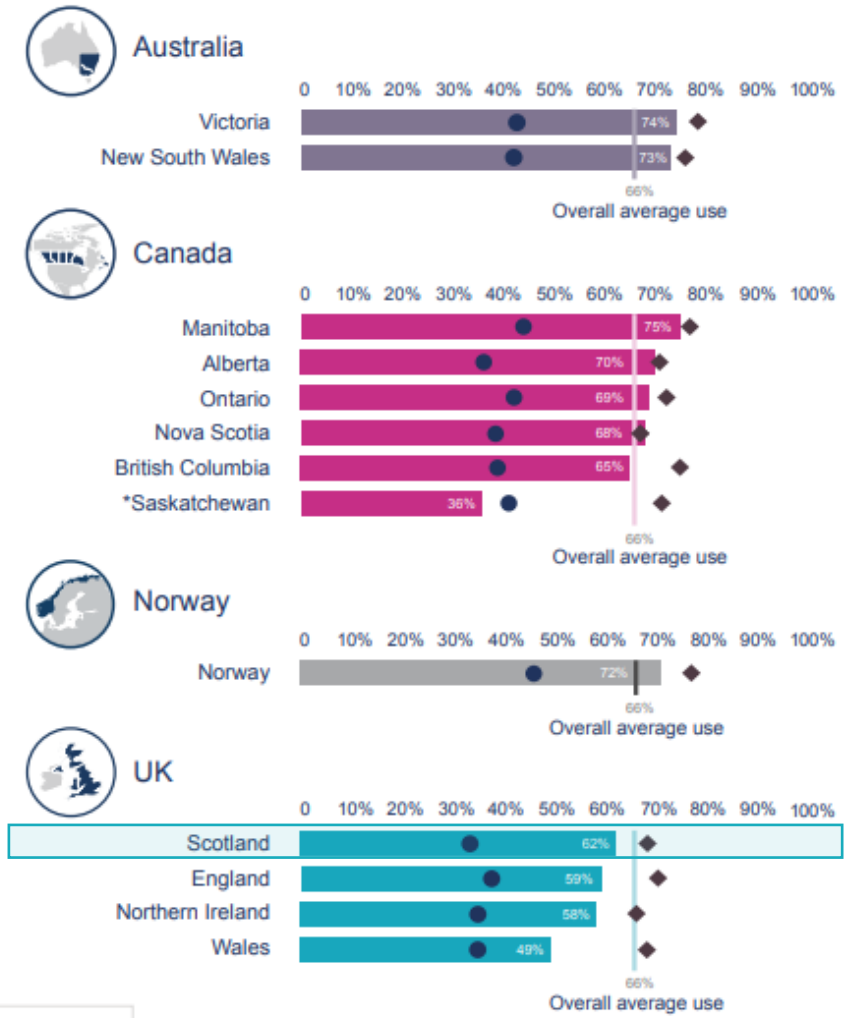
Ovarian cancer

Average chemotherapy use vs 1- and 5- year net survival



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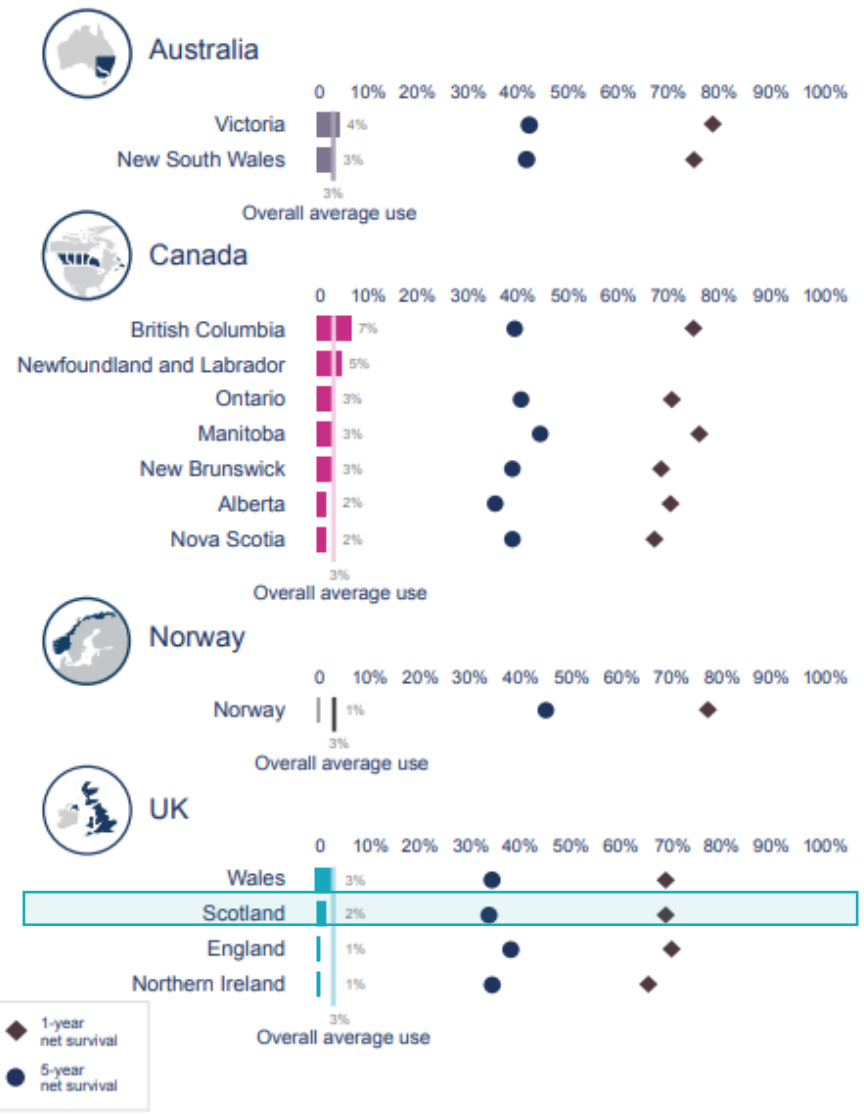
Ovarian cancer

Average radiotherapy use vs 1- and 5- year net survival



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The use of radiotherapy is low in patients with ovarian cancer in accordance with clinical practice guidelines.

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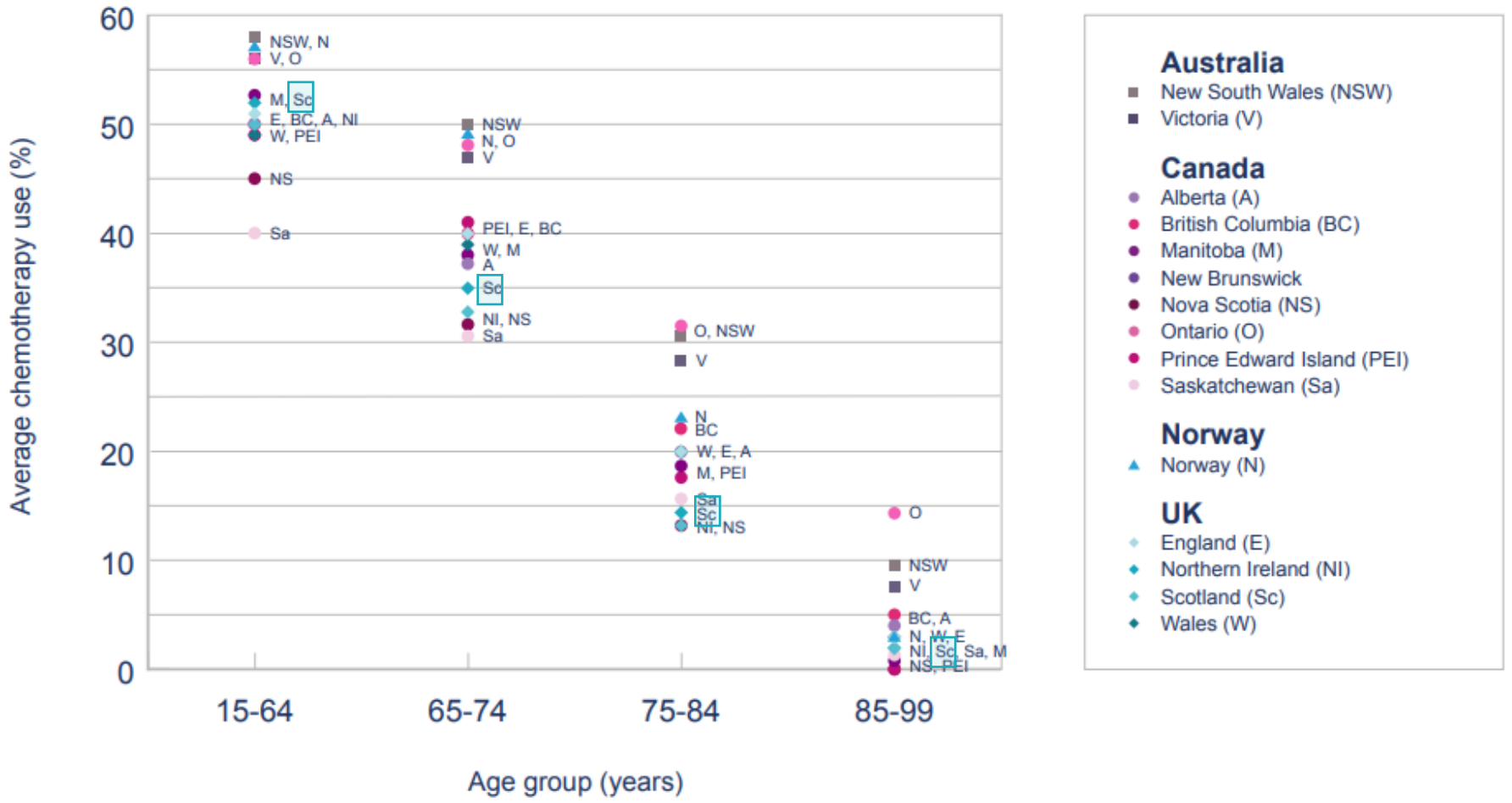
All cancer sites

Chemotherapy use by age group



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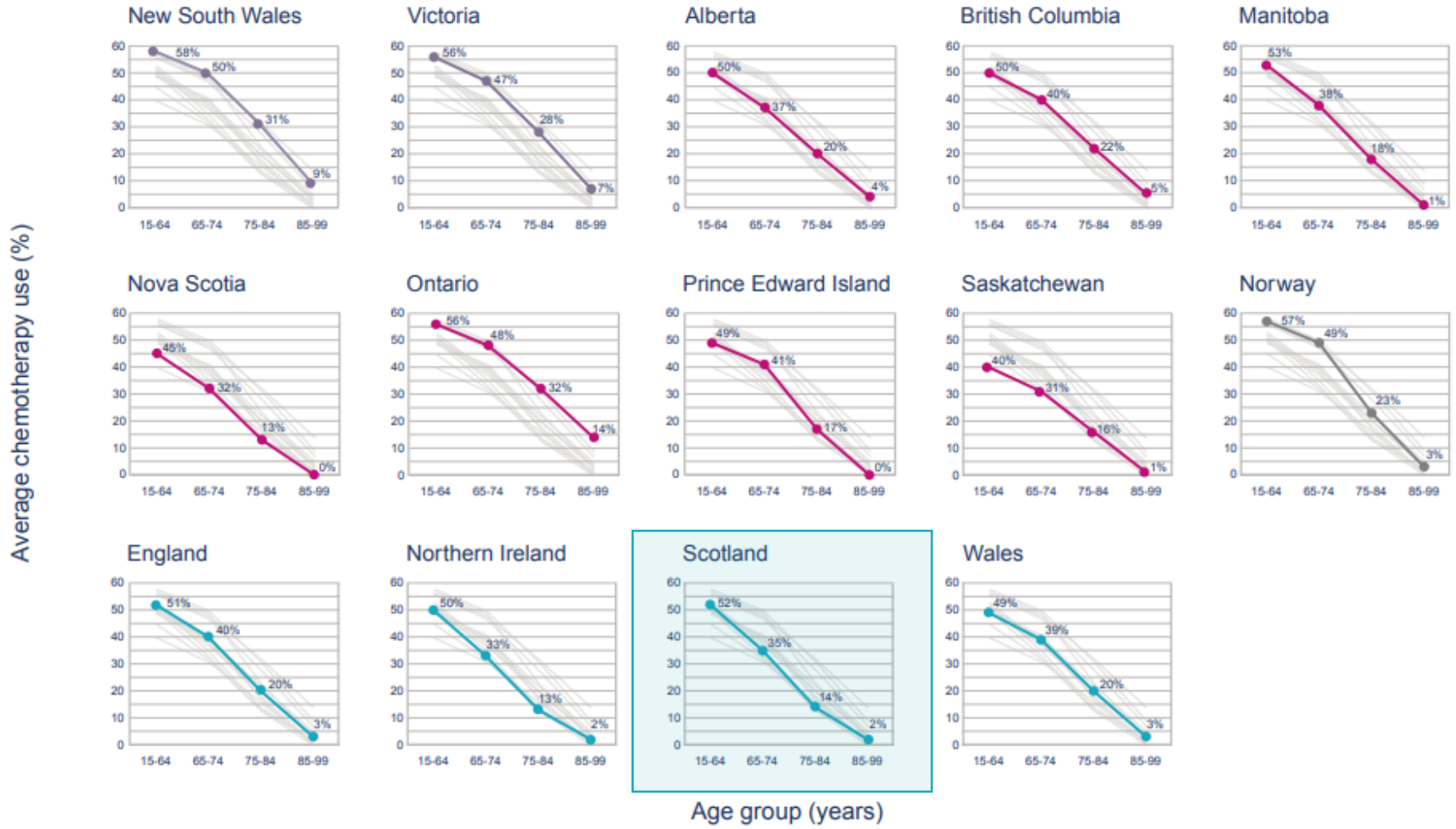
All cancer sites

Chemotherapy use by age group



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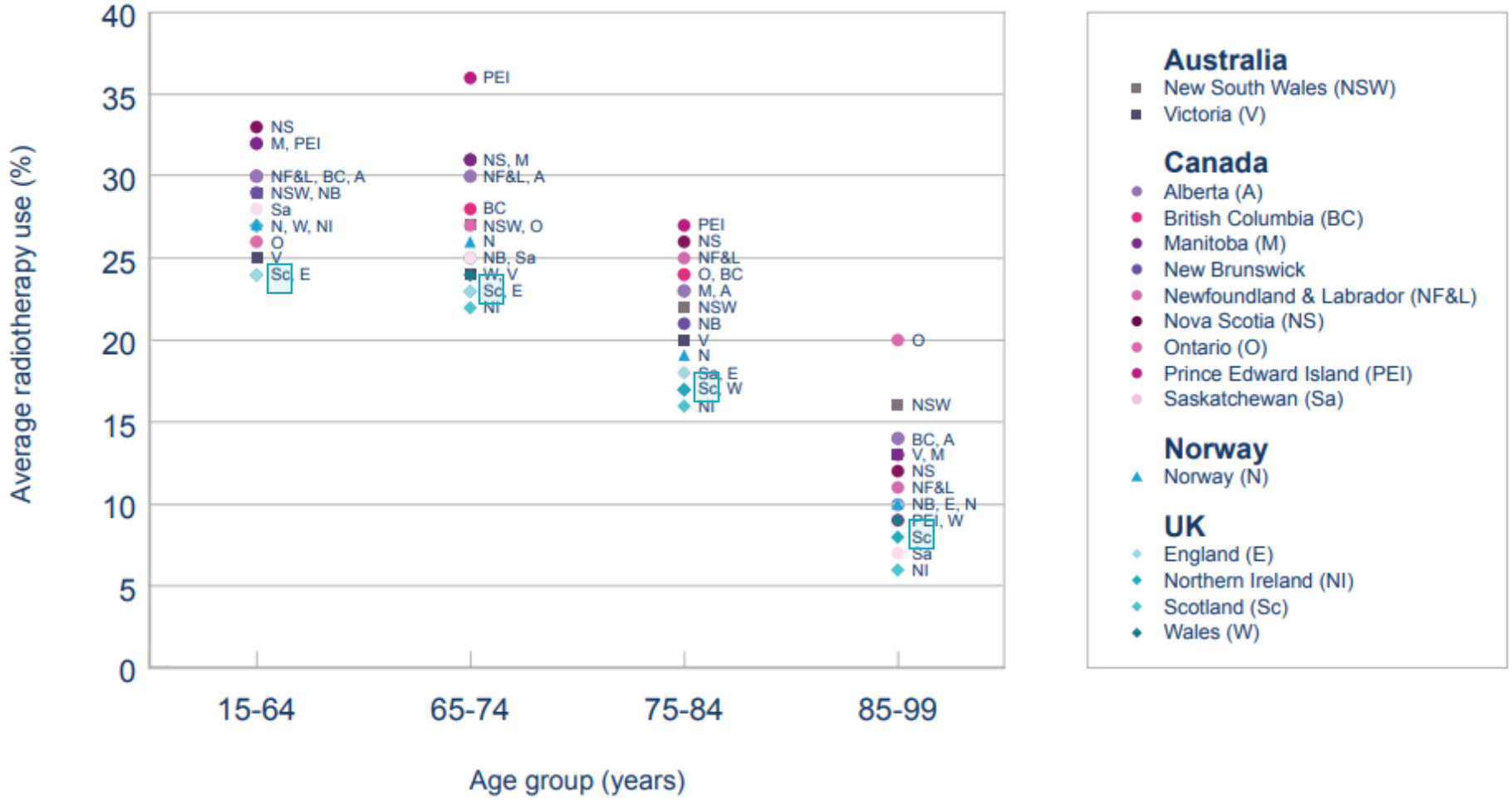
All cancer sites

Radiotherapy use by age group



The use of radiotherapy is low in patients with colon, liver, pancreatic, and ovarian cancers in accordance with clinical practice guidelines.

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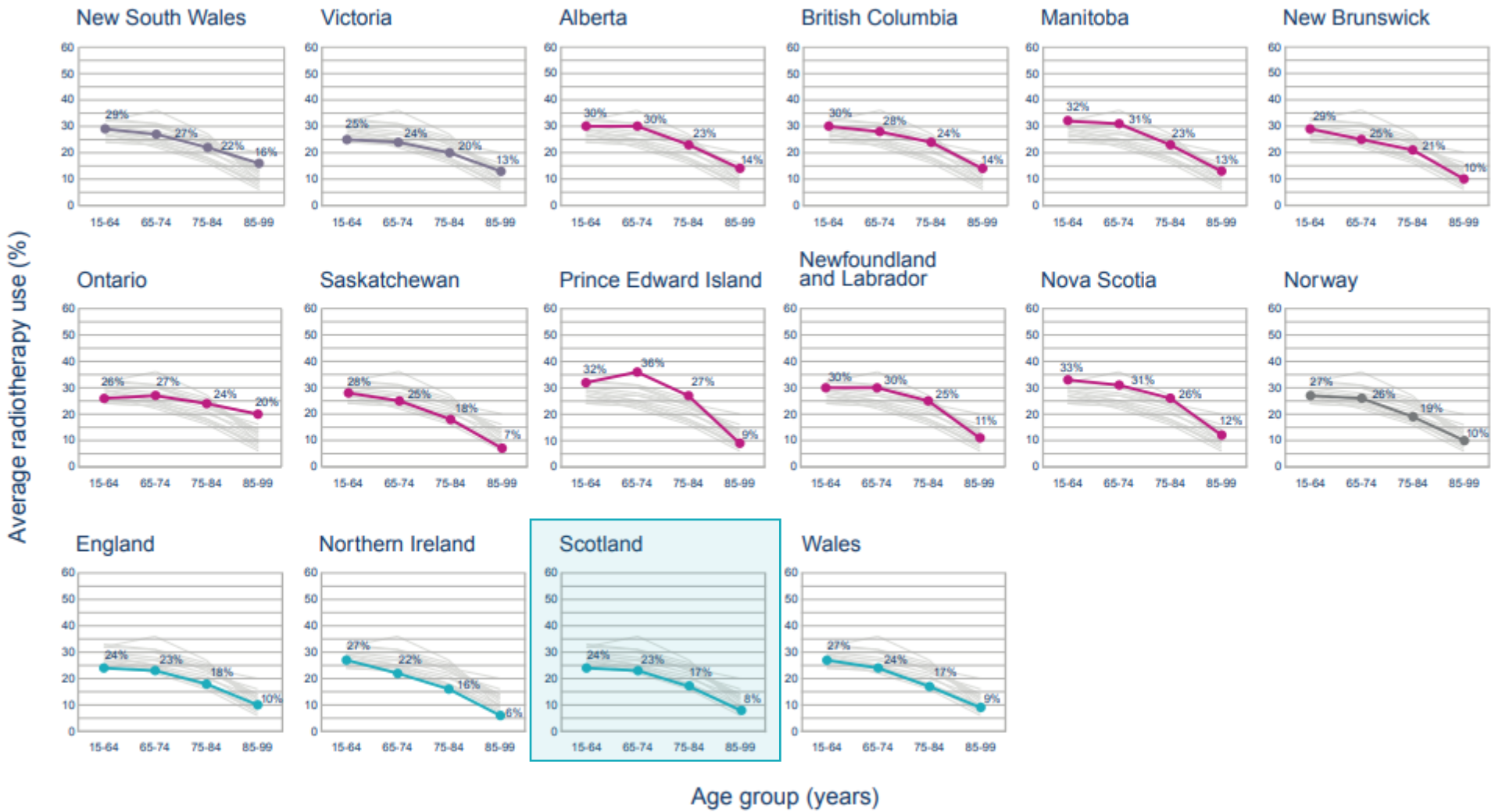
All cancer sites

Radiotherapy use by age group



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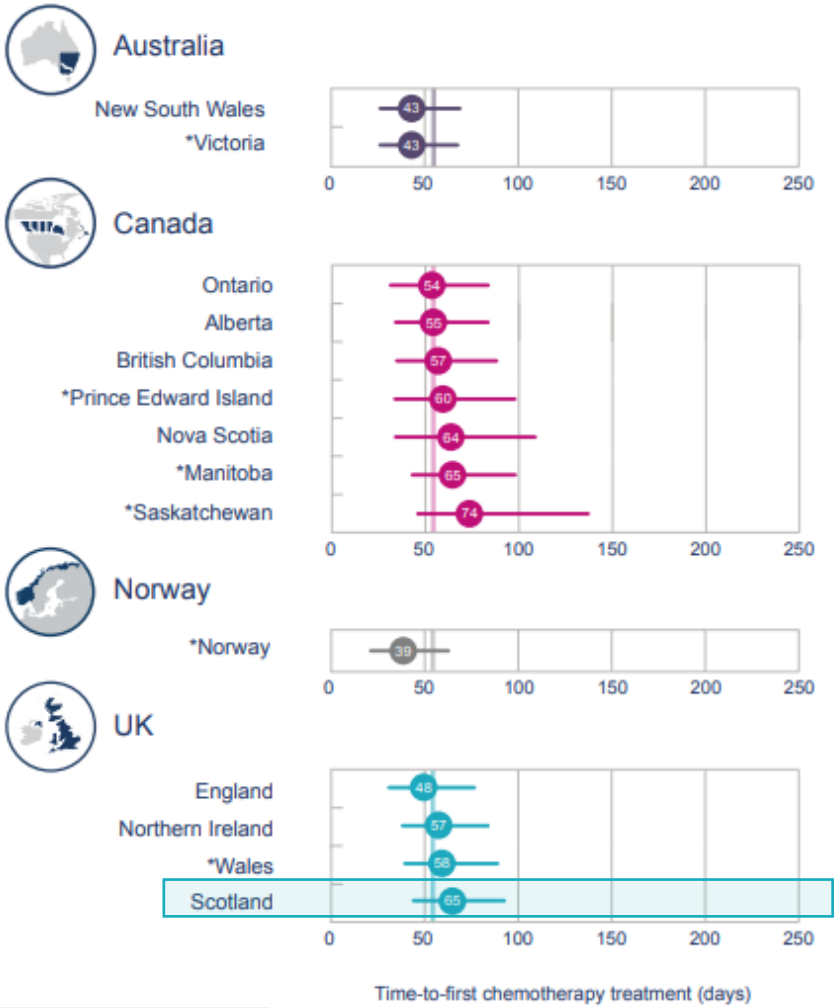
All cancer sites

Time-to-first chemotherapy treatment



'Average time-to-first treatment' relates to the average (median) across all jurisdictions included in the meta-analysis. Those not included in the meta-analysis are marked with an asterisk (*).

Time-to-first treatment refers to the treatment with that specific modality. Treatment can begin before a formal diagnosis; the parameters used in this study are 31 days before diagnosis to 365 days after diagnosis.

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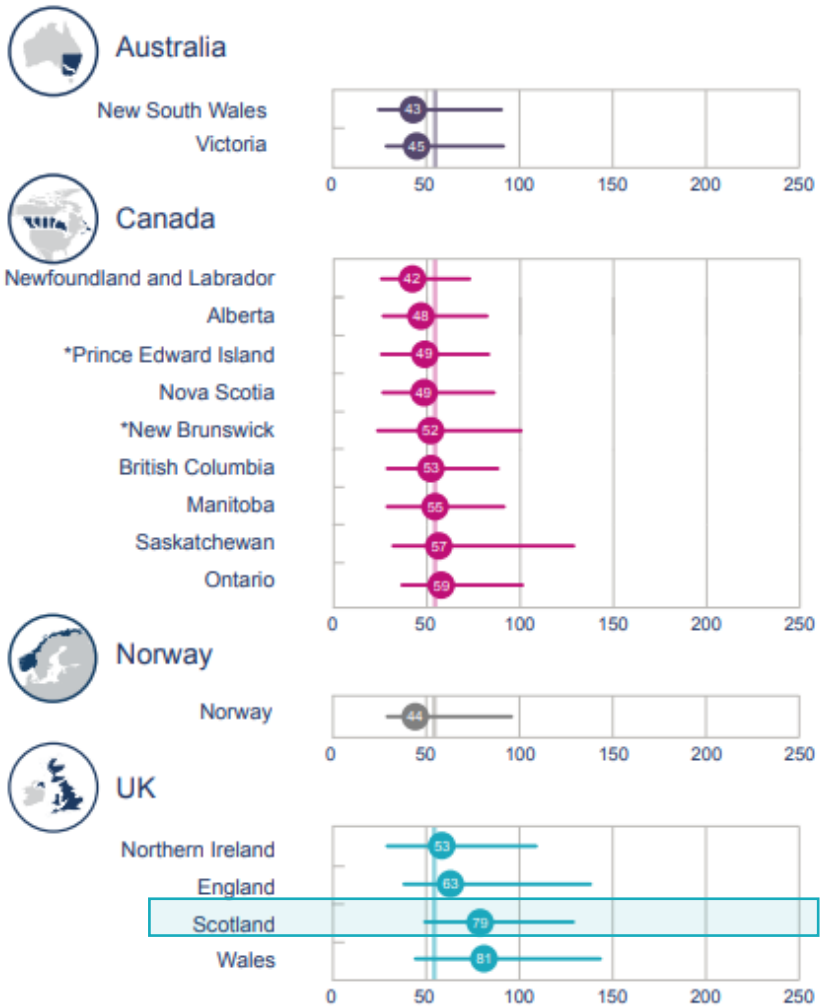
All cancer sites

Time-to-first radiotherapy treatment



'Average time-to-first treatment' relates to the average (median) across all jurisdictions included in the meta-analysis. Those not included in the meta-analysis are marked with an asterisk (*).

Time-to-first treatment refers to the treatment with that specific modality. Treatment can begin before a formal diagnosis; the parameters used in this study are 31 days before diagnosis to 365 days after diagnosis.

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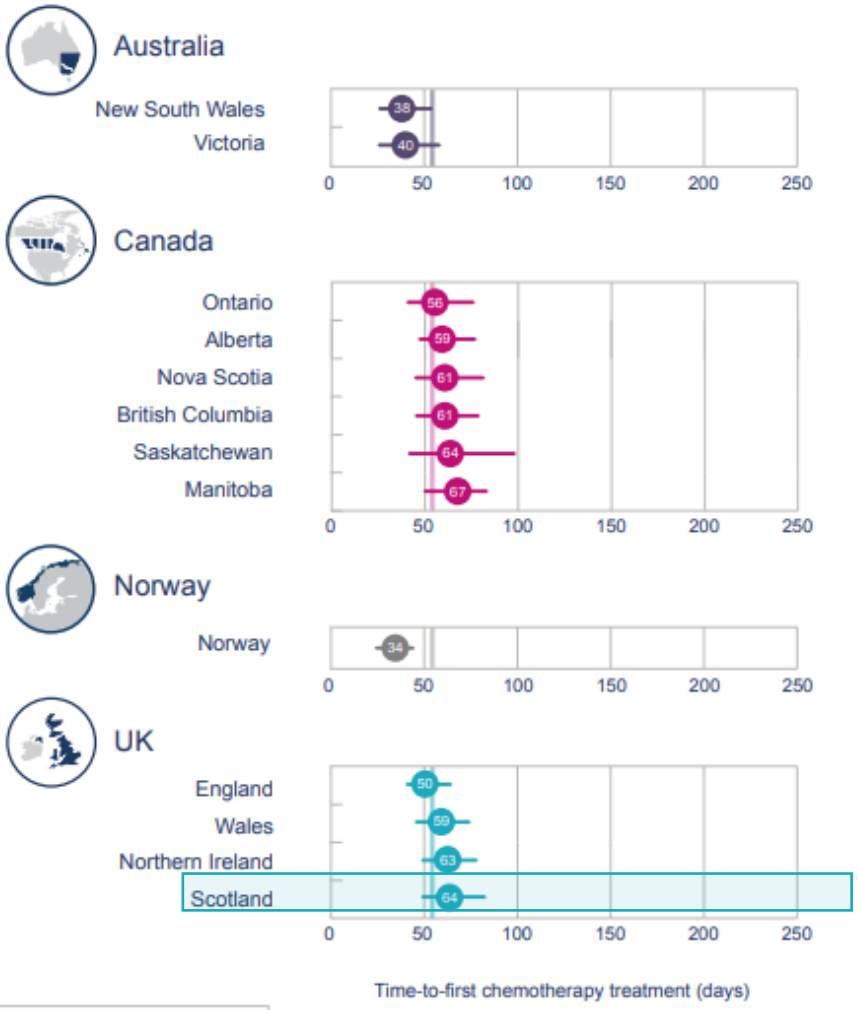
Oesophageal cancer

Time-to-first chemotherapy treatment



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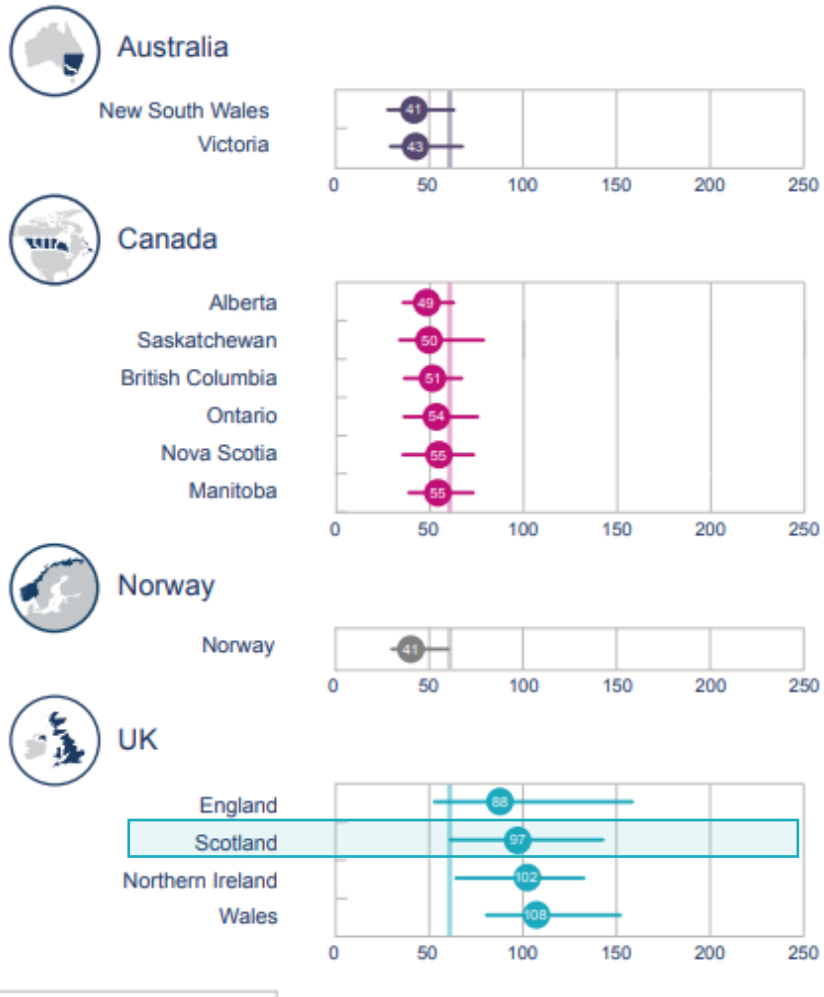
Oesophageal cancer

Time-to-first radiotherapy treatment



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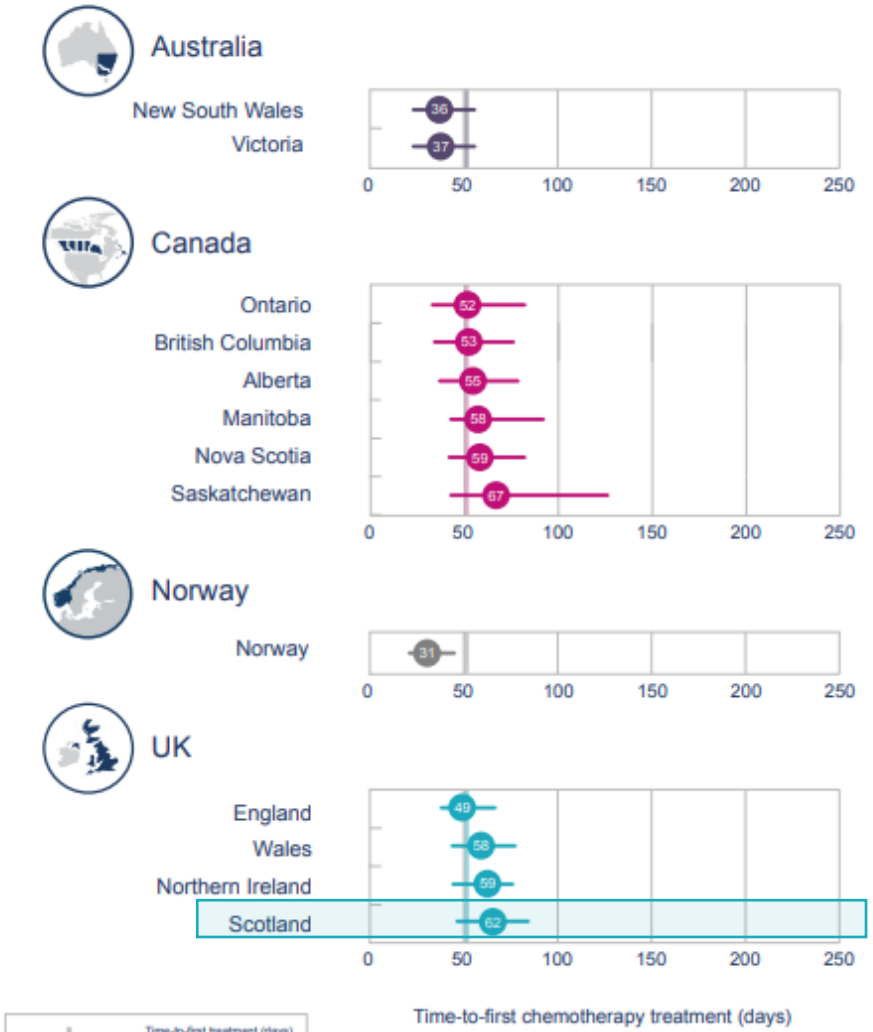
Stomach cancer

Time-to-first chemotherapy treatment



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Stomach cancer

Time-to-first radiotherapy treatment

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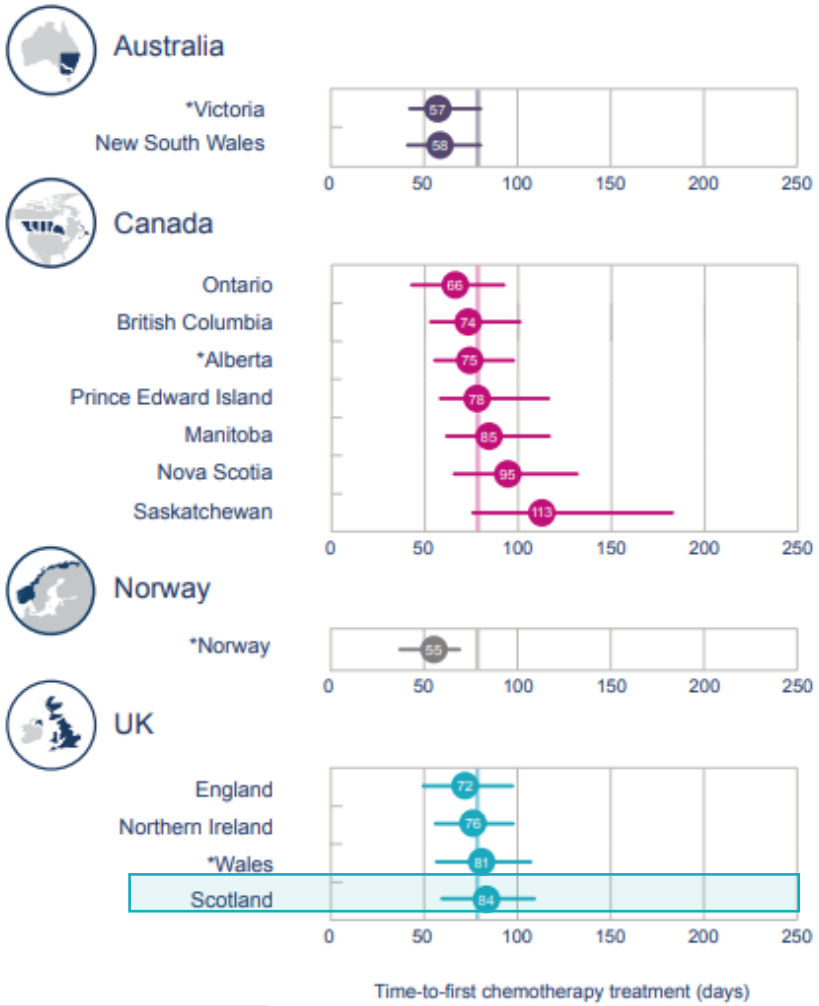
Colon cancer

Time-to-first chemotherapy treatment



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Rectal cancer

Time-to-first chemotherapy treatment

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Rectal cancer

Time-to-first radiotherapy treatment

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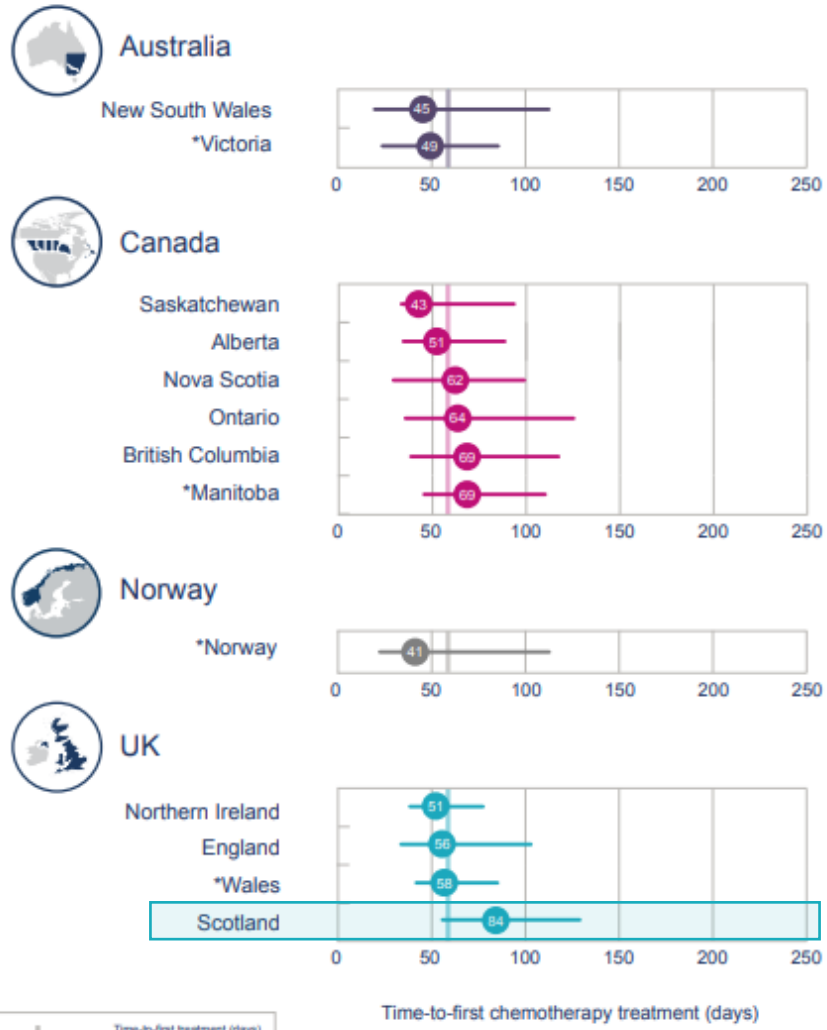
Liver cancer

Time-to-first chemotherapy treatment



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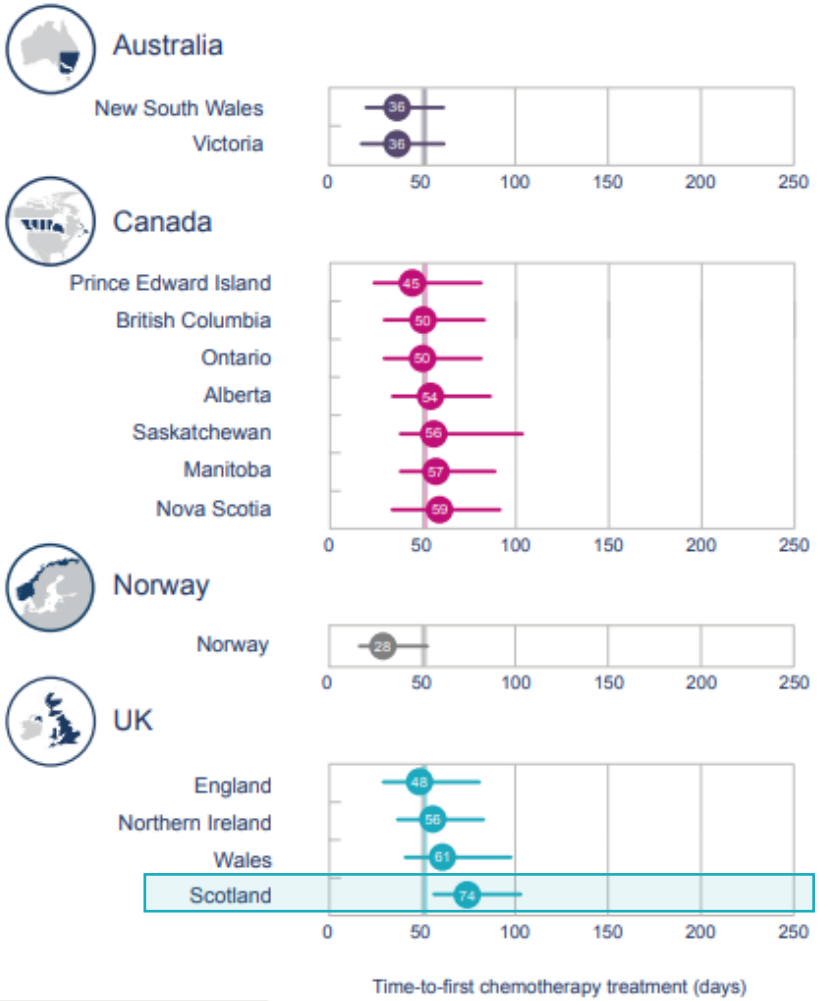
Pancreatic cancer

Time-to-first chemotherapy treatment



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Lung cancer

Time-to-first chemotherapy treatment

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Lung cancer

Time-to-first radiotherapy treatment

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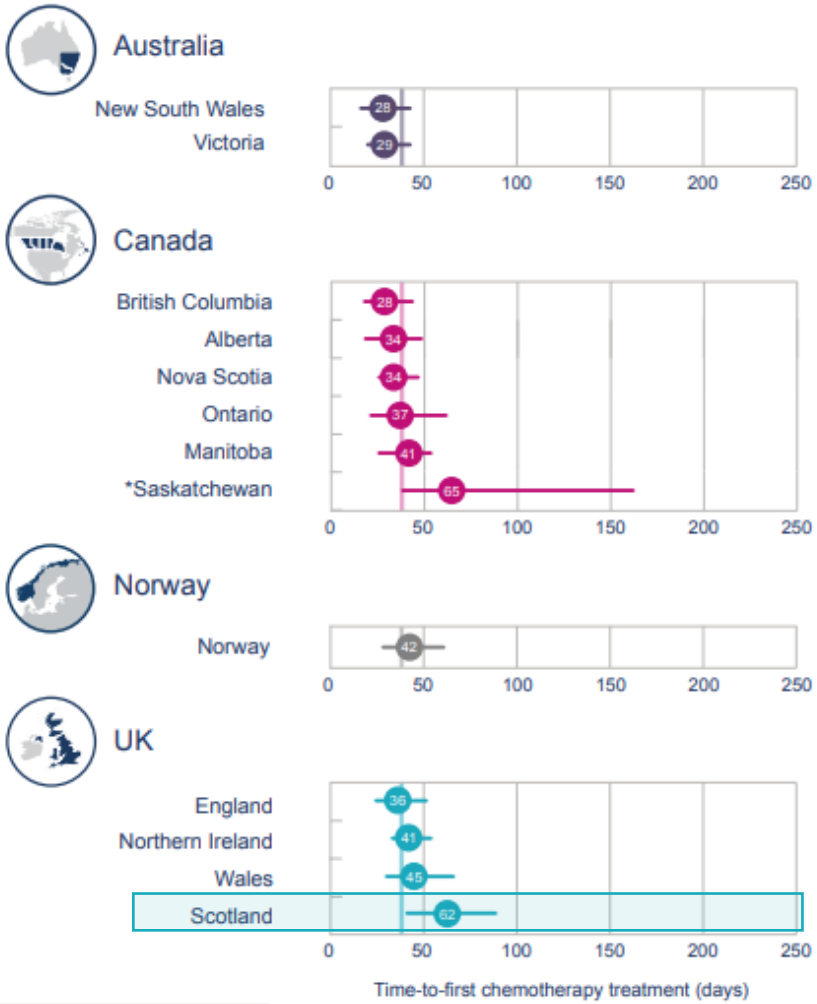
Ovarian cancer

Time-to-first chemotherapy treatment



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Summary of Findings and Impacts

Differences in data collection, quality, accessibility limit international comparisons

Time intervals across cancer pathways vary internationally

Similar awareness of signs and symptoms. Differences in help seeking behaviour. Age related risk not well recognised

Difference in primary care readiness to refer and some differences in health systems/ processes highlighted

International differences in exist in survival, stage, distribution and by stage

Across the modules, novel, robust tools developed which have been internationally recognized

Review

- Led to a study tour to Denmark to learn more about improvements in access to diagnostics which provided additional evidence to establish pilots to improve diagnosis in Wales.

Public Awareness Campaigns

- Be Clear on Cancer
- Development of PCP training programme that aims to educate and promote the awareness of cancer symptoms alongside raising PCPs awareness of the publics presumed barriers to present

Strategy

- Provided evidence for Scotland's cancer plan: Beating Cancer: Ambition and Action
- Provided evidence to the Scottish Primary Care Cancer Group and the Scottish Clinical Imaging Network to improve direct access to imaging for primary care practitioners

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Q & A

Thank you

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