Routes to diagnosis of cancer

Cancer diagnosed in 2018-2021

Northern Ireland Cancer Registry

Northern Ireland Cancer Registry, 2025

ABOUT THIS REPORT

Contents

This report includes information on the routes to a diagnosis of cancer (excluding non-melanoma skin cancer) during 2018-2021. The routes to diagnosis classification identifies the key event in the pathway that leads to a patient's diagnosis of cancer. Cancer incidence data is sourced from the Northern Ireland Cancer Registry (NICR), with linkage to multiple health datasets extracted from administrative data sources allowing derivation of the classification.

Administrative data

Screening data for the project was provided courtesy of the bowel, breast and cervical screening programmes managed by the Public Health Agency, while outpatient data was provided by the Business Services Organisation. Access to data from the Cancer Patient Pathway System providing information on primary care referrals and the Patient Administration System which holds information on inpatient admissions was supplied by the five Health and Social Care Trusts. Cancer mortality data, used in the calculation of cancer survival, was provided courtesy of the General Register Office (NI) via the Department of Health.

We would like to thank all data providers for their assistance and support, without whom this report would not have been possible.

Reuse of information

Further information

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Acknowledgements

The Northern Ireland Cancer Registry (NICR) uses data provided by patients and collected by the health service as part of their care and support.
NICR is funded by the Public Health Agency and is based in Queen's University, Belfast.

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SUMMARY

The routes to diagnosis project aims to provide an indication of the key event in each cancer patient's pathway that most directly led to their cancer diagnosis. Based upon cancers (excluding non-melanoma skin cancer) diagnosed in 2018-2021 patients were classified as shown in figure 1:

Summary figure 1: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021

5.8% where the patient was referred from the national screening programmes.

33.5% where the patient had a GP referral with a red-flag to indicate suspected cancer.

23.3% where the patient presented as an emergency inpatient to hospital.

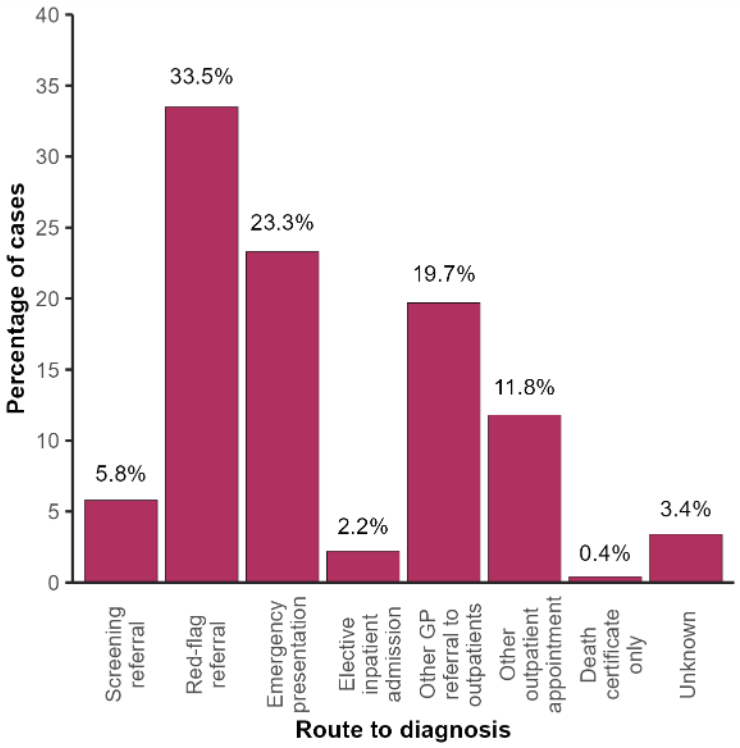
2.2% where the patient had an elective inpatient appointment with no earlier admission recorded.

19.7% where the patient had a GP referral to outpatients that was not a red flag referral.

11.8% where the patient had an outpatient appointment which was not a direct result of a GP referral.

0.4% where no data was available on the patient, except for reference to cancer on a death certificate.

3.4% where no data was available on the patient.



Screening

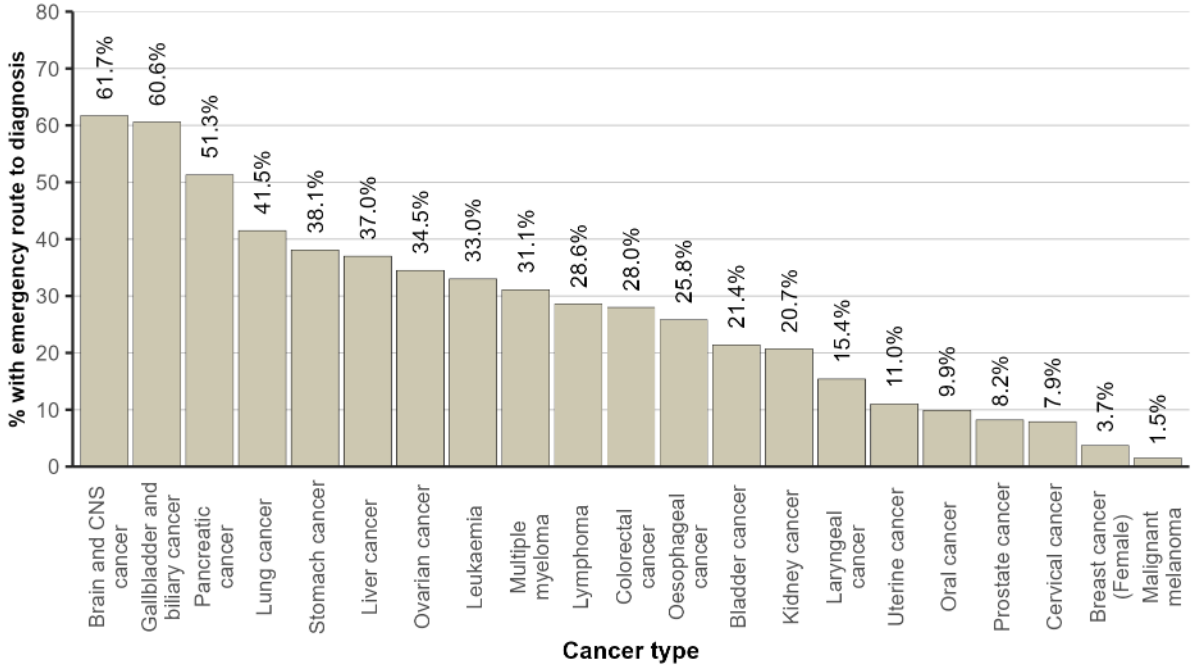
The screening route to diagnosis only applies to certain cancers and age groups. For these groups: 52.5% of female breast cancer patients aged 50 to 70, 43.6% of cervical cancer patients aged 25 to 64 and 22.4% of colorectal cancer patients aged 60 to 74 were diagnosed via the screening route.

Emergency admissions

For the four most common cancer types: 3.7% of female breast cancer patients, 41.5% of lung cancer patients, 8.2% of prostate cancer patients and 28.0% of colorectal cancer patients were diagnosed via the emergency presentation route.

Diagnosis following an emergency admission ranged from 61.7% for brain and central nervous system cancer patients and 60.6% for gallbladder and biliary cancer patients to 3.7% for female breast cancer patients and 1.5% for malignant melanoma patients.

Summary figure 2: Percentage of cases diagnosed in 2018-2021 with an emergency presentation route to diagnosis by cancer type

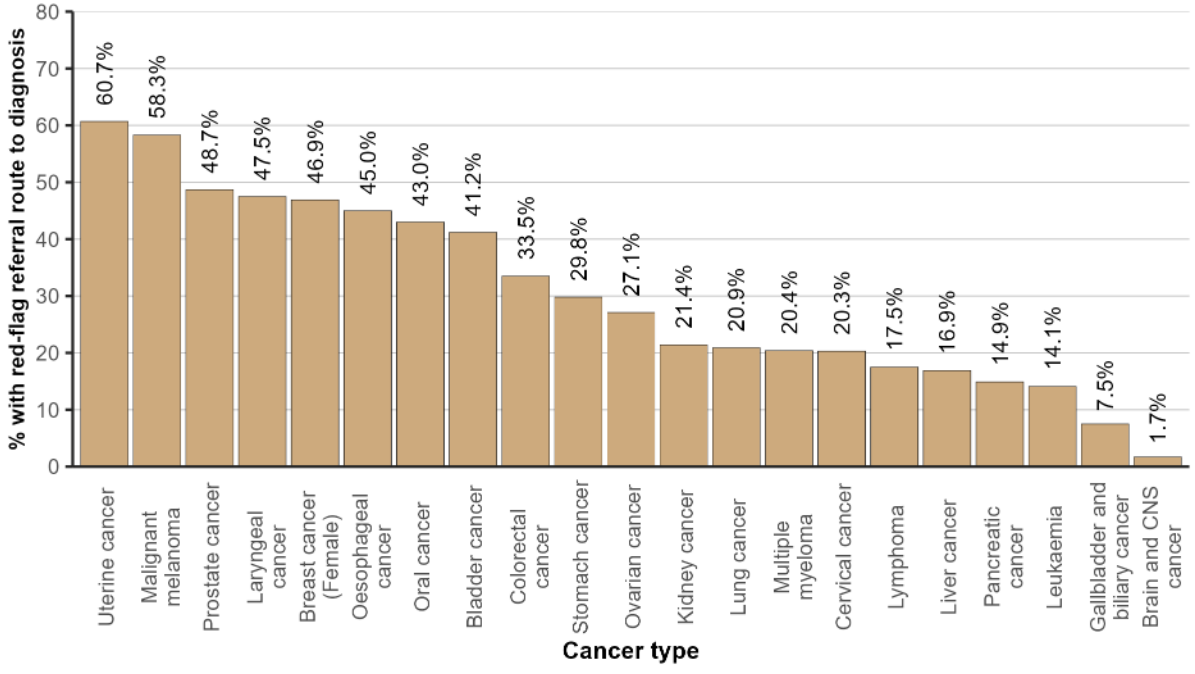


Red-flag referrals

For the four most common cancer types: 46.9% of female breast cancer patients, 20.9% of lung cancer patients, 48.7% of prostate cancer patients and 33.5% of colorectal cancer patients were diagnosed via the red-flag referral route.

Diagnosis following a red-flag referral ranged from 60.7% for uterine cancer patients and 58.3% for malignant melanoma patients to 7.5% for gallbladder and biliary cancer patients and 1.7% for brain and central nervous system cancer patients.

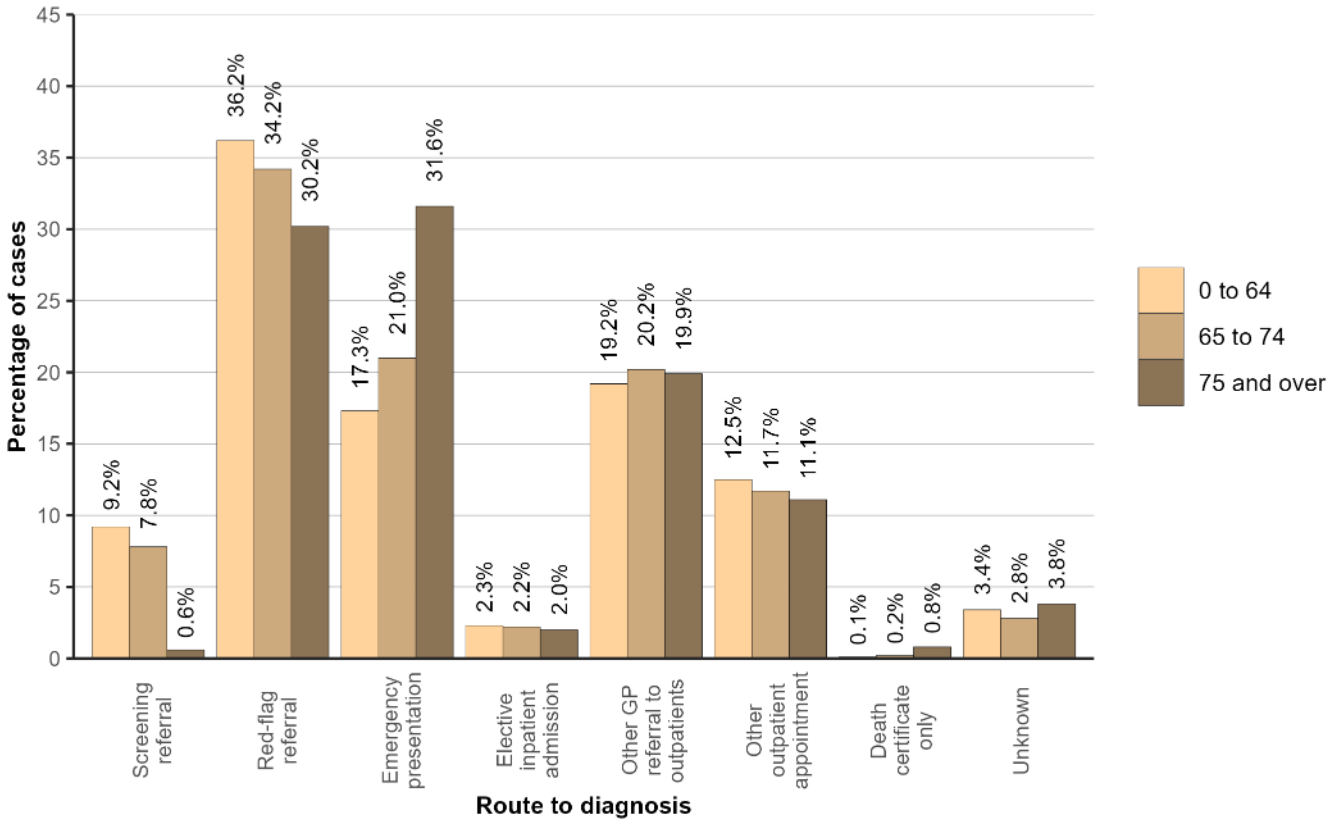
Summary figure 3: Percentage of cases diagnosed in 2018-2021 with a red-flag referral route to diagnosis by cancer type



Age at diagnosis

Route to diagnosis was associated with the patients age at diagnosis with the proportion of cases of cancer (ex NMSC) diagnosed via a red-flag referral being 36.2% among patients aged 0 to 64 compared to 30.2% among patients aged 75 and over. The proportions diagnosed via an emergency presentation were 17.3% and 31.6% for patients aged 0 to 64 and 75 and over respectively, while a screening referral was the route taken by 9.2% of patients aged 0 to 64 and 0.6% of patients aged 75 and over.

Summary figure 4: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021 by age group



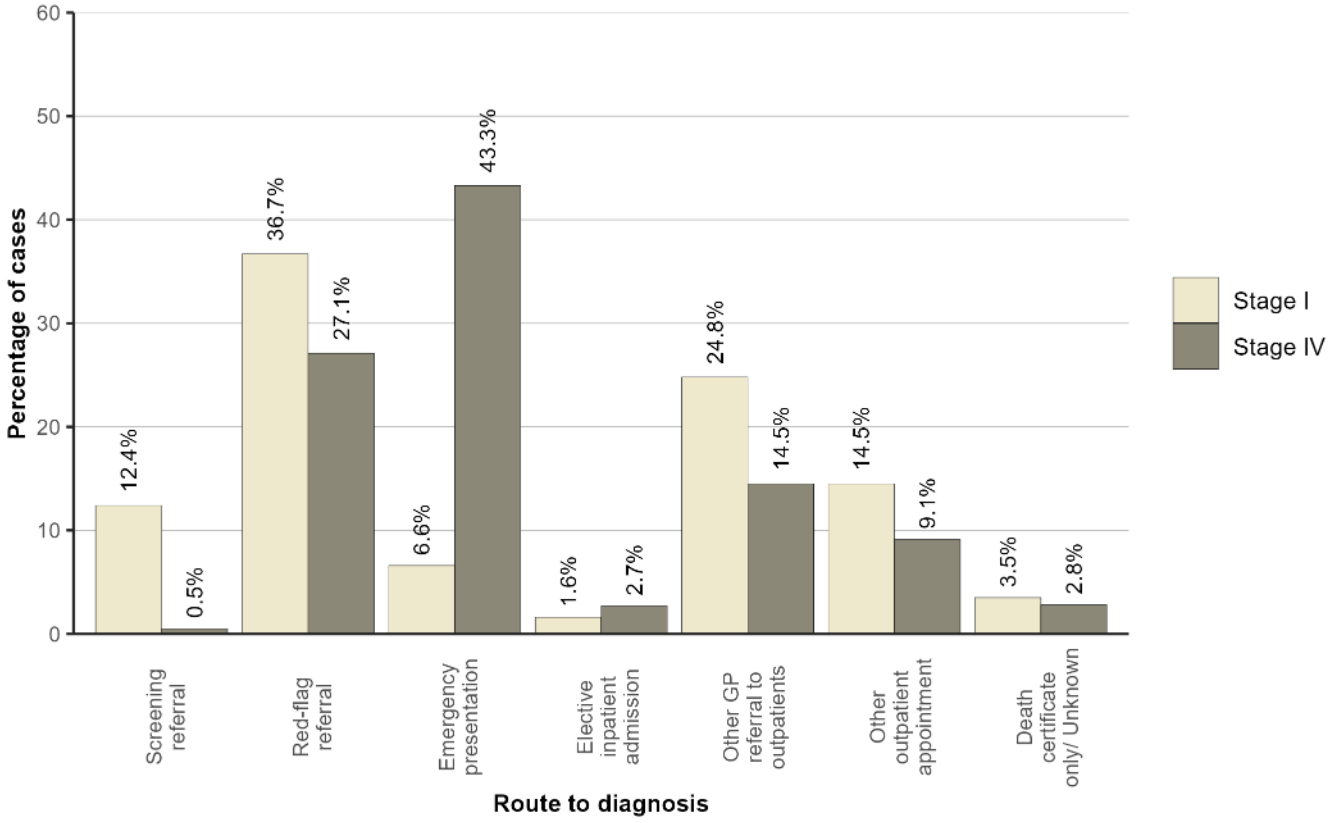
Stage at diagnosis

There was a strong relationship between route to diagnosis and stage at diagnosis with the proportion of cancer (ex NMSC) cases diagnosed via a red-flag referral being 36.7% among stage I cancers compared to 27.1% among stage IV cancers. The proportions diagnosed via a screening referral were 12.4% and 0.5% for stage I and stage IV cancers respectively, while an emergency presentation was the route taken in 6.6% of cases diagnosed at stage I and 43.3% of cases diagnosed at stage IV.

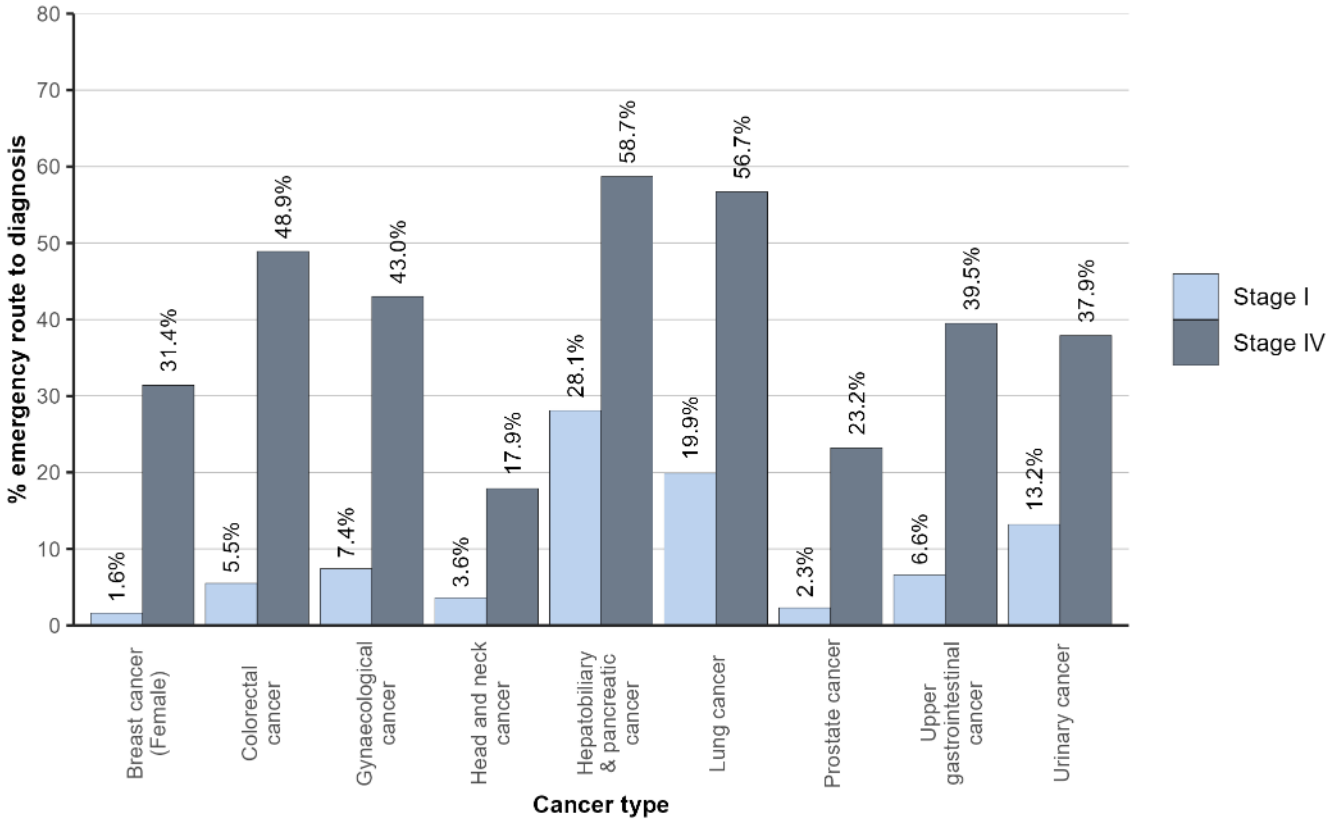
The large variation in emergency route to diagnosis by stage was apparent for most cancer types.

- 31.4% of stage IV female breast cancers were diagnosed via an emergency admission route compared to 1.6% of stage I cancers.
- 56.7% of stage IV lung cancers were diagnosed via an emergency admission route compared to 19.9% of stage I cancers.
- 23.2% of stage IV prostate cancers were diagnosed via an emergency admission route compared to 2.3% of stage I cancers.

Summary figure 5: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021 by stage at diagnosis



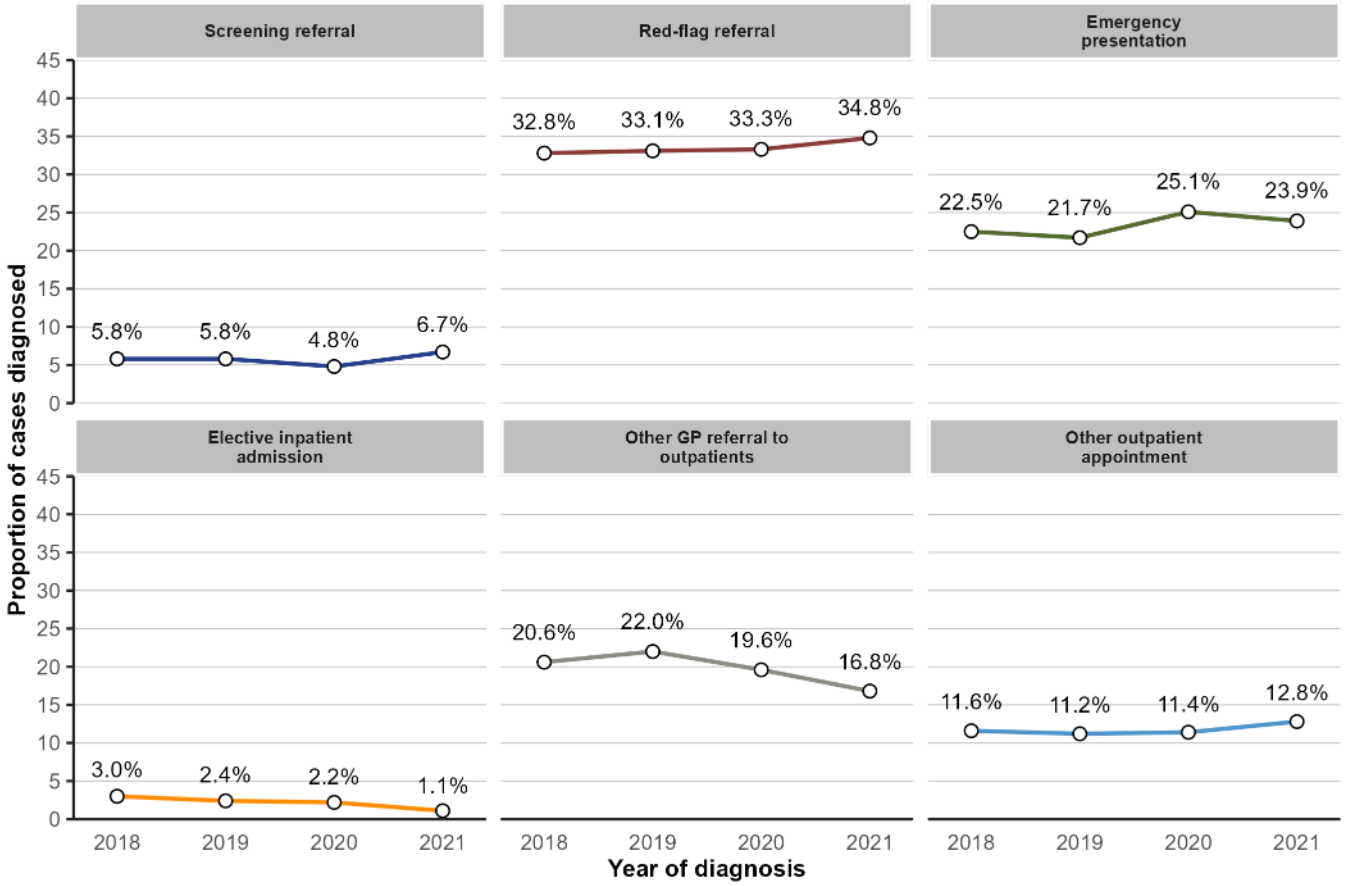
Summary figure 6: Percentage of cases with an emergency route to diagnosis for patients diagnosed in 2018-2021 by cancer type and stage at diagnosis



Trends over time

The proportion of cases diagnosed via a screening referral route increased from 4.8% in 2020 to 6.7% in 2021. while presentation via a red-flag referral route increased from 33.3% to 34.8%. The proportion of cases diagnosed via an emergency presentation route decreased from 25.1% in 2020 to 23.9% in 2021.

Summary figure 7: Trends in route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021

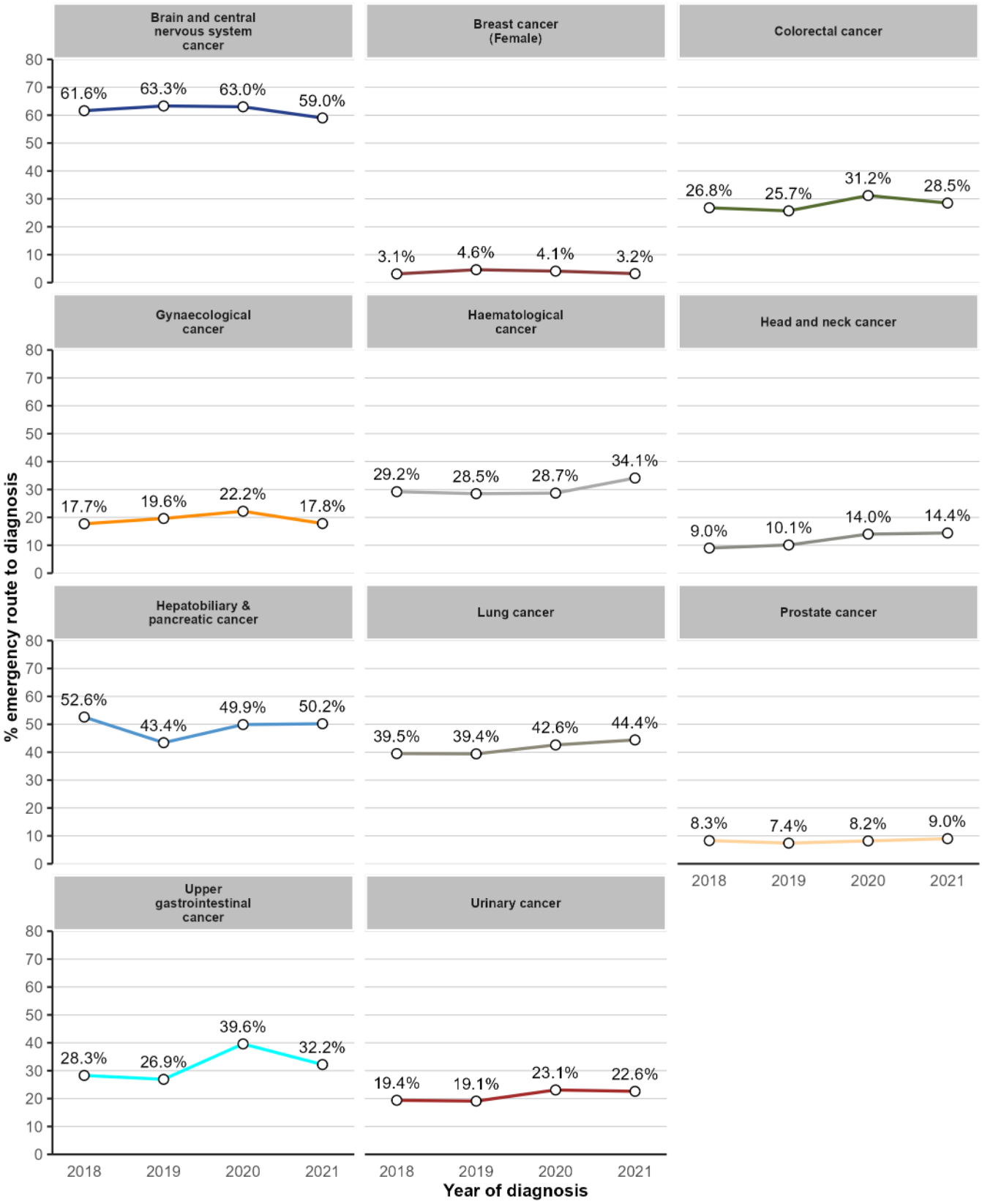


The distribution of cases diagnosed by route to diagnosis varied over time for specific cancer types. Those demonstrating significant changes between 2020 and 2021 were female breast cancer, colorectal cancer, lung cancer, prostate cancer and malignant melanoma.

For those demonstrating significant changes in the previous two years the proportion with an emergency presentation route:

- decreased for female breast cancer from 4.1% in 2020 to 3.2% in 2021.
- decreased for colorectal cancer from 31.2% in 2020 to 28.5% in 2021.
- increased for lung cancer from 42.6% in 2020 to 44.4% in 2021.
- increased for prostate cancer from 8.2% in 2020 to 9.0% in 2021.

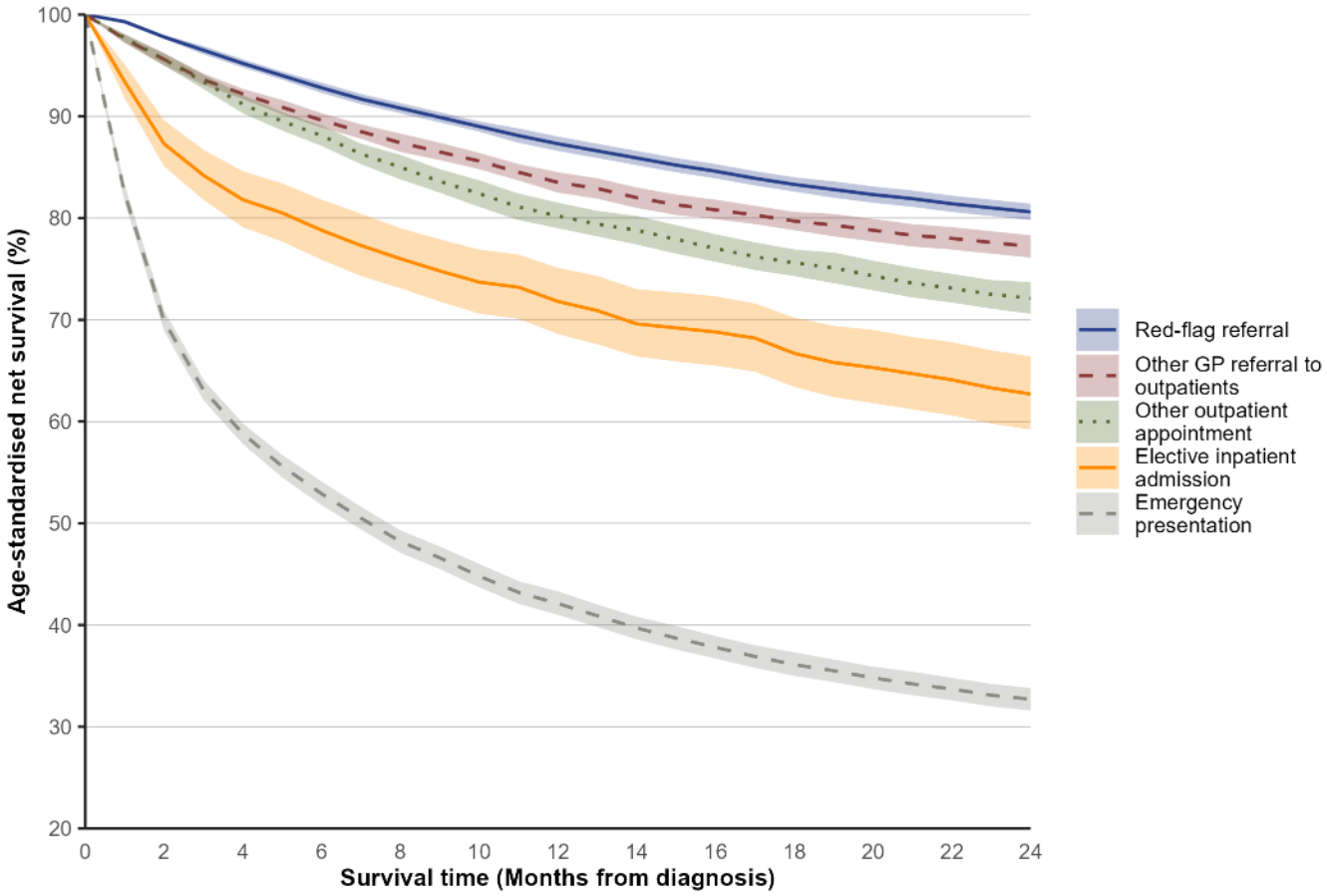
Summary figure 8: Trends in percentage of cases with an emergency route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021



Survival

During 2018-2021 one-year age-standardised net survival from cancer (ex NMSC) ranged from 42.1% for those diagnosed via an emergency presentation route to 87.3% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 32.7% for those diagnosed via an emergency presentation route to 80.6% for those diagnosed via a red-flag referral route.

Summary figure 9: Age-standardised net survival by route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021



01: INTRODUCTION

In March 2022 the Department of Health launched a new Cancer Strategy for Northern Ireland [1] which set the direction for cancer services for the 10 years between 2022 and 2032. Action 5 of this strategy aims to:

> **Establish routes to diagnosis reporting and analysis on a regular basis to monitor changes to help improve diagnostic pathways and outcomes for patients**

In 2023 the Northern Ireland Cancer Registry (NICR) was funded by the Department of Health to develop a routes to diagnosis project with the aim of providing an indication of the key event in each cancer patient's pathway that most directly led to their cancer diagnosis. Initially piloted in Northern Ireland in 2020 using data from 2012-2016 [2], which was in turn based upon a project that has been running in England since 2012 [3,4], this exercise classifies every case of cancer registered in NI as having one of the following eight **Routes to Diagnosis.**

Screening referral

Patient was referred to inpatient or outpatient services from national cancer screening programmes.

Red-flag referral

Patient had a GP referral to hospital, with a red-flag to indicate suspected cancer as a result of presenting with cancer related symptoms.

Emergency presentation

Patient presented as an emergency inpatient to hospital, either as a self-referral or as a result of a GP or outpatient appointment.

Elective inpatient admission

Patient had an elective inpatient appointment where no earlier admission or referral was recorded.

Other GP referral to outpatients

Patient had a routine or urgent GP referral to outpatients that was not a red flag referral.

Other outpatient appointment

Patient had an outpatient appointment which was not directly a result of a GP referral (e.g. an internal referral or a referral from an external body such as a private hospital or charity).

Death certificate only

No data was available on the patient, except for a reference to cancer on their death certificate.

Unknown

No data available on patient.

The data required to assign this classification comes from several sources. The core data on cancer patients diagnosed from 2018-2021 is collected by the Northern Ireland Cancer Registry. This data is

linked to hospital episode data (both inpatient and outpatient) from the Patient Administration System (PAS), referral data from the Cancer Patient Pathway System (CaPPS) and data supplied by the three cancer screening programmes in NI (bowel, breast and cervix).

The translation of this wealth of data into a single route to diagnosis is based upon the algorithm developed by the National Cancer Registration and Analysis Service in England [3,4]. This process works by initially assigning an endpoint based upon the hospital episode that occurred closest to diagnosis, and then working backwards to the event most likely to be the main referral source with certain key events, such as screening, given priority over others.

Results are presented as both an average number of cases per year and as proportions of the total number of cases diagnosed. A range of cancer types are considered, and results are broken down by a range of demographic and cancer characteristics. Where possible comparisons are made to the latest available data from England, while survival up to two years from diagnosis is also presented. These results are a tangible step in meeting Action 5 of the new Cancer Strategy by providing a comprehensive report on the pathway patients take to a diagnosis of cancer in Northern Ireland. It is hoped the results will not only be useful to policy makers, but will also provide the foundation for future development and research into this area.

The report authors would like to thank the various organisations who provided data from this report, in particular the five Health and Social Care Trusts, Business Service Organisation, the three cancer screening programmes managed by the Public Health Agency (PHA) and the Department of Health who funded this project.

02: METHODOLOGY

2.1: CANCER REGISTRATION

The Northern Ireland Cancer Registry (NICR) is part of Queen's University, Belfast and is funded by the Public Health Agency to collate information on all new diagnoses of cancer in Northern Ireland (NI). It was first established in 1994 and uses an automated computer system with multiple information sources from across the Health and Social Care (HSC) Service in NI to provide detailed information on cancer incidence from 1993 onwards.

The NICR acquires notifications of possible cancer and pre-malignant conditions within the NI population from three main sources:

- Pathology reports from the four pathology laboratories in NI (Belfast, Altnagelvin, Antrim and Craigavon);
- Hospital admissions and discharges recorded in the Patient Administration System (PAS) and supplied by the five Health and Social Care Trusts (HSCT); and
- Death registrations from the General Registrar Office (GRO), which are received via the Department of Health (DoH).

These data sources are combined electronically, with automatic routines applied that cross check key details and resolve multiple notifications. However, considerable manual work is also required to ensure that key data items (e.g. date of diagnosis, cancer type) are coded to international cancer registration standards and that the final data is as complete and as accurate as possible.

As part of this process, a major focus of the registry's operation is on the verification of any registration which comes from a single hospital admission, a single pathology report or a single death certificate. For these registrations trained Cancer Intelligence Officers (CIOs) examine general practitioners' (GPs) notes for patients who have died from cancer, hospital records for cases identified without histopathology or cytology confirmation, pathology reports where there is conflicting information or other possible errors, and other health care systems such as the Regional Information System for Oncology & Haematology (RISOH) in order to further check the accuracy of any coding, ensure that no duplicate registrations are present and to separate primary cancers from secondary and recurrent disease.

Date of diagnosis

One of the primary data items recorded as part of the cancer registration process is the date of cancer diagnosis. NICR base the collection of this data item on recommendations from the European Network of Cancer Registries [5], which states that where possible the date of diagnosis should be the date of first histological or cytological confirmation of the malignancy. Given that this process can involve various stages, the date is chosen according to the following priority:

1. Date when the biopsy was taken;
2. Date of receipt of the sample by the pathologist;
3. Date of the pathology report.

In the scenario where the cancer is not diagnosed pathologically then the date of admission to hospital as a result of this malignancy is used as the date of diagnosis. If no information is available other than the fact that the patient has died as a result of cancer then date of death is used as the date of diagnosis, and the registration is flagged as being death certificate only (DCO).

Cancer coding

Cancer type is coded using the tenth revision of the International Classification of Diseases (ICD10) [6]. The ICD10 codes used to classify cancer are C00-C97, with non-melanoma skin cancer (ICD10 code C44) excluded from the overall cancer count as it is relatively easily treated, rarely fatal and as such does not always involve treatment in a hospital setting making a route to diagnosis difficult to assign. The ICD10 codes used to classify each type of cancer are listed below.

Table 2.1: Classification of cancer type based upon ICD10 code

Cancer type	ICD10 code	Cancer type	ICD10 code
Colorectal	C18-C20	**Gynaecological**	C51-C58
Breast	C50	- **Cervical**	- C53
Lung (inc. trachea)	C33-C34	- **Ovarian (inc. fallopian tube)**	- C56-C57.4
Prostate	C61	- **Uterine**	- C54-C55
Head & neck	C00-C14, C30-C32	**Urinary**	C64-C68
- **Oral**	- C00-C14	- **Bladder**	- C67
- **Laryngeal**	- C32	- **Kidney**	- C64
- **Nasal cavity & other sinuses**	- C30-C31	**Malignant melanoma**	C43
Upper gastrointestinal	C15-C16	**Brain (inc. CNS)**	C70-C72, C75.1-C75.3
- **Oesophageal**	- C15	**Haematological**	C81-C96
- **Stomach**	- C16	- **Leukaemia**	- C91-C95
Hepatobiliary & pancreatic	C22-C25	- **Lymphoma**	- C81-C86
- **Liver**	- C22	- **Multiple myeloma**	- C90
- **Gallbladder & other biliary**	- C23-C24		
- **Pancreas**	- C25	**All cancers (ex. NMSC)**	C00-C43, C45-C97

CNS: Central Nervous System, NMSC: Non-melanoma skin cancer

Geographic areas

NICR routinely collects address information, including postcode, allowing geographic areas to be assigned to records of cancer incidence. This is accomplished for each patient through an electronic process that uses the collected postcode along with a lookup file, known as the Central Postcode Directory (CPD) [7], that provides the relationship between each valid postcode in Northern Ireland and a range of higher geographic areas. The key areas derived from the patient's postcode in this manner for the routes to diagnosis project are Health and Social Care Trusts (HSCT) and Super Output Areas (SOA - a small geographic area with a target population of around 2,000 people). Addresses with an unknown, incomplete or invalid postcode cannot be assigned higher geographic areas, however only a small proportion of records for cancers diagnosed fall into this category (0.01% in 2018-2021).

Socio-economic deprivation

The 2017 Northern Ireland multiple deprivation measure (NIMDM) [8] assigns a deprivation score to each Super Output Area (SOA) in Northern Ireland based upon the economic characteristics of all persons usually resident in that area. For the purposes of this report SOAs were ranked according to this score and divided into quintiles, with quintile 1 containing the fifth of the population resident in the most deprived SOAs and quintile 5 containing the fifth of the population resident in the least deprived SOAs. Patients were then assigned a deprivation quintile based upon their SOA of residence which was derived for each patient based upon their postcode of residence.

Urban/Rural status

Determination of urban/rural status is based upon the 2015 Statistical Classification and Delineation of Settlements [9]. This defines urban areas as settlements with a usually resident population of 5,000 people or more. The settlement development limits used in this classification are specified by the Department of the Environment (DoE) Planning Service and are not based upon small area boundaries such as super output areas. A best fit approach is thus applied in which settlements are approximated using SOAs [9], however many settlement suburbs intersect SOA boundaries requiring the use of an additional mixed urban/rural category in the presented analysis.

Cancer stage

Staging is carried out using a number of laboratory and clinical tests at diagnosis. The staging classification used throughout this report is the TNM stage [10] that includes information on the extent of the primary tumour (T), the absence or presence of lymph node metastasis (N) and the absence or presence of distant metastasis (M). The classification combines these three elements to produce an overall TNM stage for the tumour, although the manner in which the overall TNM stage is derived depends upon the cancer site. Staging is carried out for most cancer sites, however there is no TNM classification for brain cancer, leukaemia and multiple myeloma.

For analysis purposes the overall TNM stage for each cancer type is coded to four groups, ranging from early tumours (Stage I) to advanced tumours that have distant metastasis (Stage IV). Cancers without a stage assigned are classified as 'unknown', but are retained in the analysis as a lack of cancer staging still has clinical relevance with such patients less likely to have had treatment for their cancer.

2.2: Additional Data Sources

Data from NICR is linked to several additional data sources in order to collate the information required to derive a route to diagnosis for each patient.

Screening data

Screening data is supplied by the three cancer screening programmes in Northern Ireland (Breast, Bowel and Cervix) which are managed by the Public Health Agency. Each data provider is securely sent a list of

Health and Care Numbers (HCN) relating to patients who have been diagnosed with a breast, bowel or cervical cancer along with the date they were diagnosed and the site and morphology of the cancer.

The breast and bowel screening services use this information to derive whether or not these cancers were screen detected. This indicator is returned securely to NICR where it is linked to the cancer incidence record. The cervical screening program does not make a determination on whether a cancer is screen detected but returns the date and result of the most recent screening test (if one occurred). A screen detected cervical cancer is then defined by NICR as one with a positive screening result in the six months prior to diagnosis.

Cancer referrals from primary care

Referral data is sourced from the Cancer Patient Pathway System (CaPPS). This information system is used by the NHS to monitor the progress of each patient throughout their cancer diagnosis and treatment pathway. It is one of the data sources used in the production of cancer waiting time information in Northern Ireland and is thus the closest equivalent data source to the National Cancer Waiting Times dataset used in the derivation of English routes to diagnosis information.

Data on all confirmed cancers recorded in CaPPS is extracted from this dataset for the relevant study years and linked to the cancer registry data based upon Health and Care Number. Given that patients can have more than one cancer diagnosed, even within the space of a couple of years, only links between data sources that have diagnosis dates within six months of each other are retained. An exact match between diagnosis dates is not expected between NICR and CaPPS as different definitions are used.

Referral data from CaPPS is then coded into two distinct categories:

- **Red flag referrals from a GP** which occurred up to six months prior to cancer diagnosis. In the event that a patient had more than one of this type of referral the closest to diagnosis is retained. The red-flag group represents the closest equivalent measure to the Urgent suspected cancer (USC) referrals category used in the English classification.
- **All other referral types** including non-red flag GP referral, any referral type from other health professionals such as dentists and consultants (including those that later receive an upgrade to red-flag status) and referrals from A&E departments.

Hospital Inpatient Data

The Patient Administration System (PAS) contains all records of hospital inpatient admissions in Northern Ireland. Records with cancer as a primary or secondary medical condition coded on the system are sent to NICR by each Trust on a biannual basis. This information includes the method and date of hospital admission, which are extracted and linked to the NICR cancer incidence data as part of the routes to diagnosis project. Admissions in the six months up to diagnosis are retained and are coded into three distinct categories:

- **Emergency admissions.** These include attendance at Emergency Departments (ED) either via walk in or ambulance, referrals to EDs from GPs, paramedics or consultants and transfers/referrals to EDs from outpatient departments.
- **Elective admissions.** These include any planned or booked admissions, referrals from screening, GPs or consultants as a result of suspected cancer and admissions of patients on waiting lists.
- **Other admissions.** Any admission types not included above such as maternity admissions, internal admissions and transfers from other hospitals.

The closest admission to diagnosis of each type (up to a maximum of six months) is used in assigning the route to diagnosis.

Hospital Outpatient Data

Hospital outpatient data is sourced in a similar manner to screening information with Business Services Organisation providing matched outpatient records for cancer patients to NICR. Once received they are processed in a similar manner to hospital inpatient data with outpatient appointments up to six months prior to diagnosis linked to cancer incidence data. Outpatient appointments are coded into five distinct categories based upon the source of referral of each appointment.

- **Emergency referral.** These include any appointments resulting from a referral from an Emergency Department.
- **GP referral.** Appointments initiated as a result of a referral (of any type) from a GP.
- **Other external referral.** Appointments initiated as a result of a referral from any other health professional that is external to the specialty responsible for the patients cancer care. These would include allied health professionals such as dentists and optometrists, specialist nurses, screening services, external and third-sector bodies such as Action Cancer and the private sector.
- **Consultant referral.** Any appointments resulting from an internal referral from a consultant. This would also include those referrals coded as coming from a particular specialty (e.g. General Medicine).
- **Other internal referral.** Appointments initiated as a result of a referral from any other health professional who is already responsible for the patients care such as non-specialist nurses. Internal transfers including inter-Trust and inter-hospital transfers are included in this group.

The closest appointment to diagnosis of each type is used in assigning the route to diagnosis, however, in some cases the subtype of each referral type (e.g. whether an appointment originated from a screening referral) is relevant to the final classification of diagnosis route.

2.3: Routes to Diagnosis Algorithm

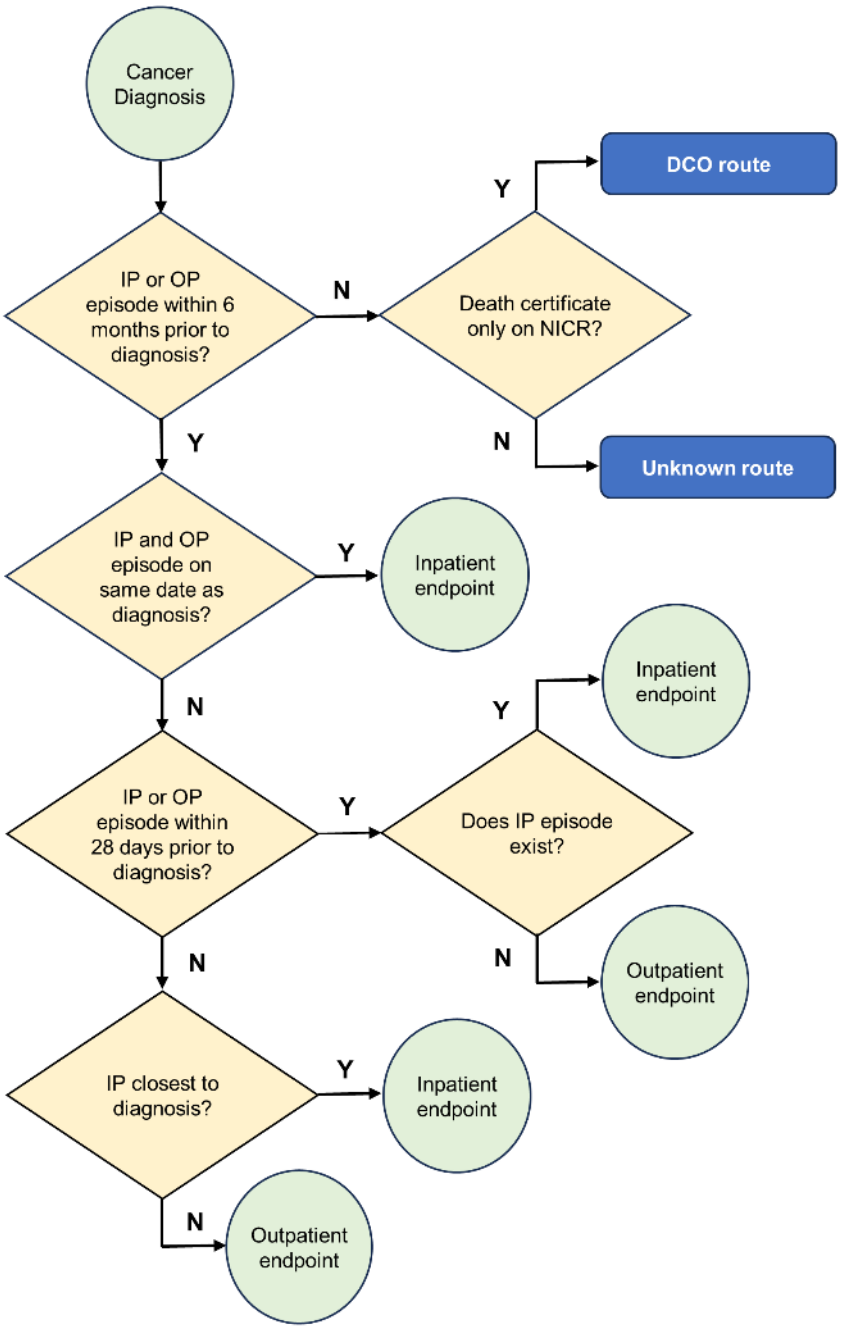
Starting from the date of diagnosis, the routes to diagnosis algorithm works backwards by examining the data gathered from the sources described in the previous section. The steps are as follows:

Step 01 – Determine the end point

The end point of the route is considered to be the inpatient admission or outpatient appointment that led most immediately to a diagnosis of cancer. A specific set of rules is applied to assign this end point to each patient:

1. Determine whether an inpatient or outpatient episode occurs in the six months prior to a cancer diagnosis and assign to 'Unknown' end point if none exists.
2. Reassign the end point to 'Death certificate only' (DCO) if no inpatient or outpatient episode exists and the basis of diagnosis assigned by NICR is DCO.
3. Determine whether both an inpatient and outpatient episode occur on the diagnosis date and assign the end point to 'Inpatient' if they do.

Figure 2.1: Route to diagnosis algorithm - Step 1: Assigning inpatient (IP) and outpatient (OP) end points



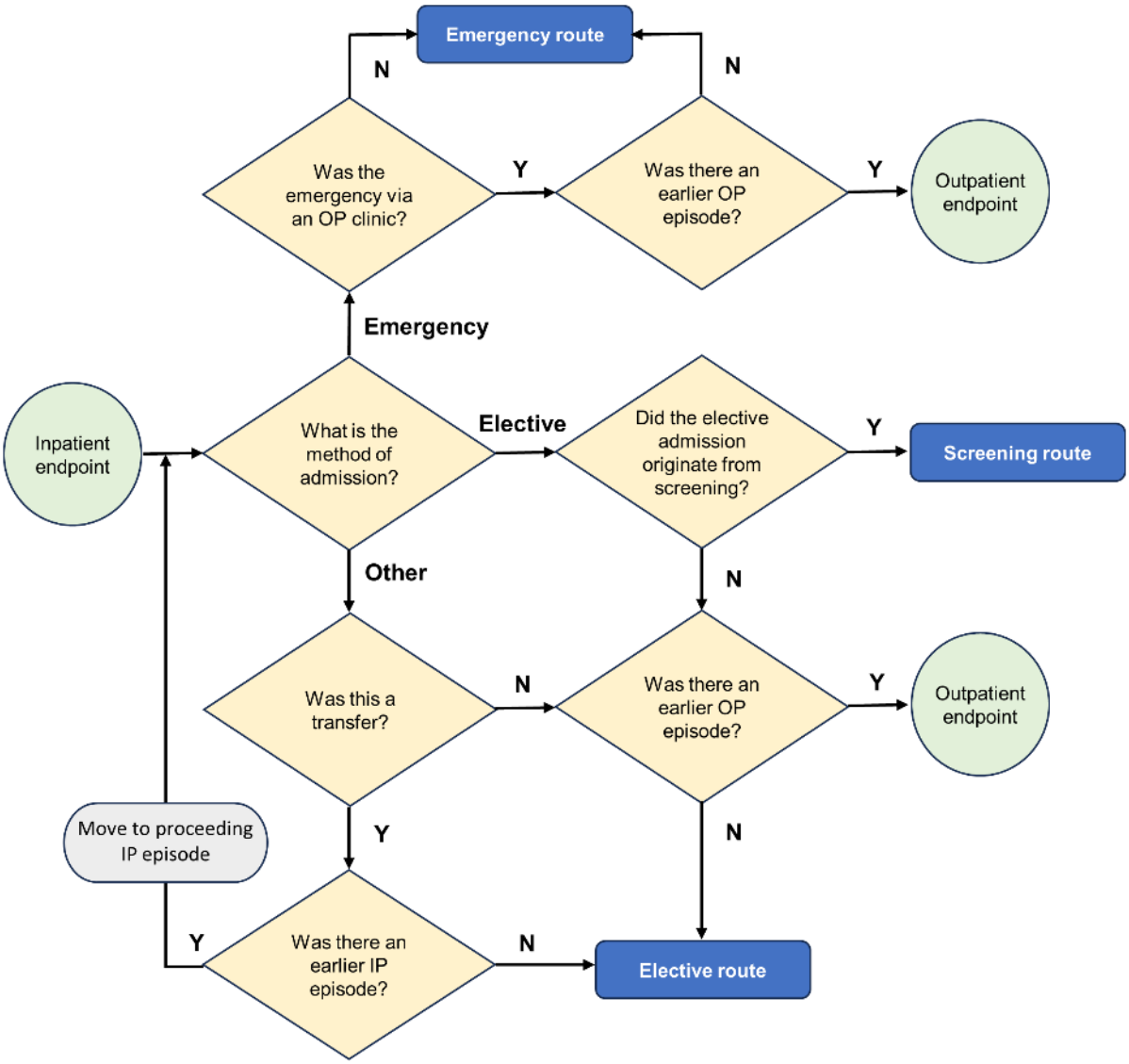
4. Determine whether there is an inpatient episode in the 28 days prior to diagnosis. If so assign the end point to 'Inpatient' otherwise assign the end point to 'Outpatient' if such events also exist in this time frame.
5. Otherwise determine whether there is an inpatient or outpatient episode more than 28 days prior to diagnosis (up to a maximum of six months) and if so use the nearest to diagnosis as the end point. Inpatient episodes have priority over outpatient episodes if both exist on the same day.

Step 02 – Inpatient routes

For patients with an 'Inpatient' end point start to work backwards to derive an inpatient start point.

1. Assign the start point to either 'Emergency admission', 'Elective admission' or 'Other admission' based upon which of these was used to assign the endpoint. In the event that more than one episode occurs at the end point give priority to 'Emergency admission', then 'Elective admission' and then 'Other admission'.

Figure 2.2: Route to diagnosis algorithm - Step 2: Assigning inpatient (IP) start point



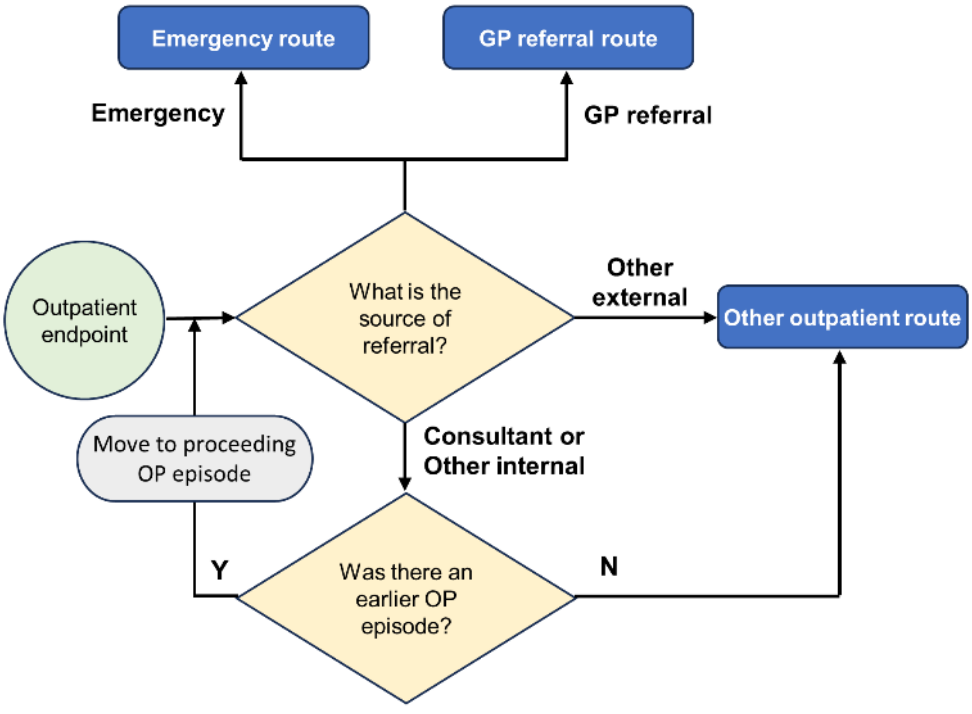
2. For patients with an 'Other admission' starting point, identify those which are transfers and reassign the starting point as an 'Elective admission' if no other admission type exists for that patient prior to this event. If prior inpatient episodes to the transfer do exist, use the nearest other emergency or elective admission to diagnosis as the starting point.
3. Treat any remaining 'Other admission' in the same manner as an 'Elective admission' (e.g. This will include admissions such as maternity admissions).
4. Separate out elective admissions that originated from screening services and assign them to a 'Screening referral' starting point.
5. Fix the starting point for any further 'Elective admission' or 'Other admission' inpatients as an 'Elective admission', unless there is an earlier outpatient appointment recorded in which case the end point is reassigned to 'Outpatient' status.
6. Keep the starting point for 'Emergency admission' inpatients as is unless they have been admitted via an outpatient clinic. If they are then the endpoint is reassigned to 'Outpatient' status, but only if earlier outpatient episodes have been recorded, otherwise they remain assigned to 'Emergency admission'.

Step 03 – Outpatient routes

For patients with an 'Outpatient' end point start to work backwards to derive an outpatient start point.

1. Assign the start point to either 'Emergency referral', 'GP referral', 'Other external referral', 'Consultant referral' or 'Other internal referral' based upon which of these was used to assign the endpoint. In the event that more than one appointment occurs at the end point give priority to 'Emergency referral', then 'GP referral', then 'Other external referral', then 'Consultant referral', then 'Other internal referral' routes.

Figure 2.3: Route to diagnosis algorithm - Step 3: Assigning outpatient (OP) start point



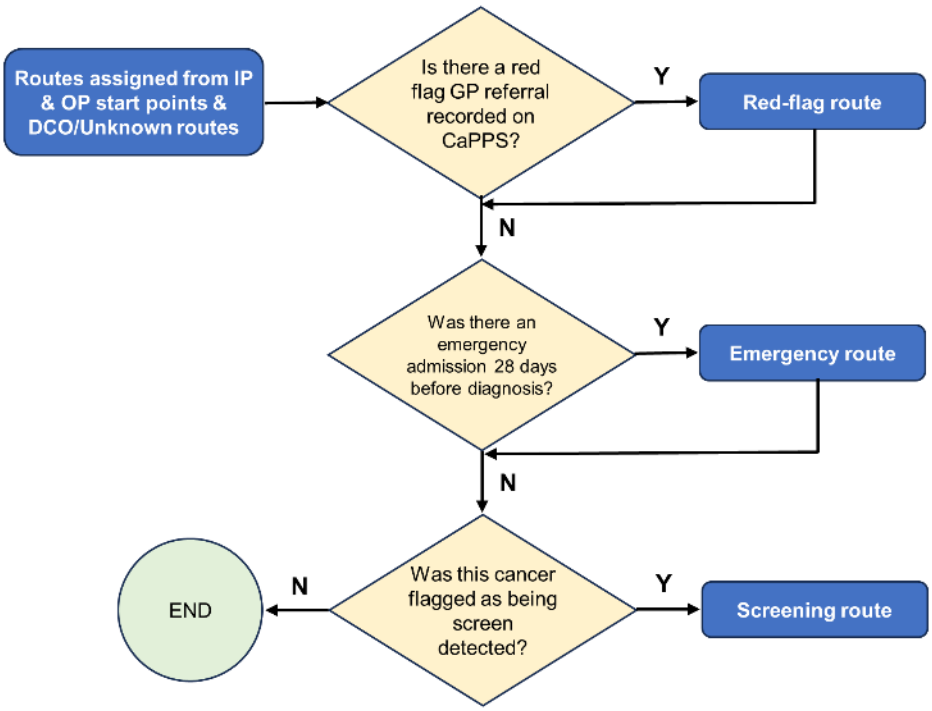
2. For patients with an 'Other internal referral' or 'Consultant referral' outpatient starting point check whether a preceding outpatient appointment exists up to six months prior to diagnosis. If one does then reassign the route to diagnosis to 'Emergency referral', 'GP referral', or 'Other external referral' depending upon which is the closest to diagnosis. If more than one exists give priority to 'Emergency referral', then 'GP referral', then 'Other external referral' routes.
3. Assign any remaining 'Other internal referral' or 'Consultant referral' starting points to 'Other external referral' route, which is then relabelled as 'Other outpatient appointment'.

Step 04 – Assign route to diagnosis

Using the information gathered using these rules, a route to diagnosis can now be assigned.

1. Set the route to diagnosis as the inpatient or outpatient start points depending upon the end point classification plus the end point for records with no hospital data. This should result in one of seven categories: 'Emergency admission', 'Emergency referral', 'Elective admission', 'GP referral', 'Other outpatient appointment', 'Death certificate only' and 'Unknown'.
2. The 'Emergency admission' from inpatient data and 'Emergency referral' from outpatient data are grouped into a single category labelled 'Emergency presentation'.
3. Data on red flags from GPs are then used to overwrite all other events except screening referrals and emergency admissions that occur up to 28 days from diagnosis. This category is labelled 'Red-flag referral'.

Figure 2.4: Route to diagnosis algorithm - Step 4: Assigning final route to diagnosis



4. Data on emergency admissions up to 28 days from diagnosis are used to overwrite all other events except screening. This data is part of the 'Emergency presentation' category.

5. Data on screen detection of cancers from the screening programmes overwrites any previously assigned route. This category is part of the 'Screening referral' category.

2.4: Statistical Analysis

The most useful statistical measure of the route to diagnosis for cancer patients is the absolute number of cases diagnosed by each route in a given period of time. However, the number of cancer cases within a year compared to the size of the population of Northern Ireland is relatively small, particularly for the less common cancers. This can result in the number of events being studied fluctuating each year as a result of natural variation, particularly when data are broken down by smaller geographic areas such as Health Trusts or by patient demographics such as age. In order to introduce more stability into any presented statistics we observe the population over several years and present a mean number of cases per year, which should be interpreted as a typical value for the annual number of cases in the patient group being studied.

In order to properly investigate the distribution of cancer by route to diagnosis and to make comparisons between different groups, proportions are presented alongside the annual average number of cases. All proportions are multiplied by 100% to provide a percentage value. Percentages are accompanied by 95% confidence intervals which are derived using the Wilson score method [11,12], as the more standard approach using a normal approximation method does not perform well when the numerator and/or denominator is small. Comparisons of the distribution of cases by route to diagnosis across different patient characteristics (e.g. by gender or age group) are tested for significance using the chi-square test. Comparisons of specific pairs of proportions (e.g. proportion of cases which were screen detected in Northern Ireland compared to in England) are tested using the z-test for proportions, but with the Bonferroni correction for multiple comparisons applied.

Confidentiality and data utility

In order to preserve the confidentiality of patients, tables are constructed so that the total number of cases that each table cell is based upon is greater than or equal to 5. This is done by combining categories with less than five patients in the route to diagnosis classification with the 'Unknown' category to create an 'Other/Unknown' category. While this category may contain less than 5 patients, no information can be derived from this grouping.

Comparisons with England

Where possible comparisons of the results presented in this report are made with similar results from England [13] for patients diagnosed in 2018-2020. These comparisons should be treated cautiously due to different data systems, definitions and coding. In particular, the red-flag category in Northern Ireland is compared to the urgent suspected cancer (USC) referrals category in England which has a similar purpose, but relates to different targets and policies.

Cancer survival

Survival refers to the proportion of patients who are alive a given amount of time after a diagnosis of cancer. It is one of the best indicators as to the efficiency of diagnostic and treatment methods in a geographic area and is widely used by cancer registries as a broad indicator of the effectiveness of health services in the treatment of cancer.

In this report age-standardised net survival (ASNS) is used to provide an estimate of patient survival which has been adjusted to take account of deaths unrelated to cancer. It also assumes a standard age distribution thereby removing the impact of changes in the age distribution of cancer patients on changes in survival by route to diagnosis. While this measure is hypothetical, as it assumes patients can only die from cancer related factors, it is a better indicator of the impact of changes in cancer care on patient survival.

The method of calculation used in this report for net survival is the Pohar-Perme method [14] which is calculated using the stns module in the Stata statistical software package [15]. This requires the use of background mortality rates by calendar year, sex and single year of age which are derived from mortality data provided by GRO, but are smoothed using Poisson regression in order to remove fluctuations caused by the small number of events recorded.

Age-standardisation is conducted using the standard populations suggested by Corazziari et al [16], but collapsed to four age groups due to the small number of events in the NI population for specific age ranges. Age-standardised results are only reported for groups with more than 50 patients. For groups with between 10 and 50 patients, unstandardised net survival is reported.

As with the other statistical measures used in this report net survival values are accompanied by 95% confidence intervals.

03: All Cancers excluding non-melanoma skin cancer (NMSC)

The most common route to diagnosis among cancer (ex NMSC) patients during 2018-2021 was via a red-flag referral, with 3,394 (33.5%) cases diagnosed on average each year. This was followed by an emergency presentation route with 2,357 (23.3%) cases diagnosed on average each year. Screening referrals made up 5.8% of cases during this period.

Figure 3.1: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021

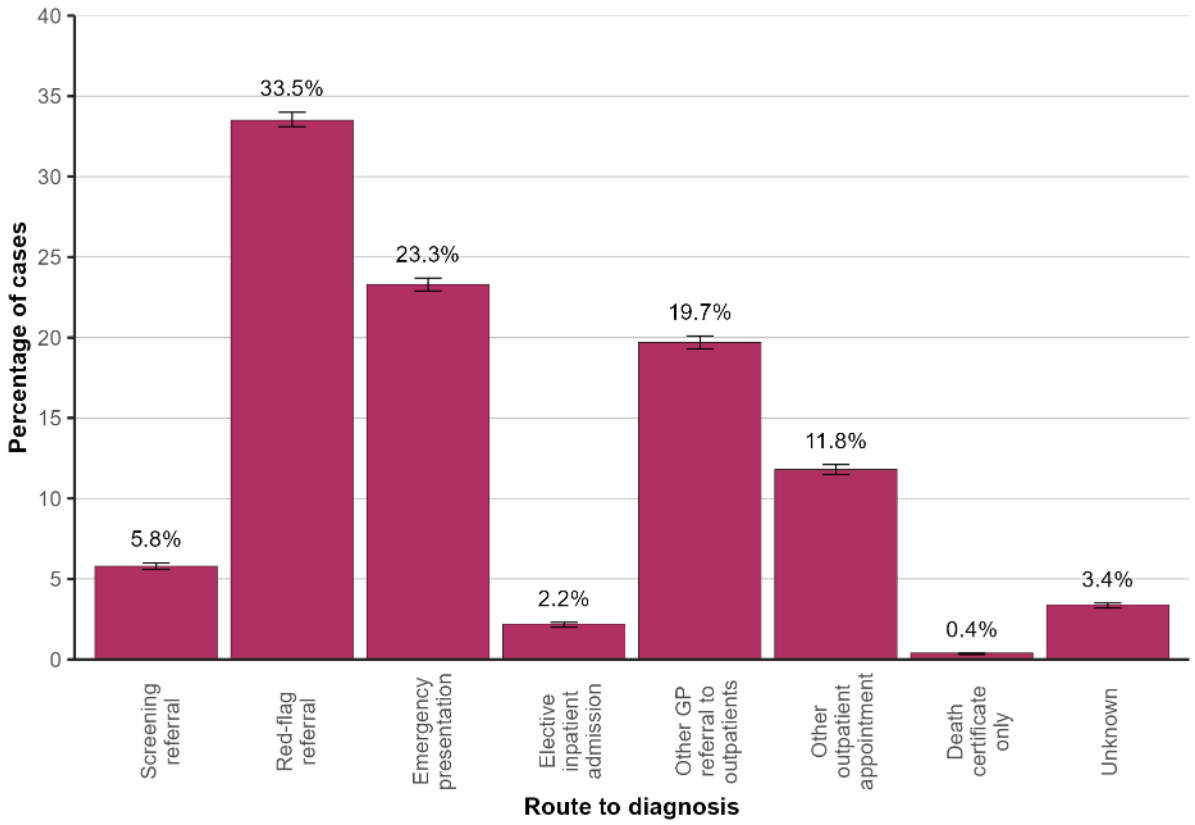


Table 3.1: Average number of cancer (ex NMSC) cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	588	5.8% (5.6% - 6.0%)
Red-flag referral	3,394	33.5% (33.1% - 34.0%)
Emergency presentation	2,357	23.3% (22.9% - 23.7%)
Elective inpatient admission	220	2.2% (2.0% - 2.3%)
Other GP referral to outpatients	1,996	19.7% (19.3% - 20.1%)
Other outpatient appointment	1,193	11.8% (11.5% - 12.1%)
Death certificate only	38	0.4% (0.3% - 0.4%)
Unknown	340	3.4% (3.2% - 3.5%)

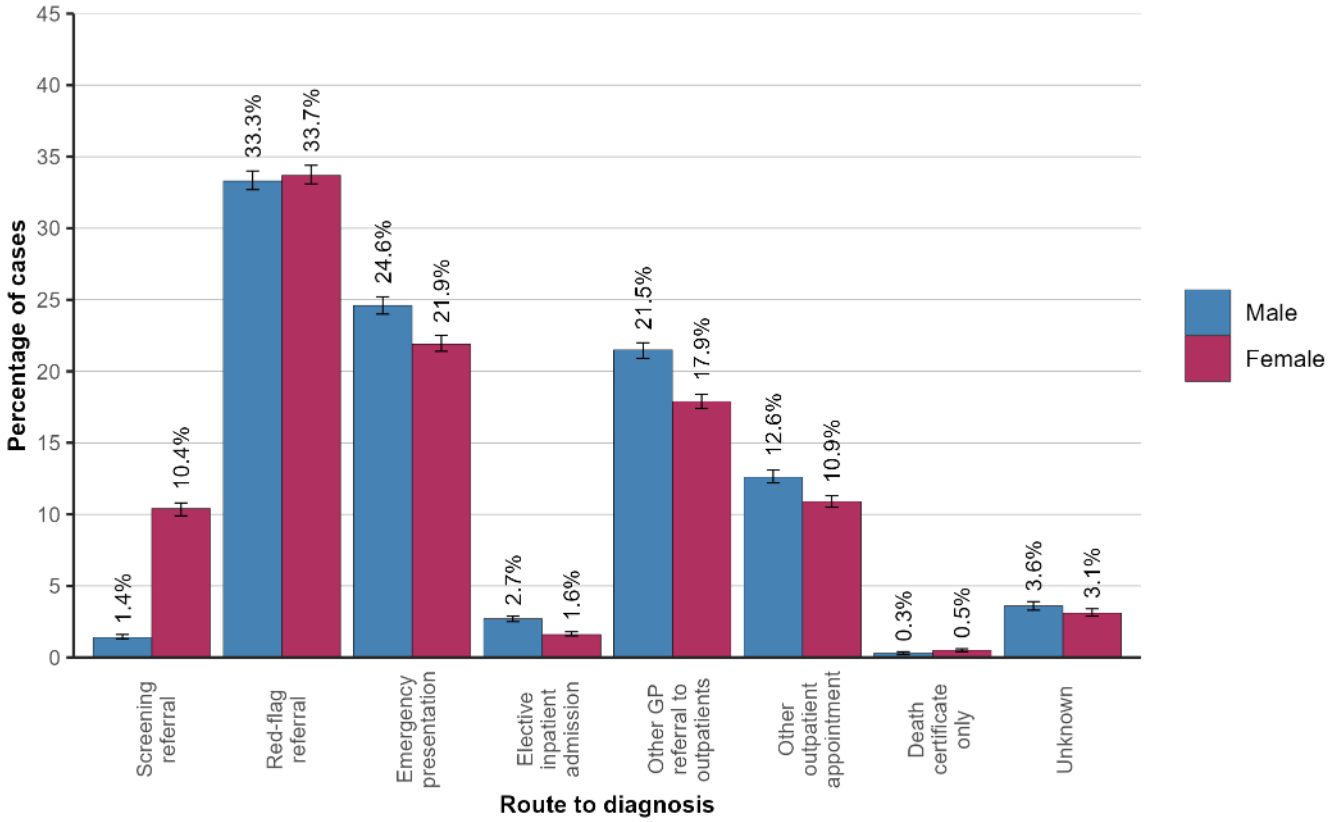
CI: Confidence Interval

3.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2021 there were 1,721 male and 1,672 female cases of cancer (ex NMSC) diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (33.3%) and women (33.7%).

The route to diagnosis with the biggest difference between males and females was a screening referral with 1.4% of male cases and 10.4% of female cases diagnosed via this route. The variation in route to diagnosis by gender was statistically significant ($p < 0.001$).

Figure 3.2: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021 by gender

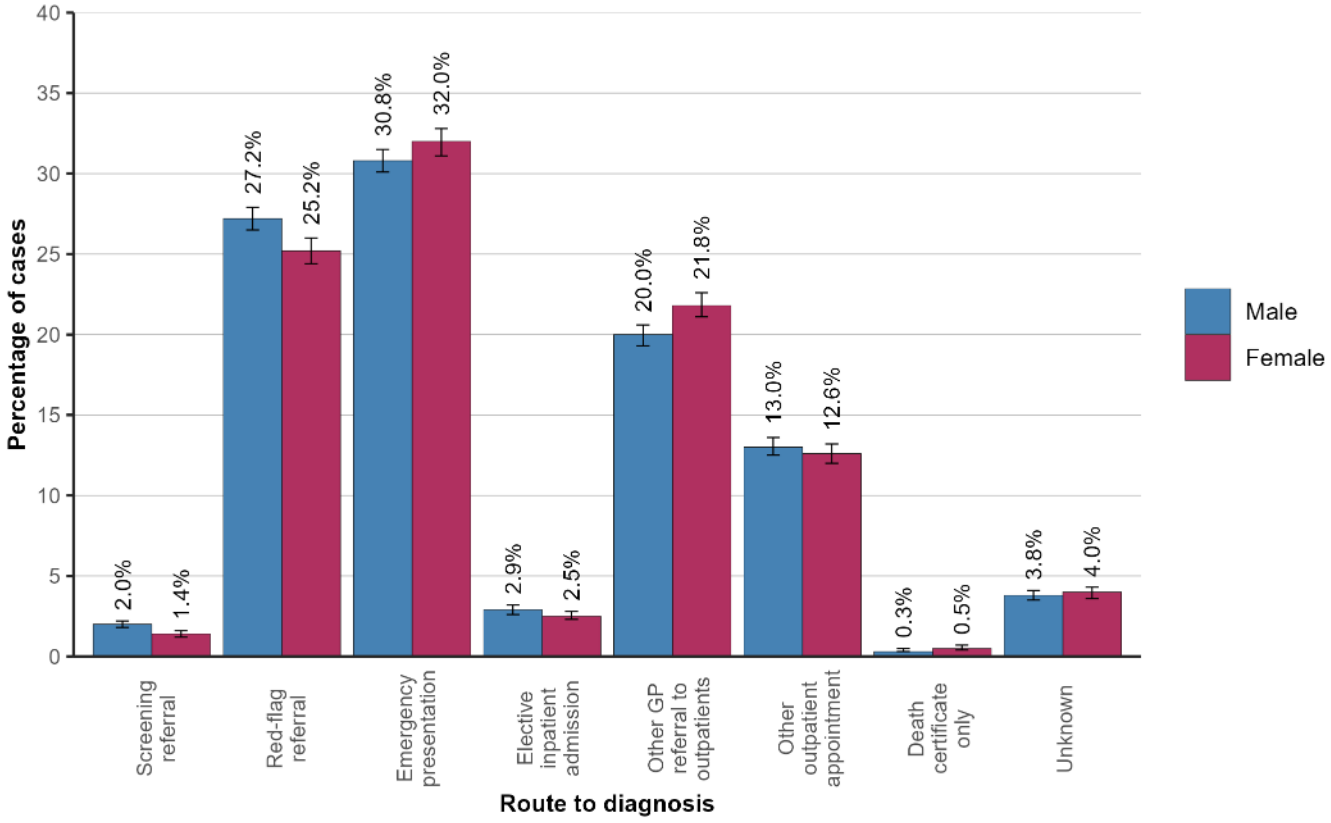


Excluding gender-specific cancers

During 2018-2021 there were 1,146 male and 916 female cases of cancer (excluding non-melanoma skin, breast, gynaecological, prostate and male genital cancers) diagnosed each year where the route to diagnosis was an emergency presentation. This was the most common route to diagnosis for both men (30.8%) and women (32.0%).

The route to diagnosis with the biggest difference between males and females was a red-flag referral with 27.2% of male cases and 25.2% of female cases diagnosed via this route. The variation in route to diagnosis by gender was statistically significant ($p < 0.001$).

Figure 3.3: Route to diagnosis for cancer (excluding non-melanoma skin, breast, gynaecological, prostate and male genital cancers) patients diagnosed in 2018-2021 by gender

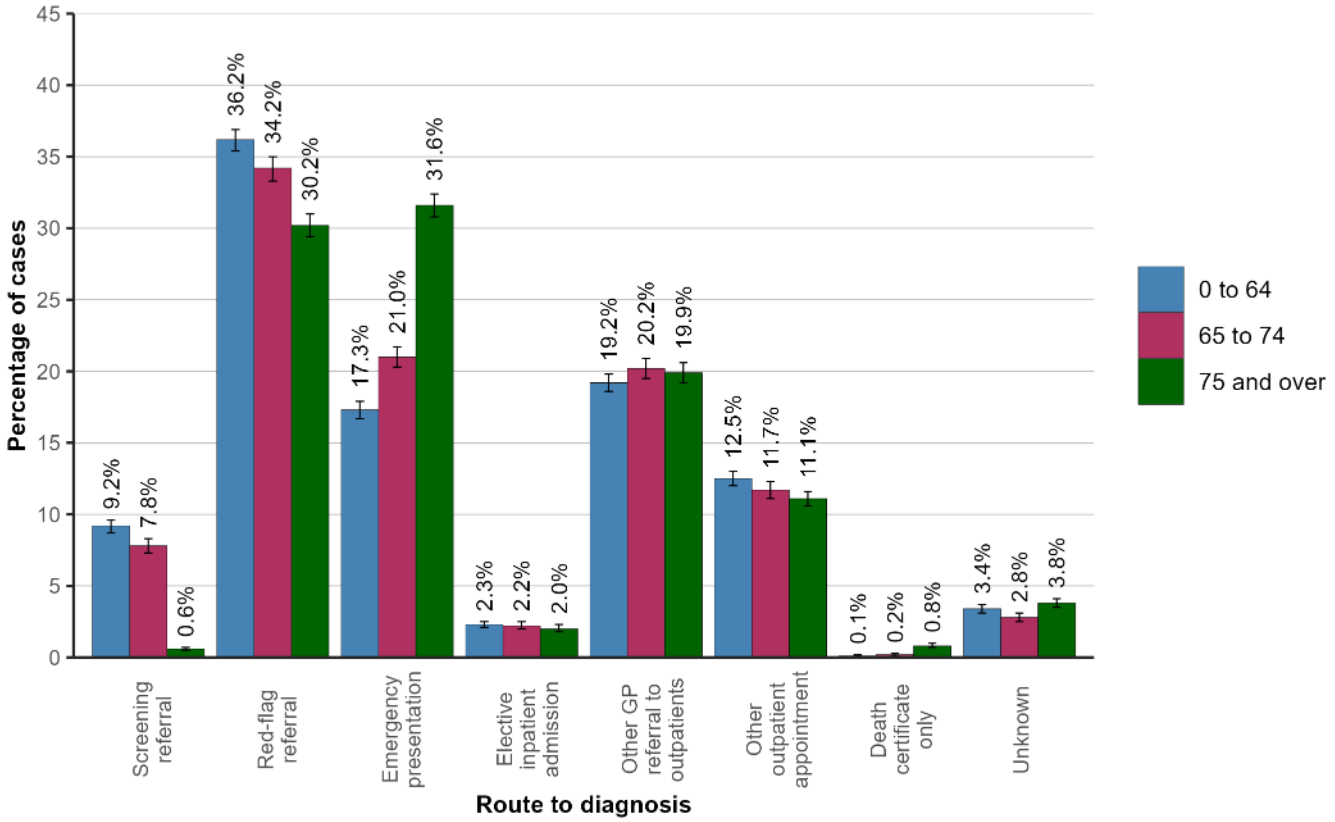


3.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of cancer (ex NMSC) overall was a red-flag referral. Among those aged 0 to 64 there were 1,348 (36.2%) diagnosed per year via this route, compared to 1,059 (30.2%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 0 to 64 but not those aged 75 and over. The most common route to diagnosis for those aged 75 and over was an emergency presentation (31.6%).

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 17.3% of those aged 0 to 64 and 31.6% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 3.4: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021 by age group



3.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of cancer (ex NMSC) diagnosed via a red-flag referral ranged from 30.8% in Belfast HSCT to 38.2% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 21.4% to 26.5% in Western HSCT and Belfast HSCT respectively. Screening referral was the route taken in 5.0% of cases in Belfast HSCT and 6.9% of cases in Southern HSCT. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of cancer (ex NMSC) diagnosed via a red-flag referral was 32.3% in the most deprived areas compared to 33.0% in the least deprived areas. The proportions diagnosed via an emergency presentation were 26.2% and 21.1% in the most and least deprived areas respectively. Screening referral was the route taken in 5.3% of cases from the most deprived areas and 5.8% of cases in the least deprived areas. The variation in route to diagnosis by deprivation quintile was statistically significant ($p < 0.001$).

Figure 3.5: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021 by Health and Social Care Trust

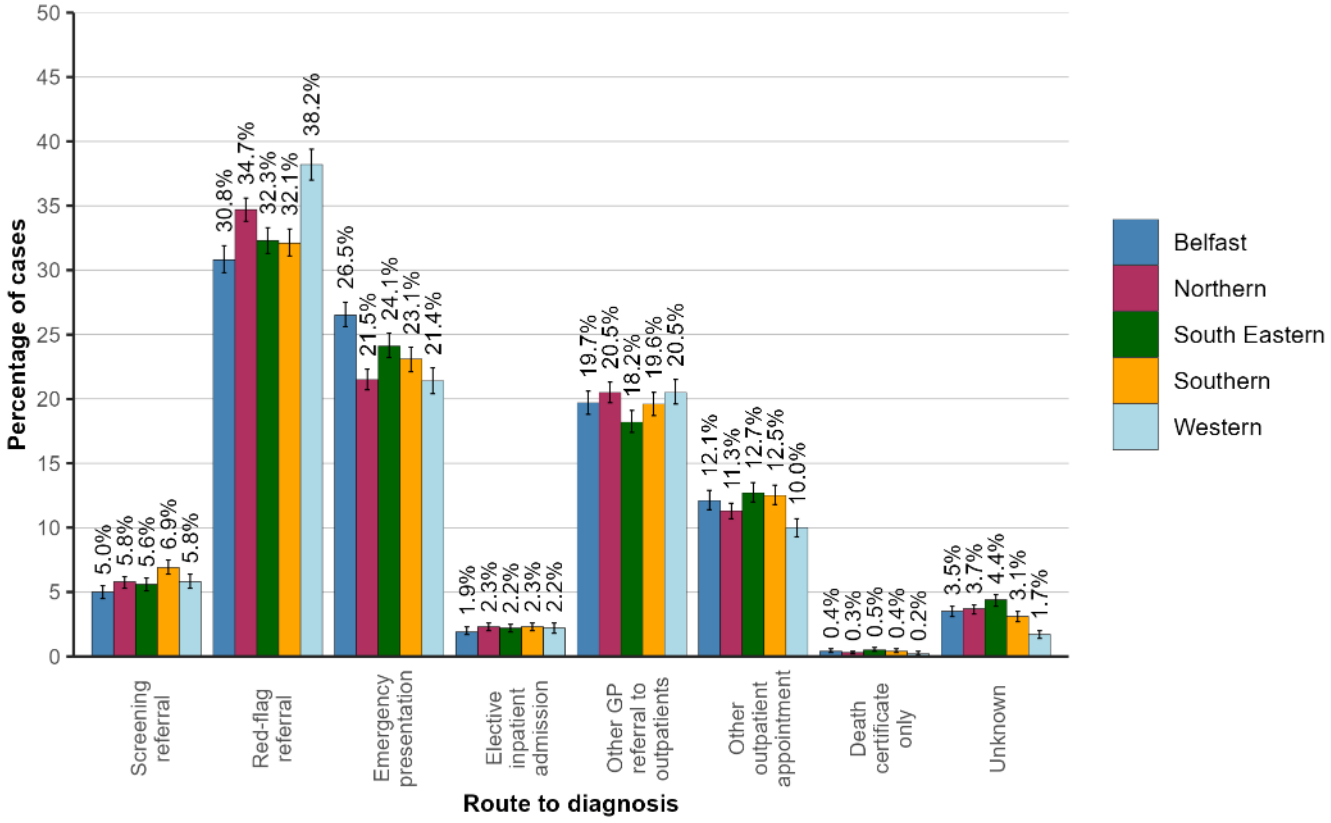
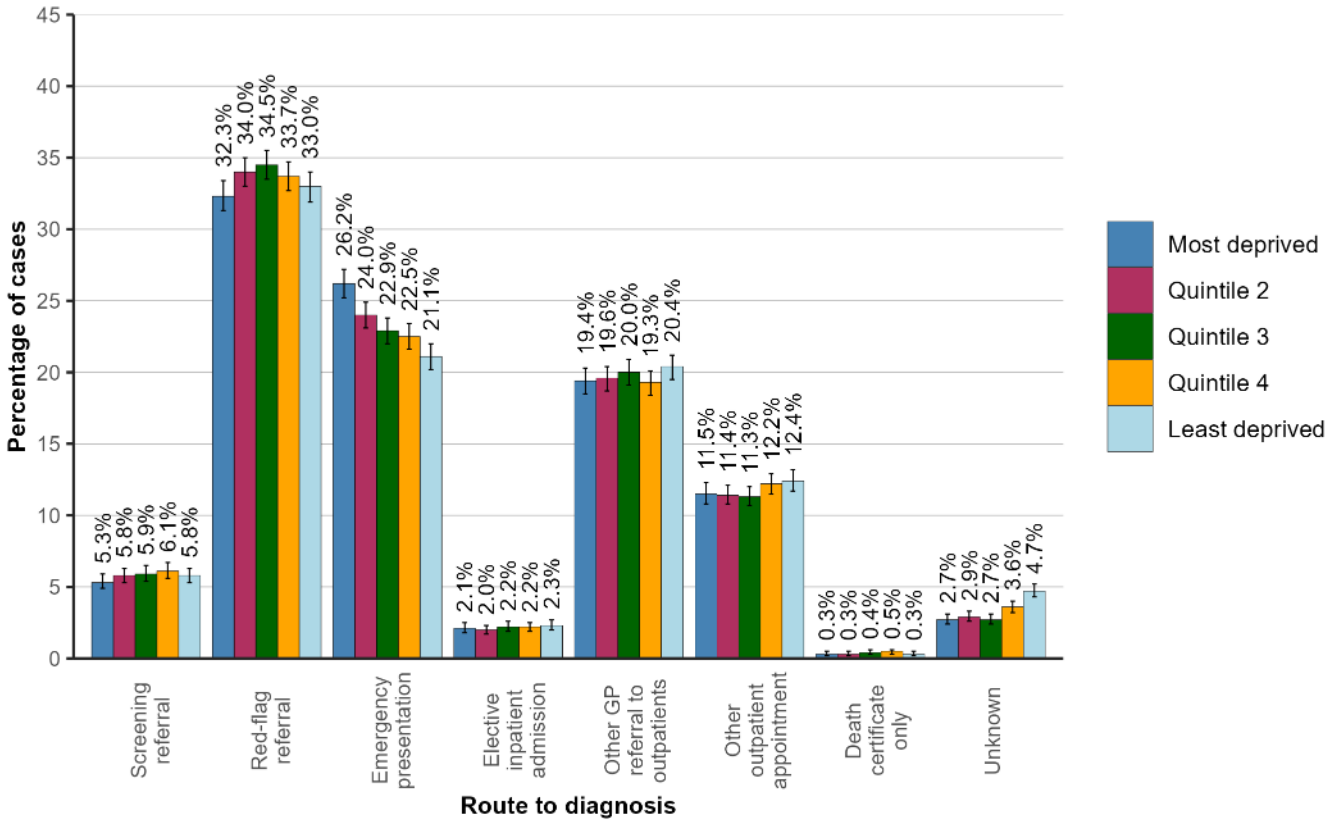


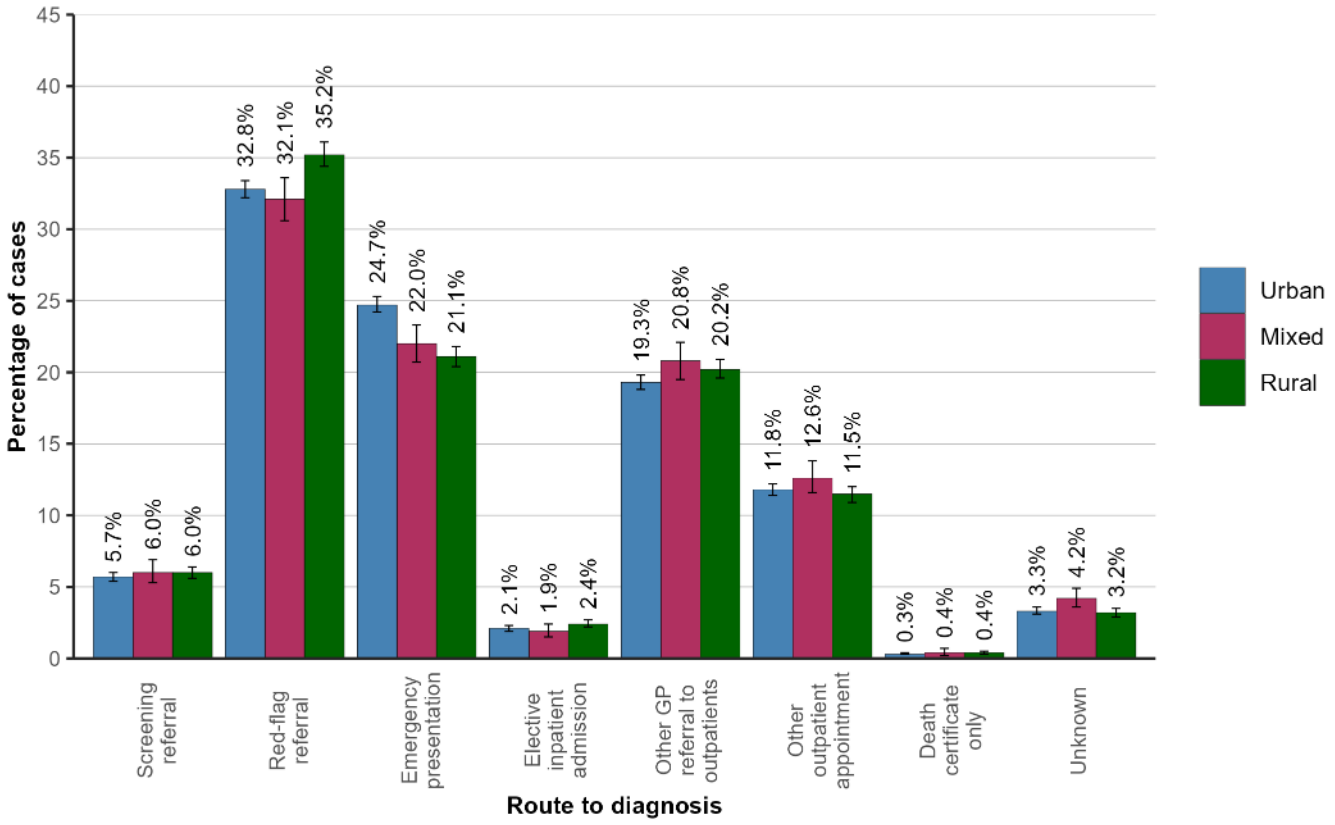
Figure 3.6: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of cancer (ex NMSC) diagnosed via a red-flag referral was 32.8% in urban areas compared to 35.2% in rural areas. The proportions diagnosed via an emergency presentation were 24.7% and 21.1% in urban and rural areas respectively. Screening referral was the route taken in 5.7% of cases from urban areas and 6.0% of cases in rural areas. The variation in route to diagnosis by urban/rural status was statistically significant ($p < 0.001$).

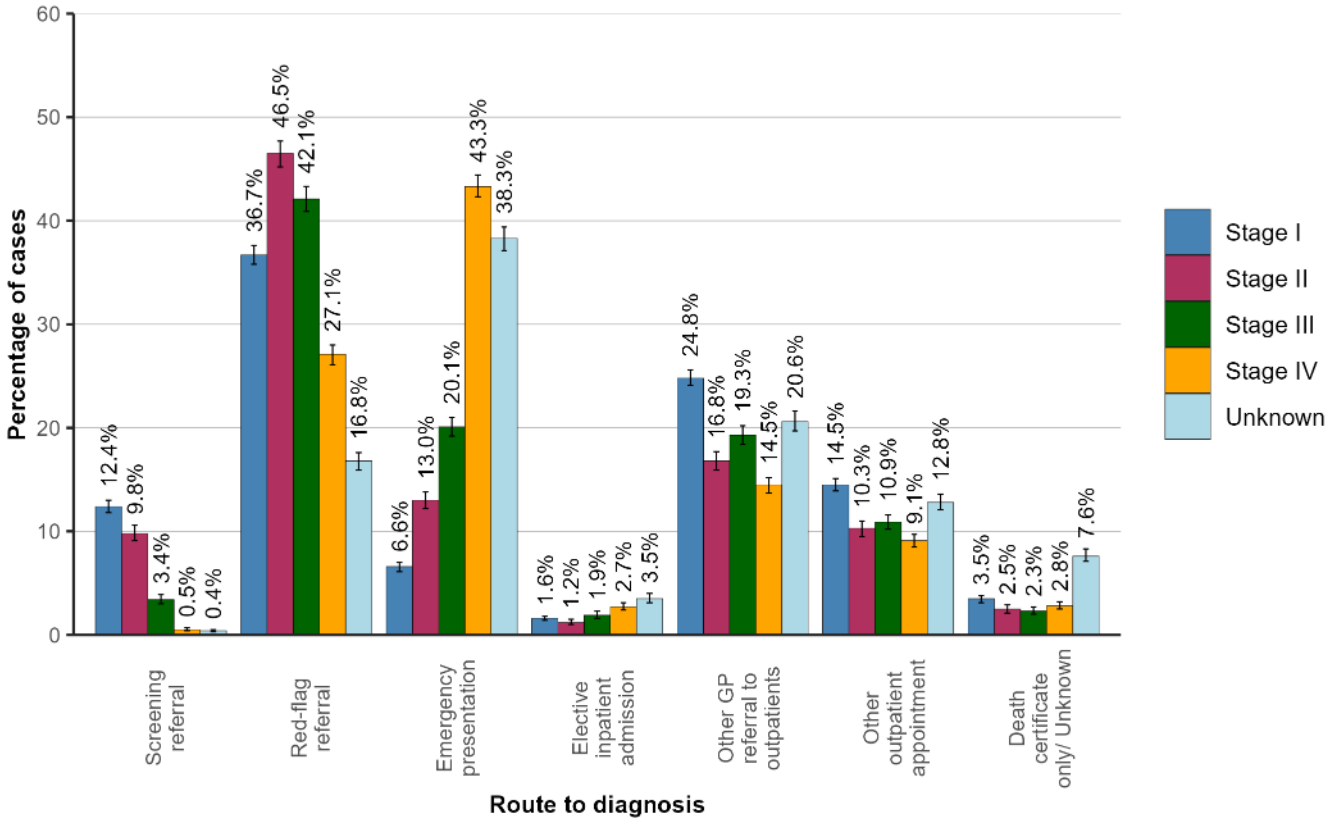
Figure 3.7: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021 by urban/rural status



3.4: Routes to diagnosis by stage at diagnosis

During 2018-2021 the proportion of cases of cancer (ex NMSC) diagnosed via a red-flag referral was 36.7% among stage I cancers compared to 27.1% among stage IV cancers. The proportions diagnosed via a screening referral were 12.4% and 0.5% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 43.3% of cases diagnosed at stage IV and 6.6% of cases diagnosed at stage I. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 3.8: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021 by stage at diagnosis



3.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

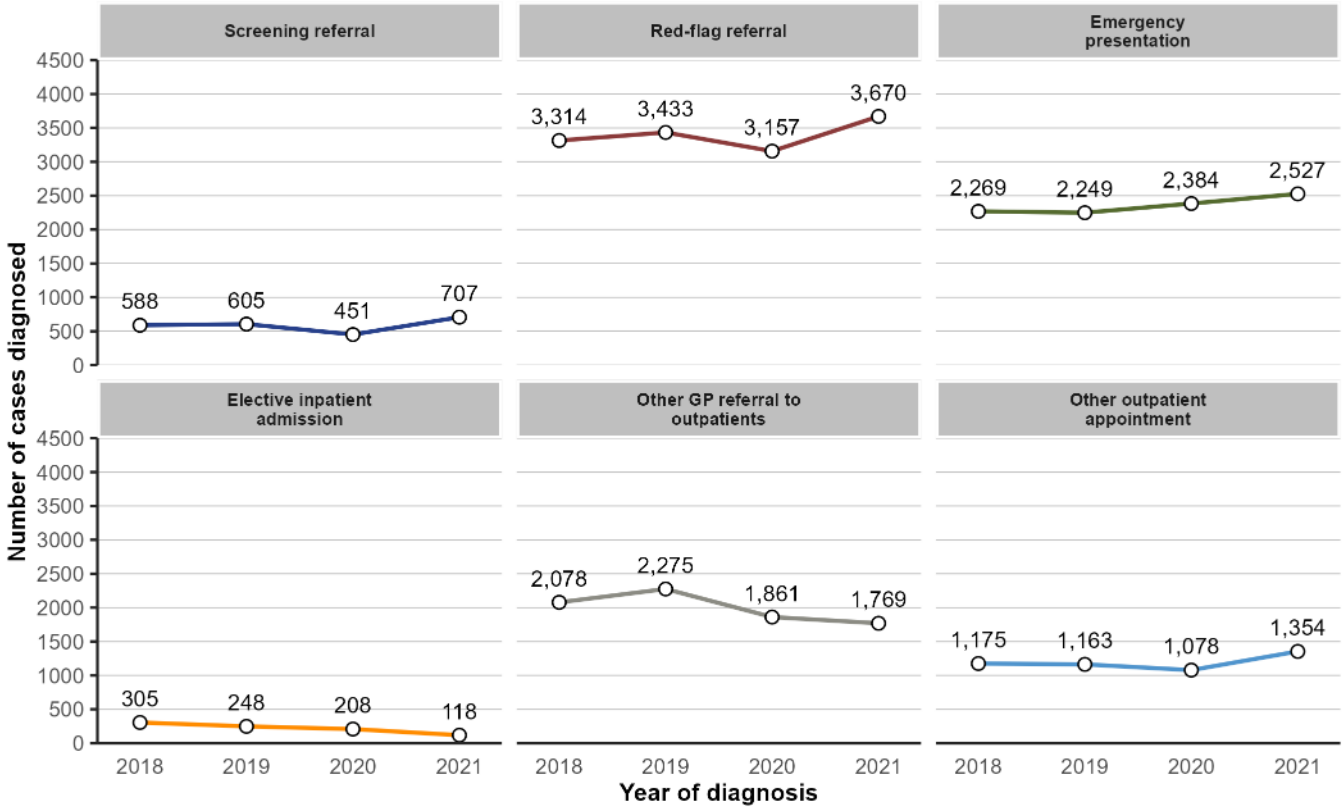
The number of cancer (ex NMSC) cases diagnosed via a screening referral increased by 56.8% from 451 in 2020 to 707 in 2021. As a proportion of all cases, a screening referral diagnosis increased from 4.8% in 2020 to 6.7% in 2021.

The number of cancer (ex NMSC) cases diagnosed via a red-flag referral increased by 16.2% from 3,157 in 2020 to 3,670 in 2021. As a proportion of all cases, a red-flag referral diagnosis increased from 33.3% in 2020 to 34.8% in 2021.

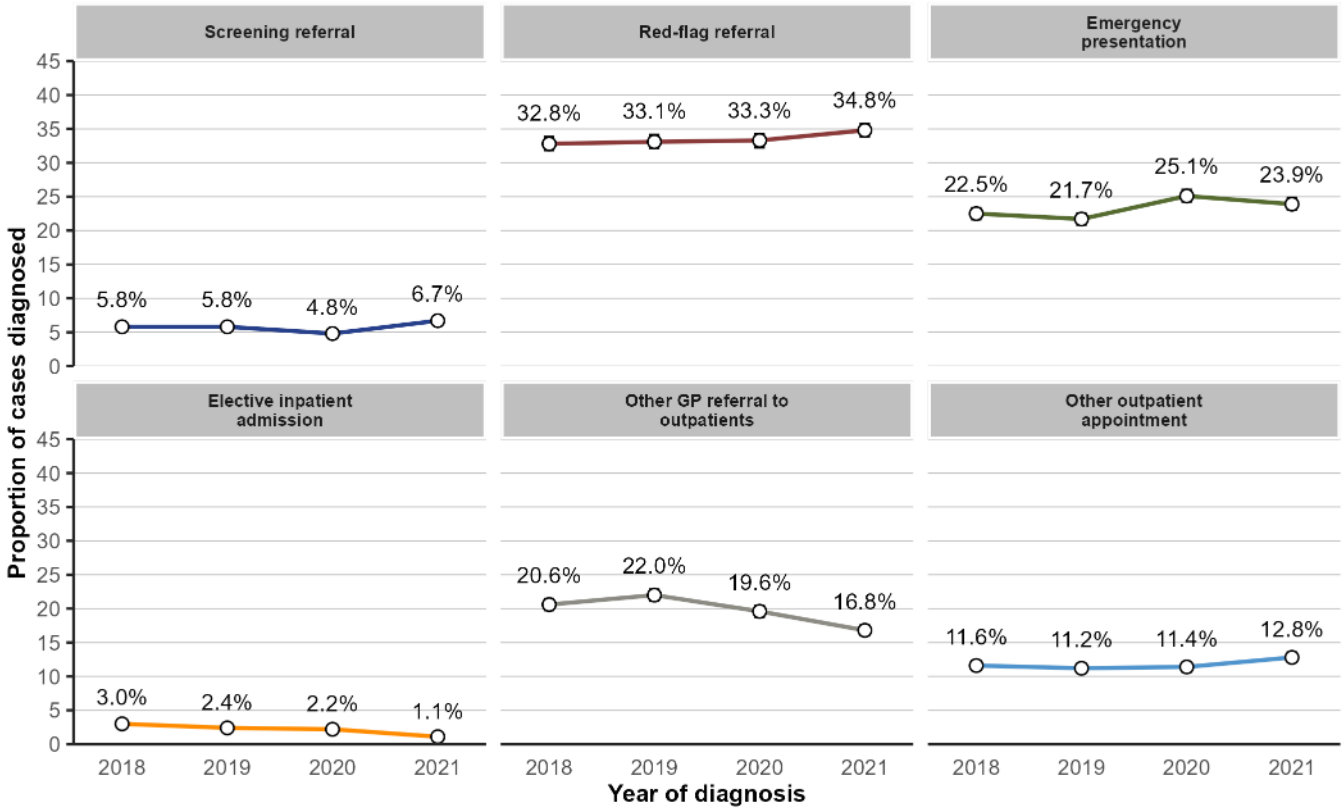
The number of cancer (ex NMSC) cases diagnosed via an emergency presentation increased by 6.0% from 2,384 in 2020 to 2,527 in 2021. As a proportion of all cases, an emergency presentation diagnosis decreased from 25.1% in 2020 to 23.9% in 2021. The variation in route to diagnosis between the previous two years was statistically significant ($p < 0.001$).

Figure 3.9: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

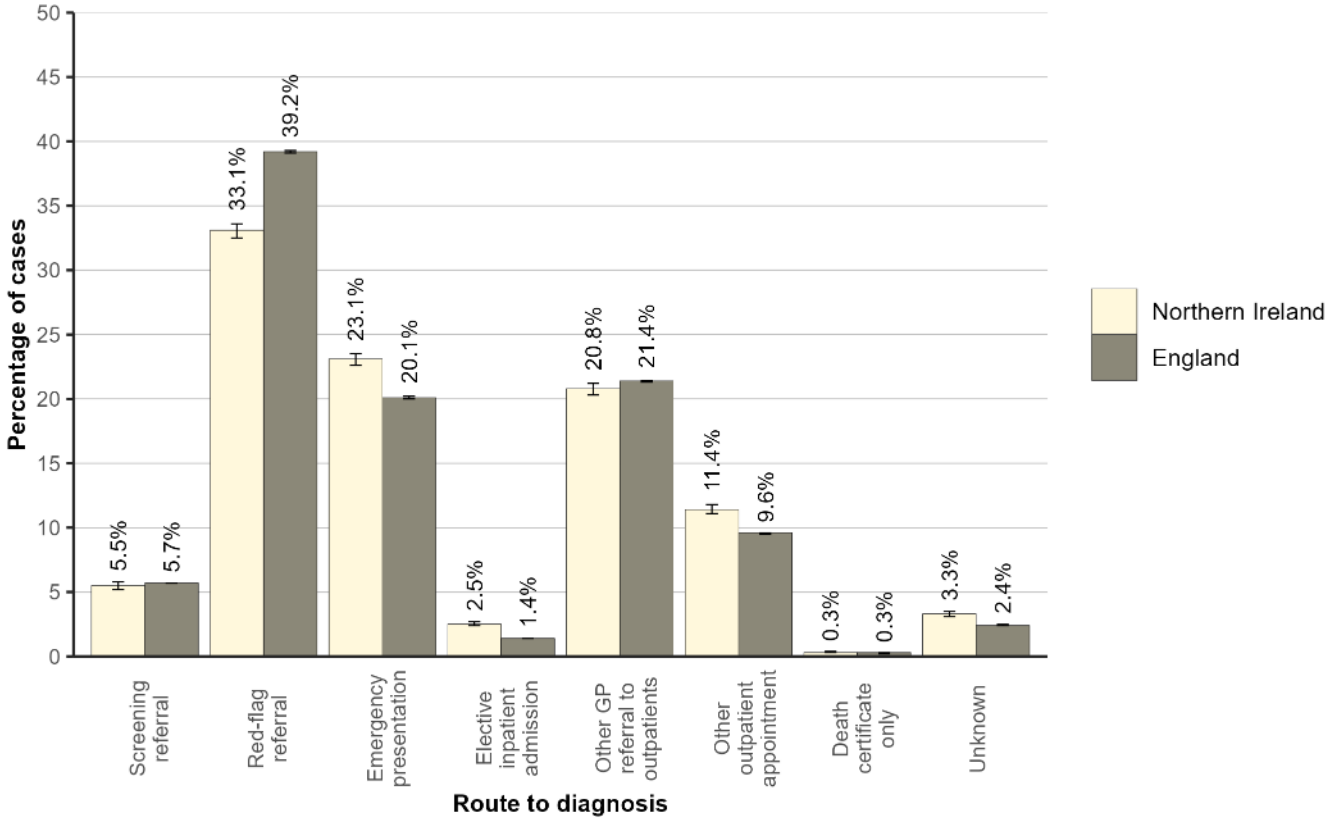


3.6: Comparison with England

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with cancer (ex NMSC) in 2018-2020 compared to patients diagnosed in England during the same time period.

- Red-flag referral (33.1% in NI compared to 39.2% in England; p<0.001).
- Emergency presentation (23.1% in NI compared to 20.1% in England; p<0.001).
- Elective inpatient admission (2.5% in NI compared to 1.4% in England; p<0.001).
- Other outpatient appointment (11.4% in NI compared to 9.6% in England; p<0.001).

Figure 3.10: Route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



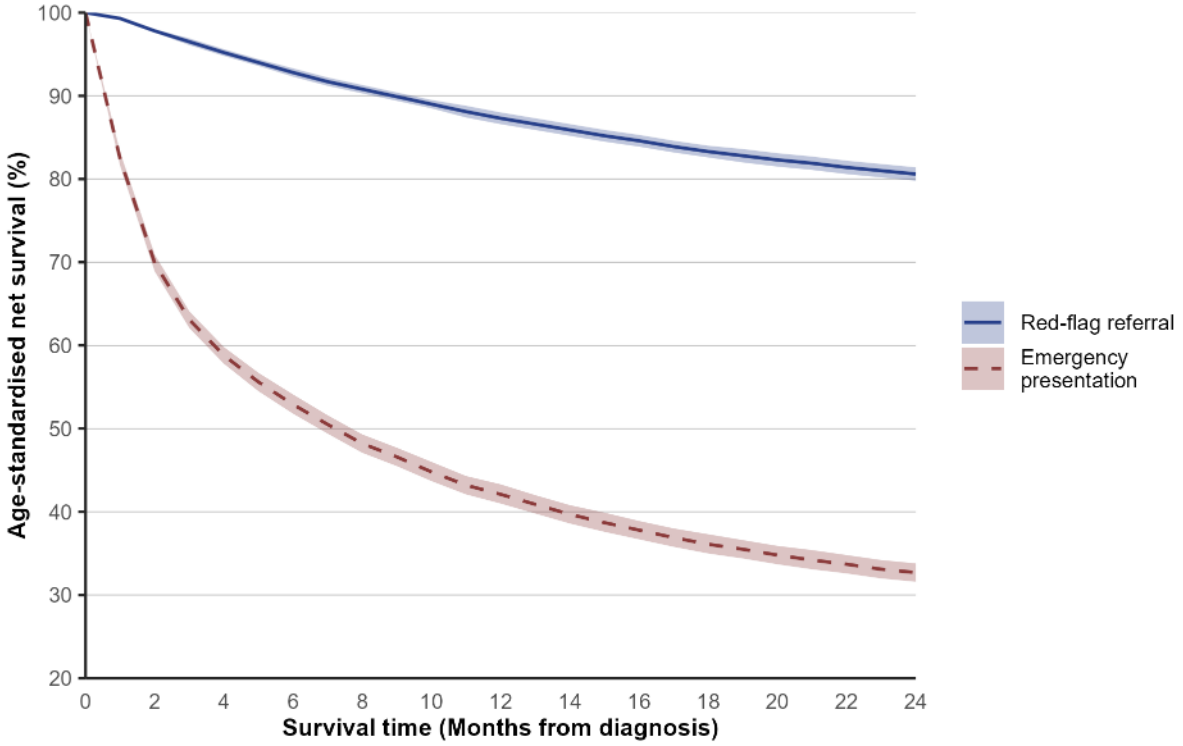
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

3.7: SURVIVAL

During 2018-2021 one-year age-standardised net survival from cancer (ex NMSC) ranged from 42.1% for those diagnosed via an emergency presentation route to 87.3% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 32.7% for those diagnosed via an emergency presentation route to 80.6% for those diagnosed via a red-flag referral route.

Figure 3.11: Age-standardised net survival by route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

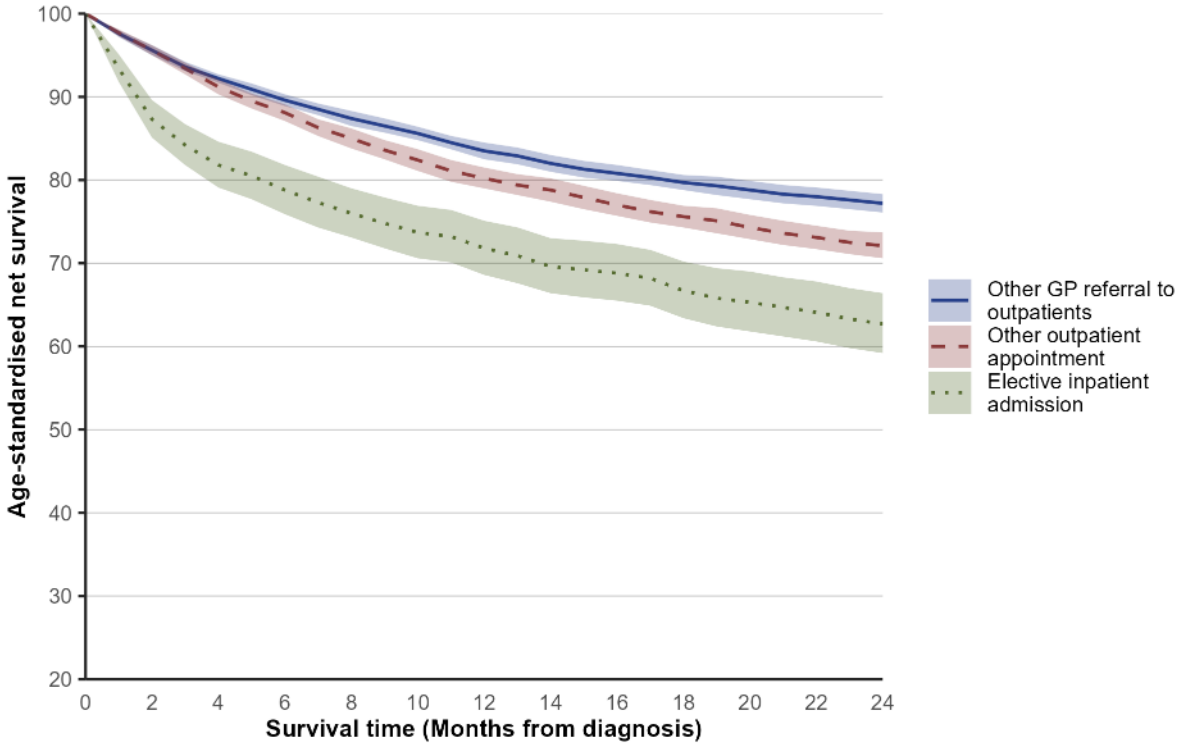


Table 3.2: Age-standardised net survival by route to diagnosis for cancer (ex NMSC) patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	87.3% (86.6% - 88.0%)	80.6% (79.8% - 81.4%)
Emergency presentation	42.1% (41.0% - 43.3%)	32.7% (31.6% - 33.8%)
Elective inpatient admission	71.8% (68.6% - 75.1%)	62.7% (59.2% - 66.4%)
Other GP referral to outpatients	83.5% (82.5% - 84.5%)	77.2% (76.1% - 78.3%)
Other outpatient appointment	80.2% (79.0% - 81.5%)	72.1% (70.6% - 73.7%)
Unknown	75.7% (73.2% - 78.3%)	70.3% (67.5% - 73.3%)

ASNS: Age-standardised net survival with 95% confidence interval.

04: Colorectal Cancer

The most common route to diagnosis among colorectal cancer patients during 2018-2021 was via a red-flag referral, with 414 (33.5%) cases diagnosed on average each year. This was followed by an emergency presentation route with 345 (28.0%) cases diagnosed on average each year. Screening referrals made up 9.2% of cases during this period.

Figure 4.1: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2021

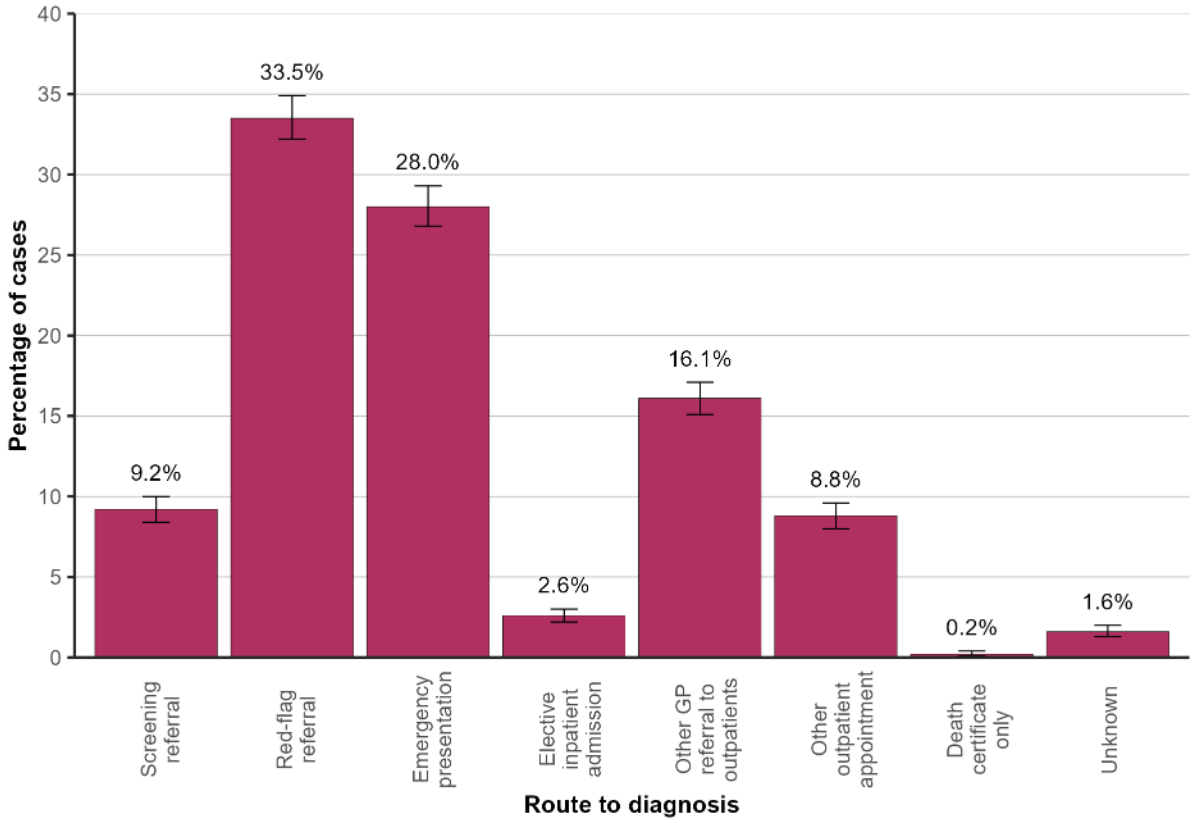


Table 4.1: Average number of colorectal cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	114	9.2% (8.4% - 10.0%)
Red-flag referral	414	33.5% (32.2% - 34.9%)
Emergency presentation	345	28.0% (26.8% - 29.3%)
Elective inpatient admission	32	2.6% (2.2% - 3.0%)
Other GP referral to outpatients	198	16.1% (15.1% - 17.1%)
Other outpatient appointment	108	8.8% (8.0% - 9.6%)
Death certificate only	3	0.2% (0.1% - 0.4%)
Unknown	20	1.6% (1.3% - 2.0%)

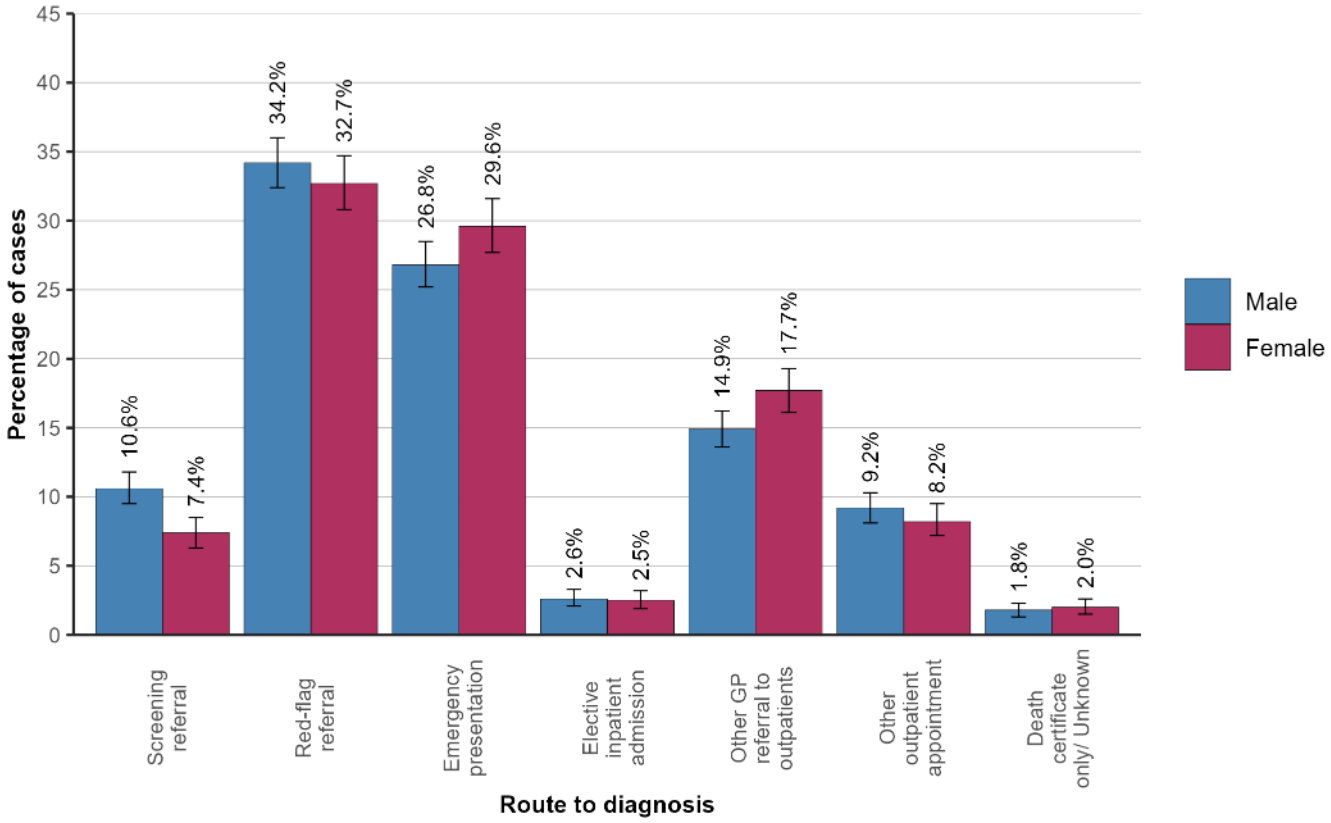
CI: Confidence Interval

4.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2021 there were 238 male and 176 female cases of colorectal cancer diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (34.2%) and women (32.7%).

The route to diagnosis with the biggest difference between males and females was a screening referral with 10.6% of male cases and 7.4% of female cases diagnosed via this route. The variation in route to diagnosis by gender was statistically significant ($p < 0.001$).

Figure 4.2: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2021 by gender

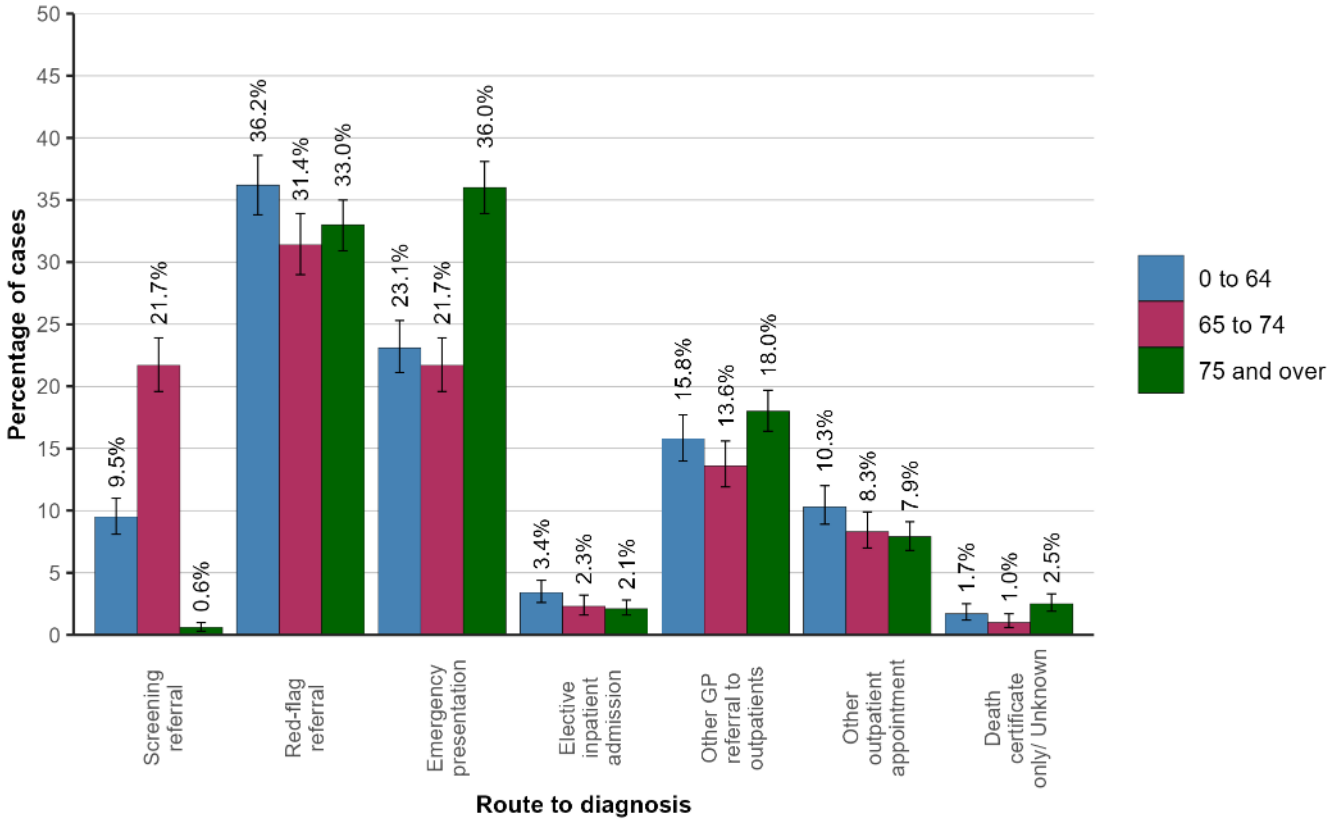


4.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of colorectal cancer overall was a red-flag referral. Among those aged 0 to 64 there were 139 (36.2%) diagnosed per year via this route, compared to 167 (33.0%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 0 to 64 but not those aged 75 and over. The most common route to diagnosis for those aged 75 and over was an emergency presentation (36.0%).

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 23.1% of those aged 0 to 64 and 36.0% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 4.3: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2021 by age group



For patients of screening age

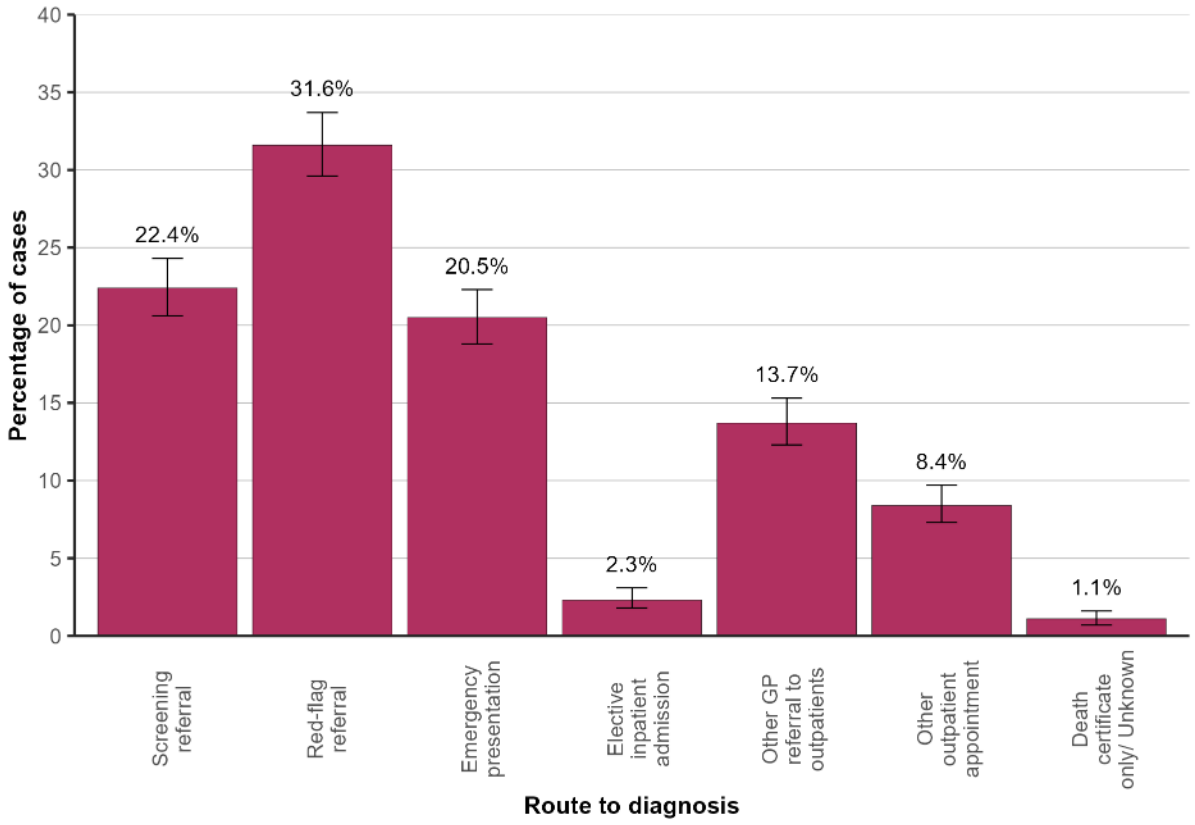
The most common route to diagnosis among colorectal cancer patients diagnosed within screening age (aged 60 to 74) during 2018-2021 was via a red-flag referral, with 156 (31.6%) cases diagnosed on average each year. This was followed by a screening referral route with 111 (22.4%) cases diagnosed on average each year. Emergency presentations made up 20.5% of cases among those diagnosed within screening age during this period.

Table 4.2: Average number of colorectal cancer cases diagnosed each year among patients of screening age (aged 60 to 74) during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	111	22.4% (20.6% - 24.3%)
Red-flag referral	156	31.6% (29.6% - 33.7%)
Emergency presentation	101	20.5% (18.8% - 22.3%)
Elective inpatient admission	12	2.3% (1.8% - 3.1%)
Other GP referral to outpatients	68	13.7% (12.3% - 15.3%)
Other outpatient appointment	42	8.4% (7.3% - 9.7%)
Death certificate only/ Unknown	5	1.1% (0.7% - 1.6%)

CI: Confidence Interval

Figure 4.4: Route to diagnosis for colorectal cancer patients of screening age (aged 60 to 74) diagnosed in 2018-2021



4.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of colorectal cancer diagnosed via a red-flag referral ranged from 30.7% in South Eastern HSCT to 39.0% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 25.4% to 29.8% in Southern HSCT and Belfast HSCT respectively. Screening referral was the route taken in 8.1% of cases in Northern HSCT and 10.8% of cases in Belfast HSCT. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of colorectal cancer diagnosed via a red-flag referral was 33.8% in the most deprived areas compared to 35.5% in the least deprived areas. The proportions diagnosed via an emergency presentation were 28.7% and 23.4% in the most and least deprived areas respectively. Screening referral was the route taken in 9.6% of cases from the most deprived areas and 10.1% of cases in the least deprived areas. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 4.5: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

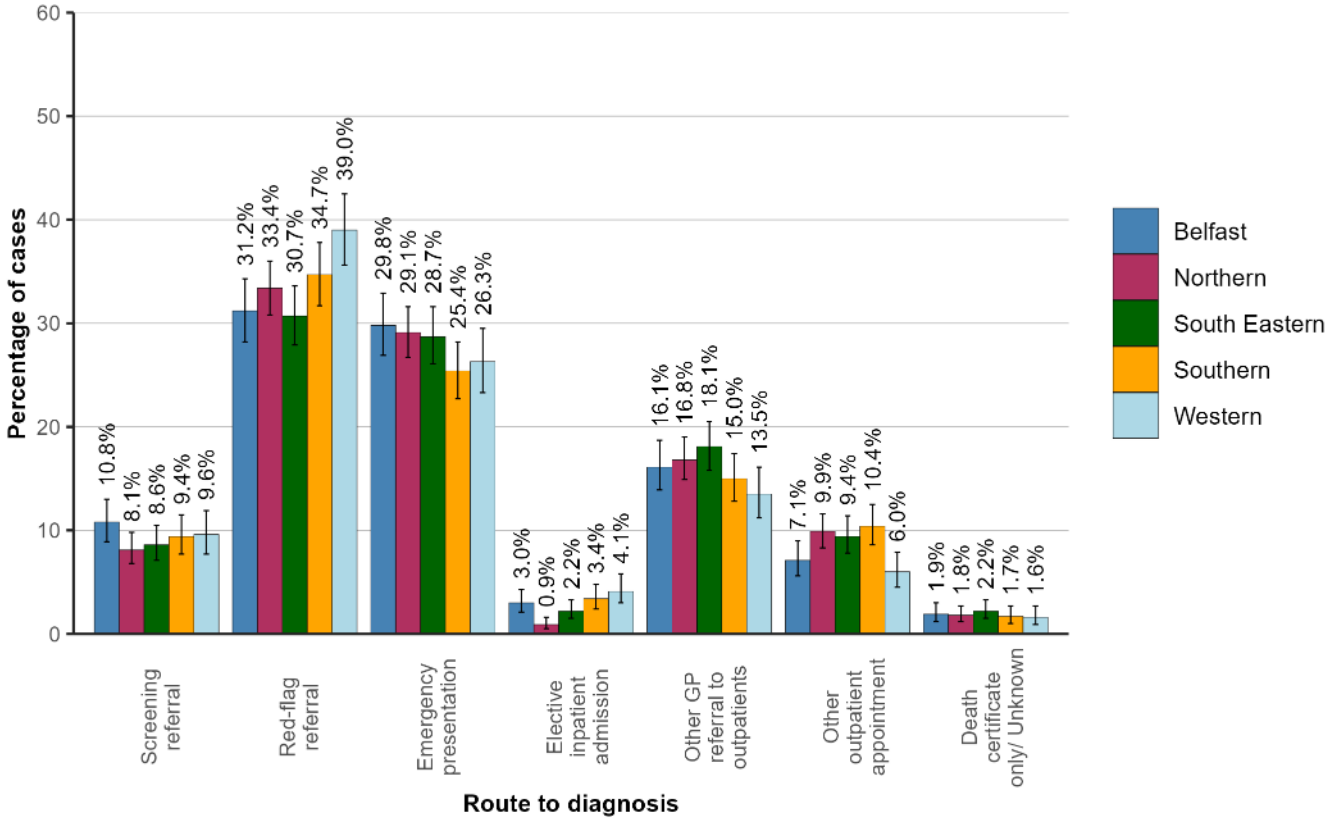
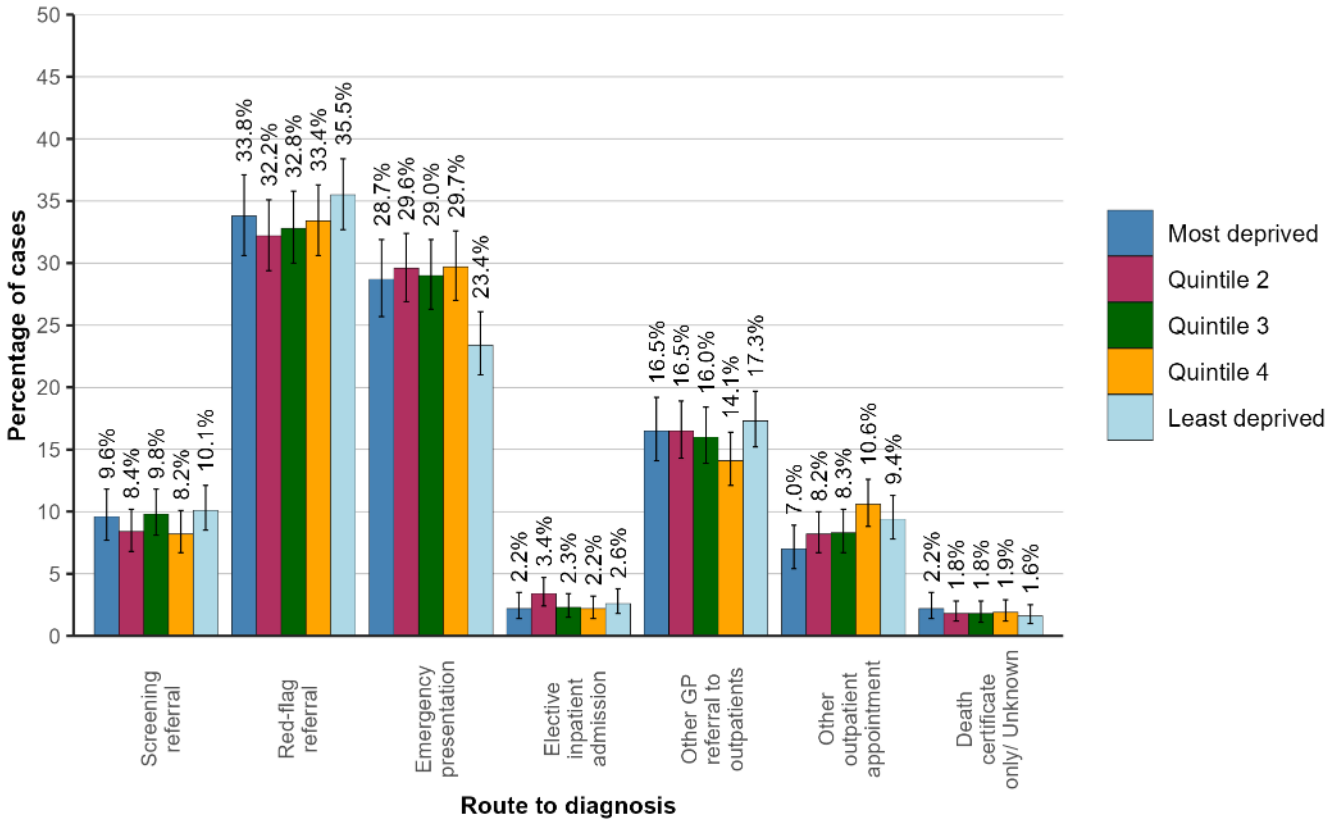


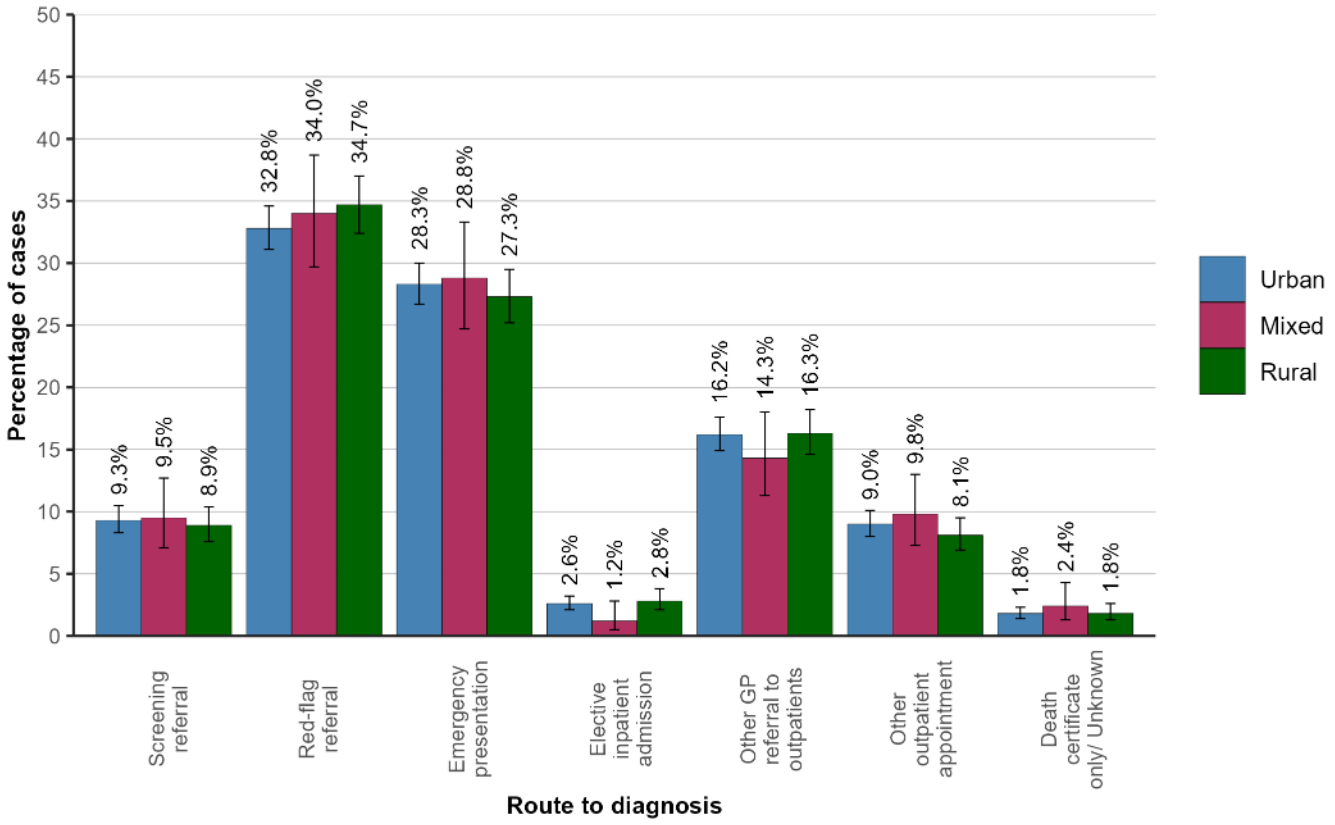
Figure 4.6: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of colorectal cancer diagnosed via a red-flag referral was 32.8% in urban areas compared to 34.7% in rural areas. The proportions diagnosed via an emergency presentation were 28.3% and 27.3% in urban and rural areas respectively. Screening referral was the route taken in 9.3% of cases from urban areas and 8.9% of cases in rural areas. The variation in route to diagnosis by urban/rural status was not statistically significant.

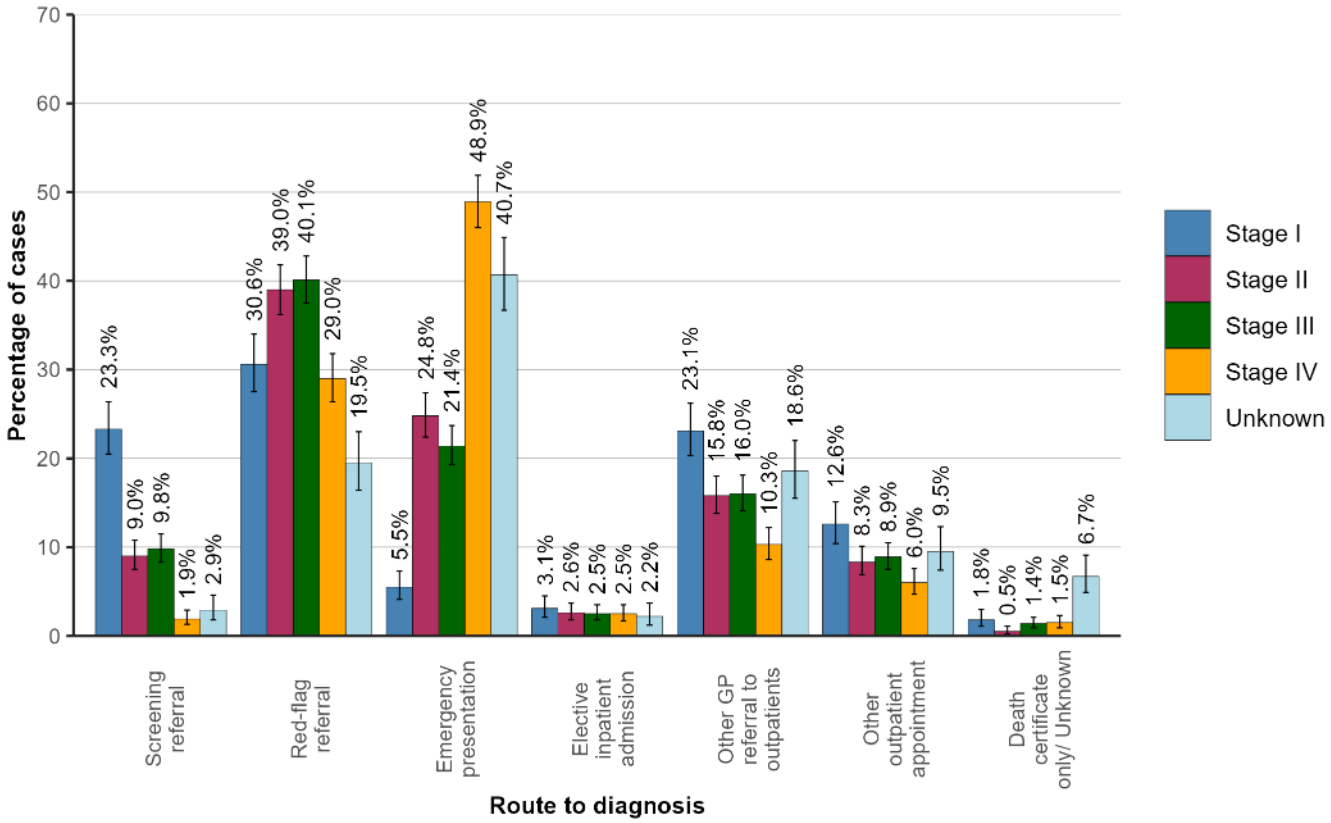
Figure 4.7: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2021 by urban/rural status



4.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2021 the proportion of cases of colorectal cancer diagnosed via a red-flag referral was 30.6% among stage I cancers compared to 29.0% among stage IV cancers. The proportions diagnosed via a screening referral were 23.3% and 1.9% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 48.9% of cases diagnosed at stage IV and 5.5% of cases diagnosed at stage I. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

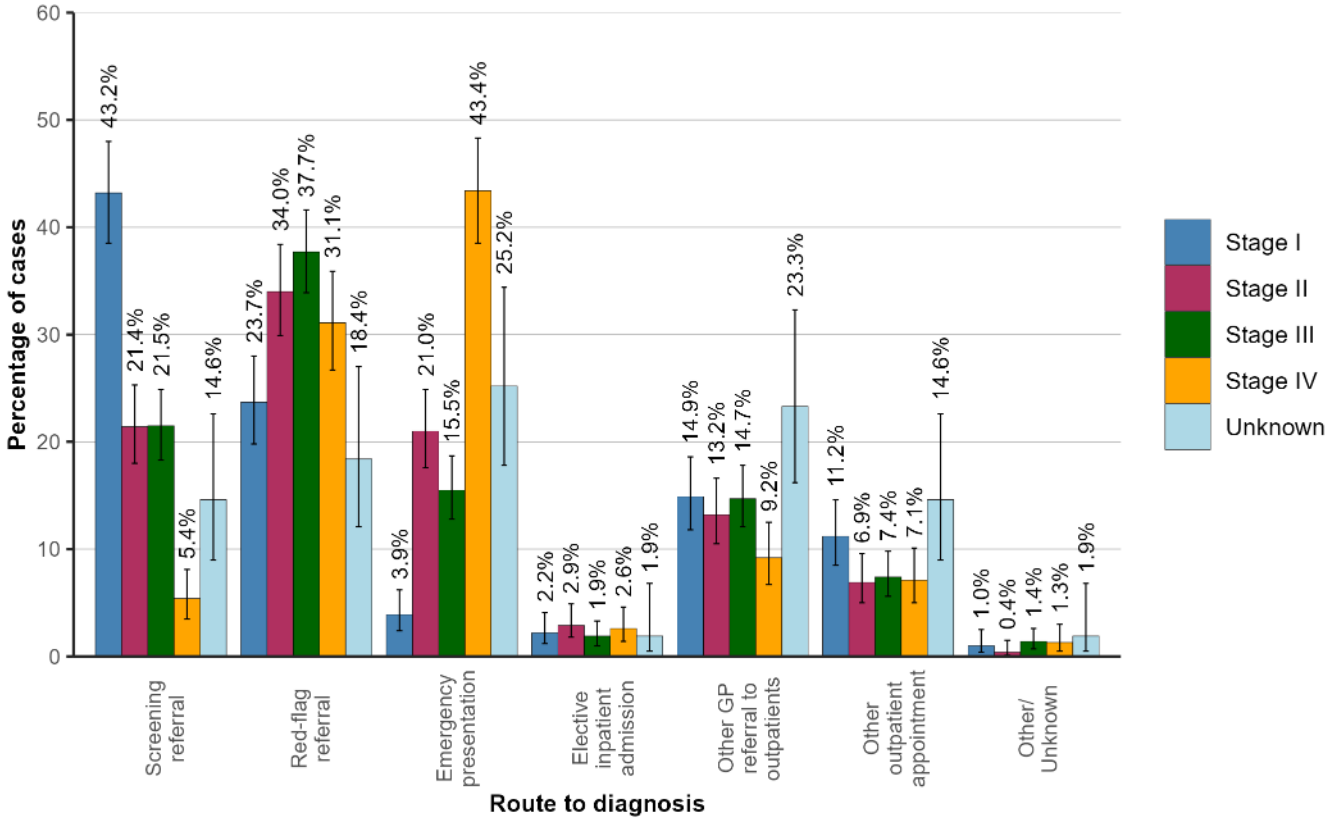
Figure 4.8: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2021 by stage at diagnosis



For patients of screening age

During 2018-2021 the proportion of colorectal cancer cases among patients of screening age who were diagnosed via a screening referral was 43.2% among stage I cancers compared to 5.4% among stage IV cancers. The proportions diagnosed via a red-flag referral were 23.7% and 31.1% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 43.4% of cases diagnosed at stage IV and 3.9% of cases diagnosed at stage I. The variation in route to diagnosis by stage among those of screening age was statistically significant ($p < 0.001$).

Figure 4.9: Route to diagnosis for colorectal cancer patients of screening age (aged 60 to 74) diagnosed in 2018-2021 by stage at diagnosis



4.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

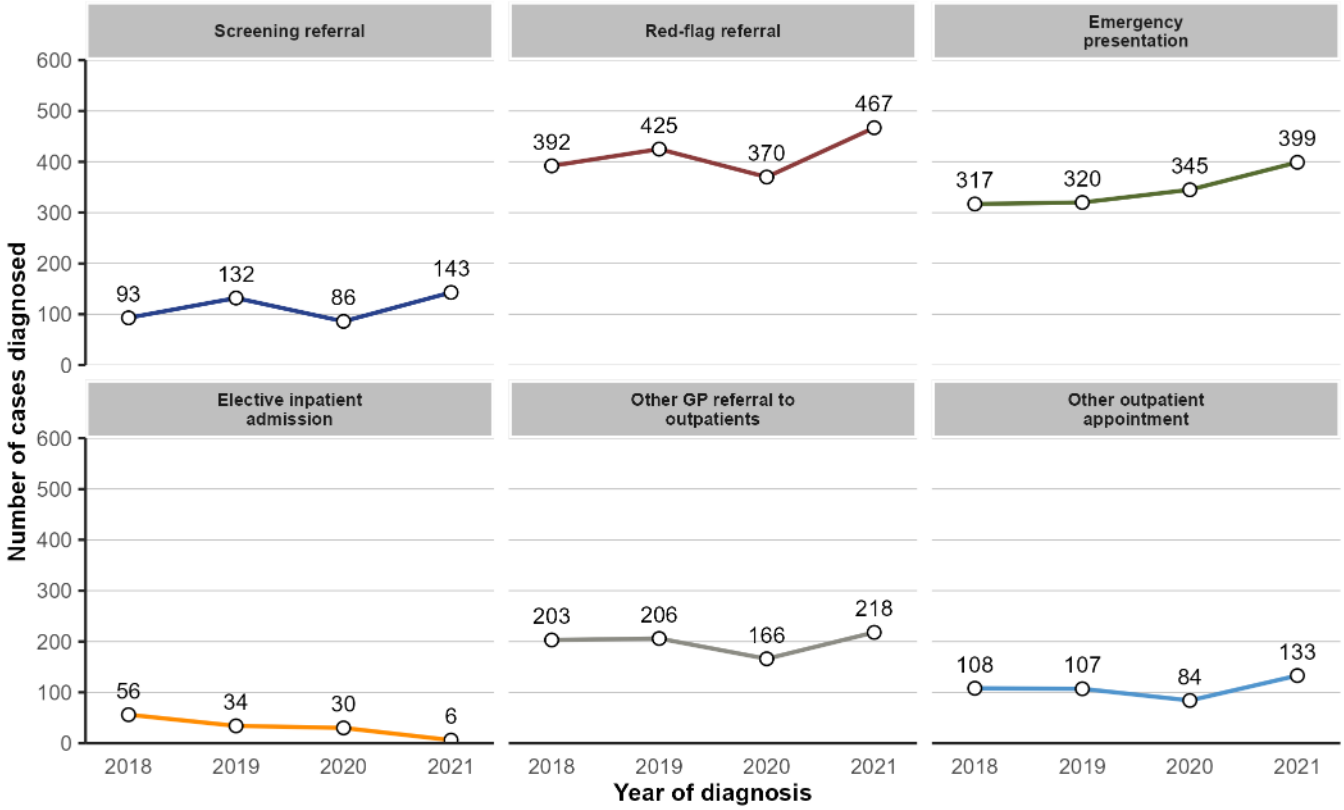
The number of colorectal cancer cases diagnosed via a screening referral increased by 66.3% from 86 in 2020 to 143 in 2021. As a proportion of all cases, a screening referral diagnosis increased from 7.8% in 2020 to 10.2% in 2021.

The number of colorectal cancer cases diagnosed via a red-flag referral increased by 26.2% from 370 in 2020 to 467 in 2021. As a proportion of all cases, a red-flag referral diagnosis decreased from 33.5% in 2020 to 33.4% in 2021.

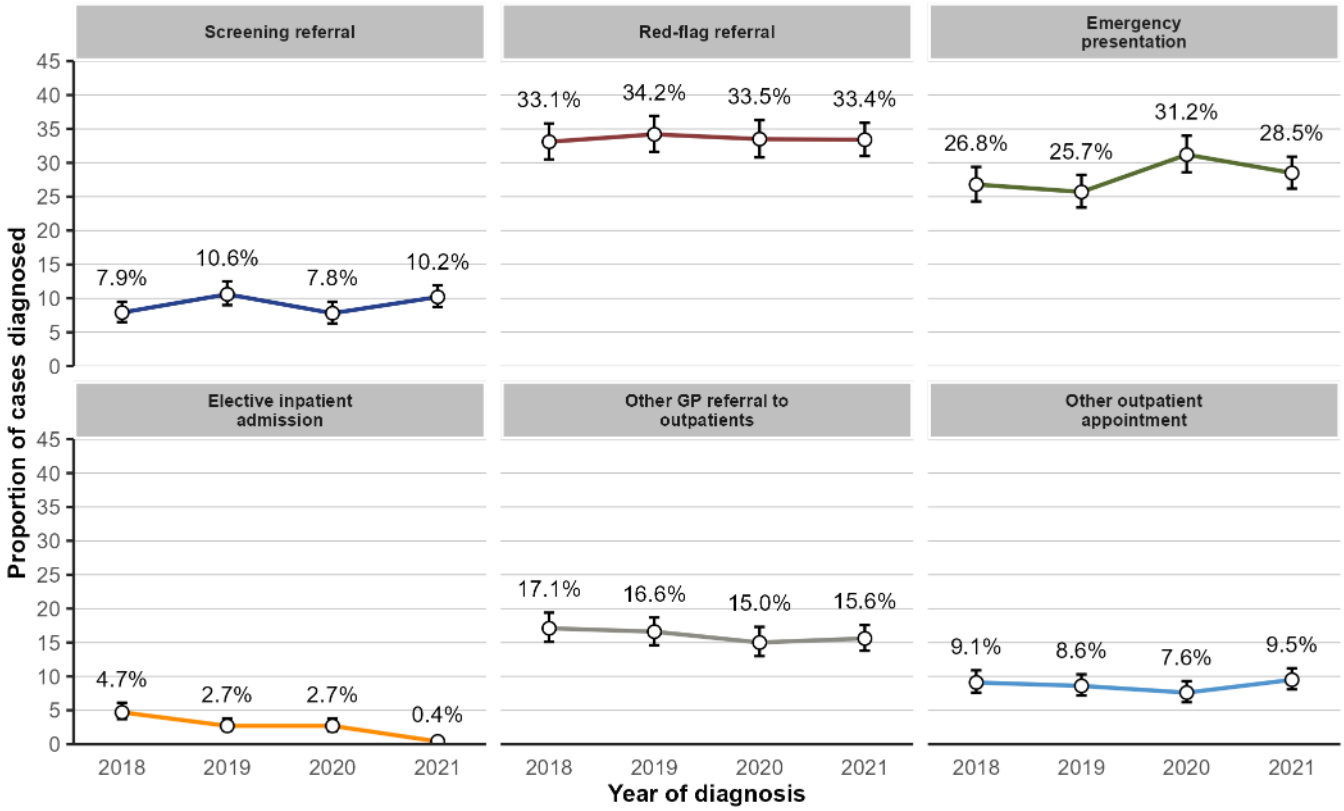
The number of colorectal cancer cases diagnosed via an emergency presentation increased by 15.7% from 345 in 2020 to 399 in 2021. As a proportion of all cases, an emergency presentation diagnosis decreased from 31.2% in 2020 to 28.5% in 2021. The variation in route to diagnosis between the previous two years was statistically significant ($p < 0.001$).

Figure 4.10: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

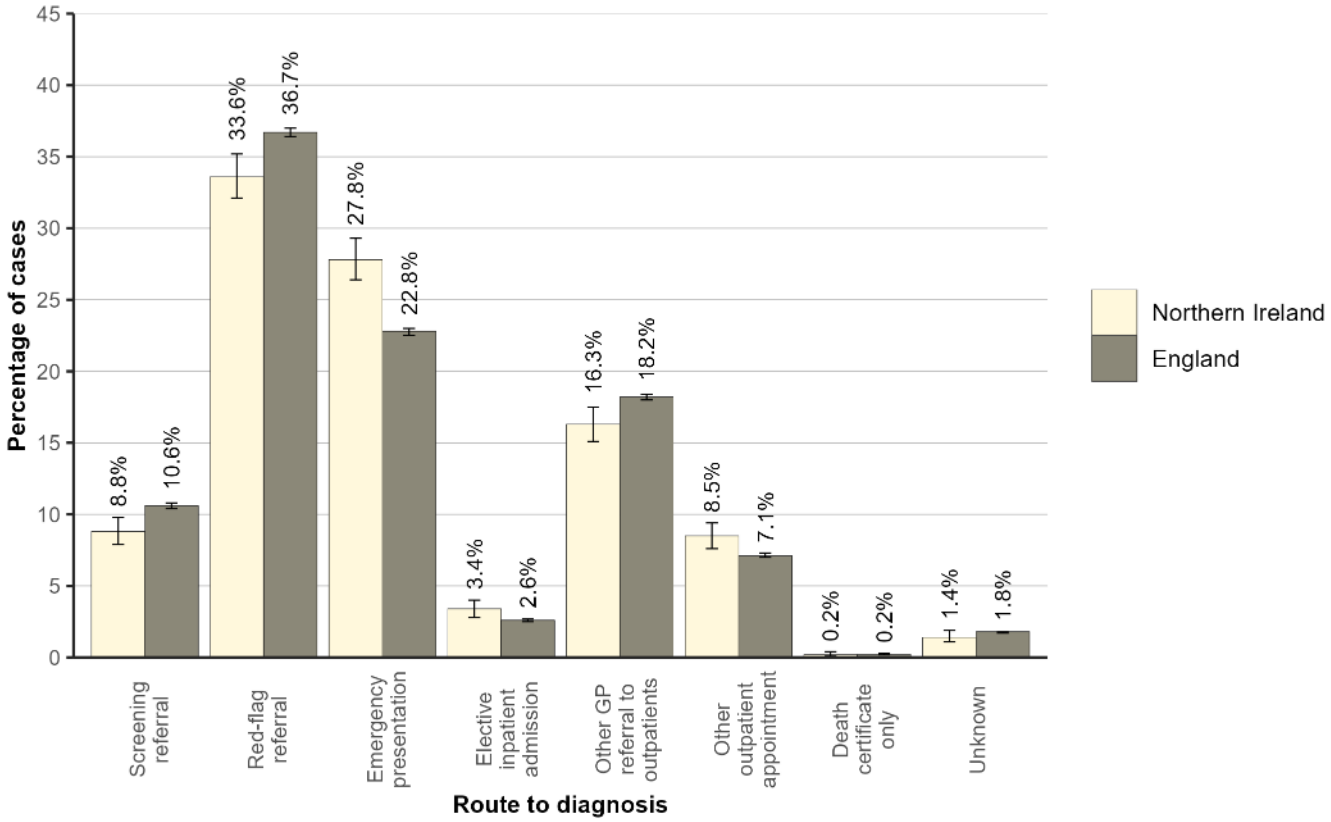


4.6: Comparison with England

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with colorectal cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Screening referral (8.8% in NI compared to 10.6% in England; p=0.001).
- Red-flag referral (33.6% in NI compared to 36.7% in England; p<0.001).
- Emergency presentation (27.8% in NI compared to 22.8% in England; p<0.001).
- Elective inpatient admission (3.4% in NI compared to 2.6% in England; p=0.003).
- Other GP referral to outpatients (16.3% in NI compared to 18.2% in England; p=0.004).
- Other outpatient appointment (8.5% in NI compared to 7.1% in England; p=0.001).

Figure 4.11: Route to diagnosis for colorectal cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



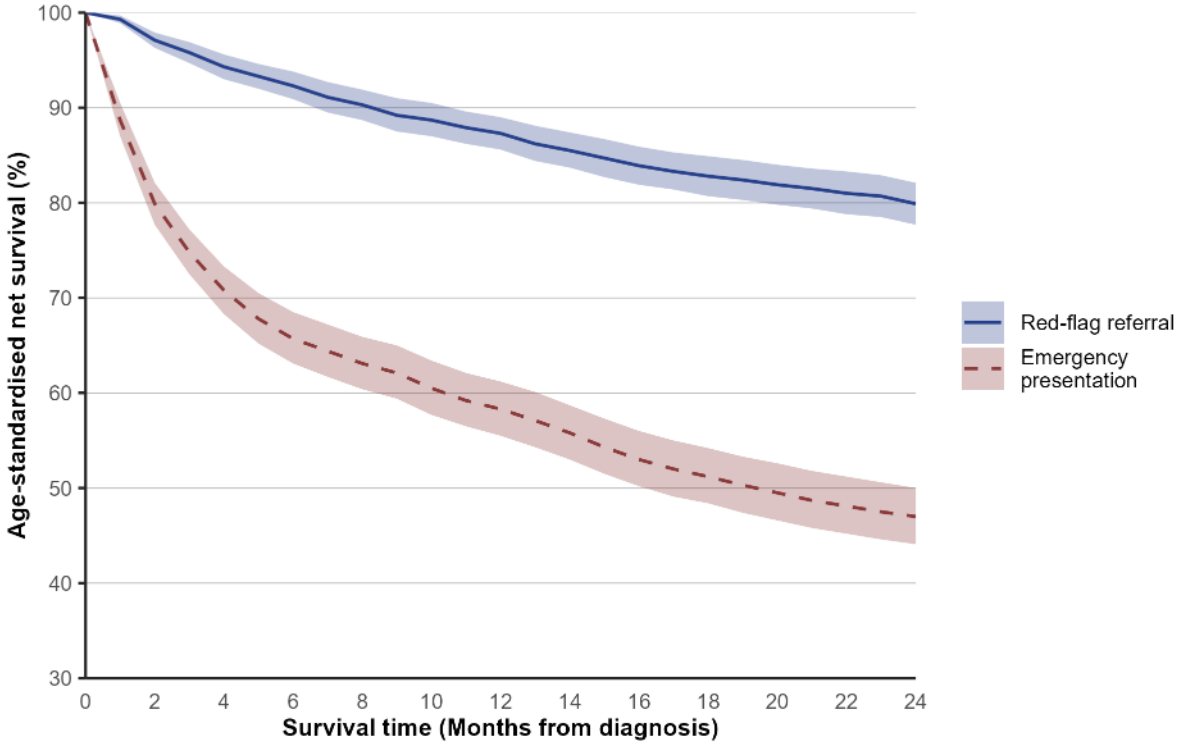
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

4.7: SURVIVAL

During 2018-2021 one-year age-standardised net survival from colorectal cancer ranged from 58.3% for those diagnosed via an emergency presentation route to 88.8% for those diagnosed via an elective inpatient admission route. Two years from diagnosis age-standardised net survival ranged from 47.0% for those diagnosed via an emergency presentation route to 82.5% for those diagnosed via an elective inpatient admission route.

Figure 4.12: Age-standardised net survival by route to diagnosis for colorectal cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

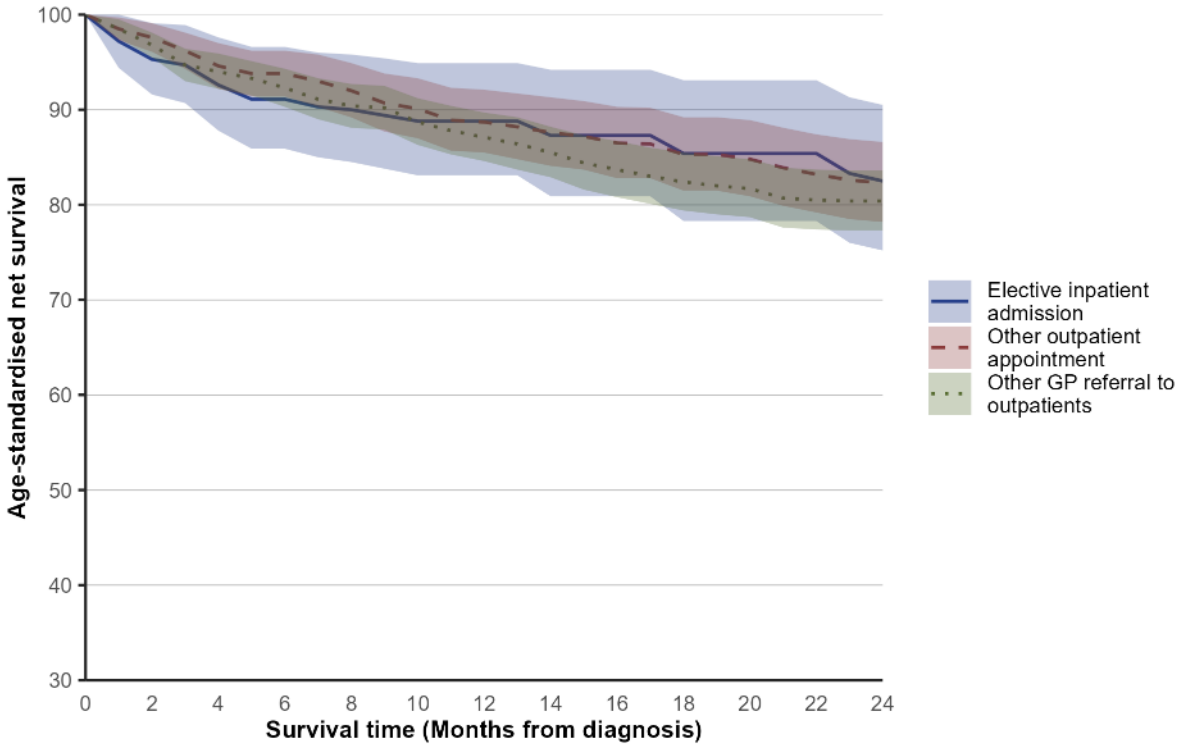


Table 4.3: Age-standardised net survival by route to diagnosis for colorectal cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	87.3% (85.6% - 89.0%)	79.9% (77.7% - 82.1%)
Emergency presentation	58.3% (55.5% - 61.2%)	47.0% (44.1% - 50.0%)
Elective inpatient admission	88.8% (83.1% - 94.9%)	82.5% (75.2% - 90.5%)
Other GP referral to outpatients	87.1% (84.6% - 89.7%)	80.4% (77.3% - 83.6%)
Other outpatient appointment	88.7% (85.5% - 92.1%)	82.3% (78.2% - 86.6%)
Unknown	71.4% (60.7% - 84.0%)	67.1% (55.2% - 81.6%)

ASNS: Age-standardised net survival with 95% confidence interval.

For patients of screening age

During 2018-2021 one-year net survival from colorectal cancer for patients diagnosed within screening age (aged 60 to 74) ranged from 60.2% for those diagnosed via an emergency presentation route to 98.6% for those diagnosed via a screening referral route. Two years from diagnosis net survival for patients diagnosed within screening age ranged from 49.3% for those diagnosed via an emergency presentation route to 97.5% for those diagnosed via a screening referral route.

Figure 4.13: Net survival by route to diagnosis for colorectal cancer patients of screening age (aged 60 to 74) diagnosed in 2018-2021

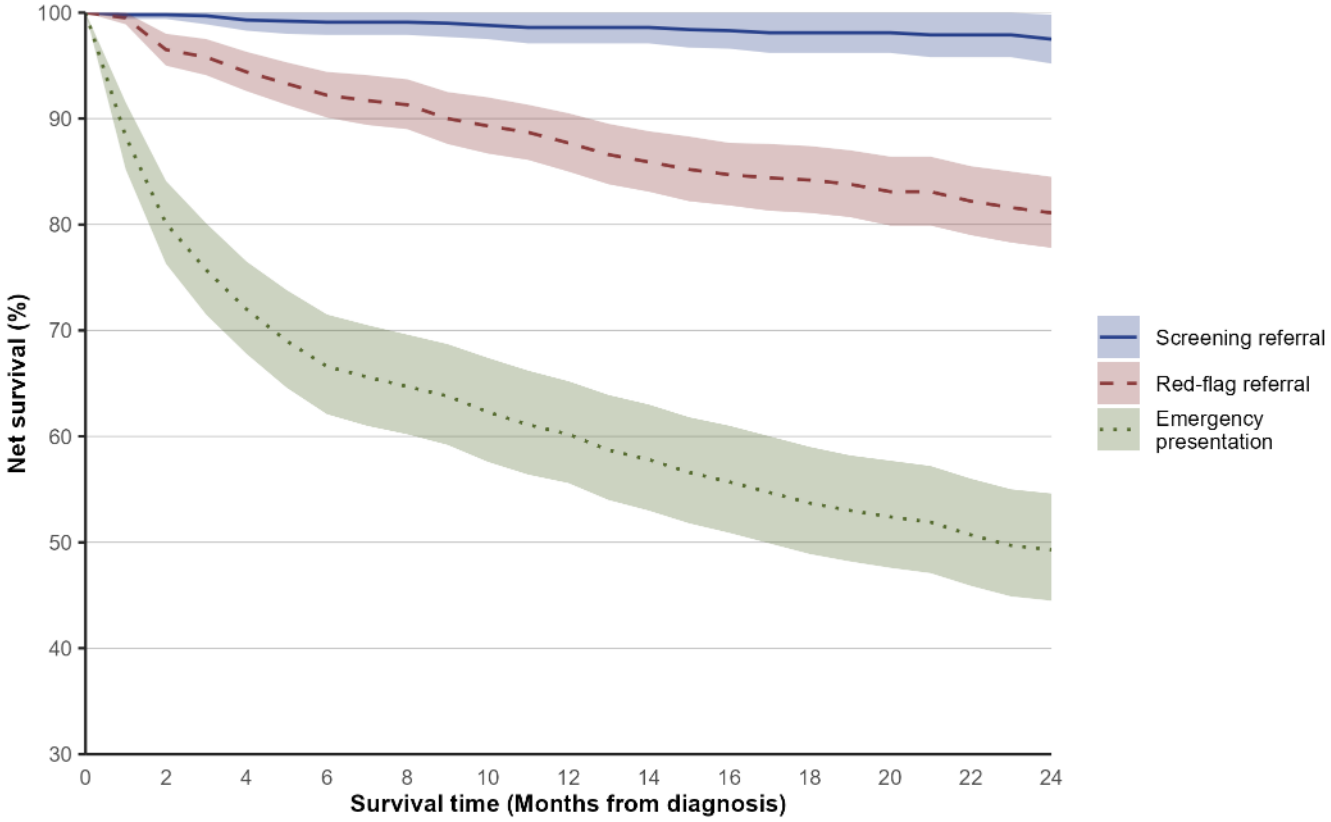


Table 4.4: Net survival by route to diagnosis for colorectal cancer patients of screening age (aged 60 to 74) diagnosed in 2018-2021

Route to diagnosis	One-year survival (NS)	Two-year survival (NS)
Screening referral	98.6% (97.1% - 100.0%)	97.5% (95.2% - 99.8%)
Red-flag referral	87.7% (85.0% - 90.5%)	81.1% (77.8% - 84.5%)
Emergency presentation	60.2% (55.6% - 65.2%)	49.3% (44.5% - 54.6%)
Elective inpatient admission	92.2% (84.3% - 100.0%)	86.9% (76.8% - 98.3%)
Other GP referral to outpatients	87.9% (83.9% - 92.1%)	83.4% (78.6% - 88.5%)
Other outpatient appointment	89.0% (83.9% - 94.4%)	82.6% (76.4% - 89.3%)
Unknown	70.4% (53.3% - 93.0%)	70.4% (53.3% - 93.0%)

NS: Net survival with 95% confidence interval

05: Female Breast Cancer

The most common route to diagnosis among female breast cancer patients during 2018-2021 was via a red-flag referral, with 700 (46.9%) cases diagnosed on average each year. This was followed by a screening referral route with 442 (29.6%) cases diagnosed on average each year. Emergency presentations made up 3.7% of cases during this period.

Figure 5.1: Route to diagnosis for female breast cancer patients diagnosed in 2018-2021

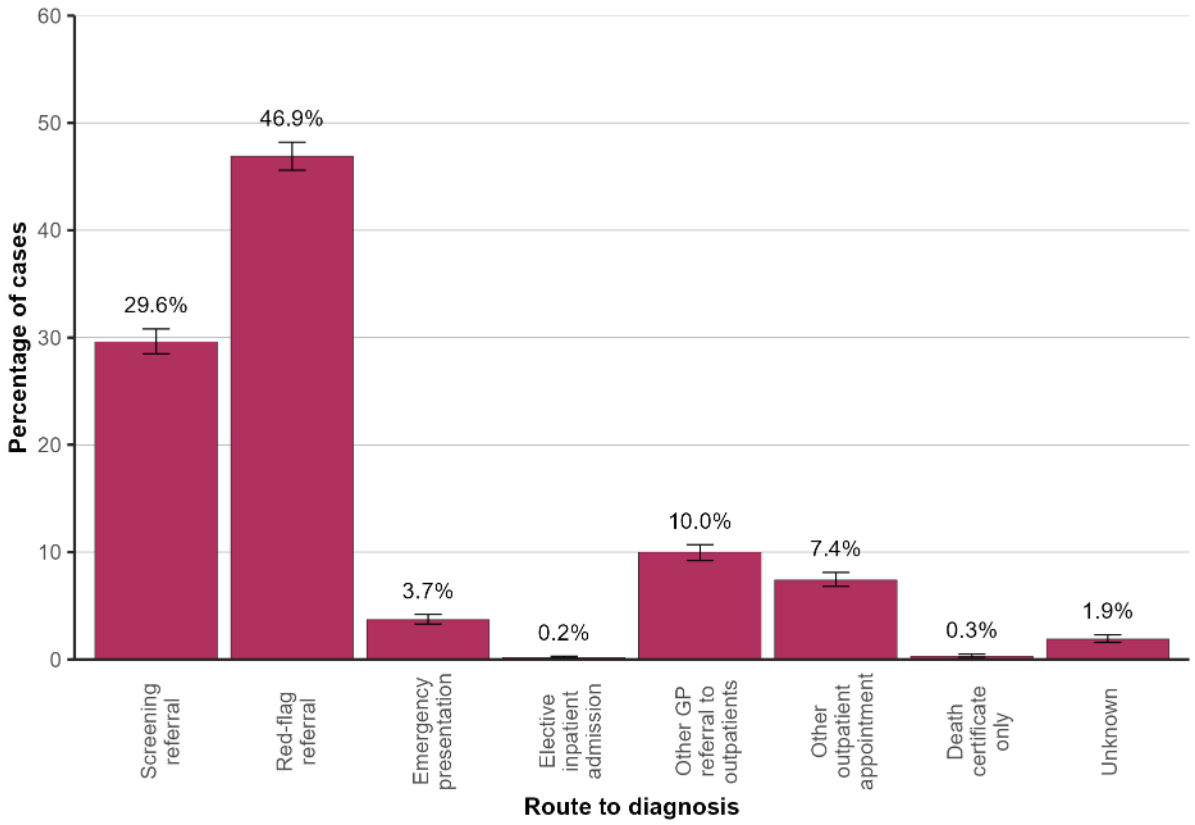


Table 5.1: Average number of female breast cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	442	29.6% (28.5% - 30.8%)
Red-flag referral	700	46.9% (45.6% - 48.2%)
Emergency presentation	56	3.7% (3.3% - 4.2%)
Elective inpatient admission	3	0.2% (0.1% - 0.3%)
Other GP referral to outpatients	149	10.0% (9.2% - 10.7%)
Other outpatient appointment	111	7.4% (6.8% - 8.1%)
Death certificate only	5	0.3% (0.2% - 0.5%)
Unknown	28	1.9% (1.6% - 2.3%)

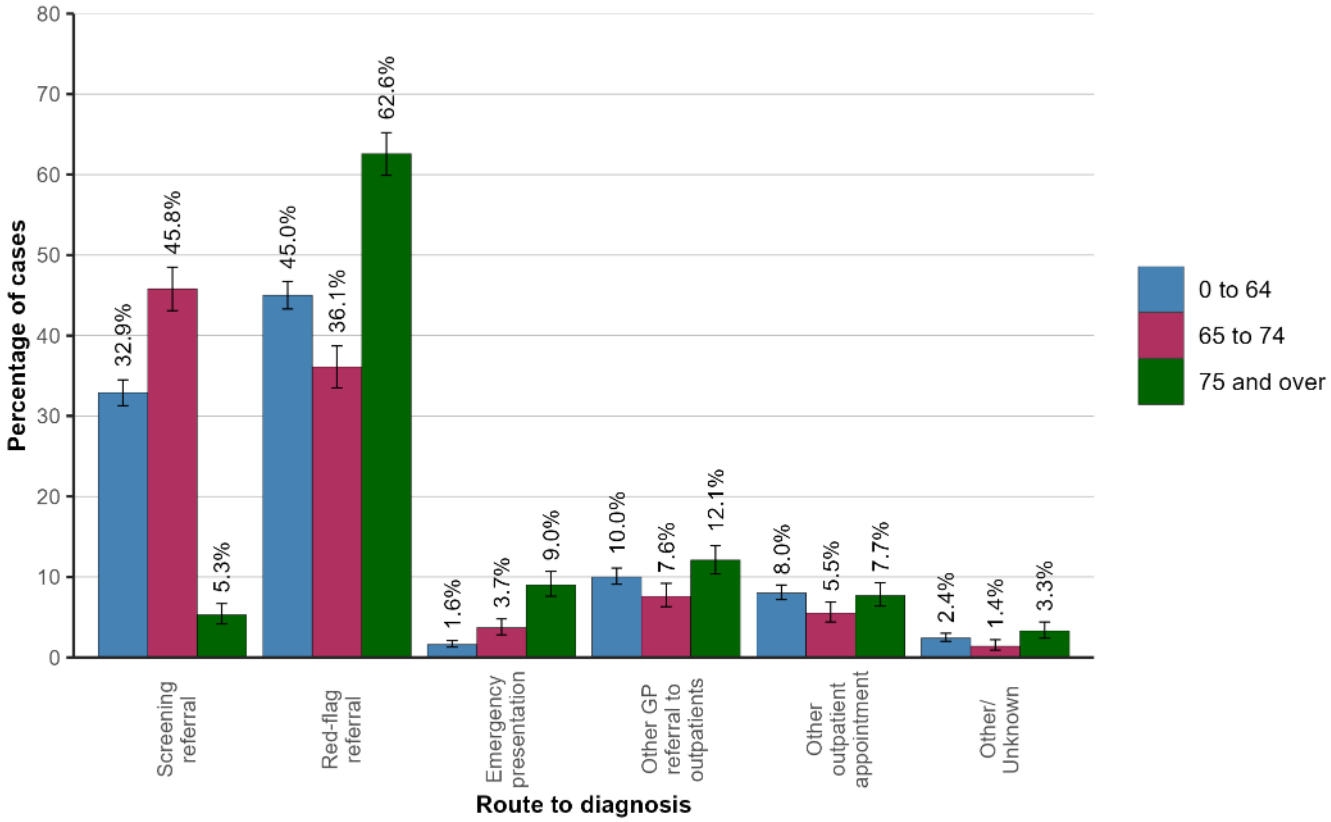
CI: Confidence Interval

5.1: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of female breast cancer overall was a red-flag referral. Among those aged 0 to 64 there were 375 (45.0%) diagnosed per year via this route, compared to 206 (62.6%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was a screening referral with 32.9% of those aged 0 to 64 and 5.3% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

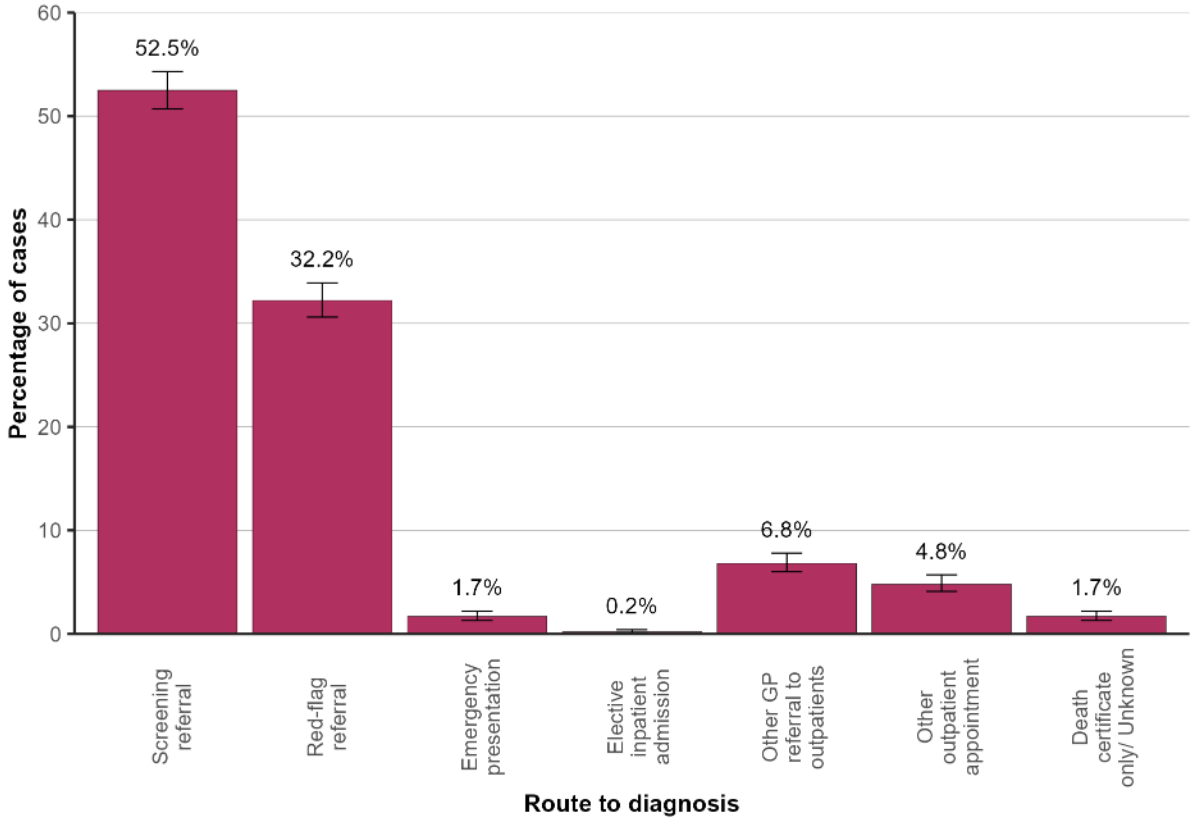
Figure 5.2: Route to diagnosis for female breast cancer patients diagnosed in 2018-2021 by age group



For patients of screening age

The most common route to diagnosis among female breast cancer patients diagnosed within screening age (aged 50 to 70) during 2018-2021 was via a screening referral, with 401 (52.5%) cases diagnosed on average each year. This was followed by a red-flag referral route with 246 (32.2%) cases diagnosed on average each year. Emergency presentations made up 1.7% of cases among those diagnosed within screening age during this period.

Figure 5.3: Route to diagnosis for female breast cancer patients of screening age (aged 50 to 70) diagnosed in 2018-2021



5.2: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of female breast cancer diagnosed via a red-flag referral ranged from 42.2% in Southern HSCT to 49.1% in Western HSCT. The proportions diagnosed via a screening referral ranged from 24.3% to 34.5% in Belfast HSCT and Southern HSCT respectively. Emergency presentation was the route taken in 2.9% of cases in Northern HSCT and 5.2% of cases in Belfast HSCT. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of female breast cancer diagnosed via a red-flag referral was 47.8% in the most deprived areas compared to 44.7% in the least deprived areas. The proportions diagnosed via a screening referral were 28.7% and 28.0% in the most and least deprived areas respectively. Emergency presentation was the route taken in 3.9% of cases from the most deprived areas and 3.2% of cases in the least deprived areas. The variation in route to diagnosis by deprivation quintile was statistically significant ($p < 0.001$).

Figure 5.4: Route to diagnosis for female breast cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

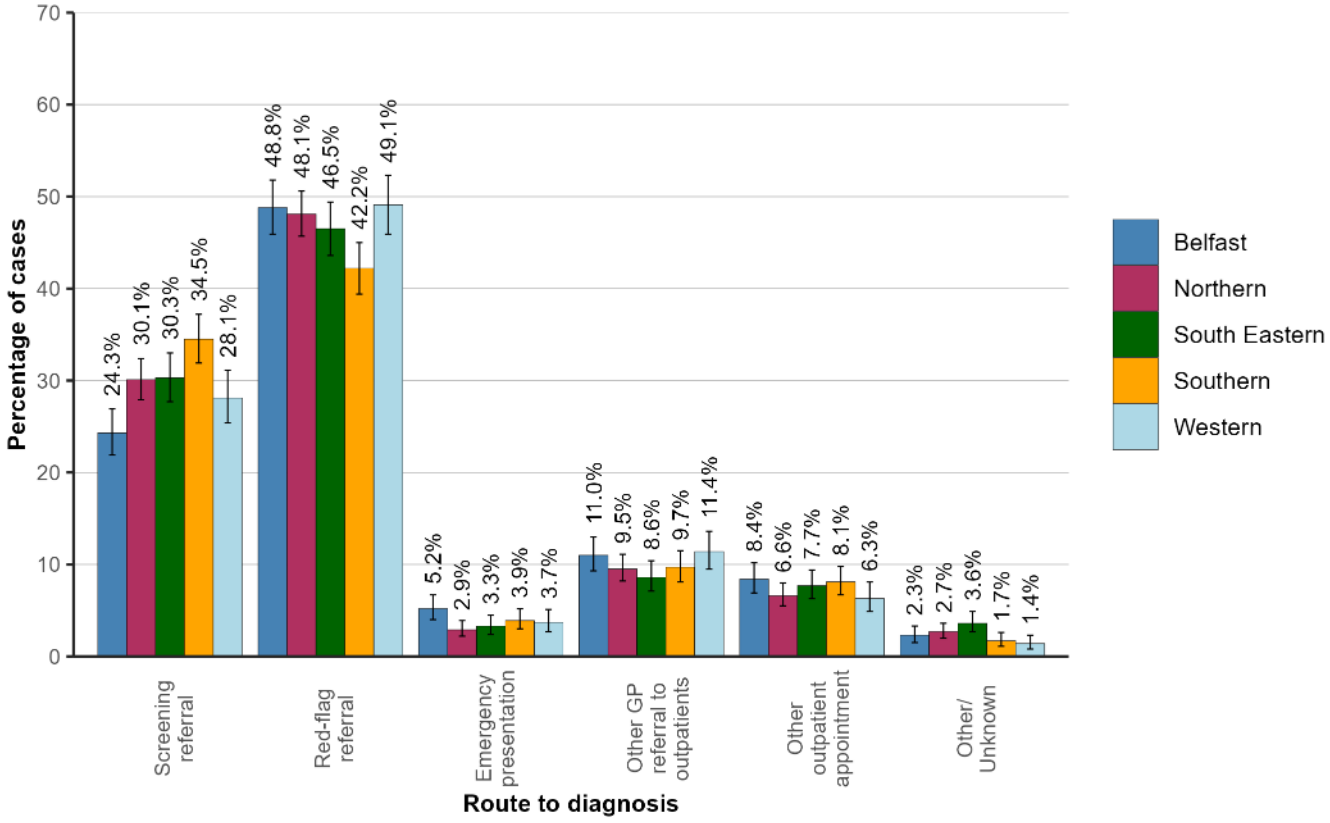
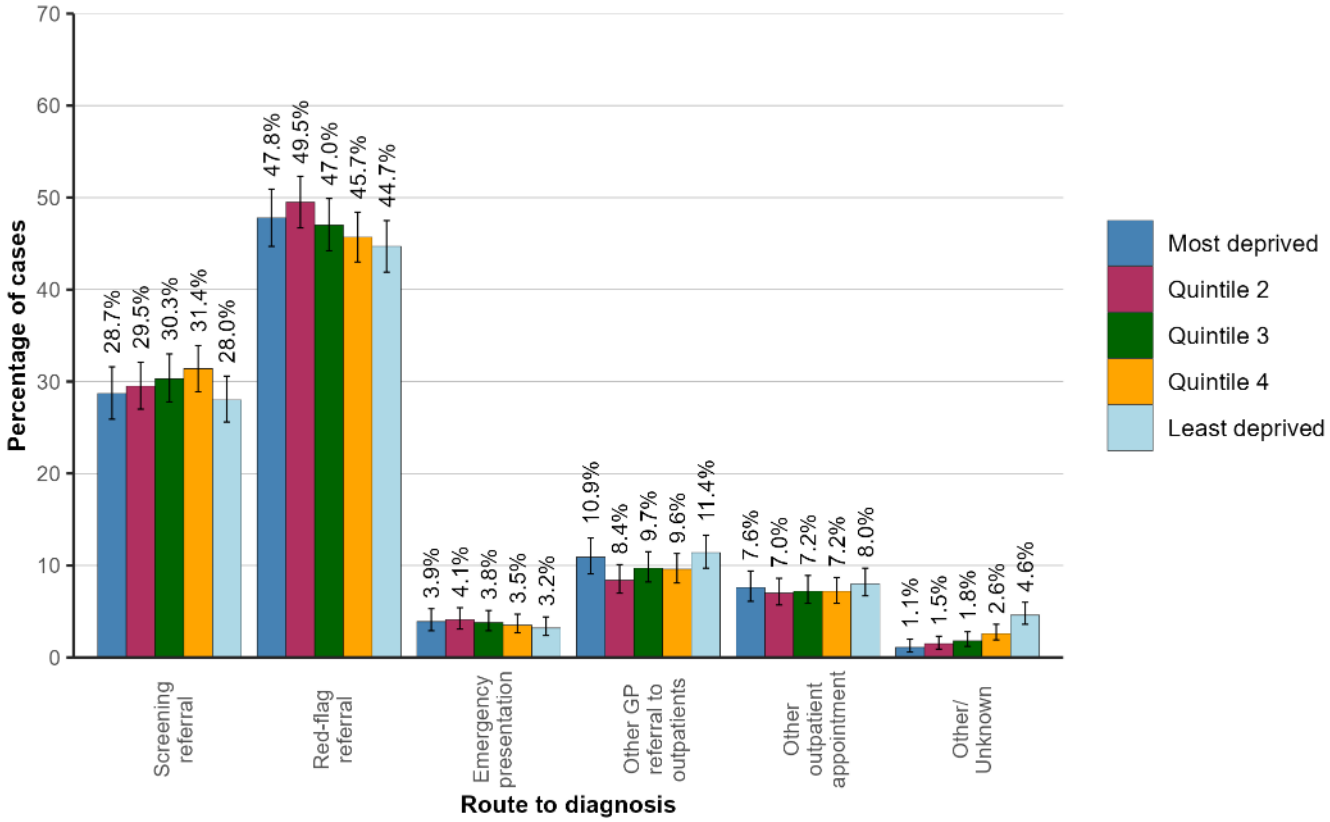


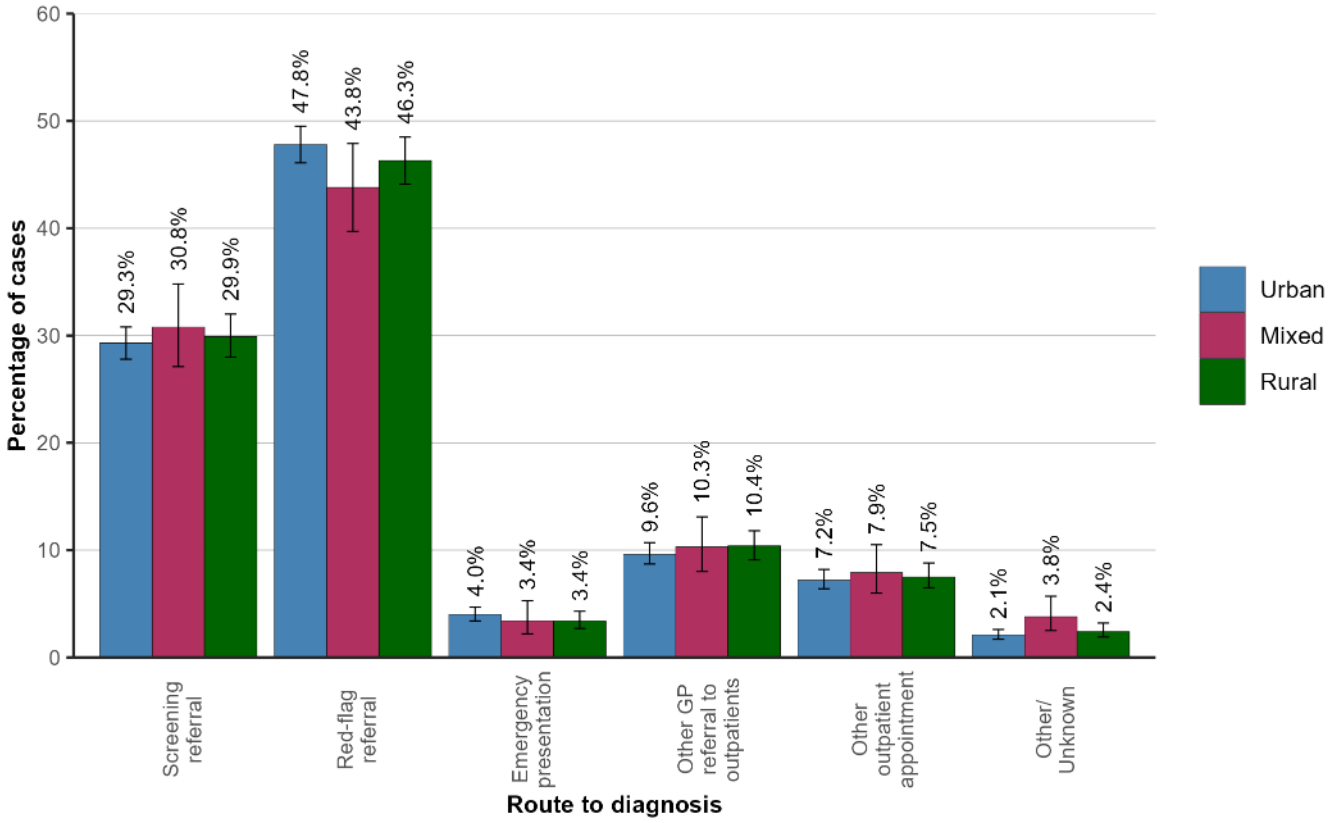
Figure 5.5: Route to diagnosis for female breast cancer patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of female breast cancer diagnosed via a red-flag referral was 47.8% in urban areas compared to 46.3% in rural areas. The proportions diagnosed via a screening referral were 29.3% and 29.9% in urban and rural areas respectively. Emergency presentation was the route taken in 4.0% of cases from urban areas and 3.4% of cases in rural areas. The variation in route to diagnosis by urban/rural status was not statistically significant.

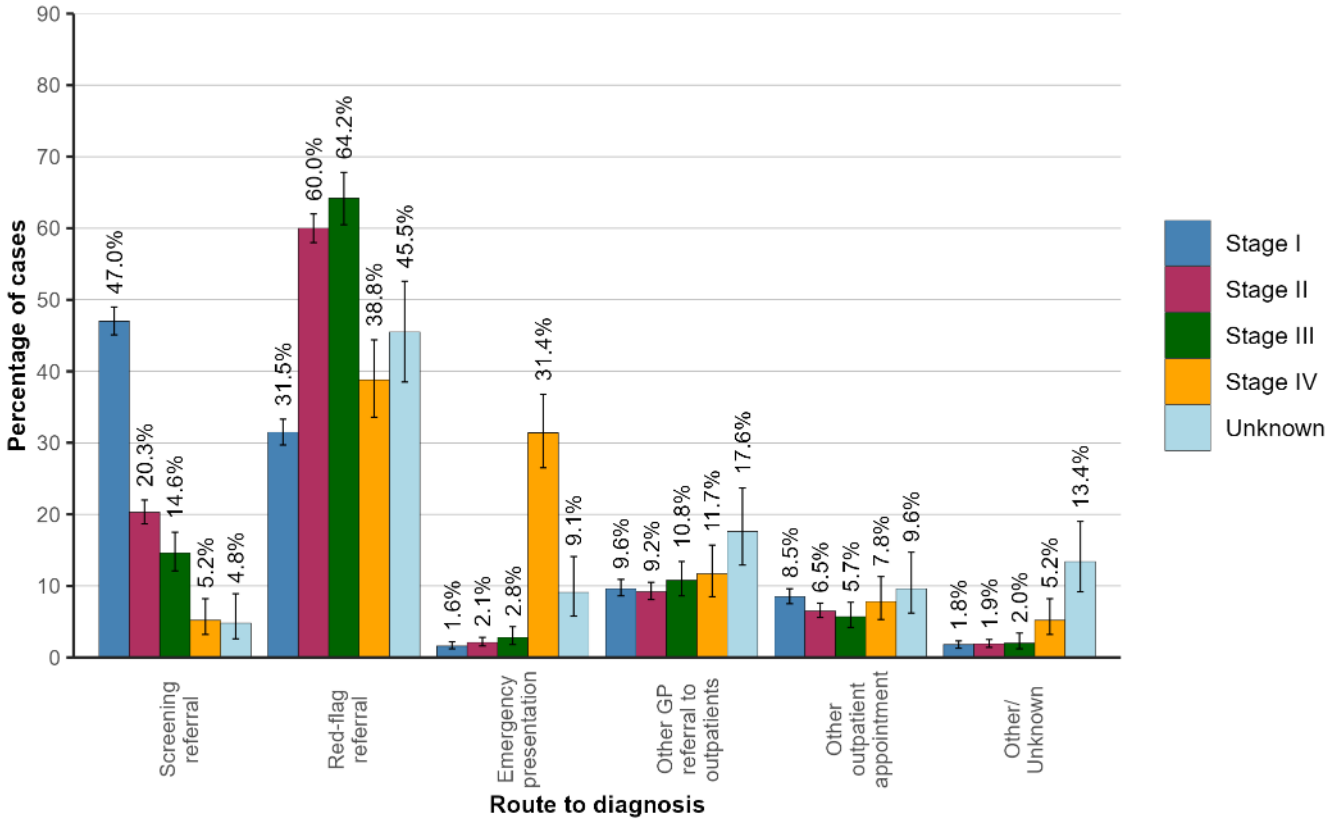
Figure 5.6: Route to diagnosis for female breast cancer patients diagnosed in 2018-2021 by urban/rural status



5.3: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2021 the proportion of cases of female breast cancer diagnosed via a screening referral was 47.0% among stage I cancers compared to 5.2% among stage IV cancers. The proportions diagnosed via a red-flag referral were 31.5% and 38.8% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 31.4% of cases diagnosed at stage IV and 1.6% of cases diagnosed at stage I. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

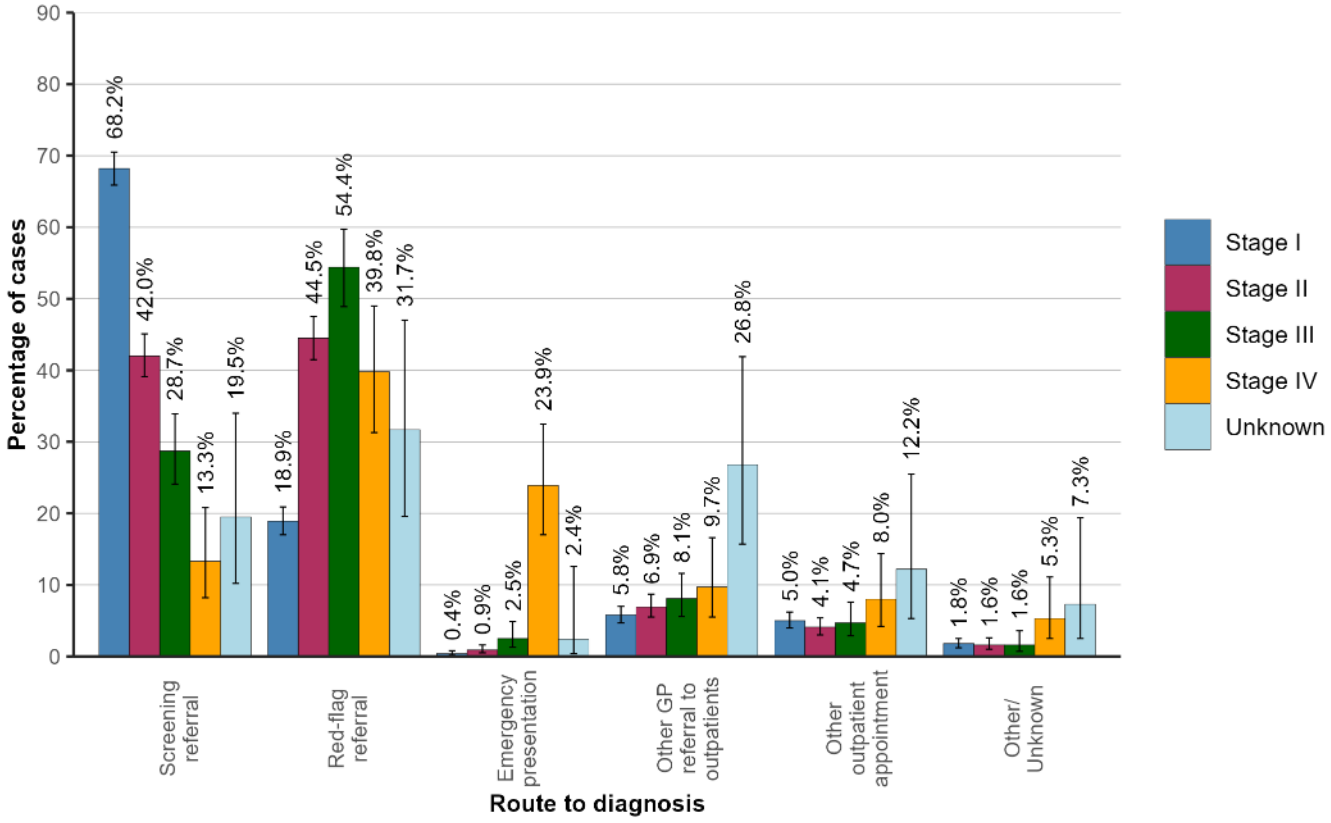
Figure 5.7: Route to diagnosis for female breast cancer patients diagnosed in 2018-2021 by stage at diagnosis



For patients of screening age

During 2018-2021 the proportion of female breast cancer cases among patients of screening age who were diagnosed via a screening referral was 68.2% among stage I cancers compared to 13.3% among stage IV cancers. The proportions diagnosed via a red-flag referral were 18.9% and 39.8% for stage I and stage IV cancers respectively. Emergency presentation was the route taken in 23.9% of cases diagnosed at stage IV and 0.4% of cases diagnosed at stage I. The variation in route to diagnosis by stage among those of screening age was statistically significant ($p < 0.001$).

Figure 5.8: Route to diagnosis for female breast cancer patients of screening age (aged 50 to 70) diagnosed in 2018-2021 by stage at diagnosis



5.4: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

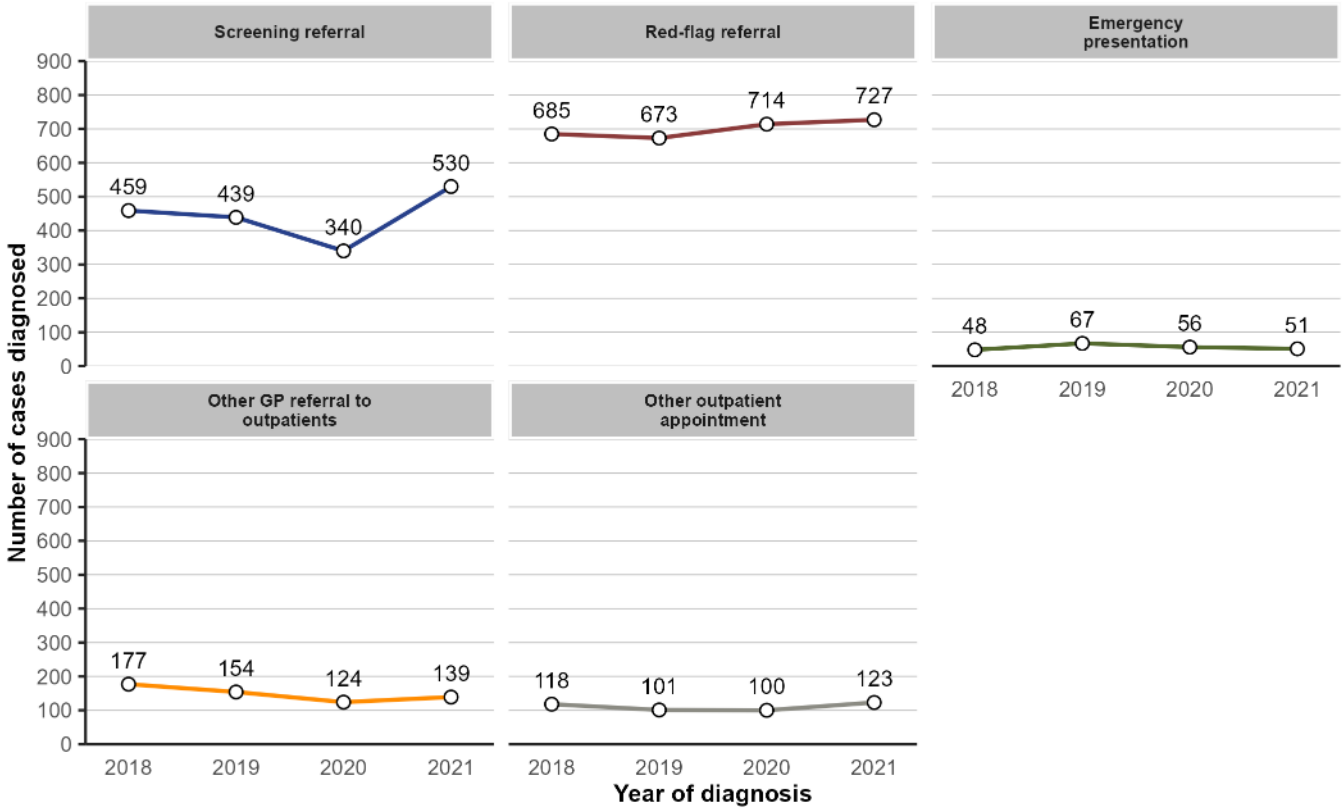
The number of female breast cancer cases diagnosed via a screening referral increased by 55.9% from 340 in 2020 to 530 in 2021. As a proportion of all cases, a screening referral diagnosis increased from 25.0% in 2020 to 32.8% in 2021.

The number of female breast cancer cases diagnosed via a red-flag referral increased by 1.8% from 714 in 2020 to 727 in 2021. As a proportion of all cases, a red-flag referral diagnosis decreased from 52.5% in 2020 to 45.0% in 2021.

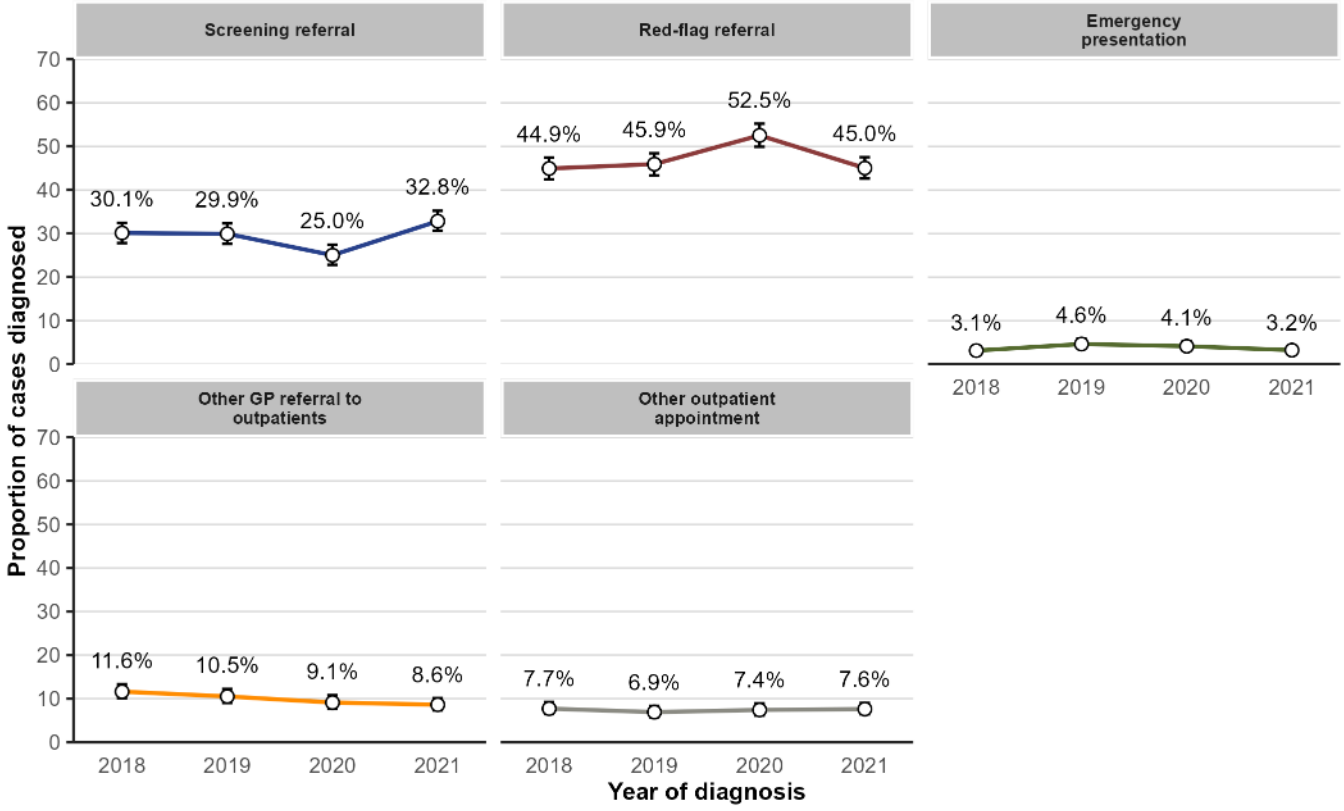
The number of female breast cancer cases diagnosed via an emergency presentation decreased by 8.9% from 56 in 2020 to 51 in 2021. As a proportion of all cases, an emergency presentation diagnosis decreased from 4.1% in 2020 to 3.2% in 2021. The variation in route to diagnosis between the previous two years was statistically significant ($p < 0.001$).

Figure 5.9: Route to diagnosis for female breast cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

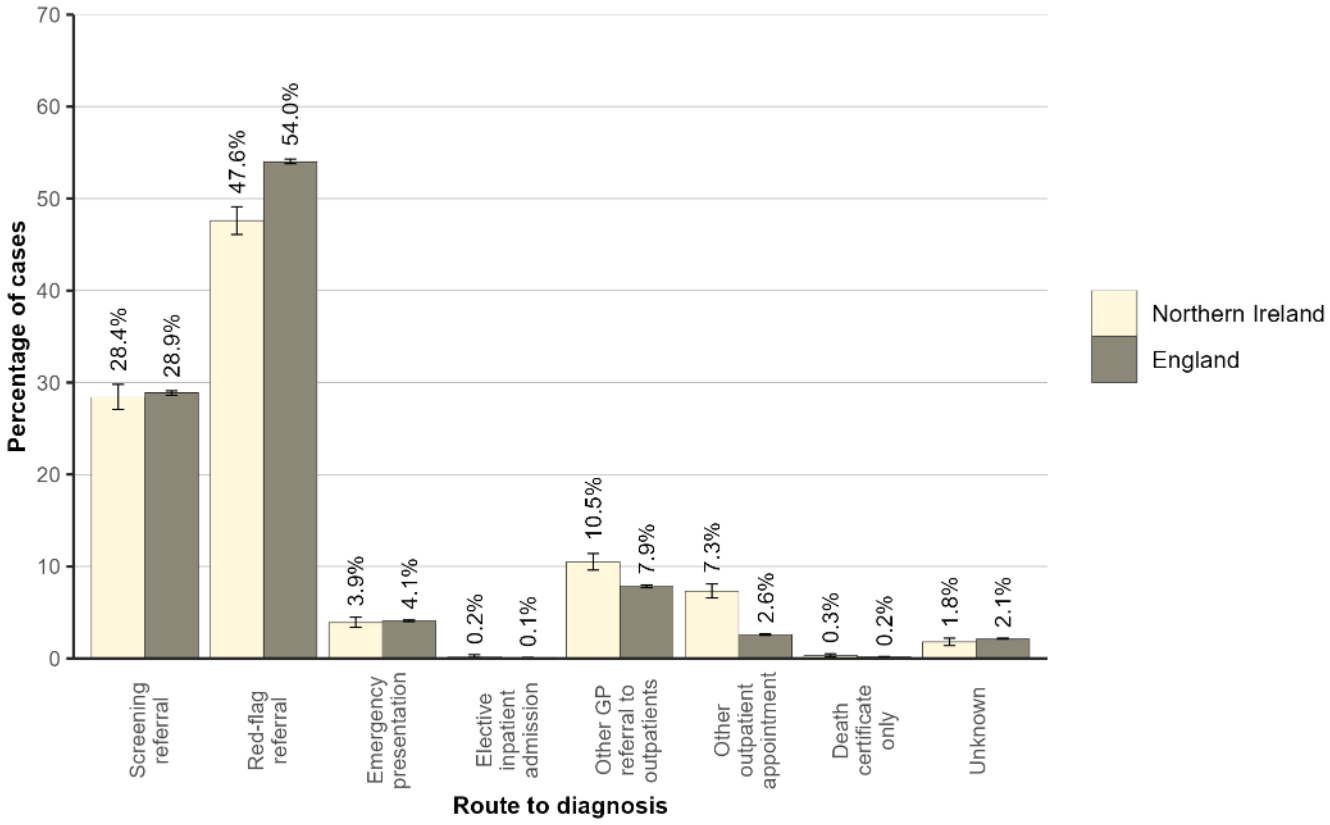


5.5: Comparison with England

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with female breast cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Red-flag referral (47.6% in NI compared to 54.0% in England; p<0.001).
- Other GP referral to outpatients (10.5% in NI compared to 7.9% in England; p<0.001).
- Other outpatient appointment (7.3% in NI compared to 2.6% in England; p<0.001).

Figure 5.10: Route to diagnosis for female breast cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



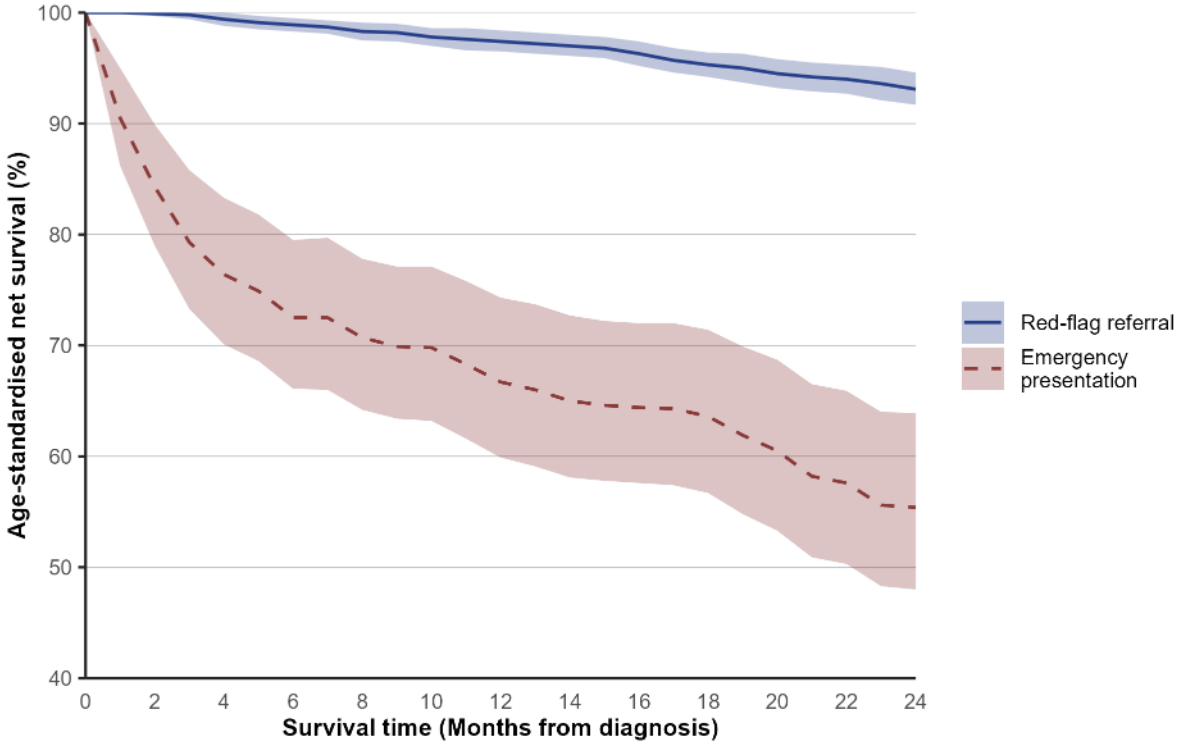
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

5.6: SURVIVAL

During 2018-2021 one-year age-standardised net survival from female breast cancer ranged from 66.7% for those diagnosed via an emergency presentation route to 97.4% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 55.4% for those diagnosed via an emergency presentation route to 93.1% for those diagnosed via a red-flag referral route.

Figure 5.11: Age-standardised net survival by route to diagnosis for female breast cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

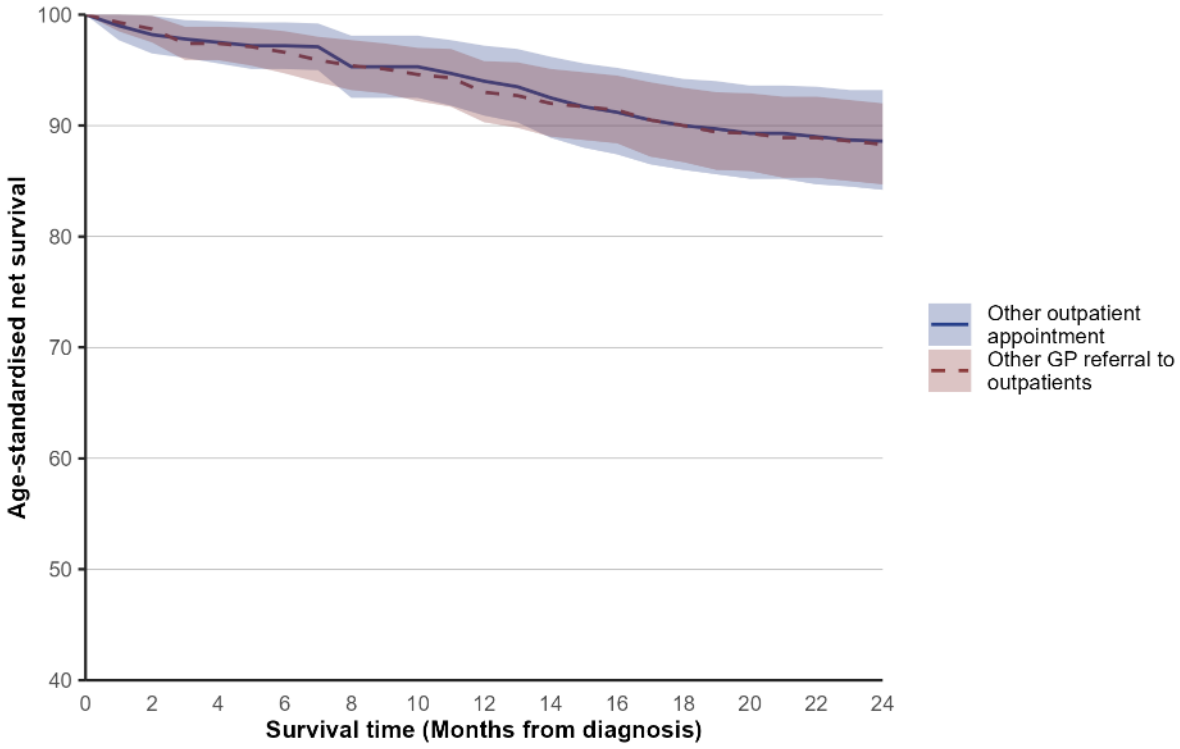


Table 5.2: Age-standardised net survival by route to diagnosis for female breast cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	97.4% (96.5% - 98.4%)	93.1% (91.7% - 94.6%)
Emergency presentation	66.7% (59.9% - 74.3%)	55.4% (48.0% - 63.9%)
Elective inpatient admission	56.2% (34.0% - 92.8%)*	56.2% (34.0% - 92.8%)*
Other GP referral to outpatients	93.0% (90.3% - 95.8%)	88.3% (84.7% - 92.0%)
Other outpatient appointment	94.0% (90.9% - 97.2%)	88.6% (84.2% - 93.2%)
Unknown	89.9% (82.1% - 98.4%)	89.9% (82.1% - 98.4%)

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

For patients of screening age

During 2018-2021 one-year net survival from female breast cancer for patients diagnosed within screening age (aged 50 to 70) ranged from 71.3% for those diagnosed via an emergency presentation route to 100.0% for those diagnosed via a screening referral route. Two years from diagnosis net survival for patients diagnosed within screening age ranged from 56.9% for those diagnosed via an emergency presentation route to 99.5% for those diagnosed via a screening referral route.

Figure 5.12: Net survival by route to diagnosis for female breast cancer patients of screening age (aged 50 to 70) diagnosed in 2018-2021

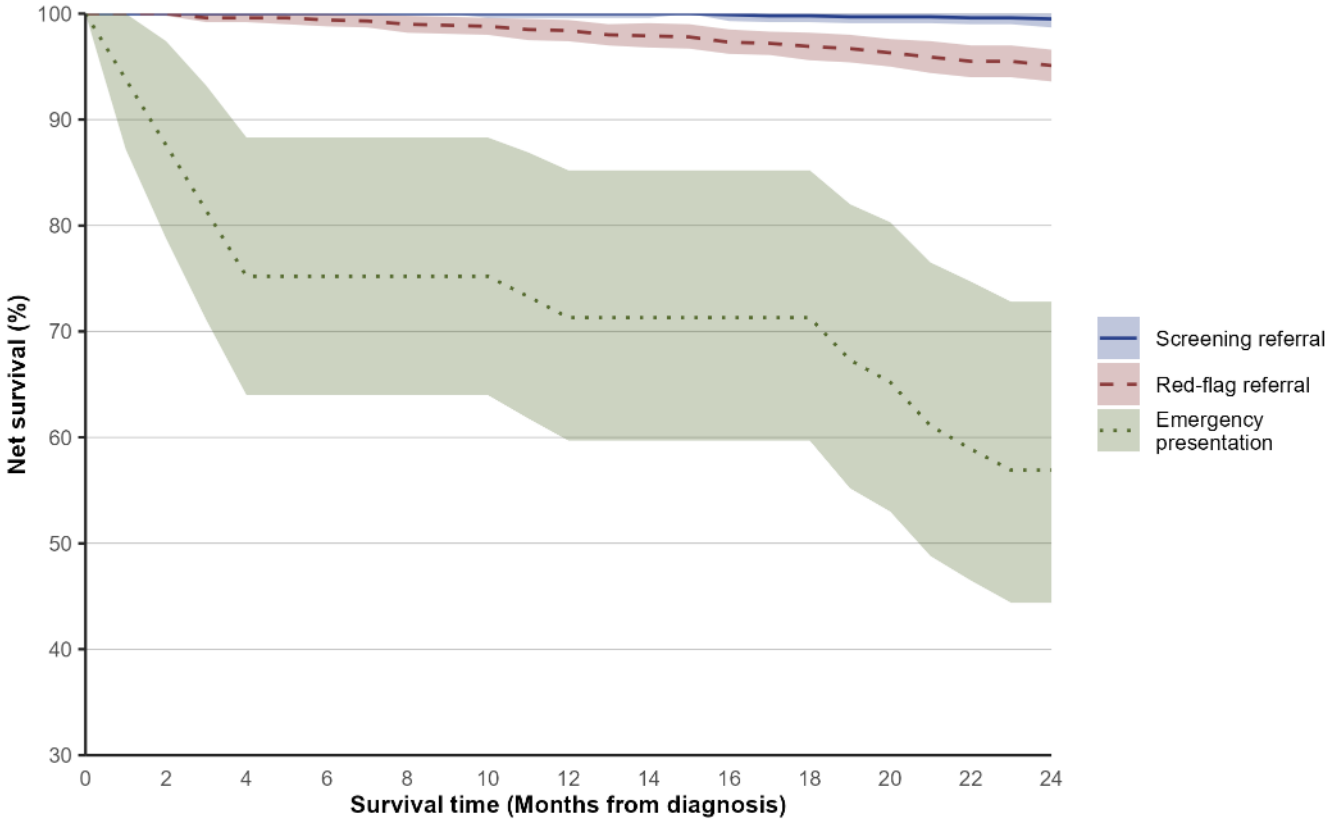


Table 5.3: Net survival by route to diagnosis for female breast cancer patients of screening age (aged 50 to 70) diagnosed in 2018-2021

Route to diagnosis	One-year survival (NS)	Two-year survival (NS)
Screening referral	100.0% (99.6% - 100.0%)	99.5% (98.7% - 100.0%)
Red-flag referral	98.4% (97.4% - 99.4%)	95.1% (93.6% - 96.6%)
Emergency presentation	71.3% (59.7% - 85.2%)	56.9% (44.4% - 72.8%)
Other GP referral to outpatients	97.5% (95.0% - 100.0%)	94.0% (90.4% - 97.8%)
Other outpatient appointment	95.5% (91.8% - 99.3%)	93.6% (89.3% - 98.1%)
Unknown	97.8% (93.7% - 100.0%)	97.8% (93.7% - 100.0%)

NS: Net survival with 95% confidence interval

06: LUNG CANCER (INCLUDING TRACHEA)

The most common route to diagnosis among lung cancer patients during 2018-2021 was via an emergency presentation, with 564 (41.5%) cases diagnosed on average each year. This was followed by a red-flag referral route with 285 (20.9%) cases diagnosed on average each year.

Figure 6.1: Route to diagnosis for lung cancer patients diagnosed in 2018-2021

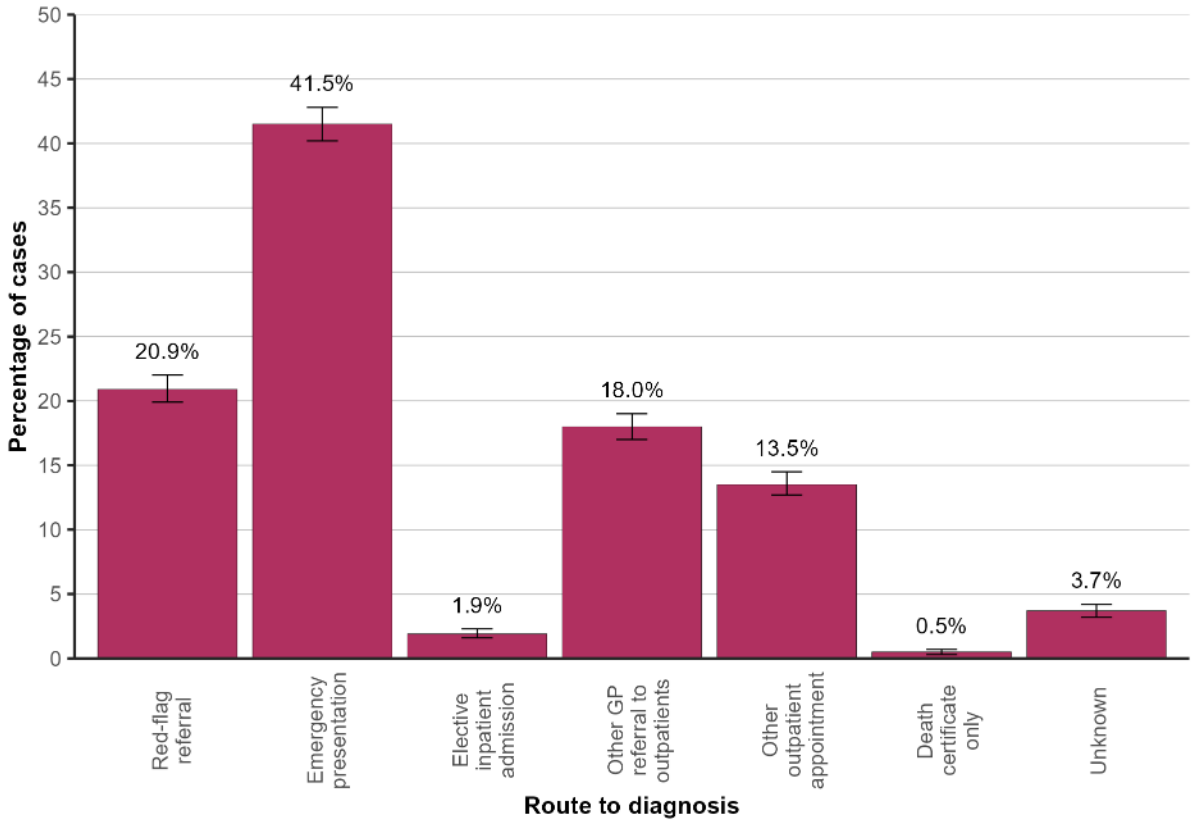


Table 6.1: Average number of lung cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	285	20.9% (19.9% - 22.0%)
Emergency presentation	564	41.5% (40.2% - 42.8%)
Elective inpatient admission	26	1.9% (1.6% - 2.3%)
Other GP referral to outpatients	245	18.0% (17.0% - 19.0%)
Other outpatient appointment	184	13.5% (12.7% - 14.5%)
Death certificate only	7	0.5% (0.3% - 0.7%)
Unknown	50	3.7% (3.2% - 4.2%)

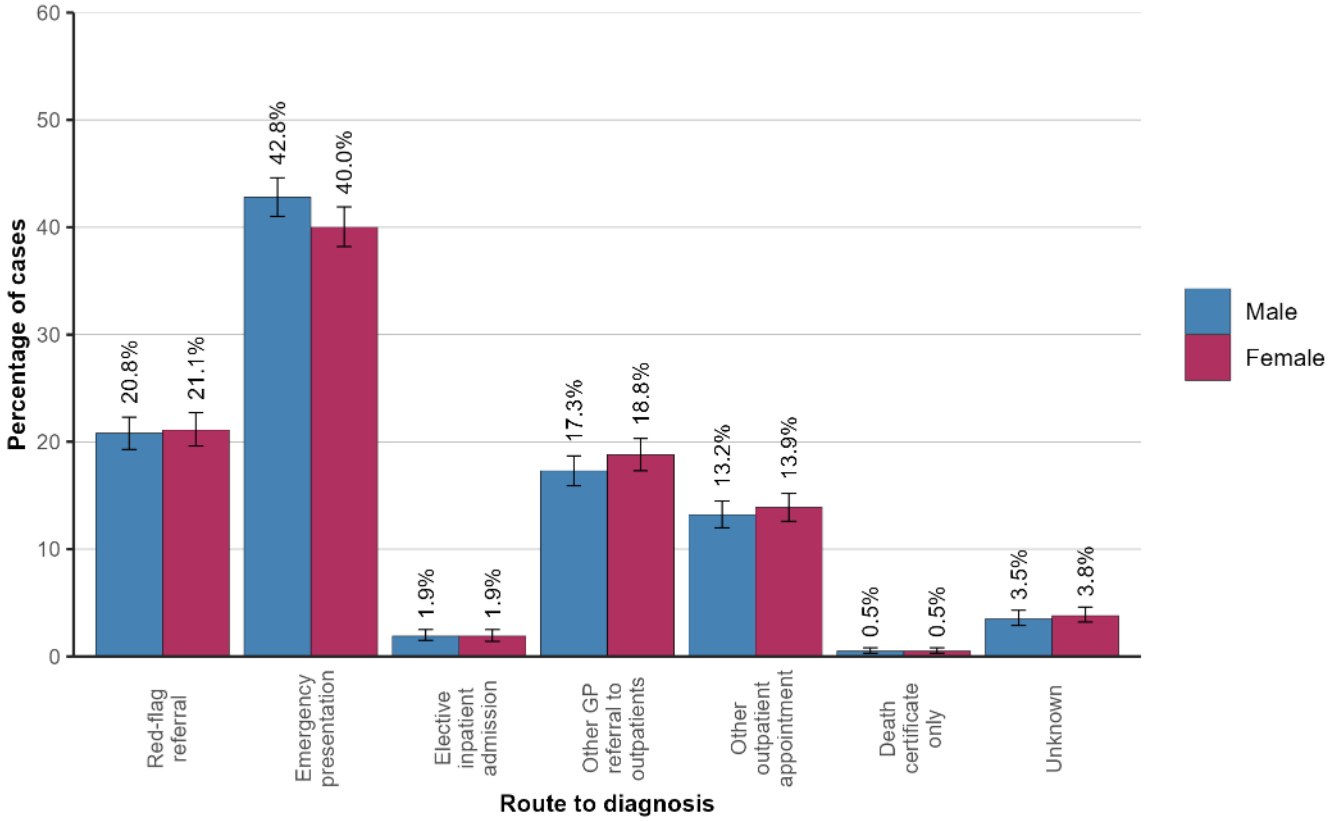
CI: Confidence Interval

6.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2021 there were 302 male and 262 female cases of lung cancer diagnosed each year where the route to diagnosis was an emergency presentation. This was the most common route to diagnosis for both men (42.8%) and women (40.0%).

Emergency presentation routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 6.2: Route to diagnosis for lung cancer patients diagnosed in 2018-2021 by gender

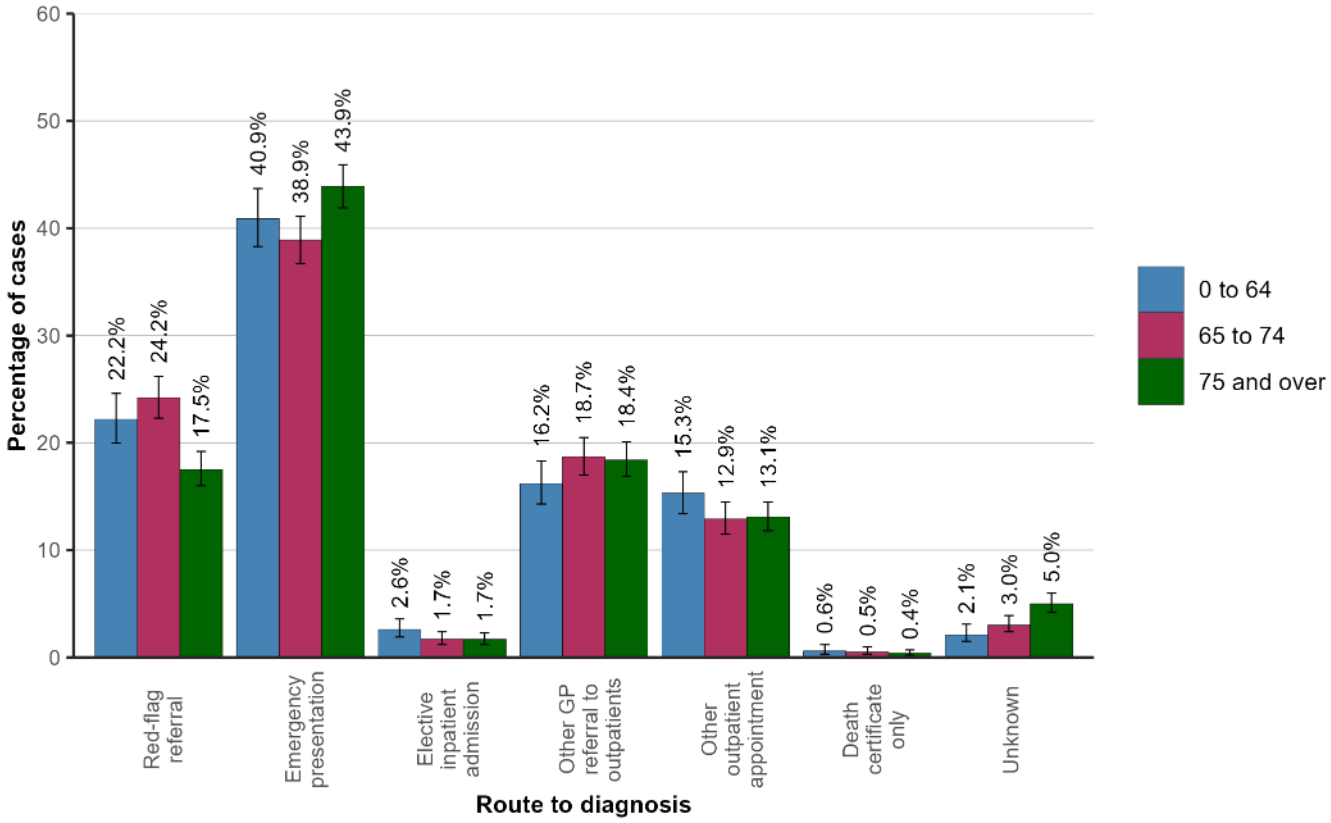


6.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of lung cancer overall was an emergency presentation. Among those aged 0 to 64 there were 130 (40.9%) diagnosed per year via this route, compared to 252 (43.9%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was a red-flag referral with 22.2% of those aged 0 to 64 and 17.5% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 6.3: Route to diagnosis for lung cancer patients diagnosed in 2018-2021 by age group



6.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of lung cancer diagnosed via an emergency presentation ranged from 36.7% in Northern HSCT to 46.3% in South Eastern HSCT. The proportions diagnosed via a red-flag referral ranged from 16.7% to 27.1% in Belfast HSCT and Western HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of lung cancer diagnosed via an emergency presentation was 42.7% in the most deprived areas compared to 44.8% in the least deprived areas. The proportions diagnosed via a red-flag referral were 21.8% and 18.2% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 6.4: Route to diagnosis for lung cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

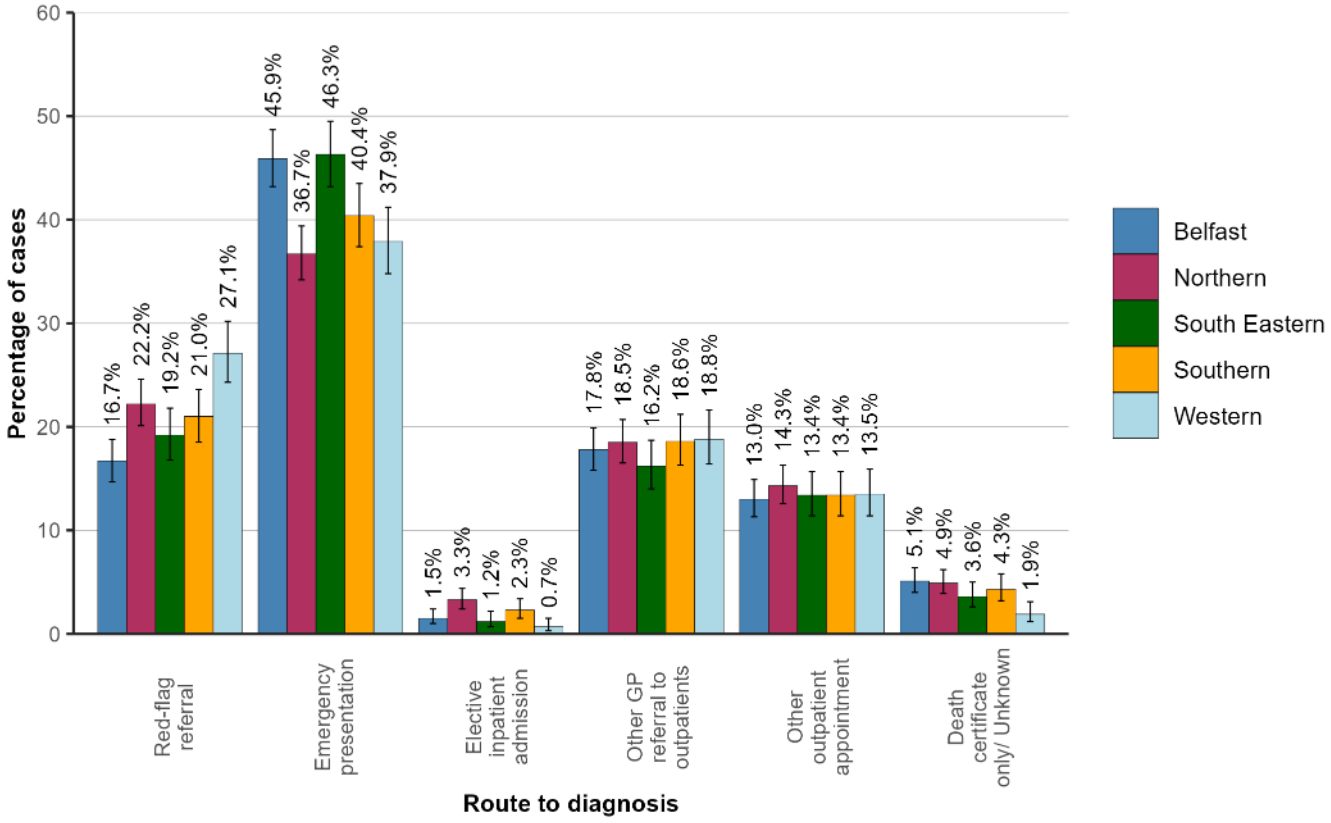
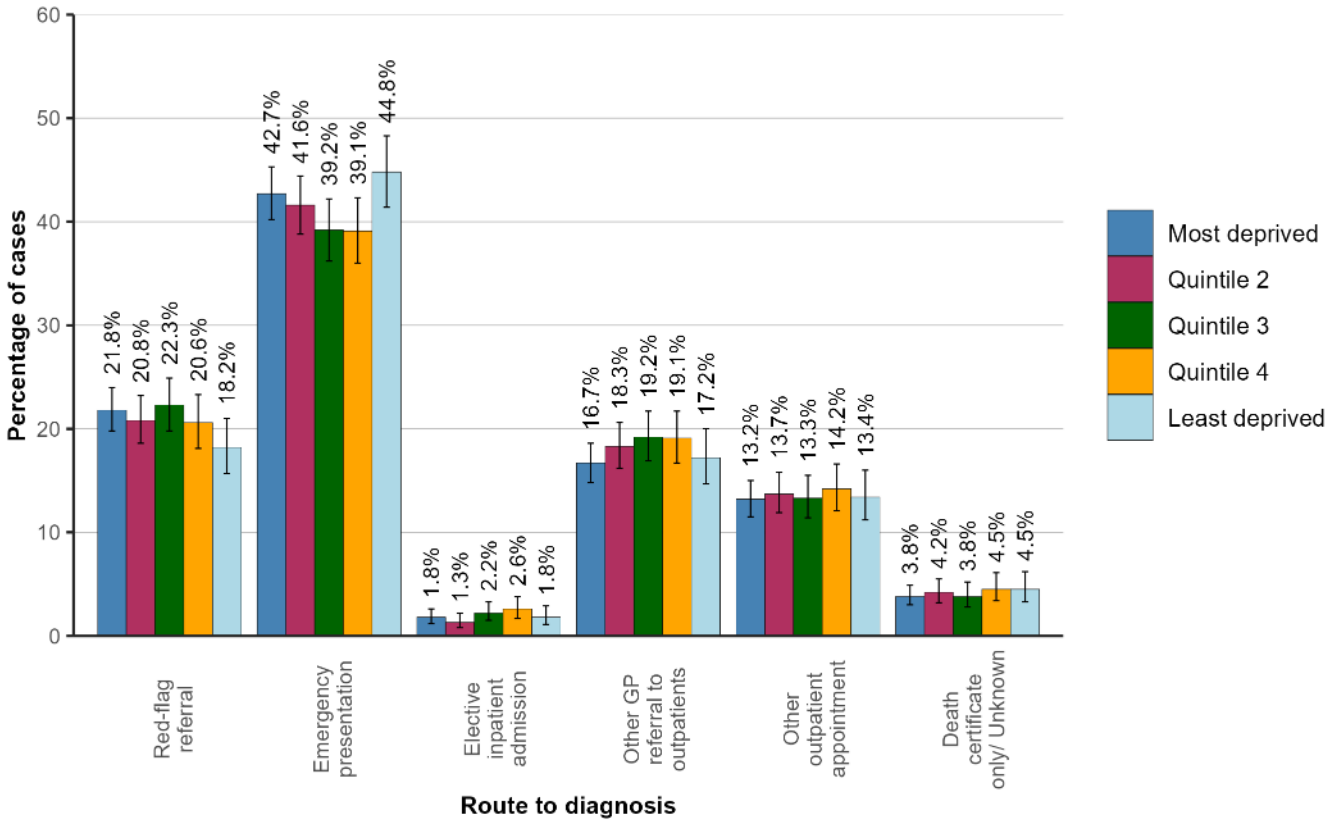


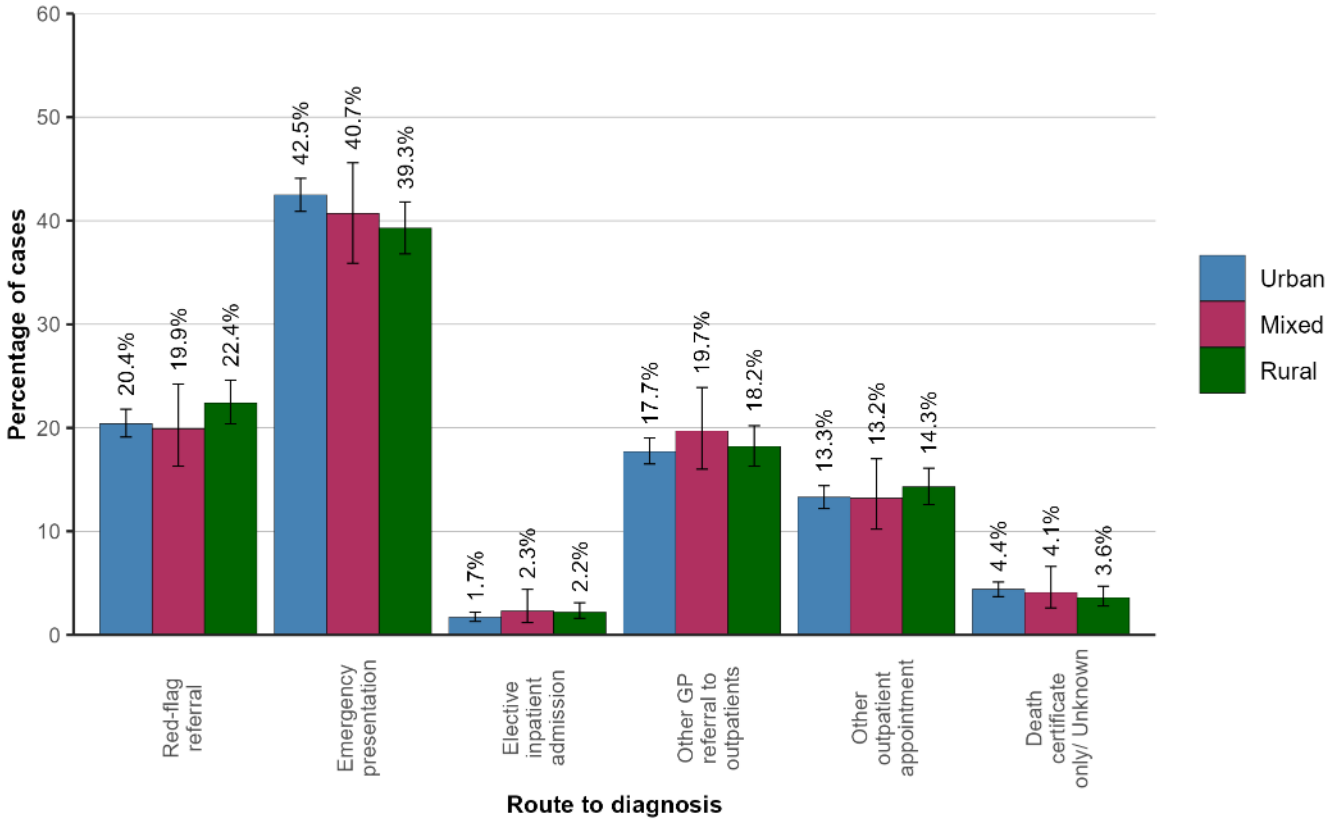
Figure 6.5: Route to diagnosis for lung cancer patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of lung cancer diagnosed via an emergency presentation was 42.5% in urban areas compared to 39.3% in rural areas. The proportions diagnosed via a red-flag referral were 20.4% and 22.4% in urban and rural areas respectively. The variation in route to diagnosis by urban/rural status was not statistically significant.

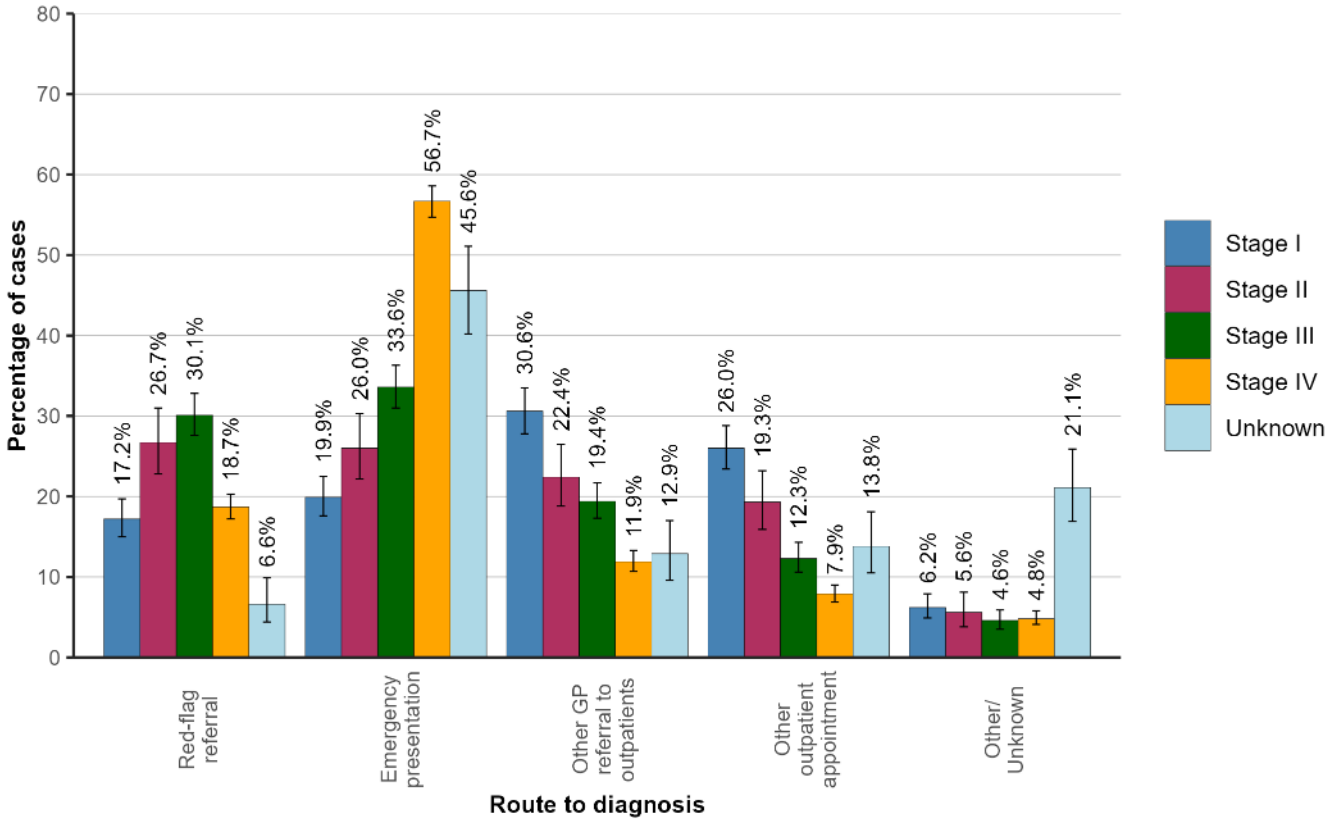
Figure 6.6: Route to diagnosis for lung cancer patients diagnosed in 2018-2021 by urban/rural status



6.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2021 the proportion of cases of lung cancer diagnosed via an emergency presentation was 19.9% among stage I cancers compared to 56.7% among stage IV cancers. The proportions diagnosed via a red-flag referral were 17.2% and 18.7% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 6.7: Route to diagnosis for lung cancer patients diagnosed in 2018-2021 by stage at diagnosis



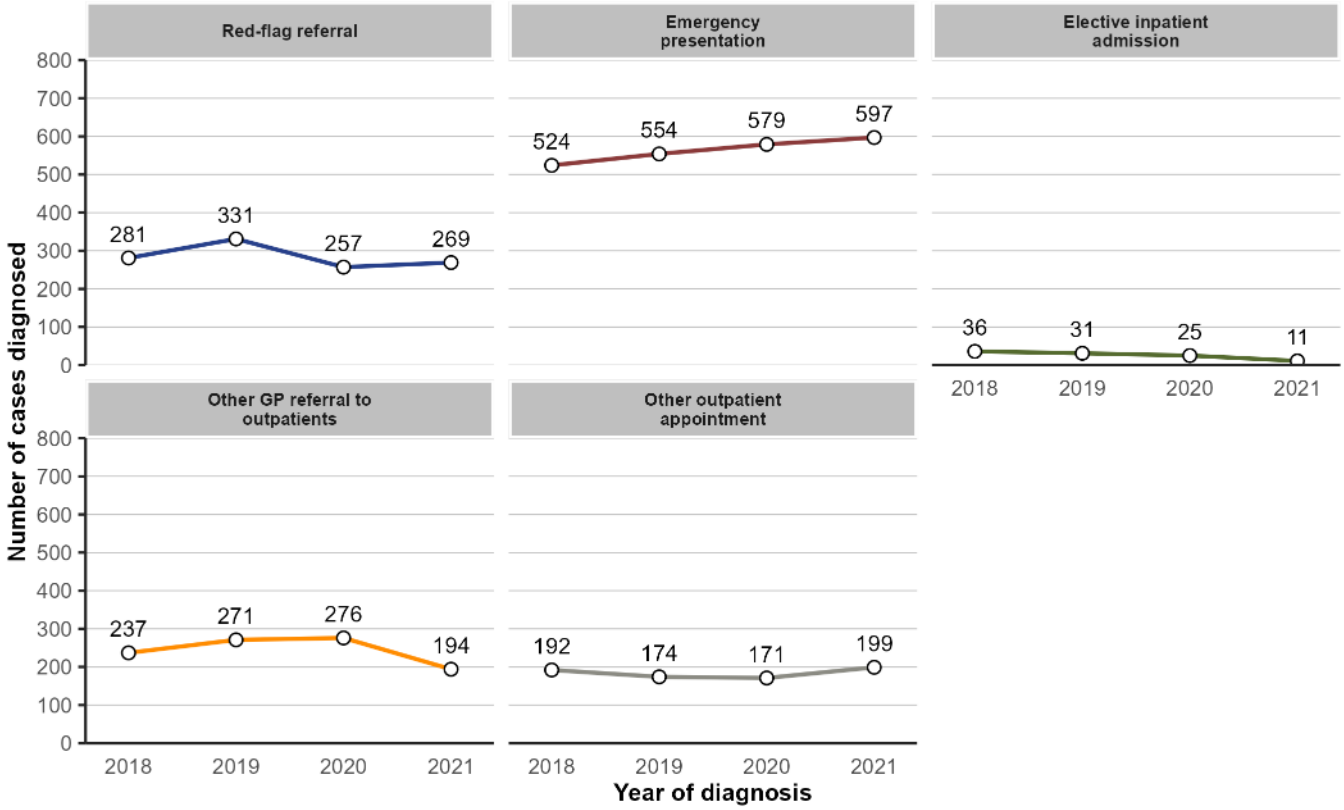
6.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of lung cancer cases diagnosed via a red-flag referral increased by 4.7% from 257 in 2020 to 269 in 2021. As a proportion of all cases, a red-flag referral diagnosis increased from 18.9% in 2020 to 20.0% in 2021.

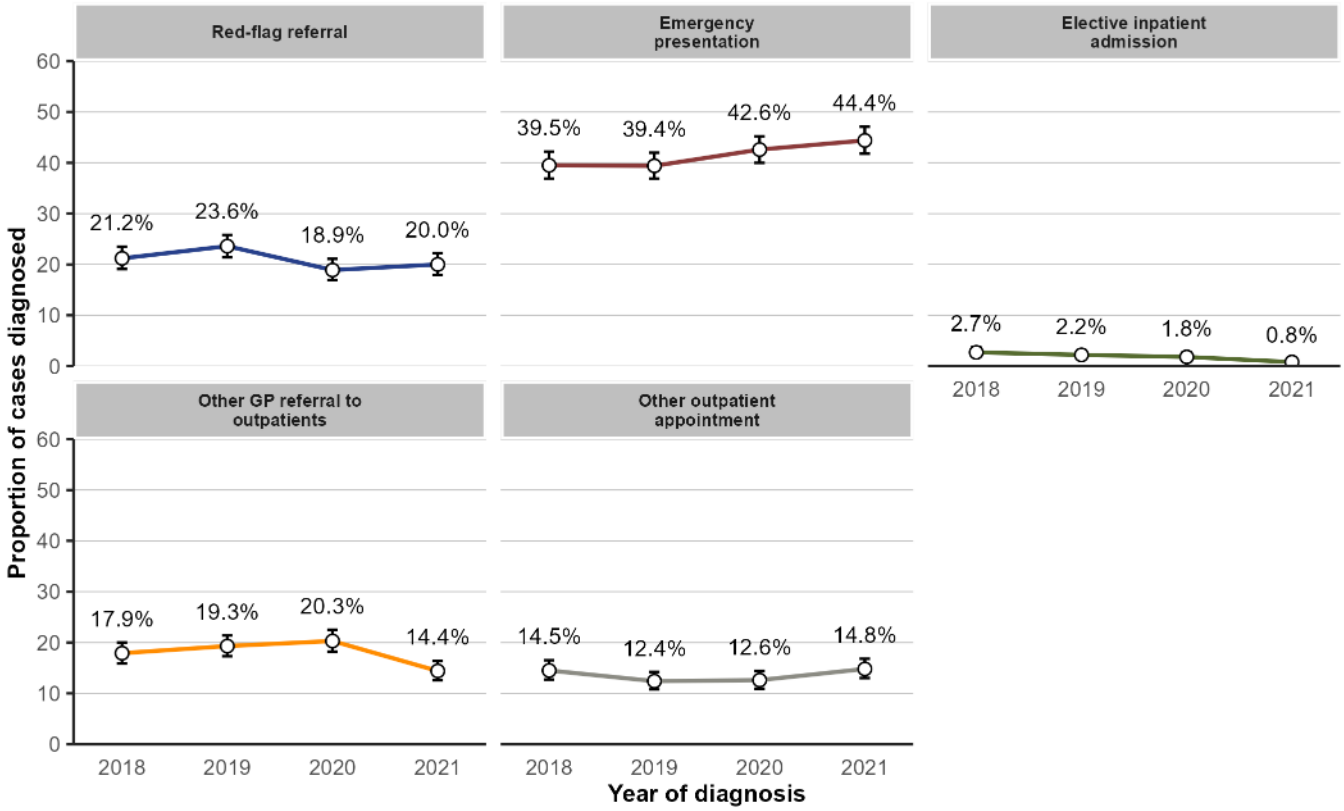
The number of lung cancer cases diagnosed via an emergency presentation increased by 3.1% from 579 in 2020 to 597 in 2021. As a proportion of all cases, an emergency presentation diagnosis increased from 42.6% in 2020 to 44.4% in 2021. The variation in route to diagnosis between the previous two years was statistically significant ($p < 0.001$).

Figure 6.8: Route to diagnosis for lung cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

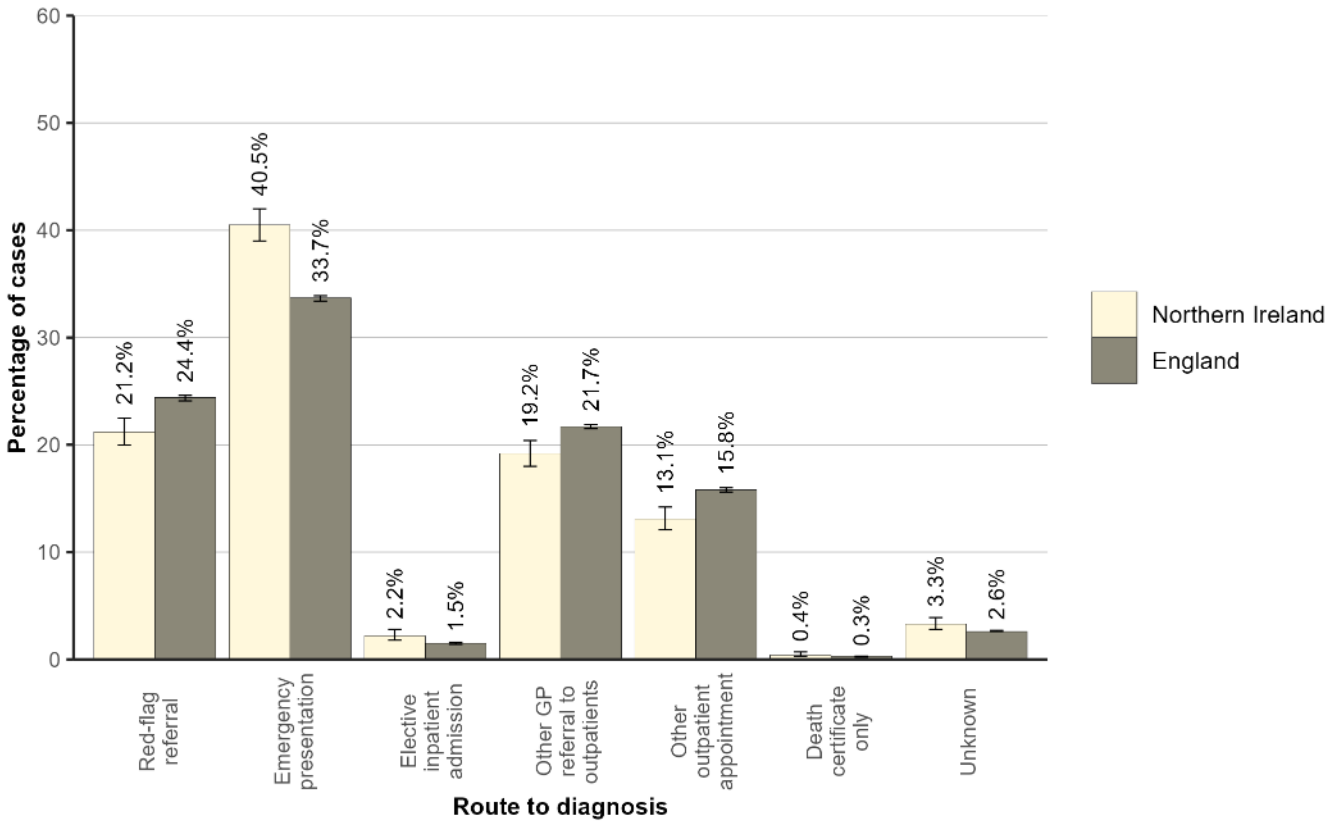


6.6: COMPARISON WITH ENGLAND

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with lung cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Red-flag referral (21.2% in NI compared to 24.4% in England; p<0.001).
- Emergency presentation (40.5% in NI compared to 33.7% in England; p<0.001).
- Elective inpatient admission (2.2% in NI compared to 1.5% in England; p<0.001).
- Other GP referral to outpatients (19.2% in NI compared to 21.7% in England; p<0.001).
- Other outpatient appointment (13.1% in NI compared to 15.8% in England; p<0.001).

Figure 6.9: Route to diagnosis for lung cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



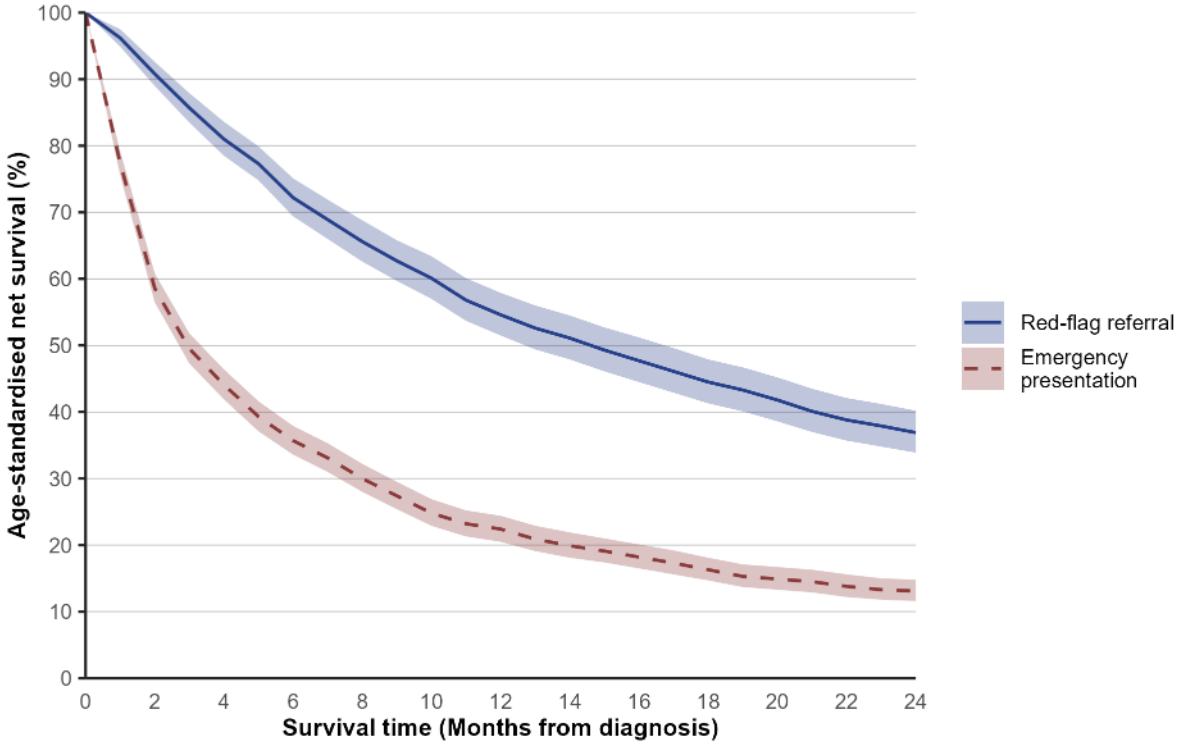
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

6.7: SURVIVAL

During 2018-2021 one-year age-standardised net survival from lung cancer ranged from 22.4% for those diagnosed via an emergency presentation route to 61.5% for those diagnosed via another outpatient appointment route. Two years from diagnosis age-standardised net survival ranged from 13.1% for those diagnosed via an emergency presentation route to 43.4% for those diagnosed via another GP referral to outpatients route.

Figure 6.10: Age-standardised net survival by route to diagnosis for lung cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

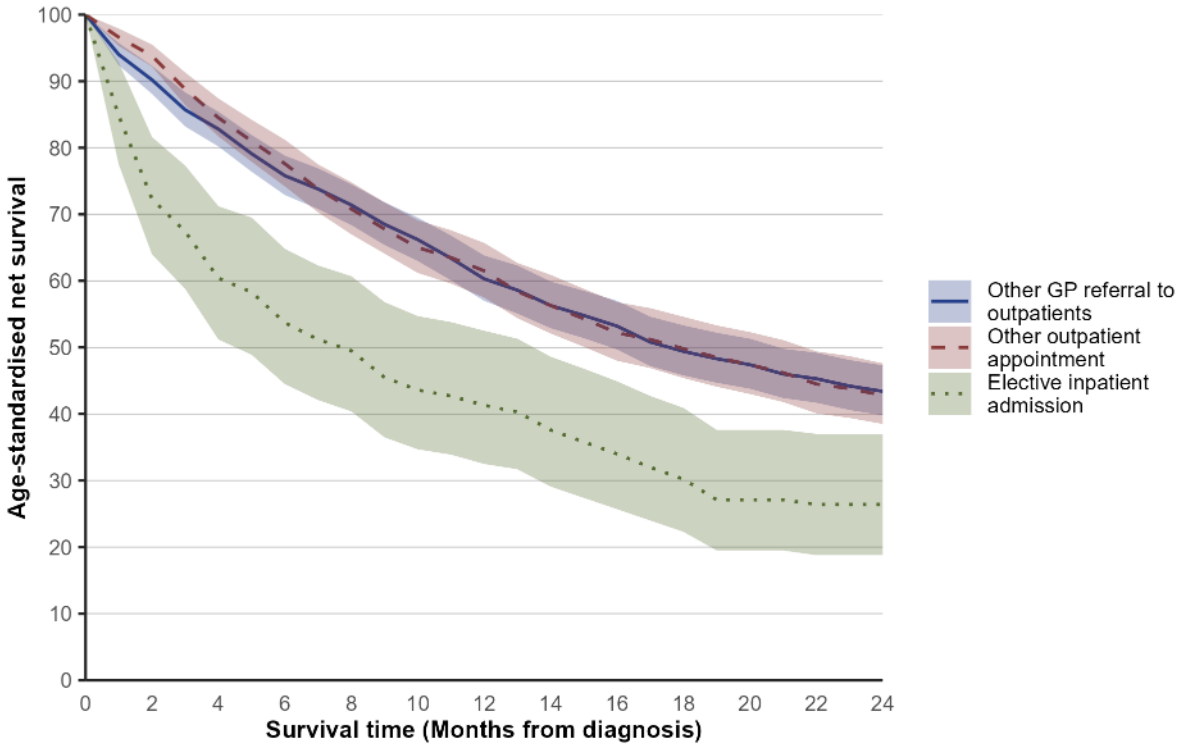


Table 6.2: Age-standardised net survival by route to diagnosis for lung cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	54.6% (51.5% - 57.9%)	36.9% (33.9% - 40.2%)
Emergency presentation	22.4% (20.5% - 24.4%)	13.1% (11.6% - 14.8%)
Elective inpatient admission	41.3% (32.5% - 52.5%)	26.4% (18.8% - 37.0%)
Other GP referral to outpatients	60.3% (57.0% - 63.8%)	43.4% (39.8% - 47.3%)
Other outpatient appointment	61.5% (57.5% - 65.7%)	42.8% (38.5% - 47.6%)
Unknown	43.9% (34.5% - 55.9%)	24.0% (19.5% - 29.5%)

ASNS: Age-standardised net survival with 95% confidence interval.

07: Prostate Cancer

The most common route to diagnosis among prostate cancer patients during 2018-2021 was via a red-flag referral, with 655 (48.7%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 350 (26.1%) cases diagnosed on average each year. Emergency presentations made up 8.2% of cases during this period.

Figure 7.1: Route to diagnosis for prostate cancer patients diagnosed in 2018-2021

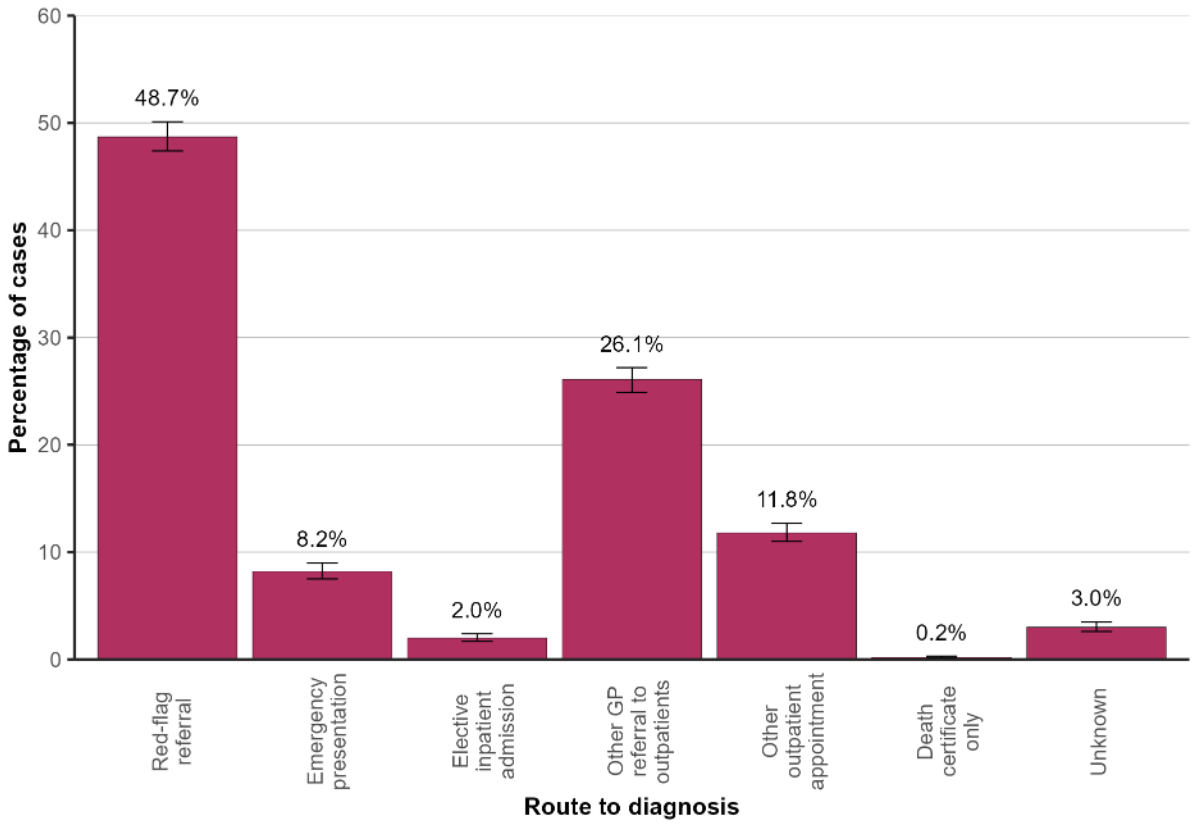


Table 7.1: Average number of prostate cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	655	48.7% (47.4% - 50.1%)
Emergency presentation	111	8.2% (7.5% - 9.0%)
Elective inpatient admission	27	2.0% (1.7% - 2.4%)
Other GP referral to outpatients	350	26.1% (24.9% - 27.2%)
Other outpatient appointment	159	11.8% (11.0% - 12.7%)
Death certificate only	2	0.2% (0.1% - 0.3%)
Unknown	41	3.0% (2.6% - 3.5%)

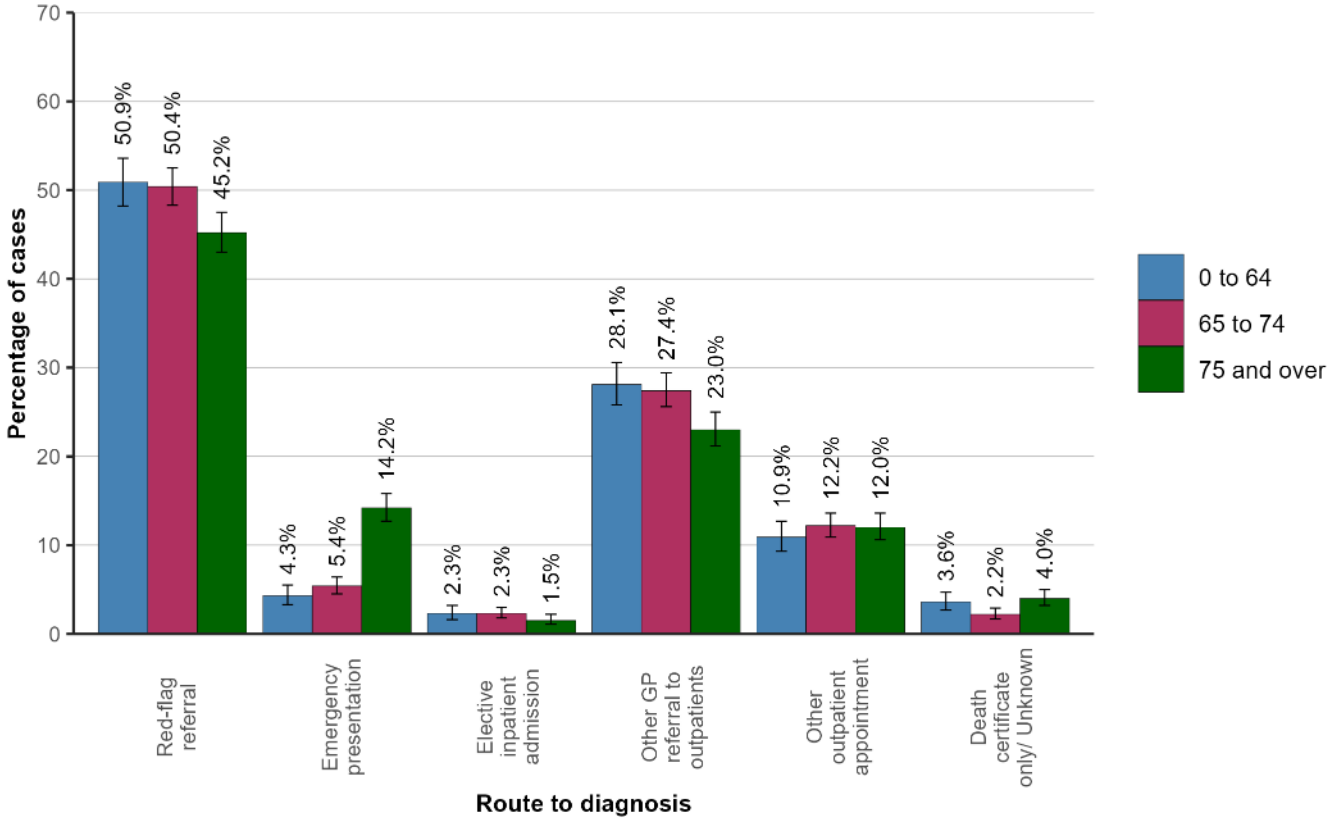
CI: Confidence Interval

7.1: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of prostate cancer overall was a red-flag referral. Among those aged 0 to 64 there were 168 (50.9%) diagnosed per year via this route, compared to 216 (45.2%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 4.3% of those aged 0 to 64 and 14.2% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 7.2: Route to diagnosis for prostate cancer patients diagnosed in 2018-2021 by age group



7.2: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of prostate cancer diagnosed via a red-flag referral ranged from 44.2% in Belfast HSCT to 54.4% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 5.8% to 10.0% in Western HSCT and Southern HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Figure 7.3: Route to diagnosis for prostate cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

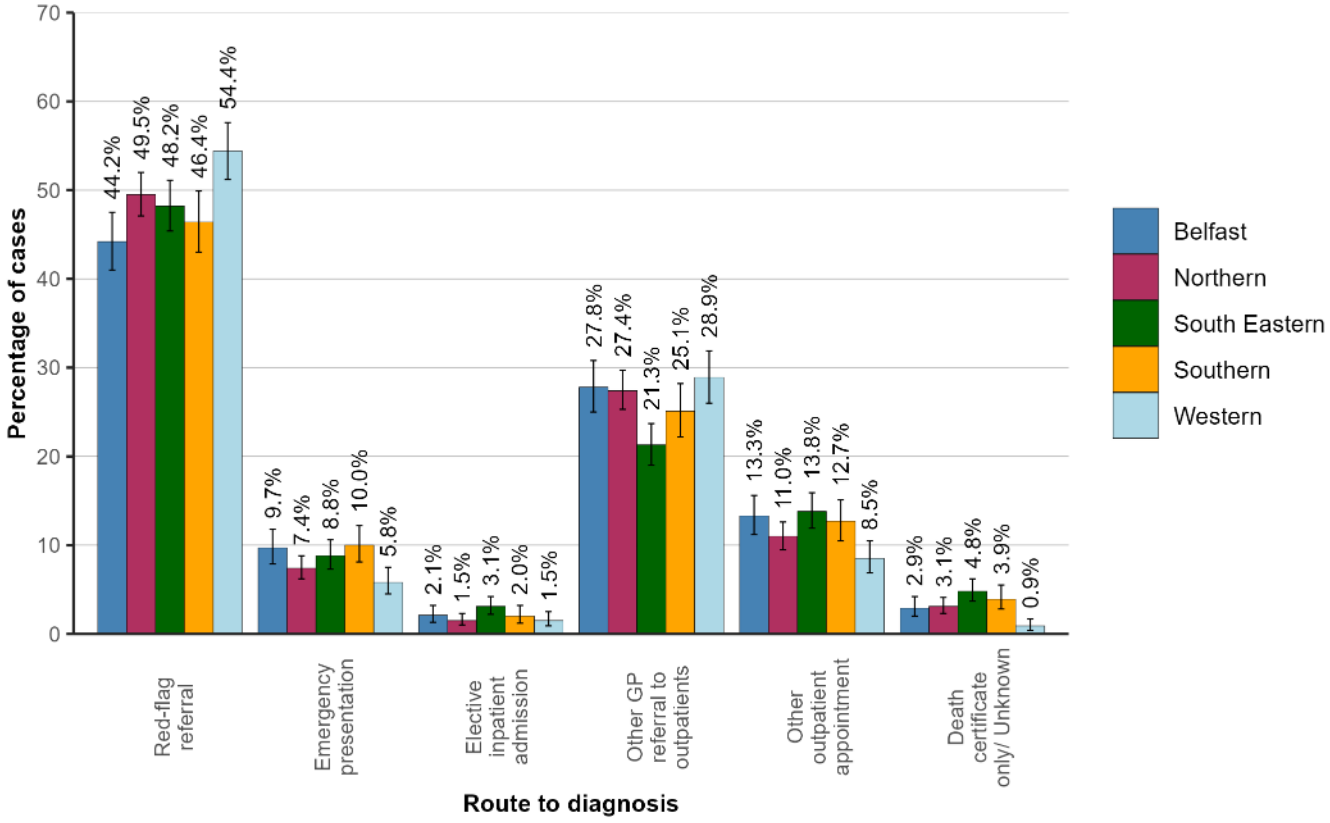
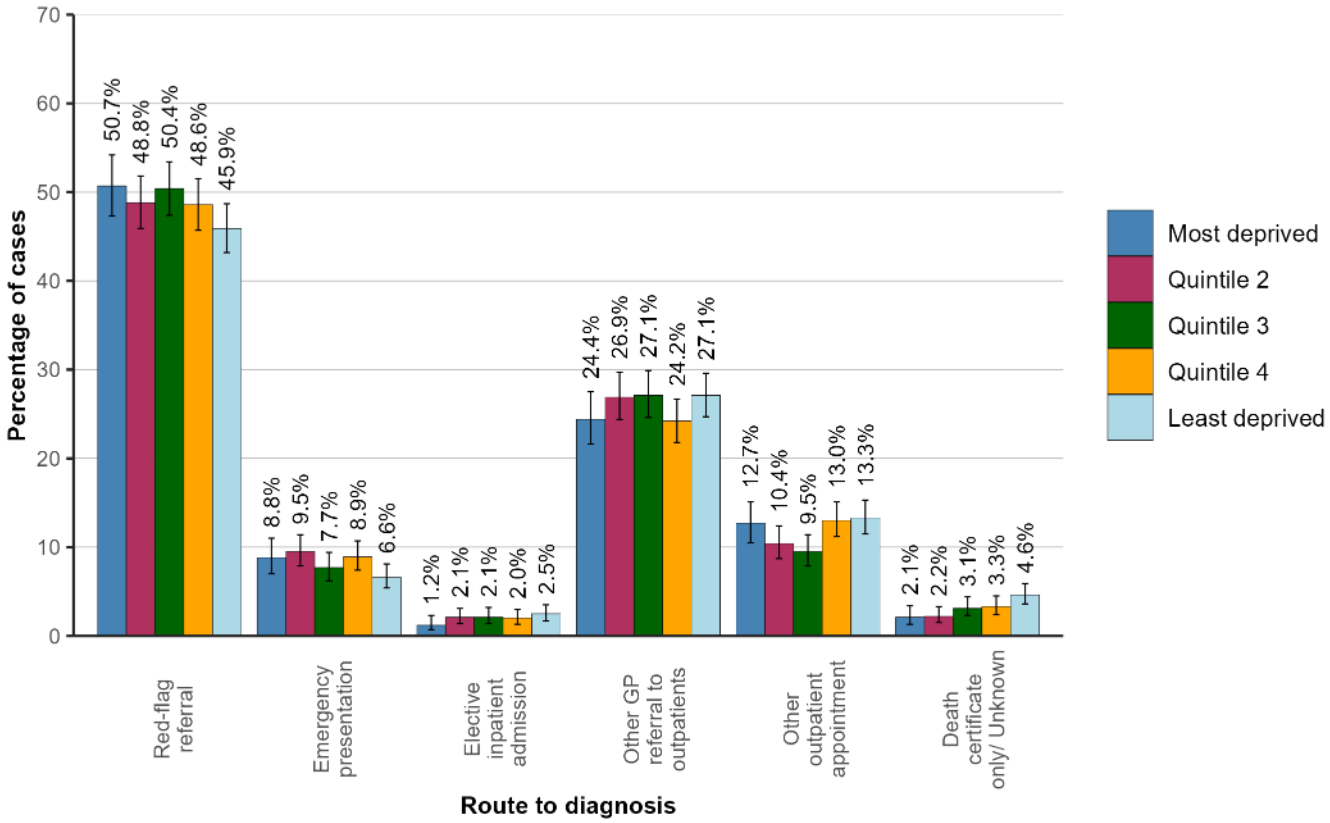


Figure 7.4: Route to diagnosis for prostate cancer patients diagnosed in 2018-2021 by deprivation quintile



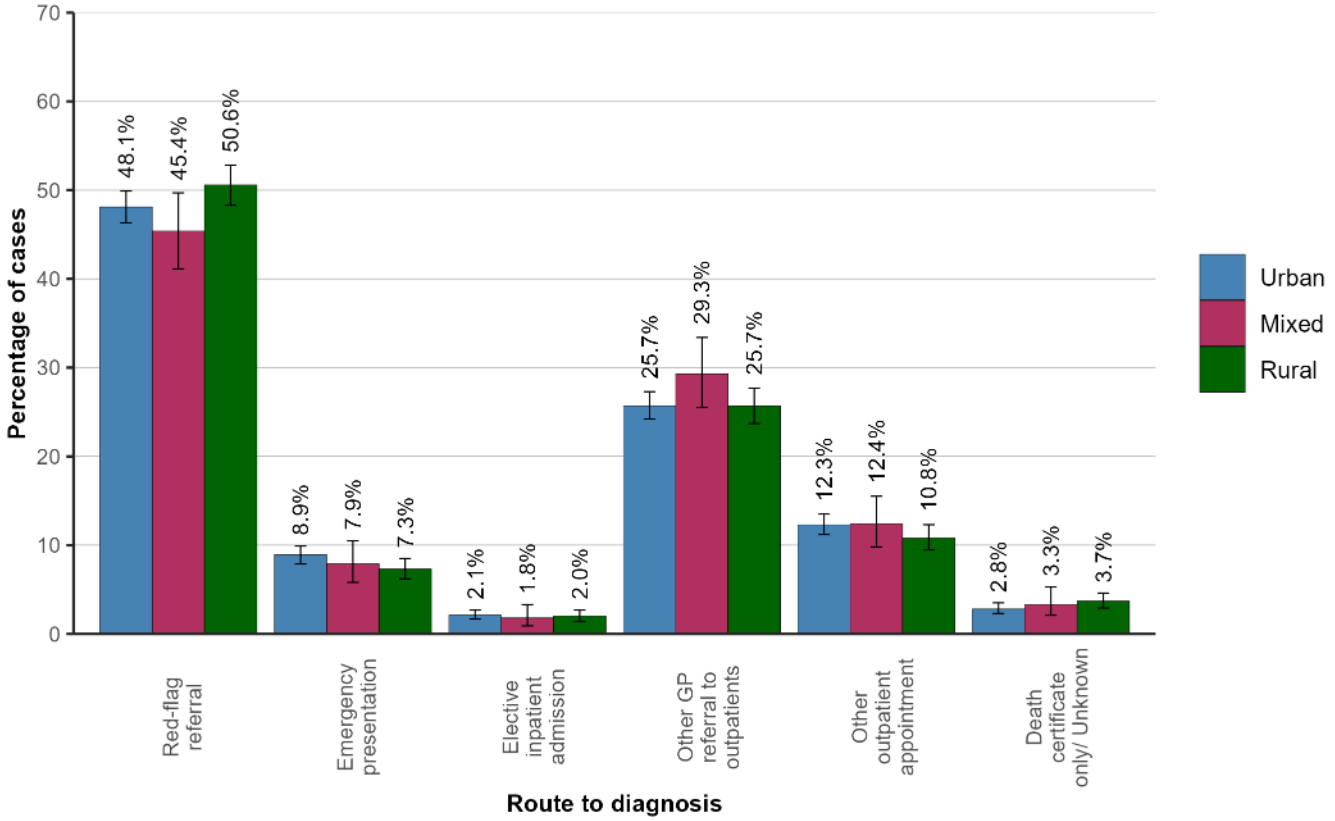
Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of prostate cancer diagnosed via a red-flag referral was 50.7% in the most deprived areas compared to 45.9% in the least deprived areas. The proportions diagnosed via an emergency presentation were 8.8% and 6.6% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was statistically significant (p = 0.002).

Urban/Rural status

During 2018-2021 the proportion of cases of prostate cancer diagnosed via a red-flag referral was 48.1% in urban areas compared to 50.6% in rural areas. The proportions diagnosed via an emergency presentation were 8.9% and 7.3% in urban and rural areas respectively. The variation in route to diagnosis by urban/rural status was not statistically significant.

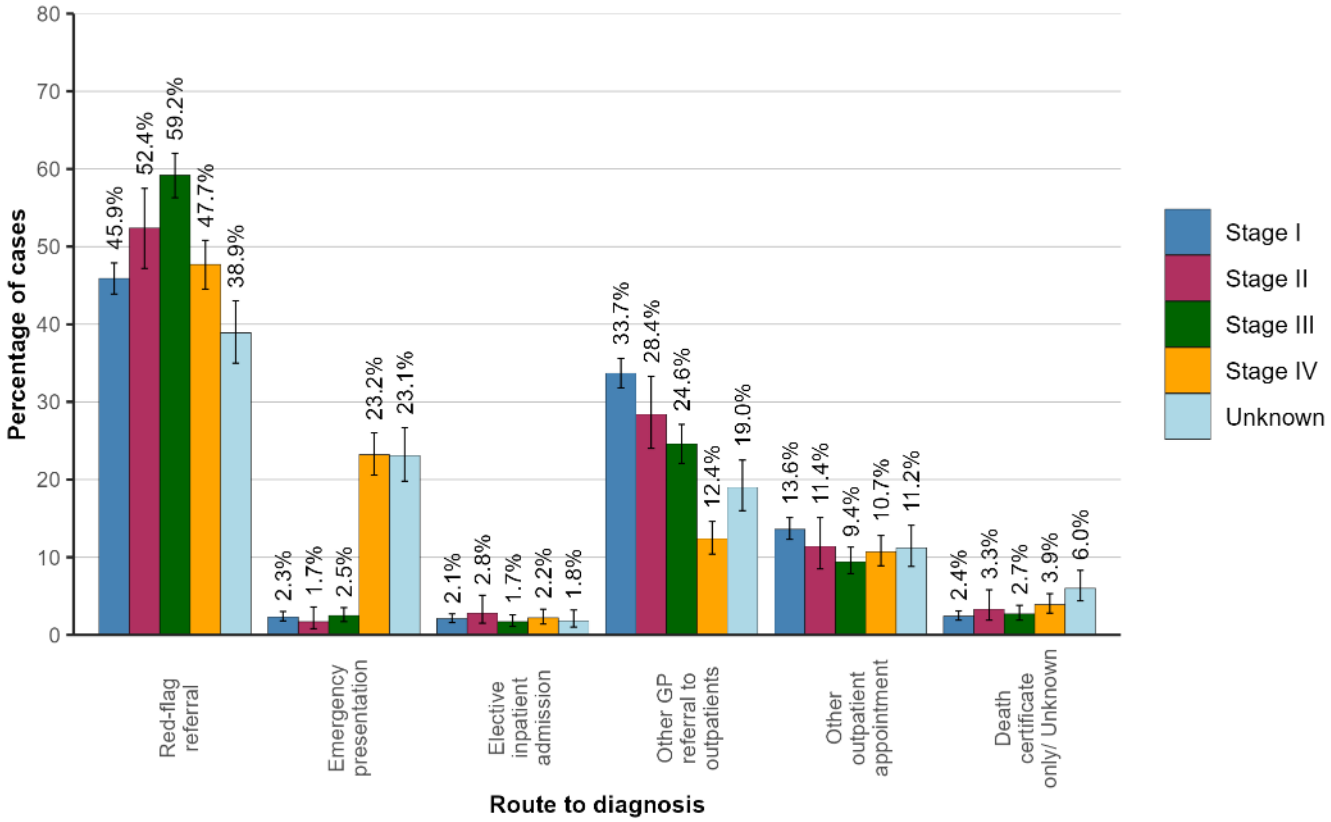
Figure 7.5: Route to diagnosis for prostate cancer patients diagnosed in 2018-2021 by urban/rural status



7.3: Routes to diagnosis by stage at diagnosis

During 2018-2021 the proportion of cases of prostate cancer diagnosed via a red-flag referral was 45.9% among stage I cancers compared to 47.7% among stage IV cancers. The proportions diagnosed via an emergency presentation were 2.3% and 23.2% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant (p < 0.001).

Figure 7.6: Route to diagnosis for prostate cancer patients diagnosed in 2018-2021 by stage at diagnosis



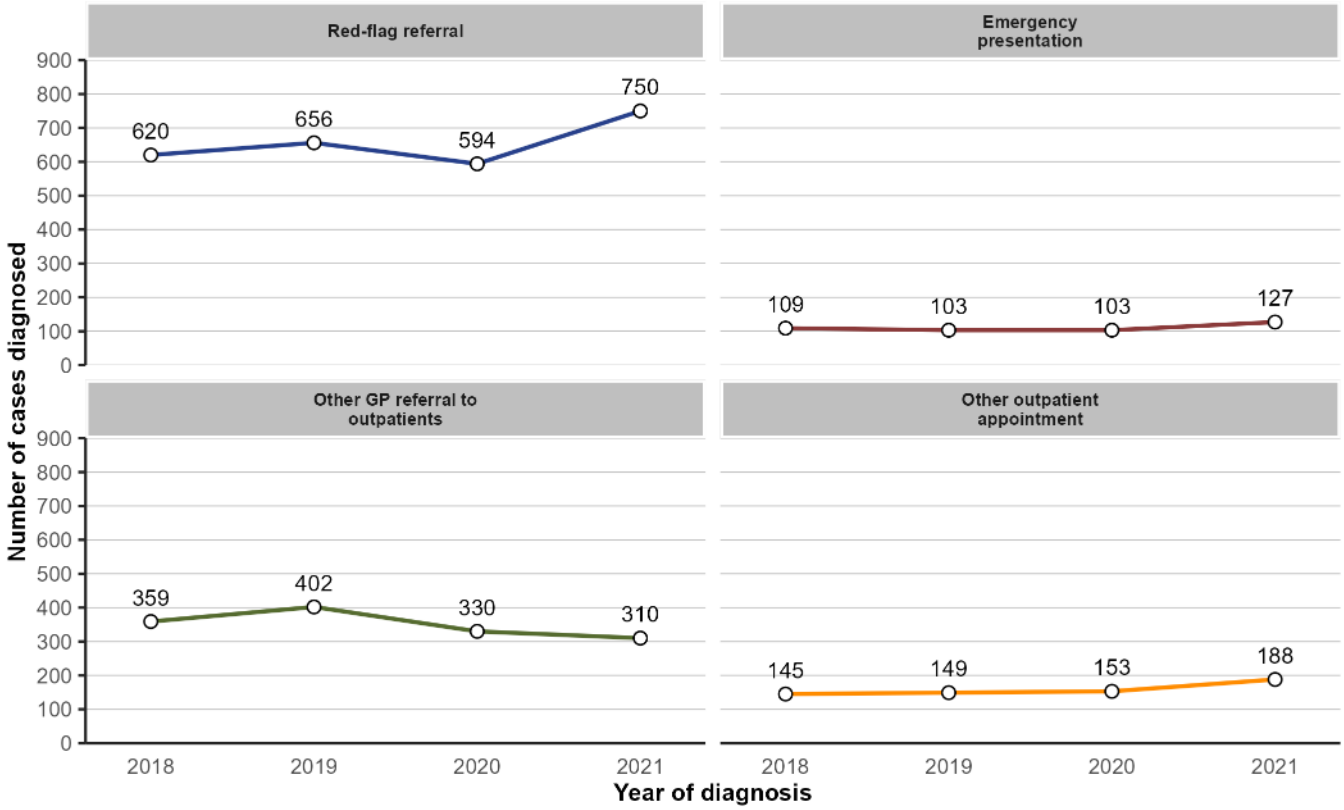
7.4: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of prostate cancer cases diagnosed via a red-flag referral increased by 26.3% from 594 in 2020 to 750 in 2021. As a proportion of all cases, a red-flag referral diagnosis increased from 47.2% in 2020 to 53.0% in 2021.

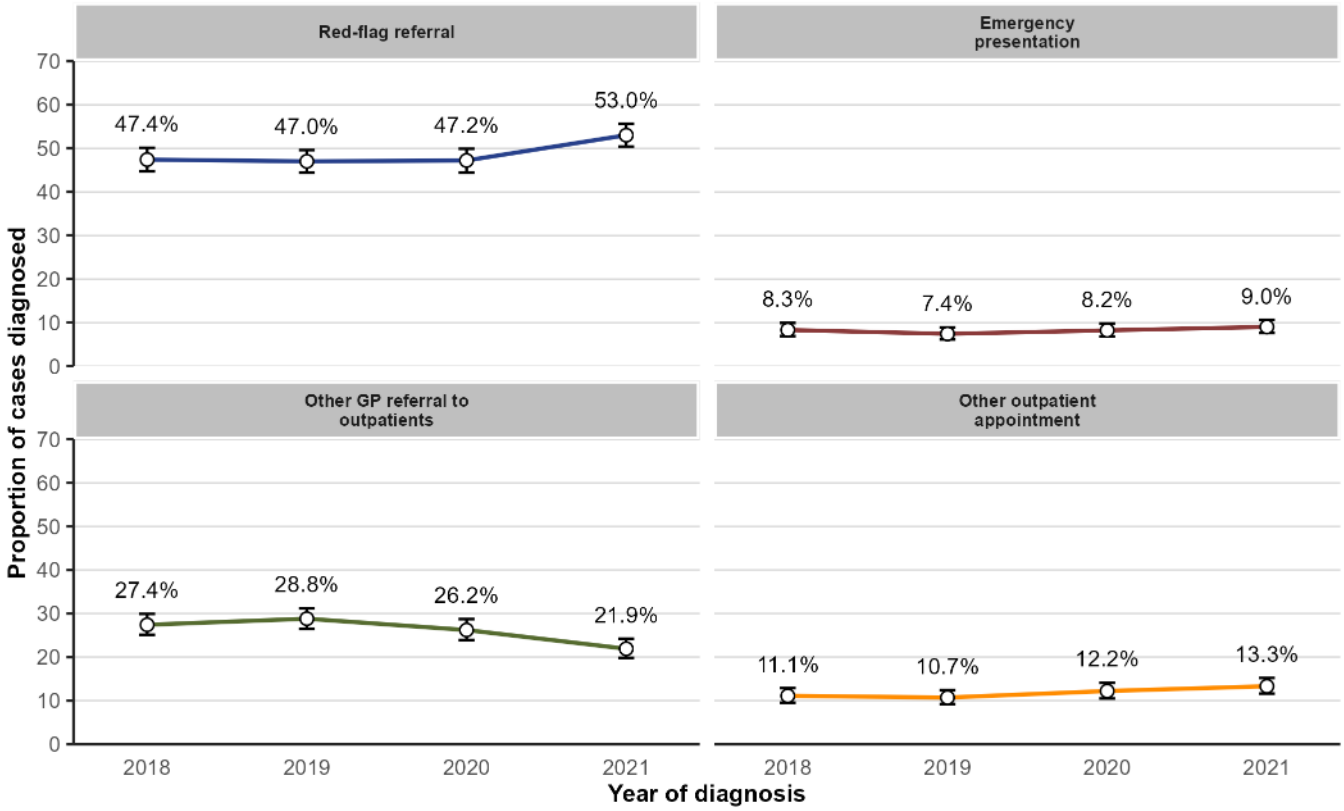
The number of prostate cancer cases diagnosed via an emergency presentation increased by 23.3% from 103 in 2020 to 127 in 2021. As a proportion of all cases, an emergency presentation diagnosis increased from 8.2% in 2020 to 9.0% in 2021. The variation in route to diagnosis between the previous two years was statistically significant ($p < 0.001$).

Figure 7.7: Route to diagnosis for prostate cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

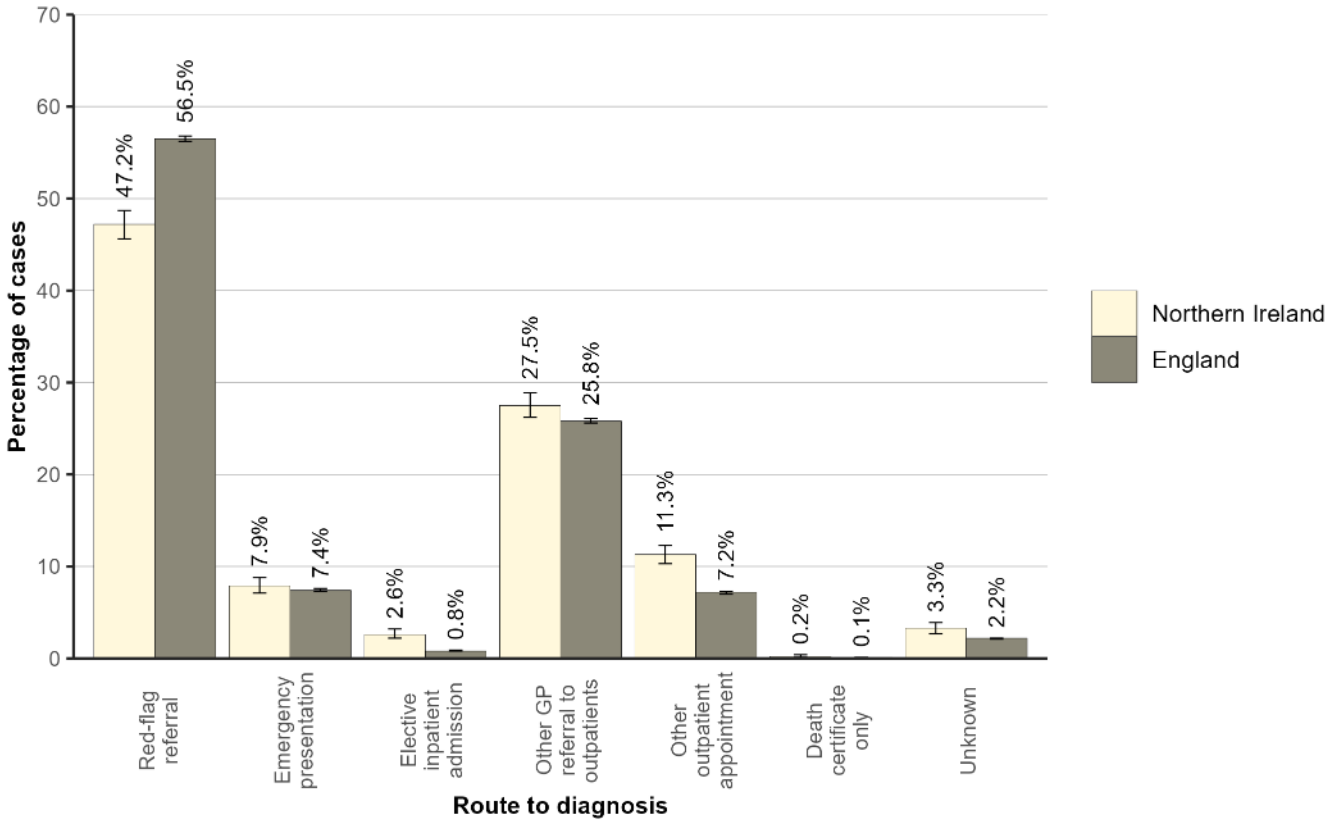


7.5: Comparison with England

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with prostate cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Red-flag referral (47.2% in NI compared to 56.5% in England; p<0.001).
- Elective inpatient admission (2.6% in NI compared to 0.8% in England; p<0.001).
- Other outpatient appointment (11.3% in NI compared to 7.2% in England; p<0.001).

Figure 7.8: Route to diagnosis for prostate cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



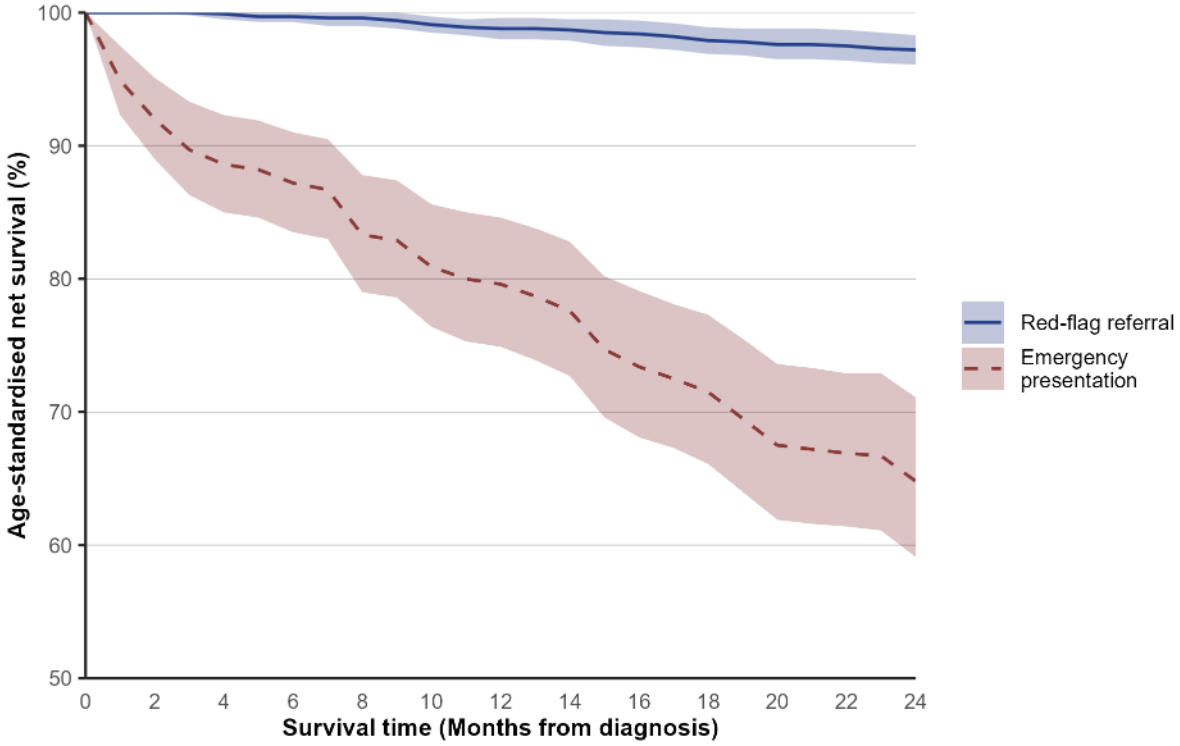
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

7.6: SURVIVAL

During 2018-2021 one-year age-standardised net survival from prostate cancer ranged from 79.6% for those diagnosed via an emergency presentation route to 99.1% for those diagnosed via another GP referral to outpatients route. Two years from diagnosis age-standardised net survival ranged from 64.8% for those diagnosed via an emergency presentation route to 98.2% for those diagnosed via another GP referral to outpatients route.

Figure 7.9: Age-standardised net survival by route to diagnosis for prostate cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

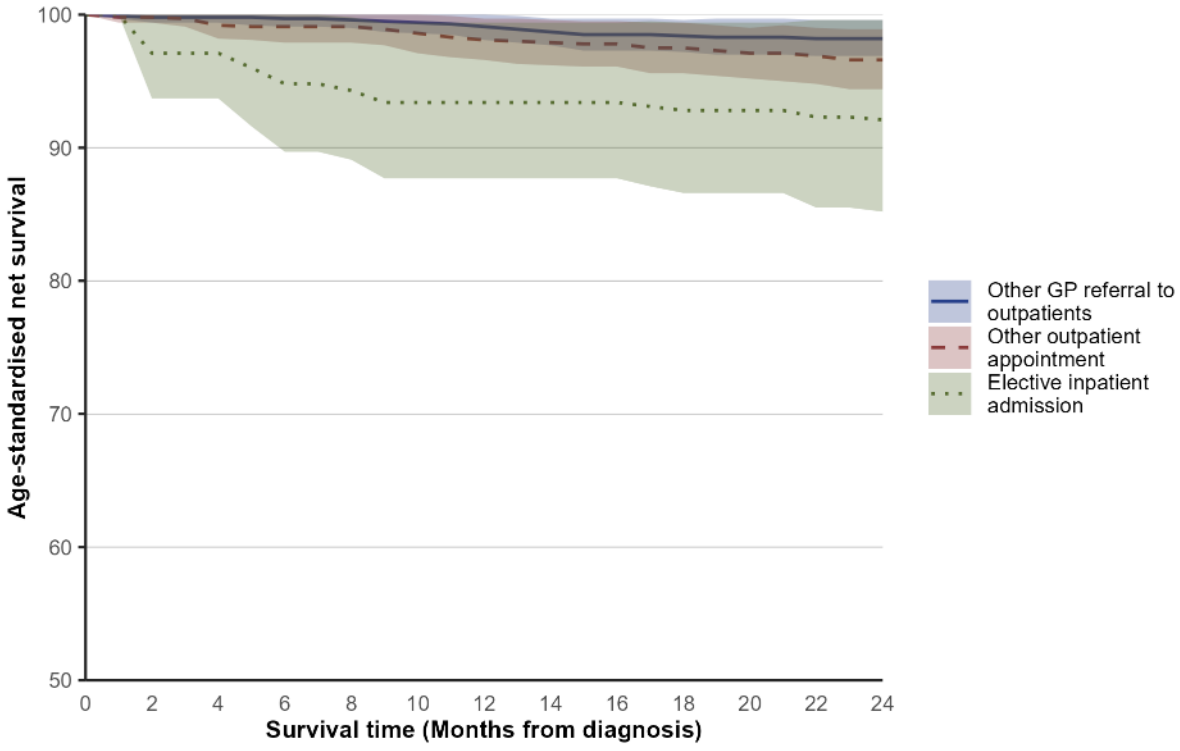


Table 7.2: Age-standardised net survival by route to diagnosis for prostate cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	98.8% (98.0% - 99.6%)	97.2% (96.1% - 98.3%)
Emergency presentation	79.6% (74.9% - 84.6%)	64.8% (59.1% - 71.1%)
Elective inpatient admission	93.4% (87.7% - 99.4%)	92.1% (85.2% - 99.6%)
Other GP referral to outpatients	99.1% (98.1% - 100.0%)	98.2% (96.9% - 99.6%)
Other outpatient appointment	98.1% (96.6% - 99.7%)	96.6% (94.4% - 98.9%)
Unknown	96.6% (93.3% - 100.0%)	94.4% (89.9% - 99.1%)

ASNS: Age-standardised net survival with 95% confidence interval.

08: Head and Neck Cancer

The most common route to diagnosis among head and neck cancer patients during 2018-2021 was via a red-flag referral, with 156 (43.3%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 79 (21.8%) cases diagnosed on average each year. Emergency presentations made up 11.7% of cases during this period.

Figure 8.1: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2021

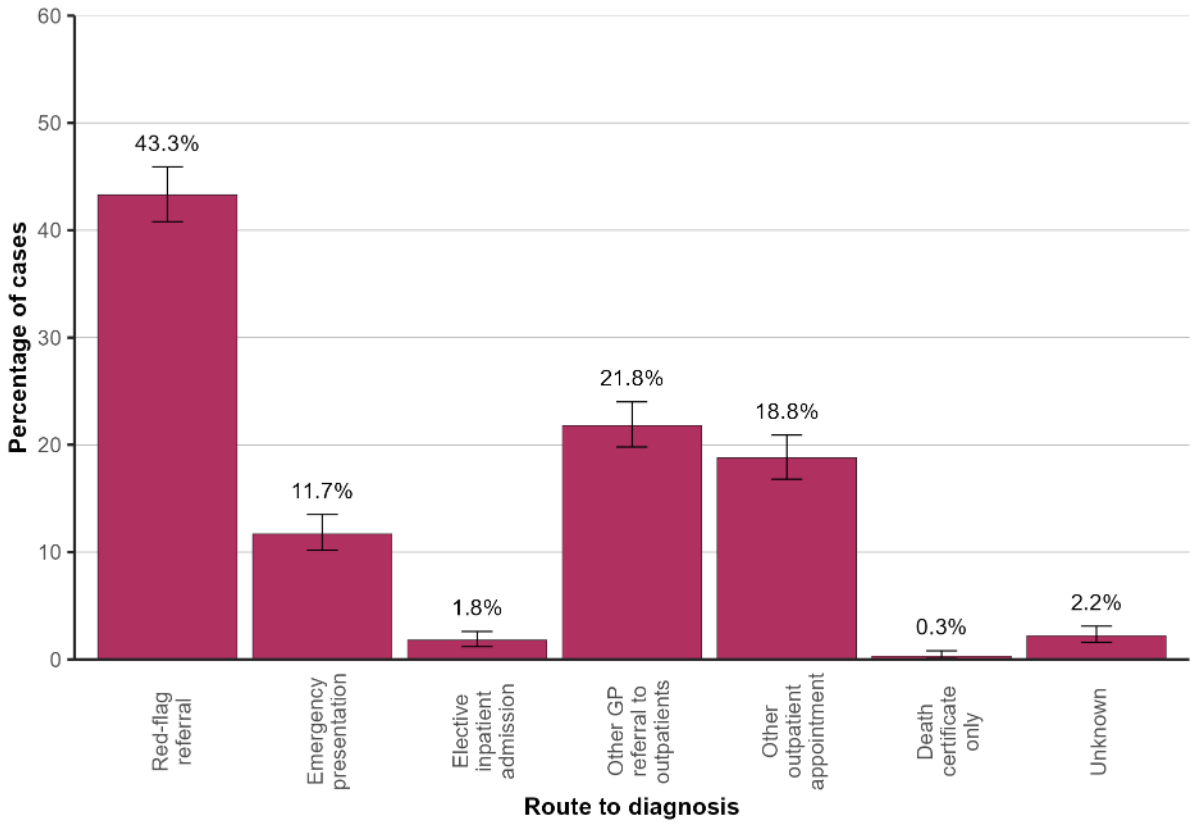


Table 8.1: Average number of head and neck cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	156	43.3% (40.8% - 45.9%)
Emergency presentation	42	11.7% (10.2% - 13.5%)
Elective inpatient admission	7	1.8% (1.2% - 2.6%)
Other GP referral to outpatients	79	21.8% (19.8% - 24.0%)
Other outpatient appointment	68	18.8% (16.8% - 20.9%)
Death certificate only	1	0.3% (0.1% - 0.8%)
Unknown	8	2.2% (1.6% - 3.1%)

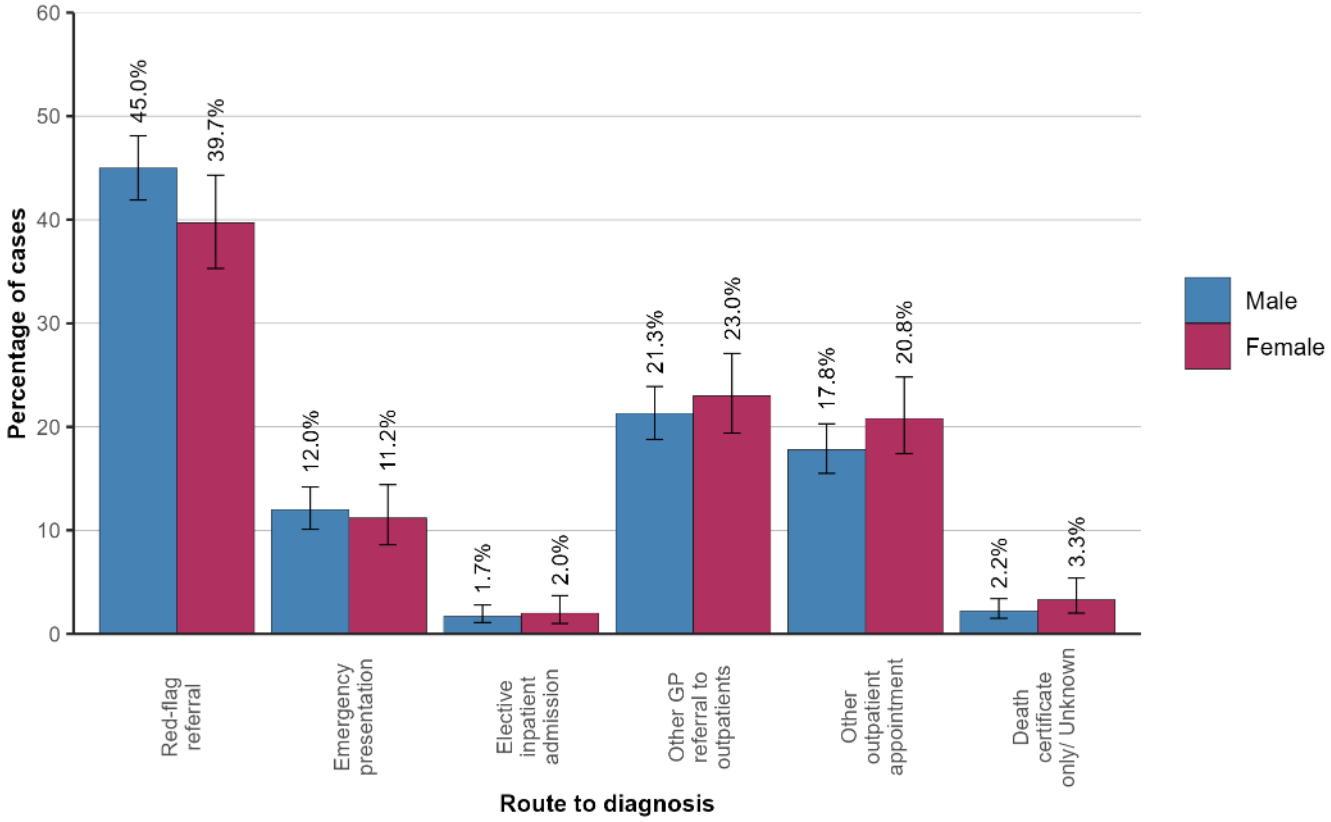
CI: Confidence Interval

8.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2021 there were 111 male and 45 female cases of head and neck cancer diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (45.0%) and women (39.7%).

Red-flag referral routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 8.2: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2021 by gender

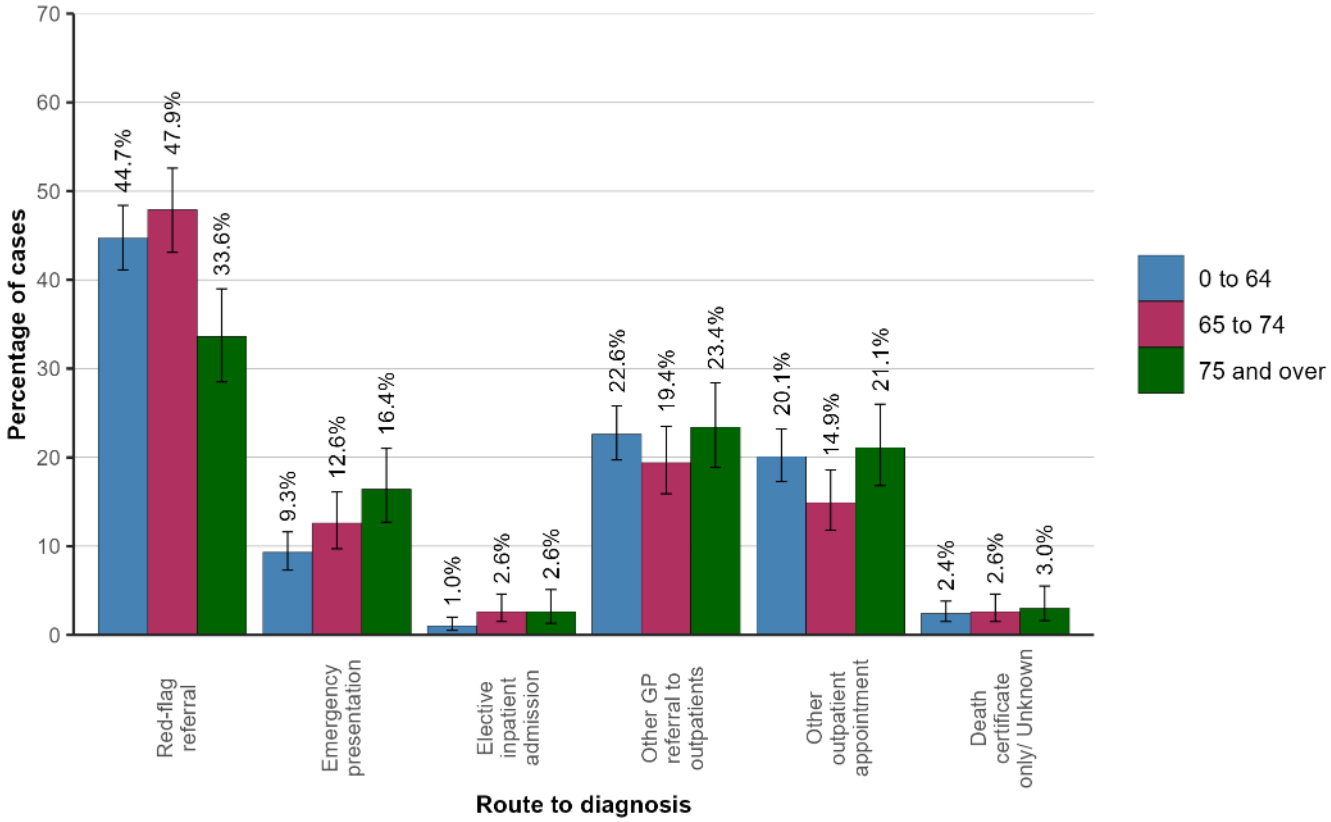


8.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of head and neck cancer overall was a red-flag referral. Among those aged 0 to 64 there were 80 (44.7%) diagnosed per year via this route, compared to 26 (33.6%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

Red-flag referral routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 8.3: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2021 by age group



8.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of head and neck cancer diagnosed via a red-flag referral ranged from 37.3% in South Eastern HSCT to 47.2% in Belfast HSCT. The proportions diagnosed via an emergency presentation ranged from 10.2% to 15.0% in Northern HSCT and Belfast HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant (p = 0.027).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of head and neck cancer diagnosed via a red-flag referral was 44.5% in the most deprived areas compared to 42.0% in the least deprived areas. The proportions diagnosed via an emergency presentation were 14.7% and 8.0% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 8.4: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

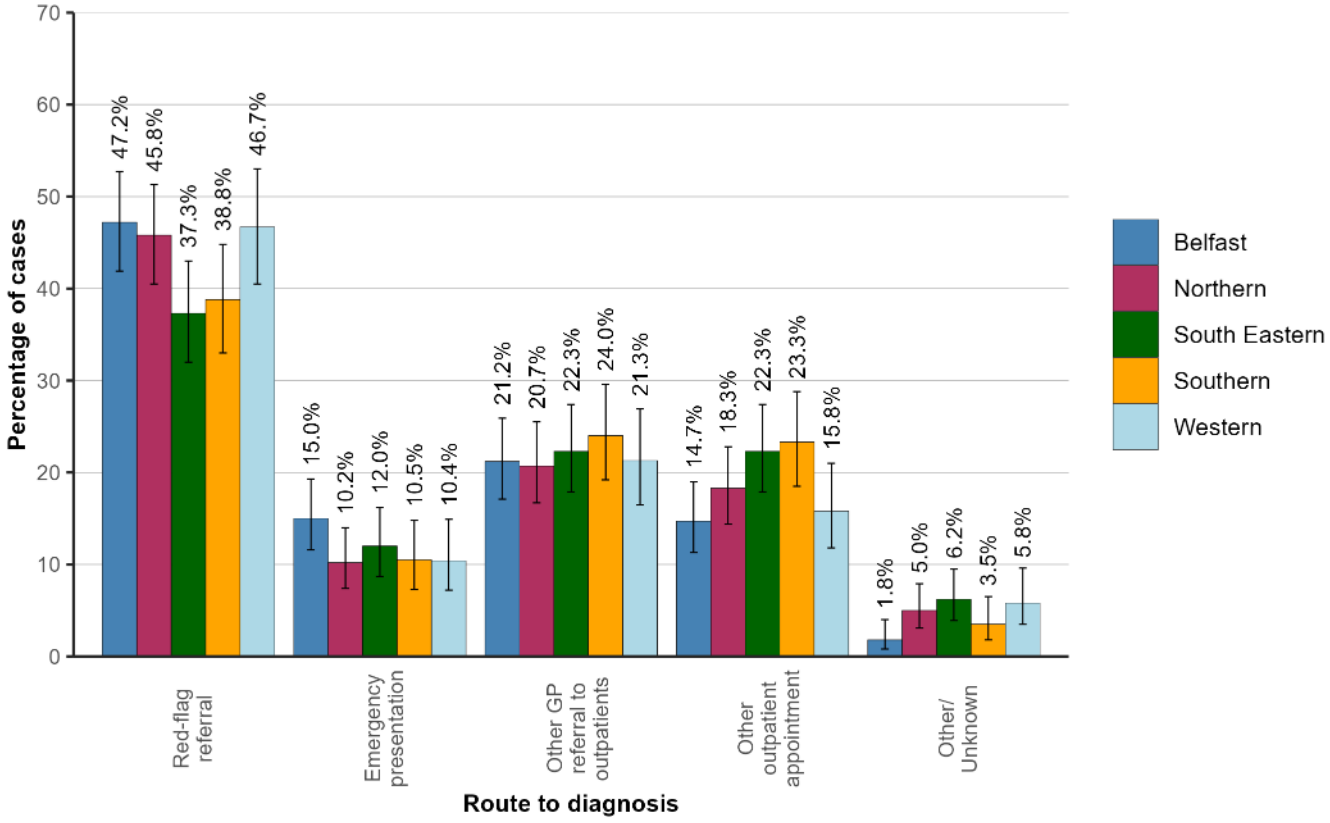
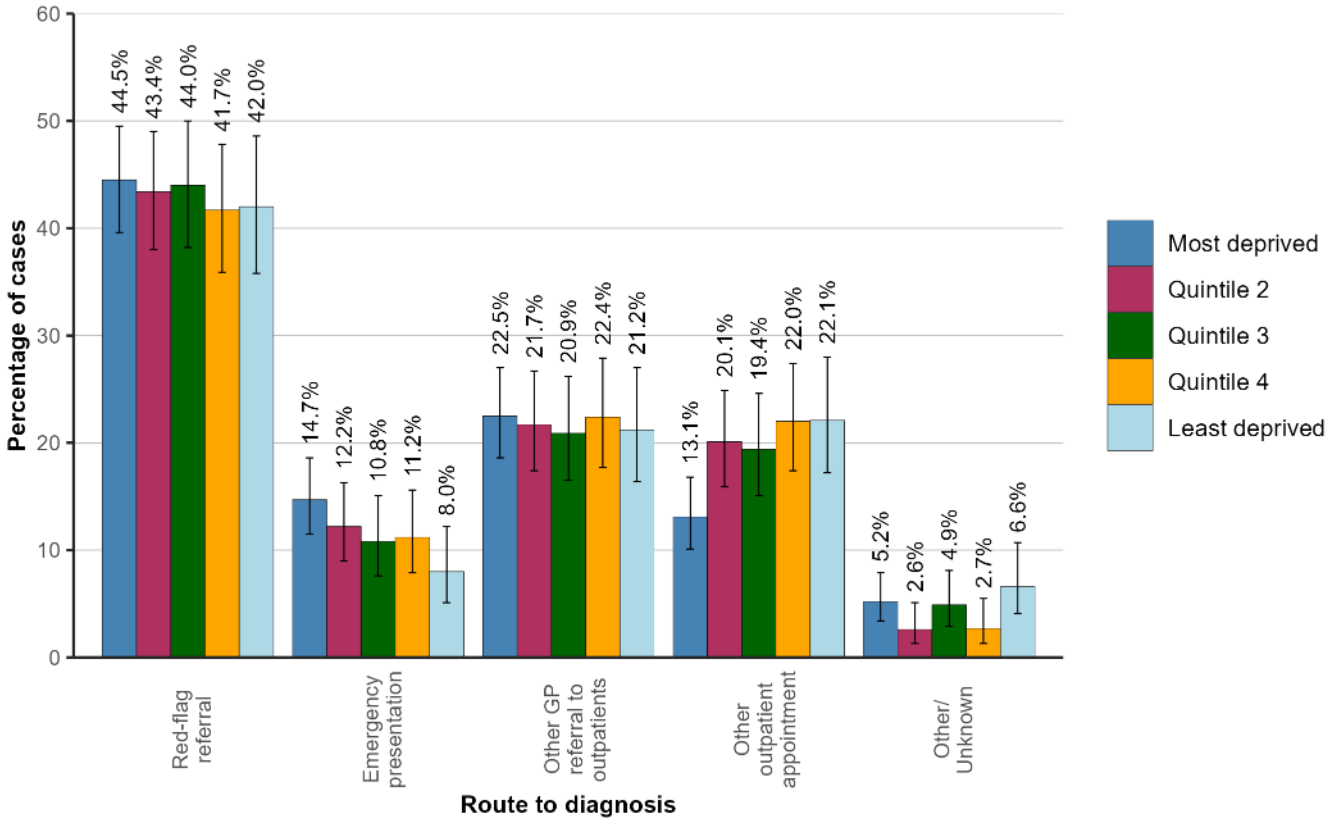


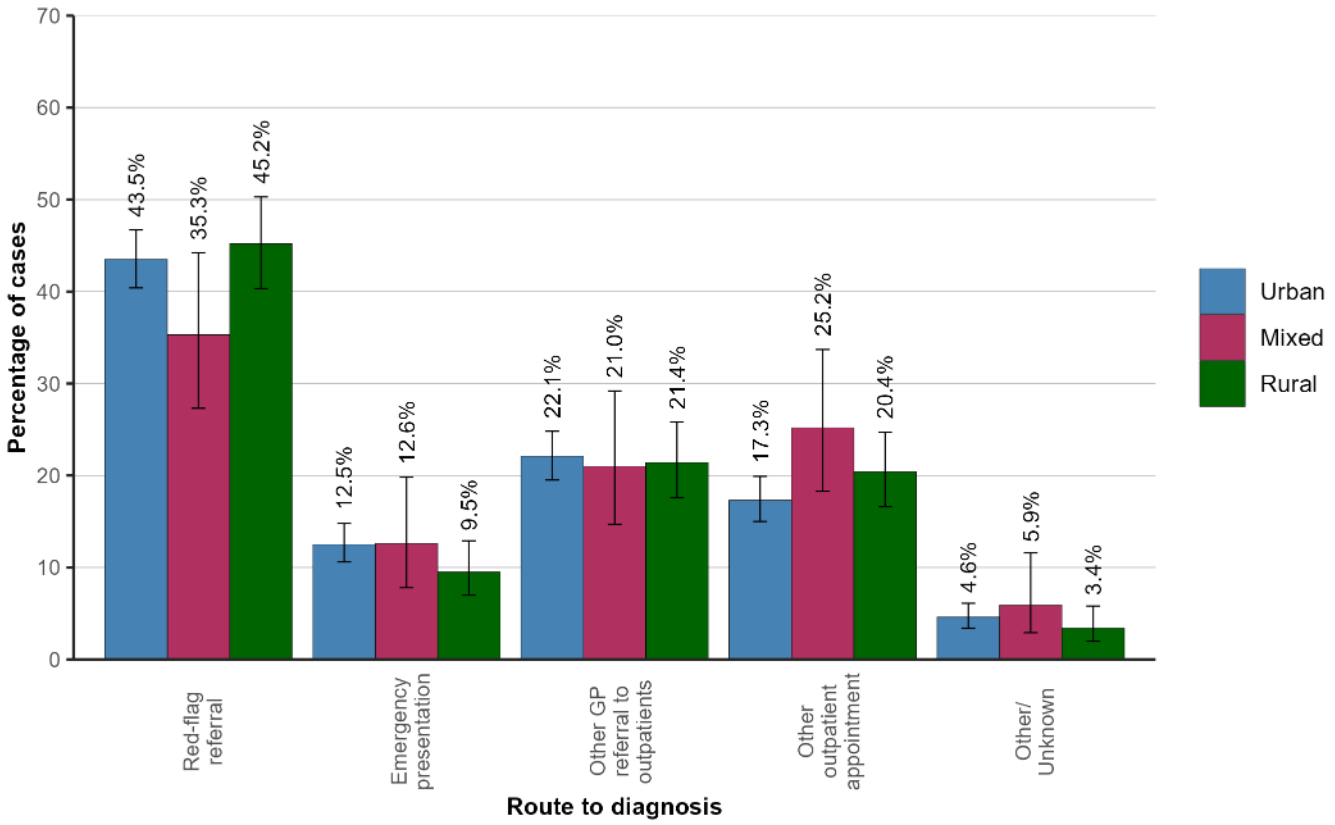
Figure 8.5: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of head and neck cancer diagnosed via a red-flag referral was 43.5% in urban areas compared to 45.2% in rural areas. The proportions diagnosed via an emergency presentation were 12.5% and 9.5% in urban and rural areas respectively. The variation in route to diagnosis by urban/rural status was not statistically significant.

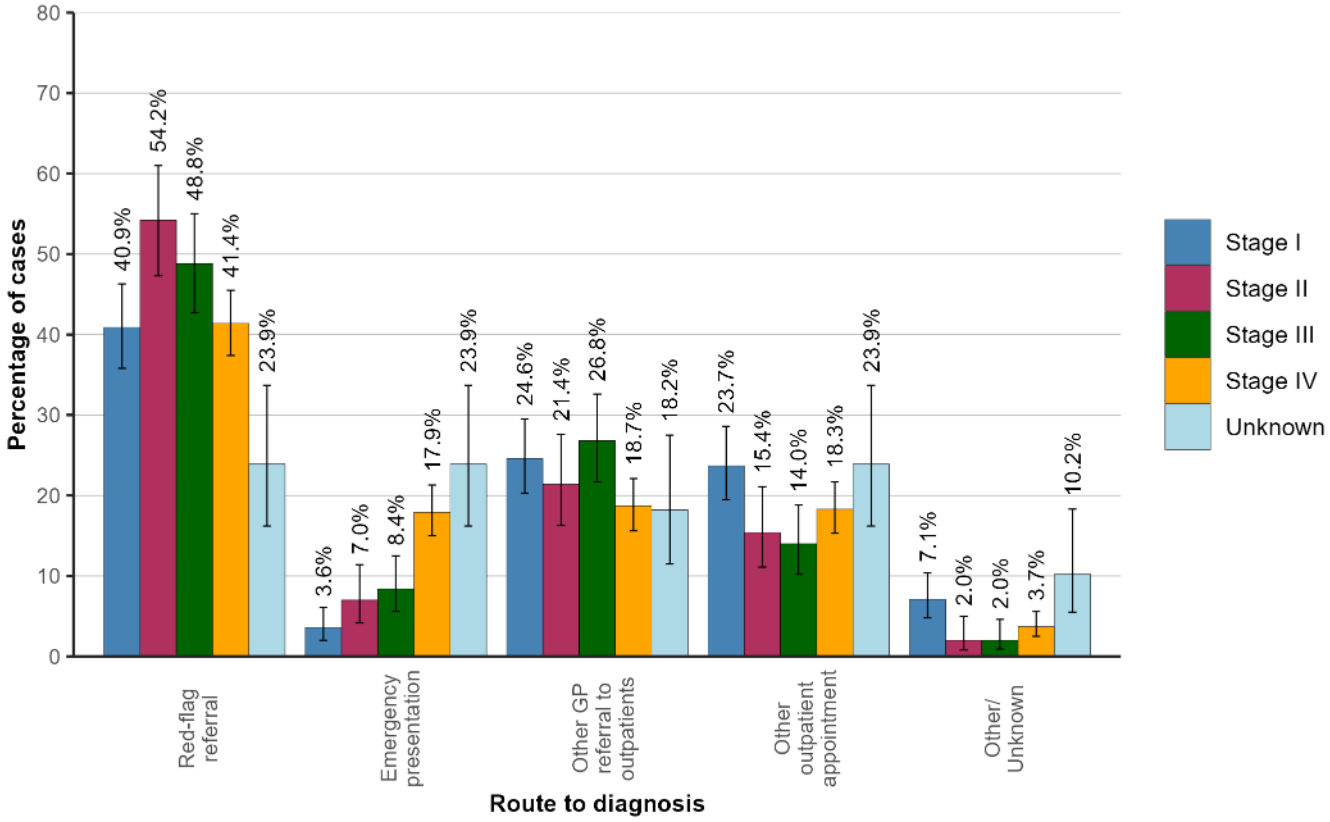
Figure 8.6: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2021 by urban/rural status



8.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2021 the proportion of cases of head and neck cancer diagnosed via a red-flag referral was 40.9% among stage I cancers compared to 41.4% among stage IV cancers. The proportions diagnosed via an emergency presentation were 3.6% and 17.9% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 8.7: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2021 by stage at diagnosis



8.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

Oral cancer: The most common route to diagnosis among oral cancer patients during 2018-2021 was via a red-flag referral, with 110 (43.0%) cases diagnosed on average each year. This was followed by another outpatient appointment route with 55 (21.5%) cases diagnosed on average each year. Emergency presentations made up 9.9% of cases during this period.

Laryngeal cancer: The most common route to diagnosis among laryngeal cancer patients during 2018-2021 was via a red-flag referral, with 42 (47.5%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 22 (24.7%) cases diagnosed on average each year. Emergency presentations made up 15.4% of cases during this period.

Figure 8.8: Route to diagnosis for oral cancer patients diagnosed in 2018-2021

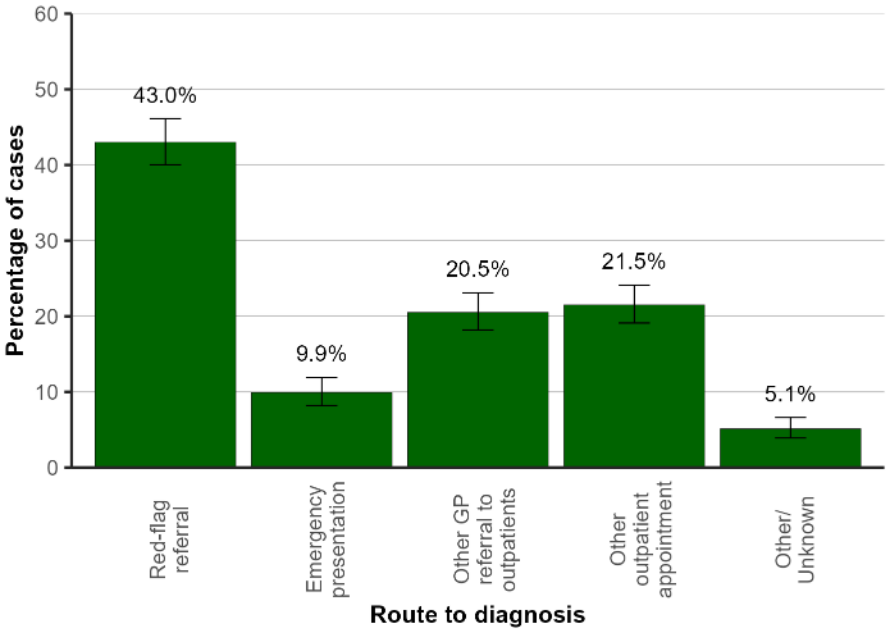
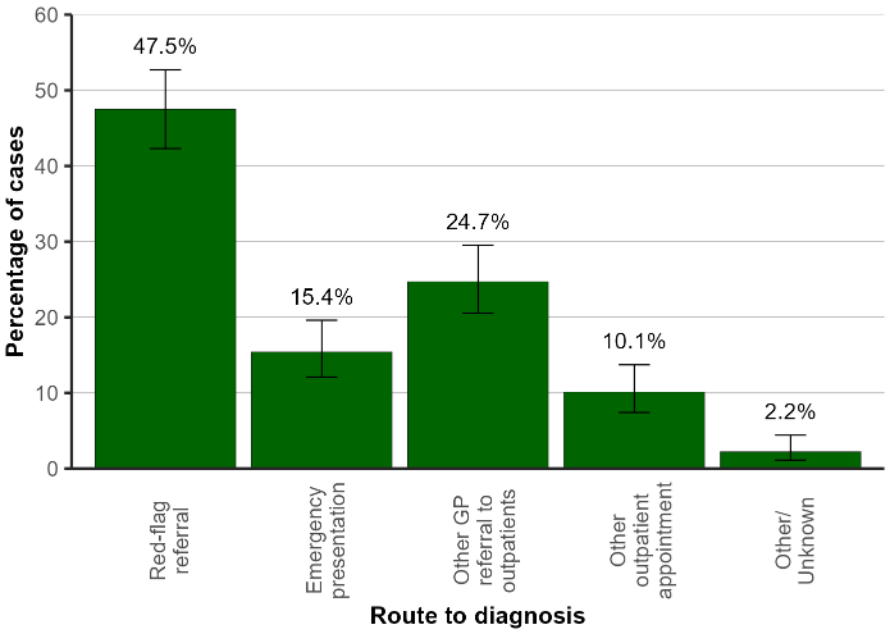


Figure 8.9: Route to diagnosis for laryngeal cancer patients diagnosed in 2018-2021



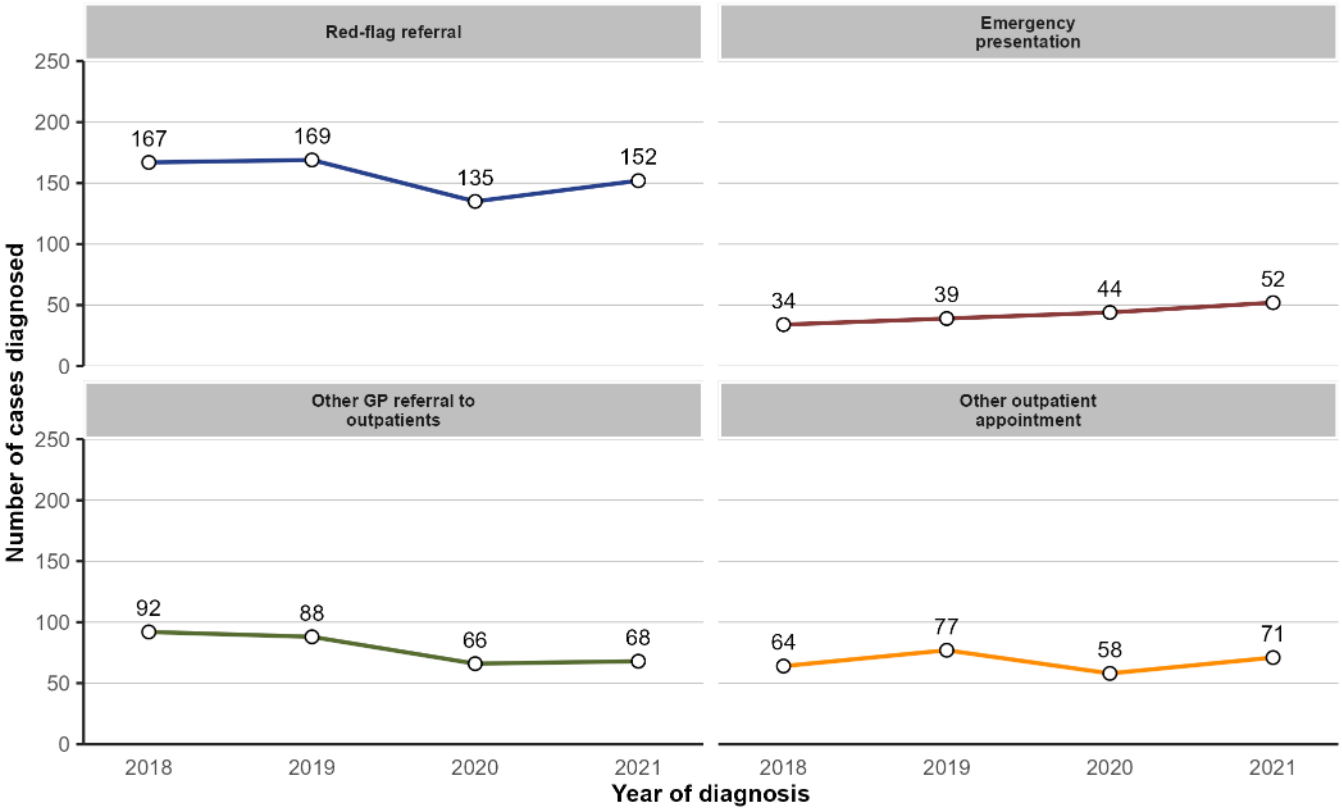
8.6: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of head and neck cancer cases diagnosed via a red-flag referral increased by 12.6% from 135 in 2020 to 152 in 2021. As a proportion of all cases, a red-flag referral diagnosis decreased from 43.0% in 2020 to 42.2% in 2021.

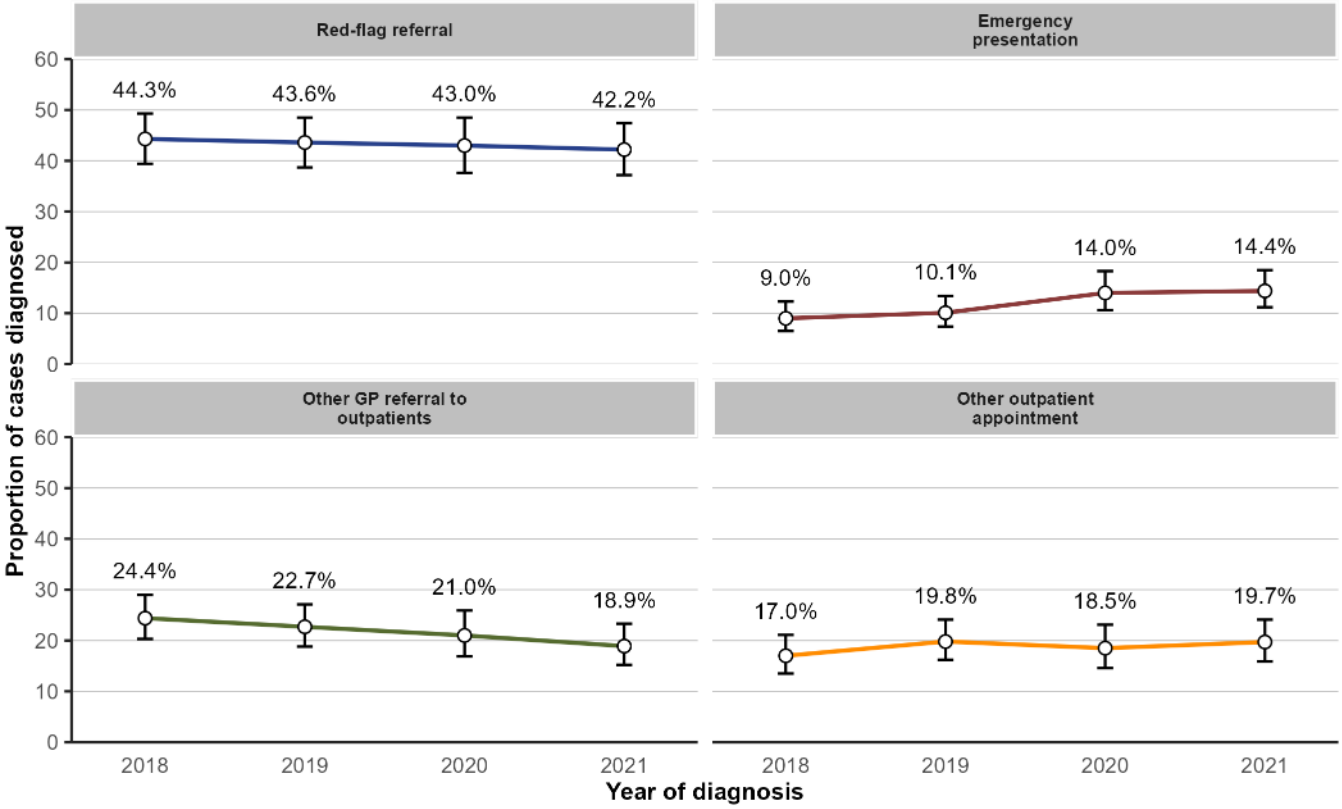
The number of head and neck cancer cases diagnosed via an emergency presentation increased by 18.2% from 44 in 2020 to 52 in 2021. As a proportion of all cases, an emergency presentation diagnosis increased from 14.0% in 2020 to 14.4% in 2021. The variation in route to diagnosis between the previous two years was not statistically significant.

Figure 8.10: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

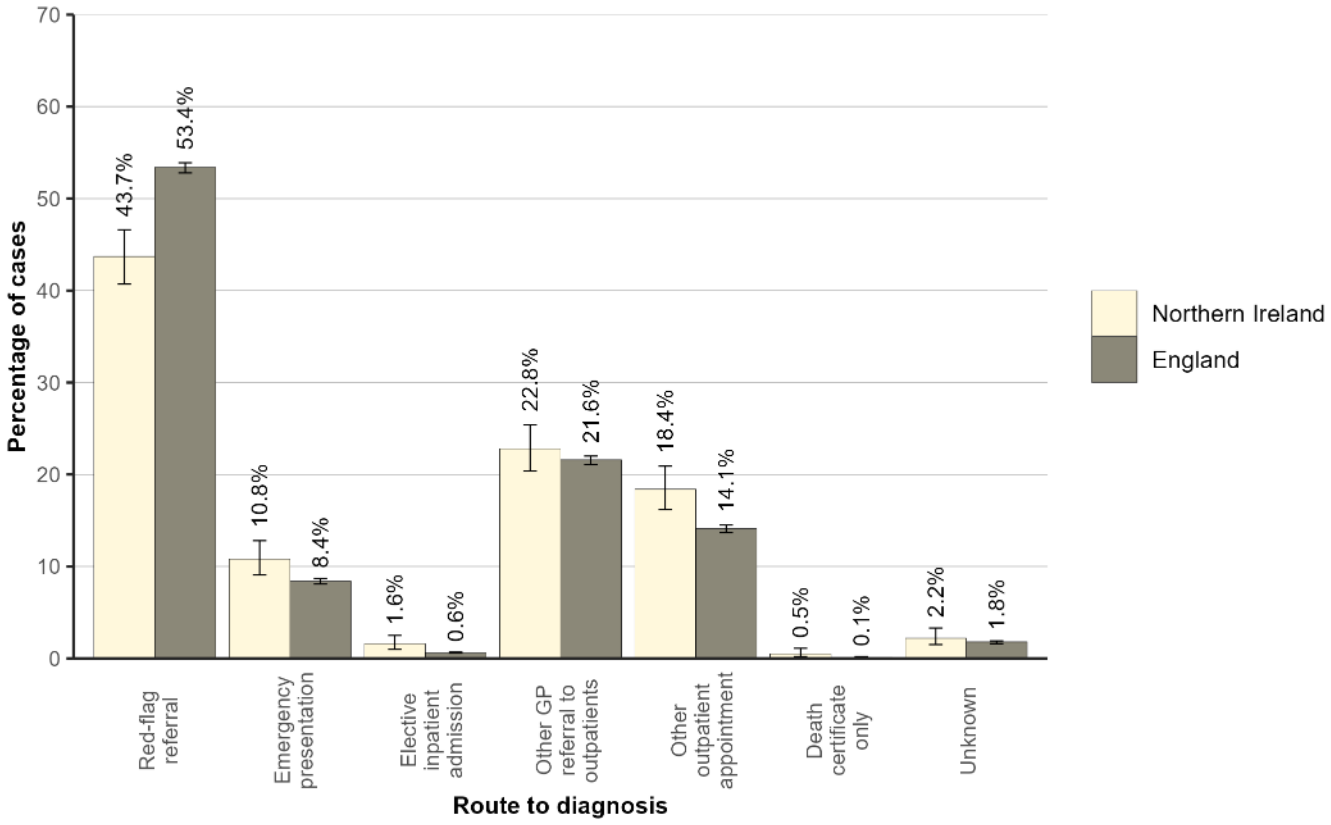


8.7: Comparison with England

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with head and neck cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Red-flag referral (43.7% in NI compared to 53.4% in England; p<0.001).
- Emergency presentation (10.8% in NI compared to 8.4% in England; p=0.005).
- Elective inpatient admission (1.6% in NI compared to 0.6% in England; p<0.001).
- Other outpatient appointment (18.4% in NI compared to 14.1% in England; p<0.001).

Figure 8.11: Route to diagnosis for head and neck cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



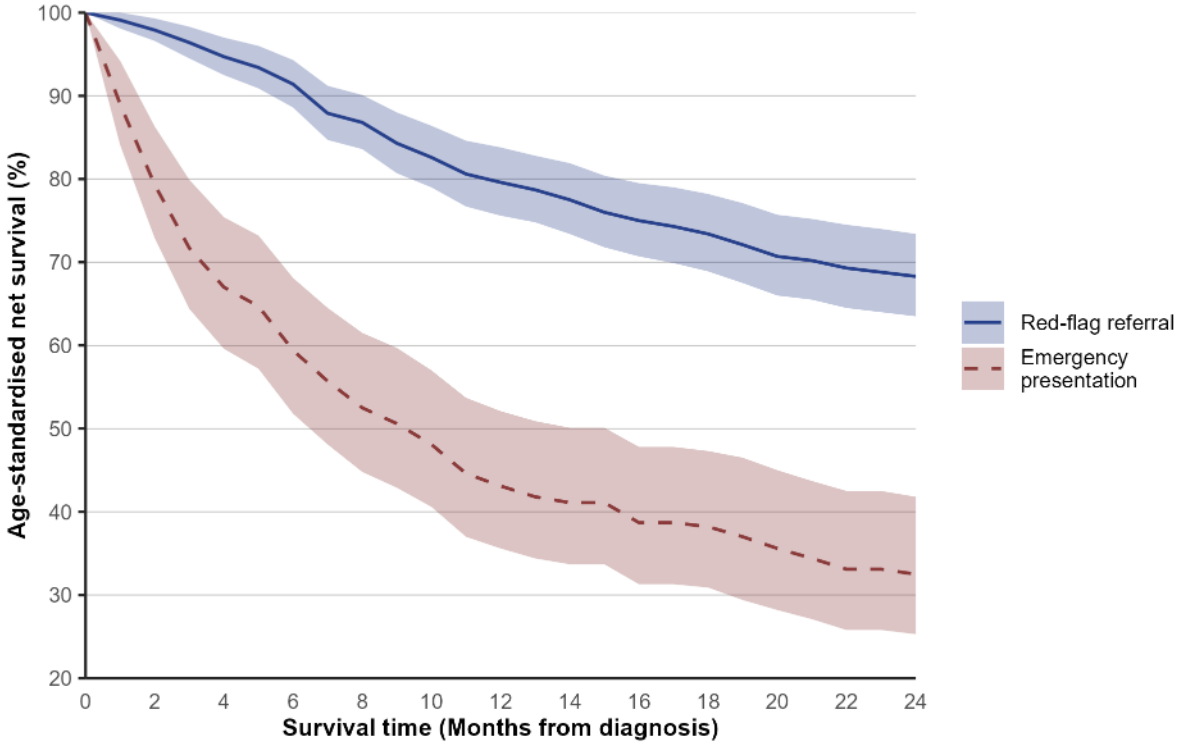
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

8.8: SURVIVAL

During 2018-2021 one-year age-standardised net survival from head and neck cancer ranged from 43.1% for those diagnosed via an emergency presentation route to 82.5% for those diagnosed via another GP referral to outpatients route. Two years from diagnosis age-standardised net survival ranged from 32.5% for those diagnosed via an emergency presentation route to 72.8% for those diagnosed via another GP referral to outpatients route.

Figure 8.12: Age-standardised net survival by route to diagnosis for head and neck cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

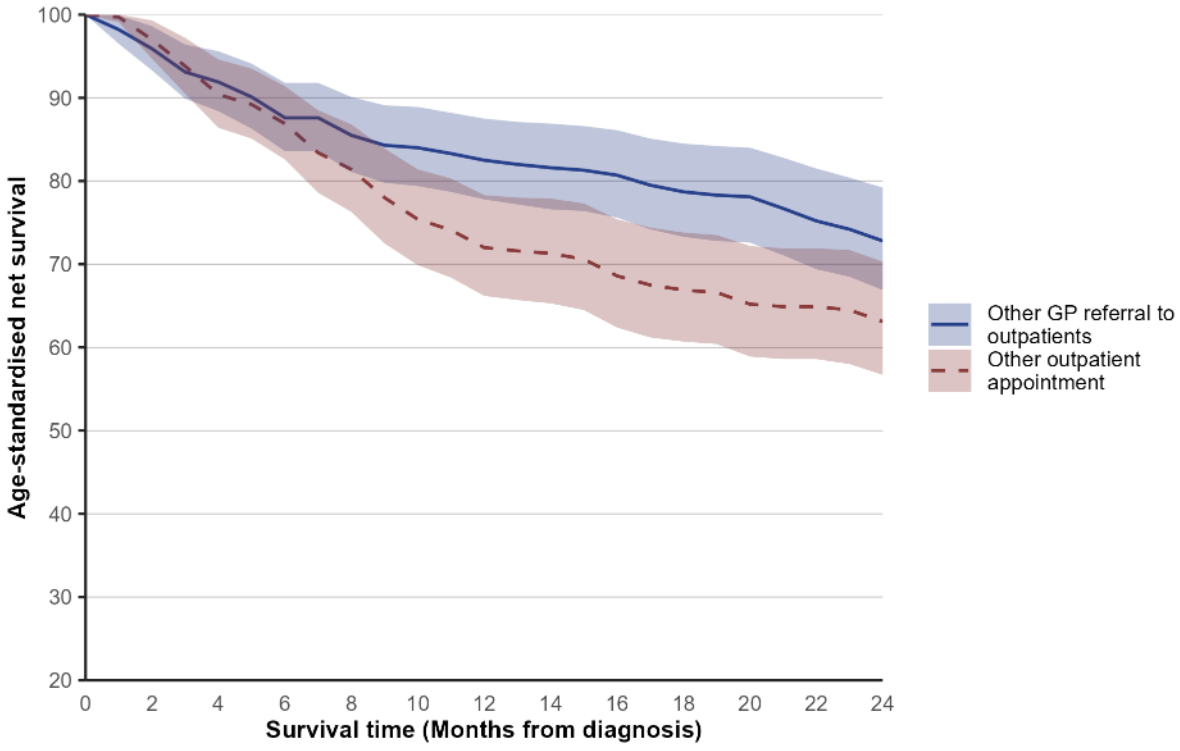


Table 8.2: Age-standardised net survival by route to diagnosis for head and neck cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	79.6% (75.6% - 83.8%)	68.3% (63.5% - 73.4%)
Emergency presentation	43.1% (35.6% - 52.1%)	32.5% (25.3% - 41.8%)
Elective inpatient admission	78.8% (64.1% - 96.8%)*	76.9% (61.3% - 96.5%)*
Other GP referral to outpatients	82.5% (77.8% - 87.5%)	72.8% (66.9% - 79.2%)
Other outpatient appointment	72.0% (66.2% - 78.3%)	63.1% (56.7% - 70.3%)
Unknown	89.2% (78.5% - 100.0%)*	75.8% (61.5% - 93.5%)*

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

09: Upper Gastrointestinal Cancer

The most common route to diagnosis among upper gastrointestinal cancer patients during 2018-2021 was via a red-flag referral, with 155 (37.8%) cases diagnosed on average each year. This was followed by an emergency presentation route with 130 (31.6%) cases diagnosed on average each year.

Figure 9.1: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021

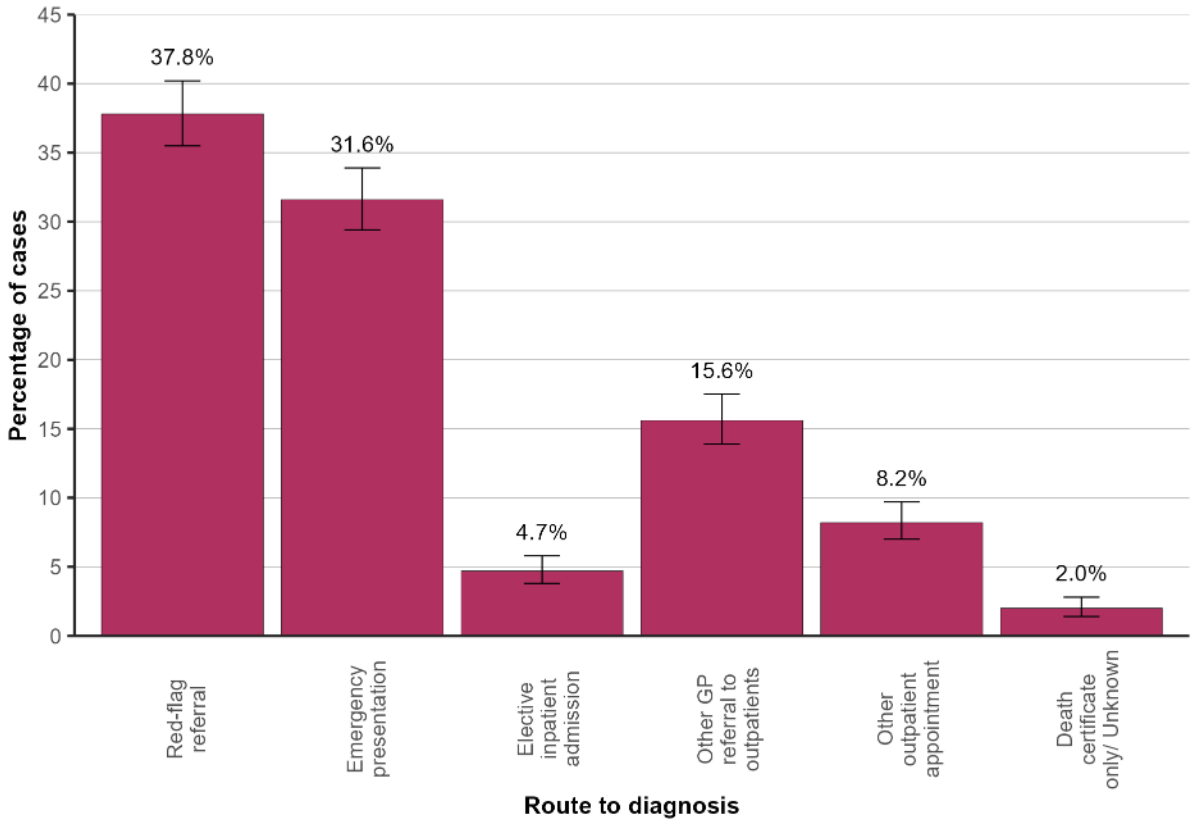


Table 9.1: Average number of upper gastrointestinal cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	155	37.8% (35.5% - 40.2%)
Emergency presentation	130	31.6% (29.4% - 33.9%)
Elective inpatient admission	19	4.7% (3.8% - 5.8%)
Other GP referral to outpatients	64	15.6% (13.9% - 17.5%)
Other outpatient appointment	34	8.2% (7.0% - 9.7%)
Death certificate only/ Unknown	8	2.0% (1.4% - 2.8%)

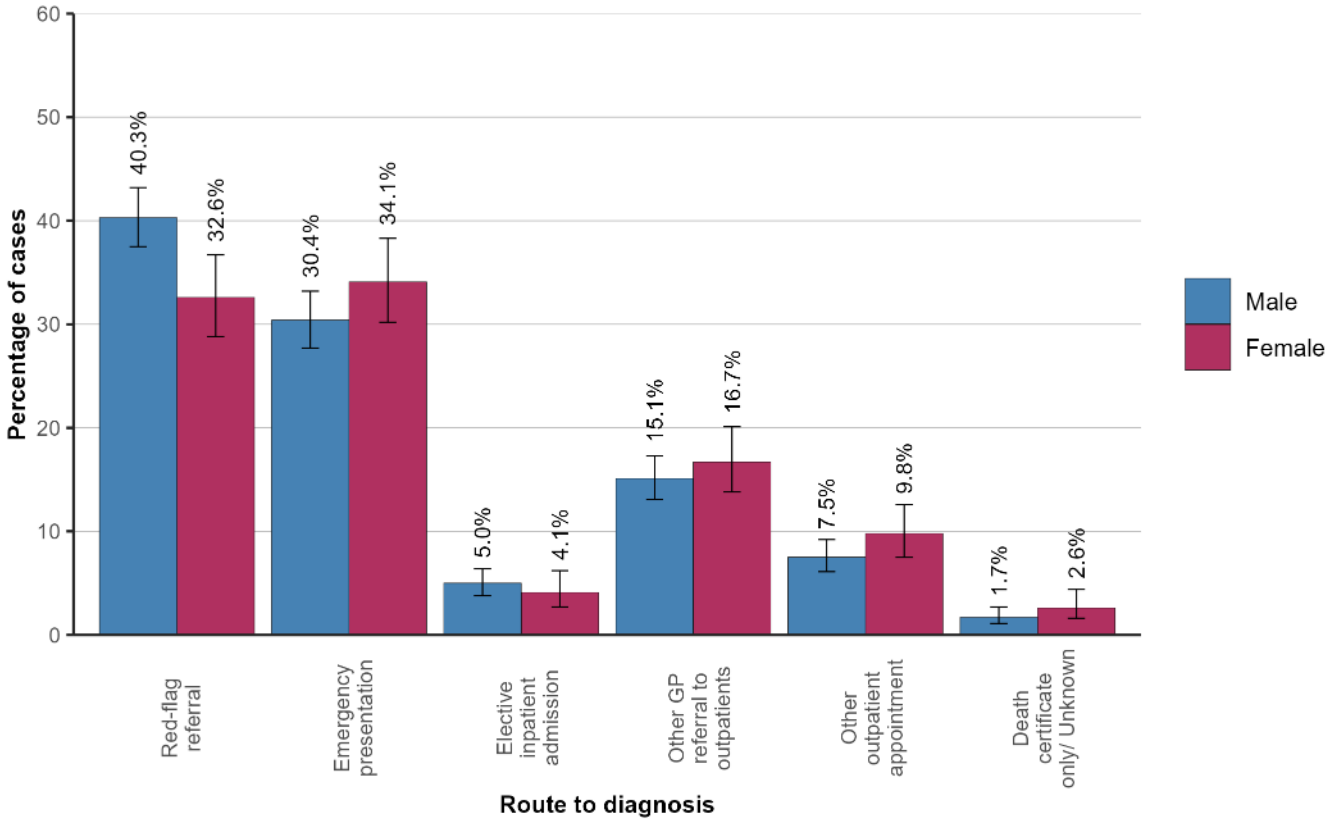
CI: Confidence Interval

9.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2021 there were 112 male and 44 female cases of upper gastrointestinal cancer diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for men (40.3%) but not women (32.6%). The most common route to diagnosis for women was an emergency presentation (34.1%).

Red-flag referral routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was statistically significant (p = 0.034).

Figure 9.2: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021 by gender

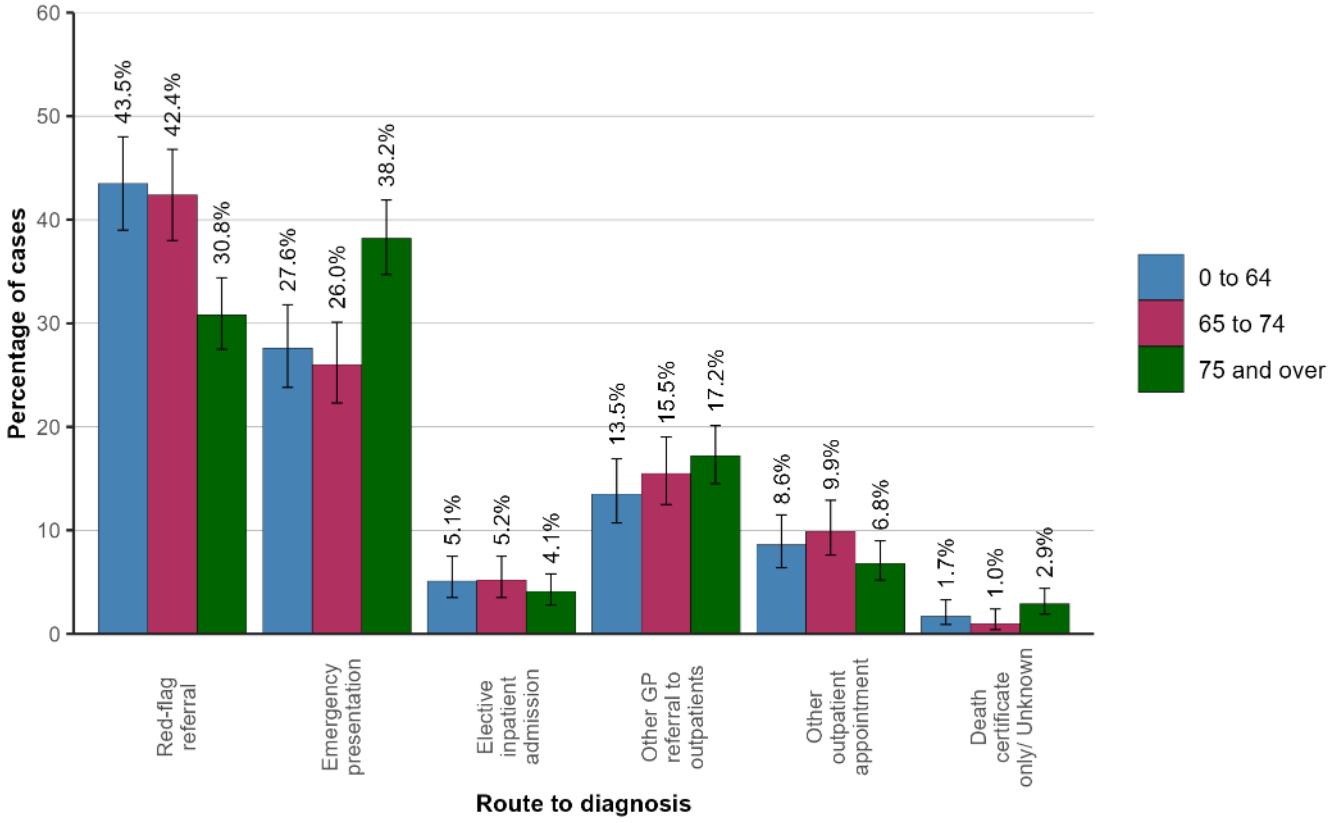


9.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of upper gastrointestinal cancer overall was a red-flag referral. Among those aged 0 to 64 there were 51 (43.5%) diagnosed per year via this route, compared to 53 (30.8%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 0 to 64 but not those aged 75 and over. The most common route to diagnosis for those aged 75 and over was an emergency presentation (38.2%).

Red-flag referral routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant (p < 0.001).

Figure 9.3: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021 by age group



9.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of upper gastrointestinal cancer diagnosed via a red-flag referral ranged from 29.9% in Northern HSCT to 46.3% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 26.5% to 34.9% in South Eastern HSCT and Belfast HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of upper gastrointestinal cancer diagnosed via a red-flag referral was 37.5% in the most deprived areas compared to 36.8% in the least deprived areas. The proportions diagnosed via an emergency presentation were 33.6% and 30.1% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was statistically significant ($p = 0.035$).

Figure 9.4: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

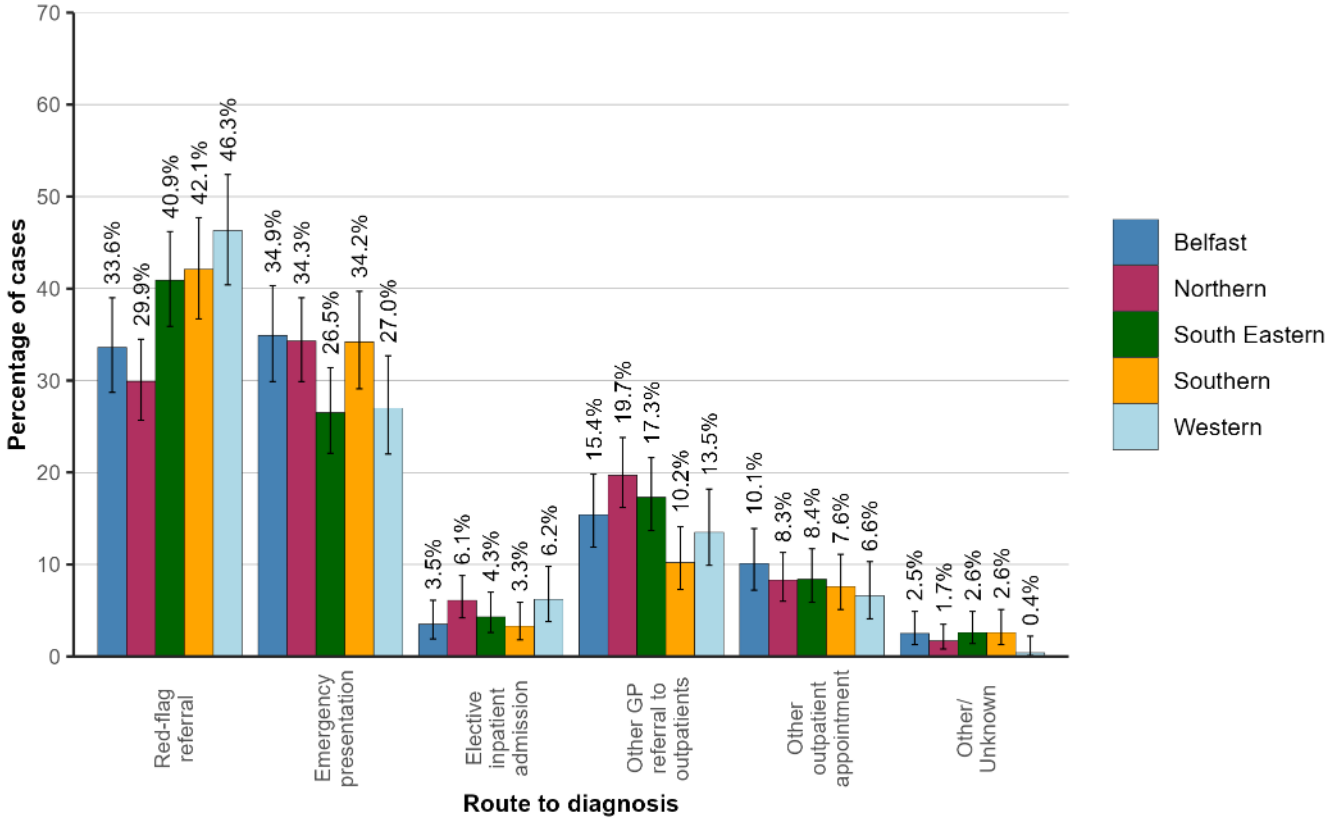
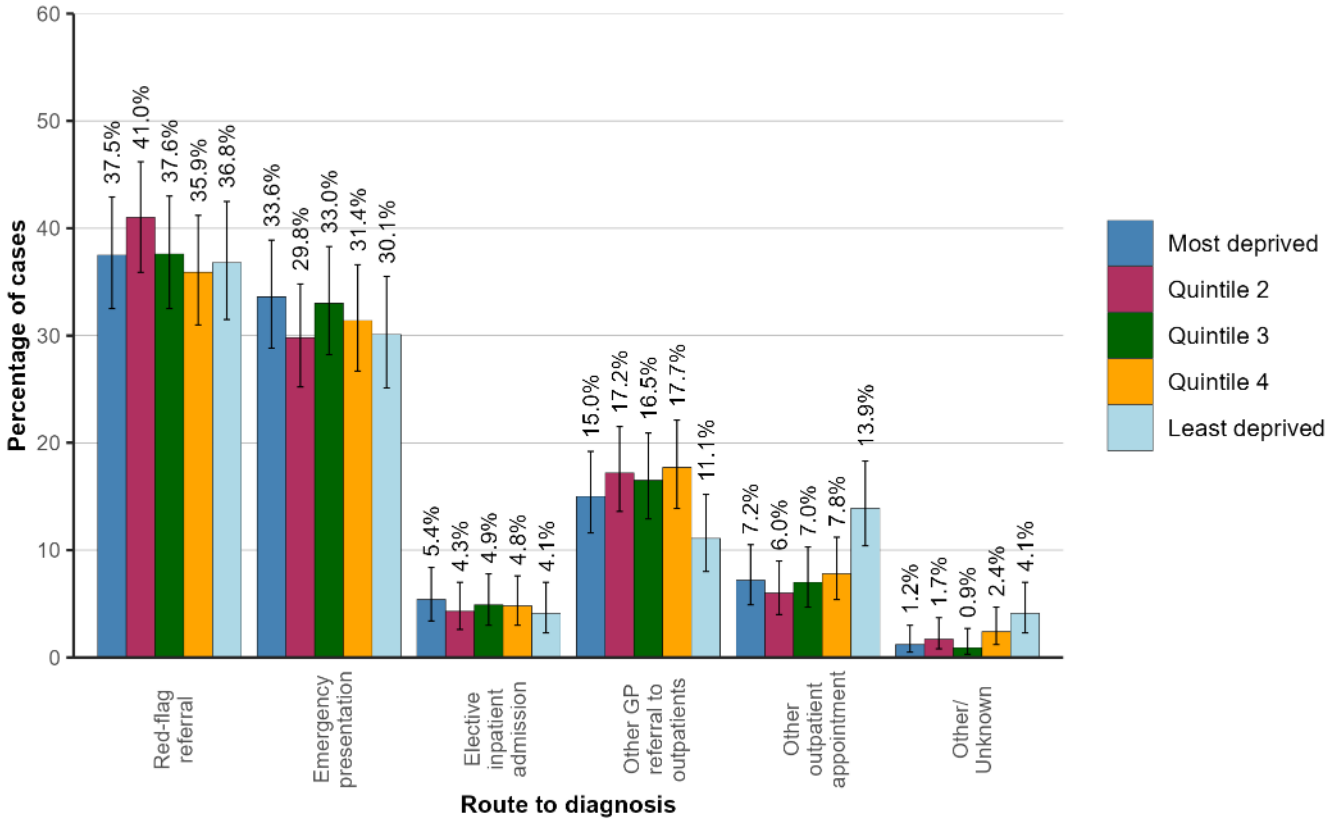


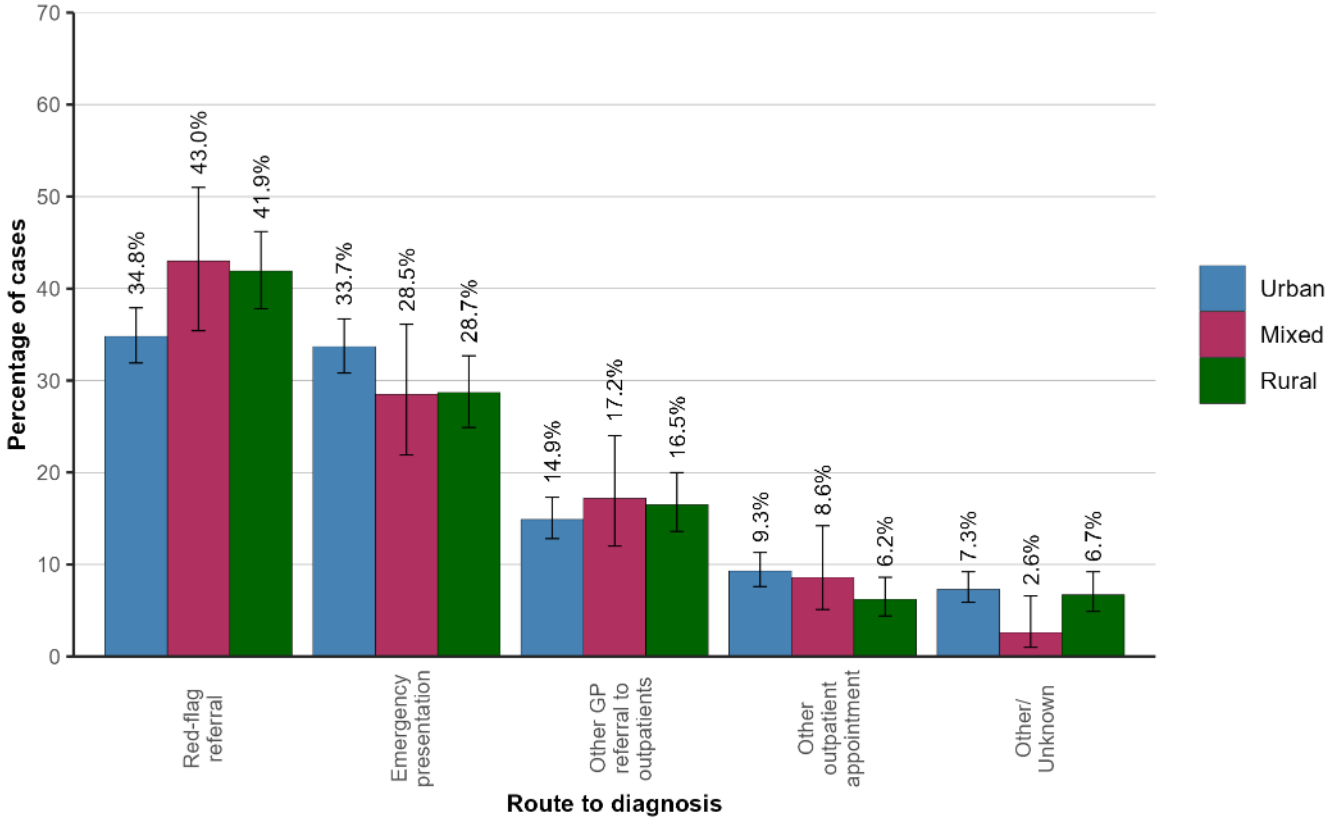
Figure 9.5: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of upper gastrointestinal cancer diagnosed via a red-flag referral was 34.8% in urban areas compared to 41.9% in rural areas. The proportions diagnosed via an emergency presentation were 33.7% and 28.7% in urban and rural areas respectively. The variation in route to diagnosis by urban/rural status was statistically significant (p = 0.020).

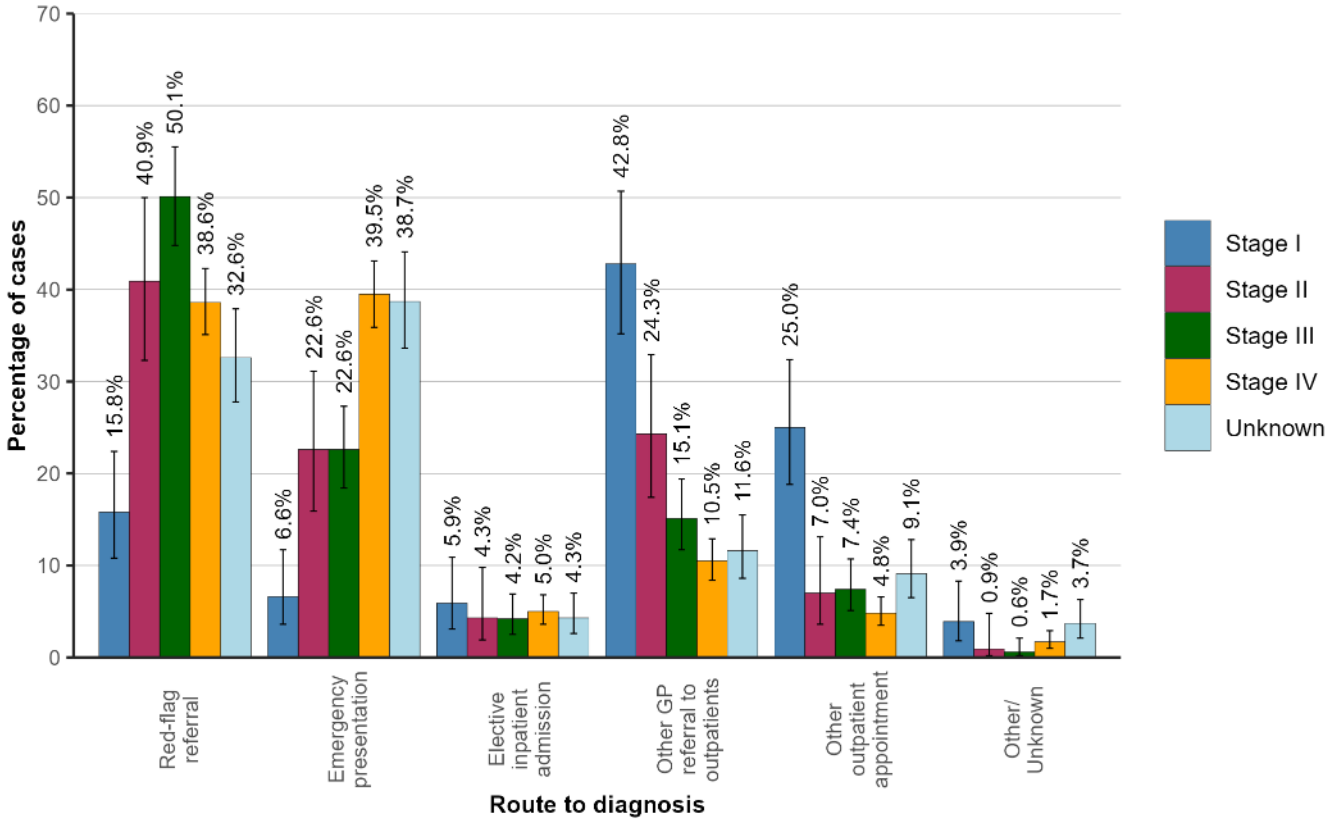
Figure 9.6: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021 by urban/rural status



9.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2021 the proportion of cases of upper gastrointestinal cancer diagnosed via a red-flag referral was 15.8% among stage I cancers compared to 38.6% among stage IV cancers. The proportions diagnosed via an emergency presentation were 6.6% and 39.5% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 9.7: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021 by stage at diagnosis



9.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

Oesophageal cancer: The most common route to diagnosis among oesophageal cancer patients during 2018-2021 was via a red-flag referral, with 98 (45.0%) cases diagnosed on average each year. This was followed by an emergency presentation route with 56 (25.8%) cases diagnosed on average each year.

Stomach cancer: The most common route to diagnosis among stomach cancer patients during 2018-2021 was via an emergency presentation, with 74 (38.1%) cases diagnosed on average each year. This was followed by a red-flag referral route with 58 (29.8%) cases diagnosed on average each year.

Figure 9.8: Route to diagnosis for oesophageal cancer patients diagnosed in 2018-2021

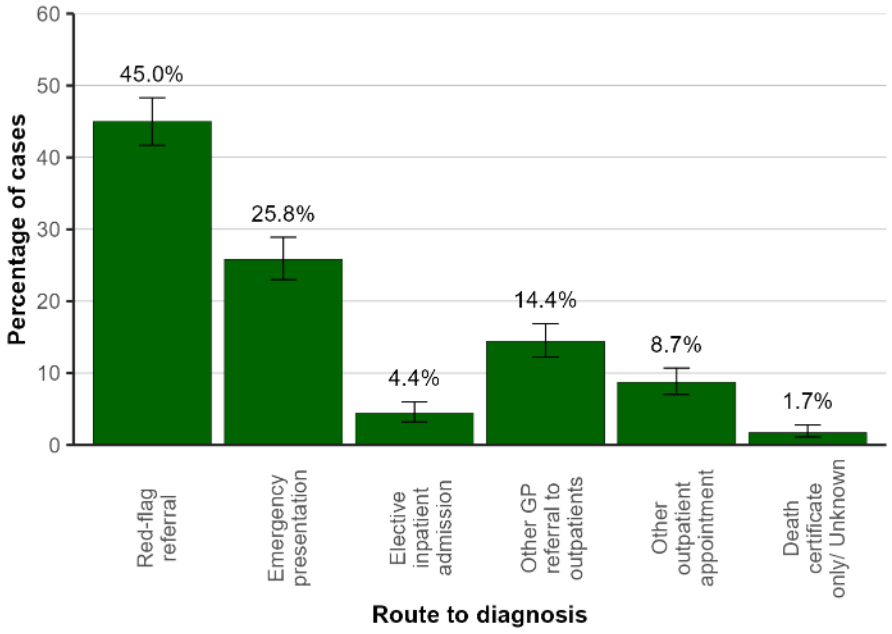
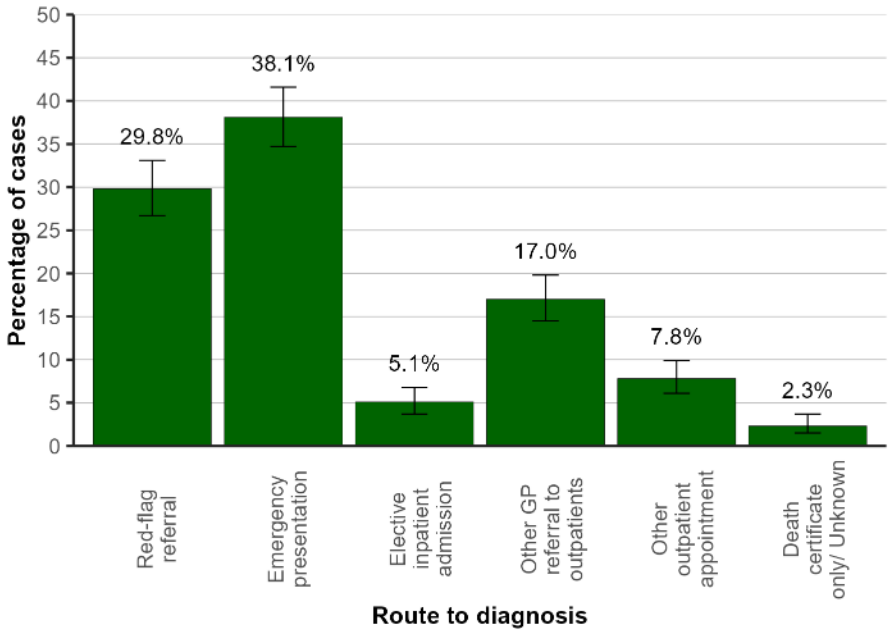


Figure 9.9: Route to diagnosis for stomach cancer patients diagnosed in 2018-2021



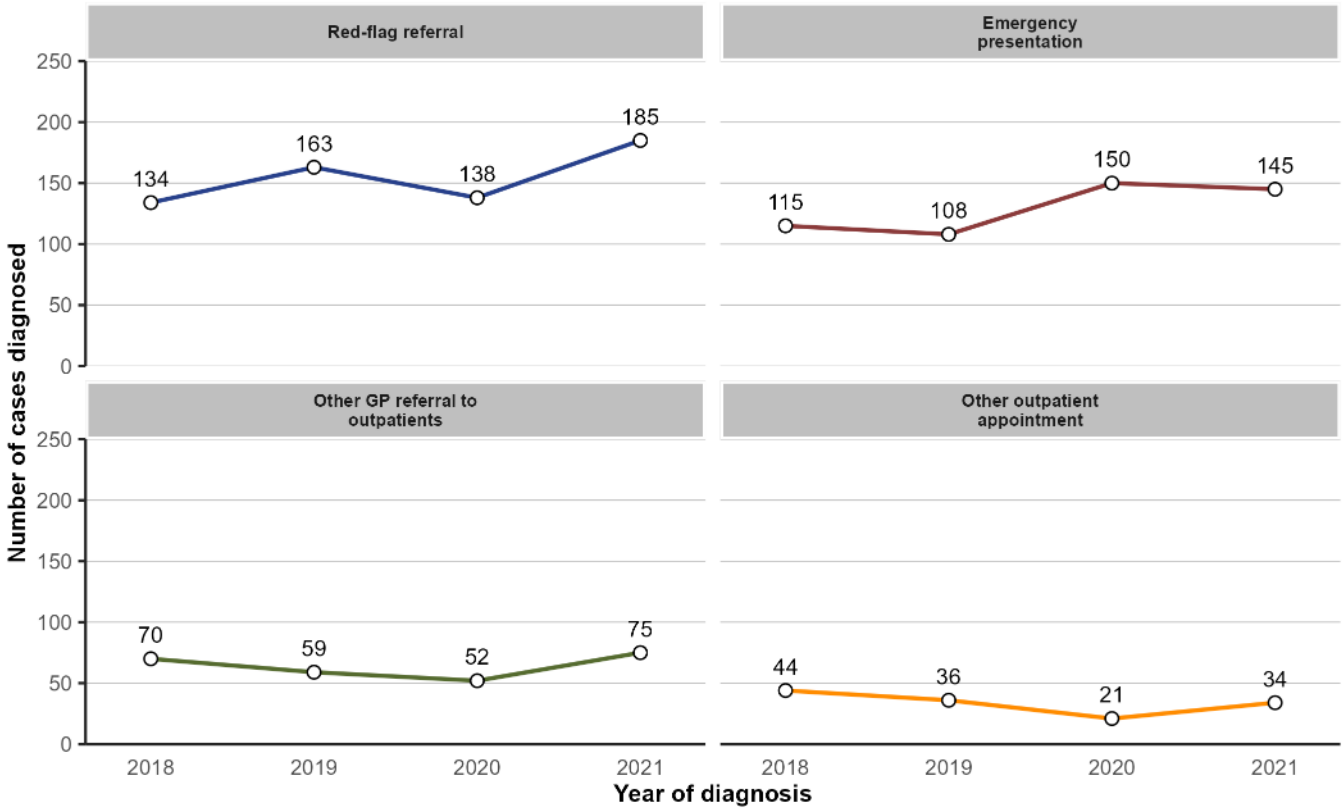
9.6: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of upper gastrointestinal cancer cases diagnosed via a red-flag referral increased by 34.1% from 138 in 2020 to 185 in 2021. As a proportion of all cases, a red-flag referral diagnosis increased from 36.4% in 2020 to 41.0% in 2021.

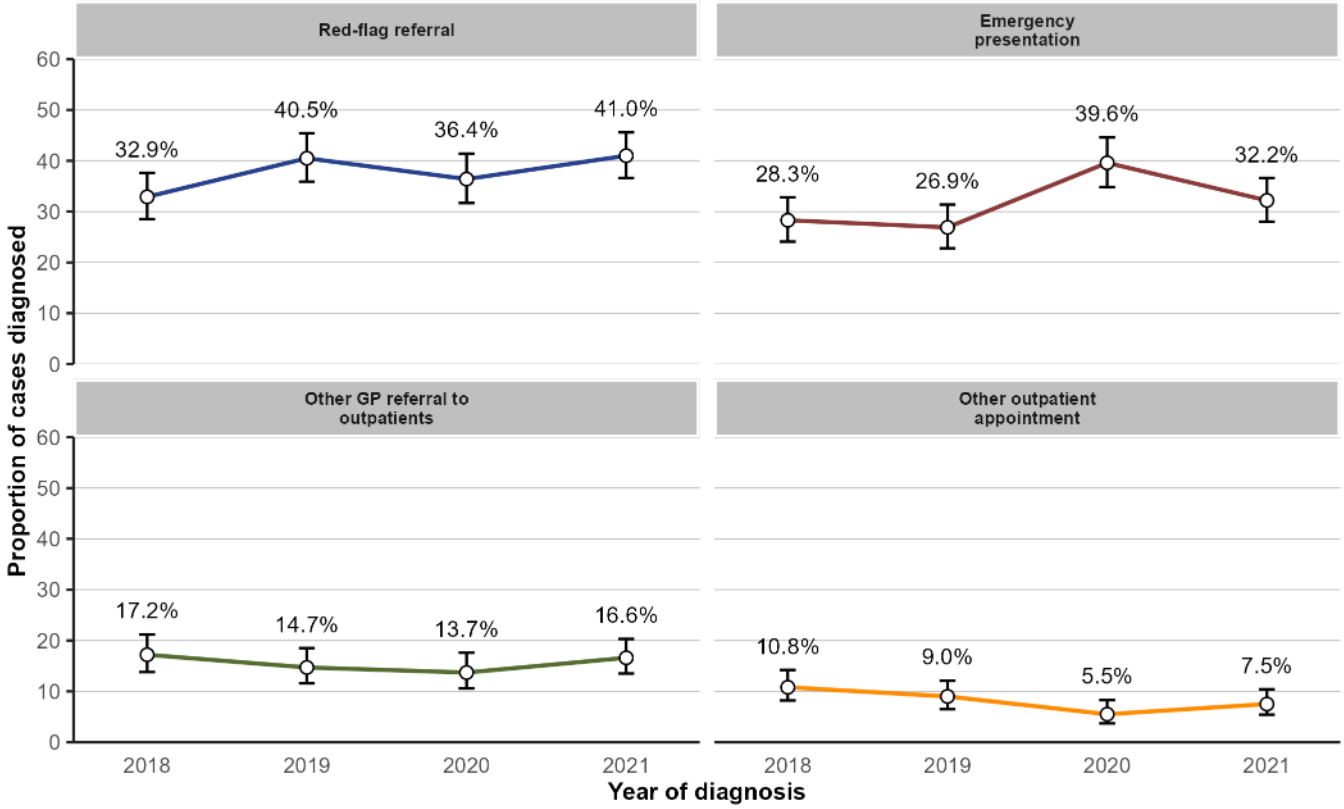
The number of upper gastrointestinal cancer cases diagnosed via an emergency presentation decreased by 3.3% from 150 in 2020 to 145 in 2021. As a proportion of all cases, an emergency presentation diagnosis decreased from 39.6% in 2020 to 32.2% in 2021. The variation in route to diagnosis between the previous two years was not statistically significant.

Figure 9.10: Route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases



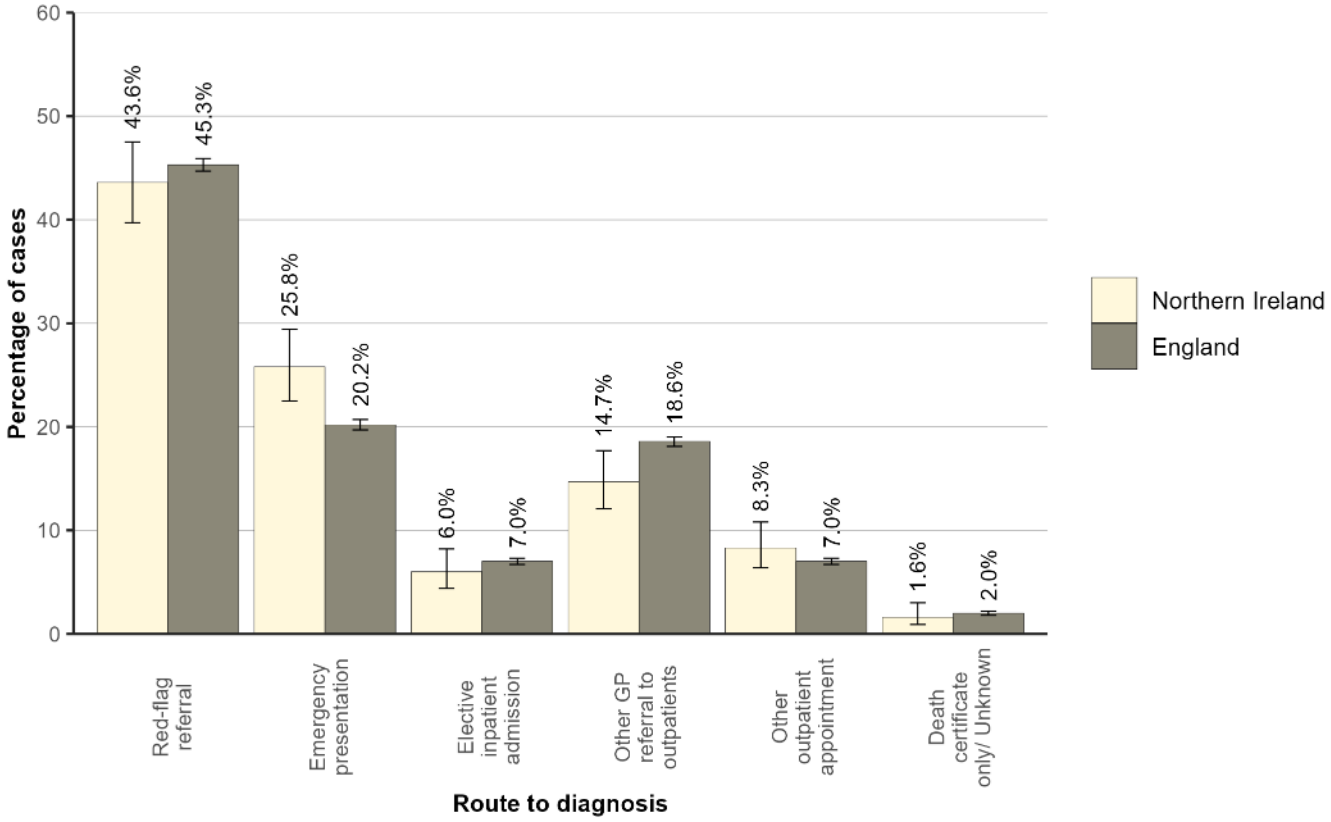
9.7: COMPARISON WITH ENGLAND

Oesophageal cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with oesophageal cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Emergency presentation (25.8% in NI compared to 20.2% in England; p=0.001).

Figure 9.11: Route to diagnosis for oesophageal cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



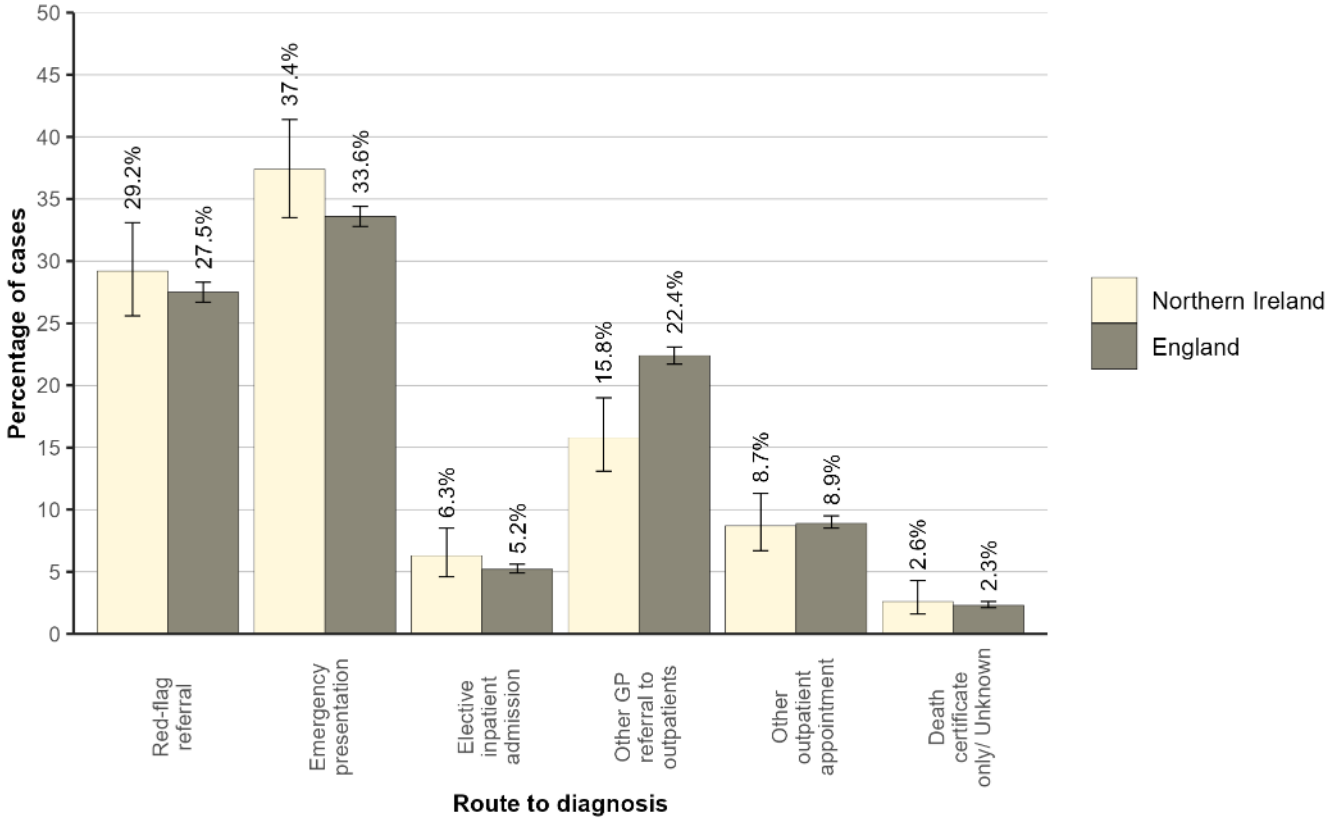
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

Stomach cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with stomach cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Other GP referral to outpatients (15.8% in NI compared to 22.4% in England; p<0.001).

Figure 9.12: Route to diagnosis for stomach cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



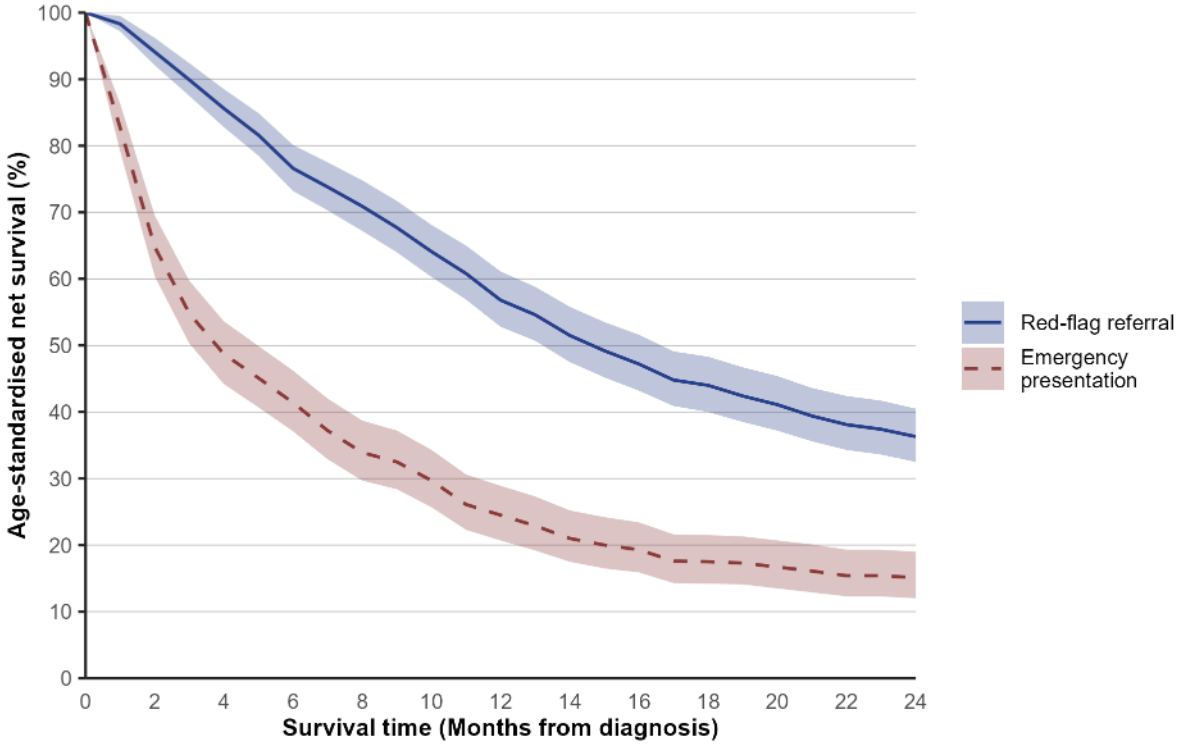
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

9.8: SURVIVAL

During 2018-2021 one-year age-standardised net survival from upper gastrointestinal cancer ranged from 24.5% for those diagnosed via an emergency presentation route to 68.9% for those diagnosed via another GP referral to outpatients route. Two years from diagnosis age-standardised net survival ranged from 15.1% for those diagnosed via an emergency presentation route to 53.9% for those diagnosed via another GP referral to outpatients route.

Figure 9.13: Age-standardised net survival by route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

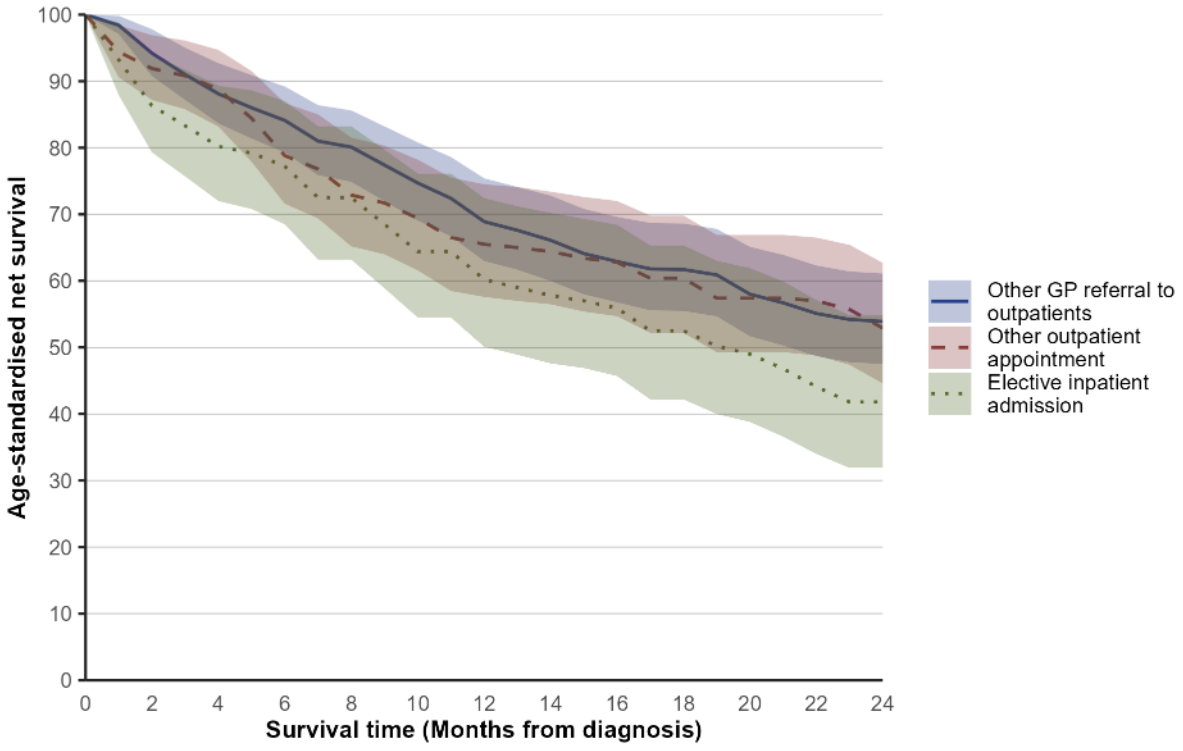


Table 9.2: Age-standardised net survival by route to diagnosis for upper gastrointestinal cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	56.8% (52.8% - 61.1%)	36.3% (32.5% - 40.5%)
Emergency presentation	24.5% (20.7% - 28.9%)	15.1% (12.0% - 19.0%)
Elective inpatient admission	60.2% (50.1% - 72.4%)	41.8% (31.9% - 54.8%)
Other GP referral to outpatients	68.9% (63.0% - 75.4%)	53.9% (47.5% - 61.1%)
Other outpatient appointment	65.5% (57.6% - 74.5%)	52.9% (44.6% - 62.7%)
Unknown	33.2% (19.6% - 56.1%)*	33.2% (19.6% - 56.1%)*

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

10: Hepatobiliary and Pancreatic Cancer

The most common route to diagnosis among hepatobiliary and pancreatic cancer patients during 2018-2021 was via an emergency presentation, with 267 (49.1%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 88 (16.1%) cases diagnosed on average each year. Red flag referrals made up 14.0% of cases during this period.

Figure 10.1: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021

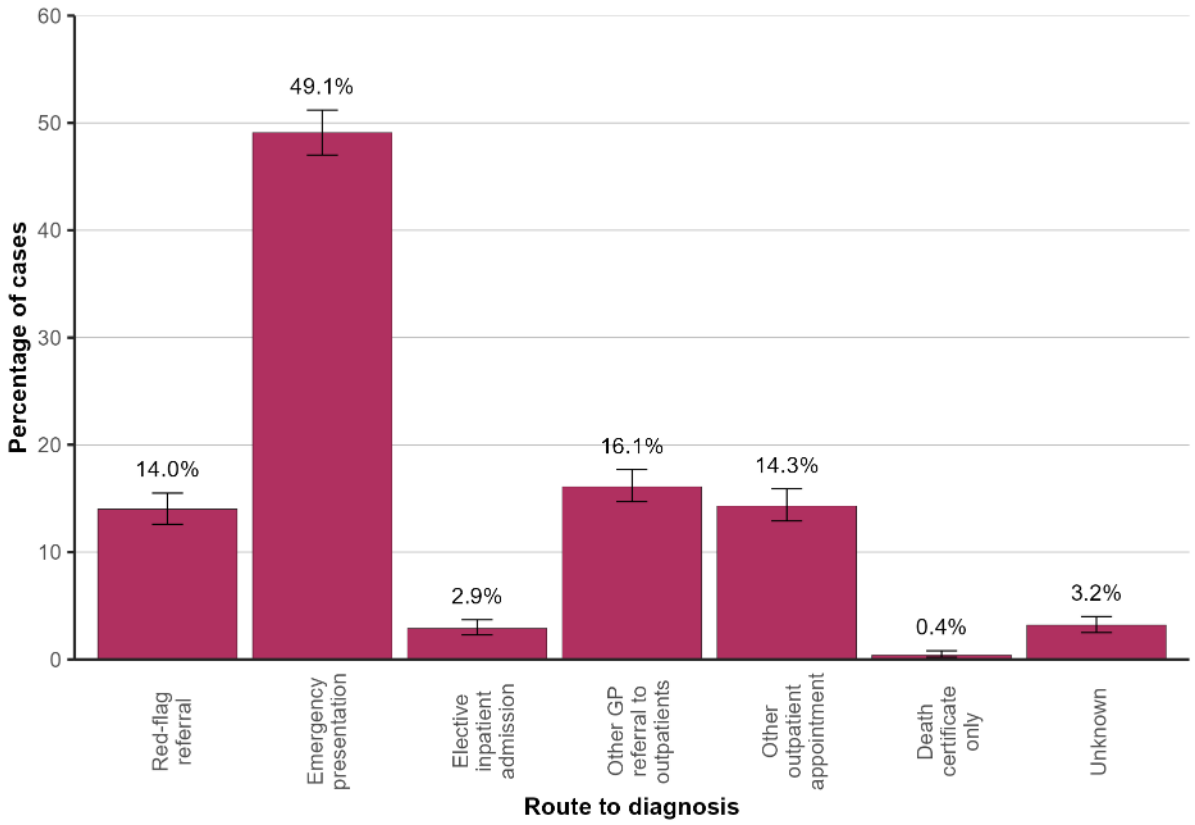


Table 10.1: Average number of hepatobiliary and pancreatic cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	76	14.0% (12.6% - 15.5%)
Emergency presentation	267	49.1% (47.0% - 51.2%)
Elective inpatient admission	16	2.9% (2.3% - 3.7%)
Other GP referral to outpatients	88	16.1% (14.7% - 17.7%)
Other outpatient appointment	78	14.3% (12.9% - 15.9%)
Death certificate only	2	0.4% (0.2% - 0.8%)
Unknown	17	3.2% (2.5% - 4.0%)

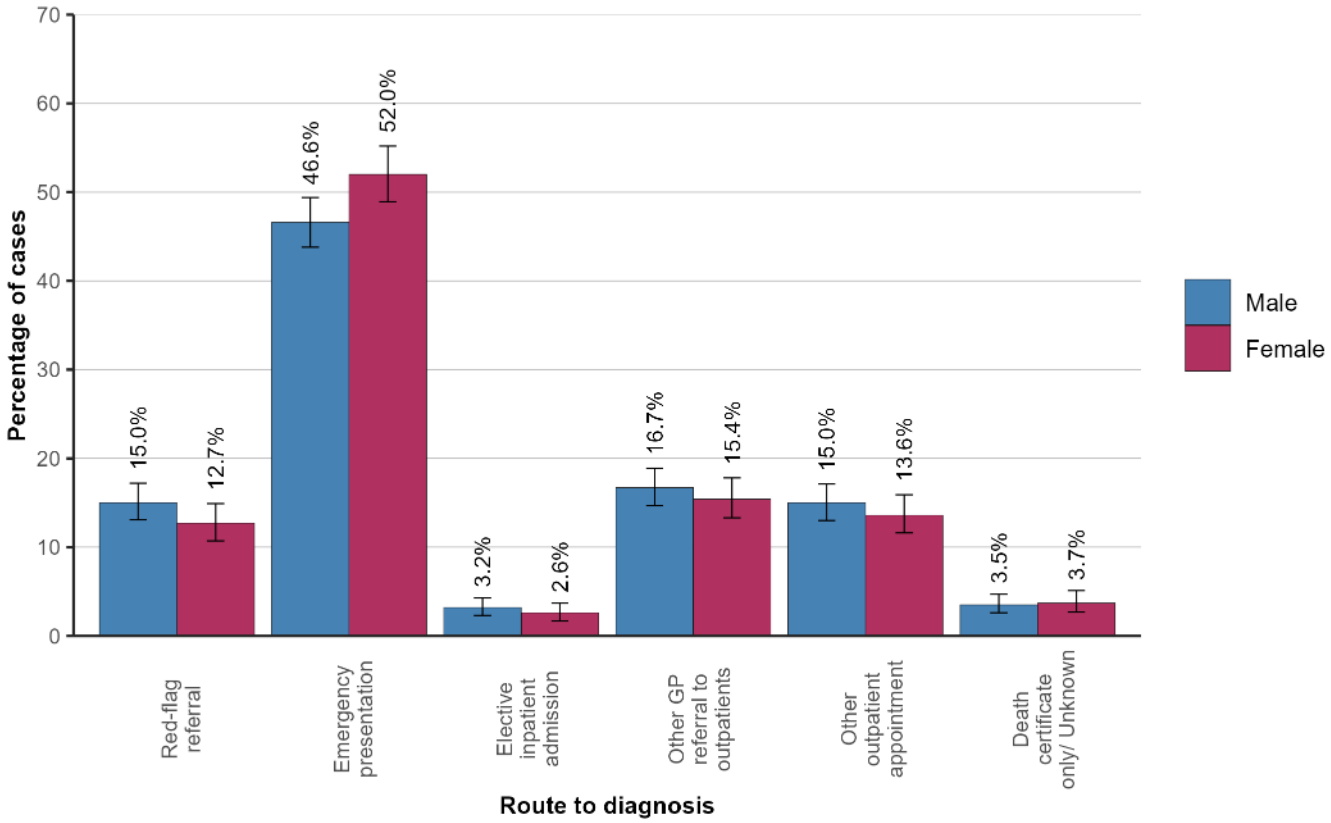
CI: Confidence Interval

10.1: Routes to diagnosis by gender

During 2018-2021 there were 140 male and 127 female cases of hepatobiliary and pancreatic cancer diagnosed each year where the route to diagnosis was an emergency presentation. This was the most common route to diagnosis for both men (46.6%) and women (52.0%).

Emergency presentation routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 10.2: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021 by gender

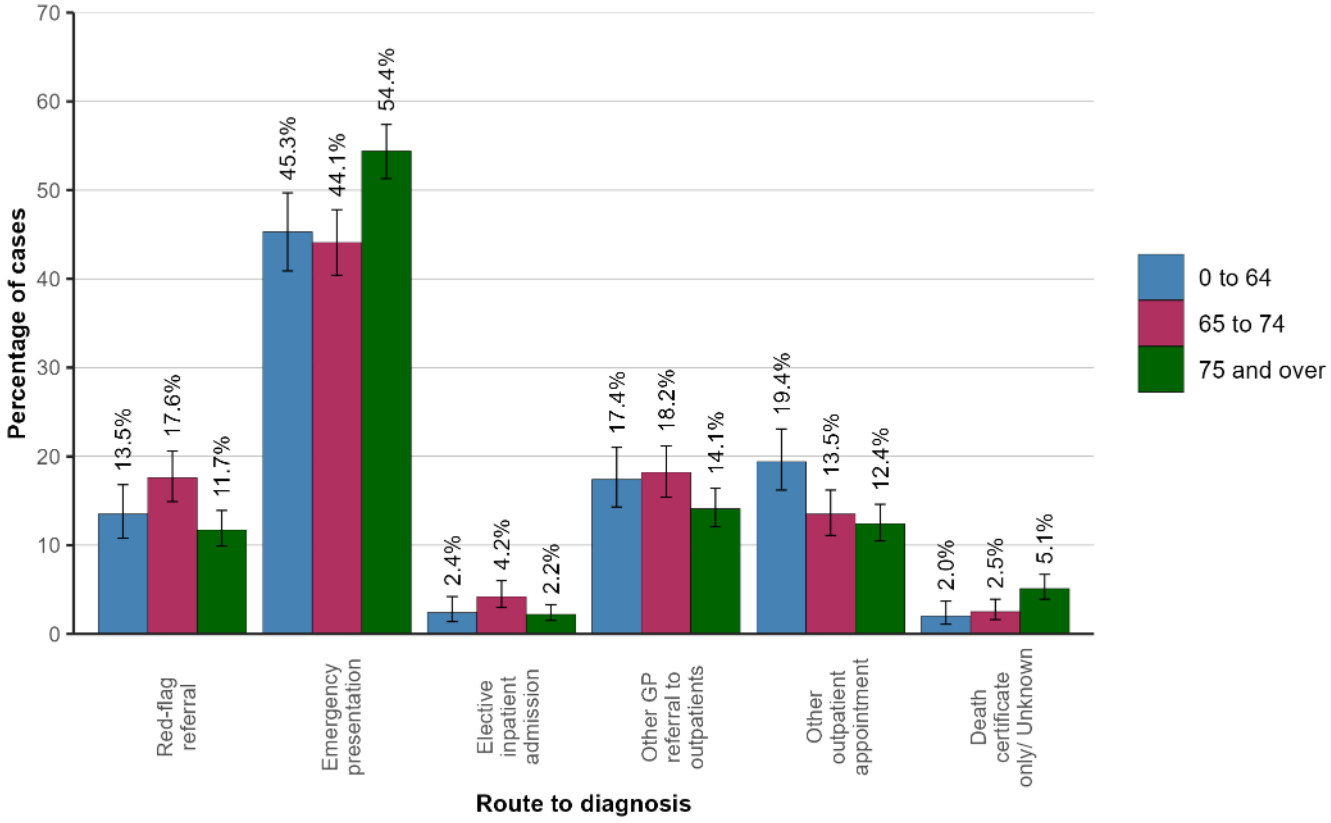


10.2: Routes to diagnosis by age group

During 2018-2021 the most common route to diagnosis for cases of hepatobiliary and pancreatic cancer overall was an emergency presentation. Among those aged 0 to 64 there were 56 (45.3%) diagnosed per year via this route, compared to 136 (54.4%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

Emergency presentation routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 10.3: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021 by age group



10.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of hepatobiliary and pancreatic cancer diagnosed via an emergency presentation ranged from 41.0% in Western HSCT to 53.5% in Southern HSCT. The proportions diagnosed via a red-flag referral ranged from 9.9% to 23.7% in Southern HSCT and Western HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of hepatobiliary and pancreatic cancer diagnosed via an emergency presentation was 48.3% in the most deprived areas compared to 50.3% in the least deprived areas. The proportions diagnosed via a red-flag referral were 14.8% and 10.2% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 10.4: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

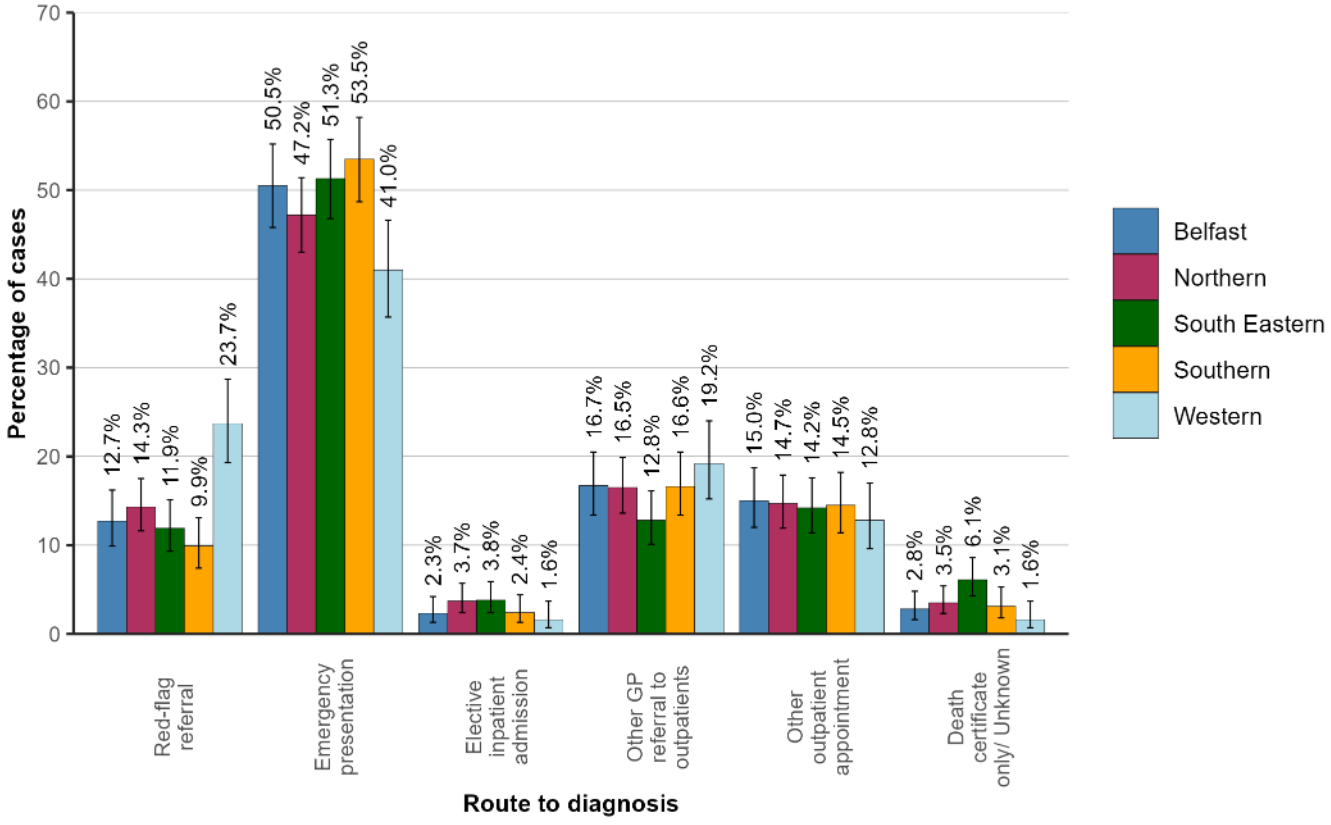
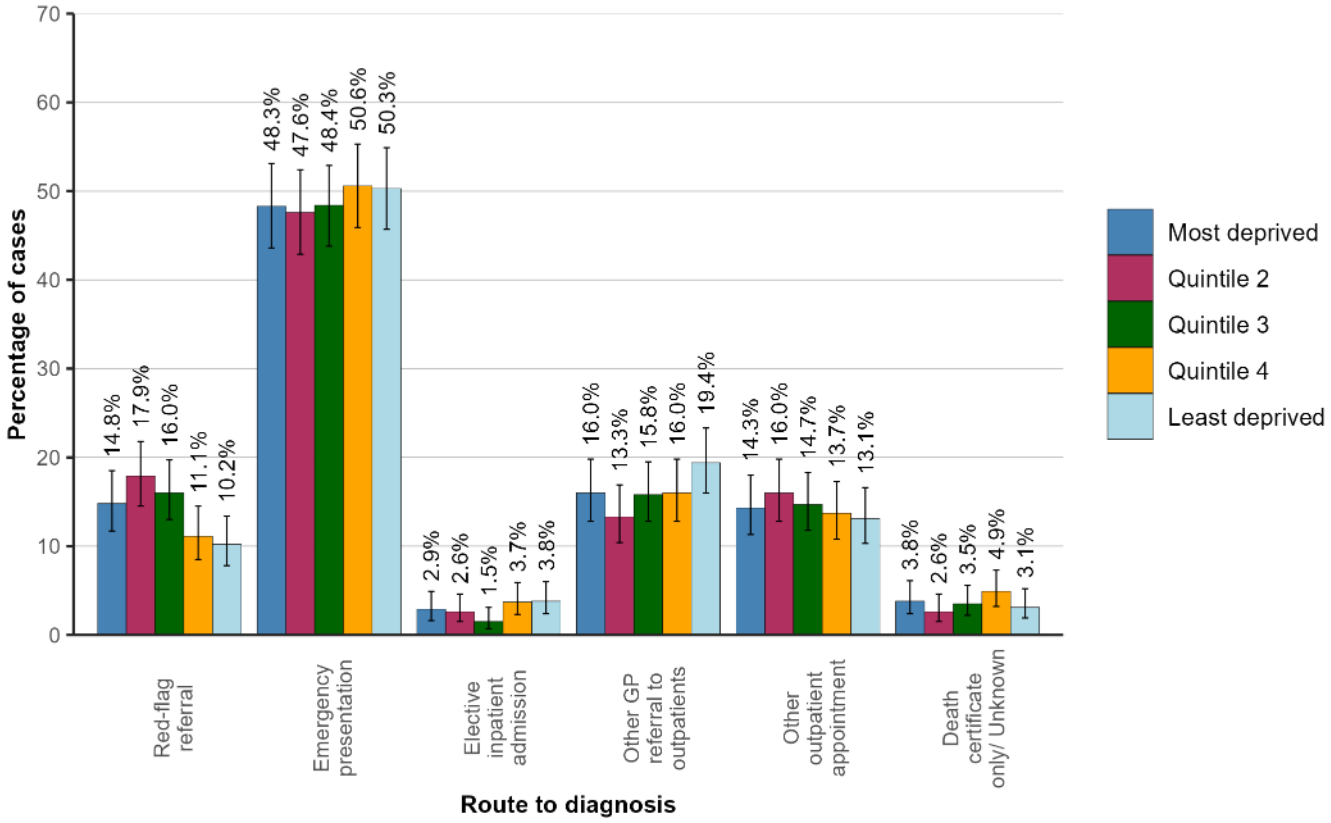


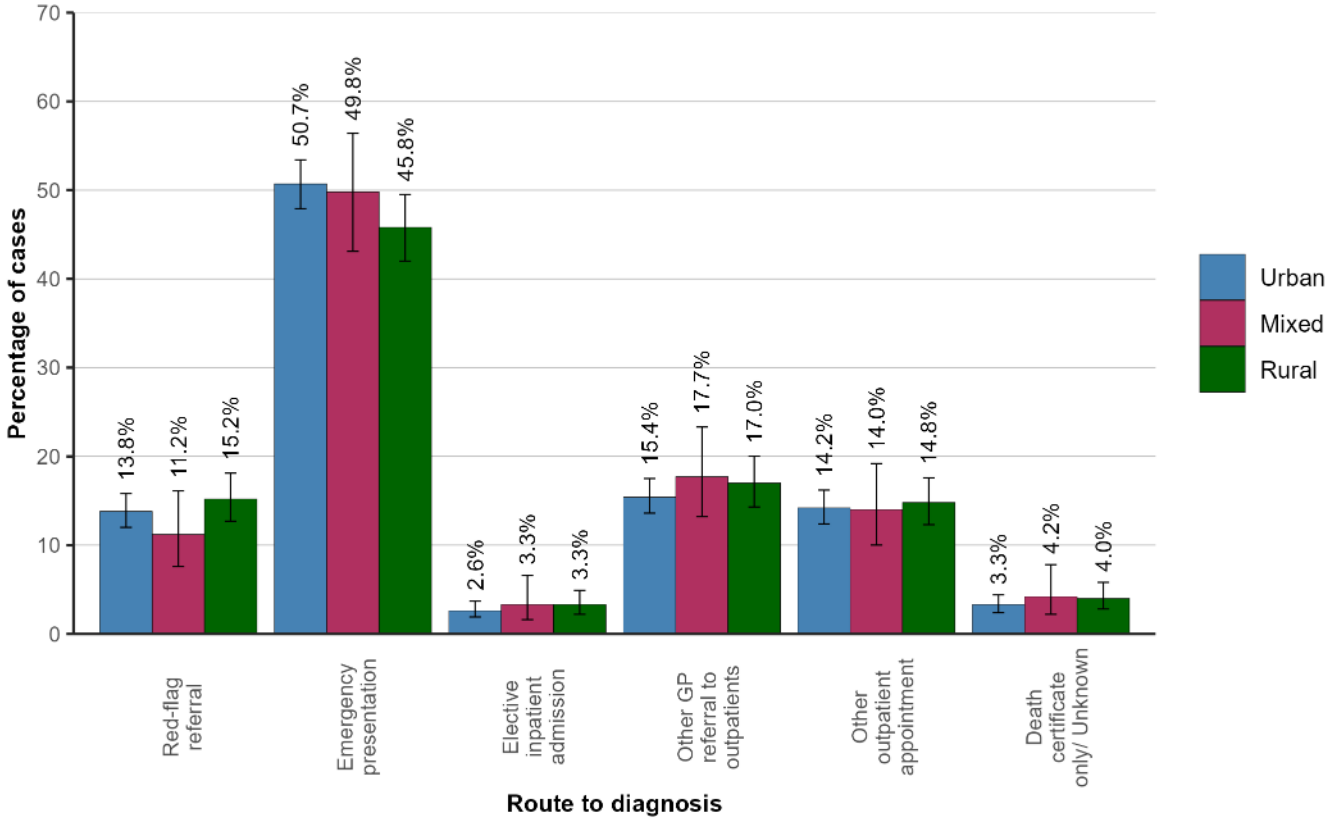
Figure 10.5: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of hepatobiliary and pancreatic cancer diagnosed via an emergency presentation was 50.7% in urban areas compared to 45.8% in rural areas. The proportions diagnosed via a red-flag referral were 13.8% and 15.2% in urban and rural areas respectively. The variation in route to diagnosis by urban/rural status was not statistically significant.

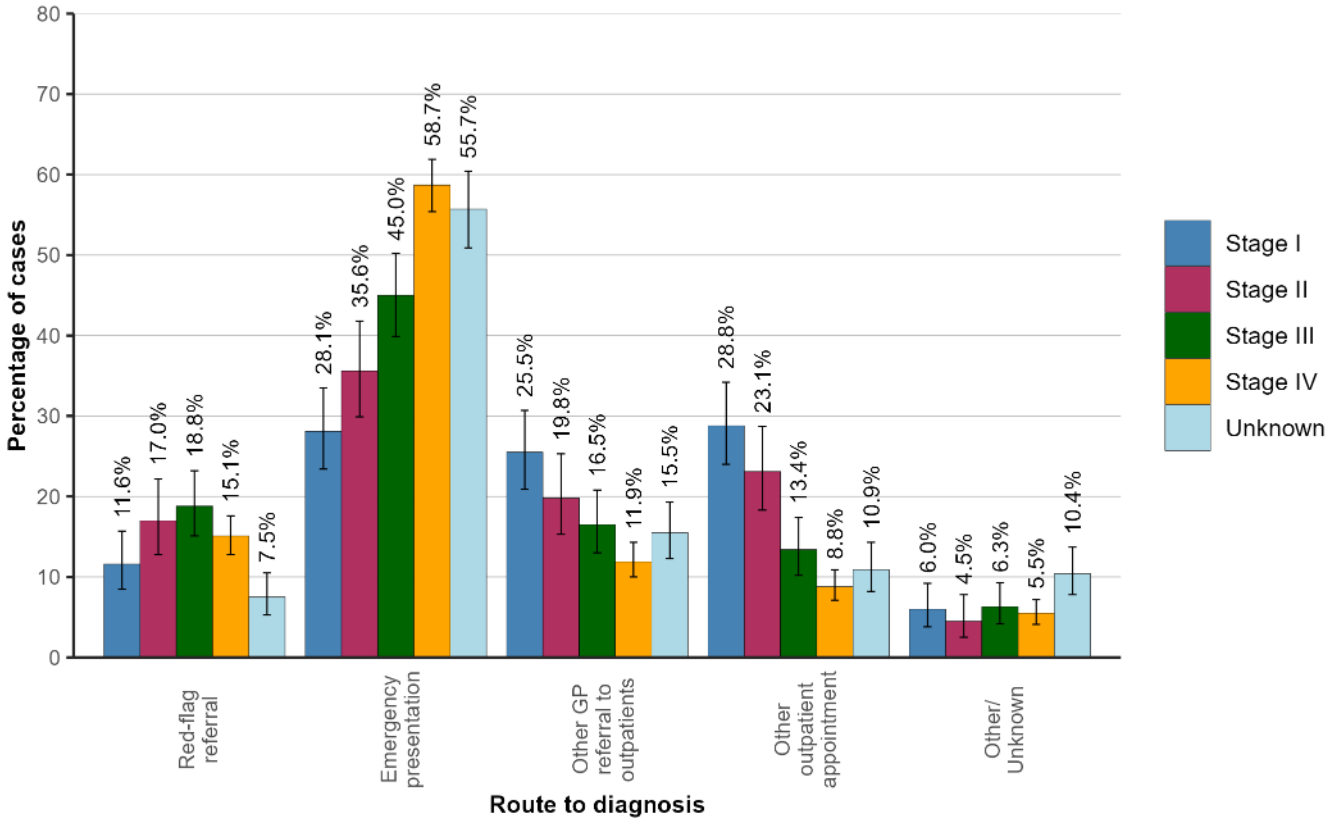
Figure 10.6: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021 by urban/rural status



10.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2021 the proportion of cases of hepatobiliary and pancreatic cancer diagnosed via an emergency presentation was 28.1% among stage I cancers compared to 58.7% among stage IV cancers. The proportions diagnosed via a red-flag referral were 11.6% and 15.1% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 10.7: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021 by stage at diagnosis



10.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

Liver cancer: The most common route to diagnosis among liver cancer patients during 2018-2021 was via an emergency presentation, with 57 (37.0%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 30 (19.1%) cases diagnosed on average each year. Red flag referrals made up 16.9% of cases during this period.

Pancreatic cancer: The most common route to diagnosis among pancreatic cancer patients during 2018-2021 was via an emergency presentation, with 145 (51.3%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 44 (15.4%) cases diagnosed on average each year. Red flag referrals made up 14.9% of cases during this period.

Gallbladder and biliary cancer: The most common route to diagnosis among gallbladder and biliary cancer patients during 2018-2021 was via an emergency presentation, with 65 (60.6%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 15 (13.8%) cases diagnosed on average each year. Red flag referrals made up 7.5% of cases during this period.

Figure 10.8: Route to diagnosis for liver cancer patients diagnosed in 2018-2021

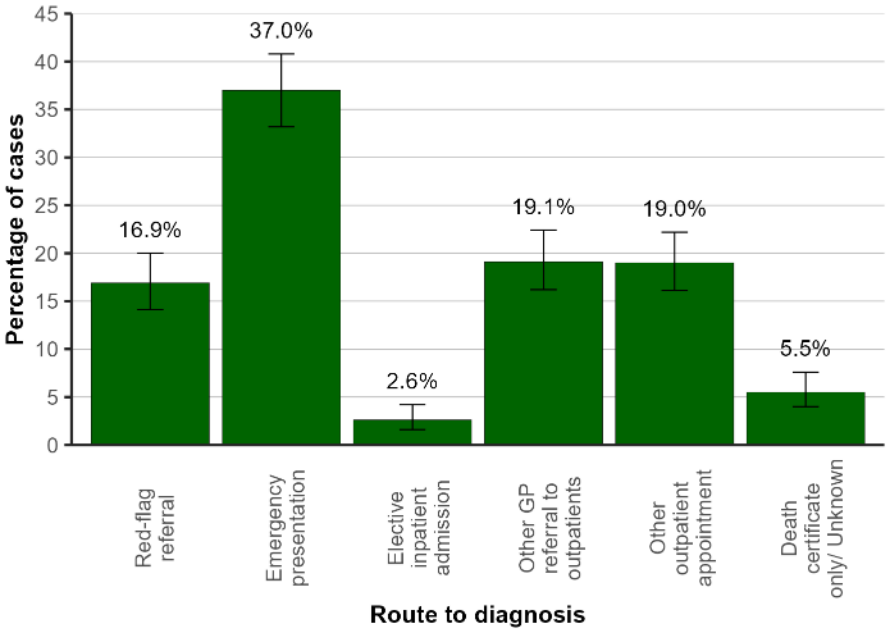


Figure 10.9: Route to diagnosis for pancreatic cancer patients diagnosed in 2018-2021

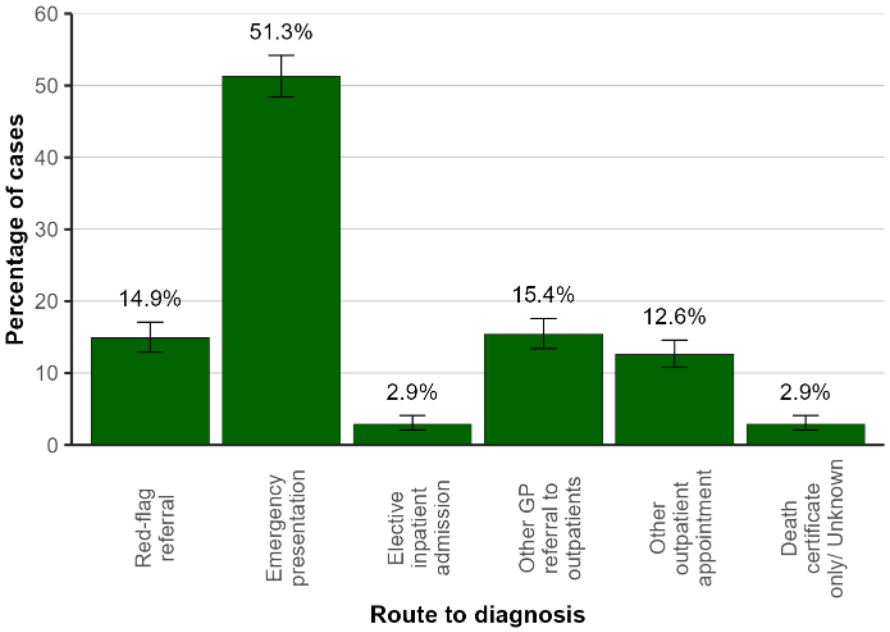
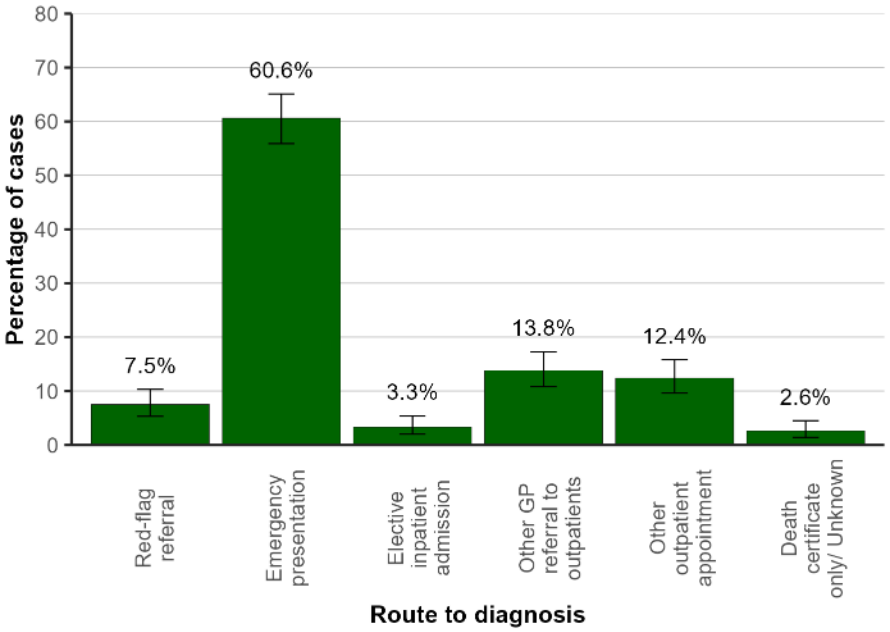


Figure 10.10: Route to diagnosis for gallbladder and biliary cancer patients diagnosed in 2018-2021



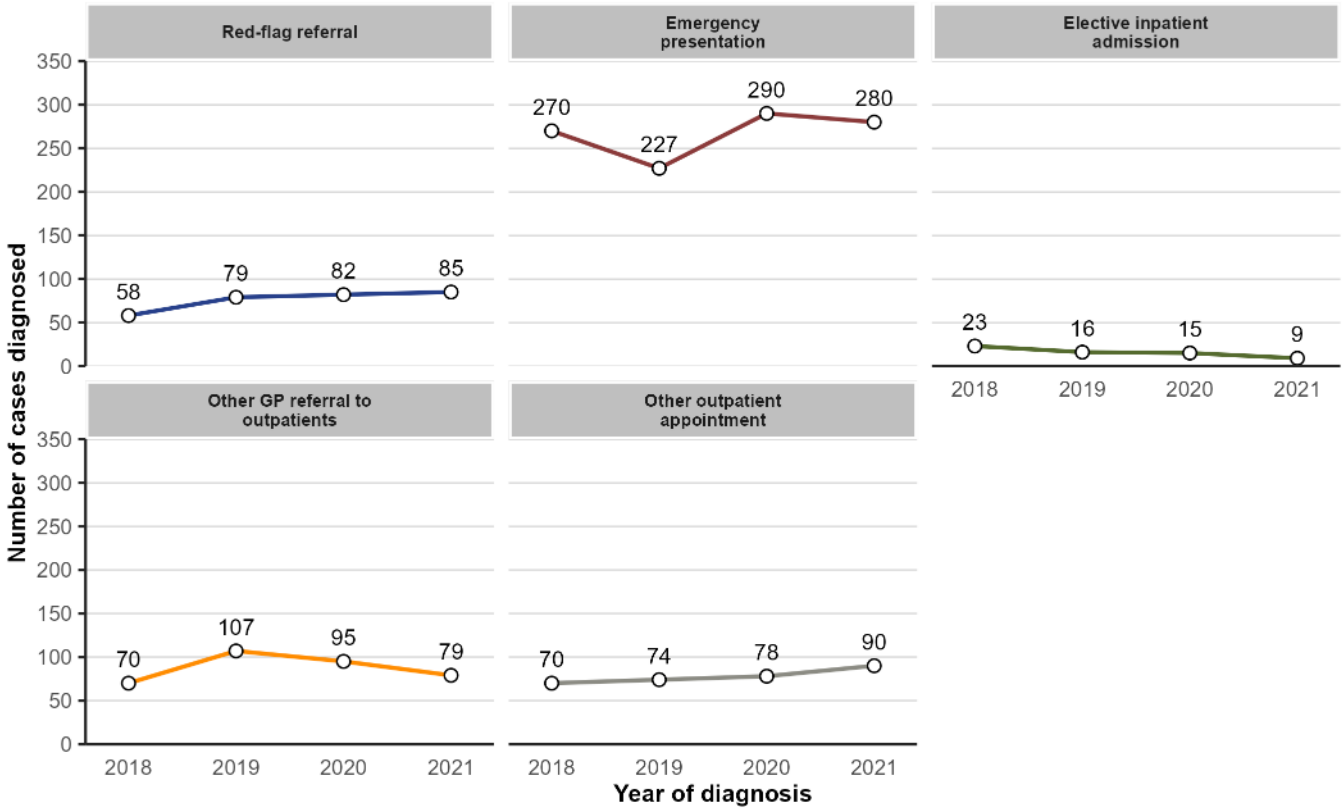
10.6: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of hepatobiliary and pancreatic cancer cases diagnosed via a red-flag referral increased by 3.7% from 82 in 2020 to 85 in 2021. As a proportion of all cases, a red-flag referral diagnosis increased from 14.1% in 2020 to 15.2% in 2021.

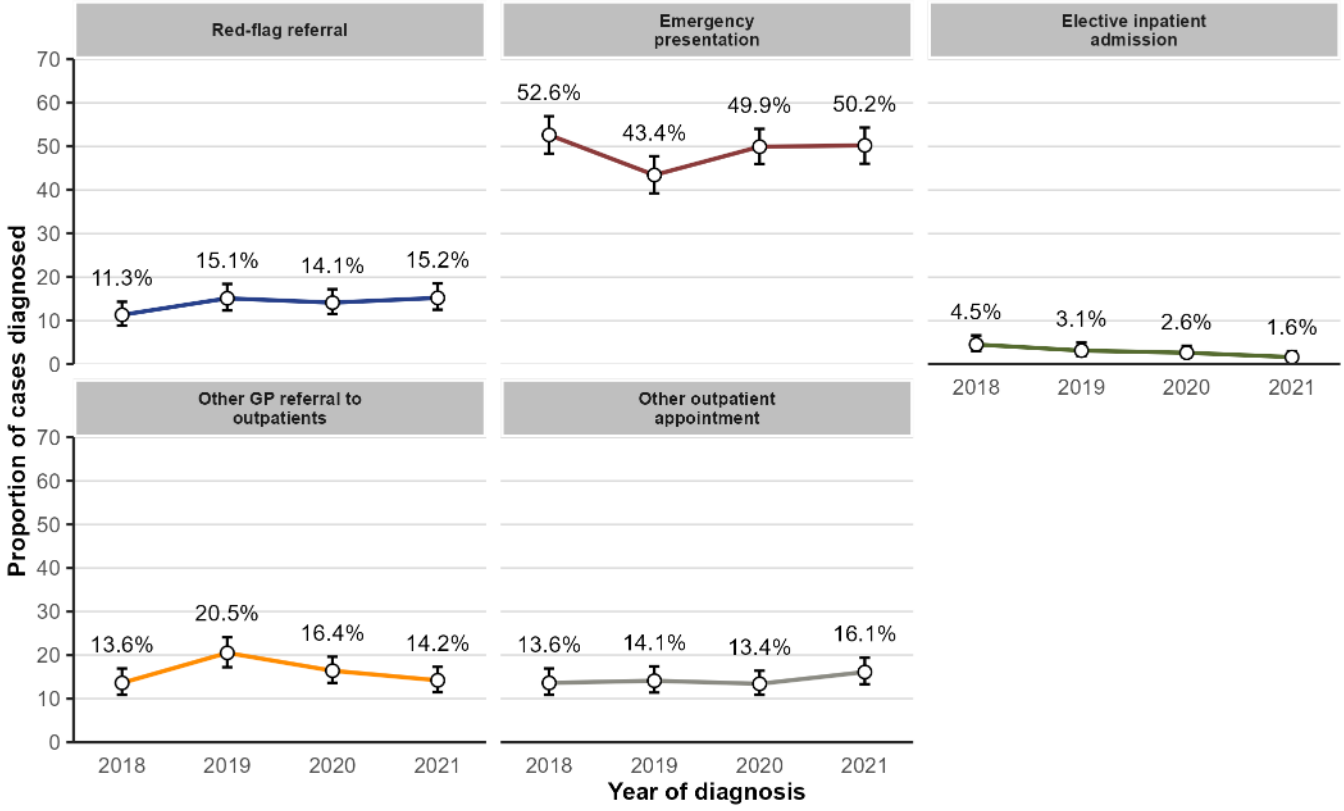
The number of hepatobiliary and pancreatic cancer cases diagnosed via an emergency presentation decreased by 3.4% from 290 in 2020 to 280 in 2021. As a proportion of all cases, an emergency presentation diagnosis increased from 49.9% in 2020 to 50.2% in 2021. The variation in route to diagnosis between the previous two years was not statistically significant.

Figure 10.11: Route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases



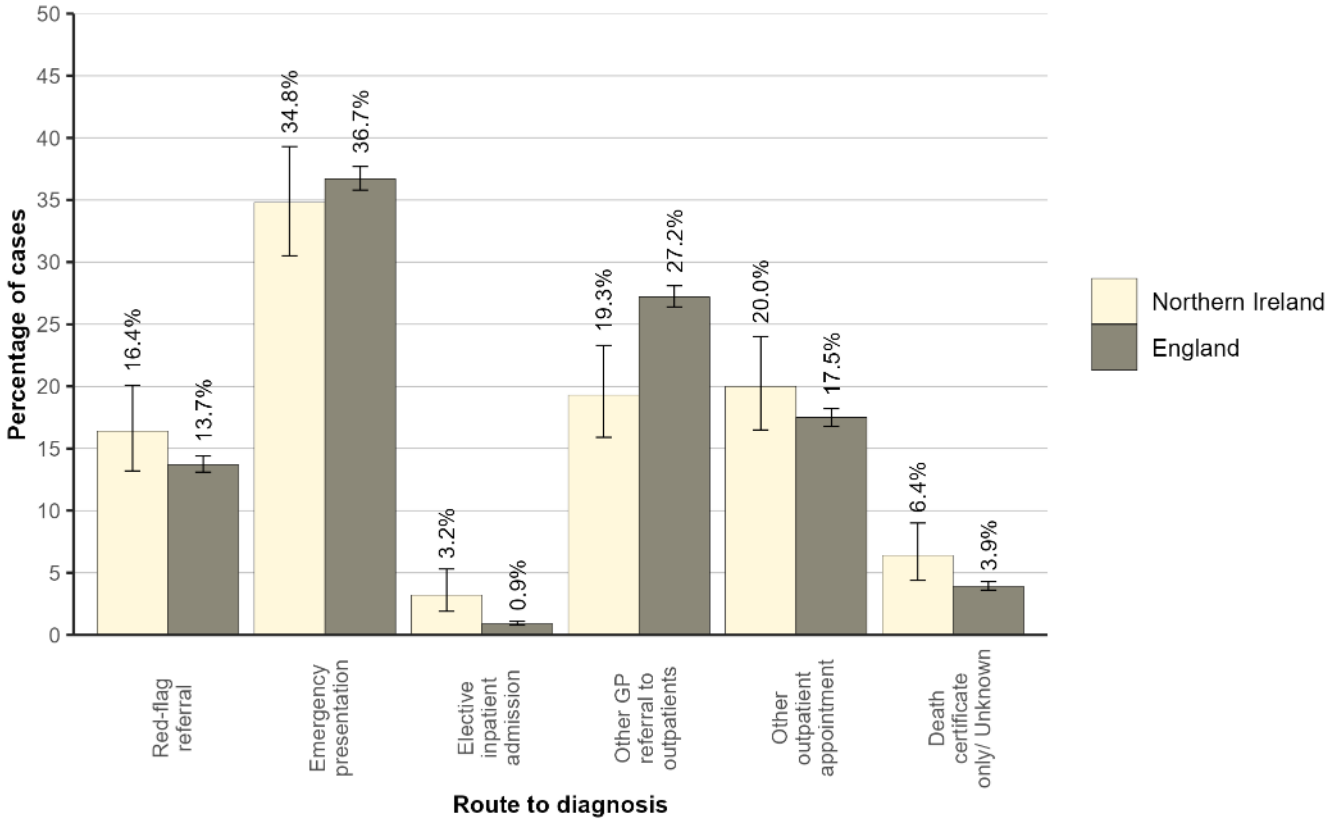
10.7: COMPARISON WITH ENGLAND

Liver cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with liver cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Elective inpatient admission (3.2% in NI compared to 0.9% in England; p<0.001).
- Other GP referral to outpatients (19.3% in NI compared to 27.2% in England; p<0.001).

Figure 10.12: Route to diagnosis for liver cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



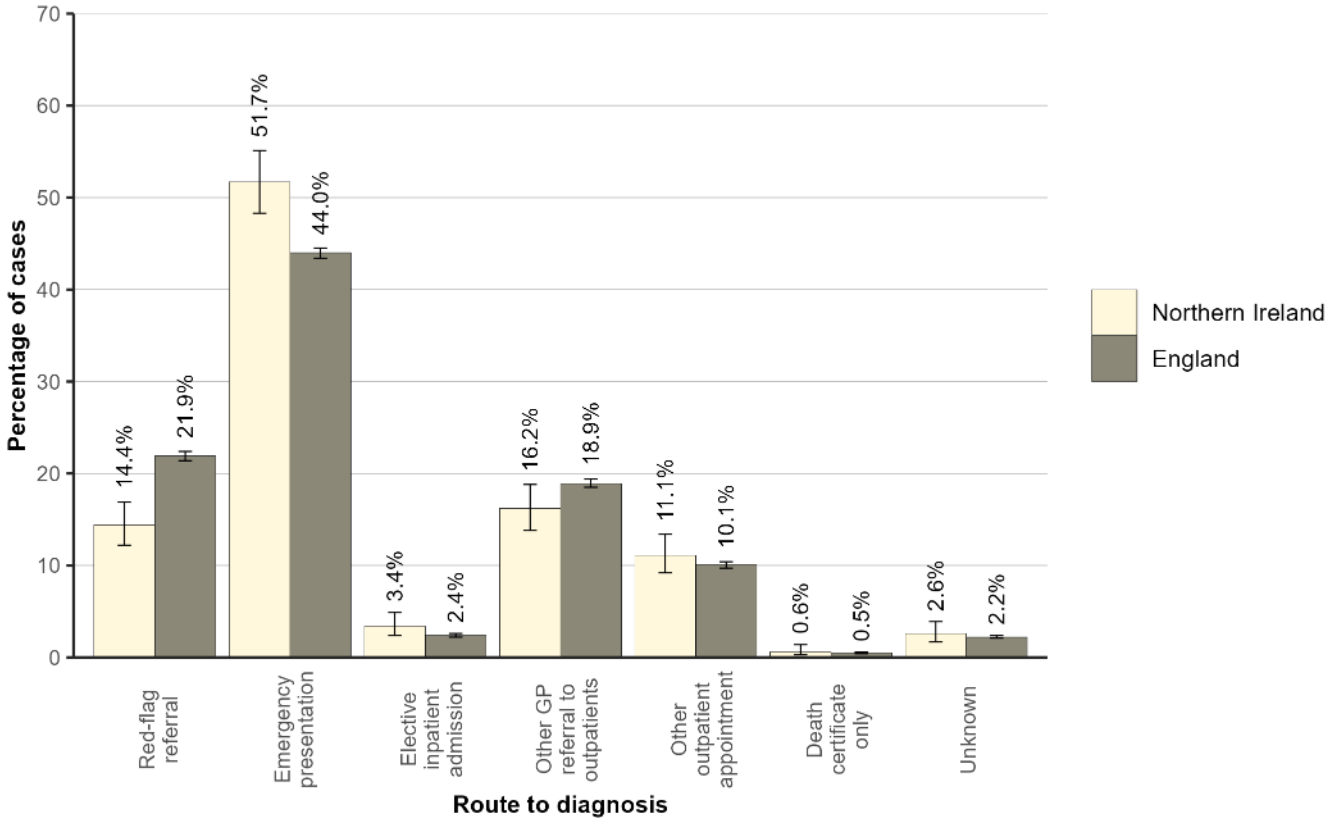
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

Pancreatic cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with pancreatic cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Red-flag referral (14.4% in NI compared to 21.9% in England; p<0.001).
- Emergency presentation (51.7% in NI compared to 44.0% in England; p<0.001).

Figure 10.13: Route to diagnosis for pancreatic cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



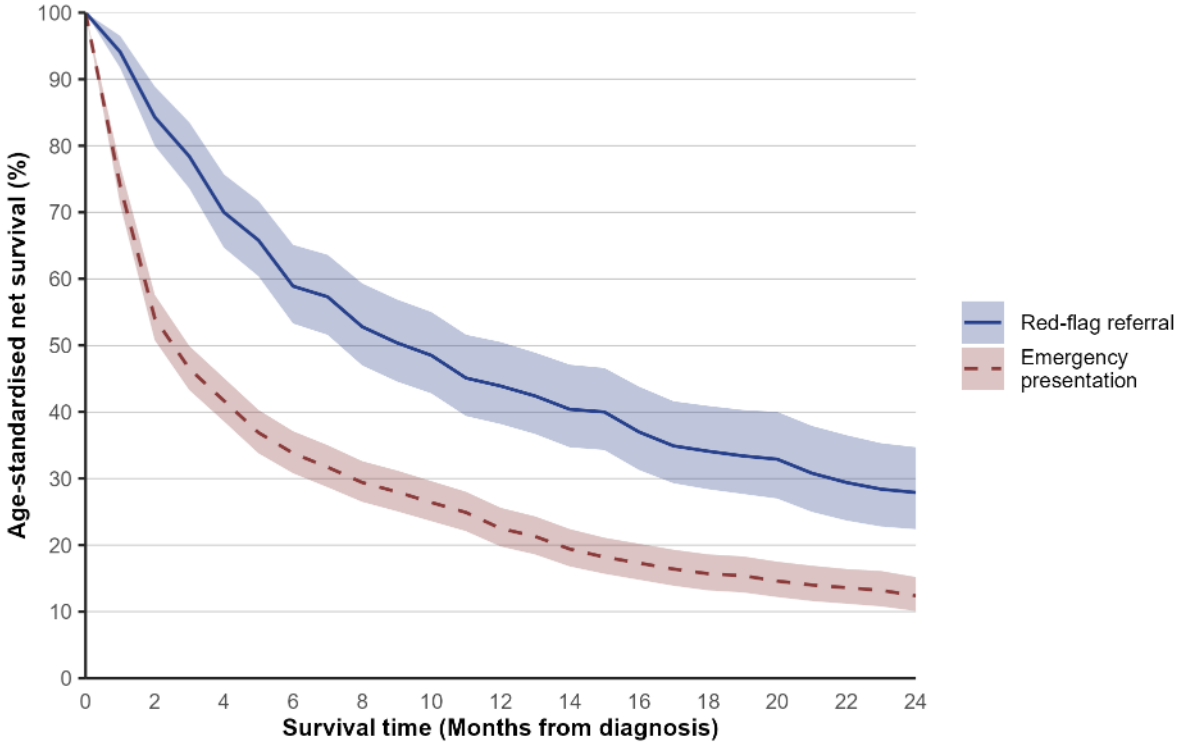
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

10.8: SURVIVAL

During 2018-2021 one-year age-standardised net survival from hepatobiliary and pancreatic cancer ranged from 22.5% for those diagnosed via an emergency presentation route to 56.0% for those diagnosed via another outpatient appointment route. Two years from diagnosis age-standardised net survival ranged from 12.4% for those diagnosed via an emergency presentation route to 41.1% for those diagnosed via another outpatient appointment route.

Figure 10.14: Age-standardised net survival by route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

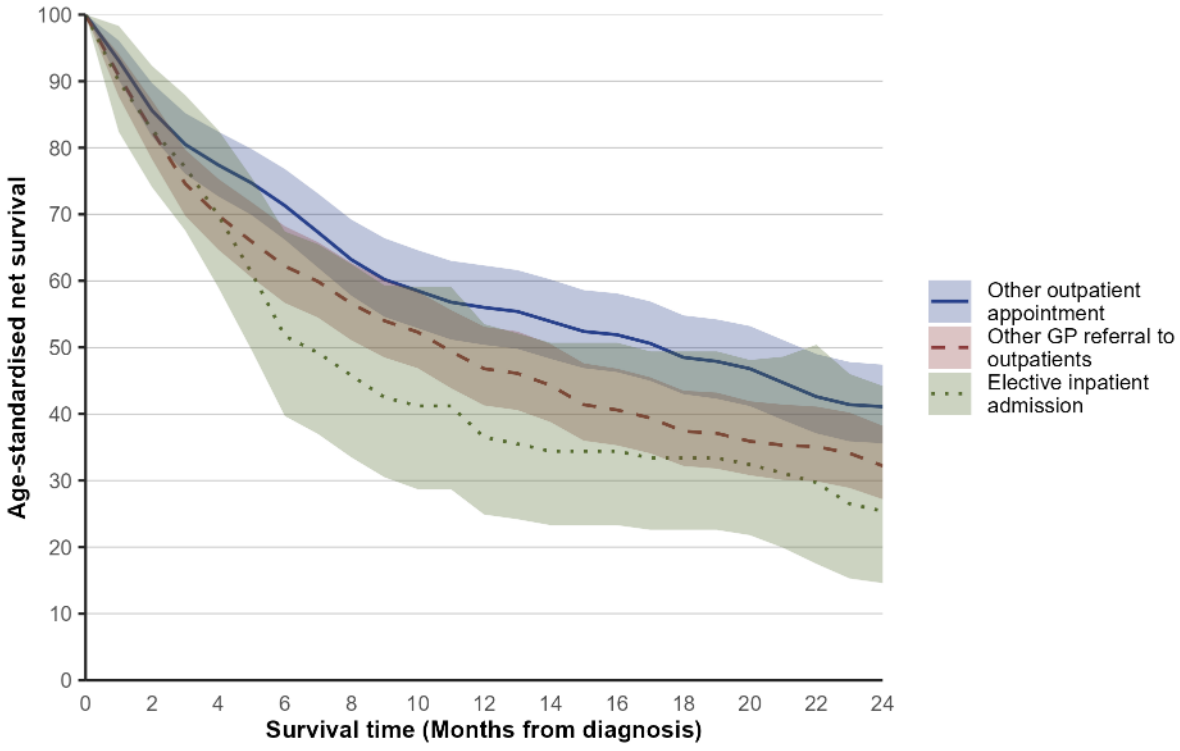


Table 10.2: Age-standardised net survival by route to diagnosis for hepatobiliary and pancreatic cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	43.9% (38.2% - 50.5%)	27.9% (22.4% - 34.7%)
Emergency presentation	22.5% (19.8% - 25.6%)	12.4% (10.1% - 15.2%)
Elective inpatient admission	36.5% (24.9% - 53.5%)	25.4% (14.6% - 44.2%)
Other GP referral to outpatients	46.8% (41.3% - 53.1%)	32.2% (27.2% - 38.2%)
Other outpatient appointment	56.0% (50.4% - 62.3%)	41.1% (35.6% - 47.4%)
Unknown	34.7% (23.9% - 50.5%)	28.7% (18.5% - 44.5%)

ASNS: Age-standardised net survival with 95% confidence interval.

11: Gynaecological Cancer

The most common route to diagnosis among gynaecological cancer patients during 2018-2021 was via a red-flag referral, with 250 (41.6%) cases diagnosed on average each year. This was followed by an emergency presentation route with 116 (19.2%) cases diagnosed on average each year. Screening referrals made up 5.4% of cases during this period.

Figure 11.1: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2021

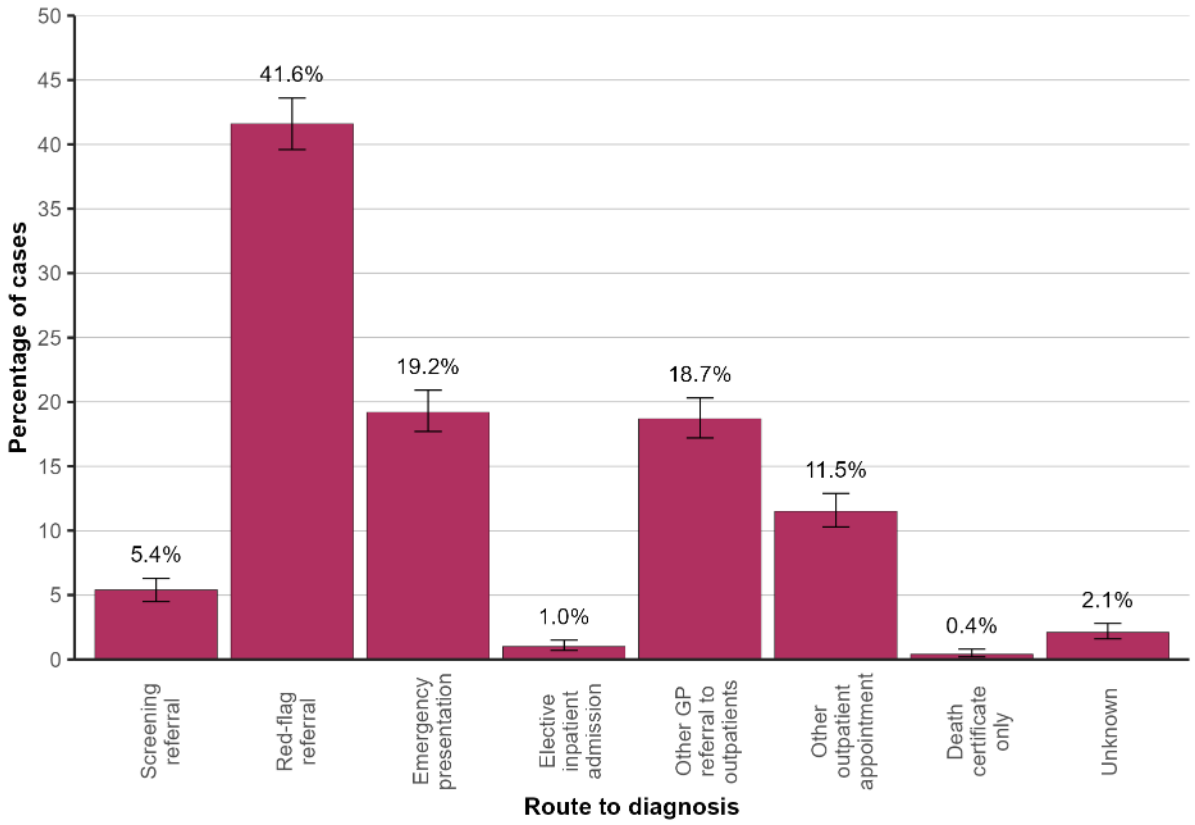


Table 11.1: Average number of gynaecological cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Screening referral	32	5.4% (4.5% - 6.3%)
Red-flag referral	250	41.6% (39.6% - 43.6%)
Emergency presentation	116	19.2% (17.7% - 20.9%)
Elective inpatient admission	6	1.0% (0.7% - 1.5%)
Other GP referral to outpatients	113	18.7% (17.2% - 20.3%)
Other outpatient appointment	69	11.5% (10.3% - 12.9%)
Death certificate only	3	0.4% (0.2% - 0.8%)
Unknown	13	2.1% (1.6% - 2.8%)

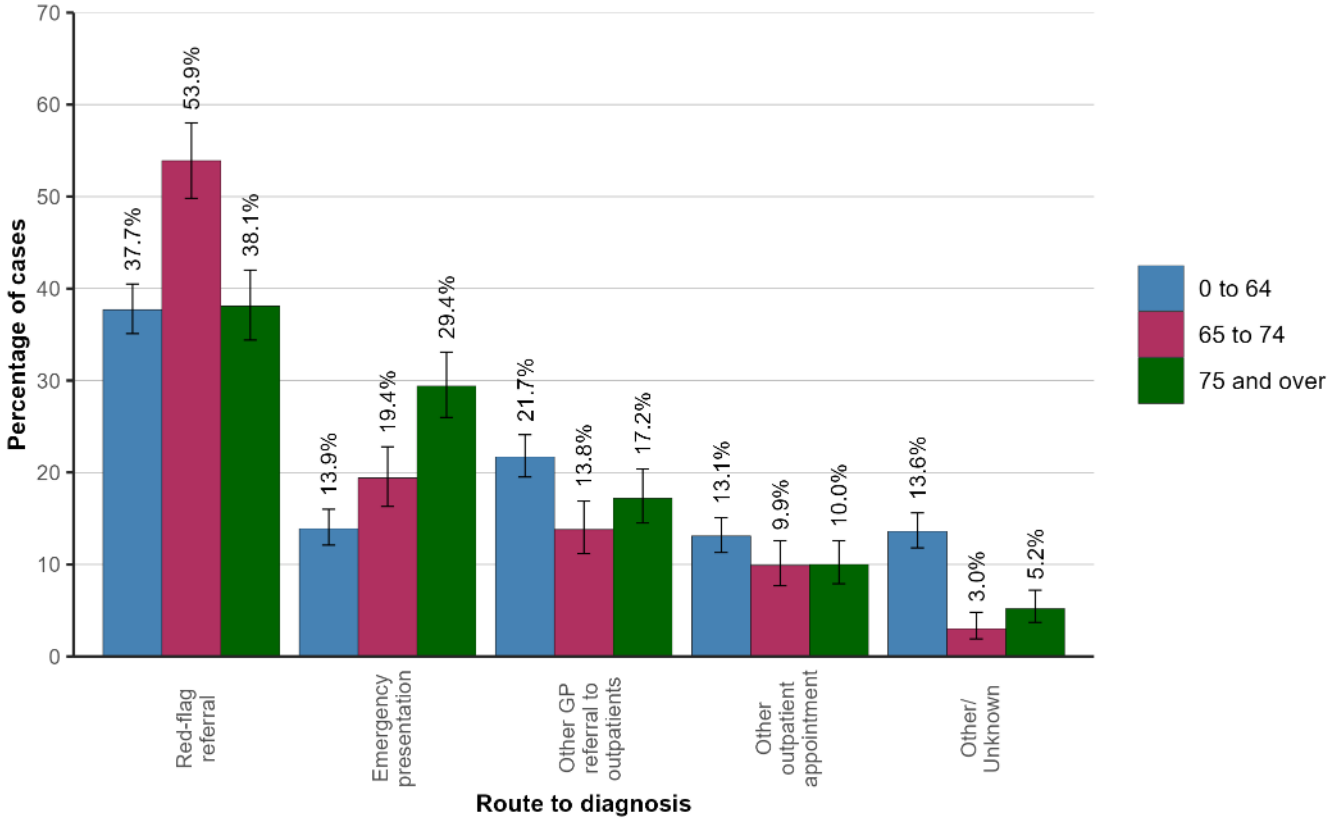
CI: Confidence Interval

11.1: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of gynaecological cancer overall was a red-flag referral. Among those aged 0 to 64 there were 115 (37.7%) diagnosed per year via this route, compared to 60 (38.1%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 13.9% of those aged 0 to 64 and 29.4% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 11.2: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2021 by age group



11.2: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of gynaecological cancer diagnosed via a red-flag referral ranged from 36.3% in Belfast HSCT to 47.1% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 15.0% to 22.3% in Western HSCT and South Eastern HSCT respectively. Screening referral was the route taken in 4.4% of cases in Southern HSCT and 8.1% of cases in Western HSCT. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p = 0.006$).

Figure 11.3: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

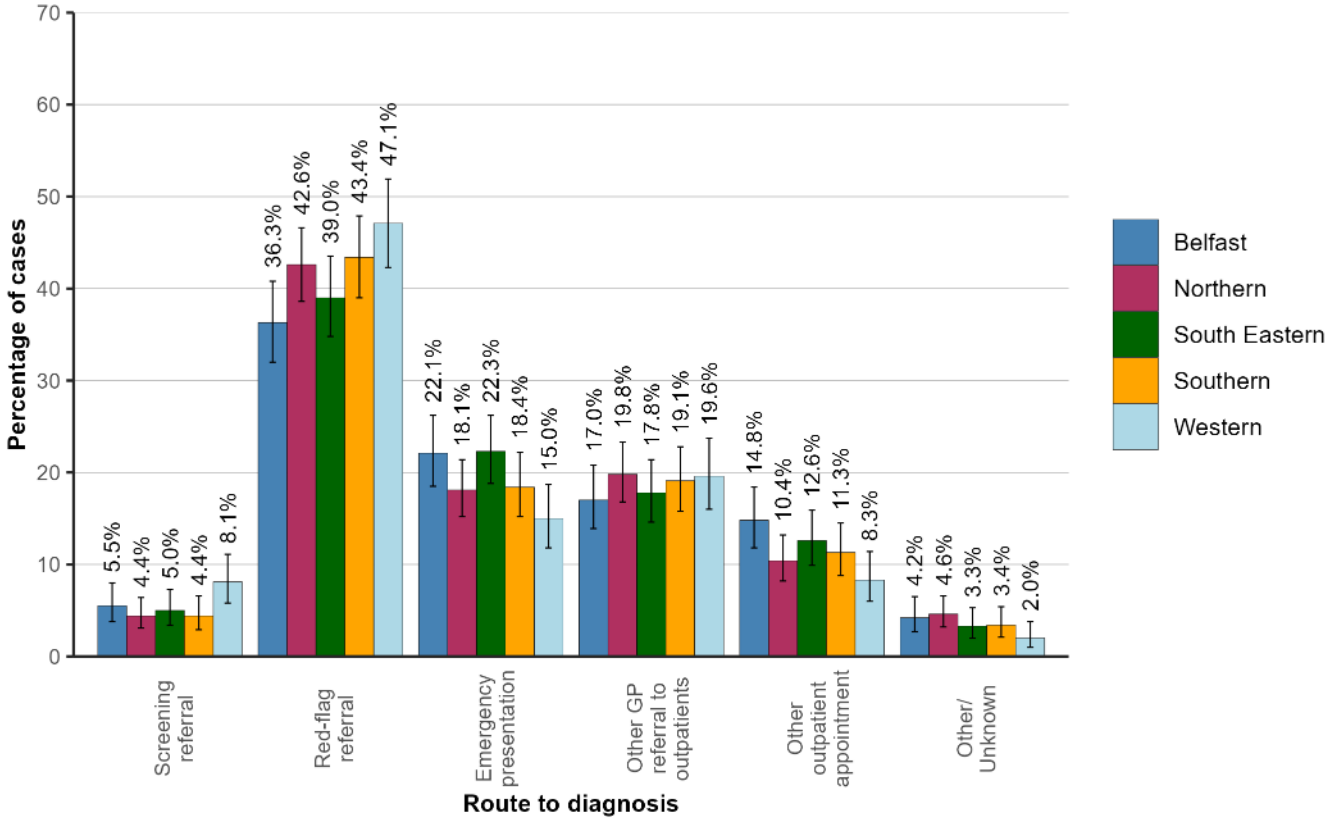
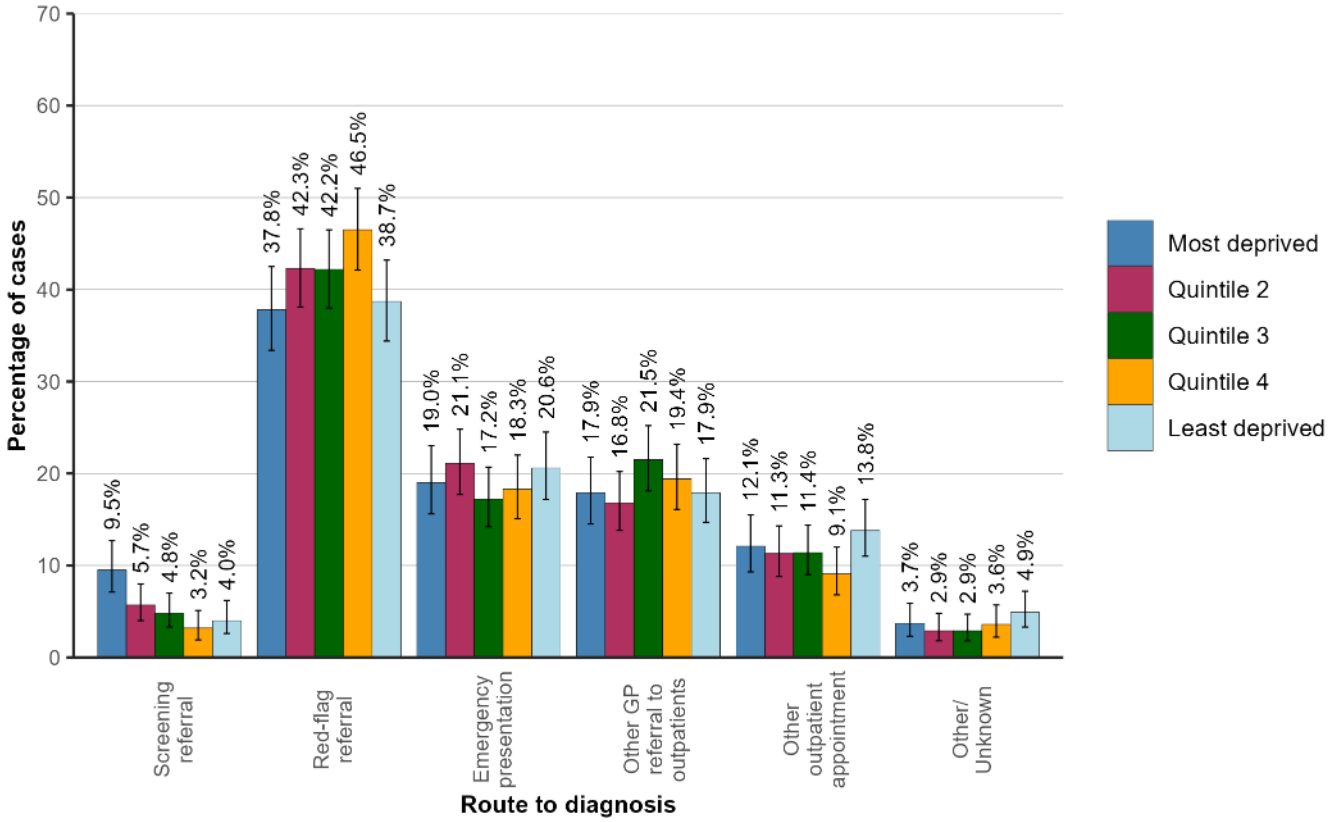


Figure 11.4: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2021 by deprivation quintile



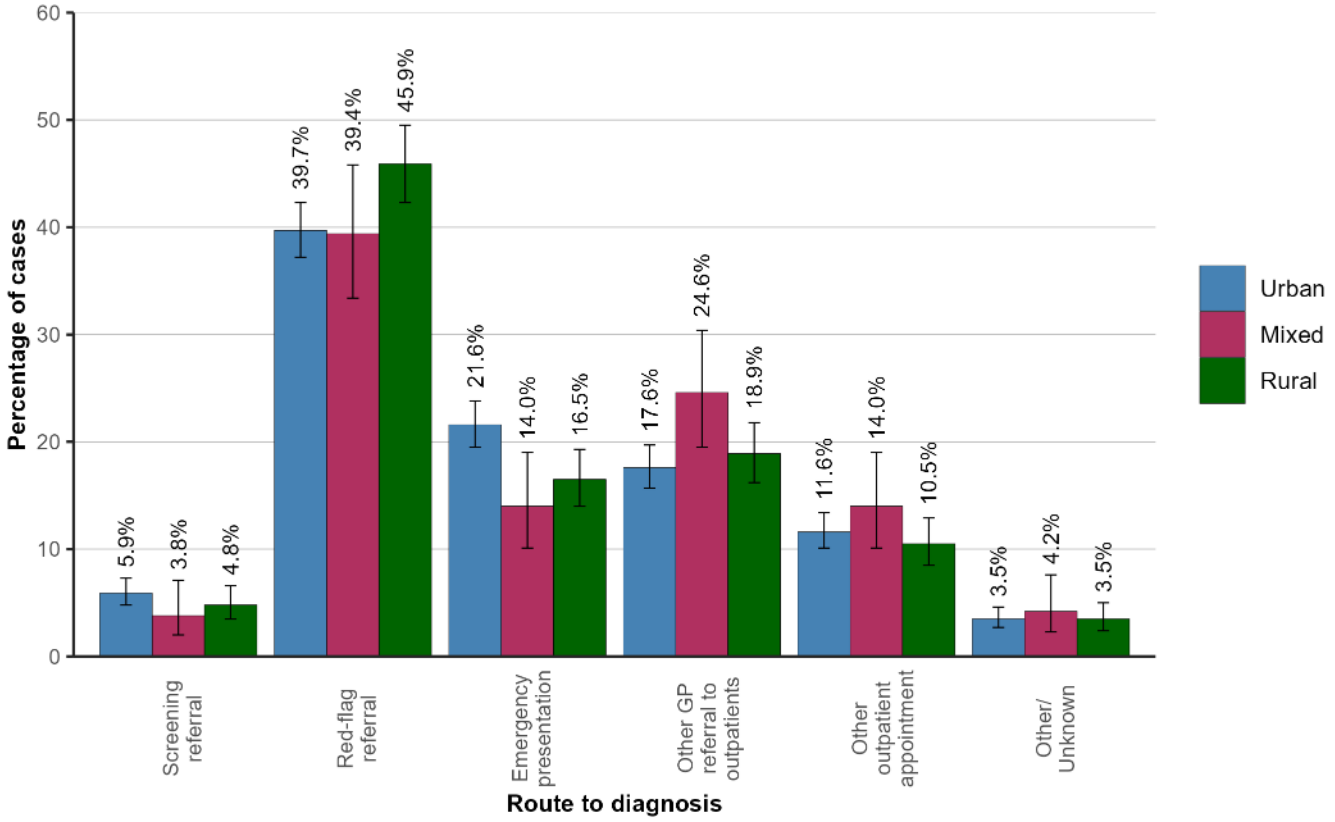
Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of gynaecological cancer diagnosed via a red-flag referral was 37.8% in the most deprived areas compared to 38.7% in the least deprived areas. The proportions diagnosed via an emergency presentation were 19.0% and 20.6% in the most and least deprived areas respectively. Screening referral was the route taken in 9.5% of cases from the most deprived areas and 4.0% of cases in the least deprived areas. The variation in route to diagnosis by deprivation quintile was statistically significant (p = 0.005).

Urban/Rural status

During 2018-2021 the proportion of cases of gynaecological cancer diagnosed via a red-flag referral was 39.7% in urban areas compared to 45.9% in rural areas. The proportions diagnosed via an emergency presentation were 21.6% and 16.5% in urban and rural areas respectively. Screening referral was the route taken in 5.9% of cases from urban areas and 4.8% of cases in rural areas. The variation in route to diagnosis by urban/rural status was statistically significant (p = 0.005).

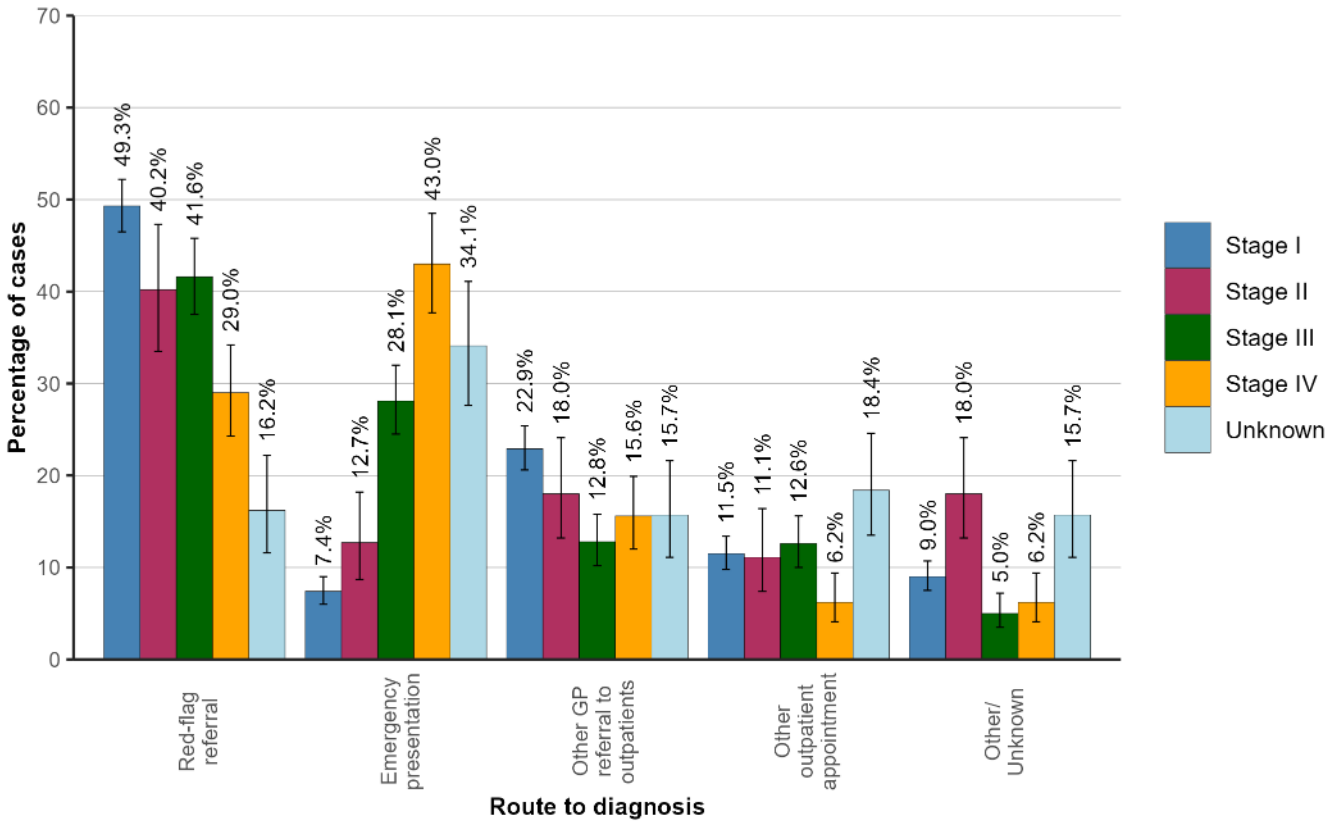
Figure 11.5: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2021 by urban/rural status



11.3: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2021 the proportion of cases of gynaecological cancer diagnosed via a red-flag referral was 49.3% among stage I cancers compared to 29.0% among stage IV cancers. The proportions diagnosed via an emergency presentation were 7.4% and 43.0% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 11.6: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2021 by stage at diagnosis



11.4: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

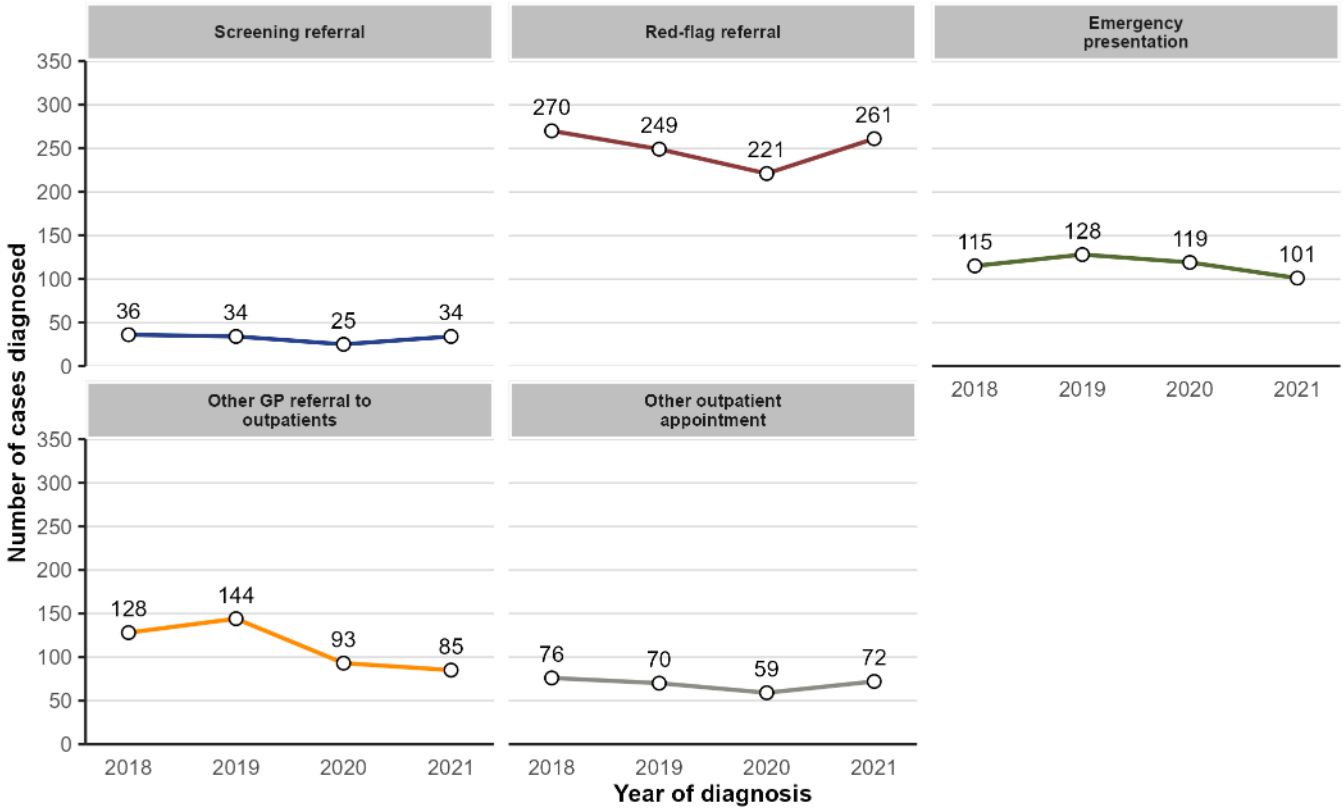
The number of gynaecological cancer cases diagnosed via a screening referral increased by 36.0% from 25 in 2020 to 34 in 2021. As a proportion of all cases, a screening referral diagnosis increased from 4.7% in 2020 to 6.0% in 2021.

The number of gynaecological cancer cases diagnosed via a red-flag referral increased by 18.1% from 221 in 2020 to 261 in 2021. As a proportion of all cases, a red-flag referral diagnosis increased from 41.2% in 2020 to 46.0% in 2021.

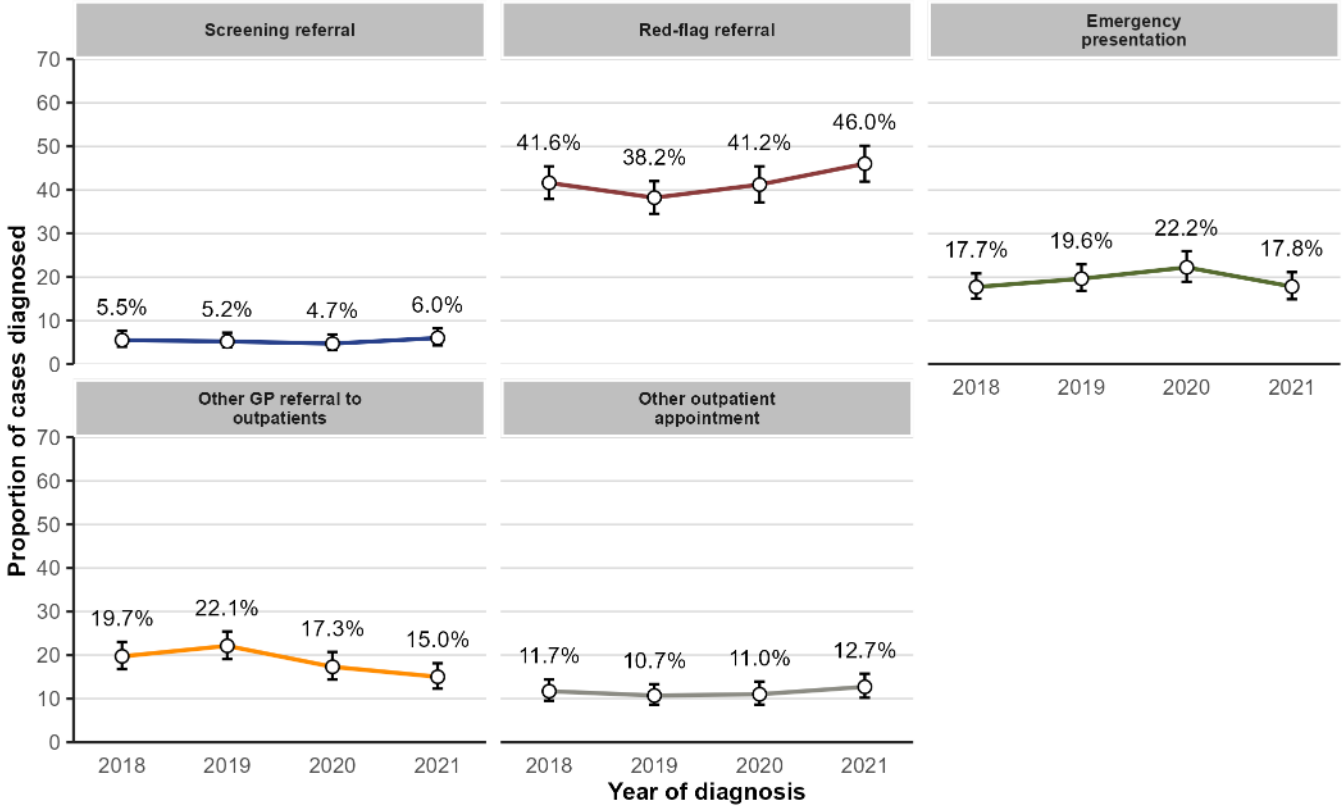
The number of gynaecological cancer cases diagnosed via an emergency presentation decreased by 15.1% from 119 in 2020 to 101 in 2021. As a proportion of all cases, an emergency presentation diagnosis decreased from 22.2% in 2020 to 17.8% in 2021. The variation in route to diagnosis between the previous two years was not statistically significant.

Figure 11.7: Route to diagnosis for gynaecological cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



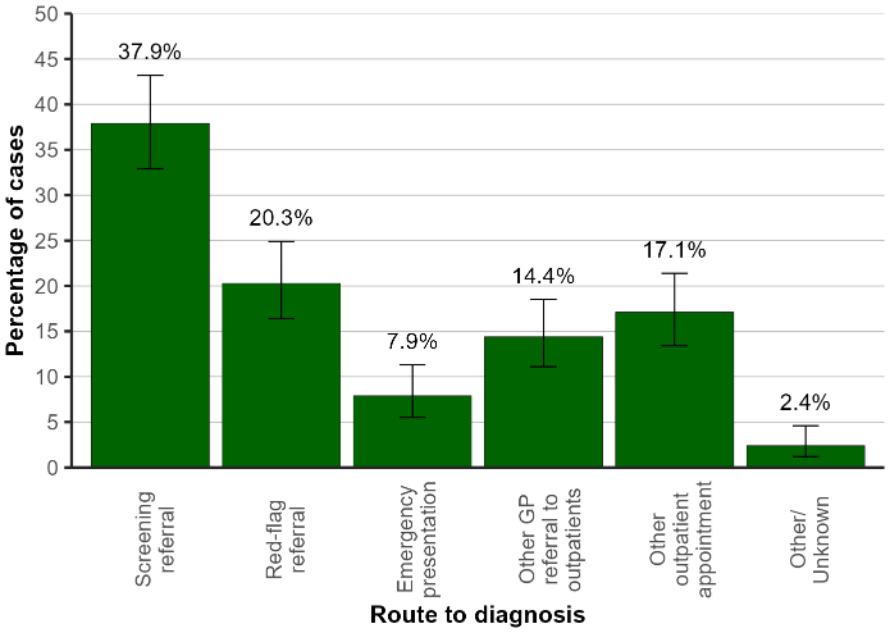
(b) Proportion of cases



11.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

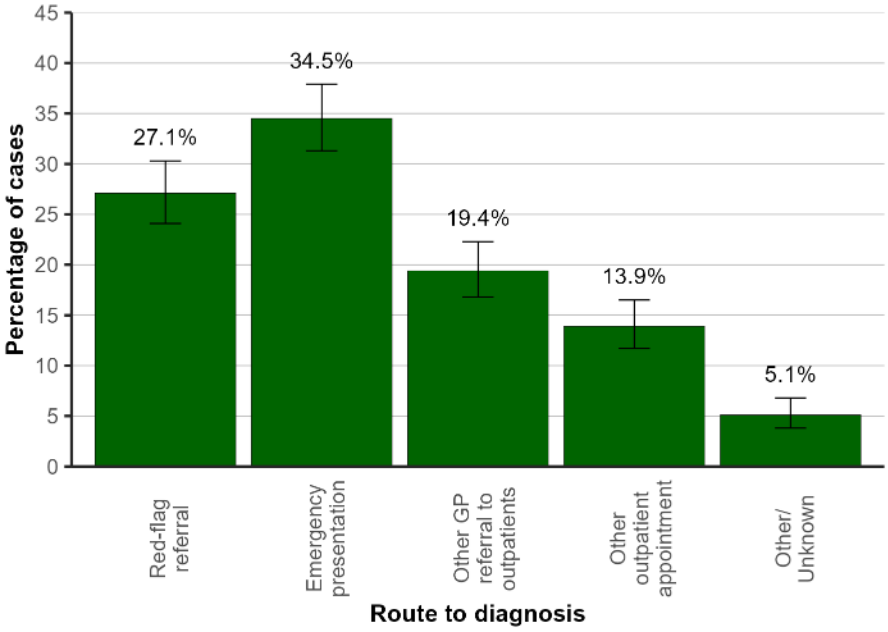
Cervical cancer: The most common route to diagnosis among cervical cancer patients during 2018-2021 was via a screening referral, with 32 (37.9%) cases diagnosed on average each year. This was followed by a red-flag referral route with 17 (20.3%) cases diagnosed on average each year. Emergency presentations made up 7.9% of cases during this period.

Figure 11.8: Route to diagnosis for cervical cancer patients diagnosed in 2018-2021



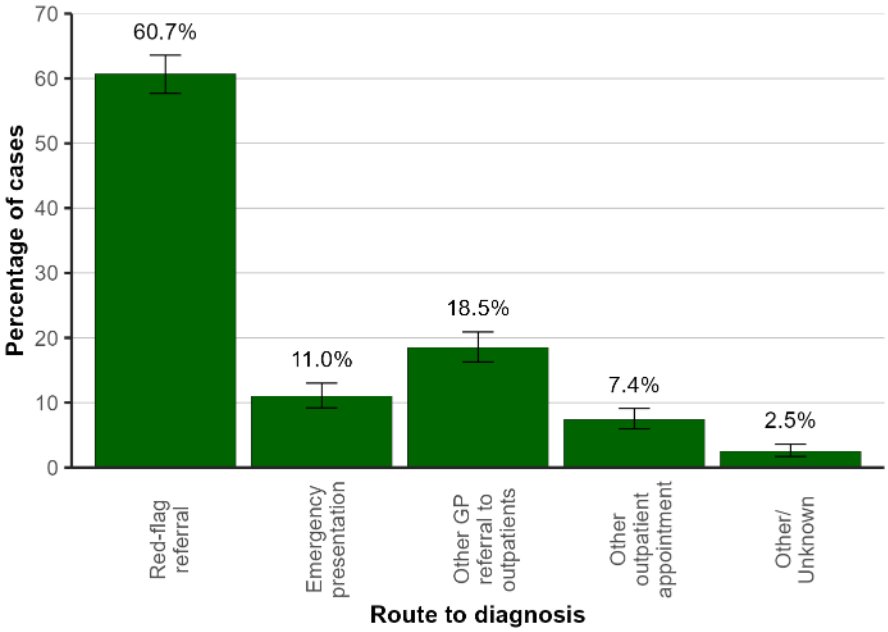
Ovarian cancer: The most common route to diagnosis among ovarian cancer patients during 2018-2021 was via an emergency presentation, with 70 (34.5%) cases diagnosed on average each year. This was followed by a red-flag referral route with 55 (27.1%) cases diagnosed on average each year.

Figure 11.9: Route to diagnosis for ovarian cancer patients diagnosed in 2018-2021



Uterine cancer: The most common route to diagnosis among uterine cancer patients during 2018-2021 was via a red-flag referral, with 160 (60.7%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 49 (18.5%) cases diagnosed on average each year. Emergency presentations made up 11.0% of cases during this period.

Figure 11.10: Route to diagnosis for uterine cancer patients diagnosed in 2018-2021



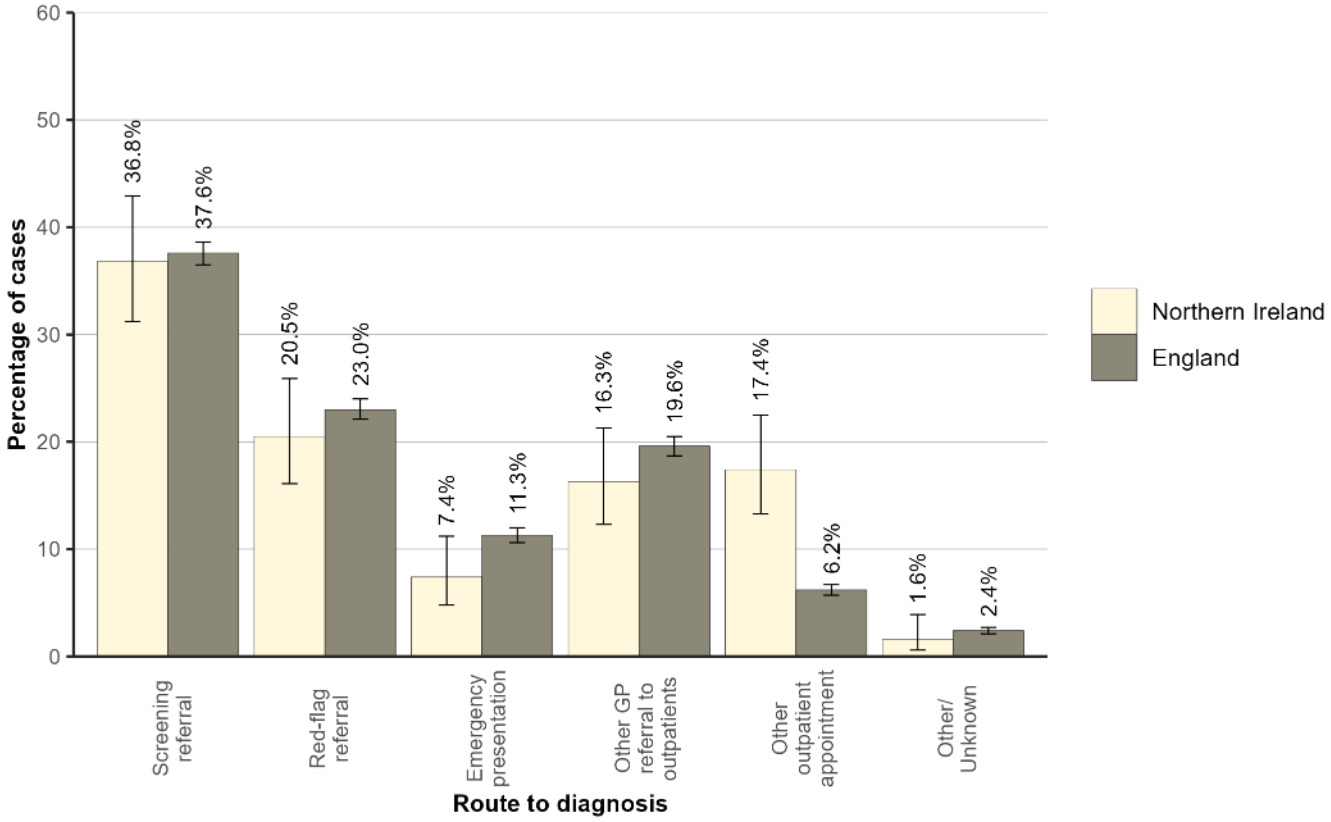
11.6: COMPARISON WITH ENGLAND

Cervical cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with cervical cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Other outpatient appointment (17.4% in NI compared to 6.2% in England; p<0.001).

Figure 11.11: Route to diagnosis for cervical cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



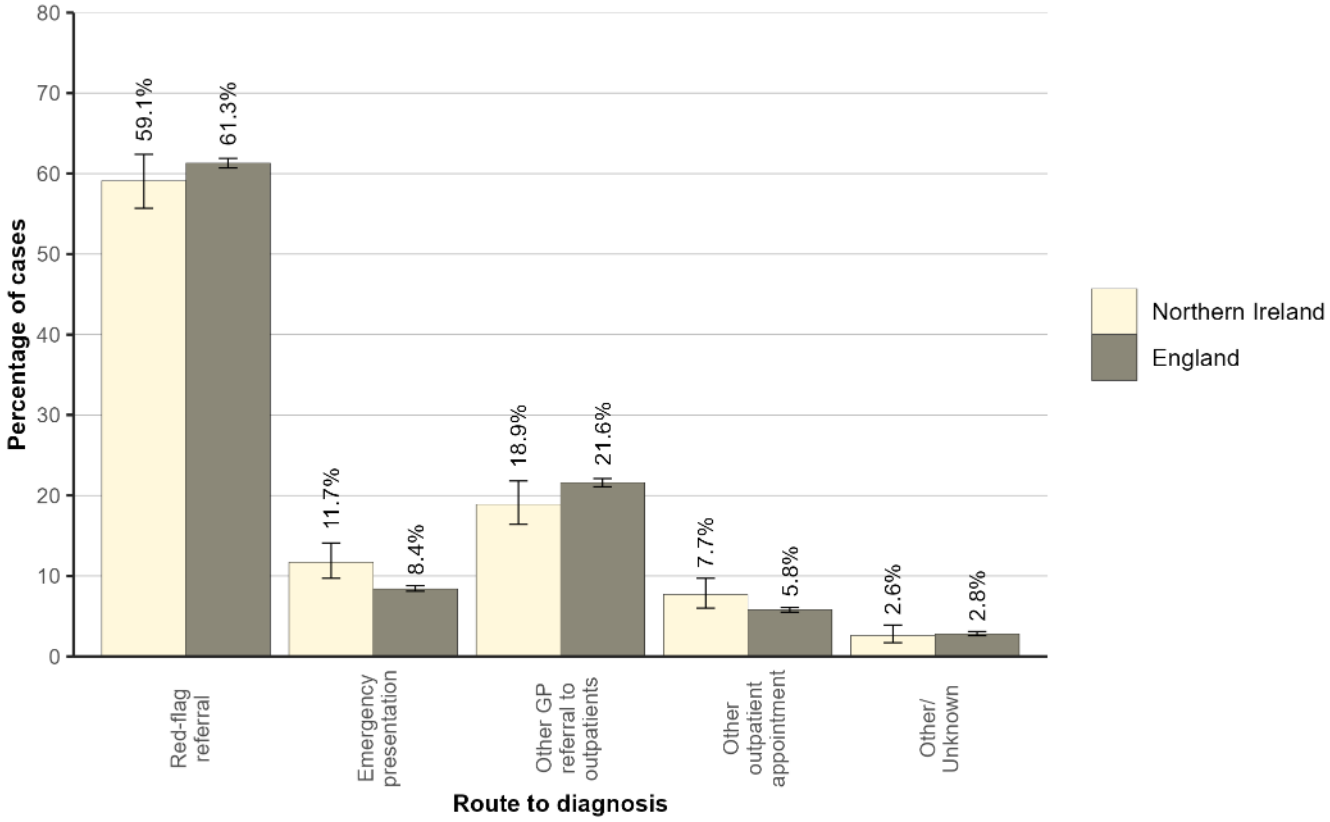
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

Uterine cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with uterine cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Emergency presentation (11.7% in NI compared to 8.4% in England; p=0.001).

Figure 11.12: Route to diagnosis for uterine cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



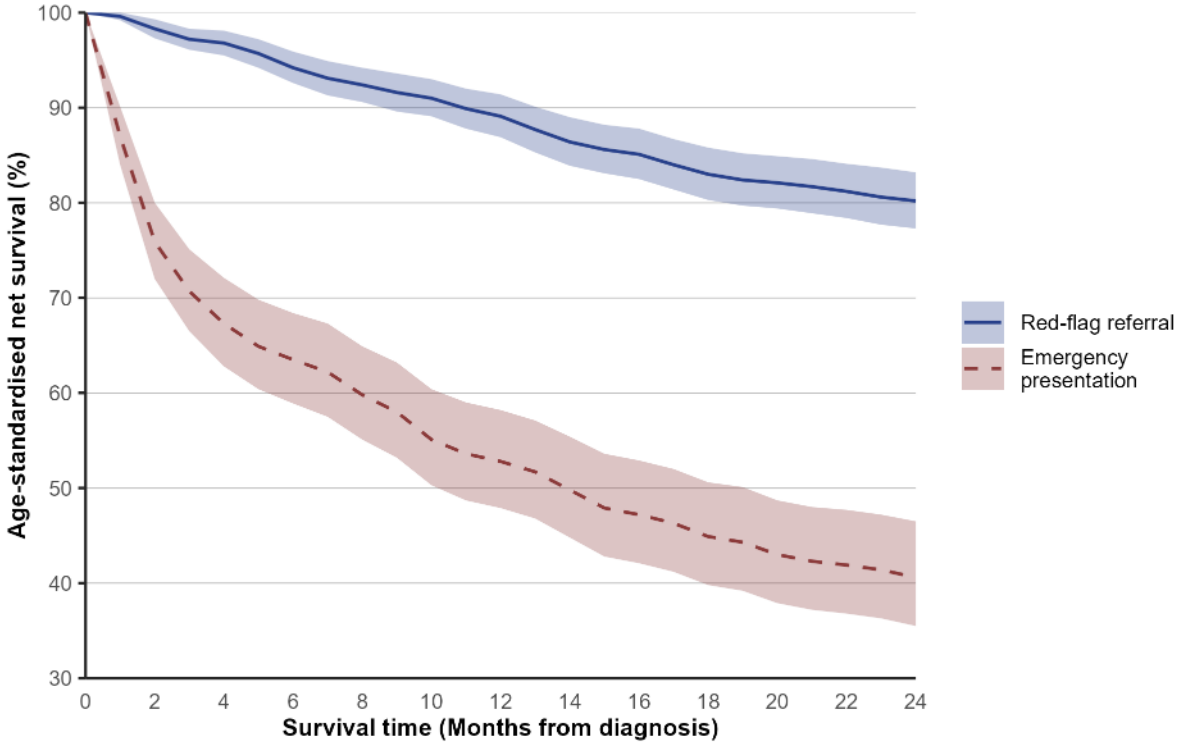
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

11.7: SURVIVAL

During 2018-2021 one-year age-standardised net survival from gynaecological cancer ranged from 52.8% for those diagnosed via an emergency presentation route to 89.1% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 40.6% for those diagnosed via an emergency presentation route to 80.4% for those diagnosed via another GP referral to outpatients route.

Figure 11.13: Age-standardised net survival by route to diagnosis for gynaecological cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

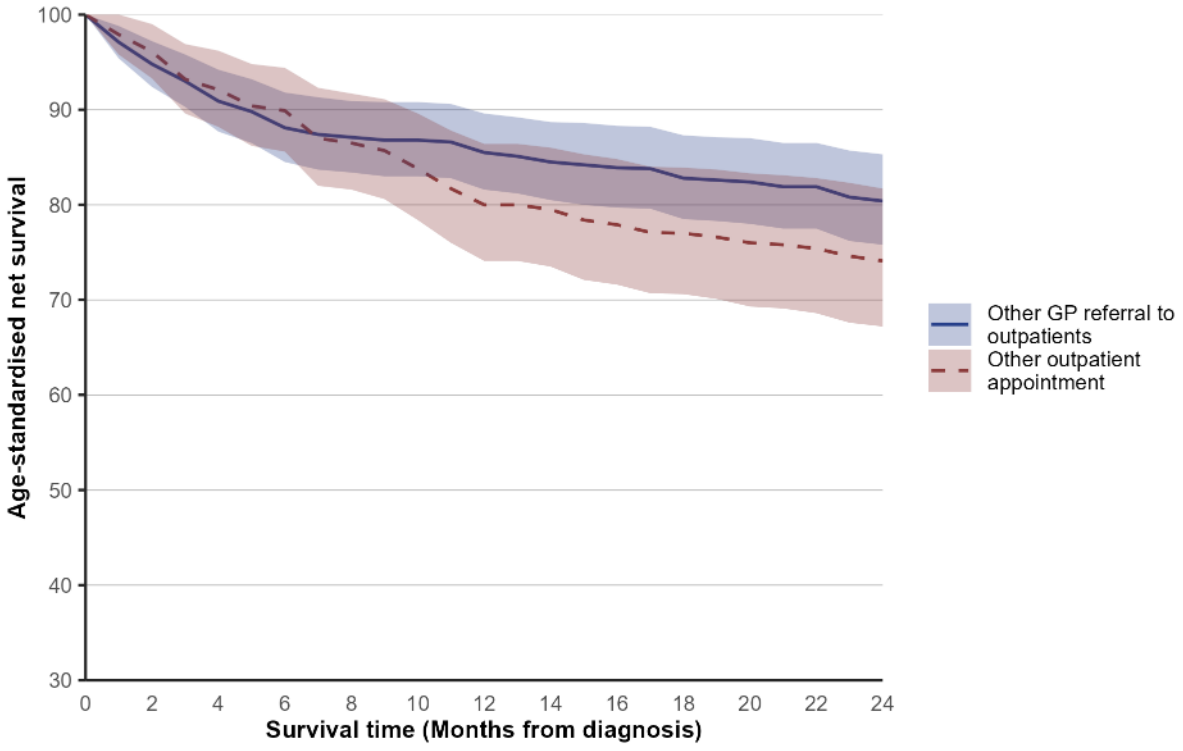


Table 11.2: Age-standardised net survival by route to diagnosis for gynaecological cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	89.1% (86.9% - 91.4%)	80.2% (77.3% - 83.2%)
Emergency presentation	52.8% (47.9% - 58.2%)	40.6% (35.5% - 46.5%)
Elective inpatient admission	75.5% (60.3% - 94.6%)*	63.6% (47.0% - 86.0%)*
Other GP referral to outpatients	85.5% (81.6% - 89.6%)	80.4% (75.8% - 85.3%)
Other outpatient appointment	80.0% (74.1% - 86.4%)	74.1% (67.2% - 81.7%)
Unknown	61.0% (46.4% - 80.3%)	58.7% (43.3% - 79.5%)

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

For patients of screening age

During 2018-2021 one-year net survival from cervical cancer for patients diagnosed within screening age (aged 25 to 64) ranged from 73.5% for those diagnosed via an emergency presentation route to 98.5% for those diagnosed via a screening referral route. Two years from diagnosis net survival for patients diagnosed within screening age ranged from 53.5% for those diagnosed via an emergency presentation route to 94.7% for those diagnosed via a screening referral route.

Figure 11.14: Net survival by route to diagnosis for cervical cancer patients of screening age (aged 25 to 64) diagnosed in 2018-2021

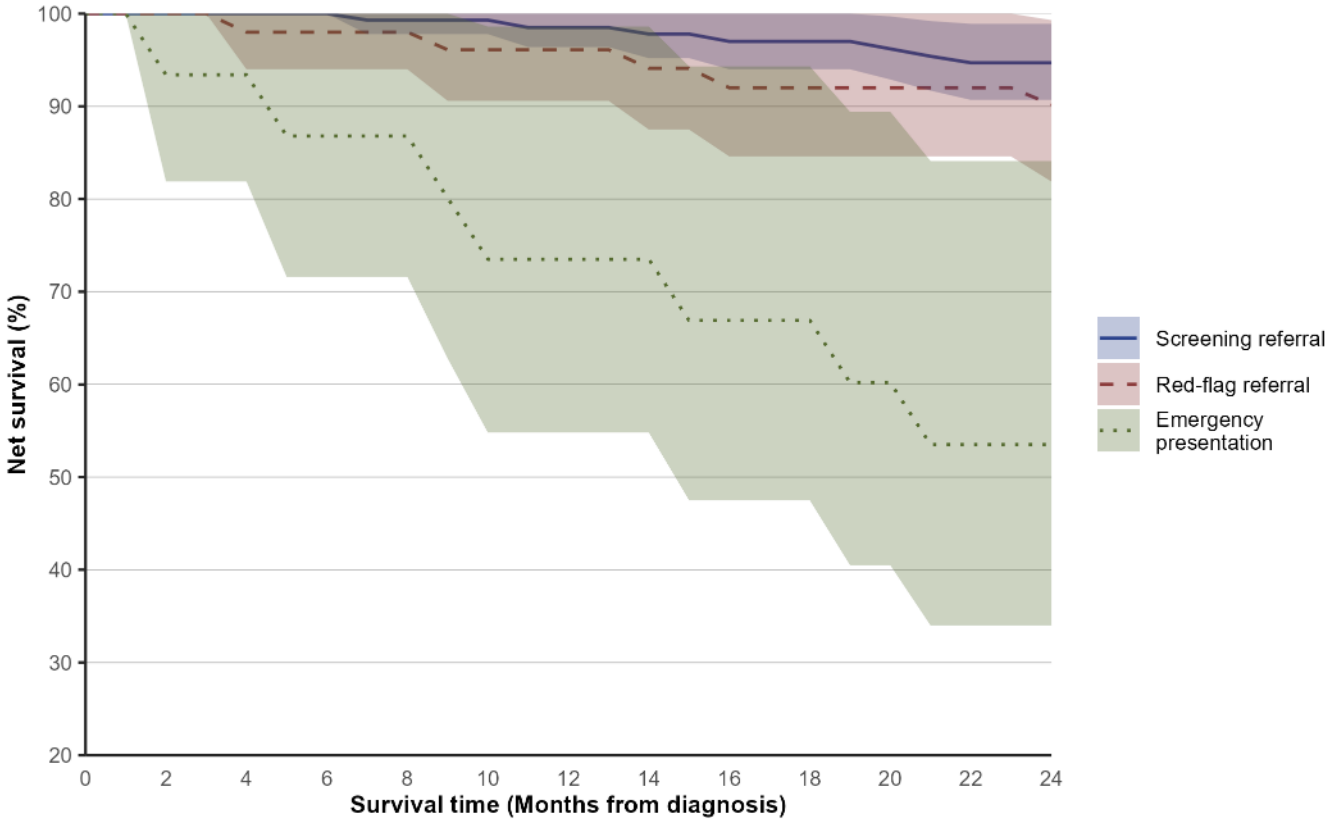


Table 11.3: Net survival by route to diagnosis for cervical cancer patients of screening age (aged 25 to 64) diagnosed in 2018-2021

Route to diagnosis	One-year survival (NS)	Two-year survival (NS)
Screening referral	98.5% (96.4% - 100.0%)	94.7% (90.7% - 98.9%)
Red-flag referral	96.1% (90.6% - 100.0%)	90.2% (81.9% - 99.3%)
Emergency presentation	73.5% (54.8% - 98.6%)	53.5% (34.0% - 84.1%)
Other GP referral to outpatients	95.3% (89.0% - 100.0%)	83.1% (72.3% - 95.5%)
Other outpatient appointment	98.2% (94.6% - 100.0%)	94.5% (88.4% - 100.0%)

NS: Net survival with 95% confidence interval

12: Urinary Cancer

The most common route to diagnosis among urinary cancer patients during 2018-2021 was via a red-flag referral, with 177 (30.0%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 143 (24.1%) cases diagnosed on average each year. Emergency presentations made up 21.0% of cases during this period.

Figure 12.1: Route to diagnosis for urinary cancer patients diagnosed in 2018-2021

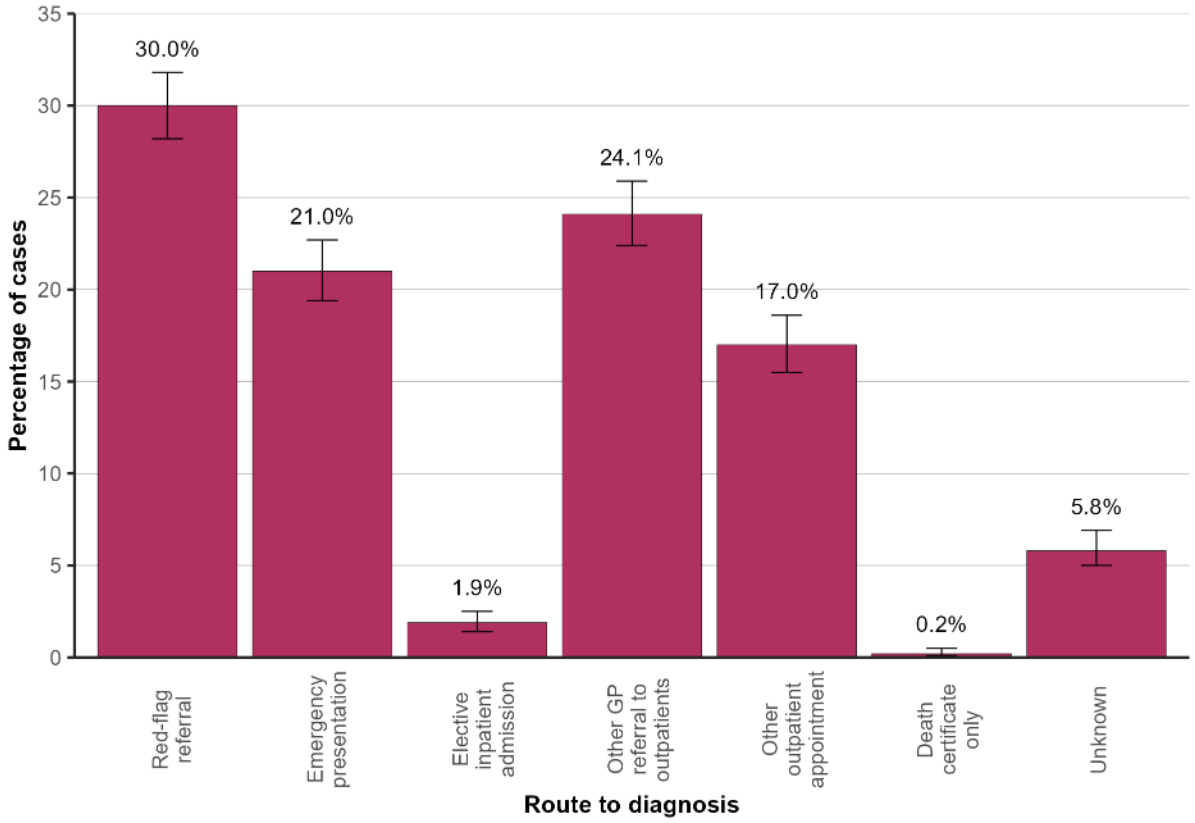


Table 12.1: Average number of urinary cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	177	30.0% (28.2% - 31.8%)
Emergency presentation	124	21.0% (19.4% - 22.7%)
Elective inpatient admission	11	1.9% (1.4% - 2.5%)
Other GP referral to outpatients	143	24.1% (22.4% - 25.9%)
Other outpatient appointment	101	17.0% (15.5% - 18.6%)
Death certificate only	1	0.2% (0.1% - 0.5%)
Unknown	35	5.8% (5.0% - 6.9%)

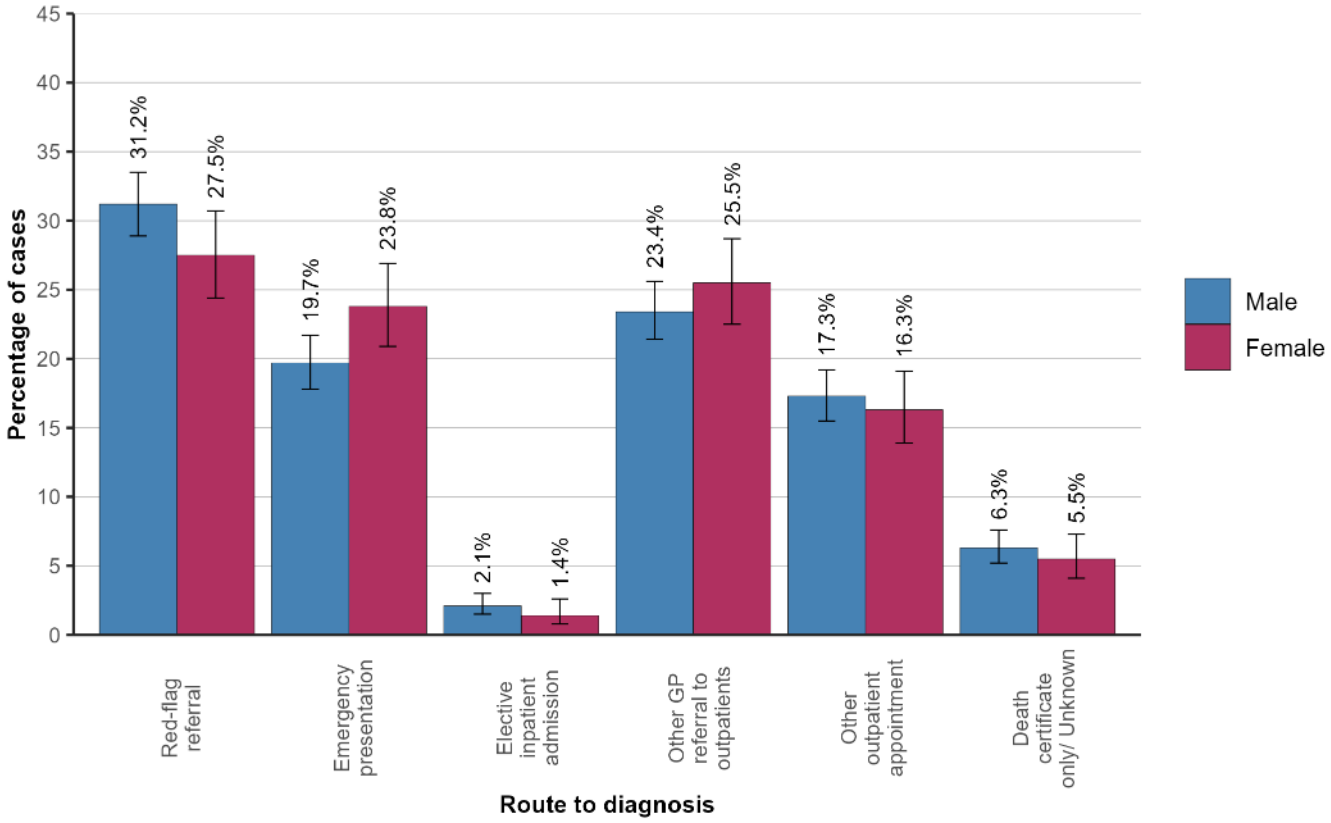
CI: Confidence Interval

12.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2021 there were 125 male and 53 female cases of urinary cancer diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (31.2%) and women (27.5%).

The route to diagnosis with the biggest difference between males and females was an emergency presentation with 19.7% of male cases and 23.8% of female cases diagnosed via this route. The variation in route to diagnosis by gender was not statistically significant.

Figure 12.2: Route to diagnosis for urinary cancer patients diagnosed in 2018-2021 by gender

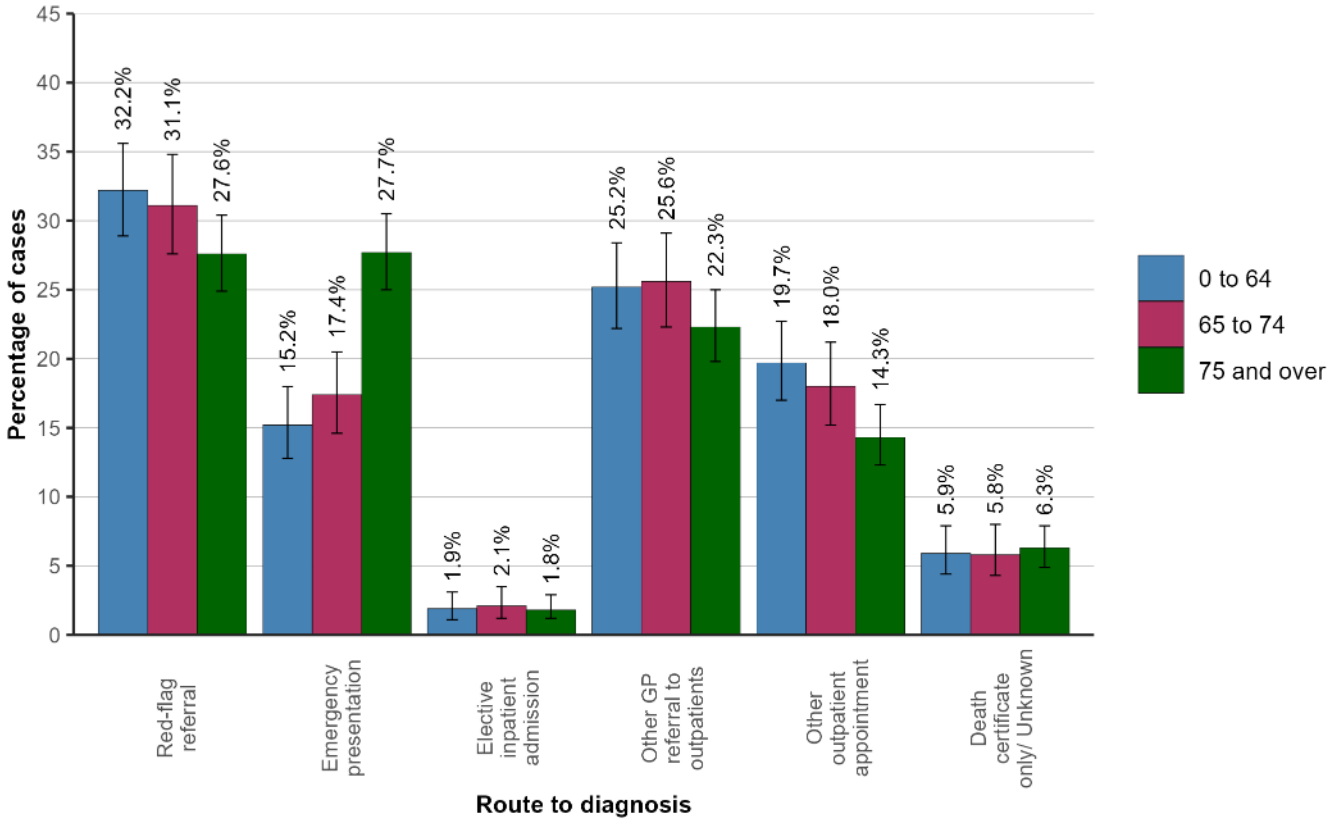


12.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of urinary cancer overall was a red-flag referral. Among those aged 0 to 64 there were 60 (32.2%) diagnosed per year via this route, compared to 68 (27.6%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 0 to 64 but not those aged 75 and over. The most common route to diagnosis for those aged 75 and over was an emergency presentation (27.7%).

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was an emergency presentation with 15.2% of those aged 0 to 64 and 27.7% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 12.3: Route to diagnosis for urinary cancer patients diagnosed in 2018-2021 by age group



12.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of urinary cancer diagnosed via a red-flag referral ranged from 24.9% in Belfast HSCT to 38.0% in Western HSCT. The proportions diagnosed via an emergency presentation ranged from 17.5% to 24.5% in Northern HSCT and Belfast HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant (p = 0.001).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of urinary cancer diagnosed via a red-flag referral was 27.8% in the most deprived areas compared to 28.9% in the least deprived areas. The proportions diagnosed via an emergency presentation were 23.4% and 20.8% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 12.4: Route to diagnosis for urinary cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

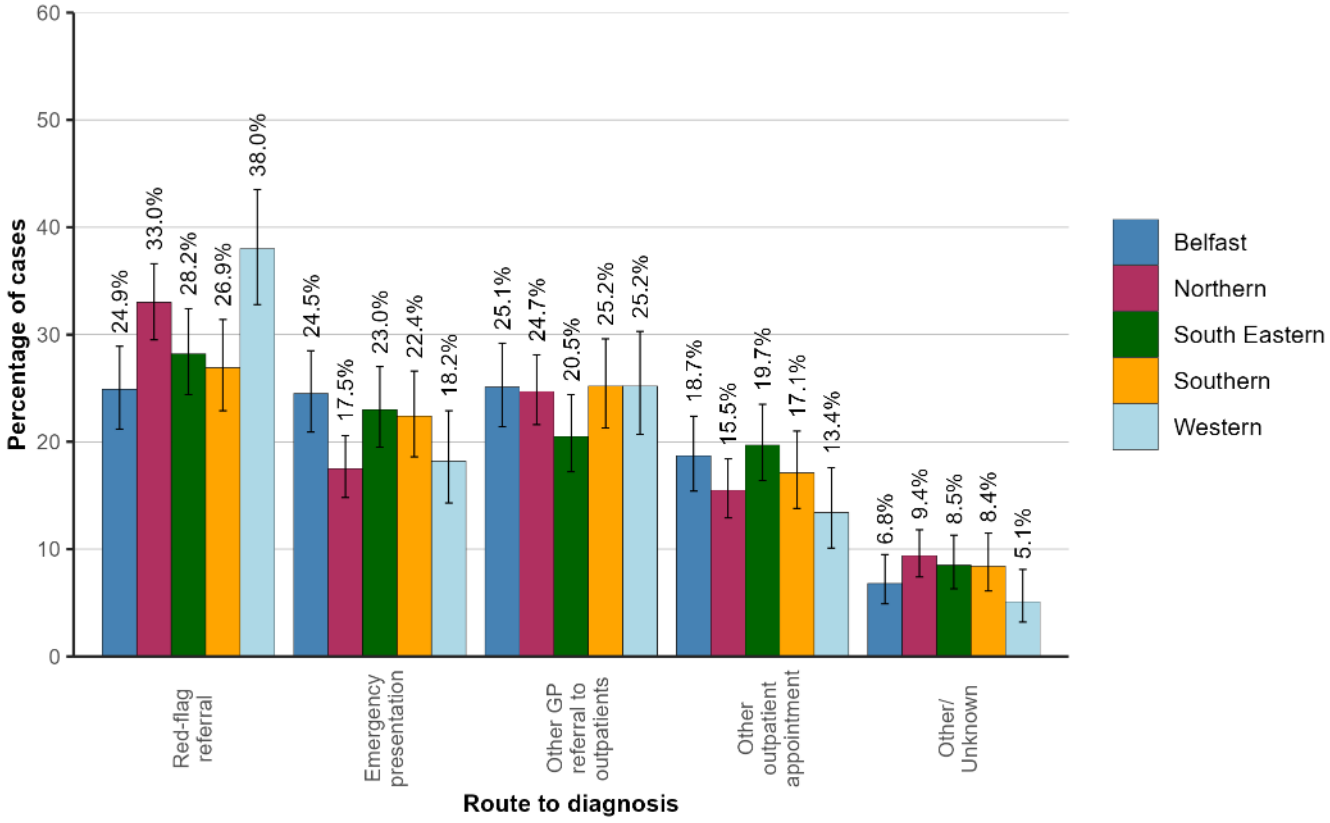
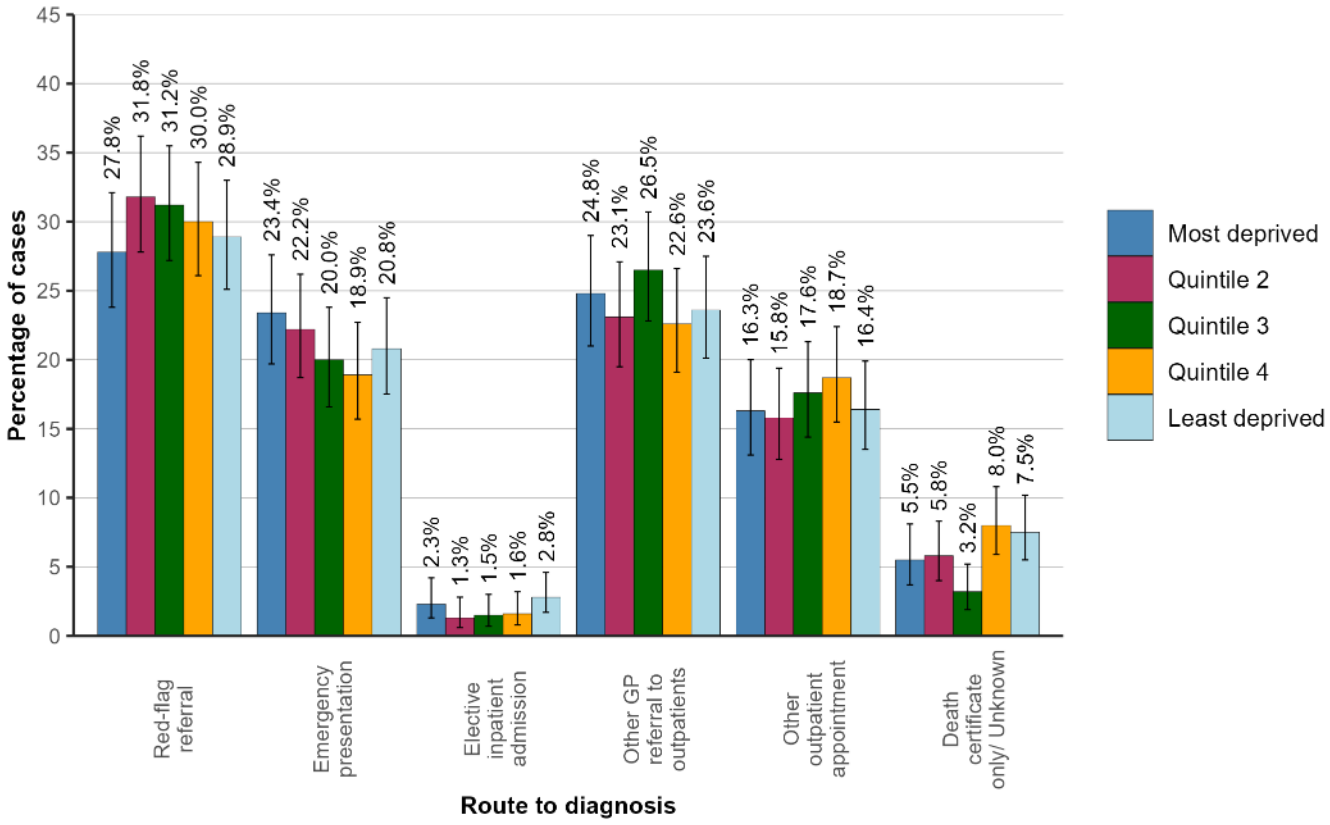


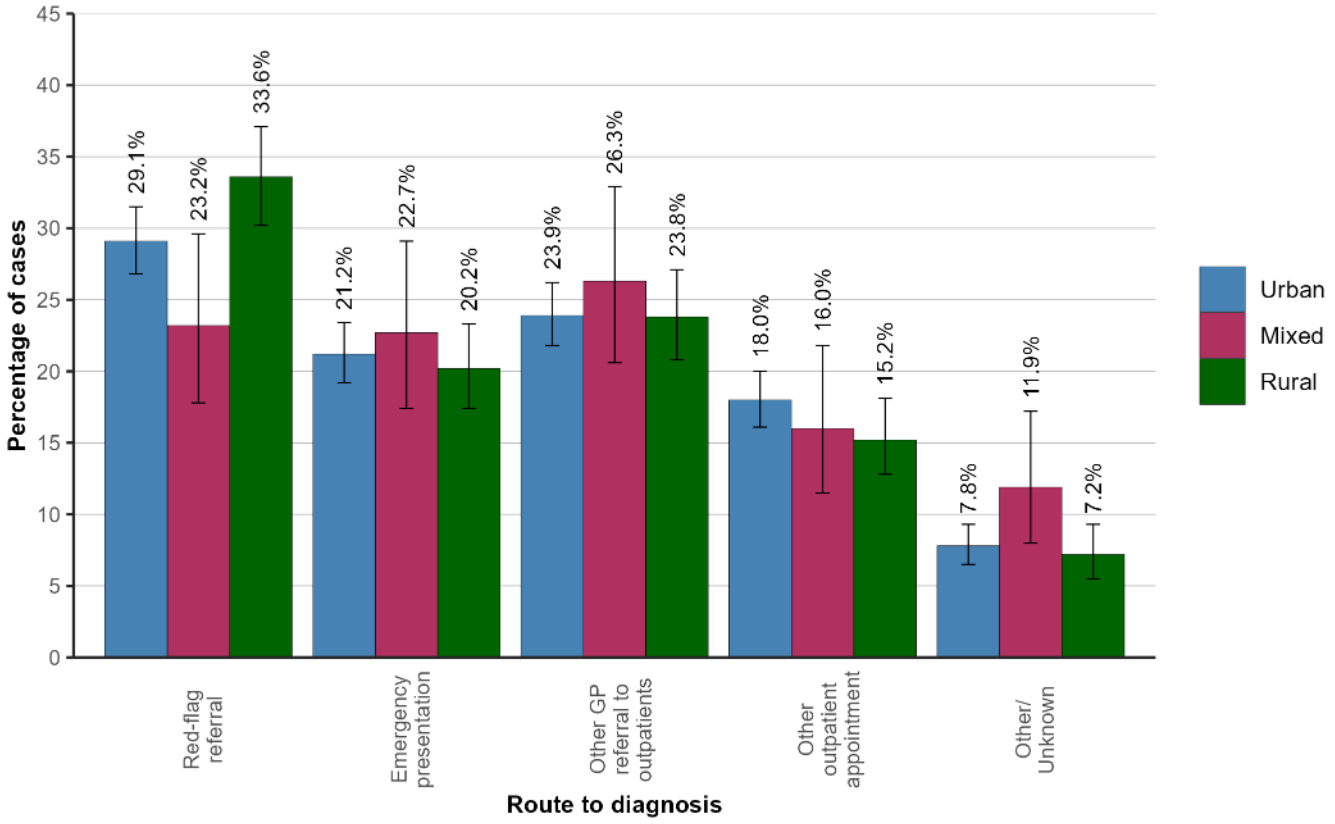
Figure 12.5: Route to diagnosis for urinary cancer patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of urinary cancer diagnosed via a red-flag referral was 29.1% in urban areas compared to 33.6% in rural areas. The proportions diagnosed via an emergency presentation were 21.2% and 20.2% in urban and rural areas respectively. The variation in route to diagnosis by urban/rural status was not statistically significant.

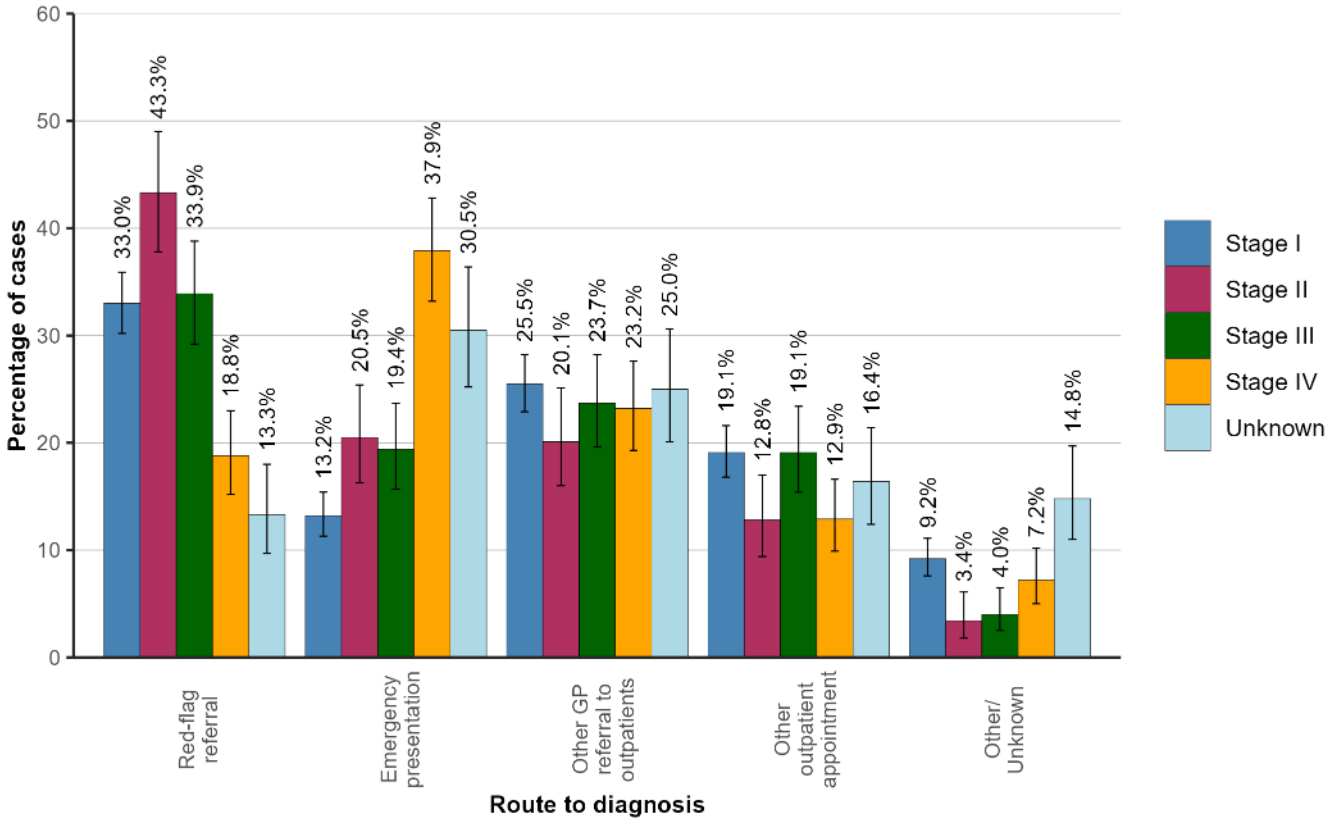
Figure 12.6: Route to diagnosis for urinary cancer patients diagnosed in 2018-2021 by urban/rural status



12.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2021 the proportion of cases of urinary cancer diagnosed via a red-flag referral was 33.0% among stage I cancers compared to 18.8% among stage IV cancers. The proportions diagnosed via an emergency presentation were 13.2% and 37.9% for stage I and stage IV cancers respectively. The variation in route to diagnosis by stage at diagnosis was statistically significant ($p < 0.001$).

Figure 12.7: Route to diagnosis for urinary cancer patients diagnosed in 2018-2021 by stage at diagnosis



12.5: ROUTES TO DIAGNOSIS BY CANCER TYPE

Bladder cancer: The most common route to diagnosis among bladder cancer patients during 2018-2021 was via a red-flag referral, with 101 (41.2%) cases diagnosed on average each year. This was followed by an emergency presentation route with 52 (21.4%) cases diagnosed on average each year.

Kidney cancer: The most common route to diagnosis among kidney cancer patients during 2018-2021 was via another GP referral to outpatients, with 80 (27.1%) cases diagnosed on average each year. This was followed by a red-flag referral route with 63 (21.4%) cases diagnosed on average each year. Emergency presentations made up 20.7% of cases during this period.

Figure 12.8: Route to diagnosis for bladder cancer patients diagnosed in 2018-2021

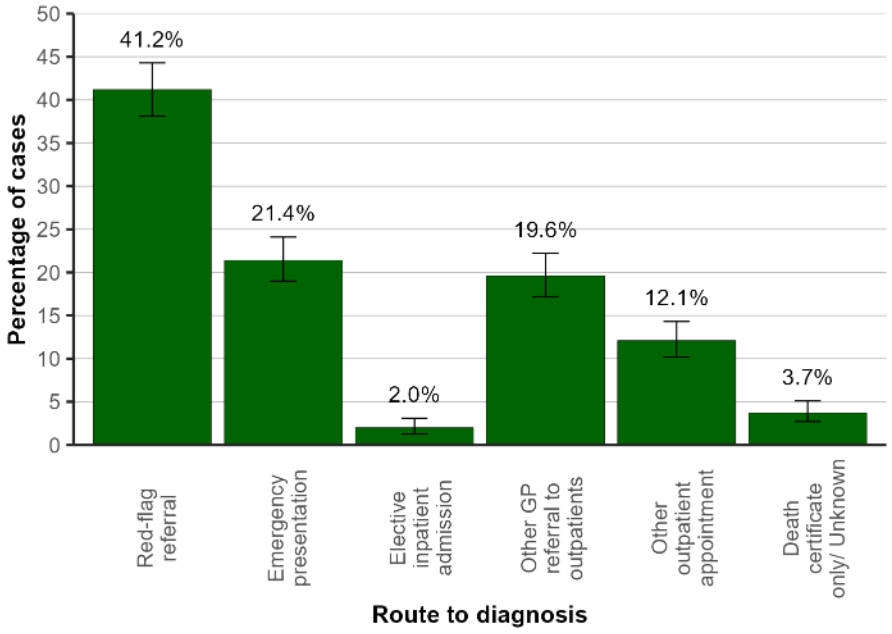
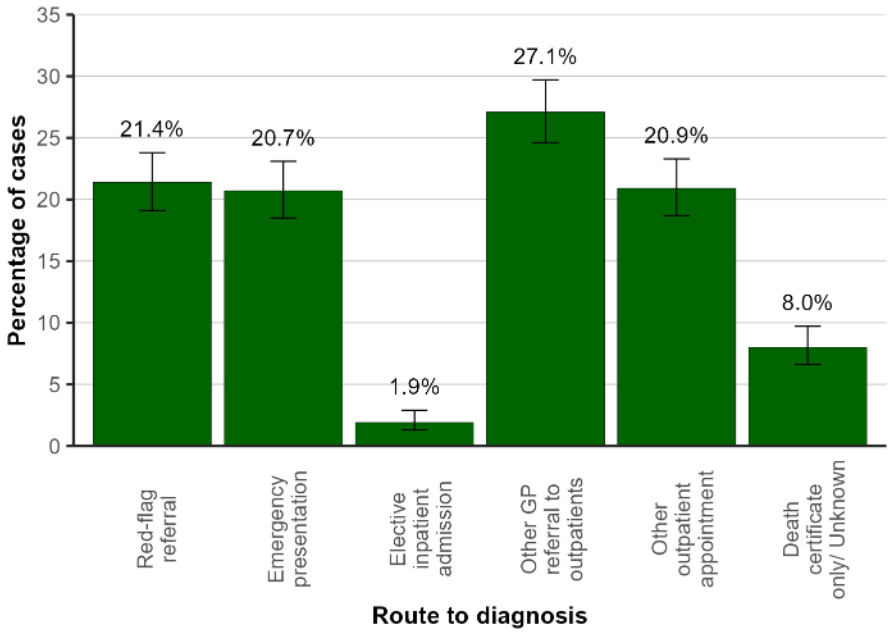


Figure 12.9: Route to diagnosis for kidney cancer patients diagnosed in 2018-2021



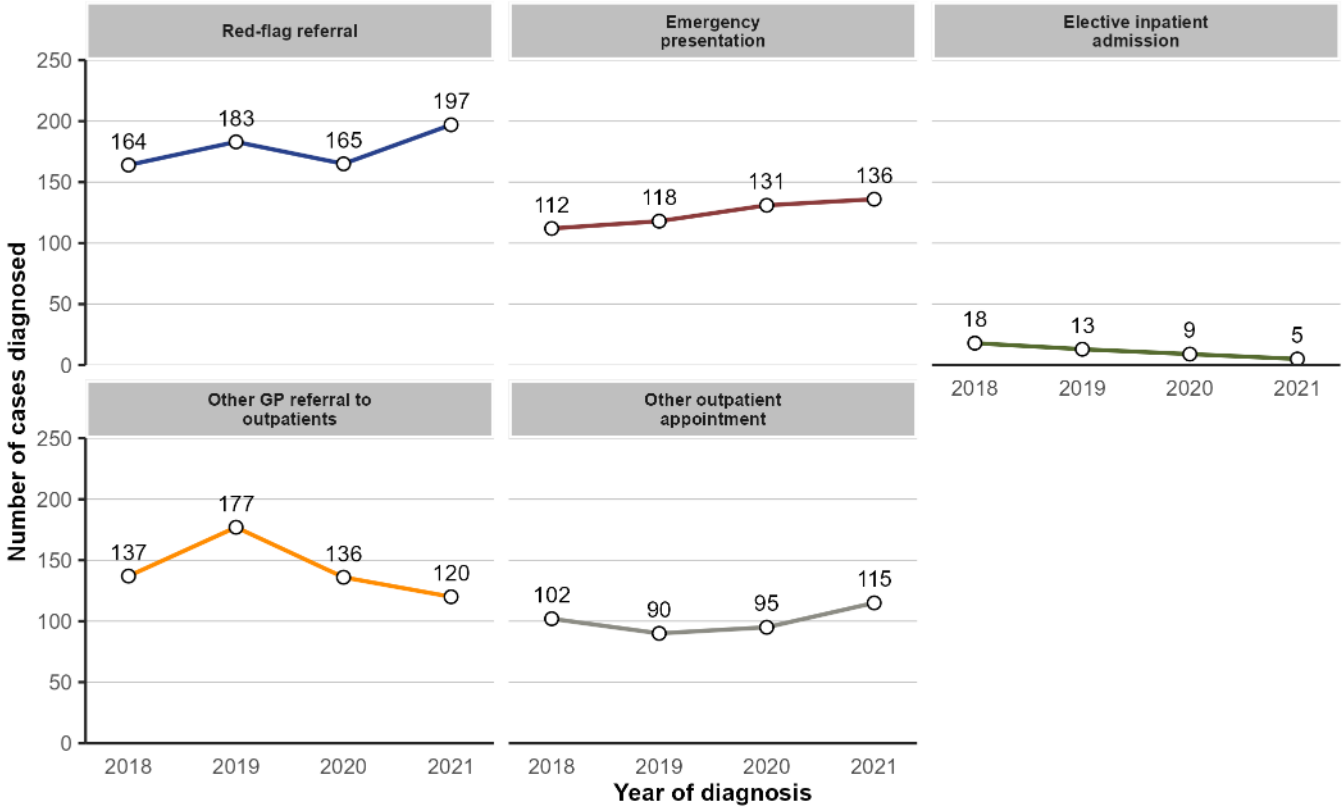
12.6: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of urinary cancer cases diagnosed via a red-flag referral increased by 19.4% from 165 in 2020 to 197 in 2021. As a proportion of all cases, a red-flag referral diagnosis increased from 29.1% in 2020 to 32.7% in 2021.

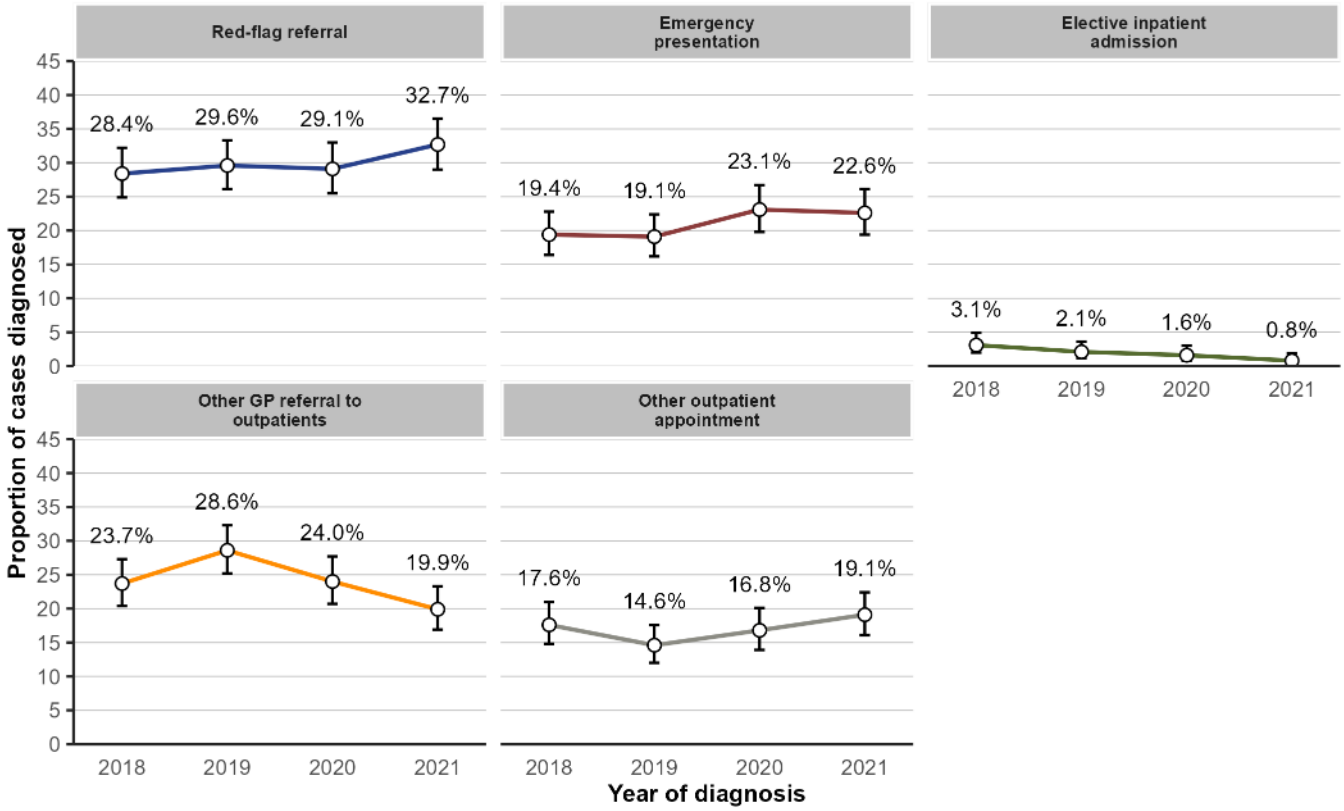
The number of urinary cancer cases diagnosed via an emergency presentation increased by 3.8% from 131 in 2020 to 136 in 2021. As a proportion of all cases, an emergency presentation diagnosis decreased from 23.1% in 2020 to 22.6% in 2021. The variation in route to diagnosis between the previous two years was not statistically significant.

Figure 12.10: Route to diagnosis for urinary cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases



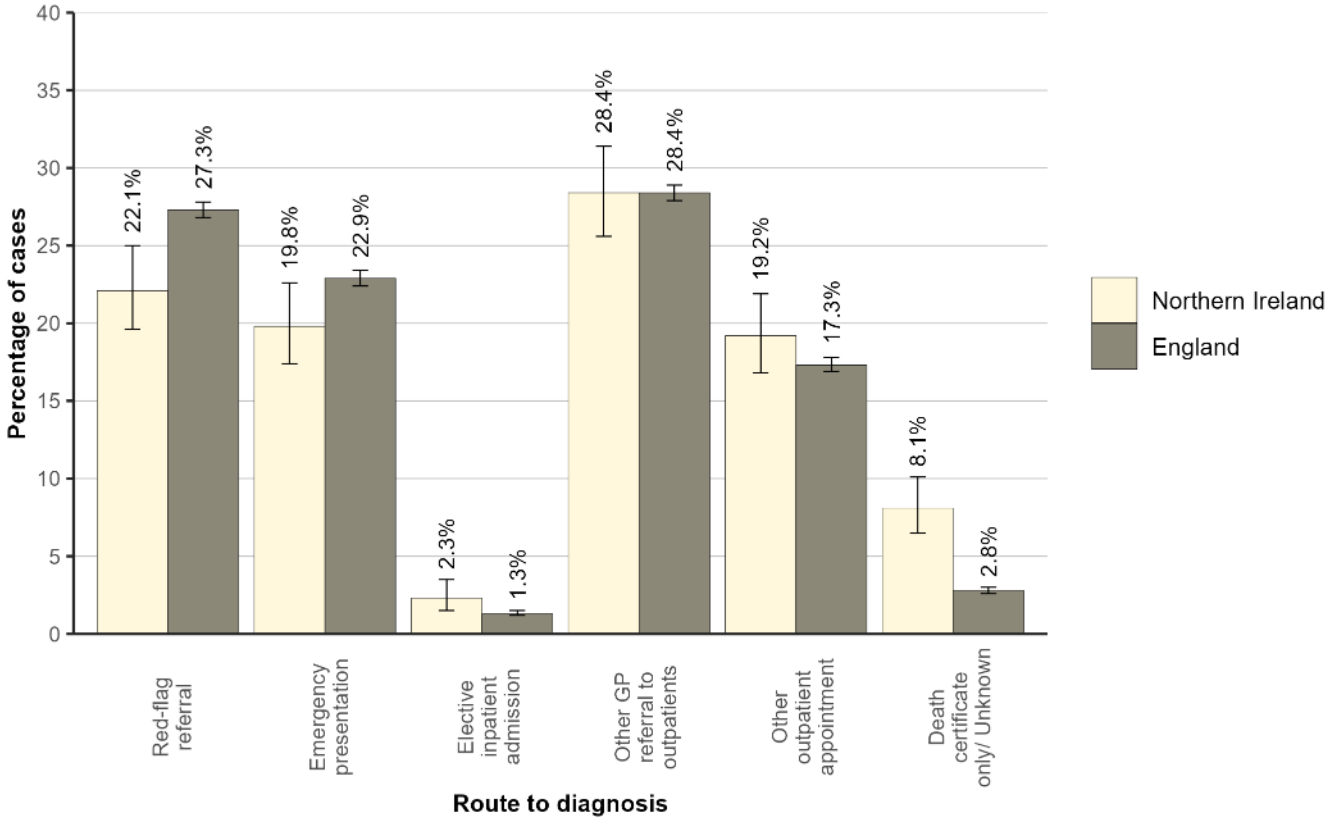
12.7: COMPARISON WITH ENGLAND

Kidney cancer

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with kidney cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Red-flag referral (22.1% in NI compared to 27.3% in England; p=0.001).

Figure 12.11: Route to diagnosis for kidney cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



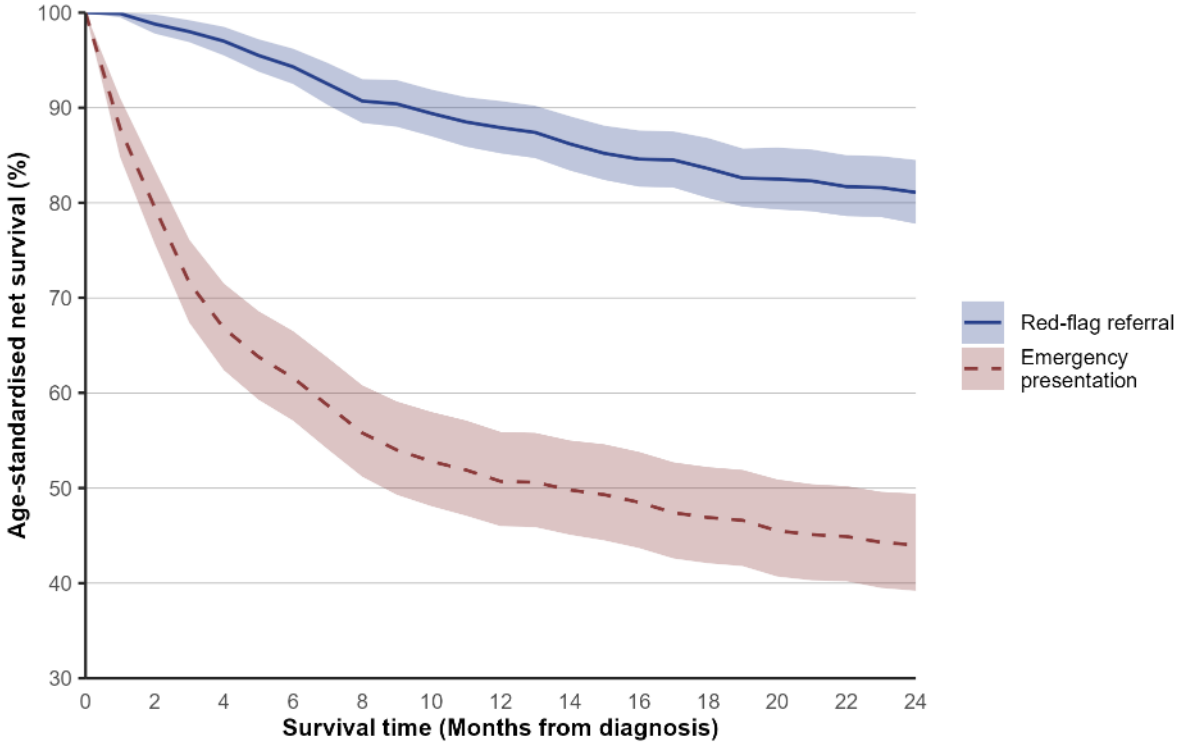
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

12.8: SURVIVAL

During 2018-2021 one-year age-standardised net survival from urinary cancer ranged from 50.7% for those diagnosed via an emergency presentation route to 87.9% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 44.0% for those diagnosed via an emergency presentation route to 81.1% for those diagnosed via a red-flag referral route.

Figure 12.12: Age-standardised net survival by route to diagnosis for urinary cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

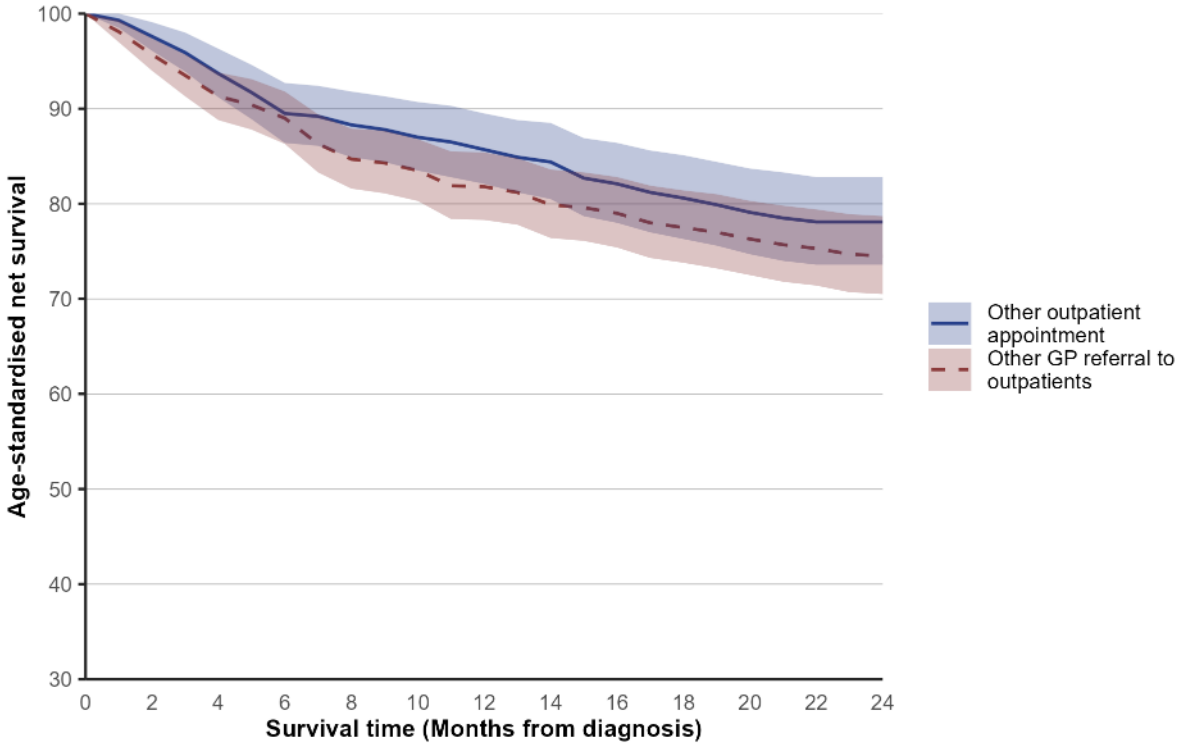


Table 12.2: Age-standardised net survival by route to diagnosis for urinary cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	87.9% (85.2% - 90.7%)	81.1% (77.8% - 84.5%)
Emergency presentation	50.7% (46.0% - 55.9%)	44.0% (39.2% - 49.4%)
Elective inpatient admission	55.3% (42.0% - 72.8%)*	48.6% (35.2% - 67.2%)*
Other GP referral to outpatients	81.8% (78.3% - 85.4%)	74.5% (70.5% - 78.7%)
Other outpatient appointment	85.7% (82.1% - 89.5%)	78.1% (73.6% - 82.8%)
Unknown	78.8% (71.9% - 86.4%)	71.0% (63.0% - 80.0%)

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

13: Malignant Melanoma

The most common route to diagnosis among melanoma patients during 2018-2021 was via a red-flag referral, with 235 (58.3%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 92 (22.9%) cases diagnosed on average each year. Emergency presentations made up 1.5% of cases during this period.

Figure 13.1: Route to diagnosis for melanoma patients diagnosed in 2018-2021

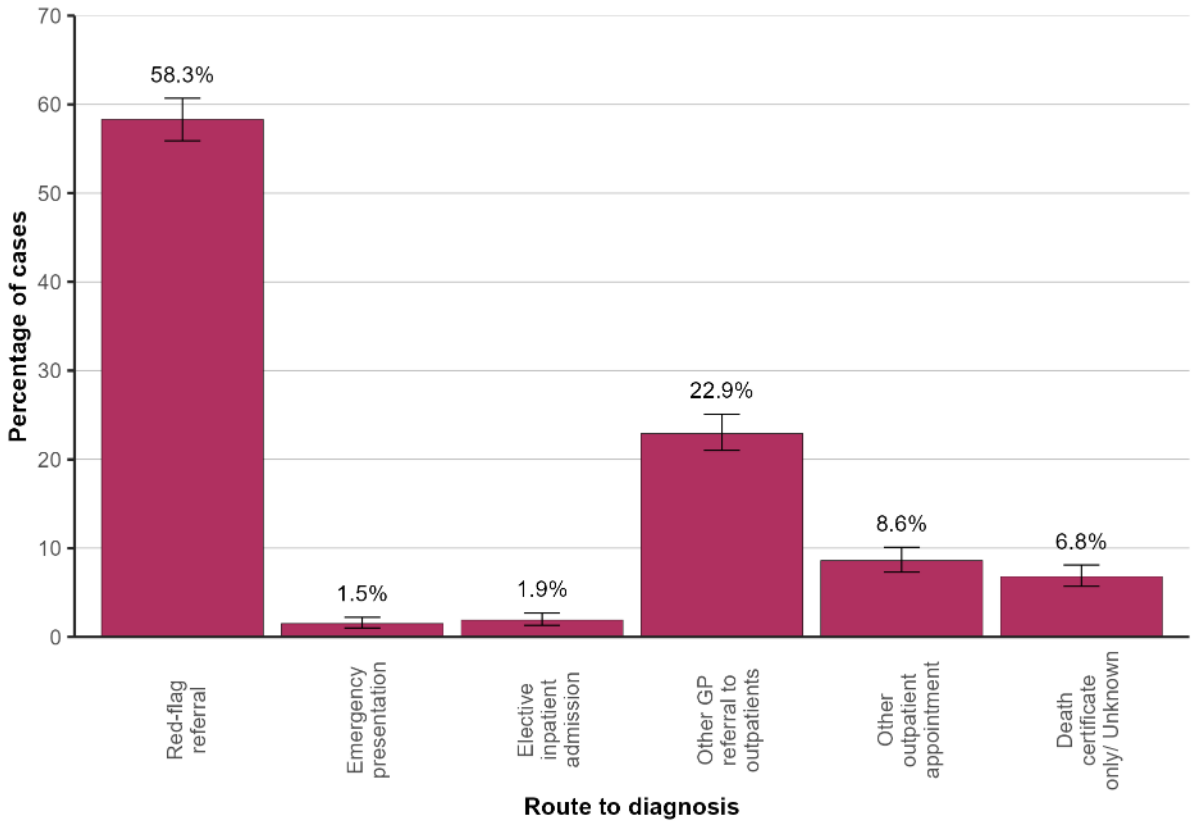


Table 13.1: Average number of melanoma cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	235	58.3% (55.9% - 60.7%)
Emergency presentation	6	1.5% (1.0% - 2.2%)
Elective inpatient admission	8	1.9% (1.3% - 2.7%)
Other GP referral to outpatients	92	22.9% (21.0% - 25.1%)
Other outpatient appointment	35	8.6% (7.3% - 10.1%)
Death certificate only/ Unknown	27	6.8% (5.7% - 8.1%)

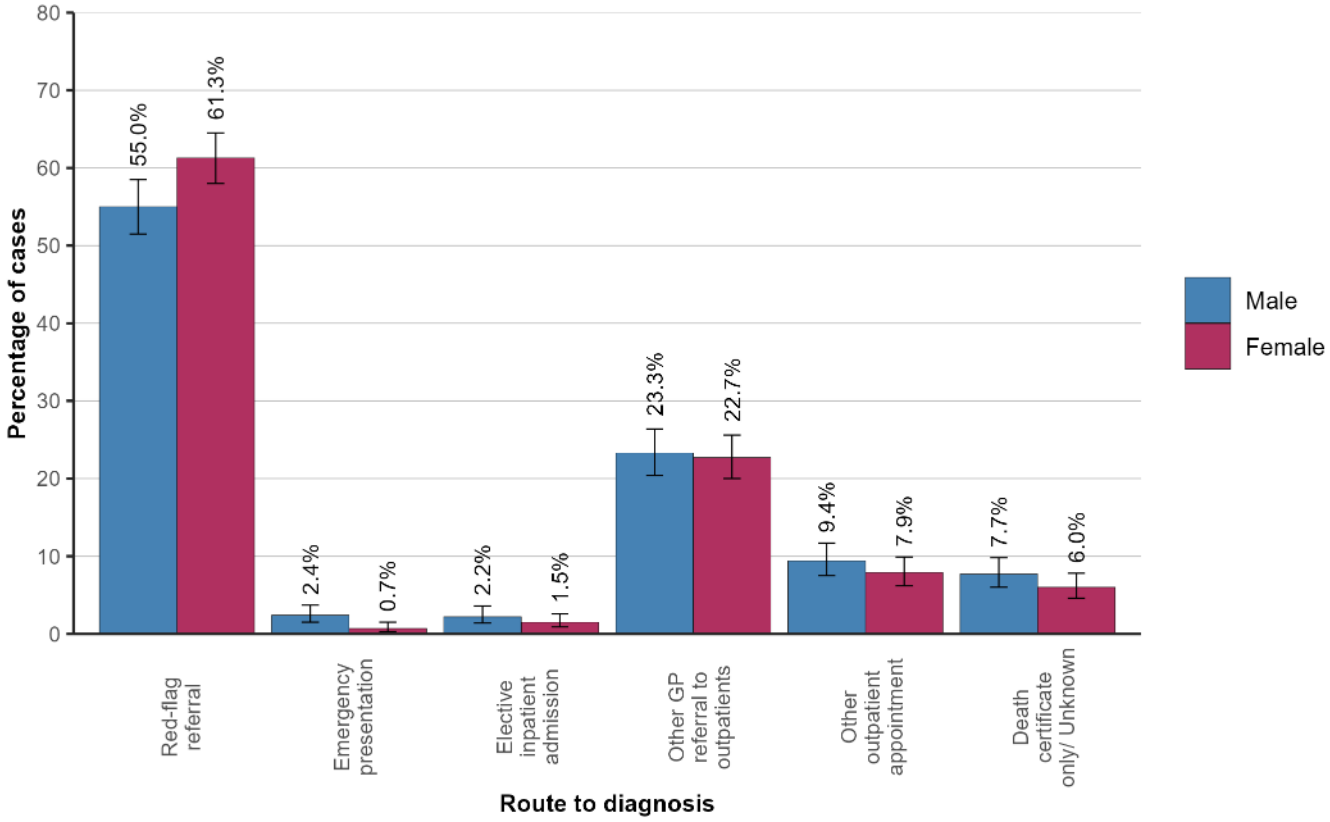
CI: Confidence Interval

13.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2021 there were 104 male and 131 female cases of melanoma diagnosed each year where the route to diagnosis was a red-flag referral. This was the most common route to diagnosis for both men (55.0%) and women (61.3%).

Red-flag referral routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was statistically significant (p = 0.015).

Figure 13.2: Route to diagnosis for melanoma patients diagnosed in 2018-2021 by gender

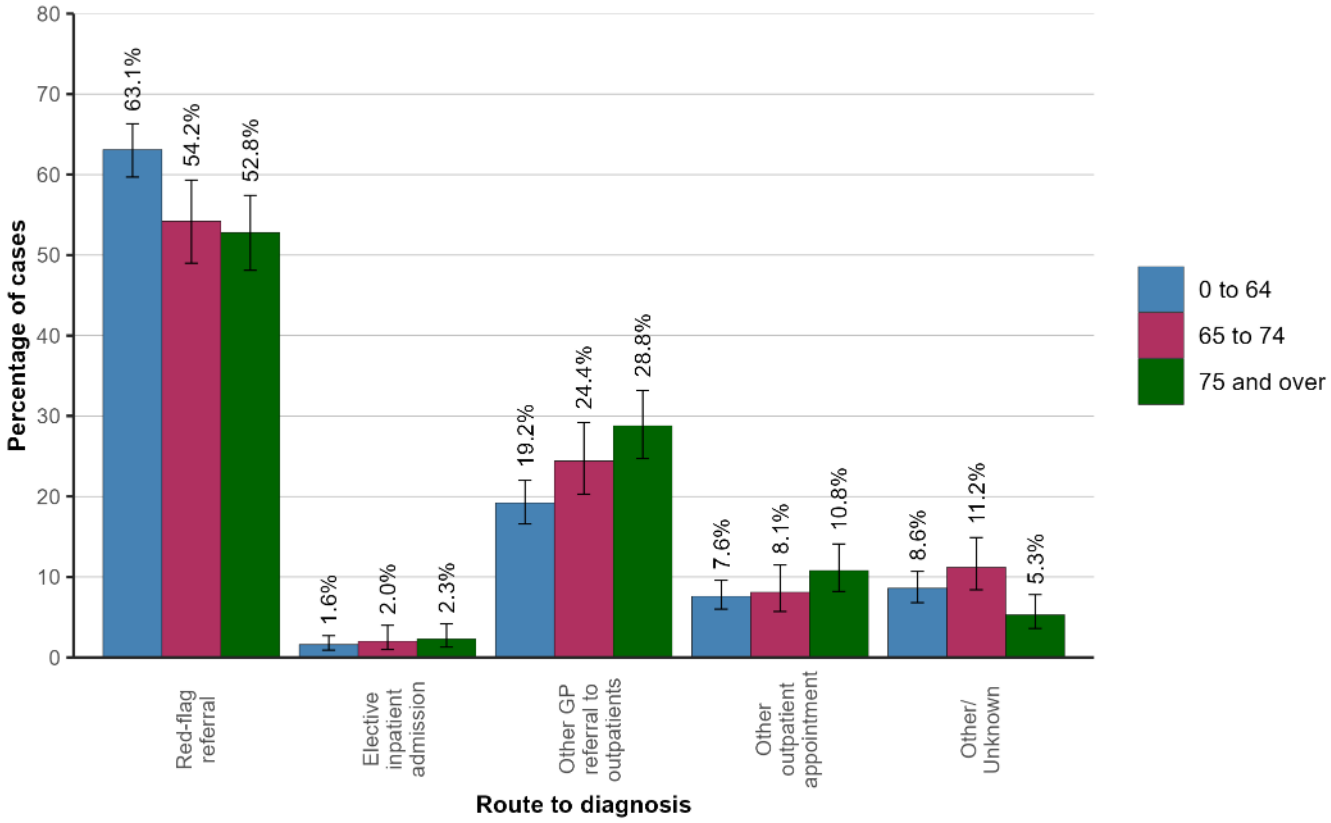


13.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of melanoma overall was a red-flag referral. Among those aged 0 to 64 there were 129 (63.1%) diagnosed per year via this route, compared to 57 (52.8%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

Red-flag referral routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant (p < 0.001).

Figure 13.3: Route to diagnosis for melanoma patients diagnosed in 2018-2021 by age group



13.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of melanoma diagnosed via a red-flag referral ranged from 47.9% in Western HSCT to 63.6% in Belfast HSCT. The variation in route to diagnosis by Health and Social Care Trust was statistically significant ($p < 0.001$).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of melanoma diagnosed via a red-flag referral was 58.3% in the most deprived areas compared to 56.3% in the least deprived areas. The variation in route to diagnosis by deprivation quintile was statistically significant ($p = 0.048$).

Figure 13.4: Route to diagnosis for melanoma patients diagnosed in 2018-2021 by Health and Social Care Trust

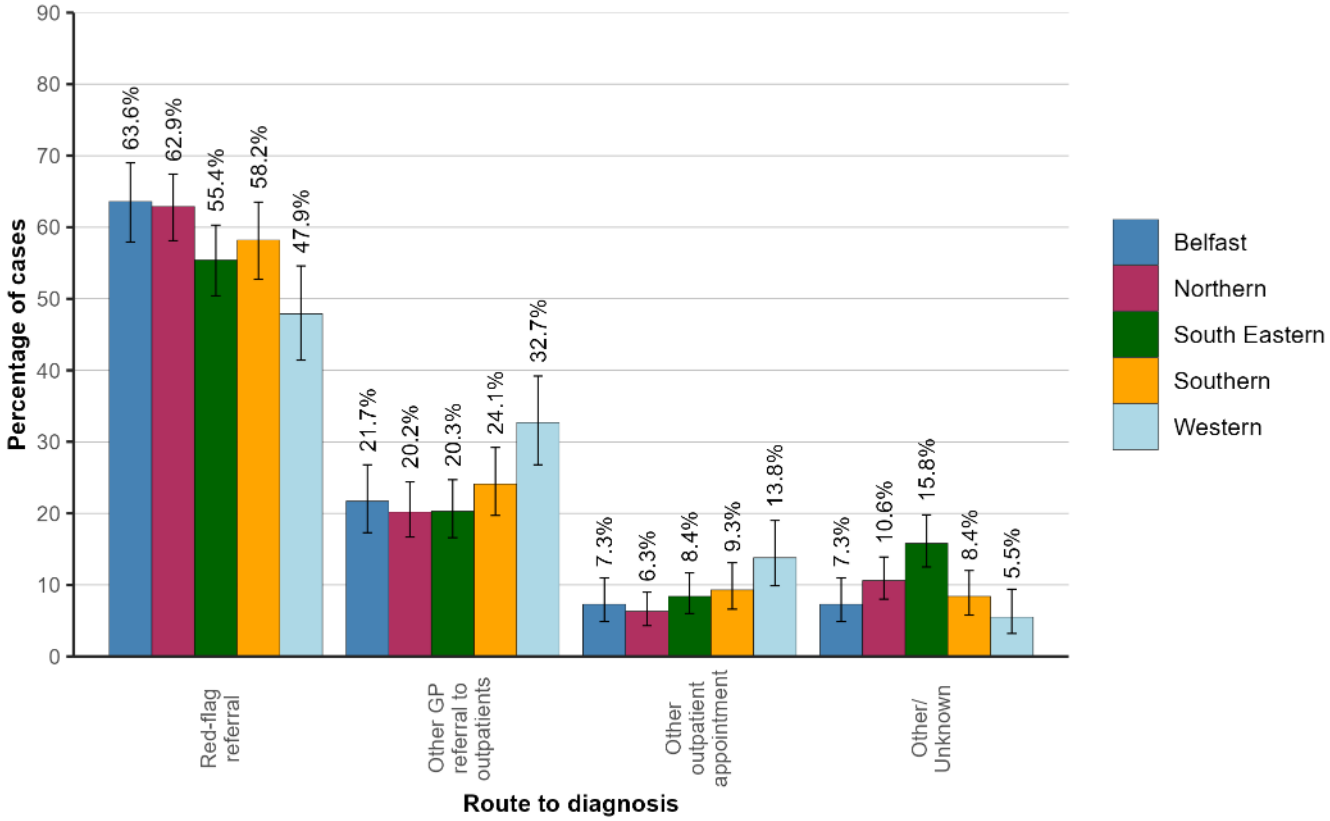
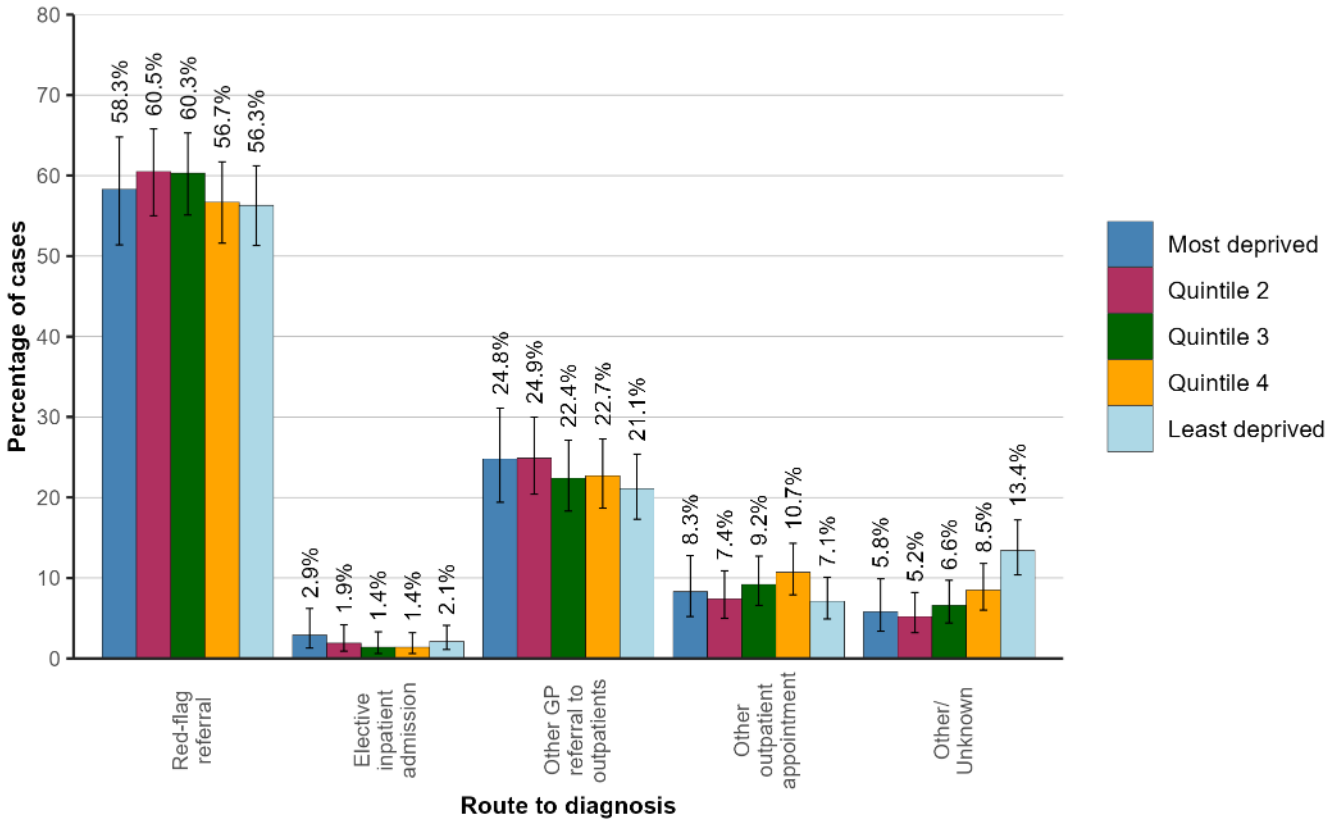


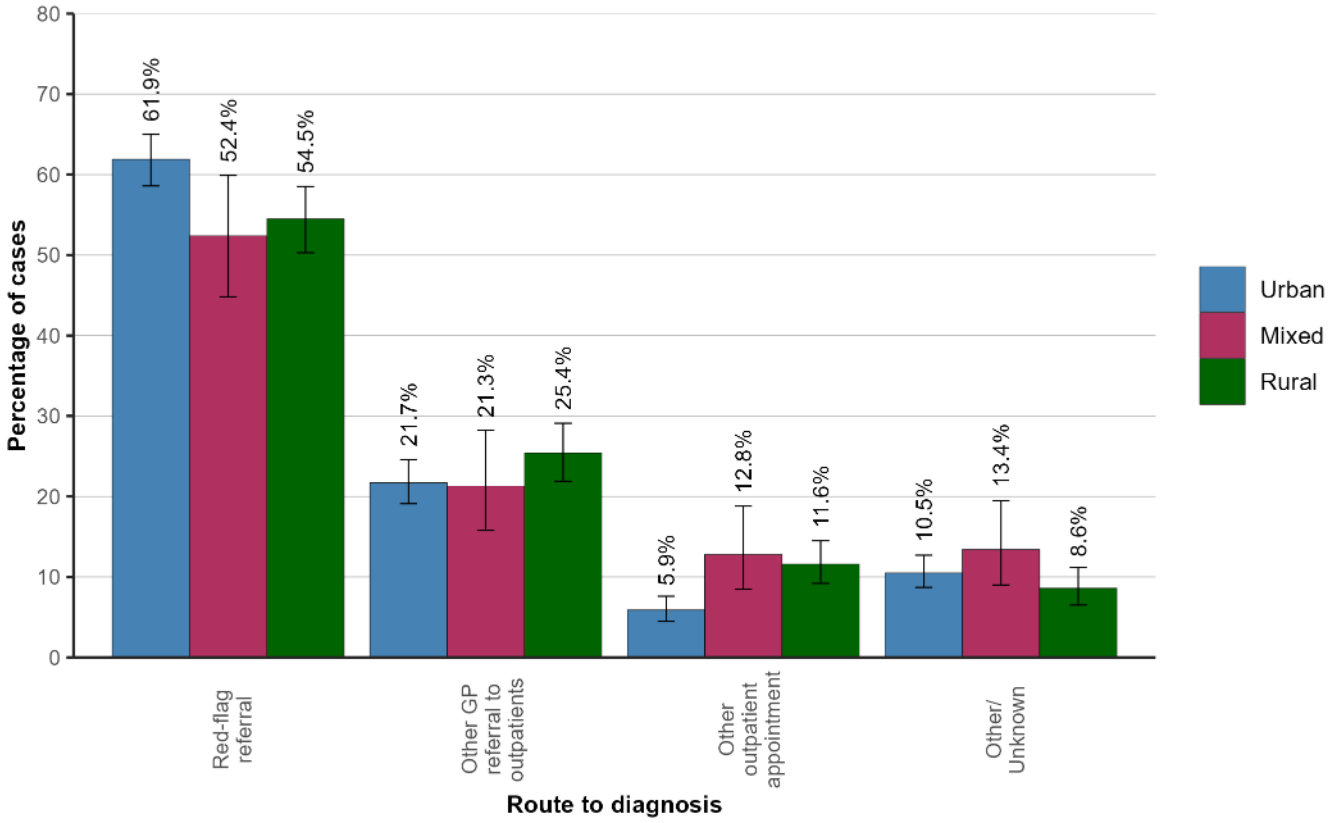
Figure 13.5: Route to diagnosis for melanoma patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of melanoma diagnosed via a red-flag referral was 61.9% in urban areas compared to 54.5% in rural areas. The variation in route to diagnosis by urban/rural status was statistically significant ($p < 0.001$).

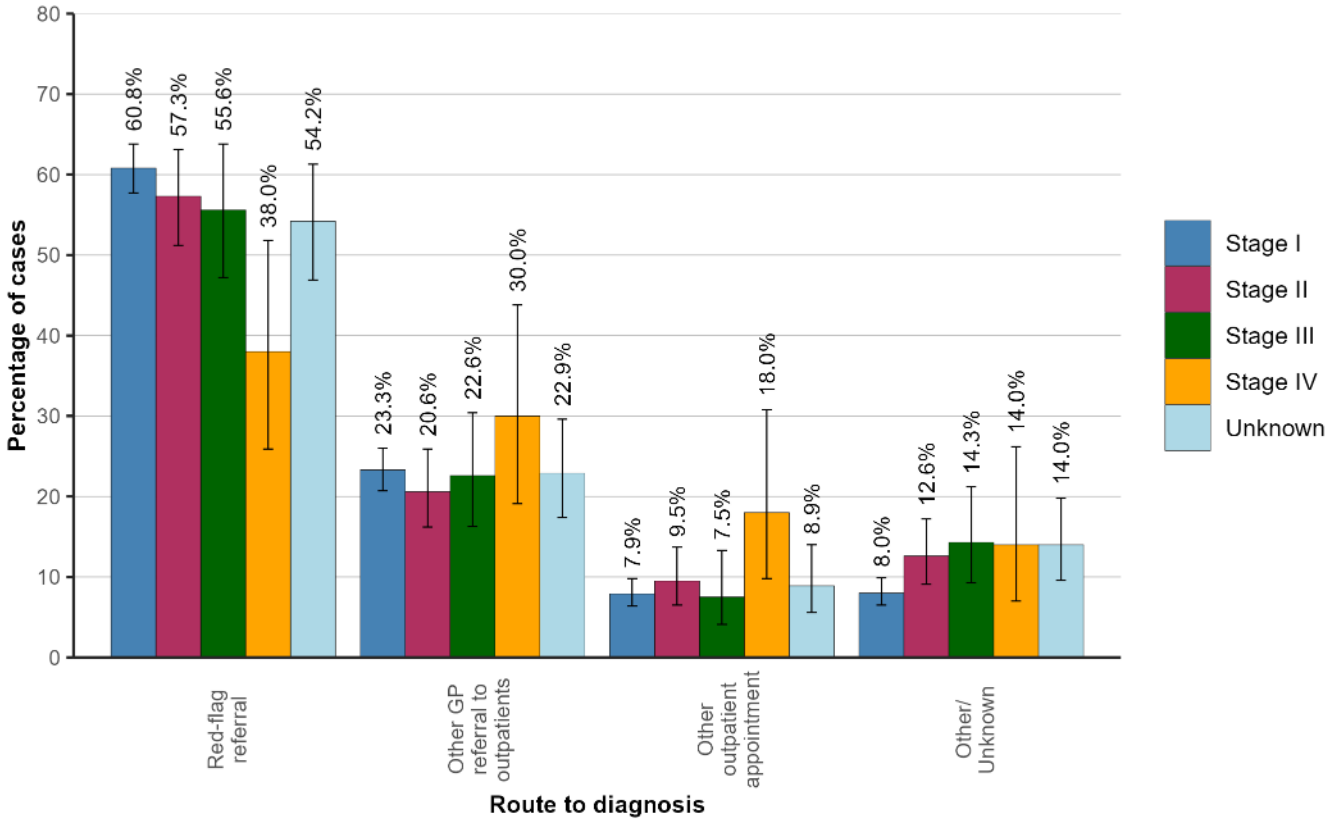
Figure 13.6: Route to diagnosis for melanoma patients diagnosed in 2018-2021 by urban/rural status



13.4: ROUTES TO DIAGNOSIS BY STAGE AT DIAGNOSIS

During 2018-2021 the proportion of cases of melanoma diagnosed via a red-flag referral was 60.8% among stage I cancers compared to 38.0% among stage IV cancers. The variation in route to diagnosis by stage at diagnosis was statistically significant (p = 0.017).

Figure 13.7: Route to diagnosis for melanoma patients diagnosed in 2018-2021 by stage at diagnosis

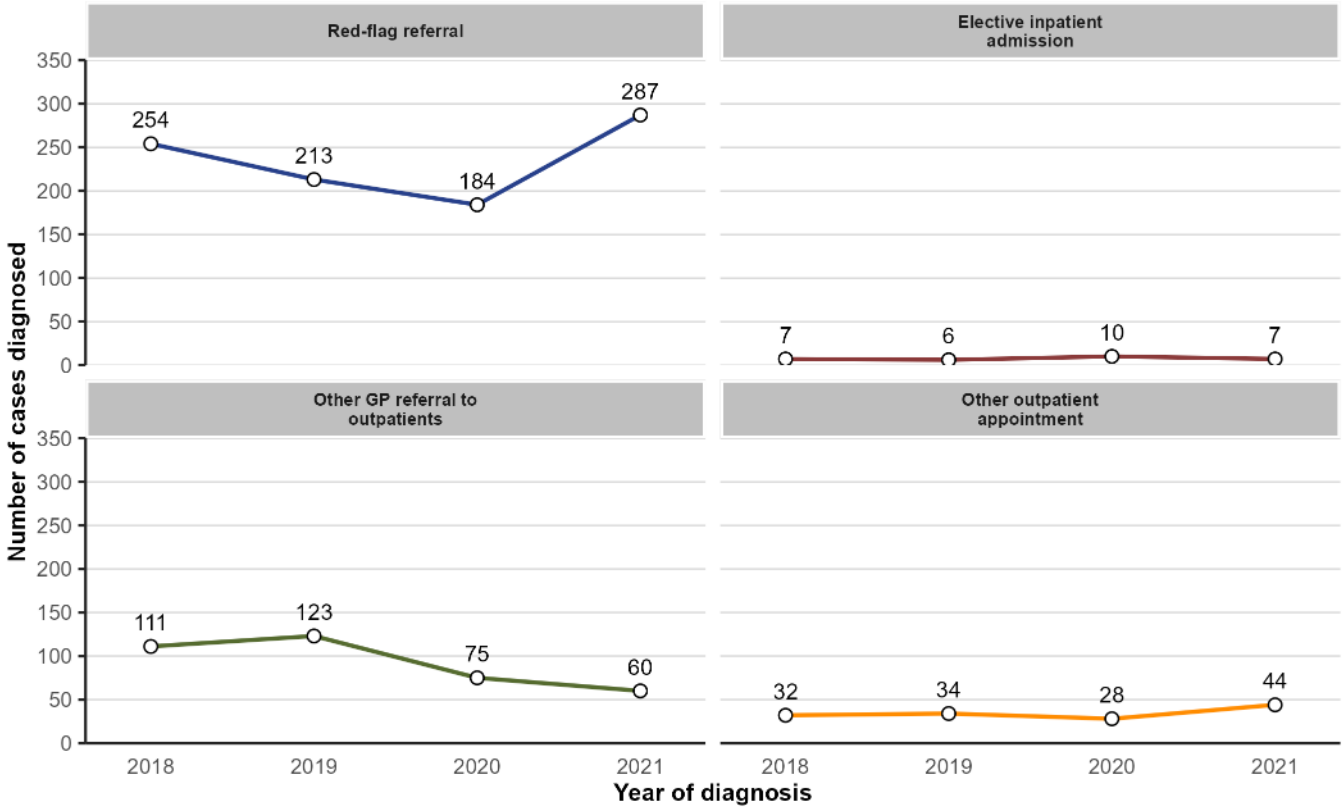


13.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

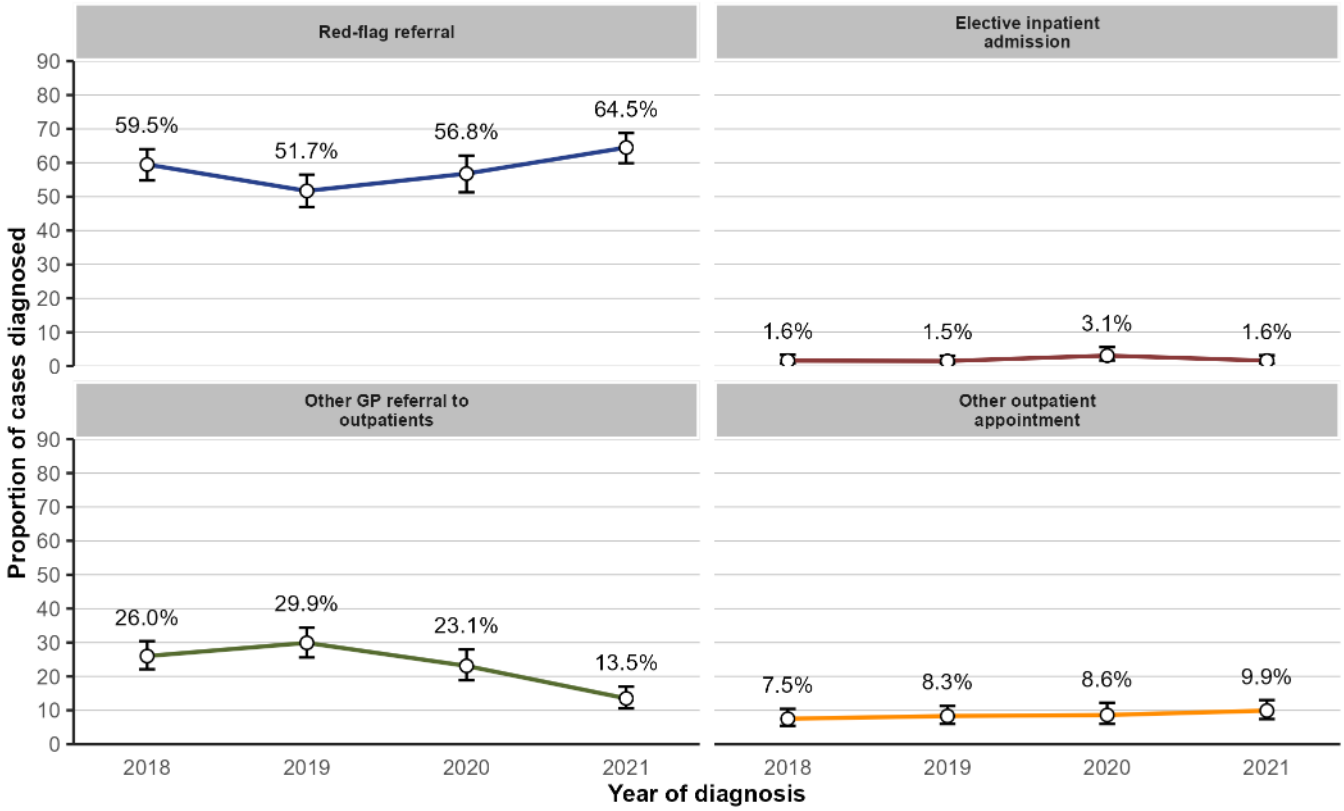
The number of melanoma cases diagnosed via a red-flag referral increased by 56.0% from 184 in 2020 to 287 in 2021. As a proportion of all cases, a red-flag referral diagnosis increased from 56.8% in 2020 to 64.5% in 2021. The variation in route to diagnosis between the previous two years was statistically significant (p = 0.005).

Figure 13.8: Route to diagnosis for melanoma patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

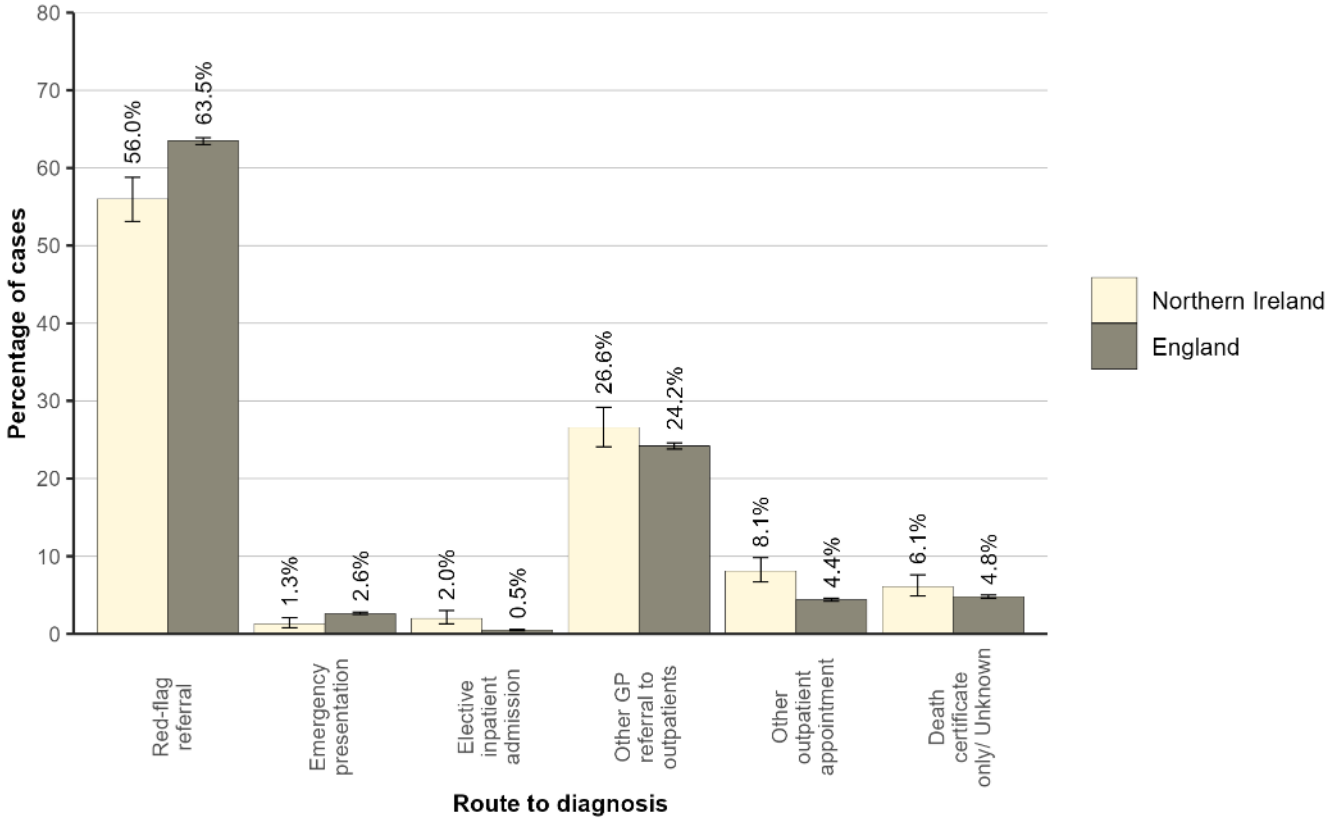


13.6: Comparison with England

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with melanoma in 2018-2020 compared to patients diagnosed in England during the same time period.

- Red-flag referral (56.0% in NI compared to 63.5% in England; p<0.001).
- Emergency presentation (1.3% in NI compared to 2.6% in England; p=0.006).
- Elective inpatient admission (2.0% in NI compared to 0.5% in England; p<0.001).
- Other outpatient appointment (8.1% in NI compared to 4.4% in England; p<0.001).

Figure 13.9: Route to diagnosis for melanoma patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

13.7: SURVIVAL

During 2018-2021 one-year age-standardised net survival from melanoma ranged from 97.2% for those diagnosed via another outpatient appointment route to 100.0% for those diagnosed via an unknown route. Two years from diagnosis age-standardised net survival ranged from 94.9% for those diagnosed via another GP referral to outpatients route to 99.3% for those diagnosed via an unknown route.

Figure 13.10: Age-standardised net survival by route to diagnosis for melanoma patients diagnosed in 2018-2021

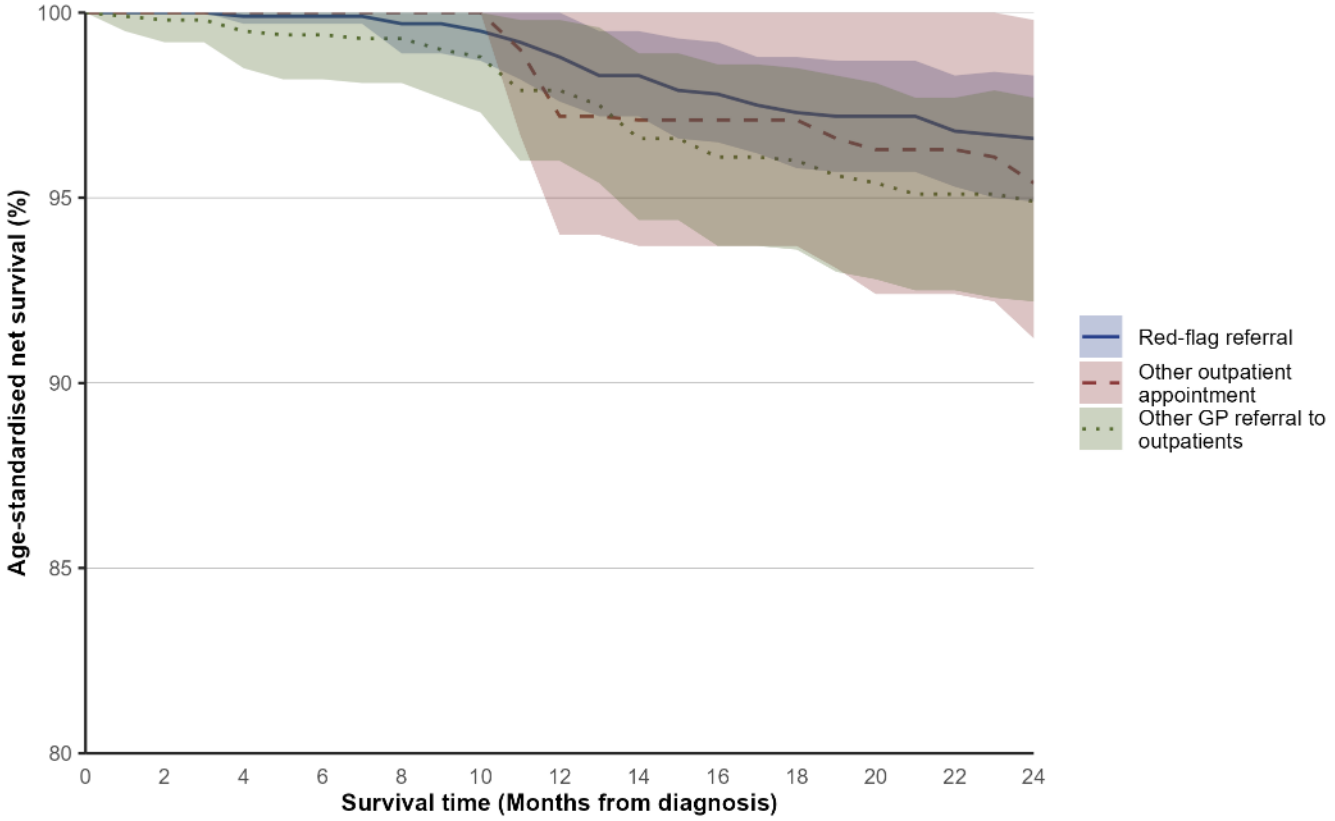


Table 13.2: Age-standardised net survival by route to diagnosis for melanoma patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	98.8% (97.6% - 100.0%)	96.6% (94.9% - 98.3%)
Emergency presentation	79.8% (65.2% - 97.7%)*	78.4% (60.9% - 100.0%)*
Elective inpatient admission	99.1% (92.9% - 100.0%)*	99.1% (90.2% - 100.0%)*
Other GP referral to outpatients	97.9% (96.0% - 99.8%)	94.9% (92.2% - 97.7%)
Other outpatient appointment	97.2% (94.0% - 100.0%)	95.4% (91.2% - 99.8%)
Unknown	100.0%	99.3% (96.8% - 100.0%)

*ASNS: Age-standardised net survival with 95% confidence interval. * Unstandardised net survival presented as less than 50 patients in this group.*

14: Brain Cancer (including central nervous system)

The most common route to diagnosis among brain cancer (including central nervous system) patients during 2018-2021 was via an emergency presentation, with 101 (61.7%) cases diagnosed on average each year. This was followed by another outpatient appointment route with 26 (15.9%) cases diagnosed on average each year. Red flag referrals made up 1.7% of cases during this period.

Figure 14.1: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2021

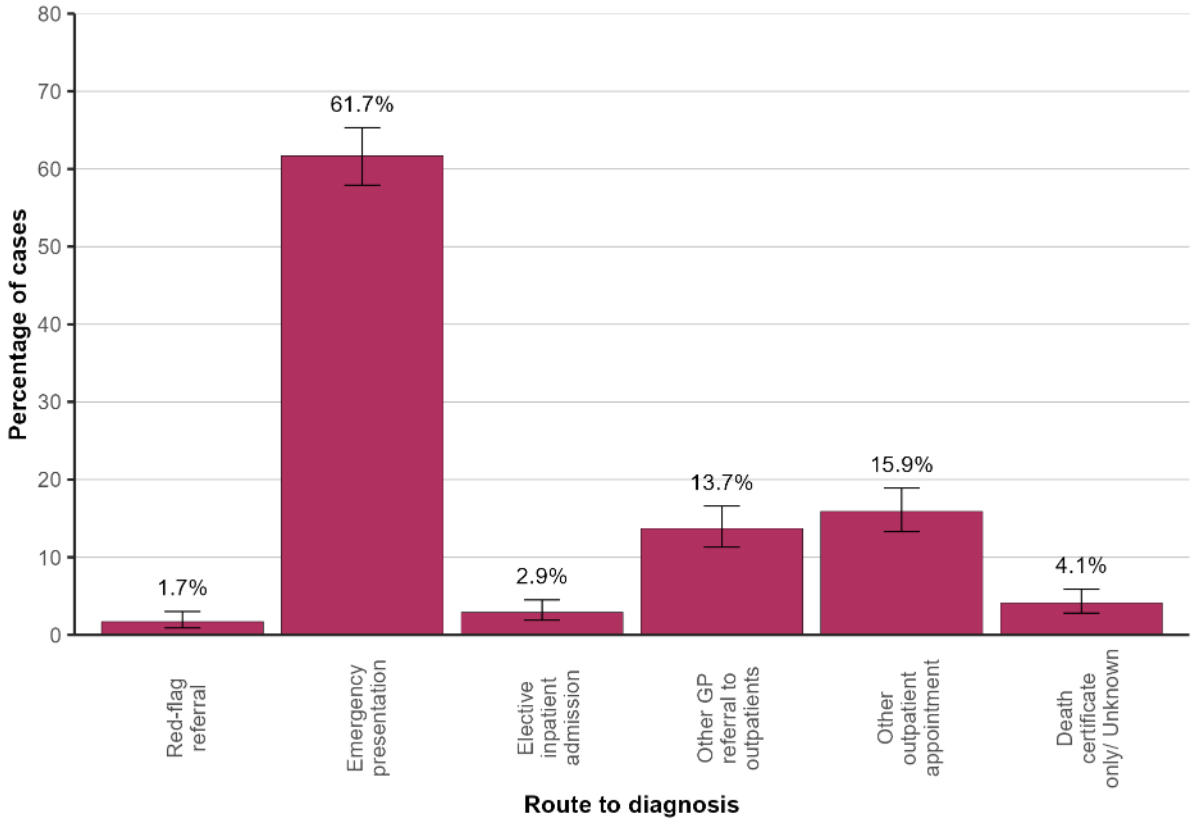


Table 14.1: Average number of brain cancer (including central nervous system) cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	3	1.7% (0.9% - 3.0%)
Emergency presentation	101	61.7% (57.9% - 65.3%)
Elective inpatient admission	5	2.9% (1.9% - 4.5%)
Other GP referral to outpatients	23	13.7% (11.3% - 16.6%)
Other outpatient appointment	26	15.9% (13.3% - 18.9%)
Death certificate only/ Unknown	7	4.1% (2.8% - 5.9%)

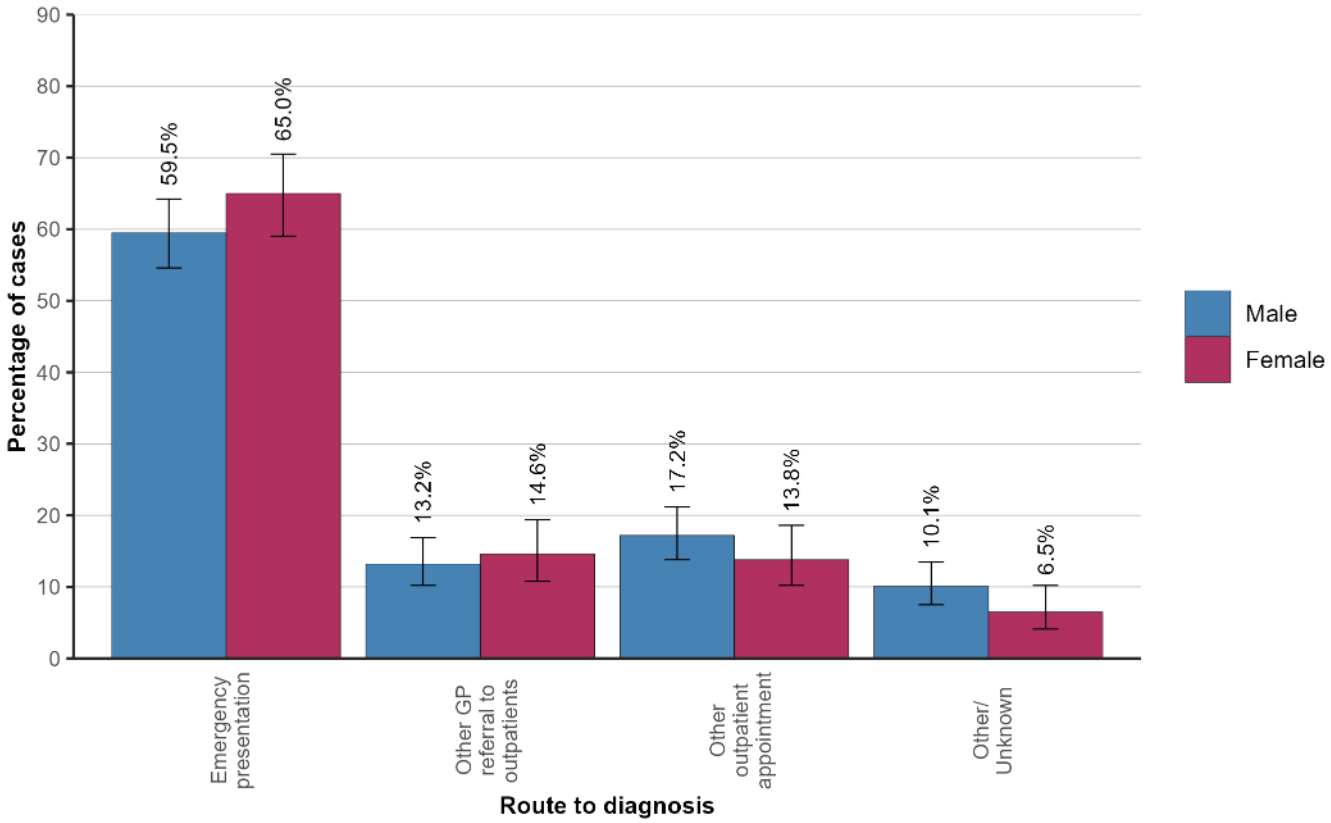
CI: Confidence Interval

14.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2021 there were 59 male and 42 female cases of brain cancer (including central nervous system) diagnosed each year where the route to diagnosis was an emergency presentation. This was the most common route to diagnosis for both men (59.5%) and women (65.0%).

Emergency presentation routes also demonstrated the biggest difference between males and females. The variation in route to diagnosis by gender was not statistically significant.

Figure 14.2: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2021 by gender

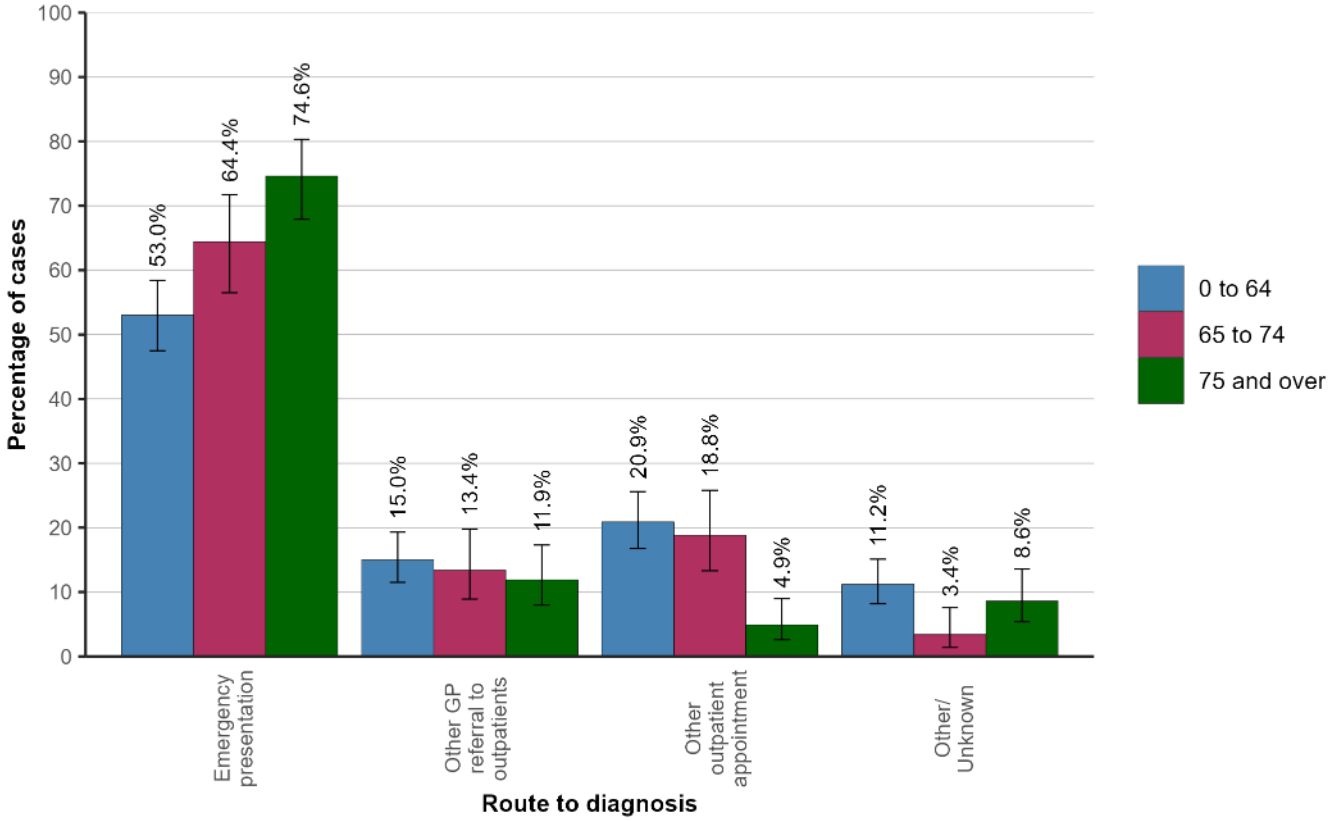


14.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of brain cancer (including central nervous system) overall was an emergency presentation. Among those aged 0 to 64 there were 43 (53.0%) diagnosed per year via this route, compared to 35 (74.6%) per year among those aged 75 and over. This made it the most common route to diagnosis for both those aged 0 to 64 and those aged 75 and over.

Emergency presentation routes also demonstrated the biggest difference between those aged 0 to 64 and 75 and over. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 14.3: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2021 by age group



14.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of brain cancer (including central nervous system) diagnosed via an emergency presentation ranged from 53.4% in South Eastern HSCT to 70.0% in Belfast HSCT. The variation in route to diagnosis by Health and Social Care Trust was not statistically significant.

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of brain cancer (including central nervous system) diagnosed via an emergency presentation was 64.1% in the most deprived areas compared to 64.1% in the least deprived areas. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 14.4: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2021 by Health and Social Care Trust

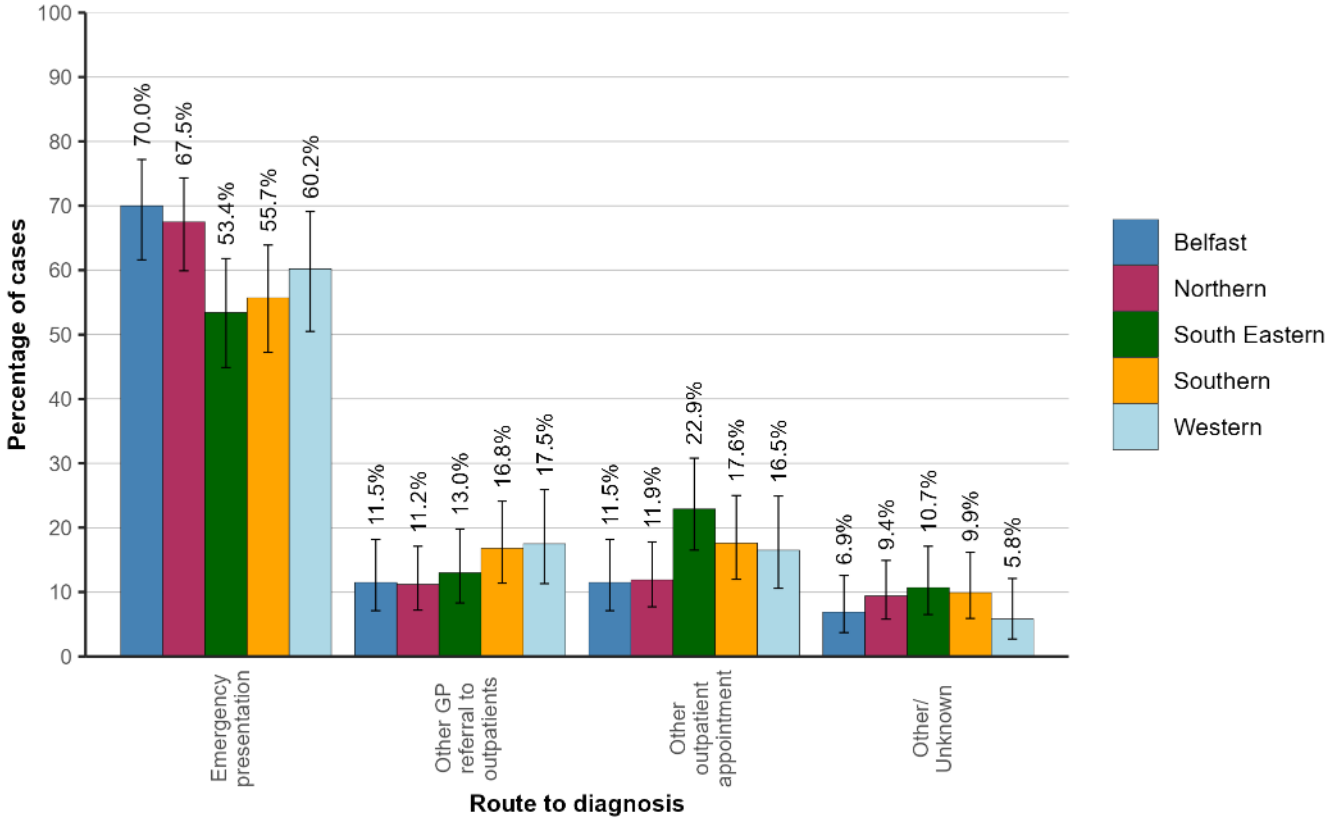
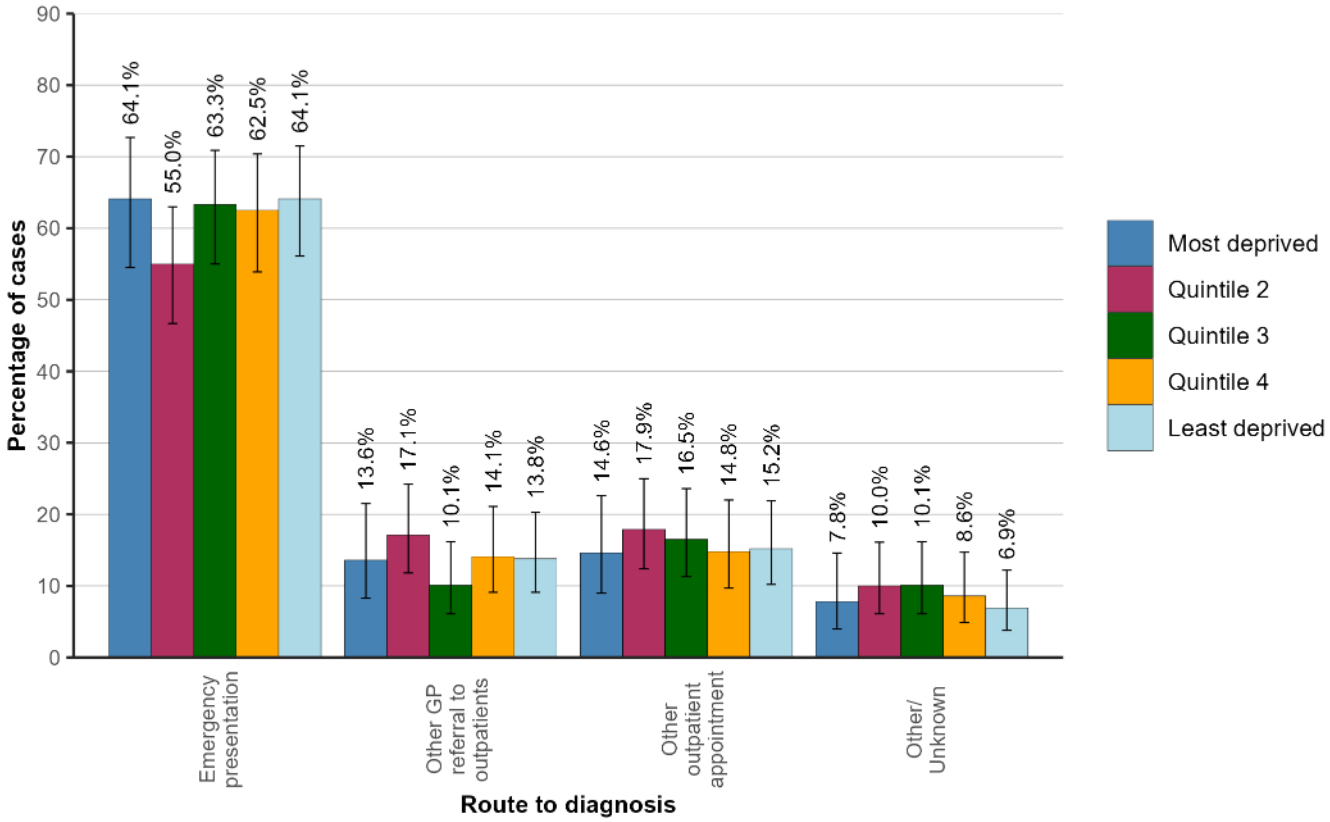


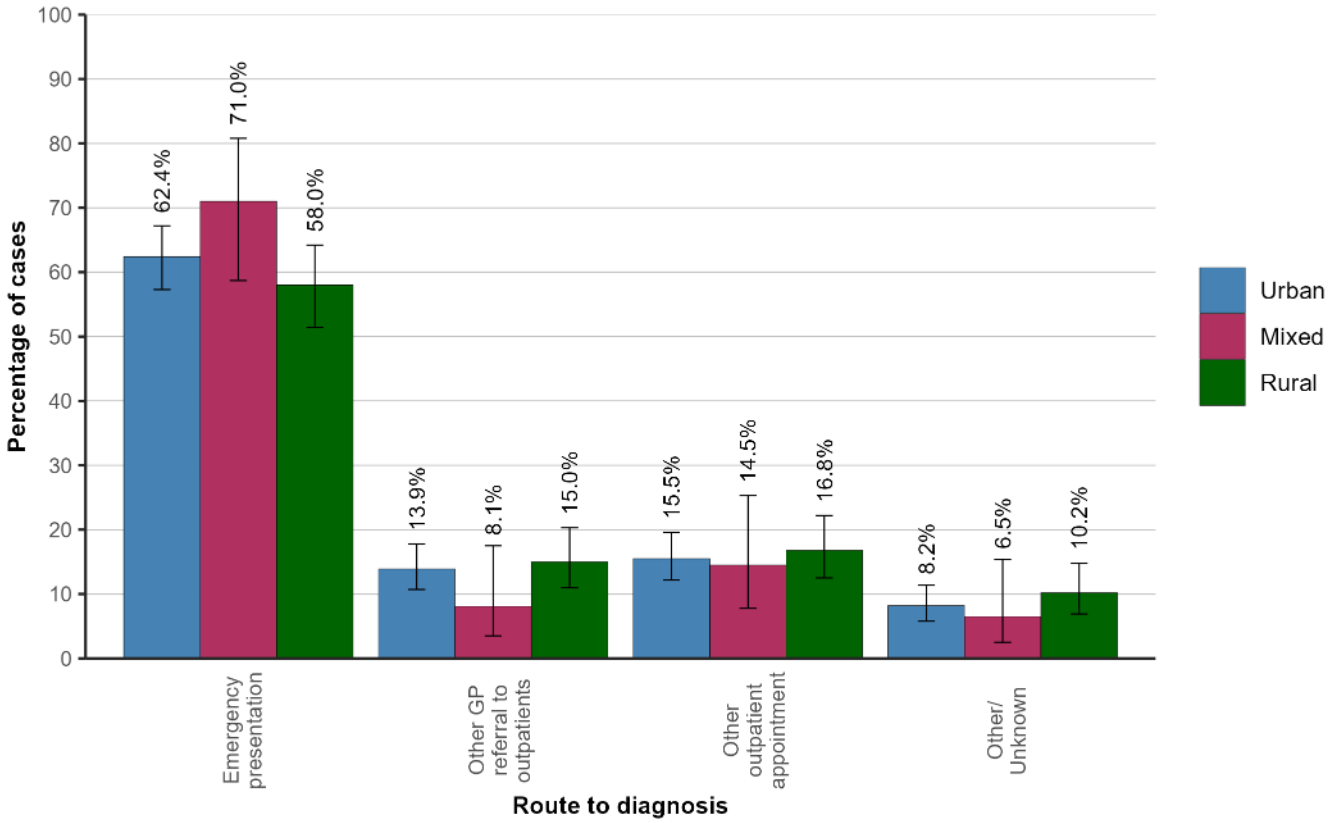
Figure 14.5: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of brain cancer (including central nervous system) diagnosed via an emergency presentation was 62.4% in urban areas compared to 58.0% in rural areas. The variation in route to diagnosis by urban/rural status was not statistically significant.

Figure 14.6: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2021 by urban/rural status

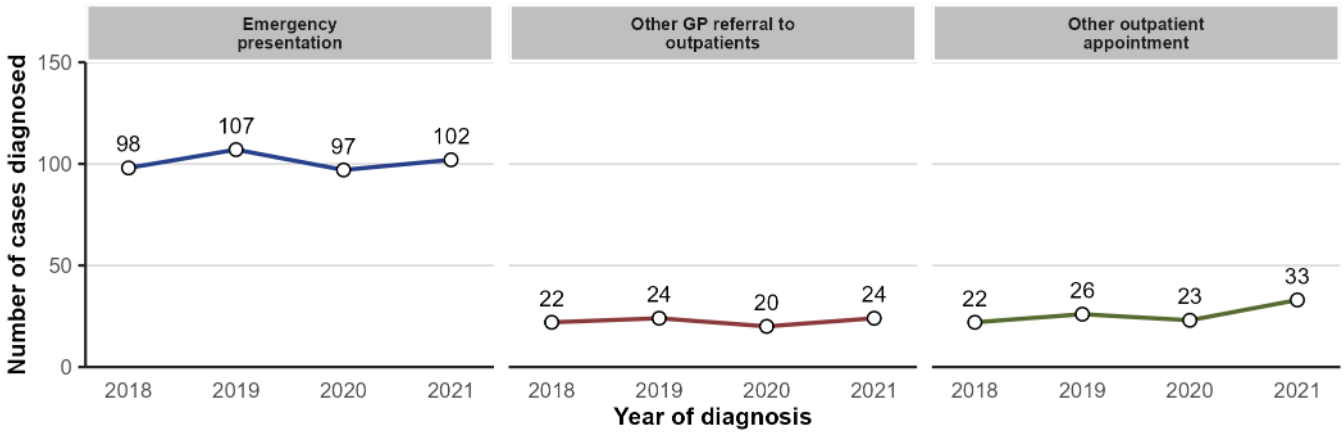


14.4: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

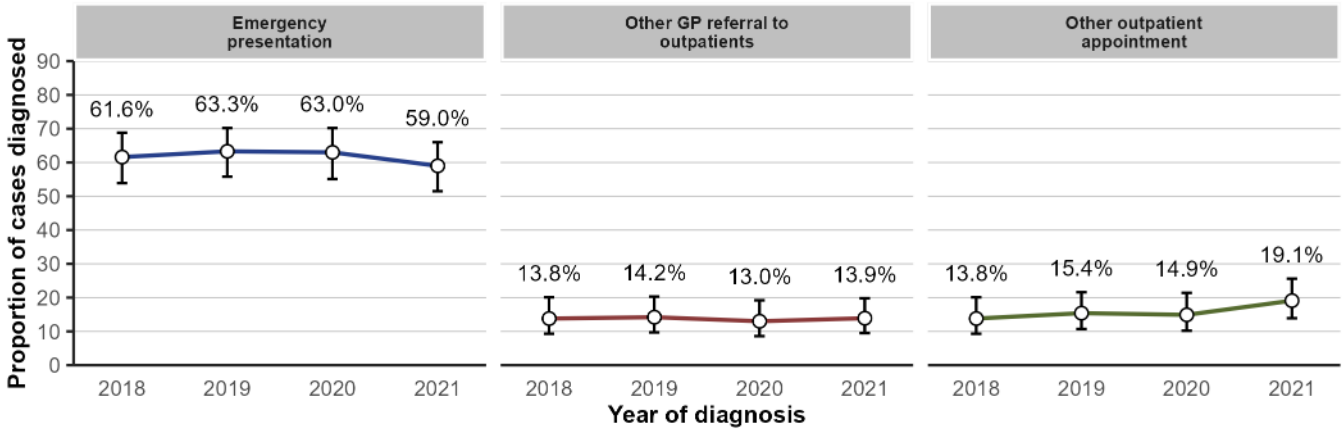
The number of brain cancer (including central nervous system) cases diagnosed via an emergency presentation increased by 5.2% from 97 in 2020 to 102 in 2021. As a proportion of all cases, an emergency presentation diagnosis decreased from 63.0% in 2020 to 59.0% in 2021. The variation in route to diagnosis between the previous two years was not statistically significant.

Figure 14.7: Route to diagnosis for brain cancer (including central nervous system) patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases



15: Haematological Cancer

The most common route to diagnosis among haematological cancer patients during 2018-2021 was via an emergency presentation, with 268 (30.2%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 267 (30.1%) cases diagnosed on average each year. Red flag referrals made up 16.9% of cases during this period.

Figure 15.1: Route to diagnosis for haematological cancer patients diagnosed in 2018-2021

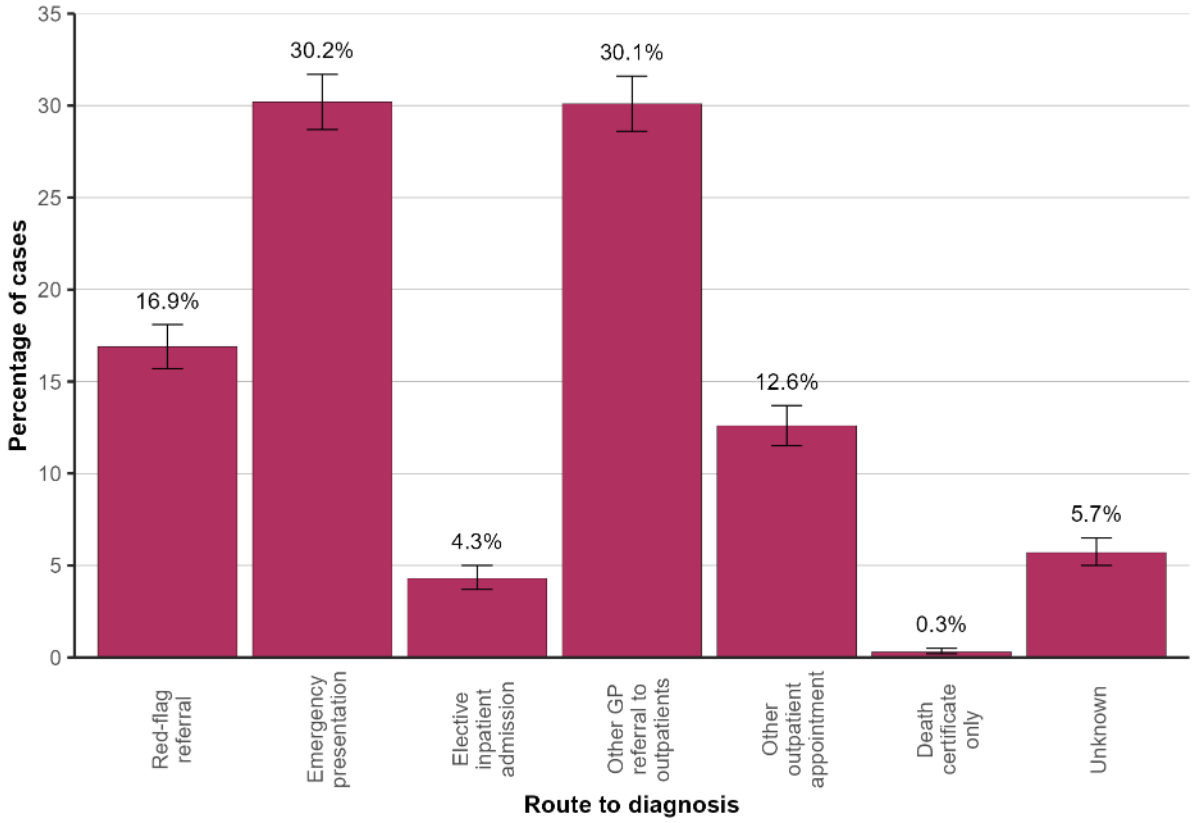


Table 15.1: Average number of haematological cancer cases diagnosed each year during 2018-2021 by route to diagnosis

Route to diagnosis	Cases per year	Proportion (95% CI)
Red-flag referral	150	16.9% (15.7% - 18.1%)
Emergency presentation	268	30.2% (28.7% - 31.7%)
Elective inpatient admission	38	4.3% (3.7% - 5.0%)
Other GP referral to outpatients	267	30.1% (28.6% - 31.6%)
Other outpatient appointment	112	12.6% (11.5% - 13.7%)
Death certificate only	3	0.3% (0.2% - 0.5%)
Unknown	51	5.7% (5.0% - 6.5%)

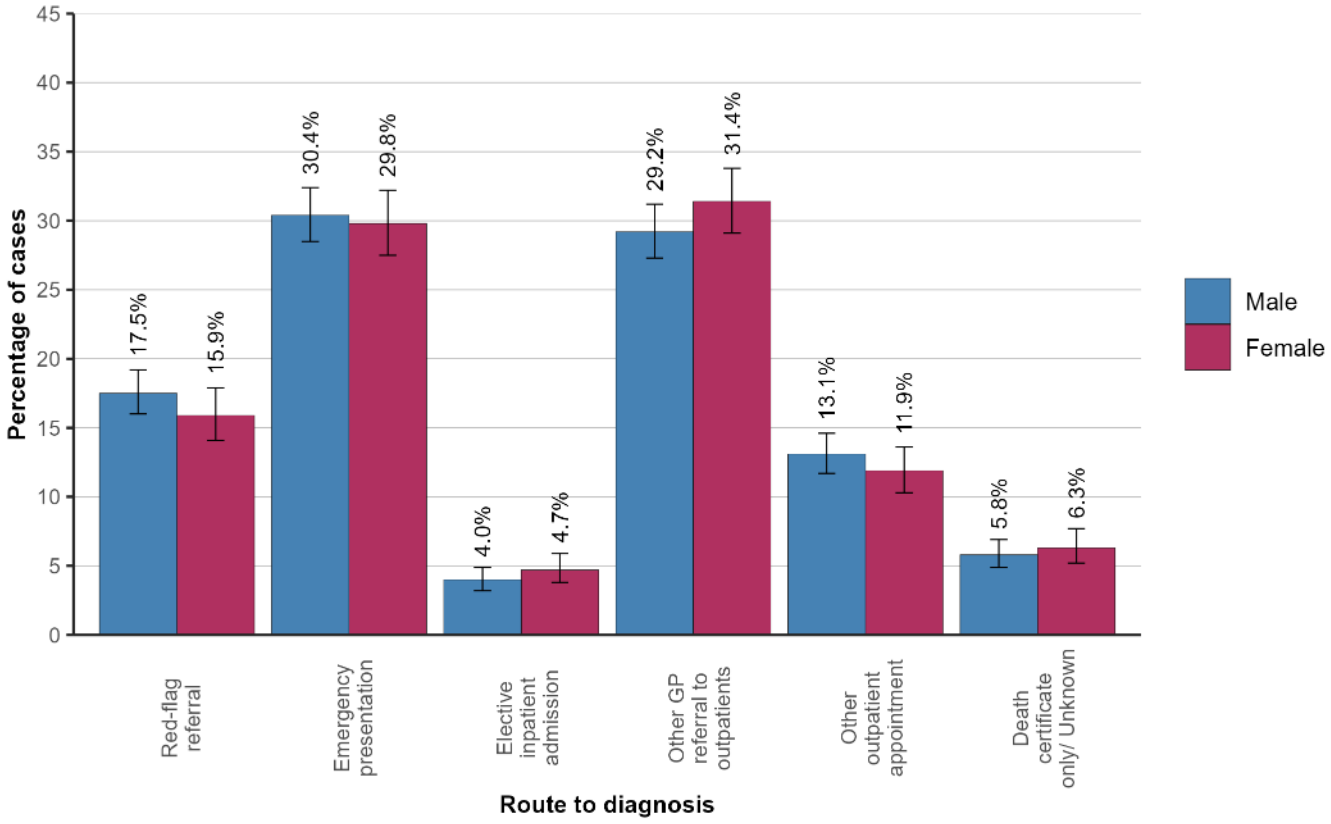
CI: Confidence Interval

15.1: ROUTES TO DIAGNOSIS BY GENDER

During 2018-2021 there were 158 male and 110 female cases of haematological cancer diagnosed each year where the route to diagnosis was an emergency presentation. This was the most common route to diagnosis for men (30.4%) but not women (29.8%). The most common route to diagnosis for women was another GP referral to outpatients (31.4%).

The route to diagnosis with the biggest difference between males and females was another GP referral to outpatients with 29.2% of male cases and 31.4% of female cases diagnosed via this route. The variation in route to diagnosis by gender was not statistically significant.

Figure 15.2: Route to diagnosis for haematological cancer patients diagnosed in 2018-2021 by gender

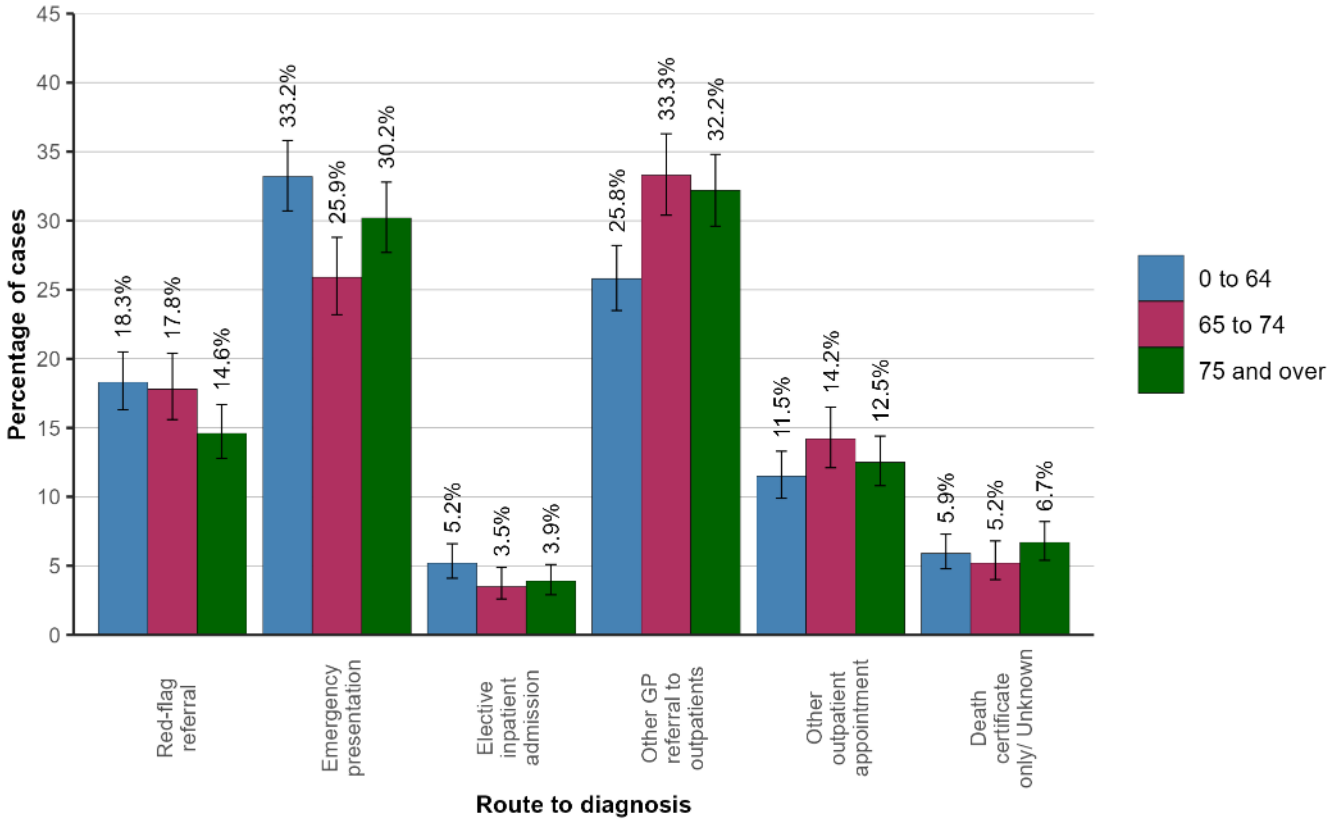


15.2: ROUTES TO DIAGNOSIS BY AGE GROUP

During 2018-2021 the most common route to diagnosis for cases of haematological cancer overall was an emergency presentation. Among those aged 0 to 64 there were 110 (33.2%) diagnosed per year via this route, compared to 96 (30.2%) per year among those aged 75 and over. This made it the most common route to diagnosis for those aged 0 to 64 but not those aged 75 and over. The most common route to diagnosis for those aged 75 and over was another GP referral to outpatients (32.2%).

The route to diagnosis with the biggest difference between those aged 0 to 64 and aged 75 and over was another GP referral to outpatients with 25.8% of those aged 0 to 64 and 32.2% of those aged 75 and over diagnosed via this route. The variation in route to diagnosis by age group was statistically significant ($p < 0.001$).

Figure 15.3: Route to diagnosis for haematological cancer patients diagnosed in 2018-2021 by age group



15.3: ROUTES TO DIAGNOSIS BY AREA OF RESIDENCE

Health and Social Care Trust

During 2018-2021 the proportion of cases of haematological cancer diagnosed via an emergency presentation ranged from 27.2% in Southern HSCT to 34.1% in Western HSCT. The proportions diagnosed via a red-flag referral ranged from 14.6% to 20.2% in South Eastern HSCT and Western HSCT respectively. The variation in route to diagnosis by Health and Social Care Trust was statistically significant (p = 0.002).

Area-based socio-economic deprivation

During 2018-2021 the proportion of cases of haematological cancer diagnosed via an emergency presentation was 30.4% in the most deprived areas compared to 26.8% in the least deprived areas. The proportions diagnosed via a red-flag referral were 15.7% and 17.7% in the most and least deprived areas respectively. The variation in route to diagnosis by deprivation quintile was not statistically significant.

Figure 15.4: Route to diagnosis for haematological cancer patients diagnosed in 2018-2021 by Health and Social Care Trust

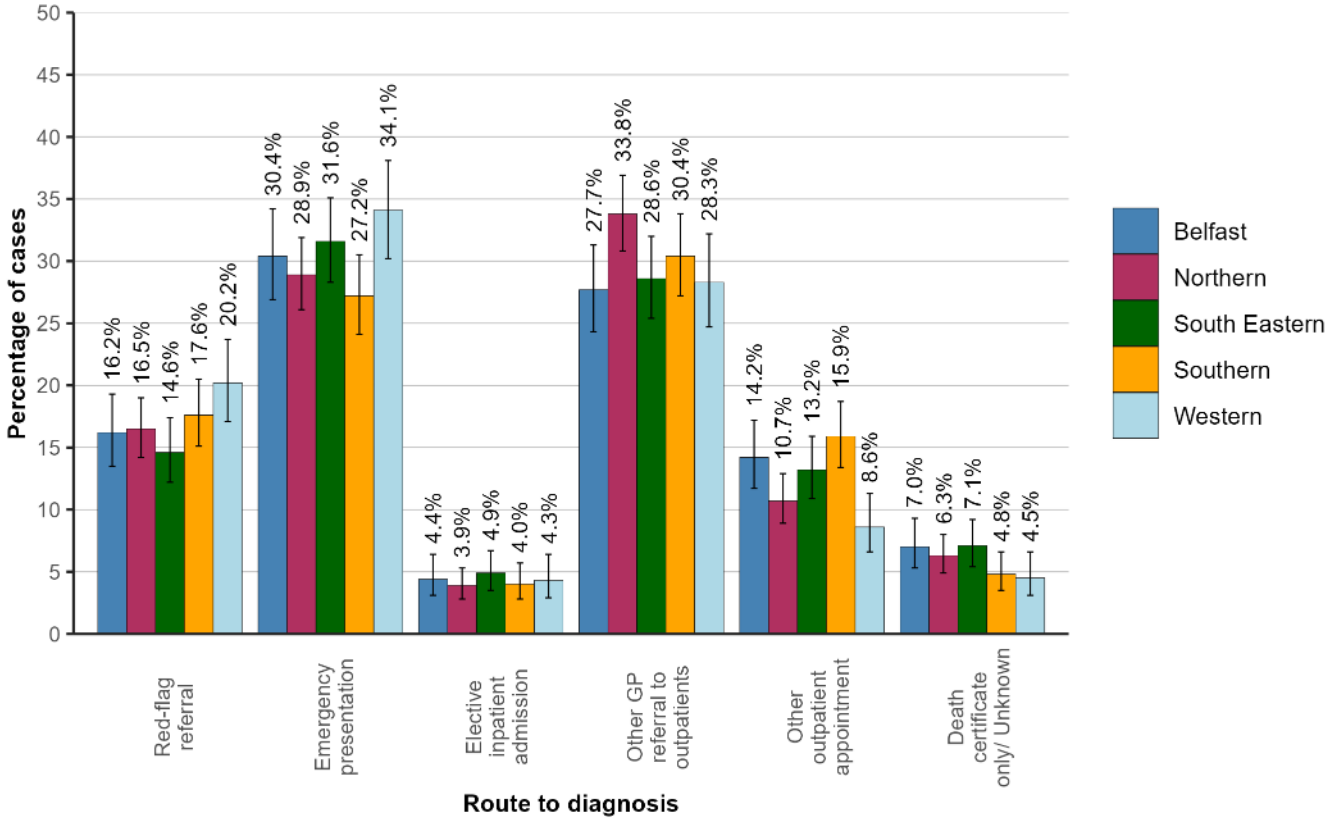
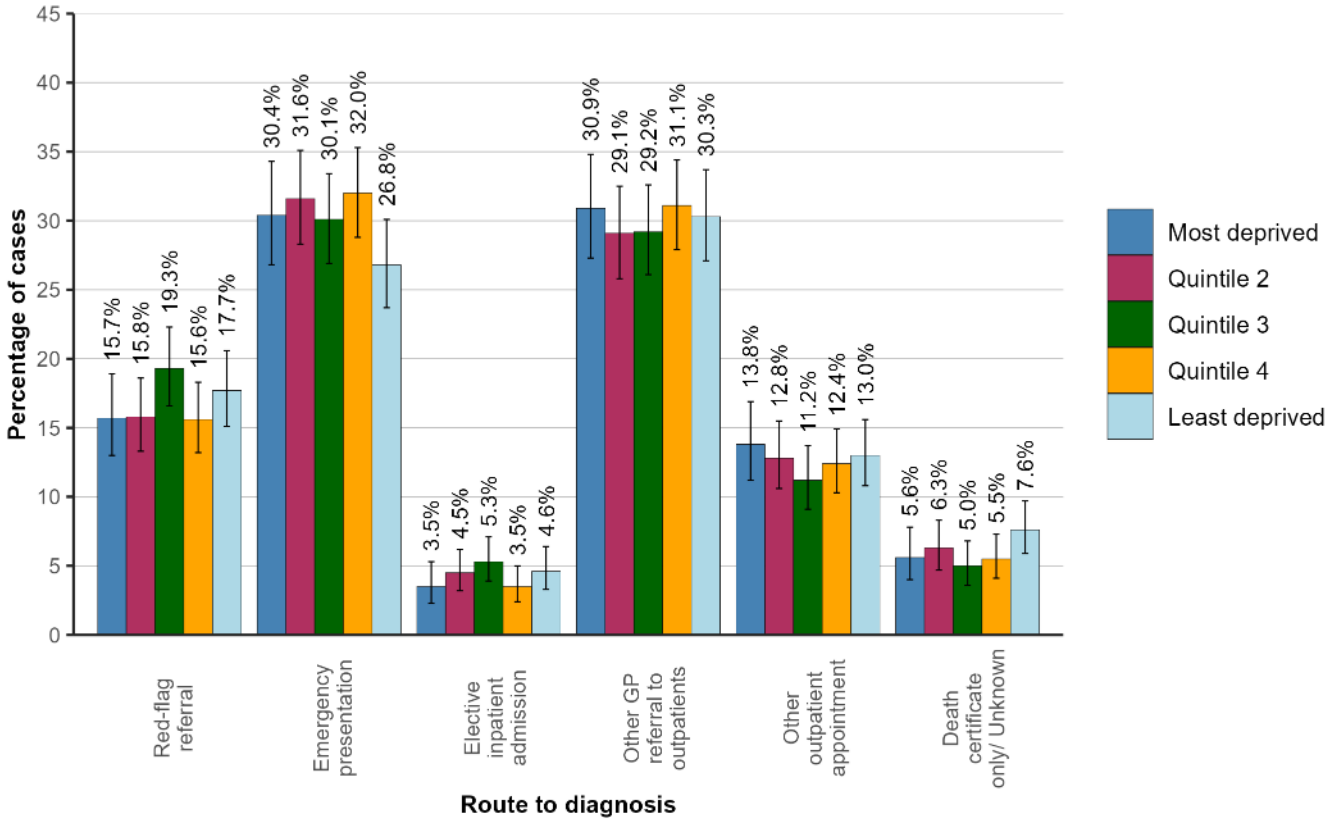


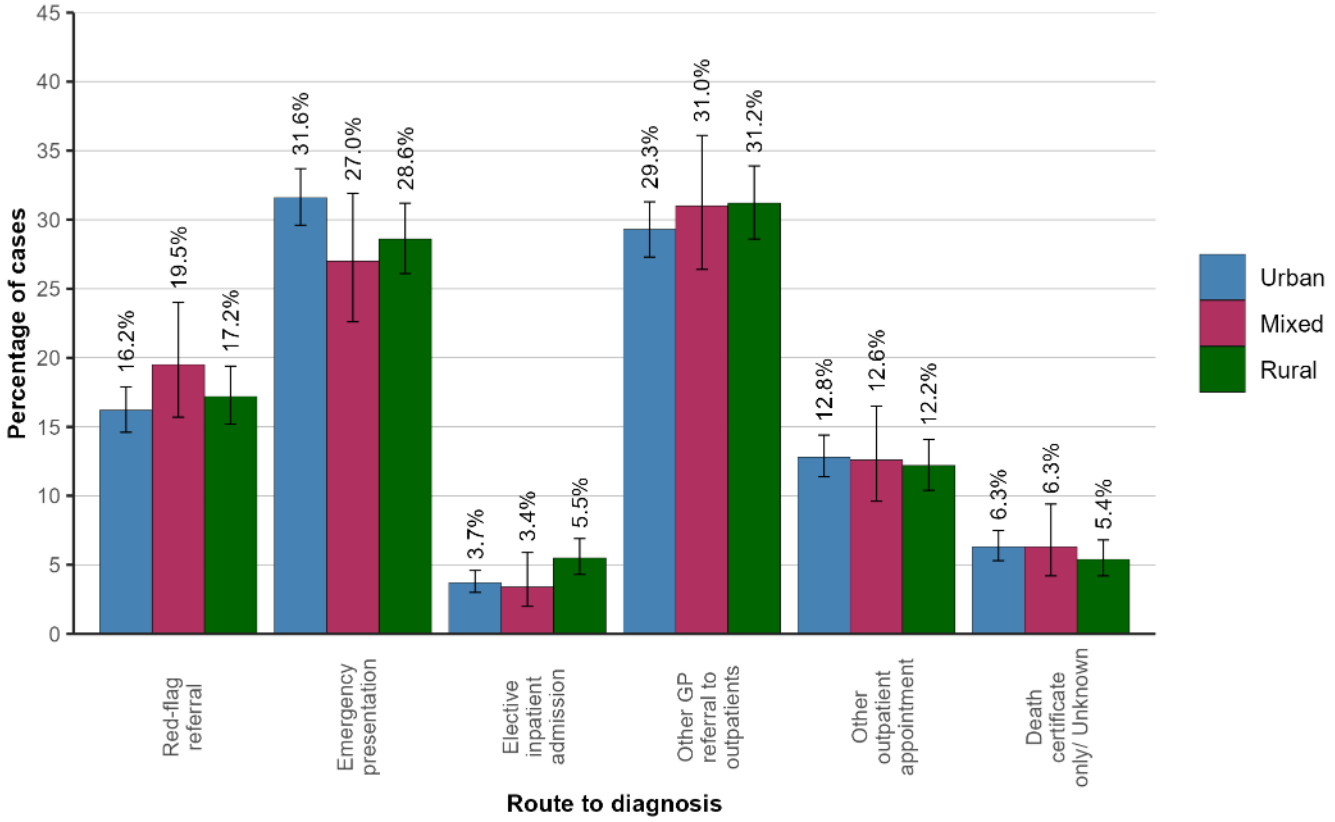
Figure 15.5: Route to diagnosis for haematological cancer patients diagnosed in 2018-2021 by deprivation quintile



Urban/Rural status

During 2018-2021 the proportion of cases of haematological cancer diagnosed via an emergency presentation was 31.6% in urban areas compared to 28.6% in rural areas. The proportions diagnosed via a red-flag referral were 16.2% and 17.2% in urban and rural areas respectively. The variation in route to diagnosis by urban/rural status was not statistically significant.

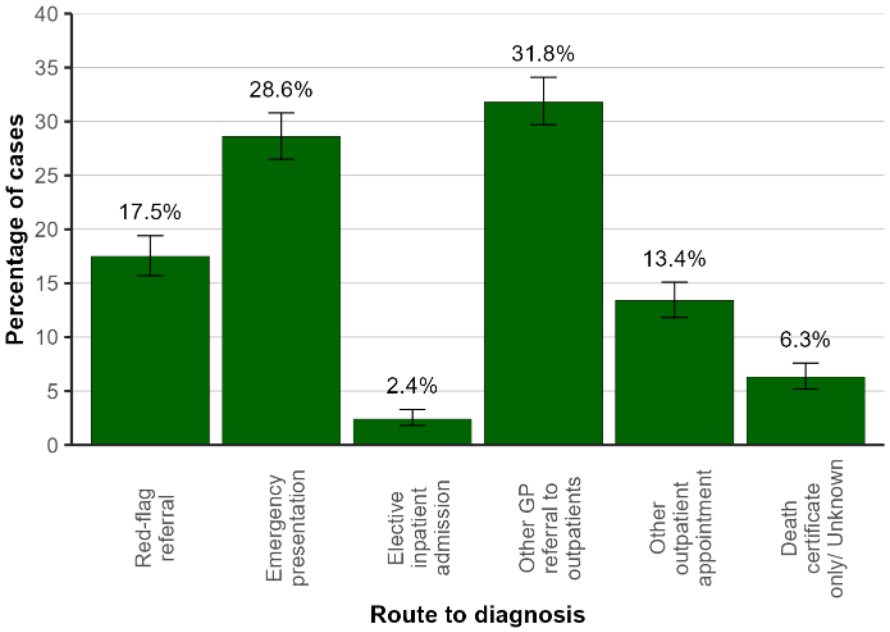
Figure 15.6: Route to diagnosis for haematological cancer patients diagnosed in 2018-2021 by urban/rural status



15.4: Routes to diagnosis by cancer type

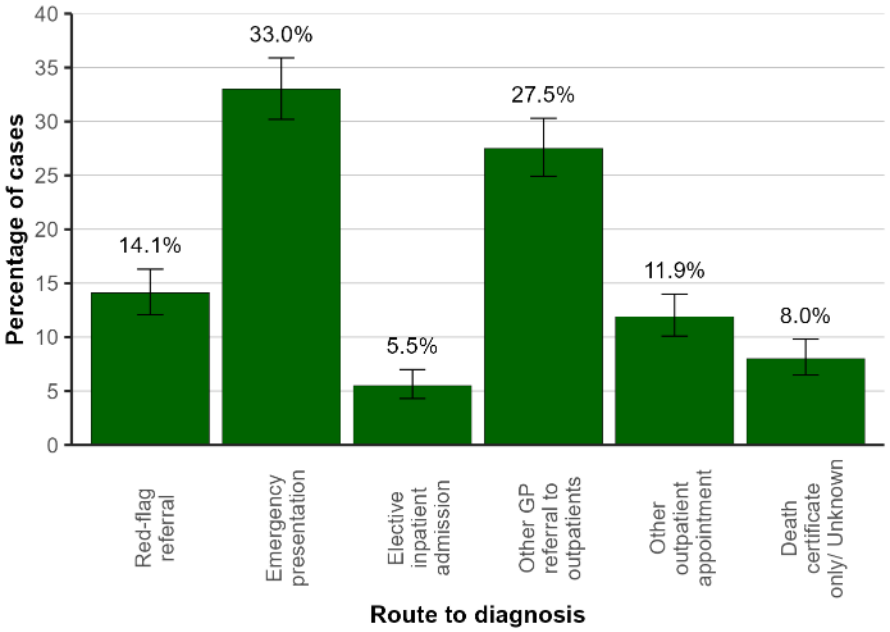
Lymphoma: The most common route to diagnosis among lymphoma patients during 2018-2021 was via another GP referral to outpatients, with 135 (31.8%) cases diagnosed on average each year. This was followed by an emergency presentation route with 122 (28.6%) cases diagnosed on average each year. Red flag referrals made up 17.5% of cases during this period.

Figure 15.7: Route to diagnosis for lymphoma patients diagnosed in 2018-2021



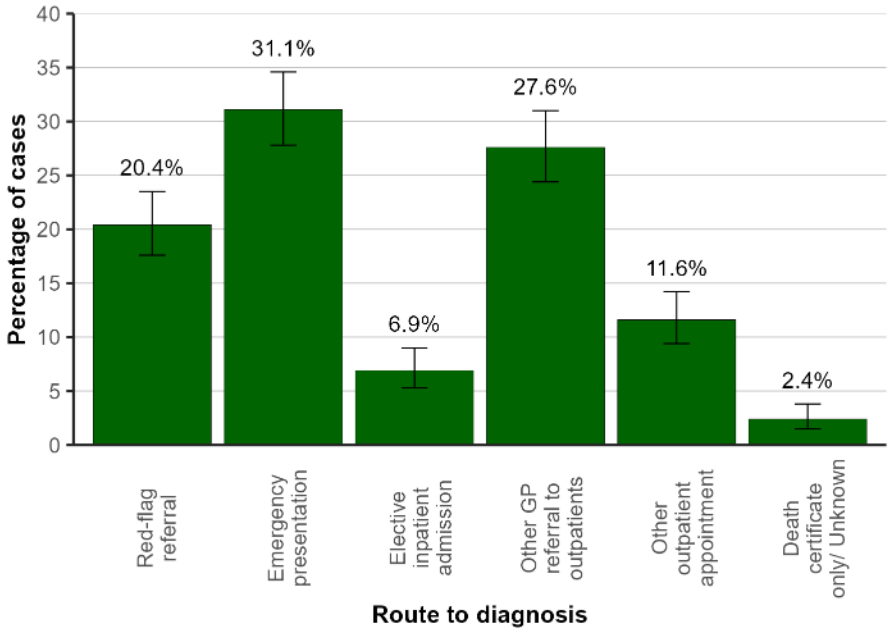
Leukaemia: The most common route to diagnosis among leukaemia patients during 2018-2021 was via an emergency presentation, with 86 (33.0%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 72 (27.5%) cases diagnosed on average each year. Red flag referrals made up 14.1% of cases during this period.

Figure 15.8: Route to diagnosis for leukaemia patients diagnosed in 2018-2021



Multiple myeloma: The most common route to diagnosis among multiple myeloma patients during 2018-2021 was via an emergency presentation, with 55 (31.1%) cases diagnosed on average each year. This was followed by another GP referral to outpatients route with 49 (27.6%) cases diagnosed on average each year. Red flag referrals made up 20.4% of cases during this period.

Figure 15.9: Route to diagnosis for multiple myeloma patients diagnosed in 2018-2021



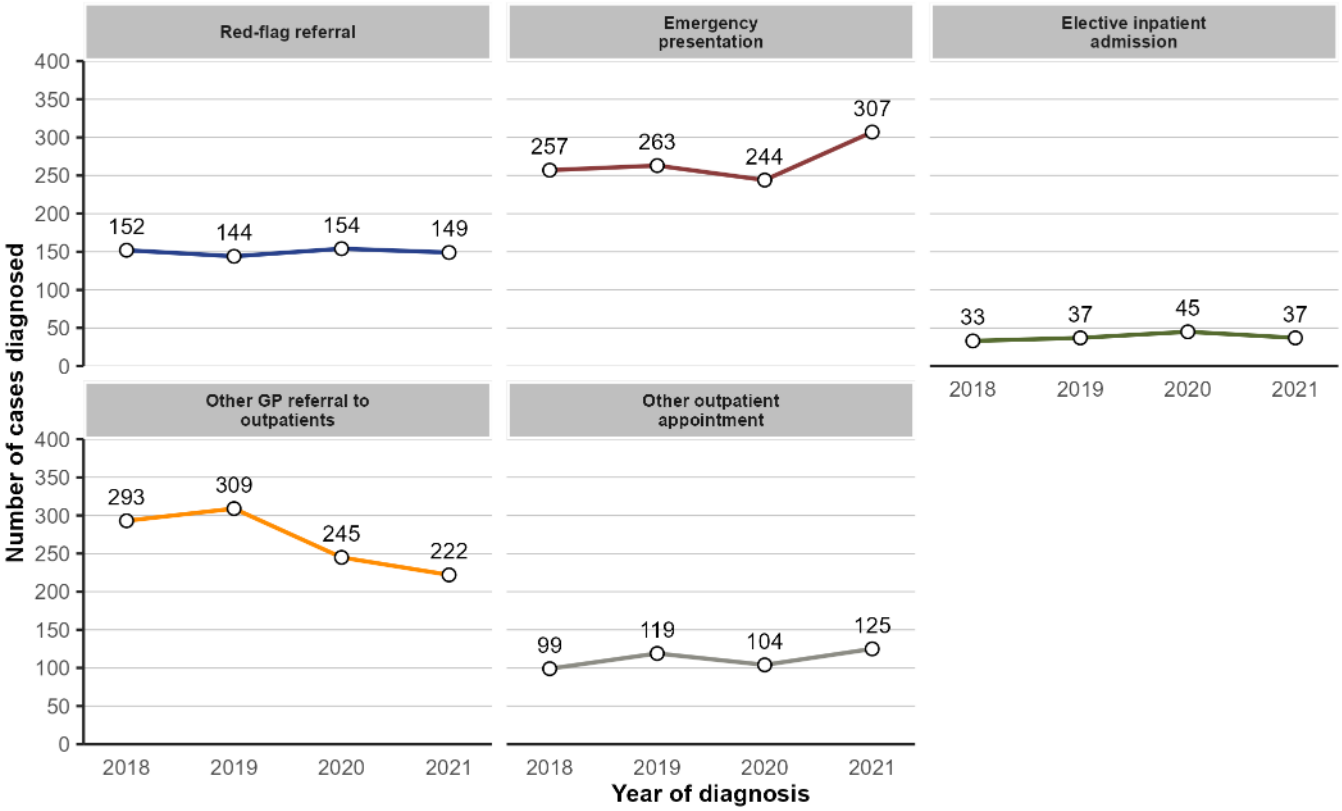
15.5: ROUTES TO DIAGNOSIS BY YEAR OF DIAGNOSIS

The number of haematological cancer cases diagnosed via a red-flag referral decreased by 3.2% from 154 in 2020 to 149 in 2021. As a proportion of all cases, a red-flag referral diagnosis decreased from 18.1% in 2020 to 16.6% in 2021.

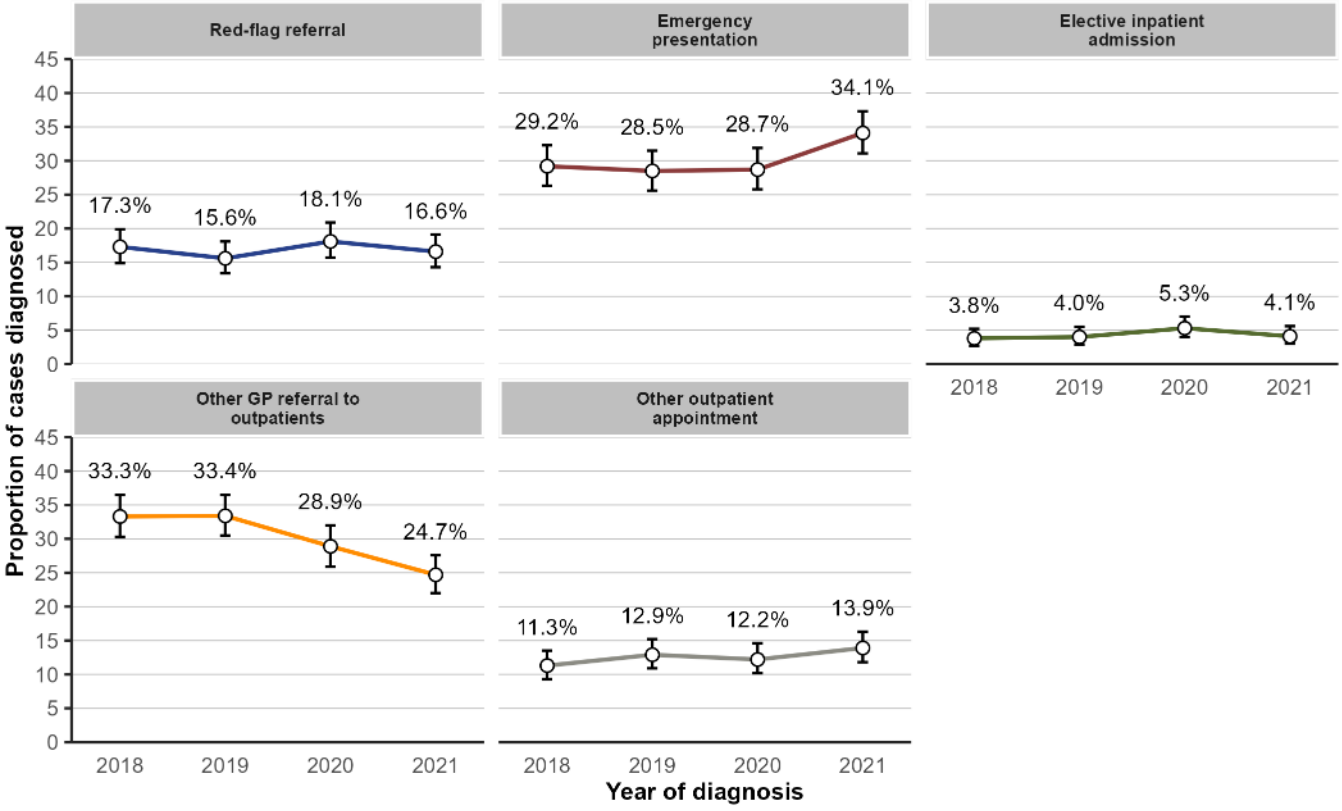
The number of haematological cancer cases diagnosed via an emergency presentation increased by 25.8% from 244 in 2020 to 307 in 2021. As a proportion of all cases, an emergency presentation diagnosis increased from 28.7% in 2020 to 34.1% in 2021. The variation in route to diagnosis between the previous two years was not statistically significant.

Figure 15.10: Route to diagnosis for haematological cancer patients diagnosed in 2018-2021 by year of diagnosis

(a) Number of cases



(b) Proportion of cases

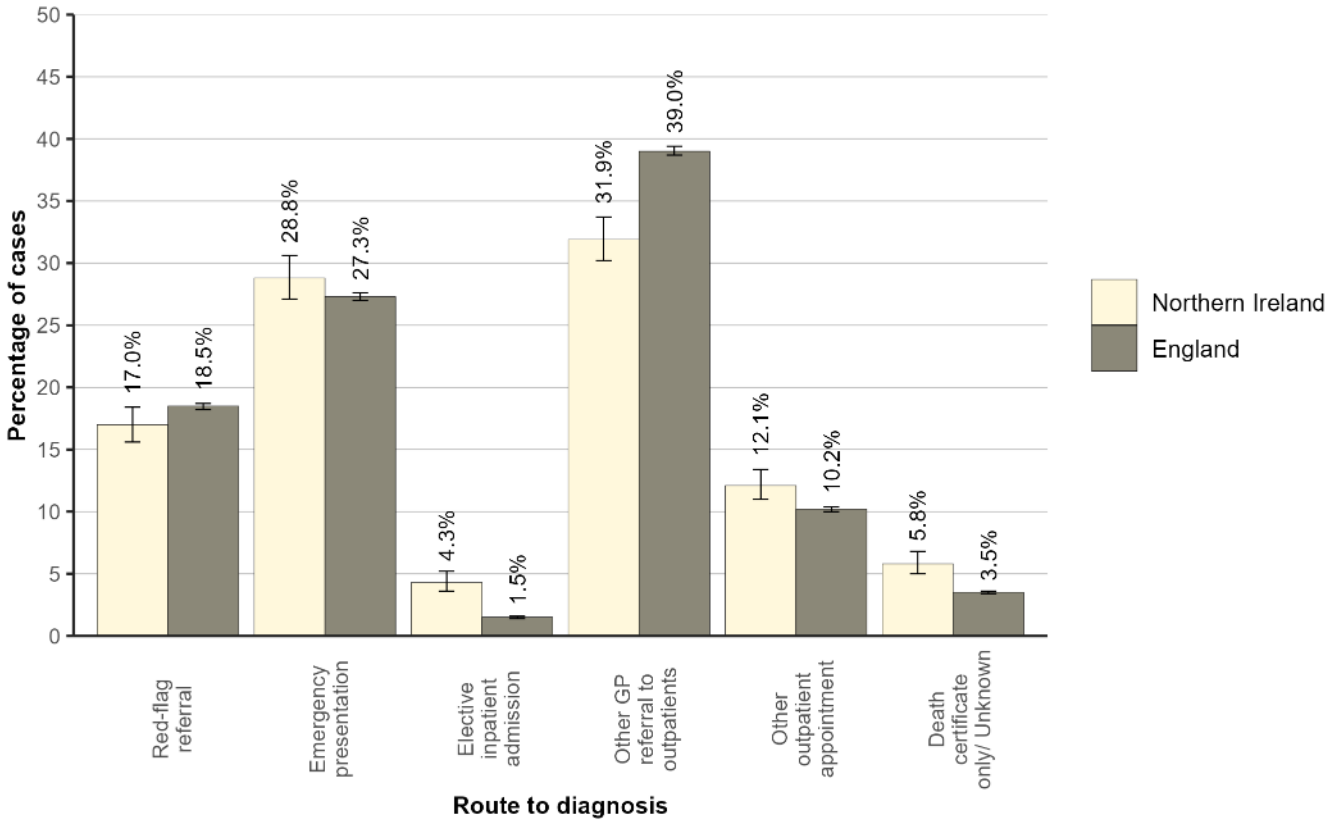


15.6: COMPARISON WITH ENGLAND

There were significant differences in the proportion of cases with the following routes to diagnosis for patients diagnosed with haematological cancer in 2018-2020 compared to patients diagnosed in England during the same time period.

- Elective inpatient admission (4.3% in NI compared to 1.5% in England; p<0.001).
- Other GP referral to outpatients (31.9% in NI compared to 39.0% in England; p<0.001).
- Other outpatient appointment (12.1% in NI compared to 10.2% in England; p=0.002).

Figure 15.11: Route to diagnosis for haematological cancer patients diagnosed in 2018-2020 compared to patients diagnosed in England during 2018-2020



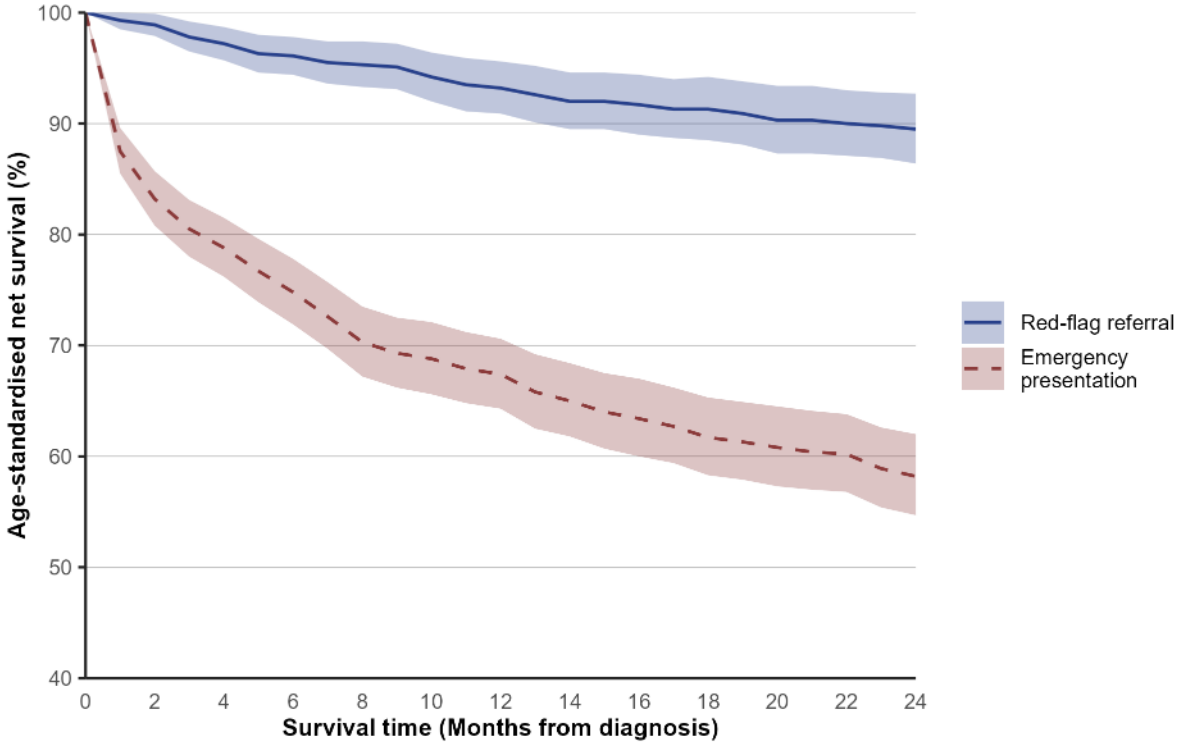
Source of English data: National Disease Registration Service, See reference 13.
Due to potential differences in coding and data sources, differences between the two studies should be treated as an approximate comparison.

15.7: SURVIVAL

During 2018-2021 one-year age-standardised net survival from haematological cancer ranged from 67.4% for those diagnosed via an emergency presentation route to 93.2% for those diagnosed via a red-flag referral route. Two years from diagnosis age-standardised net survival ranged from 58.2% for those diagnosed via an emergency presentation route to 89.5% for those diagnosed via a red-flag referral route.

Figure 15.12: Age-standardised net survival by route to diagnosis for haematological cancer patients diagnosed in 2018-2021

(a) Red-flag and emergency routes



(b) Other routes

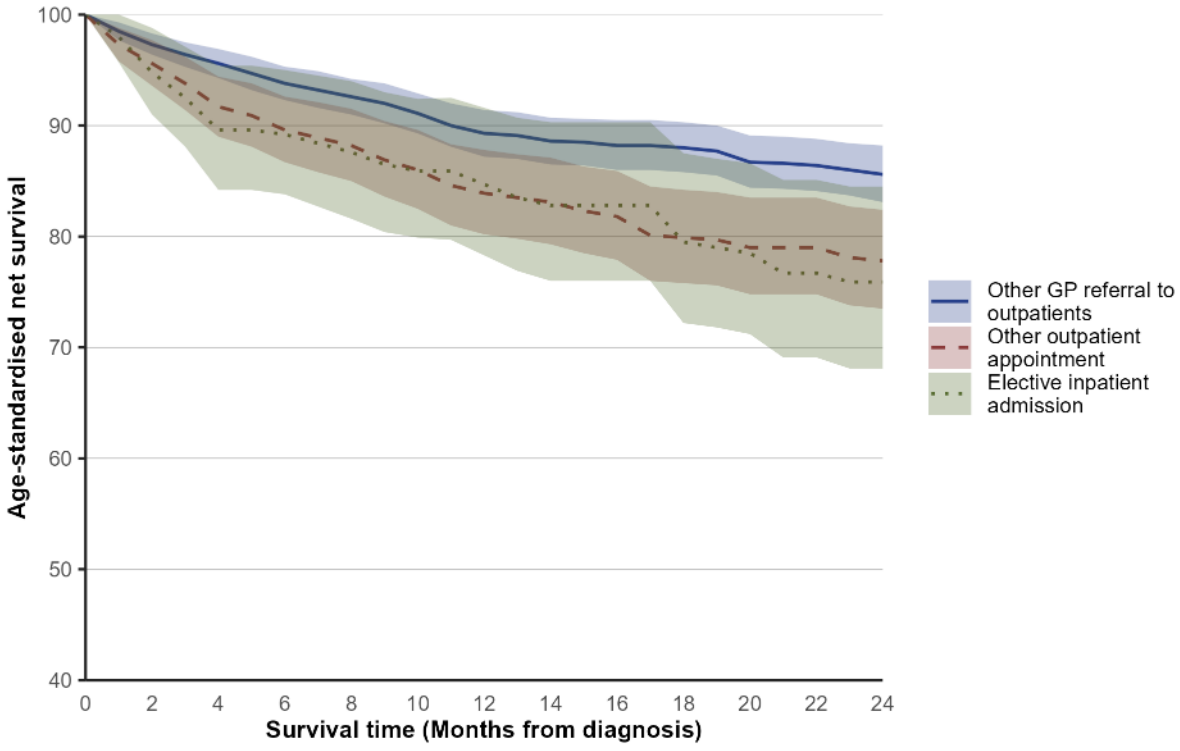


Table 15.2: Age-standardised net survival by route to diagnosis for haematological cancer patients diagnosed in 2018-2021

Route to diagnosis	One-year survival (ASNS)	Two-year survival (ASNS)
Red-flag referral	93.2% (90.9% - 95.6%)	89.5% (86.4% - 92.7%)
Emergency presentation	67.4% (64.3% - 70.6%)	58.2% (54.7% - 62.0%)
Elective inpatient admission	84.7% (78.3% - 91.6%)	75.9% (68.1% - 84.5%)
Other GP referral to outpatients	89.3% (87.2% - 91.4%)	85.6% (83.1% - 88.2%)
Other outpatient appointment	83.9% (80.2% - 87.8%)	77.8% (73.5% - 82.4%)
Unknown	87.3% (82.6% - 92.2%)	83.6% (77.9% - 89.7%)

ASNS: Age-standardised net survival with 95% confidence interval.

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Supplementary tables

ALL CANCERS EXCLUDING NON-MELANOMA SKIN CANCER (NMSC)

Average number of cancer (ex NMSC) cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Screening referral	74 1.4% (1.3%-1.6%)	514 10.4% (9.9%-10.8%)
Red-flag referral	1,721 33.3% (32.7%-34.0%)	1,672 33.7% (33.1%-34.4%)
Emergency presentation	1,270 24.6% (24.0%-25.2%)	1,088 21.9% (21.4%-22.5%)
Elective inpatient admission	138 2.7% (2.5%-2.9%)	82 1.6% (1.5%-1.8%)
Other GP referral to outpatients	1,109 21.5% (20.9%-22.0%)	887 17.9% (17.4%-18.4%)
Other outpatient appointment	652 12.6% (12.2%-13.1%)	540 10.9% (10.5%-11.3%)
Death certificate only	15 0.3% (0.2%-0.4%)	23 0.5% (0.4%-0.6%)
Unknown	186 3.6% (3.3%-3.9%)	154 3.1% (2.9%-3.4%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Screening referral	342 9.2% (8.7%-9.6%)	225 7.8% (7.3%-8.3%)	21 0.6% (0.5%-0.7%)
Red-flag referral	1,348 36.2% (35.4%-36.9%)	987 34.2% (33.3%-35.0%)	1,059 30.2% (29.4%-31.0%)
Emergency presentation	644 17.3% (16.7%-17.9%)	607 21.0% (20.3%-21.7%)	1,107 31.6% (30.8%-32.4%)
Elective inpatient admission	85 2.3% (2.1%-2.5%)	64 2.2% (2.0%-2.5%)	71 2.0% (1.8%-2.3%)
Other GP referral to outpatients	716 19.2% (18.6%-19.8%)	583 20.2% (19.5%-20.9%)	697 19.9% (19.2%-20.6%)
Other outpatient appointment	465 12.5% (12.0%-13.0%)	338 11.7% (11.1%-12.3%)	390 11.1% (10.6%-11.6%)
Death certificate only	4 0.1% (0.1%-0.2%)	6 0.2% (0.1%-0.3%)	29 0.8% (0.7%-1.0%)
Unknown	126 3.4% (3.1%-3.7%)	80 2.8% (2.5%-3.1%)	134 3.8% (3.5%-4.1%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Screening referral	97 5.0% (4.5%-5.5%)	152 5.8% (5.3%-6.2%)	114 5.6% (5.1%-6.1%)	131 6.9% (6.4%-7.5%)	94 5.8% (5.3%-6.4%)
Red-flag referral	604 30.8% (29.8%-31.9%)	911 34.7% (33.8%-35.6%)	659 32.3% (31.3%-33.3%)	605 32.1% (31.1%-33.2%)	614 38.2% (37.0%-39.4%)
Emergency presentation	520 26.5% (25.6%-27.5%)	565 21.5% (20.7%-22.3%)	493 24.1% (23.2%-25.1%)	435 23.1% (22.1%-24.0%)	345 21.4% (20.4%-22.4%)
Elective inpatient admission	38 1.9% (1.7%-2.3%)	60 2.3% (2.0%-2.6%)	44 2.2% (1.9%-2.5%)	43 2.3% (2.0%-2.6%)	35 2.2% (1.8%-2.6%)
Other GP referral to outpatients	386 19.7% (18.8%-20.6%)	538 20.5% (19.7%-21.3%)	373 18.2% (17.4%-19.1%)	369 19.6% (18.7%-20.5%)	330 20.5% (19.6%-21.5%)
Other outpatient appointment	238 12.1% (11.4%-12.9%)	297 11.3% (10.7%-11.9%)	260 12.7% (12.0%-13.5%)	236 12.5% (11.8%-13.3%)	161 10.0% (9.3%-10.7%)
Death certificate only	8 0.4% (0.3%-0.6%)	8 0.3% (0.2%-0.4%)	11 0.5% (0.4%-0.7%)	7 0.4% (0.3%-0.6%)	4 0.2% (0.1%-0.4%)
Unknown	68 3.5% (3.1%-3.9%)	96 3.7% (3.3%-4.0%)	89 4.4% (3.9%-4.8%)	59 3.1% (2.7%-3.5%)	27 1.7% (1.4%-2.0%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Screening referral	101 5.3% (4.9%-5.9%)	121 5.8% (5.3%-6.3%)	122 5.9% (5.4%-6.5%)	127 6.1% (5.6%-6.7%)	118 5.8% (5.3%-6.3%)
Red-flag referral	607 32.3% (31.3%-33.4%)	712 34.0% (33.0%-35.0%)	707 34.5% (33.5%-35.5%)	698 33.7% (32.7%-34.7%)	669 33.0% (31.9%-34.0%)
Emergency presentation	493 26.2% (25.2%-27.2%)	502 24.0% (23.1%-24.9%)	470 22.9% (22.0%-23.8%)	465 22.5% (21.6%-23.4%)	428 21.1% (20.2%-22.0%)
Elective inpatient admission	40 2.1% (1.8%-2.5%)	42 2.0% (1.7%-2.3%)	46 2.2% (1.9%-2.6%)	45 2.2% (1.9%-2.5%)	47 2.3% (2.0%-2.7%)
Other GP referral to outpatients	364 19.4% (18.5%-20.3%)	410 19.6% (18.7%-20.4%)	410 20.0% (19.1%-20.9%)	399 19.3% (18.4%-20.1%)	413 20.4% (19.5%-21.2%)
Other outpatient appointment	217 11.5% (10.8%-12.3%)	239 11.4% (10.8%-12.1%)	232 11.3% (10.7%-12.0%)	252 12.2% (11.5%-12.9%)	252 12.4% (11.7%-13.2%)
Death certificate only	6 0.3% (0.2%-0.5%)	7 0.3% (0.2%-0.5%)	8 0.4% (0.3%-0.6%)	10 0.5% (0.3%-0.6%)	7 0.3% (0.2%-0.5%)
Unknown	52 2.7% (2.4%-3.1%)	62 2.9% (2.6%-3.3%)	56 2.7% (2.4%-3.1%)	74 3.6% (3.2%-4.0%)	96 4.7% (4.3%-5.2%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Screening referral	337 5.7% (5.4%-6.0%)	55 6.0% (5.3%-6.9%)	196 6.0% (5.6%-6.4%)
Red-flag referral	1,955 32.8% (32.2%-33.4%)	292 32.1% (30.6%-33.6%)	1,146 35.2% (34.4%-36.1%)
Emergency presentation	1,472 24.7% (24.2%-25.3%)	200 22.0% (20.7%-23.3%)	685 21.1% (20.4%-21.8%)
Elective inpatient admission	124 2.1% (1.9%-2.3%)	18 1.9% (1.5%-2.4%)	79 2.4% (2.2%-2.7%)
Other GP referral to outpatients	1,148 19.3% (18.8%-19.8%)	189 20.8% (19.5%-22.1%)	659 20.2% (19.6%-20.9%)
Other outpatient appointment	705 11.8% (11.4%-12.2%)	115 12.6% (11.6%-13.8%)	373 11.5% (10.9%-12.0%)
Death certificate only	21 0.3% (0.3%-0.4%)	4 0.4% (0.2%-0.7%)	14 0.4% (0.3%-0.5%)
Unknown	198 3.3% (3.1%-3.6%)	38 4.2% (3.6%-4.9%)	103 3.2% (2.9%-3.5%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	360 12.4% (11.8%-13.0%)	151 9.8% (9.1%-10.6%)	60 3.4% (3.0%-3.9%)	11 0.5% (0.4%-0.7%)	7 0.4% (0.3%-0.5%)
Red-flag referral	1,063 36.7% (35.8%-37.6%)	714 46.5% (45.2%-47.7%)	734 42.1% (40.9%-43.3%)	581 27.1% (26.1%-28.0%)	301 16.8% (15.9%-17.6%)
Emergency presentation	190 6.6% (6.1%-7.0%)	199 13.0% (12.2%-13.8%)	350 20.1% (19.2%-21.0%)	930 43.3% (42.3%-44.4%)	688 38.3% (37.1%-39.4%)
Elective inpatient admission	46 1.6% (1.4%-1.8%)	19 1.2% (1.0%-1.5%)	33 1.9% (1.6%-2.3%)	58 2.7% (2.4%-3.1%)	64 3.5% (3.1%-4.0%)
Other GP referral to outpatients	720 24.8% (24.1%-25.6%)	258 16.8% (15.9%-17.7%)	336 19.3% (18.4%-20.2%)	311 14.5% (13.7%-15.2%)	371 20.6% (19.7%-21.6%)
Other outpatient appointment	420 14.5% (13.9%-15.1%)	158 10.3% (9.5%-11.0%)	190 10.9% (10.2%-11.6%)	195 9.1% (8.5%-9.7%)	231 12.8% (12.1%-13.6%)
Death certificate only/ Unknown	101 3.5% (3.1%-3.8%)	38 2.5% (2.1%-2.9%)	41 2.3% (2.0%-2.7%)	61 2.8% (2.5%-3.2%)	138 7.6% (7.1%-8.3%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Screening referral	588 5.8% (5.4%-6.3%)	605 5.8% (5.4%-6.3%)	451 4.8% (4.3%-5.2%)	707 6.7% (6.2%-7.2%)
Red-flag referral	3,314 32.8% (31.9%-33.8%)	3,433 33.1% (32.2%-34.1%)	3,157 33.3% (32.3%-34.2%)	3,670 34.8% (33.9%-35.7%)
Emergency presentation	2,269 22.5% (21.7%-23.3%)	2,249 21.7% (20.9%-22.5%)	2,384 25.1% (24.3%-26.0%)	2,527 23.9% (23.1%-24.8%)
Elective inpatient admission	305 3.0% (2.7%-3.4%)	248 2.4% (2.1%-2.7%)	208 2.2% (1.9%-2.5%)	118 1.1% (0.9%-1.3%)
Other GP referral to outpatients	2,078 20.6% (19.8%-21.4%)	2,275 22.0% (21.2%-22.8%)	1,861 19.6% (18.8%-20.4%)	1,769 16.8% (16.1%-17.5%)
Other outpatient appointment	1,175 11.6% (11.0%-12.3%)	1,163 11.2% (10.6%-11.9%)	1,078 11.4% (10.7%-12.0%)	1,354 12.8% (12.2%-13.5%)
Death certificate only	20 0.2% (0.1%-0.3%)	38 0.4% (0.3%-0.5%)	43 0.5% (0.3%-0.6%)	51 0.5% (0.4%-0.6%)
Unknown	342 3.4% (3.1%-3.8%)	346 3.3% (3.0%-3.7%)	309 3.3% (2.9%-3.6%)	361 3.4% (3.1%-3.8%)

COLORECTAL CANCER

Average number of colorectal cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Screening referral	74 10.6% (9.5%-11.8%)	40 7.4% (6.3%-8.5%)
Red-flag referral	238 34.2% (32.4%-36.0%)	176 32.7% (30.8%-34.7%)
Emergency presentation	187 26.8% (25.2%-28.5%)	159 29.6% (27.7%-31.6%)
Elective inpatient admission	18 2.6% (2.1%-3.3%)	13 2.5% (1.9%-3.2%)
Other GP referral to outpatients	104 14.9% (13.6%-16.2%)	95 17.7% (16.1%-19.3%)
Other outpatient appointment	64 9.2% (8.1%-10.3%)	44 8.2% (7.2%-9.5%)
Death certificate only/ Unknown	12 1.8% (1.3%-2.3%)	11 2.0% (1.5%-2.6%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over	Screening age (aged 60 to 74)
Screening referral	36 9.5% (8.1%-11.0%)	74 21.7% (19.6%-23.9%)	3 0.6% (0.3%-1.0%)	111 22.4% (20.6%-24.3%)
Red-flag referral	139 36.2% (33.8%-38.6%)	108 31.4% (29.0%-33.9%)	167 33.0% (30.9%-35.0%)	156 31.6% (29.6%-33.7%)
Emergency presentation	89 23.1% (21.1%-25.3%)	74 21.7% (19.6%-23.9%)	183 36.0% (33.9%-38.1%)	101 20.5% (18.8%-22.3%)
Elective inpatient admission	13 3.4% (2.6%-4.4%)	8 2.3% (1.6%-3.2%)	11 2.1% (1.6%-2.8%)	12 2.3% (1.8%-3.1%)
Other GP referral to outpatients	60 15.8% (14.0%-17.7%)	47 13.6% (11.9%-15.6%)	91 18.0% (16.4%-19.7%)	68 13.7% (12.3%-15.3%)
Other outpatient appointment	40 10.3% (8.9%-12.0%)	29 8.3% (7.0%-9.9%)	40 7.9% (6.8%-9.1%)	42 8.4% (7.3%-9.7%)
Death certificate only/ Unknown	7 1.7% (1.2%-2.5%)	4 1.0% (0.6%-1.7%)	13 2.5% (1.9%-3.3%)	5 1.1% (0.7%-1.6%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Screening referral	24 10.8% (8.9%-13.0%)	26 8.1% (6.8%-9.8%)	22 8.6% (7.1%-10.5%)	22 9.4% (7.7%-11.5%)	19 9.6% (7.7%-11.9%)
Red-flag referral	70 31.2% (28.2%-34.3%)	108 33.4% (30.8%-36.0%)	79 30.7% (27.9%-33.6%)	82 34.7% (31.7%-37.8%)	75 39.0% (35.6%-42.5%)
Emergency presentation	67 29.8% (26.9%-32.9%)	94 29.1% (26.7%-31.6%)	74 28.7% (26.1%-31.6%)	60 25.4% (22.7%-28.2%)	51 26.3% (23.3%-29.5%)
Elective inpatient admission	7 3.0% (2.1%-4.3%)	3 0.9% (0.5%-1.6%)	6 2.2% (1.5%-3.3%)	8 3.4% (2.4%-4.8%)	8 4.1% (3.0%-5.8%)
Other GP referral to outpatients	36 16.1% (13.9%-18.7%)	54 16.8% (14.9%-19.0%)	47 18.1% (15.8%-20.5%)	35 15.0% (12.8%-17.4%)	26 13.5% (11.2%-16.1%)
Other outpatient appointment	16 7.1% (5.6%-9.0%)	32 9.9% (8.3%-11.6%)	24 9.4% (7.8%-11.4%)	25 10.4% (8.6%-12.5%)	12 6.0% (4.5%-7.9%)
Death certificate only/ Unknown	4 1.9% (1.2%-3.0%)	6 1.8% (1.2%-2.7%)	6 2.2% (1.5%-3.3%)	4 1.7% (1.0%-2.7%)	3 1.6% (0.9%-2.7%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Screening referral	19 9.6% (7.7%-11.8%)	22 8.4% (6.8%-10.2%)	25 9.8% (8.1%-11.8%)	21 8.2% (6.7%-10.1%)	27 10.1% (8.5%-12.1%)
Red-flag referral	68 33.8% (30.6%-37.1%)	84 32.2% (29.4%-35.1%)	82 32.8% (30.0%-35.8%)	85 33.4% (30.6%-36.3%)	95 35.5% (32.7%-38.4%)
Emergency presentation	58 28.7% (25.7%-31.9%)	77 29.6% (26.9%-32.4%)	73 29.0% (26.3%-31.9%)	76 29.7% (27.0%-32.6%)	63 23.4% (21.0%-26.1%)
Elective inpatient admission	5 2.2% (1.4%-3.5%)	9 3.4% (2.4%-4.7%)	6 2.3% (1.5%-3.4%)	6 2.2% (1.4%-3.2%)	7 2.6% (1.8%-3.8%)
Other GP referral to outpatients	33 16.5% (14.1%-19.2%)	43 16.5% (14.3%-18.9%)	40 16.0% (13.9%-18.4%)	36 14.1% (12.1%-16.4%)	46 17.3% (15.2%-19.7%)
Other outpatient appointment	14 7.0% (5.4%-8.9%)	21 8.2% (6.7%-10.0%)	21 8.3% (6.7%-10.2%)	27 10.6% (8.8%-12.6%)	25 9.4% (7.8%-11.3%)
Death certificate only/ Unknown	5 2.2% (1.4%-3.5%)	5 1.8% (1.2%-2.8%)	5 1.8% (1.1%-2.8%)	5 1.9% (1.2%-2.9%)	4 1.6% (1.0%-2.5%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Screening referral	67 9.3% (8.3%-10.5%)	10 9.5% (7.1%-12.7%)	37 8.9% (7.6%-10.4%)
Red-flag referral	235 32.8% (31.1%-34.6%)	36 34.0% (29.7%-38.7%)	143 34.7% (32.4%-37.0%)
Emergency presentation	202 28.3% (26.7%-30.0%)	30 28.8% (24.7%-33.3%)	113 27.3% (25.2%-29.5%)
Elective inpatient admission	19 2.6% (2.1%-3.2%)	1 1.2% (0.5%-2.8%)	12 2.8% (2.1%-3.8%)
Other GP referral to outpatients	116 16.2% (14.9%-17.6%)	15 14.3% (11.3%-18.0%)	68 16.3% (14.6%-18.2%)
Other outpatient appointment	64 9.0% (8.0%-10.1%)	10 9.8% (7.3%-13.0%)	34 8.1% (6.9%-9.5%)
Death certificate only/ Unknown	13 1.8% (1.4%-2.3%)	3 2.4% (1.3%-4.3%)	8 1.8% (1.3%-2.6%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	46 23.3% (20.5%-26.4%)	26 9.0% (7.5%-10.8%)	33 9.8% (8.3%-11.5%)	5 1.9% (1.3%-2.9%)	4 2.9% (1.8%-4.6%)
Red-flag referral	60 30.6% (27.5%-34.0%)	114 39.0% (36.2%-41.8%)	134 40.1% (37.5%-42.8%)	80 29.0% (26.4%-31.8%)	27 19.5% (16.4%-23.0%)
Emergency presentation	11 5.5% (4.1%-7.3%)	72 24.8% (22.4%-27.4%)	71 21.4% (19.3%-23.7%)	135 48.9% (46.0%-51.9%)	57 40.7% (36.7%-44.9%)
Elective inpatient admission	6 3.1% (2.1%-4.5%)	8 2.6% (1.8%-3.7%)	8 2.5% (1.8%-3.5%)	7 2.5% (1.7%-3.5%)	3 2.2% (1.2%-3.7%)
Other GP referral to outpatients	45 23.1% (20.3%-26.2%)	46 15.8% (13.8%-18.0%)	53 16.0% (14.1%-18.1%)	28 10.3% (8.6%-12.2%)	26 18.6% (15.5%-22.0%)
Other outpatient appointment	25 12.6% (10.4%-15.1%)	24 8.3% (6.9%-10.1%)	30 8.9% (7.5%-10.5%)	17 6.0% (4.7%-7.6%)	13 9.5% (7.4%-12.3%)
Death certificate only/ Unknown	4 1.8% (1.1%-3.0%)	2 0.5% (0.2%-1.1%)	5 1.4% (0.9%-2.1%)	4 1.5% (0.9%-2.3%)	9 6.7% (4.9%-9.1%)

By stage at diagnosis for patients of screening age (aged 60 to 74)

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	44 43.2% (38.5%-48.0%)	26 21.4% (18.0%-25.3%)	32 21.5% (18.3%-24.9%)	5 5.4% (3.5%-8.1%)	4 14.6% (9.0%-22.6%)
Red-flag referral	24 23.7% (19.8%-28.0%)	41 34.0% (29.9%-38.4%)	56 37.7% (33.9%-41.6%)	31 31.1% (26.7%-35.9%)	5 18.4% (12.1%-27.0%)
Emergency presentation	4 3.9% (2.4%-6.2%)	25 21.0% (17.6%-24.9%)	23 15.5% (12.8%-18.7%)	43 43.4% (38.5%-48.3%)	7 25.2% (17.8%-34.4%)
Elective inpatient admission	2 2.2% (1.2%-4.1%)	4 2.9% (1.8%-4.9%)	3 1.9% (1.0%-3.3%)	3 2.6% (1.4%-4.6%)	1 1.9% (0.5%-6.8%)
Other GP referral to outpatients	15 14.9% (11.8%-18.6%)	16 13.2% (10.5%-16.6%)	22 14.7% (12.1%-17.8%)	9 9.2% (6.7%-12.5%)	6 23.3% (16.2%-32.3%)
Other outpatient appointment	12 11.2% (8.5%-14.6%)	8 6.9% (5.0%-9.6%)	11 7.4% (5.6%-9.8%)	7 7.1% (5.0%-10.1%)	4 14.6% (9.0%-22.6%)
Other/ Unknown	1 1.0% (0.4%-2.5%)	1 0.4% (0.1%-1.5%)	2 1.4% (0.7%-2.6%)	1 1.3% (0.5%-3.0%)	1 1.9% (0.5%-6.8%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Screening referral	93 7.9% (6.5%-9.5%)	132 10.6% (9.0%-12.5%)	86 7.8% (6.3%-9.5%)	143 10.2% (8.7%-11.9%)
Red-flag referral	392 33.1% (30.5%-35.8%)	425 34.2% (31.6%-36.9%)	370 33.5% (30.8%-36.3%)	467 33.4% (31.0%-35.9%)
Emergency presentation	317 26.8% (24.3%-29.4%)	320 25.7% (23.4%-28.2%)	345 31.2% (28.6%-34.0%)	399 28.5% (26.2%-30.9%)
Elective inpatient admission	56 4.7% (3.7%-6.1%)	34 2.7% (2.0%-3.8%)	30 2.7% (1.9%-3.8%)	6 0.4% (0.2%-0.9%)
Other GP referral to outpatients	203 17.1% (15.1%-19.4%)	206 16.6% (14.6%-18.7%)	166 15.0% (13.0%-17.3%)	218 15.6% (13.8%-17.6%)
Other outpatient appointment	108 9.1% (7.6%-10.9%)	107 8.6% (7.2%-10.3%)	84 7.6% (6.2%-9.3%)	133 9.5% (8.1%-11.2%)
Death certificate only/ Unknown	15 1.3% (0.8%-2.1%)	19 1.5% (1.0%-2.4%)	24 2.2% (1.5%-3.2%)	33 2.4% (1.7%-3.3%)

FEMALE BREAST CANCER

Average number of female breast cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over	Screening age (aged 50 to 70)
Screening referral	274 32.9% (31.3%-34.5%)	150 45.8% (43.1%-48.5%)	18 5.3% (4.2%-6.7%)	401 52.5% (50.7%-54.3%)
Red-flag referral	375 45.0% (43.3%-46.7%)	118 36.1% (33.5%-38.7%)	206 62.6% (59.9%-65.2%)	246 32.2% (30.6%-33.9%)
Emergency presentation	14 1.6% (1.3%-2.1%)	12 3.7% (2.8%-4.8%)	30 9.0% (7.6%-10.7%)	13 1.7% (1.3%-2.2%)
Other GP referral to outpatients	84 10.0% (9.1%-11.1%)	25 7.6% (6.3%-9.2%)	40 12.1% (10.4%-13.9%)	52 6.8% (6.0%-7.8%)
Other outpatient appointment	67 8.0% (7.2%-9.0%)	18 5.5% (4.4%-6.9%)	26 7.7% (6.4%-9.3%)	37 4.8% (4.1%-5.7%)
Other/ Unknown	20 2.4% (2.0%-3.0%)	5 1.4% (0.9%-2.2%)	11 3.3% (2.4%-4.4%)	
- Elective inpatient admission				2 0.2% (0.1%-0.4%)
- Death certificate only/ Unknown				13 1.7% (1.3%-2.2%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Screening referral	67 24.3% (21.9%-26.9%)	119 30.1% (27.9%-32.4%)	86 30.3% (27.7%-33.0%)	104 34.5% (31.9%-37.2%)	67 28.1% (25.4%-31.1%)
Red-flag referral	134 48.8% (45.9%-51.8%)	191 48.1% (45.7%-50.6%)	132 46.5% (43.6%-49.4%)	127 42.2% (39.4%-45.0%)	117 49.1% (45.9%-52.3%)
Emergency presentation	14 5.2% (4.0%-6.7%)	12 2.9% (2.2%-3.9%)	9 3.3% (2.4%-4.5%)	12 3.9% (3.0%-5.2%)	9 3.7% (2.7%-5.1%)
Other GP referral to outpatients	30 11.0% (9.3%-13.0%)	38 9.5% (8.2%-11.1%)	25 8.6% (7.1%-10.4%)	29 9.7% (8.1%-11.5%)	27 11.4% (9.5%-13.6%)
Other outpatient appointment	23 8.4% (6.9%-10.2%)	26 6.6% (5.5%-8.0%)	22 7.7% (6.3%-9.4%)	24 8.1% (6.7%-9.8%)	15 6.3% (4.9%-8.1%)
Other/ Unknown	6 2.3% (1.5%-3.3%)	11 2.7% (2.0%-3.6%)	10 3.6% (2.7%-4.9%)	5 1.7% (1.1%-2.6%)	3 1.4% (0.8%-2.3%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Screening referral	71 28.7% (25.9%-31.6%)	92 29.5% (27.0%-32.1%)	91 30.3% (27.8%-33.0%)	102 31.4% (28.9%-33.9%)	86 28.0% (25.6%-30.6%)
Red-flag referral	119 47.8% (44.7%-50.9%)	154 49.5% (46.7%-52.3%)	141 47.0% (44.2%-49.9%)	149 45.7% (43.0%-48.4%)	138 44.7% (41.9%-47.5%)
Emergency presentation	10 3.9% (2.9%-5.3%)	13 4.1% (3.1%-5.4%)	12 3.8% (2.9%-5.1%)	12 3.5% (2.7%-4.7%)	10 3.2% (2.4%-4.4%)
Other GP referral to outpatients	27 10.9% (9.1%-13.0%)	26 8.4% (7.0%-10.1%)	29 9.7% (8.2%-11.5%)	31 9.6% (8.1%-11.3%)	35 11.4% (9.7%-13.3%)
Other outpatient appointment	19 7.6% (6.1%-9.4%)	22 7.0% (5.7%-8.6%)	22 7.2% (5.9%-8.9%)	24 7.2% (5.9%-8.7%)	25 8.0% (6.7%-9.7%)
Other/ Unknown	3 1.1% (0.6%-2.0%)	5 1.5% (0.9%-2.3%)	6 1.8% (1.2%-2.8%)	9 2.6% (1.9%-3.6%)	14 4.6% (3.6%-6.0%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Screening referral	250 29.3% (27.8%-30.8%)	43 30.8% (27.1%-34.8%)	150 29.9% (28.0%-32.0%)
Red-flag referral	408 47.8% (46.1%-49.5%)	61 43.8% (39.7%-47.9%)	232 46.3% (44.1%-48.5%)
Emergency presentation	34 4.0% (3.4%-4.7%)	5 3.4% (2.2%-5.3%)	17 3.4% (2.7%-4.3%)
Other GP referral to outpatients	82 9.6% (8.7%-10.7%)	14 10.3% (8.0%-13.1%)	52 10.4% (9.1%-11.8%)
Other outpatient appointment	62 7.2% (6.4%-8.2%)	11 7.9% (6.0%-10.5%)	38 7.5% (6.5%-8.8%)
Other/ Unknown	18 2.1% (1.7%-2.6%)	5 3.8% (2.5%-5.7%)	12 2.4% (1.9%-3.2%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	295 47.0% (45.1%-49.0%)	117 20.3% (18.7%-22.0%)	24 14.6% (12.1%-17.5%)	4 5.2% (3.2%-8.2%)	2 4.8% (2.6%-8.9%)
Red-flag referral	197 31.5% (29.7%-33.3%)	347 60.0% (58.0%-62.0%)	105 64.2% (60.5%-67.8%)	30 38.8% (33.6%-44.4%)	21 45.5% (38.5%-52.6%)
Emergency presentation	10 1.6% (1.2%-2.2%)	12 2.1% (1.6%-2.8%)	5 2.8% (1.8%-4.3%)	24 31.4% (26.5%-36.8%)	4 9.1% (5.8%-14.1%)
Other GP referral to outpatients	61 9.6% (8.6%-10.9%)	53 9.2% (8.1%-10.5%)	18 10.8% (8.6%-13.4%)	9 11.7% (8.5%-15.7%)	8 17.6% (12.9%-23.7%)
Other outpatient appointment	53 8.5% (7.5%-9.6%)	38 6.5% (5.6%-7.6%)	9 5.7% (4.2%-7.7%)	6 7.8% (5.3%-11.3%)	5 9.6% (6.2%-14.7%)
Other/ Unknown	11 1.8% (1.3%-2.3%)	11 1.9% (1.4%-2.5%)	3 2.0% (1.2%-3.4%)	4 5.2% (3.2%-8.2%)	6 13.4% (9.2%-19.0%)

By stage at diagnosis for patients of screening age (aged 50 to 70)

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Screening referral	263 68.2% (65.9%-70.5%)	109 42.0% (39.1%-45.1%)	23 28.7% (24.1%-33.9%)	4 13.3% (8.2%-20.8%)	2 19.5% (10.2%-34.0%)
Red-flag referral	73 18.9% (17.0%-20.9%)	115 44.5% (41.5%-47.5%)	44 54.4% (48.9%-59.7%)	11 39.8% (31.3%-49.0%)	3 31.7% (19.6%-47.0%)
Emergency presentation	2 0.4% (0.2%-0.8%)	2 0.9% (0.5%-1.6%)	2 2.5% (1.3%-4.9%)	7 23.9% (17.0%-32.5%)	0 -
Other GP referral to outpatients	22 5.8% (4.7%-7.0%)	18 6.9% (5.5%-8.7%)	7 8.1% (5.6%-11.6%)	3 9.7% (5.5%-16.6%)	3 26.8% (15.7%-41.9%)
Other outpatient appointment	19 5.0% (4.0%-6.2%)	11 4.1% (3.0%-5.4%)	4 4.7% (2.9%-7.6%)	2 8.0% (4.2%-14.4%)	1 12.2% (5.3%-25.5%)
Other/ Unknown	7 1.8% (1.2%-2.5%)	4 1.6% (1.0%-2.6%)	1 1.6% (0.7%-3.6%)	2 5.3% (2.5%-11.1%)	1 7.3% (2.5%-19.4%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Screening referral	459 30.1% (27.8%-32.4%)	439 29.9% (27.6%-32.3%)	340 25.0% (22.8%-27.4%)	530 32.8% (30.6%-35.2%)
Red-flag referral	685 44.9% (42.4%-47.4%)	673 45.9% (43.3%-48.4%)	714 52.5% (49.9%-55.2%)	727 45.0% (42.6%-47.5%)
Emergency presentation	48 3.1% (2.4%-4.1%)	67 4.6% (3.6%-5.8%)	56 4.1% (3.2%-5.3%)	51 3.2% (2.4%-4.1%)
Other GP referral to outpatients	177 11.6% (10.1%-13.3%)	154 10.5% (9.0%-12.2%)	124 9.1% (7.7%-10.8%)	139 8.6% (7.3%-10.1%)
Other outpatient appointment	118 7.7% (6.5%-9.2%)	101 6.9% (5.7%-8.3%)	100 7.4% (6.1%-8.9%)	123 7.6% (6.4%-9.0%)
Other/ Unknown	40 2.6% (1.9%-3.5%)	33 2.2% (1.6%-3.1%)	25 1.8% (1.2%-2.7%)	44 2.7% (2.0%-3.6%)

LUNG CANCER (INCLUDING TRACHEA)

Average number of lung cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	146 20.8% (19.3%-22.3%)	138 21.1% (19.6%-22.7%)
Emergency presentation	302 42.8% (41.0%-44.6%)	262 40.0% (38.2%-41.9%)
Elective inpatient admission	14 1.9% (1.5%-2.5%)	12 1.9% (1.4%-2.5%)
Other GP referral to outpatients	122 17.3% (15.9%-18.7%)	123 18.8% (17.3%-20.3%)
Other outpatient appointment	93 13.2% (12.0%-14.5%)	91 13.9% (12.6%-15.2%)
Death certificate only	4 0.5% (0.3%-0.8%)	3 0.5% (0.3%-0.8%)
Unknown	25 3.5% (2.9%-4.3%)	25 3.8% (3.2%-4.6%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	70 22.2% (20.0%-24.6%)	114 24.2% (22.3%-26.2%)	101 17.5% (16.0%-19.2%)
Emergency presentation	130 40.9% (38.3%-43.7%)	183 38.9% (36.7%-41.1%)	252 43.9% (41.9%-45.9%)
Elective inpatient admission	8 2.6% (1.9%-3.6%)	8 1.7% (1.2%-2.4%)	10 1.7% (1.2%-2.3%)
Other GP referral to outpatients	51 16.2% (14.3%-18.3%)	88 18.7% (17.0%-20.5%)	106 18.4% (16.9%-20.1%)
Other outpatient appointment	48 15.3% (13.4%-17.3%)	61 12.9% (11.5%-14.5%)	75 13.1% (11.8%-14.5%)
Death certificate only	2 0.6% (0.3%-1.2%)	3 0.5% (0.3%-1.0%)	2 0.4% (0.2%-0.7%)
Unknown	7 2.1% (1.5%-3.1%)	14 3.0% (2.4%-3.9%)	29 5.0% (4.2%-6.0%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	54 16.7% (14.7%-18.8%)	73 22.2% (20.1%-24.6%)	46 19.2% (16.8%-21.8%)	51 21.0% (18.5%-23.6%)	60 27.1% (24.3%-30.2%)
Emergency presentation	149 45.9% (43.2%-48.7%)	121 36.7% (34.2%-39.4%)	112 46.3% (43.2%-49.5%)	99 40.4% (37.4%-43.5%)	84 37.9% (34.8%-41.2%)
Elective inpatient admission	5 1.5% (1.0%-2.4%)	11 3.3% (2.4%-4.4%)	3 1.2% (0.7%-2.2%)	6 2.3% (1.5%-3.4%)	2 0.7% (0.3%-1.5%)
Other GP referral to outpatients	58 17.8% (15.8%-19.9%)	61 18.5% (16.5%-20.7%)	39 16.2% (14.0%-18.7%)	46 18.6% (16.3%-21.2%)	42 18.8% (16.4%-21.6%)
Other outpatient appointment	42 13.0% (11.3%-14.9%)	47 14.3% (12.6%-16.3%)	32 13.4% (11.4%-15.7%)	33 13.4% (11.4%-15.7%)	30 13.5% (11.4%-15.9%)
Death certificate only/ Unknown	17 5.1% (4.0%-6.4%)	16 4.9% (3.9%-6.2%)	9 3.6% (2.6%-5.0%)	11 4.3% (3.2%-5.8%)	4 1.9% (1.2%-3.1%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	80 21.8% (19.8%-24.0%)	63 20.8% (18.6%-23.2%)	58 22.3% (19.8%-24.9%)	48 20.6% (18.1%-23.3%)	36 18.2% (15.7%-21.0%)
Emergency presentation	157 42.7% (40.2%-45.3%)	125 41.6% (38.8%-44.4%)	102 39.2% (36.2%-42.2%)	91 39.1% (36.0%-42.3%)	89 44.8% (41.4%-48.3%)
Elective inpatient admission	7 1.8% (1.2%-2.6%)	4 1.3% (0.8%-2.2%)	6 2.2% (1.5%-3.3%)	6 2.6% (1.7%-3.8%)	4 1.8% (1.1%-2.9%)
Other GP referral to outpatients	61 16.7% (14.8%-18.6%)	55 18.3% (16.2%-20.6%)	50 19.2% (16.9%-21.7%)	44 19.1% (16.7%-21.7%)	34 17.2% (14.7%-20.0%)
Other outpatient appointment	48 13.2% (11.5%-15.0%)	41 13.7% (11.9%-15.8%)	35 13.3% (11.4%-15.5%)	33 14.2% (12.1%-16.6%)	27 13.4% (11.2%-16.0%)
Death certificate only/ Unknown	14 3.8% (3.0%-4.9%)	13 4.2% (3.2%-5.5%)	10 3.8% (2.8%-5.2%)	11 4.5% (3.4%-6.1%)	9 4.5% (3.3%-6.2%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Red-flag referral	182 20.4% (19.1%-21.8%)	19 19.9% (16.3%-24.2%)	83 22.4% (20.4%-24.6%)
Emergency presentation	378 42.5% (40.9%-44.1%)	39 40.7% (35.9%-45.6%)	146 39.3% (36.8%-41.8%)
Elective inpatient admission	15 1.7% (1.3%-2.2%)	2 2.3% (1.2%-4.4%)	8 2.2% (1.6%-3.1%)
Other GP referral to outpatients	158 17.7% (16.5%-19.0%)	19 19.7% (16.0%-23.9%)	68 18.2% (16.3%-20.2%)
Other outpatient appointment	118 13.3% (12.2%-14.4%)	13 13.2% (10.2%-17.0%)	53 14.3% (12.6%-16.1%)
Death certificate only/ Unknown	39 4.4% (3.7%-5.1%)	4 4.1% (2.6%-6.6%)	14 3.6% (2.8%-4.7%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	44 17.2% (15.0%-19.7%)	30 26.7% (22.8%-31.0%)	93 30.1% (27.6%-32.8%)	114 18.7% (17.2%-20.3%)	5 6.6% (4.4%-9.9%)
Emergency presentation	50 19.9% (17.6%-22.5%)	29 26.0% (22.2%-30.3%)	103 33.6% (31.0%-36.3%)	345 56.7% (54.7%-58.6%)	36 45.6% (40.2%-51.1%)
Other GP referral to outpatients	77 30.6% (27.8%-33.5%)	25 22.4% (18.8%-26.5%)	60 19.4% (17.3%-21.7%)	73 11.9% (10.7%-13.3%)	10 12.9% (9.6%-17.0%)
Other outpatient appointment	66 26.0% (23.4%-28.8%)	22 19.3% (15.9%-23.2%)	38 12.3% (10.6%-14.3%)	48 7.9% (6.9%-9.0%)	11 13.8% (10.5%-18.1%)
Other/ Unknown	16 6.2% (4.9%-7.9%)	6 5.6% (3.8%-8.1%)	14 4.6% (3.5%-5.9%)	30 4.8% (4.1%-5.8%)	17 21.1% (16.9%-25.9%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Red-flag referral	281 21.2% (19.1%-23.5%)	331 23.6% (21.4%-25.8%)	257 18.9% (16.9%-21.1%)	269 20.0% (17.9%-22.2%)
Emergency presentation	524 39.5% (36.9%-42.2%)	554 39.4% (36.9%-42.0%)	579 42.6% (40.0%-45.2%)	597 44.4% (41.8%-47.1%)
Elective inpatient admission	36 2.7% (2.0%-3.7%)	31 2.2% (1.6%-3.1%)	25 1.8% (1.2%-2.7%)	11 0.8% (0.5%-1.5%)
Other GP referral to outpatients	237 17.9% (15.9%-20.0%)	271 19.3% (17.3%-21.4%)	276 20.3% (18.2%-22.5%)	194 14.4% (12.6%-16.4%)
Other outpatient appointment	192 14.5% (12.7%-16.5%)	174 12.4% (10.8%-14.2%)	171 12.6% (10.9%-14.4%)	199 14.8% (13.0%-16.8%)
Death certificate only/ Unknown	55 4.2% (3.2%-5.4%)	44 3.1% (2.3%-4.2%)	52 3.8% (2.9%-5.0%)	75 5.6% (4.5%-6.9%)

PROSTATE CANCER

Average number of prostate cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	168 50.9% (48.2%-53.6%)	272 50.4% (48.3%-52.5%)	216 45.2% (43.0%-47.5%)
Emergency presentation	14 4.3% (3.3%-5.5%)	29 5.4% (4.5%-6.4%)	68 14.2% (12.7%-15.8%)
Elective inpatient admission	8 2.3% (1.6%-3.2%)	13 2.3% (1.8%-3.0%)	7 1.5% (1.1%-2.2%)
Other GP referral to outpatients	93 28.1% (25.8%-30.6%)	148 27.4% (25.6%-29.4%)	110 23.0% (21.2%-25.0%)
Other outpatient appointment	36 10.9% (9.3%-12.7%)	66 12.2% (10.9%-13.6%)	57 12.0% (10.6%-13.6%)
Death certificate only/ Unknown	12 3.6% (2.7%-4.7%)	12 2.2% (1.7%-2.9%)	19 4.0% (3.2%-5.0%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	102 44.2% (41.0%-47.5%)	192 49.5% (47.1%-52.0%)	141 48.2% (45.4%-51.1%)	95 46.4% (43.0%-49.9%)	126 54.4% (51.2%-57.6%)
Emergency presentation	22 9.7% (7.9%-11.8%)	29 7.4% (6.2%-8.8%)	26 8.8% (7.3%-10.6%)	20 10.0% (8.1%-12.2%)	14 5.8% (4.5%-7.5%)
Elective inpatient admission	5 2.1% (1.3%-3.2%)	6 1.5% (1.0%-2.3%)	9 3.1% (2.2%-4.2%)	4 2.0% (1.2%-3.2%)	4 1.5% (0.9%-2.5%)
Other GP referral to outpatients	64 27.8% (25.0%-30.8%)	107 27.4% (25.3%-29.7%)	62 21.3% (19.0%-23.7%)	51 25.1% (22.2%-28.2%)	67 28.9% (26.0%-31.9%)
Other outpatient appointment	31 13.3% (11.2%-15.6%)	43 11.0% (9.5%-12.6%)	40 13.8% (11.9%-15.9%)	26 12.7% (10.5%-15.1%)	20 8.5% (6.9%-10.5%)
Death certificate only/ Unknown	7 2.9% (2.0%-4.2%)	12 3.1% (2.3%-4.1%)	14 4.8% (3.7%-6.2%)	8 3.9% (2.8%-5.5%)	2 0.9% (0.4%-1.7%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	102 50.7% (47.3%-54.2%)	131 48.8% (45.9%-51.8%)	137 50.4% (47.4%-53.4%)	141 48.6% (45.7%-51.5%)	145 45.9% (43.2%-48.7%)
Emergency presentation	18 8.8% (7.0%-11.0%)	26 9.5% (7.9%-11.4%)	21 7.7% (6.2%-9.4%)	26 8.9% (7.4%-10.7%)	21 6.6% (5.4%-8.1%)
Elective inpatient admission	3 1.2% (0.7%-2.3%)	6 2.1% (1.4%-3.1%)	6 2.1% (1.4%-3.2%)	6 2.0% (1.3%-3.0%)	8 2.5% (1.7%-3.5%)
Other GP referral to outpatients	49 24.4% (21.6%-27.5%)	72 26.9% (24.4%-29.7%)	74 27.1% (24.6%-29.9%)	70 24.2% (21.8%-26.7%)	85 27.1% (24.7%-29.6%)
Other outpatient appointment	26 12.7% (10.5%-15.1%)	28 10.4% (8.7%-12.4%)	26 9.5% (7.9%-11.4%)	38 13.0% (11.2%-15.1%)	42 13.3% (11.5%-15.3%)
Death certificate only/ Unknown	4 2.1% (1.3%-3.4%)	6 2.2% (1.5%-3.3%)	9 3.1% (2.3%-4.4%)	10 3.3% (2.4%-4.5%)	15 4.6% (3.6%-5.9%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Red-flag referral	359 48.1% (46.3%-49.9%)	58 45.4% (41.1%-49.7%)	238 50.6% (48.3%-52.8%)
Emergency presentation	66 8.9% (7.9%-9.9%)	10 7.9% (5.8%-10.5%)	34 7.3% (6.2%-8.5%)
Elective inpatient admission	16 2.1% (1.7%-2.7%)	2 1.8% (0.9%-3.3%)	9 2.0% (1.4%-2.7%)
Other GP referral to outpatients	192 25.7% (24.2%-27.3%)	37 29.3% (25.5%-33.4%)	121 25.7% (23.7%-27.7%)
Other outpatient appointment	92 12.3% (11.2%-13.5%)	16 12.4% (9.8%-15.5%)	51 10.8% (9.5%-12.3%)
Death certificate only/ Unknown	21 2.8% (2.3%-3.5%)	4 3.3% (2.1%-5.3%)	17 3.7% (2.9%-4.6%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	271 45.9% (43.9%-47.9%)	47 52.4% (47.2%-57.5%)	168 59.2% (56.3%-62.0%)	115 47.7% (44.5%-50.8%)	55 38.9% (35.0%-43.0%)
Emergency presentation	14 2.3% (1.8%-3.0%)	2 1.7% (0.8%-3.6%)	7 2.5% (1.7%-3.5%)	56 23.2% (20.6%-26.0%)	33 23.1% (19.8%-26.7%)
Elective inpatient admission	12 2.1% (1.6%-2.7%)	3 2.8% (1.5%-5.1%)	5 1.7% (1.1%-2.6%)	5 2.2% (1.4%-3.3%)	3 1.8% (1.0%-3.2%)
Other GP referral to outpatients	199 33.7% (31.8%-35.6%)	26 28.4% (24.0%-33.3%)	70 24.6% (22.1%-27.1%)	30 12.4% (10.4%-14.6%)	27 19.0% (16.0%-22.5%)
Other outpatient appointment	80 13.6% (12.3%-15.1%)	10 11.4% (8.5%-15.1%)	27 9.4% (7.9%-11.3%)	26 10.7% (8.9%-12.8%)	16 11.2% (8.8%-14.1%)
Death certificate only/ Unknown	14 2.4% (1.9%-3.1%)	3 3.3% (1.9%-5.8%)	8 2.7% (1.9%-3.8%)	9 3.9% (2.8%-5.3%)	9 6.0% (4.4%-8.3%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Red-flag referral	620 47.4% (44.7%-50.1%)	656 47.0% (44.4%-49.6%)	594 47.2% (44.4%-49.9%)	750 53.0% (50.4%-55.6%)
Emergency presentation	109 8.3% (6.9%-9.9%)	103 7.4% (6.1%-8.9%)	103 8.2% (6.8%-9.8%)	127 9.0% (7.6%-10.6%)
Other GP referral to outpatients	359 27.4% (25.1%-29.9%)	402 28.8% (26.5%-31.2%)	330 26.2% (23.9%-28.7%)	310 21.9% (19.8%-24.2%)
Other outpatient appointment	145 11.1% (9.5%-12.9%)	149 10.7% (9.2%-12.4%)	153 12.2% (10.5%-14.1%)	188 13.3% (11.6%-15.2%)
Other/ Unknown	76 5.8% (4.7%-7.2%)	86 6.2% (5.0%-7.5%)	79 6.3% (5.1%-7.8%)	39 2.8% (2.0%-3.7%)

HEAD AND NECK CANCER

Average number of head and neck cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	111 45.0% (41.9%-48.1%)	45 39.7% (35.3%-44.3%)
Emergency presentation	30 12.0% (10.1%-14.2%)	13 11.2% (8.6%-14.4%)
Elective inpatient admission	4 1.7% (1.1%-2.8%)	2 2.0% (1.0%-3.7%)
Other GP referral to outpatients	52 21.3% (18.8%-23.9%)	26 23.0% (19.4%-27.1%)
Other outpatient appointment	44 17.8% (15.5%-20.3%)	24 20.8% (17.4%-24.8%)
Death certificate only/ Unknown	6 2.2% (1.5%-3.4%)	4 3.3% (2.0%-5.4%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	80 44.7% (41.1%-48.4%)	51 47.9% (43.1%-52.6%)	26 33.6% (28.5%-39.0%)
Emergency presentation	17 9.3% (7.3%-11.6%)	13 12.6% (9.7%-16.1%)	13 16.4% (12.7%-21.0%)
Elective inpatient admission	2 1.0% (0.5%-2.0%)	3 2.6% (1.5%-4.6%)	2 2.6% (1.3%-5.1%)
Other GP referral to outpatients	40 22.6% (19.7%-25.8%)	21 19.4% (15.9%-23.5%)	18 23.4% (18.9%-28.4%)
Other outpatient appointment	36 20.1% (17.3%-23.2%)	16 14.9% (11.8%-18.6%)	16 21.1% (16.8%-26.0%)
Death certificate only/ Unknown	4 2.4% (1.5%-3.8%)	3 2.6% (1.5%-4.6%)	2 3.0% (1.6%-5.5%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	39 47.2% (41.9%-52.7%)	37 45.8% (40.5%-51.3%)	27 37.3% (32.0%-43.0%)	25 38.8% (33.0%-44.8%)	28 46.7% (40.5%-53.0%)
Emergency presentation	12 15.0% (11.6%-19.3%)	8 10.2% (7.4%-14.0%)	9 12.0% (8.7%-16.2%)	7 10.5% (7.3%-14.8%)	6 10.4% (7.2%-14.9%)
Other GP referral to outpatients	17 21.2% (17.1%-25.9%)	17 20.7% (16.7%-25.5%)	16 22.3% (17.9%-27.4%)	16 24.0% (19.2%-29.6%)	13 21.3% (16.5%-26.9%)
Other outpatient appointment	12 14.7% (11.3%-19.0%)	15 18.3% (14.4%-22.8%)	16 22.3% (17.9%-27.4%)	15 23.3% (18.5%-28.8%)	10 15.8% (11.8%-21.0%)
Other/ Unknown	2 1.8% (0.8%-4.0%)	4 5.0% (3.1%-7.9%)	5 6.2% (3.9%-9.5%)	2 3.5% (1.8%-6.5%)	4 5.8% (3.5%-9.6%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	43 44.5% (39.6%-49.5%)	33 43.4% (38.0%-49.0%)	30 44.0% (38.2%-50.0%)	27 41.7% (35.9%-47.8%)	24 42.0% (35.8%-48.6%)
Emergency presentation	14 14.7% (11.5%-18.6%)	9 12.2% (9.0%-16.3%)	7 10.8% (7.6%-15.1%)	7 11.2% (7.9%-15.6%)	5 8.0% (5.1%-12.2%)
Other GP referral to outpatients	22 22.5% (18.6%-27.0%)	17 21.7% (17.4%-26.7%)	14 20.9% (16.5%-26.2%)	15 22.4% (17.7%-27.9%)	12 21.2% (16.4%-27.0%)
Other outpatient appointment	13 13.1% (10.1%-16.8%)	15 20.1% (15.9%-24.9%)	13 19.4% (15.1%-24.6%)	14 22.0% (17.4%-27.4%)	13 22.1% (17.2%-28.0%)
Other/ Unknown	5 5.2% (3.4%-7.9%)	2 2.6% (1.3%-5.1%)	3 4.9% (2.9%-8.1%)	2 2.7% (1.3%-5.5%)	4 6.6% (4.1%-10.7%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Red-flag referral	103 43.5% (40.4%-46.7%)	11 35.3% (27.3%-44.2%)	43 45.2% (40.3%-50.3%)
Emergency presentation	30 12.5% (10.6%-14.8%)	4 12.6% (7.8%-19.8%)	9 9.5% (7.0%-12.9%)
Other GP referral to outpatients	52 22.1% (19.5%-24.8%)	6 21.0% (14.7%-29.2%)	20 21.4% (17.6%-25.8%)
Other outpatient appointment	41 17.3% (15.0%-19.9%)	8 25.2% (18.3%-33.7%)	19 20.4% (16.6%-24.7%)
Other/ Unknown	11 4.6% (3.4%-6.1%)	2 5.9% (2.9%-11.6%)	3 3.4% (2.0%-5.8%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	35 40.9% (35.8%-46.3%)	27 54.2% (47.3%-61.0%)	31 48.8% (42.7%-55.0%)	58 41.4% (37.4%-45.5%)	5 23.9% (16.2%-33.7%)
Emergency presentation	3 3.6% (2.0%-6.1%)	4 7.0% (4.2%-11.4%)	5 8.4% (5.6%-12.5%)	25 17.9% (15.0%-21.3%)	5 23.9% (16.2%-33.7%)
Other GP referral to outpatients	21 24.6% (20.3%-29.5%)	11 21.4% (16.3%-27.6%)	17 26.8% (21.7%-32.6%)	26 18.7% (15.6%-22.1%)	4 18.2% (11.5%-27.5%)
Other outpatient appointment	20 23.7% (19.5%-28.6%)	8 15.4% (11.1%-21.1%)	9 14.0% (10.2%-18.8%)	26 18.3% (15.3%-21.7%)	5 23.9% (16.2%-33.7%)
Other/ Unknown	6 7.1% (4.8%-10.4%)	1 2.0% (0.8%-5.0%)	1 2.0% (0.9%-4.6%)	5 3.7% (2.5%-5.6%)	2 10.2% (5.5%-18.3%)

By cancer type

Route to diagnosis	Cancer of the nasal cavity or sinuses	Laryngeal cancer	Oral cancer
Red-flag referral	4 23.3% (14.4%-35.4%)	42 47.5% (42.3%-52.7%)	110 43.0% (40.0%-46.1%)
Emergency presentation	3 21.7% (13.1%-33.6%)	14 15.4% (12.1%-19.6%)	25 9.9% (8.2%-11.9%)
Other GP referral to outpatients	4 26.7% (17.1%-39.0%)	22 24.7% (20.5%-29.5%)	53 20.5% (18.2%-23.1%)
Other outpatient appointment	4 23.3% (14.4%-35.4%)	9 10.1% (7.4%-13.7%)	55 21.5% (19.1%-24.1%)
Other/ Unknown	1 5.0% (1.7%-13.7%)	2 2.2% (1.1%-4.4%)	13 5.1% (3.9%-6.6%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Red-flag referral	167 44.3% (39.4%-49.3%)	169 43.6% (38.7%-48.5%)	135 43.0% (37.6%-48.5%)	152 42.2% (37.2%-47.4%)
Emergency presentation	34 9.0% (6.5%-12.3%)	39 10.1% (7.4%-13.4%)	44 14.0% (10.6%-18.3%)	52 14.4% (11.2%-18.5%)
Other GP referral to outpatients	92 24.4% (20.3%-29.0%)	88 22.7% (18.8%-27.1%)	66 21.0% (16.9%-25.9%)	68 18.9% (15.2%-23.3%)
Other outpatient appointment	64 17.0% (13.5%-21.1%)	77 19.8% (16.2%-24.1%)	58 18.5% (14.6%-23.1%)	71 19.7% (15.9%-24.1%)
Other/ Unknown	20 5.3% (3.5%-8.1%)	15 3.9% (2.4%-6.3%)	11 3.5% (2.0%-6.2%)	17 4.7% (3.0%-7.4%)

UPPER GASTROINTESTINAL CANCER

Average number of upper gastrointestinal cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	112 40.3% (37.5%-43.2%)	44 32.6% (28.8%-36.7%)
Emergency presentation	84 30.4% (27.7%-33.2%)	46 34.1% (30.2%-38.3%)
Elective inpatient admission	14 5.0% (3.8%-6.4%)	6 4.1% (2.7%-6.2%)
Other GP referral to outpatients	42 15.1% (13.1%-17.3%)	22 16.7% (13.8%-20.1%)
Other outpatient appointment	21 7.5% (6.1%-9.2%)	13 9.8% (7.5%-12.6%)
Death certificate only/ Unknown	5 1.7% (1.1%-2.7%)	4 2.6% (1.6%-4.4%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	51 43.5% (39.0%-48.0%)	51 42.4% (38.0%-46.8%)	53 30.8% (27.5%-34.4%)
Emergency presentation	32 27.6% (23.8%-31.8%)	32 26.0% (22.3%-30.1%)	66 38.2% (34.7%-41.9%)
Elective inpatient admission	6 5.1% (3.5%-7.5%)	6 5.2% (3.5%-7.5%)	7 4.1% (2.8%-5.8%)
Other GP referral to outpatients	16 13.5% (10.7%-16.9%)	19 15.5% (12.5%-19.0%)	30 17.2% (14.5%-20.1%)
Other outpatient appointment	10 8.6% (6.4%-11.5%)	12 9.9% (7.6%-12.9%)	12 6.8% (5.2%-9.0%)
Death certificate only/ Unknown	2 1.7% (0.9%-3.3%)	1 1.0% (0.4%-2.4%)	5 2.9% (1.9%-4.4%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	27 33.6% (28.7%-39.0%)	31 29.9% (25.7%-34.5%)	36 40.9% (35.9%-46.2%)	32 42.1% (36.7%-47.7%)	30 46.3% (40.4%-52.4%)
Emergency presentation	28 34.9% (29.9%-40.3%)	35 34.3% (29.9%-39.0%)	23 26.5% (22.1%-31.4%)	26 34.2% (29.1%-39.7%)	18 27.0% (22.0%-32.7%)
Elective inpatient admission	3 3.5% (1.9%-6.1%)	6 6.1% (4.2%-8.8%)	4 4.3% (2.6%-7.0%)	3 3.3% (1.8%-5.9%)	4 6.2% (3.8%-9.8%)
Other GP referral to outpatients	12 15.4% (11.9%-19.8%)	20 19.7% (16.2%-23.8%)	15 17.3% (13.7%-21.6%)	8 10.2% (7.3%-14.1%)	9 13.5% (9.9%-18.2%)
Other outpatient appointment	8 10.1% (7.2%-13.9%)	9 8.3% (6.0%-11.3%)	7 8.4% (5.9%-11.7%)	6 7.6% (5.1%-11.1%)	4 6.6% (4.1%-10.3%)
Other/ Unknown	2 2.5% (1.3%-4.9%)	2 1.7% (0.8%-3.5%)	2 2.6% (1.4%-4.9%)	2 2.6% (1.3%-5.1%)	0 -

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	31 37.5% (32.5%-42.9%)	36 41.0% (35.9%-46.2%)	31 37.6% (32.5%-43.0%)	30 35.9% (31.0%-41.2%)	27 36.8% (31.5%-42.5%)
Emergency presentation	28 33.6% (28.8%-38.9%)	26 29.8% (25.2%-34.8%)	27 33.0% (28.2%-38.3%)	26 31.4% (26.7%-36.6%)	22 30.1% (25.1%-35.5%)
Elective inpatient admission	5 5.4% (3.4%-8.4%)	4 4.3% (2.6%-7.0%)	4 4.9% (3.0%-7.8%)	4 4.8% (3.0%-7.6%)	3 4.1% (2.3%-7.0%)
Other GP referral to outpatients	13 15.0% (11.6%-19.2%)	15 17.2% (13.6%-21.5%)	14 16.5% (12.9%-20.9%)	15 17.7% (13.9%-22.1%)	8 11.1% (8.0%-15.2%)
Other outpatient appointment	6 7.2% (4.9%-10.5%)	5 6.0% (4.0%-9.0%)	6 7.0% (4.7%-10.3%)	7 7.8% (5.4%-11.2%)	10 13.9% (10.4%-18.3%)
Other/ Unknown	1 1.2% (0.5%-3.0%)	2 1.7% (0.8%-3.7%)	1 0.9% (0.3%-2.7%)	2 2.4% (1.2%-4.7%)	3 4.1% (2.3%-7.0%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Red-flag referral	84 34.8% (31.9%-37.9%)	16 43.0% (35.4%-51.0%)	55 41.9% (37.8%-46.2%)
Emergency presentation	82 33.7% (30.8%-36.7%)	11 28.5% (21.9%-36.1%)	37 28.7% (24.9%-32.7%)
Other GP referral to outpatients	36 14.9% (12.8%-17.3%)	7 17.2% (12.0%-24.0%)	22 16.5% (13.6%-20.0%)
Other outpatient appointment	23 9.3% (7.6%-11.3%)	3 8.6% (5.1%-14.2%)	8 6.2% (4.4%-8.6%)
Other/ Unknown	18 7.3% (5.9%-9.2%)	1 2.6% (1.0%-6.6%)	9 6.7% (4.9%-9.2%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	6 15.8% (10.8%-22.4%)	12 40.9% (32.3%-50.0%)	42 50.1% (44.8%-55.5%)	68 38.6% (35.1%-42.3%)	27 32.6% (27.8%-37.9%)
Emergency presentation	3 6.6% (3.6%-11.7%)	7 22.6% (15.9%-31.1%)	19 22.6% (18.4%-27.3%)	70 39.5% (35.9%-43.1%)	32 38.7% (33.6%-44.1%)
Elective inpatient admission	2 5.9% (3.1%-10.9%)	1 4.3% (1.9%-9.8%)	4 4.2% (2.5%-6.9%)	9 5.0% (3.6%-6.8%)	4 4.3% (2.6%-7.0%)
Other GP referral to outpatients	16 42.8% (35.2%-50.7%)	7 24.3% (17.4%-32.9%)	13 15.1% (11.7%-19.4%)	19 10.5% (8.4%-12.9%)	10 11.6% (8.6%-15.5%)
Other outpatient appointment	10 25.0% (18.8%-32.4%)	2 7.0% (3.6%-13.1%)	6 7.4% (5.1%-10.7%)	9 4.8% (3.5%-6.6%)	8 9.1% (6.5%-12.8%)
Other/ Unknown	2 3.9% (1.8%-8.3%)	0 -	1 0.6% (0.2%-2.1%)	3 1.7% (1.0%-2.9%)	3 3.7% (2.1%-6.3%)

By cancer type

Route to diagnosis	Oesophageal cancer	Stomach cancer
Red-flag referral	98 45.0% (41.7%-48.3%)	58 29.8% (26.7%-33.1%)
Emergency presentation	56 25.8% (23.0%-28.9%)	74 38.1% (34.7%-41.6%)
Elective inpatient admission	10 4.4% (3.2%-6.0%)	10 5.1% (3.7%-6.8%)
Other GP referral to outpatients	31 14.4% (12.2%-16.9%)	33 17.0% (14.5%-19.8%)
Other outpatient appointment	19 8.7% (7.0%-10.7%)	15 7.8% (6.1%-9.9%)
Death certificate only/ Unknown	4 1.7% (1.1%-2.8%)	5 2.3% (1.5%-3.7%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Red-flag referral	134 32.9% (28.5%-37.6%)	163 40.5% (35.9%-45.4%)	138 36.4% (31.7%-41.4%)	185 41.0% (36.6%-45.6%)
Emergency presentation	115 28.3% (24.1%-32.8%)	108 26.9% (22.8%-31.4%)	150 39.6% (34.8%-44.6%)	145 32.2% (28.0%-36.6%)
Other GP referral to outpatients	70 17.2% (13.8%-21.2%)	59 14.7% (11.6%-18.5%)	52 13.7% (10.6%-17.6%)	75 16.6% (13.5%-20.3%)
Other outpatient appointment	44 10.8% (8.2%-14.2%)	36 9.0% (6.5%-12.1%)	21 5.5% (3.7%-8.3%)	34 7.5% (5.4%-10.4%)
Other/ Unknown	44 10.8% (8.2%-14.2%)	36 9.0% (6.5%-12.1%)	18 4.7% (3.0%-7.4%)	12 2.7% (1.5%-4.6%)

HEPATOBILIARY AND PANCREATIC CANCER

Average number of hepatobiliary and pancreatic cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	45 15.0% (13.1%-17.2%)	31 12.7% (10.7%-14.9%)
Emergency presentation	140 46.6% (43.8%-49.4%)	127 52.0% (48.9%-55.2%)
Elective inpatient admission	10 3.2% (2.3%-4.3%)	6 2.6% (1.7%-3.7%)
Other GP referral to outpatients	50 16.7% (14.7%-18.9%)	38 15.4% (13.3%-17.8%)
Other outpatient appointment	45 15.0% (13.0%-17.1%)	33 13.6% (11.6%-15.9%)
Death certificate only/ Unknown	11 3.5% (2.6%-4.7%)	9 3.7% (2.7%-5.1%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	17 13.5% (10.8%-16.8%)	30 17.6% (14.9%-20.6%)	29 11.7% (9.9%-13.9%)
Emergency presentation	56 45.3% (40.9%-49.7%)	75 44.1% (40.4%-47.8%)	136 54.4% (51.3%-57.4%)
Elective inpatient admission	3 2.4% (1.4%-4.2%)	7 4.2% (3.0%-6.0%)	6 2.2% (1.5%-3.3%)
Other GP referral to outpatients	22 17.4% (14.3%-21.0%)	31 18.2% (15.4%-21.2%)	35 14.1% (12.1%-16.4%)
Other outpatient appointment	24 19.4% (16.2%-23.1%)	23 13.5% (11.1%-16.2%)	31 12.4% (10.5%-14.6%)
Death certificate only/ Unknown	3 2.0% (1.1%-3.7%)	4 2.5% (1.6%-3.9%)	13 5.1% (3.9%-6.7%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	14 12.7% (9.9%-16.2%)	19 14.3% (11.6%-17.5%)	14 11.9% (9.3%-15.1%)	10 9.9% (7.4%-13.1%)	19 23.7% (19.3%-28.7%)
Emergency presentation	55 50.5% (45.8%-55.2%)	64 47.2% (43.0%-51.4%)	61 51.3% (46.8%-55.7%)	56 53.5% (48.7%-58.2%)	32 41.0% (35.7%-46.6%)
Elective inpatient admission	3 2.3% (1.3%-4.2%)	5 3.7% (2.4%-5.7%)	5 3.8% (2.4%-5.9%)	3 2.4% (1.3%-4.4%)	1 1.6% (0.7%-3.7%)
Other GP referral to outpatients	18 16.7% (13.4%-20.5%)	22 16.5% (13.6%-19.9%)	15 12.8% (10.1%-16.1%)	17 16.6% (13.4%-20.5%)	15 19.2% (15.2%-24.0%)
Other outpatient appointment	16 15.0% (12.0%-18.7%)	20 14.7% (11.9%-17.9%)	17 14.2% (11.4%-17.6%)	15 14.5% (11.4%-18.2%)	10 12.8% (9.6%-17.0%)
Death certificate only/ Unknown	3 2.8% (1.6%-4.8%)	5 3.5% (2.3%-5.4%)	7 6.1% (4.3%-8.6%)	3 3.1% (1.8%-5.3%)	1 1.6% (0.7%-3.7%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	16 14.8% (11.7%-18.5%)	19 17.9% (14.5%-21.8%)	18 16.0% (13.0%-19.7%)	12 11.1% (8.5%-14.5%)	12 10.2% (7.8%-13.4%)
Emergency presentation	51 48.3% (43.6%-53.1%)	50 47.6% (42.9%-52.4%)	55 48.4% (43.8%-52.9%)	55 50.6% (45.9%-55.3%)	57 50.3% (45.7%-54.9%)
Elective inpatient admission	3 2.9% (1.6%-4.9%)	3 2.6% (1.5%-4.6%)	2 1.5% (0.7%-3.1%)	4 3.7% (2.3%-5.9%)	4 3.8% (2.4%-6.0%)
Other GP referral to outpatients	17 16.0% (12.8%-19.8%)	14 13.3% (10.4%-16.9%)	18 15.8% (12.8%-19.5%)	17 16.0% (12.8%-19.8%)	22 19.4% (16.0%-23.3%)
Other outpatient appointment	15 14.3% (11.3%-18.0%)	17 16.0% (12.8%-19.8%)	17 14.7% (11.8%-18.3%)	15 13.7% (10.8%-17.3%)	15 13.1% (10.3%-16.6%)
Death certificate only/ Unknown	4 3.8% (2.4%-6.1%)	3 2.6% (1.5%-4.6%)	4 3.5% (2.2%-5.6%)	5 4.9% (3.2%-7.3%)	4 3.1% (1.9%-5.2%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Red-flag referral	45 13.8% (12.0%-15.8%)	6 11.2% (7.6%-16.1%)	26 15.2% (12.7%-18.1%)
Emergency presentation	163 50.7% (47.9%-53.4%)	27 49.8% (43.1%-56.4%)	77 45.8% (42.0%-49.5%)
Elective inpatient admission	9 2.6% (1.9%-3.7%)	2 3.3% (1.6%-6.6%)	6 3.3% (2.2%-4.9%)
Other GP referral to outpatients	50 15.4% (13.6%-17.5%)	10 17.7% (13.2%-23.3%)	29 17.0% (14.3%-20.0%)
Other outpatient appointment	46 14.2% (12.4%-16.2%)	8 14.0% (10.0%-19.2%)	25 14.8% (12.3%-17.6%)
Death certificate only/ Unknown	11 3.3% (2.4%-4.4%)	2 4.2% (2.2%-7.8%)	7 4.0% (2.8%-5.8%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	9 11.6% (8.5%-15.7%)	11 17.0% (12.8%-22.2%)	17 18.8% (15.1%-23.2%)	33 15.1% (12.8%-17.6%)	8 7.5% (5.3%-10.5%)
Emergency presentation	21 28.1% (23.4%-33.5%)	22 35.6% (29.9%-41.8%)	40 45.0% (39.9%-50.2%)	127 58.7% (55.4%-61.9%)	58 55.7% (50.9%-60.4%)
Other GP referral to outpatients	19 25.5% (20.9%-30.7%)	12 19.8% (15.3%-25.3%)	15 16.5% (13.0%-20.8%)	26 11.9% (10.0%-14.3%)	16 15.5% (12.3%-19.3%)
Other outpatient appointment	22 28.8% (24.0%-34.2%)	14 23.1% (18.3%-28.7%)	12 13.4% (10.2%-17.4%)	19 8.8% (7.1%-10.9%)	11 10.9% (8.2%-14.3%)
Other/ Unknown	5 6.0% (3.8%-9.2%)	3 4.5% (2.5%-7.8%)	6 6.3% (4.2%-9.3%)	12 5.5% (4.1%-7.2%)	11 10.4% (7.8%-13.7%)

By cancer type

Route to diagnosis	Gallbladder and biliary cancer	Liver cancer	Pancreatic cancer
Red-flag referral	8 7.5% (5.3%-10.3%)	26 16.9% (14.1%-20.0%)	42 14.9% (12.9%-17.1%)
Emergency presentation	65 60.6% (55.9%-65.1%)	57 37.0% (33.2%-40.8%)	145 51.3% (48.4%-54.2%)
Elective inpatient admission	4 3.3% (2.0%-5.4%)	4 2.6% (1.6%-4.2%)	8 2.9% (2.1%-4.1%)
Other GP referral to outpatients	15 13.8% (10.8%-17.3%)	30 19.1% (16.2%-22.4%)	44 15.4% (13.4%-17.6%)
Other outpatient appointment	13 12.4% (9.6%-15.8%)	29 19.0% (16.1%-22.2%)	36 12.6% (10.8%-14.6%)
Death certificate only/ Unknown	3 2.6% (1.4%-4.5%)	9 5.5% (4.0%-7.6%)	8 2.9% (2.1%-4.1%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Red-flag referral	58 11.3% (8.8%-14.3%)	79 15.1% (12.3%-18.4%)	82 14.1% (11.5%-17.2%)	85 15.2% (12.5%-18.5%)
Emergency presentation	270 52.6% (48.3%-56.9%)	227 43.4% (39.2%-47.7%)	290 49.9% (45.9%-54.0%)	280 50.2% (46.0%-54.3%)
Elective inpatient admission	23 4.5% (3.0%-6.6%)	16 3.1% (1.9%-4.9%)	15 2.6% (1.6%-4.2%)	9 1.6% (0.9%-3.0%)
Other GP referral to outpatients	70 13.6% (10.9%-16.9%)	107 20.5% (17.2%-24.1%)	95 16.4% (13.6%-19.6%)	79 14.2% (11.5%-17.3%)
Other outpatient appointment	70 13.6% (10.9%-16.9%)	74 14.1% (11.4%-17.4%)	78 13.4% (10.9%-16.4%)	90 16.1% (13.3%-19.4%)
Death certificate only/ Unknown	22 4.3% (2.8%-6.4%)	20 3.8% (2.5%-5.8%)	21 3.6% (2.4%-5.5%)	15 2.7% (1.6%-4.4%)

GYNAECOLOGICAL CANCER

Average number of gynaecological cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	115 37.7% (35.1%-40.5%)	75 53.9% (49.8%-58.0%)	60 38.1% (34.4%-42.0%)
Emergency presentation	42 13.9% (12.1%-16.0%)	27 19.4% (16.3%-22.8%)	47 29.4% (26.0%-33.1%)
Other GP referral to outpatients	66 21.7% (19.5%-24.1%)	19 13.8% (11.2%-16.9%)	27 17.2% (14.5%-20.4%)
Other outpatient appointment	40 13.1% (11.3%-15.1%)	14 9.9% (7.7%-12.6%)	16 10.0% (7.9%-12.6%)
Other/ Unknown	41 13.6% (11.8%-15.6%)	4 3.0% (1.9%-4.8%)	8 5.2% (3.7%-7.2%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Screening referral	6 5.5% (3.8%-8.0%)	7 4.4% (3.1%-6.4%)	6 5.0% (3.4%-7.3%)	5 4.4% (2.9%-6.6%)	8 8.1% (5.8%-11.1%)
Red-flag referral	41 36.3% (32.0%-40.8%)	62 42.6% (38.6%-46.6%)	47 39.0% (34.8%-43.5%)	52 43.4% (39.0%-47.9%)	48 47.1% (42.3%-51.9%)
Emergency presentation	25 22.1% (18.5%-26.2%)	27 18.1% (15.2%-21.4%)	27 22.3% (18.8%-26.2%)	22 18.4% (15.2%-22.2%)	15 15.0% (11.8%-18.7%)
Other GP referral to outpatients	19 17.0% (13.9%-20.8%)	29 19.8% (16.8%-23.3%)	22 17.8% (14.6%-21.4%)	23 19.1% (15.8%-22.8%)	20 19.6% (16.0%-23.7%)
Other outpatient appointment	17 14.8% (11.8%-18.4%)	15 10.4% (8.2%-13.2%)	15 12.6% (9.9%-15.9%)	14 11.3% (8.8%-14.5%)	9 8.3% (6.0%-11.4%)
Other/ Unknown	5 4.2% (2.7%-6.5%)	7 4.6% (3.2%-6.6%)	4 3.3% (2.0%-5.3%)	4 3.4% (2.1%-5.4%)	2 2.0% (1.0%-3.8%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Screening referral	10 9.5% (7.1%-12.7%)	7 5.7% (4.0%-8.0%)	6 4.8% (3.3%-7.0%)	4 3.2% (1.9%-5.1%)	5 4.0% (2.6%-6.2%)
Red-flag referral	41 37.8% (33.4%-42.5%)	54 42.3% (38.1%-46.6%)	55 42.2% (38.0%-46.5%)	55 46.5% (42.1%-51.0%)	46 38.7% (34.4%-43.2%)
Emergency presentation	21 19.0% (15.6%-23.0%)	27 21.1% (17.7%-24.8%)	22 17.2% (14.2%-20.7%)	22 18.3% (15.1%-22.0%)	24 20.6% (17.2%-24.5%)
Other GP referral to outpatients	19 17.9% (14.5%-21.8%)	22 16.8% (13.8%-20.2%)	28 21.5% (18.1%-25.2%)	23 19.4% (16.1%-23.2%)	21 17.9% (14.7%-21.6%)
Other outpatient appointment	13 12.1% (9.3%-15.5%)	15 11.3% (8.8%-14.3%)	15 11.4% (9.0%-14.4%)	11 9.1% (6.8%-12.0%)	16 13.8% (11.0%-17.2%)
Other/ Unknown	4 3.7% (2.3%-5.9%)	4 2.9% (1.8%-4.8%)	4 2.9% (1.8%-4.7%)	4 3.6% (2.2%-5.7%)	6 4.9% (3.3%-7.2%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Screening referral	21 5.9% (4.8%-7.3%)	2 3.8% (2.0%-7.1%)	9 4.8% (3.5%-6.6%)
Red-flag referral	141 39.7% (37.2%-42.3%)	23 39.4% (33.4%-45.8%)	86 45.9% (42.3%-49.5%)
Emergency presentation	77 21.6% (19.5%-23.8%)	8 14.0% (10.1%-19.0%)	31 16.5% (14.0%-19.3%)
Other GP referral to outpatients	63 17.6% (15.7%-19.7%)	15 24.6% (19.5%-30.4%)	36 18.9% (16.2%-21.8%)
Other outpatient appointment	41 11.6% (10.1%-13.4%)	8 14.0% (10.1%-19.0%)	20 10.5% (8.5%-12.9%)
Other/ Unknown	13 3.5% (2.7%-4.6%)	3 4.2% (2.3%-7.6%)	7 3.5% (2.4%-5.0%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	144 49.3% (46.5%-52.2%)	19 40.2% (33.5%-47.3%)	56 41.6% (37.5%-45.8%)	23 29.0% (24.3%-34.2%)	8 16.2% (11.6%-22.2%)
Emergency presentation	22 7.4% (6.0%-9.0%)	6 12.7% (8.7%-18.2%)	38 28.1% (24.5%-32.0%)	35 43.0% (37.7%-48.5%)	16 34.1% (27.6%-41.1%)
Other GP referral to outpatients	67 22.9% (20.6%-25.4%)	9 18.0% (13.2%-24.1%)	17 12.8% (10.2%-15.8%)	13 15.6% (12.0%-19.9%)	7 15.7% (11.1%-21.6%)
Other outpatient appointment	34 11.5% (9.8%-13.4%)	5 11.1% (7.4%-16.4%)	17 12.6% (10.0%-15.6%)	5 6.2% (4.1%-9.4%)	9 18.4% (13.5%-24.6%)
Other/ Unknown	26 9.0% (7.5%-10.7%)	9 18.0% (13.2%-24.1%)	7 5.0% (3.5%-7.2%)	5 6.2% (4.1%-9.4%)	7 15.7% (11.1%-21.6%)

By cancer type

Route to diagnosis	Cervical cancer	Ovarian cancer	Uterine cancer
Screening referral	32 37.9% (32.9%-43.2%)	0 -	0 -
Red-flag referral	17 20.3% (16.4%-24.9%)	55 27.1% (24.1%-30.3%)	160 60.7% (57.7%-63.6%)
Emergency presentation	7 7.9% (5.5%-11.3%)	70 34.5% (31.3%-37.9%)	29 11.0% (9.2%-13.0%)
Other GP referral to outpatients	12 14.4% (11.1%-18.5%)	39 19.4% (16.8%-22.3%)	49 18.5% (16.3%-20.9%)
Other outpatient appointment	15 17.1% (13.4%-21.4%)	28 13.9% (11.7%-16.5%)	20 7.4% (6.0%-9.1%)
Other/ Unknown	2 2.4% (1.2%-4.6%)	10 5.1% (3.8%-6.8%)	7 2.5% (1.7%-3.6%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Screening referral	36 5.5% (4.0%-7.6%)	34 5.2% (3.8%-7.2%)	25 4.7% (3.2%-6.8%)	34 6.0% (4.3%-8.2%)
Red-flag referral	270 41.6% (37.9%-45.4%)	249 38.2% (34.5%-42.0%)	221 41.2% (37.1%-45.4%)	261 46.0% (41.9%-50.1%)
Emergency presentation	115 17.7% (15.0%-20.8%)	128 19.6% (16.8%-22.9%)	119 22.2% (18.9%-25.9%)	101 17.8% (14.9%-21.1%)
Other GP referral to outpatients	128 19.7% (16.8%-23.0%)	144 22.1% (19.1%-25.4%)	93 17.3% (14.4%-20.7%)	85 15.0% (12.3%-18.1%)
Other outpatient appointment	76 11.7% (9.5%-14.4%)	70 10.7% (8.6%-13.3%)	59 11.0% (8.6%-13.9%)	72 12.7% (10.2%-15.7%)
Other/ Unknown	24 3.7% (2.5%-5.4%)	27 4.1% (2.9%-6.0%)	20 3.7% (2.4%-5.7%)	15 2.6% (1.6%-4.3%)

URINARY CANCER

Average number of urinary cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	125 31.2% (28.9%-33.5%)	53 27.5% (24.4%-30.7%)
Emergency presentation	79 19.7% (17.8%-21.7%)	46 23.8% (20.9%-26.9%)
Elective inpatient admission	9 2.1% (1.5%-3.0%)	3 1.4% (0.8%-2.6%)
Other GP referral to outpatients	94 23.4% (21.4%-25.6%)	49 25.5% (22.5%-28.7%)
Other outpatient appointment	69 17.3% (15.5%-19.2%)	31 16.3% (13.9%-19.1%)
Death certificate only/ Unknown	25 6.3% (5.2%-7.6%)	11 5.5% (4.1%-7.3%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	60 32.2% (28.9%-35.6%)	49 31.1% (27.6%-34.8%)	68 27.6% (24.9%-30.4%)
Emergency presentation	28 15.2% (12.8%-18.0%)	28 17.4% (14.6%-20.5%)	69 27.7% (25.0%-30.5%)
Elective inpatient admission	4 1.9% (1.1%-3.1%)	3 2.1% (1.2%-3.5%)	5 1.8% (1.2%-2.9%)
Other GP referral to outpatients	47 25.2% (22.2%-28.4%)	41 25.6% (22.3%-29.1%)	55 22.3% (19.8%-25.0%)
Other outpatient appointment	37 19.7% (17.0%-22.7%)	29 18.0% (15.2%-21.2%)	36 14.3% (12.3%-16.7%)
Death certificate only/ Unknown	11 5.9% (4.4%-7.9%)	9 5.8% (4.3%-8.0%)	16 6.3% (4.9%-7.9%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	30 24.9% (21.2%-28.9%)	56 33.0% (29.5%-36.6%)	34 28.2% (24.4%-32.4%)	28 26.9% (22.9%-31.4%)	30 38.0% (32.8%-43.5%)
Emergency presentation	30 24.5% (20.9%-28.5%)	30 17.5% (14.8%-20.6%)	28 23.0% (19.5%-27.0%)	23 22.4% (18.6%-26.6%)	14 18.2% (14.3%-22.9%)
Other GP referral to outpatients	30 25.1% (21.4%-29.2%)	42 24.7% (21.6%-28.1%)	25 20.5% (17.2%-24.4%)	26 25.2% (21.3%-29.6%)	20 25.2% (20.7%-30.3%)
Other outpatient appointment	23 18.7% (15.4%-22.4%)	26 15.5% (12.9%-18.4%)	24 19.7% (16.4%-23.5%)	18 17.1% (13.8%-21.0%)	11 13.4% (10.1%-17.6%)
Other/ Unknown	8 6.8% (4.9%-9.5%)	16 9.4% (7.4%-11.8%)	10 8.5% (6.3%-11.3%)	9 8.4% (6.1%-11.5%)	4 5.1% (3.2%-8.1%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	30 27.8% (23.8%-32.1%)	37 31.8% (27.8%-36.2%)	37 31.2% (27.2%-35.5%)	37 30.0% (26.1%-34.3%)	37 28.9% (25.1%-33.0%)
Emergency presentation	26 23.4% (19.7%-27.6%)	26 22.2% (18.7%-26.2%)	24 20.0% (16.6%-23.8%)	23 18.9% (15.7%-22.7%)	26 20.8% (17.5%-24.5%)
Elective inpatient admission	3 2.3% (1.3%-4.2%)	2 1.3% (0.6%-2.8%)	2 1.5% (0.7%-3.0%)	2 1.6% (0.8%-3.2%)	4 2.8% (1.7%-4.6%)
Other GP referral to outpatients	27 24.8% (21.0%-29.0%)	27 23.1% (19.5%-27.1%)	31 26.5% (22.8%-30.7%)	28 22.6% (19.1%-26.6%)	30 23.6% (20.1%-27.5%)
Other outpatient appointment	18 16.3% (13.1%-20.0%)	19 15.8% (12.8%-19.4%)	21 17.6% (14.4%-21.3%)	23 18.7% (15.5%-22.4%)	21 16.4% (13.5%-19.9%)
Death certificate only/ Unknown	6 5.5% (3.7%-8.1%)	7 5.8% (4.0%-8.3%)	4 3.2% (1.9%-5.2%)	10 8.0% (5.9%-10.8%)	10 7.5% (5.5%-10.2%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Red-flag referral	107 29.1% (26.8%-31.5%)	11 23.2% (17.8%-29.6%)	60 33.6% (30.2%-37.1%)
Emergency presentation	78 21.2% (19.2%-23.4%)	11 22.7% (17.4%-29.1%)	36 20.2% (17.4%-23.3%)
Other GP referral to outpatients	88 23.9% (21.8%-26.2%)	13 26.3% (20.6%-32.9%)	42 23.8% (20.8%-27.1%)
Other outpatient appointment	66 18.0% (16.1%-20.0%)	8 16.0% (11.5%-21.8%)	27 15.2% (12.8%-18.1%)
Other/ Unknown	29 7.8% (6.5%-9.3%)	6 11.9% (8.0%-17.2%)	13 7.2% (5.5%-9.3%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	87 33.0% (30.2%-35.9%)	32 43.3% (37.8%-49.0%)	32 33.9% (29.2%-38.8%)	18 18.8% (15.2%-23.0%)	9 13.3% (9.7%-18.0%)
Emergency presentation	35 13.2% (11.3%-15.4%)	15 20.5% (16.3%-25.4%)	18 19.4% (15.7%-23.7%)	37 37.9% (33.2%-42.8%)	20 30.5% (25.2%-36.4%)
Other GP referral to outpatients	67 25.5% (22.9%-28.2%)	15 20.1% (16.0%-25.1%)	22 23.7% (19.6%-28.2%)	23 23.2% (19.3%-27.6%)	16 25.0% (20.1%-30.6%)
Other outpatient appointment	50 19.1% (16.8%-21.6%)	10 12.8% (9.4%-17.0%)	18 19.1% (15.4%-23.4%)	13 12.9% (9.9%-16.6%)	11 16.4% (12.4%-21.4%)
Other/ Unknown	24 9.2% (7.6%-11.1%)	3 3.4% (1.8%-6.1%)	4 4.0% (2.5%-6.5%)	7 7.2% (5.0%-10.2%)	10 14.8% (11.0%-19.7%)

By cancer type

Route to diagnosis	Bladder cancer	Kidney cancer
Red-flag referral	101 41.2% (38.1%-44.3%)	63 21.4% (19.1%-23.8%)
Emergency presentation	52 21.4% (19.0%-24.1%)	61 20.7% (18.5%-23.1%)
Elective inpatient admission	5 2.0% (1.3%-3.1%)	6 1.9% (1.3%-2.9%)
Other GP referral to outpatients	48 19.6% (17.2%-22.2%)	80 27.1% (24.6%-29.7%)
Other outpatient appointment	30 12.1% (10.2%-14.3%)	62 20.9% (18.7%-23.3%)
Death certificate only/ Unknown	9 3.7% (2.7%-5.1%)	24 8.0% (6.6%-9.7%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Red-flag referral	164 28.4% (24.9%-32.2%)	183 29.6% (26.1%-33.3%)	165 29.1% (25.5%-33.0%)	197 32.7% (29.0%-36.5%)
Emergency presentation	112 19.4% (16.4%-22.8%)	118 19.1% (16.2%-22.4%)	131 23.1% (19.8%-26.7%)	136 22.6% (19.4%-26.1%)
Elective inpatient admission	18 3.1% (2.0%-4.9%)	13 2.1% (1.2%-3.6%)	9 1.6% (0.8%-3.0%)	5 0.8% (0.4%-1.9%)
Other GP referral to outpatients	137 23.7% (20.4%-27.3%)	177 28.6% (25.2%-32.3%)	136 24.0% (20.7%-27.7%)	120 19.9% (16.9%-23.3%)
Other outpatient appointment	102 17.6% (14.8%-21.0%)	90 14.6% (12.0%-17.6%)	95 16.8% (13.9%-20.1%)	115 19.1% (16.1%-22.4%)
Death certificate only/ Unknown	45 7.8% (5.9%-10.3%)	37 6.0% (4.4%-8.1%)	31 5.5% (3.9%-7.7%)	30 5.0% (3.5%-7.0%)

MALIGNANT MELANOMA

Average number of melanoma cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	104 55.0% (51.5%-58.5%)	131 61.3% (58.0%-64.5%)
Emergency presentation	5 2.4% (1.5%-3.7%)	2 0.7% (0.3%-1.5%)
Elective inpatient admission	4 2.2% (1.4%-3.6%)	3 1.5% (0.9%-2.6%)
Other GP referral to outpatients	44 23.3% (20.4%-26.4%)	48 22.7% (20.0%-25.6%)
Other outpatient appointment	18 9.4% (7.5%-11.7%)	17 7.9% (6.2%-9.9%)
Death certificate only/ Unknown	15 7.7% (6.0%-9.8%)	13 6.0% (4.6%-7.8%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	129 63.1% (59.7%-66.3%)	48 54.2% (49.0%-59.3%)	57 52.8% (48.1%-57.4%)
Elective inpatient admission	3 1.6% (0.9%-2.7%)	2 2.0% (1.0%-4.0%)	3 2.3% (1.3%-4.2%)
Other GP referral to outpatients	39 19.2% (16.6%-22.0%)	22 24.4% (20.3%-29.2%)	31 28.8% (24.7%-33.2%)
Other outpatient appointment	16 7.6% (6.0%-9.6%)	7 8.1% (5.7%-11.5%)	12 10.8% (8.2%-14.1%)
Other/ Unknown	18 8.6% (6.8%-10.7%)	10 11.2% (8.4%-14.9%)	6 5.3% (3.6%-7.8%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	46 63.6% (57.9%-69.0%)	65 62.9% (58.1%-67.4%)	53 55.4% (50.4%-60.3%)	45 58.2% (52.7%-63.5%)	26 47.9% (41.4%-54.6%)
Other GP referral to outpatients	16 21.7% (17.3%-26.8%)	21 20.2% (16.7%-24.4%)	19 20.3% (16.6%-24.7%)	19 24.1% (19.7%-29.2%)	18 32.7% (26.8%-39.2%)
Other outpatient appointment	5 7.3% (4.9%-11.0%)	7 6.3% (4.3%-9.0%)	8 8.4% (6.0%-11.7%)	7 9.3% (6.6%-13.1%)	8 13.8% (9.9%-19.0%)
Other/ Unknown	5 7.3% (4.9%-11.0%)	11 10.6% (8.0%-13.9%)	15 15.8% (12.5%-19.8%)	7 8.4% (5.8%-12.0%)	3 5.5% (3.2%-9.4%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	30 58.3% (51.4%-64.8%)	47 60.5% (55.0%-65.8%)	53 60.3% (55.1%-65.3%)	52 56.7% (51.6%-61.7%)	54 56.3% (51.3%-61.2%)
Elective inpatient admission	2 2.9% (1.3%-6.2%)	2 1.9% (0.9%-4.2%)	1 1.4% (0.6%-3.3%)	1 1.4% (0.6%-3.2%)	2 2.1% (1.1%-4.1%)
Other GP referral to outpatients	13 24.8% (19.4%-31.1%)	19 24.9% (20.4%-30.0%)	20 22.4% (18.3%-27.1%)	21 22.7% (18.7%-27.3%)	20 21.1% (17.3%-25.4%)
Other outpatient appointment	4 8.3% (5.2%-12.8%)	6 7.4% (5.0%-10.9%)	8 9.2% (6.6%-12.7%)	10 10.7% (7.9%-14.3%)	7 7.1% (4.9%-10.1%)
Other/ Unknown	3 5.8% (3.4%-9.9%)	4 5.2% (3.2%-8.2%)	6 6.6% (4.4%-9.7%)	8 8.5% (6.0%-11.8%)	13 13.4% (10.4%-17.2%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Red-flag referral	137 61.9% (58.6%-65.0%)	22 52.4% (44.8%-59.9%)	76 54.5% (50.3%-58.5%)
Other GP referral to outpatients	48 21.7% (19.1%-24.6%)	9 21.3% (15.8%-28.2%)	36 25.4% (21.9%-29.1%)
Other outpatient appointment	13 5.9% (4.5%-7.6%)	5 12.8% (8.5%-18.8%)	16 11.6% (9.2%-14.5%)
Other/ Unknown	23 10.5% (8.7%-12.7%)	6 13.4% (9.0%-19.5%)	12 8.6% (6.5%-11.2%)

By stage at diagnosis

Route to diagnosis	Stage I	Stage II	Stage III	Stage IV	Unknown
Red-flag referral	150 60.8% (57.7%-63.8%)	38 57.3% (51.2%-63.1%)	19 55.6% (47.2%-63.8%)	5 38.0% (25.9%-51.8%)	24 54.2% (46.9%-61.3%)
Other GP referral to outpatients	57 23.3% (20.7%-26.0%)	14 20.6% (16.2%-25.9%)	8 22.6% (16.3%-30.4%)	4 30.0% (19.1%-43.8%)	10 22.9% (17.4%-29.6%)
Other outpatient appointment	20 7.9% (6.4%-9.8%)	6 9.5% (6.5%-13.7%)	3 7.5% (4.1%-13.3%)	2 18.0% (9.8%-30.8%)	4 8.9% (5.6%-14.0%)
Other/ Unknown	20 8.0% (6.5%-9.9%)	8 12.6% (9.1%-17.2%)	5 14.3% (9.3%-21.2%)	2 14.0% (7.0%-26.2%)	6 14.0% (9.6%-19.8%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Red-flag referral	254 59.5% (54.8%-64.0%)	213 51.7% (46.9%-56.5%)	184 56.8% (51.3%-62.1%)	287 64.5% (59.9%-68.8%)
Elective inpatient admission	7 1.6% (0.8%-3.3%)	6 1.5% (0.7%-3.1%)	10 3.1% (1.7%-5.6%)	7 1.6% (0.8%-3.2%)
Other GP referral to outpatients	111 26.0% (22.1%-30.4%)	123 29.9% (25.6%-34.4%)	75 23.1% (18.9%-28.0%)	60 13.5% (10.6%-17.0%)
Other outpatient appointment	32 7.5% (5.4%-10.4%)	34 8.3% (6.0%-11.3%)	28 8.6% (6.0%-12.2%)	44 9.9% (7.4%-13.0%)
Other/ Unknown	23 5.4% (3.6%-8.0%)	36 8.7% (6.4%-11.9%)	27 8.3% (5.8%-11.9%)	47 10.6% (8.0%-13.8%)

BRAIN CANCER (INCLUDING CENTRAL NERVOUS SYSTEM)

Average number of brain cancer (including central nervous system) cases diagnosed each year during 2018-2021 by route to diagnosis

(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Emergency presentation	59 59.5% (54.6%-64.2%)	42 65.0% (59.0%-70.5%)
Other GP referral to outpatients	13 13.2% (10.2%-16.9%)	10 14.6% (10.8%-19.4%)
Other outpatient appointment	17 17.2% (13.8%-21.2%)	9 13.8% (10.2%-18.6%)
Other/ Unknown	10 10.1% (7.5%-13.5%)	4 6.5% (4.1%-10.2%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Emergency presentation	43 53.0% (47.5%-58.4%)	24 64.4% (56.5%-71.7%)	35 74.6% (67.9%-80.3%)
Other GP referral to outpatients	12 15.0% (11.5%-19.3%)	5 13.4% (8.9%-19.8%)	6 11.9% (8.0%-17.3%)
Other outpatient appointment	17 20.9% (16.8%-25.6%)	7 18.8% (13.3%-25.8%)	2 4.9% (2.6%-9.0%)
Other/ Unknown	9 11.2% (8.2%-15.1%)	1 3.4% (1.4%-7.6%)	4 8.6% (5.4%-13.6%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Emergency presentation	23 70.0% (61.6%-77.2%)	27 67.5% (59.9%-74.3%)	18 53.4% (44.9%-61.8%)	18 55.7% (47.2%-63.9%)	16 60.2% (50.5%-69.1%)
Other GP referral to outpatients	4 11.5% (7.1%-18.2%)	5 11.2% (7.2%-17.1%)	4 13.0% (8.3%-19.8%)	6 16.8% (11.4%-24.1%)	5 17.5% (11.3%-25.9%)
Other outpatient appointment	4 11.5% (7.1%-18.2%)	5 11.9% (7.7%-17.8%)	8 22.9% (16.5%-30.8%)	6 17.6% (12.0%-25.0%)	4 16.5% (10.6%-24.9%)
Other/ Unknown	2 6.9% (3.7%-12.6%)	4 9.4% (5.8%-14.9%)	4 10.7% (6.5%-17.1%)	3 9.9% (5.9%-16.2%)	2 5.8% (2.7%-12.1%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Emergency presentation	17 64.1% (54.5%-72.7%)	19 55.0% (46.7%-63.0%)	22 63.3% (55.0%-70.9%)	20 62.5% (53.9%-70.4%)	23 64.1% (56.1%-71.5%)
Other GP referral to outpatients	4 13.6% (8.3%-21.5%)	6 17.1% (11.8%-24.2%)	4 10.1% (6.1%-16.2%)	5 14.1% (9.1%-21.1%)	5 13.8% (9.1%-20.3%)
Other outpatient appointment	4 14.6% (9.0%-22.6%)	6 17.9% (12.4%-25.0%)	6 16.5% (11.3%-23.6%)	5 14.8% (9.7%-22.0%)	6 15.2% (10.2%-21.9%)
Other/ Unknown	2 7.8% (4.0%-14.6%)	4 10.0% (6.1%-16.1%)	4 10.1% (6.1%-16.2%)	3 8.6% (4.9%-14.7%)	3 6.9% (3.8%-12.2%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Emergency presentation	57 62.4% (57.3%-67.2%)	11 71.0% (58.7%-80.8%)	33 58.0% (51.4%-64.2%)
Other GP referral to outpatients	13 13.9% (10.7%-17.8%)	1 8.1% (3.5%-17.5%)	9 15.0% (11.0%-20.3%)
Other outpatient appointment	14 15.5% (12.2%-19.6%)	2 14.5% (7.8%-25.3%)	10 16.8% (12.5%-22.2%)
Other/ Unknown	8 8.2% (5.8%-11.4%)	1 6.5% (2.5%-15.4%)	6 10.2% (6.9%-14.8%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Emergency presentation	98 61.6% (53.9%-68.8%)	107 63.3% (55.8%-70.2%)	97 63.0% (55.1%-70.2%)	102 59.0% (51.5%-66.0%)
Other GP referral to outpatients	22 13.8% (9.3%-20.1%)	24 14.2% (9.7%-20.3%)	20 13.0% (8.6%-19.2%)	24 13.9% (9.5%-19.8%)
Other outpatient appointment	22 13.8% (9.3%-20.1%)	26 15.4% (10.7%-21.6%)	23 14.9% (10.2%-21.4%)	33 19.1% (13.9%-25.6%)
Other/ Unknown	17 10.7% (6.8%-16.5%)	12 7.1% (4.1%-12.0%)	14 9.1% (5.5%-14.7%)	14 8.1% (4.9%-13.1%)

HAEMATOLOGICAL CANCER

Average number of haematological cancer cases diagnosed each year during 2018-2021 by route to diagnosis
(Including proportions and 95% confidence intervals)

By gender

Route to diagnosis	Males	Females
Red-flag referral	91 17.5% (16.0%-19.2%)	59 15.9% (14.1%-17.9%)
Emergency presentation	158 30.4% (28.5%-32.4%)	110 29.8% (27.5%-32.2%)
Elective inpatient admission	21 4.0% (3.2%-4.9%)	18 4.7% (3.8%-5.9%)
Other GP referral to outpatients	152 29.2% (27.3%-31.2%)	116 31.4% (29.1%-33.8%)
Other outpatient appointment	68 13.1% (11.7%-14.6%)	44 11.9% (10.3%-13.6%)
Death certificate only/ Unknown	30 5.8% (4.9%-6.9%)	23 6.3% (5.2%-7.7%)

By age group

Route to diagnosis	Aged 0 to 64	Aged 65 to 74	Aged 75 and over
Red-flag referral	61 18.3% (16.3%-20.5%)	43 17.8% (15.6%-20.4%)	47 14.6% (12.8%-16.7%)
Emergency presentation	110 33.2% (30.7%-35.8%)	62 25.9% (23.2%-28.8%)	96 30.2% (27.7%-32.8%)
Elective inpatient admission	17 5.2% (4.1%-6.6%)	9 3.5% (2.6%-4.9%)	12 3.9% (2.9%-5.1%)
Other GP referral to outpatients	85 25.8% (23.5%-28.2%)	80 33.3% (30.4%-36.3%)	102 32.2% (29.6%-34.8%)
Other outpatient appointment	38 11.5% (9.9%-13.3%)	34 14.2% (12.1%-16.5%)	40 12.5% (10.8%-14.4%)
Death certificate only/ Unknown	20 5.9% (4.8%-7.3%)	13 5.2% (4.0%-6.8%)	21 6.7% (5.4%-8.2%)

By Health and Social Care Trust

Route to diagnosis	Belfast	Northern	South Eastern	Southern	Western
Red-flag referral	25 16.2% (13.5%-19.3%)	38 16.5% (14.2%-19.0%)	26 14.6% (12.2%-17.4%)	33 17.6% (15.1%-20.5%)	28 20.2% (17.1%-23.7%)
Emergency presentation	47 30.4% (26.9%-34.2%)	67 28.9% (26.1%-31.9%)	57 31.6% (28.3%-35.1%)	51 27.2% (24.1%-30.5%)	47 34.1% (30.2%-38.1%)
Elective inpatient admission	7 4.4% (3.1%-6.4%)	9 3.9% (2.8%-5.3%)	9 4.9% (3.5%-6.7%)	8 4.0% (2.8%-5.7%)	6 4.3% (2.9%-6.4%)
Other GP referral to outpatients	42 27.7% (24.3%-31.3%)	78 33.8% (30.8%-36.9%)	51 28.6% (25.4%-32.0%)	57 30.4% (27.2%-33.8%)	39 28.3% (24.7%-32.2%)
Other outpatient appointment	22 14.2% (11.7%-17.2%)	25 10.7% (8.9%-12.9%)	24 13.2% (10.9%-15.9%)	30 15.9% (13.4%-18.7%)	12 8.6% (6.6%-11.3%)
Death certificate only/ Unknown	11 7.0% (5.3%-9.3%)	15 6.3% (4.9%-8.0%)	13 7.1% (5.4%-9.2%)	9 4.8% (3.5%-6.6%)	6 4.5% (3.1%-6.6%)

By deprivation quintile

Route to diagnosis	Most deprived	Quintile 2	Quintile 3	Quintile 4	Least deprived
Red-flag referral	23 15.7% (13.0%-18.9%)	28 15.8% (13.3%-18.6%)	36 19.3% (16.6%-22.3%)	31 15.6% (13.2%-18.3%)	33 17.7% (15.1%-20.6%)
Emergency presentation	44 30.4% (26.8%-34.3%)	57 31.6% (28.3%-35.1%)	56 30.1% (26.9%-33.4%)	63 32.0% (28.8%-35.3%)	50 26.8% (23.7%-30.1%)
Elective inpatient admission	5 3.5% (2.3%-5.3%)	8 4.5% (3.2%-6.2%)	10 5.3% (3.9%-7.1%)	7 3.5% (2.4%-5.0%)	9 4.6% (3.3%-6.4%)
Other GP referral to outpatients	44 30.9% (27.3%-34.8%)	52 29.1% (25.8%-32.5%)	54 29.2% (26.1%-32.6%)	61 31.1% (27.9%-34.4%)	56 30.3% (27.1%-33.7%)
Other outpatient appointment	20 13.8% (11.2%-16.9%)	23 12.8% (10.6%-15.5%)	21 11.2% (9.1%-13.7%)	24 12.4% (10.3%-14.9%)	24 13.0% (10.8%-15.6%)
Death certificate only/ Unknown	8 5.6% (4.0%-7.8%)	11 6.3% (4.7%-8.3%)	9 5.0% (3.6%-6.8%)	11 5.5% (4.1%-7.3%)	14 7.6% (5.9%-9.7%)

By urban/rural status

Route to diagnosis	Urban	Mixed	Rural
Red-flag referral	81 16.2% (14.6%-17.9%)	17 19.5% (15.7%-24.0%)	52 17.2% (15.2%-19.4%)
Emergency presentation	158 31.6% (29.6%-33.7%)	24 27.0% (22.6%-31.9%)	87 28.6% (26.1%-31.2%)
Elective inpatient admission	19 3.7% (3.0%-4.6%)	3 3.4% (2.0%-5.9%)	17 5.5% (4.3%-6.9%)
Other GP referral to outpatients	146 29.3% (27.3%-31.3%)	27 31.0% (26.4%-36.1%)	94 31.2% (28.6%-33.9%)
Other outpatient appointment	64 12.8% (11.4%-14.4%)	11 12.6% (9.6%-16.5%)	37 12.2% (10.4%-14.1%)
Death certificate only/ Unknown	32 6.3% (5.3%-7.5%)	6 6.3% (4.2%-9.4%)	16 5.4% (4.2%-6.8%)

By cancer type

Route to diagnosis	Leukaemia	Lymphoma	Multiple myeloma
Red-flag referral	37 14.1% (12.1%-16.3%)	74 17.5% (15.7%-19.4%)	36 20.4% (17.6%-23.5%)
Emergency presentation	86 33.0% (30.2%-35.9%)	122 28.6% (26.5%-30.8%)	55 31.1% (27.8%-34.6%)
Elective inpatient admission	14 5.5% (4.3%-7.0%)	10 2.4% (1.8%-3.3%)	12 6.9% (5.3%-9.0%)
Other GP referral to outpatients	72 27.5% (24.9%-30.3%)	135 31.8% (29.7%-34.1%)	49 27.6% (24.4%-31.0%)
Other outpatient appointment	31 11.9% (10.1%-14.0%)	57 13.4% (11.8%-15.1%)	21 11.6% (9.4%-14.2%)
Death certificate only/ Unknown	21 8.0% (6.5%-9.8%)	27 6.3% (5.2%-7.6%)	4 2.4% (1.5%-3.8%)

By year of diagnosis

Route to diagnosis	2018	2019	2020	2021
Red-flag referral	152 17.3% (14.9%-19.9%)	144 15.6% (13.4%-18.1%)	154 18.1% (15.7%-20.9%)	149 16.6% (14.3%-19.1%)
Emergency presentation	257 29.2% (26.3%-32.3%)	263 28.5% (25.6%-31.5%)	244 28.7% (25.8%-31.9%)	307 34.1% (31.1%-37.3%)
Elective inpatient admission	33 3.8% (2.7%-5.2%)	37 4.0% (2.9%-5.5%)	45 5.3% (4.0%-7.0%)	37 4.1% (3.0%-5.6%)
Other GP referral to outpatients	293 33.3% (30.3%-36.5%)	309 33.4% (30.5%-36.5%)	245 28.9% (25.9%-32.0%)	222 24.7% (22.0%-27.6%)
Other outpatient appointment	99 11.3% (9.3%-13.5%)	119 12.9% (10.9%-15.2%)	104 12.2% (10.2%-14.6%)	125 13.9% (11.8%-16.3%)
Death certificate only/ Unknown	45 5.1% (3.8%-6.8%)	52 5.6% (4.3%-7.3%)	57 6.7% (5.2%-8.6%)	59 6.6% (5.1%-8.4%)