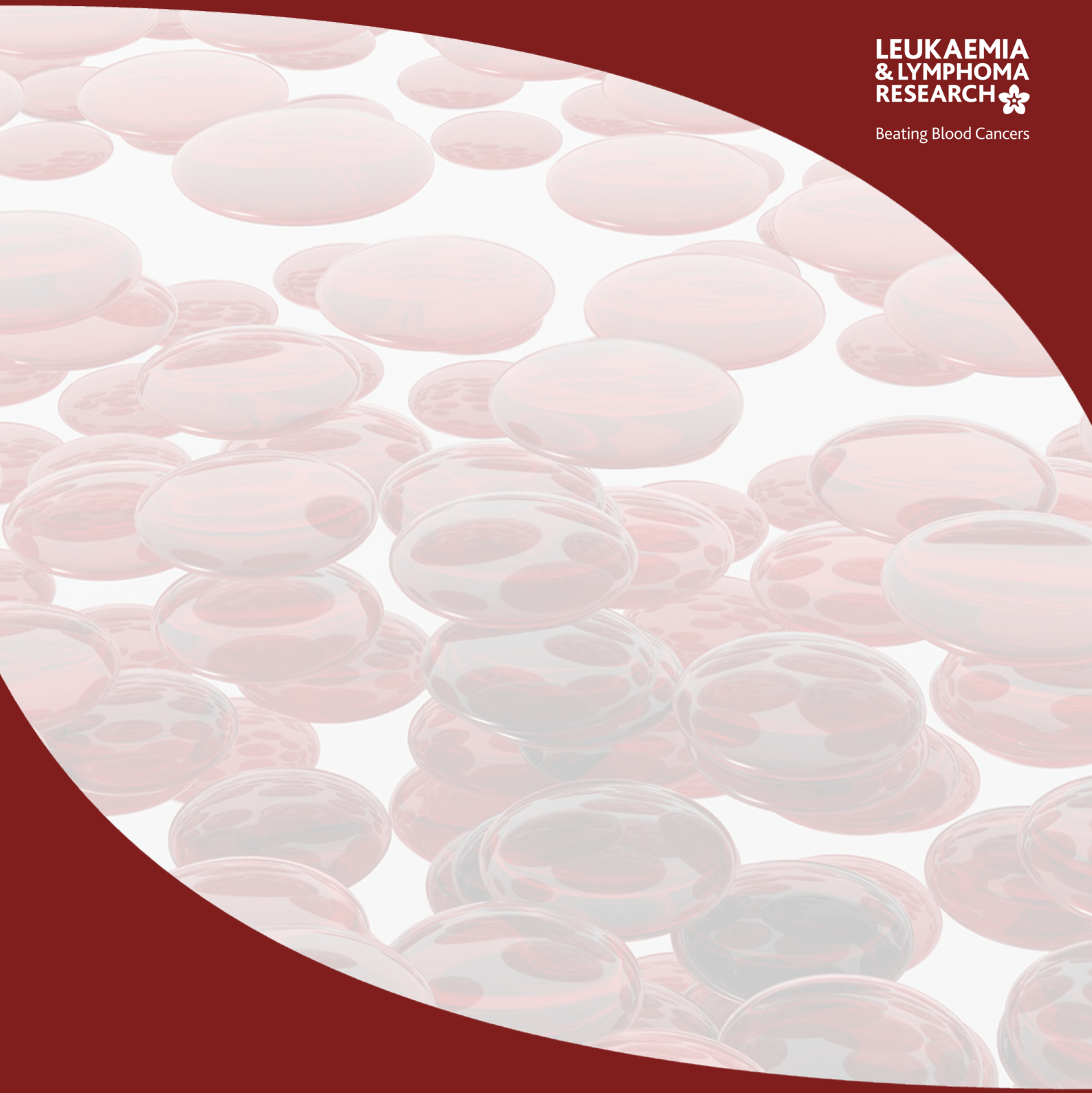


LEUKAEMIA & LYMPHOMA RESEARCH

Beating Blood Cancers

Haematological malignancies & cancer registration in England (2004-2008)

Quality appraisal comparing data from the National Cancer Data Repository (NCDR) with the population-based Haematological Malignancy Research Network (HMRN)

Final Report

June 2012

ECSG Epidemiology & Cancer Statistics Group

Timothy Bagguley
John Blase
Daniel Painter
Eve Roman*
Alexandra Smith

Area 3, Seebohm Rowntree Building
Department of Health Sciences
University of York
YO10 5DD
*eve.roman@york.ac.uk

NHS
Northern and Yorkshire
Cancer Registry and Information Service

Ed Bolton
Caroline Brook
Brian Ferguson
Steven Oliver*
Sheila Pass

Level 6, Bexley Wing (Institute of Oncology)
St James's University Hospital
Beckett Street
Leeds
LS9 7TF
*steven.oliver@hyms.ac.uk

NCIN national cancer intelligence network
Using information to improve quality & choice

Hamish Ross

Haematology Clinical Reference Group
18th Floor, Portland House
Bressenden Place
London
SW1E 5RS

The research presented in this report was supported by funding from the NCIN; a UK-wide initiative, working to drive improvements in standards of cancer care and clinical outcomes by improving and using the information collected about cancer patients for analysis, publication and research. Sitting within the National Cancer Research Institute (NCRI), NCIN works closely with cancer services in England, Scotland, Wales and Northern Ireland. In England, the NCIN is part of the National Cancer Programme.

Contents

Tables

Figures

Annexes

1.0 Executive Summary

Concerns have been raised in both clinical and research communities that traditional cancer registration systems are failing to ascertain a significant number of haematological malignancies. To investigate this possibility an evaluation comparing registration data held by the National Cancer Data Repository (NCDR) with that of a high quality specialist haematological population-based regional registry – the Haematological Malignancy Research Network (www.hmrn.org) – has been carried out. Within HMRN, all diagnoses are made and contemporaneously coded using the most up-to-date WHO classification for oncology (currently ICD-O-3) by clinical scientists working at the Haematological Malignancy Diagnostic Service (www.hmds.info) - an integrated specialist haematopathology laboratory identified in the UK's 2007 Cancer reform Strategy as 'the model for delivery of complex diagnostic services'.

In order to generate predictions for Cancer Registry and Cancer Network populations, HMRN's ICD-O-3 codes (> 70 diagnostic codes) were mapped to 10 main ICD-10 categories. For England as a whole, the observed (2004-2008) and predicted counts of 7 of the 10 cancer groupings showed good agreement across most age bands: acute lymphoblastic leukaemias (ALL), acute myeloid leukaemias (AML), chronic myeloid leukaemia (CML), Hodgkin lymphomas (HL), non-Hodgkin lymphomas (NHL), myelomas and myelodysplastic syndromes (MDS). Relative deficits, which became more pronounced as age increased, were, however, evident for chronic lymphocytic leukaemia (CLL) and the myeloproliferative neoplasms (MPN). The remaining group, monoclonal gammopathy of uncertain significance (MGUS) showed the most pronounced deficit; but information on this indolent condition is not actively pursued as part of the national registration scheme.

Variations were observed across Cancer Registries and their associated Cancer Networks, with the latter generally exhibiting similar patterns to those of their associated Registries. Some of the highest observed/expected ratios were seen among Networks contributing to the South West Cancer Intelligence Service (SWCIS), with some of lowest among those contributing to the Thames Cancer Registry (TCR). With respect to specific disease categories, MPN and MDS showed the most variation, with higher than predicted registration levels being particularly pronounced for Cancer Networks contributing to the SWCIS, where the overall MDS and MPN ratios were 238.3 (220-258) and 190.1 (176-205) respectively.

There are a number of factors that may have influenced the findings presented in this report, and these need to be considered when interpreting the patterns seen: -

- Haematological malignancies are characterised by their ability to progress and transform; and because HMRN was established with a view to capturing and characterizing these processes, prevalent cases were excluded when the registry was established in September 2004. Within the myelodysplastic syndromes, for example, a general progression to more aggressive disease is a relatively common pathway. Indeed, with respect to the latter, around 15% of those newly diagnosed with MDS in HMRN's first year had progressed to AML within six years. In practice this means that HMRN rates for malignancies with known precursors, or where transformation can occur (e.g. MGUS/myeloma, MDS/AML, MBL/CLL, follicular lymphoma/diffuse large B-cell lymphoma), are likely to be conservative for the earlier years, particularly within the older age categories.

- Predictions were made on the basis of HMRN bridge-coded data, providing scope for the introduction of systematic errors. Not all ICD-O-3 codes have ICD 10 counterparts; others overlap ICD-10 categories; and the definitions of some disease groupings have changed over time – the blast threshold for AML, for example, being reduced from 30% to 20% in WHO ICD-O-3.

- All diagnoses within HMRN are, by definition, pathologically confirmed, which is not always the case at cancer registration. Again, this could exacerbate the differences between observed and predicted levels, particularly in the elderly where a clinical diagnosis sometimes forms the basis of cancer registration.

- Variation between registries in case ascertainment and coding procedures are likely to have influenced the patterns observed. This is, perhaps, particularly pertinent to MDS and MPN, which have been clinically recognized as malignancies for at least a decade, but have ICD-10 D-codes. CLL is another example, where disease definitions have changed over time.

- Registration systems are changing, with evidence of quality improvement and levels of ascertainment increasing. The present report examines data from 2004-8, and it is likely that some of the variations seen may have become less marked in recent years.

Overall, this comparison provides broad reassurance that there is not substantial under-registration of most haematological malignancies in England. Further quality enhancement is likely to come from standardisation of operating procedures between registries and through the extension of information feeds from integrated laboratory services and MDTs to enable more accurate categorisation of disease. Given that at present there are no reasons to suspect strong geographical patterning of haematological malignancies across the UK, variations in data quality should be carefully examined before considering the likelihood of true incidence variation. No system is 'perfect' in ascertaining all cancers accurately, and differences between the fundamental design of HMRN and traditional registries will have contributed to some of the 'incidence' patterns seen here. It is also important to note that this report deals solely with overall disease counts, and issues relating to the accuracy of more precise diagnostic recording and the quality of other variables, such as the date of diagnosis and quality of the outcome and treatment data recorded, have not been considered.

2.0 Introduction

'There are no precise and reliable figures for incidence and survival rates for the different forms of haematological cancer in England and Wales. Whilst the Office for National Statistics (ONS) and the Wales Cancer Intelligence and Surveillance Unit do publish descriptive statistics, there are many problems with these figures. For example, there is evidence that many cases are never reported to cancer registries, so the actual number of patients could be substantially higher than national figures suggest.'

This quote, taken from the National Institute for Clinical Excellence (NICE) manual on Improving Outcomes Guidance (IOG) in Haematological Cancers (1) is now nine years old, but it still encapsulates the view of many clinical and research active haemato-oncologists in the UK. Indeed, this concern is not restricted to the UK, EUROCARE 4 noting in 2009 that 'the evolving classification and poor standardization of data collected on haematological malignancies vitiate the comparison of disease incidence and survival over time and across regions' (2). In recognition of these problems, a number of methods have been applied in an attempt to generate more informative descriptive data, including, for example, the application of bridge-coding algorithms to historically coded data (3–5) and the reporting of specialist hospital-based case-series frequencies (6,7). Inevitably, however, the accuracy and completeness of data generated by such initiatives has continued to pose serious interpretative problems for both researchers and health service planners. Accordingly, establishing credible information about the incidence and prevalence of haematological neoplasms in the UK is a documented priority of the haematological malignancy Site-Specific Clinical Reference Group (SSCRG); the members recognising that whilst improvements had occurred in cancer intelligence since the original IOG was published in 2003 (1), uncertainty regarding the quality of registration data within the National Cancer Data Repository (NCDR) remains.

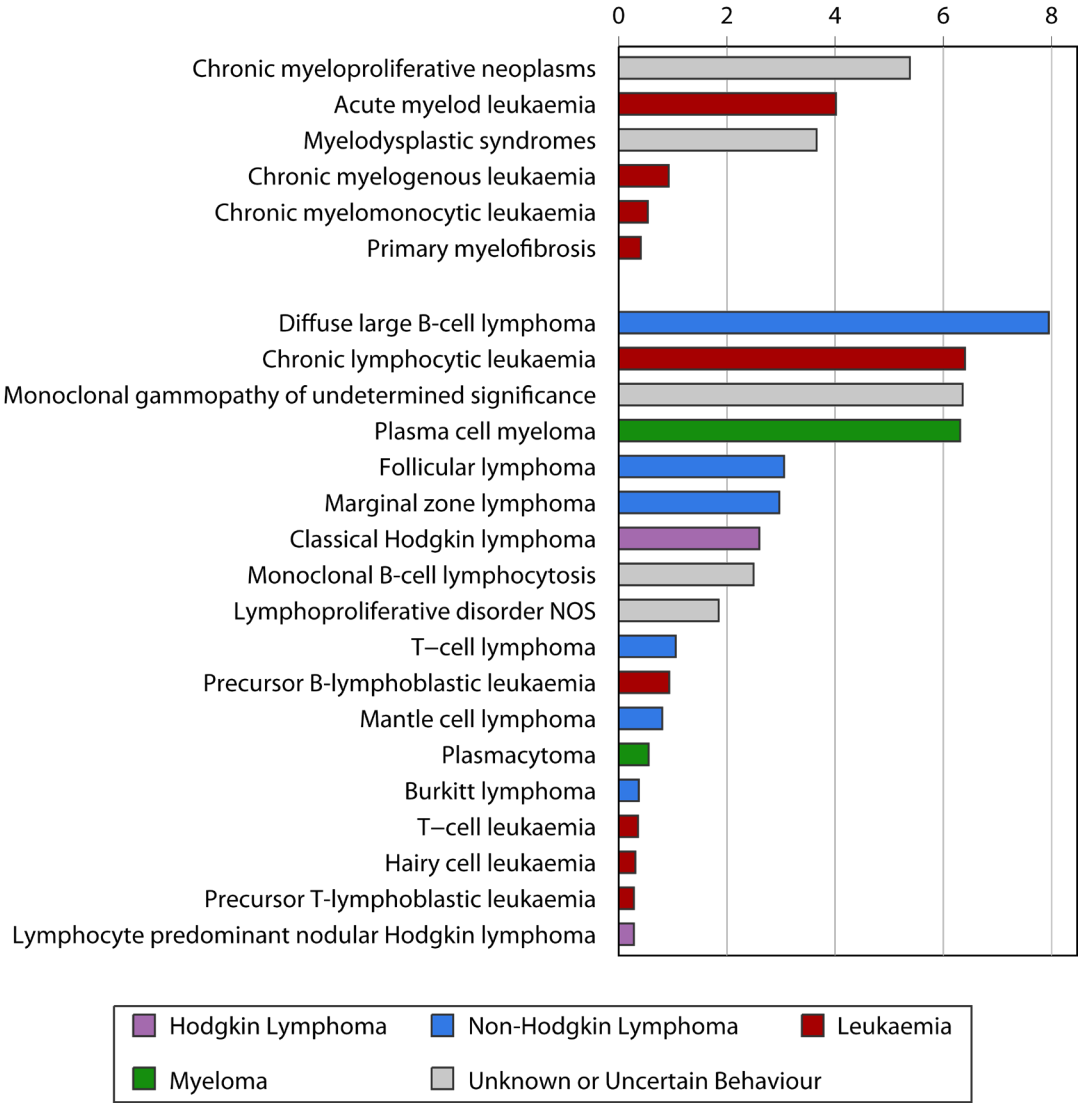
Central to the problem is that unlike many other cancers, haematological malignancies are diagnosed using multiple parameters including a combination of histology, cytology, immunophenotyping, cytogenetics, imaging and clinical data (8–10). This range and depth of data has been difficult for cancer registries to access systematically, forming a barrier not only to the collection of diagnostic data at the level of detail required to systematically implement the latest World Health Organization (WHO) classification(10); but also a barrier to complete ascertainment (11). More importantly, however, whilst the integration of diagnostic services is recognized as being key to improving the completeness and accuracy of the haematological malignancy registration process, it is also recognized as being 'the single most important aspect of improving outcomes in haematological cancer' (1). Unfortunately, UK progress towards this objective continues to be slow; the 2012 Additional Best Practice Commissioning Guidance for Developing Haematological Diagnostic Services (12) noting that 'implementation remains incomplete' and that 'The accuracy and certainty of diagnosis remains an on-going problem, particularly among the lymphomas where diagnostic concordance is currently estimated to be less that 85%' (12,13).

At the forefront of diagnostics in haemato-oncology, the Haematological Malignancy Diagnostic Service (www.HMDS.info) was identified as 'The model for delivery of complex diagnostic services' in the UK's 2007 Cancer Reform Strategy (14). HMDS provides a fully integrated service in a single department, bringing together the relevant technology and expertise (including histology, cytology, immunophenotyping, molecular cytogenetics and sequencing) required for the diagnosis and on-going monitoring of all haematological cancers. Within this specialist laboratory, which serves the two adjacent Cancer Networks of Yorkshire and Humber & Yorkshire Coast, all diagnoses (including disease transformations and progressions) are coded to the latest WHO classification by experts in the field.

Predicated on HMDS's infrastructure, and with the overarching aim of overcoming existing limitations and producing high quality functional data, the Haematological Malignancy

Research Network (www.HMRN.org) was established in September 2004 (15). HMRN overcomes many of the difficulties faced by national cancer registrations systems in terms of case-ascertainment and coding to modern disease classifications, and the data have already been used to estimate disease incidence for the UK as a whole (16). The rates for 24 of the main WHO ICD-O-3 categories derived from this population-based patient cohort are ordered by magnitude in Figure 2.1. The bars are colour coded, differentiating the traditional groupings of leukaemia, non-Hodgkin lymphoma, Hodgkin lymphoma, and myeloma from other haematological neoplasms that are less consistently coded in the national cancer registration scheme.

Figure 2.1: Annual Crude per 100,000: HMRN, 2004-2009



As is evident from Figure 2.1, the classic ICD-10 leukaemia group contains a mix of myeloid and lymphoid conditions, the latter including both precursor and mature B-cell and T-cell subtypes. By contrast, within the traditional lymphoma and myeloma groupings there is less diversity in cell type of origin; with mature B-cell malignancies dominating. Indeed, with an estimated annual rate of 7.9 per 100,000 per year, diffuse large B-cell lymphoma (DLBCL) is the most common haematological malignancy, and chronic lymphocytic leukaemia (CLL), which like DLBCL is also a mature B-cell neoplasm, is the next most common.

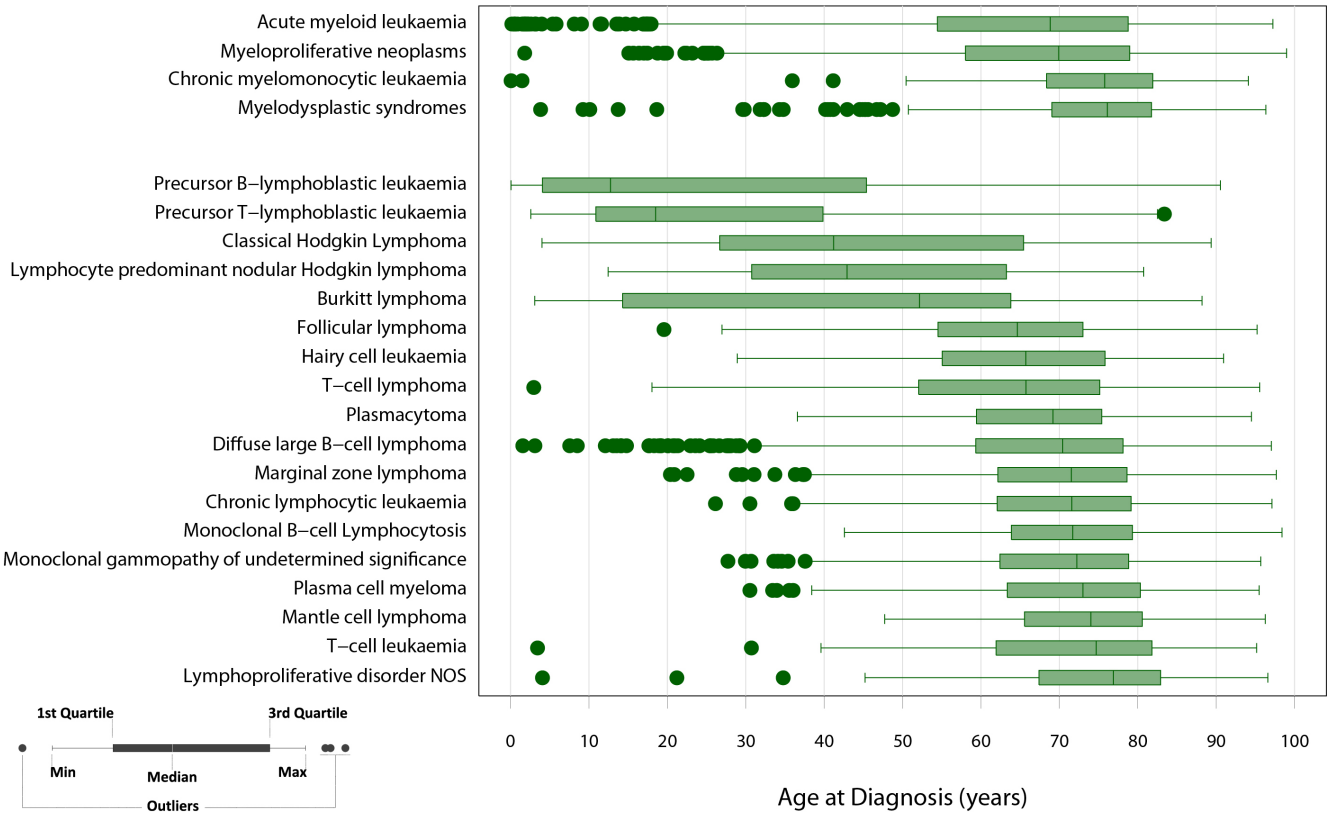
Haematological malignancies exhibit characteristic socio-demographic patterns, and such differences are important to take into account when making comparisons within and between

populations. With a view to setting the scene for the comparisons to be made within this report, the following sub-sections use data from HMRN's population-based cohort to illustrate some of the main differences seen with age, sex, and area-based measures of deprivation.

Age

As with most other cancers, the likelihood of being diagnosed with a haematological malignancy increases markedly with age. However, unlike many others cancers, haematological malignancies can be diagnosed at any age, with different subtypes predominating at different ages (Figure 2.2). The interquartile range is represented by the box, with outliers occurring outside the maximum data series of 1.5 times the interquartile range being shown as separate points.

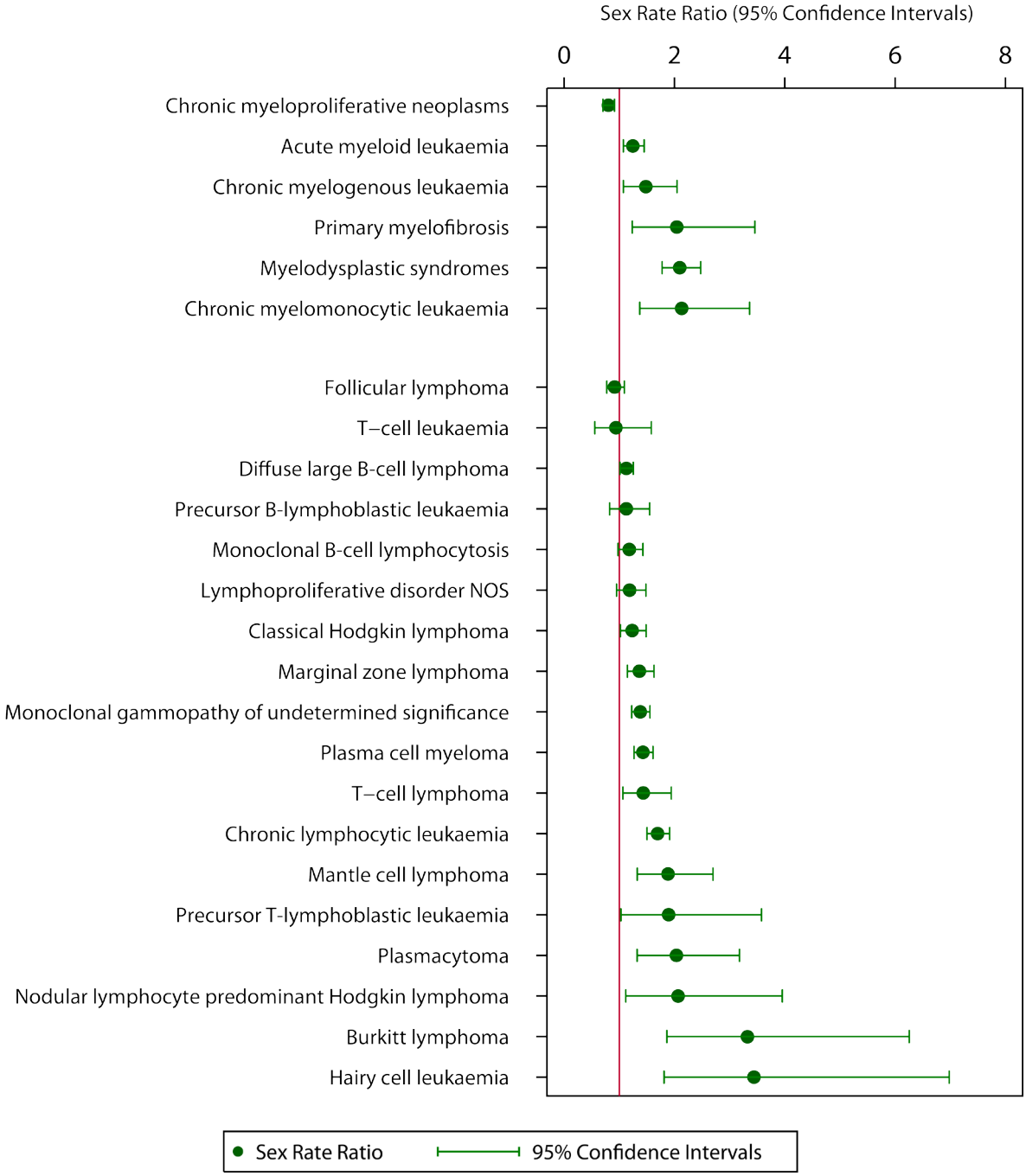
Figure 2.2: Age at diagnosis distributions: HMRN 2004-2009



Sex

As can be seen from Figure 2.3, haematological malignancies tend to occur more frequently in males than females, and for some cancers the age-standardized rate among males is more than twice that of females within both the myeloid and lymphoid groups. Furthermore, as with age, such differences are relevant not only to the consideration of factors which may be related to disease aetiology, but are also important to take account of when comparing data both within and between populations.

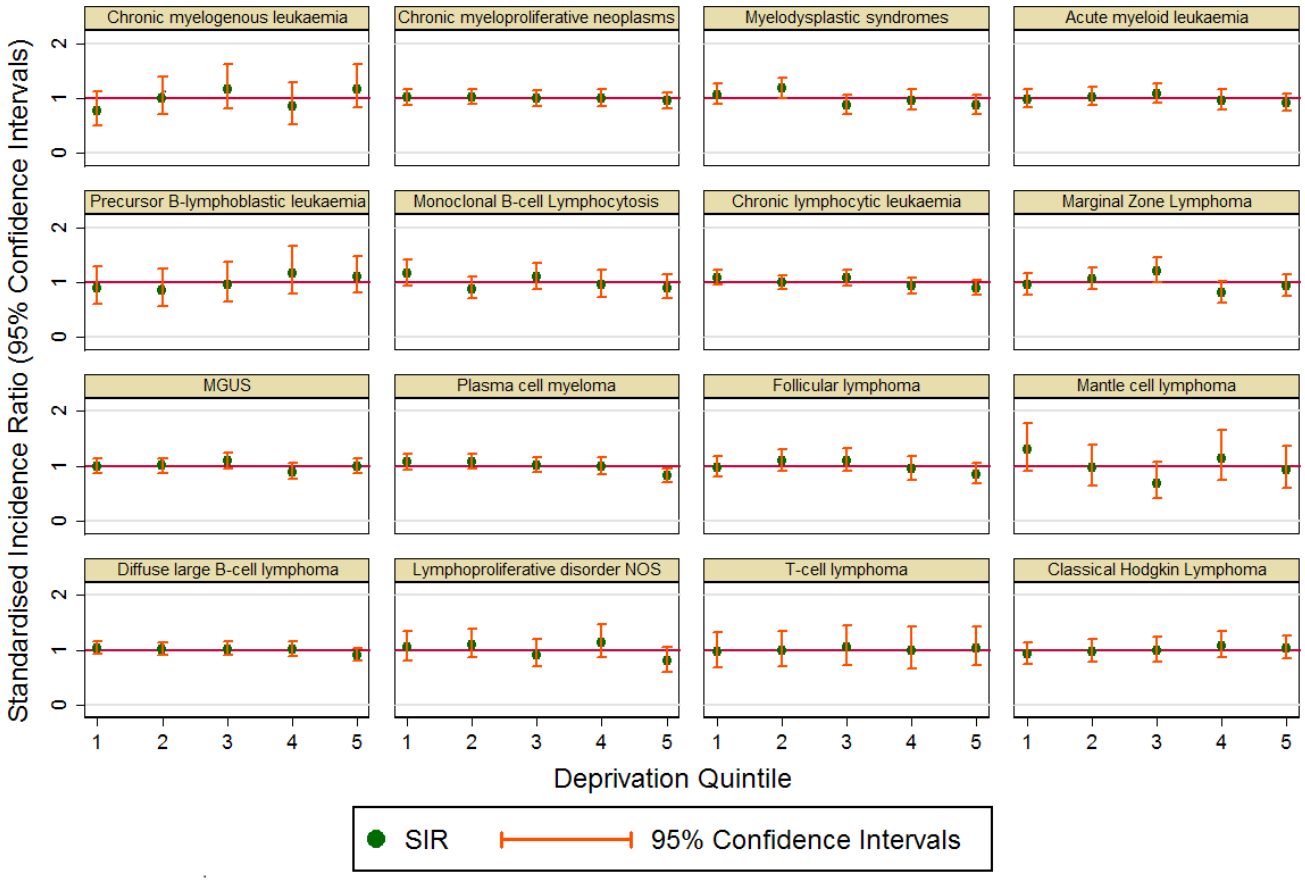
Figure 2.3: Sex at diagnosis distributions: HMRN 2004-2009



Area-based deprivation

Within most national and regional populations, the incidence of certain cancers is commonly observed to vary systematically with socio-economic factors for reasons that are known to be related either to their aetiology or to their likelihood of detection. In England as a whole, for example, the most recent analyses of registration data showed that as area-based affluence increased the estimated incidence of cancers such as lung, stomach and cervix fell, whereas the estimated incidence of cancers such as melanoma, breast and prostate increased (19). By contrast, however, no such systematic trends have been observed within UK haematological malignancy data (19). This lack of association is also evident in HMRN's two Cancer Networks, as can be seen from Figure 2.4 where the standardized incidence ratios (SIRs) for the 16 largest diagnostic groups shown in Figure 1 are plotted by index of multiple deprivation quintiles (group 1 being the most affluent and 5 the most deprived).

Figure 2.4: Standardized-incidence ratios (SIR) by index of multiple deprivation (IMD) income domain; HMRN, 2004-2009



That no systematic trends with deprivation are evident in either the broad cancer categories examined at national level (19), or the finer categories examined within HMRN's two Cancer Networks (16) impacts not only on potential aetiological hypotheses, but also on the generalizability of HMRN's data to the UK population as a whole. Nonetheless, for some haematological malignancies there is an indication of a deficit in the most deprived quintile. For haematological neoplasms, the most notable example is myeloma, where in HMRN data (Figure 2) the SIR for deprivation category 5 is 0.82 (95% CI 0.71-0.95); with a similar effect being noted in national data (19). This could reflect socio-economic variations in the likelihood of a diagnosis being made, the symptoms of myeloma often extending back over several months, and perhaps even years before a diagnosis is made (20). Indeed, the National Audit for Cancer in Primary Care found that around 1 in 4 myeloma patients consulted 4 or more times with symptoms before being referred for specialist assessment - the highest of any cancer type (21).

3.0 Aims and Objectives

Using HMRN's population-based rates as the 'gold-standard', the present project was initiated with a view to assessing the completeness of data on haematological malignancies contained within the National Cancer Data Repository (NCDR). The main tasks identified were as follows:

1. To develop and apply a bridge-coding algorithm to HMRN data, estimating approximate ICD-10 frequencies on the basis of ICD-O-3 diagnoses

2. To estimate the frequency of haematological malignancies for England as a whole, as well as for each English Cancer Registry and Cancer Network – this being done for the total, the major ICD-10 groupings, and the main ICD-O-3 non-Hodgkin lymphoma (NHL) sub-types.

3. In collaboration with the English Cancer Registries, compare the frequencies calculated in 1 above with those enumerated by individual English Cancer Registries and Cancer Networks – this being done for the total and the major ICD-10 groupings.

4. To use HMRN rates to estimate the prevalence of haematological malignancies for England as a whole, as well as for individual English Cancer Registries and Cancer Networks.

5. To undertake a comparison between predicted and observed patterns within the total NYCRIS catchment population.

6. To survey English Registry Directors, or their representatives, and obtain views on their local cancer registration practise, as well as soliciting comments on the preliminary analyses carried out as part of 3 above.

4.0 Data and Methods

The three datasets used in this project, together with a brief account of the analysis applied, are described in the following sections.

4.1 National Cancer Data Repository (NCDR)

Data on haematological malignancies diagnosed in England during the five years 2004-8, were obtained from the eight registries contributing to the National Cancer Data Repository (NCDR). Information is examined in this report both at Registry and Network levels; individuals being assigned according to their postcode of residence at the time of diagnosis. As is evident from Table 4.1.1, Registry and Network boundaries are not coterminous, with number of Cancer Networks falling within the geographic catchment of more than one Cancer Registry.

Table 4.1.1: Mapping between Cancer Registries and Networks; Networks falling within more than one Registry are marked with an *

Registry	Cancer Networks
Eastern Cancer Registration & Information Centre (ECRIC)	Anglia Essex Mount Vernon North London*
Northern & Yorkshire Cancer Registration & Information Service (NYCRIS)	East Midlands* Humber & Yorkshire Coast North of England Yorkshire
North West Cancer Intelligent Service (NWCIS)	Gt. Manchester & Cheshire Lancashire & South Cumbria Merseyside & Cheshire
Oxford Cancer Intelligence Unit (OCIU)	East Midlands* Thames Valley*
South West Cancer Intelligence Service (SWCIS)	Three Counties* Avon, Somerset & Wiltshire Central South Coast* Dorset Peninsula Surrey, West Sussex & Hampshire* Thames Valley*

Continued on following page >

Table 4.1.1 (Continued)

Registry	Cancer Networks
Thames Cancer Registry (TCR)	Central South Coast* Kent & Medway North East London North London South East London South West London Surrey, West Sussex & Hampshire* Sussex West London
Trent Cancer Registry (TrCR)	East Midlands* North Trent
West Midlands Cancer Intelligence Unit (WMCIU)	Three Counties* Arden East Midlands* Greater Midlands Pan Birmingham

Based on recommendations made by the Oxford Cancer Intelligence Unit (22), observed average annual counts were compiled for all haematological registrations combined and for the groups listed in Table 4.1.2.

Table 4.1.2: Haematological Neoplasms; NCDR groupings

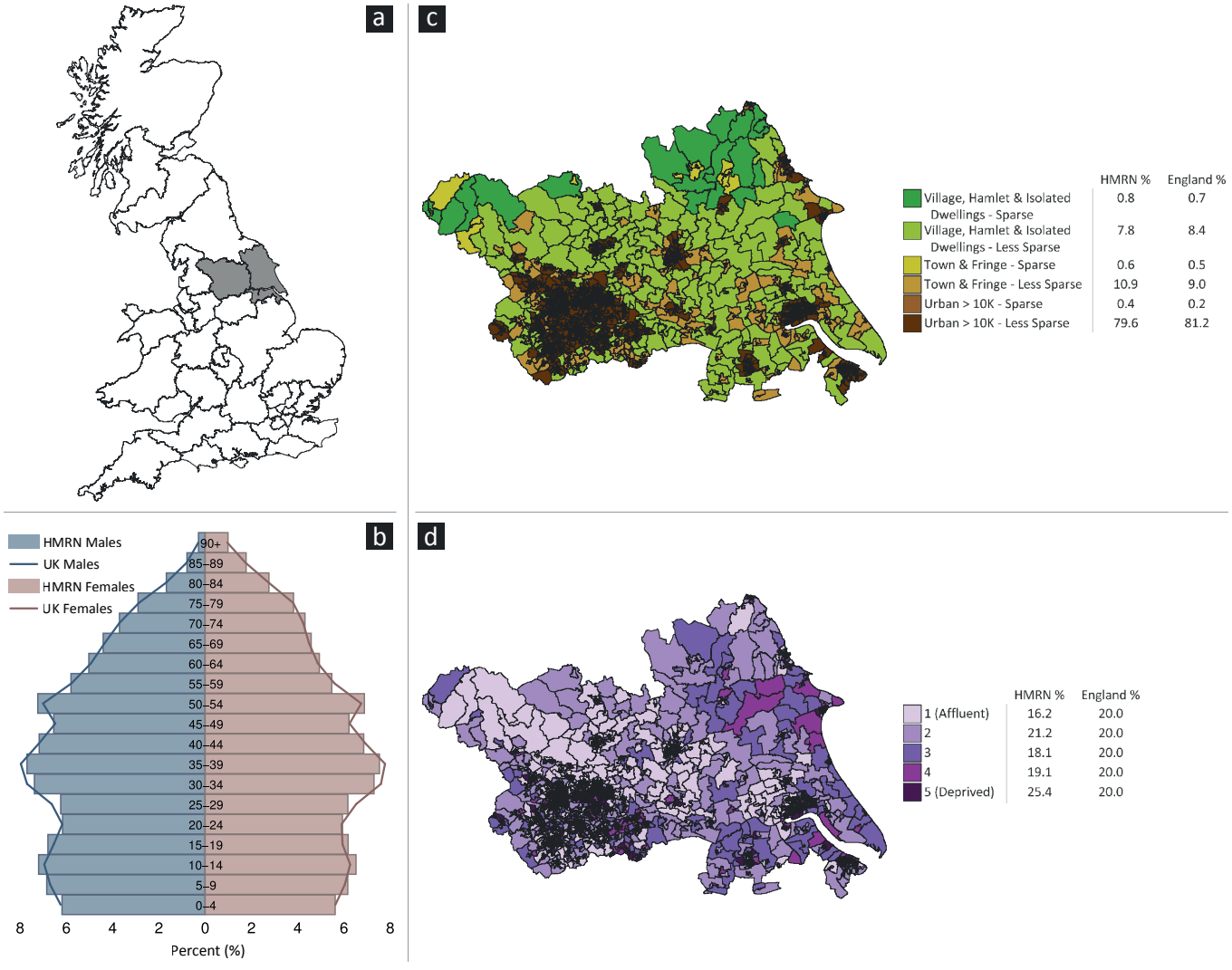
Neoplasm	ICD-10 code
Total Haematological	**C81.0 – 96.9; D45-47.9**
Acute Lymphoblastic Leukaemia (ALL)	C91.0
Acute Myeloid Leukaemia (AML)	C92.0, 92.4, 92.5, 93.0, 94.0, 94.2
Chronic Lymphocytic Leukaemia (CLL)	C91.1
Chronic Myeloid Leukaemia (CML)	C92.1
Hodgkin Lymphoma (HL)	C81
Non-Hodgkin Lymphoma (NHL)	C82.0-85.9
Myeloma	C90.0
Monoclonal Gammopathy of Undetermined Significance (MGUS)	D47.2
Myeloproliferative Neoplasms (MPD)	D45, 47.0-47.9
Myelodysplastic Syndromes (MDS)	D46.0-46.9
Other	C88, 90.1, 90.2,91.2-91.9, 92.3-92.9, 93.1-93.9, 94.0-96.9

4.2 The Haematological Malignancy Research Network (HMRN)

HMRN is a partnership between HMDS, the clinical haematology network which works across the two Cancer Networks of Yorkshire and Humber & Yorkshire Coast, and the Epidemiology and Genetics Unit (www.egu.york.ac.uk) which is based at the University of York (15,16). Covering a population of 3.6 million and accruing around 2,200 new patients each year, HMRN's patient cohort has full ethical approval and Section 251 exemption to collect data for audit and research purposes.

HMRN data for 2004-10 are used in the present report. Importantly, the population age and sex structure of the region reflects that of the UK as a whole (Figure 4.2.1b); as does the broad socio-demographic pattern, albeit containing a slightly higher proportion of individuals in the lowest deprivation quintile (Figure 4.2.1d). Furthermore, in accordance with overall UK census data, around 92% of the population covered by HMRN describe themselves as white and 25% live in rural areas (Figure 4.2.1c).

Figure 4.2.1: Socio-demographic structure of Haematological Malignancy Research Network (HMRN): a) location of study area; b) age and sex structure; c) urban/rural distribution; d) Index of Multiple Deprivation – Income domain



As described in the Introduction, within HMRN the process of patient ascertainment and disease diagnosis is centralised at HMDS (www.HMDS.info). HMDS uses a sophisticated web-based database (HMDS In-house Laboratory Information System - HILIS) to handle specimen tracking, reporting and diagnoses; and all samples and results from the same patients are linked. All diagnoses, including disease transformations and progression, are contemporaneously coded at HMDS to the appropriate ICD-O-3 category by clinical staff making the diagnosis.

For the purposes of the present project, and with a view to attempting to mirror national registration procedures, HMRN ICD-O-3 diagnostic codes were mapped to the ICD-10 categories listed in Table 4.2.1. Notably, several conditions classified as in situ neoplasms (D codes) in WHO's 1992 ICD-10 classification are recognized as malignancies in ICD-O-3; this includes the diverse myeloproliferative neoplasms (MPNs) and myelodysplastic syndromes (MDS). It is also important to remember when interpreting the findings presented in this report, that whilst bridge-coding during the period studied here may provide a reasonable approximation for some conditions (e.g. ALL, myeloma) this is not the case for others; with several ICD-O-3 codes either overlapping ICD-10 categories or having no clear ICD-10 counterpart – providing scope for systematic error. For example, ICD-O-3 9596/3 'B-cell Lymphoma, unclassifiable, with features intermediate between DLBCL & HL' could be coded as either an NHL or an HL at cancer registration; ICD-O-3 9940/3 'hairy cell leukaemia' (a mature B-cell neoplasm) could be coded as a leukaemia; and ICD-O-3 9876/3 'atypical CML BCR-ABL1 negative' could be coded as a CML rather than MDS/MPN etc.

Table 4.2.1: HMRN ICD-O-3 Morphology and ICD10 bridge-coding

ICD10 Group for prediction	ICD-O-3 Morphology	Name
Acute Lymphoblastic Leukaemia (ALL)	9811/3	B-lymphoblastic leukaemia NOS
	9812/3	B-lymphoblastic leukaemia with t(9;22)
	9813/3	B-lymphoblastic leukaemia with t(11q23)
	9814/3	B-lymphoblastic leukaemia with t(12;21)
	9815/3	B-lymphoblastic leukaemia with hyperdiploidy
	9816/3	B-lymphoblastic leukaemia with hypodiploidy
	9837/3	T-lymphoblastic leukaemia
Acute Myeloid Leukaemia (AML)	9861/3	AML NOS
	9861/3	AML with NPM mutation as sole abnormality
	9866/3	APML t(15;17)(q22;q11-12)
	9871/3	AML with core binding factor
	9895/3	AML with myelodysplasia-related changes
	9896/3	AML with core binding factor
	9920/3	AML - therapy related
	9727/3	Blastic plasmacytoid dendritic cell neoplasm
Chronic Lymphocytic Leukaemia (CLL)	9823/3	B-cell chronic lymphocytic leukaemia
Chronic Myeloid Leukaemia (CML)	9875/3	Chronic myelogenous leukaemia
Hodgkin Lymphoma (HL)	9651/3	Lymphocyte-rich classical HL
	9652/3	Mixed cellularity classical HL
	9659/3	Lymphocyte predominant nodular HL
	9663/3	Nodular sclerosis classical HL

Continued on following page >

Table 4.2.1 (Continued)

ICD10 Group for prediction	ICD-O-3 Morphology	Name
Non-Hodgkin Lymphoma (NHL)	9596/3	B-cell Lymphoma, unclassifiable, with features intermediate between DLBCL & HL
	9673/3	Mantle cell lymphoma
	9679/3	Mediastinal large B-cell lymphoma
	9680/3	DLBCL, not otherwise specified
	9687/3	Burkitt lymphoma
	9688/3	T-cell/histiocyte-rich large B-cell lymphoma
	9689/3	Systemic marginal zone lymphoma
	9698/3	Follicular lymphoma
	9698/3	Follicular lymphoma with large cell transformation
	9699/3	Extranodal marginal zone lymphoma
	9591/3, 9823/3	Lymphoproliferative disorders NOS (LPD)
	9700/3	Mycosis fungoides
	9701/3	Sezary syndrome
	9702/3	Peripheral T-cell lymphoma - common; unspecified
	9705/3	Angioimmunoblastic T-cell lymphoma
	9712/3	Intravascular large B-cell lymphoma
	9714/3	Anaplastic large cell lymphoma of T/null type
	9717/3	Enteropathy-type T-cell lymphoma
	9718/3	Primary cutaneous CD30 positive T-cell
	9719/3	Extranodal NK/T-cell lymphoma, nasal type
	9735/3	Plasmablastic large B-cell lymphoma
	9827/3	Adult T-cell lymphoma/leukaemia (HTLV-1 +ve)
Myeloma	9734/3, 9731/3	Plasmacytoma
	9732/3	Plasma cell myeloma
Monoclonal Gammopathy of Undetermined Significance (MGUS)	9765/1	MGUS
Myelodysplastic Syndromes (MDS)	9982/3	Refractory anaemia with ringed sideroblasts
	9983/3	Refractory anaemia with excess blasts
	9985/3	Refractory cytopenia with multilineage dysplasia
	9986/3	Myelodysplastic syndrome (5q-)
	9989/3	Myelodysplastic syndrome, unclassifiable

Continued on following page >

Table 4.2.1 (Continued)

ICD10 Group for prediction	ICD-O-3 Morphology	Name
Myeloproliferative Neoplasms (MPN)	9741/3	Systemic mastocytosis
	9950/3	Polycythaemia vera
	9961/3	Primary myelofibrosis
	9962/3	Essential thrombocythaemia
	9975/3	Myeloproliferative neoplasm, unclassifiable
Other	9823/3	Monoclonal B-Cell Lymphocytosis
	9831/3	T-cell or NK cell large granular lymphocytosis
	9834/3	T-cell prolymphocytic leukaemia
	9876/3	Atypical chronic myeloid leukaemia
	9940/3	Hairy Cell Leukaemia
	9945/3	Chronic myelomonocytic leukaemia
	9946/3	Juvenile chronic myelomonocytic leukaemia

With respect to the analysis, the expected annual numbers of incident cases for each ICD-10 group was estimated by applying HMRN's sex and 5-year age-specific rates to the corresponding population strata of each Cancer Registry and Cancer Network. Population data were obtained from the UK 2001 census (23). In terms of socio-demographic variables, predictions were based solely on age and sex distributions, as previous national and local analyses revealed no marked associations either with socio-economic proxies or with urban/rural status (Section 2.3). Incidence rates and corresponding 95% confidence intervals (CIs) were estimated using Poisson regression; and all analyses were conducted in STATA, with the Stata command 'smr' being used to compute the ratio of the observed to the expected and corresponding 95% confidence intervals. Prevalence was estimated by applying HMRN incidence and survival rates observed during the period 2004-10 to national and regional population data using the methods developed by Capocaccia and De Angelis (24). For the purposes of the present report, the total number of prevalent cases (persons who have, or who have ever had a haematological malignancy) was estimated for England as a whole, and separately for each Cancer Registry and Cancer Network.

4.3 Northern and Yorkshire Cancer Registry and Information Service (NYCRIS)

An extract of all cancer registrations held by HMRN was obtained for the five year period 1st September 2004 to 31st August 2009. This was cross-checked against NYCRIS registrations (ICD10 C81-C96, D45-47) that had a postcode of residence at diagnosis in either the Yorkshire Cancer Network or the Humber & Yorkshire Coast Cancer Network during the same time period.

Both HMRN and NYCRIS data were mapped to the broad disease categories used in the national comparisons (Table 4.1.2); and individual records were matched on NHS number, date of birth and sex to create a merged analysis dataset. One individual could have more than one haematological malignancy recorded in both HMRN and NYCRIS, to limit the complexity of comparisons individuals were also categorised as to whether they had 'any registration' with one of these disease categories in both the HMRN and NYCRIS datasets.

4.4 Survey of English Cancer Registries

In June 2011, a preliminary report detailing some of the initial findings relating to Objective 2 (see Section 3) was produced. The results were reviewed with key individuals at NYCRIS (Head of Registration and Deputy Director) and the SSCRG (Haematological Cancer Epidemiology Lead, Chair); and subsequently distributed to all eight English registry directors with a request to identify a respondent in the registry who could provide information on the collection of data relevant to haematological cancers. With the aim of identifying relevant contextual information, NYCRIS staff subsequently arranged telephone conference calls with each registry during which an interview questionnaire was completed. Responses to the interview were collated and then returned to each registry for checking.

5.0 Results and Commentary

Findings are presented in four main sections. Comparative data on incidence are in Section 5.1; with more detailed Tables and Figures being provided in Annexes 1-4. HMRN's prevalence estimates are tabulated in Section 5.2, and additional data from the NYCRIS/HMRN comparison are in Section 5.3. The final section contains a summary of the results from the survey of Cancer Registries, with further detail being provided in Annex 6.

5.1 Incidence

Over the four years 2004-8 an average of 26,827 haematological malignancies were registered by the NCDR each year (Table 5.1.1). The observed frequencies are distributed across the 10 major ICD-10 diagnostic groups in Table 5.1.1; where they are also compared with those expected on the basis of HMRN's age and sex specific rates.

Table 5.1.1 Annual observed (2004-8) and expected based on HMRN rates (2004-10) for the total haematological malignancies and the main diagnostic groups

Diagnostic Group	Observed	Expected	O-E	O/E (95% CI)
Total	26827	30100	-3273	89(88-90)
ALL	602	591.7	10.3	102 (94-110)
AML	2217	2029.6	187.4	109(105-114)
CLL	2364	3198.8	-834.8	74(71-77)
CML	540	470.1	69.9	115(105-125)
HL	1413	1476.9	-63.9	96(91-101)
NHL	9397	9120.4	276.6	103(101-105)
Myeloma	3633	3478.9	154.1	104(101-108)
MGUS	623	3169.3	-2546.3	20(18-21)
MPN	2187	2745.1	-558.1	80(76-83)
MDS	2187	1875.9	311.1	117(112-122)

As might be predicted, overall agreement is best for the aggressive acutely presenting conditions of ALL (O-E = +10.3; O/E = 101.7, 95% CI 94-110) and HL (O-E= -63.9; O/E = 95.7,91-101), both of which occur comparatively frequently in the young (Figure 2.2); and worst for the indolent MGUS (O-E = -2546.3; O/E = 19.7, 18-21) – a condition frequently detected in older people undergoing routine tests for other co-morbidities that is not actively pursued for registration purposes in the national scheme (see Section 5.4). With a ratio of 104.4 (101-108) agreement is also good for myeloma, as it is for the comparatively heterogeneous disease grouping comprising all NHLs combined 103 (101-105). Relative deficits are, however, evident for the mature B-cell neoplasm CLL (73.9, 71-77) and the diverse myeloproliferative neoplasms (79.7, 76-83). By contrast, AML (109.2, 105-114), CML (115, 104-125) and MDS (116.6, 112-122) all have ratios in excess of 100.

The observed and expected counts of each of the cancer groupings listed in Table 5.1.1 are stratified by age in Figure 5.1.1. General agreement across the age spectrum remains good for many conditions (ALL, AML, HL, NHL, myeloma), but for sub-types with apparent overall deficits (CLL, MGUS, MPN) the observed to expected differences become gradually more marked as

age increases. For both CML and MDS, however, where the numbers observed exceed the numbers predicted, the difference appears to be largely driven by a sharp upturn in those over 75 years of age.

Figure 5.1.1a: Total haematological malignancies - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 26827, Expected = 30100; O/E = 89% (CI: 88-90)

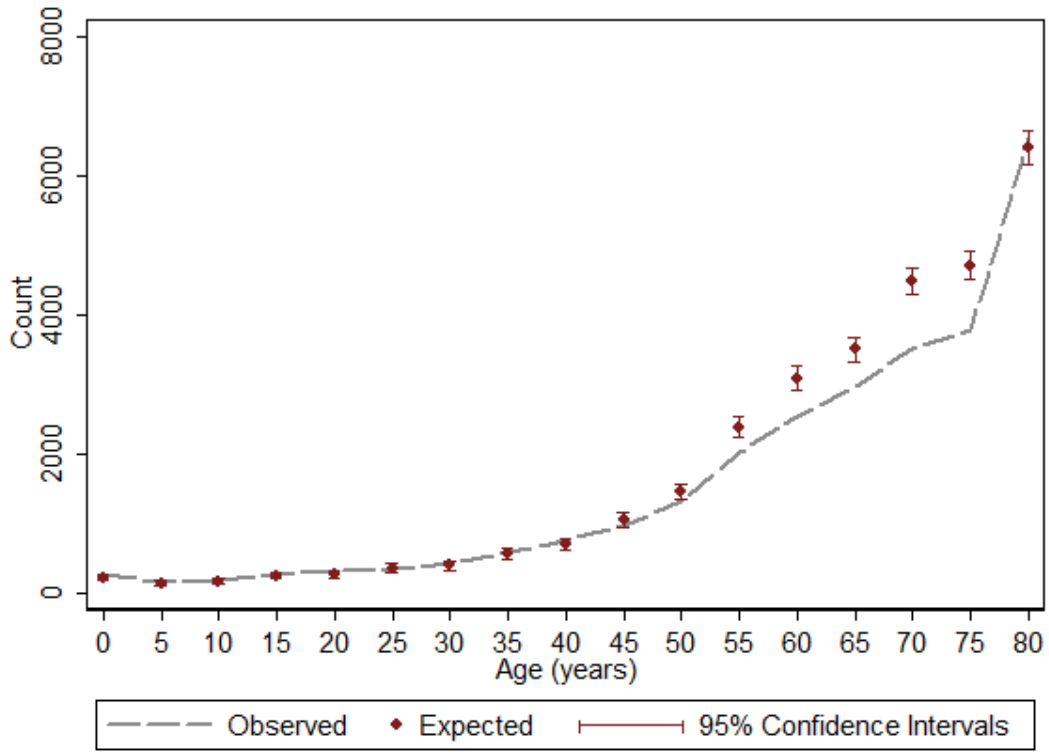


Figure 5.1.1b: Acute lymphoblastic leukaemia - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 602, Expected = 592; O/E = 101.7% (CI: 94-110)

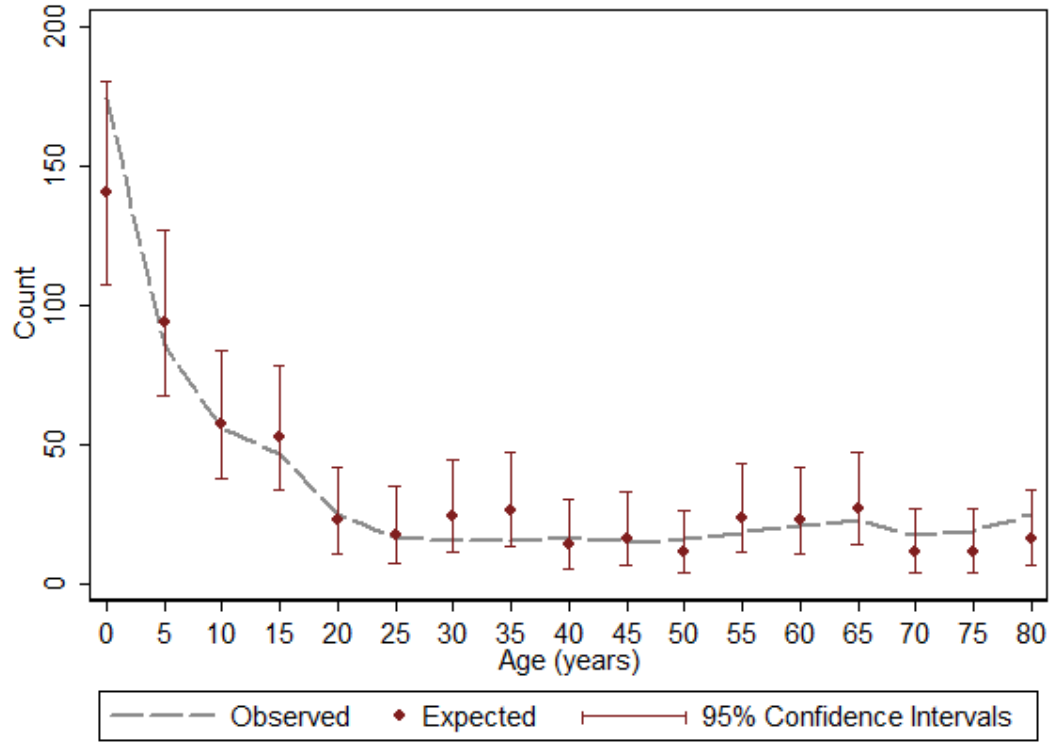


Figure 5.1.1c: Acute myeloid leukaemia - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 2217, Expected = 2030; O/E = 109.2% (CI: 105-114)

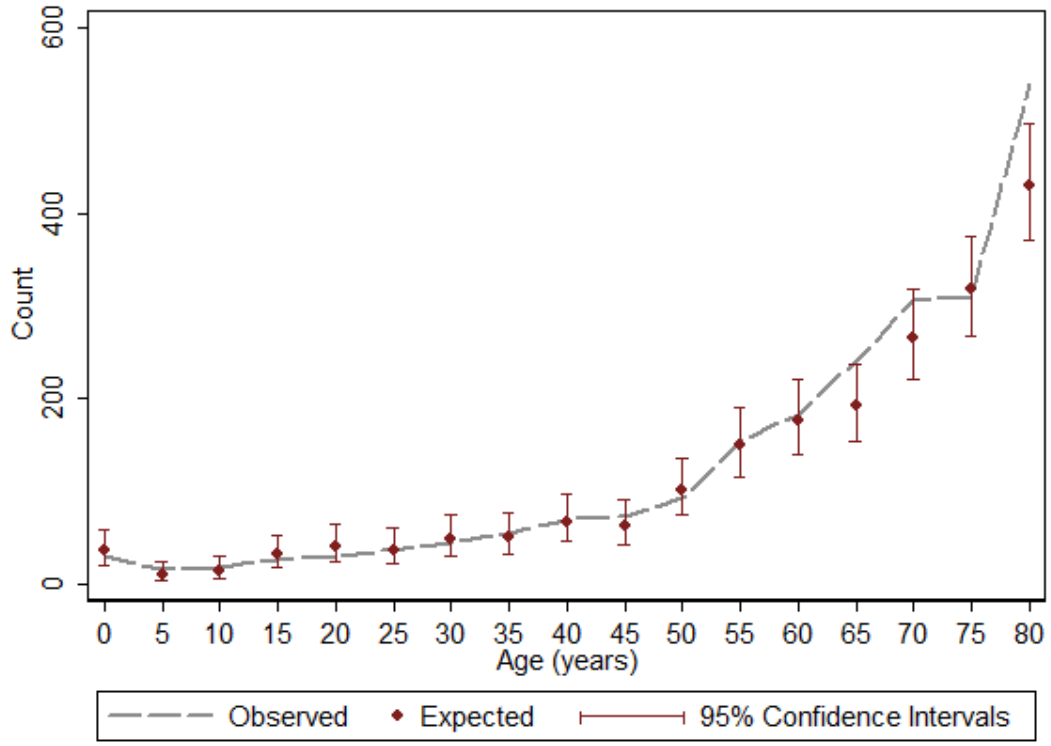


Figure 5.1.1d: Chronic lymphocytic leukaemia - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 2364, Expected = 3197; O/E = 73.9% (CI: 71-77)

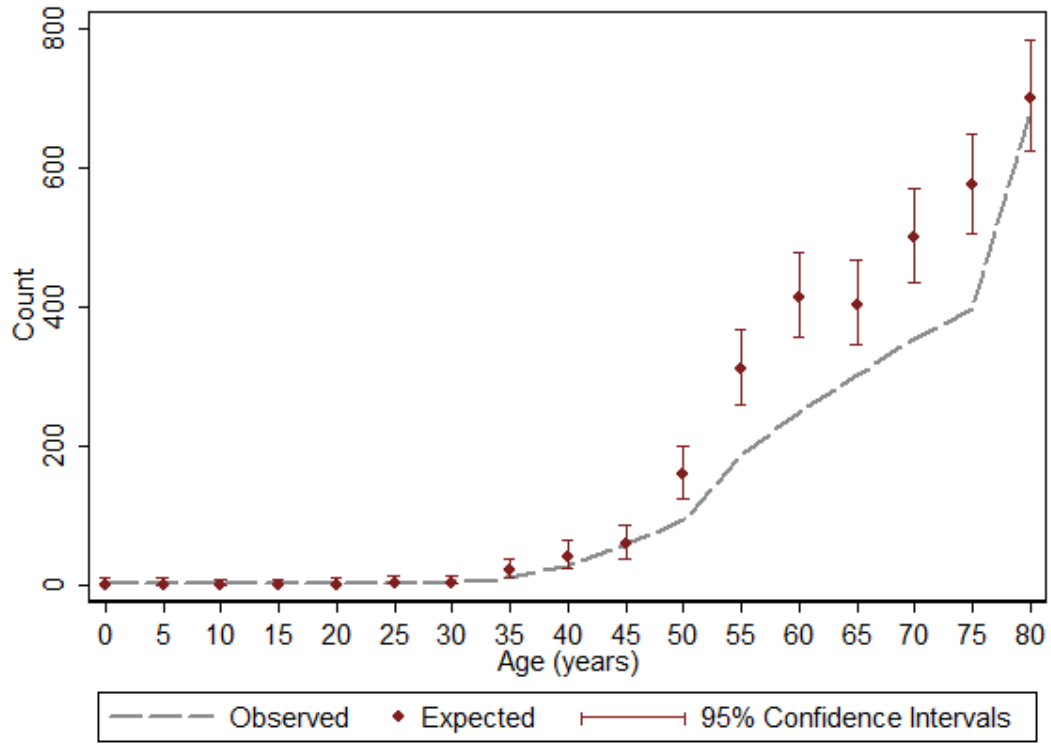


Figure 5.1.1e: Chronic myeloid leukaemia - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 540, Expected = 470; O/E = 114.9% (CI: 105-125)

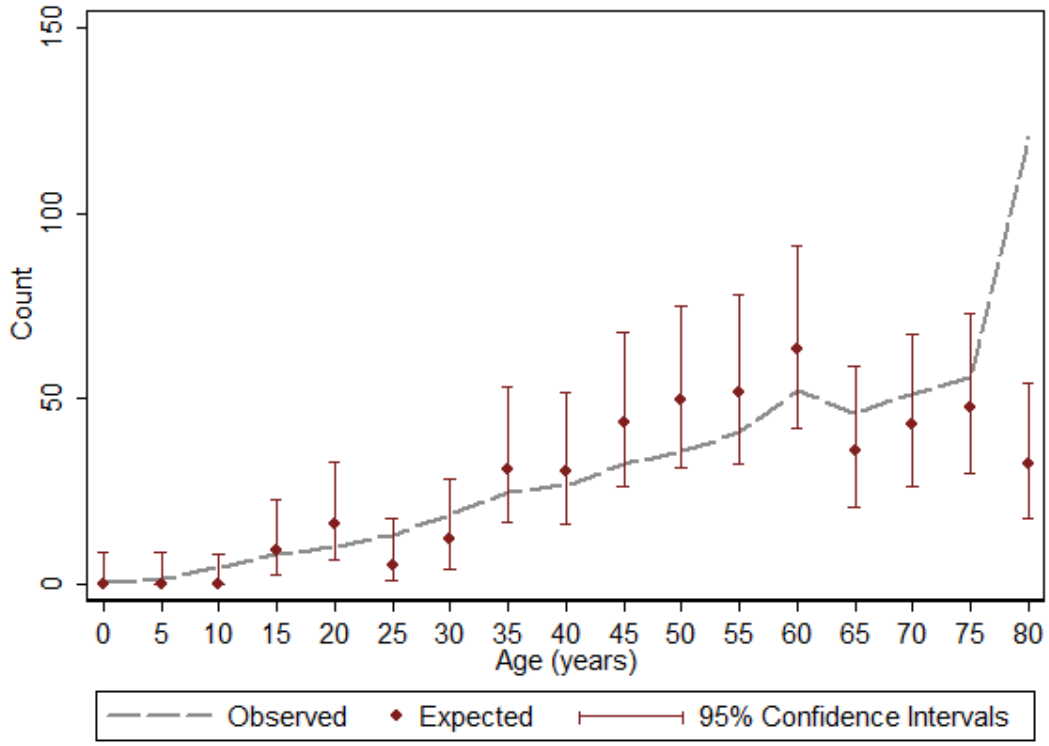


Figure 5.1.1f: Hodgkin lymphoma - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 1413, Expected = 1477; O/E = 95.7% (CI: 91-101)

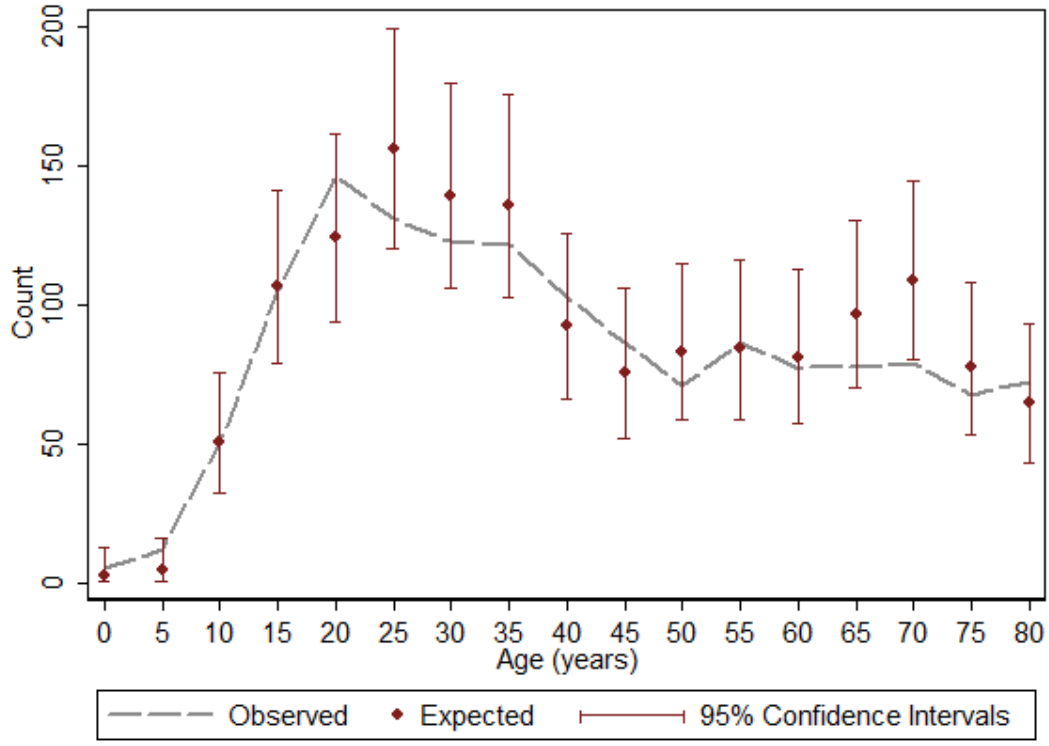


Figure 5.1.1g: Non-Hodgkin lymphoma - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 9397, Expected = 9120; O/E = 103% (CI: 101-105)

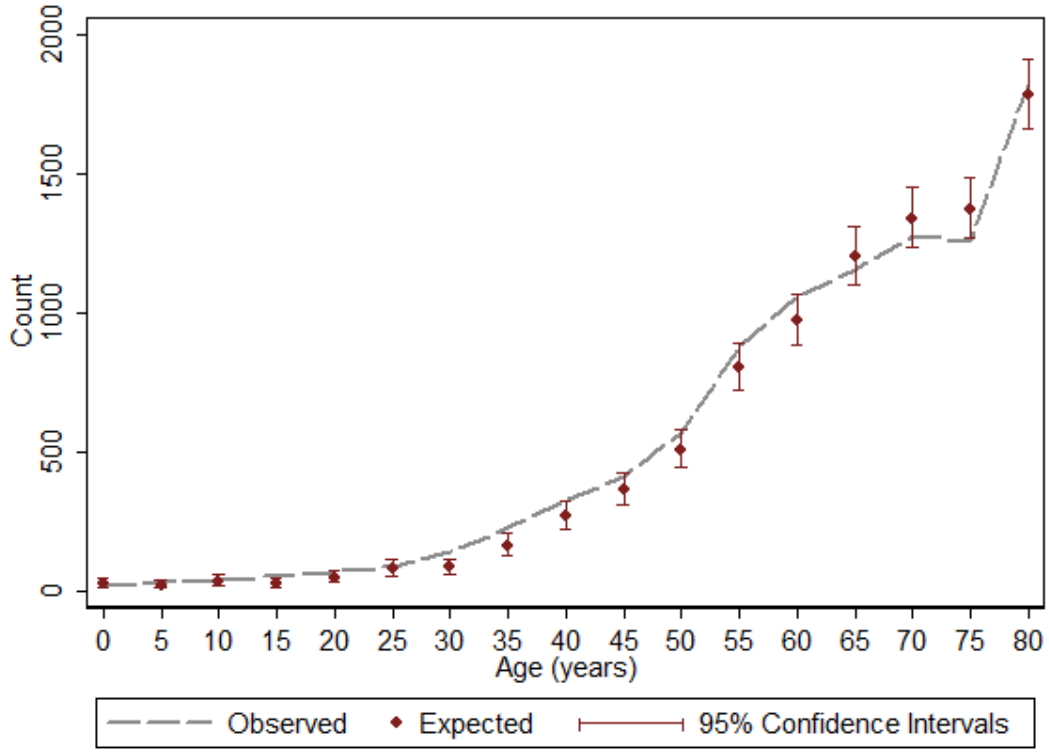


Figure 5.1.1h: Myeloma - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 3633, Expected = 3479; O/E = 104.4% (CI: 101-108)

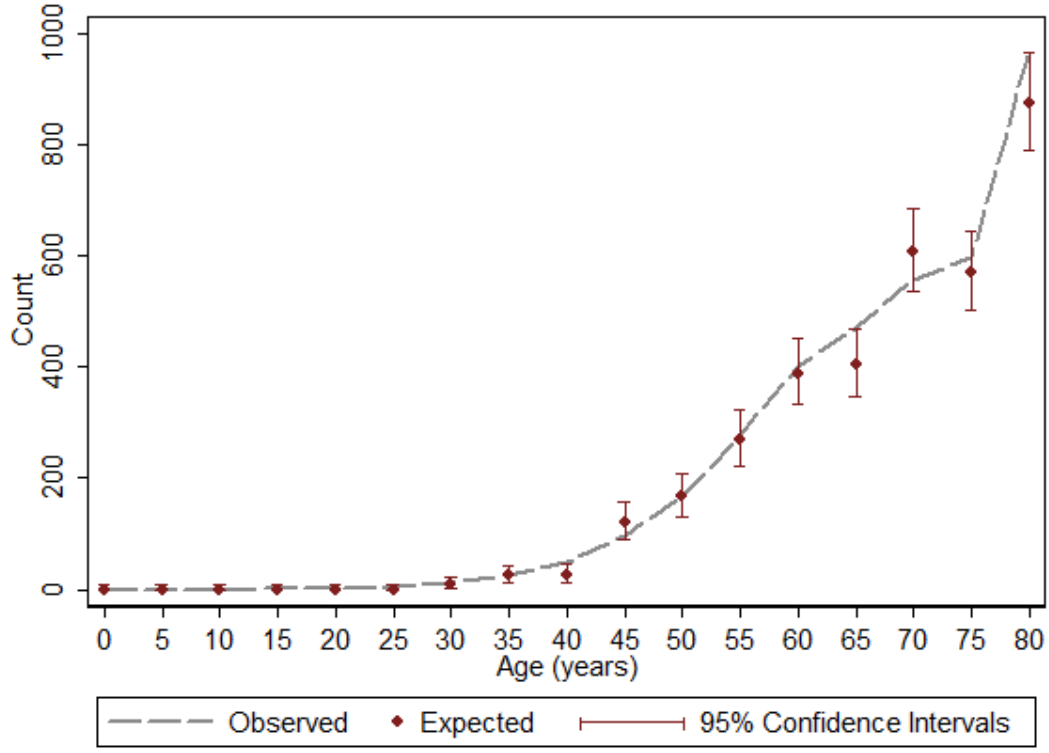


Figure 5.1.1i: Monoclonal gammopathy of undetermined significance - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 623, Expected = 3169; O/E = 19.7% (CI: 18-21)

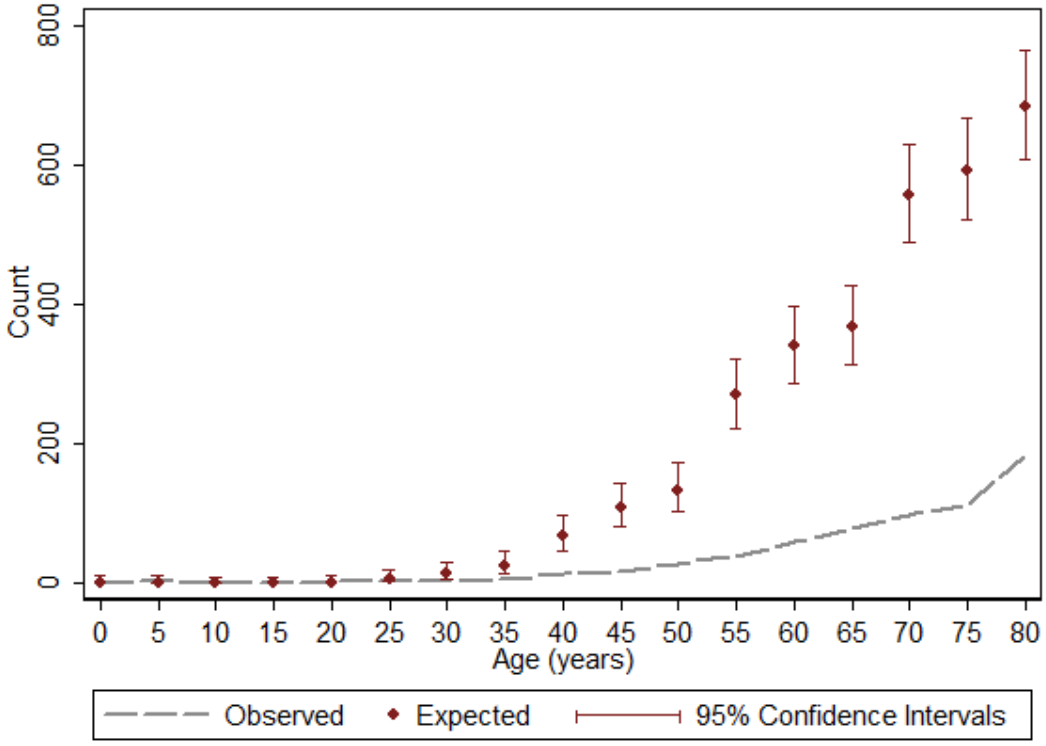


Figure 5.1.1j: Myeloproliferative neoplasms - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

All ages: Observed = 2187, Expected = 2745; O/E = 79.7% (CI: 76-83)

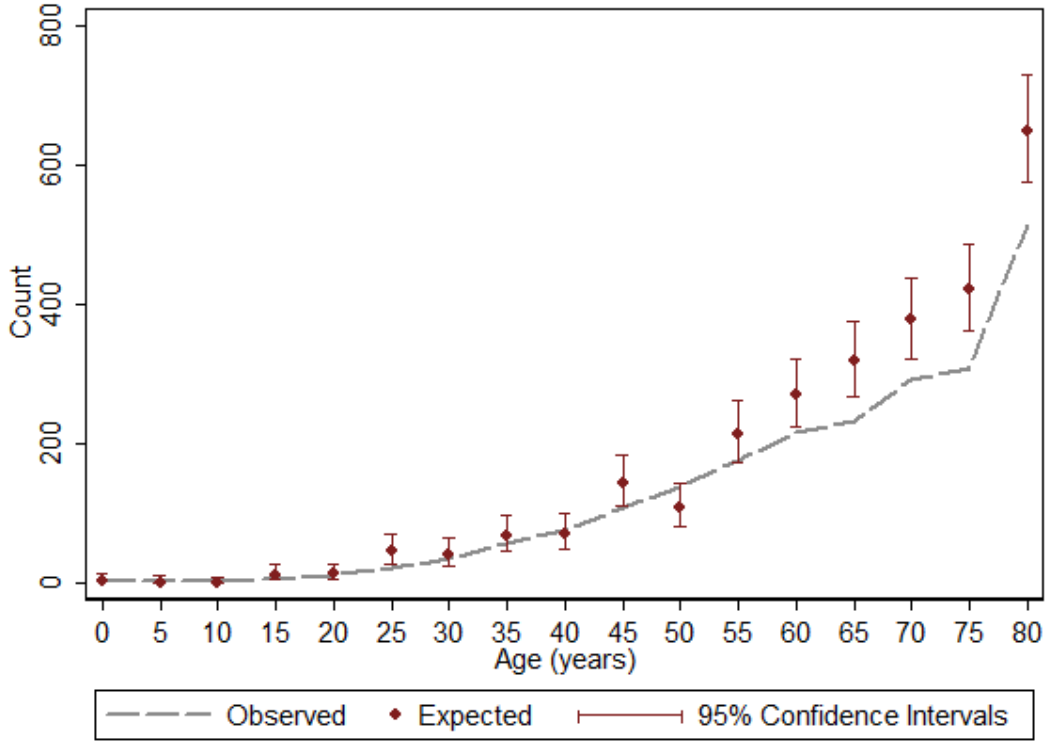
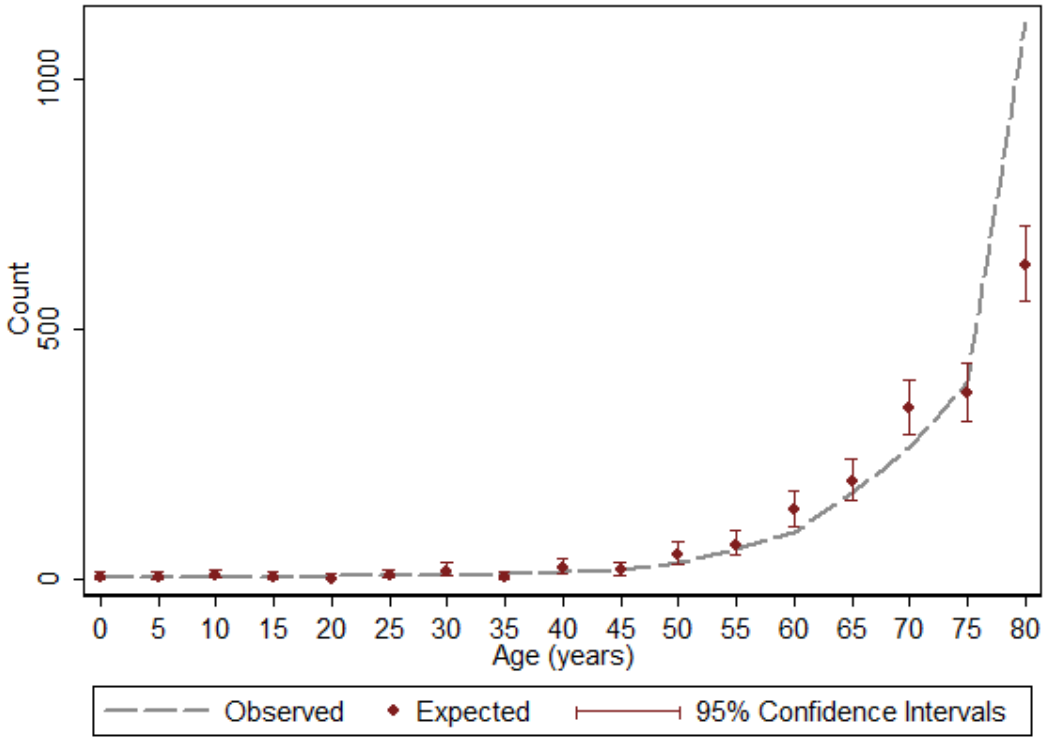


Figure 5.1.1k: Myelodysplastic syndromes - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

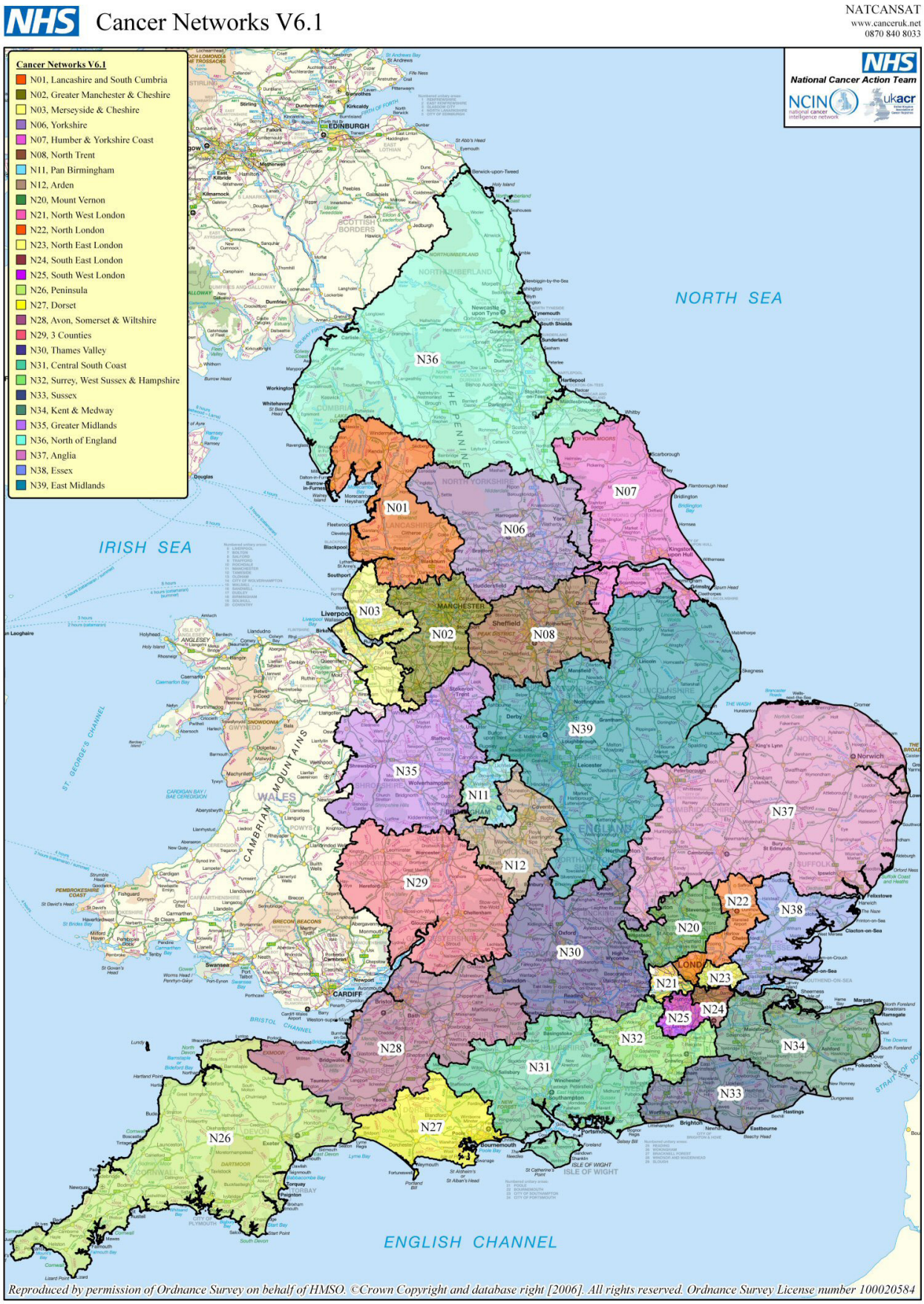
All ages: Observed = 2187, Expected = 1876; O/E = 116.6% (CI: 112-122)



The data are stratified by Cancer Registry and Cancer Network in Annexes 1 and 2 respectively. With respect to the Registries (Annex 1), as might be predicted given the fact that HMRN and NYCRIS both receive feeds from HMDS, least variation is seen for NYCRIS; the lowest observed/expected ratio (excluding MGUS) being for the MPNs (79.0; 70-89) and the highest for CML (109.8; 98-123). Several other registries also have ratios close to 100; OCIU's ratios, for example, ranging from 73.7 (61-89) for MPNs through to 116.0 (82-159) for ALL. By contrast, SWCIS's observed/expected ratios appear consistently high; those for MDS and MPN being strikingly so at 238.3 (220-258) and 190.1(176-205) respectively.

As might be expected, the Cancer Network ratios shown in Annex 2 tend to exhibit similar patterns to those of their associated Registry (Annex 1). The observed/expected ratios for Cancer Networks within the SWICIS, for example, tend to be comparatively high whereas those within NYCRIS and OCIU tend to be fairly centrally located within the overall distribution. This is illustrated in Tables 5.1.2 and 5.1.3, which respectively show data for MDS (one of the conditions showing the most variation) and myeloma (one of the conditions showing the least variation). To aid interpretation, the cancer networks are mapped in Figure 5.1.2, and the parent cancer registries are colour coded in the first column of Tables 5.1.2 and 5.1.3.

Figure 5.1.2: Cancer Networks



http://ncat.nhs.uk/sites/default/files/CancerNetworksV6%201%20(England%20Networks_2008)_Updated%20NWLondonNetworkName%20v2%20r1500.jpg

Table 5.1.2 Myelodysplastic syndromes distributed by Cancer Network: Observed (2004-8) and Expected based on HMRN age & sex specific rates (2004-10)

Registry	Network					
	Code	Name	Observed	Expected	O/E (%)	95% CI
SWCIS	N27	Dorset	84	26.5	317.3	253-393
SWCIS	N26	Peninsula	167	60.1	277.7	237-323
SWCIS	N28	Avon, Somerset & Wiltshire	161	69	233.3	199-272
SWCIS WMCIU	N29	Three Counties	82	38.9	211	168-262
TrCR	N08	N Trent	124	66.9	185.4	154-221
SWCIS TCR	N31	Central South Coast	127	72.9	174.2	145-207
ECRIC	N37	Anglia	141	97.7	144.3	121-170
ECRIC	N38	Essex	72	51.3	140.4	110-177
WMCIU	N12	Arden	47	37.1	126.6	93-168
TrCR WMCIU OCIU NYCRIS	N39	East Midlands	173	144.7	119.5	102-139
SWCIS OCIU	N30	Thames Valley	91	87	104.5	84-128
NWCIS	N02	G Manchester & Cheshire	114	114.6	99.5	82-120
NYCRIS	N07	Humber & Yorkshire Coast	39	39.3	99.3	71-136
TCR	N33	Sussex	43	43.4	99.1	72-133
ECRIC	N20	Mount Vernon	44	46.6	94.5	69-127
NYCRIS	N36	North of England	108	114.3	94.5	77-114
NYCRIS	N06	Yorkshire	92	97.8	97.1	76-115
NWCIS	N01	Lancashire & S Cumbria	53	56.8	93.4	70-122
NWCIS	N03	Merseyside & Cheshire	70	77.6	90.2	70-114
WMCIU	N35	Greater Midlands	60	71.6	83.8	64-108
SWCIS TCR	N32	Surrey, W Sussex & Hants	36	45	79.9	56-111
WMCIU	N11	Pan Birmingham	50	72	69.5	52-92
TCR	N23	N E London	38	57.5	66	47-91
TCR	N24	S E London	36	57.6	62.5	44-87
TCR	N34	Kent & Medway	35	60.3	58.1	40-81
TCR ECRIC	N22	N London	27	55.7	48.4	32-70
TCR	N21	W London	32	67.3	47.6	33-67
TCR	N25	S W London	28	58.1	48.2	32-70

Table 5.1.3 Myeloma distributed by Cancer Network: Observed (2004-8) and Expected based on HMRN age & sex specific rates (2004-10)

Registry	Network					
	Code	Name	Observed	Expected	O/E (%)	95% CI
SWCIS	N27	Dorset	72	49.1	146.6	115-185
SWCIS	N28	Avon, Somerset & Wiltshire	176	128	137.5	118-159
SWCIS	N26	Peninsula	150	111.5	134.5	114-158
SWCIS / WMCIU	N29	Three Counties	94	72.1	130.4	105-160
SWCIS / TCR	N31	Central South Coast	163	135.2	120.6	103-141
NYCRIS	N07	Humber & Yorkshire Coast	87	72.9	119.4	96-147
TCR	N33	Sussex	96	80.5	119.3	97-146
TrCR	N08	N Trent	145	124	116.9	99-138
ECRIC	N38	Essex	111	95.1	116.7	96.141
ECRIC	N37	Anglia	203	181.2	112.1	97-129
WMCIU	N12	Arden	77	68.8	111.9	88-140
TrCR / WMCIU / OCIU / NYCRIS	N39	East Midlands	299	268.4	111.4	99-125
TCR / ECRIC	N22	N London	111	103.4	107.4	88-129
NWCIS	N03	Merseyside & Cheshire	154	144	107	91-125
NWCIS	N01	Lancashire & S Cumbria	107	105.3	101.6	83-123
ECRIC	N20	Mount Vernon	87	86.3	100.8	81-124
SWCIS / OCIU	N30	Thames Valley	161	161.4	99.7	85-116
NYCRIS	N36	North of England	204	212	96.2	83-110
TCR	N34	Kent & Medway	105	111.8	93.9	77-114
SWCIS / TCR	N32	Surrey, W Sussex & Hants	78	83.5	93.4	74-117
TCR	N25	S W London	98	107.8	90.9	74-111
NYCRIS	N06	Yorkshire	163	181.3	89.9	77-105
TCR	N24	S E London	95	106.8	89	72-109
TCR	N21	W London	111	124.8	89	73-107
WMCIU	N11	Pan Birmingham	114	133.5	85.4	70-103
NWCIS	N02	G Manchester & Cheshire	176	212.5	82.8	71-96
WMCIU	N35	Greater Midlands	109	132.7	82.1	67-99
TCR	N23	N E London	74	106.7	69.4	54-87

The general pattern, in terms of Cancer Registry ordering, is broadly similar in Tables 5.1.2 and 5.1.3; with the three registries contained wholly within the SWCIS (Dorset, Peninsula, and Avon, Somerset & Wiltshire) ranked 1, 2 and 3, and those within the TCR tending to feature in the lower half. Similar relative configurations are evident for the other haematological cancers, as can be seen from the Tables and Maps presented in Annexes 2 and 3.

The range of variation across the Cancer Networks for the different diagnostic groups is further summarized in Table 5.1.4. For ALL, AML, CML and HL the observed/expected ratios were all close to 100, varying little from one Network to another. As anticipated, all of the Networks had markedly lower levels of MGUS registrations than predicted on the basis of HMRN rates; and 71% had lower than expected levels of CLL. As discussed above, MPN and MDS showed considerable variation, with higher than predicted registration levels being particularly pronounced in the Cancer Networks contributing to the SWCIS. The situation is similar (although less marked) for NHL, with 5 for the 7 SWCIS Networks having significantly elevated observed/expected ratios and some of the lowest ratios being seen amongst the Networks contributing to the TCR.

Table 5.1.4: English Cancer Network (N=28) summarized according to whether the observed counts differed significantly (p<0.05) from the counts expected on the basis of HMRN rates

Diagnostic Group	Significantly < 100 N (%)	Not significant N (%)	Significantly > 100 N (%)
Total	18 (64)	6 (21)	4 (14)
ALL	0	28 (100)	0
AML	0	26 (93)	2 (7)
CLL	20 (71)	7 (25)	1(4)
CML	0	28 (100)	0
HL	0	28 (100)	0
NHL	8 (29)	12 (43)	8 (29)
Myeloma	3 (11)	20 (71)	5 (18)
MGUS	28 (100)	0	0
MPN	17 (61)	7 (25)	4 (14)
MDS	7 (25)	12 (43)	9(32)

The observed and expected counts are broken down by age and Cancer Registry in Annex 4, and by age and Cancer Network in Annex 5. When comparing findings between Registries and Networks, as well as within Registries and Networks, it is important to note that the vertical axes are scaled for maximum resolution and hence vary one from another. Accordingly, whereas some differences are based on comparatively large numbers of registrations across the age groups (e.g. the Cancer Registry NHL graphs), for others this is not the case (e.g. the Cancer Network CML graphs).

Finally, with a view to providing additional information to the Cancer Registries and Networks, predicted frequencies of the main NHL subtypes based on HMRN rates are provided for Cancer Registries in Annex 6 and Cancer Networks in Annex 7.

5.2 Prevalence

The numbers of individuals estimated to have ever had a haematological malignancy are distributed by diagnostic category in Tables 5.2.1 and 5.2.2, the former relating to Cancer Registries and the latter to Cancer Networks. These prevalence estimates were generated by applying HMRN's observed incidence and survival rates 2004-10. When interpreting these figures it is important to bear in mind that this is a comparatively short (albeit relatively current) period of time, and that no attempt has been made to take account of potential differences in survival, either by geography, socio-economic or time, and that issues relating to 'cure' have not been considered.

Table 5.2.1: Prevalence (HMRN predicted) by cancer registry

Registry	Total HMs	ALL	AML	CLL	CML	HL	NHL	Myeloma	MDS	MGUS	MPN
Total	228604	5309	4074	24283	4662	32599	57816	15691	4994	27869	27705
ECRIC	25080	583	447	2667	512	3574	6343	1723	549	3056	3037
NYCRIS	30351	704	541	3222	618	4330	7676	2082	662	3701	3681
NWCIS	29989	696	534	3182	610	4279	7584	2057	654	3658	3638
OCIU	12675	295	226	1351	260	1804	3206	872	278	1543	1532
SWCIS	31200	725	556	3315	637	4448	7891	2142	682	3803	3780
THAMES	52570	1220	937	5577	1070	7502	13295	3605	1147	6412	6378
TRENT	22231	517	396	2364	454	3168	5623	1527	486	2709	2691
WCMIU	24507	569	437	2605	500	3493	6198	1683	536	2987	2968

Table 5.2.2: Prevalence (HMRN predicted) by cancer network

Registry	Total HMs	ALL	AML	CLL	CML	HL	NHL	Myeloma	MDS	MGUS	MPN
N01	6918	161	123	735	141	987	1750	475	151	843	838
N02	13965	324	249	1485	285	1991	3532	959	305	1702	1691
N03	9452	219	168	1002	192	1350	2390	648	206	1153	1148
N06	11910	276	212	1264	243	1699	3012	817	260	1452	1444
N07	4789	111	85	509	98	683	1211	329	105	584	580
N08	8151	189	145	867	166	1162	2062	560	178	993	987
N11	8773	204	156	932	179	1251	2219	602	192	1069	1063
N12	4527	105	81	482	93	645	1145	311	99	551	547
N20	5677	132	101	604	116	809	1436	390	124	692	687
N21	8204	191	146	873	168	1168	2075	564	180	999	992
N22	6791	158	121	721	138	969	1717	466	148	828	823
N23	7017	163	125	747	144	999	1775	482	154	855	849
N24	7017	163	125	746	143	1000	1775	482	153	855	850
N25	7085	165	126	753	145	1010	1792	486	155	864	859
N26	7326	170	131	777	149	1046	1853	502	160	894	889
N27	3224	75	57	342	66	460	815	221	70	393	391
N28	8414	196	150	895	172	1199	2128	578	184	1025	1019
N29	4737	110	84	504	97	675	1198	325	104	577	574
N30	10623	247	190	1133	218	1511	2687	731	233	1293	1283
N31	8887	206	158	945	181	1267	2248	610	194	1083	1076
N32	5492	128	98	584	112	782	1389	377	120	669	665
N33	5283	122	94	559	107	755	1336	362	115	645	642
N34	7346	171	131	780	150	1048	1858	504	160	896	890
N35	8729	203	156	929	179	1243	2208	600	191	1063	1056
N36	13931	324	248	1480	284	1987	3523	956	304	1698	1688
N37	11913	277	212	1268	244	1697	3013	819	261	1451	1441
N38	6248	145	111	664	127	891	1580	429	137	762	757
N39	17650	410	315	1879	361	2514	4464	1213	387	2150	2135

5.3 Comparison of data held by HMRN and NYCRIS

NYCRIS obtains data from four cancer Networks; three are totally contained within its boundaries (Yorkshire, Humber & Yorkshire Coast, and the North of England), and one is shared with OCIU, TrCR and WMCIU (East Midlands). HMRN's boundaries are defined according to the delivery of cancer services for haematological malignancies, which are broadly co-terminus with the two Cancer Networks of Yorkshire and Humber & Yorkshire Coast (Section 4.1). The observed/expected ratios for England, NYCRIS as a whole and its 4 constituent Cancer Networks are shown in Table 5.3.1.

Table 5.3.1 Observed (2004-8) and Expected based on HMRN age & sex specific rates (2004-10): NYCRIS and contributory Cancer Networks

Diagnostic Group	England	NYCRIS	NYCRIS Cancer Networks			
			Yorkshire	Humber & Yorkshire Coast	North of England	East Midlands[1]
Total	89 (88-90)	86 (83-89)	89 (84-94)	105 (97-114)	74 (70-78)	90 (86-94)
ALL	102 (94-110)	106 (84-131)	104 (71-147)	113 (62-190)	100 (70-138)	99 (72-132)
AML	109 (105-114)	110 (98-123)	114 (94-136)	113 (83-150)	101 (84-120)	116 (100-134)
CLL	74 (71-77)	90 (81-99)	105 (90-122)	130 (104-160)	61 (50-73)	79 (68-91)
CML	115 (105-125)	111 (86-140)	114 (76-165)	122 (63-213)	98 (65-141)	99 (70-137)
HL	96 (91-101)	91 (78-106)	96 (75-121)	87 (58-127)	86 (68-107)	102 (84-122)
NHL	103 (101-105)	95 (89-100)	89 (80-97)	112 (97-128)	91 (83-99)	114 (106-122)
Myeloma	104 (101-108)	99 (90-108)	90 (77-105)	119 (96-147)	96 (83-110)	111 (99-125)
MGUS	20 (18-21)	34 (29-40)	50 (40-62)	57 (41-79)	10 (6-16)	5 (2-8)
MPN	80 (76-83)	79 (70-89)	102 (86-120)	104 (80-134)	48 (38-60)	63 (53-74)
MDS	117 (112-122)	96 (85-109)	94 (76-115)	99 (71-136)	95 (77-114)	120 (102-139)

[1]*Data for the East Midlands, the majority of which is contained within TrCR, are shown for completeness.*

HMRN and NYCRIS both receive feeds from HMDS; and the observed/expected ratios of the diagnostic groupings that show the greatest regional variability tend to be closer to 100 in the NYCRIS Cancer Networks that overlap with HMRN's catchment than in other Registries and Networks (Table 5.3.1, Annex 3). The observed/expected ratios for the MPNs, for example, range from 22.6 (14-35) in N E London through to 309.7(257-370) in Dorset; but in Yorkshire and Humber & Yorkshire Coast the comparable figures are 102(86-120) and 104(80-134) respectively. This undoubtedly reflects the fact that throughout the 2004-8 period examined in this section of the report, NYCRIS has been in receipt of a feed from HMDS – initially paper-based and subsequently electronic. As an integrated diagnostic facility HMDS routinely diagnoses the full spectrum of haematological neoplasms; coding to ICD-O-3 and linking progressions and transformations within the same individual. The comprehensive nature of this service means that for some conditions NYCRIS probably receives more notifications than other Cancer Registries; this being particularly likely for the ICD-10 'D-coded' conditions like MGUS and the MPNs.

The HMDS feed to NYCRIS could also be part of the explanation for the variations seen for CLL, both within NYCRIS (Table 5.3.1) and across the country as a whole (Annex 3). The term monoclonal B-cell lymphocytosis (MBL) is used when the B-cell count in the peripheral blood

is less than 5x109/l; and although this arbitrary cut-off is widely used, MBL and CLL are part of a continuum (25). Hence, the probability that a patient with MBL or low level CLL will be diagnosed varies with both local clinical practice and local access to specialist diagnostic facilities. Many of these patients will not require treatment, and so within cancer registries these patients may not be registered, be registered inconsistently, or be coded inappropriately. Furthermore, within HMDS both CLL and MBL are routinely recorded, the conditions being distinguished textually on the pathology report but being given the same ICD-O-3 code. Hence it is possible that, as a result, within NYCRIS some MBLs may have been erroneously bridge-coded to CLL (see Section 5.4).

With a view to examining the data in more detail, 9078 individuals were identified through matching HMRN diagnoses with NYCRIS registrations (Sept 2004-Aug 2008). Of these 6,921 (76%) had one or more records in both datasets; 1,004 (11%) were in HMRN alone and 1,153 (13%) were in NYCRIS alone. Information on the disease groups (as defined in Table 4.2) of those with no record either in NYCRIS or in HMRN is given in Table 5.3.2.

Table 5.3.2: Disease group of those with no record either in NYCRIS or HMRN during the period September 2004 - August 2008

Disease Group	NYCRIS registration (no HMRN diagnosis)	HMRN diagnosis (no NYCRIS registration)
	Number (%)	Number (%)
Total	1,153 (100)	1,004 (100)
ALL	16 (1.4)	3 (0.3)
AML	102 (8.9)	2 (0.2)
CLL	80 (6.9)	285 (28.4)
CML	21 (1.8)	6 (0.6)
HL	37 (3.2)	4 (0.4)
NHL	329 (28.5)	103 (10.3)
Myeloma	165 (14.3)	22 (2.2)
MGUS	55 (4.8)	409 (40.7)
MPN	127 (11.0)	71 (7.1)
MDS	152 (13.2)	62 (6.2)

The disease group distributions shown in Table 5.3.2 differ from each other; the two largest groups with a record in NYCRIS but not HMRN are NHL (28.5%) and myeloma (14.3%); and the two largest with a record in HMRN but not NYCRIS are MGUS (40.7%) and CLL (28.4%).

The comparative deficits of MGUS and CLL registrations within NYCRIS are broadly as expected, for the reasons explained above. One factor that has a bearing on the distribution seen for those within NYCRIS that have no record within HMRN, relates to the fact that unlike other cancers, haematological malignancies are characterised by their ability to progress and transform. HMRN was established with a view to capturing and characterizing these processes, and at 'start-up' in September 2004 prevalent cases were not included. In practise this means that the rates for malignancies with known precursors or where transformation can occur (e.g. MGUS/myeloma, MDS/AML, MBL/CLL, follicular lymphoma/diffuse large B-cell lymphoma) are conservative for the earlier years – and these earlier years have been used in the present report. Obviously, as the data mature these effects will attenuate.

In addition, to lowering the overall estimates of conditions such as myeloma, AML and NHL; the initial exclusion of prevalent cases will also have contributed to some of the age-specific patterns seen in Annexes 4 and 5, where in several Registries and Networks the observed counts are sometimes higher than those predicted on the basis of HMRN rates. Within MDS, for example, a general progression to more aggressive disease is a relatively common pathway; as is progression from MDS to AML. Indeed, with respect to the latter, around 15% of those newly diagnosed with MDS in HMRN's first year had progressed to AML by year 6. The same is true within the lymphomas, where progression from FL to DLBCL is not uncommon. Accordingly, differences were also seen by age when matched HMRN and NYCRIS records were compared (Table 5.3.3). A larger number of individuals aged 80 or over were registered with a haematological malignancy in NYCRIS than in the HMRN. This is likely to occur partly as a consequence of the exclusion of prevalent cases in HMRN and also because not all cases of disease in older patients will undergo laboratory confirmation.

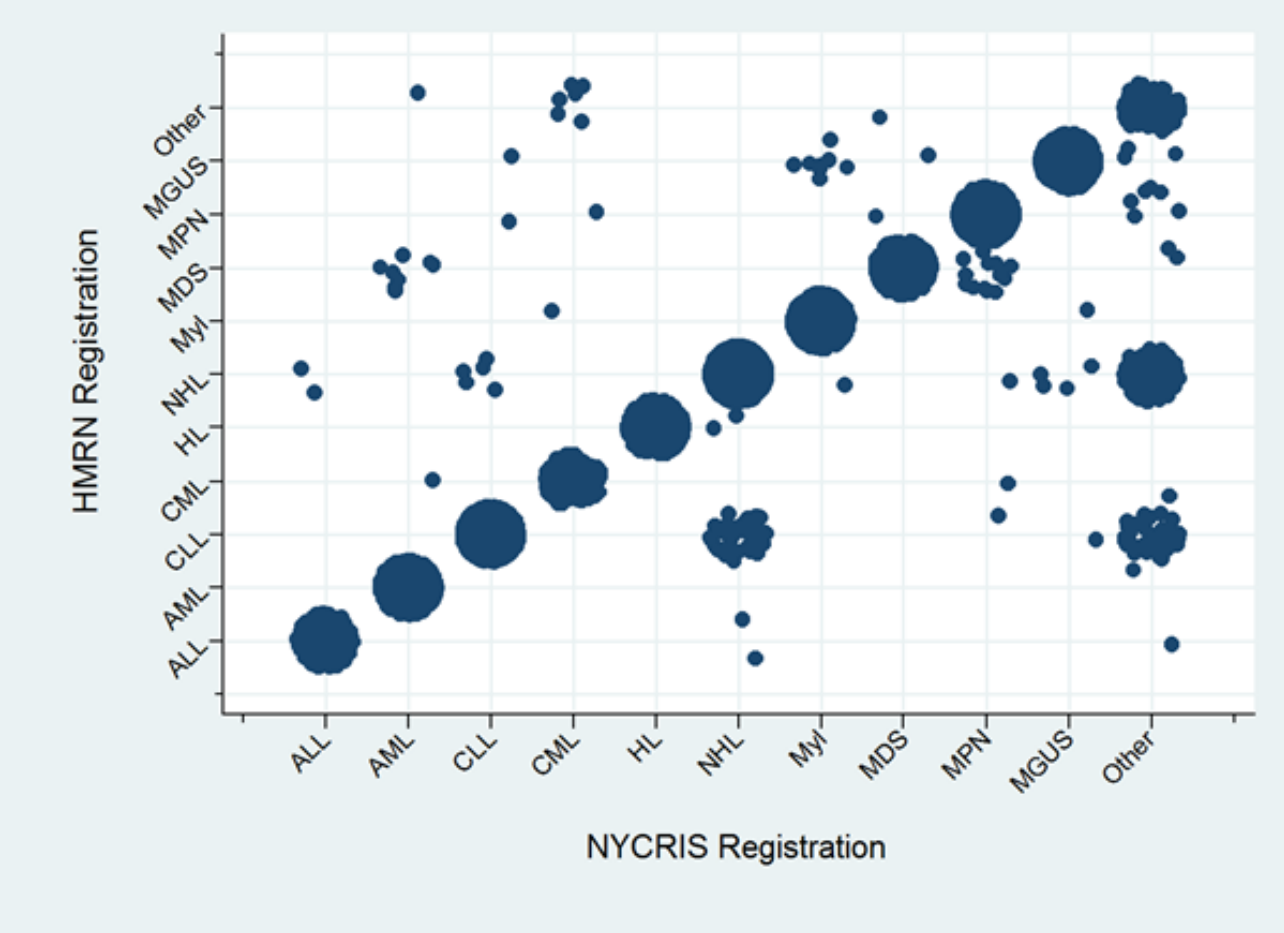
Figure 5.3.3 Age distribution of patients with no record either in NYCRIS or HMRN* during the period September 2004 - August 2008

Age band (years)	Recorded in HMRN but not NYCRIS		Recorded in NYCRIS but not HMRN*	
	Not in NYCRIS (%)	Total in HMRN	Not in HMRN (%)	Total in NYCRIS
Total	1004 (13)	7925	1153 (14)	8074
0-65	316 (11)	2901	294 (10)	2881
65-79	467 (14)	3377	406 (12)	2316
80+	221 (13)	1647	453 (24)	1877

**many of these are 'flagged' as ineligible in HMRN, for reasons discussed elsewhere in this document.*

The relationship between disease coding in NYCRIS and the bridge-coded ICD-O3 diagnoses from HMRN is further explored in Figure 5.3.1. For ALL, CML and HL there is little variation, but in other disease groups there are some recognisable patterns. For example, some patients recorded in NYCRIS as having AML had a diagnosis of MDS in HMRN, others with CLL in NYCRIS had an NHL diagnosis in HMRN, and a few myeloma registrations in NYCRIS appeared in the MGUS category in HMRN.

Figure 5.3.1 Disease group comparison between NYCRIS and HMRN for individuals with only one diagnosis, September 2004 - August 2008



5.4 Survey of Cancer Registry responses to interim report

The Registry survey was carried out in the last quarter of 2011. The questions asked, together with a summary of the responses received are provided on the following pages. More detailed information is available from NYCRIS.

1. ***Do you think that the counts of cases produced via the NCDR are valid representations of local data?*** All respondents considered the observed data a valid representation of their own registry data.

2. ***If year on year changes have been observed previously in the UKACR Performance Indicators reports, have you undertaken any more detailed work to look at which haematological cancers in particular*** Registries that commented (NYCRIS, TCR, WMCIU) were aware of past under-ascertainment of these cancers, and as a consequence interpreted increased registration as to be expected given improvements in registration. They also noted that in overall terms, registration counts for haematological cancer were low and subject to random variation.

3. ***Have there been any significant changes in your notification processes from 2008 onwards that may be affecting your more recent haematology data?*** A range of enhancements were identified, in particular the inclusion of Cancer Waiting Times (CWT) and information from Multi-Disciplinary Teams (MDTs).

4. ***Which of the following notification sources do you use for haematology*** *(Histopathology reports; Cytology reports; Local Patient Administration System (PAS); Local MDTs; Cancer Waiting Times(CWT); National Hospital Episode Statistics (HES))****? When did you start using them from (which year)?*** All used histopathology reports, and all but NWCIS reported using cytology. Most registries had some notifications via PAS (except NYCRIS, TCR, WMCIU). Only NYCRIS did not use MDTs, only TCR did not use CWT, and NWCIS was the only registry using HES. Registries also identified a range of 'in-house' systems for notification, including specific proformas in ECRIC and WMCIU.

5. *Acute Lymphoblastic Leukaemia is largely a children's diagnosis and presumably exchanges with children's registers ensure more accurate capture of these cases. However, there are more cases than expected in the 0-5 age group.* ***Is it possible that this may be due to a higher level of duplicate registrations? (i.e. for similar but not the same diagnoses).*** All Registries were confident that there was no duplication. However it should be noted that NCDR is a 'merged' dataset, with records from all registries combined – so duplication may be present across registries in particular if patients receive treatment in other regions.

6. *There appears to be an increased number of cases of Acute Myeloid Leukaemia within the registries particularly in the >60 years. There is a grey area relating to these registrations in relation to transformations/progressions from myelodysplasia. In ICDO2, these had different behaviours (1 and 3), and registry rules would have required 2 registrations to be made. This would have particularly affected the elderly population. In ICDO3, these are both behaviour 3 and as such this raises the question of whether it should be one or two registrations.* ***During the time period investigated (2004-07), is it possible that diagnoses of MDS are included within AML?*** In general registries reported that both myelodysplasia and AML were likely to be recorded, with WMCIU identifying that changes in blast count definition for diagnosis might also have impacted on registrations.

7. ***It would be useful to know what the practice now is in each registry, especially if coding in ICDO3?*** ; and
8. ***If making one registration, which code is being used and are registrations being flagged as transformations/progressions?*** Practice varied between registries and some relied on in-house records to maintain multiple registrations.

9. *For Chronic Lymphocytic Leukaemia, the observed numbers are mostly lower than expected in registries. This may be due to a number of reasons, e.g. incomplete notification processes or lower levels of diagnosis.* ***What are the notification routes for CLLs to the registry? Does this include GP referred blood tests?*** It was recognised in registries that reporting of CLL varied often within their registration catchment, GP requested blood tests were a source of notification for NYCRIS.

10. ***How is CLL defined on the pathology reports? Do you receive reports for pre-cursor CLLs, i.e. absolute B-cell count <5 x 109/L (Monoclonal B-cell lymphocytosis (CLL phenotype)? Are these coded to CLL?*** With the exception of NYCRIS no registries reported problems with Monoclonal B-cell lymphocytosis, in general as this was not being notified to them.

11. ***Do your pathology reports come with an ICDO3 code attached? If so, which one is used for CLL?*** Only NYCRIS currently received notification from laboratories already coded to ICD-O3, and this was limited to the HMDS catchment.

12. ***For Chronic Myeloid Leukaemia (CML) there is evidence of increased registrations in >75 years in every registry. Why is this?***
13. ***What is the notification route for these?*** No hypotheses for this were identified by registries, CML notification routes were identified in responses to question 4.

14. ***How is CMML coded?*** For registries coding in ICD-O-2 the coding was C92.7 – M9868/3, for those using ICD-O-3 it was C92.7 - M9945/3.

15. ***How are you registering chronic lymphoid leukaemias/lymphomas?*** In general, practice was based on the origin of pathology specimens; several made the point that these were grouped for any analysis

16. ***Transformation from less specific to more specific NHL. How are these recorded?*** There was considerable diversity between registries, with a combination of UKACR, SEER and in-house policies in place.

17. ***For Myeloma, there appears to be reduced cases in 4 out of 8 registries in 70-75 age group. We would welcome any thoughts on this.***

18. ***What happens with notifications for monoclonal gammopathy of uncertain significance (MGUS)?*** Registries had no specific hypotheses around mismatches on myeloma, all recorded MGUS. ECRIC operated a 6 month rule regarding registration of MGUS separately from myeloma; WMCIU highlighted the fact that there was under-ascertainment.

The preliminary report was based on less data than this final report; both with respect to time period (NCDR 2004-2007, HMRN rates 2004-2009) and breadth of diagnoses considered. With respect to ALL, given the above (question 5), it is probably worth noting that the addition of an extra year resulted in the discrepancies identified in the preliminary report becoming less pronounced; the average annual observed numbers fell from 623 to 602, and no statistically significant patterning with age remained.

In summary, registry responses provide a useful snapshot of current registration practice for haematological malignancies in England. In terms of supporting understanding of the apparent differences between observed and predicted registrations one area that was highlighted was the diversity in practice in the registration of NHL. This was apparent in the not uncommon situation when registries encounter the possibility of transformation. Different practice was recorded regarding the situations in which one or more registrations would be made, and in which situations previous registrations might be updated with more specific diagnoses. Standardisation of registration process will be essential in this area as the registries begin to operate under a single system. It was acknowledged by registry staff that existing UKACR guidance was not wholly clear and that they would welcome further work to standardise operation procedures for coding transformations.

6.0 References

1. National Institute for Clinical Excellence. Improving outcomes in haematological cancer : the manual. London: National Institute for Clinical Excellence; 2003.

2. Sant M, Allemani C, Santaquilani M, Knijn A, Marchesi F, Capocaccia R. EUROCARE-4. Survival of cancer patients diagnosed in 1995-1999. Results and commentary. Eur. J. Cancer. 2009 Apr;45(6):931–91.

3. Sant M, Allemani C, Tereanu C, De Angelis R, Capocaccia R, Visser O, et al. Incidence of hematologic malignancies in Europe by morphologic subtype: results of the HAEMACARE project. Blood. 2010 Nov 11;116(19):3724–34.

4. Turner JJ, Morton LM, Linet MS, Clarke CA, Kadin ME, Vajdic CM, et al. InterLymph hierarchical classification of lymphoid neoplasms for epidemiologic research based on the WHO Classification (2008): update and future directions. Blood [Internet]. 2010 Aug 10 [cited 2010 Aug 25]; Available from: http://www.ncbi.nlm.nih.gov/pubmed/20699439

5. Maynadié M, Girodon F, Manivet-Janoray I, Mounier M, Mugneret F, Bailly F, et al. Twenty-five years of epidemiological recording on myeloid malignancies: data from the specialized registry of hematologic malignancies of Cote d'Or (Burgundy, France). Haematologica. 2011 Jan;96(1):55–61.

6. Yoon SO, Suh C, Lee DH, Chi H-S, Park CJ, Jang S-S, et al. Distribution of lymphoid neoplasms in the Republic of Korea: analysis of 5318 cases according to the World Health Organization classification. Am. J. Hematol. 2010 Oct;85(10):760–4.

7. Mozaheb Z, Aledavood A, Farzad F. Distributions of major sub-types of lymphoid malignancies among adults in Mashhad, Iran. Cancer Epidemiol. 2011 Feb;35(1):26–9.

8. Fritz A. International classification of diseases for oncology : ICD-O. 3rd ed. Geneva: World Health Organization; 2000.

9. Jaffe E, World Health Organization. Pathology and genetics of tumours of haematopoietic and lymphoid tissues. Lyon; Oxford: IARC Press ; Oxford University Press (distributor); 2001.

10. Swerdlow S. WHO classification of tumours of haematopoietic and lymphoid tissues. 4th ed. Lyon; France: International Agency for Research on Cancer; 2008.

11. Berrino F, De Angelis R, Sant M, Rosso S, Bielska-Lasota M, Lasota MB, et al. Survival for eight major cancers and all cancers combined for European adults diagnosed in 1995-99: results of the EUROCARE-4 study. Lancet Oncol. 2007 Sep;8(9):773–83.

12. Best Practice Commissioning Guidance for developing Haematology Diagnostic Services | NCAT [Internet]. [cited 2012 Jun 5]. Available from: http://ncat.nhs.uk/news/best-practice-commissioning-guidance-for-developing-haematology-diagnostic-services

13. Ireland R. Haematological malignancies: the rationale for integrated haematopathology services, key elements of organization and wider contribution to patient care. Histopathology. 2011 Jan;58(1):145–54.

14. Department of Health. Cancer Reform Strategy [Internet]. [cited 2011 Mar 15]. Available from: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_081006

15. Smith A, Roman E, Howell D, Jones R, Patmore R, Jack A. The Haematological Malignancy Research Network (HMRN): a new information strategy for population based epidemiology and health service research. Br. J. Haematol. 2010 Mar;148(5):739–53.

16. Smith A, Howell D, Patmore R, Jack A, Roman E. Incidence of haematological malignancy by sub-type: a report from the Haematological Malignancy Research Network. Br. J. Cancer. 2011 Nov 22;105(11):1684–92.

17. Barlow L, Westergren K, Holmberg L, Talbäck M. The completeness of the Swedish Cancer Register: a sample survey for year 1998. Acta Oncol. 2009;48(1):27–33.

18. Larsen IK, Småstuen M, Johannesen TB, Langmark F, Parkin DM, Bray F, et al. Data quality at the Cancer Registry of Norway: an overview of comparability, completeness, validity and timeliness. Eur. J. Cancer. 2009 May;45(7):1218–31.

19. National Cancer Intelligence Network. Cancer Incidence by Deprivation England 1995-2004 [Internet]. 2009 [cited 2011 Feb 16]. Available from: http://www.ncin.org.uk/publications/reports/default.aspx

20. Friese CR, Abel GA, Magazu LS, Neville BA, Richardson LC, Earle CC. Diagnostic delay and complications for older adults with multiple myeloma. Leuk. Lymphoma. 2009 Mar;50(3):392–400.

21. RCGP; NCIN; NCAT. National Audit of Cancer Diagnosis in Primary Care [Internet]. Clinical Innovation and Research Centre; 2011. Available from: http://www.rcgp.org.uk/pdf/National_Audit_of_Cancer_Diagnosis_in_Primary-Care.pdf

22. OCIU. Haematological maligancies [Internet]. SPH; 2010 [cited 2012 Jun 16]. Available from: http://www.sph.nhs.uk/sph-ociu/cancer-intelligence-function/information-service-1/Heam_Mal_final_part.pdf

23. Office for National Statistics. Census: Standard Area Statistics (England). ESRC/JISC Census Programme. 2001;Census Dissemination Unit(MIMAS):University of Manchester.

24. Capocaccia R, De Angelis R. Estimating the completeness of prevalence based on cancer registry data. Stat Med. 1997 Feb 28;16(4):425–40.

25. Rawstron AC, Bennett FL, O'Connor SJM, Kwok M, Fenton JAL, Plummer M, et al. Monoclonal B-cell lymphocytosis and chronic lymphocytic leukemia. N. Engl. J. Med. 2008 Aug 7;359(6):575–83.

Annex 1

Annual observed and expected based on HMRN rates (Cancer Registry)

Total

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	26827	30100.0	89	88-90
ALL	602	591.7	101.7	94-110
AML	2217	2029.6	109.2	105-114
CLL	2364	3196.8	73.9	71-77
CML	540	470.1	114.9	105-125
HL	1413	1476.9	95.7	91-101
NHL	9397	9120.4	103	101-105
Myeloma	3633	3478.9	104.4	101-108
MGUS	623	3169.3	19.7	18-21
MPN	2187	2745.1	79.7	76-83
MDS	2187	1875.9	116.6	112-122

Eastern Cancer Registration and Information Centre (ECRIC)

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	3141	3304.4	95.1	92-98
ALL	61	64.9	94	72-121
AML	259	222.6	116.4	103-131
CLL	255	350.6	72.7	64-82
CML	66	51.6	128	99-163
HL	175	162.0	108	93-125
NHL	1163	1000.2	116.3	110-123
Myeloma	421	381.5	110.3	100-121
MGUS	62	347.6	17.8	14-23
MPN	252	301.0	83.7	74-95
MDS	269	205.7	130.8	116-147

Northern and Yorkshire Cancer Registration and Information Service (NYCRIS)

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	3435	4001.5	85.8	83-89
ALL	83	78.6	105.6	84-131
AML	296	269.5	109.8	98-123
CLL	382	424.5	90	81-99
CML	69	62.4	110.5	86-140
HL	179	196.1	91.3	78-106
NHL	1144	1211.2	94.5	89-100
Myeloma	456	462.0	98.7	90-108
MGUS	143	420.9	34	29-40
MPN	288	364.5	79	70-89
MDS	240	249.1	96.3	85-109

North West Cancer Intelligence Services (NWCIS)

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	3127	3954.3	79.1	76-82
ALL	78	77.6	100.5	79-125
AML	276	266.4	103.6	92-117
CLL	296	419.5	70.6	63-79
CML	68	61.7	110.2	86-140
HL	170	193.8	87.7	75-102
NHL	1125	1196.9	94	89-100
Myeloma	438	456.6	95.9	87-105
MGUS	12	415.9	2.9	1-5
MPN	267	360.2	74.1	65-84
MDS	239	246.2	97.1	85-110

Oxford Cancer Intelligence Unit (OCIU)

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1428	1668.8	85.6	81-90
ALL	38	32.8	116	82-159
AML	115	112.4	102.3	84-123
CLL	134	177.1	75.7	63-90
CML	26	26.0	99.9	65-146
HL	88	81.8	107.6	86-133
NHL	522	505.1	103.3	95-113
Myeloma	192	192.7	99.7	86-115
MGUS	19	175.5	10.8	7-17
MPN	112	152.0	73.7	61-89
MDS	115	103.9	110.7	91-133

South West Cancer Intelligence Service (SWCIS)

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	5059	4111.9	123	120-126
ALL	78	80.7	96.6	76-121
AML	320	277.0	115.5	103-129
CLL	422	436.3	96.7	88-106
CML	86	64.2	134	107-166
HL	203	201.5	100.7	87-116
NHL	1617	1244.6	129.9	124-136
Myeloma	620	474.8	130.6	121-141
MGUS	97	432.5	22.4	18-27
MPN	712	374.6	190.1	176-205
MDS	610	256.0	238.3	220-258

Thames Cancer Registry (TCR)

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	5419	6932.2	78.2	76-80
ALL	141	136.1	103.6	87-122
AML	502	466.9	107.5	98-117
CLL	411	735.5	55.9	51-62
CML	123	108.2	113.7	95-136
HL	320	339.8	94.2	84-105
NHL	1911	2098.3	91.1	87-95
Myeloma	758	800.4	94.7	88-102
MGUS	206	729.2	28.3	25-32
MPN	199	631.5	31.5	27-36
MDS	266	431.6	61.6	54-70

Trent Cancer Registry (TrCR)

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	2689	2928.9	91.8	88-95
ALL	52	57.5	90.4	68-119
AML	223	197.3	113	99-129
CLL	235	310.7	75.6	66-86
CML	51	45.7	111.6	83-147
HL	138	143.6	96.1	81-114
NHL	1000	886.5	112.8	106-120
Myeloma	392	338.2	115.9	105-128
MGUS	13	308.1	4.2	2-7
MPN	195	266.8	73.1	63-84
MDS	259	182.3	142	125-160

West Midlands Cancer Intelligence Unit (WMCIU)

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	2525	3229.3	78.2	75-81
ALL	69	63.4	108.8	85-138
AML	224	217.5	103	90-117
CLL	226	342.6	66	58-75
CML	49	50.4	97.3	72-129
HL	137	158.3	86.6	73-102
NHL	187	201.1	93	80-107
Myeloma	160	294.2	54.4	46-63
MGUS	353	372.9	94.7	85-105
MPN	68	339.7	20	16-25
MDS	912	977.5	93.3	87-100

Annex 2

Annual observed and expected based on HMRN rates (Cancer Network)

N01 - Lancashire and South Cumbria Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	723	911.9	79.3	74-85
ALL	15	17.9	83.8	47-138
AML	60	61.4	97.7	75-126
CLL	57	96.7	58.9	45-76
CML	15	14.2	105.4	59-174
HL	41	44.7	91.7	66-124
NHL	278	276.0	100.7	89-113
Myeloma	107	105.3	101.6	83-123
MGUS	2	95.9	2.1	0-8
MPN	52	83.1	62.6	47-82
MDS	53	56.8	93.4	70-122

N02 - Greater Manchester and Cheshire Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1328	1840.2	72.2	68-76
ALL	35	36.1	96.9	67-135
AML	126	123.9	101.7	85-121
CLL	113	195.2	57.9	48-70
CML	32	28.7	111.5	76-157
HL	81	90.2	89.8	71-112
NHL	471	557.0	84.6	77-93
Myeloma	176	212.5	82.8	71-96
MGUS	4	193.6	2.1	1-5
MPN	107	167.6	63.8	52-77
MDS	114	114.6	99.5	82-120

N03 - Merseyside and Cheshire Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1076	1247.0	86.3	81-92
ALL	28	24.5	114.4	76-165
AML	89	84.0	106	85-130
CLL	125	132.3	94.5	79-113
CML	20	19.5	102.8	63-159
HL	47	61.1	76.9	57-102
NHL	376	377.4	99.6	90-110
Myeloma	154	144.0	107	91-125
MGUS	4	131.2	3	1-8
MPN	107	113.6	94.2	77-114
MDS	70	77.6	90.2	70-114

N06 - Yorkshire Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1397	1570.2	89	84-94
ALL	32	30.8	103.8	71-147
AML	120	105.8	113.5	94-136
CLL	175	166.6	105	90-122
CML	28	24.5	114.3	76-165
HL	74	77.0	96.1	75-121
NHL	421	475.3	88.6	80-97
Myeloma	163	181.3	89.9	77-105
MGUS	83	165.2	50.3	40-62
MPN	146	143.1	102.1	86-120
MDS	92	97.8	94.1	76-115

N07 - Humber and Yorkshire Coast Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	664	631.1	105.2	97-114
ALL	14	12.4	113	62-190
AML	48	42.5	112.9	83-150
CLL	87	67.0	129.9	104-160
CML	12	9.8	121.9	63-213
HL	27	30.9	87.3	58-127
NHL	213	191.0	111.5	97-128
Myeloma	87	72.9	119.4	96-147
MGUS	38	66.4	57.2	41-79
MPN	60	57.5	104.4	80-134
MDS	39	39.3	99.3	71-136

N08 - North Trent Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1017	1074.0	94.7	89-101
ALL	16	21.1	75.9	43-123
AML	76	72.3	105.1	83-131
CLL	77	114.0	67.6	53-84
CML	22	16.8	131.3	82-199
HL	45	52.6	85.5	62-114
NHL	358	325.1	110.1	99-122
Myeloma	145	124.0	116.9	99-138
MGUS	5	113.0	4.4	1-10
MPN	93	97.8	95	77-116
MDS	124	66.9	185.4	154-221

N11 - Pan Birmingham Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	829	1156.1	71.7	67-77
ALL	22	22.7	96.9	61-147
AML	78	77.9	100.2	79-125
CLL	65	122.7	53	41-68
CML	16	18.0	88.7	51-144
HL	55	56.7	97.1	73-126
NHL	298	349.9	85.2	76-95
Myeloma	114	133.5	85.4	70-103
MGUS	28	121.6	23	15-33
MPN	56	105.3	53.2	40-69
MDS	50	72.0	69.5	52-92

N12 - Arden Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	512	596.1	85.9	79-94
ALL	15	11.7	128.1	72-211
AML	45	40.2	112.1	82-150
CLL	42	63.2	66.4	48-90
CML	11	9.3	118.3	59-212
HL	23	29.2	78.7	50-118
NHL	173	180.4	95.9	82-111
Myeloma	77	68.8	111.9	88-140
MGUS	12	62.7	19.1	10-33
MPN	38	54.3	70	50-96
MDS	47	37.1	126.6	93-168

N20 - Mount Vernon Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	636	747.8	85.1	79-92
ALL	14	14.7	95.3	52-160
AML	53	50.4	105.2	79-138
CLL	51	79.3	64.3	48-85
CML	13	11.7	111.4	59-191
HL	42	36.7	114.6	83-155
NHL	247	226.3	109.1	96-124
Myeloma	87	86.3	100.8	81-124
MGUS	7	78.7	8.9	4-18
MPN	42	68.1	61.7	44-83
MDS	44	46.6	94.5	69-127

N21 - West London Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	706	1080.5	65.3	61-70
ALL	19	21.2	89.5	54-140
AML	67	72.8	92.1	71-117
CLL	44	114.6	38.4	28-52
CML	19	16.9	112.7	68-176
HL	45	53.0	85	62-114
NHL	247	327.1	75.5	66-86
Myeloma	111	124.8	89	73-107
MGUS	7	113.7	6.2	2-13
MPN	39	98.4	39.6	28-54
MDS	32	67.3	47.6	33-67

N22 - North London Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	692	895.2	77.3	72-83
ALL	21	17.6	119.5	74-183
AML	62	60.3	102.8	79-132
CLL	46	95.0	48.4	35-65
CML	14	14.0	100.2	55-168
HL	47	43.9	107.1	79-142
NHL	262	271.0	96.7	85-109
Myeloma	111	103.4	107.4	88-129
MGUS	7	94.2	7.4	3-15
MPN	33	81.6	40.5	28-57
MDS	27	55.7	48.4	32-70

N23 - North East London Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	577	924.2	62.4	57-68
ALL	18	18.1	99.2	59-157
AML	55	62.2	88.4	67-115
CLL	40	98.1	40.8	29-56
CML	14	14.4	97.1	53-163
HL	40	45.3	88.3	63-120
NHL	217	279.7	77.6	68-89
Myeloma	74	106.7	69.4	54-87
MGUS	8	97.2	8.2	4-16
MPN	19	84.2	22.6	14-35
MDS	38	57.5	66	47-91

N24 - South East London Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	740	924.6	80	74-86
ALL	17	18.2	93.6	55-150
AML	60	62.3	96.3	74-124
CLL	57	98.1	58.1	44-75
CML	15	14.4	104	58-171
HL	39	45.3	86.1	61-118
NHL	239	279.9	85.4	75-97
Myeloma	95	106.8	89	72-109
MGUS	55	97.3	56.6	43-74
MPN	22	84.2	26.1	16-40
MDS	36	57.6	62.5	44-87

N25 - South West London Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	704	933.8	75.4	70-81
ALL	20	18.3	109.1	67-168
AML	65	62.9	103.3	80-132
CLL	58	99.1	58.5	44-76
CML	18	14.6	123.5	73-195
HL	41	45.8	89.6	64-122
NHL	245	282.6	86.7	76-98
Myeloma	98	107.8	90.9	74-111
MGUS	27	98.2	27.5	18-40
MPN	24	85.1	28.2	18-42
MDS	28	58.1	48.2	32-70

N26 - Peninsula Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1256	966.1	130	123-137
ALL	15	19.0	79.1	44-130
AML	86	65.1	132.2	106-163
CLL	109	102.5	106.3	87-128
CML	18	15.1	119.4	71-189
HL	45	47.4	95	69-127
NHL	395	292.4	135.1	122-149
Myeloma	150	111.5	134.5	114-158
MGUS	24	101.6	23.6	15-35
MPN	175	88.0	198.8	170-231
MDS	167	60.1	277.7	237-323

N27 - Dorset Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	657	425.3	154.5	143-167
ALL	6	8.4	71.9	26-156
AML	36	28.6	125.7	88-174
CLL	58	45.1	128.6	98-166
CML	11	6.6	165.8	83-297
HL	21	20.8	100.7	62-154
NHL	193	128.7	149.9	130-173
Myeloma	72	49.1	146.6	115-185
MGUS	14	44.7	31.3	17-53
MPN	120	38.7	309.7	257-370
MDS	84	26.5	317.3	253-393

N28 - Avon, Somerset and Wiltshire Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1332	1108.5	120.2	114-127
ALL	23	21.8	105.7	67-159
AML	81	74.7	108.5	86-135
CLL	105	117.6	89.3	73-108
CML	22	17.3	127.2	80-193
HL	54	54.3	99.4	75-130
NHL	426	335.5	127	115-140
Myeloma	176	128.0	137.5	118-159
MGUS	34	116.6	29.2	20-41
MPN	178	101.0	176.3	151-204
MDS	161	69.0	233.3	199-272

N29 - 3 Counties Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	663	624.2	106.2	98-115
ALL	14	12.3	114.2	62-192
AML	44	42.0	104.7	76-140
CLL	55	66.2	83	63-108
CML	13	9.7	133.5	71-228
HL	31	30.6	101.3	69-144
NHL	229	188.9	121.2	106-138
Myeloma	94	72.1	130.4	105-160
MGUS	6	65.7	9.1	3-20
MPN	51	56.9	89.7	67-118
MDS	82	38.9	211	168-262

N30 - Thames Valley Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1172	1398.1	83.8	79-89
ALL	32	27.5	116.6	80-165
AML	91	94.2	96.6	78-119
CLL	110	148.3	74.2	61-89
CML	21	21.8	96.3	60-147
HL	74	68.5	108	85-136
NHL	420	423.2	99.2	90-109
Myeloma	161	161.4	99.7	85-116
MGUS	18	147.1	12.2	7-19
MPN	98	127.4	76.9	62-94
MDS	91	87.0	104.5	84-128

N31 - Central South Coast Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1373	1171.1	117.2	111-124
ALL	22	23.0	95.7	60-145
AML	87	78.9	110.3	88-136
CLL	122	124.2	98.2	82-117
CML	23	18.3	125.9	80-189
HL	59	57.4	102.8	78-133
NHL	451	354.5	127.2	116-140
Myeloma	163	135.2	120.6	103-141
MGUS	26	123.2	21.1	14-31
MPN	179	106.7	167.8	144-194
MDS	127	72.9	174.2	145-207

N32 - Surrey, West Sussex and Hampshire Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	592	723.5	81.8	75-89
ALL	15	14.2	105.6	59-174
AML	57	48.7	117	89-152
CLL	43	76.8	56	41-75
CML	15	11.3	132.9	74-219
HL	33	35.5	93.1	64-131
NHL	208	219.0	95	83-109
Myeloma	78	83.5	93.4	74-117
MGUS	16	76.1	21	12-34
MPN	26	65.9	39.4	26-58
MDS	36	45.0	79.9	56-111

N33 - Sussex Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	685	697.2	98.2	91-106
ALL	11	13.7	80.3	40-144
AML	65	47.0	138.4	107-176
CLL	50	74.0	67.6	50-89
CML	12	10.9	110.3	57-193
HL	31	34.2	90.7	62-129
NHL	236	211.0	111.8	98-127
Myeloma	96	80.5	119.3	97-146
MGUS	51	73.3	69.5	52-91
MPN	23	63.5	36.2	23-54
MDS	43	43.4	99.1	72-133

N34 - Kent and Medway Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	809	968.3	83.5	78-90
ALL	20	19.0	105.2	64-162
AML	81	65.2	124.2	99-154
CLL	68	102.7	66.2	51-84
CML	15	15.1	99.3	56-164
HL	45	47.5	94.8	69-127
NHL	302	293.1	103	92-115
Myeloma	105	111.8	93.9	77-114
MGUS	28	101.9	27.5	18-40
MPN	26	88.2	29.5	19-43
MDS	35	60.3	58.1	40-81

N35 - The Greater Midlands Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	849	1149.7	73.8	69-79
ALL	24	22.6	106.3	68-158
AML	73	77.4	94.3	74-119
CLL	88	122.0	72.1	58-89
CML	16	17.9	89.2	51-145
HL	43	56.4	76.3	55-103
NHL	313	348.0	89.9	80-100
Myeloma	109	132.7	82.1	67-99
MGUS	24	120.9	19.8	13-30
MPN	49	104.7	46.8	35-62
MDS	60	71.6	83.8	64-108

N36 - North of England Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1363	1836.3	74.2	70-78
ALL	36	36.1	99.8	70-138
AML	125	123.7	101.1	84-120
CLL	118	194.8	60.6	50-73
CML	28	28.7	97.7	65-141
HL	77	90.0	85.6	68-107
NHL	506	555.8	91	83-99
Myeloma	204	212.0	96.2	83-110
MGUS	20	193.1	10.4	6-16
MPN	81	167.3	48.4	38-60
MDS	108	114.3	94.5	77-114

N37 - Anglia Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	1560	1569.1	99.4	95-104
ALL	30	30.8	97.4	66-139
AML	122	105.7	115.4	96-138
CLL	138	166.5	82.9	70-98
CML	34	24.5	138.9	96-194
HL	87	76.9	113.1	91-140
NHL	551	475.0	116	107-126
Myeloma	203	181.2	112.1	97-129
MGUS	40	165.0	24.2	17-33
MPN	139	143.0	97.2	82-115
MDS	141	97.7	144.3	121-170

N38 - Essex Cancer Network

Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	798	823.5	96.9	90-104
ALL	14	16.2	86.6	47-145
AML	70	55.5	126.2	98-159
CLL	56	87.4	64.1	48-83
CML	14	12.8	109	60-183
HL	39	40.4	96.6	69-132
NHL	302	249.3	121.2	108-136
Myeloma	111	95.1	116.7	96-141
MGUS	12	86.6	13.9	7-24
MPN	61	75.0	81.3	62-104
MDS	72	51.3	140.4	110-177

N39 - East Midlands Cancer Network

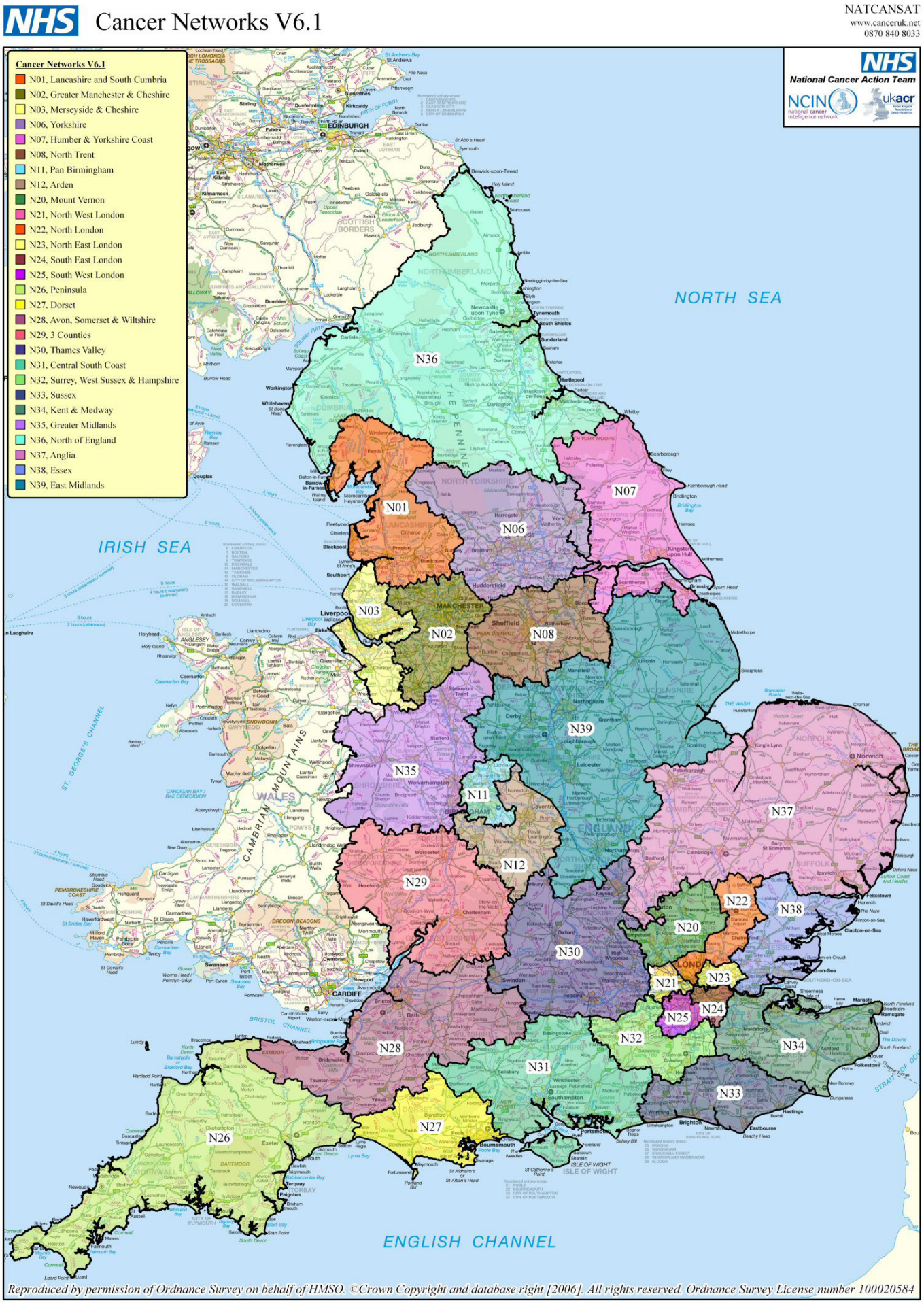
Annual observed (2004-8) and expected based on HMRN rates (2004-10).

Diagnostic Group	Observed	Expected	O/E (%)	95% CI
Total	2094	2324.6	90.1	86-94
ALL	45	45.6	98.6	72-132
AML	182	156.6	116.2	100-134
CLL	194	246.6	78.7	68-91
CML	36	36.3	99.3	70-137
HL	116	113.9	101.8	84-122
NHL	803	703.6	114.1	106-122
Myeloma	299	268.4	111.4	99-125
MGUS	11	244.5	4.5	2-8
MPN	133	211.8	62.8	53-74
MDS	173	144.7	119.5	102-139

Annex 3

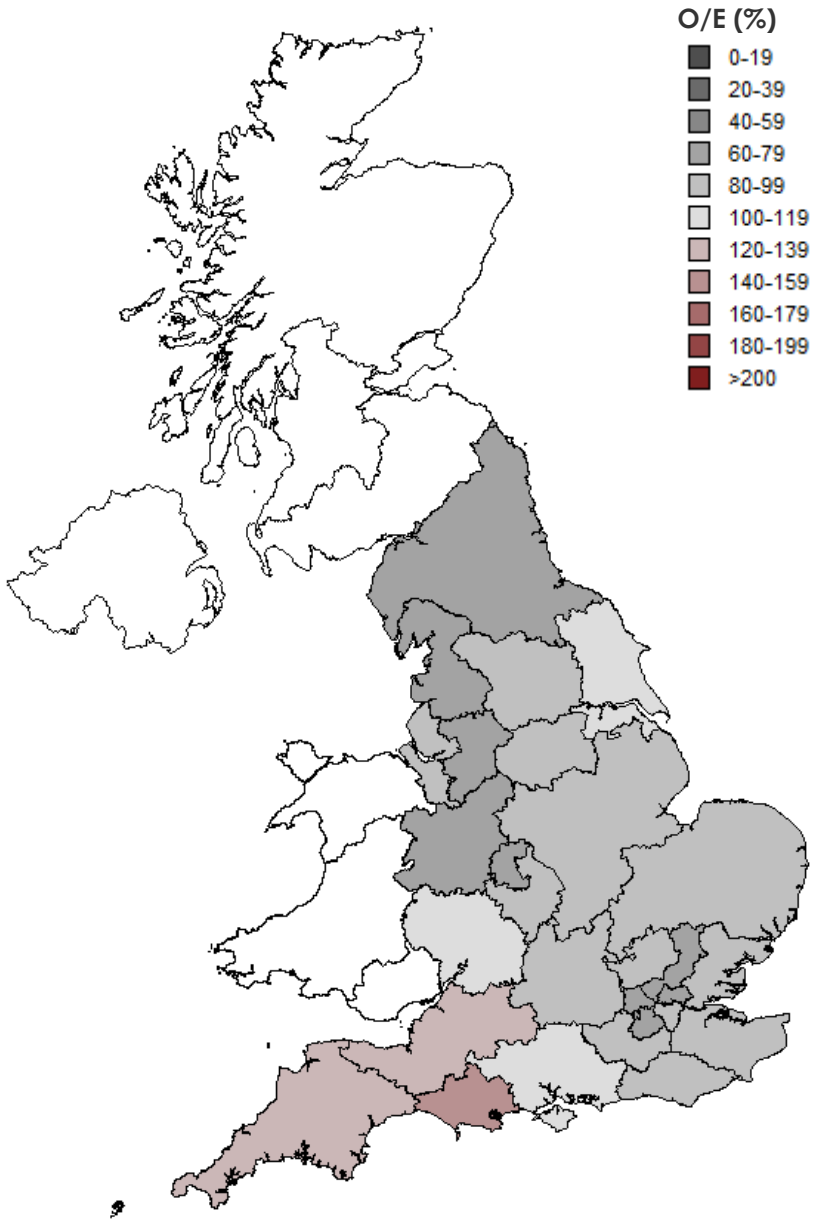
Annual observed and expected based on HMRN rates
(Cancer Network, Maps & Tables)

Cancer Networks



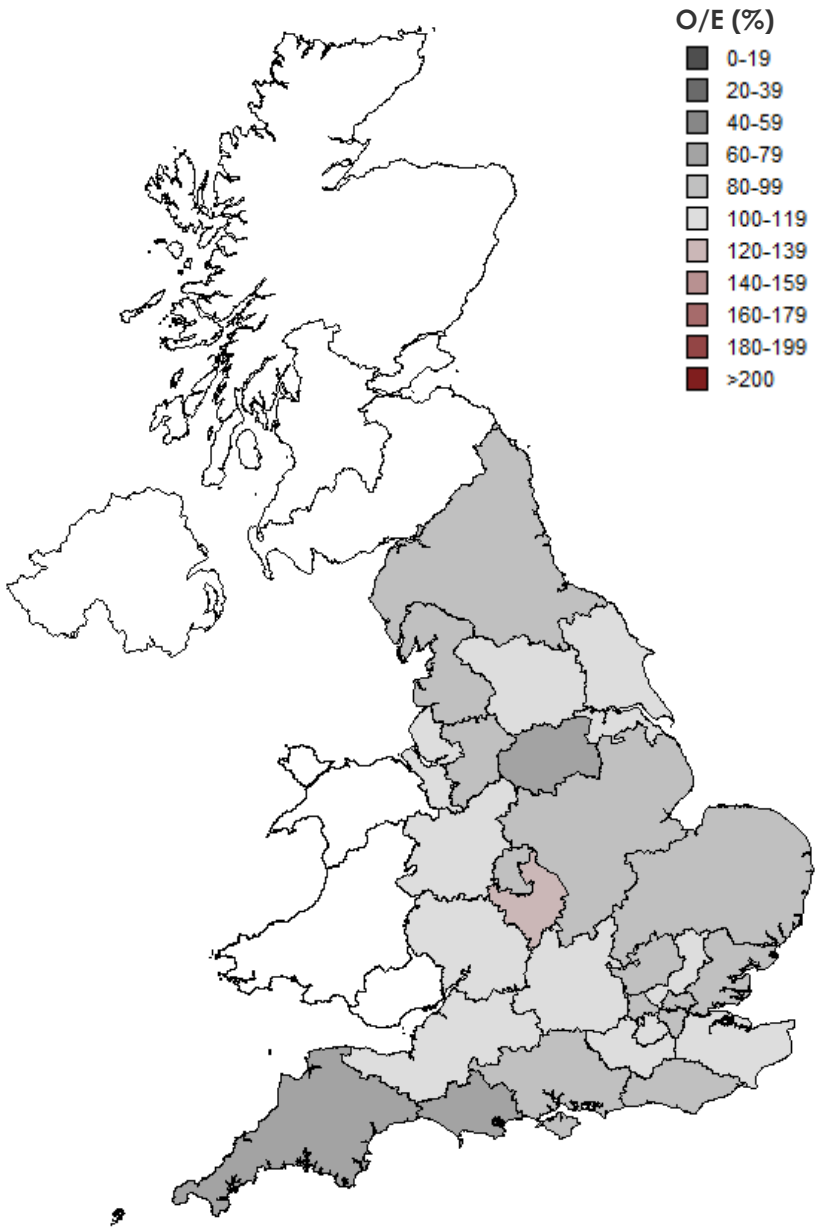
http://ncat.nhs.uk/sites/default/files/CancerNetworksV6%201%20(England%20Networks_2008)_Updated%20NWLondonNetworkName%20v2%20r1500.jpg

Total haematological malignancies - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



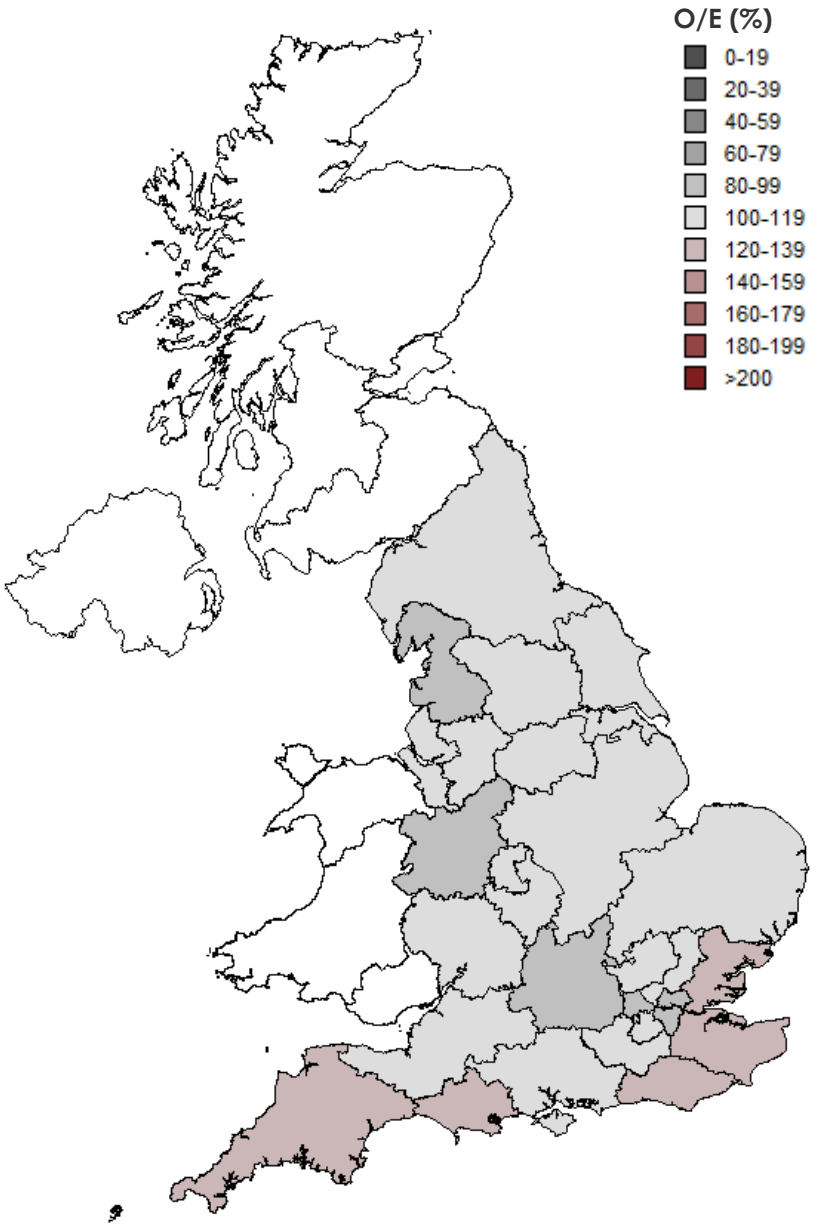
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**26892**	**30300.0**	**88.7**	**88-90**
N01	Lancashire and South Cumbria	723	911.9	79.3	74-85
N02	Greater Manchester and Cheshire	1328	1840.2	72.2	68-76
N03	Merseyside and Cheshire	1076	1247.0	86.3	81-92
N06	Yorkshire	1397	1570.2	89	84-94
N07	Humber and Yorkshire Coast	664	631.1	105.2	97-114
N08	North Trent	1017	1074.0	94.7	89-101
N11	Pan Birmingham	829	1156.1	71.7	67-77
N12	Arden	512	596.1	85.9	79-94
N20	Mount Vernon	636	747.8	85.1	79-92
N21	West London	706	1080.5	65.3	61-70
N22	North London	692	895.2	77.3	72-83
N23	North East London	577	924.2	62.4	57-68
N24	South East London	740	924.6	80	74-86
N25	South West London	704	933.8	75.4	70-81
N26	Peninsula	1256	966.1	130	123-137
N27	Dorset	657	425.3	154.5	143-167
N28	Avon, Somerset and Wiltshire	1332	1108.5	120.2	114-127
N29	3 Counties	663	624.2	106.2	98-115
N30	Thames Valley	1172	1398.1	83.8	79-89
N31	Central South Coast	1373	1171.1	117.2	111-124
N32	Surrey, West Sussex and Hampshire	592	723.5	81.8	75-89
N33	Sussex	685	697.2	98.2	91-106
N34	Kent and Medway	809	968.3	83.5	78-90
N35	The Greater Midlands	849	1149.7	73.8	69-79
N36	North of England	1363	1836.3	74.2	70-78
N37	Anglia	1560	1569.1	99.4	95-104
N38	Essex	798	823.5	96.9	90-104
N39	East Midlands	2094	2324.6	90.1	86-94

Acute lymphoblastic leukaemia - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



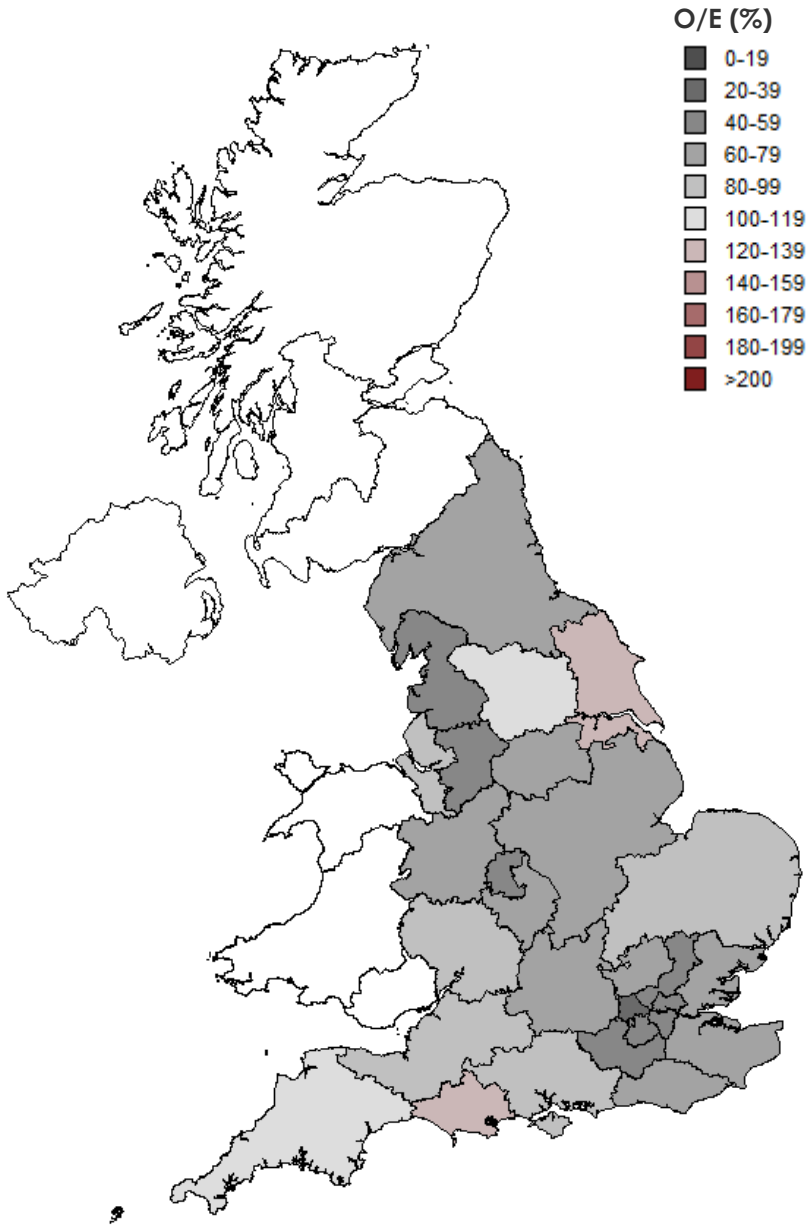
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**604**	**595.3**	**101.5**	**94-110**
N01	Lancashire and South Cumbria	15	17.9	83.8	47-138
N02	Greater Manchester and Cheshire	35	36.1	96.9	67-135
N03	Merseyside and Cheshire	28	24.5	114.4	76-165
N06	Yorkshire	32	30.8	103.8	71-147
N07	Humber and Yorkshire Coast	14	12.4	113	62-190
N08	North Trent	16	21.1	75.9	43-123
N11	Pan Birmingham	22	22.7	96.9	61-147
N12	Arden	15	11.7	128.1	72-211
N20	Mount Vernon	14	14.7	95.3	52-160
N21	West London	19	21.2	89.5	54-140
N22	North London	21	17.6	119.5	74-183
N23	North East London	18	18.1	99.2	59-157
N24	South East London	17	18.2	93.6	55-150
N25	South West London	20	18.3	109.1	67-168
N26	Peninsula	15	19.0	79.1	44-130
N27	Dorset	6	8.4	71.9	26-156
N28	Avon, Somerset and Wiltshire	23	21.8	105.7	67-159
N29	3 Counties	14	12.3	114.2	62-192
N30	Thames Valley	32	27.5	116.6	80-165
N31	Central South Coast	22	23.0	95.7	60-145
N32	Surrey, West Sussex and Hampshire	15	14.2	105.6	59-174
N33	Sussex	11	13.7	80.3	40-144
N34	Kent and Medway	20	19.0	105.2	64-162
N35	The Greater Midlands	24	22.6	106.3	68-158
N36	North of England	36	36.1	99.8	70-138
N37	Anglia	30	30.8	97.4	66-139
N38	Essex	14	16.2	86.6	47-145
N39	East Midlands	45	45.6	98.6	72-132

Acute myeloid leukaemia - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



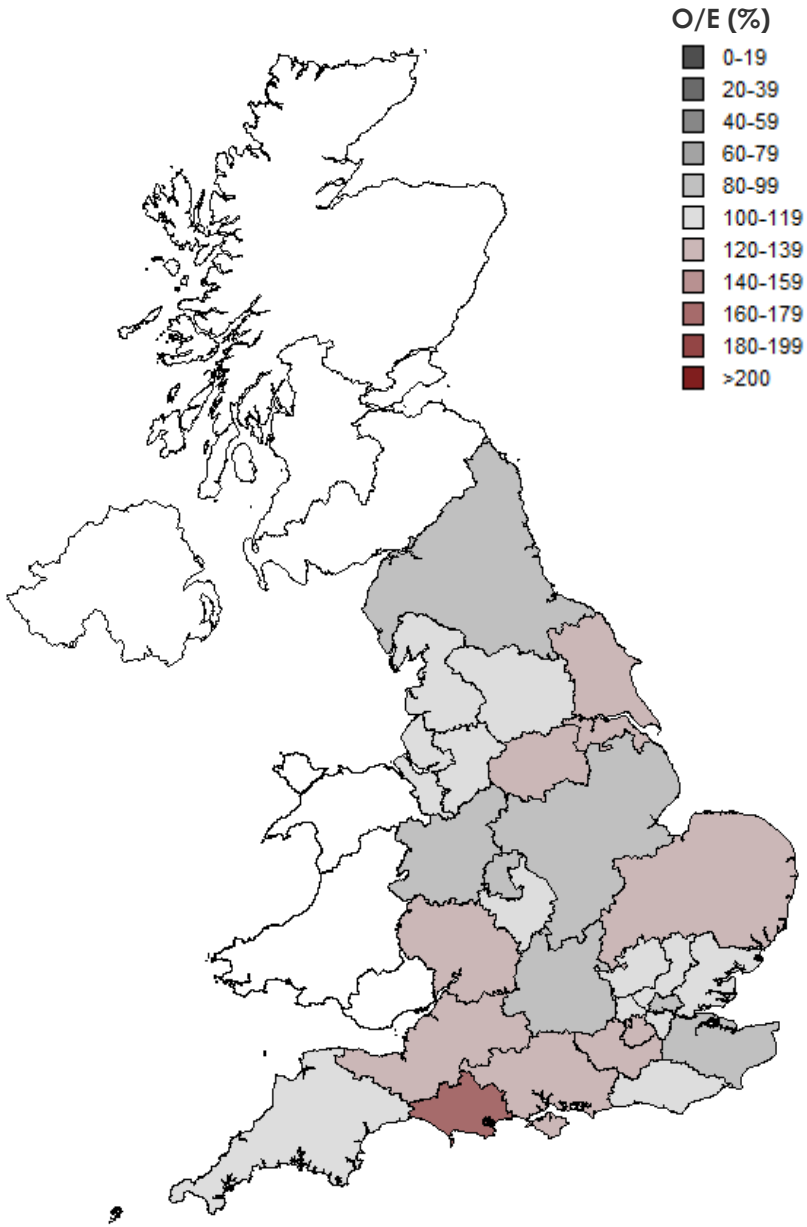
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**2220**	**2042.1**	**108.7**	**104-113**
N01	Lancashire and South Cumbria	60	61.4	97.7	75-126
N02	Greater Manchester and Cheshire	126	123.9	101.7	85-121
N03	Merseyside and Cheshire	89	84.0	106	85-130
N06	Yorkshire	120	105.8	113.5	94-136
N07	Humber and Yorkshire Coast	48	42.5	112.9	83-150
N08	North Trent	76	72.3	105.1	83-131
N11	Pan Birmingham	78	77.9	100.2	79-125
N12	Arden	45	40.2	112.1	82-150
N20	Mount Vernon	53	50.4	105.2	79-138
N21	West London	67	72.8	92.1	71-117
N22	North London	62	60.3	102.8	79-132
N23	North East London	55	62.2	88.4	67-115
N24	South East London	60	62.3	96.3	74-124
N25	South West London	65	62.9	103.3	80-132
N26	Peninsula	86	65.1	132.2	106-163
N27	Dorset	36	28.6	125.7	88-174
N28	Avon, Somerset and Wiltshire	81	74.7	108.5	86-135
N29	3 Counties	44	42.0	104.7	76-140
N30	Thames Valley	91	94.2	96.6	78-119
N31	Central South Coast	87	78.9	110.3	88-136
N32	Surrey, West Sussex and Hampshire	57	48.7	117	89-152
N33	Sussex	65	47.0	138.4	107-176
N34	Kent and Medway	81	65.2	124.2	99-154
N35	The Greater Midlands	73	77.4	94.3	74-119
N36	North of England	125	123.7	101.1	84-120
N37	Anglia	122	105.7	115.4	96-138
N38	Essex	70	55.5	126.2	98-159
N39	East Midlands	182	156.6	116.2	100-134

Chronic lymphocytic leukaemia - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



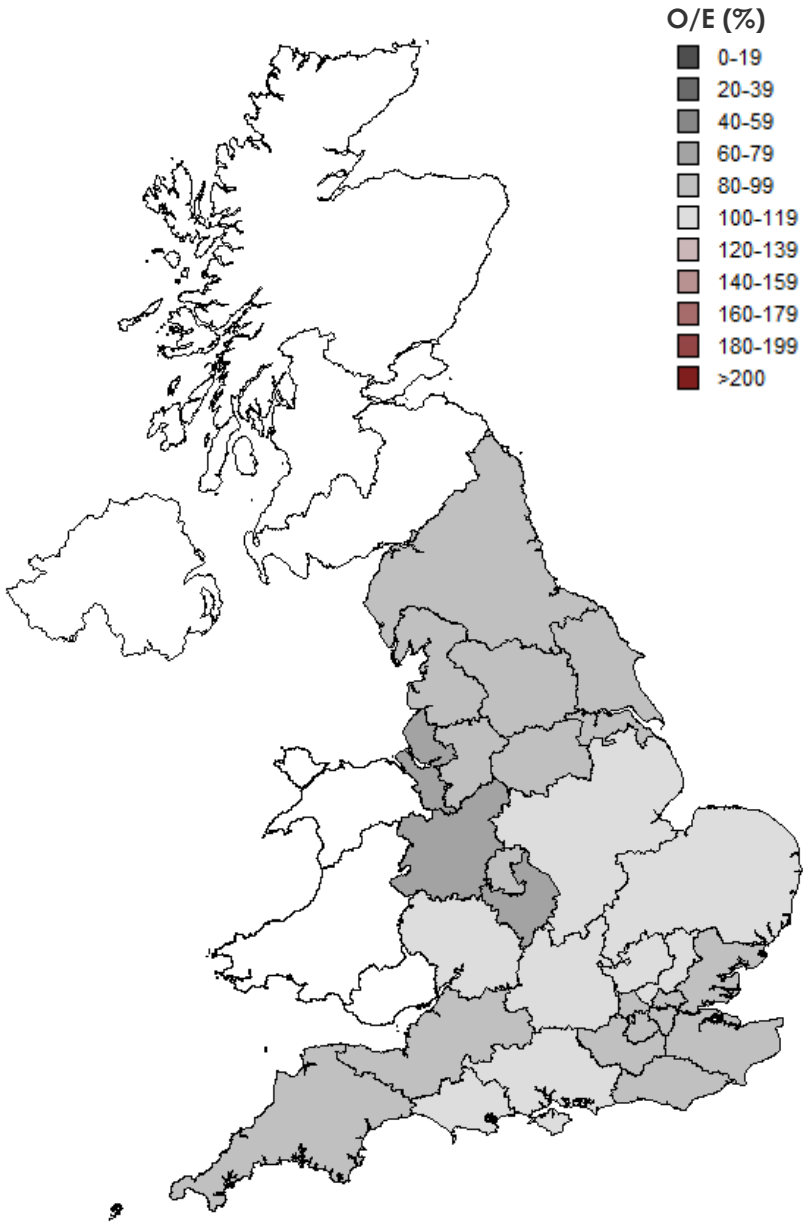
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**2368**	**3216.7**	**73.6**	**71-77**
N01	Lancashire and South Cumbria	57	96.7	58.9	45-76
N02	Greater Manchester and Cheshire	113	195.2	57.9	48-70
N03	Merseyside and Cheshire	125	132.3	94.5	79-113
N06	Yorkshire	175	166.6	105	90-122
N07	Humber and Yorkshire Coast	87	67.0	129.9	104-160
N08	North Trent	77	114.0	67.6	53-84
N11	Pan Birmingham	65	122.7	53	41-68
N12	Arden	42	63.2	66.4	48-90
N20	Mount Vernon	51	79.3	64.3	48-85
N21	West London	44	114.6	38.4	28-52
N22	North London	46	95.0	48.4	35-65
N23	North East London	40	98.1	40.8	29-56
N24	South East London	57	98.1	58.1	44-75
N25	South West London	58	99.1	58.5	44-76
N26	Peninsula	109	102.5	106.3	87-128
N27	Dorset	58	45.1	128.6	98-166
N28	Avon, Somerset and Wiltshire	105	117.6	89.3	73-108
N29	3 Counties	55	66.2	83	63-108
N30	Thames Valley	110	148.3	74.2	61-89
N31	Central South Coast	122	124.2	98.2	82-117
N32	Surrey, West Sussex and Hampshire	43	76.8	56	41-75
N33	Sussex	50	74.0	67.6	50-89
N34	Kent and Medway	68	102.7	66.2	51-84
N35	The Greater Midlands	88	122.0	72.1	58-89
N36	North of England	118	194.8	60.6	50-73
N37	Anglia	138	166.5	82.9	70-98
N38	Essex	56	87.4	64.1	48-83
N39	East Midlands	194	246.6	78.7	68-91

Chronic myeloid leukaemia - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



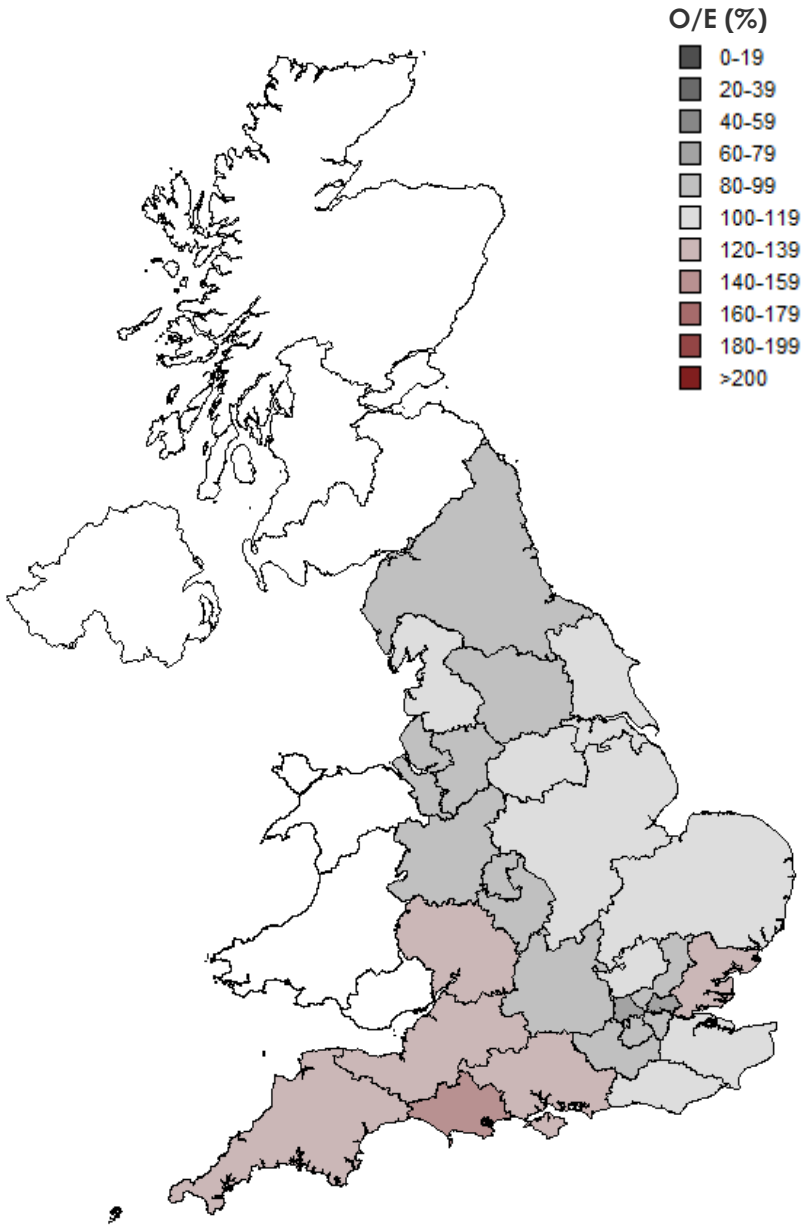
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**541**	**473.0**	**114.4**	**105-124**
N01	Lancashire and South Cumbria	15	14.2	105.4	59-174
N02	Greater Manchester and Cheshire	32	28.7	111.5	76-157
N03	Merseyside and Cheshire	20	19.5	102.8	63-159
N06	Yorkshire	28	24.5	114.3	76-165
N07	Humber and Yorkshire Coast	12	9.8	121.9	63-213
N08	North Trent	22	16.8	131.3	82-199
N11	Pan Birmingham	16	18.0	88.7	51-144
N12	Arden	11	9.3	118.3	59-212
N20	Mount Vernon	13	11.7	111.4	59-191
N21	West London	19	16.9	112.7	68-176
N22	North London	14	14.0	100.2	55-168
N23	North East London	14	14.4	97.1	53-163
N24	South East London	15	14.4	104	58-171
N25	South West London	18	14.6	123.5	73-195
N26	Peninsula	18	15.1	119.4	71-189
N27	Dorset	11	6.6	165.8	83-297
N28	Avon, Somerset and Wiltshire	22	17.3	127.2	80-193
N29	3 Counties	13	9.7	133.5	71-228
N30	Thames Valley	21	21.8	96.3	60-147
N31	Central South Coast	23	18.3	125.9	80-189
N32	Surrey, West Sussex and Hampshire	15	11.3	132.9	74-219
N33	Sussex	12	10.9	110.3	57-193
N34	Kent and Medway	15	15.1	99.3	56-164
N35	The Greater Midlands	16	17.9	89.2	51-145
N36	North of England	28	28.7	97.7	65-141
N37	Anglia	34	24.5	138.9	96-194
N38	Essex	14	12.8	109	60-183
N39	East Midlands	36	36.3	99.3	70-137

Hodgkin lymphoma - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



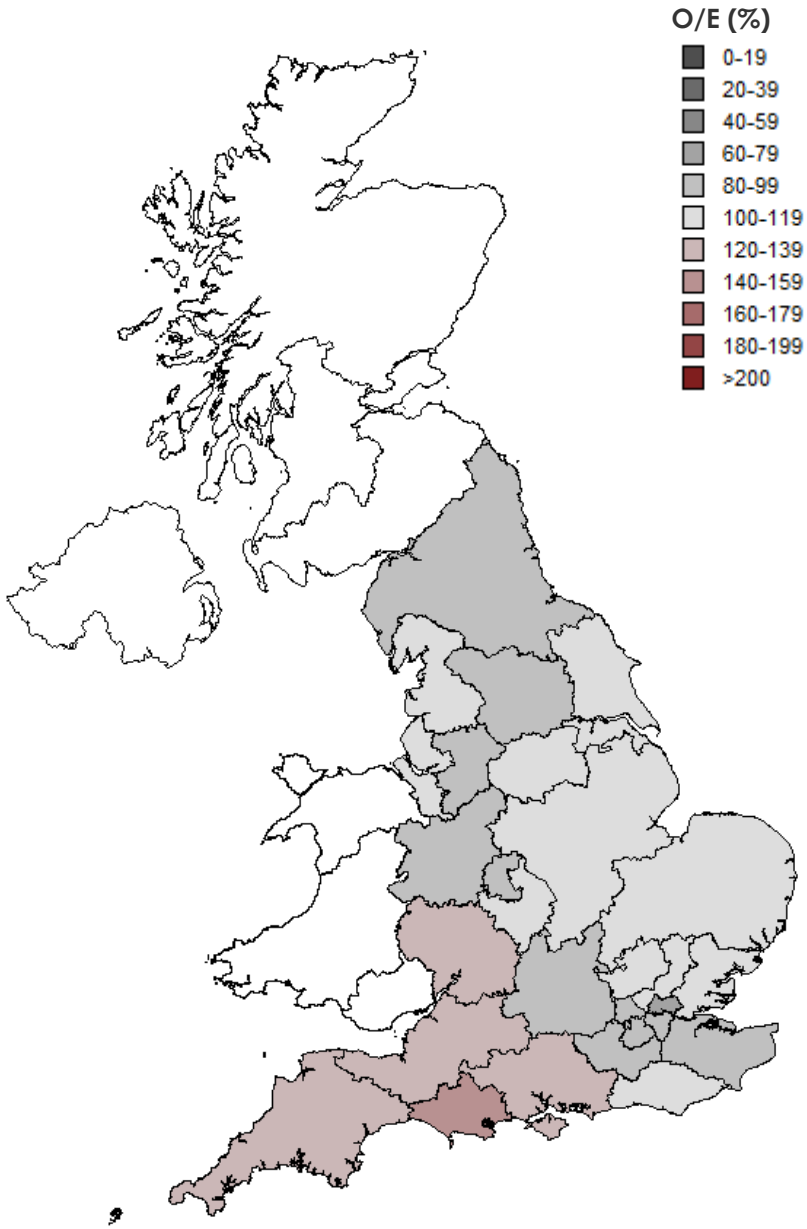
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**1416**	**1486.0**	**95.3**	**90-100**
N01	Lancashire and South Cumbria	41	44.7	91.7	66-124
N02	Greater Manchester and Cheshire	81	90.2	89.8	71-112
N03	Merseyside and Cheshire	47	61.1	76.9	57-102
N06	Yorkshire	74	77.0	96.1	75-121
N07	Humber and Yorkshire Coast	27	30.9	87.3	58-127
N08	North Trent	45	52.6	85.5	62-114
N11	Pan Birmingham	55	56.7	97.1	73-126
N12	Arden	23	29.2	78.7	50-118
N20	Mount Vernon	42	36.7	114.6	83-155
N21	West London	45	53.0	85	62-114
N22	North London	47	43.9	107.1	79-142
N23	North East London	40	45.3	88.3	63-120
N24	South East London	39	45.3	86.1	61-118
N25	South West London	41	45.8	89.6	64-122
N26	Peninsula	45	47.4	95	69-127
N27	Dorset	21	20.8	100.7	62-154
N28	Avon, Somerset and Wiltshire	54	54.3	99.4	75-130
N29	3 Counties	31	30.6	101.3	69-144
N30	Thames Valley	74	68.5	108	85-136
N31	Central South Coast	59	57.4	102.8	78-133
N32	Surrey, West Sussex and Hampshire	33	35.5	93.1	64-131
N33	Sussex	31	34.2	90.7	62-129
N34	Kent and Medway	45	47.5	94.8	69-127
N35	The Greater Midlands	43	56.4	76.3	55-103
N36	North of England	77	90.0	85.6	68-107
N37	Anglia	87	76.9	113.1	91-140
N38	Essex	39	40.4	96.6	69-132
N39	East Midlands	116	113.9	101.8	84-122

Non-Hodgkin lymphoma - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



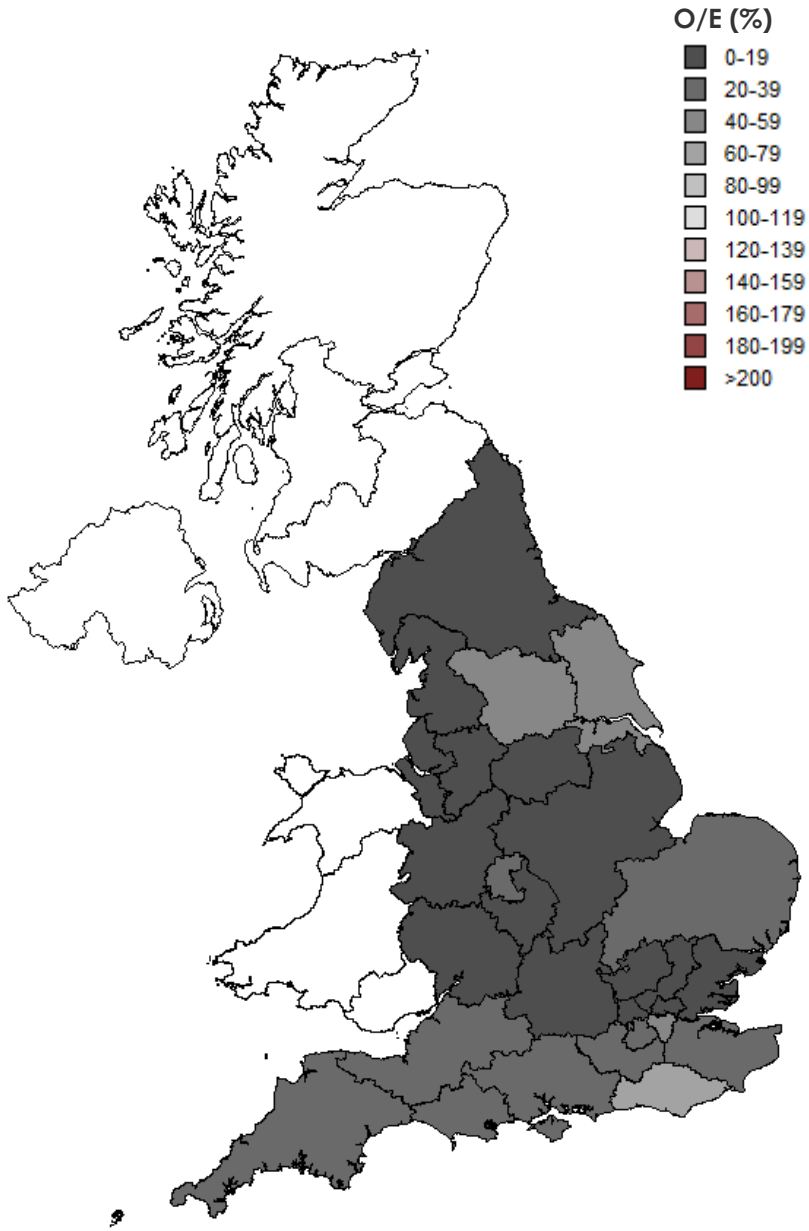
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**9422**	**9176.9**	**102.7**	**101-105**
N01	Lancashire and South Cumbria	278	276.0	100.7	89-113
N02	Greater Manchester and Cheshire	471	557.0	84.6	77-93
N03	Merseyside and Cheshire	376	377.4	99.6	90-110
N06	Yorkshire	421	475.3	88.6	80-97
N07	Humber and Yorkshire Coast	213	191.0	111.5	97-128
N08	North Trent	358	325.1	110.1	99-122
N11	Pan Birmingham	298	349.9	85.2	76-95
N12	Arden	173	180.4	95.9	82-111
N20	Mount Vernon	247	226.3	109.1	96-124
N21	West London	247	327.1	75.5	66-86
N22	North London	262	271.0	96.7	85-109
N23	North East London	217	279.7	77.6	68-89
N24	South East London	239	279.9	85.4	75-97
N25	South West London	245	282.6	86.7	76-98
N26	Peninsula	395	292.4	135.1	122-149
N27	Dorset	193	128.7	149.9	130-173
N28	Avon, Somerset and Wiltshire	426	335.5	127	115-140
N29	3 Counties	229	188.9	121.2	106-138
N30	Thames Valley	420	423.2	99.2	90-109
N31	Central South Coast	451	354.5	127.2	116-140
N32	Surrey, West Sussex and Hampshire	208	219.0	95	83-109
N33	Sussex	236	211.0	111.8	98-127
N34	Kent and Medway	302	293.1	103	92-115
N35	The Greater Midlands	313	348.0	89.9	80-100
N36	North of England	506	555.8	91	83-99
N37	Anglia	551	475.0	116	107-126
N38	Essex	302	249.3	121.2	108-136
N39	East Midlands	803	703.6	114.1	106-122

Myeloma - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



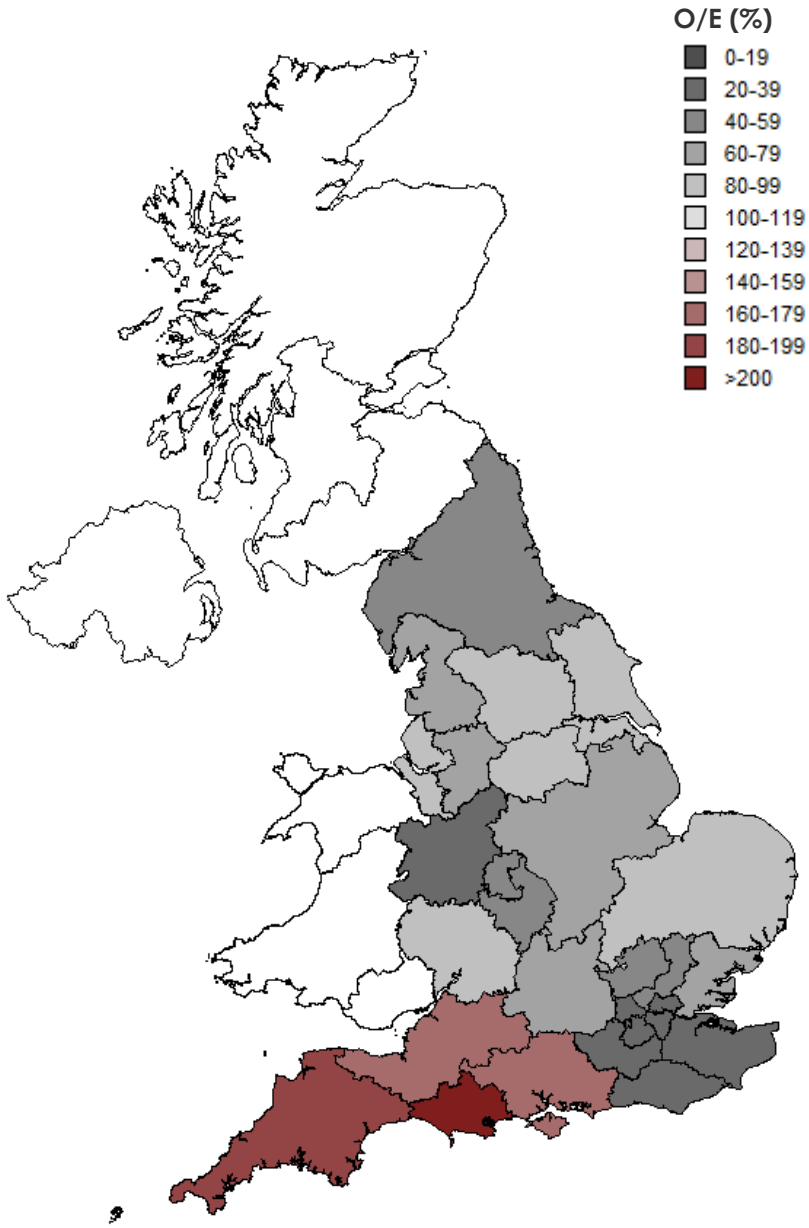
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**3641**	**3500.5**	**104**	**101-107**
N01	Lancashire and South Cumbria	107	105.3	101.6	83-123
N02	Greater Manchester and Cheshire	176	212.5	82.8	71-96
N03	Merseyside and Cheshire	154	144.0	107	91-125
N06	Yorkshire	163	181.3	89.9	77-105
N07	Humber and Yorkshire Coast	87	72.9	119.4	96-147
N08	North Trent	145	124.0	116.9	99-138
N11	Pan Birmingham	114	133.5	85.4	70-103
N12	Arden	77	68.8	111.9	88-140
N20	Mount Vernon	87	86.3	100.8	81-124
N21	West London	111	124.8	89	73-107
N22	North London	111	103.4	107.4	88-129
N23	North East London	74	106.7	69.4	54-87
N24	South East London	95	106.8	89	72-109
N25	South West London	98	107.8	90.9	74-111
N26	Peninsula	150	111.5	134.5	114-158
N27	Dorset	72	49.1	146.6	115-185
N28	Avon, Somerset and Wiltshire	176	128.0	137.5	118-159
N29	3 Counties	94	72.1	130.4	105-160
N30	Thames Valley	161	161.4	99.7	85-116
N31	Central South Coast	163	135.2	120.6	103-141
N32	Surrey, West Sussex and Hampshire	78	83.5	93.4	74-117
N33	Sussex	96	80.5	119.3	97-146
N34	Kent and Medway	105	111.8	93.9	77-114
N35	The Greater Midlands	109	132.7	82.1	67-99
N36	North of England	204	212.0	96.2	83-110
N37	Anglia	203	181.2	112.1	97-129
N38	Essex	111	95.1	116.7	96-141
N39	East Midlands	299	268.4	111.4	99-125

Monoclonal gammopathy of undetermined significance - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



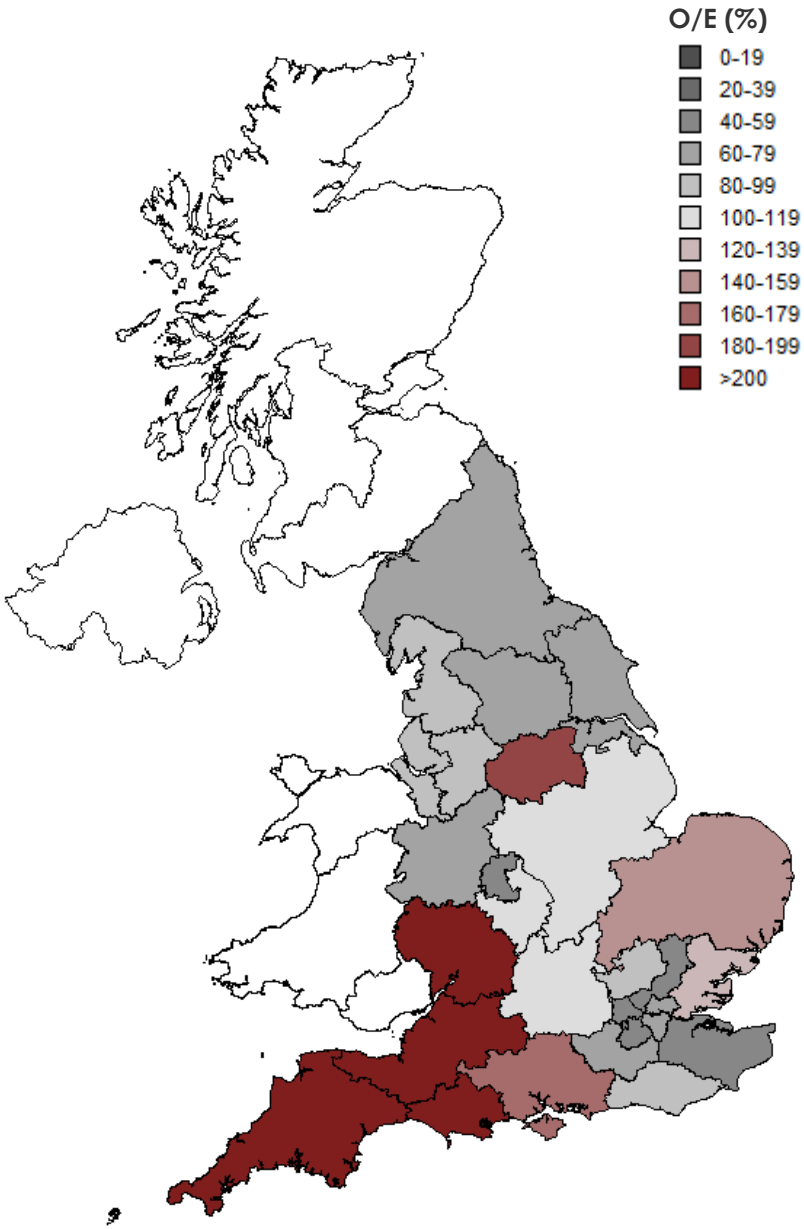
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**625**	**3189.0**	**19.6**	**18-21**
N01	Lancashire and South Cumbria	2	95.9	2.1	0-8
N02	Greater Manchester and Cheshire	4	193.6	2.1	1-5
N03	Merseyside and Cheshire	4	131.2	3	1-8
N06	Yorkshire	83	165.2	50.3	40-62
N07	Humber and Yorkshire Coast	38	66.4	57.2	41-79
N08	North Trent	5	113.0	4.4	1-10
N11	Pan Birmingham	28	121.6	23	15-33
N12	Arden	12	62.7	19.1	10-33
N20	Mount Vernon	7	78.7	8.9	4-18
N21	West London	7	113.7	6.2	2-13
N22	North London	7	94.2	7.4	3-15
N23	North East London	8	97.2	8.2	4-16
N24	South East London	55	97.3	56.6	43-74
N25	South West London	27	98.2	27.5	18-40
N26	Peninsula	24	101.6	23.6	15-35
N27	Dorset	14	44.7	31.3	17-53
N28	Avon, Somerset and Wiltshire	34	116.6	29.2	20-41
N29	3 Counties	6	65.7	9.1	3-20
N30	Thames Valley	18	147.1	12.2	7-19
N31	Central South Coast	26	123.2	21.1	14-31
N32	Surrey, West Sussex and Hampshire	16	76.1	21	12-34
N33	Sussex	51	73.3	69.5	52-91
N34	Kent and Medway	28	101.9	27.5	18-40
N35	The Greater Midlands	24	120.9	19.8	13-30
N36	North of England	20	193.1	10.4	6-16
N37	Anglia	40	165.0	24.2	17-33
N38	Essex	12	86.6	13.9	7-24
N39	East Midlands	11	244.5	4.5	2-8

Myeloproliferative neoplasms - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**2195**	**2762.1**	**79.5**	**76-83**
N01	Lancashire and South Cumbria	52	83.1	62.6	47-82
N02	Greater Manchester and Cheshire	107	167.6	63.8	52-77
N03	Merseyside and Cheshire	107	113.6	94.2	77-114
N06	Yorkshire	146	143.1	102.1	86-120
N07	Humber and Yorkshire Coast	60	57.5	104.4	80-134
N08	North Trent	93	97.8	95	77-116
N11	Pan Birmingham	56	105.3	53.2	40-69
N12	Arden	38	54.3	70	50-96
N20	Mount Vernon	42	68.1	61.7	44-83
N21	West London	39	98.4	39.6	28-54
N22	North London	33	81.6	40.5	28-57
N23	North East London	19	84.2	22.6	14-35
N24	South East London	22	84.2	26.1	16-40
N25	South West London	24	85.1	28.2	18-42
N26	Peninsula	175	88.0	198.8	170-231
N27	Dorset	120	38.7	309.7	257-370
N28	Avon, Somerset and Wiltshire	178	101.0	176.3	151-204
N29	3 Counties	51	56.9	89.7	67-118
N30	Thames Valley	98	127.4	76.9	62-94
N31	Central South Coast	179	106.7	167.8	144-194
N32	Surrey, West Sussex and Hampshire	26	65.9	39.4	26-58
N33	Sussex	23	63.5	36.2	23-54
N34	Kent and Medway	26	88.2	29.5	19-43
N35	The Greater Midlands	49	104.7	46.8	35-62
N36	North of England	81	167.3	48.4	38-60
N37	Anglia	139	143.0	97.2	82-115
N38	Essex	61	75.0	81.3	62-104
N39	East Midlands	133	211.8	62.8	53-74

Myelodysplastic syndromes - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)



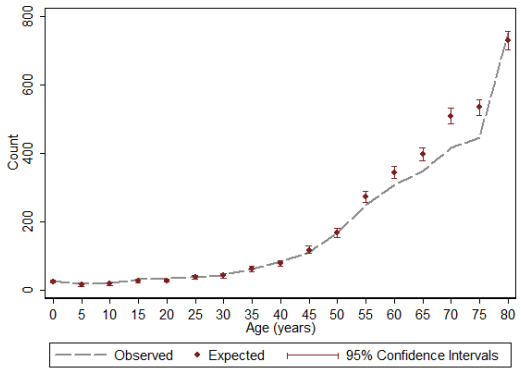
Code	Cancer Network	Observed	Expected	O/E (%)	95% CI
	Total	**2193**	**1887.5**	**116.2**	**111-121**
N01	Lancashire and South Cumbria	53	56.8	93.4	70-122
N02	Greater Manchester and Cheshire	114	114.6	99.5	82-120
N03	Merseyside and Cheshire	70	77.6	90.2	70-114
N06	Yorkshire	92	97.8	94.1	76-115
N07	Humber and Yorkshire Coast	39	39.3	99.3	71-136
N08	North Trent	124	66.9	185.4	154-221
N11	Pan Birmingham	50	72.0	69.5	52-92
N12	Arden	47	37.1	126.6	93-168
N20	Mount Vernon	44	46.6	94.5	69-127
N21	West London	32	67.3	47.6	33-67
N22	North London	27	55.7	48.4	32-70
N23	North East London	38	57.5	66	47-91
N24	South East London	36	57.6	62.5	44-87
N25	South West London	28	58.1	48.2	32-70
N26	Peninsula	167	60.1	277.7	237-323
N27	Dorset	84	26.5	317.3	253-393
N28	Avon, Somerset and Wiltshire	161	69.0	233.3	199-272
N29	3 Counties	82	38.9	211	168-262
N30	Thames Valley	91	87.0	104.5	84-128
N31	Central South Coast	127	72.9	174.2	145-207
N32	Surrey, West Sussex and Hampshire	36	45.0	79.9	56-111
N33	Sussex	43	43.4	99.1	72-133
N34	Kent and Medway	35	60.3	58.1	40-81
N35	The Greater Midlands	60	71.6	83.8	64-108
N36	North of England	108	114.3	94.5	77-114
N37	Anglia	141	97.7	144.3	121-170
N38	Essex	72	51.3	140.4	110-177
N39	East Midlands	173	144.7	119.5	102-139

Annex 4

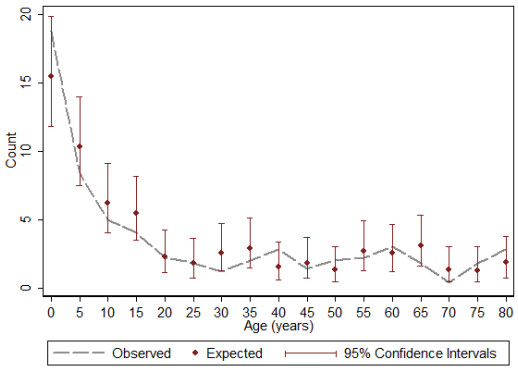
Annual observed and expected stratified by age based on HMRN rates (Cancer Registry, Figures)

Eastern Cancer Registration and Information Centre (ECRIC) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

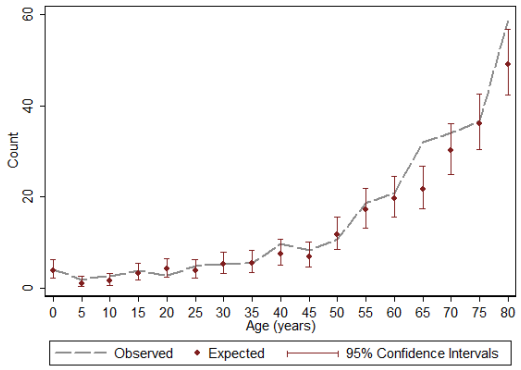
Total haematological malignancies - Persons
All ages: O/E = 95.1% (CI: 92-98)



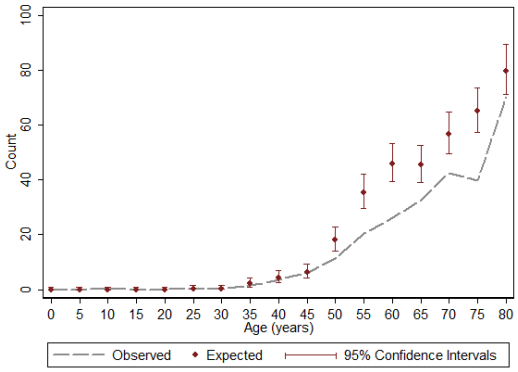
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 94.0% (CI: 72-121)



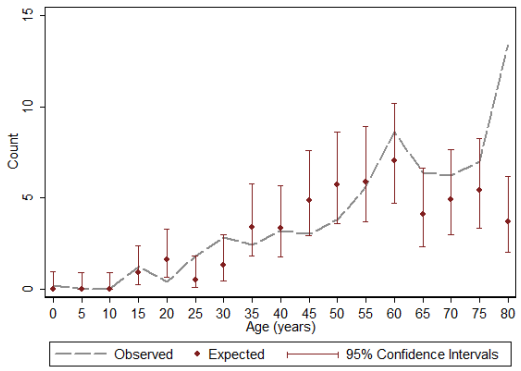
Acute myeloid leukaemia - Persons
All ages: O/E = 116.4% (CI: 103-131)



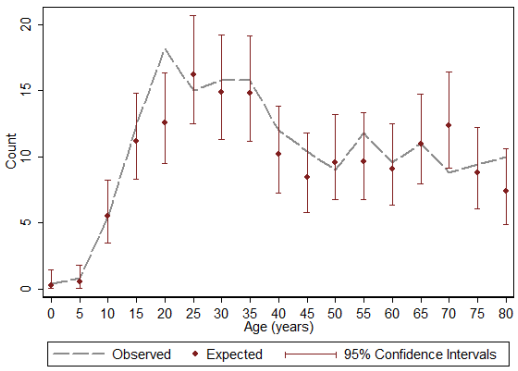
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 72.7% (CI: 64-82)



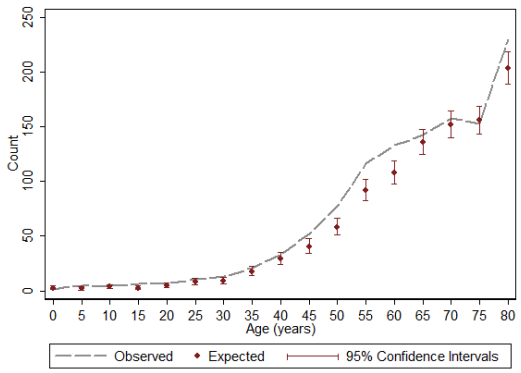
Chronic myeloid leukaemia - Persons
All ages: O/E = 128.0% (CI: 99-163)



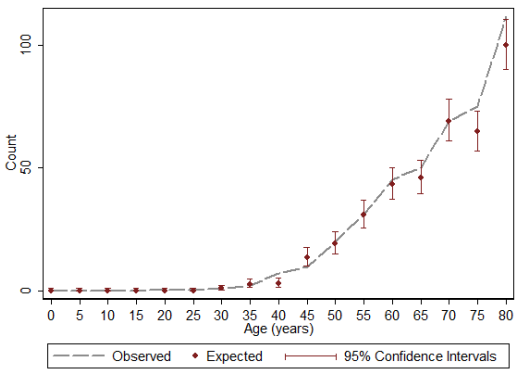
Hodgkin lymphoma - Persons
All ages: O/E = 108.0% (CI: 93-125)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 116.3% (CI: 110-123)

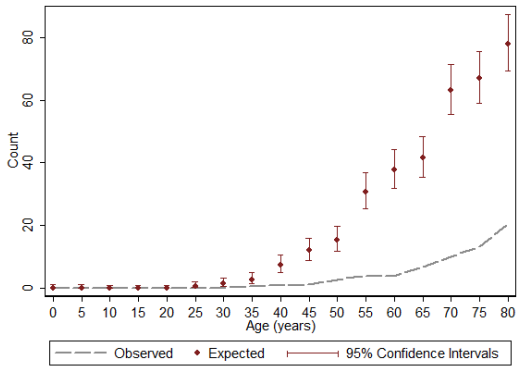


Myeloma - Persons
All ages: O/E = 110.3% (CI: 100-121)

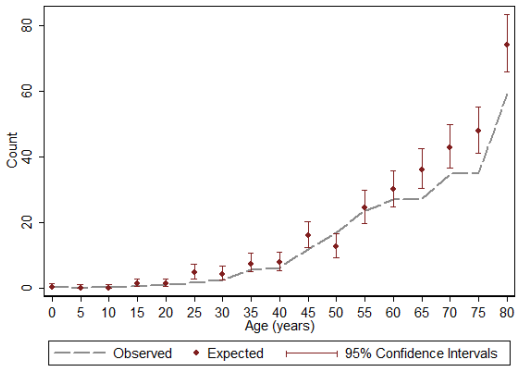


Eastern Cancer Registration and Information Centre (ECRIC) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

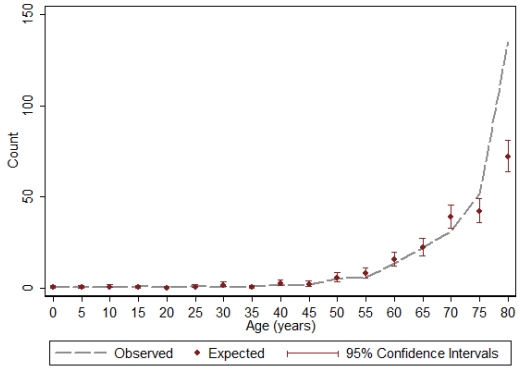
MGUS - Persons
All ages: O/E = 17.8% (CI: 14-23)



Myeloproliferative neoplasms - Persons
All ages: O/E = 83.7% (CI: 74-95)

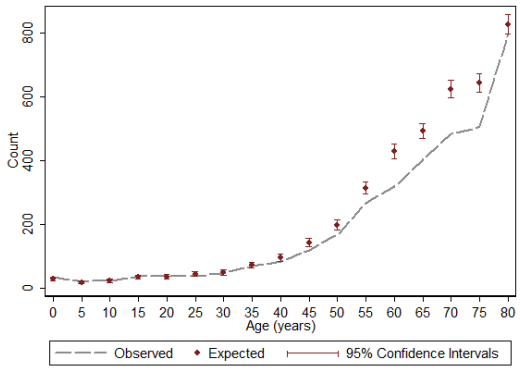


Myelodysplastic syndromes - Persons
All ages: O/E = 130.8% (CI: 116-147)

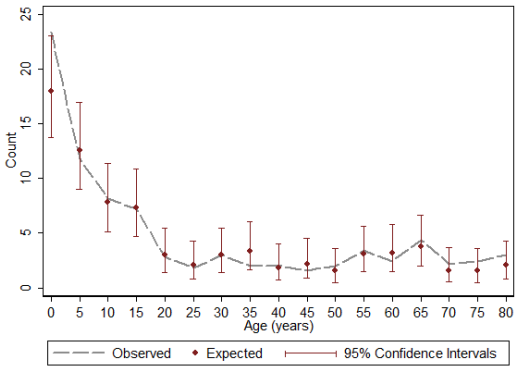


Northern and Yorkshire Cancer Registration and Information Service (NYCRIS) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

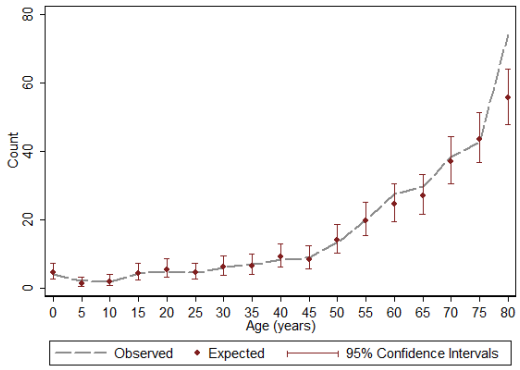
Total haematological malignancies - Persons
All ages: O/E = 85.8% (CI: 83-89)



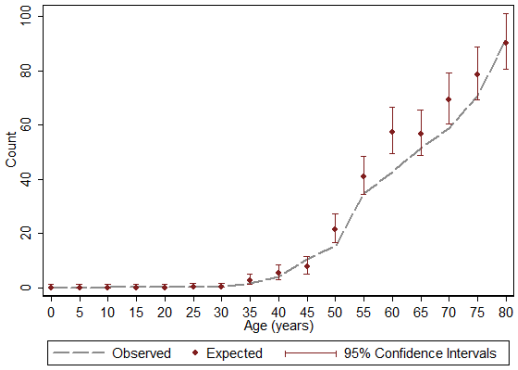
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 105.6% (CI: 84-131)



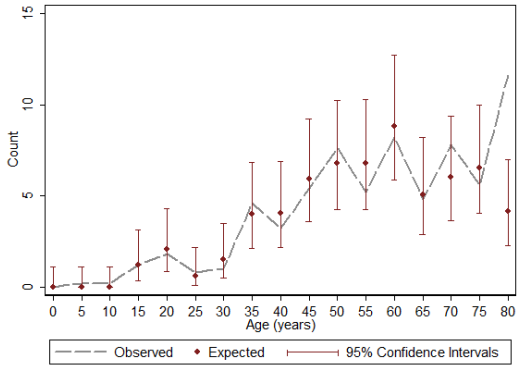
Acute myeloid leukaemia - Persons
All ages: O/E = 109.8% (CI: 98-123)



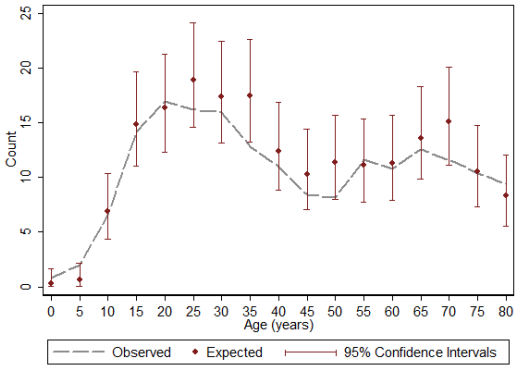
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 90.0% (CI: 81-99)



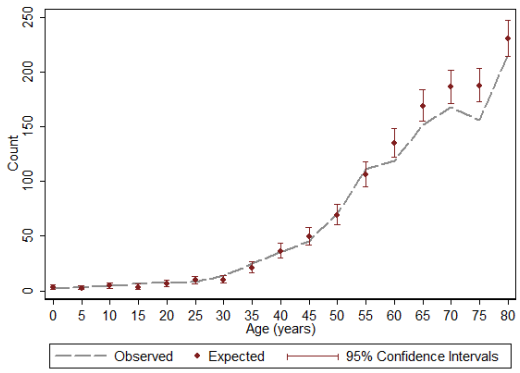
Chronic myeloid leukaemia - Persons
All ages: O/E = 110.5% (CI: 86-140)



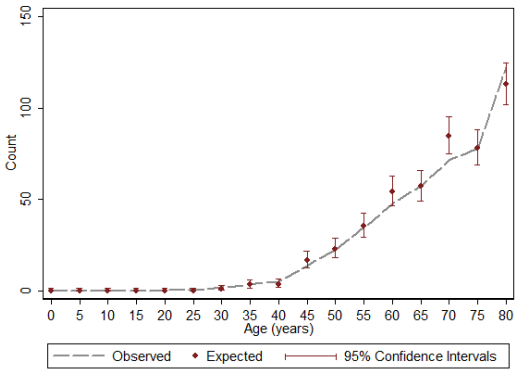
Hodgkin lymphoma - Persons
All ages: O/E = 91.3% (CI: 78-106)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 94.5% (CI: 89-100)

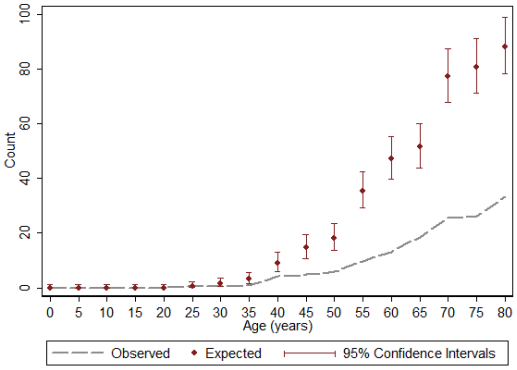


Myeloma - Persons
All ages: O/E = 98.7% (CI: 90-108)

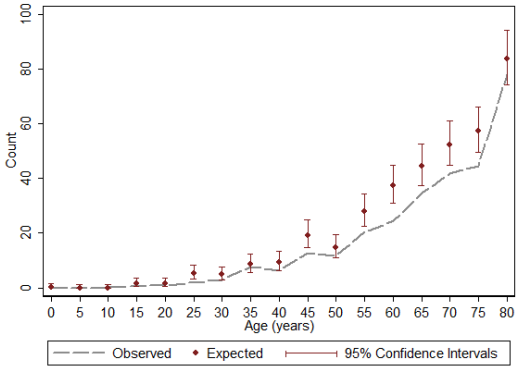


Northern and Yorkshire Cancer Registration and Information Service (NYCRIS) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

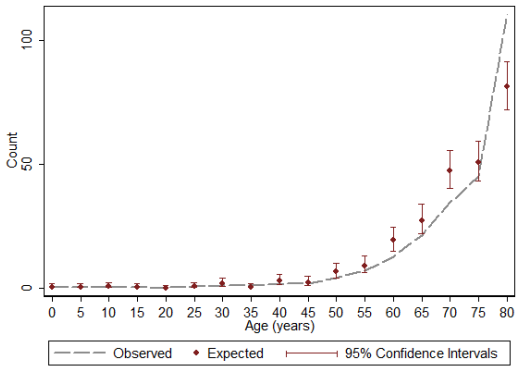
MGUS - Persons
All ages: O/E = 34.0% (CI: 29-40)



Myeloproliferative neoplasms - Persons
All ages: O/E = 79.0% (CI: 70-89)

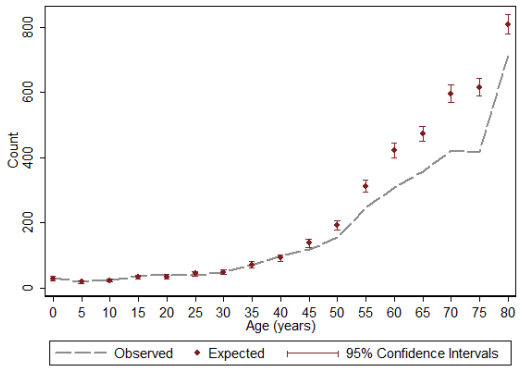


Myelodysplastic syndromes - Persons
All ages: O/E = 96.3% (CI: 85-109)

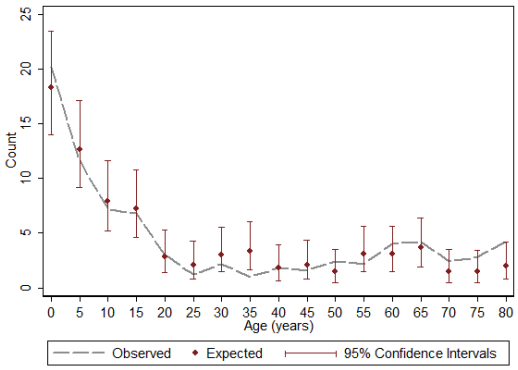


North West Cancer Intelligence Service (NWCIS) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

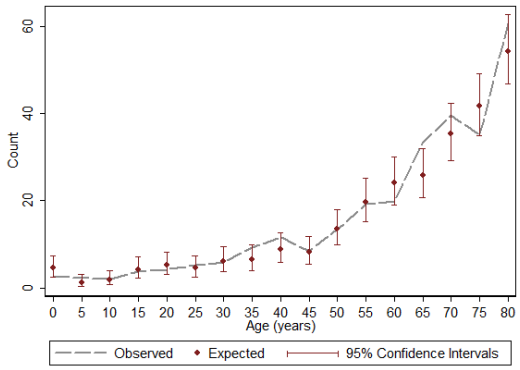
Total haematological malignancies - Persons
All ages: O/E = 79.1% (CI: 76-82)



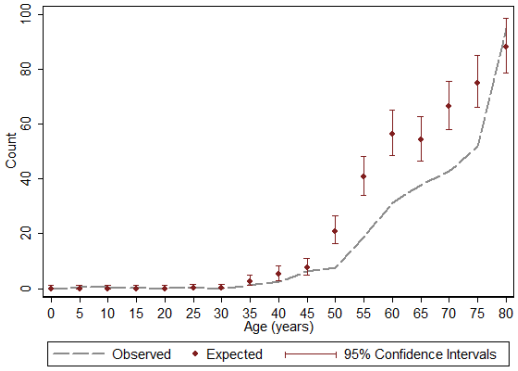
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 100.5% (CI: 79-125)



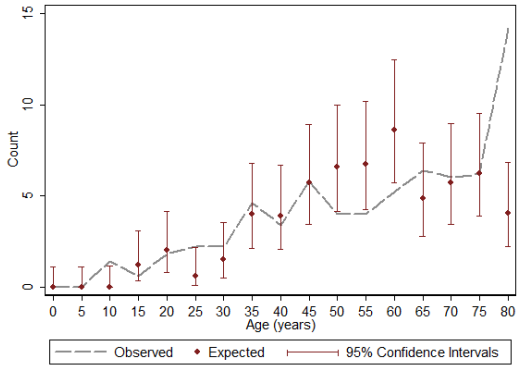
Acute myeloid leukaemia - Persons
All ages: O/E = 103.6% (CI: 92-117)



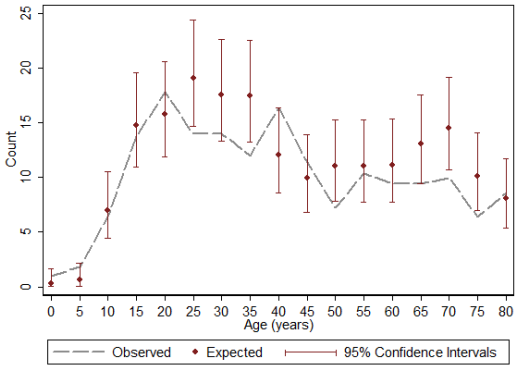
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 70.6% (CI: 63-79)



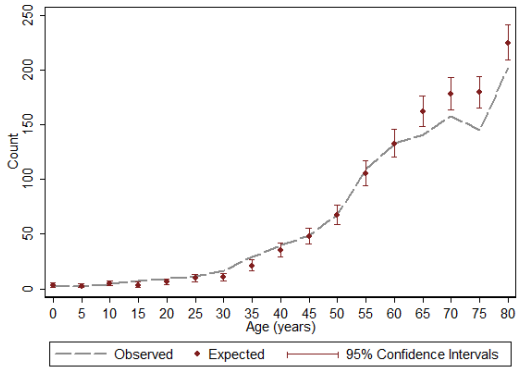
Chronic myeloid leukaemia - Persons
All ages: O/E = 110.2% (CI: 86-140)



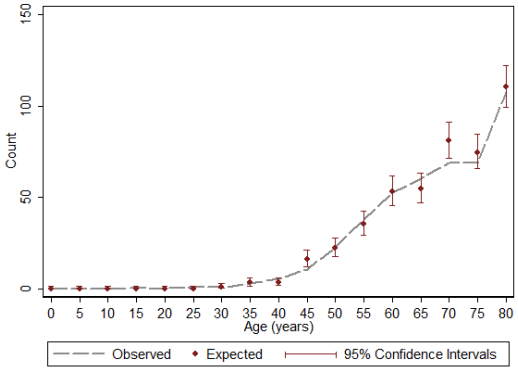
Hodgkin lymphoma - Persons
All ages: O/E = 87.7% (CI: 75-102)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 94.0% (CI: 89-100)

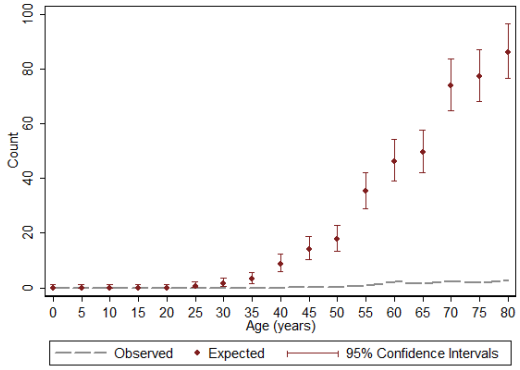


Myeloma - Persons
All ages: O/E = 95.9% (CI: 87-105)

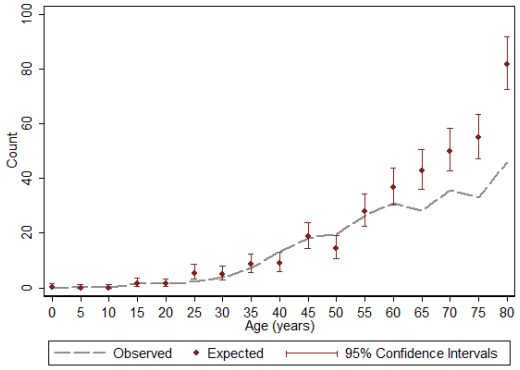


North West Cancer Intelligence Service (NWCIS) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

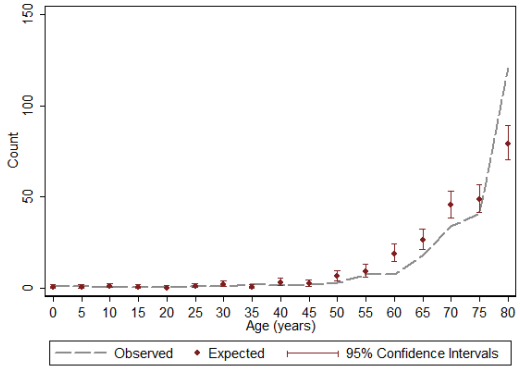
MGUS - Persons
All ages: O/E = 2.9% (CI: 1-5)



Myeloproliferative neoplasms - Persons
All ages: O/E = 74.1% (CI: 65-84)

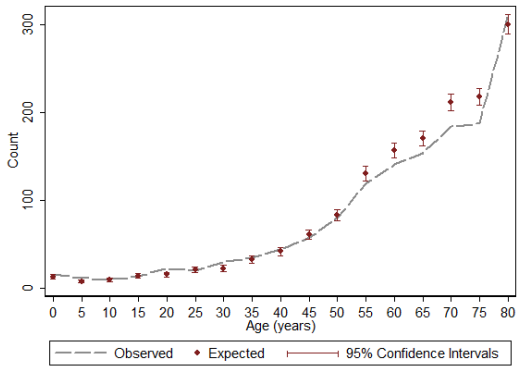


Myelodysplastic syndromes - Persons
All ages: O/E = 97.1% (CI: 85-110)

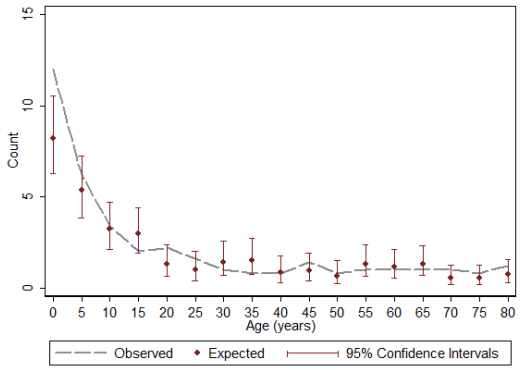


Oxford Cancer Intelligence Unit (OCIU) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

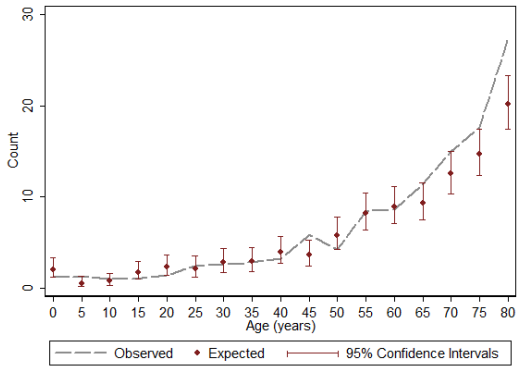
Total haematological malignancies - Persons
All ages: O/E = 85.6% (CI: 81-90)



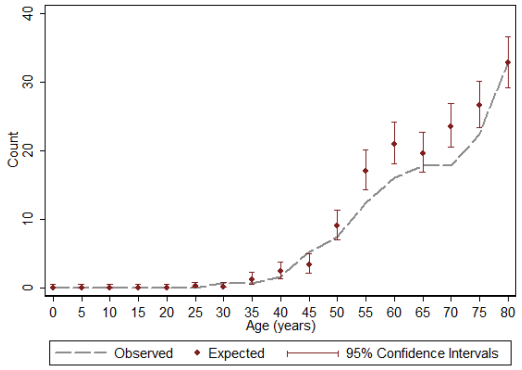
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 116.0% (CI: 82-159)



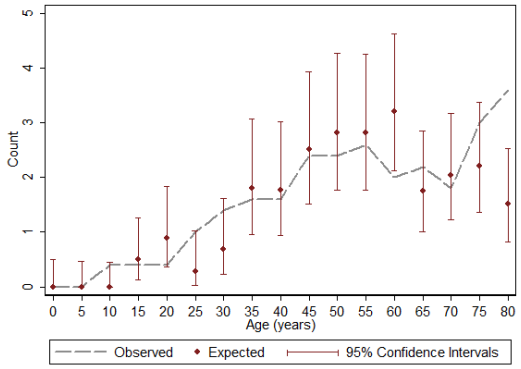
Acute myeloid leukaemia - Persons
All ages: O/E = 102.3% (CI: 84-123)



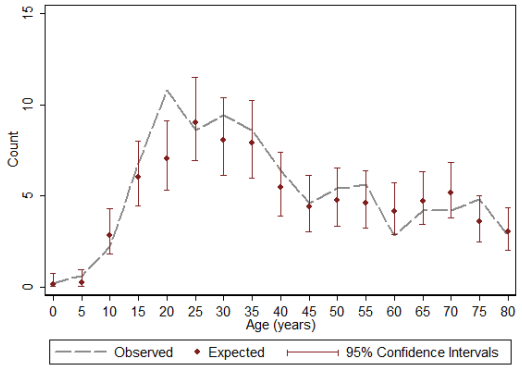
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 75.7% (CI: 63-90)



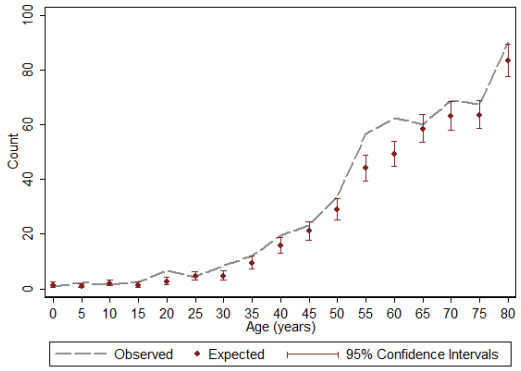
Chronic myeloid leukaemia - Persons
All ages: O/E = 99.9% (CI: 65-146)



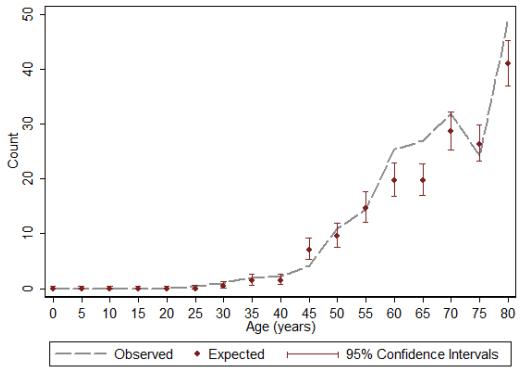
Hodgkin lymphoma - Persons
All ages: O/E = 107.6% (CI: 86-133)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 103.3% (CI: 95-113)

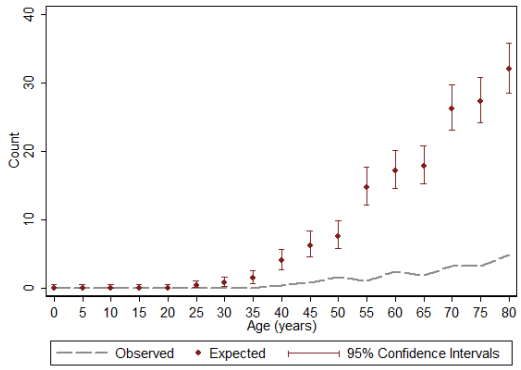


Myeloma - Persons
All ages: O/E = 99.7% (CI: 86-115)

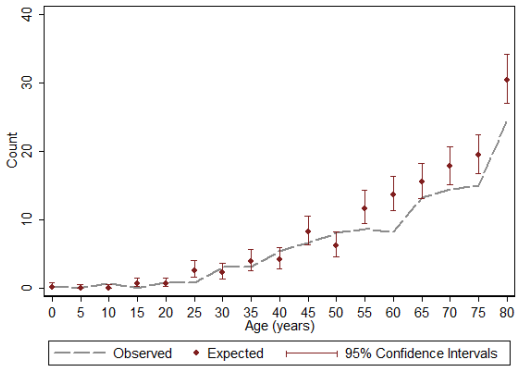


Oxford Cancer Intelligence Unit (OCIU) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

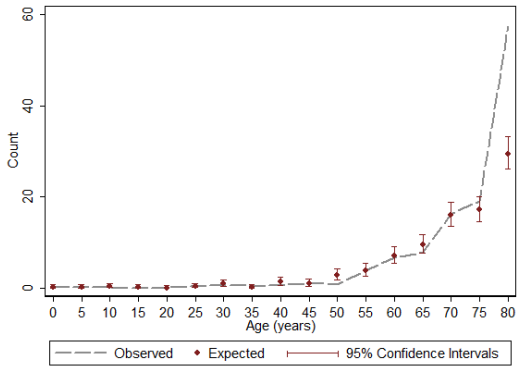
MGUS - Persons
All ages: O/E = 10.8% (CI: 7-17)



Myeloproliferative neoplasms - Persons
All ages: O/E = 73.7% (CI: 61-89)

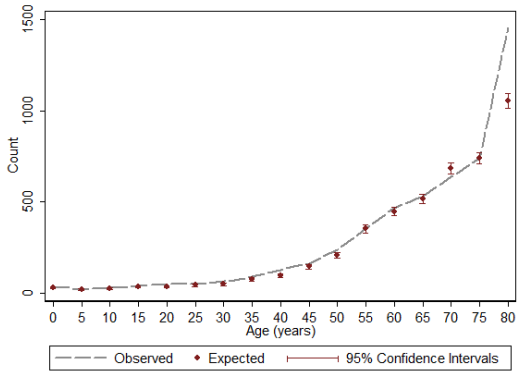


Myelodysplastic syndromes - Persons
All ages: O/E = 110.7% (CI: 91-133)

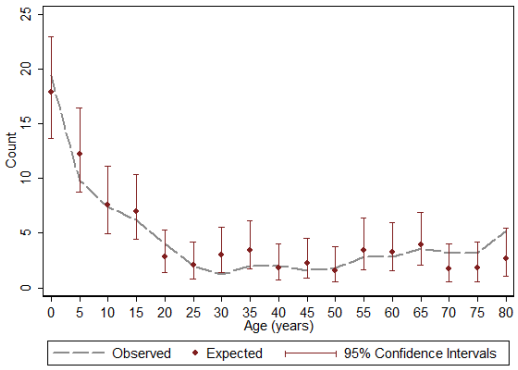


South West Cancer Intelligence Service (SWCIS) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

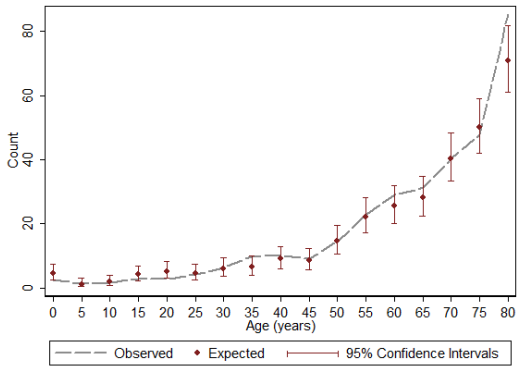
Total haematological malignancies - Persons
All ages: O/E = 123% (CI: 120-126)



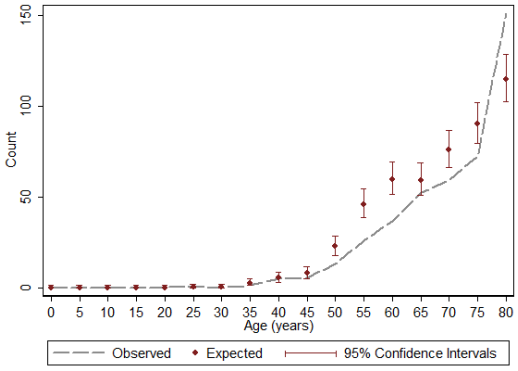
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 96.6% (CI: 76-121)



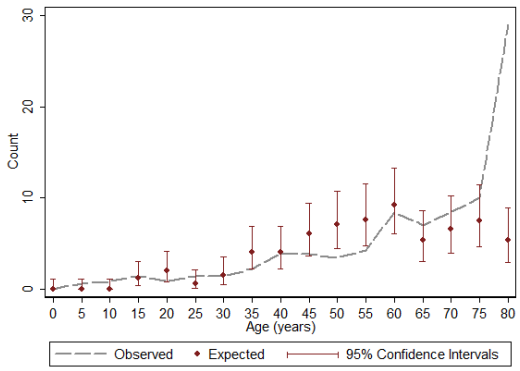
Acute myeloid leukaemia - Persons
All ages: O/E = 115.5% (CI: 103-129)



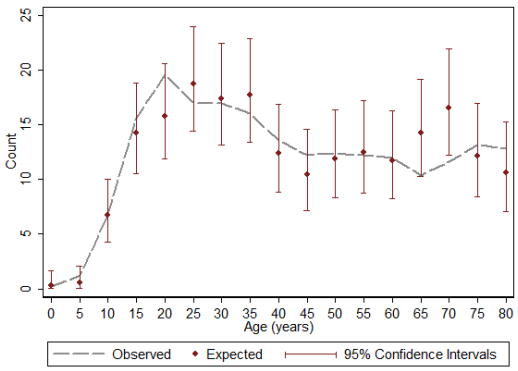
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 96.7% (CI: 88-106)



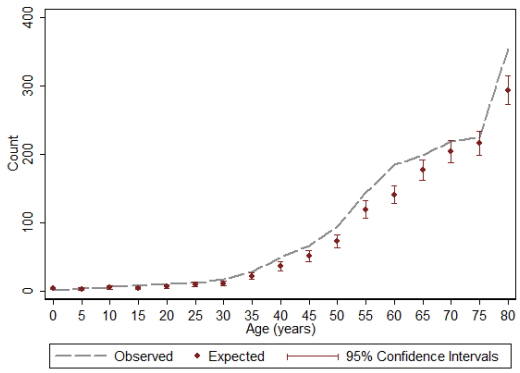
Chronic myeloid leukaemia - Persons
All ages: O/E = 134.0% (CI: 107-166)



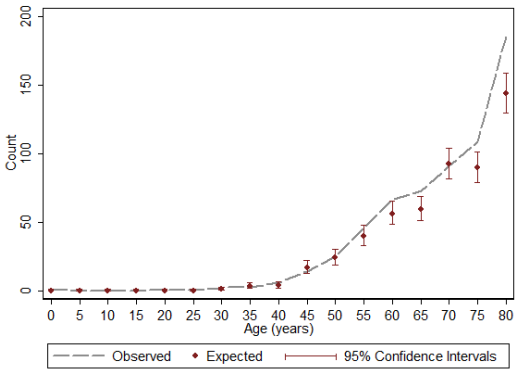
Hodgkin lymphoma - Persons
All ages: O/E = 100.7% (CI: 87-116)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 129.9% (CI: 124-136)

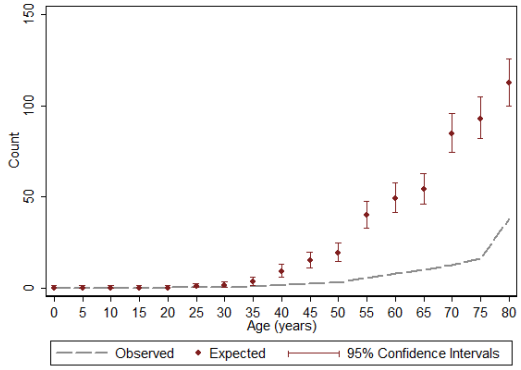


Myeloma - Persons
All ages: O/E = 130.6% (CI: 121-141)

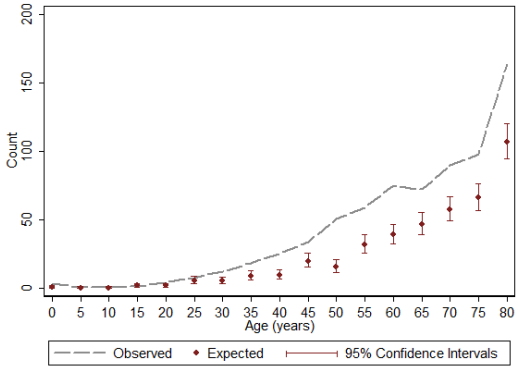


South West Cancer Intelligence Service (SWCIS) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

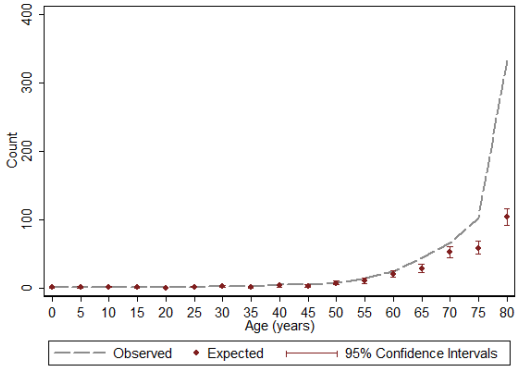
MGUS - Persons
All ages: O/E = 22.4% (CI: 18-27)



Myeloproliferative neoplasms - Persons
All ages: O/E = 190.1% (CI: 176-205)

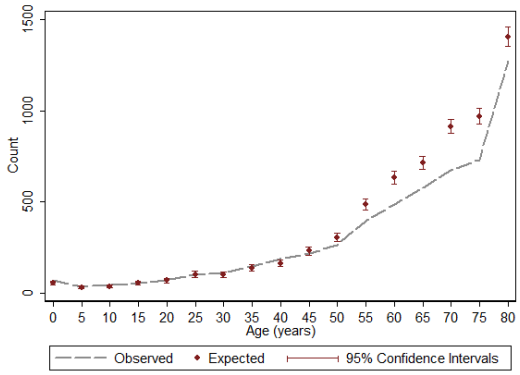


Myelodysplastic syndromes - Persons
All ages: O/E = 238.3% (CI: 220-258)

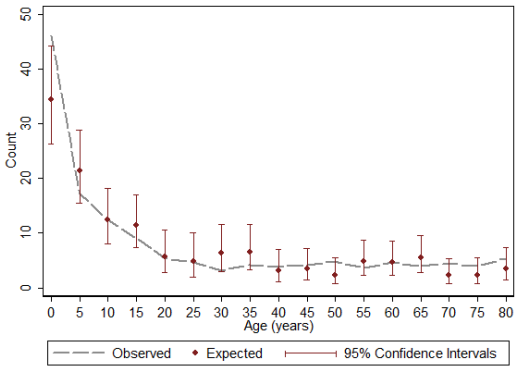


Thames Cancer Registry (TCR) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

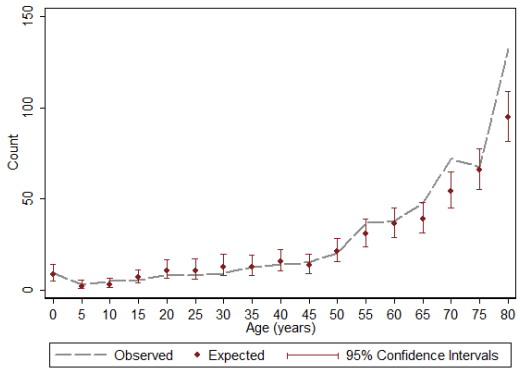
Total haematological malignancies - Persons
All ages: O/E = 78.2% (CI: 76-80)



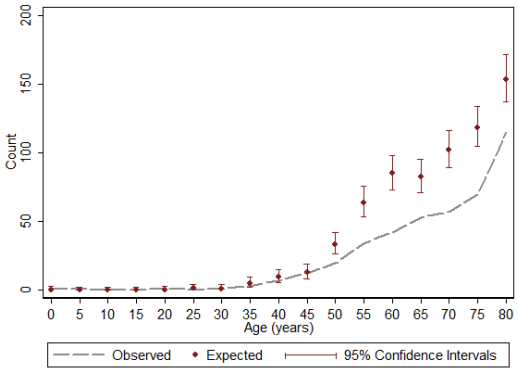
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 103.6% (CI: 87-122)



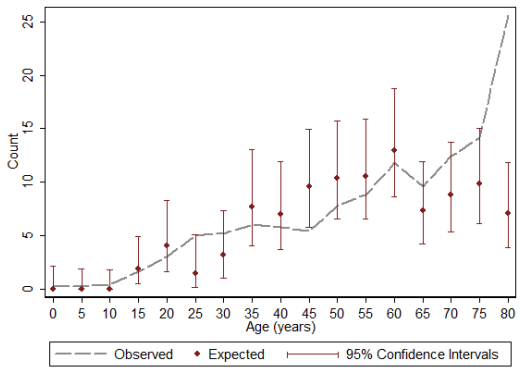
Acute myeloid leukaemia - Persons
All ages: O/E = 107.5% (CI: 98-117)



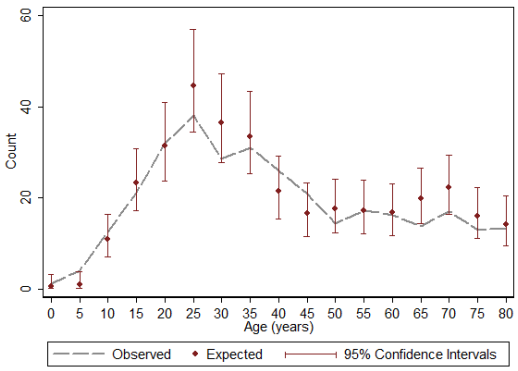
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 55.9% (CI: 51-62)



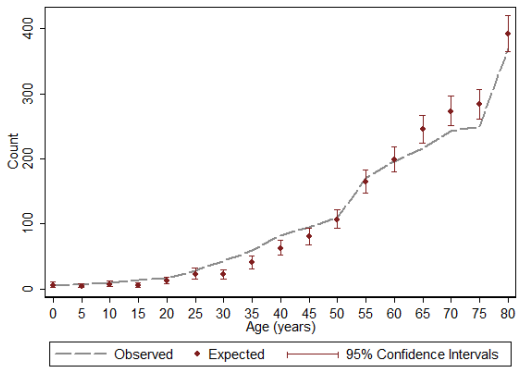
Chronic myeloid leukaemia - Persons
All ages: O/E = 113.7% (CI: 95-136)



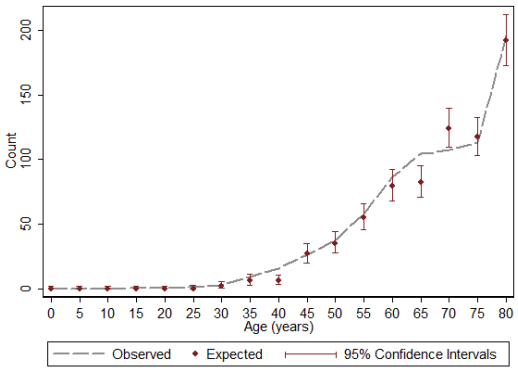
Hodgkin lymphoma - Persons
All ages: O/E = 94-2% (CI: 84-105)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 91.1% (CI: 87-95)

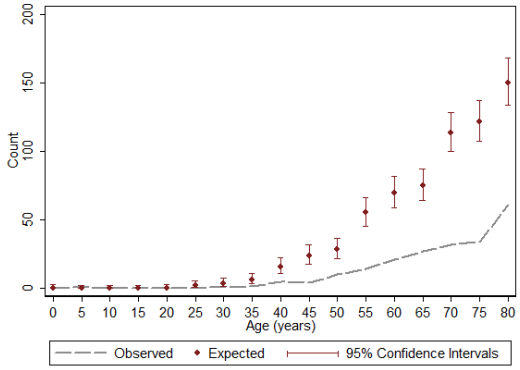


Myeloma - Persons
All ages: O/E = 94.7% (CI: 88-102)

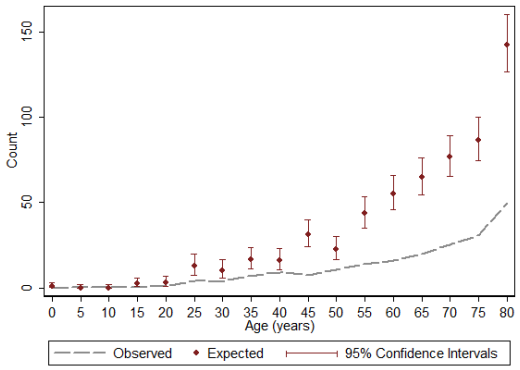


Thames Cancer Registry (TCR) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

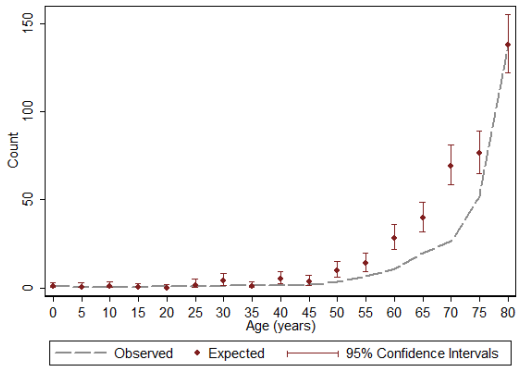
MGUS - Persons
All ages: O/E = 28.3% (CI: 25-32)



Myeloproliferative neoplasms - Persons
All ages: O/E = 31.5% (CI: 27-36)

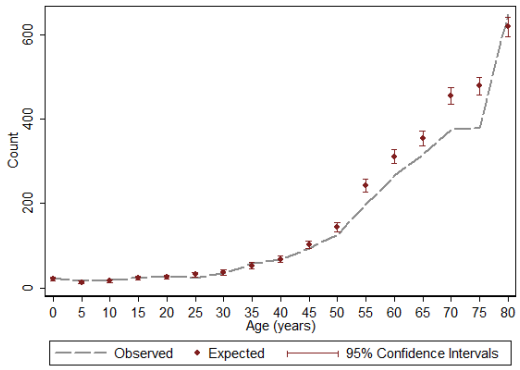


Myelodysplastic syndromes - Persons
All ages: O/E = 61.6% (CI: 54-70)

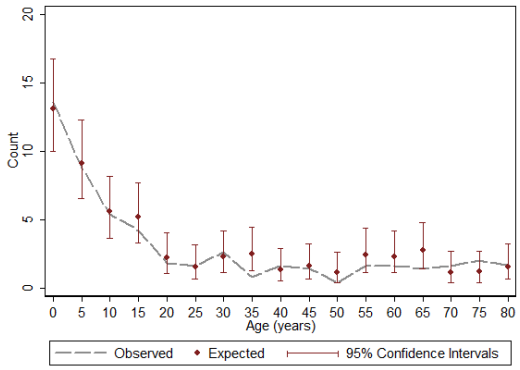


Trent Cancer Registry (TrCR) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

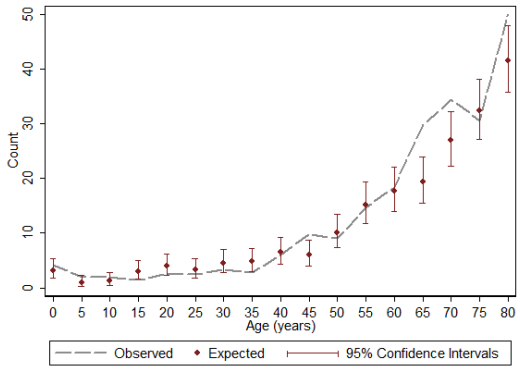
Total haematological malignancies - Persons
All ages: O/E = 91.8% (CI: 88-95)



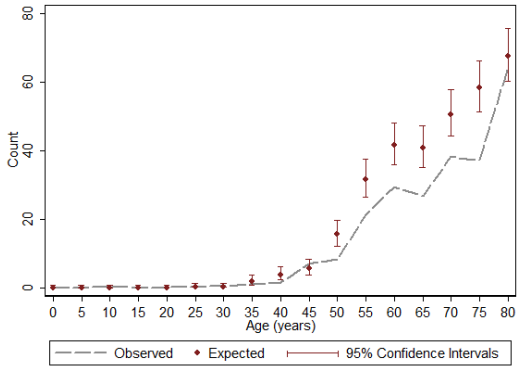
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 90.4% (CI: 68-119)



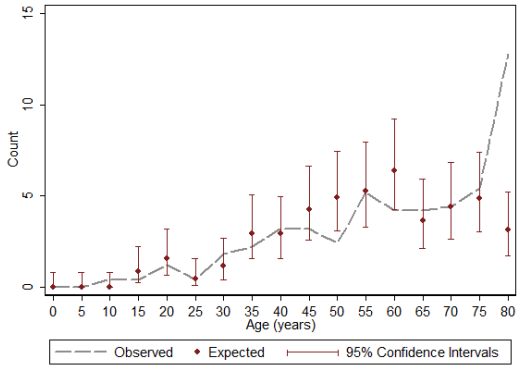
Acute myeloid leukaemia - Persons
All ages: O/E = 113.0% (CI: 99-129)



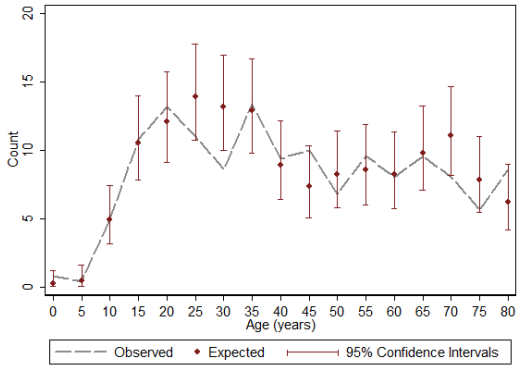
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 75.6% (CI: 66-86)



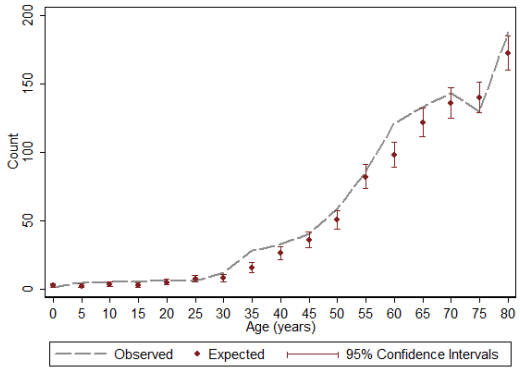
Chronic myeloid leukaemia - Persons
All ages: O/E = 111.6% (CI: 83-147)



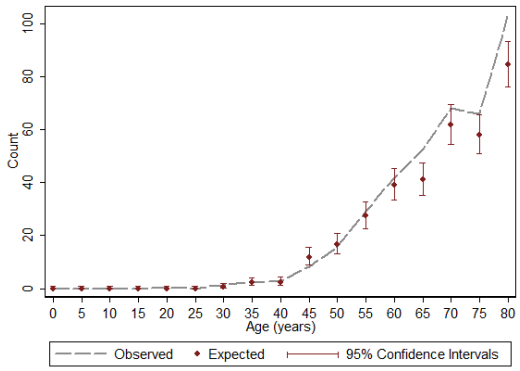
Hodgkin lymphoma - Persons
All ages: O/E = 96.1% (CI: 81-114)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 112.8% (CI: 106-120)

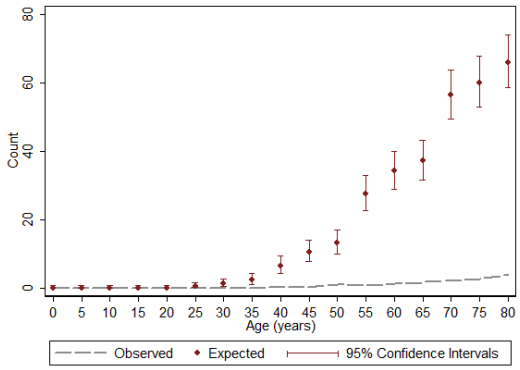


Myeloma - Persons
All ages: O/E = 115.9% (CI: 105-128)

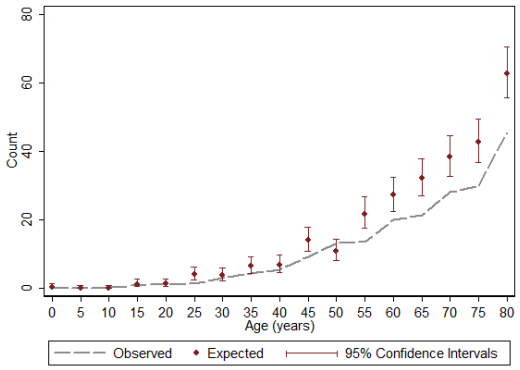


Trent Cancer Registry (TrCR) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

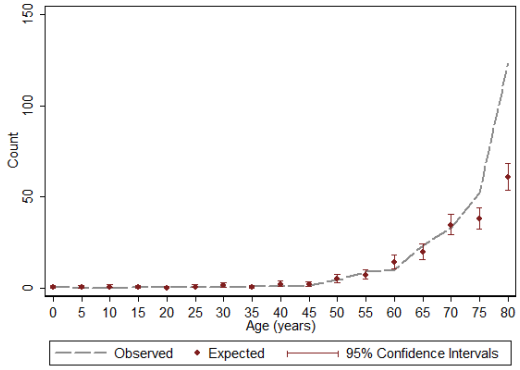
MGUS - Persons
All ages: O/E = 28.3% (CI: 25-32)



Myeloproliferative neoplasms - Persons
All ages: O/E = 73.1% (CI: 63-84)

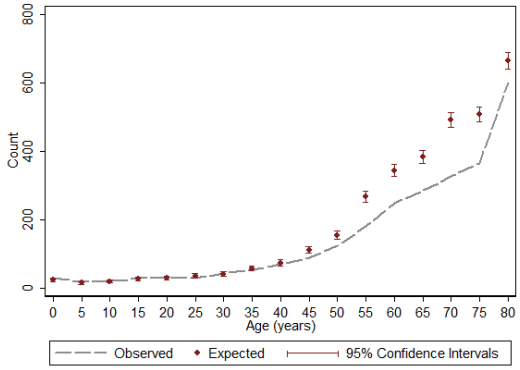


Myelodysplastic syndromes - Persons
All ages: O/E = 142.0% (CI: 125-160)

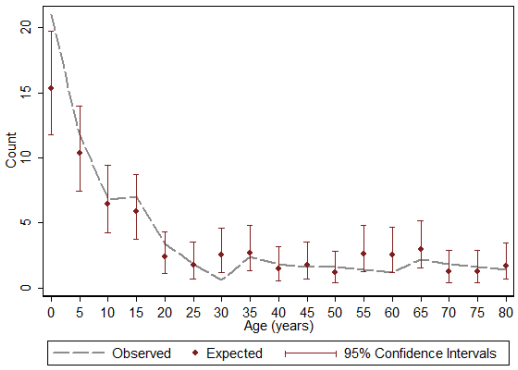


West Midlands Cancer Intelligence Unit (WMCIU) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

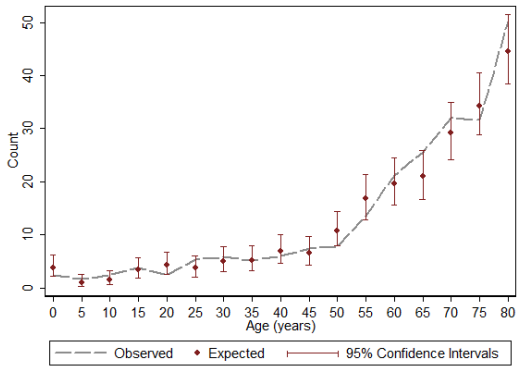
Total haematological malignancies - Persons
All ages: O/E = 78.2% (CI: 75-81)



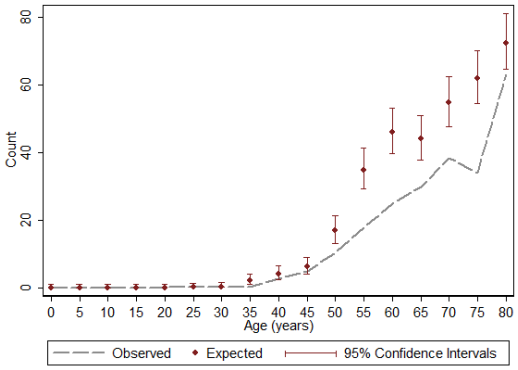
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 108.8% (CI: 85-138)



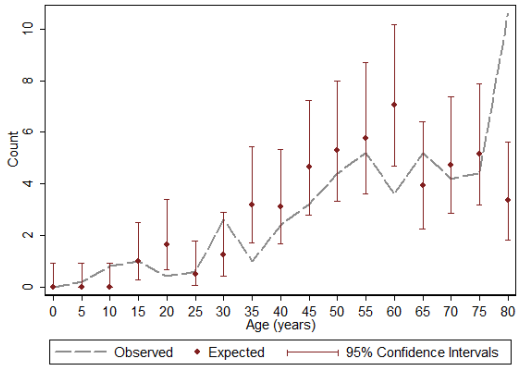
Acute myeloid leukaemia - Persons
All ages: O/E = 103.0% (CI: 90-117)



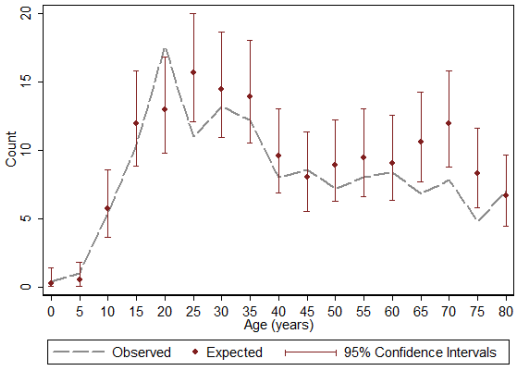
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 66.0% (CI: 58-75)



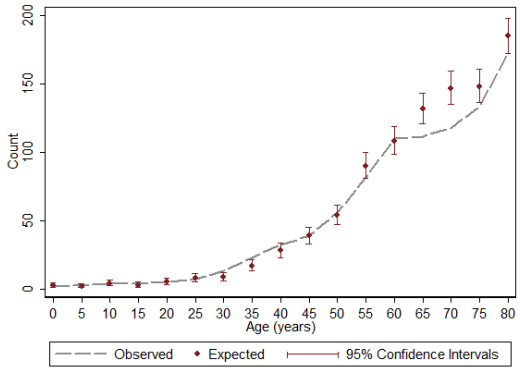
Chronic myeloid leukaemia - Persons
All ages: O/E = 97.3% (CI: 72-129)



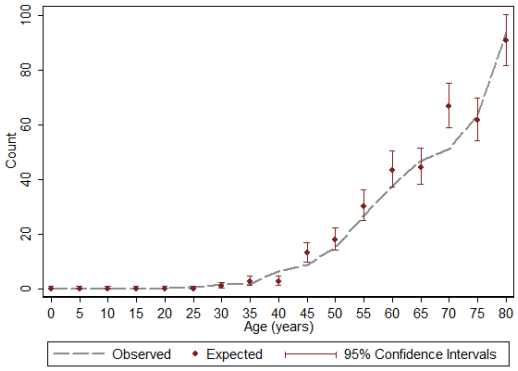
Hodgkin lymphoma - Persons
All ages: O/E = 86.6% (CI: 73-102)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 93.3% (CI: 87-100)

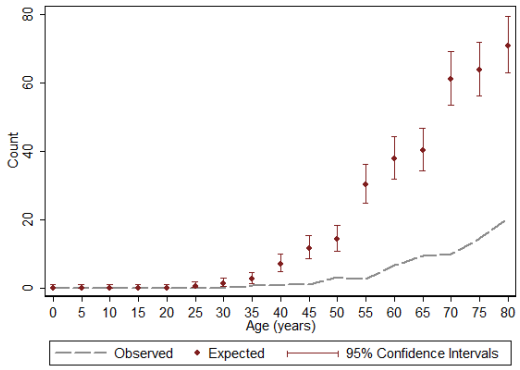


Myeloma - Persons
All ages: O/E = 94.7% (CI: 85-105)

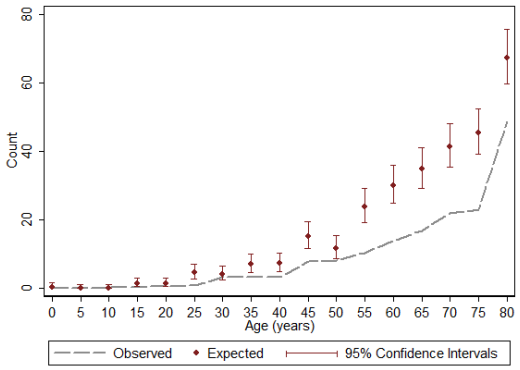


West Midlands Cancer Intelligence Unit (WMCIU) - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

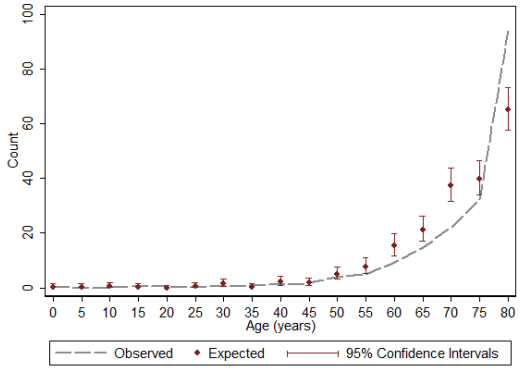
MGUS - Persons
All ages: O/E = 4.2% (CI: 2-7)



Myeloproliferative neoplasms - Persons
All ages: O/E = 73.1% (CI: 63-84)



Myelodysplastic syndromes - Persons
All ages: O/E = 142% (CI: 125-160)

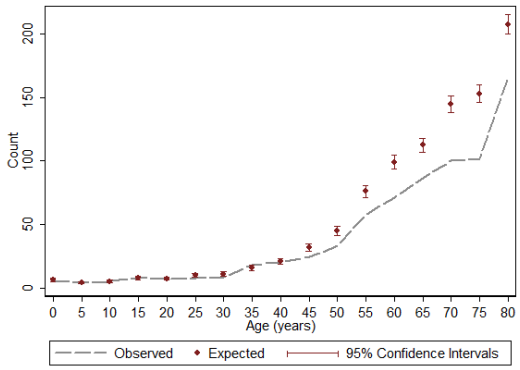


Annex 5

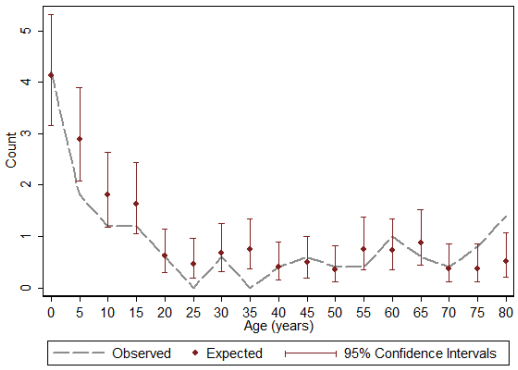
Annual observed and expected stratified by age based on HMRN rates (Cancer Network, Figures)

N01 - Lancashire and South Cumbria Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

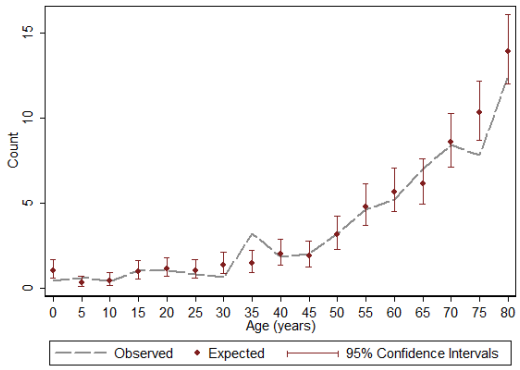
Total haematological malignancies - Persons
All ages: O/E = 79.3% (CI: 74-85)



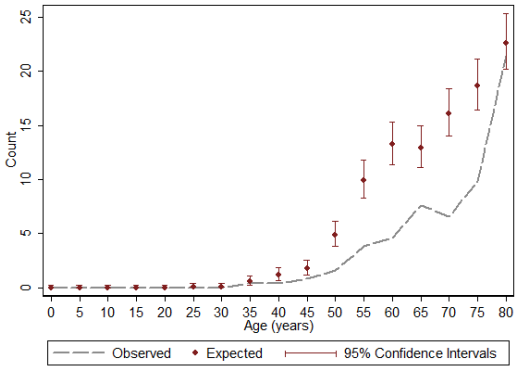
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 83.8% (CI: 47-138)



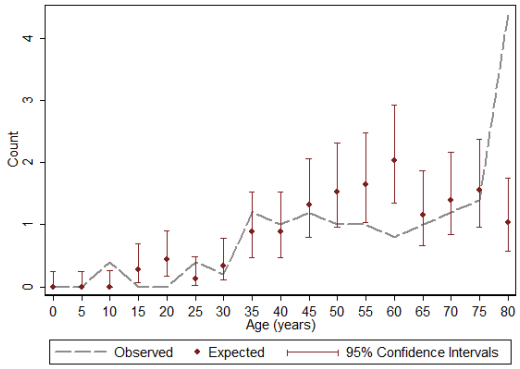
Acute myeloid leukaemia - Persons
All ages: O/E = 97.7% (CI: 75-126)



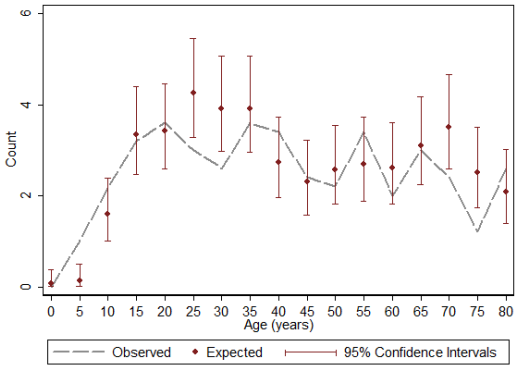
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 58.9% (CI: 45-76)



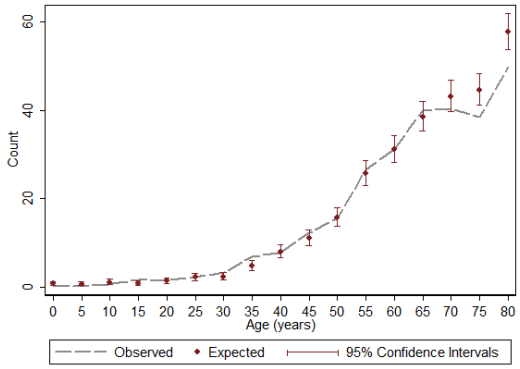
Chronic myeloid leukaemia - Persons
All ages: O/E = 105.4% (CI: 59-174)



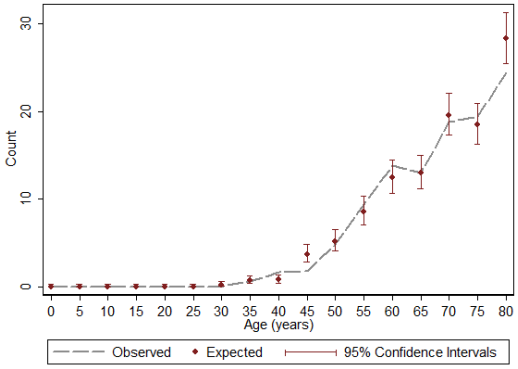
Hodgkin lymphoma - Persons
All ages: O/E = 91.7% (CI: 66-124)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 100.7% (CI: 89-113)

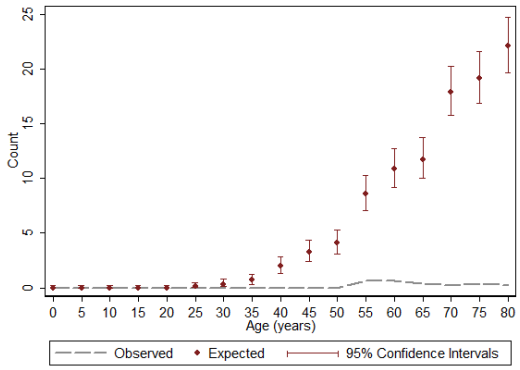


Myeloma - Persons
All ages: O/E = 101.6% (CI: 83-123)

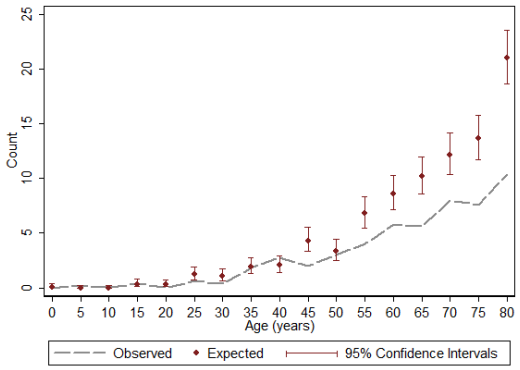


N01 - Lancashire and South Cumbria Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

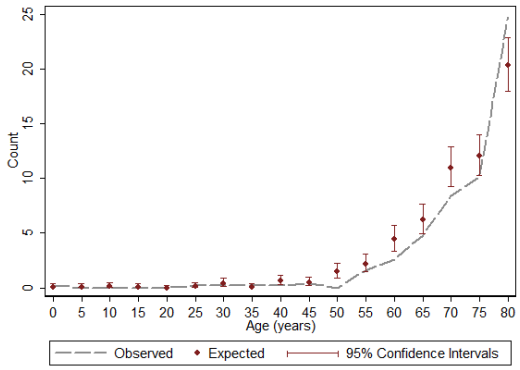
MGUS - Persons
All ages: O/E = 2.1% (CI: 0-8)



Myeloproliferative neoplasms - Persons
All ages: O/E = 62.6% (CI: 47-82)

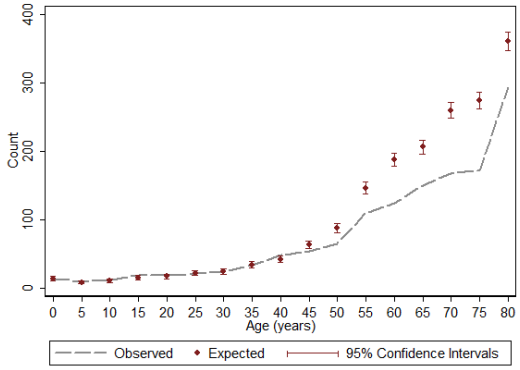


Myelodysplastic syndromes - Persons
All ages: O/E = 93.4% (CI: 70-122)

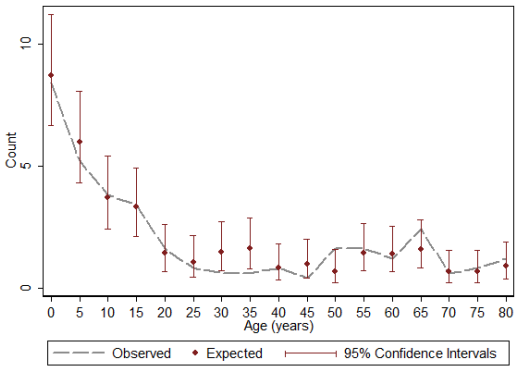


N02 - Greater Manchester and Cheshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

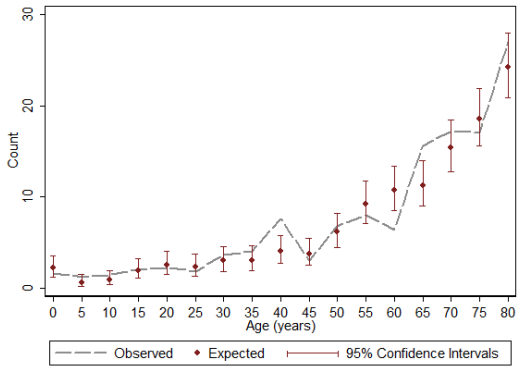
Total haematological malignancies - Persons
All ages: O/E = 72.2% (CI: 68-76)



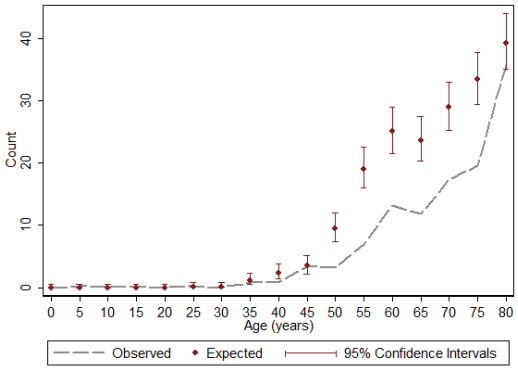
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 96.9% (CI: 67-135)



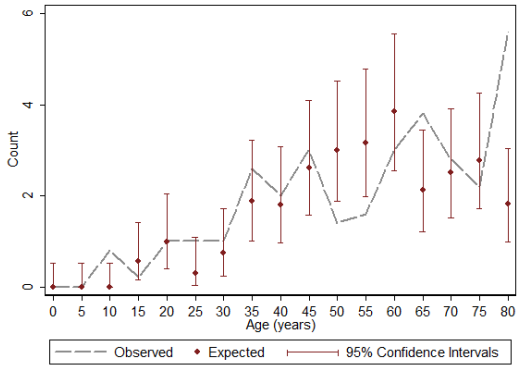
Acute myeloid leukaemia - Persons
All ages: O/E = 101.7% (CI: 85-121)



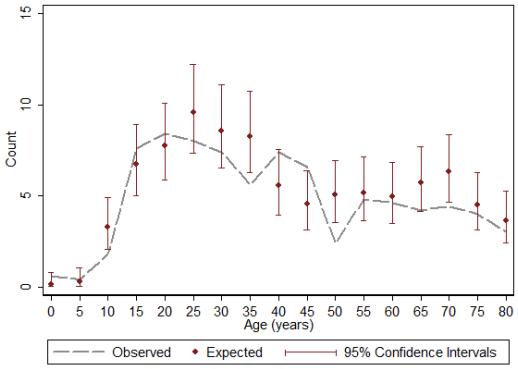
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 57.9% (CI: 48-70)



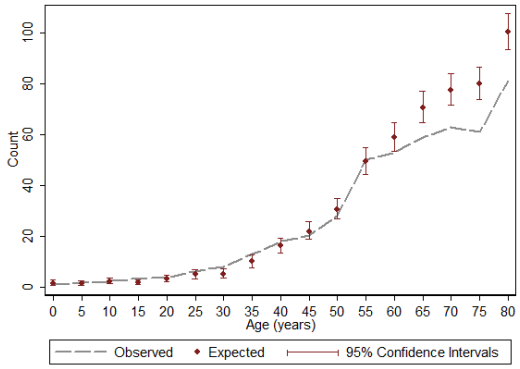
Chronic myeloid leukaemia - Persons
All ages: O/E = 111.5% (CI: 76-157)



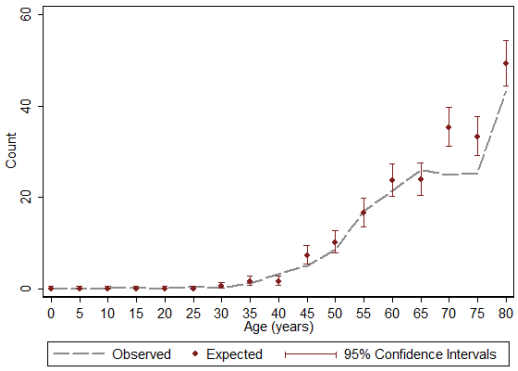
Hodgkin lymphoma - Persons
All ages: O/E = 89.8% (CI: 71-112)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 84.6% (CI: 77-93)

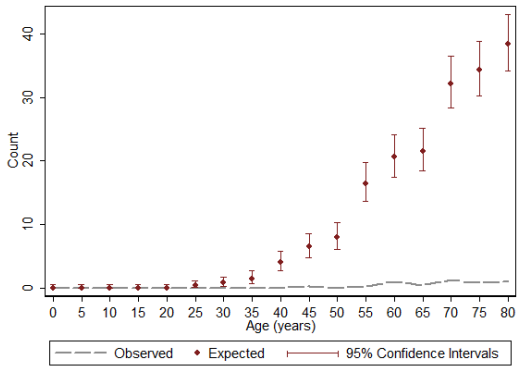


Myeloma - Persons
All ages: O/E = 82.8% (CI: 71-96)

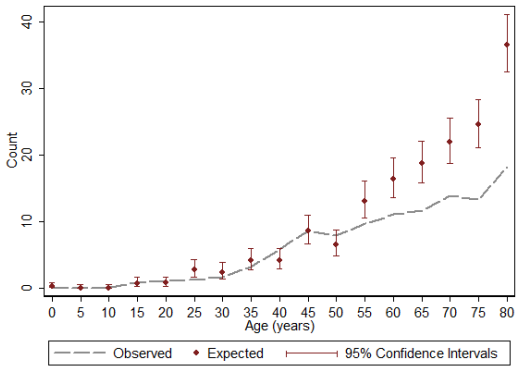


N02 - Greater Manchester and Cheshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

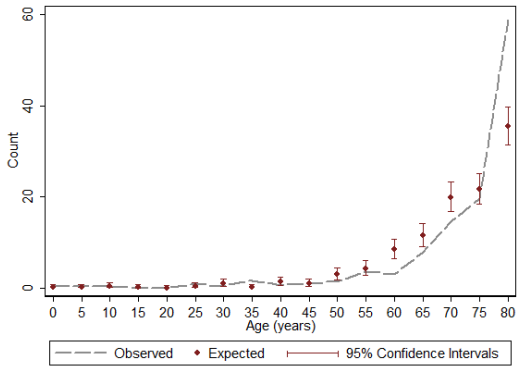
MGUS - Persons
All ages: O/E = 2.1% (CI: 1-5)



Myeloproliferative neoplasms - Persons
All ages: O/E = 63.8% (CI: 52-77)

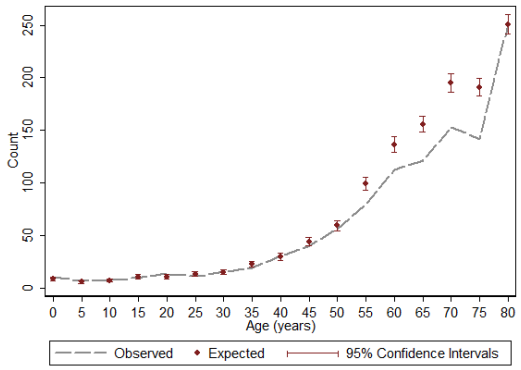


Myelodysplastic syndromes - Persons
All ages: O/E = 99.5% (CI: 82-120)

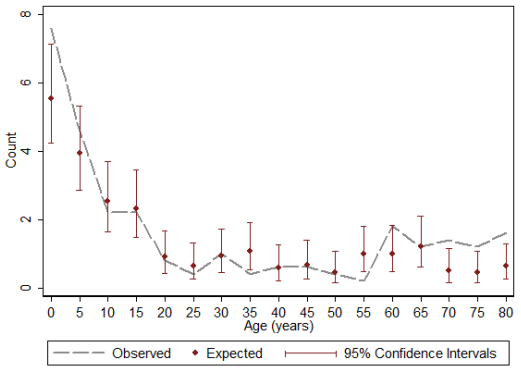


N03 - Merseyside and Cheshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

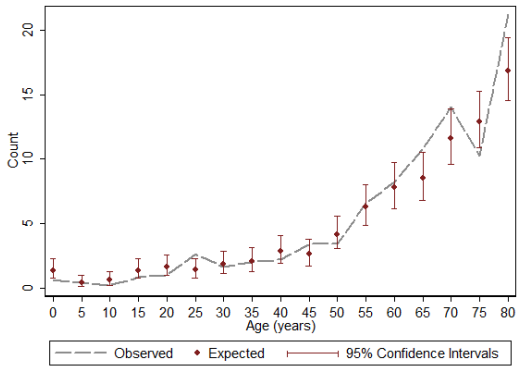
Total haematological malignancies - Persons
All ages: O/E = 86.3% (CI: 81-92)



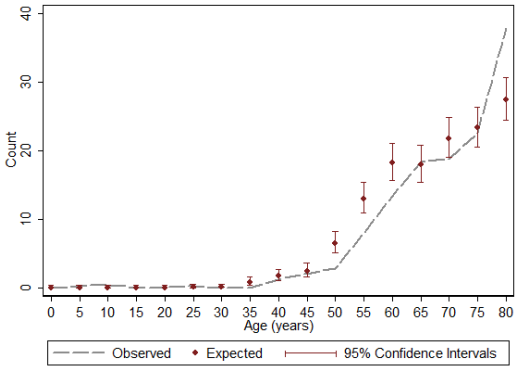
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 114.4% (CI: 76-165)



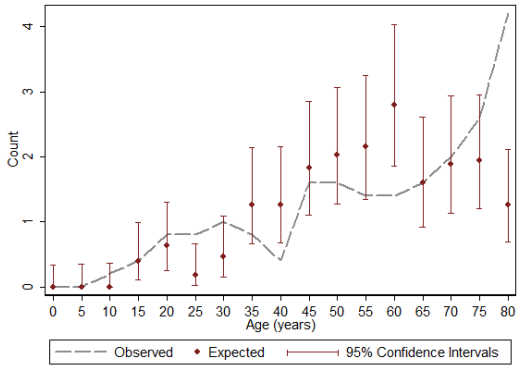
Acute myeloid leukaemia - Persons
All ages: O/E = 106% (CI: 85-130)



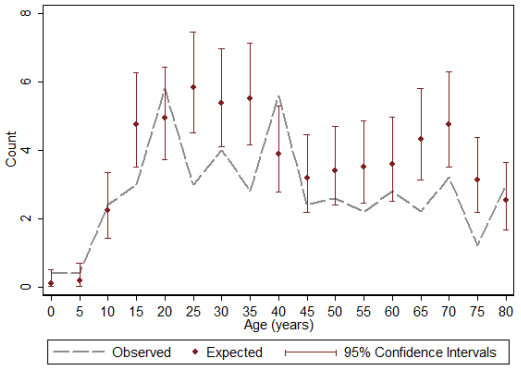
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 94.5% (CI: 79-113)



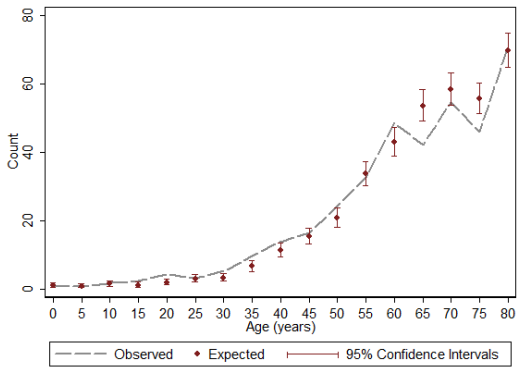
Chronic myeloid leukaemia - Persons
All ages: O/E = 102.8% (CI: 63-159)



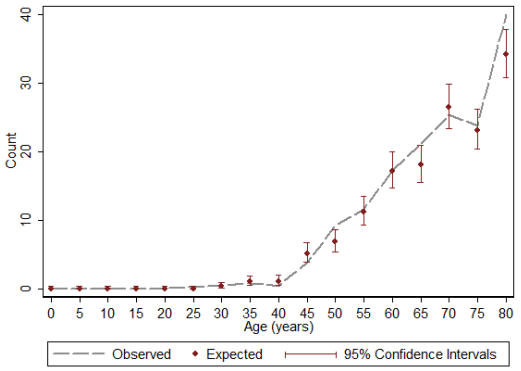
Hodgkin lymphoma - Persons
All ages: O/E = 76.9% (CI: 57-102)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 99.6% (CI: 90-110)

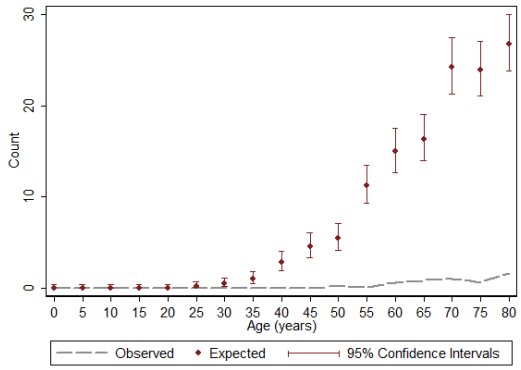


Myeloma - Persons
All ages: O/E = 107% (CI: 91-125)

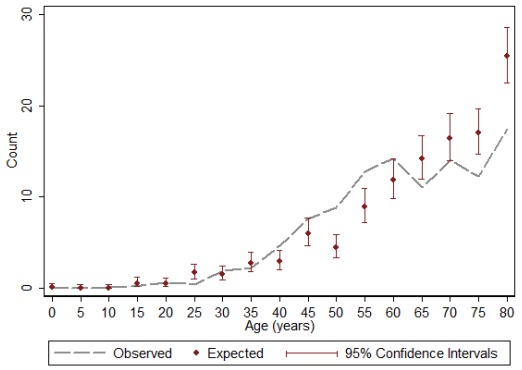


N03 - Merseyside and Cheshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

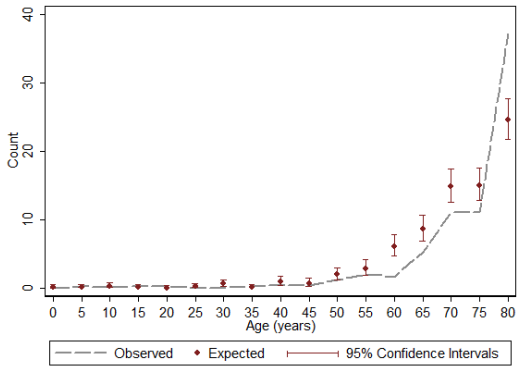
MGUS - Persons
All ages: O/E = 3% (CI: 1-8)



Myeloproliferative neoplasms - Persons
All ages: O/E = 94.2% (CI: 77-114)

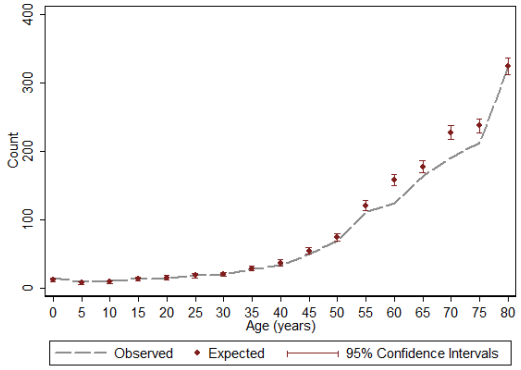


Myelodysplastic syndromes - Persons
All ages: O/E = 90.2% (CI: 70-114)

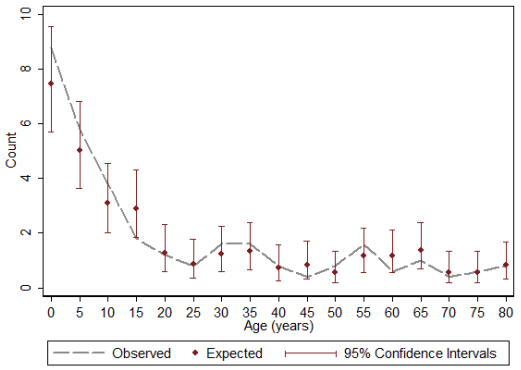


N06 - Yorkshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

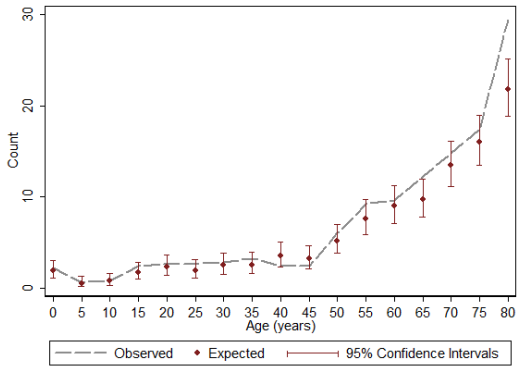
Total haematological malignancies - Persons
All ages: O/E = 89% (CI: 84-94)



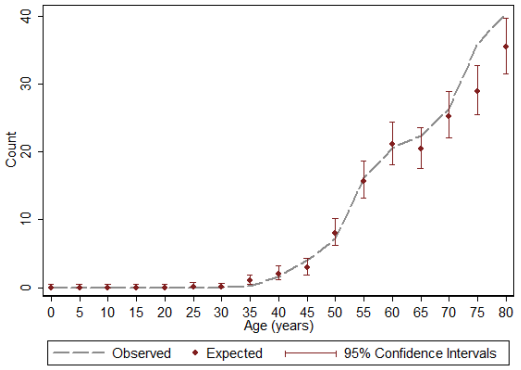
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 103.8% (CI: 74-147)



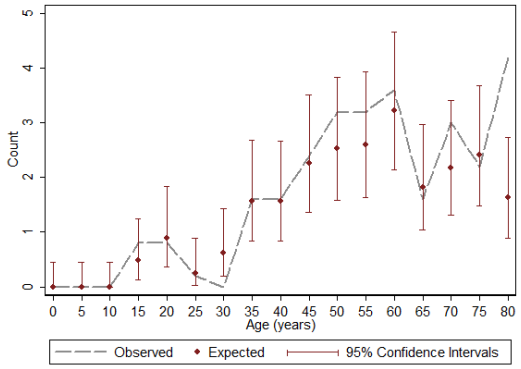
Acute myeloid leukaemia - Persons
All ages: O/E = 113.5% (CI: 94-136)



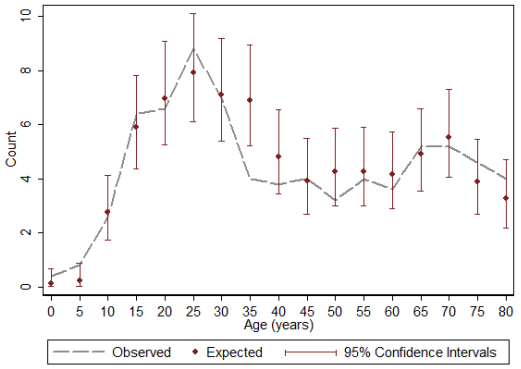
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 103.8% (CI: 71-147)



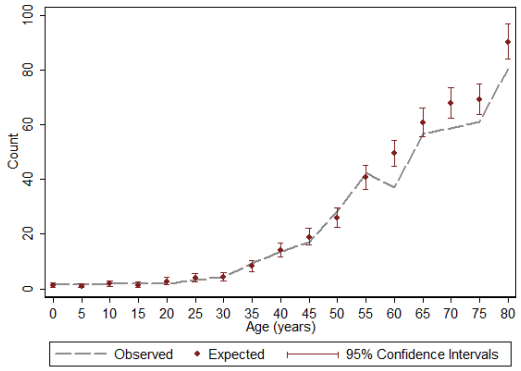
Chronic myeloid leukaemia - Persons
All ages: O/E = 105% (CI: 90-122)



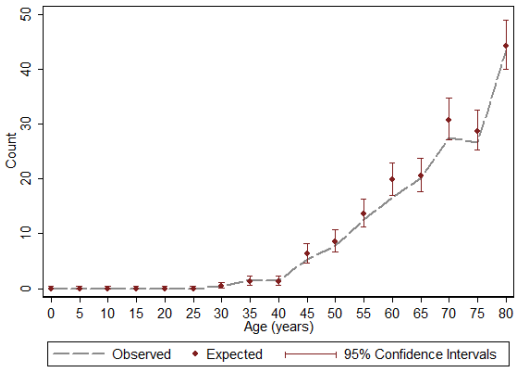
Hodgkin lymphoma - Persons
All ages: O/E = 114.3% (CI: 76-165)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 96.1% (CI: 75-121)

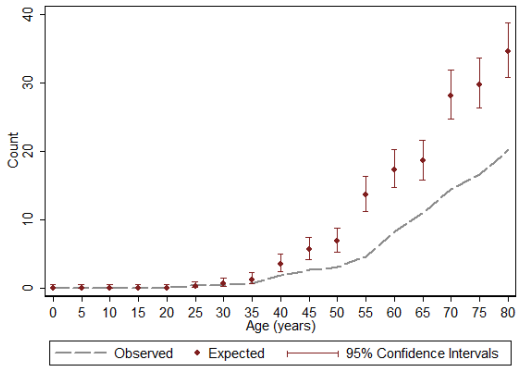


Myeloma - Persons
All ages: O/E = 89.9% (CI: 77-105)

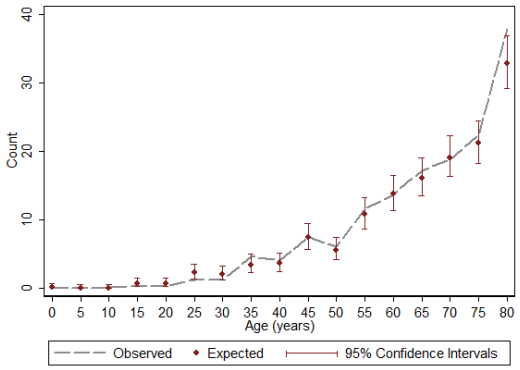


N06 - Yorkshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

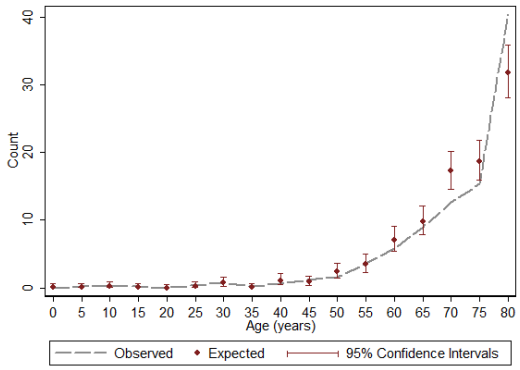
MGUS - Persons
All ages: O/E = 50.3% (CI: 40-62)



Myeloproliferative neoplasms - Persons
All ages: O/E = 102.1% (CI: 86-120)

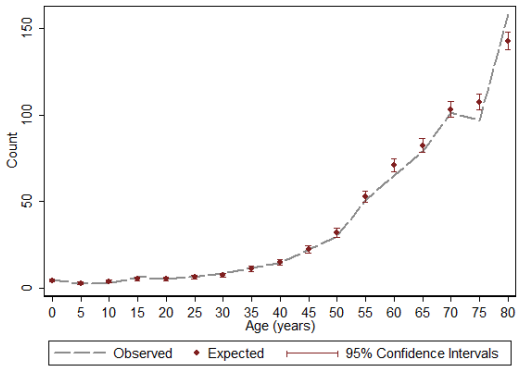


Myelodysplastic syndromes - Persons
All ages: O/E = 94.1% (CI: 76-115)

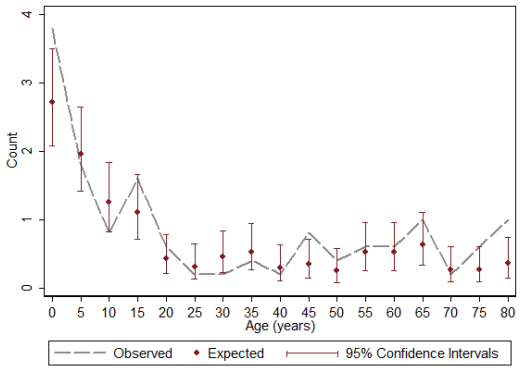


N07 - Humber and Yorkshire Coast Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

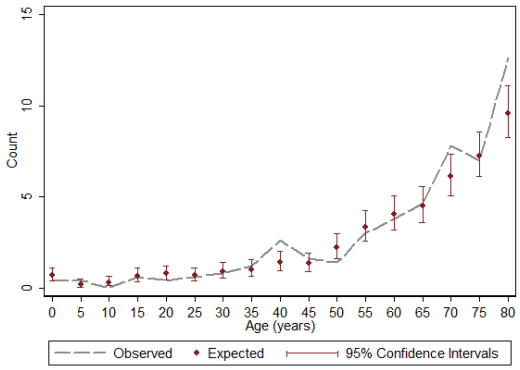
Total haematological malignancies - Persons
All ages: O/E = 105.2% (CI: 97-114)



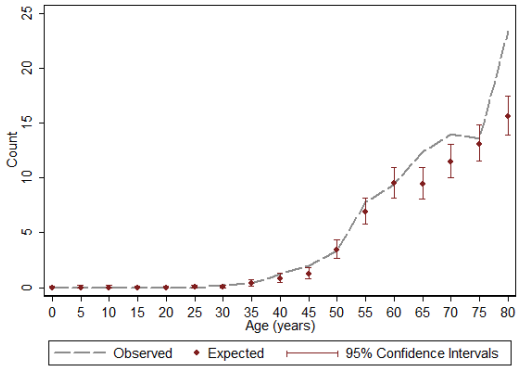
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 113% (CI: 62-190)



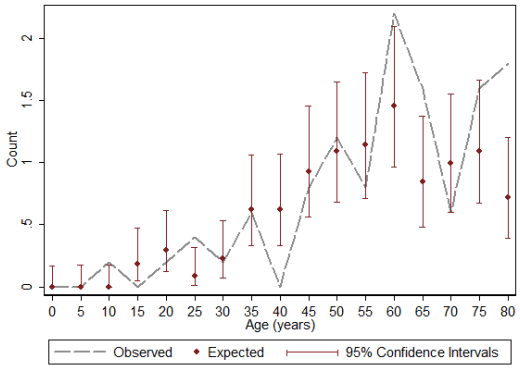
Acute myeloid leukaemia - Persons
All ages: O/E = 112.9% (CI: 83-150)



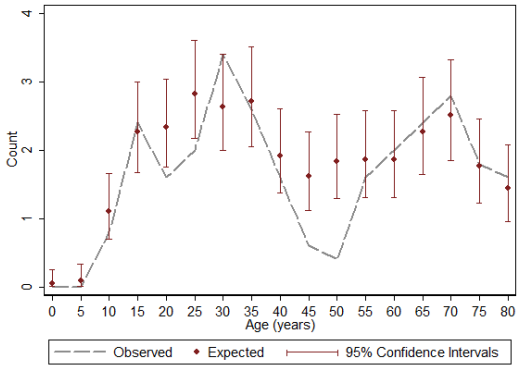
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 129.9% (CI: 104-160)



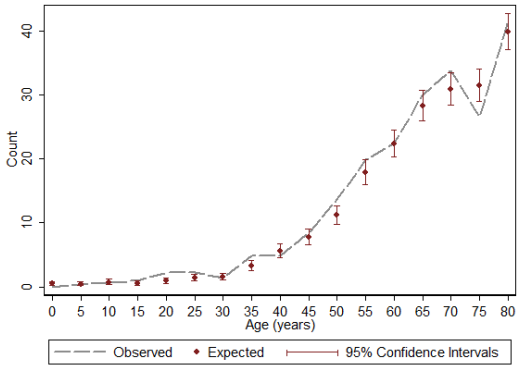
Chronic myeloid leukaemia - Persons
All ages: O/E = 121.9% (CI: 63-213)



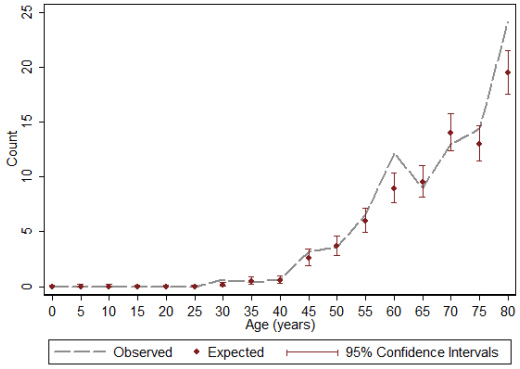
Hodgkin lymphoma - Persons
All ages: O/E = 87.3% (CI: 58-127)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 111.5% (CI: 97-128)

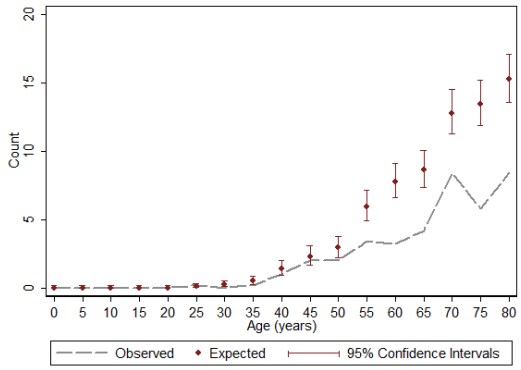


Myeloma - Persons
All ages: O/E = 119.4% (CI: 96-147)

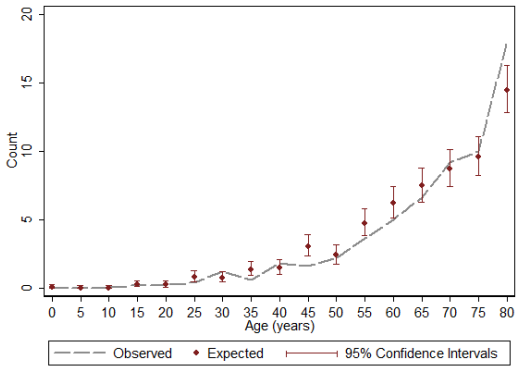


N07 - Humber and Yorkshire Coast Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

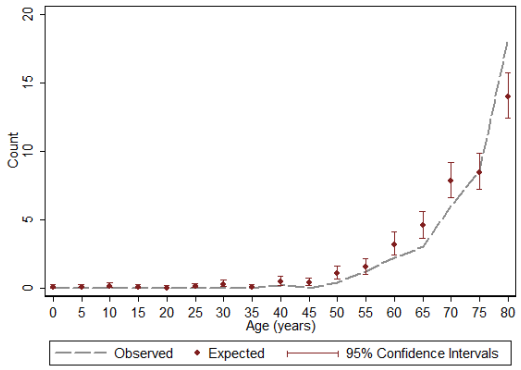
MGUS - Persons
All ages: O/E = 57.2% (CI: 41-79)



Myeloproliferative neoplasms - Persons
All ages: O/E = 104.4% (CI: 80-134)

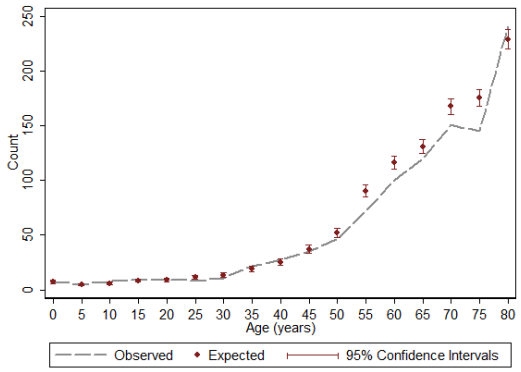


Myelodysplastic syndromes - Persons
All ages: O/E = 99.3% (CI: 71-136)

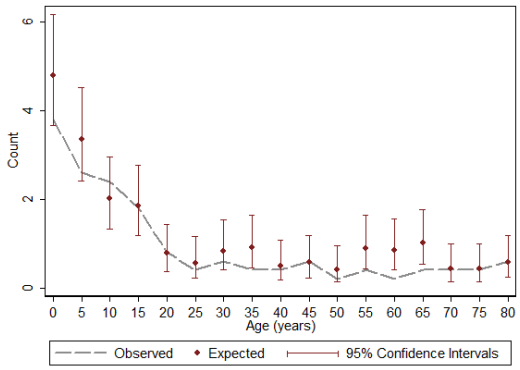


N08 - North Trent Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

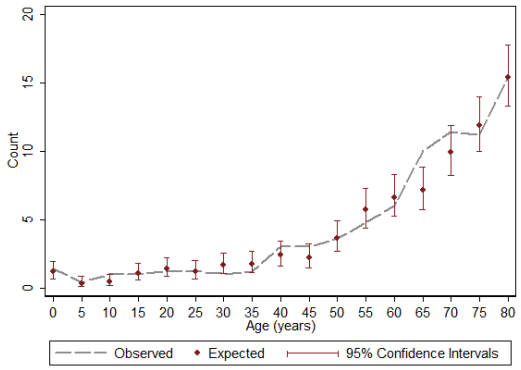
Total haematological malignancies - Persons
All ages: O/E = 94.7% (CI: 89-101)



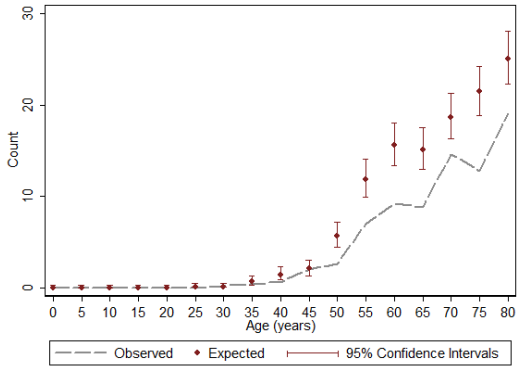
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 75.9% (CI: 43-123)



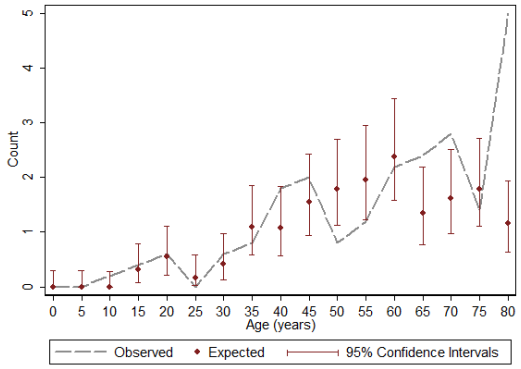
Acute myeloid leukaemia - Persons
All ages: O/E = 105.1% (CI: 83-131)



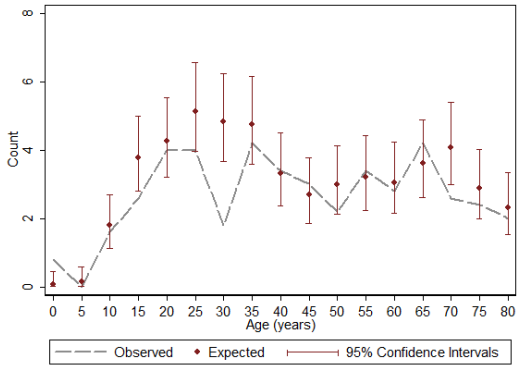
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 67.6% (CI: 53-84)



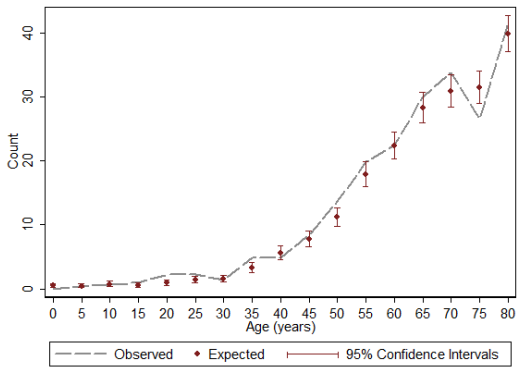
Chronic myeloid leukaemia - Persons
All ages: O/E = 131.3% (CI: 82-199)



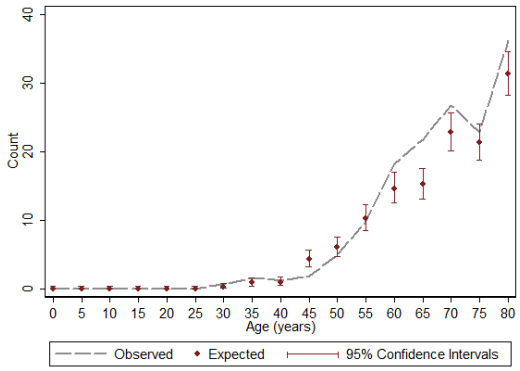
Hodgkin lymphoma - Persons
All ages: O/E = 85.5% (CI: 62-114)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 110.1% (CI: 99-122)

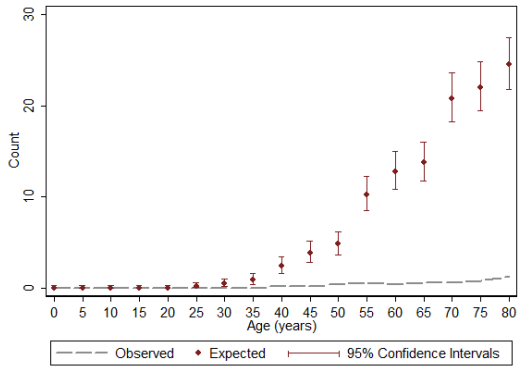


Myeloma - Persons
All ages: O/E = 116.9% (CI: 99-138)

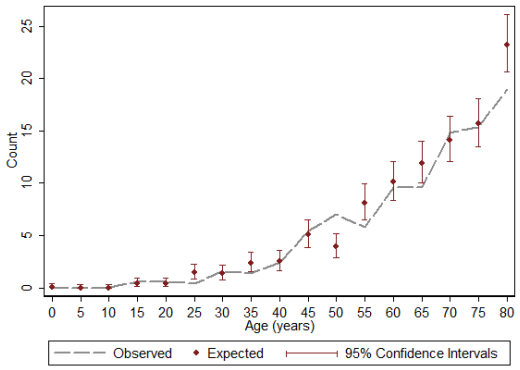


N08 - North Trent Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

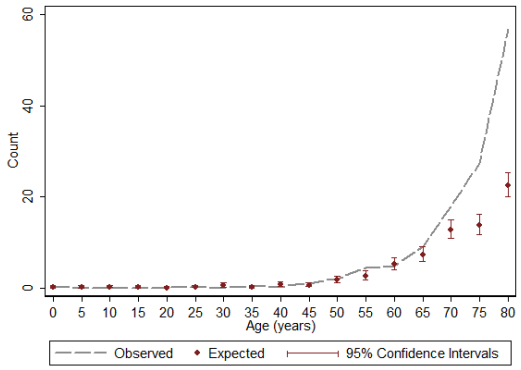
MGUS - Persons
All ages: O/E = 4.4% (CI: 1-10)



Myeloproliferative neoplasms - Persons
All ages: O/E = 95% (CI: 77-116)

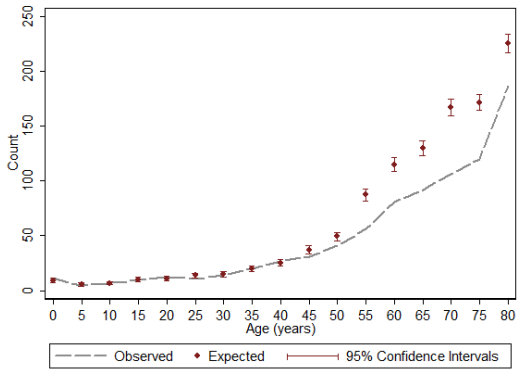


Myelodysplastic syndromes - Persons
All ages: O/E = 185.4% (CI: 154-221)

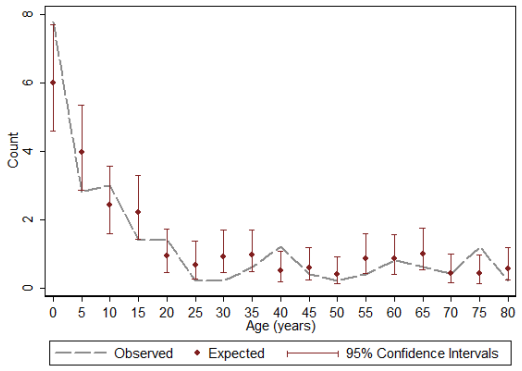


N11 - Pan Birmingham Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

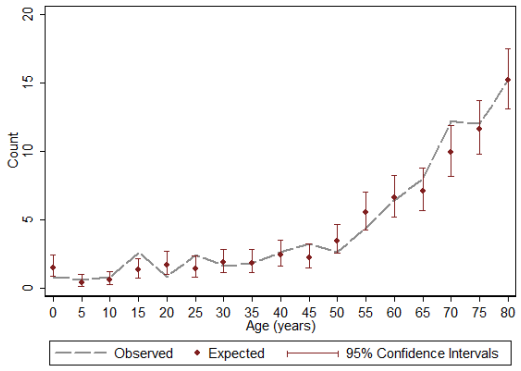
Total haematological malignancies - Persons
All ages: O/E = 71.7% (CI: 67-77)



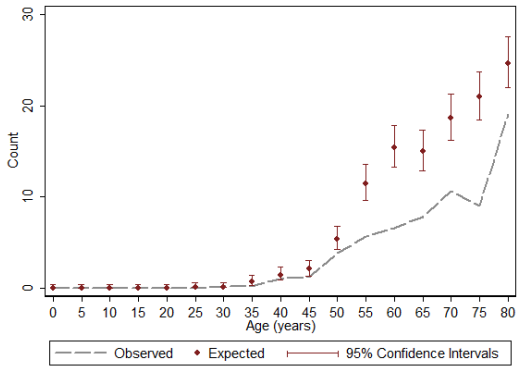
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 96.9% (CI: 61-147)



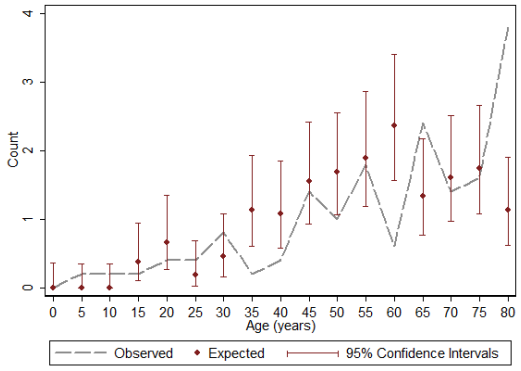
Acute myeloid leukaemia - Persons
All ages: O/E = 100.2% (CI: 79-125)



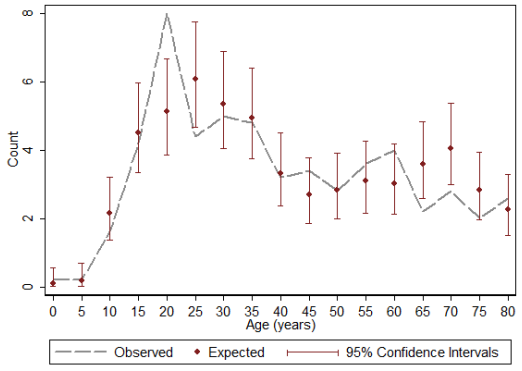
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 53.0% (CI: 41-68)



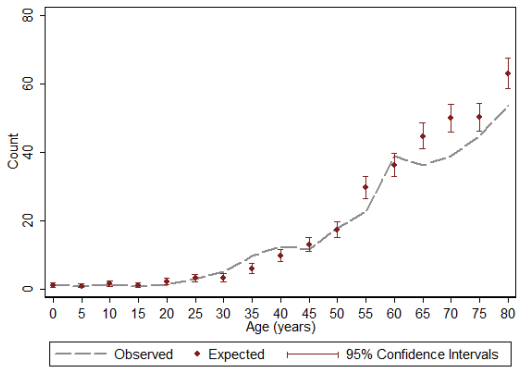
Chronic myeloid leukaemia - Persons
All ages: O/E = 88.7% (CI: 51-144)



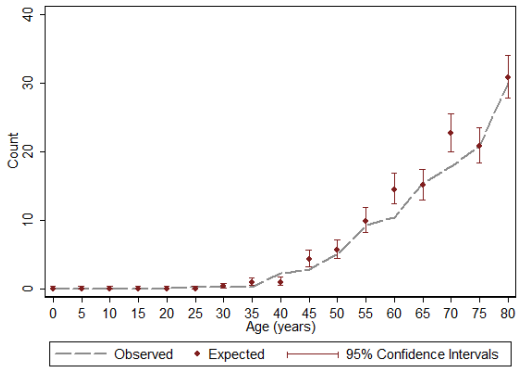
Hodgkin lymphoma - Persons
All ages: O/E = 97.1% (CI: 73-126)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 85.2% (CI: 76-95)

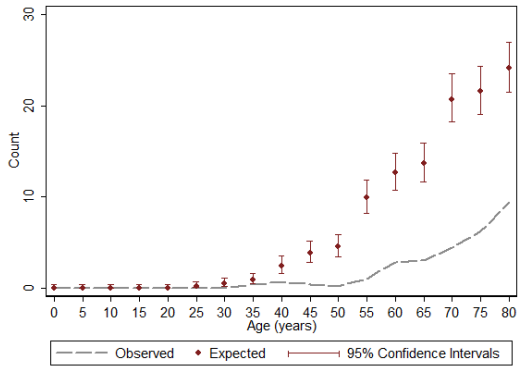


Myeloma - Persons
All ages: O/E = 85.4% (CI: 70-103)

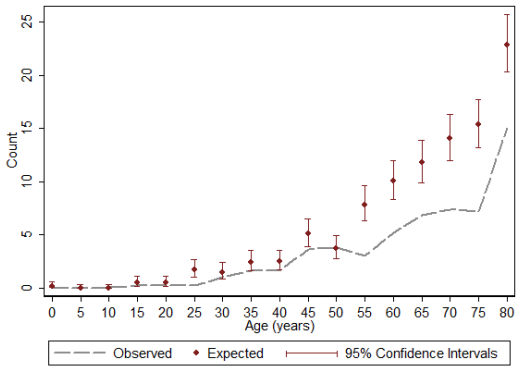


N11 - Pan Birmingham Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

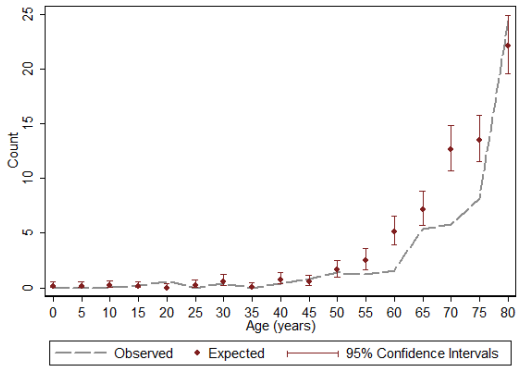
MGUS - Persons
All ages: O/E = 23% (CI: 15-33)



Myeloproliferative neoplasms - Persons
All ages: O/E = 53.2% (CI: 40-69)

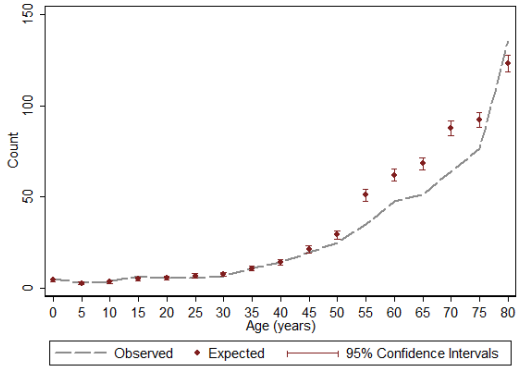


Myelodysplastic syndromes - Persons
All ages: O/E = 69.5% (CI: 52-92)

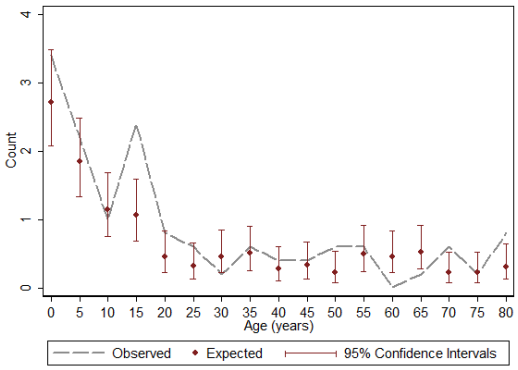


N12 - Arden Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

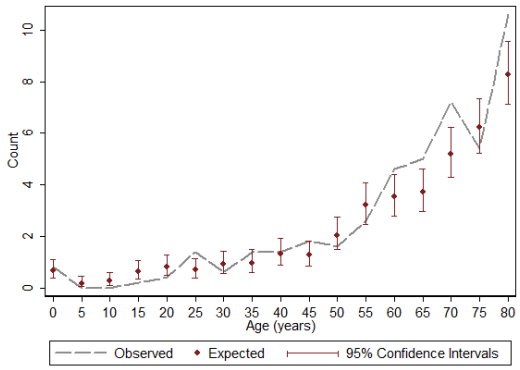
Total haematological malignancies - Persons
All ages: O/E = 85.9% (CI: 79-94)



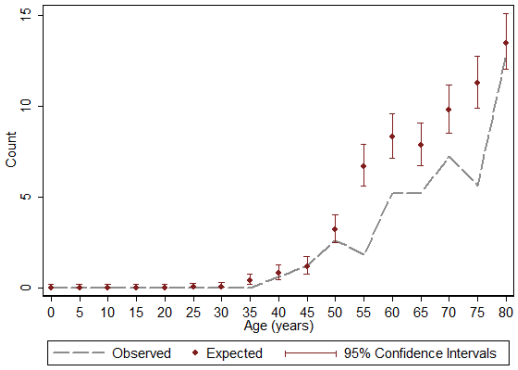
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 128.1% (CI: 72-211)



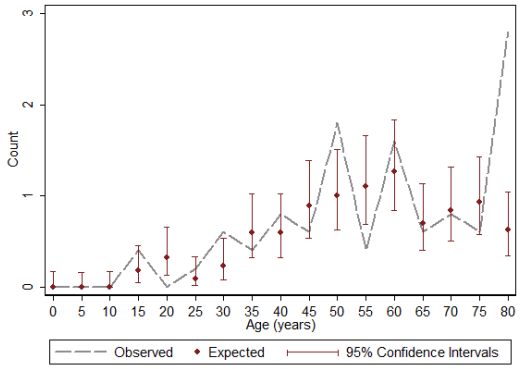
Acute myeloid leukaemia - Persons
All ages: O/E = 112.1% (CI: 82-150)



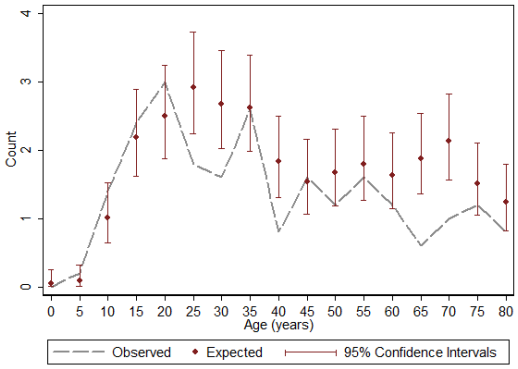
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 66.4% (CI: 48-90)



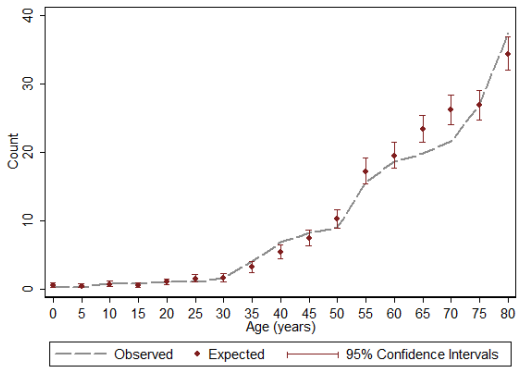
Chronic myeloid leukaemia - Persons
All ages: O/E = 118.3% (CI: 59-212)



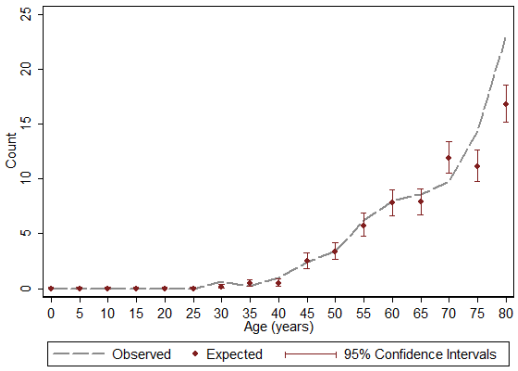
Hodgkin lymphoma - Persons
All ages: O/E = 78.7% (CI: 50-118)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 95.9% (CI: 82-111)

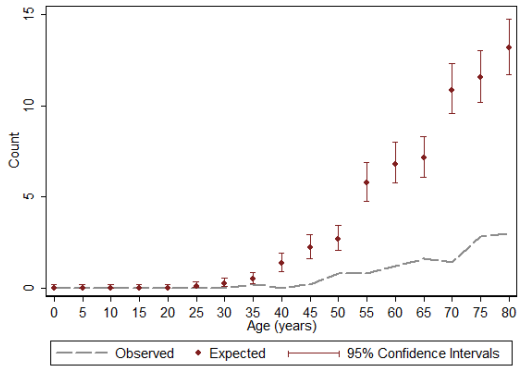


Myeloma - Persons
All ages: O/E = 111.9% (CI: 88-140)

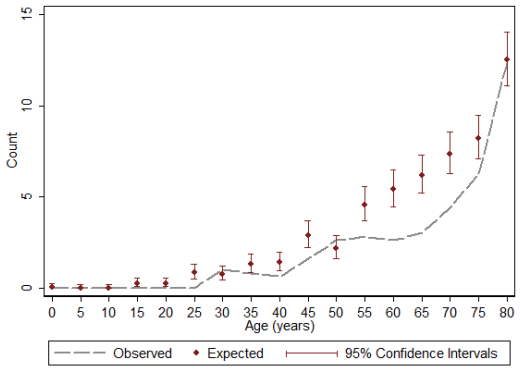


N12 - Arden Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

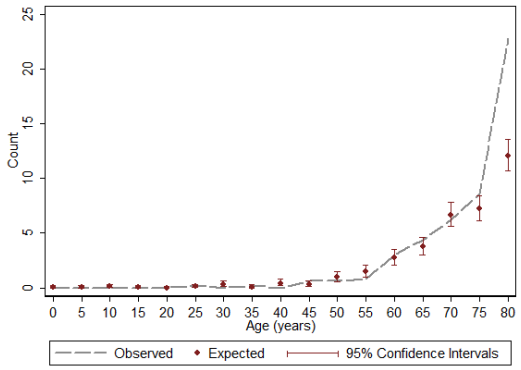
MGUS - Persons
All ages: O/E = 19.1% (CI: 10-33)



Myeloproliferative neoplasms - Persons
All ages: O/E = 70.0% (CI: 50-96)

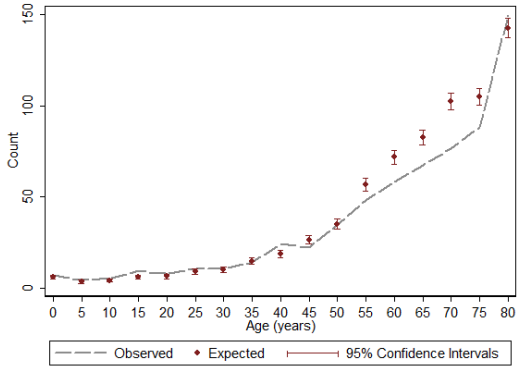


Myelodysplastic syndromes - Persons
All ages: O/E = 126.6% (CI: 93-168)

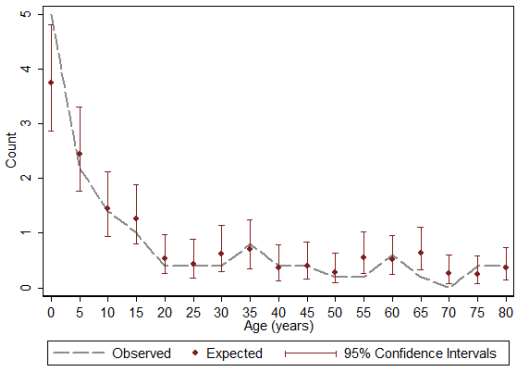


N20 - Mount Vernon Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

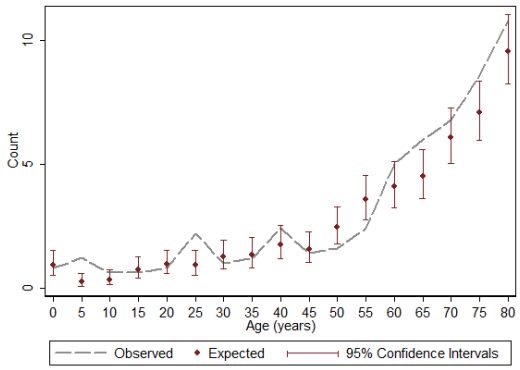
Total haematological malignancies - Persons
All ages: O/E = 85.1% (CI: 79-92)



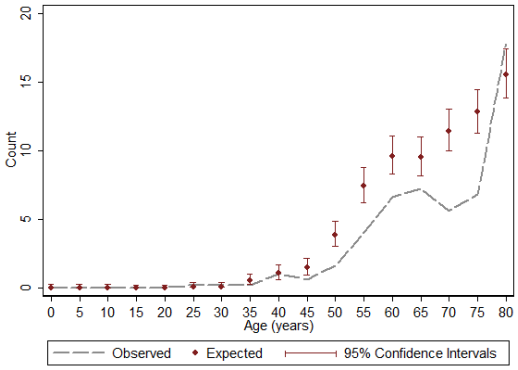
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 95.3% (CI: 52-160)



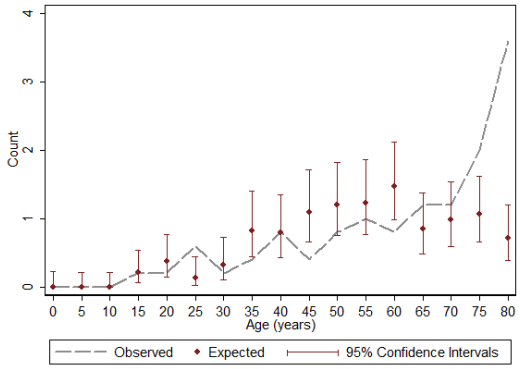
Acute myeloid leukaemia - Persons
All ages: O/E = 105.2% (CI: 79-138)



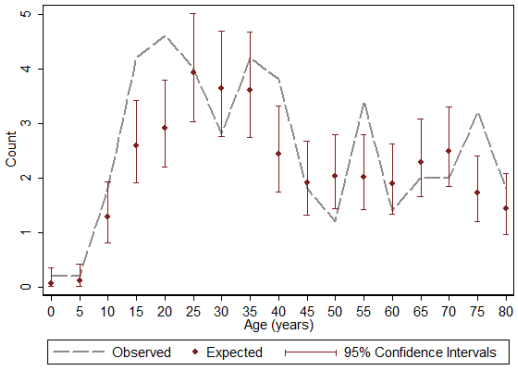
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 64.3% (CI: 48-85)



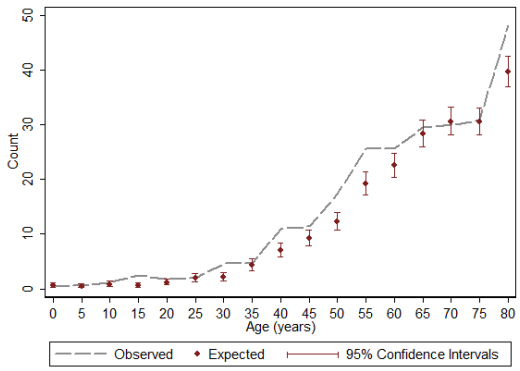
Chronic myeloid leukaemia - Persons
All ages: O/E = 111.4% (CI: 59-191)



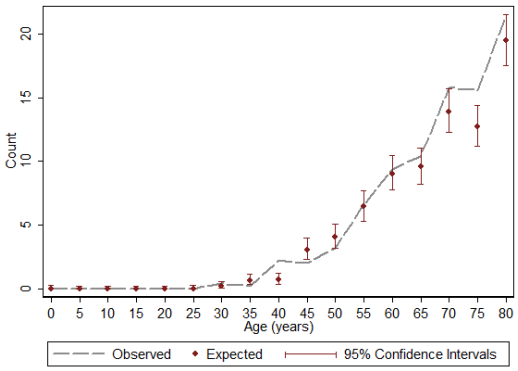
Hodgkin lymphoma - Persons
All ages: O/E = 114.6% (CI: 83-155)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 109.1% (CI: 96-124)

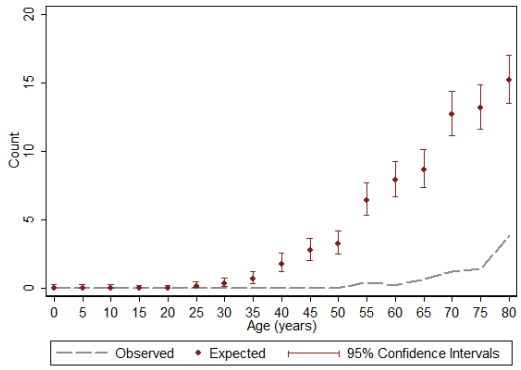


Myeloma - Persons
All ages: O/E = 100.8% (CI: 81-124)

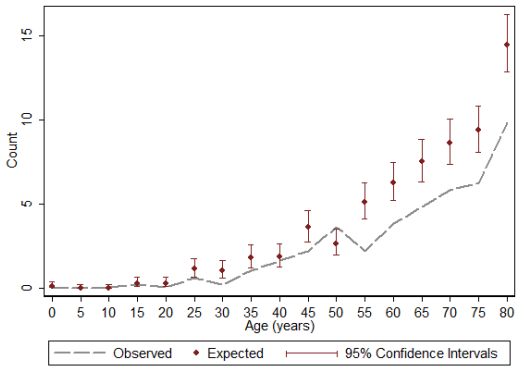


N20 - Mount Vernon Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

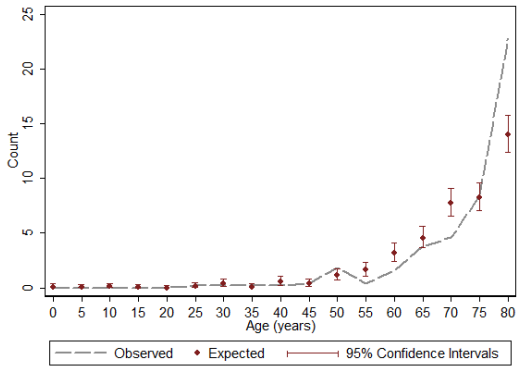
MGUS - Persons
All ages: O/E = 8.9% (CI: 4-18)



Myeloproliferative neoplasms - Persons
All ages: O/E = 61.7% (CI: 44-83)

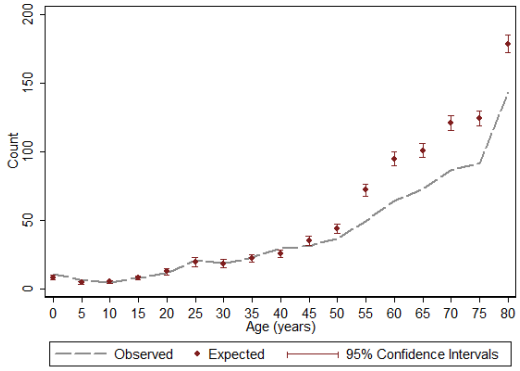


Myelodysplastic syndromes - Persons
All ages: O/E = 94.5% (CI: 69-127)

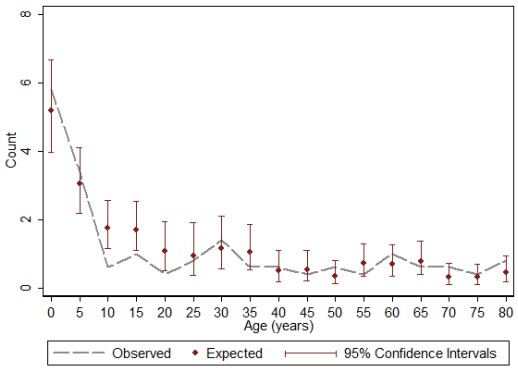


N21 - West London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

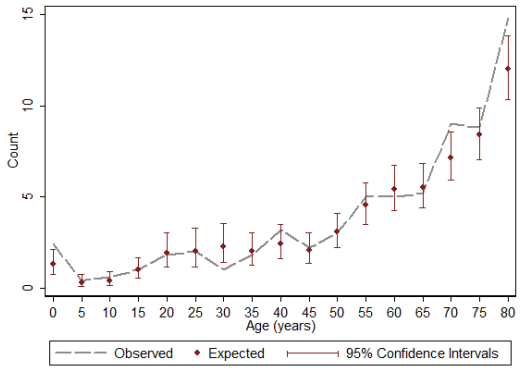
Total haematological malignancies - Persons
All ages: O/E = 65.3% (CI: 61-70)



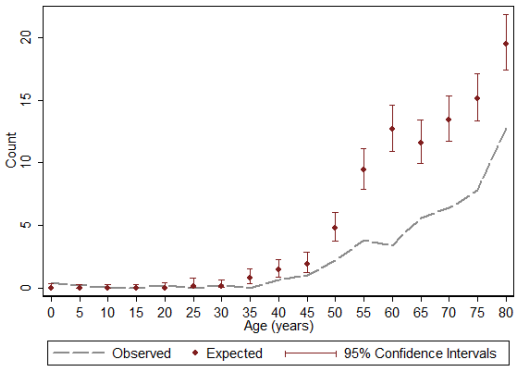
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 89.5% (CI: 54-140)



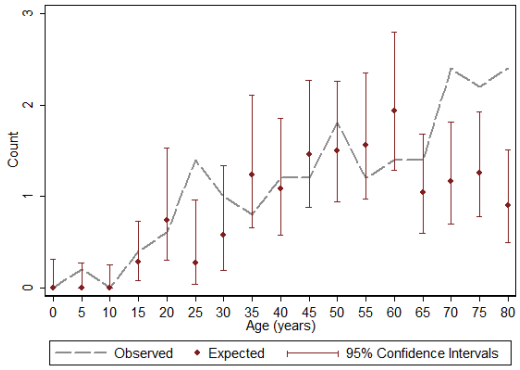
Acute myeloid leukaemia - Persons
All ages: O/E = 92.1% (CI: 71-117)



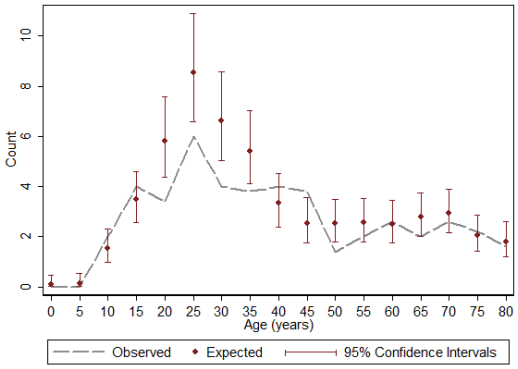
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 38.4% (CI: 28-52)



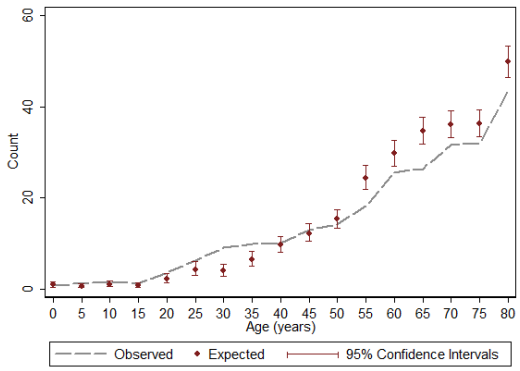
Chronic myeloid leukaemia - Persons
All ages: O/E = 112.7% (CI: 68-176)



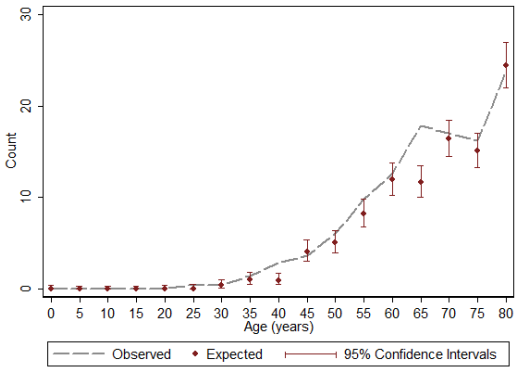
Hodgkin lymphoma - Persons
All ages: O/E = 85.0% (CI: 62-114)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 75.5% (CI: 66-86)

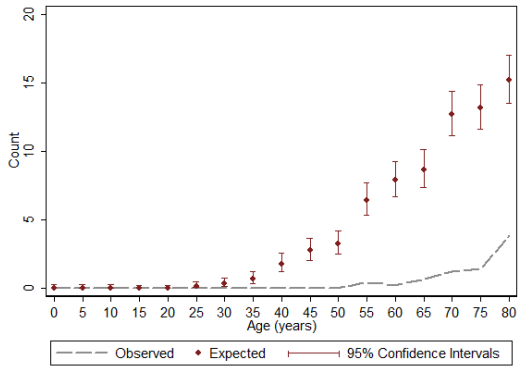


Myeloma - Persons
All ages: O/E = 89% (CI: 73-107)

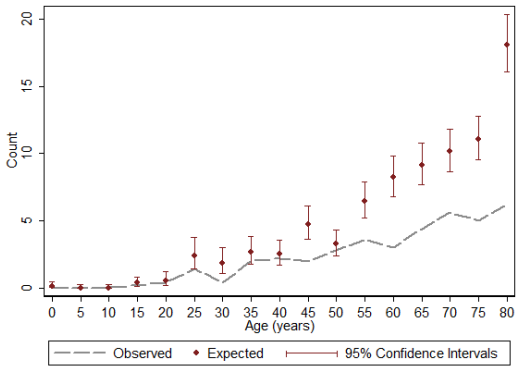


N21 - West London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

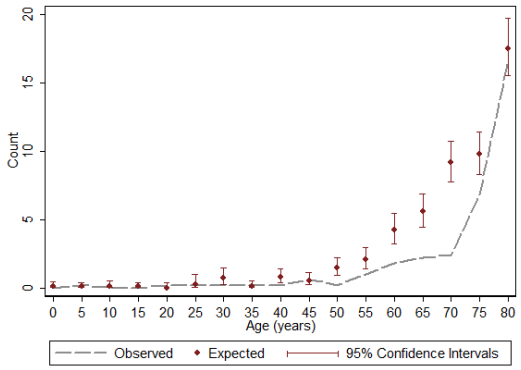
MGUS - Persons
All ages: O/E = 6.2% (CI: 2-13)



Myeloproliferative neoplasms - Persons
All ages: O/E = 39.6% (CI: 28-54)

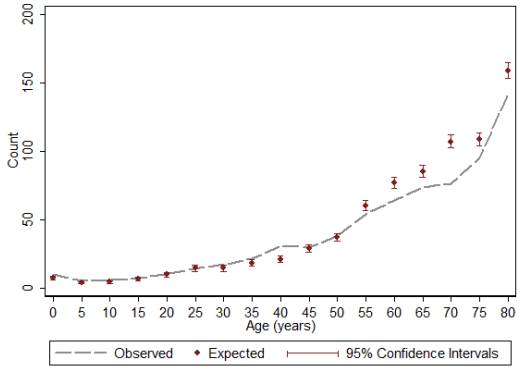


Myelodysplastic syndromes - Persons
All ages: O/E = 47.6% (CI: 33-67)

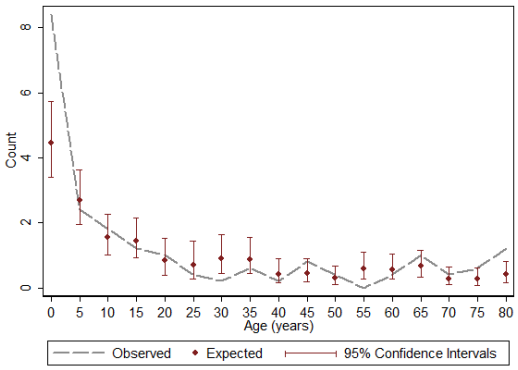


N22 - North London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

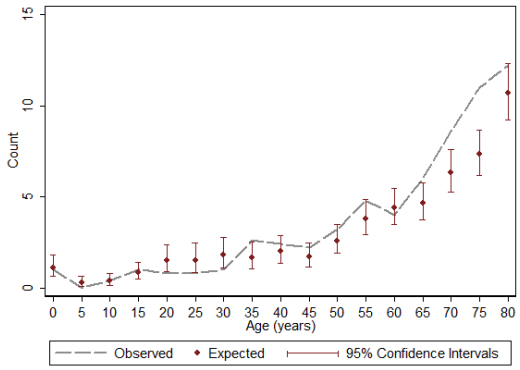
Total haematological malignancies - Persons
All ages: O/E = 77.3% (CI: 72-83)



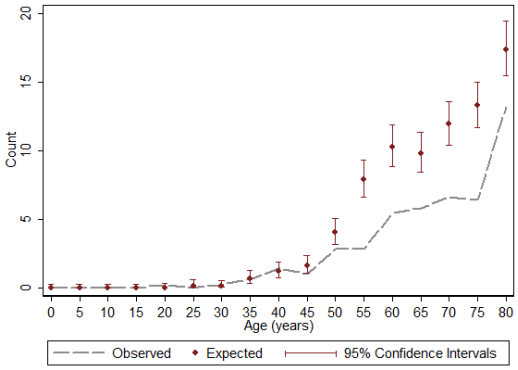
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 119.5% (CI: 74-183)



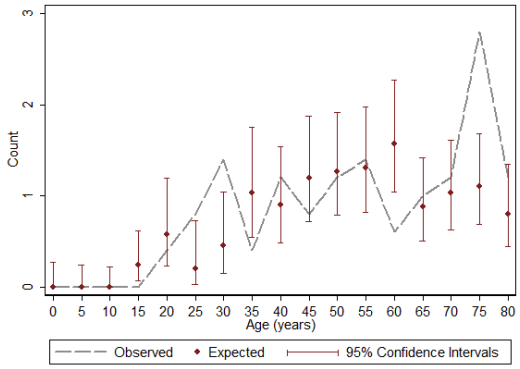
Acute myeloid leukaemia - Persons
All ages: O/E = 102.8% (CI: 79-132)



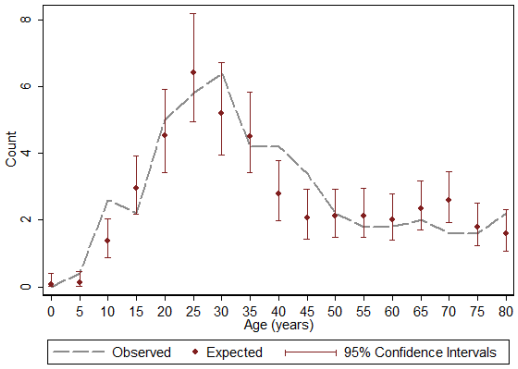
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 48.4% (CI: 35-65)



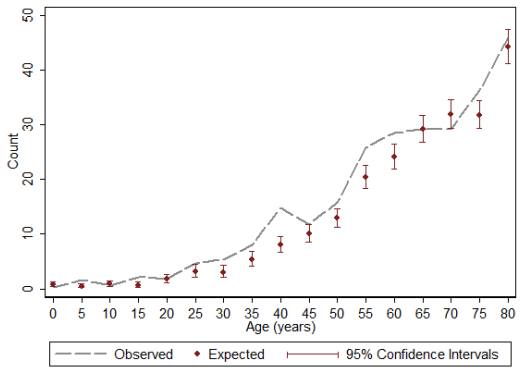
Chronic myeloid leukaemia - Persons
All ages: O/E = 100.2% (CI: 55-168)



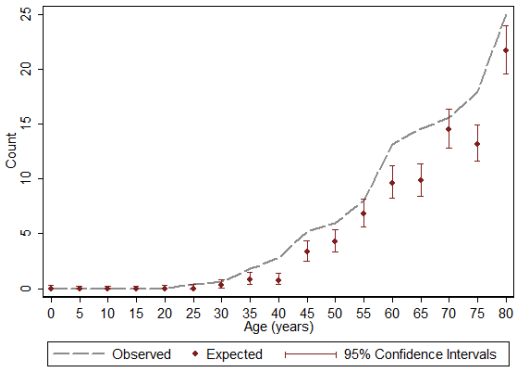
Hodgkin lymphoma - Persons
All ages: O/E = 107.1% (CI: 79-142)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 96.7% (CI: 85-109)

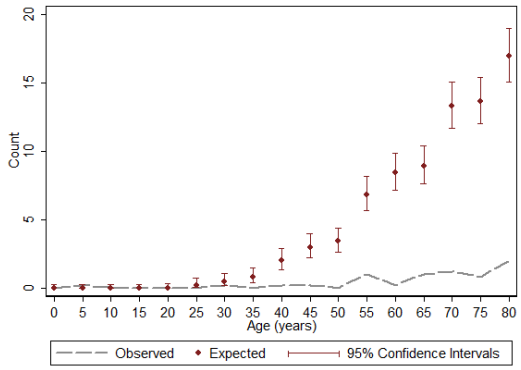


Myeloma - Persons
All ages: O/E = 107.4% (CI: 88-129)

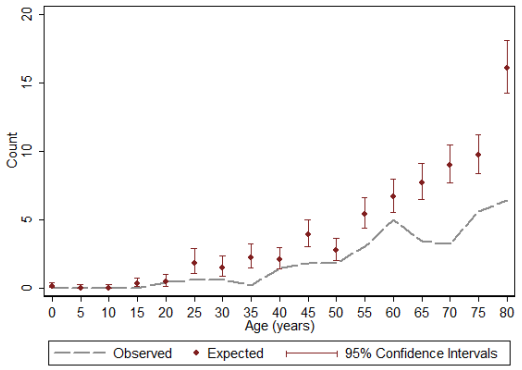


N22 - North London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

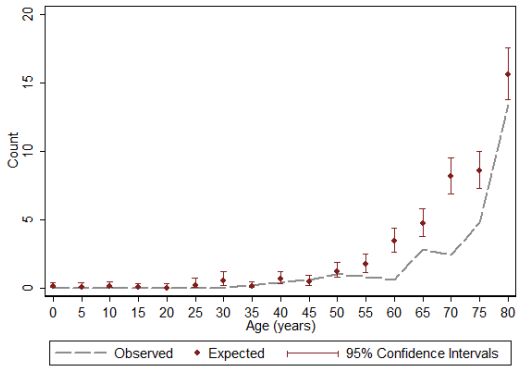
MGUS - Persons
All ages: O/E = 7.4% (CI: 3-15)



Myeloproliferative neoplasms - Persons
All ages: O/E = 40.5% (CI: 28-57)

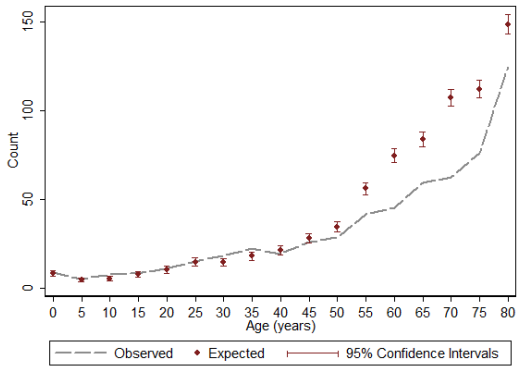


Myelodysplastic syndromes - Persons
All ages: O/E = 48.4% (CI: 32-70)

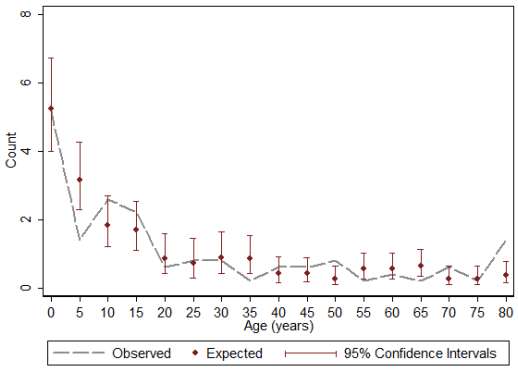


N23 - North East London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

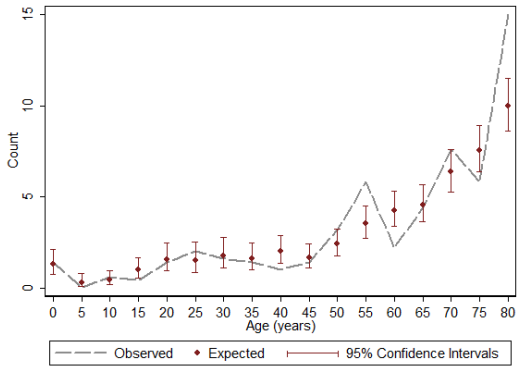
Total haematological malignancies - Persons
All ages: O/E = 62.4% (CI: 57-68)



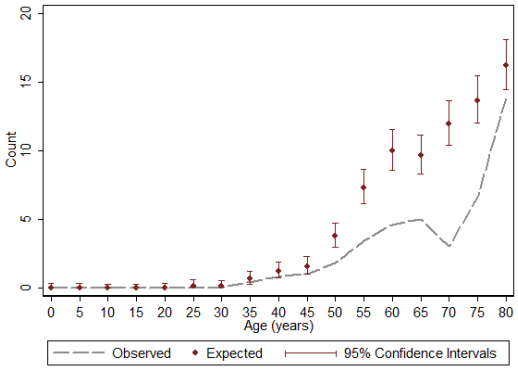
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 99.2% (CI: 59-157)



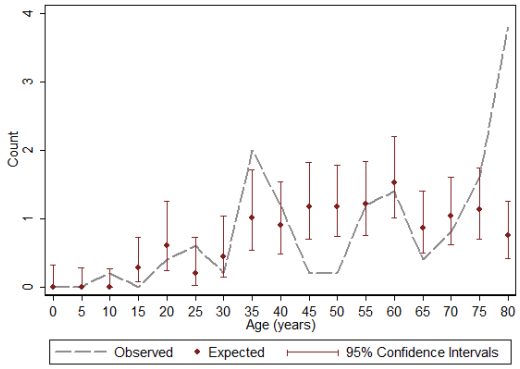
Acute myeloid leukaemia - Persons
All ages: O/E = 88.4% (CI: 67-115)



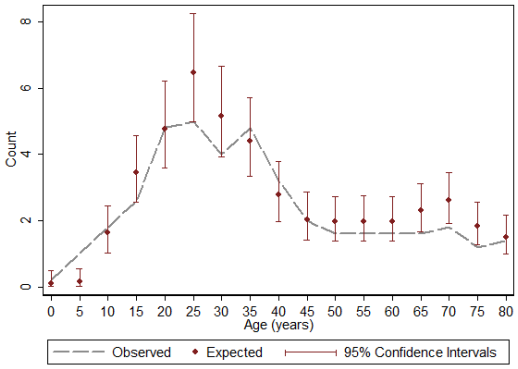
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 40.8% (CI: 29-56)



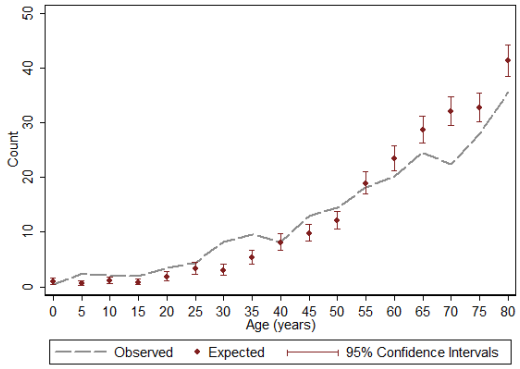
Chronic myeloid leukaemia - Persons
All ages: O/E = 97.1% (CI: 53-163)



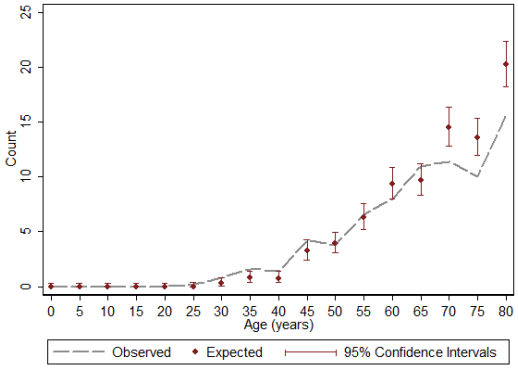
Hodgkin lymphoma - Persons
All ages: O/E = 88.3% (CI: 63-120)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 77.6% (CI: 68-89)

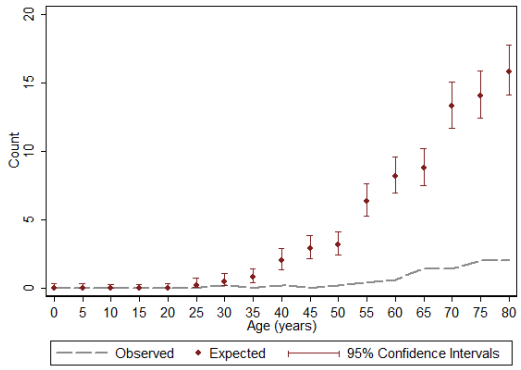


Myeloma - Persons
All ages: O/E = 69.4% (CI: 54-87)

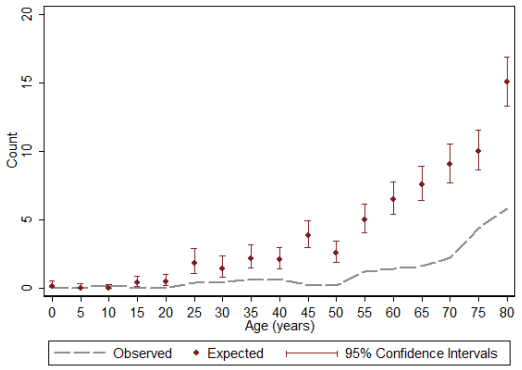


N23 - North East London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

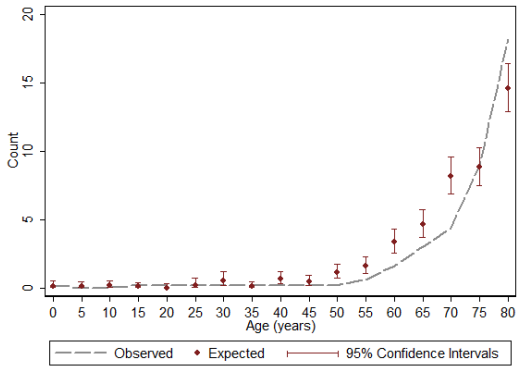
MGUS - Persons
All ages: O/E = 8.2% (CI: 4-16)



Myeloproliferative neoplasms - Persons
All ages: O/E = 22.6% (CI: 14-35)

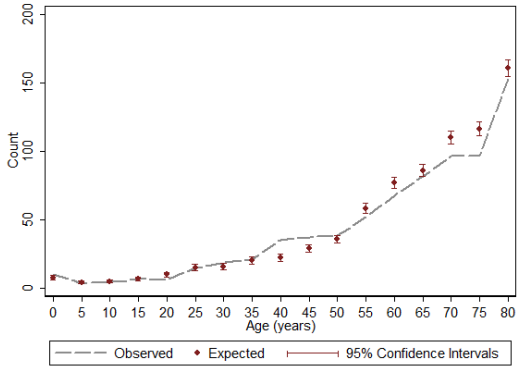


Myelodysplastic syndromes - Persons
All ages: O/E = 66% (CI: 47-91)

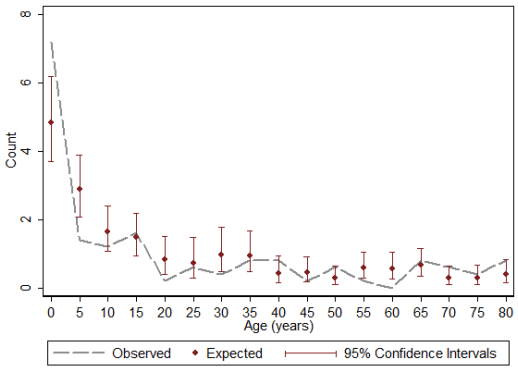


N24 - South East London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

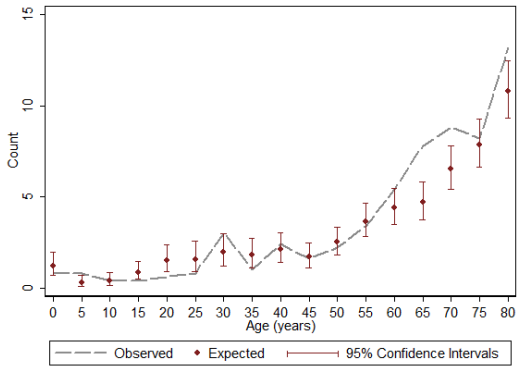
Total haematological malignancies - Persons
All ages: O/E = 80% (CI: 74-86)



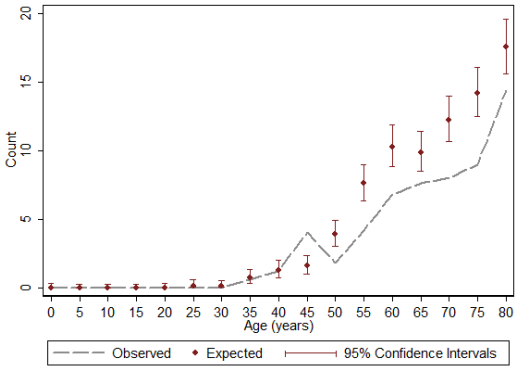
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 93.6% (CI: 55-150)



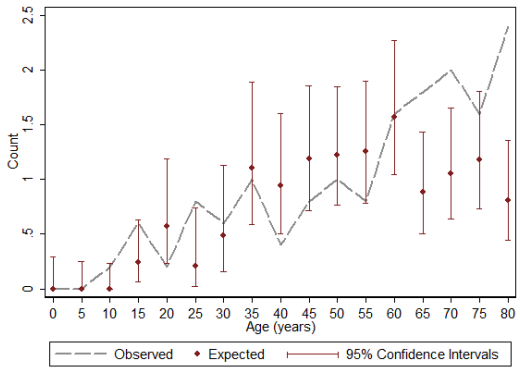
Acute myeloid leukaemia - Persons
All ages: O/E = 96.3% (CI: 74-124)



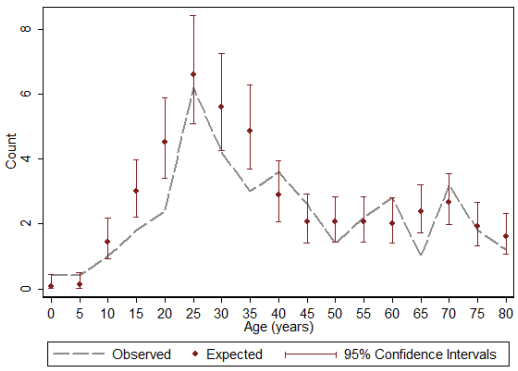
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 58.1% (CI: 44-75)



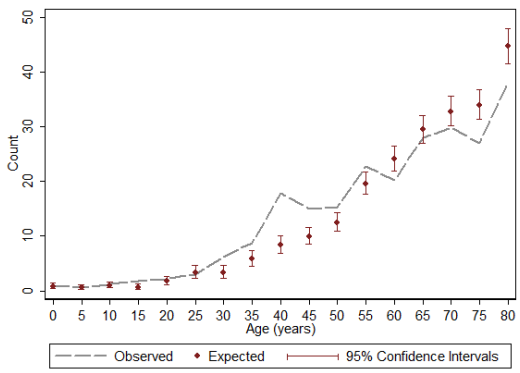
Chronic myeloid leukaemia - Persons
All ages: O/E = 104% (CI: 58-171)



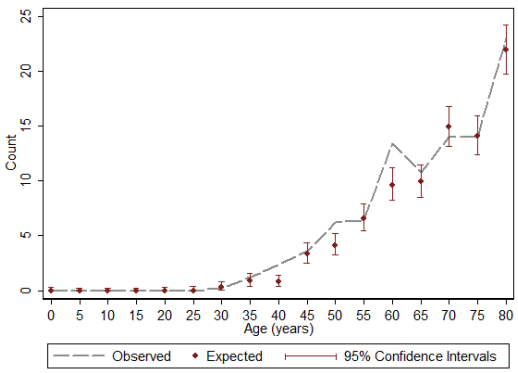
Hodgkin lymphoma - Persons
All ages: O/E = 86.1% (CI: 61-118)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 85.4% (CI: 75-97)

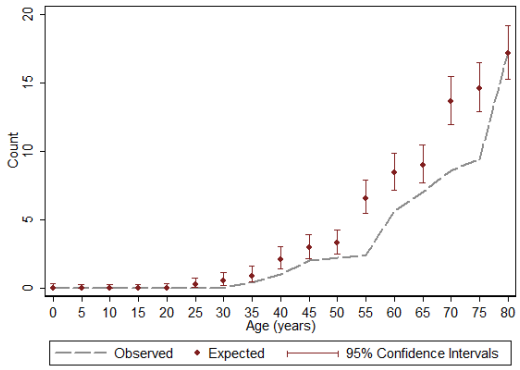


Myeloma - Persons
All ages: O/E = 89% (CI: 72-109)

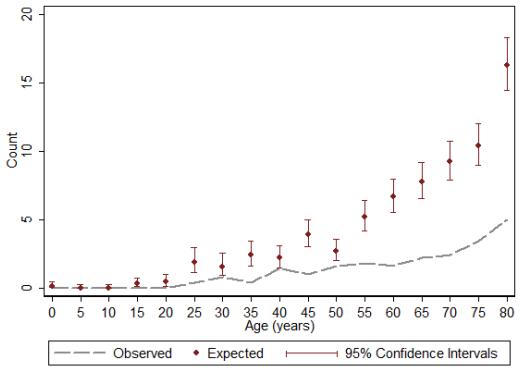


N24 - South East London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

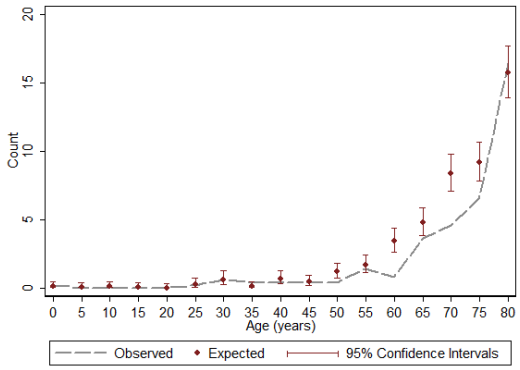
MGUS - Persons
All ages: O/E = 56.6% (CI: 43-74)



Myeloproliferative neoplasms - Persons
All ages: O/E = 26.1% (CI: 16-40)

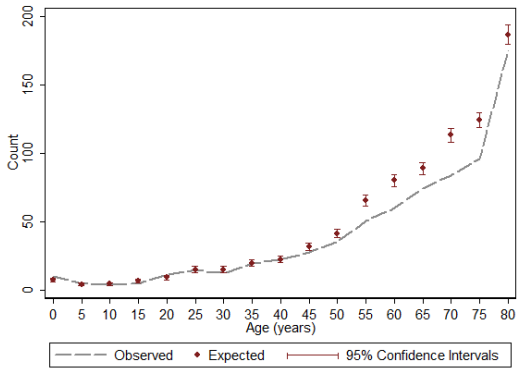


Myelodysplastic syndromes - Persons
All ages: O/E = 62.5% (CI: 44-87)

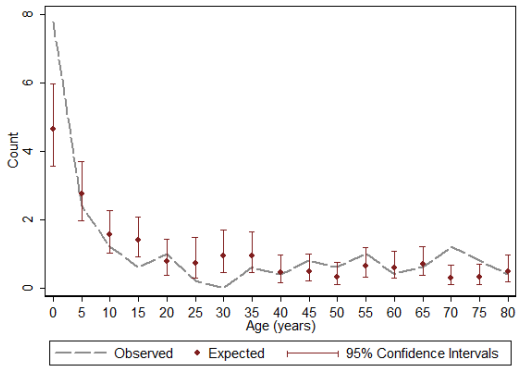


N25 - South West London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

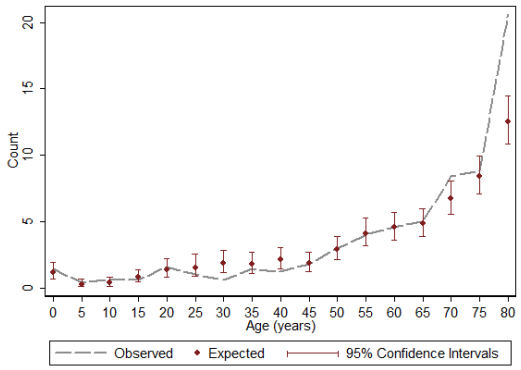
Total haematological malignancies - Persons
All ages: O/E = 75.4% (CI: 70-81)



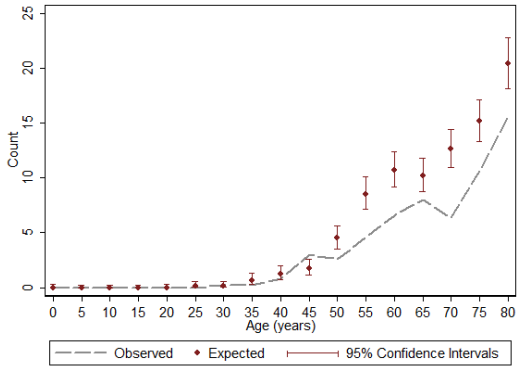
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 109.1% (CI: 67-168)



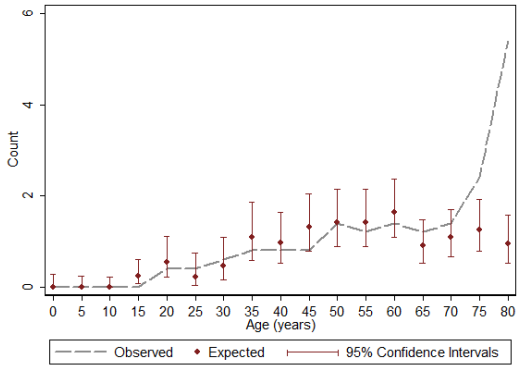
Acute myeloid leukaemia - Persons
All ages: O/E = 103.3% (CI: 80-132)



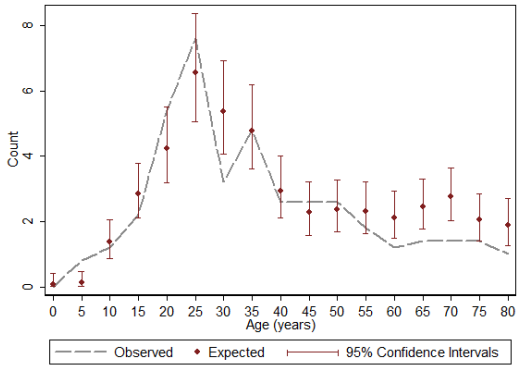
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 58.5% (CI: 44-76)



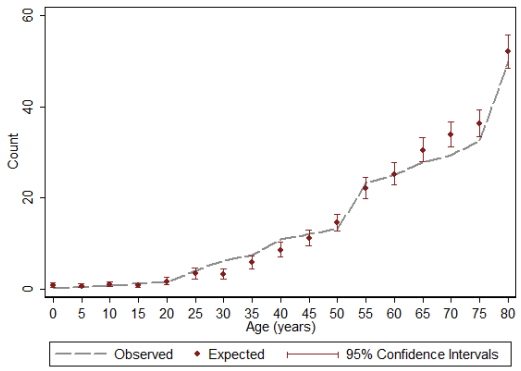
Chronic myeloid leukaemia - Persons
All ages: O/E = 123.5% (CI: 73-195)



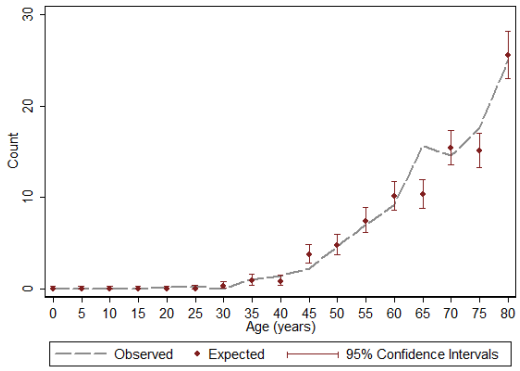
Hodgkin lymphoma - Persons
All ages: O/E = 89.6% (CI: 64-122)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 86.7% (CI: 76-98)

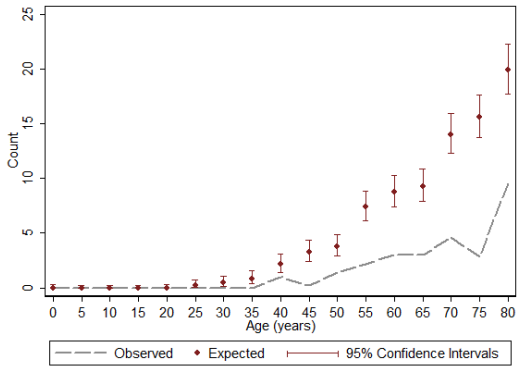


Myeloma - Persons
All ages: O/E = 90.9% (CI: 74-111)

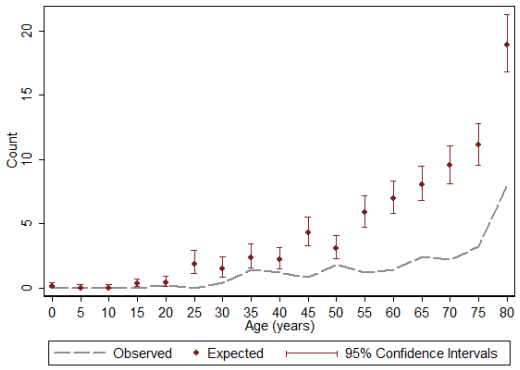


N25 - South West London Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

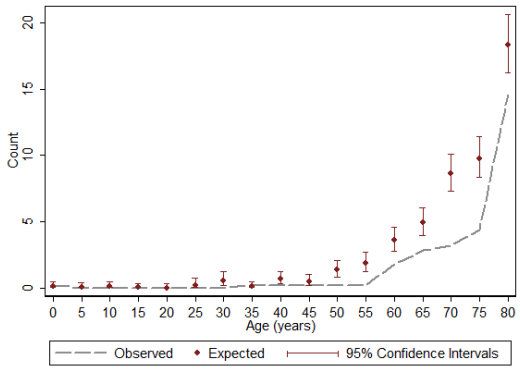
MGUS - Persons
All ages: O/E = 27.5% (CI: 18-40)



Myeloproliferative neoplasms - Persons
All ages: O/E = 28.2% (CI: 18-42)

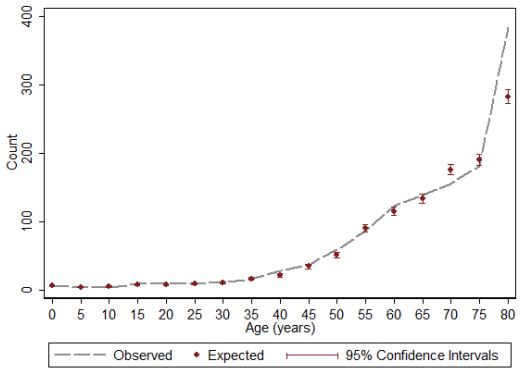


Myelodysplastic syndromes - Persons
All ages: O/E = 48.2% (CI: 32-70)

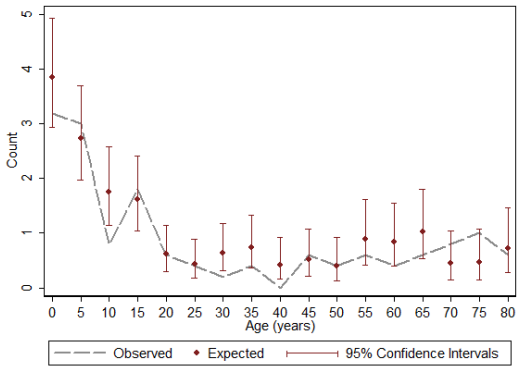


N26 - Peninsula Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

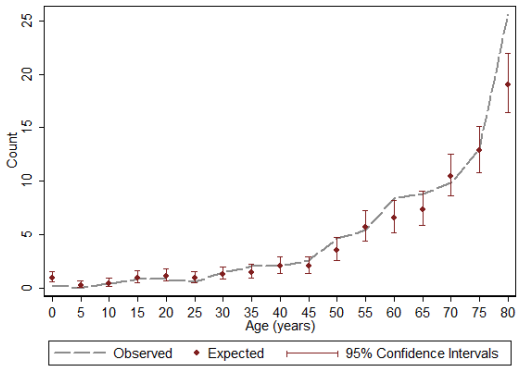
Total haematological malignancies - Persons
All ages: O/E = 130% (CI: 123-137)



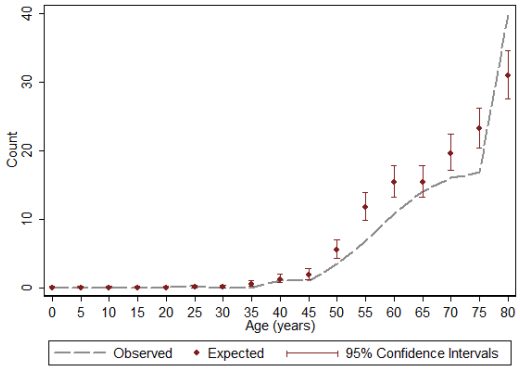
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 79.1% (CI: 44-130)



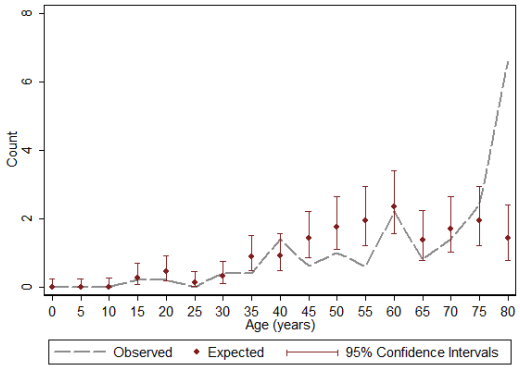
Acute myeloid leukaemia - Persons
All ages: O/E = 132.2% (CI: 106-163)



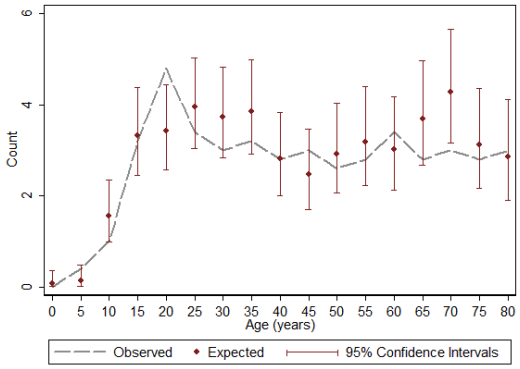
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 106.3% (CI: 87-128)



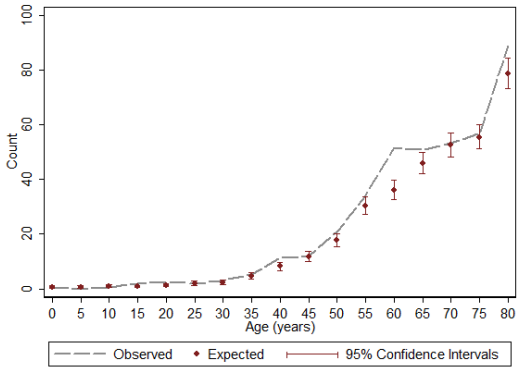
Chronic myeloid leukaemia - Persons
All ages: O/E = 119.4% (CI: 71-189)



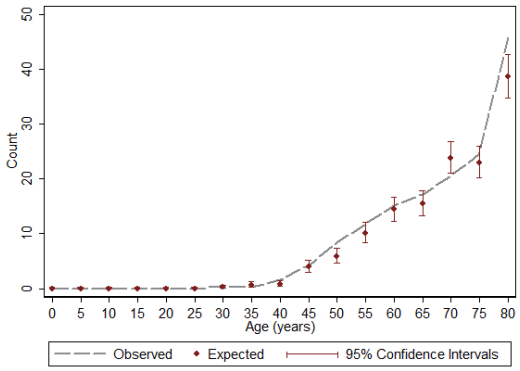
Hodgkin lymphoma - Persons
All ages: O/E = 95% (CI: 69-127)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 135.1% (CI: 122-149)

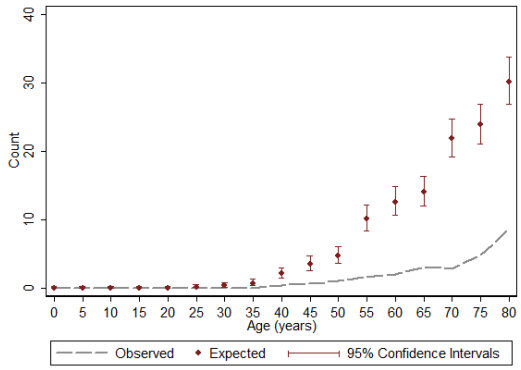


Myeloma - Persons
All ages: O/E = 134.5% (CI: 114-158)

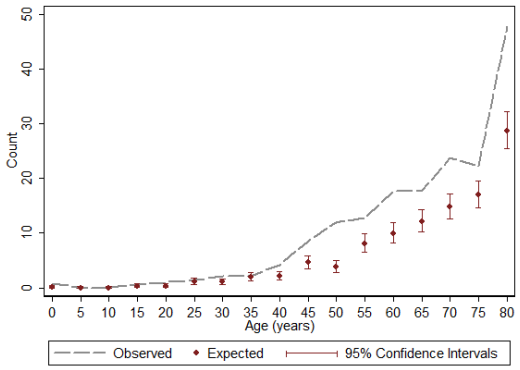


N26 - Peninsula Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

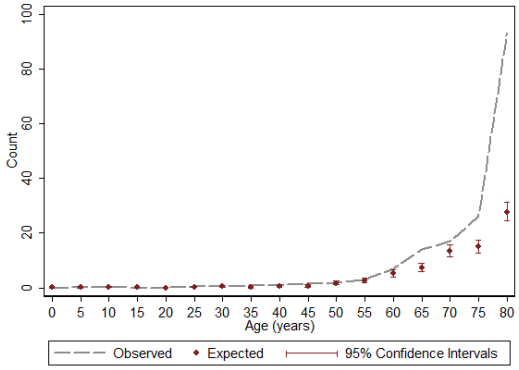
MGUS - Persons
All ages: O/E = 23.6% (CI: 15-35)



Myeloproliferative neoplasms - Persons
All ages: O/E = 198.8% (CI: 170-231)

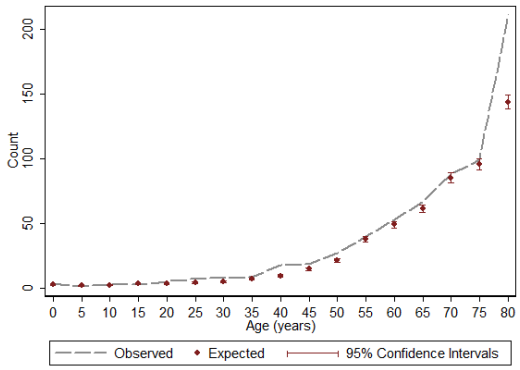


Myelodysplastic syndromes - Persons
All ages: O/E = 277.7% (CI: 237-323)

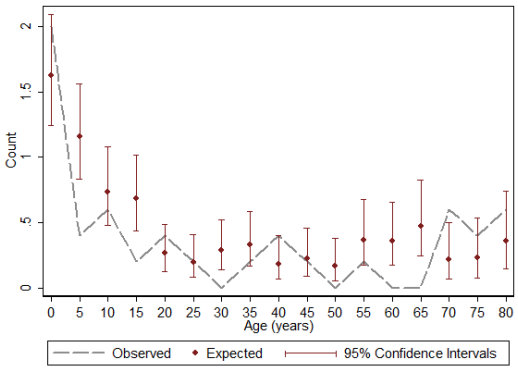


N27 - Dorset Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

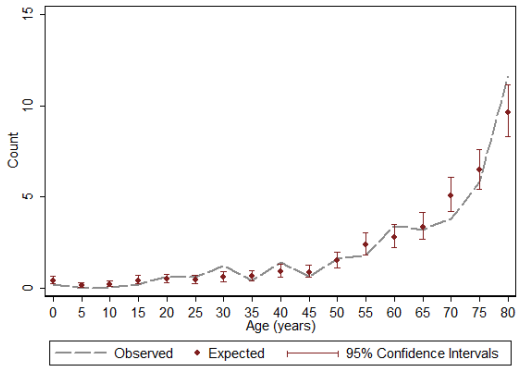
Total haematological malignancies - Persons
All ages: O/E = 154.5% (CI: 143-167)



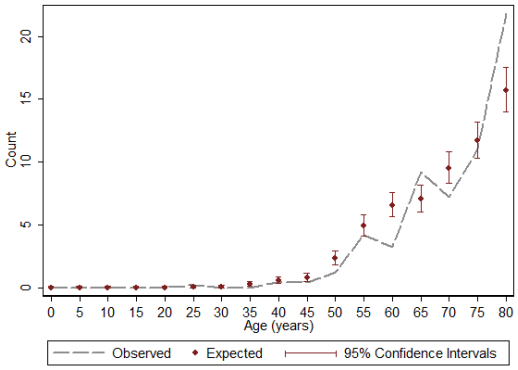
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 71.9% (CI: 26-156)



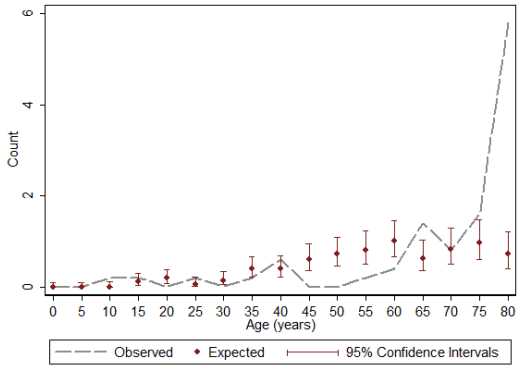
Acute myeloid leukaemia - Persons
All ages: O/E = 125.7% (CI: 88-174)



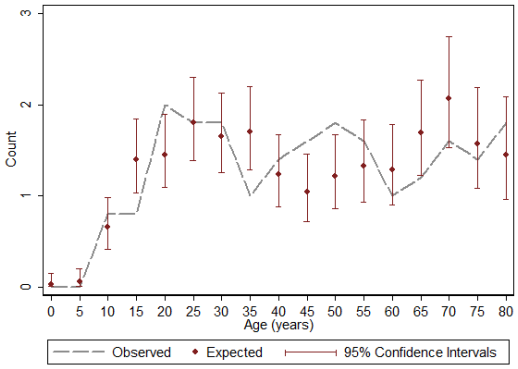
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 128.6% (CI: 98-166)



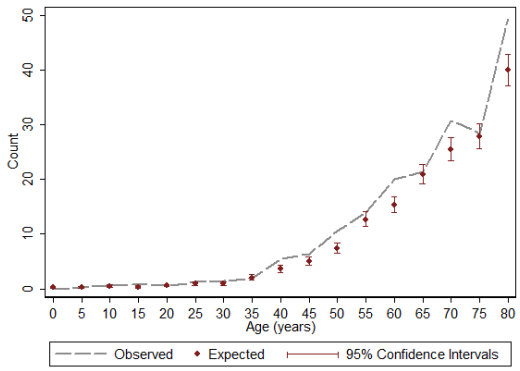
Chronic myeloid leukaemia - Persons
All ages: O/E = 165.8% (CI: 83-297)



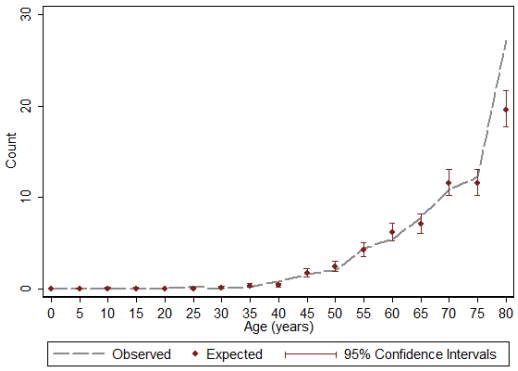
Hodgkin lymphoma - Persons
All ages: O/E = 100.7% (CI: 62-154)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 149.9% (CI: 130-173)

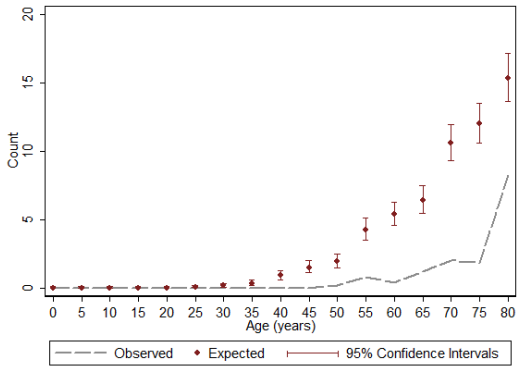


Myeloma - Persons
All ages: O/E = 146.6% (CI: 115-185)

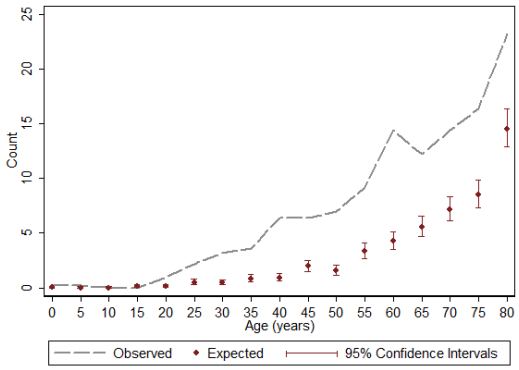


N27 - Dorset Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

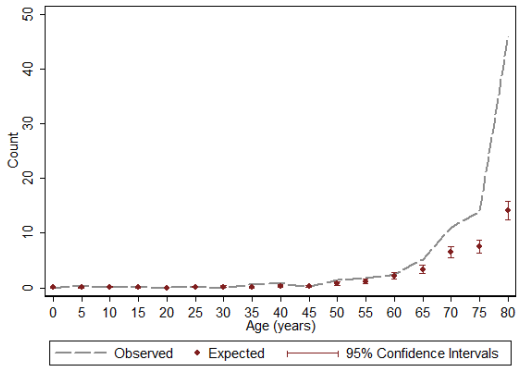
MGUS - Persons
All ages: O/E = 31.3% (CI: 17-53)



Myeloproliferative neoplasms - Persons
All ages: O/E = 309.7% (CI: 257-370)

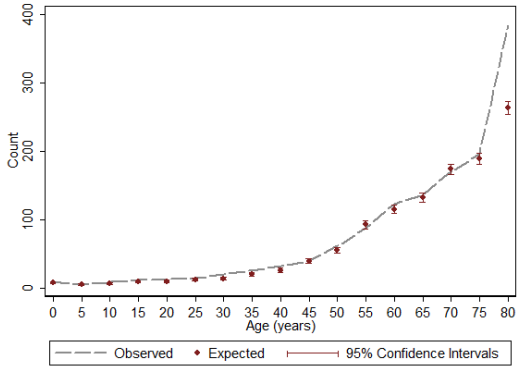


Myelodysplastic syndromes - Persons
All ages: O/E = 317.3% (CI: 253-393)

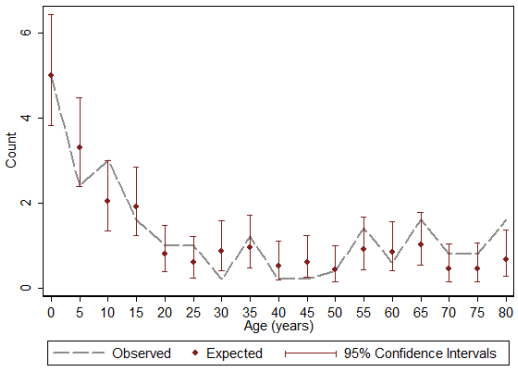


N28 - Avon, Somerset and Wiltshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

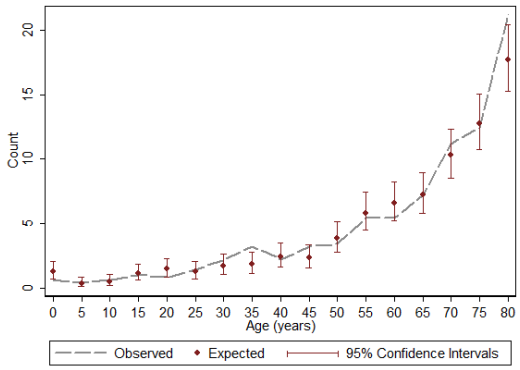
Total haematological malignancies - Persons
All ages: O/E = 120.2% (CI: 114-127)



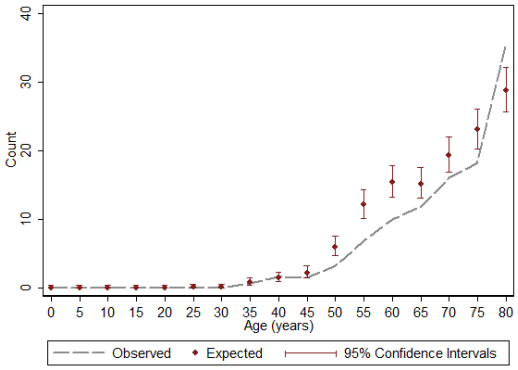
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 105.7% (CI: 67-159)



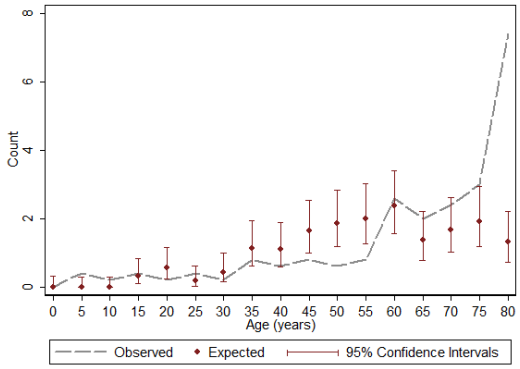
Acute myeloid leukaemia - Persons
All ages: O/E = 108.5% (CI: 86-135)



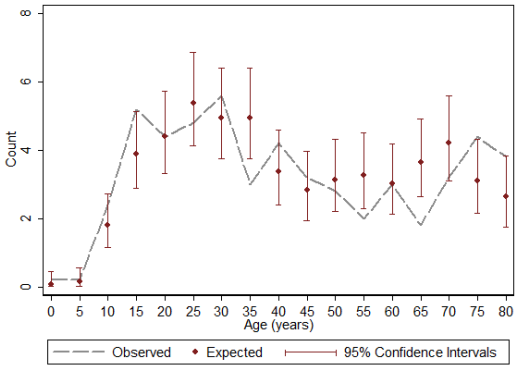
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 89.3% (CI: 73-108)



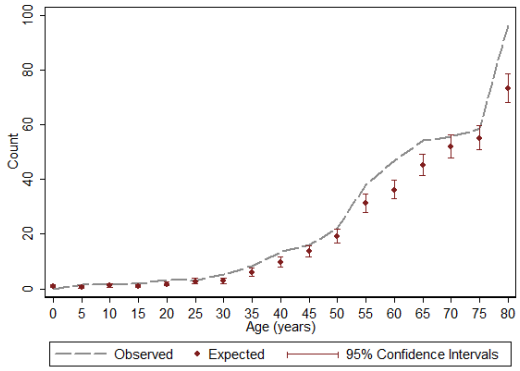
Chronic myeloid leukaemia - Persons
All ages: O/E = 127.2% (CI: 80-193)



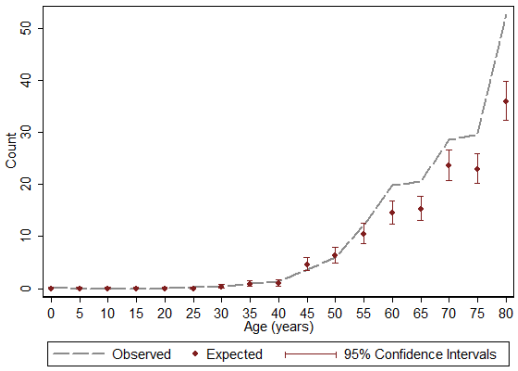
Hodgkin lymphoma - Persons
All ages: O/E = 99.4% (CI: 75-130)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 127% (CI: 115-140)

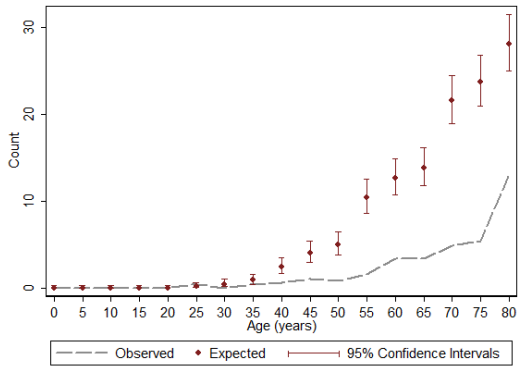


Myeloma - Persons
All ages: O/E = 137.5% (CI: 118-159)

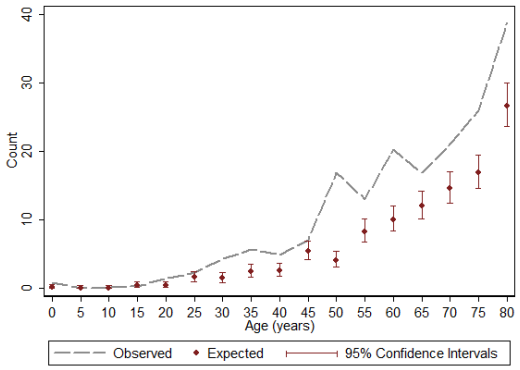


N28 - Avon, Somerset and Wiltshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

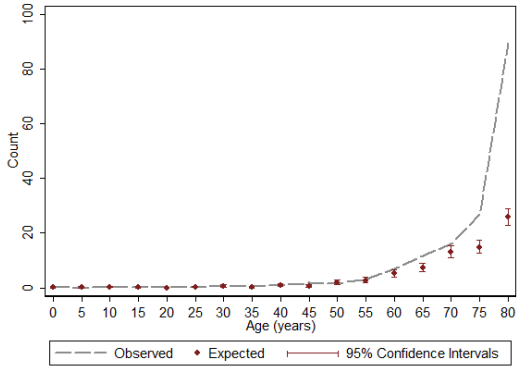
MGUS - Persons
All ages: O/E = 29.2% (CI: 20-41)



Myeloproliferative neoplasms - Persons
All ages: O/E = 176.3% (CI: 151-204)

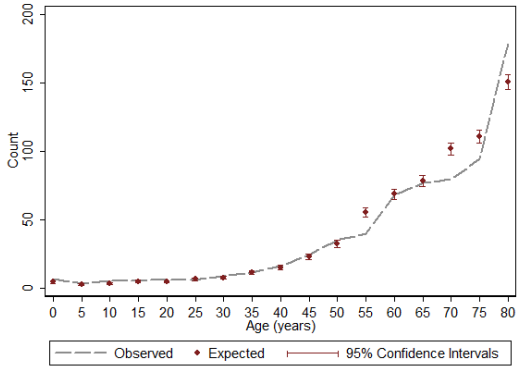


Myelodysplastic syndromes - Persons
All ages: O/E = 233.3% (CI: 199-272)

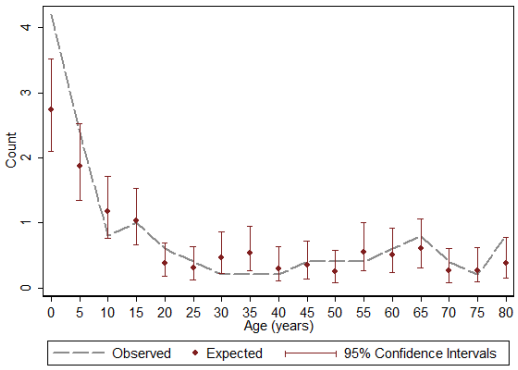


N29 - 3 Counties Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

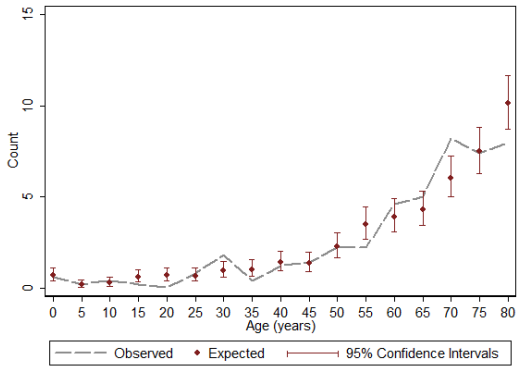
Total haematological malignancies - Persons
All ages: O/E = 106.2% (CI: 98-115)



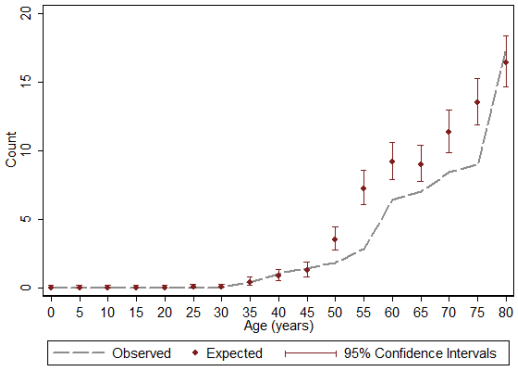
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 114.2% (CI: 62-192)



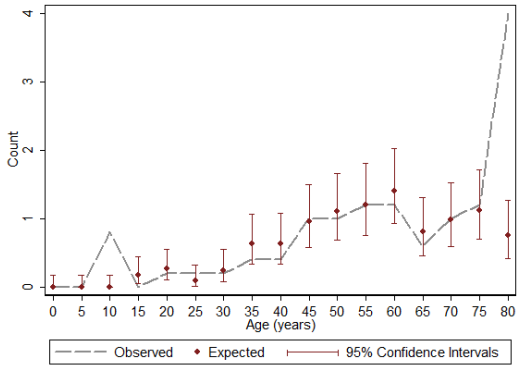
Acute myeloid leukaemia - Persons
All ages: O/E = 104.7% (CI: 76-140)



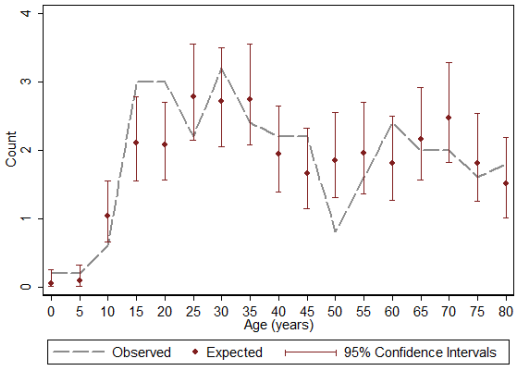
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 83% (CI: 63-108)



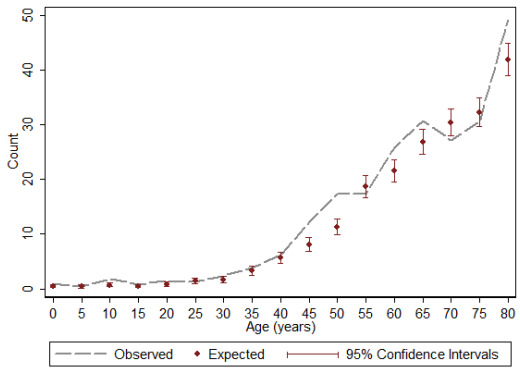
Chronic myeloid leukaemia - Persons
All ages: O/E = 133.5% (CI: 71-228)



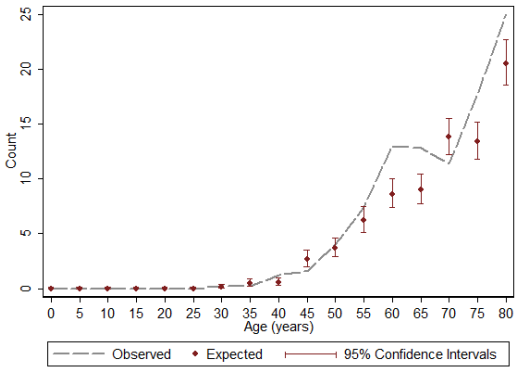
Hodgkin lymphoma - Persons
All ages: O/E = 101.3% (CI: 69-144)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 121.2% (CI: 106-138)

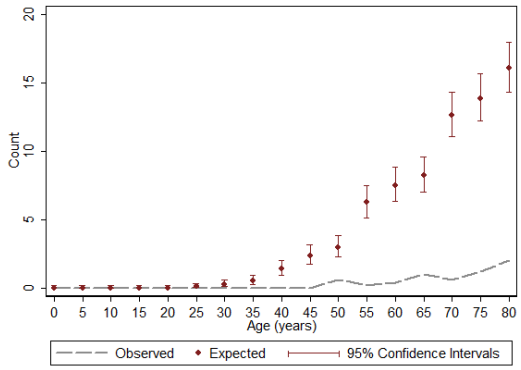


Myeloma - Persons
All ages: O/E = 130.4% (CI: 105-160)

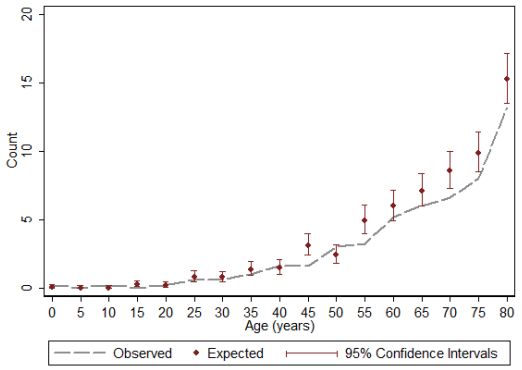


N29 - 3 Counties Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

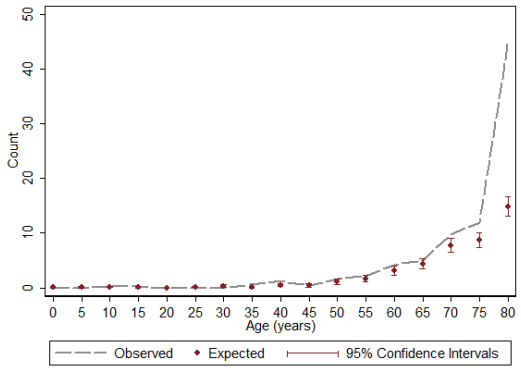
MGUS - Persons
All ages: O/E = 9.1% (CI: 3-20)



Myeloproliferative neoplasms - Persons
All ages: O/E = 89.7% (CI: 67-118)

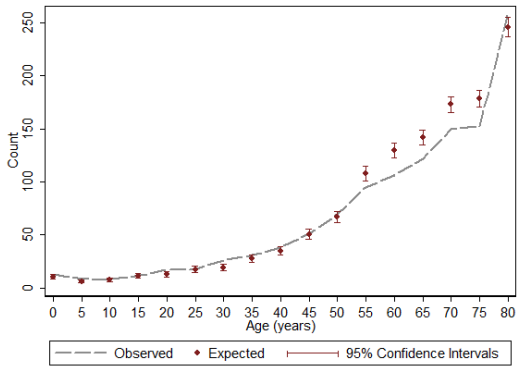


Myelodysplastic syndromes - Persons
All ages: O/E = 211% (CI: 168-262)

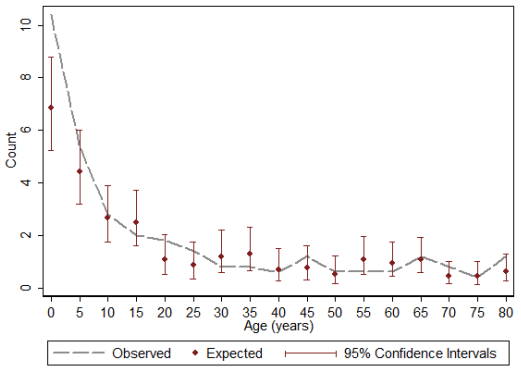


N30 - Thames Valley Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

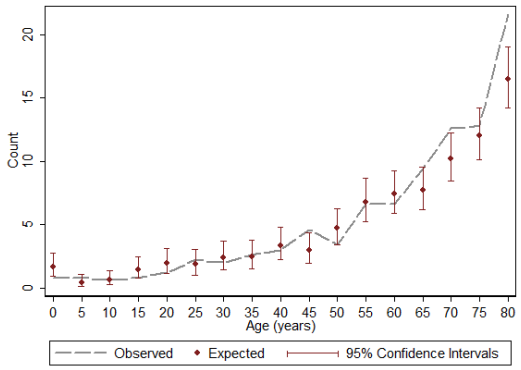
Total haematological malignancies - Persons
All ages: O/E = 83.8% (CI: 79-89)



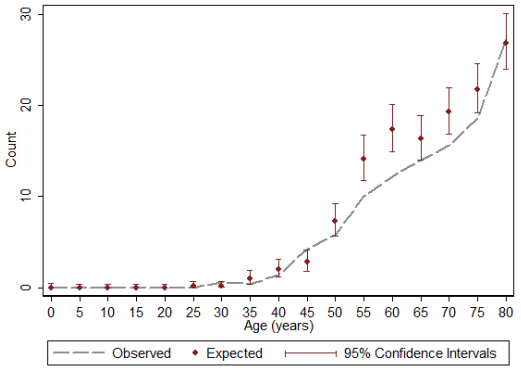
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 116.6% (CI: 80-165)



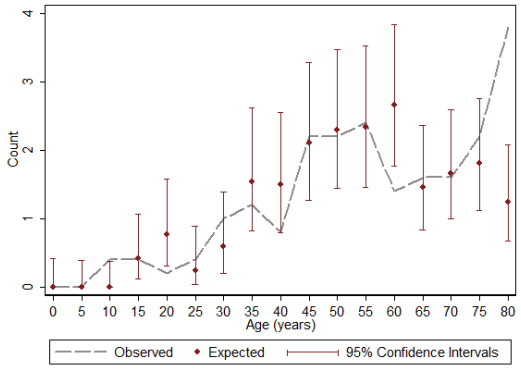
Acute myeloid leukaemia - Persons
All ages: O/E = 96.6% (CI: 78-119)



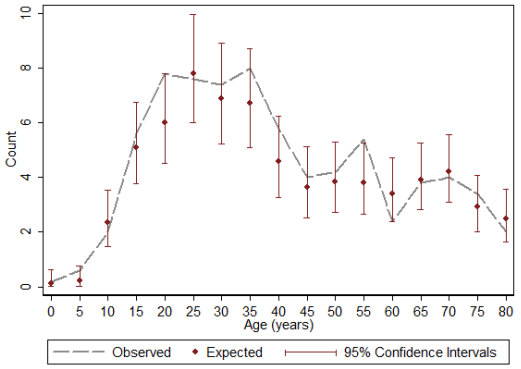
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 74.2% (CI: 61-89)



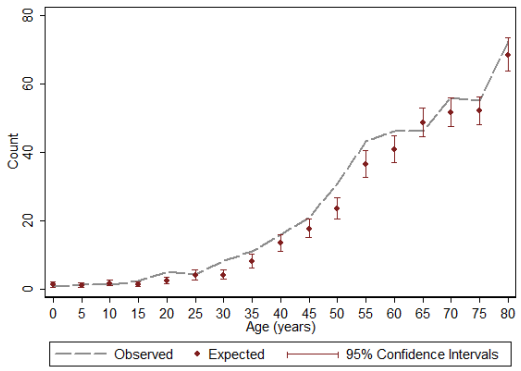
Chronic myeloid leukaemia - Persons
All ages: O/E = 96.3% (CI: 60-147)



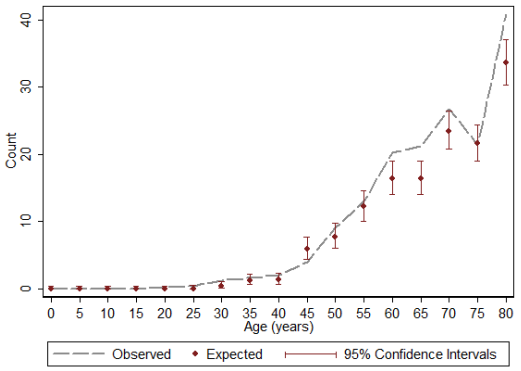
Hodgkin lymphoma - Persons
All ages: O/E = 108% (CI: 85-136)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 99.2% (CI: 90-109)

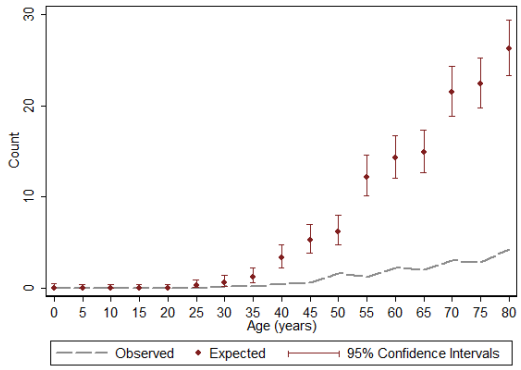


Myeloma - Persons
All ages: O/E = 99.7% (CI: 85-116)

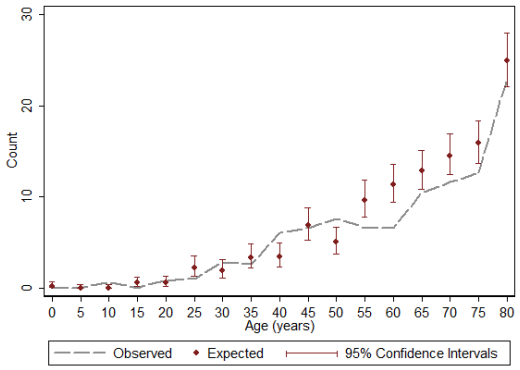


N30 - Thames Valley Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

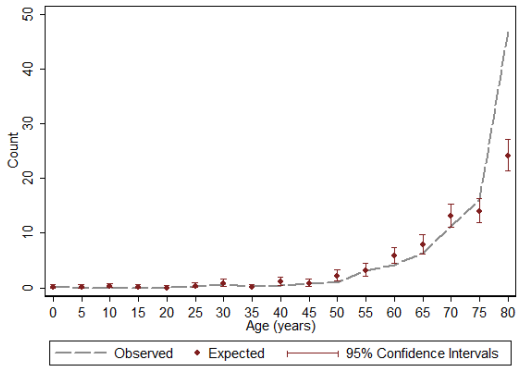
MGUS - Persons
All ages: O/E = 12.2% (CI: 7-19)



Myeloproliferative neoplasms - Persons
All ages: O/E = 76.9% (CI: 62-94)

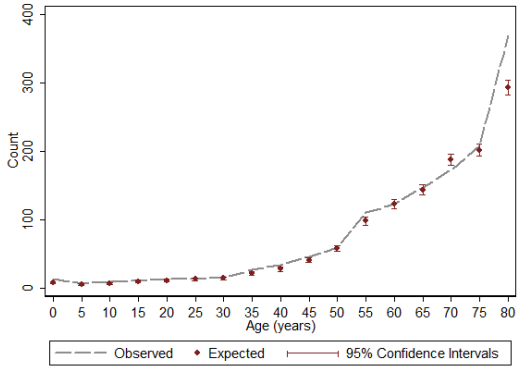


Myelodysplastic syndromes - Persons
All ages: O/E = 104.5% (CI: 84-128)

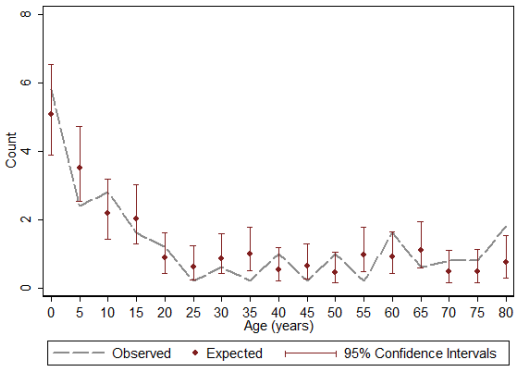


N31 - Central South Coast Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

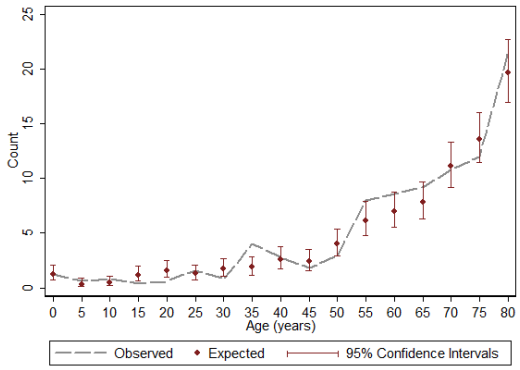
Total haematological malignancies - Persons
All ages: O/E = 117.2% (CI: 111-124)



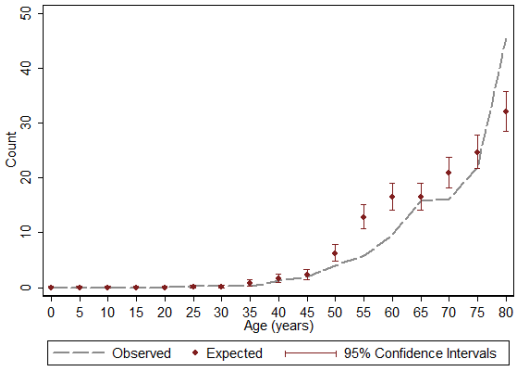
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 95.7% (CI: 60-145)



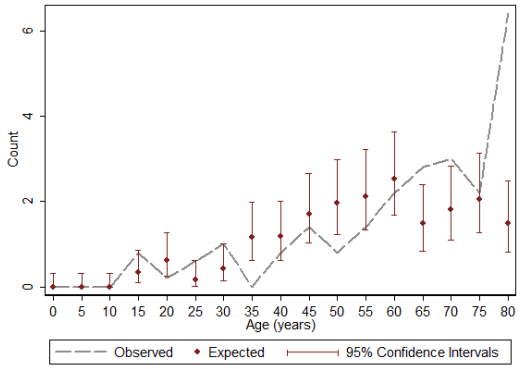
Acute myeloid leukaemia - Persons
All ages: O/E = 110.3% (CI: 88-136)



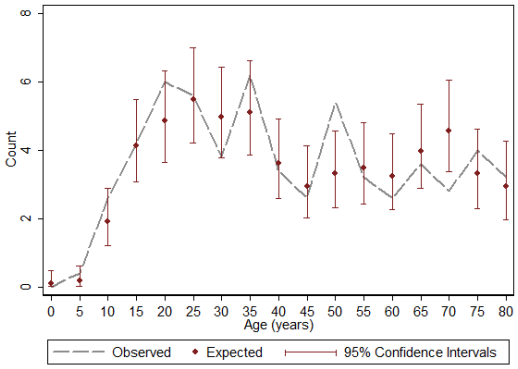
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 98.2% (CI: 82-117)



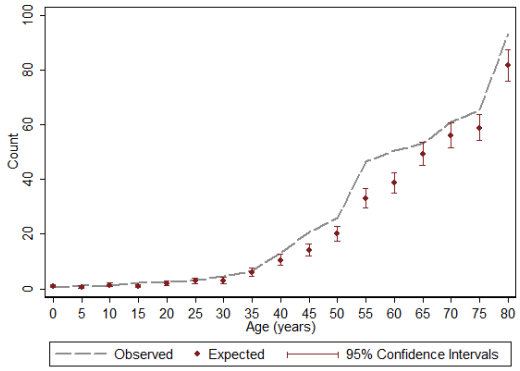
Chronic myeloid leukaemia - Persons
All ages: O/E = 125.9% (CI: 80-189)



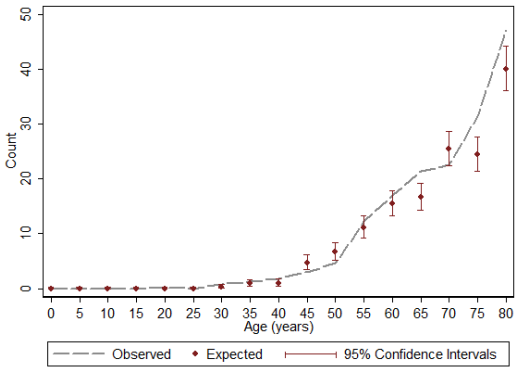
Hodgkin lymphoma - Persons
All ages: O/E = 102.8% (CI: 78-133)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 127.2% (CI: 116-140)

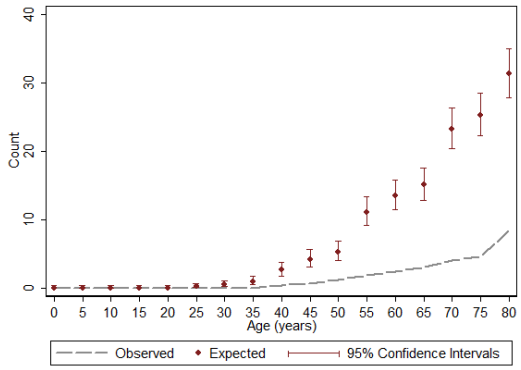


Myeloma - Persons
All ages: O/E = 120.6% (CI: 103-141)

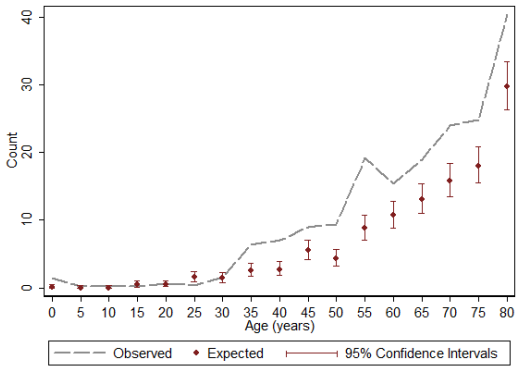


N31 - Central South Coast Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

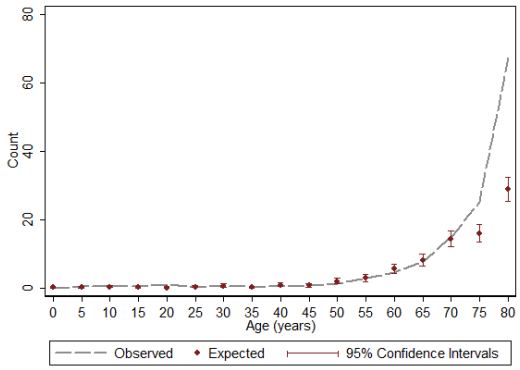
MGUS - Persons
All ages: O/E = 21.1% (CI: 14-31)



Myeloproliferative neoplasms - Persons
All ages: O/E = 167.8% (CI: 144-194)

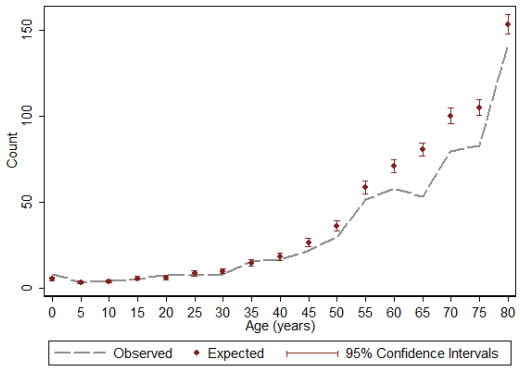


Myelodysplastic syndromes - Persons
All ages: O/E = 174.2% (CI: 145-207)

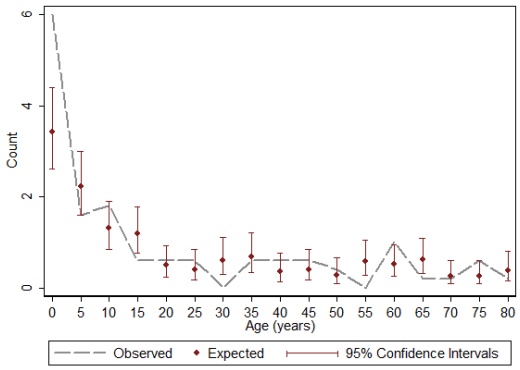


N32 - Surrey, West Sussex and Hampshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

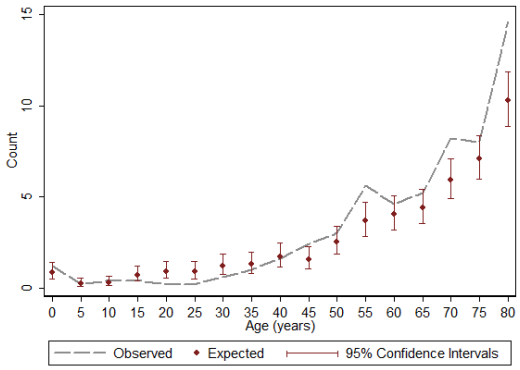
Total haematological malignancies - Persons
All ages: O/E = 81.8% (CI: 75-89)



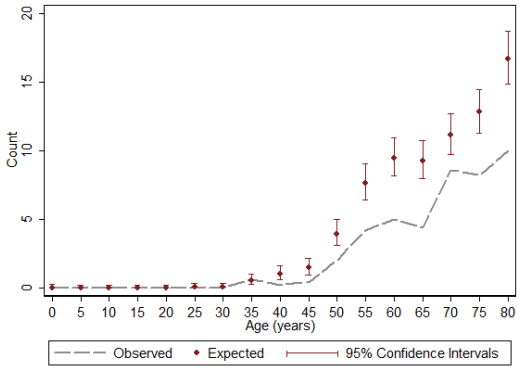
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 105.6% (CI: 59-174)



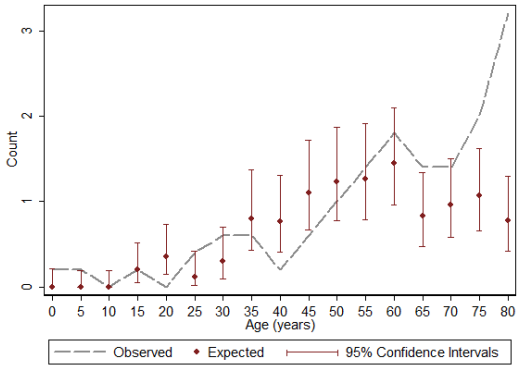
Acute myeloid leukaemia - Persons
All ages: O/E = 117% (CI: 89-152)



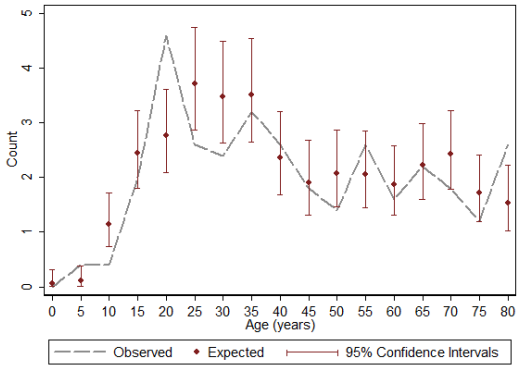
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 56% (CI: 41-75)



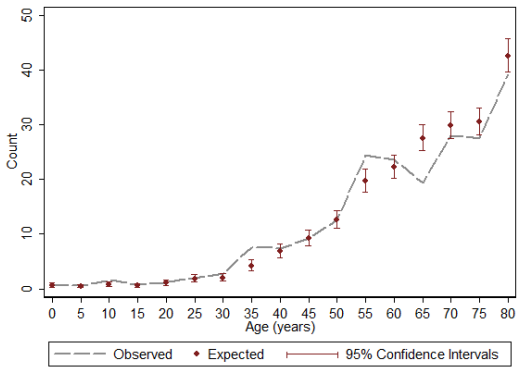
Chronic myeloid leukaemia - Persons
All ages: O/E = 132.9% (CI: 74-219)



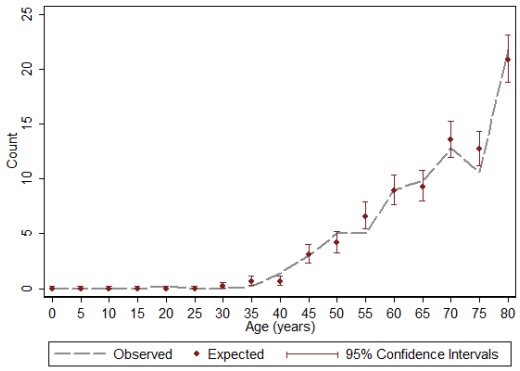
Hodgkin lymphoma - Persons
All ages: O/E = 93.1% (CI: 64-131)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 95% (CI: 83-109)

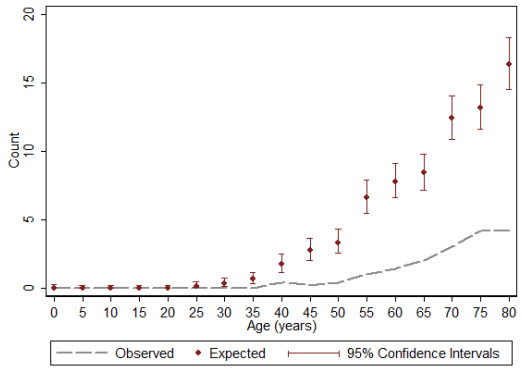


Myeloma - Persons
All ages: O/E = 93.4% (CI: 74-117)

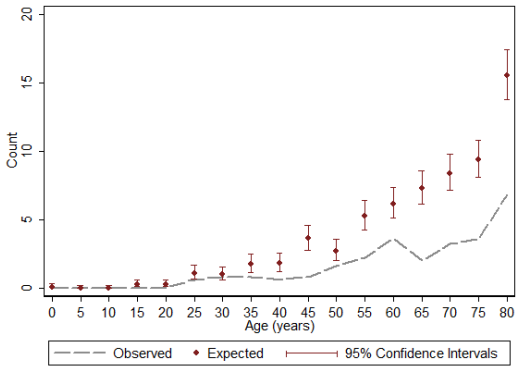


N32 - Surrey, West Sussex and Hampshire Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

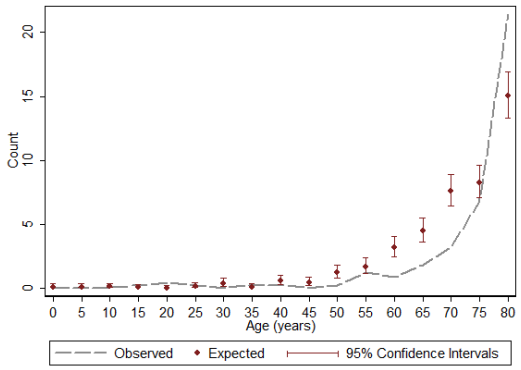
MGUS - Persons
All ages: O/E = 21% (CI: 12-34)



Myeloproliferative neoplasms - Persons
All ages: O/E = 39.4% (CI: 26-58)

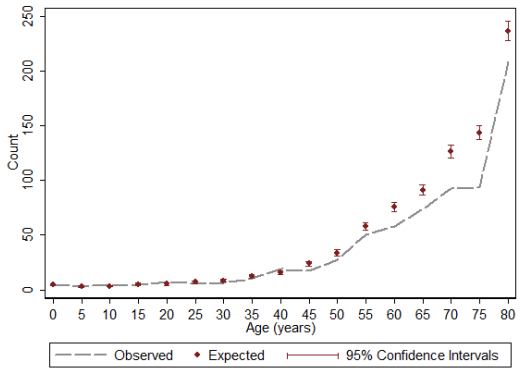


Myelodysplastic syndromes - Persons
All ages: O/E = 79.9% (CI: 56-111)

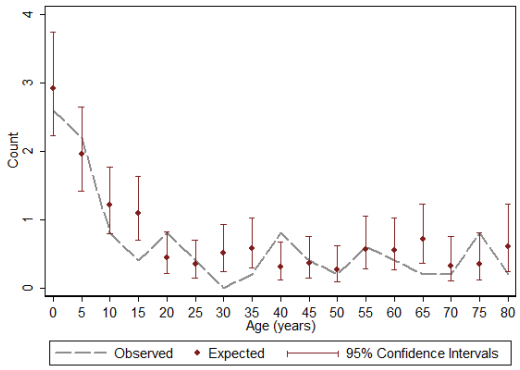


N33 - Sussex Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

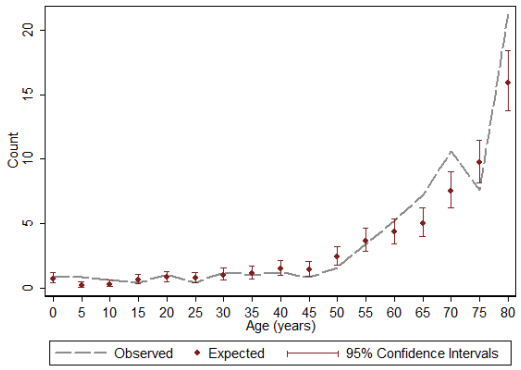
Total haematological malignancies - Persons
All ages: O/E = 98.2% (CI: 91-106)



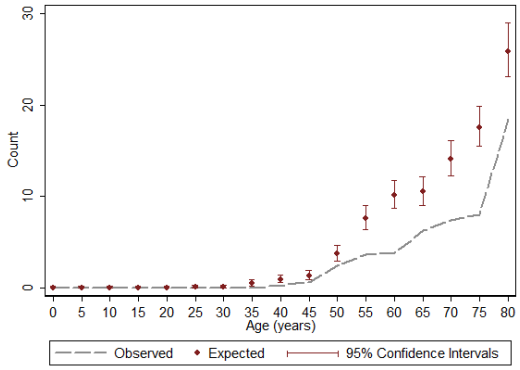
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 80.3% (CI: 40-144)



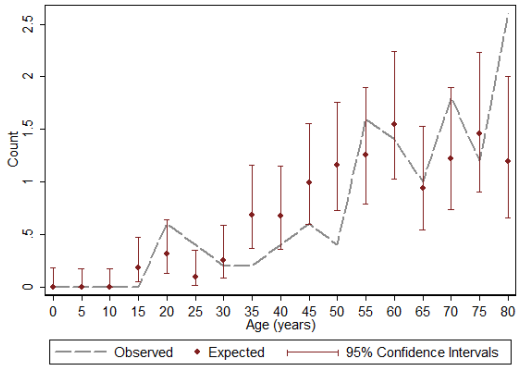
Acute myeloid leukaemia - Persons
All ages: O/E = 138.4% (CI: 107-176)



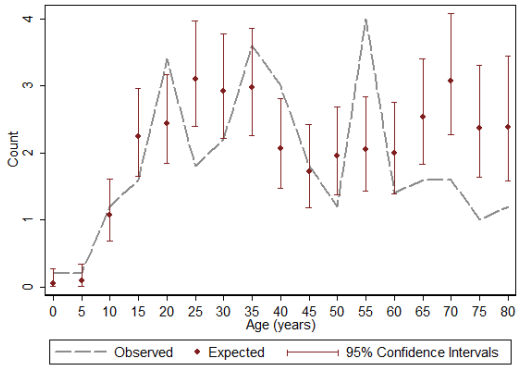
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 67.6% (CI: 50-89)



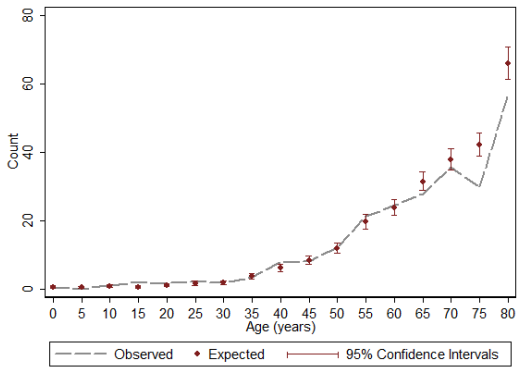
Chronic myeloid leukaemia - Persons
All ages: O/E = 110.3% (CI: 57-193)



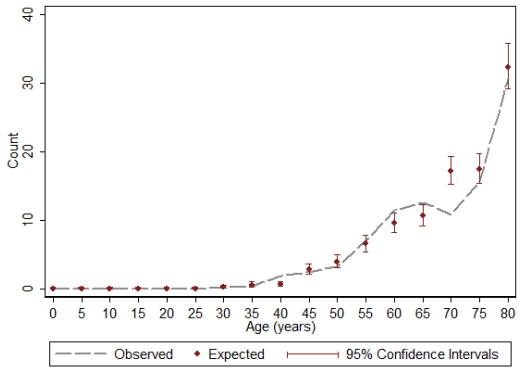
Hodgkin lymphoma - Persons
All ages: O/E = 90.7% (CI: 62-129)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 11.8% (CI: 98-127)

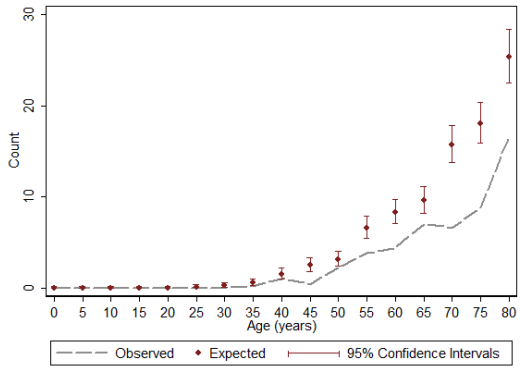


Myeloma - Persons
All ages: O/E = 119.3% (CI: 97-146)

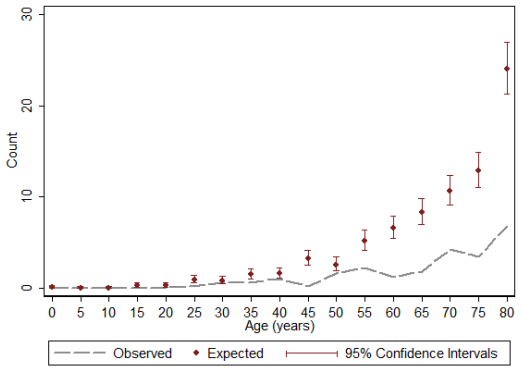


N33 - Sussex Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

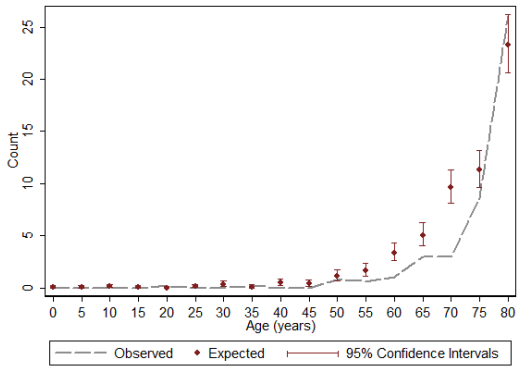
MGUS - Persons
All ages: O/E = 69.5% (CI: 52-91)



Myeloproliferative neoplasms - Persons
All ages: O/E = 36.2% (CI: 23-54)

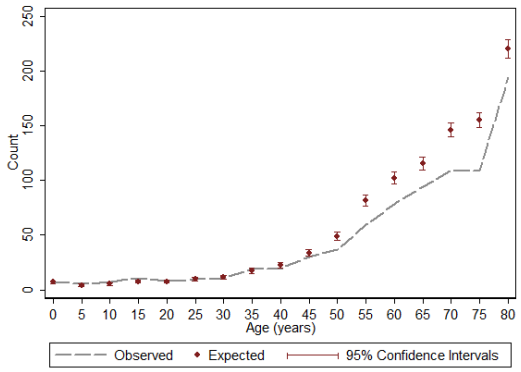


Myelodysplastic syndromes - Persons
All ages: O/E = 99.1% (CI: 72-133)

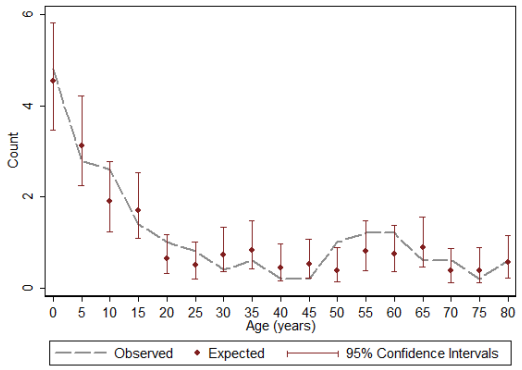


N34 - Kent and Medway Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

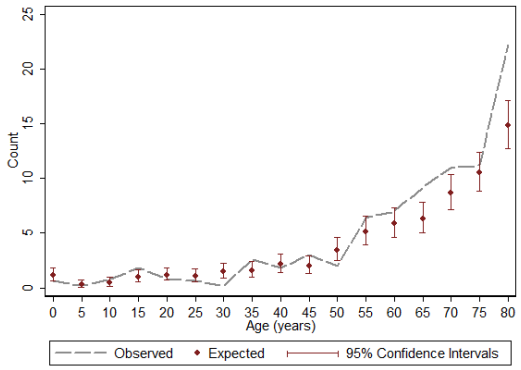
Total haematological malignancies - Persons
All ages: O/E = 83.5% (CI: 78-90)



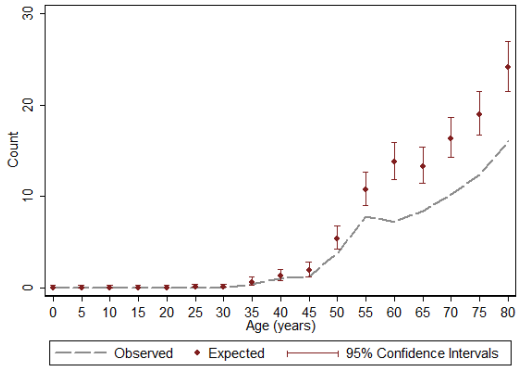
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 105.2% (CI: 64-162)



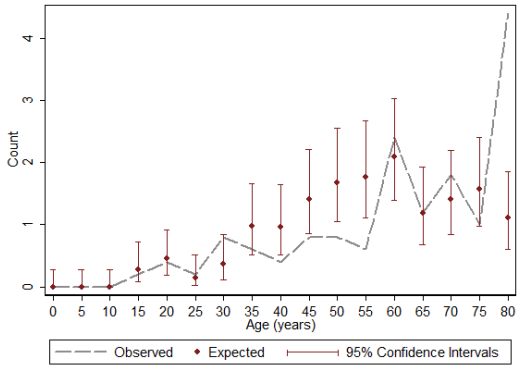
Acute myeloid leukaemia - Persons
All ages: O/E = 124.2% (CI: 99-154)



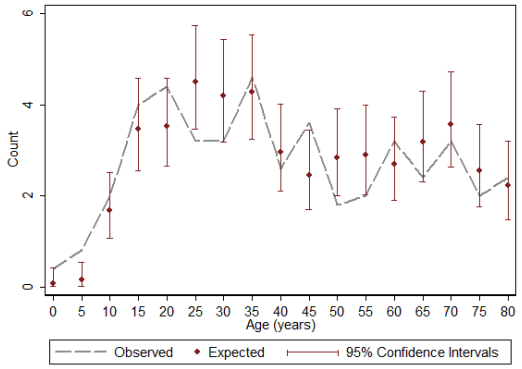
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 66.2% (CI: 51-84)



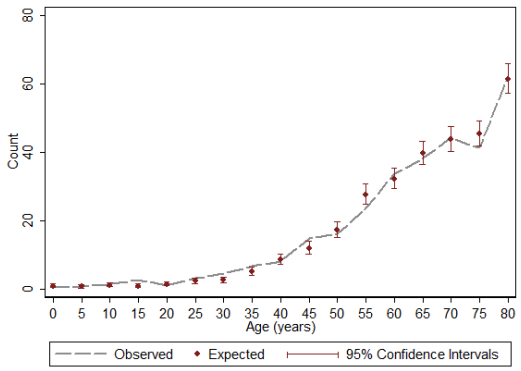
Chronic myeloid leukaemia - Persons
All ages: O/E = 99.3% (CI: 56-164)



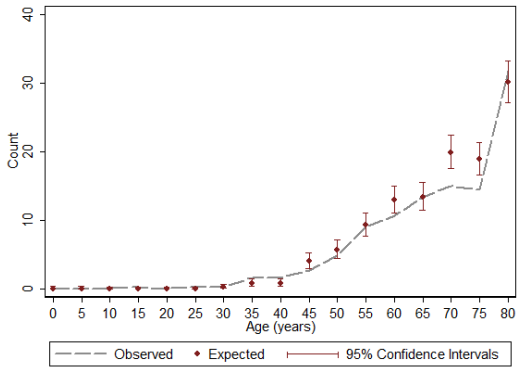
Hodgkin lymphoma - Persons
All ages: O/E = 94.8% (CI: 69-127)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 103% (CI: 92-115)

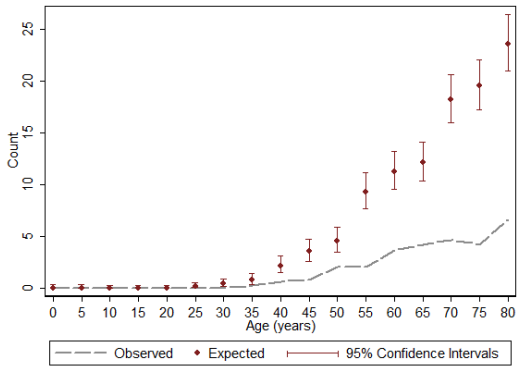


Myeloma - Persons
All ages: O/E = 93.9% (CI: 77-114)

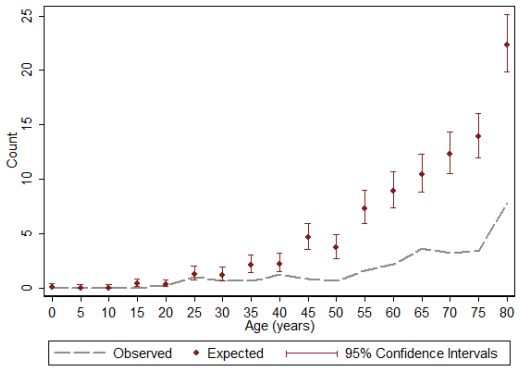


N34 - Kent and Medway Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

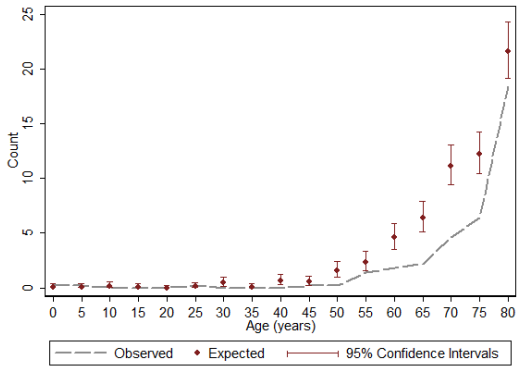
MGUS - Persons
All ages: O/E = 27.5% (CI: 18-40)



Myeloproliferative neoplasms - Persons
All ages: O/E = 29.5% (CI: 19-43)

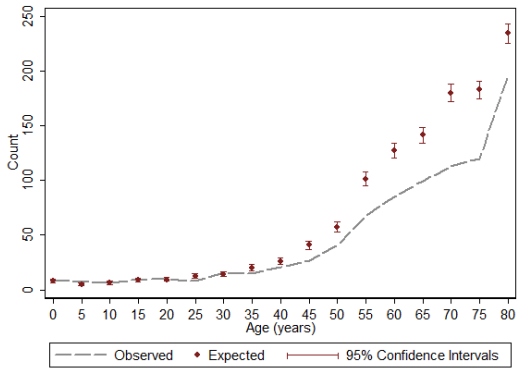


Myelodysplastic syndromes - Persons
All ages: O/E = 58.1% (CI: 40-81)

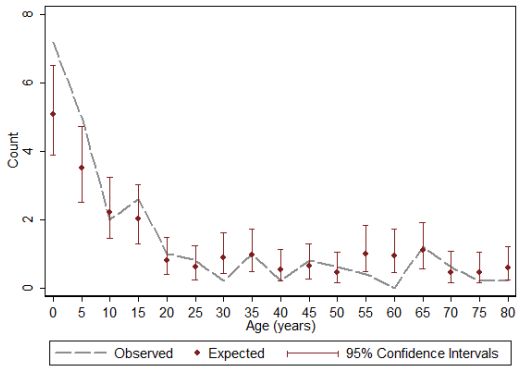


N35 - The Greater Midlands Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

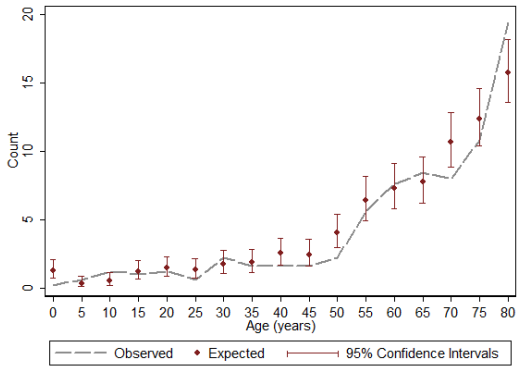
Total haematological malignancies - Persons
All ages: O/E = 73.8% (CI: 69-79)



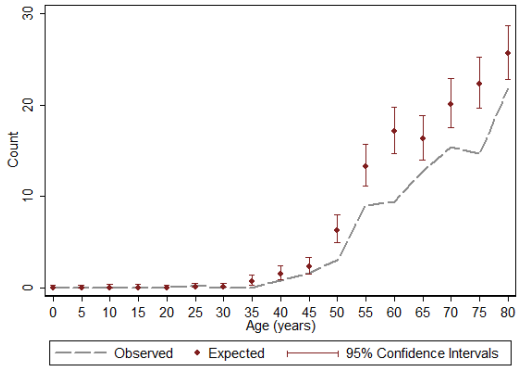
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 106.3% (CI: 68-158)



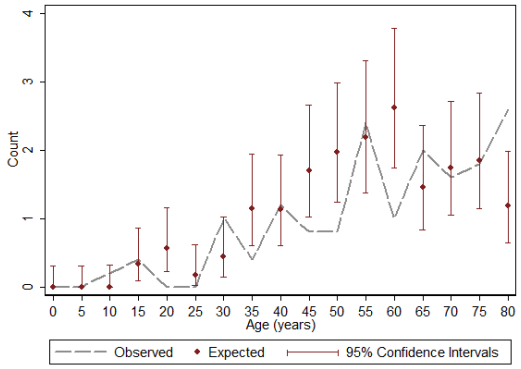
Acute myeloid leukaemia - Persons
All ages: O/E = 94.3% (CI: 74-119)



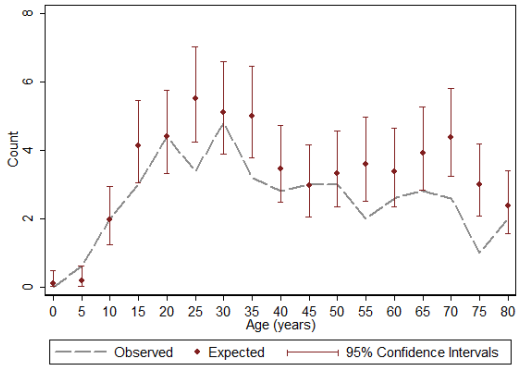
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 72.1% (CI: 58-89)



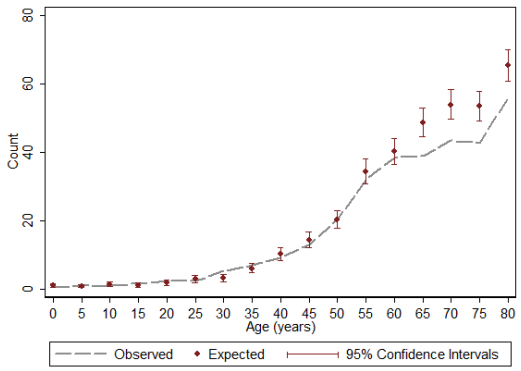
Chronic myeloid leukaemia - Persons
All ages: O/E = 89.2% (CI: 51-145)



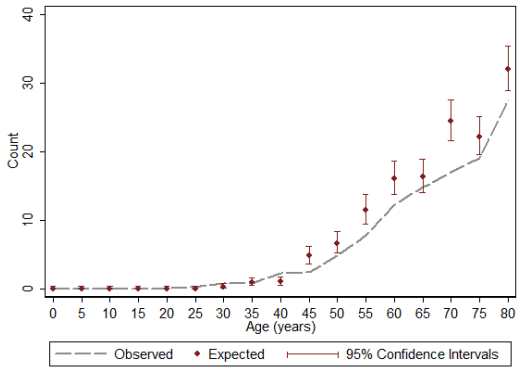
Hodgkin lymphoma - Persons
All ages: O/E = 76.3% (CI: 55-103)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 89.9% (CI: 80-100)

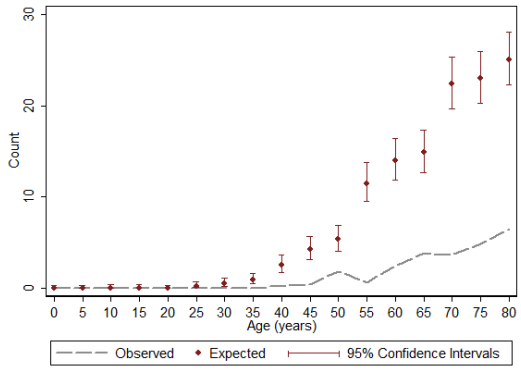


Myeloma - Persons
All ages: O/E = 82.1% (CI: 67-99)

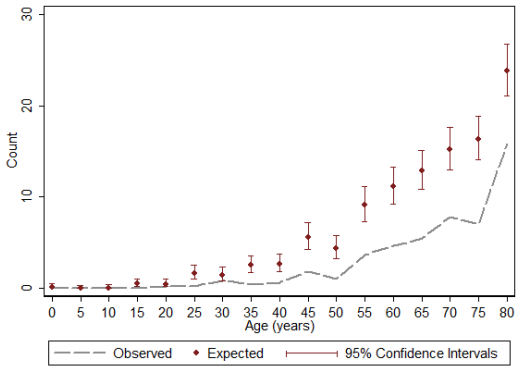


N35 - The Greater Midlands Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

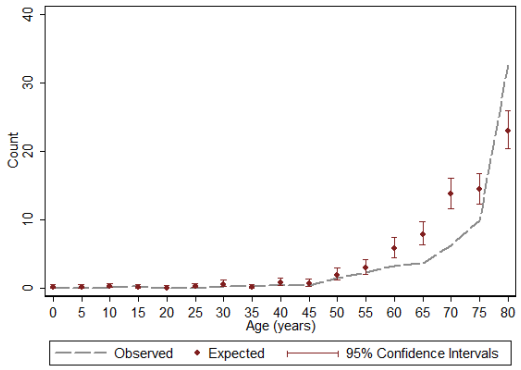
MGUS - Persons
All ages: O/E = 19.8% (CI: 13-30)



Myeloproliferative neoplasms - Persons
All ages: O/E = 46.8% (CI: 35-62)

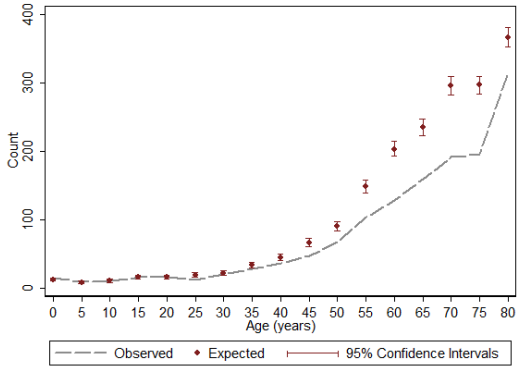


Myelodysplastic syndromes - Persons
All ages: O/E = 83.8% (CI: 64-108)

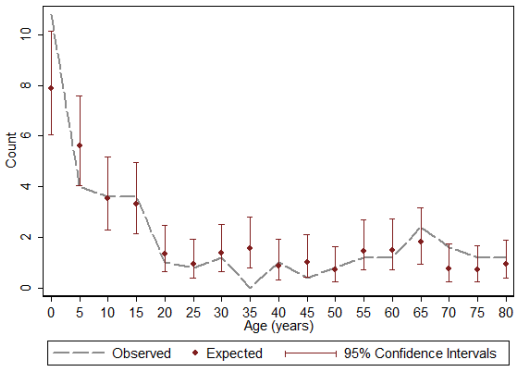


N36 - North of England Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

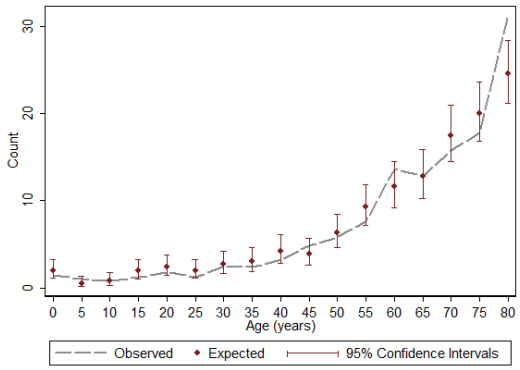
Total haematological malignancies - Persons
All ages: O/E = 74.2% (CI: 70-78)



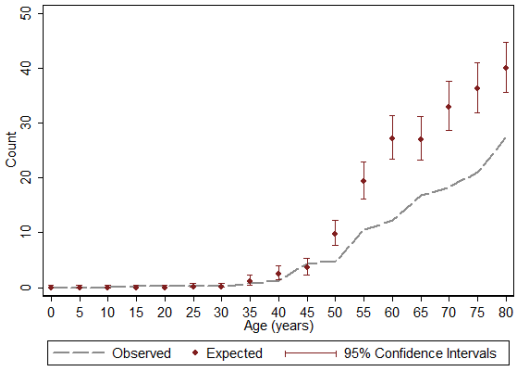
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 99.8% (CI: 70-138)



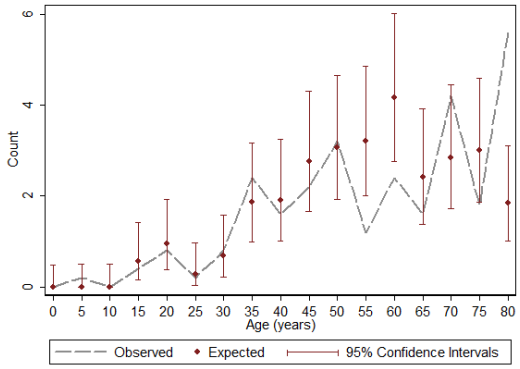
Acute myeloid leukaemia - Persons
All ages: O/E = 101.1% (CI: 84-120)



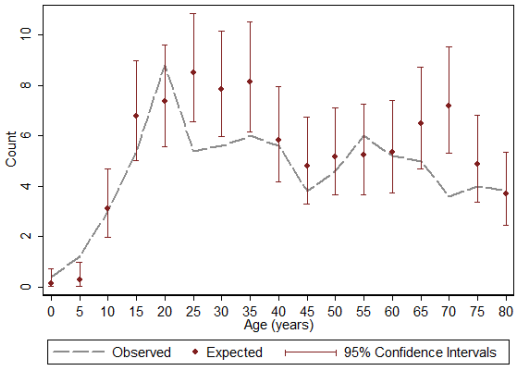
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 60.6% (CI: 50-73)



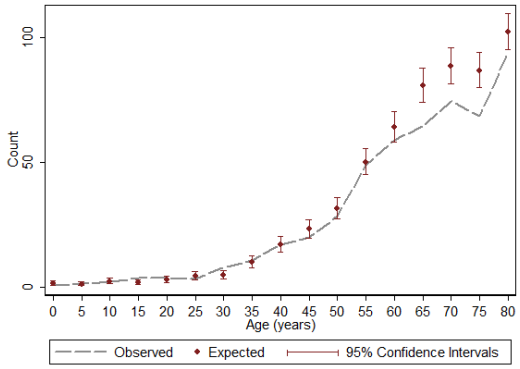
Chronic myeloid leukaemia - Persons
All ages: O/E = 97.7% (CI: 65-141)



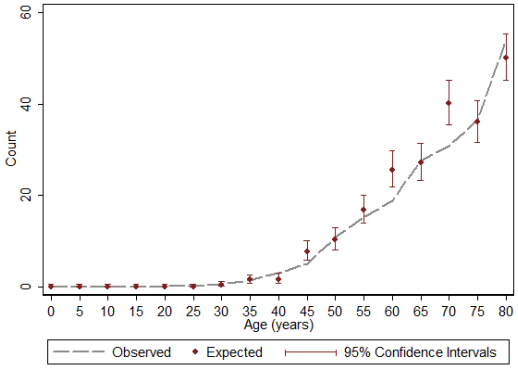
Hodgkin lymphoma - Persons
All ages: O/E = 85.6% (CI: 68-107)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 91% (CI: 83-99)

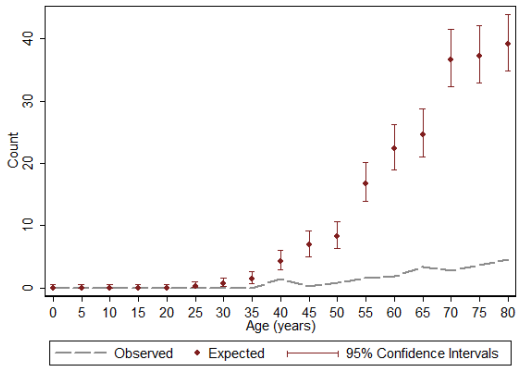


Myeloma - Persons
All ages: O/E = 96.2% (CI: 83-110)

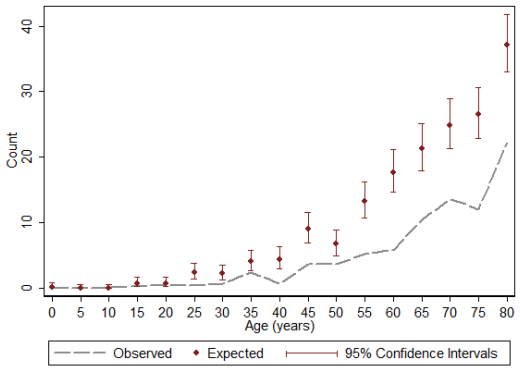


N36 - North of England Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

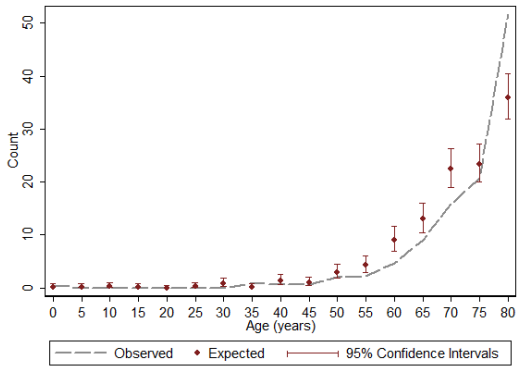
MGUS - Persons
All ages: O/E = 10.4% (CI: 6-16)



Myeloproliferative neoplasms - Persons
All ages: O/E = 48.4% (CI: 38-60)

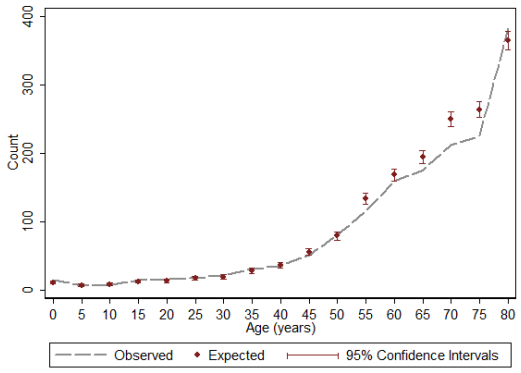


Myelodysplastic syndromes - Persons
All ages: O/E = 94.5% (CI: 77-114)

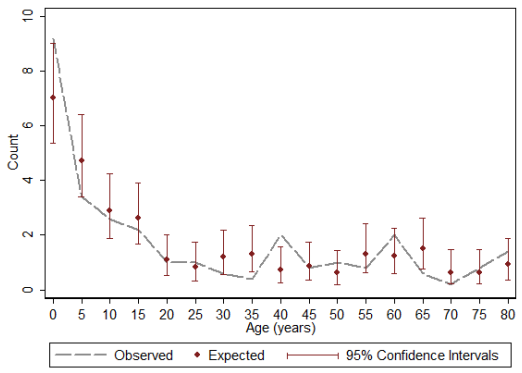


N37 - Anglia Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

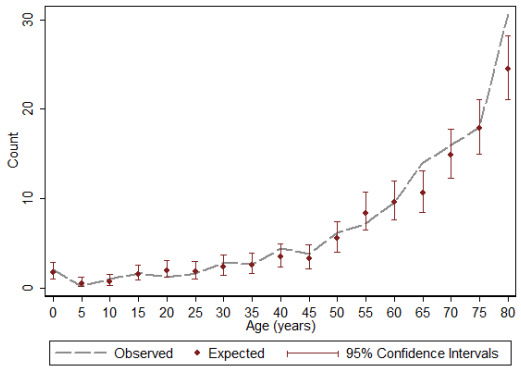
Total haematological malignancies - Persons
All ages: O/E = 99.4% (CI: 95-104)



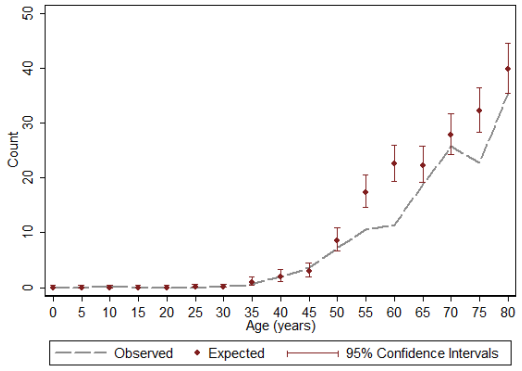
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 97.4% (CI: 66-139)



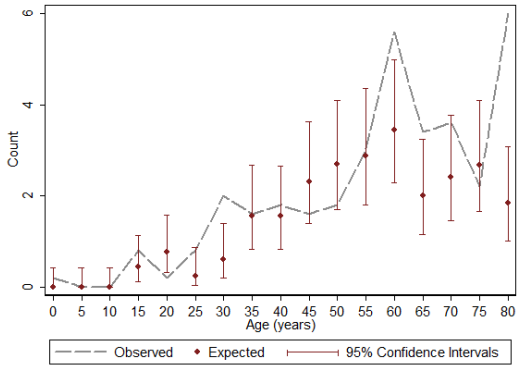
Acute myeloid leukaemia - Persons
All ages: O/E = 115.4% (CI: 96-138)



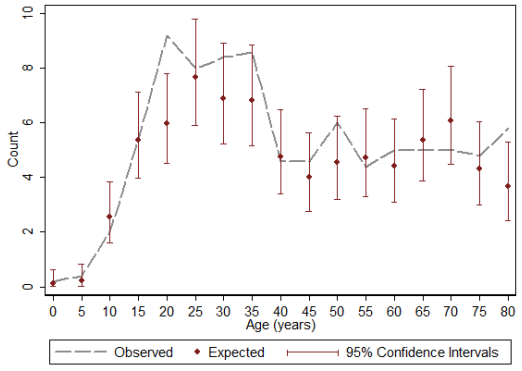
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 82.9% (CI: 70-98)



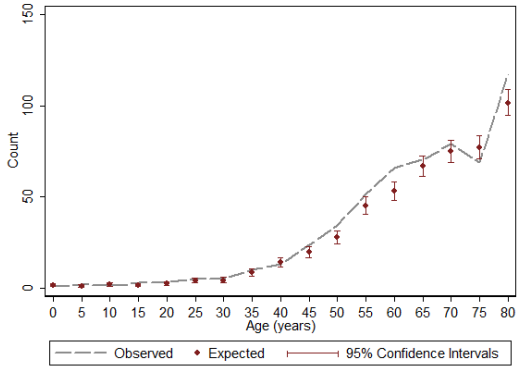
Chronic myeloid leukaemia - Persons
All ages: O/E = 138.9% (CI: 96-194)



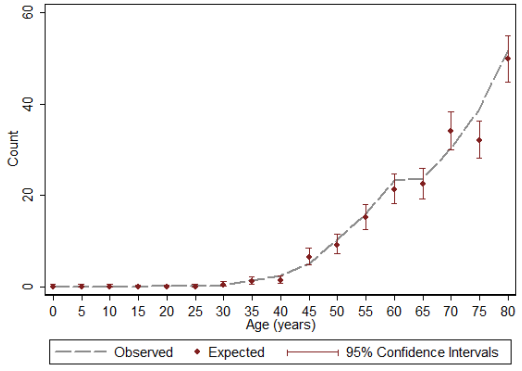
Hodgkin lymphoma - Persons
All ages: O/E = 113.1% (CI: 91-140)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 116% (CI: 107-126)

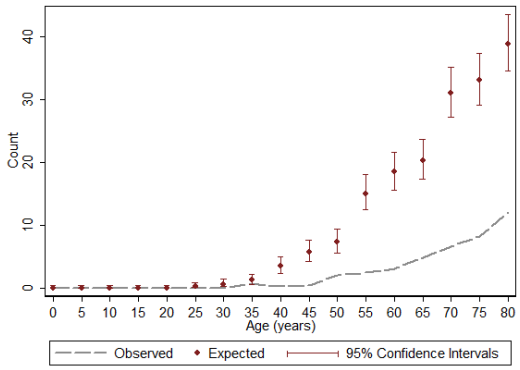


Myeloma - Persons
All ages: O/E = 112.1% (CI: 97-129)

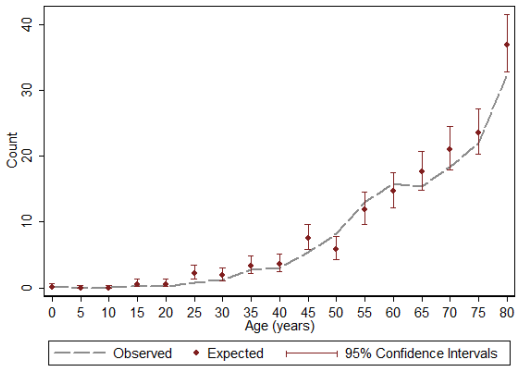


N37 - Anglia Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

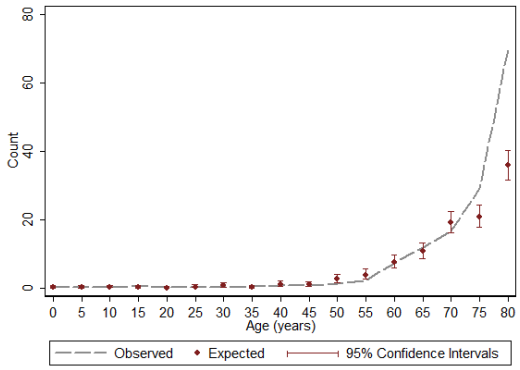
MGUS - Persons
All ages: O/E = 24.2% (CI: 17-33)



Myeloproliferative neoplasms - Persons
All ages: O/E = 97.2% (CI: 82-115)

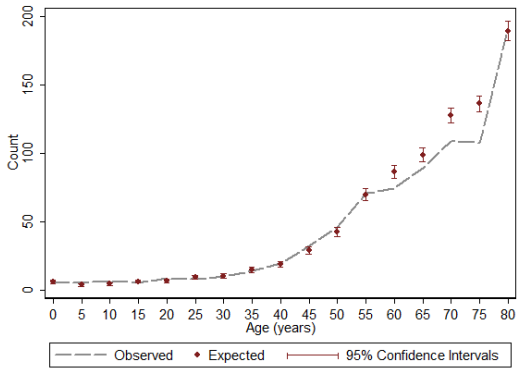


Myelodysplastic syndromes - Persons
All ages: O/E = 144.3% (CI: 121-170)

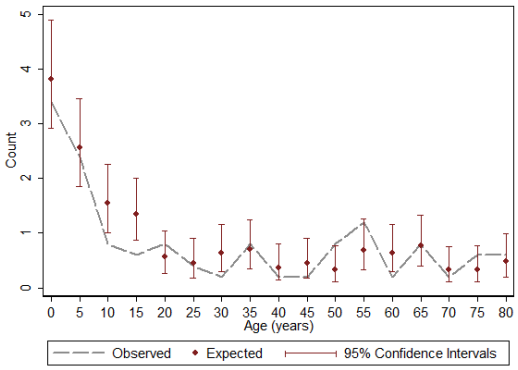


N38 - Essex Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

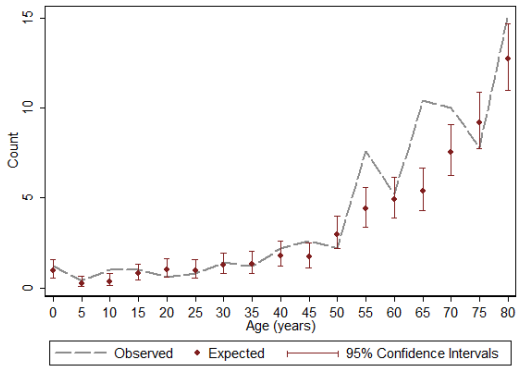
Total haematological malignancies - Persons
All ages: O/E = 96.9% (CI: 90-104)



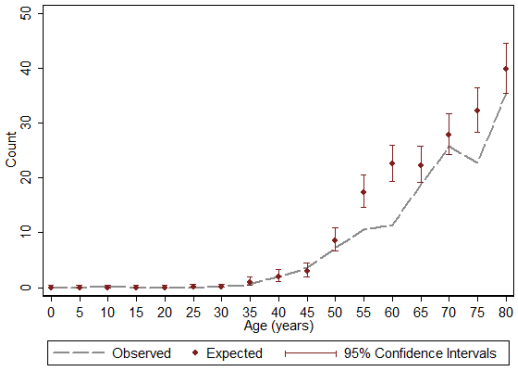
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 86.6% (CI: 47-145)



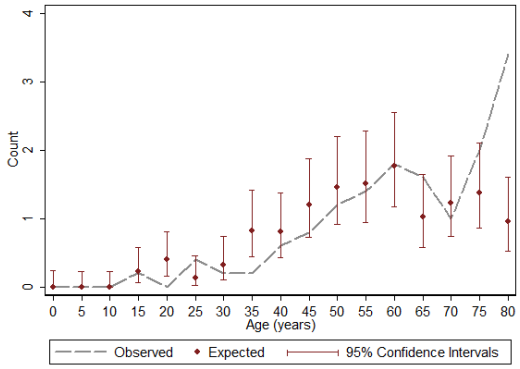
Acute myeloid leukaemia - Persons
All ages: O/E = 126.2% (CI: 98-159)



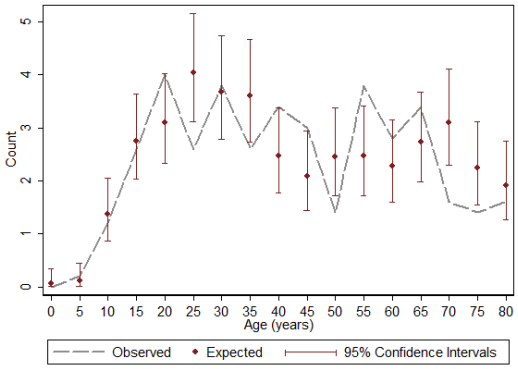
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 64.1% (CI: 48-83)



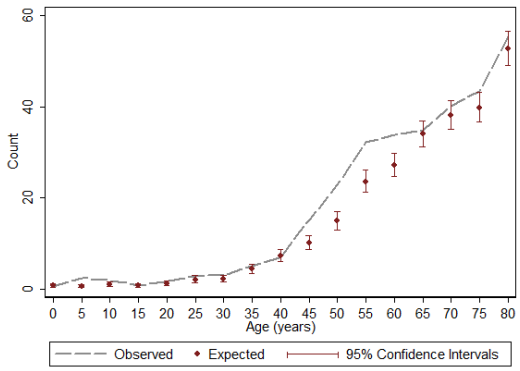
Chronic myeloid leukaemia - Persons
All ages: O/E = 109.0% (CI: 60-183)



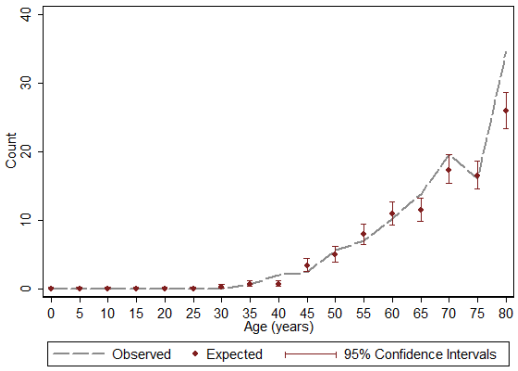
Hodgkin lymphoma - Persons
All ages: O/E = 86.6% (CI: 69-132)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 121.2% (CI: 108-136)

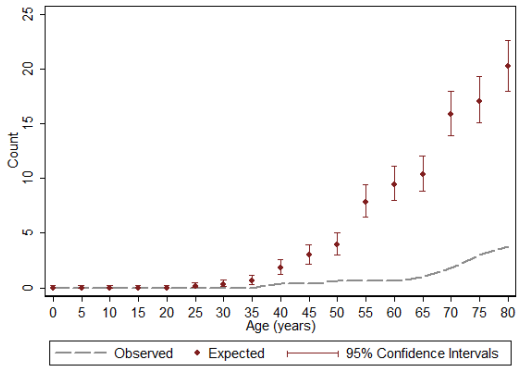


Myeloma - Persons
All ages: O/E = 116.7% (CI: 96-141)

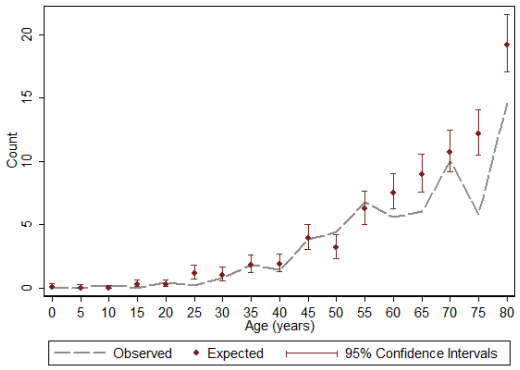


N38 - Essex Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

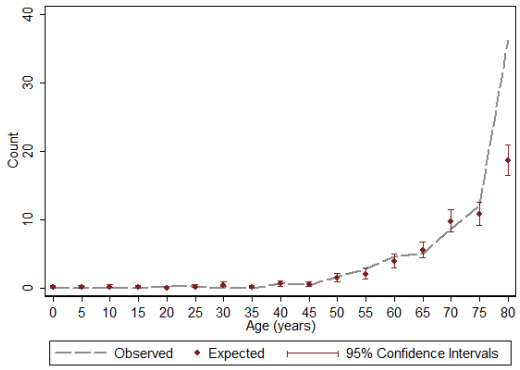
MGUS - Persons
All ages: O/E = 13.9% (CI: 7-24)



Myeloproliferative neoplasms - Persons
All ages: O/E = 81.3% (CI: 62-104)

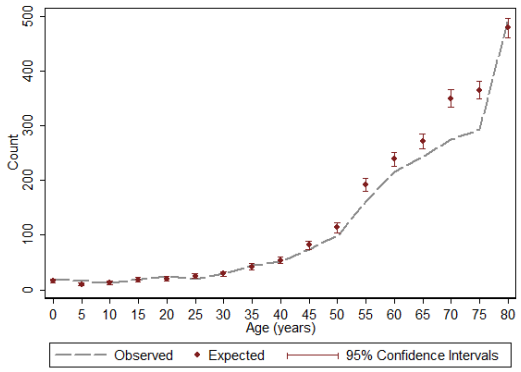


Myelodysplastic syndromes - Persons
All ages: O/E = 140.4% (CI: 110-177)

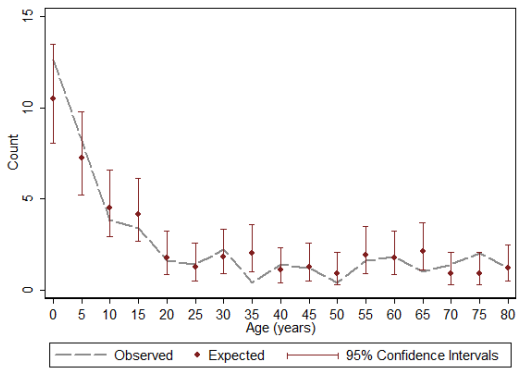


N39 - East Midlands Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

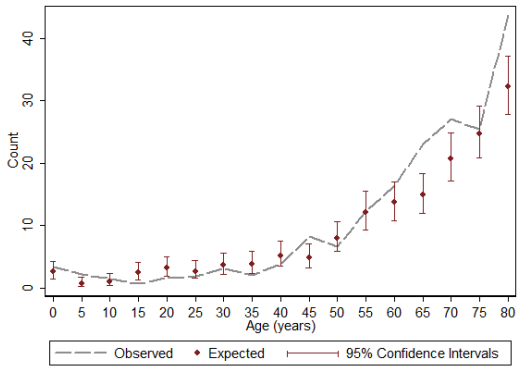
Total haematological malignancies - Persons
All ages: O/E = 90.1% (CI: 86-94)



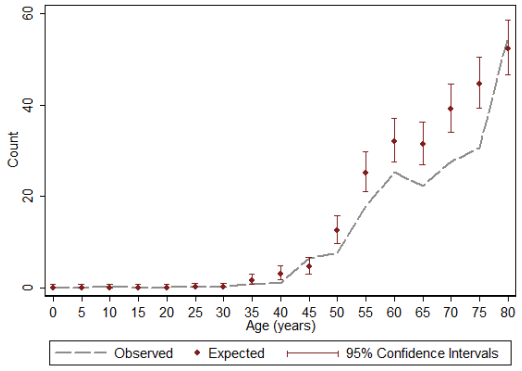
Acute lymphoblastic leukaemia - Persons
All ages: O/E = 98.6% (CI: 72-132)



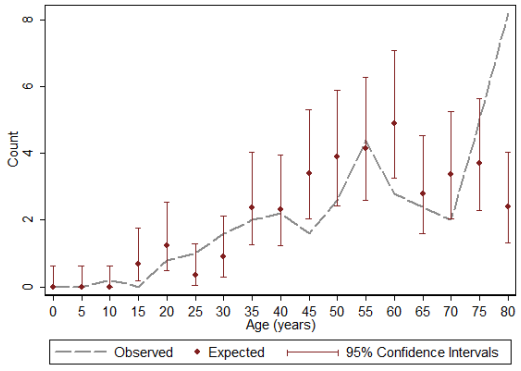
Acute myeloid leukaemia - Persons
All ages: O/E = 116.2% (CI: 100-134)



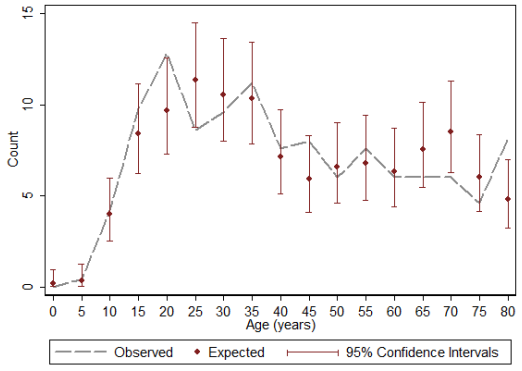
Chronic lymphocytic leukaemia - Persons
All ages: O/E = 78.7% (CI: 68-91)



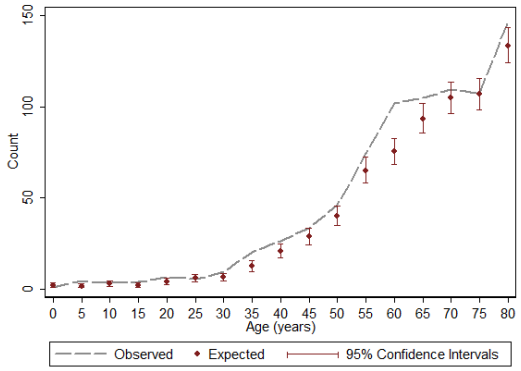
Chronic myeloid leukaemia - Persons
All ages: O/E = 99.3% (CI: 70-137)



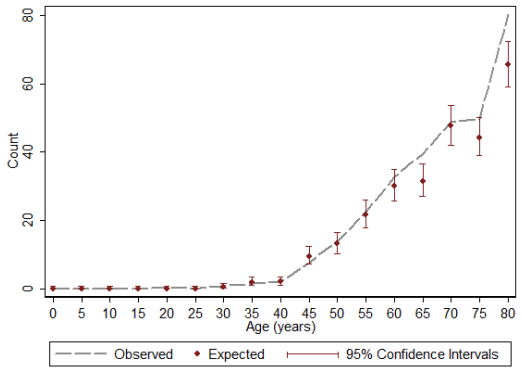
Hodgkin lymphoma - Persons
All ages: O/E = 101.8% (CI: 84-122)



Non-Hodgkin lymphoma - Persons
All ages: O/E = 114.1% (CI: 106-122)

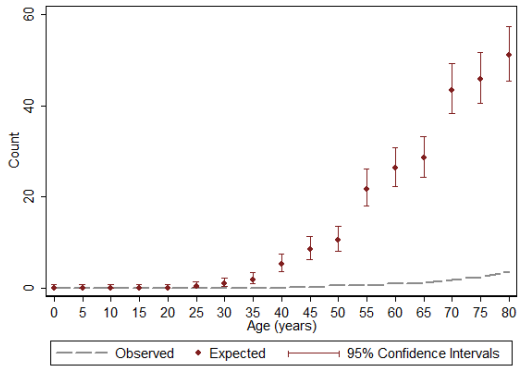


Myeloma - Persons
All ages: O/E = 111.4% (CI: 99-125)

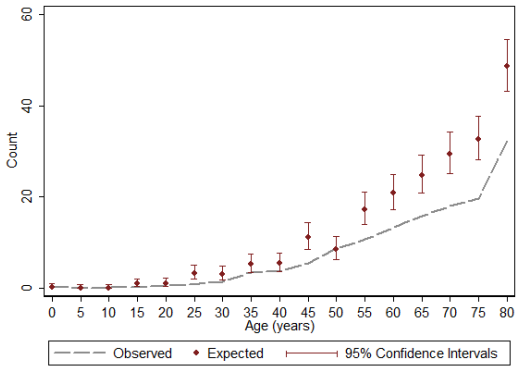


N39 - East Midlands Cancer Network - annual observed (England, 2004-8) and expected based on HMRN rates (2004-10)

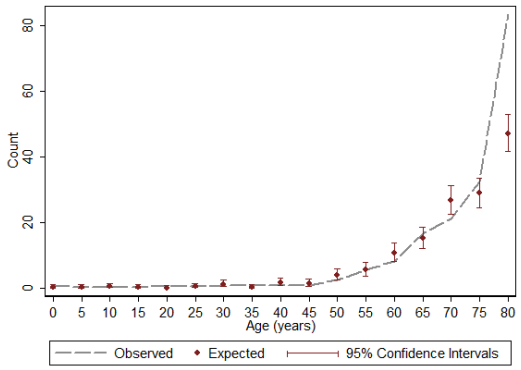
MGUS - Persons
All ages: O/E = 4.5% (CI: 2-8)



Myeloproliferative neoplasms - Persons
All ages: O/E = 62.8% (CI: 53-74)



Myelodysplastic syndromes - Persons
All ages: O/E = 119.5% (CI: 102-139)



Annex 6

Predicted NHL sub-types, based on HMRN registration rates (Cancer Registry)

Eastern Cancer Registration and Information Centre (ECRIC) - expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**1000**	**969.4-1031.8**
Extranodal marginal zone lymphoma	38.0	32.2-44.5
Systemic marginal zone lymphoma	131.0	120-142.8
Follicular lymphoma	167.7	155.3-181
Mantle cell lymphoma	45.0	38.7-52.1
Diffuse large B-cell lymphoma	434.1	413.8-455.1
Burkitt lymphoma	18.9	14.8-23.6
T-cell lymphoma	53.8	46.9-61.5
Lymphoproliferative disorder NOS	95.3	86-105.4

Northern and Yorkshire Cancer Registration and Information Service (NYCRIS) - expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**1211**	**1173.8-1249.4**
Extranodal marginal zone lymphoma	46.0	38.9-53.9
Systemic marginal zone lymphoma	158.7	145.3-172.9
Follicular lymphoma	203.1	188-219.2
Mantle cell lymphoma	54.5	46.8-63.1
Diffuse large B-cell lymphoma	525.7	501.1-551
Burkitt lymphoma	22.8	18-28.6
T-cell lymphoma	65.2	56.7-74.5
Lymphoproliferative disorder NOS	115.4	104.1-127.6

North West Cancer Intelligence Service (NWCIS) - expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**1197**	**1160-1234.7**
Extranodal marginal zone lymphoma	45.4	38.5-53.3
Systemic marginal zone lymphoma	156.8	143.6-170.9
Follicular lymphoma	200.7	185.8-216.6
Mantle cell lymphoma	53.9	46.3-62.4
Diffuse large B-cell lymphoma	519.5	495.2-544.6
Burkitt lymphoma	22.6	17.8-28.3
T-cell lymphoma	64.4	56.1-73.6
Lymphoproliferative disorder NOS	114.1	102.9-126.1

Oxford Cancer Intelligence Unit (OCIU) - expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**505**	**489.5-521.1**
Extranodal marginal zone lymphoma	19.2	16.2-22.5
Systemic marginal zone lymphoma	66.2	60.6-72.1
Follicular lymphoma	84.7	78.4-91.4
Mantle cell lymphoma	22.7	19.5-26.3
Diffuse large B-cell lymphoma	219.2	209-229.8
Burkitt lymphoma	9.5	7.5-11.9
T-cell lymphoma	27.2	23.7-31.1
Lymphoproliferative disorder NOS	48.1	43.4-53.2

South West Cancer Intelligence Unit (SWCIS) - expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**1245**	**1206.2-1283.9**
Extranodal marginal zone lymphoma	47.3	40-55.4
Systemic marginal zone lymphoma	163.0	149.3-177.7
Follicular lymphoma	208.7	193.2-225.2
Mantle cell lymphoma	56.0	48.1-64.9
Diffuse large B-cell lymphoma	540.2	515-566.3
Burkitt lymphoma	23.5	18.5-29.4
T-cell lymphoma	67.0	58.3-76.6
Lymphoproliferative disorder NOS	118.6	107-131.2

Thames Cancer Registry (TCR) - expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**2098**	**2033.6-2164.5**
Extranodal marginal zone lymphoma	79.7	67.5-93.4
Systemic marginal zone lymphoma	274.9	251.8-299.5
Follicular lymphoma	351.9	325.7-379.7
Mantle cell lymphoma	94.4	81.1-109.3
Diffuse large B-cell lymphoma	910.6	868.2-954.6
Burkitt lymphoma	39.6	31.1-49.6
T-cell lymphoma	112.9	98.3-129.1
Lymphoproliferative disorder NOS	200.0	180.3-221.1

Trent Cancer Registry (TrCR) - expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**887**	**859.2-914.5**
Extranodal marginal zone lymphoma	33.7	28.5-39.5
Systemic marginal zone lymphoma	116.1	106.4-126.6
Follicular lymphoma	148.7	137.6-160.4
Mantle cell lymphoma	39.9	34.3-46.2
Diffuse large B-cell lymphoma	384.8	366.8-403.3
Burkitt lymphoma	16.7	13.2-21
T-cell lymphoma	47.7	41.5-54.5
Lymphoproliferative disorder NOS	84.5	76.2-93.4

West Midlands Cancer Intelligence Unit (WMCIU) - expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**977**	**947.3-1008.3**
Extranodal marginal zone lymphoma	37.1	31.4-43.5
Systemic marginal zone lymphoma	128.1	117.3-139.5
Follicular lymphoma	163.9	151.7-176.9
Mantle cell lymphoma	44.0	37.8-50.9
Diffuse large B-cell lymphoma	424.2	404.4-444.7
Burkitt lymphoma	18.4	14.5-23.1
T-cell lymphoma	52.6	45.8-60.1
Lymphoproliferative disorder NOS	93.2	84-103

Annex 7

Predicted NHL sub-types, based on HMRN registration rates (Cancer Network)

N01 - Lancashire and South Cumbria Cancer Network expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**276.0**	**267.5-284.7**
Extranodal marginal zone lymphoma	10.5	8.9-12.3
Systemic marginal zone lymphoma	36.2	33.1-39.4
Follicular lymphoma	46.3	42.8-49.9
Mantle cell lymphoma	12.4	10.7-14.4
Diffuse large B-cell lymphoma	119.8	114.2-125.6
Burkitt lymphoma	5.2	4.1-6.5
T-cell lymphoma	14.9	12.9-17
Lymphoproliferative disorder NOS	26.3	23.7-29.1

N02 - Greater Manchester and Cheshire Cancer Network expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**557.0**	**539.8-574.6**
Extranodal marginal zone lymphoma	21.1	17.9-24.8
Systemic marginal zone lymphoma	73.0	66.8-79.5
Follicular lymphoma	93.4	86.5-100.8
Mantle cell lymphoma	25.1	21.5-29
Diffuse large B-cell lymphoma	241.7	230.5-253.4
Burkitt lymphoma	10.5	8.3-13.2
T-cell lymphoma	30.0	26.1-34.3
Lymphoproliferative disorder NOS	53.1	47.9-58.7

N03 - Merseyside and Cheshire Cancer Network expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**377.4**	**365.8-389.4**
Extranodal marginal zone lymphoma	14.3	12.1-16.8
Systemic marginal zone lymphoma	49.4	45.3-53.9
Follicular lymphoma	63.3	58.6-68.3
Mantle cell lymphoma	17.0	14.6-19.7
Diffuse large B-cell lymphoma	163.8	156.2-171.7
Burkitt lymphoma	7.1	5.6-8.9
T-cell lymphoma	20.3	17.7-23.2
Lymphoproliferative disorder NOS	36.0	32.4-39.8

N06 - Yorkshire Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**475.3**	**460.6-490.3**
Extranodal marginal zone lymphoma	18.0	15.3-21.2
Systemic marginal zone lymphoma	62.3	57-67.8
Follicular lymphoma	79.7	73.8-86
Mantle cell lymphoma	21.4	18.4-24.8
Diffuse large B-cell lymphoma	206.3	196.7-216.2
Burkitt lymphoma	9.0	7.1-11.2
T-cell lymphoma	25.6	22.3-29.2
Lymphoproliferative disorder NOS	45.3	40.8-50.1

N07 - Humber & Yorkshire Coast Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**191**	**185.1-197.1**
Extranodal marginal zone lymphoma	7.3	6.1-8.5
Systemic marginal zone lymphoma	25.0	22.9-27.3
Follicular lymphoma	32.0	29.7-34.6
Mantle cell lymphoma	8.6	7.4-10
Diffuse large B-cell lymphoma	82.9	79-86.9
Burkitt lymphoma	3.6	2.8-4.5
T-cell lymphoma	10.3	8.9-11.8
Lymphoproliferative disorder NOS	18.2	16.4-20.1

N08 - North Trent Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**110.1**	**315.1-335.4**
Extranodal marginal zone lymphoma	12.3	10.5-14.5
Systemic marginal zone lymphoma	42.6	39-46.4
Follicular lymphoma	54.5	50.5-58.8
Mantle cell lymphoma	14.6	12.6-16.9
Diffuse large B-cell lymphoma	141.1	134.5-147.9
Burkitt lymphoma	6.1	4.8-7.7
T-cell lymphoma	17.5	15.2-20
Lymphoproliferative disorder NOS	31.0	27.9-34.3

N11 - Pan Birmingham Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**349.9**	**339.1-361.0**
Extranodal marginal zone lymphoma	13.3	11.3-15.6
Systemic marginal zone lymphoma	45.8	42-50
Follicular lymphoma	58.7	54.3-63.3
Mantle cell lymphoma	15.8	13.5-18.2
Diffuse large B-cell lymphoma	151.9	144.8-159.2
Burkitt lymphoma	6.6	5.2-8.3
T-cell lymphoma	18.8	16.4-21.5
Lymphoproliferative disorder NOS	33.3	30.1-36.9

N12 - Arden Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**180.4**	**174.9-186.1**
Extranodal marginal zone lymphoma	6.9	5.8-8
Systemic marginal zone lymphoma	23.6	21.7-25.8
Follicular lymphoma	30.3	28-32.6
Mantle cell lymphoma	8.1	7-9.4
Diffuse large B-cell lymphoma	78.3	74.7-82.1
Burkitt lymphoma	3.4	2.7-4.3
T-cell lymphoma	9.7	8.5-11.1
Lymphoproliferative disorder NOS	17.2	15.5-19

N20 - Mount Vernon Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**226.3**	**219.4-233.5**
Extranodal marginal zone lymphoma	8.6	7.3-10.1
Systemic marginal zone lymphoma	29.7	27.2-32.3
Follicular lymphoma	38.0	35.1-41
Mantle cell lymphoma	10.2	8.7-11.8
Diffuse large B-cell lymphoma	98.2	93.7-103
Burkitt lymphoma	4.3	3.4-5.4
T-cell lymphoma	12.2	10.6-13.9
Lymphoproliferative disorder NOS	21.6	19.5-23.9

N21 - West London Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**327.1**	**317.0-337.4**
Extranodal marginal zone lymphoma	12.4	10.5-14.6
Systemic marginal zone lymphoma	42.8	39.2-46.7
Follicular lymphoma	54.9	50.8-59.2
Mantle cell lymphoma	14.7	12.6-17
Diffuse large B-cell lymphoma	141.9	135.3-148.8
Burkitt lymphoma	6.2	4.9-7.7
T-cell lymphoma	17.6	15.3-20.1
Lymphoproliferative disorder NOS	31.2	28.1-34.5

N22 - North London Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**271.0**	**262.6-279.5**
Extranodal marginal zone lymphoma	10.3	8.7-12.1
Systemic marginal zone lymphoma	35.5	32.5-38.7
Follicular lymphoma	45.4	42.1-49
Mantle cell lymphoma	12.2	10.5-14.1
Diffuse large B-cell lymphoma	117.6	112.1-123.3
Burkitt lymphoma	5.1	4-6.4
T-cell lymphoma	14.6	12.7-16.7
Lymphoproliferative disorder NOS	25.8	23.3-28.6

N23 - North East London Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**279.7**	**271.1-288.6**
Extranodal marginal zone lymphoma	10.6	9-12.5
Systemic marginal zone lymphoma	36.6	33.6-39.9
Follicular lymphoma	46.9	43.4-50.6
Mantle cell lymphoma	12.6	10.8-14.6
Diffuse large B-cell lymphoma	121.4	115.7-127.3
Burkitt lymphoma	5.3	4.1-6.6
T-cell lymphoma	15.1	13.1-17.2
Lymphoproliferative disorder NOS	26.7	24-29.5

N24 - South East London Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**279.9**	**271.2-288.7**
Extranodal marginal zone lymphoma	10.6	9-12.5
Systemic marginal zone lymphoma	36.7	33.6-40
Follicular lymphoma	46.9	43.4-50.6
Mantle cell lymphoma	12.6	10.8-14.6
Diffuse large B-cell lymphoma	121.5	115.8-127.3
Burkitt lymphoma	5.3	4.2-6.6
T-cell lymphoma	15.1	13.1-17.2
Lymphoproliferative disorder NOS	26.7	24.1-29.5

N25 - South West London Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**282.6**	**273.9-291.6**
Extranodal marginal zone lymphoma	10.7	9.1-12.6
Systemic marginal zone lymphoma	37.0	33.9-40.3
Follicular lymphoma	47.4	43.9-51.1
Mantle cell lymphoma	12.7	10.9-14.7
Diffuse large B-cell lymphoma	122.7	116.9-128.6
Burkitt lymphoma	5.3	4.2-6.7
T-cell lymphoma	15.2	13.2-17.4
Lymphoproliferative disorder NOS	26.9	24.3-29.8

N26 - Peninsula Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**292.4**	**283.4-301.7**
Extranodal marginal zone lymphoma	11.1	9.4-13
Systemic marginal zone lymphoma	38.3	35.1-41.7
Follicular lymphoma	49.0	45.4-52.9
Mantle cell lymphoma	13.2	11.3-15.2
Diffuse large B-cell lymphoma	126.9	121-133
Burkitt lymphoma	5.5	4.3-6.9
T-cell lymphoma	15.7	13.7-18
Lymphoproliferative disorder NOS	27.9	25.1-30.8

N27 - Dorset Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**149.9**	**124.7-132.8**
Extranodal marginal zone lymphoma	4.9	4.1-5.7
Systemic marginal zone lymphoma	16.9	15.4-18.4
Follicular lymphoma	21.6	20-23.3
Mantle cell lymphoma	5.8	5-6.7
Diffuse large B-cell lymphoma	55.9	53.3-58.6
Burkitt lymphoma	2.4	1.9-3
T-cell lymphoma	6.9	6-7.9
Lymphoproliferative disorder NOS	12.3	11.1-13.6

N28 - Avon, Somerset and Wiltshire Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**335.5**	**325.2-346.1**
Extranodal marginal zone lymphoma	12.7	10.8-14.9
Systemic marginal zone lymphoma	44.0	40.3-47.9
Follicular lymphoma	56.3	52.1-60.7
Mantle cell lymphoma	15.1	13-17.5
Diffuse large B-cell lymphoma	145.6	138.8-152.7
Burkitt lymphoma	6.3	5-7.9
T-cell lymphoma	18.1	15.7-20.6
Lymphoproliferative disorder NOS	32.0	28.8-35.4

N29 - 3 Counties Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**188.9**	**183.1-194.9**
Extranodal marginal zone lymphoma	7.2	6.1-8.4
Systemic marginal zone lymphoma	24.8	22.7-27
Follicular lymphoma	31.7	29.3-34.2
Mantle cell lymphoma	8.5	7.3-9.8
Diffuse large B-cell lymphoma	82.0	78.2-86
Burkitt lymphoma	3.6	2.8-4.5
T-cell lymphoma	10.2	8.9-11.6
Lymphoproliferative disorder NOS	18.0	16.2-19.9

N30 - Thames Valley Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**423.2**	**410.1-436.6**
Extranodal marginal zone lymphoma	16.1	13.6-18.8
Systemic marginal zone lymphoma	55.4	50.8-60.4
Follicular lymphoma	71.0	65.7-76.6
Mantle cell lymphoma	19.0	16.4-22.1
Diffuse large B-cell lymphoma	183.7	175.1-192.5
Burkitt lymphoma	8.0	6.3-10
T-cell lymphoma	22.8	19.8-26
Lymphoproliferative disorder NOS	40.3	36.4-44.6

N31 - Central South Coast Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**354.5**	**343.5-365.7**
Extranodal marginal zone lymphoma	13.5	11.4-15.8
Systemic marginal zone lymphoma	46.4	42.5-50.6
Follicular lymphoma	59.4	55-64.1
Mantle cell lymphoma	16.0	13.7-18.5
Diffuse large B-cell lymphoma	153.8	146.7-161.3
Burkitt lymphoma	6.7	5.3-8.4
T-cell lymphoma	19.1	16.6-21.8
Lymphoproliferative disorder NOS	33.8	30.5-37.4

N32 - Surrey, West Sussex and Hampshire Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**219.0**	**212.2-225.9**
Extranodal marginal zone lymphoma	8.3	7-9.8
Systemic marginal zone lymphoma	28.7	26.3-31.3
Follicular lymphoma	36.7	34-39.6
Mantle cell lymphoma	9.9	8.5-11.4
Diffuse large B-cell lymphoma	95.0	90.6-99.6
Burkitt lymphoma	4.1	3.2-5.2
T-cell lymphoma	11.8	10.3-13.5
Lymphoproliferative disorder NOS	20.9	18.8-23.1

N33 - Sussex Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**211.0**	**204.5-217.7**
Extranodal marginal zone lymphoma	8.0	6.8-9.4
Systemic marginal zone lymphoma	27.6	25.3-30.1
Follicular lymphoma	35.4	32.8-38.2
Mantle cell lymphoma	9.5	8.2-11
Diffuse large B-cell lymphoma	91.6	87.3-96
Burkitt lymphoma	4.0	3.1-5
T-cell lymphoma	11.4	9.9-13
Lymphoproliferative disorder NOS	20.1	18.1-22.2

N34 - Kent and Medway Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**293.1**	**284.1-302.4**
Extranodal marginal zone lymphoma	11.1	9.4-13.1
Systemic marginal zone lymphoma	38.4	35.2-41.8
Follicular lymphoma	49.2	45.5-53
Mantle cell lymphoma	13.2	11.3-15.3
Diffuse large B-cell lymphoma	127.2	121.3-133.3
Burkitt lymphoma	5.5	4.3-6.9
T-cell lymphoma	15.8	13.7-18
Lymphoproliferative disorder NOS	27.9	25.2-30.9

N35 - The Greater Midlands Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**348.0**	**337.3-359.0**
Extranodal marginal zone lymphoma	13.2	11.2-15.5
Systemic marginal zone lymphoma	45.6	41.8-49.7
Follicular lymphoma	58.4	54-63
Mantle cell lymphoma	15.7	13.5-18.1
Diffuse large B-cell lymphoma	151.0	144-158.3
Burkitt lymphoma	6.6	5.2-8.2
T-cell lymphoma	18.7	16.3-21.4
Lymphoproliferative disorder NOS	33.2	29.9-36.7

N36 - North of England Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**555.8**	**538.7-573.4**
Extranodal marginal zone lymphoma	21.1	17.9-24.8
Systemic marginal zone lymphoma	72.8	66.7-79.3
Follicular lymphoma	93.2	86.3-100.6
Mantle cell lymphoma	25.0	21.5-29
Diffuse large B-cell lymphoma	241.2	230-252.9
Burkitt lymphoma	10.5	8.2-13.1
T-cell lymphoma	29.9	26-34.2
Lymphoproliferative disorder NOS	53.0	47.8-58.6

N37 - Anglia Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**475.0**	**460.3-489.9**
Extranodal marginal zone lymphoma	18.0	15.3-21.1
Systemic marginal zone lymphoma	62.2	57-67.8
Follicular lymphoma	79.7	73.7-85.9
Mantle cell lymphoma	21.4	18.4-24.7
Diffuse large B-cell lymphoma	206.1	196.5-216.1
Burkitt lymphoma	9.0	7-11.2
T-cell lymphoma	25.6	22.2-29.2
Lymphoproliferative disorder NOS	45.3	40.8-50.1

N38 - Essex Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**249.3**	**241.6-257.1**
Extranodal marginal zone lymphoma	9.5	8-11.1
Systemic marginal zone lymphoma	32.7	29.9-35.6
Follicular lymphoma	41.8	38.7-45.1
Mantle cell lymphoma	11.2	9.6-13
Diffuse large B-cell lymphoma	108.2	103.1-113.4
Burkitt lymphoma	4.7	3.7-5.9
T-cell lymphoma	13.4	11.7-15.3
Lymphoproliferative disorder NOS	23.8	21.4-26.3

N39 - East Midlands Cancer Network
expected based on HMRN age- and sex-specific rates (2004-10)

Diagnostic Group (ICD-O-3)	Expected	95% CI
Total NHL	**703.6**	**681.9-725.8**
Extranodal marginal zone lymphoma	26.7	22.6-31.3
Systemic marginal zone lymphoma	92.2	84.4-100.4
Follicular lymphoma	118.0	109.2-127.3
Mantle cell lymphoma	31.7	27.2-36.7
Diffuse large B-cell lymphoma	305.4	291.1-320.1
Burkitt lymphoma	13.3	10.4-16.6
T-cell lymphoma	37.9	33-43.3
Lymphoproliferative disorder NOS	67.1	60.5-74.2

LEUKAEMIA & LYMPHOMA RESEARCH

Beating Blood Cancers