

UK Biobank

Cancer data: a report on the number of prevalent and incident cases

<http://www.ukbiobank.ac.uk/>
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This report details the number of prevalent and incident cases of cancer within the UK Biobank cohort, as identified through linkage to national cancer registries.

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1 Introduction

This report details the number of prevalent and incident cases of cancer within the UK Biobank cohort, as identified through linkage to national cancer registries. Details of the linkage process can be found elsewhere (<http://biobank.ctsu.ox.ac.uk/crystal/refer.cgi?id=115558>).

Data on cancer diagnoses is provided to UK Biobank by the [Health & Social Care Information Centre \(HSCIC\)](#) for participants resident in England and Wales, and the [NHS Central Register \(NHSCR\)](#) for participants resident in Scotland. Cancer registries acquire information on cancer diagnoses from a variety of sources including hospitals, cancer centres and treatment centres, hospices and nursing homes, private hospitals, cancer screening programmes, other cancer registers, general practices, death certificates, Hospital Episode Statistics (HES) and Cancer Waiting Time (CWT) data. (In many instances, more than one source of information is available to cancer registries from a single organisation, for example hospital patient information systems, pathology laboratories, medical records departments and radiotherapy databases). Please see the UK Association of Cancer Registries website for more details (www.ukacr.org)

2 Aim

The aim of this report is to provide researchers with an indication of the numbers of prevalent and incident cases of cancers in the UK Biobank Resource, in order to guide timings for submitting cancer-related research applications. Please see **Table 1**.

Please note:

- **Prevalent cases** of cancer are defined as those diagnosed prior to the recruitment date into UK Biobank. **Incident cases** of cancer are defined as those diagnosed after the recruitment date into UK Biobank.
- Cancers identified from sources other than the cancer registry are not included here (i.e. self-reported cancer, primary care records, hospital records, etc.)
- The numbers of cases of cancers is provided by broad cancer groupings (according to ICD-10 chapters), as well as the numbers for individual sub-sites of most interest to researchers. Please contact the Access Team if you wish to enquire about the numbers of cases of a specific cancer site(s) (i.e. ICD-10 code(s)) that is not included in this report).
- The earliest record of cancer diagnosis in the UK Biobank cohort is **20 September 1957**. Cancers diagnosed prior to this date are not included here (as this is the earliest date to which cancer registry data is available).
- Although we have cancer data on some participants until **October 2013**, the last date of complete follow-up should be taken to be the end of 2011; data is still continuing to

accrue after that date and will be made available in due course. As a result, all longitudinal analyses that require follow-up data should be censored at Dec 2011. Please see the report on [Health Outcomes](#) to view tables of cancer incidence by year, age group and sex.

- For the sake of clarity, only the first occurrence of cancer for an individual participant is included in this report.
- The numbers of cases of benign neoplasms (ICD-10 D10-D36) may be under-estimated because not all benign neoplasms are routinely registered by cancer registries. Currently, ICD-10 D32-D33, D35.2-D35.4, D00-D09 and D37-D48 are mandatory registerable benign conditions. Please see the UK Association of Cancer Registries website for more details (www.ukacr.org).
- The contents of this document will be updated periodically, as and when follow-up data is incorporated into the UK Biobank Resource.

Table 1. Number of prevalent and incident cancers available from cancer registry data

	Prevalent	Incident
Malignant neoplasms	35422	14553
Lip, oral cavity and pharynx	528	184
Lip	22	8
Tongue	152	63
Digestive organs	2845	2004
Oesophagus	139	200
Stomach	147	137
Colorectal	2285	1256
Liver	27	43
Gallbladder or biliary ducts / tree	47	91
Pancreas	56	180
Respiratory and intrathoracic organs	515	765
Larynx	180	40
Trachea, bronchial and lung	293	706
Pleura (incl. pleural mesothelioma)	8	76
Bone and articular cartilage of limbs	62	15
Melanoma and other malignant neoplasms of the skin	11842	4477
Malignant melanoma	2056	538
Non-melanoma skin cancer (excl. Kaposi's and genital cancer)	9786	3939
Soft & connective tissue and peripheral nerve tumours	245	106
Kaposi's sarcoma	11	2
Peripheral / autonomic nerve, soft & connective tissue	234	104
Breast	9238	2320
Female genital organs	2291	668
Cervical	650	26
Uterine	895	354
Ovarian / other female genital organs	643	252
Male genital organs	3788	2124
Prostate	3056	2080
Testis	685	29
Urinary tract	1114	546
Kidney	481	251
Renal pelvis, ureter, bladder and urethra	629	294
Eye, brain and other parts of central nervous system (CNS)	256	196
Brain	135	169
Meninges, cord and other parts of the CNS	21	3
Thyroid and other endocrine glands	436	91
Thyroid	406	89
Ill-defined and malignancy without site, secondary and unspecified sites	154	163
Primary lymphoid and haematopoietic tissue	2102	821
Hodgkin's disease	398	34
Multiple myeloma and malignant plasma cell neoplasm	179	128
Non-malignant neoplasms	9728	1813
In-situ neoplasms	7892	1221
Benign neoplasms	670	94
Uncertain or unknown behaviour	1361	498

3 Cancer coding

Cancer site is coded according to the International Classification of Diseases (ICD), which is provided by the World Health Organisation (WHO) (<http://www.who.int/classifications/icd/en/>).

For participants resident in England and Wales; cancers diagnosed between 1971 and 1978, 1979 and 1994, and 1995 to present, are coded according to the 8th, 9th and 10th revisions of ICD respectively. For participants resident in Scotland, cancers diagnosed up until 31 Dec 1996 are coded according to the 9th revision of ICD and cancers diagnosed from 01 Jan 1997 are coded according to the 10th revision.

To provide an estimate of the number of prevalent cases by cancer type, it was therefore necessary to map between the different versions of ICD. ICD-9 codes for cancer have been mapped to the current version ICD-10, using the mappings outlined in **Table 2**, based on expert advice from the National Cancer Intelligence Network and local clinicians. ICD-8 codes were not included in the mapping, as there are few differences between the cancer codes in the 8th and 9th revisions.

Table 2. UK Biobank ICD-9 to ICD-10 map for cancers

	ICD-9 code	ICD-10 code
Malignant neoplasms	140 – 208	C00 – C97
Lip, oral cavity and pharynx	140 – 149	C00 – C14
Lip	140	C00
Tongue	141	C01 – C02
Digestive organs	150 – 157, 159	C15 – C26
Oesophagus	150	C15
Stomach	151	C16
Colorectal	153 – 154.1	C18 – C20
Liver	155.0	C22 (excl. C22.1)
Gallbladder or biliary ducts / tree	155.1, 156	C22.1, C23 – C24
Pancreas	157	C25
Respiratory and intrathoracic organs	160 – 165	C30 – C39
Larynx	161	C32
Trachea, bronchial and lung	162	C33 – C34
Pleura (incl. pleural mesothelioma)	163	C38.4, C45.0
Bone and articular cartilage of limbs	170	C40 – C41
Melanoma and other malignant neoplasms of the skin	172 – 173	C43 – C44
Malignant melanoma	172	C43
Non-melanoma skin cancer (excl. Kaposi's and genital cancer)	173	C44
Soft & connective tissue and peripheral nerve tumours	158, 171, 176	C45 – C49 (excl. C45.0)
Kaposi's sarcoma	176	C46
Peripheral / autonomic nerve, soft & connective tissue	158, 171	C45 (excl. C45.0), C47-C49
Breast	174 – 175	C50
Female genital organs	179 – 184	C51 – C58
Cervical	180	C53
Uterine	179, 182	C54 – C55
Ovarian / other female genital organs	183	C56 – C57
Male genital organs	185 – 187	C60 – C63
Prostate	185	C61
Testis	186	C62
Urinary tract	188 - 189	C64 – C68
Kidney	189.0	C64
Renal pelvis, ureter, bladder and urethra	188, 189.1 – 189.3	C65 – C68.0
Eye, brain and other parts of central nervous system (CNS)	190 – 192	C69 – C72
Brain	191	C71
Meninges, cord and other parts of the CNS	192.0 – 192.3	C70, C72
Thyroid and other endocrine glands	193 – 194	C73 – C75
Thyroid	193	C73
Ill-defined and malignancy without site, secondary and unspecified sites	195 – 199	C76 – C80
Primary lymphoid and haematopoietic tissue	200 – 208	C81 – C96
Hodgkin's disease	201	C81
Multiple myeloma and malignant plasma cell neoplasm	203	C90
Non-malignant neoplasms	230 – 239	D00 – D48
In-situ neoplasms	230 – 234	D00 – D09
Benign neoplasms	210 – 229	D10 – D36
Uncertain or unknown behaviour	235 – 239	D37 – D48