

UK Biobank

Death and Cancer Outcomes Report

August 2016

<http://www.ukbiobank.ac.uk/>



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1. Introduction

UK Biobank receives death notifications and cancer diagnoses on a regular basis through linkage to national death and cancer registries, as described elsewhere:

<http://biobank.ctsu.ox.ac.uk/crystal/refer.cgi?id=115559>

<http://biobank.ctsu.ox.ac.uk/crystal/refer.cgi?id=115558> .

This report provides a description of the 20 most common primary causes of deaths and types of cancers, currently in the UK Biobank resource, by age group, sex and year.

Please note:

- **This report (and the online Data Showcase) contains all notifications of deaths and cancers. However, the date of complete follow-up (censoring date) for analyses should be taken to be January 2016 for deaths from E&W and November 2015 for deaths from Scotland. For cancers, date of complete follow-up is September 2014 for E&W and November 2014 for Scotland. In your dataset, please do check that your censoring date refers to the date of complete follow-up (rather than the most recent registration).**
- A small number of participants may have delayed death registration owing to coroner's report. These will be included in the database, as and when they are received.

- Only the first occurrence of a malignant cancer for an individual participant is included in this report.
- The contents of this document will be updated periodically, as and when follow-up data is incorporated into the UK Biobank Resource.
- Please note that data is currently incomplete for cancers registered in 2014.

2. Data on deaths

Figure 2.1: Numbers of the 20 most common causes of death (ICD)

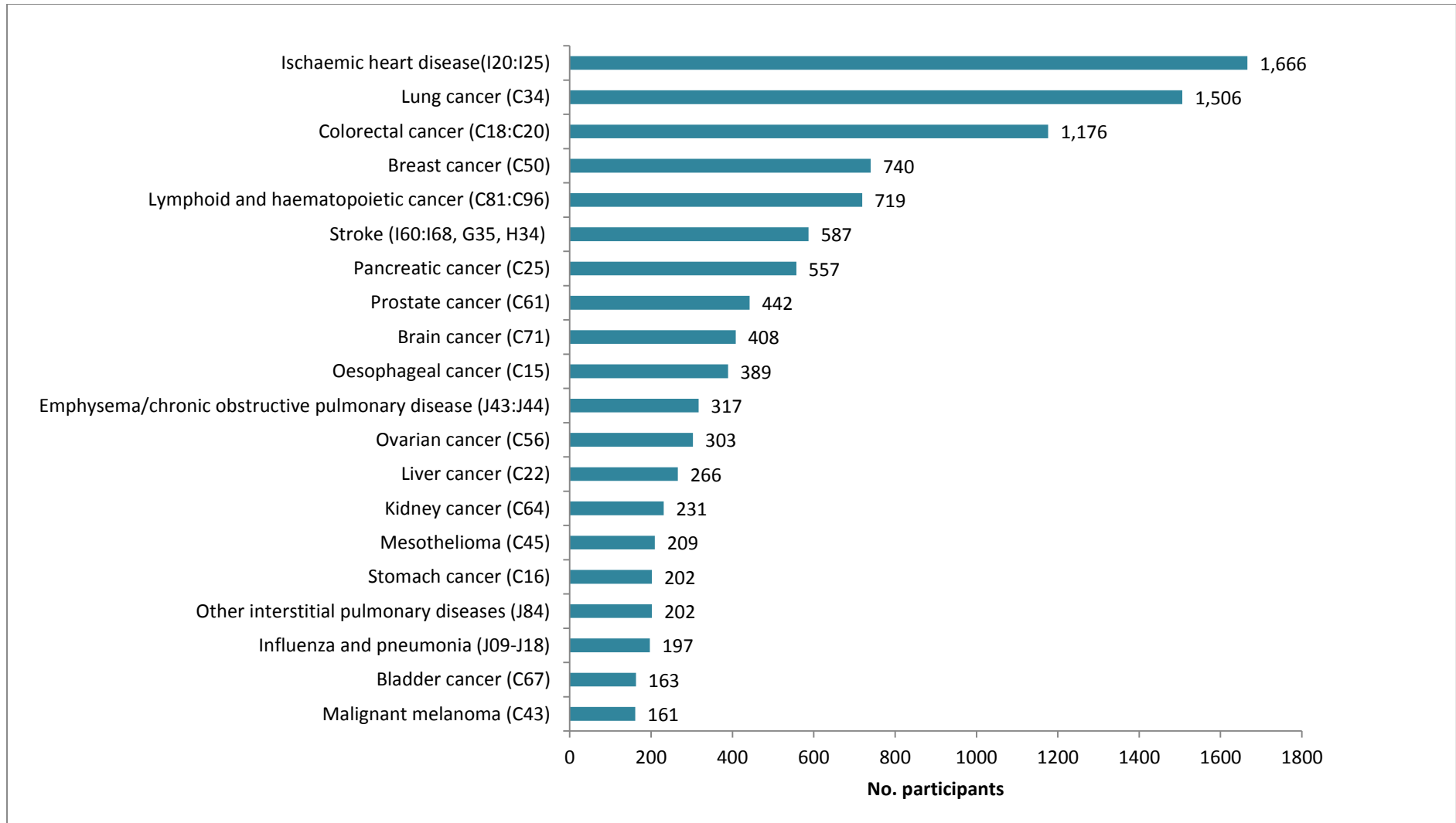


Table 2.1: Numbers of the 20 most common causes of death by age group and sex

| | Below 40 | 40 to <50 years | 50 to <60 years | 60 to <70 years | 70 to <80 years | Male | Female |
|---|----------|-----------------|-----------------|-----------------|-----------------|--------------|--------------|
| Ischaemic heart disease | 0 | 37 | 249 | 848 | 532 | 1391 | 275 |
| Lung cancer | 0 | 21 | 186 | 795 | 504 | 846 | 660 |
| Colorectal cancer | 0 | 23 | 215 | 566 | 372 | 682 | 494 |
| Breast cancer | 0 | 54 | 212 | 346 | 128 | 8 | 732 |
| Lymphoid and haematopoietic cancer | 0 | 18 | 78 | 340 | 283 | 444 | 275 |
| Stroke | 0 | 12 | 77 | 282 | 216 | 327 | 260 |
| Pancreatic cancer | 0 | 10 | 73 | 303 | 171 | 300 | 257 |
| Prostate cancer | 0 | 1 | 23 | 189 | 229 | 442 | 0 |
| Brain cancer | 0 | 22 | 68 | 213 | 105 | 246 | 162 |
| Oesophageal cancer | 0 | 6 | 49 | 211 | 123 | 306 | 83 |
| Emphysema/chronic obstructive pulmonary disease | 1 | 3 | 20 | 158 | 135 | 209 | 108 |
| Ovarian cancer | 0 | 8 | 50 | 145 | 100 | 0 | 303 |
| Liver cancer | 0 | 2 | 46 | 141 | 77 | 144 | 122 |
| Kidney cancer | 0 | 4 | 28 | 129 | 70 | 164 | 67 |
| Mesothelioma | 0 | 1 | 9 | 103 | 96 | 162 | 47 |
| Other interstitial pulmonary diseases | 0 | 2 | 7 | 88 | 105 | 151 | 51 |
| Stomach cancer | 0 | 5 | 31 | 102 | 64 | 144 | 58 |
| Influenza and pneumonia | 0 | 8 | 25 | 83 | 81 | 130 | 67 |
| Bladder Cancer | 0 | 3 | 14 | 78 | 68 | 121 | 42 |
| Malignant Melanoma | 0 | 10 | 35 | 67 | 49 | 103 | 58 |
| Top 20 deaths total | 1 | 250 | 1495 | 5187 | 3508 | 6320 | 4121 |
| Other deaths total | 1 | 221 | 710 | 1829 | 1259 | 2463 | 1557 |
| Total Deaths | 2 | 471 | 2,205 | 7,016 | 4,767 | 8,783 | 5,678 |

Table 2.2: Numbers of the 20 most common causes of death by year of death

| | 2006-2010 (recruitment period) | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|-----------------------------------|--------------|--------------|--------------|--------------|--------------|------------|
| Ischaemic heart disease | 387 | 205 | 219 | 254 | 265 | 299 | 36 |
| Lung cancer | 280 | 190 | 235 | 255 | 263 | 265 | 18 |
| Colorectal cancer | 207 | 167 | 178 | 172 | 210 | 216 | 26 |
| Breast cancer | 170 | 115 | 96 | 122 | 117 | 108 | 12 |
| Lymphoid and haematopoietic cancer | 116 | 88 | 93 | 97 | 152 | 155 | 18 |
| Stroke | 100 | 59 | 79 | 89 | 133 | 110 | 17 |
| Pancreatic cancer | 97 | 59 | 88 | 85 | 99 | 117 | 12 |
| Prostate cancer | 64 | 60 | 53 | 67 | 95 | 94 | 9 |
| Brain cancer | 79 | 55 | 60 | 70 | 56 | 80 | 8 |
| Oesophageal cancer | 74 | 44 | 59 | 59 | 70 | 74 | 9 |
| Emphysema/chronic obstructive pulmonary disease | 48 | 30 | 43 | 46 | 60 | 80 | 10 |
| Ovarian cancer | 56 | 43 | 40 | 55 | 46 | 57 | 6 |
| Liver cancer | 39 | 35 | 35 | 40 | 51 | 58 | 8 |
| Kidney cancer | 41 | 29 | 33 | 33 | 50 | 39 | 6 |
| Mesothelioma | 38 | 23 | 28 | 40 | 34 | 41 | 5 |
| Other Interstitial pulmonary diseases | 22 | 19 | 29 | 42 | 47 | 37 | 6 |
| Stomach cancer | 32 | 32 | 30 | 37 | 35 | 32 | 4 |
| Influenza and pneumonia | 32 | 12 | 25 | 26 | 35 | 63 | 4 |
| Bladder Cancer | 26 | 15 | 26 | 29 | 29 | 35 | 3 |
| Malignant melanoma | 29 | 24 | 23 | 30 | 25 | 27 | 3 |
| Top 20 deaths total | 1937 | 1304 | 1472 | 1648 | 1872 | 1987 | 220 |
| Other deaths | 738 | 472 | 515 | 701 | 726 | 776 | 91 |
| Total Deaths | 2,675 | 1,776 | 1,987 | 2,349 | 2,598 | 2,763 | 311 |

3. Data on Incident cancers

Figure 3.1: Numbers of the 20 most common incident cancers (ICD), diagnosed after date of recruitment

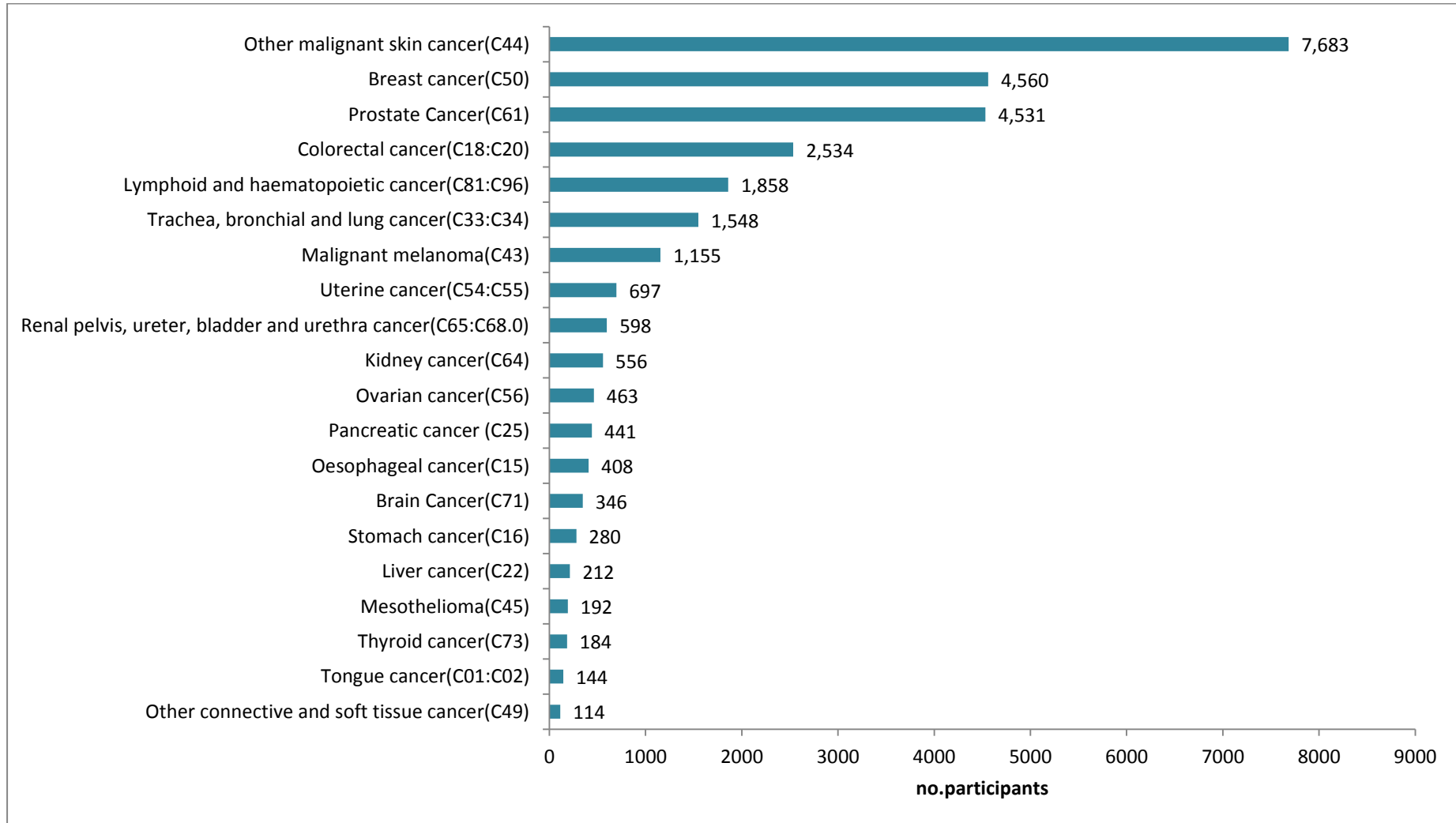


Table 3.1: Numbers of the 20 most common incident cancers by age group and sex

| | 40 to < 50 years | 50 to < 60 years | 60 to < 70 years | 70 to < 80 years | Missing age | Female | Male |
|---|------------------|------------------|------------------|------------------|--------------|---------------|---------------|
| Other malignant skin cancer(C44) | 358 | 1,240 | 3,797 | 1,275 | 1,013 | 3,519 | 4,164 |
| Breast cancer(C50) | 568 | 1,246 | 2,275 | 444 | 27 | 4,532 | 28 |
| Prostate Cancer(C61) | 38 | 586 | 2,890 | 990 | 27 | 1 | 4,530 |
| Colorectal cancer(C18:C20) | 92 | 474 | 1,424 | 525 | 19 | 1,089 | 1,445 |
| Lymphoid and haematopoietic cancer(C81:C96) | 91 | 353 | 1,012 | 381 | 21 | 809 | 1,049 |
| Trachea, bronchial and lung cancer(C33:C34) | 27 | 234 | 889 | 388 | 10 | 722 | 826 |
| Malignant melanoma(C43) | 118 | 277 | 576 | 180 | 4 | 588 | 567 |
| Uterine cancer(C54:C55) | 27 | 184 | 377 | 101 | 8 | 697 | 0 |
| Renal pelvis, ureter, bladder and urethra cancer(C65:C68.0) | 12 | 64 | 359 | 156 | 7 | 150 | 448 |
| Kidney cancer(C64) | 17 | 112 | 327 | 95 | 5 | 193 | 363 |
| Ovarian cancer(C56) | 35 | 117 | 220 | 86 | 5 | 463 | 0 |
| Pancreatic cancer (C25) | 12 | 64 | 267 | 92 | 6 | 204 | 237 |
| Oesophageal cancer(C15) | 7 | 66 | 240 | 87 | 8 | 101 | 307 |
| Brain Cancer(C71) | 33 | 70 | 178 | 59 | 6 | 129 | 217 |
| Stomach cancer(C16) | 10 | 50 | 145 | 73 | 2 | 80 | 200 |
| Liver cancer(C22) | 7 | 45 | 107 | 51 | 2 | 79 | 133 |
| Mesothelioma(C45) | 1 | 12 | 115 | 63 | 1 | 41 | 151 |
| Thyroid cancer(C73) | 23 | 67 | 75 | 19 | 0 | 134 | 50 |
| Tongue cancer(C01:C02) | 3 | 54 | 65 | 19 | 3 | 49 | 95 |
| Other connective and soft tissue cancer(C49) | 17 | 26 | 48 | 21 | 2 | 48 | 66 |
| Total | 1496 | 5341 | 15386 | 5105 | 1176 | 13628 | 14876 |
| Other cancers | 462 | 1,163 | 2,475 | 759 | 54 | 2,804 | 2,109 |
| Total Cancers | 1,958 | 6,504 | 17,861 | 5,864 | 1,230 | 16,432 | 16,985 |

Table 3.2: Numbers of the 20 most common incident cancers by year of diagnosis

| | 2006 to 2010 (recruitment period) | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|--------------------------------------|--------------|--------------|--------------|--------------|------------|
| Other malignant skin cancer(C44) | 2,656 | 1,467 | 1,548 | 982 | 911 | 119 |
| Breast cancer(C50) | 1,484 | 759 | 738 | 811 | 757 | 11 |
| Prostate Cancer(C61) | 1,287 | 749 | 823 | 856 | 804 | 12 |
| Colorectal cancer(C18:C20) | 794 | 429 | 448 | 437 | 418 | 8 |
| Lymphoid and haematopoietic cancer(C81:C96) | 527 | 321 | 295 | 385 | 322 | 8 |
| Trachea, bronchial and lung cancer(C33:C34) | 425 | 224 | 298 | 294 | 298 | 9 |
| Malignant melanoma(C43) | 378 | 172 | 182 | 208 | 213 | 2 |
| Uterine cancer(C54:C55) | 216 | 118 | 141 | 112 | 108 | 2 |
| Renal pelvis, ureter, bladder and urethra cancer(C65:C68.0) | 170 | 116 | 109 | 99 | 102 | 2 |
| Kidney cancer(C64) | 145 | 88 | 108 | 116 | 97 | 2 |
| Ovarian cancer(C56) | 160 | 71 | 72 | 82 | 77 | 1 |
| Pancreatic cancer (C25) | 113 | 66 | 83 | 83 | 92 | 4 |
| Oesophageal cancer(C15) | 118 | 63 | 75 | 73 | 75 | 4 |
| Brain Cancer(C71) | 107 | 67 | 50 | 55 | 65 | 2 |
| Stomach cancer(C16) | 87 | 43 | 54 | 51 | 44 | 1 |
| Liver cancer(C22) | 58 | 34 | 41 | 36 | 43 | 0 |
| Mesothelioma(C45) | 57 | 28 | 31 | 34 | 41 | 1 |
| Thyroid cancer(C73) | 55 | 32 | 31 | 40 | 26 | 0 |
| Tongue cancer(C01:C02) | 41 | 19 | 25 | 36 | 21 | 2 |
| Other connective and soft tissue cancer(C49) | 33 | 15 | 21 | 26 | 19 | 0 |
| Total of top 20 | 8,911 | 4,881 | 5,173 | 4,816 | 4,533 | 190 |
| Other Cancers | 1,559 | 782 | 829 | 877 | 838 | 28 |
| Total | 10470 | 5,663 | 6,002 | 5,693 | 5,371 | 218 |

4. Data on prevalent cancers

Figure 4.1: Numbers of the 20 most common prevalent cancers (ICD), diagnosed before date of recruitment

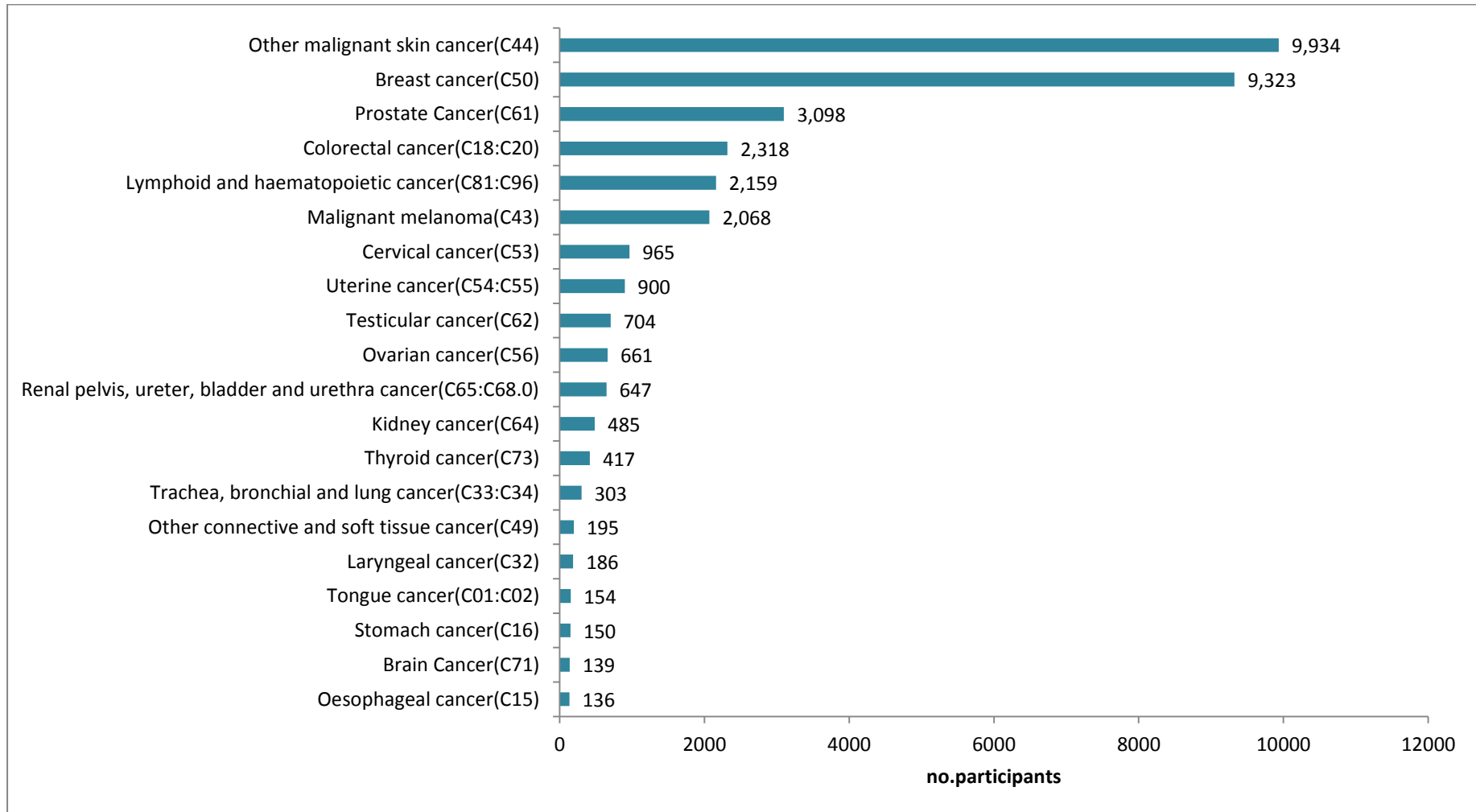


Table 4.1: Numbers of the 20 most common prevalent cancers by age group and sex

| Type | <40 years | 40 to <50 years | 50 to <60 years | 60 to <70 years | Missing age | Female | Male |
|---|--------------|-----------------|-----------------|-----------------|-------------|---------------|---------------|
| Other malignant skin cancer(C44) | 573 | 2,069 | 4,075 | 3,215 | 2 | 5,040 | 4,894 |
| Breast cancer(C50) | 657 | 2,955 | 4,216 | 1,493 | 2 | 9,282 | 41 |
| Prostate Cancer(C61) | 2 | 47 | 1,190 | 1,858 | 1 | 0 | 3,098 |
| Colorectal cancer(C18:C20) | 112 | 414 | 1,014 | 778 | 0 | 985 | 1,333 |
| Lymphoid and haematopoietic cancer(C81:C96) | 506 | 487 | 691 | 474 | 1 | 947 | 1,212 |
| Malignant melanoma(C43) | 435 | 619 | 660 | 354 | 0 | 1,330 | 738 |
| Cervical cancer(C53) | 561 | 312 | 81 | 10 | 1 | 965 | 0 |
| Uterine cancer(C54:C55) | 37 | 145 | 470 | 248 | 0 | 900 | 0 |
| Testicular cancer(C62) | 374 | 220 | 94 | 16 | 0 | 0 | 704 |
| Ovarian cancer(C56) | 123 | 176 | 241 | 121 | 0 | 661 | 0 |
| Renal pelvis, ureter, bladder and urethra cancer(C65:C68.0) | 64 | 132 | 258 | 193 | 0 | 144 | 503 |
| Kidney cancer(C64) | 29 | 101 | 217 | 138 | 0 | 172 | 313 |
| Thyroid cancer(C73) | 131 | 127 | 122 | 37 | 0 | 329 | 88 |
| Trachea, bronchial and lung cancer(C33:C34) | 24 | 49 | 131 | 99 | 0 | 141 | 162 |
| Other connective and soft tissue cancer(C49) | 54 | 44 | 65 | 32 | 0 | 95 | 100 |
| Laryngeal cancer(C32) | 8 | 38 | 87 | 53 | 0 | 23 | 163 |
| Tongue cancer(C01:C02) | 14 | 48 | 67 | 25 | 0 | 53 | 101 |
| Stomach cancer(C16) | 5 | 31 | 57 | 57 | 0 | 53 | 97 |
| Brain Cancer(C71) | 62 | 48 | 21 | 7 | 1 | 65 | 74 |
| Oesophageal cancer(C15) | 1 | 19 | 55 | 61 | 0 | 31 | 105 |
| Top 20 total | 3,772 | 8,081 | 13,812 | 9,269 | 8 | 21,216 | 13,726 |
| Other cancers | 4,253 | 2,565 | 2,540 | 1,353 | 0 | 8,538 | 2,173 |
| Total Cancers | 8,025 | 10,646 | 16,352 | 10,622 | 8 | 29,754 | 15,899 |

Table 4.2: Numbers of the 20 most common prevalent cancers by year of diagnosis

| | <1970 | 1970 to <1980 | 1980 to <1990 | 1990 to <2000 | 2000 to recruitment |
|---|-----------|---------------|---------------|---------------|---------------------|
| Other malignant skin cancer(C44) | 1 | 65 | 543 | 2,301 | 7,024 |
| Breast cancer(C50) | 1 | 68 | 625 | 2,950 | 5,679 |
| Prostate Cancer(C61) | 0 | 1 | 1 | 137 | 2,959 |
| Colorectal cancer(C18:C20) | 0 | 26 | 91 | 525 | 1,676 |
| Lymphoid and haematopoietic cancer(C81:C96) | 7 | 120 | 239 | 495 | 1,298 |
| Malignant melanoma(C43) | 2 | 53 | 271 | 598 | 1,144 |
| Cervical cancer(C53) | 2 | 63 | 411 | 329 | 160 |
| Uterine cancer(C54:C55) | 0 | 6 | 43 | 218 | 633 |
| Testicular cancer(C62) | 1 | 62 | 202 | 231 | 208 |
| Ovarian cancer(C56) | 1 | 20 | 59 | 177 | 404 |
| Renal pelvis, ureter, bladder and urethra cancer(C65:C68.0) | 0 | 15 | 65 | 220 | 347 |
| Kidney cancer(C64) | 1 | 3 | 20 | 91 | 370 |
| Thyroid cancer(C73) | 1 | 33 | 66 | 115 | 202 |
| Trachea, bronchial and lung cancer(C33:C34) | 0 | 4 | 20 | 61 | 218 |
| Other connective and soft tissue cancer(C49) | 1 | 12 | 31 | 49 | 102 |
| Laryngeal cancer(C32) | 0 | 3 | 14 | 46 | 123 |
| Tongue cancer(C01:C02) | 0 | 1 | 10 | 32 | 111 |
| Stomach cancer(C16) | 0 | 0 | 9 | 24 | 117 |
| Brain Cancer(C71) | 1 | 21 | 18 | 32 | 67 |
| Oesophageal cancer(C15) | 0 | 0 | 0 | 18 | 118 |
| Total top 20 | 19 | 576 | 2,738 | 8,649 | 22,960 |
| Other cancers | 7 | 467 | 2,292 | 3,334 | 4,611 |
| Total | 26 | 1,043 | 5,030 | 11,983 | 27,571 |