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Cancer Incidence and Survival
By Major Ethnic Group,
England, 2002 - 2006

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In collaboration with:
Cancer Research UK Cancer Survival Group,
London School of Hygiene & Tropical Medicine

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Foreword

This first national analysis of cancer incidence and survival by ethnic group represents a hugely important step forward. The National Cancer Intelligence Network and Cancer Research UK have brought together data from different sources, to present an accurate picture of cancer and ethnicity. In comparison with white ethnic groups, black people have significantly higher rates of multiple myeloma and stomach cancer. Black men have higher rates of prostate cancer, as in the USA. Asian women have increased rates of cancers of the mouth. Black and Asian women with breast cancer have poorer survival. For many other cancers there are reduced rates amongst BME groups. Now that we have this data, we need to take action by reaching out to different communities and working with them to produce targeted awareness and early detection campaigns. Black and minority ethnic groups working in the cancer field are calling for growth in the outreach services offered by health care providers and I think that this data can be used to underpin that claim. But there are still almost 10% of patients within the hospital system for whom no ethnicity information recorded. NHS Trusts need to strive towards even better collection of ethnicity data, to allow more concise analyses.

Joanne Rule
Co-chair National Cancer Equalities Initiative

Introduction

Background

The National Cancer Inequalities Initiative (NCEI), launched as part of the Cancer Reform Strategy (CRS) for England[1], aims to reduce inequalities in cancer incidence and survival for several different groups where inequality exists; one such grouping being Black and Minority Ethnic (BME) populations. However, the CRS recognised that the routinely collected data within the NHS regarding ethnicity has historically been incomplete and of poor quality.

The main source of routine data collection of ethnicity data within the NHS secondary care system is the Hospital Episode Statistics (HES) dataset, via self-reporting at patient admission. Recently, the National Cancer Intelligence Network (NCIN) facilitated the linkage between the national cancer registry data held by the Office for National Statistics and an extract of all HES records relating to cancer patients. This has resulted in the creation of a National Cancer Data Repository (NCDR), enabling the analyses presented in this report, which document the baseline data quality for and analyses of ethnicity data in relation to cancer incidence and survival.

Previous investigations of ethnicity and cancer within England, using routine population-based data sources, have primarily made use of mortality data employing the place of birth information present on death certificates[2-4]. Incidence analyses have been conducted, but only for the south Asian ethnic group, making use of computer-based name recognition algorithms, such as Nam Pechan and SANGRA[5-7]. There are clear limitations in both of these approaches and, to date, it has not been possible to look comprehensively at patterns of cancer incidence or survival in relation to ethnicity in England. This is very different from the situation in the USA where the SEER cancer registries have been able to conduct such analyses for decades[8].

This report represents, therefore, a significant step forward in being able to provide national cancer incidence analyses for the most common types of cancer together with survival analyses for breast, lung, colorectal and prostate cancers, the four most common sites, by major ethnic groups with the ethnicity information derived from HES. This approach has been used previously in regional analyses for specific sites of cancer[9] but this is the first comprehensive report for England as a whole.

Summary of methods

The primary aim of this report was to identify cancers for which BME groups were at greater risk than the White ethnic group; and to determine if BME groups had poorer outcomes than the White ethnic group. The report covers patients diagnosed in England in the period 2002-2006. All analyses are presented by sex and in two age groups: under 65 years (15 to 64 years for survival), 65 years and over (65 to 99 years for survival) together with all ages (15-99 years for survival). Incidence results are provided for 16 specific sites of solid cancer together with a grouping of "brain and other central nervous system" cancers. In addition, there are results for Hodgkin disease, non-Hodgkin lymphoma, myeloma and all leukaemias and for an overall grouping of all malignancies combined (excluding non-melanoma skin cancer). Due to small numbers of cases in some of the minor ethnic groups (see Annex 2 for definitions), it was only possible to report findings using major ethnic group categories (White, Asian, Black, Chinese and Mixed; see Terminology for definitions). Small numbers also precluded incidence analyses for Chinese and Mixed ethnic groups for types of cancer other than the four most common and the combined grouping. Survival analyses were restricted to the four most common cancers for White, Asian and Black ethnic groups for the same reason.

Throughout this report, the terms "White(s)", "Asian(s)", "Black(s)", "Chinese" and "Mixed" refer to patients from the White ethnic group, the Asian ethnic group, the Black ethnic group, the Chinese ethnic group and the Mixed ethnic group, respectively. The term "non-White" includes the four ethnic groups representing patients who are not "White" in analyses of the all malignancies group, or the top four cancers; and covers only "Asian" and "Black" ethnic groups for the remaining sites. Further details are provided in Terminology.

Linkage between cancer registry and HES data in the NCDR was not complete because not all patients diagnosed with cancer on the registration database were recorded as cancer patients within HES. Overall, 13% of patients did not match

between the two datasets. A further 11% of patients did not have an ethnic group recorded in HES, and 0.2% of patients could not have an overall "most popular" ethnic group determined. Thus, overall 24% of patients had an unknown ethnic group, although this varied by cancer site. However, the proportion of records with an ethnic group recorded within HES improved noticeably during the period examined, from 87% in 2002 to 92% in 2006 (Annex 3).

For the incidence data, three different approaches were used to accommodate patients with an unknown ethnic group. It was necessary to re-assign these records to an ethnic group to be able to calculate age-standardised rates. The three methods used were, firstly to assume that cases with an unknown ethnic group were distributed as for the cases with a known group. The second method assumed, as one extreme, that all of the unknown cases were from the White ethnic group while the third method assumed, as an alternative extreme, that they were more likely to be from the non-White ethnic groups. Further details about these methods are provided in Annex 4.

The approach taken for handling unknowns in the survival analyses was different. In this situation, unknown cases were included in analyses as a separate group, without making any assumptions about their true ethnic groups. This approach led to some results, especially for prostate cancer, being extremely difficult to interpret.

Summary of results

Males and females in the Asian, Chinese and Mixed ethnic groups all had significantly lower risk of getting cancer than Whites when the all malignancies combined group was examined. Across both age groups and for all ages, people from these three ethnic groups were between 20% and 60% less likely to get cancer than those from the White ethnic group. Black females also were between 10% and 40% less likely to get cancer than females from the White ethnic group. In contrast, there was no evidence that Black males had differing risks compared with White males. Thus, generally, people from the BME ethnic groups examined were at a significantly lower risk of getting cancer than the White ethnic group and there was no evidence for an overall inequality in cancer incidence. However, differences were found for some specific cancer sites.

The Asian ethnic group had significantly higher rates for three specific sites of cancer in comparison with the White ethnic group. Liver cancer was between 1.5 and 3 times more likely in Asians than in Whites, with statistically significant results seen for both sexes, for all ages and in both age groups. Cancer of the mouth was significantly increased for Asian females aged 65 years and over and for all ages. Surprisingly, males in the Asian ethnic group were not at a higher risk and, indeed, there was some evidence to suggest they may actually have had a lower risk of getting cancer of the mouth than Whites. Cervical cancer was the other site where the risk was significantly higher in Asian females, but only for those aged 65 and over (ratio between 1.1 and 2.7). In contrast, those aged below 65 years, or those of all ages had significantly lower risks with ratios between 0.3 and 0.8 for Asians relative to the White ethnic group.

Asians were at significantly lower risk of getting any of the four major cancers (breast, prostate, lung and colorectal), plus several other less common cancer sites (including cancers of the bladder, brain and CNS, kidney, oesophagus, ovary, pancreas and malignant melanoma of the skin).

Asian women aged 15-64 years had significantly reduced survival from breast cancer than women from the White ethnic group at three years (89% and 91%, respectively) but not at one year; nor for those aged 65-99 years or for all ages. In contrast, Asians had significantly improved outcomes for lung cancer at both one and three years than Whites for all ages (for example, 20% vs 11% for three year age-standardised survival in males).There were no significant differences between the survival of the Asians and Whites for colorectal cancer.

Black males of all ages, and both age groups were significantly more likely to have a diagnosis of prostate cancer (ratios between 1.1 and 3.4 across the age groups/all ages) than White males. Both males and females from the Black ethnic group also had higher rates of cancers of the stomach for those aged over 65 years and all ages (ratios between 1.1 and 2.5) and liver as well as myeloma. In addition, Black females, aged 65 years and over, were at higher risk of cervical cancer compared with Whites.

Blacks were at significantly lower risk of getting three of the four major cancers (breast, lung and colorectal), plus several other less common cancer sites (including cancers of the bladder, brain and CNS, oesophagus, ovary, pancreas and malignant melanoma of the skin).

Black women aged 15-64 years had significantly poorer survival from breast cancer at both one and three years than White women (85% compared with 91% at three years). There were no significant differences for those aged 65-99 years nor for all ages. Males with lung cancer from the Black ethnic group aged over 65-99 had much better survival than White males at both one and three years (13% compared with 8% at three years).

Both the Chinese and Mixed ethnic groups tended to have significantly lower incidence rates than Whites for each of the four major sites of cancer examined.

Whilst this report covers the whole of England, it is obviously of more relevance to PCTs and Cancer Networks where there are large communities of BME groups. It is possible that there are relatively fewer records within HES with no ethnic group recorded, in these areas, but overall it is unlikely that the percentage with an unknown ethnic group would be much different from that reported for England. As such, it is suggested that the rate ratios and age-standardised rates reported here for BME groups for England can be used as reasonable estimates for PCTs and Cancer Networks.

Limitations

The NCDR has now made possible, for the first time, the national investigation of ethnicity specific cancer incidence and survival rates. There are, however, several limitations to the analyses presented in this report. The most obvious of these is the lack of ethnicity information for almost a quarter of the cancer patients included in the analyses. This substantially increases the levels of uncertainty about the results presented especially as it appears, from the survival analyses, that the patients with unknown ethnicity are not a random cross-section of all patients. The methodology in the report makes use of a number of relatively crude procedures to assign these patients to specific ethnic groups for incidence data. In the future, NCIN will be working with others to develop sophisticated methods, such as statistical imputation.

NCIN will also be developing linkages between cancer registration data and other NHS data sources (including the entire HES England dataset) which will enable the capture of ethnicity information about proportionally more cancer patients. It is also apparent that the completeness of ethnicity reporting within HES is improving year on year. For both these reasons therefore, it can be expected that the proportion of cancer patients without ethnicity information should decline in the near future to below 10%. Alongside this, it will be necessary, through research, to gain a better understanding of the accuracy of ethnicity recording within HES and develop guidelines for improvement.

A further issue, highlighted in this report, is that, despite including more than 1.1 million cancer patients, only handfuls of these patients for some cancer sites were from the Chinese and Mixed ethnic groups and this restricted analyses using these ethnicities (together with all the minor census ethnicity categories). This is an inherent limitation caused by the incidence rate for the cancer types under consideration and the population and age structures of the less common ethnic groups. Improvements in the completeness and accuracy of ethnicity recording may in future facilitate confidence in the reliability of analyses for these groups, although they will inevitably remain based on small numbers.

Conclusions

Despite these limitations, this report has been able to provide a first look at the overall pattern of cancer incidence by ethnicity in England. It is apparent that people from the BME ethnic groups investigated are at a lower risk of developing cancer than the White ethnic group and, in general, there is not an across the board inequality of cancer incidence for the BME ethnic groups. However, some inequality in relation to both the incidence of and survival from cancer does exist for specific types of the disease. These will need to be investigated further and the analyses extended. At the same time, this report opens the way to using the NCDR to analyse patterns and processes of cancer care by ethnic group, a topic that, hitherto, has only been possible in the context of specific research studies.

Given the novel methods and analyses used in this report, NCIN and Cancer Research UK would particularly welcome comments and criticisms. These should be sent, by email, to enquiries@ncin.org.uk or to stats.team@cancer.org.uk.

Acknowledgements

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June 2009

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Annex 1: Data Sources: Cancer Registration and Hospital Episode Statistics

Cancer registration data from the Office for National Statistics (ONS) covering patients diagnosed in England with a malignant neoplasm in the period 2002 – 2006 were linked with Hospital Episode Statistics (HES) data for cancer patients with an in-patient or day case episode between 01/04/1997 and 30/06/2007. There were around 1,200,000 individual patients diagnosed with cancer excluding non-melanoma skin cancer (nmsc) during 2002-2006.

The HES database contains records for every in-patient and/or day case stay for each patient attending an NHS hospital in England during that period and each record includes a variable for ethnic group. However, not all cancer registration patients are recorded in the HES database and some cancer registration patients will not have been able to be linked to a HES record. Such patients will, therefore, not have a known ethnic group.

Annex 2: Populations by Ethnic Group

The 2001 Census in the UK used two classifications of a person's ethnic group; major ethnic group and minor ethnic group. This report has not attempted to analyse differences in cancer incidence between minor ethnic groups due to a small number of patients in many of the minor ethnic groups for most of the cancer sites, but has presented results for England based upon specific major ethnic groupings.

Table 1: Breakdown of population by sex and ethnic group, England, 2002-2006

Major ethnic group	Minor ethnic group	Estimated average annual male population	Estimated average annual female population
White	White British	21,961,580	22,959,820
	White Irish		
	Other White		
Asian	Indian	1,313,260	1,253,660
	Pakistani		
	Bangladeshi		
	Other Asian		
Black	Caribbean	638,360	670,940
	African		
	Other Black		
Chinese	Chinese	156,100	159,260
Mixed	White and Black Caribbean	377,660	378,580
	White and Black African		
	White and Asian		
	Other Mixed		
Other	Other	144,260	158,060

All populations were obtained from the Office of National Statistics (http://www.statistics.gov.uk/default.asp) covering the years 2002-2006, by sex and five year age group for England, estimated from the 2001 Census.

For cancer incidence analyses, only the two largest non-White ethnic groups, Asian and Black, were analysed for all the sites presented. Chinese and Mixed ethnic groups were also included for analyses of colorectal, lung, breast and prostate cancers and for the all malignancies (excluding nmsc) grouping.

For relative survival, only the White, Asian and Black ethnic groups were analysed. Patients with unknown ethnicity were analysed as a separate group for relative survival – see annex 5 for further details. Relative survival has only been presented for colorectal, lung, breast and prostate cancers.

The category of "Other Ethnic Group" in the Census included people who did not define themslves by any of the other provided ethnic group categories. It would appear, however, that this category was used more broadly in the collection of ethnicity data in HES within NHS hospitals. As a consequence, there was a significant problem of comparability between the numerator (number of cases) and denominator (population at risk), and no results for this category have been presented.

Annex 3: Assigning ethnic groups to cancer patients

All ethnicity data used in these analyses were derived from the HES database. An ethnic group is supposed to be available for every hospital admission for each patient. Some patients were recorded as having different ethnic groups in different HES records. To assign a single ethnic group for each patient included in these analyses, the 'most frequently recorded ethnicity' was used. If there were no single 'most frequently recorded ethnicity' group, then the patient's ethnic group was recorded as 'unknown'. For those patients with no valid ethnicity code in any of their hospital admissions, the ethnicity was also recorded as 'unknown'.

A patient may, therefore, have an unknown ethnic group if, the cancer registration and HES records did not match, if there was no valid ethnic group within any of the HES records for the patient, or there was no single most recorded ethnic group. Overall, around 13% of patients did not link and so were unmatched; around 11% of patients were not assigned an ethnic code because none was recorded within HES, and only around 0.2% gave conflicting possible most popular" ethnic groups. The percentage of patients assigned an ethnic group varied by year and age group (see table 2) and also by site (see table 3).

There has been a steady improvement in the data quality of ethnicity recording within HES, with a reduction in the percentage of records with unknown ethnicity due to a lack of recording within HES over time. In 2002, 13% of all male cancer patients and 14% of all female cancer patients had no ethnicity assigned due to there not being a recorded ethnicity within HES. These figures had fallen to 8% and 9% respectively, by 2006. Further improvement is still possible.

Overall, the percentage of patients without an ethnic group was around 24%, although this did vary considerably by cancer site. For example, for all ages, 13% of male bladder cancer patients were not assigned an ethnic group compared with 37% of patients with prostate cancer (see table 3).

Table 2: Patients with unknown ethnicity by reasons for unknown status, year of diagnosis, sex and age group, 2002-2006

		Males					Females			
Year	Age group	Total cases	Percent unknown ethnicity	Unknown: no recorded ethnicity (HES)	Unknown: unmatched patients	Total cases	Percent unknown ethnicity	Unknown: no recorded ethnicity (HES)	Unknown: unmatched patients
2002	<65 years	35,784	24%	13%	11%	45,962	23%	13%	11%
	≥65 years	80,524	27%	13%	14%	68,491	29%	15%	15%
	all ages	116,308	26%	13%	13%	114,453	27%	14%	13%
2003	<65 years	36,215	23%	12%	11%	47,945	22%	12%	10%
	≥65 years	80,540	25%	11%	14%	70,335	27%	12%	14%
	all ages	116,755	25%	11%	13%	118,280	25%	12%	13%
2004	<65 years	37,891	23%	11%	12%	48,739	21%	11%	10%
	≥65 years	83,384	24%	10%	15%	69,879	24%	11%	13%
	all ages	121,275	24%	10%	14%	118,618	23%	11%	12%
2005	<65 years	38,804	22%	10%	12%	49,200	20%	10%	10%
	≥65 years	82,840	24%	9%	15%	71,989	23%	10%	13%
	all ages	121,644	23%	9%	14%	121,189	22%	10%	12%
2006	<65 years	39,569	22%	9%	13%	49,904	19%	9%	10%
	≥65 years	83,044	24%	7%	16%	71,546	22%	8%	14%
	all ages	122,613	23%	8%	15%	121,450	21%	9%	12%
2002-2006	<65 years	188,263	23%	11%	12%	241,750	21%	11%	10%
	≥65 years	410,332	25%	10%	15%	352,240	25%	11%	14%
	all ages	598,595	24%	10%	14%	593,990	24%	11%	12%

Table 3: Patients with unknown ethnicity by cancer site, sex and age group, 2002-2006

ICD-10	Site	Sex	All ages						< 65 years		≥65 years	
			Total cases	Total ethnicity unknown	Percent unknown ethnicity	Unknown: no recorded ethnicity (HES)	Unknown: unmatched patients	Unknown: undetermined ethnicity	Total cases	Percent unknown ethnicity	Total cases	Percent unknown ethnicity
C00 - C97 ex.C44	All malignant neoplasms excluding NMSC	Male	598,595	145,299	24%	10%	14%	0.1%	188,263	23%	410,332	25%
		Female	593,990	140,193	24%	11%	12%	0.2%	241,750	21%	352,240	25%
C00 - C08	Mouth	Male	9,086	1,631	18%	9%	9%	0.2%	5,113	17%	3,973	20%
		Female	5,877	1,196	20%	9%	11%	0.2%	2,618	18%	3,259	22%
C15	Oesophagus	Male	20,197	2,935	15%	10%	4%	0.1%	6,658	13%	13,539	15%
		Female	11,320	1,974	17%	11%	6%	0.1%	2,213	11%	9,107	19%
C16	Stomach	Male	21,774	3,662	17%	11%	6%	0.1%	5,149	15%	16,625	17%
		Female	12,015	2,588	22%	12%	9%	0.2%	2,146	16%	9,869	23%
C18 - C20	Colorectal	Male	80,086	12,607	16%	9%	6%	0.1%	22,611	16%	57,475	16%
		Female	66,409	12,830	19%	10%	9%	0.1%	15,572	15%	50,837	21%
C22	Liver	Male	7,633	1,801	24%	10%	14%	0.2%	2,478	22%	5,155	25%
		Female	4,794	1,194	25%	11%	14%	0.2%	1,064	17%	3,730	27%
C25	Pancreas	Male	15,434	3,603	23%	12%	11%	0.1%	4,512	20%	10,922	25%
		Female	16,268	4,286	26%	13%	13%	0.1%	3,388	18%	12,880	28%
C33 - C34	Lung	Male	91,494	20,444	22%	12%	11%	0.1%	23,161	18%	68,333	24%
		Female	64,185	15,445	24%	12%	12%	0.1%	16,415	17%	47,770	27%
C43	Malignant melanoma	Male	17,236	5,997	35%	12%	23%	0.1%	9,732	41%	7,504	26%
		Female	20,861	7,642	37%	11%	25%	0.2%	12,887	41%	7,974	29%
C50	Breast	Female	187,620	46,445	25%	11%	13%	0.2%	104,339	22%	83,281	28%
C53	Cervix	Female	11,579	2,533	22%	10%	12%	0.3%	8,702	23%	2,877	18%
C54-C55	Uterus	Female	27,680	6,005	22%	11%	10%	0.8%	12,303	23%	15,377	21%
C56	Ovary	Female	28,023	6,253	22%	11%	11%	0.1%	13,179	22%	14,844	23%
C61	Prostate	Male	146,905	54,446	37%	9%	28%	0.1%	32,684	39%	114,221	36%
C64 - C66 & C68	Kidney	Male	16,076	3,351	21%	10%	10%	1.1%	6,660	20%	9,416	21%
		Female	9,810	2,151	22%	10%	10%	0.9%	3,583	18%	6,227	24%
C67	Bladder	Male	30,254	3,957	13%	8%	5%	0.1%	6,287	13%	23,967	13%
		Female	12,085	1,942	16%	10%	6%	0.0%	2,064	13%	10,021	17%
C70 - C72	Brain	Male	11,043	1,793	16%	10%	6%	0.2%	6,481	14%	4,562	19%
		Female	7,969	1,445	18%	11%	7%	0.4%	4,278	14%	3,691	23%
C81	Hodgkin disease	Male	3,651	654	18%	11%	6%	0.1%	2,978	18%	673	16%
		Female	2,748	421	15%	10%	5%	0.0%	2,112	15%	636	17%
C82 - C85 & C96	Non-Hodgkin lymphoma	Male	22,774	4,722	21%	10%	10%	0.1%	10,080	21%	12,694	20%
		Female	19,802	4,140	21%	10%	11%	0.1%	7,444	20%	12,358	22%
C88 - C90	Myeloma	Male	9,507	1,680	18%	9%	8%	0.1%	2,842	14%	6,665	19%
		Female	7,850	1,529	19%	10%	9%	0.1%	1,934	13%	5,916	22%
C91 - C95	Leukaemia	Male	17,728	4,073	23%	11%	12%	0.1%	6,970	20%	10,758	25%
		Female	13,090	3,270	25%	11%	14%	0.1%	4,684	18%	8,406	29%

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Annex 4: Handling patients with an unknown ethnic group - incidence

Cancer incidence data are usually reported as age-standardised rates per 100,000 population. This would not, however, have been possible using the dataset created by the methods described above to assign a final ethnic group to each patient because of the high proportion of patients with an unknown ethnic group; meaning that the rates reported for all of the known groups would have been under-estimates because there were no unknowns in the population data. To circumvent this problem, three different methods were used to assign an ethnic group to the patients with unknown ethnicity.

The first method produced results under the assumption that the patients with unknown ethnicity had the same distribution as patients with known ethnicity. The other two methods produced results using relatively extreme assumptions about the likely distribution of the cases with unknown ethnic group. These were firstly that all the patients with an unknown ethnic group were in fact from the White ethnic group; and secondly that the patients with unknown ethnicity were more likely to have come from the non-White ethnic groups when compared with the distribution of known patients.

Method 1 – Distribution "as known"

The "as known" distribution uses the assumption that the patients with unknown ethnicity were missing entirely at random and therefore they would have the same distribution as the known cases within each five-year age and sex group.

In the illustrative example below, the "as known" distribution assigned 25% of unknown cases to Black, 25% to Asian and 50% to White ethnic groups for each five-year group because this is the distribution of those whose ethnic group was known.

Example

	Black	Asian	White	Unknown
Real distribution of cases (% of knowns) by ethnic group	40 (25%)	40 (25%)	80 (50%)	80
Distribution of unknowns	25% (20)	25% (20)	50% (40)	
Total cases used in analyses - "as known"	60	60	120	0

Method 2 – Distribution "all White"

This assumes that all of the patients with no ethnicity assigned were White, thus boosting the numbers of cases in the analysis who were in the White ethnic group. As such, this method provides the lowest potential estimates for the non-White ethnic groups.

In the illustrative example below, the "all White" distribution assigned 100% of the cases with unknown ethnicity to the White ethnic group.

Example

	Black	Asian	White	Unknown
Real distribution of cases (% of knowns) by ethnic group	40 (25%)	40 (25%)	80 (50%)	80
Distribution of unknowns	0	0	100% (80)	
Total cases used in analyses - "all White"	40	40	160	0

Method 3 – Distribution "non-White relative increase"

This method uses the assumption that patients with unknown ethnicity were more likely to be from a non-White ethnic group than in the "as known" distribution method.

The proportion of patients with unknown ethnicity distributed to each of the non-White ethnic groups was calculated initially using the same procedure as used for the "as known" distribution. The proportion of additional cases within each non-White ethnic group was then increased by a further 50%. This procedure was employed for each sex-specific, five-year age group. For some age groups, with small numbers of cases, there were occasionally an insufficient number of cases with unknown ethnicity to allow for the 50% increase. In this situation, the maximum percentage of unknowns distributed to non-White ethnic groups was limited to 100%.

In the illustrative example below, the "non-White relative increase" distribution assigned 75% of unknown cases to the non-White ethnic groups (37.5% to Black, 37.5% to Asian), compared with 50% that would be assigned under the "as known" distribution method.

Example

	Black	Asian	White	Unknown
Real distribution of cases (% of known) by ethnic group	40 (25%)	40 (25%)	80 (50%)	80
Extra cases if "As known" distribution applied % (no cases)	*25% (+20)*	*25% (+20)*	*50% (+40)*	
Boost of 50% in non-White ethnic groups from "as known" at expense of White	+12.5% (+10)	+12.5% (+10)	-25% (-20)	
Non-White relative increase (net increase)	37.5% (30)	37.5% (30)	25% (20)	
Total cases used in analyses - "non-White relative increase"	**70**	**70**	**100**	**0**

The numbers used in the example above are for illustrative purposes only. The percentages in the non-White groups are much lower in reality than the figures shown. As a guide, for male lung cancer in 2002-06, there were over 90,000 cases; 69,000 from White ethnic group, 20,000 Unknown ethnicity, whilst only 2,200 cases (3% of cases with known ethnicity) were from non-White ethnic groups. Thus, the differences between how the unknown cases were distributed using the three methods is generally not large.

As a further example the tables below show the real number of lung cancer cases, by ethnic group, in the 70-74 years age group and the impact of the three distributional assumptions on the resulting number of cases in each group. This provides a more realistic demonstration of the numbers and proportions of cases with unknown ethnicity added to each ethnic group for each method.

As known distribution

	Asian	Black	Chinese	Mixed	Other	White	Unknown	Total
Original data	180	134	20	17	74	12,635	3,479	16,539
Distribution of known cases	1.4%	1.0%	0.15%	0.13%	0.57%	96.7%		
Total additional cases from distributing unknown	*48 (1.4%)*	*36 (1%)*	*5 (0.15%)*	*5 (0.13%)*	*20 (0.57%)*	*3,366 (96.7%)*		
Total for "As known" distribution	**228**	**170**	**25**	**22**	**94**	**16,001**	**0**	**16,539**

All White distribution

	Asian	Black	Chinese	Mixed	Other	White	Unknown	Total
Original data	180	134	20	17	74	12,635	3,479	16,539
Additional proportion of unknown cases	0%	0%	0%	0%	0%	100%		
Total additional cases from distributing unknown	*0 (0%)*	*0 (0%)*	*0 (0%)*	*0 (0%)*	*0 (0%)*	*3,479 (100%)*		
Total for "All White" distribution	**180**	**134**	**20**	**17**	**74**	**16,114**	**0**	**16,539**

Non-White relative increase distribution

	Asian	Black	Chinese	Mixed	Other	White	Unknown	Total
Original data	180	134	20	17	74	12,635	3,479	16,539
Distribution of known cases	1.4%	1.0%	0.15%	0.13%	0.57%	96.7%		
Boost of 50% in non-White ethnic groups	+0.7%	+0.5%	+0.08%	+0.07%	+0.28%	-1.6%		
Non-White relative increase	2.1%	1.5%	0.23%	0.20%	0.85%	95.1%		
Total additional cases from distributing unknown	*72 (2.1%)*	*54 (1.5%)*	*8 (0.23%)*	*7(0.20%)*	*30 (0.85%)*	*3,309 (95.1%)*		
Total for "Non-White relative increase" distribution	**252**	**188**	**28**	**24**	**104**	**15,944**	**0**	**16,539**

Annex 5: Relative Survival

Only the White, Asian and Black ethnic groups have been included in the relative survival analyses. Unlike the incidence analyses, patients with an unknown ethnic group have not been re-distributed to any other ethnic group but have been analysed, and presented, as a separate group.

For cancer survival analyses, additional exclusion criteria were used which did not apply for cancer incidence analyses. The main reasons for exclusion from the analyses were patients aged under 15 years or over 100 years at diagnosis, patients where the diagnosis was determined from the issue of a death certificate only (DCO), patients having synchronous tumours and those having multiple primary cancers of the same site.
True 'zero survival' cancer patients were kept in the analysis with a day added to their survival time.

The percentage of patients excluded due to their diagnoses being determined from the issue of a death certificate only varied by cancer site. Patients with unknown ethnicity had a higher percentage of DCOs than patients with a known ethnic group.

Exclusions of eligible records for cancer survival analysis, by cancer site and major ethnic group, England, 2002-2006

		White		Asian		Black		Unknown	
C18: Colorectal	Eligible records	117,069		1,212		1,135		25,295	
	Death Certificate Only	1,612	1.4%	16	1.3%	18	1.6%	2,305	9.1%
	Other exclusion criteria	2,100	1.8%	25	2.1%	23	2.0%	413	1.6%
	Total excluded	3,712	3.2%	41	3.4%	41	3.6%	2,718	10.7%
	Total analysed	113,357	96.8%	1,171	96.6%	1,094	96.4%	22,577	89.3%
C33 - C34: Lung	Eligible records	115,781		1,130		856		35,612	
	Death Certificate Only	4,018	3.5%	50	4.4%	26	3.0%	4,685	13.2%
	Other exclusion criteria	1,058	0.9%	19	1.7%	7	0.8%	323	0.9%
	Total excluded	5,076	4.4%	69	6.1%	33	3.9%	5,008	14.1%
	Total analysed	110,705	95.6%	1,061	93.9%	823	96.1%	30,604	85.9%
C50: Breast	Eligible records	134,212		2,608		1,920		46,066	
	Death Certificate Only	796	0.6%	9	0.3%	11	0.6%	1,493	3.2%
	Other exclusion criteria	7,714	5.7%	119	4.6%	104	5.4%	2,380	5.2%
	Total excluded	8,510	6.3%	128	4.9%	115	6.0%	3,873	8.4%
	Total analysed	125,702	93.7%	2,480	95.1%	1,805	94.0%	42,193	91.6%
C61: Prostate	Eligible records	87,716		1,026		2,360		53,975	
	Death Certificate Only	1,572	1.8%	9	0.9%	40	1.7%	1,386	2.6%
	Other exclusion criteria	650	0.7%	10	1.0%	35	1.5%	725	1.3%
	Total excluded	2,222	2.5%	19	1.9%	75	3.2%	2,111	3.9%
	Total analysed	85,494	97.5%	1,007	98.1%	2,285	96.8%	51,864	96.1%

Methods

Relative survival is defined as the ratio of the observed survival and the survival that would have been expected if the cancer patients had only experienced the background mortality seen in the general population. Background mortality rates were taken from life tables constructed for each calendar year, year of age, sex, socioeconomic status and geographic region. This is due to the risk of death from causes other than cancer varying with these factors. Cumulative probabilities of relative survival at one and three years after diagnosis are presented in this report.

Relative survival varies with age at diagnosis and the age distribution of patients varies by ethnic group, therefore survival estimates were age-standardised using standard age weights.[1]

Structure of survival analyses, patients diagnosed 2002-2006 and followed up to 2007

Calendar years within which follow-up probabilities are used to estimate survival

	2002	2003	2004	2005	2006	2007
2002	0	1	2	3	4	5
2003		0	1	2	3	4
2004			0	1	2	3
2005		Survival data used		0	1	2
2006		in complete analysis			0	1

(Left axis label: Calendar year of diagnosis)

Numbers in the cells indicate the *minimum* number of years of follow-up completed by patients surviving to the end of a given calendar year (columns) who were diagnosed in the index year (rows).

The analyses used in this report were based on cohort analyses for one-year survival and complete analyses for three-year survival, for patients diagnosed during 2002 to 2006, followed up to the end of 2007. Thus, in the figure above, patients diagnosed in 2002 were followed up to the end of 2003 (for one-year survival) and to the end of 2005 (for three-year survival). Patients diagnosed in 2003 were followed up until the end of 2004 and 2006 respectively. The cohort approach for one year-survival meant that all patients diagnosed in the given period could have been potentially followed up for at least one year; the complete approach for three-year survival meant that some patients were followed up for less than three years.

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1 Corazziari I, Quinn M and Capocaccia R. Standard cancer patient population for age standardizing survival ratios, Eur J Cancer **40** (2004), pp. 2307–2316

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C00-C97 excl. C44: All malignant neoplasms excluding non-melanoma skin cancer Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	136,889	3,270	2,562	331	578	1,403	43,230	188,263	23%
≥65 years	298,279	3,415	3,978	320	480	1,791	102,069	410,332	25%
All Ages	**435,168**	**6,685**	**6,540**	**651**	**1,058**	**3,194**	**145,299**	**598,595**	**24%**

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper
Asian	As known	0.58	0.57 -	0.60	0.53	0.52 -	0.54	0.55	0.54 -	0.56
	All White	0.44	0.43 -	0.45	0.40	0.39 -	0.41	0.41	0.41 -	0.42
	Non-White relative increase	0.65	0.64 -	0.67	0.60	0.59 -	0.61	0.62	0.61 -	0.63
Black	As known	1.06	1.02 -	1.09	1.03	1.00 -	1.06	1.04	1.02 -	1.06
	All White	0.80	0.78 -	0.83	0.77	0.75 -	0.79	0.78	0.76 -	0.80
	Non-White relative increase	1.19	1.14 -	1.23	1.16	1.13 -	1.19	1.17	1.14 -	1.20
Chinese	As known	0.53	0.50 -	0.57	0.59	0.55 -	0.64	0.57	0.54 -	0.60
	All White	0.41	0.38 -	0.43	0.44	0.41 -	0.47	0.43	0.41 -	0.45
	Non-White relative increase	0.60	0.56 -	0.64	0.67	0.62 -	0.72	0.64	0.61 -	0.68
Mixed	As known	0.66	0.62 -	0.70	0.57	0.53 -	0.60	0.60	0.58 -	0.63
	All White	0.50	0.47 -	0.53	0.42	0.40 -	0.45	0.45	0.43 -	0.47
	Non-White relative increase	0.74	0.70 -	0.78	0.64	0.60 -	0.68	0.68	0.65 -	0.70

NCRI · NHS Northern and Yorkshire Cancer Registry and Information Service · South West Public Health Observatory · ecric Fighting cancer with information · West Midlands Cancer Intelligence Unit · Trent NHS Cancer Registry · King's College London · NWCIS North West Cancer Intelligence Service · Oxford Cancer Intelligence Unit · Office for National Statistics · ukacr United Kingdom Association of Cancer Registries

Cancer incidence by major ethnic group, England, 2002-2006

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C00-C97 excl. C44: All malignant neoplasms excluding non-melanoma skin cancer	Male

Asian ethnic group compared with the White ethnic group	Black ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.	Results were inconclusive for males under 65 years, 65 years and over and of all ages in the Black ethnic group.
Chinese ethnic group compared with the White ethnic group	**Mixed ethnic group compared with the White ethnic group**
Rates for males under 65 years, 65 years and over and of all ages were lower in the Chinese ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.	Rates for males under 65 years, 65 years and over and of all ages were lower in the Mixed ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	Distribution of unknowns	<65 years ASR	<65 years Lower	<65 years Upper	≥65 years ASR	≥65 years Lower	≥65 years Upper	All ages ASR	All ages Lower	All ages Upper
White	As known	173.7	172.9 -	174.5	2335.0	2327.7 -	2342.2	411.4	410.4 -	412.5
	All White	176.0	175.2 -	176.8	2354.9	2347.6 -	2362.2	415.7	414.6 -	416.8
	Non-White relative increase	172.5	171.7 -	173.3	2325.0	2317.8 -	2332.2	409.3	408.2 -	410.3
Asian	As known	101.0	98.0 -	104.1	1243.7	1207.5 -	1279.9	226.7	222.0 -	231.5
	All White	78.2	75.6 -	80.9	934.6	903.3 -	966.0	172.4	168.3 -	176.6
	Non-White relative increase	112.4	109.2 -	115.6	1398.2	1359.8 -	1436.7	253.9	248.8 -	258.9
Black	As known	183.6	177.3 -	189.8	2399.4	2334.6 -	2464.2	427.3	418.3 -	436.4
	All White	141.6	136.1 -	147.1	1804.7	1748.6 -	1860.7	324.6	316.7 -	332.4
	Non-White relative increase	204.6	198.0 -	211.1	2696.8	2628.0 -	2765.5	478.7	469.1 -	488.3
Chinese	As known	92.5	83.7 -	101.2	1386.3	1254.5 -	1518.1	234.8	219.0 -	250.5
	All White	71.4	63.7 -	79.0	1039.1	925.3 -	1153.0	177.8	164.2 -	191.5
	Non-White relative increase	103.0	93.8 -	112.2	1559.9	1420.0 -	1699.9	263.3	246.6 -	280.0
Mixed	As known	114.5	106.2 -	122.7	1320.9	1218.3 -	1423.5	247.2	234.1 -	260.2
	All White	88.1	80.9 -	95.3	994.7	905.7 -	1083.7	187.8	176.5 -	199.1
	Non-White relative increase	127.7	118.9 -	136.4	1484.0	1375.2 -	1592.7	276.9	263.0 -	290.7
	Overall rate for England	171.5	170.7 -	172.3	2320.0	2312.9 -	2327.1	407.8	406.8 -	408.9

Age-standardised rates for the White ethnic group ranged from 408.2 to 416.8 per 100,000 for all ages. Rates for the Asian, Chinese and Mixed ethnic groups were significantly lower compared to the White ethnic group for all ages and ranged from 168.3 to 258.9 per 100,000 for the Asian ethnic group; from 164.2 to 280.0 per 100,000 for the Chinese ethnic group and from 176.5 to 290.7 per 100,000 for the Mixed ethnic group. Rates for the Black ethnic group for all ages ranged from 316.7 to 488.3 per 100,000.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006

C00-C97 excl. C44: All malignant neoplasms excluding non-melanoma skin cancer — Female
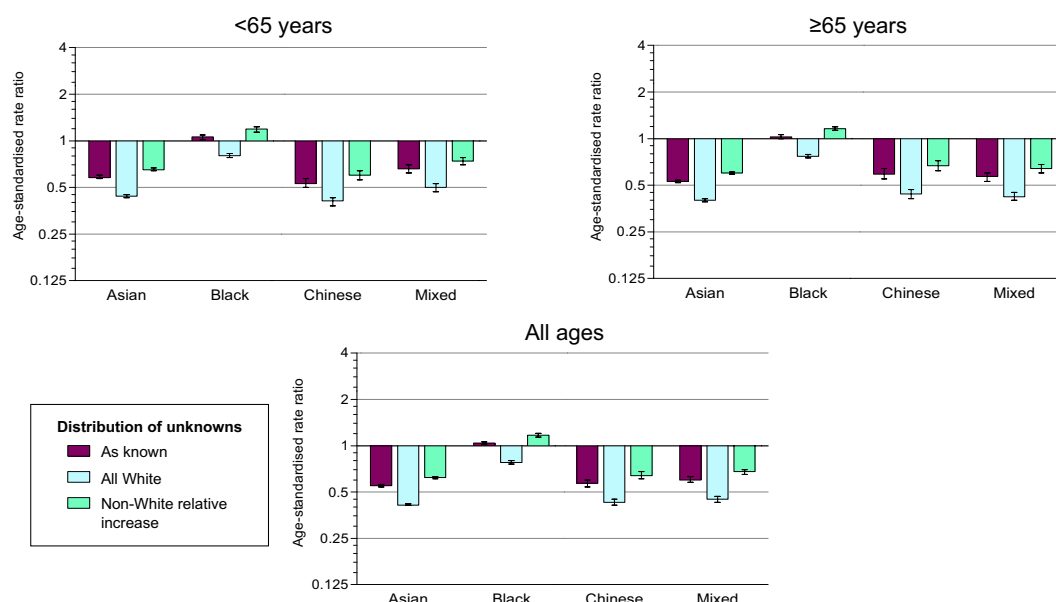
> These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	178,811	4,736	3,602	590	808	1,977	51,226	241,750	21%
≥65 years	256,982	2,289	1,873	228	358	1,543	88,967	352,240	25%
All Ages	435,793	7,025	5,475	818	1,166	3,520	140,193	593,990	24%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

> Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

		<65 years			≥65 years			All ages	
	Distribution of unknowns	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper

	Distribution of unknowns	Rate ratio	Lower	Upper	Rate ratio	Lower	Upper	Rate ratio	Lower	Upper
Asian	As known	0.65	0.64 -	0.66	0.59	0.58 -	0.61	0.62	0.61 -	0.63
	All White	0.51	0.50 -	0.52	0.45	0.44 -	0.46	0.48	0.47 -	0.49
	Non-White relative increase	0.72	0.71 -	0.74	0.66	0.64 -	0.68	0.70	0.68 -	0.71
Black	As known	0.84	0.81 -	0.86	0.76	0.73 -	0.79	0.80	0.78 -	0.82
	All White	0.65	0.63 -	0.67	0.58	0.56 -	0.60	0.62	0.60 -	0.63
	Non-White relative increase	0.93	0.91 -	0.96	0.85	0.82 -	0.88	0.90	0.88 -	0.91
Chinese	As known	0.56	0.53 -	0.59	0.55	0.51 -	0.60	0.56	0.53 -	0.58
	All White	0.43	0.41 -	0.46	0.42	0.38 -	0.45	0.43	0.41 -	0.44
	Non-White relative increase	0.62	0.59 -	0.66	0.62	0.57 -	0.68	0.62	0.60 -	0.65
Mixed	As known	0.62	0.59 -	0.65	0.57	0.54 -	0.62	0.60	0.58 -	0.62
	All White	0.48	0.46 -	0.50	0.44	0.41 -	0.47	0.46	0.45 -	0.48
	Non-White relative increase	0.69	0.66 -	0.73	0.64	0.60 -	0.69	0.67	0.64 -	0.70

**Cancer incidence by major ethnic group,
England, 2002-2006**

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C00-C97 excl. C44: All malignant neoplasms excluding non-melanoma skin cancer — Female

Asian ethnic group compared with the White ethnic group	Black ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.	Rates for females under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.
Chinese ethnic group compared with the White ethnic group	**Mixed ethnic group compared with the White ethnic group**
Rates for females under 65 years, 65 years and over and of all ages were lower in the Chinese ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.	Rates for females under 65 years, 65 years and over and of all ages were lower in the White ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% confidence interval Lower	Upper	ASR	95% confidence interval Lower	Upper	ASR	95% confidence interval Lower	Upper
White	As known	219.4	218.5 -	220.3	1440.6	1435.8 -	1445.4	353.8	352.8 -	354.7
	All White	222.6	221.7 -	223.5	1449.3	1444.5 -	1454.2	357.5	356.6 -	358.4
	Non-White relative increase	217.9	217.0 -	218.8	1436.3	1431.5 -	1441.1	351.9	351.0 -	352.8
Asian	As known	142.8	139.2 -	146.4	852.0	821.3 -	882.7	220.8	216.2 -	225.4
	All White	112.7	109.5 -	115.9	655.7	628.8 -	682.5	172.4	168.4 -	176.4
	Non-White relative increase	157.9	154.1 -	161.6	950.2	917.7 -	982.7	245.0	240.2 -	249.8
Black	As known	183.3	177.9 -	188.6	1095.4	1051.7 -	1139.1	283.6	276.9 -	290.2
	All White	144.4	139.7 -	149.1	839.4	801.4 -	877.4	220.9	215.0 -	226.7
	Non-White relative increase	202.7	197.1 -	208.3	1223.3	1177.1 -	1269.6	315.0	307.9 -	322.0
Chinese	As known	122.4	113.7 -	131.2	799.4	709.1 -	889.7	196.9	185.0 -	208.8
	All White	96.3	88.6 -	104.1	603.4	525.1 -	681.7	152.1	141.7 -	162.5
	Non-White relative increase	135.5	126.3 -	144.7	897.4	801.7 -	993.2	219.3	206.8 -	231.8
Mixed	As known	136.1	127.8 -	144.5	828.2	753.4 -	903.0	212.3	201.5 -	223.0
	All White	107.2	99.8 -	114.6	637.5	571.5 -	703.6	165.5	156.0 -	175.0
	Non-White relative increase	150.6	141.9 -	159.4	923.5	844.8 -	1002.3	235.7	224.3 -	247.0
	Overall rate for England	216.0	215.1 -	216.8	1432.3	1427.6 -	1437.1	349.8	348.9 -	350.7

Age-standardised rates for the White ethnic group ranged from 351.0 to 358.4 per 100,000 for all ages. Rates for all non-White ethnic groups were significantly lower for all ages, and ranged from 168.4 to 249.8 per 100,000 for the Asian ethnic group, from 215.0 to 322.0 per 100,000 for the Black ethnic group, from 141.7 to 231.8 per 100,000 for the Chinese ethnic group and from 156.0 to 247.0 per 100,000 for the Mixed ethnic group.

These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.
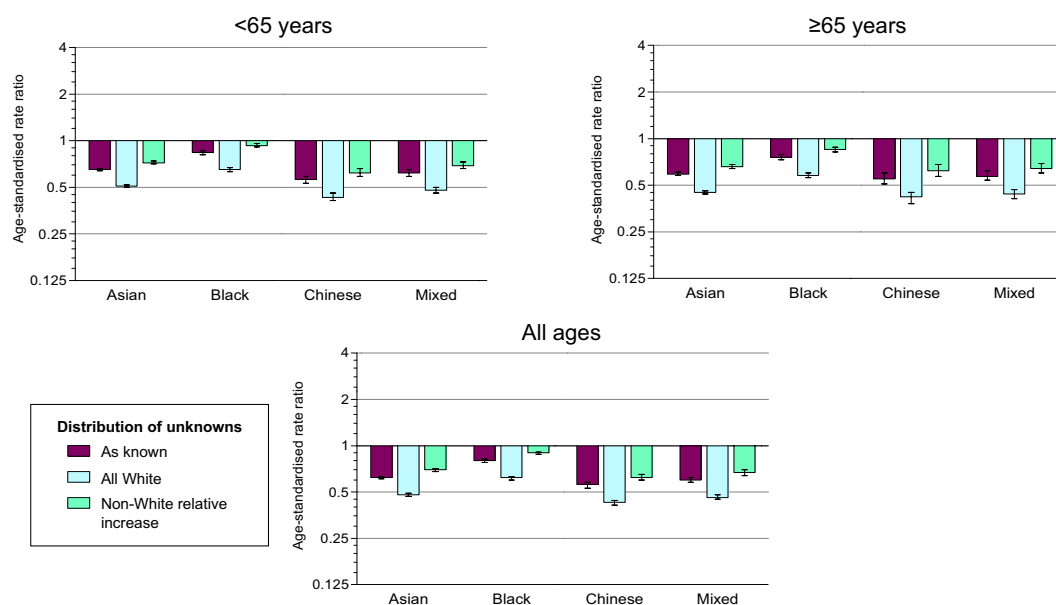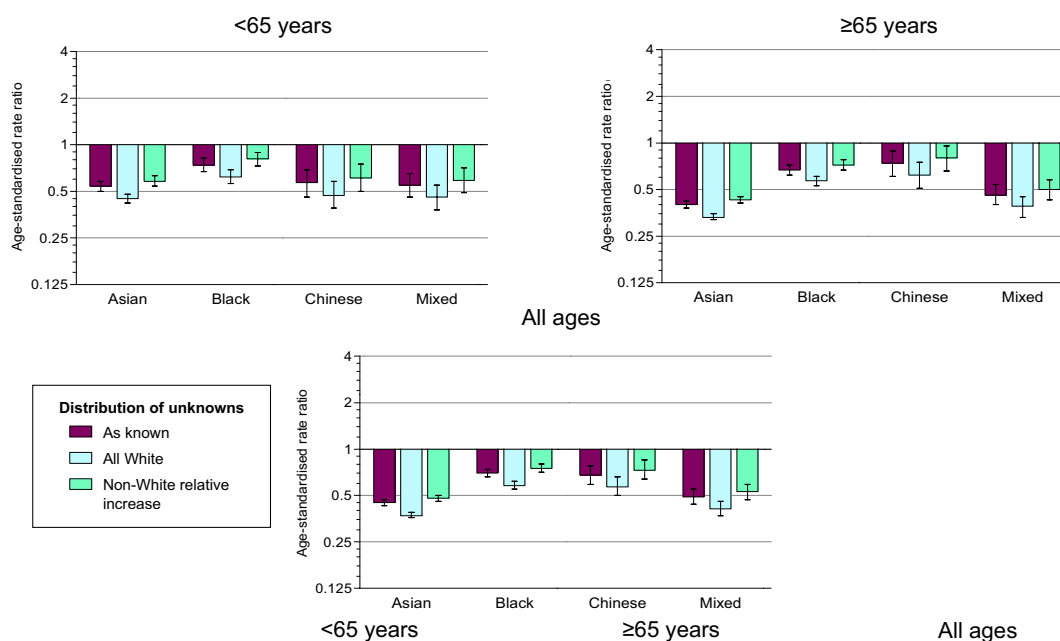
C18-C20: Colorectum — Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	18,231	358	237	43	52	158	3,532	22,611	16%
≥65 years	47,222	403	411	66	61	237	9,075	57,475	16%
All Ages	65,453	761	648	109	113	395	12,607	80,086	16%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns
- As known
- All White
- Non-White relative increase

	Distribution of unknowns	<65 years Rate ratio	95% confidence interval Lower	Upper	≥65 years Rate ratio	95% confidence interval Lower	Upper	All ages Rate ratio	95% confidence interval Lower	Upper
Asian	As known	0.54	0.50 -	0.58	0.40	0.38 -	0.42	0.45	0.43 -	0.47
	All White	0.45	0.42 -	0.48	0.33	0.32 -	0.35	0.37	0.36 -	0.39
	Non-White relative increase	0.58	0.54 -	0.63	0.43	0.41 -	0.45	0.48	0.46 -	0.50
Black	As known	0.74	0.67 -	0.82	0.67	0.62 -	0.72	0.70	0.66 -	0.74
	All White	0.62	0.56 -	0.69	0.57	0.53 -	0.61	0.58	0.55 -	0.62
	Non-White relative increase	0.81	0.73 -	0.89	0.72	0.67 -	0.78	0.75	0.71 -	0.80
Chinese	As known	0.57	0.46 -	0.69	0.74	0.61 -	0.89	0.68	0.59 -	0.78
	All White	0.47	0.39 -	0.58	0.62	0.51 -	0.75	0.57	0.50 -	0.66
	Non-White relative increase	0.61	0.50 -	0.75	0.80	0.66 -	0.96	0.73	0.64 -	0.85
Mixed	As known	0.55	0.46 -	0.65	0.46	0.40 -	0.54	0.49	0.44 -	0.55
	All White	0.46	0.38 -	0.55	0.39	0.33 -	0.45	0.41	0.37 -	0.46
	Non-White relative increase	0.59	0.49 -	0.71	0.50	0.43 -	0.58	0.53	0.47 -	0.59

Asian ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Chinese ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Chinese ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Mixed ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Mixed ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

C18-C20: Colorectum   Male

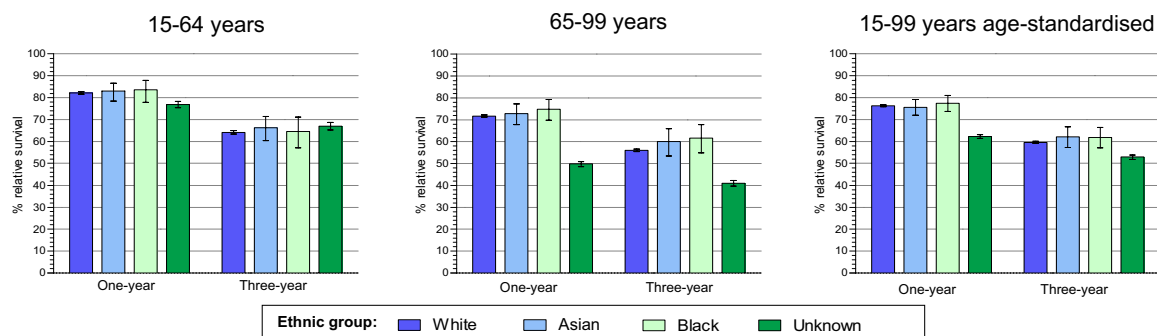### Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
			95% confidence interval			95% confidence interval			95% confidence interval	
	Distribution of unknowns	ASR	Lower	Upper	ASR	Lower	Upper	ASR	Lower	Upper
White	As known	20.9	20.6 -	21.2	328.0	325.3 -	330.7	54.7	54.3 -	55.0
	All White	21.0	20.8 -	21.3	329.3	326.6 -	332.0	54.9	54.6 -	55.3
	Non-White relative increase	20.8	20.5 -	21.1	327.4	324.7 -	330.1	54.5	54.1 -	54.9
Asian	As known	11.3	10.2 -	12.3	130.5	118.7 -	142.2	24.4	22.8 -	26.0
	All White	9.5	8.5 -	10.5	110.0	99.3 -	120.8	20.5	19.1 -	22.0
	Non-White relative increase	12.2	11.1 -	13.3	140.7	128.5 -	152.9	26.3	24.6 -	28.0
Black	As known	15.5	13.7 -	17.3	220.3	200.7 -	240.0	38.1	35.4 -	40.8
	All White	13.1	11.4 -	14.7	186.4	168.3 -	204.4	32.1	29.7 -	34.6
	Non-White relative increase	16.8	14.9 -	18.6	237.3	216.9 -	257.8	41.0	38.2 -	43.8
Chinese	As known	11.8	8.6 -	15.1	241.7	187.9 -	295.5	37.1	30.7 -	43.5
	All White	10.0	7.0 -	13.0	203.9	154.7 -	253.1	31.3	25.4 -	37.2
	Non-White relative increase	12.7	9.4 -	16.1	260.6	204.7 -	316.6	40.0	33.3 -	46.7
Mixed	As known	11.4	8.6 -	14.2	151.1	116.2 -	186.0	26.8	22.2 -	31.3
	All White	9.6	7.0 -	12.2	127.8	95.7 -	159.8	22.6	18.4 -	26.8
	Non-White relative increase	12.3	9.4 -	15.2	162.8	126.6 -	199.1	28.9	24.2 -	33.5
	Overall rate for England	20.5	20.3 -	20.8	323.2	320.5 -	325.8	53.8	53.5 -	54.2

> Age-standardised rates in the White ethnic group ranged from 54.1 to 55.3 per 100,000 for all ages. Rates in all non-White ethnic groups were significantly lower than in the White ethnic group for all ages, and ranged from 19.1 to 28.0 per 100,000 in the Asian ethnic group; from 29.7 to 43.8 per 100,000 in the Black ethnic group; from 25.4 to 46.7 per 100,000 in the Chinese ethnic group and from 18.4 to 33.5 per 100,000 in the Mixed ethnic group.
>
> These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

One year and three year relative survival (with 95% confidence intervals) by major ethnic group

> Survival results have not been presented for the Chinese and Mixed ethnic groups due to the low number of patients in both of these groups. For survival analyses, and unlike for the incidence analyses, patients with an unknown ethnic group have not been re-distributed to any other ethnic group but have been analysed, and presented, as a separate group. Relative survival results have therefore been produced for White, Asian, Black and Unknown ethnic groups. Please see page 14 for notes on exclusions and the methodology used for these analyses.
> **Caution must be exercised in the interpretation of these results due to the large proportion of male colorectal cancer records with missing data on ethnicity (16%).**

Ethnic group: White, Asian, Black, Unknown

One-year

	15-64 years				65-99 years				15-99 years				15-99 years age-standardised		
One-year	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Relative survival	95% C.I. Lower	Upper
White	17,807	82.3	81.7 -	82.8	45,465	71.7	71.3 -	72.2	63,272	75.0	74.6 -	75.4	76.3	75.9 -	76.7
Asian	342	83.0	78.5 -	86.6	388	72.8	67.7 -	77.3	730	78.0	74.6 -	81.0	75.6	72.0 -	79.2
Black	228	83.6	77.9 -	87.9	392	74.9	69.8 -	79.3	620	78.3	74.5 -	81.6	77.4	73.8 -	81.0
Unknown	3,296	76.9	75.4 -	78.3	8,054	49.8	48.6 -	50.9	11,350	58.3	57.4 -	59.3	62.3	61.4 -	63.2

Three-year

	15-64 years				65-99 years				15-99 years				15-99 years age-standardised		
Three-year	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Relative survival	95% C.I. Lower	Upper
White	17,807	64.2	63.4 -	65.0	45,465	56.1	55.5 -	56.7	63,272	58.6	58.2 -	59.1	59.6	59.1 -	60.1
Asian	342	66.3	60.4 -	71.5	388	60.0	53.5 -	66.0	730	63.0	58.7 -	67.1	62.1	57.3 -	66.8
Black	228	64.6	57.2 -	71.1	392	61.6	54.8 -	67.7	620	62.3	57.5 -	66.8	61.8	57.1 -	66.5
Unknown	3,296	67.0	65.2 -	68.7	8,054	41.0	39.7 -	42.3	11,350	49.5	48.4 -	50.5	52.9	51.8 -	53.9

> There were no significant differences in age-standardised relative survival between White, Asian and Black ethnic groups at either one or three years after diagnosis, There were also no significant differences between White, Asian and Black ethnic groups in relative survival for males in either of the two age groups: 15-64 years or 65-99 years at diagnosis. Males with unknown ethnicity had significantly lower age-standardised relative survival than the White, Asian and Black ethnic groups at both one and three years.

NCRI National Cancer Research Institute   NHS Northern and Yorkshire Cancer Registry and Information Service   ecric Fighting cancer with information   West Midlands Cancer Intelligence Unit   Trent NHS Cancer Registry   KING'S College LONDON   NWCIS North West Cancer Intelligence Service   OXFORD CANCER INTELLIGENCE UNIT   Office for National Statistics   ukacr United Kingdom Association of Cancer Registries

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Cancer incidence and survival by major ethnic group, England, 2002-2006

CANCER RESEARCH UK

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

C18-C20: Colorectum | Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	12,444	237	268	41	49	135	2,398	15,572	15%
≥65 years	39,641	222	231	41	52	218	10,432	50,837	21%
All Ages	52,085	459	499	82	101	353	12,830	66,409	19%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns
- As known
- All White
- Non-White relative increase

	<65 years			≥65 years			All ages		
Distribution of unknowns	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper
Asian									
As known	0.51	0.47 -	0.56	0.39	0.36 -	0.42	0.43	0.41 -	0.46
All White	0.43	0.40 -	0.47	0.32	0.30 -	0.34	0.36	0.34 -	0.38
Non-White relative increase	0.56	0.51 -	0.61	0.43	0.40 -	0.46	0.47	0.45 -	0.50
Black									
As known	1.01	0.91 -	1.13	0.66	0.60 -	0.72	0.79	0.73 -	0.84
All White	0.85	0.76 -	0.95	0.53	0.48 -	0.58	0.65	0.60 -	0.69
Non-White relative increase	1.10	0.98 -	1.23	0.72	0.66 -	0.79	0.86	0.80 -	0.92
Chinese									
As known	0.65	0.52 -	0.81	0.66	0.53 -	0.83	0.66	0.56 -	0.77
All White	0.54	0.43 -	0.68	0.53	0.43 -	0.66	0.54	0.46 -	0.63
Non-White relative increase	0.70	0.56 -	0.88	0.73	0.58 -	0.91	0.72	0.61 -	0.84
Mixed									
As known	0.72	0.58 -	0.89	0.55	0.46 -	0.66	0.61	0.53 -	0.70
All White	0.60	0.49 -	0.75	0.45	0.38 -	0.54	0.51	0.44 -	0.58
Non-White relative increase	0.78	0.62 -	0.97	0.60	0.50 -	0.72	0.67	0.58 -	0.77

Asian ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group
Rates for females aged 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. Results were inconclusive for females under 65 years.

Chinese ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Chinese ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Mixed ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Mixed ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

C18-C20: Colorectum　　　　　　　　　　　　　　　　　　　　　　　　**Female**

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group
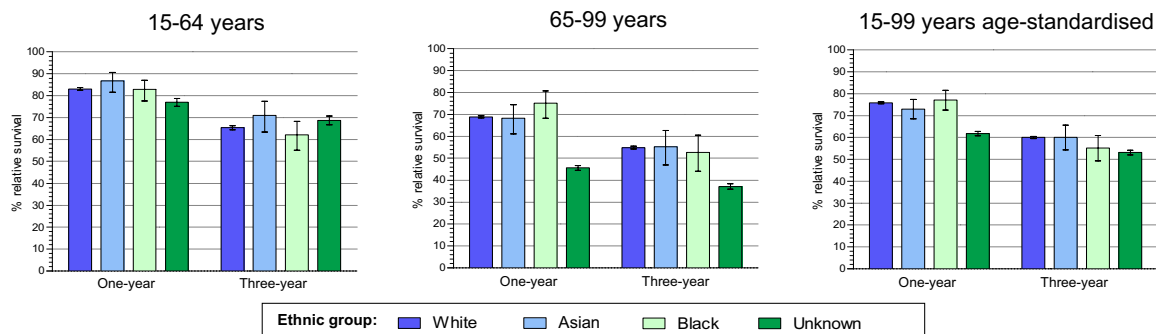
	Distribution of unknowns	<65 years ASR	95% C.I. Lower	95% C.I. Upper	≥65 years ASR	95% C.I. Lower	95% C.I. Upper	All ages ASR	95% C.I. Lower	95% C.I. Upper
White	As known	14.0	13.7 -	14.2	199.5	197.7 -	201.2	34.4	34.1 -	34.6
	All White	14.1	13.9 -	14.3	200.2	198.5 -	202.0	34.6	34.3 -	34.8
	Non-White relative increase	13.9	13.7 -	14.1	199.1	197.3 -	200.8	34.3	34.0 -	34.5
Asian	As known	7.2	6.3 -	8.0	77.8	68.6 -	87.1	14.9	13.7 -	16.2
	All White	6.1	5.3 -	6.8	63.7	55.3 -	72.0	12.4	11.3 -	13.5
	Non-White relative increase	7.7	6.9 -	8.6	84.9	75.2 -	94.6	16.2	14.9 -	17.5
Black	As known	14.2	12.6 -	15.7	131.1	115.8 -	146.4	27.0	24.9 -	29.2
	All White	12.0	10.5 -	13.4	106.1	92.4 -	119.8	22.3	20.4 -	24.3
	Non-White relative increase	15.3	13.7 -	16.9	143.6	127.6 -	159.7	29.4	27.1 -	31.6
Chinese	As known	9.0	6.5 -	11.6	132.1	95.7 -	168.5	22.6	18.1 -	27.0
	All White	7.7	5.3 -	10.0	106.7	74.1 -	139.4	18.6	14.5 -	22.6
	Non-White relative increase	9.7	7.1 -	12.4	144.8	106.6 -	182.9	24.6	19.9 -	29.2
Mixed	As known	10.0	7.5 -	12.6	110.5	83.4 -	137.5	21.1	17.3 -	24.8
	All White	8.5	6.1 -	10.9	90.7	66.0 -	115.3	17.5	14.1 -	21.0
	Non-White relative increase	10.8	8.1 -	13.5	120.3	92.1 -	148.6	22.9	19.0 -	26.8
	Overall rate for England	13.8	13.6 -	14.0	197.6	195.8 -	199.3	34.0	33.8 -	34.3

For all ages, age-standardised rates in the White ethnic group ranged from 34.0 to 34.8 per 100,000 for all ages. Rates in all non-White ethnic groups were significantly lower than in the White ethnic group for all ages, and ranged from 11.3 to 17.5 per 100,000 in the Asian ethnic group; from 20.4 to 31.6 per 100,000 in the Black ethnic group; from 14.5 to 29.2 per 100,000 in the Chinese ethnic group and from 14.1 to 26.8 per 100,000 in the Mixed ethnic group.

These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

One year and three year relative survival (with 95% confidence intervals) by major ethnic group

Survival results have not been presented for the Chinese and Mixed ethnic groups due to the low number of patients in both of these groups. For survival analyses, and unlike for the incidence analyses, patients with an unknown ethnic group have not been re-distributed to any other ethnic group but have been analysed, and presented, as a separate group. Relative survival results have therefore been produced for White, Asian, Black and Unknown ethnic groups. Please see page 14 for notes on exclusions and the methodology used for these analyses.
Caution must be exercised in the interpretation of these results due to the large proportion of female colorectal cancer records with missing data on ethnicity (19%).

Ethnic group: White, Asian, Black, Unknown

One-year

One-year	15-64 years Number of cases	Relative survival	95% C.I. Lower	95% C.I. Upper	65-99 years Number of cases	Relative survival	95% C.I. Lower	95% C.I. Upper	15-99 years Number of cases	Relative survival	95% C.I. Lower	95% C.I. Upper	15-99 years age-standardised Relative survival	95% C.I. Lower	95% C.I. Upper
White	12,207	83.1	82.4 -	83.8	37,878	68.9	68.4 -	69.4	50,085	72.7	72.3 -	73.2	75.8	75.4 -	76.2
Asian	228	86.8	81.6 -	90.6	213	68.3	61.2 -	74.4	441	78.4	74.0 -	82.1	73.0	68.5 -	77.5
Black	258	82.9	77.6 -	87.0	216	75.2	68.3 -	80.8	474	79.6	75.5 -	83.1	77.1	72.6 -	81.5
Unknown	2,271	77.0	75.2 -	78.7	8,956	45.6	44.5 -	46.7	11,227	52.5	51.6 -	53.5	61.8	60.8 -	62.8

Three-year

Three-year	15-64 years Number of cases	Relative survival	95% C.I. Lower	95% C.I. Upper	65-99 years Number of cases	Relative survival	95% C.I. Lower	95% C.I. Upper	15-99 years Number of cases	Relative survival	95% C.I. Lower	95% C.I. Upper	15-99 years age-standardised Relative survival	95% C.I. Lower	95% C.I. Upper
White	12,207	65.4	64.4 -	66.3	37,878	54.9	54.3 -	55.5	50,085	57.7	57.2 -	58.2	60.0	59.5 -	60.5
Asian	228	71.1	63.4 -	77.4	213	55.2	47.0 -	62.7	441	63.9	58.3 -	69.0	60.0	54.4 -	65.7
Black	258	62.1	55.1 -	68.3	216	52.7	44.1 -	60.5	474	58.2	52.3 -	63.2	55.1	49.3 -	60.9
Unknown	2,271	68.8	66.7 -	70.8	8,956	37.1	35.9 -	38.3	11,227	44.5	43.4 -	45.5	53.1	52.0 -	54.2

There were no significant differences in age-standardised relative survival between White, Asian and Black ethnic groups either at one or three years. There were also no significant differences between White, Asian and Black ethnic groups in relative survival for females in either of the two age groups: 15-64 years or 65-99 years at diagnosis. Females with unknown ethnicity had significantly lower age-standardised relative survival than the White, Asian and Black ethnic groups, at both one year and at three years after diagnosis.

C33-C34: Trachea, bronchus and lung — Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	18,229	278	215	27	47	167	4,198	23,161	18%
≥65 years	50,627	582	426	61	73	318	16,246	68,333	24%
All Ages	68,856	860	641	88	120	485	20,444	91,494	22%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns
- As known
- All White
- Non-White relative increase

		<65 years			≥65 years			All ages	
	Distribution of unknowns	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper
Asian	As known	0.45	0.42 -	0.49	0.54	0.51 -	0.57	0.51	0.49 -	0.54
	All White	0.37	0.34 -	0.40	0.41	0.39 -	0.43	0.40	0.38 -	0.42
	Non-White relative increase	0.50	0.46 -	0.53	0.61	0.57 -	0.64	0.57	0.55 -	0.60
Black	As known	0.76	0.68 -	0.84	0.63	0.59 -	0.68	0.67	0.63 -	0.71
	All White	0.62	0.56 -	0.69	0.48	0.45 -	0.52	0.53	0.50 -	0.56
	Non-White relative increase	0.83	0.75 -	0.92	0.71	0.66 -	0.76	0.75	0.70 -	0.79
Chinese	As known	0.38	0.31 -	0.46	0.70	0.58 -	0.84	0.60	0.52 -	0.69
	All White	0.31	0.25 -	0.37	0.52	0.44 -	0.62	0.46	0.40 -	0.52
	Non-White relative increase	0.41	0.33 -	0.50	0.79	0.66 -	0.95	0.67	0.58 -	0.78
Mixed	As known	0.64	0.52 -	0.78	0.51	0.44 -	0.59	0.55	0.49 -	0.62
	All White	0.52	0.42 -	0.63	0.39	0.34 -	0.45	0.43	0.38 -	0.48
	Non-White relative increase	0.70	0.57 -	0.86	0.57	0.49 -	0.66	0.61	0.54 -	0.68

Asian ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Chinese ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Chinese ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Mixed ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Mixed ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Cancer incidence and survival by major ethnic group, England, 2002-2006

C33-C34: Trachea, bronchus and lung — Male

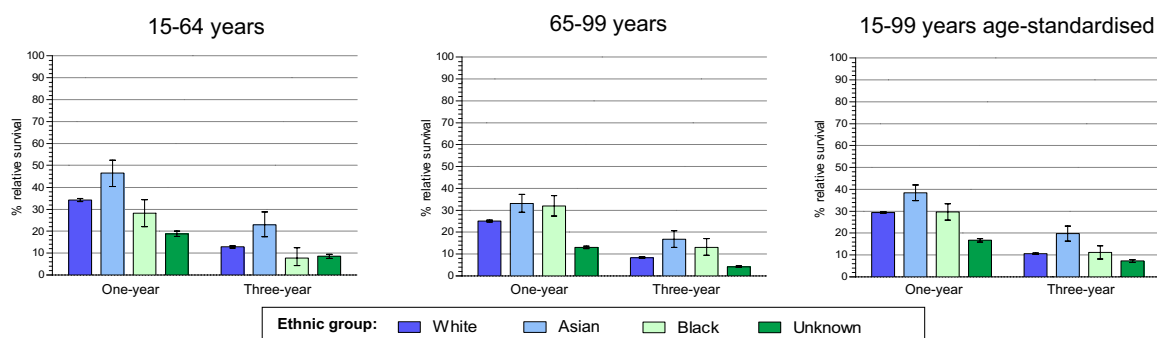### Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
			95% confidence interval			95% confidence interval			95% confidence interval	
	Distribution of unknowns	ASR	Lower	Upper	ASR	Lower	Upper	ASR	Lower	Upper
White	As known	21.4	21.2 -	21.7	388.0	385.1 -	391.0	61.8	61.4 -	62.2
	All White	21.6	21.3 -	21.9	390.6	387.6 -	393.5	62.2	61.8 -	62.6
	Non-White relative increase	21.4	21.1 -	21.6	386.8	383.8 -	389.7	61.6	61.1 -	62.0
Asian	As known	9.7	8.7 -	10.8	209.7	194.7 -	224.8	31.7	29.8 -	33.6
	All White	8.0	7.0 -	8.9	160.6	147.5 -	173.6	24.8	23.1 -	26.4
	Non-White relative increase	10.6	9.5 -	11.7	234.3	218.4 -	250.2	35.2	33.2 -	37.2
Black	As known	16.3	14.3 -	18.2	245.3	224.7 -	265.8	41.5	38.6 -	44.3
	All White	13.3	11.5 -	15.1	189.1	171.2 -	207.1	32.7	30.1 -	35.2
	Non-White relative increase	17.7	15.7 -	19.8	273.4	251.6 -	295.1	45.9	42.9 -	48.9
Chinese	As known	8.0	5.3 -	10.8	271.5	211.9 -	331.1	37.0	30.2 -	43.9
	All White	6.6	4.1 -	9.1	204.0	152.8 -	255.2	28.3	22.4 -	34.2
	Non-White relative increase	8.8	5.9 -	11.6	305.2	241.8 -	368.7	41.4	34.1 -	48.6
Mixed	As known	13.7	10.1 -	17.2	197.2	157.5 -	236.9	33.9	28.5 -	39.2
	All White	11.2	8.0 -	14.4	151.9	117.1 -	186.8	26.7	21.9 -	31.4
	Non-White relative increase	14.9	11.2 -	18.6	219.8	177.9 -	261.8	37.5	31.8 -	43.1
	Overall rate for England	21.0	20.8 -	21.3	383.6	380.8 -	386.5	60.9	60.5 -	61.3

Age-standardised rates in the White ethnic group ranged from 61.1 to 62.6 per 100,000 for all ages. Rates in all non-White ethnic groups were significantly lower than in the White ethnic group for all ages, ranging from 23.1 to 37.2 per 100,000 in the Asian ethnic group; from 30.1 to 48.9 per 100,000 in the Black ethnic group; from 22.4 to 48.6 per 100,000 in the Chinese ethnic group and from 21.9 to 43.1 per 100,000 in the Mixed ethnic group.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

One year and three year relative survival (with 95% confidence intervals) by major ethnic group

Survival results have not been presented for the Chinese and Mixed ethnic groups due to the low number of patients in both of these groups. For survival analyses, and unlike for the incidence analyses, patients with an unknown ethnic group have not been re-distributed to any other ethnic group but have been analysed, and presented, as a separate group. Relative survival results have therefore been produced for White, Asian, Black and Unknown ethnic groups. Please see page 14 for notes on exclusions and the methodology used for these analyses.
Caution must be exercised in the interpretation of these results due to the large proportion of male lung cancer records with missing data on ethnicity (22%).

Ethnic group: White, Asian, Black, Unknown

One-year	15-64 years				65-99 years				15-99 years				15-99 years age-standardised		
	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Relative survival	95% C.I. Lower	Upper
White	17,652	34.2	33.5 -	34.9	47,742	25.1	24.7 -	25.5	65,394	27.6	27.3 -	28.0	29.4	29.0 -	29.8
Asian	265	46.5	40.3 -	52.4	534	33.1	29.0 -	37.2	799	37.7	34.2 -	41.1	38.4	34.8 -	42.0
Black	207	28.1	22.1 -	34.3	403	32.0	27.3 -	36.7	610	30.5	26.8 -	34.3	29.7	25.9 -	33.4
Unknown	3,763	18.8	17.6 -	20.1	13,727	13.0	12.4 -	13.6	17,490	14.3	13.7 -	14.8	16.7	15.9 -	17.5

Three-year	15-64 years				65-99 years				15-99 years				15-99 years age-standardised		
	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Relative survival	95% C.I. Lower	Upper
White	17,652	12.8	12.3 -	13.3	47,742	8.4	8.2 -	8.7	65,394	9.7	9.4 -	10.0	10.6	10.3 -	10.9
Asian	265	22.9	17.5 -	28.8	534	16.7	13.1 -	20.7	799	18.9	15.8 -	22.2	19.7	16.3 -	23.2
Black	207	7.7	4.3 -	12.4	403	13.0	9.5 -	17.1	610	11.1	8.5 -	14.1	11.2	8.2 -	14.1
Unknown	3,763	8.5	7.6 -	9.5	13,727	4.2	3.8 -	4.6	17,490	5.2	4.9 -	5.6	7.3	6.6 -	7.9

Age-standardised relative survival for the Asian ethnic group was significantly higher than the White ethnic group at both one and three years. There were no significant differences in age-standardised relative survival between Black and White ethnic groups. For males aged 15-64 years at diagnosis, relative survival for the Asian ethnic group was significantly higher than for the White ethnic group at both one and three years.
For males aged 65-99 years, relative survival was significantly higher than in the White ethnic group for both Asian and Black ethnic groups, at both one and three years. Males with unknown ethnicity had significantly lower age-standardised relative survival than the White, Asian and Black ethnic groups at one and three years.

Cancer incidence and survival by major ethnic group, England, 2002-2006

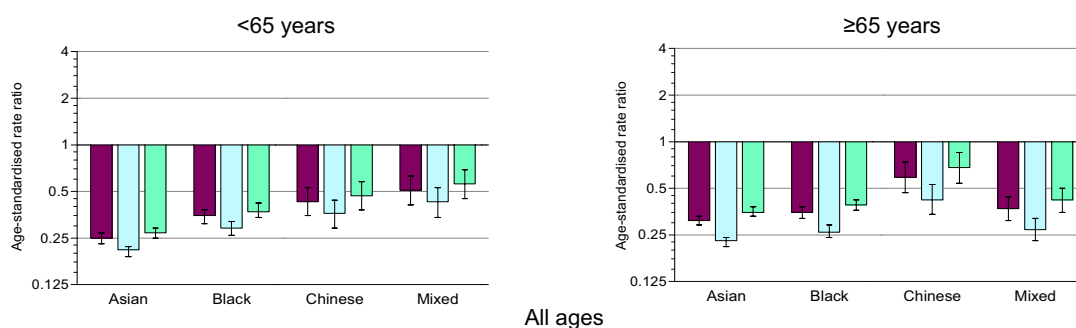## C33-C34: Trachea, bronchus and lung   Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	13,261	127	102	30	35	108	2,752	16,415	17%
≥65 years	34,517	155	123	32	32	218	12,693	47,770	27%
All Ages	47,778	282	225	62	67	326	15,445	64,185	24%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

	<65 years			≥65 years			All ages		
Distribution of unknowns	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper
Asian									
As known	0.25	0.23 -	0.27	0.31	0.29 -	0.33	0.29	0.27 -	0.30
All White	0.21	0.19 -	0.22	0.23	0.21 -	0.24	0.22	0.21 -	0.23
Non-White relative increase	0.27	0.25 -	0.29	0.35	0.33 -	0.38	0.32	0.30 -	0.34
Black									
As known	0.35	0.31 -	0.38	0.35	0.32 -	0.38	0.35	0.32 -	0.37
All White	0.29	0.26 -	0.32	0.26	0.24 -	0.29	0.27	0.26 -	0.29
Non-White relative increase	0.37	0.34 -	0.42	0.39	0.36 -	0.42	0.38	0.36 -	0.41
Chinese									
As known	0.43	0.35 -	0.53	0.59	0.47 -	0.74	0.53	0.45 -	0.62
All White	0.36	0.29 -	0.44	0.42	0.34 -	0.53	0.40	0.34 -	0.46
Non-White relative increase	0.47	0.38 -	0.58	0.68	0.54 -	0.85	0.60	0.51 -	0.70
Mixed									
As known	0.51	0.41 -	0.63	0.37	0.31 -	0.44	0.42	0.37 -	0.48
All White	0.43	0.34 -	0.53	0.27	0.23 -	0.32	0.33	0.29 -	0.37
Non-White relative increase	0.56	0.45 -	0.69	0.42	0.35 -	0.50	0.47	0.41 -	0.54

Asian ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Chinese ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Chinese ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Mixed ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower for in the Mixed ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Cancer incidence and survival by major ethnic group, England, 2002-2006

CANCER RESEARCH UK

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

C33-C34: Trachea, bronchus and lung — Female

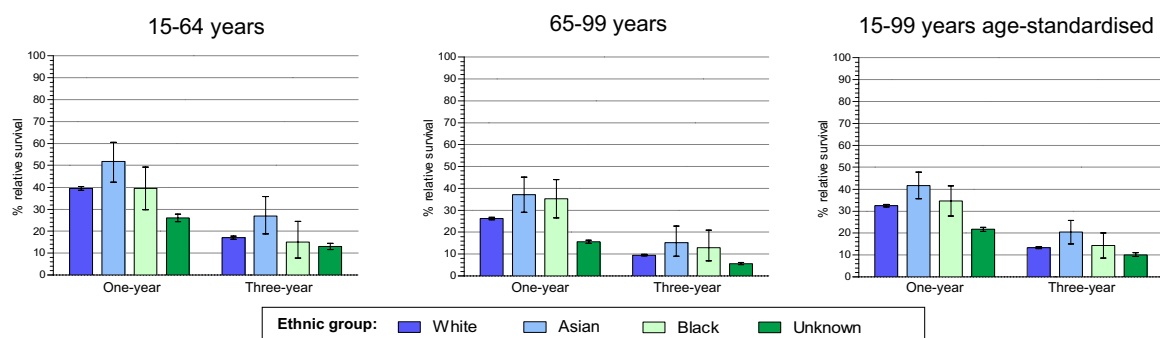### Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% confidence interval Lower	Upper	ASR	95% confidence interval Lower	Upper	ASR	95% confidence interval Lower	Upper
White	As known	15.1	14.8 -	15.3	201.1	199.3 -	202.9	35.5	35.2 -	35.8
	All White	15.1	14.9 -	15.4	201.9	200.1 -	203.7	35.7	35.4 -	36.0
	Non-White relative increase	15.0	14.8 -	15.3	200.7	198.9 -	202.5	35.4	35.2 -	35.7
Asian	As known	3.7	3.1 -	4.3	62.1	53.7 -	70.5	10.1	9.1 -	11.2
	All White	3.1	2.6 -	3.7	45.8	38.6 -	53.0	7.8	6.9 -	8.7
	Non-White relative increase	4.0	3.4 -	4.6	70.2	61.2 -	79.2	11.3	10.2 -	12.4
Black	As known	5.2	4.3 -	6.1	69.6	58.8 -	80.4	12.3	10.9 -	13.7
	All White	4.4	3.5 -	5.2	53.0	43.7 -	62.4	9.7	8.5 -	11.0
	Non-White relative increase	5.6	4.7 -	6.6	77.9	66.5 -	89.3	13.6	12.1 -	15.1
Chinese	As known	6.5	4.4 -	8.6	118.8	83.9 -	153.8	18.8	14.7 -	23.0
	All White	5.4	3.5 -	7.4	85.5	55.9 -	115.1	14.2	10.7 -	17.8
	Non-White relative increase	7.0	4.8 -	9.2	135.5	98.1 -	172.8	21.1	16.7 -	25.5
Mixed	As known	7.7	5.4 -	10.0	73.9	52.2 -	95.6	15.0	11.8 -	18.1
	All White	6.4	4.3 -	8.6	54.3	35.5 -	73.1	11.7	8.9 -	14.5
	Non-White relative increase	8.3	5.9 -	10.8	83.7	60.7 -	106.8	16.6	13.3 -	20.0
	Overall rate for England	14.5	14.3 -	14.8	197.8	196.0 -	199.6	34.7	34.4 -	35.0

Age-standardised rates in the White ethnic group ranged from 35.2 to 36.0 per 100,000 for all ages. Rates in all non-White ethnic groups were significantly lower than the White ethnic group, ranging from 6.9 to 12.4 per 100,000 in the Asian ethnic group; from 8.5 to 15.1 per 100,000 in the Black ethnic group; from 10.7 to 25.5 per 100,000 in the Chinese ethnic group and from 8.9 to 20.0 per 100,000 in the Mixed ethnic group.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

One year and three year relative survival (with 95% confidence intervals) by major ethnic group

Survival results have not been presented for the Chinese and Mixed ethnic groups due to the low number of patients in both of these groups. For survival analyses, and unlike for the incidence analyses, patients with an unknown ethnic group have not been re-distributed to any other ethnic group but have been analysed, and presented, as a separate group. Relative survival results have therefore been produced for White, Asian, Black and Unknown ethnic groups. Please see page 14 for notes on exclusions and the methodology used for these analyses.
Caution must be exercised in the interpretation of these results due to the large proportion of female lung cancer records with missing data on ethnicity (24%).

Ethnic group: White, Asian, Black, Unknown

One-year

	15-64 years				65-99 years				15-99 years				15-99 years age-standardised		
	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Relative survival	95% C.I. Lower	Upper
White	12,845	39.5	38.7 -	40.3	32,466	26.2	25.7 -	26.7	45,311	30.1	29.7 -	30.5	32.5	32.0 -	33.0
Asian	117	51.9	42.4 -	60.6	145	37.1	29.0 -	45.1	262	43.8	37.6 -	49.8	41.7	35.6 -	47.8
Black	96	39.6	29.8 -	49.2	117	35.2	26.5 -	44.1	213	37.1	30.6 -	43.7	34.7	27.8 -	41.5
Unknown	2,512	26.0	24.3 -	27.7	10,602	15.6	14.9 -	16.3	13,114	17.6	17.0 -	18.3	21.7	20.7 -	22.7

Three-year

	15-64 years				65-99 years				15-99 years				15-99 years age-standardised		
	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Number of cases	Relative survival	95% C.I. Lower	Upper	Relative survival	95% C.I. Lower	Upper
White	12,845	17.0	16.3 -	17.7	32,466	9.5	9.2 -	9.9	45,311	11.8	11.4 -	12.1	13.3	12.9 -	13.7
Asian	117	26.9	18.7 -	35.7	145	15.2	9.0 -	22.8	262	20.9	15.7 -	26.7	20.4	15.0 -	25.8
Black	96	15.0	7.8 -	24.5	117	12.9	6.9 -	20.9	213	13.9	9.0 -	19.8	14.3	8.5 -	20.1
Unknown	2,512	13.0	11.6 -	14.4	10,602	5.6	5.1 -	6.1	13,114	7.1	6.7 -	7.7	10.1	9.3 -	11.0

Age-standardised relative survival for the Asian ethnic group was significantly higher than the White ethnic group at both one and three years. There were no significant differences in age-standardised relative survival between Black and White ethnic groups. For females aged 15-64 years at diagnosis, relative survival for the Asian ethnic group was significantly higher than for the White ethnic group at both one and three years. For females aged 65-99 years at diagnosis, relative survival for the Asian ethnic group was significantly higher than in the White ethnic group at one year but not at three years. Females with unknown ethnicity had significantly lower age-standardised relative survival than the White ethnic group at both one and three years.

Cancer incidence and survival by major ethnic group, England, 2002-2006
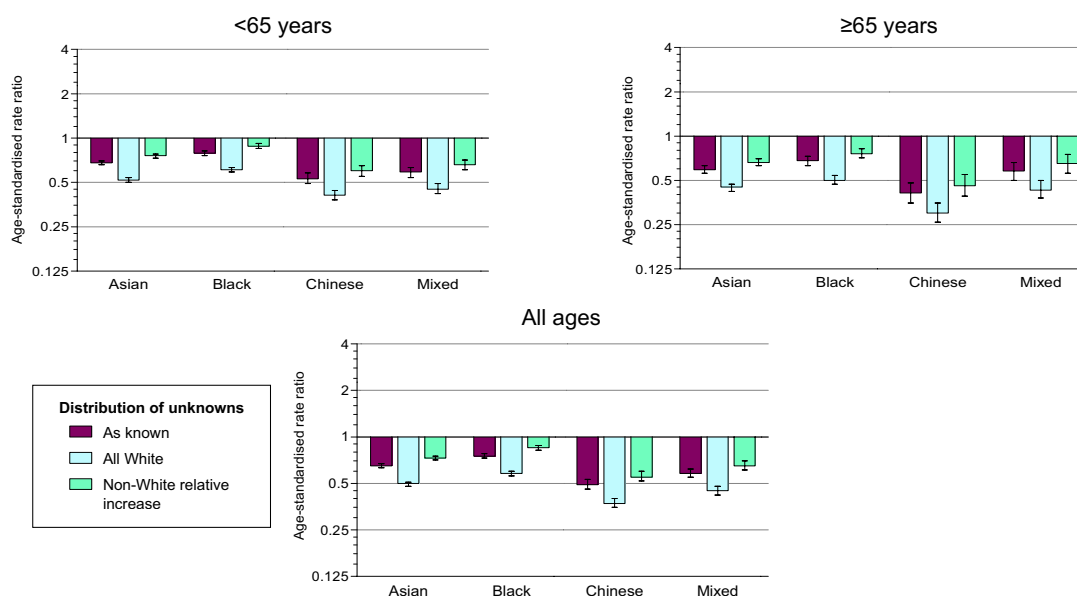
C50: Breast — Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	76,325	2,048	1,520	233	302	841	23,070	104,339	22%
≥65 years	58,463	583	419	42	84	315	23,375	83,281	28%
All Ages	134,788	2,631	1,939	275	386	1,156	46,445	187,620	25%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

<65 years

Distribution of unknowns	Rate ratio	95% confidence interval Lower	Upper
Asian			
As known	0.68	0.66 -	0.70
All White	0.52	0.50 -	0.54
Non-White relative increase	0.76	0.73 -	0.78
Black			
As known	0.79	0.76 -	0.82
All White	0.61	0.59 -	0.63
Non-White relative increase	0.88	0.85 -	0.92
Chinese			
As known	0.53	0.49 -	0.58
All White	0.41	0.38 -	0.44
Non-White relative increase	0.60	0.55 -	0.65
Mixed			
As known	0.59	0.54 -	0.63
All White	0.45	0.42 -	0.49
Non-White relative increase	0.66	0.61 -	0.71

≥65 years

Distribution of unknowns	Rate ratio	95% confidence interval Lower	Upper
Asian			
As known	0.59	0.56 -	0.63
All White	0.45	0.42 -	0.47
Non-White relative increase	0.66	0.63 -	0.70
Black			
As known	0.68	0.63 -	0.73
All White	0.50	0.47 -	0.54
Non-White relative increase	0.76	0.71 -	0.82
Chinese			
As known	0.41	0.35 -	0.48
All White	0.30	0.26 -	0.35
Non-White relative increase	0.46	0.39 -	0.55
Mixed			
As known	0.58	0.50 -	0.66
All White	0.43	0.38 -	0.50
Non-White relative increase	0.65	0.56 -	0.75

All ages

Distribution of unknowns	Rate ratio	95% confidence interval Lower	Upper
Asian			
As known	0.65	0.63 -	0.67
All White	0.50	0.48 -	0.51
Non-White relative increase	0.73	0.71 -	0.75
Black			
As known	0.75	0.73 -	0.78
All White	0.58	0.56 -	0.60
Non-White relative increase	0.85	0.82 -	0.88
Chinese			
As known	0.49	0.46 -	0.53
All White	0.37	0.35 -	0.40
Non-White relative increase	0.55	0.52 -	0.60
Mixed			
As known	0.58	0.55 -	0.62
All White	0.45	0.42 -	0.48
Non-White relative increase	0.65	0.61 -	0.70

Asian ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Chinese ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Chinese ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Mixed ethnic group compared with the White ethnic group
Rates for females under 65 years, 65 years and over and of all ages were lower in the Mixed ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Cancer incidence and survival by major ethnic group, England, 2002-2006

C50: Breast — Female

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	Distribution of unknowns	<65 years ASR	95% confidence interval Lower	Upper	≥65 years ASR	95% confidence interval Lower	Upper	All ages ASR	95% confidence interval Lower	Upper
White	As known	94.5	93.9 -	95.1	360.0	357.6 -	362.5	123.7	123.1 -	124.3
	All White	95.8	95.2 -	96.4	362.3	359.9 -	364.8	125.2	124.6 -	125.7
	Non-White relative increase	93.9	93.3 -	94.4	358.9	356.4 -	361.3	123.0	122.4 -	123.6
Asian	As known	63.9	61.5 -	66.4	213.0	197.9 -	228.2	80.3	77.6 -	83.0
	All White	49.8	47.6 -	51.9	161.9	148.7 -	175.0	62.1	59.7 -	64.5
	Non-White relative increase	71.0	68.4 -	73.6	238.6	222.6 -	254.7	89.5	86.6 -	92.3
Black	As known	74.8	71.4 -	78.1	243.7	223.4 -	264.0	93.4	89.7 -	97.0
	All White	58.4	55.4 -	61.3	182.3	164.9 -	199.8	72.0	68.8 -	75.2
	Non-White relative increase	83.0	79.4 -	86.5	274.4	252.8 -	296.0	104.0	100.1 -	107.9
Chinese	As known	50.4	44.7 -	56.1	147.3	108.9 -	185.6	61.1	54.7 -	67.4
	All White	39.2	34.1 -	44.2	109.0	76.0 -	142.0	46.8	41.3 -	52.4
	Non-White relative increase	56.0	50.0 -	62.0	166.4	125.7 -	207.2	68.2	61.4 -	74.9
Mixed	As known	55.5	49.9 -	61.0	207.6	169.3 -	245.8	72.2	65.9 -	78.6
	All White	43.2	38.3 -	48.1	157.0	123.4 -	190.6	55.7	50.2 -	61.3
	Non-White relative increase	61.6	55.8 -	67.5	232.9	192.4 -	273.3	80.5	73.8 -	87.2
	Overall rate for England	93.1	92.5 -	93.7	357.2	354.8 -	359.6	122.2	121.6 -	122.7

Age-standardised rates in the White ethnic group ranged from 122.4 to 125.7 per 100,000 for all ages. Rates in all non-White ethnic groups were significantly lower than in the White ethnic group for all ages, ranging from 59.7 to 92.3 per 100,000 in the Asian ethnic group; from 68.8 to 107.9 per 100,000 in the Black ethnic group; from 41.3 to 74.9 per 100,000 in the Chinese ethnic group and from 50.2 to 87.2 per 100,000 in the Mixed ethnic group.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

One year and three year relative survival (with 95% confidence intervals) by major ethnic group

Survival results have not been presented for the Chinese and Mixed ethnic groups due to the low number of patients in both of these groups. For survival analyses, and unlike for the incidence analyses, patients with an unknown ethnic group have not been re-distributed to any other ethnic group but have been analysed, and presented, as a separate group. Relative survival results have therefore been produced for White, Asian, Black and Unknown ethnic groups. Please see page 14 for notes on exclusions and the methodology used for these analyses.
Caution must be exercised in the interpretation of these results due to the large proportion of breast cancer records with missing data on ethnicity (25%).

Ethnic group: White, Asian, Black, Unknown

One-year

	15-64 years Number of cases	Relative survival	95% C.I. Lower	Upper	65-99 years Number of cases	Relative survival	95% C.I. Lower	Upper	15-99 years Number of cases	Relative survival	95% C.I. Lower	Upper	15-99 years age-standardised Relative survival	95% C.I. Lower	Upper
White	72,152	97.8	97.7 -	97.9	53,550	92.4	92.1 -	92.7	125,702	96.2	96.1 -	96.3	94.2	94.1 -	94.4
Asian	1,937	97.8	96.9 -	98.4	543	93.9	90.9 -	95.9	2,480	97.3	96.4 -	97.9	94.2	92.0 -	96.3
Black	1,414	96.3	95.1 -	97.2	391	93.0	89.3 -	95.5	1,805	95.7	94.6 -	96.7	92.9	90.5 -	95.4
Unknown	21,725	97.9	97.6 -	98.1	20,468	86.8	86.2 -	87.3	42,193	93.8	93.5 -	94.1	91.8	91.5 -	92.1

Three-year

	15-64 years Number of cases	Relative survival	95% C.I. Lower	Upper	65-99 years Number of cases	Relative survival	95% C.I. Lower	Upper	15-99 years Number of cases	Relative survival	95% C.I. Lower	Upper	15-99 years age-standardised Relative survival	95% C.I. Lower	Upper
White	72,152	91.4	91.1 -	91.6	53,550	83.5	83.1 -	84.0	125,702	89.1	88.9 -	89.3	86.1	85.8 -	86.4
Asian	1,937	89.2	87.5 -	90.7	543	83.8	78.9 -	87.7	2,480	88.5	86.8 -	89.9	86.3	82.9 -	89.7
Black	1,414	85.0	82.7 -	87.0	391	82.0	76.2 -	86.6	1,805	84.5	82.4 -	86.4	82.3	78.3 -	86.2
Unknown	21,725	94.9	94.6 -	95.3	20,468	80.7	79.9 -	81.5	42,193	90.2	89.8 -	90.6	86.8	86.3 -	87.3

There were no significant differences in age-standardised relative survival between White, Asian and Black ethnic groups at either one or three years. For females aged 15-64 years at diagnosis, relative survival for the Black ethnic group was significantly lower than for the White ethnic group at one year and both Asian and Black ethnic groups had significantly lower survival than the White ethnic group at three years. There were no significant differences between the White, Asian and Black ethnic groups for patients aged 65-99 years. Patients with unknown ethnicity had significantly lower age-standardised relative survival than the White ethnic group at one but not at three years.
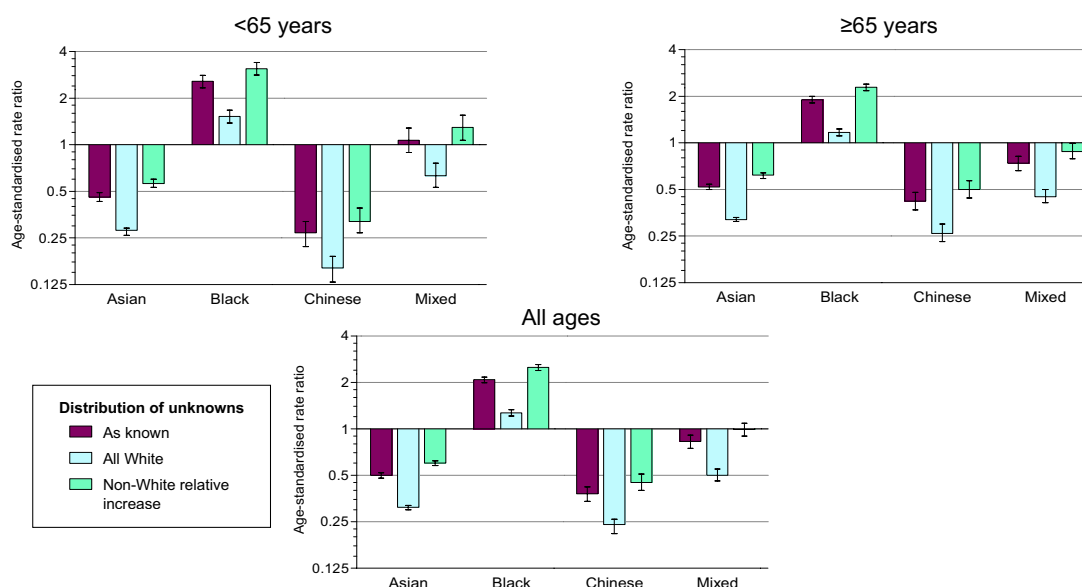
C61: Prostate | Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	18,754	265	646	15	73	125	12,806	32,684	39%
≥65 years	69,504	766	1,730	52	144	385	41,640	114,221	36%
All Ages	88,258	1,031	2,376	67	217	510	54,446	146,905	37%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns
- As known
- All White
- Non-White relative increase

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper	Rate ratio	95% confidence interval Lower	Upper
Asian	As known	0.46	0.43 -	0.49	0.52	0.50 -	0.54	0.50	0.48 -	0.52
	All White	0.28	0.26 -	0.29	0.32	0.31 -	0.33	0.31	0.30 -	0.32
	Non-White relative increase	0.56	0.53 -	0.60	0.62	0.59 -	0.64	0.60	0.58 -	0.62
Black	As known	2.56	2.33 -	2.81	1.90	1.81 -	2.00	2.08	1.99 -	2.17
	All White	1.52	1.38 -	1.67	1.17	1.11 -	1.23	1.27	1.21 -	1.33
	Non-White relative increase	3.09	2.82 -	3.39	2.28	2.17 -	2.39	2.50	2.39 -	2.61
Chinese	As known	0.27	0.22 -	0.32	0.42	0.37 -	0.48	0.38	0.34 -	0.42
	All White	0.16	0.13 -	0.19	0.26	0.23 -	0.30	0.24	0.21 -	0.26
	Non-White relative increase	0.32	0.27 -	0.39	0.50	0.44 -	0.57	0.45	0.40 -	0.51
Mixed	As known	1.07	0.89 -	1.28	0.74	0.66 -	0.82	0.83	0.75 -	0.91
	All White	0.63	0.53 -	0.76	0.45	0.41 -	0.50	0.50	0.46 -	0.55
	Non-White relative increase	1.29	1.07 -	1.55	0.88	0.79 -	0.99	0.99	0.90 -	1.09

Asian ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and of all ages were higher in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Chinese ethnic group compared with the White ethnic group
Rates for males under 65 years, 65 years and over and for all ages were lower in the Chinese ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Mixed ethnic group compared with the White ethnic group
There is some evidence of lower rates for males of all ages in the Mixed ethnic group but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups.

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C61: Prostate	Male

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	**ASR**	**95% confidence interval**		**ASR**	**95% confidence interval**		**ASR**	**95% confidence interval**	
			Lower	**Upper**		**Lower**	**Upper**		**Lower**	**Upper**
White	As known	29.3	29.0 -	29.6	648.8	645.0 -	652.7	97.5	97.0 -	98.0
	All White	30.0	29.7 -	30.3	660.5	656.6 -	664.3	99.4	98.8 -	99.9
	Non-White relative increase	29.0	28.6 -	29.3	643.0	639.2 -	646.8	96.5	96.0 -	97.0
Asian	As known	13.6	12.3 -	14.9	334.4	315.7 -	353.1	48.9	46.5 -	51.2
	All White	8.3	7.3 -	9.3	210.9	196.0 -	225.8	30.6	28.7 -	32.4
	Non-White relative increase	16.2	14.8 -	17.6	396.2	375.9 -	416.5	58.0	55.5 -	60.6
Black	As known	75.0	70.5 -	79.5	1234.6	1188.7 -	1280.4	202.5	196.1 -	209.0
	All White	45.6	42.1 -	49.2	774.7	738.2 -	811.2	125.8	120.8 -	130.9
	Non-White relative increase	89.7	84.7 -	94.6	1464.5	1414.6 -	1514.4	240.9	233.9 -	247.9
Chinese	As known	7.9	4.8 -	11.0	272.1	213.3 -	330.9	36.9	29.9 -	43.9
	All White	4.8	2.4 -	7.2	174.2	126.9 -	221.6	23.4	17.8 -	29.0
	Non-White relative increase	9.4	6.0 -	12.8	321.0	257.3 -	384.7	43.7	36.1 -	51.3
Mixed	As known	31.2	25.6 -	36.8	478.5	416.6 -	540.3	80.4	72.0 -	88.8
	All White	19.0	14.6 -	23.3	299.5	250.6 -	348.4	49.8	43.2 -	56.4
	Non-White relative increase	37.4	31.2 -	43.5	567.9	500.6 -	635.3	95.7	86.5 -	104.9
	Overall rate for England	29.5	29.2 -	29.8	651.9	648.1 -	655.6	98.0	97.5 -	98.5

Age-standardised rates in the White ethnic group ranged from 96.0 to 99.9 per 100,000 for all ages. Rates in the Asian ethnic group were significantly lower than in the White ethnic group for all ages, ranging from 28.7 to 60.6 per 100,000. Rates in the Black ethnic group were significantly higher than in the White ethnic group for all ages, ranging from 120.8 to 247.9 per 100,000. Rates in the Chinese ethnic group were significantly lower than in the White ethnic group for all ages, ranging from 17.8 to 51.3 per 100,000. There is some evidence that rates in the Mixed ethnic group were lower than in the White ethnic group for all ages, but this was not significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

One year and three year relative survival (with 95% confidence intervals) by major ethnic group

Survival results have not been presented for the Chinese and Mixed ethnic groups due to the low number of patients in both of these groups. For survival analyses, and unlike for the incidence analyses, patients with an unknown ethnic group have not been re-distributed to any other ethnic group but have been analysed, and presented, as a separate group. Relative survival results have therefore been produced for White, Asian, Black and Unknown ethnic groups. Please see page 14 for notes on exclusions and the methodology used for these analyses.

Caution must be exercised in the interpretation of these results due to the large proportion of prostate cancer records with missing data on ethnicity (37%).

15-64 years   65-99 years   15-99 years age-standardised

Ethnic group: White | Asian | Black | Unknown

15-64 years

One-year	Number of cases	Relative survival	95% C.I. Lower	Upper
White	18,506	96.5	96.2 -	96.7
Asian	260	96.5	92.8 -	98.4
Black	632	98.3	96.3 -	99.2
Unknown	12,487	99.4	99.1 -	99.5

Three-year	Number of cases	Relative survival	95% C.I. Lower	Upper
White	18,506	88.4	87.8 -	88.9
Asian	260	88.7	82.9 -	92.6
Black	632	91.7	88.4 -	94.1
Unknown	12,487	98.4	98.0 -	98.7

65-99 years

One-year	Number of cases	Relative survival	95% C.I. Lower	Upper
White	66,988	89.7	89.4 -	90.0
Asian	747	93.3	90.5 -	95.4
Black	1,653	94.0	92.2 -	95.3
Unknown	39,377	96.1	95.8 -	96.3

Three-year	Number of cases	Relative survival	95% C.I. Lower	Upper
White	66,988	77.7	77.2 -	78.2
Asian	747	84.5	80.0 -	88.1
Black	1,653	84.8	81.9 -	87.3
Unknown	39,377	95.6	95.2 -	96.0

15-99 years

One-year	Number of cases	Relative survival	95% C.I. Lower	Upper
White	85,494	91.7	91.4 -	91.9
Asian	1,007	94.4	92.2 -	96.0
Black	2,285	95.6	94.6 -	96.6
Unknown	51,864	97.2	97.0 -	97.4

Three-year	Number of cases	Relative survival	95% C.I. Lower	Upper
White	85,494	81.0	80.6 -	81.4
Asian	1,007	85.9	82.4 -	88.8
Black	2,285	87.5	85.3 -	89.5
Unknown	51,864	96.6	96.3 -	96.9

15-99 years age-standardised

One-year	Relative survival	95% C.I. Lower	Upper
White	92.0	91.7 -	92.2
Asian	92.3	90.2 -	94.5
Black	93.6	92.1 -	95.1
Unknown	96.0	95.8 -	96.3

Three-year	Relative survival	95% C.I. Lower	Upper
White	80.7	80.3 -	81.2
Asian	83.2	79.3 -	87.0
Black	83.7	81.1 -	86.2
Unknown	94.6	94.2 -	95.0

Survival from prostate cancer was systematically highest in the group of males with unknown ethnicity. Survival was usually lowest in the White ethnic group. However, the high proportion of males with unknown ethnicity (almost 40%) makes interpretation of the results extremely difficult. In particular, the observed pattern of survival by ethnicity could be reversed if the majority of males with unknown ethnicity were in the White ethnic group.

NCRI · NHS Northern and Yorkshire Cancer Registry and Information Service · South West Public Health Observatory · ecric Fighting cancer with information · West Midlands Cancer Intelligence Unit · Trent NHS Cancer Registry · KING'S College LONDON · NWCIS North West Cancer Intelligence Service · Oxford Cancer Intelligence Unit · Office for National Statistics · ukacr United Kingdom Association of Cancer Registries

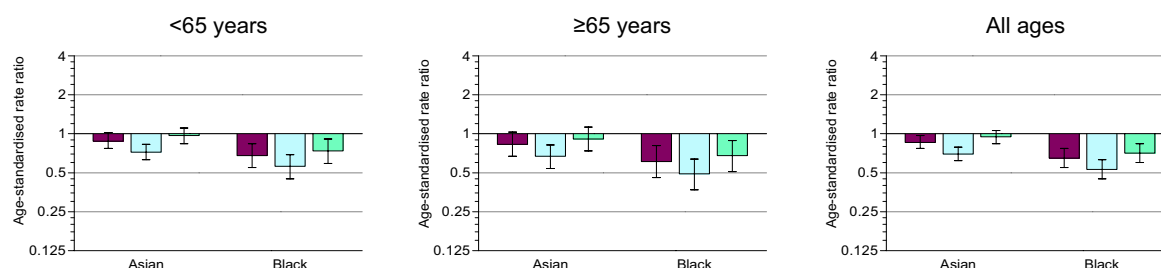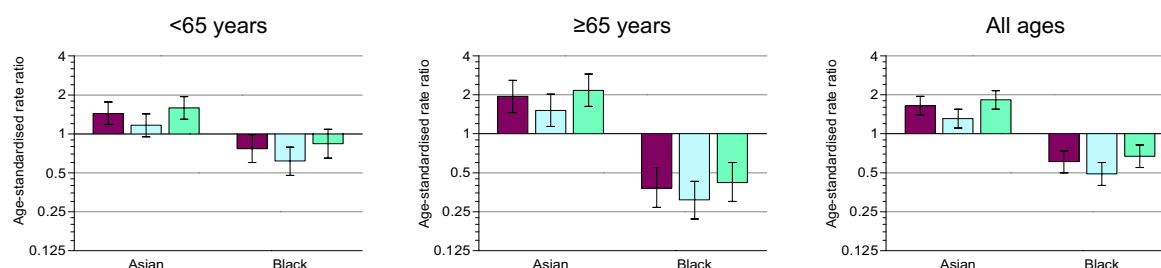# Cancer incidence by major ethnic group, England, 2002-2006

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	4,013	148	47	4	13	34	854	5,113	17%
≥65 years	3,086	60	25	2	2	21	777	3,973	20%
All Ages	7,099	208	72	6	15	55	1,631	9,086	18%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

	<65 years			≥65 years			All ages		
Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian									
As known	0.88	0.77 -	1.02	0.83	0.67 -	1.03	0.86	0.77 -	0.97
All White	0.72	0.63 -	0.83	0.67	0.54 -	0.82	0.70	0.62 -	0.79
Non-White relative increase	0.97	0.84 -	1.11	0.91	0.74 -	1.13	0.95	0.84 -	1.06
Black									
As known	0.68	0.55 -	0.84	0.61	0.46 -	0.81	0.65	0.55 -	0.77
All White	0.56	0.45 -	0.69	0.49	0.37 -	0.64	0.53	0.45 -	0.63
Non-White relative increase	0.74	0.59 -	0.91	0.68	0.51 -	0.89	0.71	0.60 -	0.84

Asian ethnic group compared with the White ethnic group

There is some evidence that males of all ages had lower rates in the Asian ethnic group but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups. Results were inconclusive for males under 65 years and 65 years and over.

Black ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	<65 years			≥65 years			All ages		
Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White									
As known	4.7	4.6 -	4.9	23.2	22.4 -	23.9	6.8	6.6 -	6.9
All White	4.8	4.6 -	4.9	23.3	22.6 -	24.0	6.8	6.7 -	7.0
Non-White relative increase	4.7	4.6 -	4.8	23.1	22.3 -	23.8	6.7	6.6 -	6.9
Asian									
As known	4.2	3.6 -	4.8	19.3	14.9 -	23.7	5.8	5.1 -	6.5
All White	3.4	2.9 -	4.0	15.6	11.6 -	19.5	4.8	4.1 -	5.4
Non-White relative increase	4.5	3.9 -	5.2	21.1	16.5 -	25.7	6.4	5.6 -	7.1
Black									
As known	3.2	2.4 -	4.0	14.2	9.2 -	19.2	4.4	3.5 -	5.3
All White	2.7	1.9 -	3.4	11.4	6.9 -	15.9	3.6	2.8 -	4.5
Non-White relative increase	3.5	2.6 -	4.3	15.6	10.3 -	20.8	4.8	3.8 -	5.7
England - all ethnic groups	4.7	4.6 -	4.8	23.0	22.3 -	23.7	6.7	6.6 -	6.8

Age-standardised rates for the White ethnic group ranged from 6.6 to 7.0 per 100,000 for all ages. Rates for the Asian ethnic group ranged from 4.1 to 7.1 per 100,000 for all ages. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 2.8 to 5.7 per 100,000.
These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006
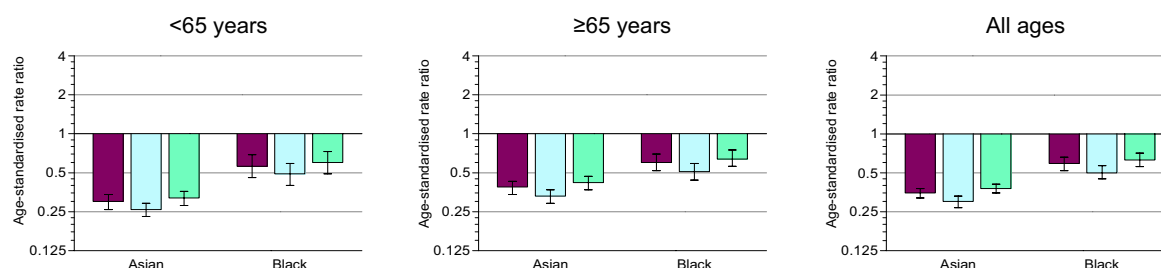
C00-C08: Mouth — Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	1,962	112	39	9	7	18	471	2,618	18%
≥65 years	2,423	70	9	1	6	25	725	3,259	22%
All Ages	4,385	182	48	10	13	43	1,196	5,877	20%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% CI Lower	Upper	Rate ratio	95% CI Lower	Upper	Rate ratio	95% CI Lower	Upper
Asian	As known	1.44	1.18 -	1.77	1.95	1.46 -	2.60	1.65	1.40 -	1.95
	All White	1.17	0.95 -	1.43	1.52	1.14 -	2.03	1.31	1.11 -	1.55
	Non-White relative increase	1.59	1.30 -	1.94	2.17	1.63 -	2.89	1.83	1.55 -	2.16
Black	As known	0.77	0.60 -	0.99	0.38	0.27 -	0.55	0.61	0.50 -	0.74
	All White	0.62	0.48 -	0.79	0.31	0.22 -	0.43	0.49	0.40 -	0.60
	Non-White relative increase	0.84	0.65 -	1.09	0.42	0.30 -	0.60	0.67	0.55 -	0.82

Asian ethnic group compared with the White ethnic group

Rates for females aged 65 years and over and of all ages were higher in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that females under 65 years in the Asian ethnic group had higher rates but this was not statistically significant under the assumption that all cases with unknown ethnicity were from the White ethnic group.

Black ethnic group compared with the White ethnic group

Rates for females aged 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that females under 65 years had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% CI Lower	Upper	ASR	95% CI Lower	Upper	ASR	95% CI Lower	Upper
White	As known	2.3	2.2 -	2.4	13.0	12.6 -	13.5	3.5	3.4 -	3.6
	All White	2.4	2.3 -	2.5	13.1	12.7 -	13.6	3.5	3.5 -	3.6
	Non-White relative increase	2.3	2.2 -	2.4	12.9	12.5 -	13.4	3.5	3.4 -	3.6
Asian	As known	3.3	2.8 -	3.9	25.4	20.1 -	30.7	5.8	5.0 -	6.5
	All White	2.7	2.2 -	3.3	20.0	15.3 -	24.7	4.7	4.0 -	5.3
	Non-White relative increase	3.6	3.1 -	4.2	28.1	22.5 -	33.6	6.3	5.5 -	7.1
Black	As known	1.8	1.3 -	2.3	5.0	2.1 -	7.9	2.1	1.6 -	2.7
	All White	1.5	1.0 -	1.9	4.0	1.4 -	6.6	1.7	1.2 -	2.2
	Non-White relative increase	1.9	1.4 -	2.5	5.5	2.4 -	8.5	2.3	1.8 -	2.9
	England - all ethnic groups	2.3	2.3 -	2.4	13.3	12.8 -	13.7	3.5	3.5 -	3.6

Age-standardised rates for the White ethnic group ranged from 3.4 to 3.6 per 100,000 for all ages. Rates for the Asian ethnic group were significantly higher than the White ethnic group for all ages, ranging from 4.0 to 7.1 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 1.2 to 2.9 per 100,000. **These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.**

Cancer incidence by major ethnic group, England, 2002-2006

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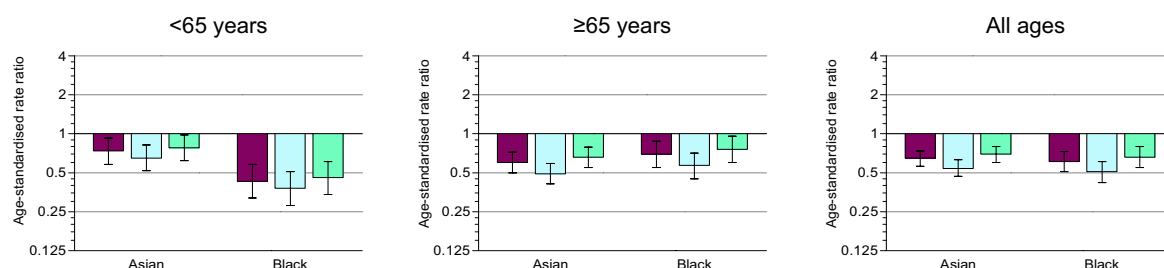| C15: Oesophagus	Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	5,630	59	48	13	13	24	871	6,658	13%
≥65 years	11,217	92	91	6	14	55	2,064	13,539	15%
All Ages	16,847	151	139	19	27	79	2,935	20,197	15%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

	<65 years			≥65 years			All ages		
Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian									
As known	0.30	0.26 -	0.34	0.39	0.34 -	0.43	0.35	0.32 -	0.38
All White	0.26	0.23 -	0.29	0.33	0.29 -	0.37	0.30	0.27 -	0.33
Non-White relative increase	0.32	0.28 -	0.36	0.42	0.37 -	0.47	0.38	0.35 -	0.41
Black									
As known	0.56	0.46 -	0.69	0.60	0.52 -	0.70	0.59	0.52 -	0.66
All White	0.49	0.40 -	0.59	0.51	0.44 -	0.59	0.50	0.45 -	0.57
Non-White relative increase	0.60	0.49 -	0.73	0.64	0.56 -	0.75	0.63	0.56 -	0.71

Asian ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	<65 years			≥65 years			All ages		
Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White									
As known	6.3	6.1 -	6.4	77.8	76.5 -	79.2	14.1	14.0 -	14.3
All White	6.3	6.1 -	6.5	78.1	76.8 -	79.4	14.2	14.0 -	14.4
Non-White relative increase	6.3	6.1 -	6.4	77.7	76.4 -	79.0	14.1	13.9 -	14.3
Asian									
As known	1.9	1.4 -	2.3	30.0	24.3 -	35.7	5.0	4.2 -	5.7
All White	1.6	1.2 -	2.1	25.4	20.2 -	30.6	4.3	3.6 -	4.9
Non-White relative increase	2.0	1.5 -	2.5	32.3	26.3 -	38.2	5.3	4.6 -	6.1
Black									
As known	3.5	2.6 -	4.5	46.7	37.8 -	55.7	8.3	7.0 -	9.6
All White	3.1	2.2 -	3.9	40.0	31.8 -	48.3	7.1	6.0 -	8.3
Non-White relative increase	3.8	2.8 -	4.7	50.1	40.8 -	59.3	8.9	7.5 -	10.2
England - all ethnic groups	6.1	5.9 -	6.2	76.5	75.2 -	77.8	13.8	13.6 -	14.0

Age-standardised rates for the White ethnic group ranged from 13.9 to 14.4 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 3.6 to 6.1 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 6.0 to 10.2 per 100,000.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.
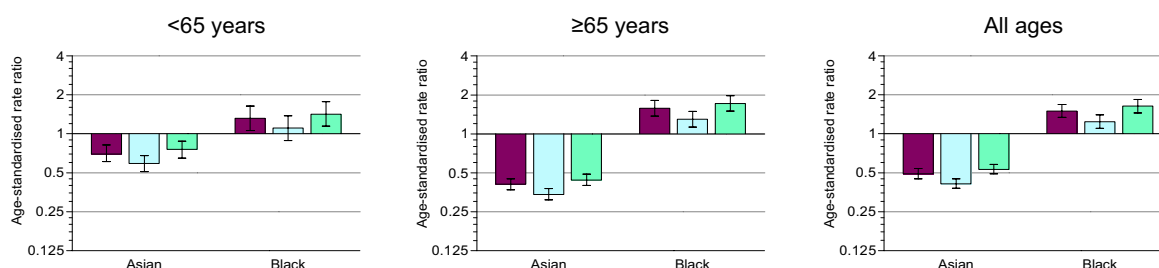
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C15: Oesophagus	Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	1,888	49	17	2	3	10	244	2,213	11%
≥65 years	7,229	58	42	4	5	39	1,730	9,107	19%
All Ages	9,117	107	59	6	8	49	1,974	11,320	17%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: As known | All White | Non-White relative increase

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.74	0.58 -	0.93	0.60	0.50 -	0.72	0.65	0.56 -	0.74
	All White	0.65	0.52 -	0.82	0.49	0.41 -	0.59	0.54	0.47 -	0.63
	Non-White relative increase	0.78	0.62 -	0.98	0.66	0.55 -	0.79	0.70	0.60 -	0.80
Black	As known	0.43	0.32 -	0.58	0.70	0.55 -	0.88	0.61	0.51 -	0.73
	All White	0.38	0.28 -	0.51	0.57	0.45 -	0.71	0.51	0.42 -	0.61
	Non-White relative increase	0.46	0.34 -	0.61	0.76	0.60 -	0.96	0.66	0.55 -	0.80

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	2.0	1.9 -	2.1	34.4	33.7 -	35.1	5.6	5.5 -	5.7
	All White	2.0	1.9 -	2.1	34.5	33.8 -	35.3	5.6	5.5 -	5.7
	Non-White relative increase	2.0	1.9 -	2.1	34.3	33.6 -	35.0	5.6	5.5 -	5.7
Asian	As known	1.5	1.1 -	1.9	20.7	15.9 -	25.6	3.6	3.0 -	4.2
	All White	1.3	1.0 -	1.7	17.0	12.6 -	21.4	3.0	2.5 -	3.6
	Non-White relative increase	1.6	1.2 -	2.0	22.6	17.5 -	27.6	3.9	3.2 -	4.5
Black	As known	0.9	0.5 -	1.3	24.0	17.4 -	30.5	3.4	2.6 -	4.2
	All White	0.8	0.4 -	1.1	19.7	13.7 -	25.6	2.8	2.1 -	3.6
	Non-White relative increase	0.9	0.5 -	1.3	26.1	19.2 -	33.0	3.7	2.9 -	4.5
	England - all ethnic groups	2.0	1.9 -	2.0	34.2	33.5 -	34.9	5.5	5.4 -	5.6

Age-standardised rates for the White ethnic group ranged from 5.5 to 5.7 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 2.5 to 4.5 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 2.1 to 4.5 per 100,000.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

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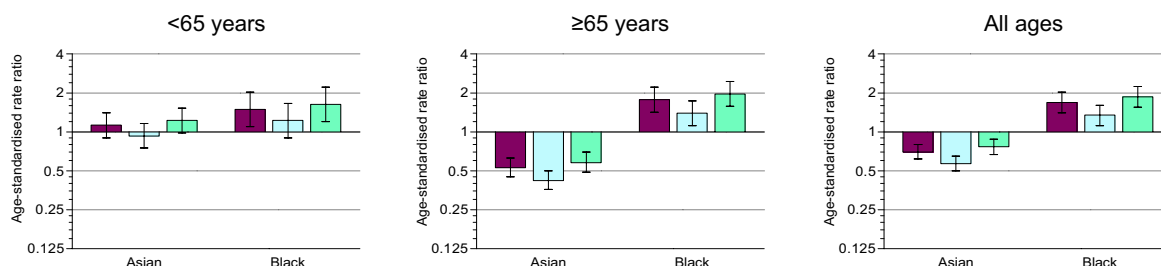| C16: Stomach	Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	4,097	107	92	17	16	44	776	5,149	15%
≥65 years	13,241	123	252	15	27	81	2,886	16,625	17%
All Ages	17,338	230	344	32	43	125	3,662	21,774	17%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: As known | All White | Non-White relative increase

		<65 years			≥65 years			All ages	
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.70	0.61 -	0.82	0.41	0.37 -	0.45	0.49	0.45 -	0.54
	All White	0.59	0.51 -	0.68	0.34	0.31 -	0.38	0.41	0.38 -	0.45
	Non-White relative increase	0.76	0.65 -	0.88	0.44	0.40 -	0.49	0.53	0.49 -	0.58
Black	As known	1.32	1.06 -	1.64	1.58	1.37 -	1.82	1.50	1.34 -	1.69
	All White	1.11	0.89 -	1.38	1.30	1.13 -	1.49	1.24	1.10 -	1.40
	Non-White relative increase	1.42	1.15 -	1.77	1.72	1.50 -	1.98	1.64	1.45 -	1.84

Asian ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for males aged 65 years and over and of all ages were higher in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that males under 65 years in the Black ethnic group had higher rates but this was not statistically significant under the assumption that all cases with unknown ethnicity were from the White ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages	
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	4.7	4.5 -	4.8	92.9	91.5 -	94.4	14.4	14.2 -	14.6
	All White	4.7	4.6 -	4.9	93.5	92.1 -	95.0	14.5	14.3 -	14.7
	Non-White relative increase	4.6	4.5 -	4.8	92.7	91.2 -	94.1	14.3	14.1 -	14.5
Asian	As known	3.3	2.7 -	3.9	37.8	31.7 -	44.0	7.1	6.2 -	7.9
	All White	2.8	2.3 -	3.3	31.8	26.2 -	37.4	6.0	5.2 -	6.7
	Non-White relative increase	3.5	2.9 -	4.1	40.9	34.5 -	47.3	7.6	6.8 -	8.5
Black	As known	6.1	5.0 -	7.3	146.8	130.2 -	163.3	21.6	19.5 -	23.7
	All White	5.2	4.2 -	6.3	121.1	106.2 -	136.1	18.0	16.1 -	19.9
	Non-White relative increase	6.6	5.4 -	7.8	159.6	142.3 -	176.9	23.4	21.3 -	25.6
England - all ethnic groups		4.7	4.6 -	4.8	92.8	91.4 -	94.2	14.4	14.2 -	14.6

Age-standardised rates for the White ethnic group ranged from 14.1 to 14.7 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 5.2 to 8.5 per 100,00. Rates for the Black ethnic group were significantly higher than the White ethnic group for all ages, ranging from 16.1 to 25.6 per 100,000 for all ages.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

C16: Stomach   Female
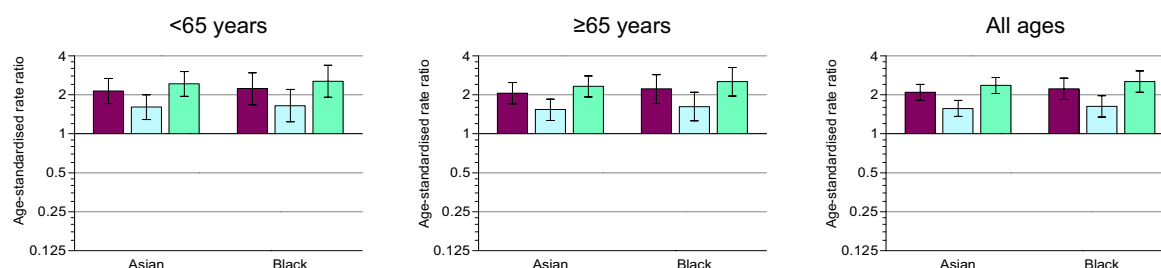
> These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	1,631	77	51	10	8	30	339	2,146	16%
≥65 years	7,383	54	108	6	18	51	2,249	9,869	23%
All Ages	9,014	131	159	16	26	81	2,588	12,015	22%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

> Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known ■ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages	
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	1.13	0.90 -	1.41	0.53	0.45 -	0.63	0.70	0.62 -	0.80
	All White	0.93	0.75 -	1.16	0.42	0.36 -	0.50	0.57	0.50 -	0.65
	Non-White relative increase	1.23	0.98 -	1.53	0.58	0.49 -	0.70	0.77	0.67 -	0.88
Black	As known	1.49	1.10 -	2.03	1.78	1.42 -	2.22	1.69	1.41 -	2.03
	All White	1.23	0.90 -	1.66	1.40	1.12 -	1.74	1.35	1.12 -	1.61
	Non-White relative increase	1.63	1.20 -	2.22	1.97	1.58 -	2.46	1.87	1.56 -	2.24

Asian ethnic group compared with the White ethnic group

Rates for females aged 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There was no significant difference in rates for females under 65 years in the Asian ethnic group.

Black ethnic group compared with the White ethnic group

Rates for females aged 65 years and over and of all ages were higher in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that females under 65 years in the Black ethnic group had higher rates but this was not statistically significant under the assumption that all cases with unknown ethnicity were from the White ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages	
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	1.8	1.8 -	1.9	36.3	35.6 -	37.1	5.6	5.5 -	5.7
	All White	1.9	1.8 -	1.9	36.6	35.8 -	37.3	5.7	5.6 -	5.8
	Non-White relative increase	1.8	1.7 -	1.9	36.2	35.5 -	36.9	5.6	5.5 -	5.7
Asian	As known	2.1	1.6 -	2.5	19.3	14.7 -	23.9	4.0	3.3 -	4.6
	All White	1.7	1.4 -	2.1	15.5	11.4 -	19.7	3.3	2.7 -	3.8
	Non-White relative increase	2.2	1.8 -	2.7	21.2	16.3 -	26.0	4.3	3.7 -	5.0
Black	As known	2.7	2.1 -	3.4	64.5	53.6 -	75.4	9.5	8.2 -	10.9
	All White	2.3	1.7 -	2.9	51.1	41.5 -	60.7	7.7	6.5 -	8.8
	Non-White relative increase	3.0	2.3 -	3.7	71.3	59.8 -	82.8	10.5	9.1 -	11.9
	England - all ethnic groups	1.9	1.8 -	2.0	36.6	35.9 -	37.3	5.7	5.6 -	5.8

> Age-standardised rates for the White ethnic group ranged from 5.5 to 5.8 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 2.7 to 5.0 per 100,000. Rates for the Black ethnic group were significantly higher than the White ethnic group for all ages ranging from 6.5 to 11.9 per 100,000.
> **These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.**

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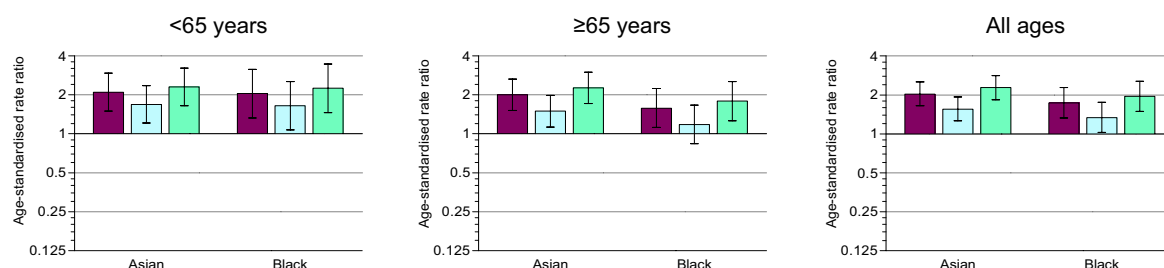
C22: Liver	Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	1,638	128	77	32	12	54	537	2,478	22%
≥65 years	3,542	166	95	28	11	49	1,264	5,155	25%
All Ages	5,180	294	172	60	23	103	1,801	7,633	24%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known □ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages	
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower - Upper		Rate ratio	95% Confidence Interval Lower - Upper		Rate ratio	95% Confidence Interval Lower - Upper
Asian	As known	2.14	1.72 - 2.67		2.06	1.71 - 2.49		2.09	1.81 - 2.41
	All White	1.61	1.29 - 2.01		1.54	1.27 - 1.86		1.57	1.36 - 1.81
	Non-White relative increase	2.43	1.95 - 3.03		2.33	1.93 - 2.81		2.37	2.05 - 2.73
Black	As known	2.24	1.68 - 2.97		2.22	1.72 - 2.86		2.22	1.84 - 2.69
	All White	1.65	1.24 - 2.20		1.62	1.26 - 2.09		1.63	1.35 - 1.97
	Non-White relative increase	2.55	1.92 - 3.39		2.53	1.96 - 3.26		2.53	2.10 - 3.06

Asian ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were higher in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were higher in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages	
	Distribution of unknowns	ASR	95% Confidence Interval Lower - Upper		ASR	95% Confidence Interval Lower - Upper		ASR	95% Confidence Interval Lower - Upper
White	As known	2.1	2.0 - 2.1		27.5	26.7 - 28.3		4.9	4.7 - 5.0
	All White	2.1	2.0 - 2.2		28.2	27.4 - 29.0		5.0	4.9 - 5.1
	Non-White relative increase	2.0	1.9 - 2.1		27.2	26.4 - 28.0		4.8	4.7 - 4.9
Asian	As known	4.4	3.7 - 5.1		56.7	49.1 - 64.2		10.1	9.1 - 11.2
	All White	3.5	2.9 - 4.1		43.3	36.7 - 49.9		7.8	6.9 - 8.7
	Non-White relative increase	4.9	4.2 - 5.6		63.3	55.3 - 71.3		11.3	10.2 - 12.4
Black	As known	4.6	3.7 - 5.5		61.0	50.3 - 71.7		10.8	9.4 - 12.2
	All White	3.5	2.7 - 4.3		45.6	36.5 - 54.8		8.2	6.9 - 9.4
	Non-White relative increase	5.1	4.2 - 6.1		68.6	57.2 - 80.0		12.1	10.6 - 13.6
	England - all ethnic groups	2.3	2.2 - 2.4		29.1	28.3 - 29.9		5.2	5.1 - 5.3

Age-standardised rates for the White ethnic group ranged from 4.7 to 5.1 per 100,000 for all ages. Rates for the Asian ethnic group were significantly higher than the White ethnic group for all ages, ranging from 6.9 to 12.4 per 100,000. Rates for the Black ethnic group were significantly higher than the White ethnic group for all ages, ranging from 6.9 to 13.6 per 100,000.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006

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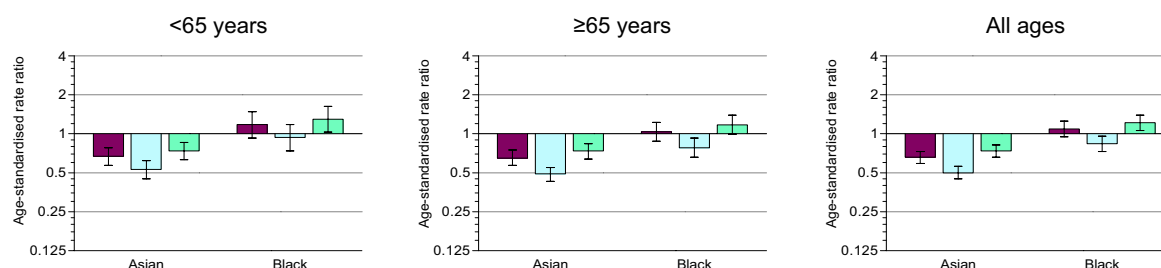
C22: Liver	Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	769	57	34	7	3	16	178	1,064	17%
≥65 years	2,568	74	38	8	4	22	1,016	3,730	27%
All Ages	3,337	131	72	15	7	38	1,194	4,794	25%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known   □ All White   ■ Non-White relative increase

	Distribution of unknowns	<65 years Rate ratio	95% Confidence Interval Lower	Upper	≥65 years Rate ratio	95% Confidence Interval Lower	Upper	All ages Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	2.10	1.50 -	2.94	2.01	1.52 -	2.65	2.04	1.65 -	2.52
	All White	1.69	1.21 -	2.36	1.50	1.13 -	1.98	1.56	1.26 -	1.93
	Non-White relative increase	2.31	1.65 -	3.23	2.27	1.72 -	2.99	2.28	1.84 -	2.83
Black	As known	2.05	1.33 -	3.15	1.58	1.12 -	2.24	1.74	1.33 -	2.28
	All White	1.65	1.07 -	2.54	1.18	0.84 -	1.67	1.34	1.03 -	1.76
	Non-White relative increase	2.25	1.46 -	3.47	1.79	1.26 -	2.53	1.95	1.49 -	2.55

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were higher in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for females under 65 years and of all ages were higher in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that females aged 65 years and over in the Black ethnic group had higher rates but this was not statistically significant under the assumption that all cases with unknown ethnicity were from the White ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	Distribution of unknowns	<65 years ASR	95% Confidence Interval Lower	Upper	≥65 years ASR	95% Confidence Interval Lower	Upper	All ages ASR	95% Confidence Interval Lower	Upper
White	As known	0.9	0.8 -	1.0	13.9	13.4 -	14.3	2.3	2.3 -	2.4
	All White	0.9	0.9 -	1.0	14.1	13.6 -	14.6	2.4	2.3 -	2.4
	Non-White relative increase	0.9	0.8 -	0.9	13.8	13.3 -	14.2	2.3	2.2 -	2.4
Asian	As known	1.9	1.4 -	2.3	27.9	22.3 -	33.4	4.7	4.0 -	5.5
	All White	1.6	1.2 -	2.0	21.1	16.3 -	25.9	3.7	3.1 -	4.3
	Non-White relative increase	2.1	1.6 -	2.5	31.2	25.4 -	37.1	5.3	4.5 -	6.0
Black	As known	1.8	1.3 -	2.4	21.9	15.8 -	28.1	4.1	3.2 -	4.9
	All White	1.5	1.0 -	2.0	16.7	11.4 -	22.0	3.2	2.5 -	3.9
	Non-White relative increase	2.0	1.4 -	2.6	24.6	18.1 -	31.1	4.5	3.6 -	5.4
	England - all ethnic groups	1.0	0.9 -	1.0	14.4	13.9 -	14.8	2.4	2.4 -	2.5

Age-standardised rates for the White ethnic group ranged from 2.2 to 2.4 per 100,000 for all ages. Rates for the Asian ethnic group were significantly higher than the White ethnic group for all ages, ranging from 3.1 to 6.0 per 100,000. Rates for the Black ethnic group were significantly higher than the White ethnic group for all ages, ranging from 2.5 to 5.4 per 100,000.
These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.
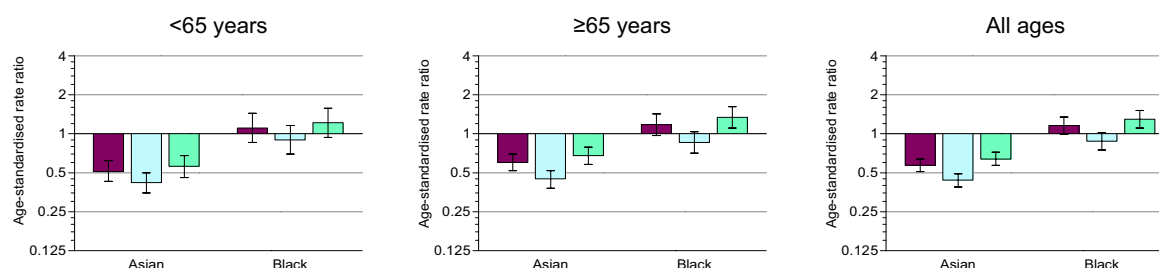
C25: Pancreas | Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	3,416	85	70	8	9	30	894	4,512	20%
≥65 years	7,918	107	109	5	11	63	2,709	10,922	25%
All Ages	11,334	192	179	13	20	93	3,603	15,434	23%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns — As known — All White — Non-White relative increase

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.67	0.57 -	0.78	0.65	0.57 -	0.75	0.66	0.59 -	0.73
	All White	0.53	0.45 -	0.62	0.49	0.43 -	0.55	0.50	0.45 -	0.56
	Non-White relative increase	0.74	0.63 -	0.86	0.74	0.64 -	0.84	0.74	0.66 -	0.82
Black	As known	1.18	0.93 -	1.48	1.04	0.88 -	1.23	1.09	0.95 -	1.25
	All White	0.94	0.74 -	1.18	0.78	0.66 -	0.93	0.84	0.73 -	0.96
	Non-White relative increase	1.30	1.03 -	1.63	1.17	0.99 -	1.39	1.22	1.06 -	1.39

Asian ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Results were inconclusive for males under 65 years, 65 years and over and of all ages in the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	4.1	4.0 -	4.2	61.8	60.6 -	63.0	10.5	10.3 -	10.6
	All White	4.2	4.0 -	4.3	62.3	61.1 -	63.5	10.6	10.4 -	10.7
	Non-White relative increase	4.1	4.0 -	4.2	61.5	60.3 -	62.7	10.4	10.2 -	10.6
Asian	As known	2.8	2.2 -	3.3	40.3	33.6 -	47.0	6.9	6.0 -	7.7
	All White	2.2	1.7 -	2.7	30.3	24.6 -	36.0	5.3	4.6 -	6.1
	Non-White relative increase	3.0	2.5 -	3.6	45.3	38.2 -	52.4	7.7	6.8 -	8.6
Black	As known	4.8	3.8 -	5.9	64.3	53.8 -	74.9	11.4	9.9 -	12.9
	All White	3.9	3.0 -	4.8	48.9	39.7 -	58.1	8.9	7.6 -	10.2
	Non-White relative increase	5.3	4.2 -	6.4	72.1	60.8 -	83.3	12.7	11.1 -	14.2
	England - all ethnic groups	4.1	4.0 -	4.2	61.6	60.4 -	62.8	10.4	10.3 -	10.6

Age-standardised rates for the White ethnic group ranged from 10.2 to 10.7 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 4.6 to 8.6 per 100,000. Rates for the Black ethnic group ranged from 7.6 to 14.2 per 100,000 for all ages.
These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

**Cancer incidence by major ethnic group,
England, 2002-2006**

CANCER RESEARCH UK

NCIN
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Using information to improve quality & choice
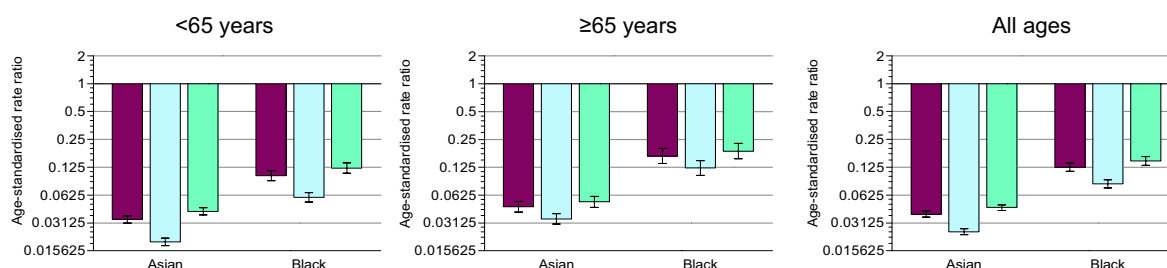
C25: Pancreas — Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	2,615	48	54	9	17	22	623	3,388	18%
≥65 years	8,956	76	93	13	14	65	3,663	12,880	28%
All Ages	11,571	124	147	22	31	87	4,286	16,268	26%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known ■ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.51	0.43 -	0.62	0.60	0.52 -	0.70	0.57	0.51 -	0.64
	All White	0.42	0.35 -	0.50	0.45	0.38 -	0.52	0.44	0.39 -	0.49
	Non-White relative increase	0.56	0.46 -	0.68	0.68	0.58 -	0.79	0.64	0.57 -	0.72
Black	As known	1.11	0.86 -	1.44	1.18	0.97 -	1.43	1.16	0.99 -	1.35
	All White	0.90	0.70 -	1.16	0.86	0.71 -	1.04	0.88	0.75 -	1.02
	Non-White relative increase	1.22	0.94 -	1.58	1.34	1.11 -	1.62	1.30	1.11 -	1.52

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for females under 65 years in the Black ethnic group were not significantly different from the White ethnic group.
Results were inconclusive for females aged 65 years and over and of all ages in the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	3.0	2.9 -	3.1	49.3	48.4 -	50.1	8.1	8.0 -	8.2
	All White	3.1	2.9 -	3.2	49.7	48.8 -	50.5	8.2	8.1 -	8.3
	Non-White relative increase	3.0	2.9 -	3.1	49.1	48.2 -	49.9	8.1	7.9 -	8.2
Asian	As known	1.5	1.2 -	1.9	29.6	23.8 -	35.4	4.6	3.9 -	5.4
	All White	1.3	0.9 -	1.6	22.1	17.1 -	27.1	3.6	2.9 -	4.2
	Non-White relative increase	1.7	1.3 -	2.1	33.3	27.2 -	39.5	5.2	4.4 -	5.9
Black	As known	3.4	2.5 -	4.2	58.1	47.9 -	68.4	9.4	8.0 -	10.7
	All White	2.7	2.0 -	3.5	42.9	34.2 -	51.6	7.2	6.0 -	8.3
	Non-White relative increase	3.7	2.8 -	4.5	65.8	54.9 -	76.7	10.5	9.1 -	11.9
	England - all ethnic groups	3.0	2.9 -	3.1	49.3	48.5 -	50.2	8.1	8.0 -	8.2

Age-standardised rates for the White ethnic group ranged from 7.9 to 8.3 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 2.9 to 5.9 per 100,000. Rates for the Black ethnic group ranged from 6.0 to 11.9 per 100,000 for all ages.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

C43: Malignant melanoma of skin — Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	5,648	10	11	4	22	24	4,013	9,732	41%
≥65 years	5,483	5	11	3	2	16	1,984	7,504	26%
All Ages	11,131	15	22	7	24	40	5,997	17,236	35%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

	<65 years			≥65 years			All ages		
Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian									
As known	0.03	0.03 -	0.04	0.05	0.04 -	0.05	0.04	0.04 -	0.04
All White	0.02	0.02 -	0.02	0.03	0.03 -	0.04	0.03	0.02 -	0.03
Non-White relative increase	0.04	0.04 -	0.05	0.05	0.05 -	0.06	0.05	0.04 -	0.05
Black									
As known	0.10	0.09 -	0.11	0.17	0.14 -	0.20	0.13	0.11 -	0.14
All White	0.06	0.05 -	0.07	0.12	0.10 -	0.15	0.08	0.07 -	0.09
Non-White relative increase	0.12	0.11 -	0.14	0.19	0.16 -	0.23	0.15	0.13 -	0.16

Asian ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There were very few cases in males from the Asian ethnic group.

Black ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There were very few cases in males from the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	<65 years			≥65 years			All ages		
Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White									
As known	9.5	9.3 -	9.7	44.6	43.6 -	45.6	13.3	13.1 -	13.5
All White	9.5	9.3 -	9.7	44.7	43.7 -	45.7	13.4	13.2 -	13.6
Non-White relative increase	9.5	9.3 -	9.6	44.6	43.6 -	45.6	13.3	13.1 -	13.5
Asian									
As known	0.3	0.2 -	0.5	2.1	0.5 -	3.7	0.5	0.3 -	0.7
All White	0.2	0.1 -	0.3	1.5	0.2 -	2.9	0.3	0.2 -	0.5
Non-White relative increase	0.4	0.2 -	0.6	2.4	0.7 -	4.0	0.6	0.4 -	0.8
Black									
As known	1.0	0.5 -	1.4	7.4	3.7 -	11.1	1.7	1.1 -	2.2
All White	0.6	0.2 -	0.9	5.5	2.2 -	8.7	1.1	0.6 -	1.6
Non-White relative increase	1.2	0.7 -	1.6	8.4	4.4 -	12.3	2.0	1.3 -	2.6
England - all ethnic groups	8.8	8.6 -	9.0	43.1	42.1 -	44.0	12.6	12.4 -	12.8

Age-standardised rates for the White ethnic group ranged from 13.1 to 13.6 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 0.2 to 0.8 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 0.6 to 2.6 per 100,000.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006

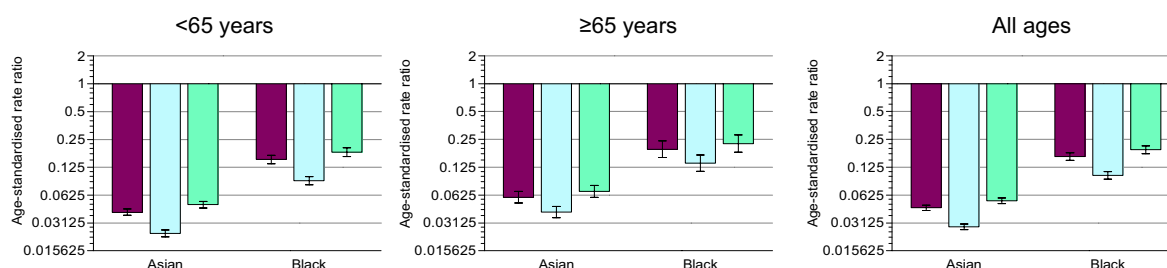## C43: Malignant melanoma of skin   Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	7,453	14	26	3	31	35	5,325	12,887	41%
≥65 years	5,612	5	10	2	7	21	2,317	7,974	29%
All Ages	13,065	19	36	5	38	56	7,642	20,861	37%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known   ▫ All White   ▫ Non-White relative increase

	Distribution of unknowns	<65 years Rate ratio	95% CI Lower	Upper	≥65 years Rate ratio	95% CI Lower	Upper	All ages Rate ratio	95% CI Lower	Upper
Asian	As known	0.04	0.04 -	0.04	0.06	0.05 -	0.07	0.05	0.04 -	0.05
	All White	0.02	0.02 -	0.03	0.04	0.04 -	0.05	0.03	0.03 -	0.03
	Non-White relative increase	0.05	0.05 -	0.05	0.07	0.06 -	0.08	0.05	0.05 -	0.06
Black	As known	0.15	0.14 -	0.17	0.20	0.16 -	0.24	0.16	0.15 -	0.18
	All White	0.09	0.08 -	0.10	0.14	0.11 -	0.17	0.10	0.09 -	0.11
	Non-White relative increase	0.18	0.16 -	0.20	0.23	0.18 -	0.28	0.19	0.18 -	0.21

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There were very few cases in females from the Asian ethnic group.

Black ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There were very few cases in females from the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	Distribution of unknowns	<65 years ASR	95% CI Lower	Upper	≥65 years ASR	95% CI Lower	Upper	All ages ASR	95% CI Lower	Upper
White	As known	12.5	12.3 -	12.8	34.4	33.6 -	35.1	14.9	14.7 -	15.1
	All White	12.6	12.4 -	12.8	34.5	33.7 -	35.2	15.0	14.8 -	15.2
	Non-White relative increase	12.5	12.3 -	12.7	34.3	33.6 -	35.1	14.9	14.7 -	15.1
Asian	As known	0.5	0.3 -	0.7	2.0	0.6 -	3.5	0.7	0.4 -	0.9
	All White	0.3	0.1 -	0.5	1.4	0.2 -	2.7	0.4	0.2 -	0.6
	Non-White relative increase	0.6	0.4 -	0.8	2.3	0.8 -	3.9	0.8	0.5 -	1.1
Black	As known	1.9	1.3 -	2.5	6.7	3.2 -	10.2	2.4	1.8 -	3.1
	All White	1.1	0.7 -	1.6	4.8	1.8 -	7.7	1.5	1.0 -	2.0
	Non-White relative increase	2.3	1.7 -	2.9	7.7	4.0 -	11.5	2.9	2.2 -	3.6
	England - all ethnic groups	11.5	11.3 -	11.7	33.5	32.8 -	34.2	13.9	13.7 -	14.1

Age-standardised rates for the White ethnic group ranged from 14.7 to 15.2 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 0.2 to 1.1 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 1.0 to 3.6 per 100,000.
These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

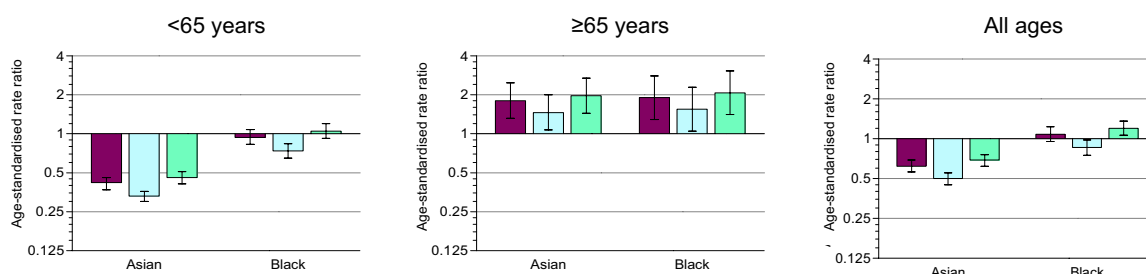## C53: Cervix Uteri   Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	6,271	118	164	31	27	90	2,001	8,702	23%
≥65 years	2,222	57	39	4	4	19	532	2,877	18%
All Ages	8,493	175	203	35	31	109	2,533	11,579	22%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known ■ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages	
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.42	0.37 -	0.46	1.80	1.32 -	2.47	0.62	0.56 -	0.69
	All White	0.33	0.30 -	0.36	1.46	1.07 -	2.00	0.50	0.45 -	0.55
	Non-White relative increase	0.46	0.41 -	0.51	1.97	1.44 -	2.70	0.69	0.62 -	0.76
Black	As known	0.94	0.83 -	1.08	1.90	1.29 -	2.80	1.08	0.95 -	1.23
	All White	0.74	0.65 -	0.84	1.55	1.05 -	2.29	0.86	0.75 -	0.98
	Non-White relative increase	1.05	0.92 -	1.20	2.07	1.41 -	3.06	1.20	1.06 -	1.36

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. Rates for females aged 65 years and over were higher in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for females aged 65 years and over were higher in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. Results were inconclusive for females under 65 years and of all ages in the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages	
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	8.1	7.9 -	8.2	11.4	11.0 -	11.8	8.4	8.3 -	8.6
	All White	8.2	8.0 -	8.4	11.5	11.1 -	12.0	8.6	8.4 -	8.7
	Non-White relative increase	8.0	7.8 -	8.2	11.4	10.9 -	11.8	8.4	8.2 -	8.5
Asian	As known	3.4	2.8 -	3.9	20.6	15.7 -	25.4	5.2	4.6 -	5.9
	All White	2.7	2.2 -	3.2	16.9	12.5 -	21.3	4.3	3.6 -	4.9
	Non-White relative increase	3.7	3.1 -	4.2	22.4	17.4 -	27.5	5.7	5.0 -	6.5
Black	As known	7.6	6.6 -	8.6	21.7	15.5 -	27.9	9.2	8.0 -	10.3
	All White	6.0	5.1 -	7.0	17.9	12.3 -	23.5	7.3	6.3 -	8.4
	Non-White relative increase	8.4	7.3 -	9.5	23.6	17.1 -	30.0	10.1	8.9 -	11.2
England - all ethnic groups		7.7	7.5 -	7.8	11.7	11.3 -	12.2	8.1	8.0 -	8.3

Age-standardised rates for the White ethnic group ranged from 8.2 to 8.7 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 3.6 to 6.5 per 100,000. Rates for the Black ethnic group ranged from 6.3 to 11.2 per 100,000 for all ages.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006

CANCER RESEARCH UK

NCIN
national cancer
intelligence network
Using information to improve quality & choice
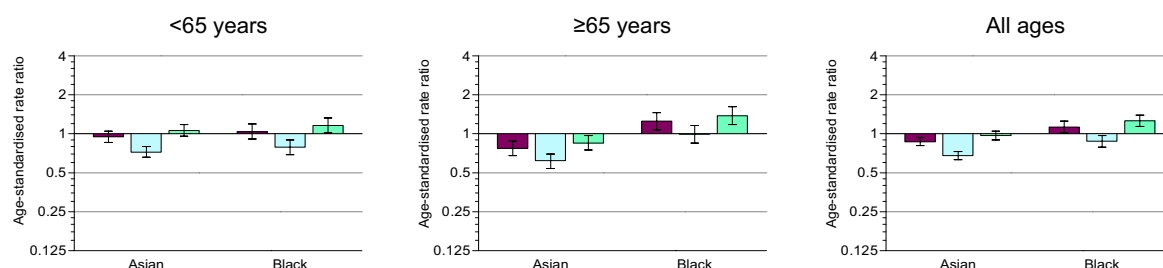
C54-C55: Uterus   Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	8,920	294	178	32	20	89	2,770	12,303	23%
≥65 years	11,716	153	160	12	24	77	3,235	15,377	21%
All Ages	20,636	447	338	44	44	166	6,005	27,680	22%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: As known | All White | Non-White relative increase

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.95	0.86 -	1.05	0.77	0.68 -	0.88	0.87	0.81 -	0.94
	All White	0.72	0.66 -	0.80	0.62	0.54 -	0.70	0.68	0.63 -	0.73
	Non-White relative increase	1.06	0.96 -	1.18	0.85	0.75 -	0.97	0.97	0.90 -	1.05
Black	As known	1.04	0.91 -	1.19	1.25	1.07 -	1.46	1.13	1.02 -	1.25
	All White	0.79	0.69 -	0.90	0.99	0.85 -	1.16	0.88	0.79 -	0.97
	Non-White relative increase	1.16	1.02 -	1.33	1.38	1.18 -	1.62	1.26	1.14 -	1.39

Asian ethnic group compared with the White ethnic group

Rates for females aged 65 years and over were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that females of all ages in the Asian ethnic group had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups. Results were inconclusive for females under 65 years.

Black ethnic group compared with the White ethnic group

There is some evidence that females aged 65 years and over in the Black ethnic group had higher rates but this was not statistically significant under the assumption that all cases with unknown ethnicity were from the White ethnic group. Results were inconclusive for females under 65 years and of all ages in the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	10.9	10.7 -	11.1	68.9	67.8 -	70.0	17.3	17.1 -	17.5
	All White	11.1	10.9 -	11.3	69.5	68.3 -	70.6	17.5	17.3 -	17.7
	Non-White relative increase	10.8	10.6 -	11.0	68.6	67.5 -	69.7	17.2	16.9 -	17.4
Asian	As known	10.3	9.3 -	11.4	53.3	45.8 -	60.9	15.1	13.8 -	16.3
	All White	8.0	7.1 -	8.9	42.8	36.0 -	49.6	11.8	10.7 -	12.9
	Non-White relative increase	11.5	10.4 -	12.6	58.6	50.7 -	66.5	16.7	15.4 -	18.0
Black	As known	11.3	9.8 -	12.7	86.2	74.2 -	98.1	19.5	17.7 -	21.4
	All White	8.7	7.5 -	10.0	68.7	58.1 -	79.4	15.3	13.7 -	17.0
	Non-White relative increase	12.6	11.0 -	14.1	94.9	82.3 -	107.4	21.6	19.7 -	23.6
England - all ethnic groups		10.9	10.7 -	11.1	69.2	68.1 -	70.3	17.3	17.1 -	17.5

Age-standardised rates for the White ethnic group ranged from 16.9 to 17.7 per 100,000 for all ages. Rates for the Asian ethnic group ranged from 10.7 to 18.0 per 100,000. Rates for the Black ethnic group ranged from 13.7 to 23.6 per 100,000 for all ages.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.
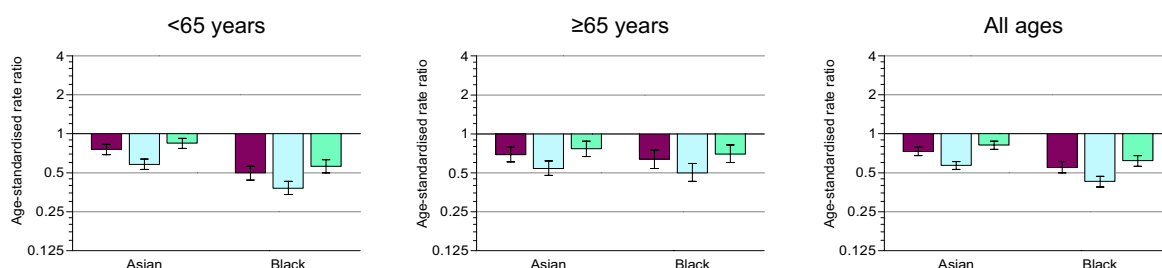
C56: Ovary	Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	9,757	300	111	37	49	91	2,834	13,179	22%
≥65 years	11,128	122	76	14	15	70	3,419	14,844	23%
All Ages	20,885	422	187	51	64	161	6,253	28,023	22%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

		<65 years	95% Confidence Interval			≥65 years	95% Confidence Interval			All ages	95% Confidence Interval	
	Distribution of unknowns	Rate ratio	Lower	Upper		Rate ratio	Lower	Upper		Rate ratio	Lower	Upper
Asian	As known	0.76	0.69 -	0.83		0.69	0.61 -	0.79		0.73	0.68 -	0.79
	All White	0.58	0.53 -	0.64		0.54	0.48 -	0.62		0.57	0.53 -	0.61
	Non-White relative increase	0.85	0.77 -	0.92		0.77	0.67 -	0.88		0.82	0.76 -	0.88
Black	As known	0.50	0.44 -	0.56		0.64	0.54 -	0.75		0.55	0.50 -	0.61
	All White	0.38	0.34 -	0.43		0.50	0.43 -	0.59		0.43	0.39 -	0.47
	Non-White relative increase	0.56	0.50 -	0.63		0.70	0.60 -	0.82		0.62	0.56 -	0.68

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years	95% Confidence Interval			≥65 years	95% Confidence Interval			All ages	95% Confidence Interval	
	Distribution of unknowns	ASR	Lower	Upper		ASR	Lower	Upper		ASR	Lower	Upper
White	As known	12.0	11.8 -	12.2		64.1	63.0 -	65.1		17.7	17.5 -	17.9
	All White	12.2	11.9 -	12.4		64.4	63.4 -	65.5		17.9	17.7 -	18.1
	Non-White relative increase	11.9	11.7 -	12.1		63.9	62.8 -	64.9		17.6	17.4 -	17.8
Asian	As known	9.1	8.2 -	10.0		44.4	37.4 -	51.4		13.0	11.9 -	14.0
	All White	7.1	6.3 -	7.9		34.9	28.7 -	41.1		10.2	9.2 -	11.1
	Non-White relative increase	10.1	9.1 -	11.0		49.2	41.8 -	56.6		14.4	13.2 -	15.5
Black	As known	6.0	5.0 -	6.9		40.7	32.5 -	48.9		9.8	8.6 -	11.0
	All White	4.7	3.8 -	5.5		32.5	25.2 -	39.8		7.7	6.6 -	8.8
	Non-White relative increase	6.6	5.6 -	7.7		44.8	36.2 -	53.4		10.8	9.5 -	12.1
	England - all ethnic groups	11.8	11.6 -	12.0		63.7	62.7 -	64.8		17.5	17.3 -	17.7

Age-standardised rates for the White ethnic group ranged from 17.4 to 18.1 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 9.2 to 15.5 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 6.6 to 12.1 per 100,000.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

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Cancer incidence by major ethnic group, England, 2002-2006

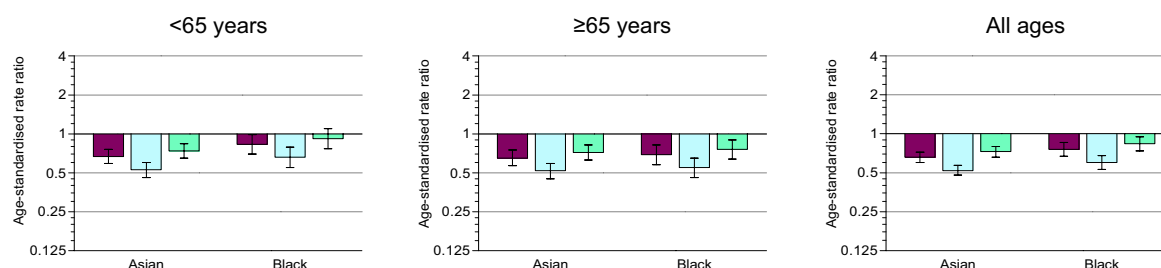## C64-C66 & C68: Kidney — Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	5,019	132	83	10	20	61	1,335	6,660	20%
≥65 years	7,146	111	71	8	10	54	2,016	9,416	21%
All Ages	12,165	243	154	18	30	115	3,351	16,076	21%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known ☐ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.67	0.59 -	0.76	0.65	0.57 -	0.75	0.66	0.60 -	0.72
	All White	0.53	0.46 -	0.60	0.52	0.45 -	0.59	0.52	0.48 -	0.57
	Non-White relative increase	0.74	0.65 -	0.84	0.72	0.63 -	0.82	0.73	0.66 -	0.80
Black	As known	0.83	0.70 -	0.99	0.69	0.58 -	0.82	0.76	0.67 -	0.86
	All White	0.66	0.55 -	0.79	0.55	0.46 -	0.65	0.60	0.53 -	0.68
	Non-White relative increase	0.92	0.77 -	1.10	0.76	0.64 -	0.90	0.84	0.74 -	0.95

Asian ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for males aged 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that males under 65 years in the Black ethnic group had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	6.2	6.0 -	6.3	54.2	53.1 -	55.3	11.5	11.3 -	11.6
	All White	6.3	6.1 -	6.4	54.6	53.5 -	55.7	11.6	11.4 -	11.8
	Non-White relative increase	6.1	6.0 -	6.3	54.0	52.9 -	55.1	11.4	11.2 -	11.6
Asian	As known	4.1	3.5 -	4.8	35.3	29.4 -	41.2	7.6	6.7 -	8.4
	All White	3.3	2.7 -	3.9	28.3	23.0 -	33.6	6.0	5.3 -	6.8
	Non-White relative increase	4.5	3.9 -	5.2	38.8	32.6 -	45.0	8.3	7.4 -	9.2
Black	As known	5.1	4.1 -	6.1	37.3	29.5 -	45.2	8.7	7.5 -	9.9
	All White	4.1	3.2 -	5.0	30.1	23.1 -	37.0	7.0	5.9 -	8.1
	Non-White relative increase	5.6	4.6 -	6.7	41.0	32.8 -	49.2	9.5	8.2 -	10.8
England - all ethnic groups		6.1	6.0 -	6.3	53.8	52.8 -	54.9	11.4	11.2 -	11.5

Age-standardised rates for the White ethnic group ranged from 11.2 to 11.8 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 5.3 to 9.2 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 5.9 to 10.8 per 100,000.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006

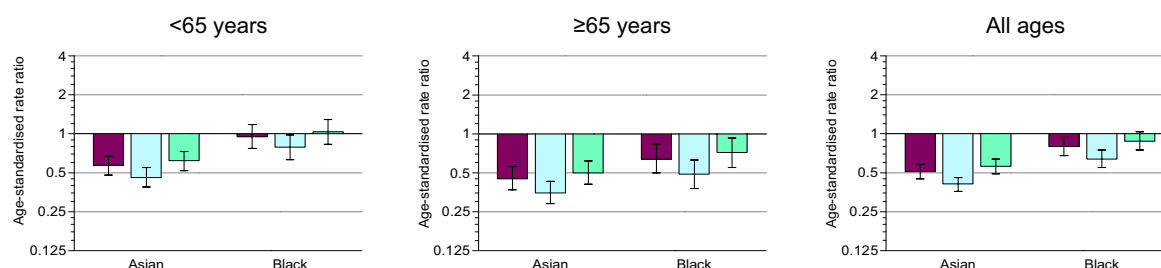| C64-C66 & C68: Kidney	Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	2,774	66	67	7	13	28	628	3,583	18%
≥65 years	4,605	33	29	2	6	29	1,523	6,227	24%
All Ages	7,379	99	96	9	19	57	2,151	9,810	22%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

	<65 years			≥65 years			All ages		
Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian									
As known	0.57	0.48 -	0.67	0.45	0.37 -	0.56	0.51	0.45 -	0.58
All White	0.46	0.39 -	0.55	0.35	0.29 -	0.43	0.41	0.36 -	0.46
Non-White relative increase	0.62	0.52 -	0.73	0.50	0.41 -	0.62	0.56	0.49 -	0.64
Black									
As known	0.95	0.77 -	1.18	0.64	0.50 -	0.83	0.80	0.68 -	0.94
All White	0.79	0.63 -	0.98	0.49	0.38 -	0.63	0.64	0.55 -	0.75
Non-White relative increase	1.04	0.83 -	1.29	0.72	0.55 -	0.93	0.88	0.75 -	1.04

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for females aged 65 years and over were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that females of all ages in the Black ethnic group had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity are relatively increased in non-White ethnic groups. Results were inconclusive for females under 65 years.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	<65 years			≥65 years			All ages		
Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White									
As known	3.3	3.2 -	3.4	26.3	25.6 -	26.9	5.8	5.7 -	6.0
All White	3.3	3.2 -	3.5	26.4	25.7 -	27.1	5.9	5.8 -	6.0
Non-White relative increase	3.3	3.2 -	3.4	26.2	25.5 -	26.8	5.8	5.7 -	5.9
Asian									
As known	1.9	1.5 -	2.3	11.9	8.3 -	15.5	3.0	2.5 -	3.5
All White	1.6	1.2 -	1.9	9.3	6.1 -	12.5	2.4	1.9 -	2.9
Non-White relative increase	2.0	1.6 -	2.5	13.2	9.4 -	17.0	3.3	2.7 -	3.8
Black									
As known	3.2	2.5 -	3.8	16.9	11.5 -	22.3	4.7	3.8 -	5.5
All White	2.6	2.0 -	3.3	13.0	8.3 -	17.7	3.8	3.0 -	4.5
Non-White relative increase	3.4	2.7 -	4.1	18.8	13.1 -	24.6	5.1	4.2 -	6.0
England - all ethnic groups	3.3	3.2 -	3.4	26.0	25.4 -	26.7	5.8	5.7 -	5.9

Age-standardised rates for the White ethnic group ranged from 5.7 to 6.0 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 1.9 to 3.8 per 100,000. Rates for the Black ethnic group ranged from 3.0 to 6.0 per 100,000 for all ages.
These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006

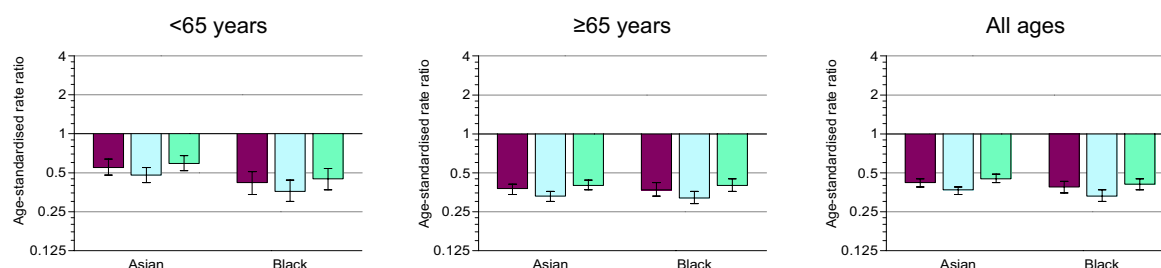## C67: Bladder   Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	5,252	102	35	7	6	38	847	6,287	13%
≥65 years	20,482	155	90	16	26	88	3,110	23,967	13%
All Ages	25,734	257	125	23	32	126	3,957	30,254	13%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known □ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages	
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.55	0.48 -	0.64	0.38	0.34 -	0.41	0.42	0.39 -	0.45
	All White	0.48	0.42 -	0.55	0.33	0.30 -	0.36	0.37	0.34 -	0.39
	Non-White relative increase	0.59	0.52 -	0.68	0.40	0.37 -	0.44	0.45	0.42 -	0.49
Black	As known	0.42	0.34 -	0.51	0.37	0.33 -	0.42	0.39	0.35 -	0.43
	All White	0.36	0.30 -	0.44	0.32	0.29 -	0.36	0.33	0.30 -	0.37
	Non-White relative increase	0.45	0.37 -	0.54	0.40	0.36 -	0.45	0.41	0.37 -	0.45

Asian ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages	
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	5.8	5.7 -	6.0	136.1	134.3 -	137.8	20.2	19.9 -	20.4
	All White	5.9	5.7 -	6.0	136.4	134.7 -	138.1	20.2	20.0 -	20.5
	Non-White relative increase	5.8	5.7 -	6.0	135.9	134.2 -	137.7	20.1	19.9 -	20.4
Asian	As known	3.2	2.7 -	3.8	51.3	43.7 -	58.8	8.5	7.5 -	9.5
	All White	2.8	2.3 -	3.3	44.7	37.6 -	51.7	7.4	6.5 -	8.3
	Non-White relative increase	3.5	2.9 -	4.1	54.6	46.8 -	62.4	9.1	8.1 -	10.1
Black	As known	2.4	1.7 -	3.2	50.9	41.1 -	60.8	7.8	6.5 -	9.0
	All White	2.1	1.4 -	2.8	44.3	35.1 -	53.4	6.7	5.6 -	7.9
	Non-White relative increase	2.6	1.8 -	3.4	54.3	44.1 -	64.4	8.3	7.0 -	9.6
	England - all ethnic groups	5.7	5.6 -	5.8	133.4	131.7 -	135.1	19.8	19.5 -	20.0

Age-standardised rates for the White ethnic group ranged from 19.9 to 20.5 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 6.5 to 10.1 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 5.6 to 9.6 per 100,000.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006

CANCER RESEARCH UK · NCIN national cancer intelligence network · *Using information to improve quality & choice*
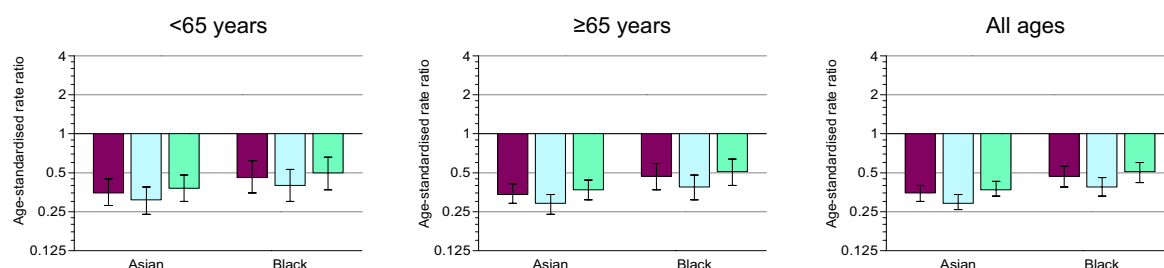
C67: Bladder | **Female**

> These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	1,742	22	19	3	2	11	265	2,064	13%
≥65 years	8,227	36	28	7	5	41	1,677	10,021	17%
All Ages	9,969	58	47	10	7	52	1,942	12,085	16%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

> Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known □ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages	
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.35	0.28 -	0.45	0.34	0.29 -	0.41	0.35	0.30 -	0.40
	All White	0.31	0.24 -	0.39	0.29	0.24 -	0.34	0.29	0.26 -	0.34
	Non-White relative increase	0.38	0.30 -	0.48	0.37	0.31 -	0.44	0.37	0.33 -	0.43
Black	As known	0.46	0.35 -	0.62	0.47	0.37 -	0.59	0.47	0.39 -	0.56
	All White	0.40	0.30 -	0.53	0.39	0.31 -	0.48	0.39	0.33 -	0.46
	Non-White relative increase	0.50	0.37 -	0.66	0.51	0.40 -	0.64	0.51	0.42 -	0.60

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages	
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	1.9	1.8 -	2.0	37.9	37.1 -	38.6	5.8	5.7 -	6.0
	All White	1.9	1.8 -	2.0	38.0	37.2 -	38.7	5.9	5.8 -	6.0
	Non-White relative increase	1.9	1.8 -	2.0	37.8	37.1 -	38.6	5.8	5.7 -	5.9
Asian	As known	0.7	0.4 -	0.9	13.1	9.1 -	17.0	2.0	1.5 -	2.5
	All White	0.6	0.3 -	0.8	10.9	7.4 -	14.5	1.7	1.3 -	2.2
	Non-White relative increase	0.7	0.4 -	1.0	14.1	10.0 -	18.2	2.2	1.7 -	2.7
Black	As known	0.9	0.5 -	1.2	17.7	11.7 -	23.7	2.7	2.0 -	3.4
	All White	0.8	0.4 -	1.1	14.6	9.2 -	20.1	2.3	1.6 -	2.9
	Non-White relative increase	0.9	0.6 -	1.3	19.3	13.0 -	25.5	2.9	2.2 -	3.7
	England - all ethnic groups	1.8	1.7 -	1.9	37.3	36.6 -	38.1	5.7	5.6 -	5.8

> Age-standardised rates for the White ethnic group ranged from 5.7 to 6.0 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 1.3 to 2.7 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 1.6 to 3.7 per 100,000.
> **These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.**
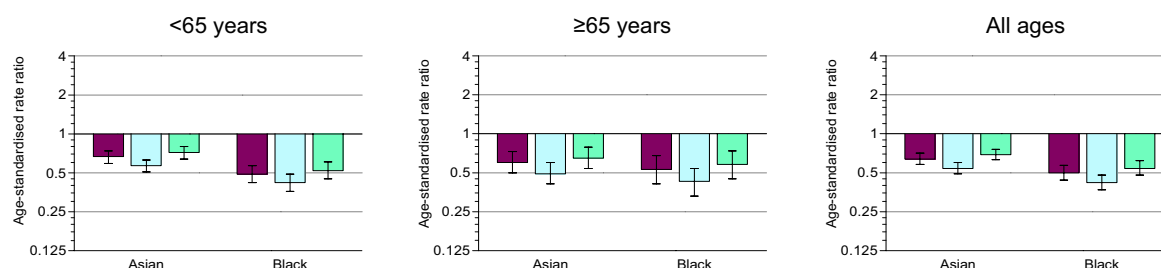
C70-C72: Brain and CNS — Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	5,187	184	68	11	36	73	922	6,481	14%
≥65 years	3,573	54	27	2	4	31	871	4,562	19%
All Ages	8,760	238	95	13	40	104	1,793	11,043	16%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: As known | All White | Non-White relative increase

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.67	0.59 -	0.74	0.60	0.50 -	0.73	0.64	0.58 -	0.71
	All White	0.57	0.51 -	0.63	0.49	0.41 -	0.60	0.54	0.49 -	0.60
	Non-White relative increase	0.72	0.64 -	0.80	0.65	0.54 -	0.79	0.69	0.63 -	0.76
Black	As known	0.49	0.42 -	0.57	0.53	0.41 -	0.68	0.50	0.44 -	0.57
	All White	0.42	0.36 -	0.49	0.43	0.33 -	0.54	0.42	0.37 -	0.48
	Non-White relative increase	0.52	0.45 -	0.61	0.58	0.45 -	0.74	0.54	0.48 -	0.62

Asian ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	6.2	6.0 -	6.3	26.8	26.0 -	27.6	8.4	8.3 -	8.6
	All White	6.2	6.1 -	6.4	27.0	26.2 -	27.7	8.5	8.4 -	8.7
	Non-White relative increase	6.1	6.0 -	6.3	26.7	25.9 -	27.5	8.4	8.2 -	8.6
Asian	As known	4.1	3.6 -	4.7	16.1	12.2 -	20.0	5.4	4.8 -	6.1
	All White	3.5	3.0 -	4.0	13.3	9.8 -	16.9	4.6	4.0 -	5.2
	Non-White relative increase	4.4	3.8 -	5.0	17.5	13.4 -	21.6	5.8	5.2 -	6.5
Black	As known	3.0	2.3 -	3.7	14.2	9.3 -	19.0	4.2	3.5 -	5.0
	All White	2.6	2.0 -	3.2	11.5	7.2 -	15.8	3.6	2.9 -	4.3
	Non-White relative increase	3.2	2.5 -	3.9	15.5	10.4 -	20.5	4.6	3.7 -	5.4
	England - all ethnic groups	6.0	5.9 -	6.2	26.5	25.7 -	27.3	8.3	8.1 -	8.4

Age-standardised rates for the White ethnic group ranged from 8.2 to 8.7 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 4.0 to 6.5 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 2.9 to 5.4 per 100,000.

These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006
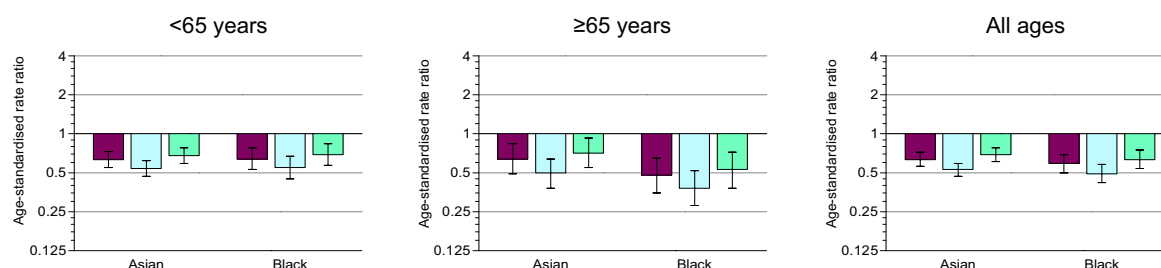
C70-C72: Brain and CNS   Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	3,440	111	58	5	25	45	594	4,278	14%
≥65 years	2,771	28	15	0	3	23	851	3,691	23%
All Ages	6,211	139	73	5	28	68	1,445	7,969	18%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known   □ All White   ■ Non-White relative increase

	Distribution of unknowns	<65 years Rate ratio	95% CI Lower	95% CI Upper	≥65 years Rate ratio	95% CI Lower	95% CI Upper	All ages Rate ratio	95% CI Lower	95% CI Upper
Asian	As known	0.63	0.55 -	0.73	0.64	0.49 -	0.84	0.63	0.56 -	0.72
	All White	0.54	0.47 -	0.62	0.50	0.38 -	0.64	0.53	0.47 -	0.59
	Non-White relative increase	0.68	0.59 -	0.78	0.71	0.55 -	0.93	0.69	0.61 -	0.78
Black	As known	0.64	0.53 -	0.78	0.48	0.35 -	0.65	0.59	0.50 -	0.69
	All White	0.55	0.45 -	0.67	0.38	0.28 -	0.52	0.49	0.42 -	0.58
	Non-White relative increase	0.69	0.57 -	0.84	0.53	0.38 -	0.72	0.63	0.54 -	0.75

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Black ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were lower in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	Distribution of unknowns	<65 years ASR	95% CI Lower	95% CI Upper	≥65 years ASR	95% CI Lower	95% CI Upper	All ages ASR	95% CI Lower	95% CI Upper
White	As known	4.1	4.0 -	4.2	16.3	15.8 -	16.8	5.4	5.3 -	5.6
	All White	4.1	4.0 -	4.3	16.4	15.9 -	16.9	5.5	5.4 -	5.6
	Non-White relative increase	4.1	3.9 -	4.2	16.3	15.7 -	16.8	5.4	5.3 -	5.5
Asian	As known	2.6	2.1 -	3.0	10.5	7.0 -	13.9	3.4	2.9 -	4.0
	All White	2.2	1.8 -	2.6	8.1	5.1 -	11.1	2.9	2.4 -	3.4
	Non-White relative increase	2.8	2.3 -	3.2	11.6	8.0 -	15.3	3.7	3.2 -	4.3
Black	As known	2.6	2.0 -	3.3	7.8	4.2 -	11.3	3.2	2.5 -	3.9
	All White	2.3	1.7 -	2.9	6.3	3.1 -	9.4	2.7	2.1 -	3.3
	Non-White relative increase	2.8	2.2 -	3.5	8.5	4.8 -	12.3	3.4	2.7 -	4.1
	England - all ethnic groups	4.0	3.8 -	4.1	16.2	15.6 -	16.7	5.3	5.2 -	5.4

Age-standardised rates for the White ethnic group ranged from 5.3 to 5.6 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 2.4 to 4.3 per 100,000. Rates for the Black ethnic group were significantly lower than the White ethnic group for all ages, ranging from 2.1 to 4.1 per 100,000.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.
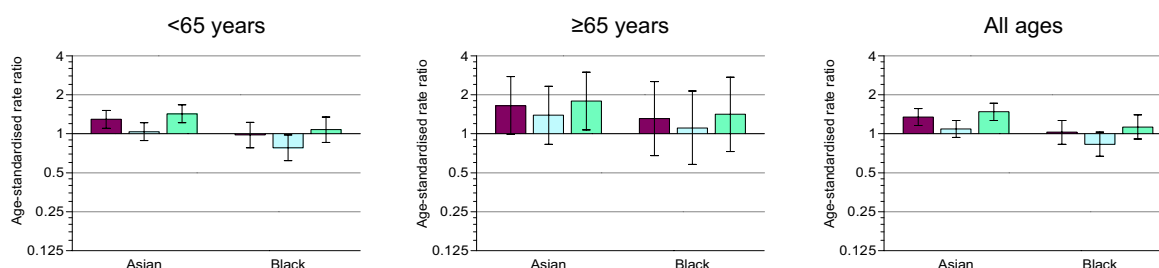
C81: Hodgkin disease — Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	2,135	165	61	6	29	39	543	2,978	18%
≥65 years	528	20	10	1	2	1	111	673	16%
All Ages	2,663	185	71	7	31	40	654	3,651	18%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known □ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages	
Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian									
As known	1.30	1.10 -	1.52	1.65	0.99 -	2.77	1.35	1.16 -	1.57
All White	1.04	0.89 -	1.22	1.39	0.83 -	2.33	1.09	0.94 -	1.27
Non-White relative increase	1.43	1.22 -	1.68	1.79	1.07 -	2.99	1.48	1.27 -	1.73
Black									
As known	0.98	0.78 -	1.23	1.31	0.68 -	2.54	1.03	0.83 -	1.27
All White	0.78	0.62 -	0.98	1.11	0.58 -	2.14	0.83	0.67 -	1.03
Non-White relative increase	1.08	0.86 -	1.35	1.42	0.73 -	2.74	1.13	0.91 -	1.40

Asian ethnic group compared with the White ethnic group

There is some evidence that rates for males under 65 years and of all ages were higher in the Asian ethnic group but this was not statistically significant under the assumption that all cases with unknown ethnicity were from the White ethnic group. Results were inconclusive for males aged 65 years and over.

Black ethnic group compared with the White ethnic group

Rates for males aged 65 years and over and of all ages in the Black ethnic group were not significantly different from the White ethnic group. Results were inconclusive for males under 65 years in the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages	
Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White									
As known	2.7	2.6 -	2.8	3.8	3.5 -	4.1	2.8	2.7 -	2.9
All White	2.8	2.7 -	2.9	3.8	3.5 -	4.1	2.9	2.8 -	3.0
Non-White relative increase	2.7	2.6 -	2.8	3.8	3.5 -	4.1	2.8	2.7 -	2.9
Asian									
As known	3.5	3.0 -	4.0	6.3	3.8 -	8.8	3.8	3.3 -	4.3
All White	2.9	2.5 -	3.3	5.3	3.0 -	7.7	3.2	2.7 -	3.6
Non-White relative increase	3.8	3.3 -	4.3	6.8	4.1 -	9.4	4.1	3.6 -	4.7
Black									
As known	2.6	2.0 -	3.2	5.0	2.1 -	7.9	2.9	2.3 -	3.5
All White	2.2	1.6 -	2.7	4.3	1.6 -	6.9	2.4	1.8 -	3.0
Non-White relative increase	2.9	2.3 -	3.5	5.4	2.4 -	8.3	3.2	2.5 -	3.8
England - all ethnic groups	2.7	2.6 -	2.8	3.9	3.6 -	4.2	2.9	2.8 -	3.0

Age-standardised rates for the White ethnic group ranged from 2.7 to 3.0 per 100,000 for all ages. Rates for the Asian ethnic group ranged from 2.7 to 4.7 per 100,000 for all ages. Rates for the Black ethnic group ranged from 1.8 to 3.8 per 100,000 for all ages.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

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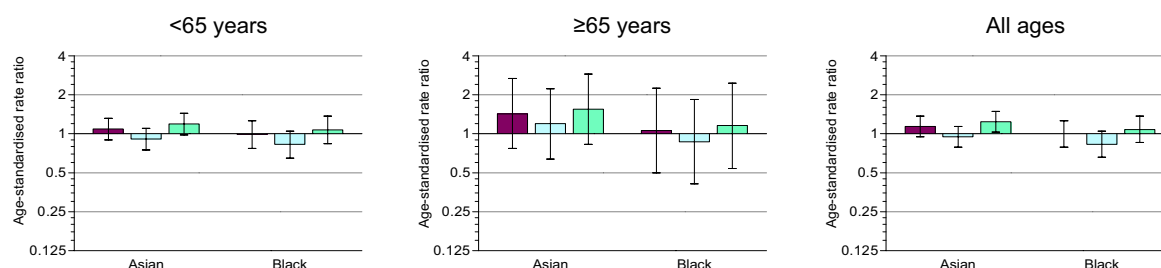
C81: Hodgkin disease | **Female**

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These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	1,578	101	56	5	27	32	313	2,112	15%
≥65 years	507	12	6	0	1	2	108	636	17%
All Ages	2,085	113	62	5	28	34	421	2,748	15%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns ■ As known □ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages	
Distribution of unknowns	**Rate ratio**	**95% Confidence Interval Lower**	**Upper**	**Rate ratio**	**95% Confidence Interval Lower**	**Upper**	**Rate ratio**	**95% Confidence Interval Lower**	**Upper**
Asian									
As known	1.09	0.90 -	1.32	1.43	0.77 -	2.67	1.14	0.95 -	1.37
All White	0.91	0.75 -	1.10	1.20	0.64 -	2.23	0.95	0.79 -	1.14
Non-White relative increase	1.19	0.98 -	1.44	1.55	0.83 -	2.89	1.24	1.03 -	1.49
Black									
As known	0.99	0.77 -	1.26	1.06	0.50 -	2.25	1.00	0.79 -	1.26
All White	0.83	0.65 -	1.05	0.87	0.41 -	1.84	0.83	0.66 -	1.05
Non-White relative increase	1.07	0.84 -	1.37	1.16	0.54 -	2.46	1.08	0.86 -	1.37

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years and 65 years and over in the Asian ethnic group were not significantly different from the White ethnic group. Results were inconclusive for females of all ages from the Asian ethnic group.

Black ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages in the Black ethnic group were not significantly different from the White ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages	
Distribution of unknowns	**ASR**	**95% Confidence Interval Lower**	**Upper**	**ASR**	**95% Confidence Interval Lower**	**Upper**	**ASR**	**95% Confidence Interval Lower**	**Upper**
White									
As known	2.0	1.9 -	2.0	2.8	2.6 -	3.0	2.0	2.0 -	2.1
All White	2.0	1.9 -	2.1	2.8	2.6 -	3.0	2.1	2.0 -	2.2
Non-White relative increase	1.9	1.8 -	2.0	2.8	2.5 -	3.0	2.0	1.9 -	2.1
Asian									
As known	2.1	1.8 -	2.5	4.0	1.9 -	6.0	2.3	1.9 -	2.7
All White	1.8	1.5 -	2.2	3.3	1.5 -	5.2	2.0	1.6 -	2.4
Non-White relative increase	2.3	1.9 -	2.7	4.3	2.1 -	6.4	2.5	2.1 -	2.9
Black									
As known	1.9	1.5 -	2.4	2.9	0.8 -	5.1	2.0	1.6 -	2.5
All White	1.7	1.2 -	2.1	2.4	0.5 -	4.4	1.7	1.3 -	2.2
Non-White relative increase	2.1	1.6 -	2.6	3.2	1.0 -	5.4	2.2	1.7 -	2.7
England - all ethnic groups	2.0	1.9 -	2.0	2.8	2.6 -	3.0	2.0	2.0 -	2.1

Age-standardised rates for the White ethnic group ranged from 1.9 to 2.2 per 100,000 for all ages. Rates for the Asian ethnic group ranged from 1.6 to 2.9 per 100,000 for all ages. Rates for the Black ethnic group ranged from 1.3 to 2.7 per 100,000 for all ages.

These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.
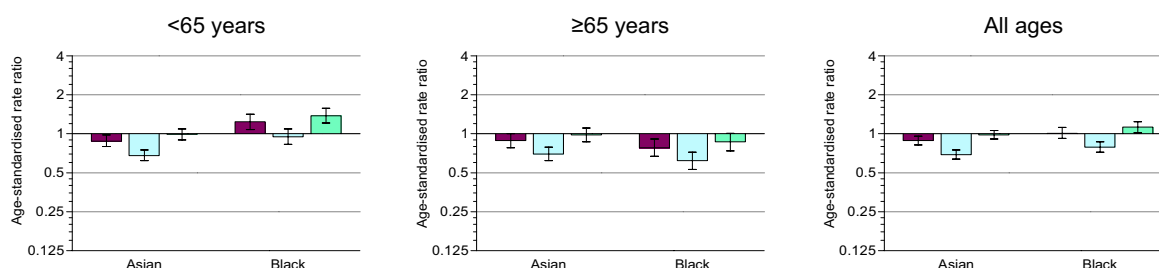
C82-C85 & C96: Non-Hodgkin lymphoma — Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	7,277	286	210	16	48	104	2,139	10,080	21%
≥65 years	9,718	188	103	5	17	80	2,583	12,694	20%
All Ages	16,995	474	313	21	65	184	4,722	22,774	21%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns: ■ As known □ All White ■ Non-White relative increase

	Distribution of unknowns	<65 years Rate ratio	<65 years 95% Confidence Interval Lower	Upper	≥65 years Rate ratio	≥65 years 95% Confidence Interval Lower	Upper	All ages Rate ratio	All ages 95% Confidence Interval Lower	Upper
Asian	As known	0.88	0.80 -	0.98	0.89	0.78 -	1.00	0.89	0.82 -	0.96
	All White	0.68	0.62 -	0.75	0.70	0.62 -	0.79	0.69	0.64 -	0.75
	Non-White relative increase	0.99	0.90 -	1.09	0.98	0.87 -	1.11	0.98	0.91 -	1.06
Black	As known	1.24	1.08 -	1.42	0.78	0.67 -	0.91	1.01	0.92 -	1.12
	All White	0.95	0.83 -	1.09	0.62	0.53 -	0.72	0.79	0.72 -	0.87
	Non-White relative increase	1.38	1.21 -	1.58	0.87	0.74 -	1.01	1.13	1.02 -	1.24

Asian ethnic group compared with the White ethnic group

There is some evidence that males under 65 years and of all ages in the Asian ethnic group had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups.
Results were inconclusive for males aged 65 years and over.

Black ethnic group compared with the White ethnic group

Results were inconclusive for males of all ages from the Black ethnic group. There is some evidence that males aged 65 years and over in the Black ethnic group had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups. There is some evidence that males under 65 years had higher rates but this was not statistically significant under the assumption that all cases with unknown ethnicity were from the White ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	Distribution of unknowns	<65 years ASR	<65 years 95% Confidence Interval Lower	Upper	≥65 years ASR	≥65 years 95% Confidence Interval Lower	Upper	All ages ASR	All ages 95% Confidence Interval Lower	Upper
White	As known	9.1	8.9 -	9.3	72.3	71.0 -	73.6	16.1	15.8 -	16.3
	All White	9.3	9.1 -	9.5	72.9	71.6 -	74.2	16.3	16.1 -	16.5
	Non-White relative increase	9.0	8.8 -	9.2	72.0	70.7 -	73.3	15.9	15.7 -	16.2
Asian	As known	8.1	7.2 -	8.9	64.0	55.8 -	72.2	14.2	13.1 -	15.4
	All White	6.3	5.6 -	7.1	51.1	43.8 -	58.5	11.3	10.3 -	12.3
	Non-White relative increase	8.9	8.0 -	9.8	70.4	61.8 -	79.0	15.7	14.5 -	16.9
Black	As known	11.3	9.9 -	12.6	56.6	46.8 -	66.4	16.3	14.7 -	17.9
	All White	8.9	7.7 -	10.1	45.3	36.5 -	54.0	12.9	11.4 -	14.3
	Non-White relative increase	12.5	11.1 -	13.9	62.3	52.0 -	72.6	18.0	16.3 -	19.6
	England - all ethnic groups	9.2	9.0 -	9.4	72.2	71.0 -	73.5	16.1	15.9 -	16.3

Age-standardised rates for the White ethnic group ranged from 15.7 to 16.5 per 100,000 for all ages. Rates for the Asian ethnic group ranged from 10.3 to 16.9 per 100,000 for all ages. Rates for the Black ethnic group ranged from 11.4 to 19.6 per 100,000 for all ages.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

C82-C85 & C96: Non-Hodgkin lymphoma   Female
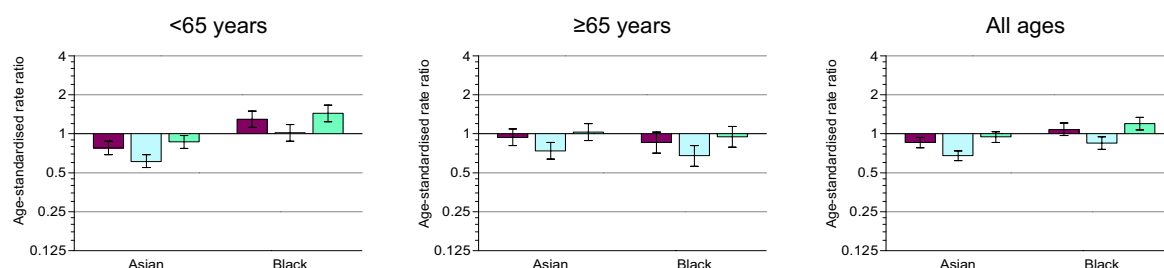
These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	5,478	177	188	14	36	77	1,474	7,444	20%
≥65 years	9,408	132	78	3	14	57	2,666	12,358	22%
All Ages	14,886	309	266	17	50	134	4,140	19,802	21%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

	<65 years			≥65 years			All ages		
	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian									
As known	0.78	0.69 -	0.88	0.94	0.81 -	1.09	0.86	0.78 -	0.94
All White	0.61	0.55 -	0.69	0.74	0.64 -	0.86	0.68	0.62 -	0.74
Non-White relative increase	0.87	0.77 -	0.97	1.03	0.89 -	1.20	0.95	0.86 -	1.04
Black									
As known	1.30	1.12 -	1.50	0.86	0.71 -	1.03	1.08	0.97 -	1.21
All White	1.02	0.88 -	1.18	0.68	0.56 -	0.81	0.85	0.76 -	0.95
Non-White relative increase	1.44	1.24 -	1.67	0.95	0.79 -	1.14	1.20	1.07 -	1.34

Asian ethnic group compared with the White ethnic group

Rates for females under 65 years were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that females of all ages in the Asian ethnic group had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups. Results were inconclusive for females aged 65 years and over.

Black ethnic group compared with the White ethnic group

There is some evidence that females under 65 years in the Black ethnic group had higher rates but this was not statistically significant under the assumption that all cases with unknown ethnicity were from the White ethnic group. Results were inconclusive for females aged 65 years and over and of all ages from the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	<65 years			≥65 years			All ages		
	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White									
As known	6.6	6.4 -	6.7	51.1	50.2 -	52.0	11.5	11.3 -	11.6
All White	6.7	6.6 -	6.9	51.4	50.5 -	52.3	11.6	11.5 -	11.8
Non-White relative increase	6.5	6.4 -	6.7	50.9	50.0 -	51.8	11.4	11.2 -	11.6
Asian									
As known	5.1	4.5 -	5.8	47.8	40.5 -	55.1	9.8	8.9 -	10.8
All White	4.1	3.5 -	4.7	38.1	31.6 -	44.6	7.9	7.0 -	8.7
Non-White relative increase	5.6	4.9 -	6.4	52.7	45.0 -	60.3	10.8	9.8 -	11.8
Black									
As known	8.6	7.5 -	9.7	43.8	35.1 -	52.5	12.4	11.1 -	13.8
All White	6.8	5.9 -	7.8	34.8	27.1 -	42.5	9.9	8.7 -	11.1
Non-White relative increase	9.4	8.3 -	10.6	48.3	39.1 -	57.4	13.7	12.3 -	15.1
England - all ethnic groups	6.6	6.5 -	6.8	51.1	50.2 -	52.0	11.5	11.4 -	11.7

Age-standardised rates for the White ethnic group ranged from 11.2 to 11.8 per 100,000 for all ages. Rates for the Asian ethnic group ranged from 7.0 to 11.8 per 100,000 for all ages. Rates for the Black ethnic group ranged from 8.7 to 15.1 per 100,000 for all ages.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.
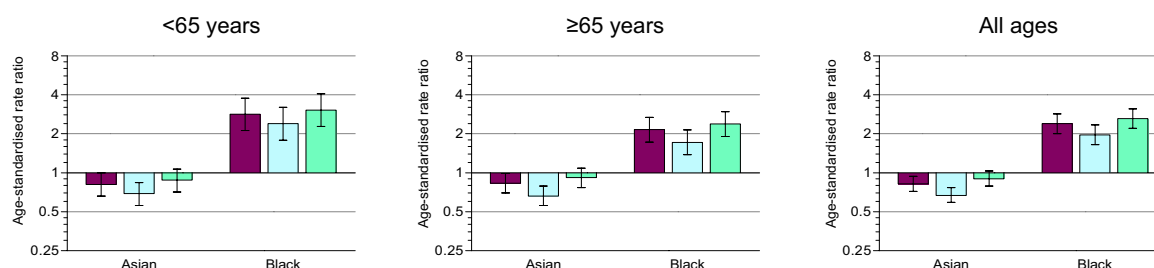
C88-C90: Myeloma | Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	2,222	67	104	5	12	32	400	2,842	14%
≥65 years	5,101	87	135	3	14	45	1,280	6,665	19%
All Ages	7,323	154	239	8	26	77	1,680	9,507	18%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns ■ As known □ All White ■ Non-White relative increase

	<65 years			≥65 years			All ages		
Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian									
As known	0.81	0.66 -	1.00	0.83	0.70 -	0.99	0.82	0.72 -	0.94
All White	0.69	0.56 -	0.84	0.66	0.56 -	0.79	0.67	0.59 -	0.77
Non-White relative increase	0.88	0.71 -	1.07	0.92	0.77 -	1.09	0.90	0.79 -	1.03
Black									
As known	2.83	2.12 -	3.77	2.16	1.73 -	2.69	2.40	2.01 -	2.86
All White	2.40	1.79 -	3.20	1.72	1.38 -	2.14	1.96	1.65 -	2.34
Non-White relative increase	3.05	2.29 -	4.07	2.38	1.91 -	2.97	2.62	2.20 -	3.12

Asian ethnic group compared with the White ethnic group

There is some evidence that rates for males aged 65 years and over and of all ages were lower in the Asian ethnic group but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups. Results were inconclusive for males under 65 years in the Asian ethnic group.

Black ethnic group compared with the White ethnic group

Rates for males under 65 years, 65 years and over and of all ages were higher in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

	<65 years			≥65 years			All ages		
Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White									
As known	2.5	2.4 -	2.6	36.8	35.9 -	37.8	6.3	6.2 -	6.4
All White	2.5	2.4 -	2.6	37.2	36.3 -	38.1	6.4	6.2 -	6.5
Non-White relative increase	2.5	2.4 -	2.6	36.7	35.7 -	37.6	6.3	6.1 -	6.4
Asian									
As known	2.0	1.6 -	2.5	30.6	24.8 -	36.5	5.2	4.4 -	5.9
All White	1.8	1.3 -	2.2	24.7	19.5 -	29.9	4.3	3.6 -	5.0
Non-White relative increase	2.2	1.7 -	2.7	33.6	27.5 -	39.7	5.6	4.9 -	6.4
Black									
As known	7.1	5.8 -	8.4	79.6	67.4 -	91.7	15.1	13.3 -	16.8
All White	6.1	4.9 -	7.3	64.1	53.3 -	74.9	12.5	10.9 -	14.1
Non-White relative increase	7.6	6.3 -	8.9	87.3	74.6 -	100.1	16.4	14.6 -	18.2
England - all ethnic groups	2.6	2.5 -	2.7	37.4	36.5 -	38.3	6.4	6.3 -	6.6

Age-standardised rates for the White ethnic group ranged from 6.1 to 6.5 per 100,000 for all ages. Rates for the Asian ethnic group ranged from 3.6 to 6.4 per 100,000. Rates for the Black ethnic group were significantly higher than the White ethnic group for all ages, ranging from 10.9 to 18.2 per 100,000.
These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

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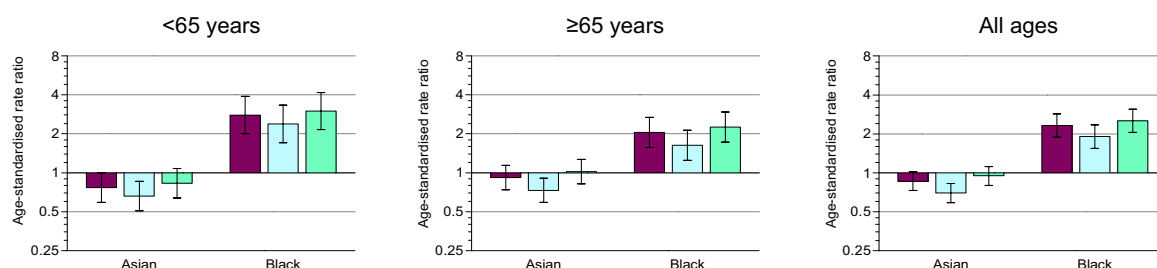
C88-C90: Myeloma	Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	1,524	38	78	4	10	25	255	1,934	13%
≥65 years	4,455	60	86	3	9	29	1,274	5,916	22%
All Ages	5,979	98	164	7	19	54	1,529	7,850	19%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

Distribution of unknowns ■ As known ■ All White ■ Non-White relative increase

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.77	0.59 -	1.00	0.92	0.74 -	1.14	0.86	0.73 -	1.02
	All White	0.66	0.51 -	0.86	0.73	0.59 -	0.91	0.70	0.59 -	0.83
	Non-White relative increase	0.83	0.64 -	1.08	1.02	0.82 -	1.27	0.95	0.80 -	1.12
Black	As known	2.79	2.00 -	3.89	2.05	1.57 -	2.68	2.32	1.89 -	2.86
	All White	2.39	1.71 -	3.34	1.63	1.25 -	2.13	1.91	1.55 -	2.35
	Non-White relative increase	3.00	2.15 -	4.17	2.26	1.73 -	2.95	2.53	2.06 -	3.11

Asian ethnic group compared with the White ethnic group

Results were inconclusive for under 65 years, 65 years and over and of all ages for females in the Asian ethnic group.

Black ethnic group compared with the White ethnic group

Rates for females under 65 years, 65 years and over and of all ages were higher in the Black ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	1.7	1.6 -	1.7	23.1	22.5 -	23.7	4.0	3.9 -	4.1
	All White	1.7	1.6 -	1.8	23.3	22.7 -	23.9	4.1	4.0 -	4.2
	Non-White relative increase	1.7	1.6 -	1.7	23.0	22.4 -	23.6	4.0	3.9 -	4.1
Asian	As known	1.3	0.9 -	1.7	21.3	16.4 -	26.1	3.5	2.9 -	4.1
	All White	1.1	0.8 -	1.5	17.0	12.7 -	21.3	2.9	2.3 -	3.4
	Non-White relative increase	1.4	1.0 -	1.8	23.4	18.3 -	28.4	3.8	3.1 -	4.4
Black	As known	4.6	3.7 -	5.6	47.4	38.4 -	56.4	9.3	8.0 -	10.7
	All White	4.0	3.1 -	4.9	38.1	30.1 -	46.2	7.8	6.6 -	9.0
	Non-White relative increase	4.9	4.0 -	5.9	52.1	42.6 -	61.5	10.1	8.8 -	11.5
England - all ethnic groups		1.7	1.6 -	1.8	23.5	22.9 -	24.1	4.1	4.0 -	4.2

Age-standardised rates for the White ethnic group ranged from 3.9 to 4.2 per 100,000 for all ages. Rates for the Asian ethnic group ranged from 2.3 to 4.4 per 100,000. Rates for the Black ethnic group were significantly higher than the White ethnic group for all ages, ranging from 6.6 to 11.5 per 100,000.

These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.
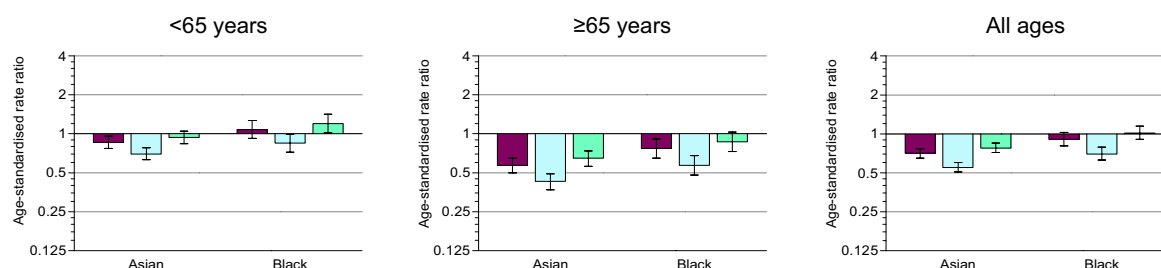
C91-C95: Leukaemia	Male

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	4,997	247	134	22	57	91	1,422	6,970	20%
≥65 years	7,860	94	78	7	13	55	2,651	10,758	25%
All Ages	12,857	341	212	29	70	146	4,073	17,728	23%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.86	0.77 -	0.96	0.57	0.50 -	0.65	0.71	0.65 -	0.77
	All White	0.70	0.63 -	0.78	0.43	0.37 -	0.49	0.55	0.51 -	0.60
	Non-White relative increase	0.94	0.84 -	1.05	0.65	0.56 -	0.74	0.78	0.72 -	0.85
Black	As known	1.08	0.92 -	1.27	0.77	0.65 -	0.91	0.91	0.81 -	1.03
	All White	0.85	0.72 -	0.99	0.57	0.48 -	0.68	0.70	0.63 -	0.79
	Non-White relative increase	1.20	1.02 -	1.42	0.87	0.73 -	1.03	1.02	0.91 -	1.15

Asian ethnic group compared with the White ethnic group

Rates for males aged 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. There is some evidence that males under 65 years in the Asian ethnic group had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups.

Black ethnic group compared with the White ethnic group

There is some evidence that males aged 65 years and over in the Black ethnic group had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups. Results were inconclusive for males under 65 years and of all ages in the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	6.5	6.4 -	6.7	61.0	59.8 -	62.2	12.5	12.3 -	12.7
	All White	6.6	6.5 -	6.8	61.5	60.3 -	62.7	12.7	12.5 -	12.9
	Non-White relative increase	6.5	6.3 -	6.6	60.8	59.6 -	61.9	12.4	12.3 -	12.6
Asian	As known	5.6	5.0 -	6.3	34.9	28.8 -	41.0	8.8	8.0 -	9.7
	All White	4.6	4.1 -	5.2	26.2	20.9 -	31.6	7.0	6.3 -	7.8
	Non-White relative increase	6.1	5.4 -	6.8	39.2	32.7 -	45.7	9.7	8.8 -	10.6
Black	As known	7.1	6.0 -	8.1	46.8	37.8 -	55.9	11.4	10.1 -	12.8
	All White	5.6	4.7 -	6.6	35.3	27.5 -	43.1	8.9	7.7 -	10.1
	Non-White relative increase	7.8	6.6 -	8.9	52.6	43.0 -	62.2	12.7	11.2 -	14.2
	England - all ethnic groups	6.6	6.4 -	6.7	60.6	59.4 -	61.7	12.5	12.3 -	12.7

Age-standardised rates for the White ethnic group ranged from 12.3 to 12.9 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 6.3 to 10.6 per 100,000. Rates for the Black ethnic group ranged from 7.7 to 14.2 per 100,000 for all ages.
These ranges are not confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

Cancer incidence by major ethnic group, England, 2002-2006
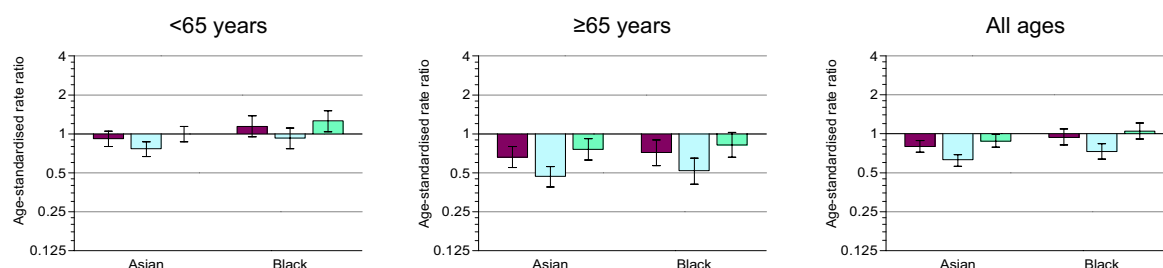
C91-C95: Leukaemia	Female

These results have been produced using cancer registration data linked together with Hospital Episode Statistics (HES) to derive ethnicity information about patients with cancer. Due to incomplete linkage of patients between datasets, and the limited availability and accuracy of ethnicity within HES in the time period considered, **it is essential to read pages 9 to 15 of this report to understand the assumptions used in deriving these results and before making any interpretation of them.**

Number of cases by major ethnic group

Age Group	White	Asian	Black	Chinese	Mixed	Other	Unknown	Total cases	Percent unknown
<65 years	3,441	180	110	18	30	54	851	4,684	18%
≥65 years	5,845	51	39	2	10	40	2,419	8,406	29%
All Ages	9,286	231	149	20	40	94	3,270	13,090	25%

Rate ratios (with 95% confidence intervals) by major ethnic group (White ethnic group = 1)

Results have only been presented for White, Asian and Black ethnic groups due to the small number of patients for the Chinese and Mixed ethnic groups. Due to the large number of patients with unknown ethnicity, three different methods of assigning an ethnic group to these patients have been used to give an estimate of the possible variation in age-standardised rates and rate ratios. A full explanation of the methodology is available on page 12. Rate ratios have been calculated to compare differences in age-standardised rates between non-White ethnic groups and the White ethnic group. If the rates are equal then the rate ratio equals 1. All graphs showing rate ratios have been plotted on a logarithmic scale so that equal distances on the graph represent an equal difference in order of magnitude in the rate ratios.

		<65 years			≥65 years			All ages		
	Distribution of unknowns	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper	Rate ratio	95% Confidence Interval Lower	Upper
Asian	As known	0.92	0.80 -	1.05	0.66	0.55 -	0.80	0.80	0.72 -	0.89
	All White	0.77	0.67 -	0.87	0.47	0.39 -	0.56	0.63	0.56 -	0.69
	Non-White relative increase	1.00	0.87 -	1.14	0.76	0.63 -	0.92	0.88	0.79 -	0.99
Black	As known	1.14	0.95 -	1.38	0.72	0.57 -	0.90	0.94	0.82 -	1.09
	All White	0.93	0.77 -	1.11	0.52	0.41 -	0.65	0.73	0.64 -	0.84
	Non-White relative increase	1.26	1.04 -	1.51	0.82	0.66 -	1.03	1.05	0.91 -	1.21

Asian ethnic group compared with the White ethnic group

Rates for females aged 65 years and over and of all ages were lower in the Asian ethnic group with statistically significant results for all three assumptions regarding the distribution of cases with unknown ethnicity. Results were inconclusive for under 65 years.

Black ethnic group compared with the White ethnic group

There is some evidence that females aged 65 years and over in the Black ethnic group had lower rates but this was not statistically significant under the assumption that cases with unknown ethnicity were relatively increased in non-White ethnic groups. Results were inconclusive for females under 65 years and of all ages in the Black ethnic group.

Estimated European age-standardised rates (with 95% confidence intervals) by major ethnic group

		<65 years			≥65 years			All ages		
	Distribution of unknowns	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper	ASR	95% Confidence Interval Lower	Upper
White	As known	4.4	4.3 -	4.6	32.3	31.6 -	33.0	7.5	7.4 -	7.6
	All White	4.5	4.4 -	4.6	32.6	31.9 -	33.3	7.6	7.5 -	7.7
	Non-White relative increase	4.4	4.3 -	4.5	32.2	31.5 -	32.9	7.5	7.3 -	7.6
Asian	As known	4.1	3.5 -	4.6	21.4	16.4 -	26.3	6.0	5.3 -	6.7
	All White	3.5	2.9 -	4.0	15.3	11.1 -	19.4	4.7	4.1 -	5.4
	Non-White relative increase	4.4	3.8 -	5.0	24.4	19.1 -	29.7	6.6	5.9 -	7.3
Black	As known	5.1	4.2 -	5.9	23.3	17.0 -	29.5	7.1	6.1 -	8.1
	All White	4.2	3.4 -	4.9	16.8	11.5 -	22.1	5.6	4.7 -	6.5
	Non-White relative increase	5.5	4.6 -	6.4	26.5	19.9 -	33.1	7.8	6.8 -	8.9
	England - all ethnic groups	4.4	4.3 -	4.6	32.2	31.5 -	32.9	7.5	7.4 -	7.6

Age-standardised rates for the White ethnic group ranged from 7.3 to 7.7 per 100,000 for all ages. Rates for the Asian ethnic group were significantly lower than the White ethnic group for all ages, ranging from 4.1 to 7.3 per 100,000. Rates for the Black ethnic group ranged from 4.7 to 8.9 per 100,000 for all ages.
These ranges are <u>not</u> confidence intervals but reflect a combination of both statistical uncertainty and uncertainty concerning the distribution of cases with unknown ethnicity.

NCIN core objectives

Using information to improve quality and choice for cancer patients

- Promoting efficient and effective data collection throughout the cancer journey

- Providing a common national repository for cancer datasets

- Producing expert analyses, based on robust methodologies, to monitor patterns of cancer care

- Exploiting information to drive improvements in standards of cancer care and clinical outcomes

- Enabling use of cancer information to support audit and research programmes

Terminology

Ethnic groups

This report uses the classification of ethnicity as used in the 2001 Census in the UK. Analyses have been presented for major ethnic groups. The reference to "White", "Asian", "Black", "Mixed" and "Other" refer to self-selected ethnic groups defined as follows[1]:

"White": The term used to group all persons who describe their ethnicity as British, Irish or from other European ancestral origins who identify themselves as White.

"Asian": This term covers all persons who identify themselves as having Asian or Asian British ethnicity. These persons have Asian ancestry and identify their ethnicity as Indian, Pakistani, Bangladeshi or other Asian ethnicities.

"Black": This term used in this report describes persons who identify themselves as Black British, African, Caribbean or other ethnicities with African ancestral origins.

"Chinese": This term covers persons with ancestral origins in China, who identify themselves as Chinese.

"Mixed": The term includes persons who identify themselves as belonging to an ethnic group that has a mix of ancestral origins. This includes people who identify as White and Black African, White and Black Caribbean, White and Asian or any other mix of ethnic groups.

"Other": This covers all persons who identify themselves as having any other ethnicity that is not one of the above definitions.

All of these terms are capitalised throughout this report to highlight their specific use.

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[1] Bhopal, R. Glossary of terms relating to ethnicity and race: for reflection and debate, J Epidemiol Community Health 2004; 58: 441-445, from which these definitions have been adapted.

Glossary

Age-Standardised Rate (ASR)

Age-standardised rates eliminate the variation in the age structures of populations and as such enable comparisons between different areas, over time and between different groups.

For cancer incidence, crude rates within each 5-year age group were calculated by dividing the number of cases by the population at risk. ASRs were obtained by using a weighted average of these age specific rates. The European Standard Population was used to derive the weights for direct age standardisation.

Relative survival was age-standardised using the direct approach with weights derived from the EUROCARE-2 study[2].

Standardised Rate Ratio (RR)

Rate ratios were used to compare rates from one group to another. They were calculated using the rate for each group compared with the rate for the comparison group. For cancer incidence, the ASR for each non-White ethnic group was compared with the ASR for the White ethnic group. An ethnic group with a RR of 0.5 has an ASR that is half the rate of the White ethnic group. Conversely, an ethnic group with a RR of 2 has an ASR that is double the rate of the White ethnic group.

95% Confidence Interval

For the age-standardised rates, standardised rate ratios and relative survival, 95% confidence intervals are given. These are a measure of variability in the estimated rates and ratios. The upper and lower limits of the confidence interval show how big a contribution chance may have made to a particular statistic. The 95% confidence intervals quoted give the range in which the rate in question would fall 19 times out of 20, were it possible to repeat the analyses.

Confidence intervals for ASRs and relative survival have been calculated using the direct method, whilst confidence intervals for rate ratios have been calculated using an approximation[3].

Relative Survival

Relative survival is the ratio of the observed probability of survival and the probability that would have been expected had the cancer patients experienced the normal (background) mortality of the population in which they live, given the same distribution of factors such as age, sex, geographic area, calendar period and deprivation.

Approaches to estimating survival

The cohort approach used for estimating one-year survival meant that all patients included in the analyses had a potential follow-up of at least one year.

The complete approach used for estimating three-year survival meant that some patients included in the analyses were followed up for less than three years.

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[2] Corazziari I, Quinn M and Capocaccia R. Standard cancer patient population for age standardizing survival ratios, Eur J Cancer **40** (2004), pp. 2307–2316

[3] Boyle P, Parkin DM. (1991) Statistical methods for registries. Chapter 11, Cancer Registration: Principles and Methods, Jensen OM, Parkin DM, MacLennan R, Muir CS, Skeet RG (eds), pp 126-158. International Agency for Research on Cancer: Lyon. IARC Scientific publications No. 95.
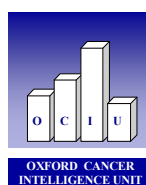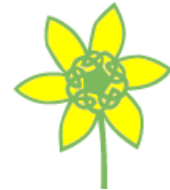
NCIN Collaborators

NWCIS
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Office for National Statistics

West Midlands
Cancer Intelligence Unit

breakthrough
breast cancer

KING'S
College
LONDON

MRC | Medical Research Council

SOUTH WEST PUBLIC HEALTH OBSERVATORY

NHS
Cancer Screening Programmes

NHS
The Information Centre
for health and social care

CANCER RESEARCH UK

NHS
Connecting for Health

ecric
Fighting cancer with information

Research Capability Programme

NHS
National Services Scotland

NATCANSAT
The National Cancer Services Analysis Team

N. IRELAND
Cancer Registry

Trent NHS
Cancer Registry

NHS
National Cancer Action Team

WE ARE MACMILLAN.
CANCER SUPPORT

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London School of Hygiene & Tropical Medicine

DH Department of Health

NCRI
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NHS
Northern and Yorkshire
Cancer Registry and Information Service

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POI

NCRI

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Cancer
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Cancer Intelligence Unit

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Cancer Registry and Information Service

Trent NHS
Cancer Registry

O C I U
OXFORD CANCER
INTELLIGENCE UNIT

NWCIS
North West Cancer Intelligence Service

Office for
National Statistics

Previous NCIN data publications

Cancer Incidence and Mortality by Cancer Network, UK, 2005

One Year Cancer Survival Trends, England, 1985 - 2004
One Year Cancer Survival by Cancer Network, England, 2000 - 2004

Cancer Incidence by Deprivation, England, 1995 - 2004

One Year and Five Year Cancer Prevalence
By Cancer Network, England, 2004