



Office for Health
Improvement
& Disparities

Atlas of health variation in head and neck cancer in England

Incidence of head and neck cancer

Published 22 October 2024

2. Incidence of head and neck cancer

The introduction provides a background to variation in head and neck cancer incidence in England. This section demonstrates variation in the incidence rates of head and neck cancer by ICB geography, age (0 to 69 years and 70 years and over), sex and lower super output area (LSOAs) deprivation quintiles in England.

A decrease in the incidence of head and neck, oropharyngeal, oral cavity and laryngeal cancers was observed in 2020. Incidence data from 2020 is an outlier due to the disruption to healthcare services during the COVID-19 pandemic. There was reduced access to primary medical and dental services during the pandemic and a reduction in cancer referrals, which may have resulted in this temporary decrease in new cases of head and neck cancers being recorded.¹⁹ Data for 2021 suggests the upward trend in head and neck cancer incidence has continued.³

2.1: Variation in incidence of head and neck cancer in England

Box plot time series 2.1: Trend in variation in incidence rate of head and neck cancer across ICBs (2013 to 2020)

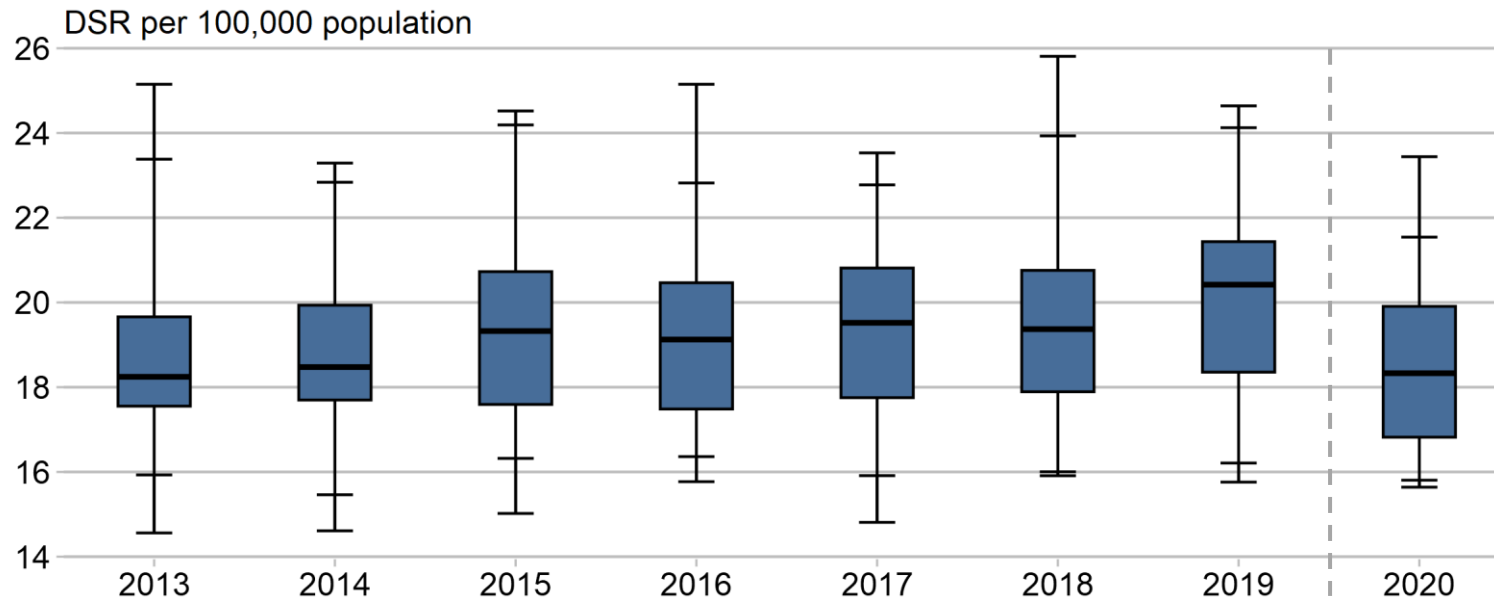


Table time series 2.1: Trend in variation in incidence rate of head and neck cancer across ICBs (2013 to 2020)

DSR per 100,000 population

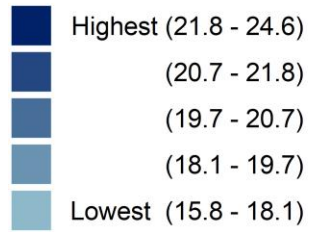
Year	2013	2014	2015	2016	2017	2018	2019	Significance 2013 to 2019	2020
Maximum to minimum	10.6	8.7	9.5	9.4	8.7	9.9	8.9	No significant change	7.8
75th to 25th percentile	2.1	2.2	3.1	3.0	3.1	2.9	3.1	No significant change	3.1
95th to 5th percentile	7.5	7.4	7.9	6.5	6.9	7.9	7.9	No significant change	5.7
Median	18.2	18.5	19.3	19.1	19.5	19.4	20.4	Increasing significant	18.3

The box plot and data table show the distribution of integrated care board (ICB) values for the period 2013 to 2020. The median increased significantly from 18.2 per 100,000 population in 2013 to 20.4 per 100,000 population in 2019. In 2020 the median incidence rate decreased to 18.3 per 100,000 population.

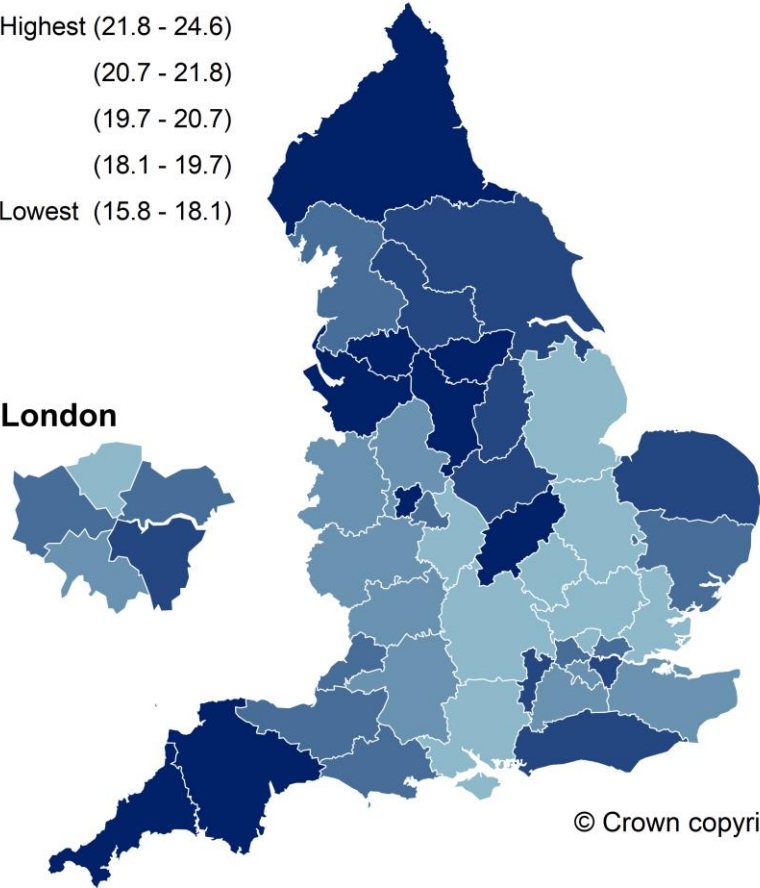
Map 2.1: Variation in incidence rate of head and neck cancer by ICB (2019)

DSR per 100,000 population (optimum value: low)

Equal-sized quintiles of geographies

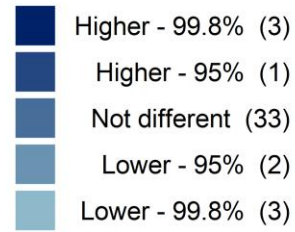


London

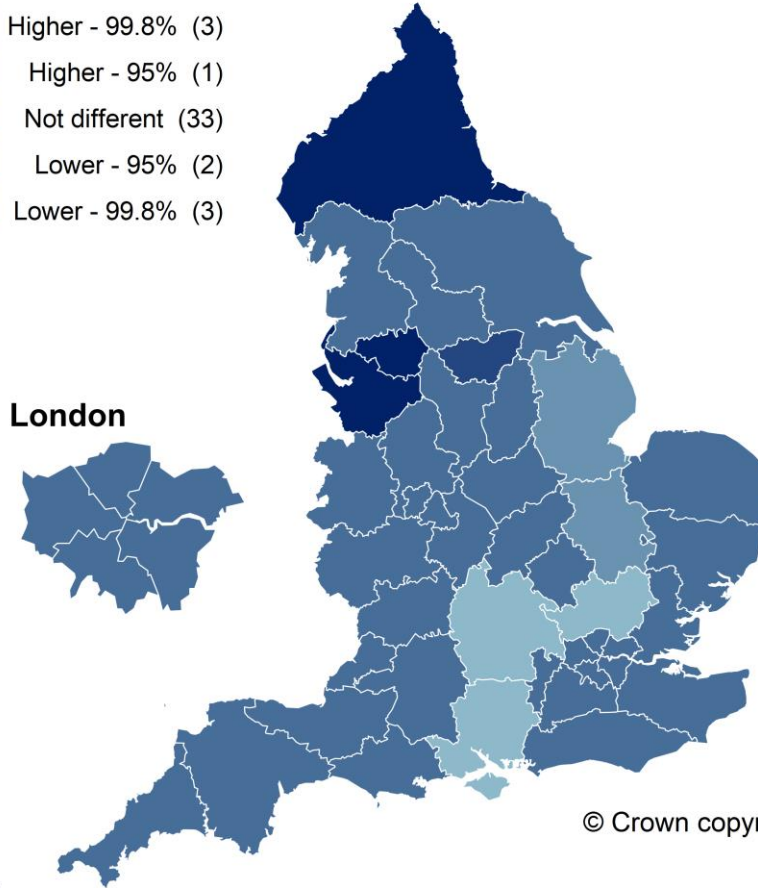


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Significance level compared with England

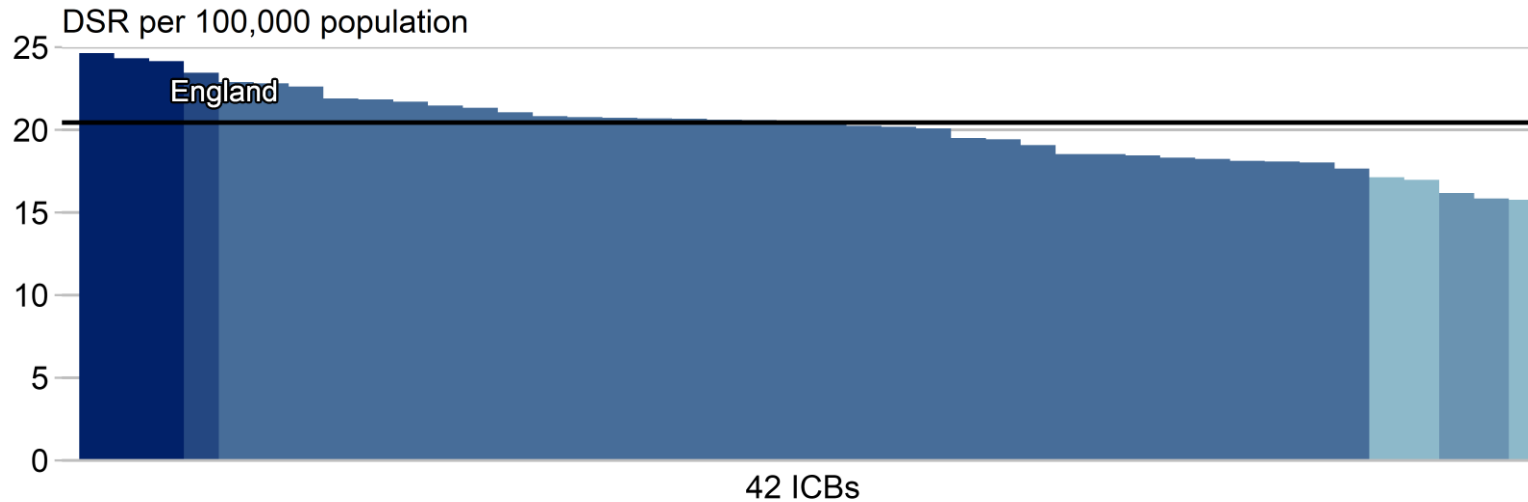


London



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Bar chart 2.1: Variation in incidence rate of head and neck cancer by ICB (2019)



The maps and column chart display the latest period (2019), during which ICB values ranged from 15.8 per 100,000 population to 24.6 per 100,000 population, which is a 1.6-fold difference between ICBs. The England value for 2019 was 20.4 per 100,000 population.

Of the 42 ICBs, 4 were statistically significantly higher than the England value (1 at the 95% confidence level and 3 at the 99.8% confidence level) and 5 were statistically significantly lower than the England value (2 at the 95% confidence level and 3 at the 99.8% confidence level).

The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.2: Variation in incidence of oral cavity cancer in England

Box plot time series 2.2: Trend in variation in incidence rate of oral cavity cancer across ICBs (2013 to 2020)

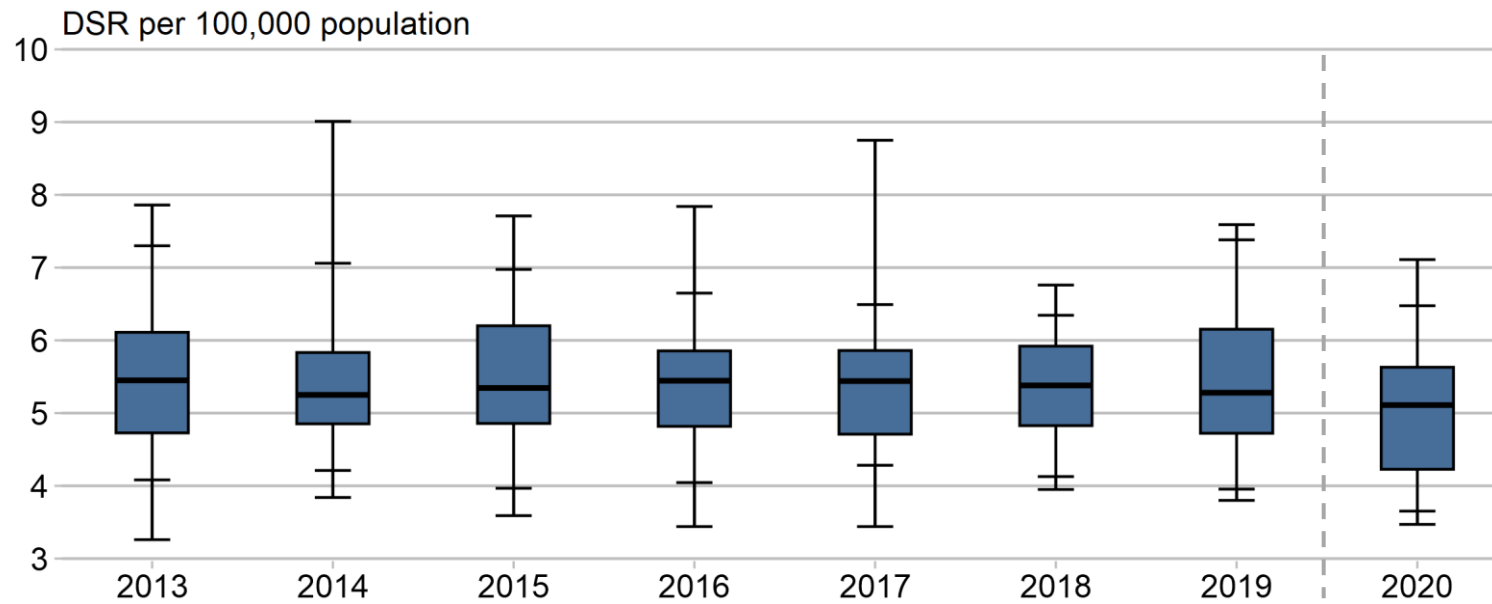


Table time series 2.2: Trend in variation in incidence rate of oral cavity cancer across ICBs (2013 to 2020)

DSR per 100,000 population

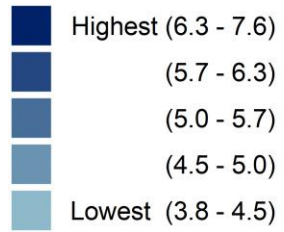
Year	2013	2014	2015	2016	2017	2018	2019	Significance 2013 to 2019	2020
Maximum to minimum	4.6	5.2	4.1	4.4	5.3	2.8	3.8	No significant change	3.6
75th to 25th percentile	1.4	1.0	1.3	1.0	1.2	1.1	1.4	No significant change	1.4
95th to 5th percentile	3.2	2.8	3.0	2.6	2.2	2.2	3.4	No significant change	2.8
Median	5.5	5.3	5.3	5.4	5.4	5.4	5.3	No significant change	5.1

The box plot and data table show the distribution of ICB values for the period 2013 to 2020.

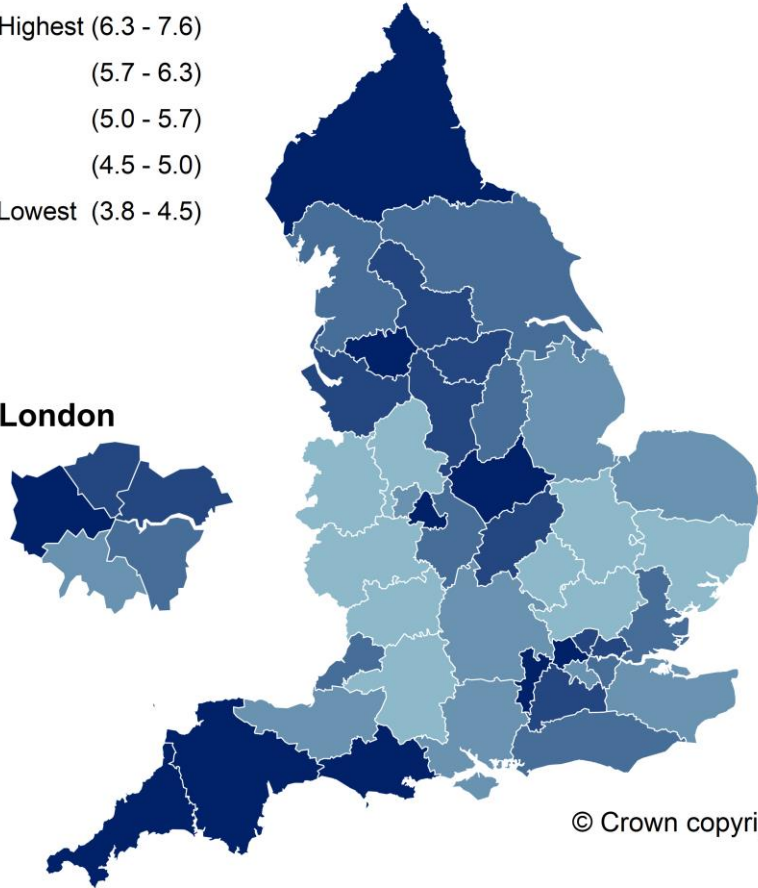
Map 2.2: Variation in incidence rate of oral cavity cancer by ICB (2019)

DSR per 100,000 population (optimum value: low)

Equal-sized quintiles of geographies

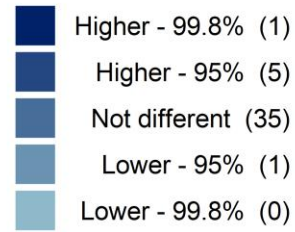


London

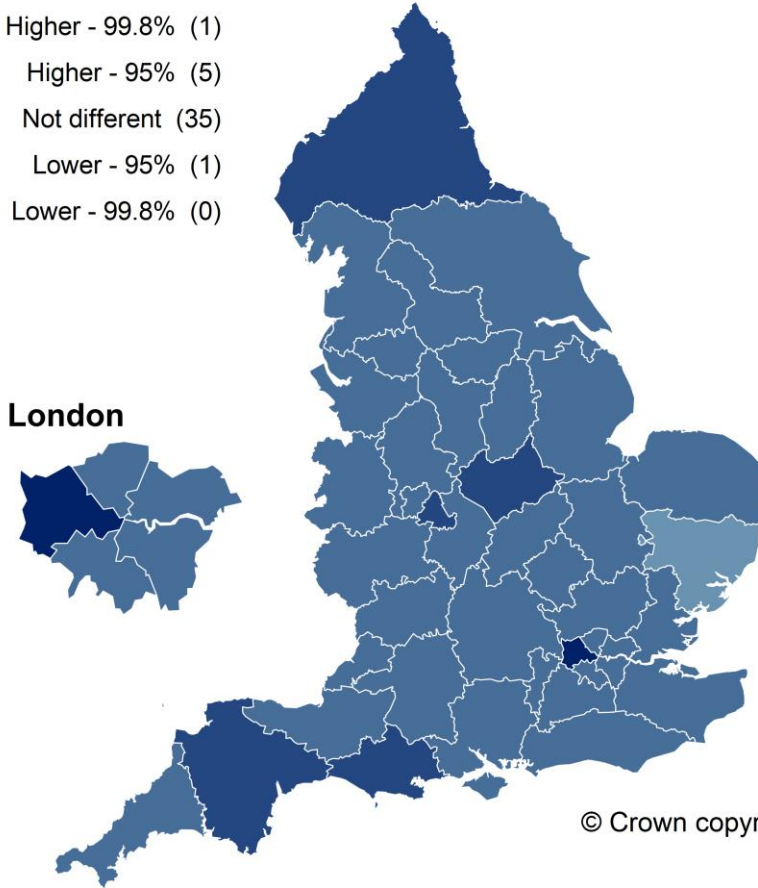


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Significance level compared with England

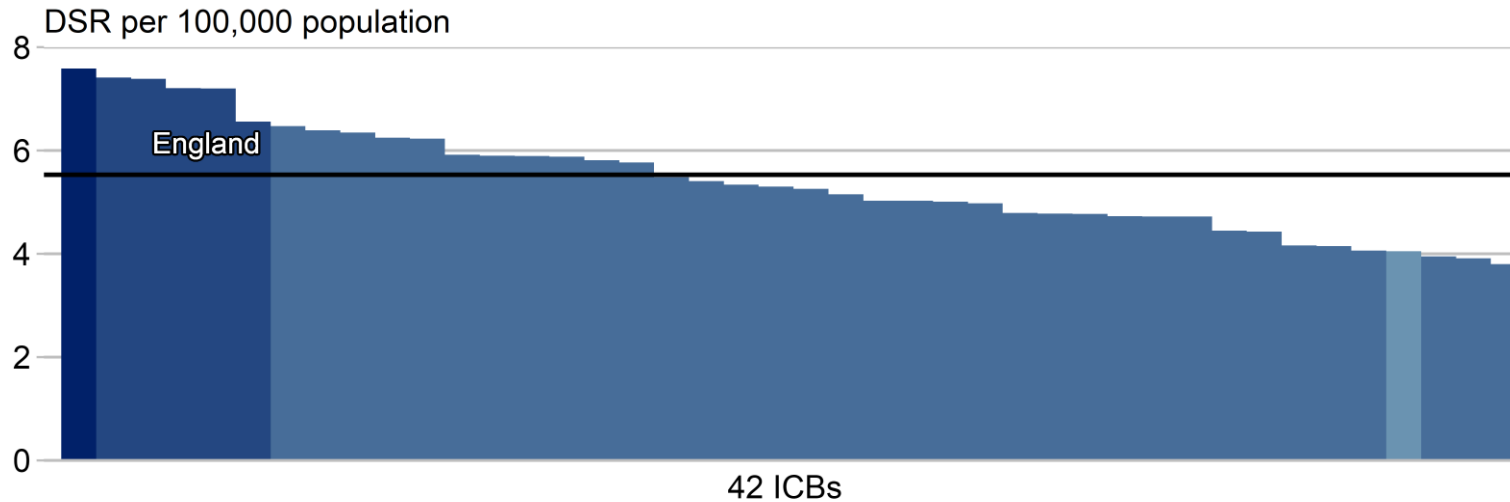


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Bar chart 2.2: Variation in incidence rate of oral cavity cancer by ICB (2019)



The maps and column chart display the latest period (2019), during which ICB values ranged from 3.8 per 100,000 population to 7.6 per 100,000 population, which is a 2.0-fold difference between ICBs. The England value for 2019 was 5.5 per 100,000 population.

Of the 42 ICBs, 6 were statistically significantly higher than the England value (5 at the 95% confidence level and 1 at the 99.8% confidence level) and 1 was statistically significantly lower than the England value (1 at the 95% confidence level and 0 at the 99.8% confidence level).

The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.3: Variation in incidence of oropharyngeal cancer in England

Box plot time series 2.3: Trend in variation in incidence rate of oropharyngeal cancer across ICBs (2013 to 2020)

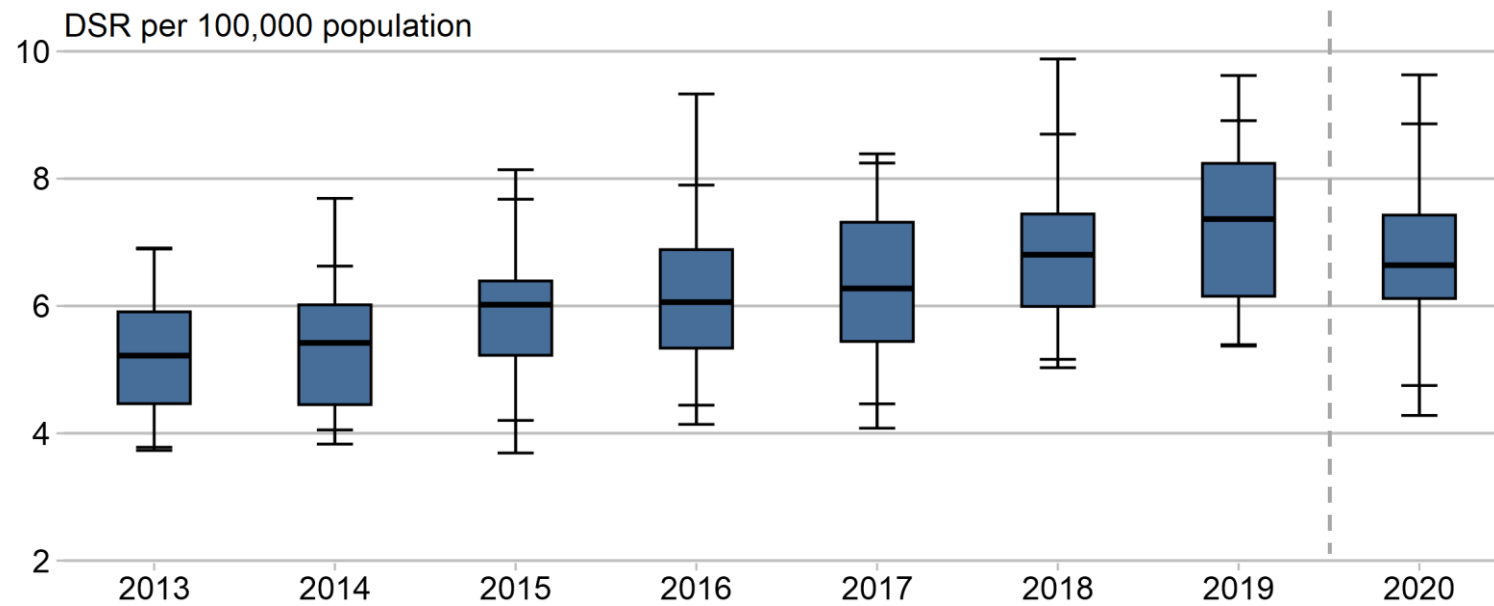


Table time series 2.3: Trend in variation in incidence rate of oropharyngeal cancer across ICBs (2013 to 2020)

DSR per 100,000 population

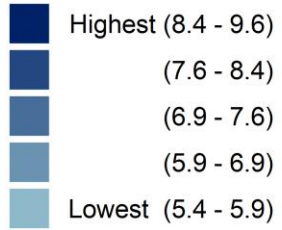
Year	2013	2014	2015	2016	2017	2018	2019	Significance 2013 to 2019	2020
Maximum to minimum	3.2	3.9	4.5	5.2	4.3	4.9	4.3	No significant change	5.4
75th to 25th percentile	1.4	1.6	1.2	1.5	1.9	1.5	2.1	No significant change	1.3
95th to 5th percentile	3.1	2.6	3.5	3.5	3.8	3.5	3.5	No significant change	4.1
Median	5.2	5.4	6.0	6.1	6.3	6.8	7.4	Increasing significant	6.6

The box plot and data table show the distribution of ICB values for the period 2013 to 2020. The median increased significantly from 5.2 per 100,000 population in 2013 to 7.4 per 100,000 population in 2019.

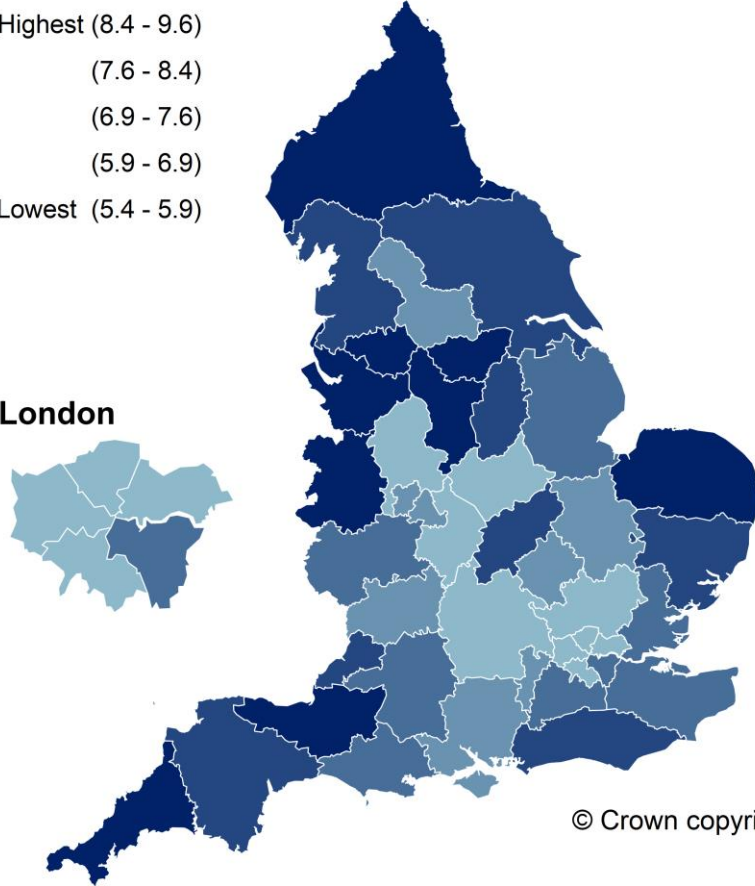
Map 2.3: Variation in incidence rate of oropharyngeal cancer by ICB (2019)

DSR per 100,000 population (optimum value: low)

Equal-sized quintiles of geographies

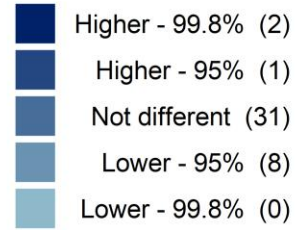


London

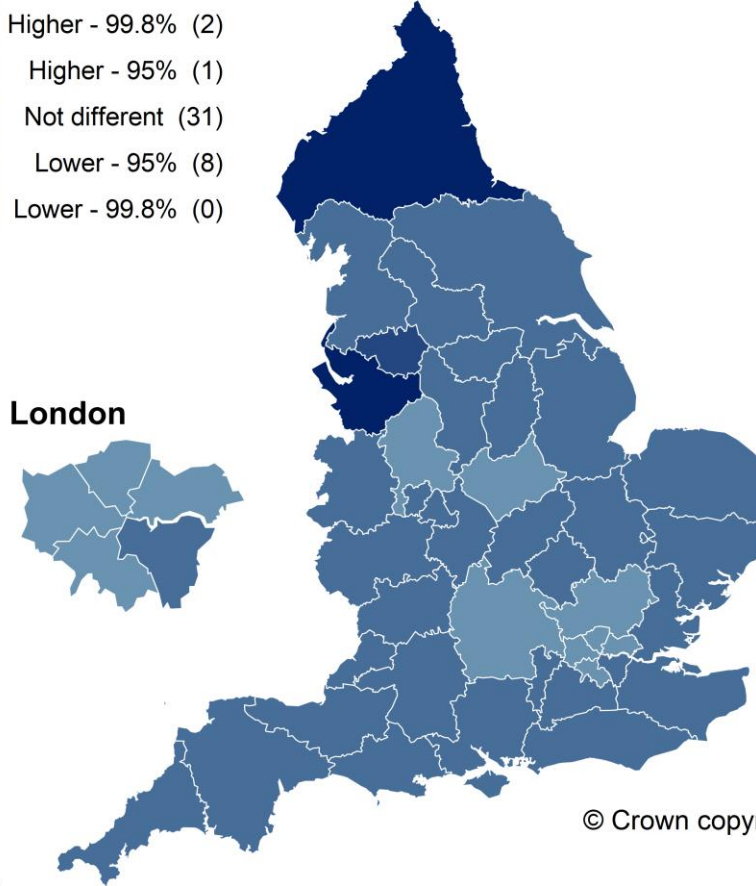


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Significance level compared with England

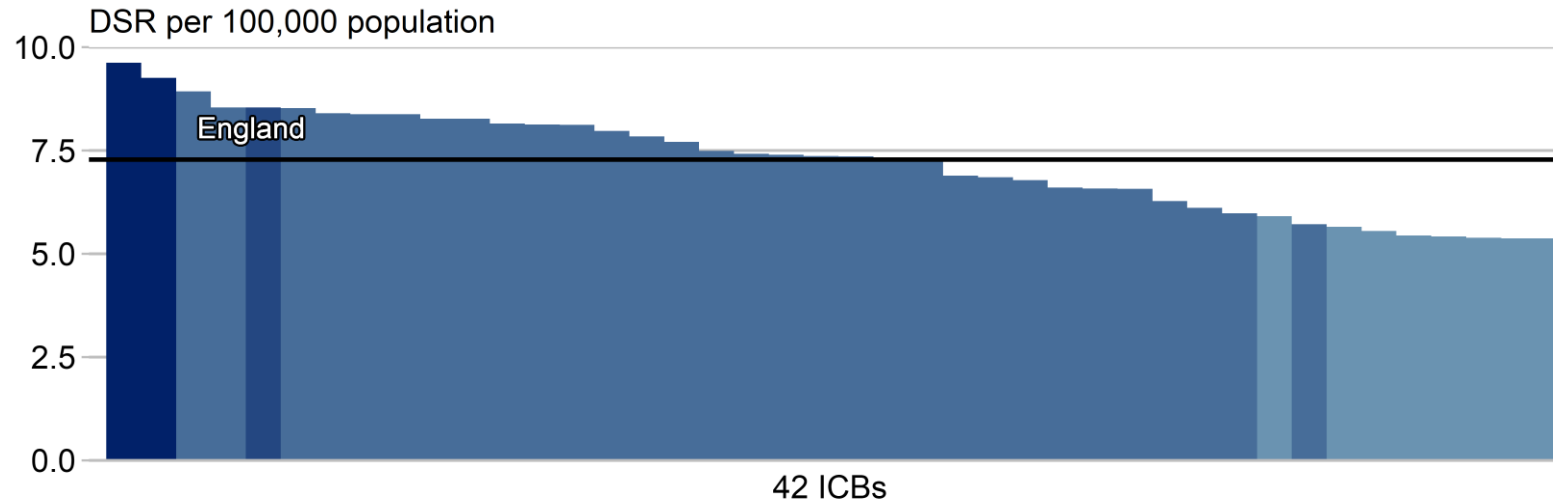


London



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Bar chart 2.3: Variation in incidence rate of oropharyngeal cancer by ICB (2019)



The maps and column chart display the latest period (2019), during which ICB values ranged from 5.4 per 100,000 population to 9.6 per 100,000 population, which is a 1.8-fold difference between ICBs. The England value for 2019 was 7.3 per 100,000 population.

Of the 42 ICBs, 3 were statistically significantly higher than the England value (1 at the 95% confidence level and 2 at the 99.8% confidence level) and 8 were statistically significantly lower than the England value (8 at the 95% confidence level and 0 at the 99.8% confidence level).

The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.4: Variation in incidence of laryngeal cancer in England

Box plot time series 2.4: Trend in variation in incidence rate of laryngeal cancer across ICBs (2013 to 2020)

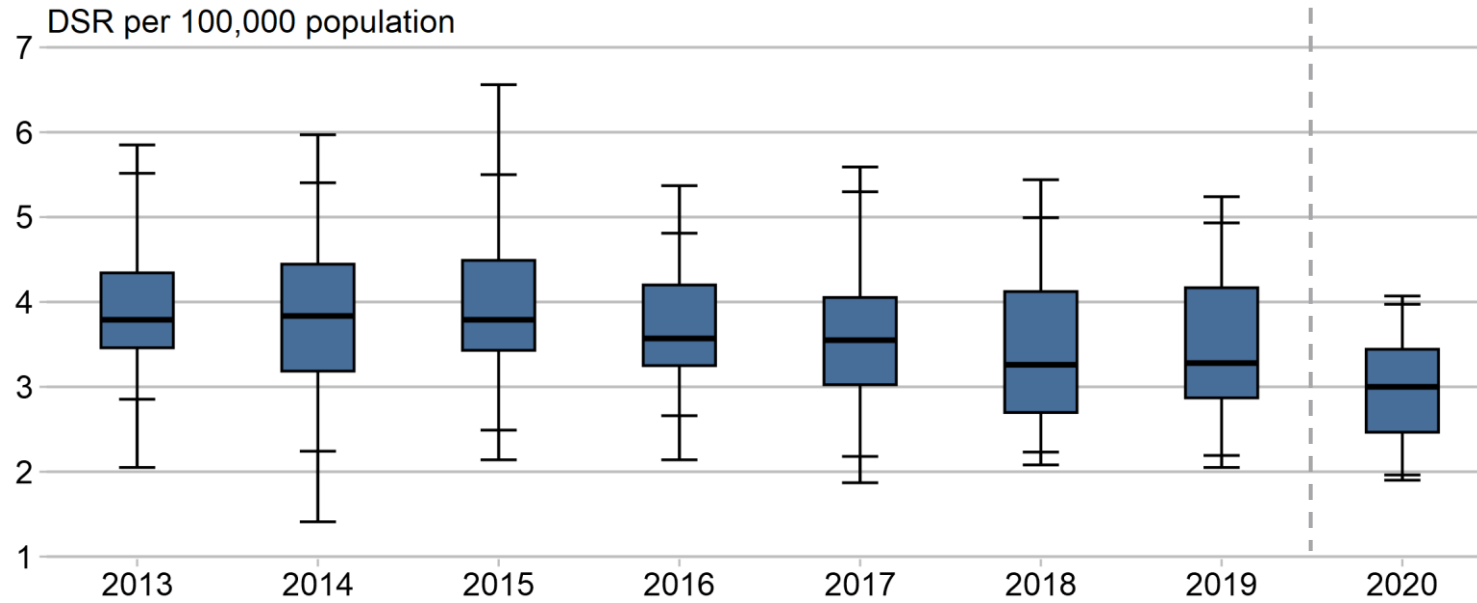


Table time series 2.4: Trend in variation in incidence rate of laryngeal cancer across ICBs in England (2013 to 2020)

DSR per 100,000 population

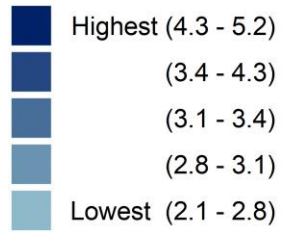
Year	2013	2014	2015	2016	2017	2018	2019	Significance 2013 to 2019	2020
Maximum to minimum	3.8	4.6	4.4	3.2	3.7	3.4	3.2	No significant change	2.2
75th to 25th percentile	0.9	1.3	1.1	1.0	1.0	1.4	1.3	No significant change	1.0
95th to 5th percentile	2.7	3.2	3.0	2.2	3.1	2.8	2.7	No significant change	2.0
Median	3.8	3.8	3.8	3.6	3.6	3.3	3.3	Decreasing significant	3.0

The box plot and data table show the distribution of ICB values for the period 2013 to 2020. The median decreased significantly from 3.8 per 100,000 population in 2013 to 3.3 per 100,000 population in 2019.

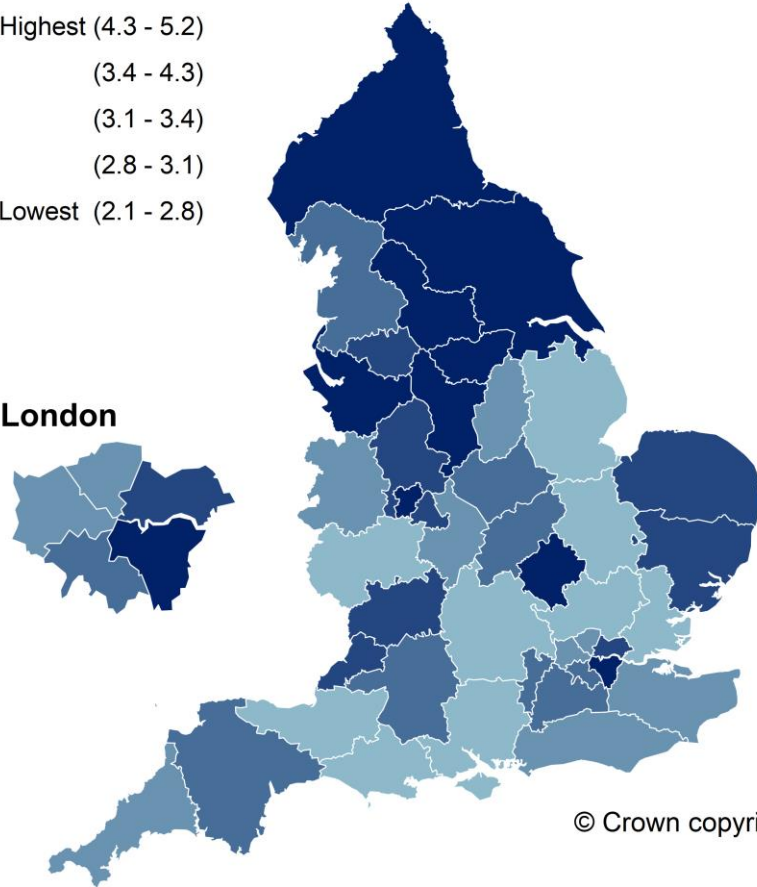
Map 2.4: Variation in incidence rate of laryngeal cancer by ICB (2019)

DSR per 100,000 population (optimum value: low)

Equal-sized quintiles of geographies

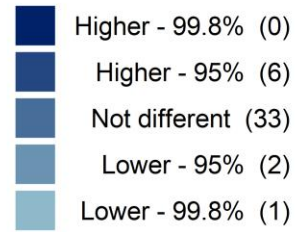


London

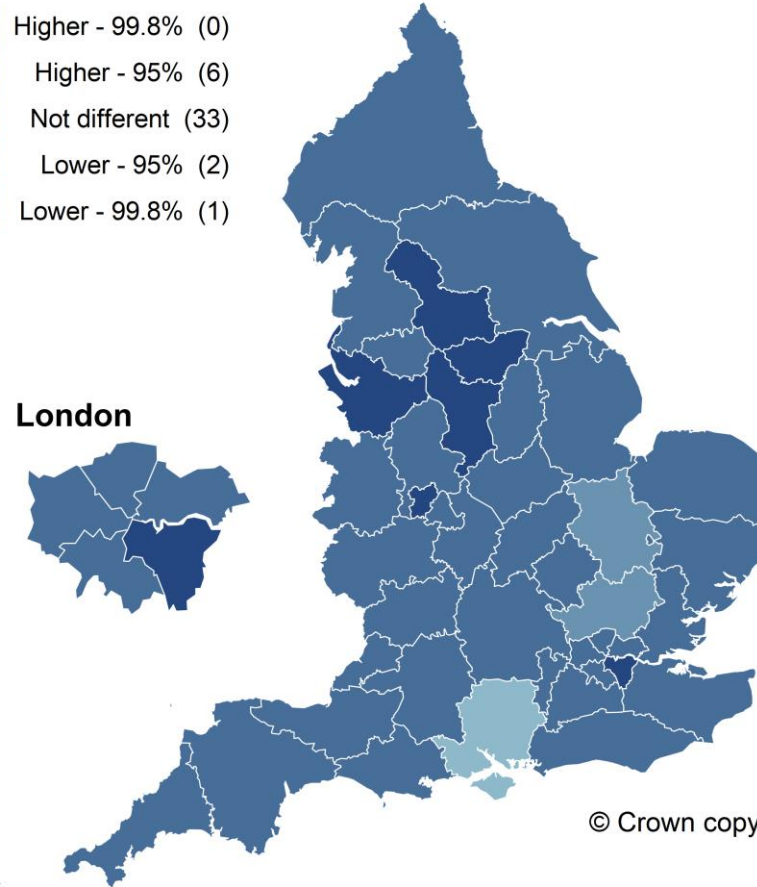


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Significance level compared with England

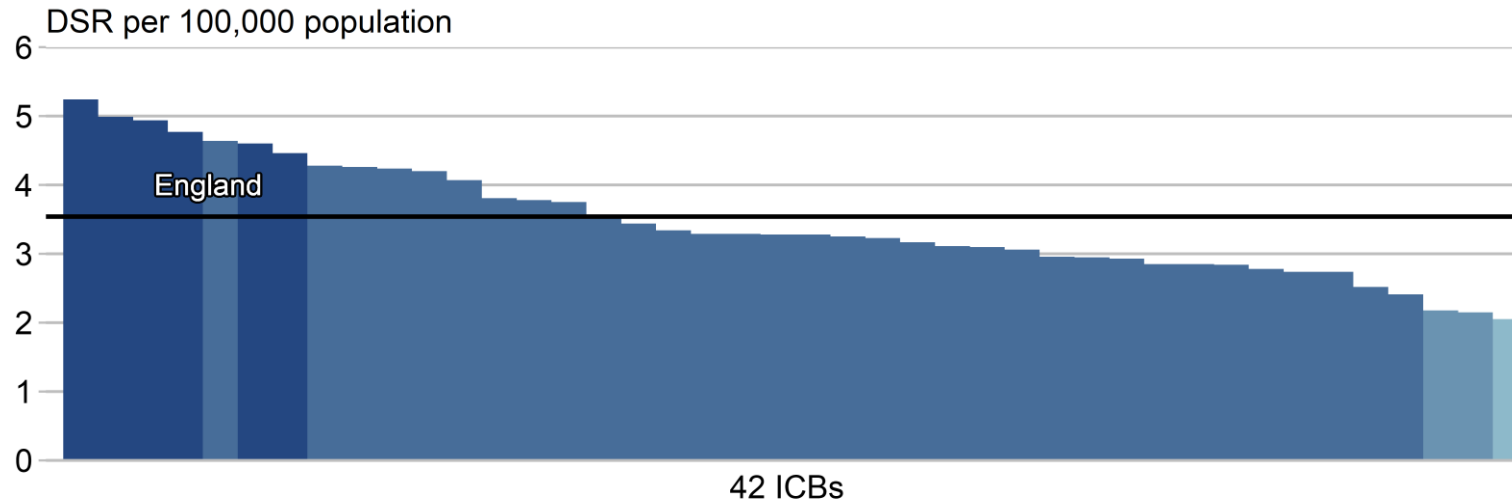


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Bar chart 2.4: Variation in incidence rate of laryngeal cancer by ICB (2019)



The maps and column chart display the latest period (2019), during which ICB values ranged from 2.1 per 100,000 population to 5.2 per 100,000 population, which is a 2.6-fold difference between ICBs. The England value for 2019 was 3.5 per 100,000 population.

Of the 42 ICBs, 6 were statistically significantly higher than the England value (6 at the 95% confidence level and 0 at the 99.8% confidence level) and 3 were statistically significantly lower than the England value (2 at the 95% confidence level and 1 at the 99.8% confidence level).

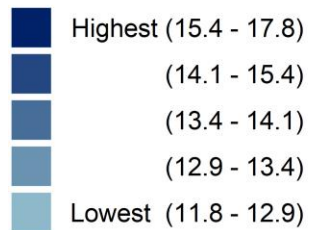
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.5: Variation in incidence of head and neck cancer in people aged 0 to 69 years

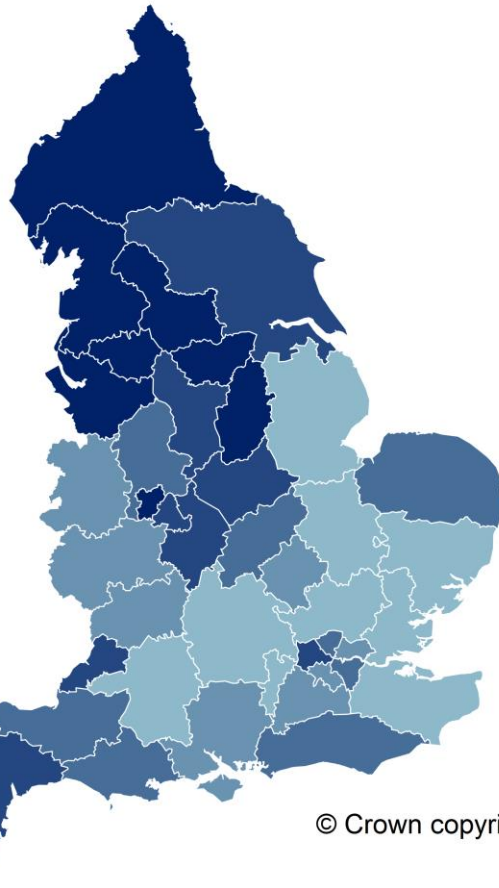
Map 2.5: Variation in incidence rate of head and neck cancer in people aged 0 to 69 years by ICB (2013 to 2020 pooled)

DSR per 100,000 population (optimum value: low)

Equal-sized quintiles of geographies

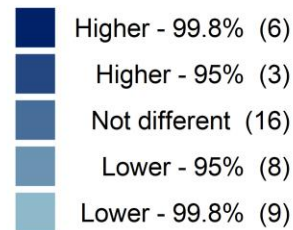


London

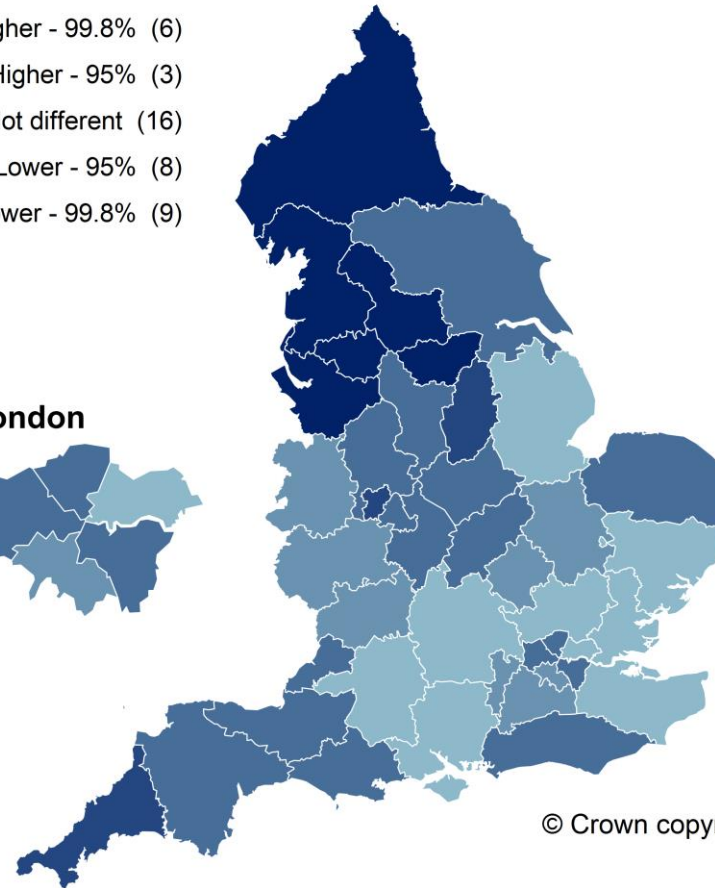


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Significance level compared with England

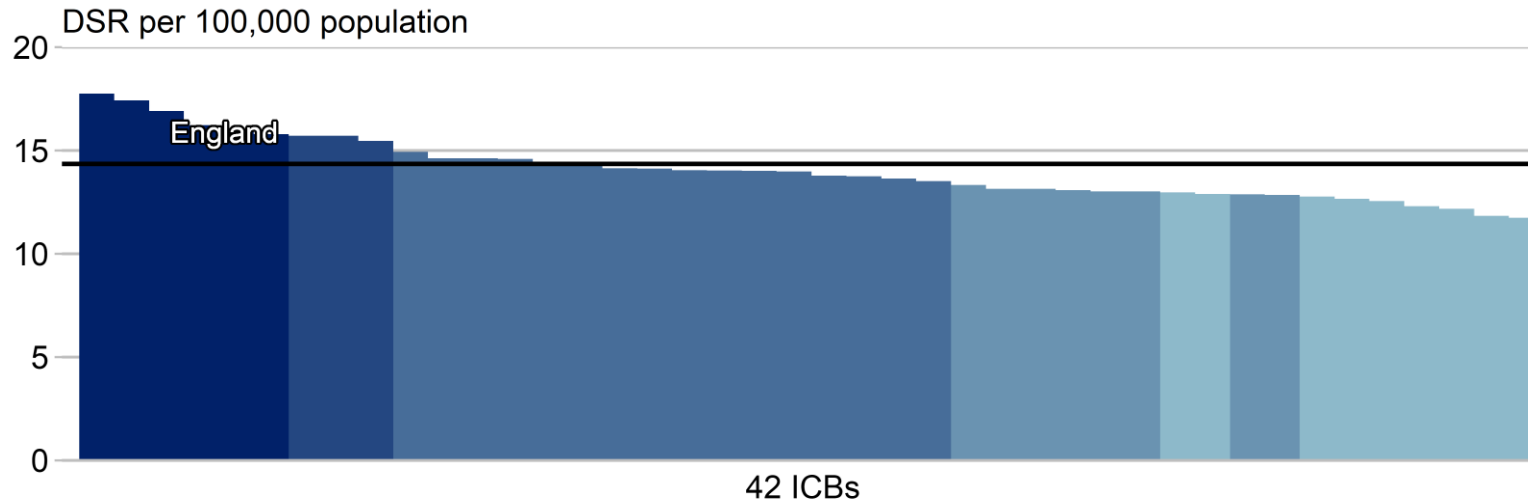


London



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Bar chart 2.5: Variation in incidence rate of head and neck cancer in people aged 0 to 69 years by ICB (2013 to 2020 pooled)



The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 11.8 per 100,000 population to 17.8 per 100,000 population, which is a 1.5-fold difference between ICBs. The England value for 2013 to 2020 pooled was 14.4 per 100,000 population.

Of the 42 ICBs, 9 were statistically significantly higher than the England value (3 at the 95% confidence level and 6 at the 99.8% confidence level) and 17 were statistically significantly lower than the England value (8 at the 95% confidence level and 9 at the 99.8% confidence level).

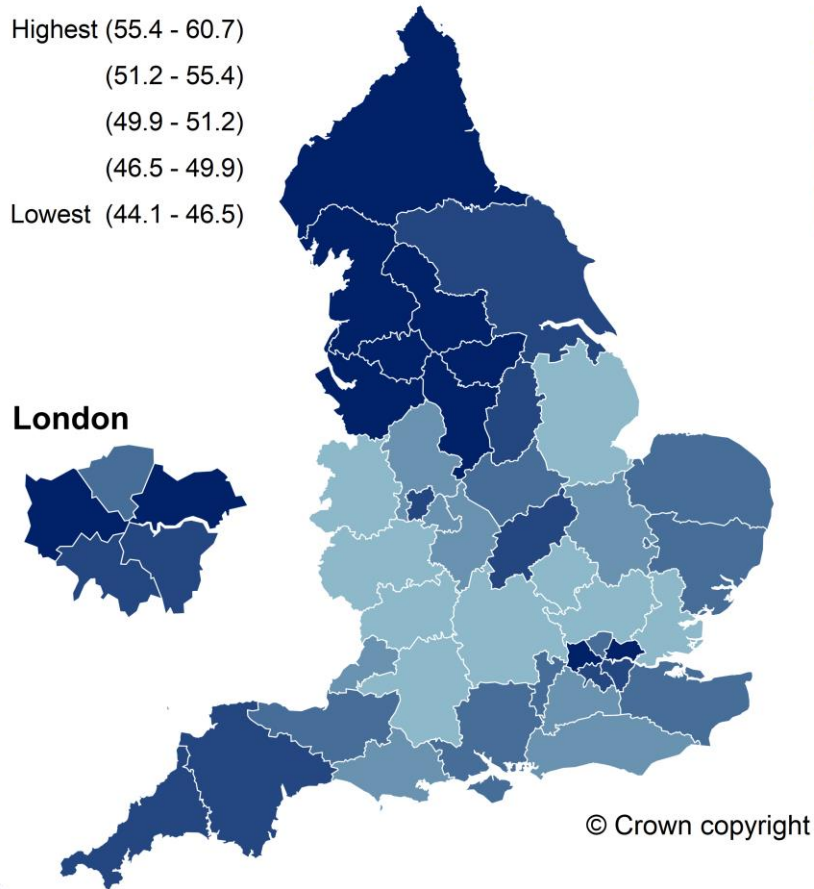
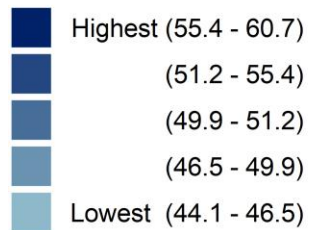
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.6: Variation in incidence of head and neck cancer in people aged 70 years and over

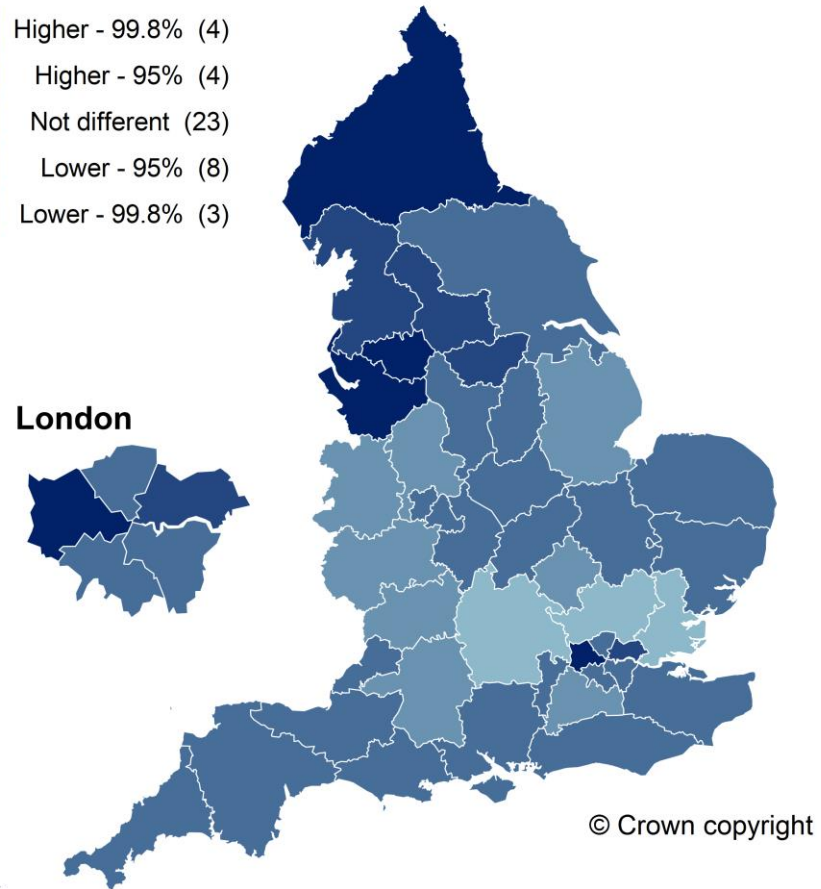
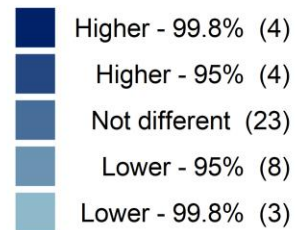
Map 2.6: Variation in incidence rate of head and neck cancer in people aged 70 years and over by ICB (2013 to 2020 pooled)

DSR per 100,000 population (optimum value: low)

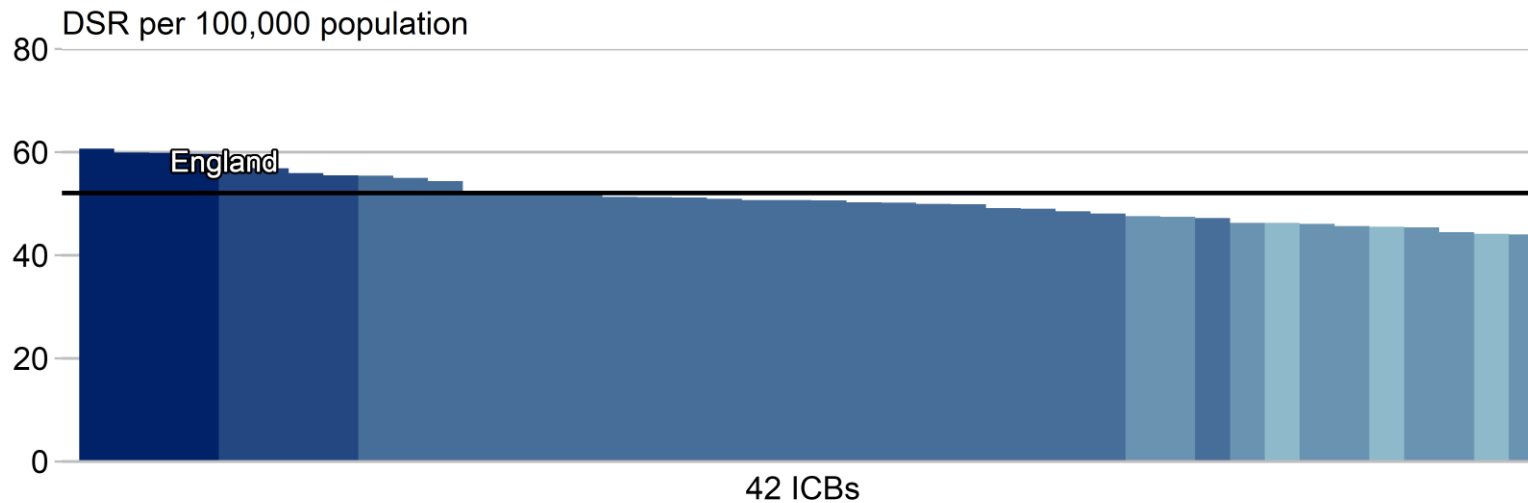
Equal-sized quintiles of geographies



Significance level compared with England



Bar chart 2.6: Variation in incidence rate of head and neck cancer in people aged 70 years and over by ICB (2013 to 2020 pooled)



The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 44.1 per 100,000 population to 60.7 per 100,000 population, which is a 1.4-fold difference between ICBs. The England value for 2013 to 2020 pooled was 52.1 per 100,000 population.

Of the 42 ICBs, 8 were statistically significantly higher than the England value (4 at the 95% confidence level and 4 at the 99.8% confidence level) and 11 were statistically significantly lower than the England value (8 at the 95% confidence level and 3 at the 99.8% confidence level).

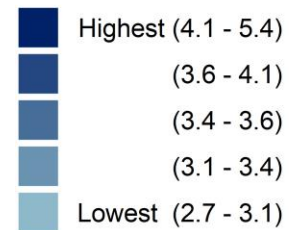
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.7: Variation in incidence of oral cavity cancer in people aged 0 to 69 years

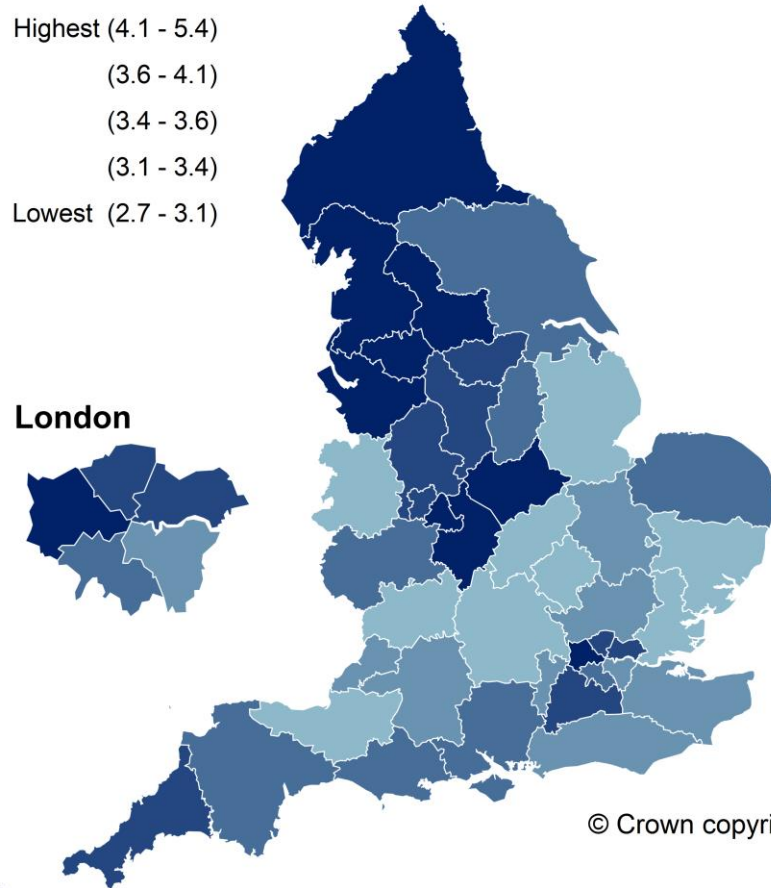
Map 2.7: Variation in incidence rate of oral cavity cancer in people aged 0 to 69 years by ICB (2013 to 2020 pooled)

DSR per 100,000 population (optimum value: low)

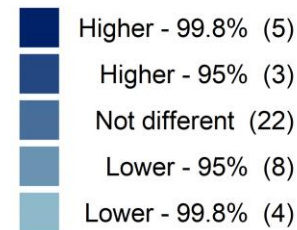
Equal-sized quintiles of geographies



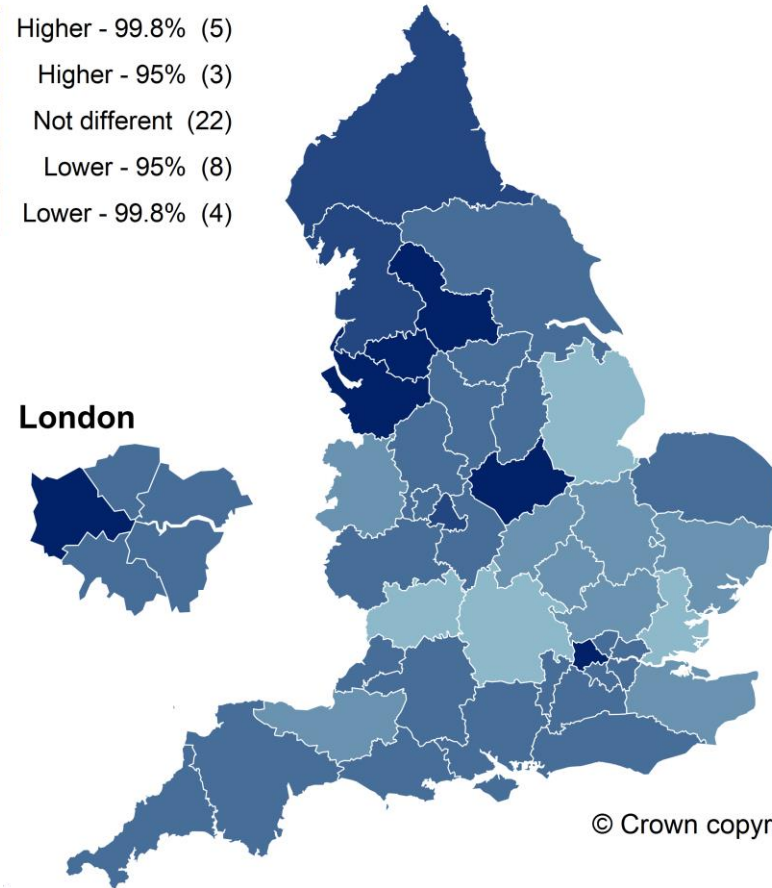
London



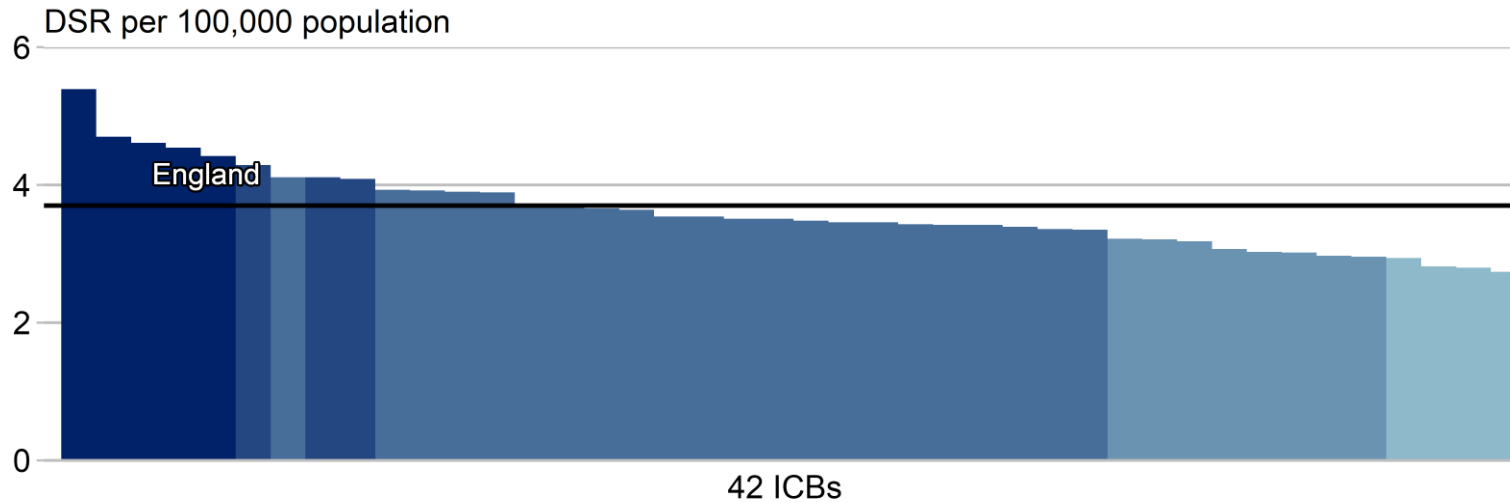
Significance level compared with England



London



Bar chart 2.7: Variation in incidence rate of oral cavity cancer in people aged 0 to 69 years by ICB (2013 to 2020 pooled)



The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 2.7 per 100,000 population to 5.4 per 100,000 population, which is a 2.0-fold difference between ICBs. The England value for 2013 to 2020 pooled was 3.7 per 100,000 population.

Of the 42 ICBs, 8 were statistically significantly higher than the England value (3 at the 95% confidence level and 5 at the 99.8% confidence level) and 12 were statistically significantly lower than the England value (8 at the 95% confidence level and 4 at the 99.8% confidence level).

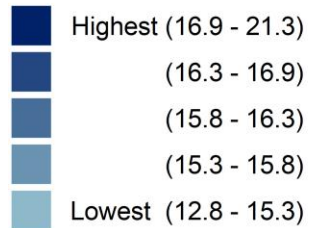
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.8: Variation in incidence of oral cavity cancer in people aged 70 years and over

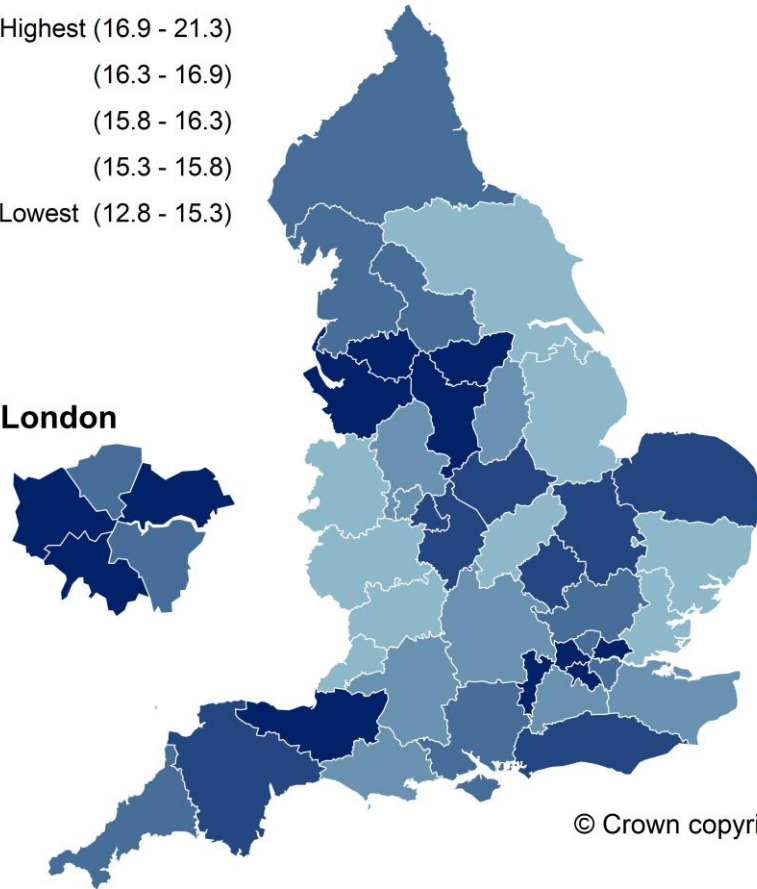
Map 2.8: Variation in incidence rate of oral cavity cancer in people aged 70 years and over by ICB (2013 to 2020 pooled)

DSR per 100,000 population (optimum value: low)

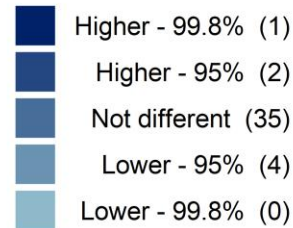
Equal-sized quintiles of geographies



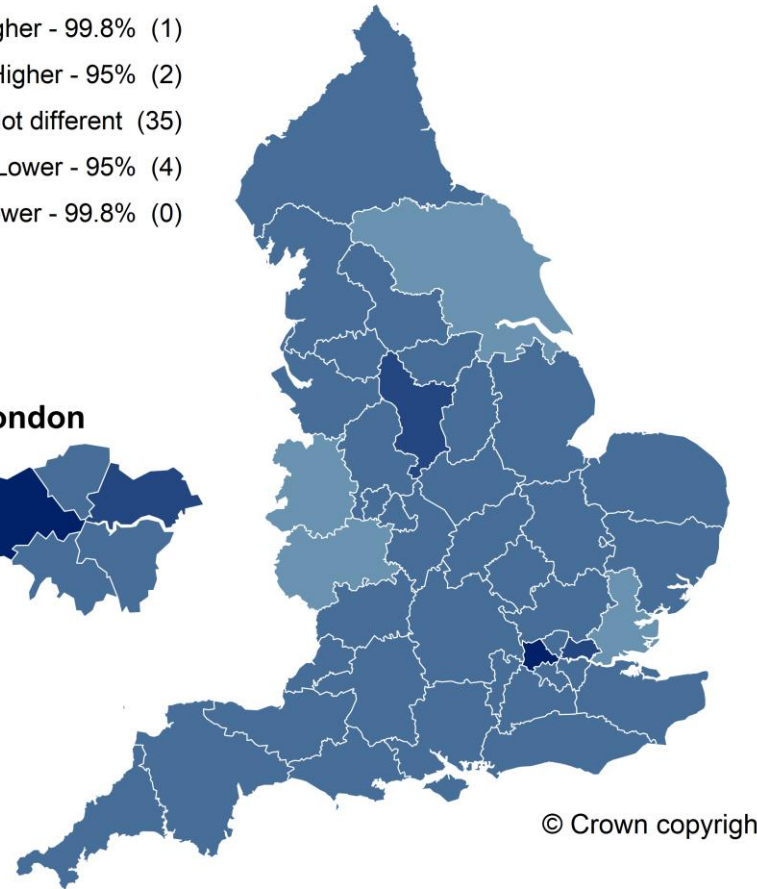
London



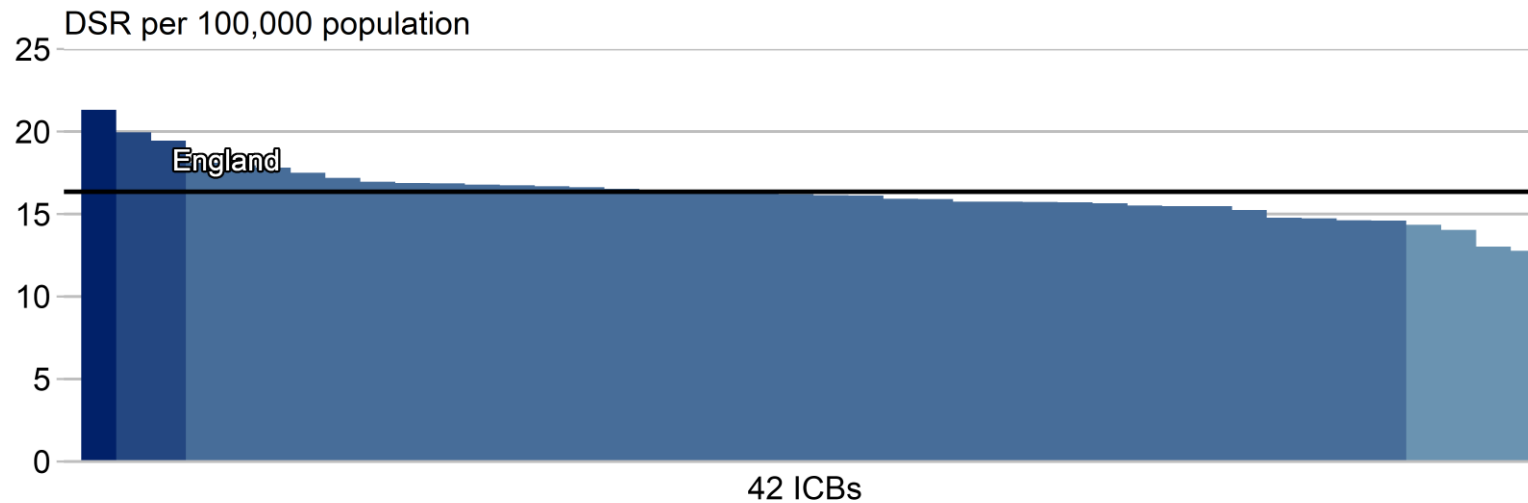
Significance level compared with England



London



Bar chart 2.8: Variation in incidence rate of oral cavity cancer in people aged 70 years and over by ICB (2013 to 2020 pooled)



The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 12.8 per 100,000 population to 21.3 per 100,000 population, which is a 1.7-fold difference between ICBs. The England value for 2013 to 2020 pooled was 16.4 per 100,000 population.

Of the 42 ICBs, 3 were statistically significantly higher than the England value (2 at the 95% confidence level and 1 at the 99.8% confidence level) and 4 were statistically significantly lower than the England value (4 at the 95% confidence level and 0 at the 99.8% confidence level).

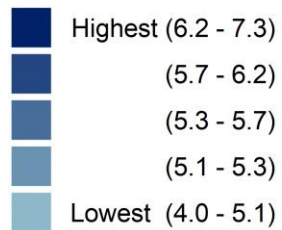
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.9: Variation in incidence of oropharyngeal cancer in people aged 0 to 69 years

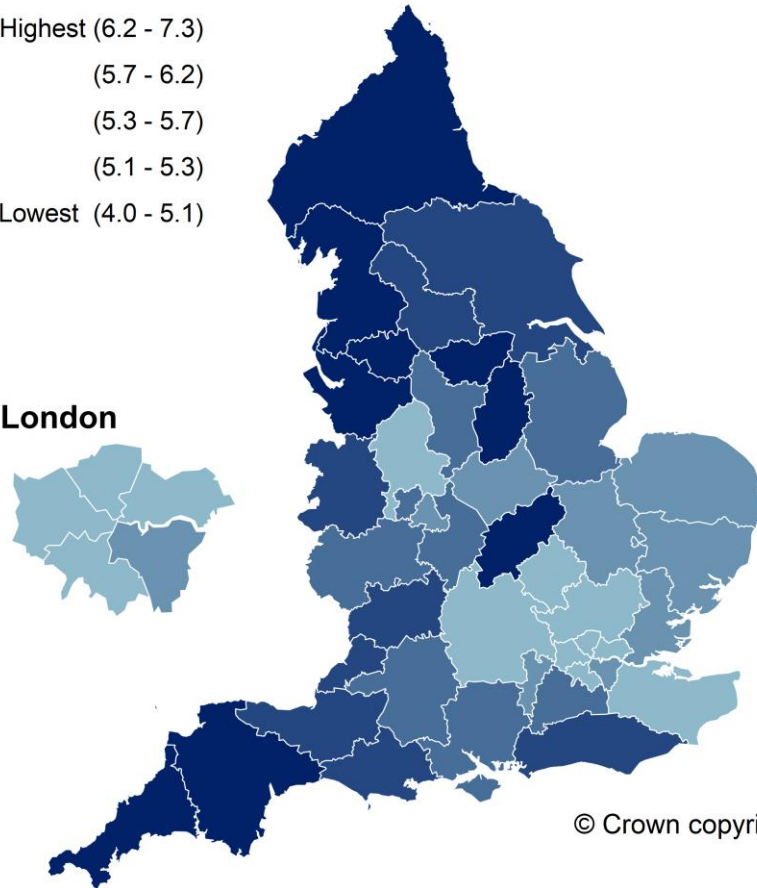
Map 2.9: Variation in incidence rate of oropharyngeal cancer in people aged 0 to 69 years by ICB (2013 to 2020 pooled)

DSR per 100,000 population (optimum value: low)

Equal-sized quintiles of geographies

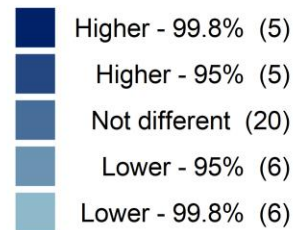


London

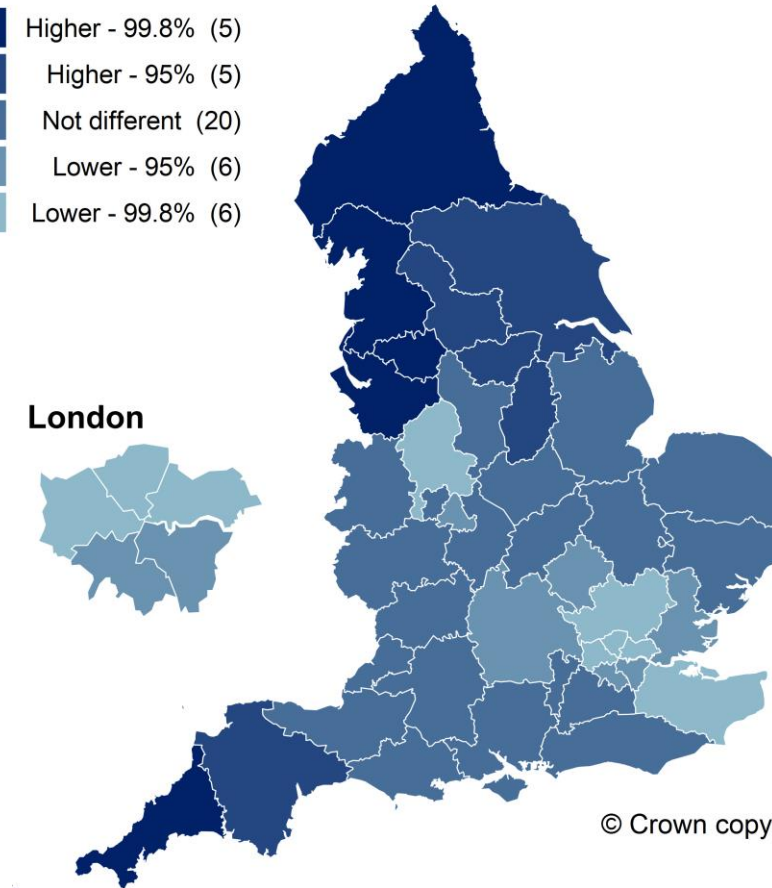


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Significance level compared with England

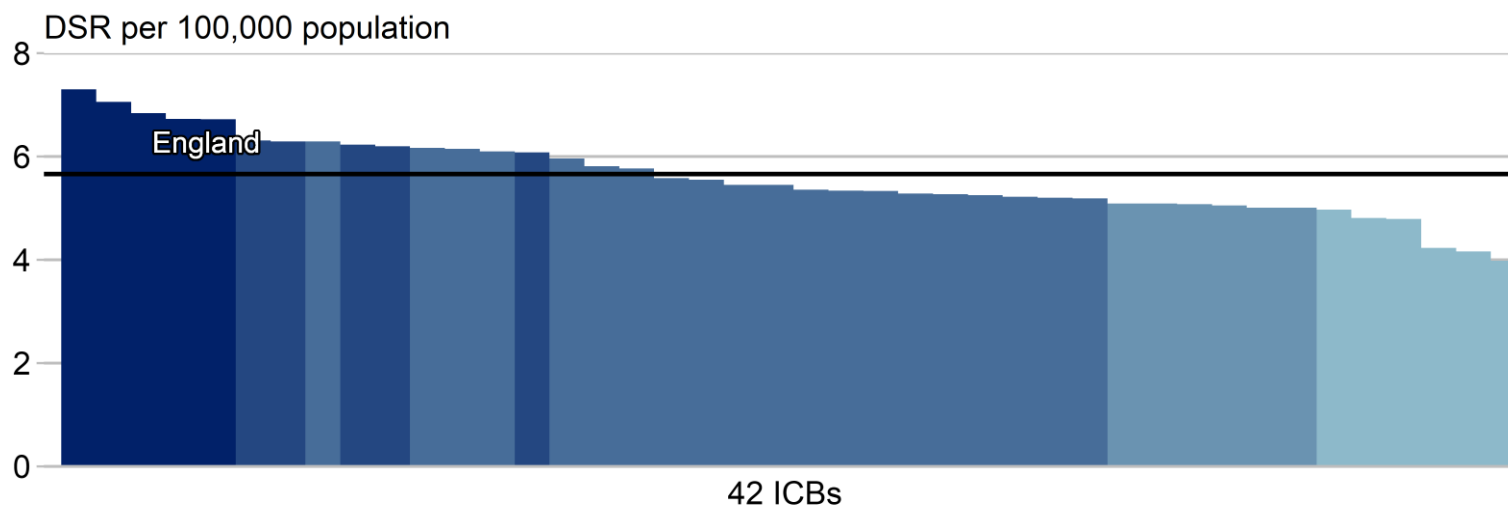


London



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Bar chart 2.9: Variation in incidence rate of oropharyngeal cancer in people aged 0 to 69 years by ICB (2013 to 2020 pooled)



The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 4.0 per 100,000 population to 7.3 per 100,000 population, which is a 1.8-fold difference between ICBs. The England value for 2013 to 2020 pooled was 5.7 per 100,000 population.

Of the 42 ICBs, 10 were statistically significantly higher than the England value (5 at the 95% confidence level and 5 at the 99.8% confidence level) and 12 were statistically significantly lower than the England value (6 at the 95% confidence level and 6 at the 99.8% confidence level).

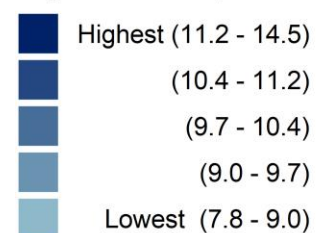
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.10: Variation in incidence of oropharyngeal cancer in people aged 70 years and over

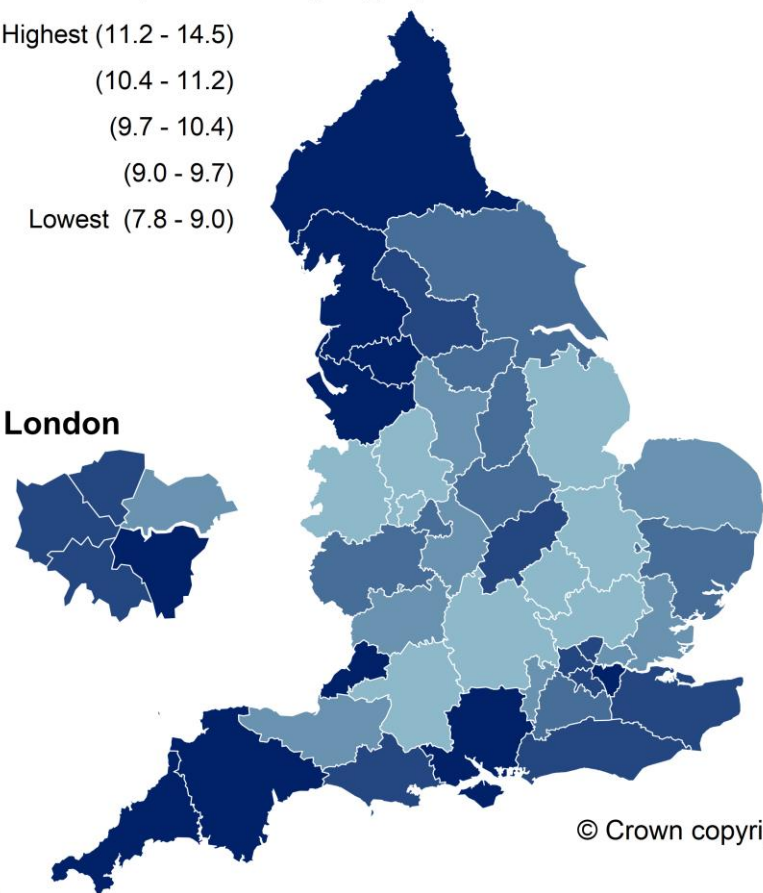
Map 2.10: Variation in incidence rate of oropharyngeal cancer in people aged 70 years and over by ICB (2013 to 2020 pooled)

DSR per 100,000 population (optimum value: low)

Equal-sized quintiles of geographies

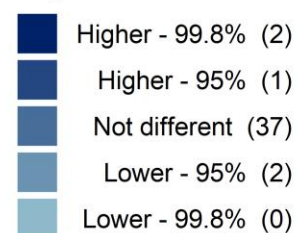


London

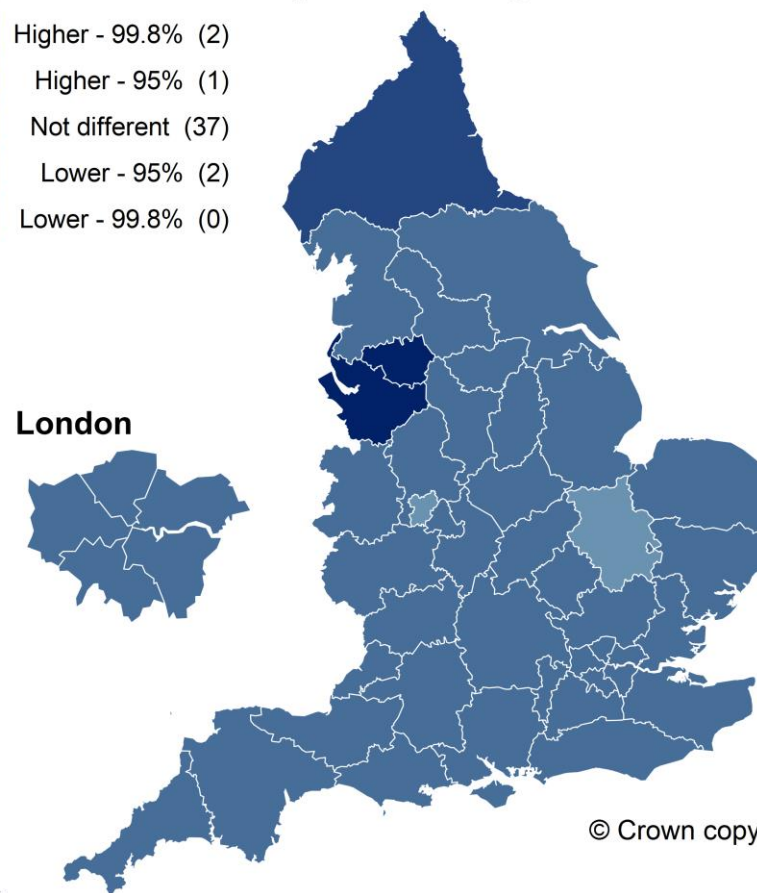


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Significance level compared with England

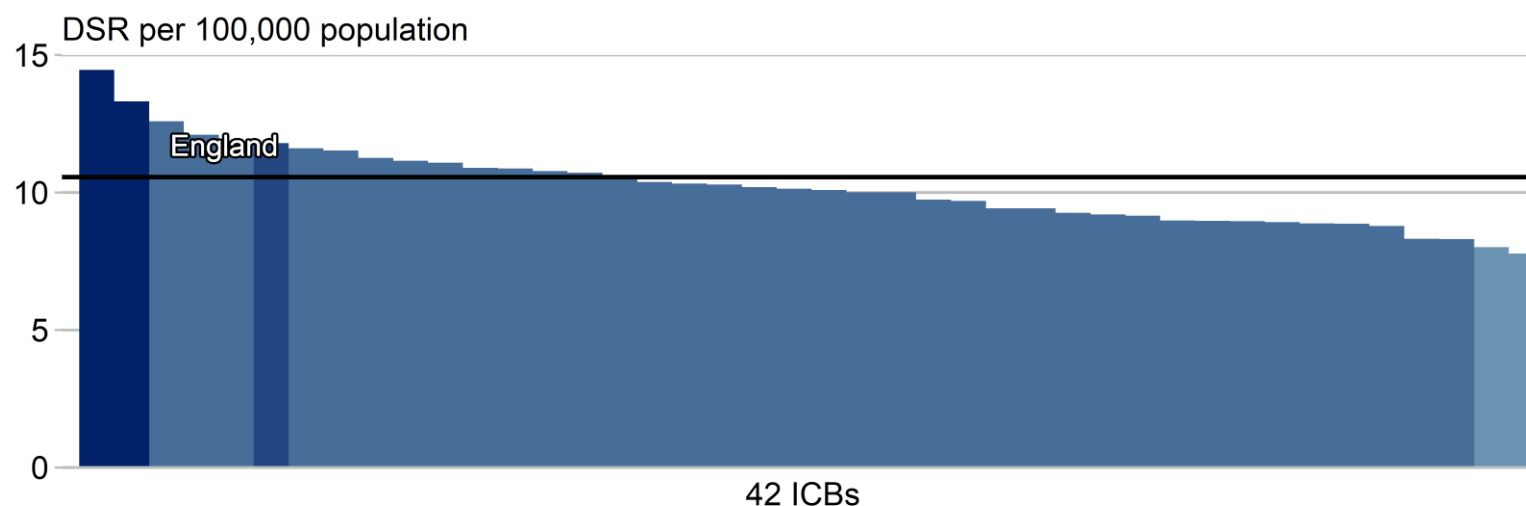


London



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Bar chart 2.10: Variation in incidence rate of oropharyngeal cancer in people aged 70 years and over by ICB (2013 to 2020 pooled)



The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 7.8 per 100,000 population to 14.5 per 100,000 population, which is a 1.9-fold difference between ICBs. The England value for 2013 to 2020 pooled was 10.6 per 100,000 population.

Of the 42 ICBs, 3 were statistically significantly higher than the England value (1 at the 95% confidence level and 2 at the 99.8% confidence level) and 2 were statistically significantly lower than the England value (2 at the 95% confidence level and 0 at the 99.8% confidence level).

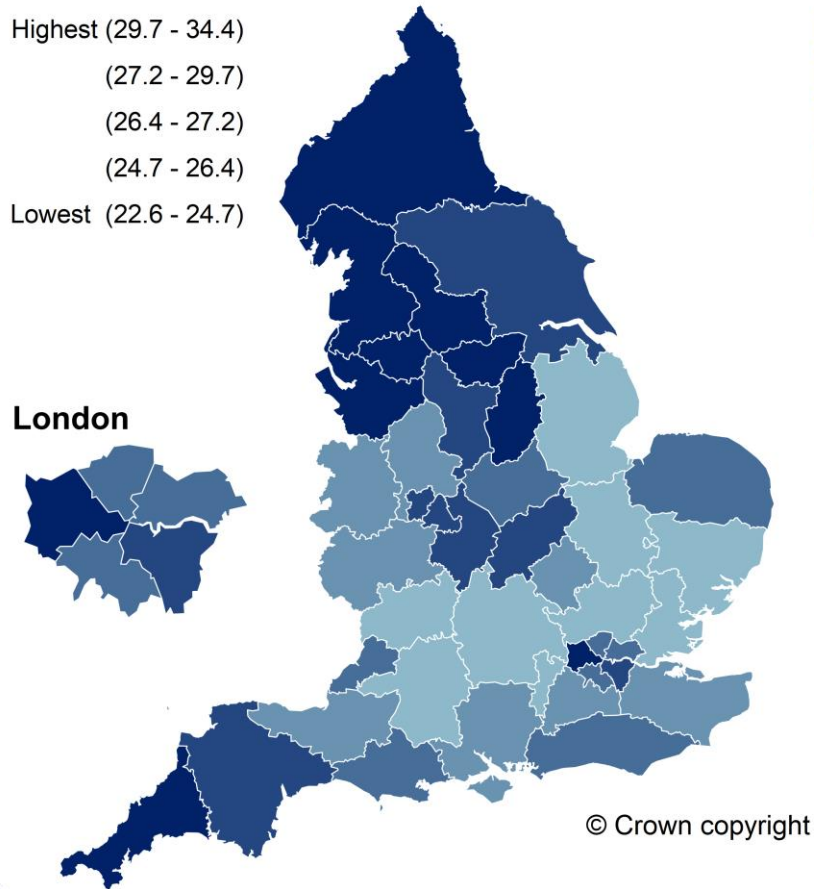
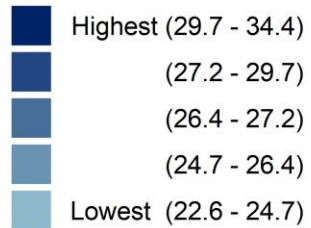
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.11: Variation in incidence of head and neck cancer in males

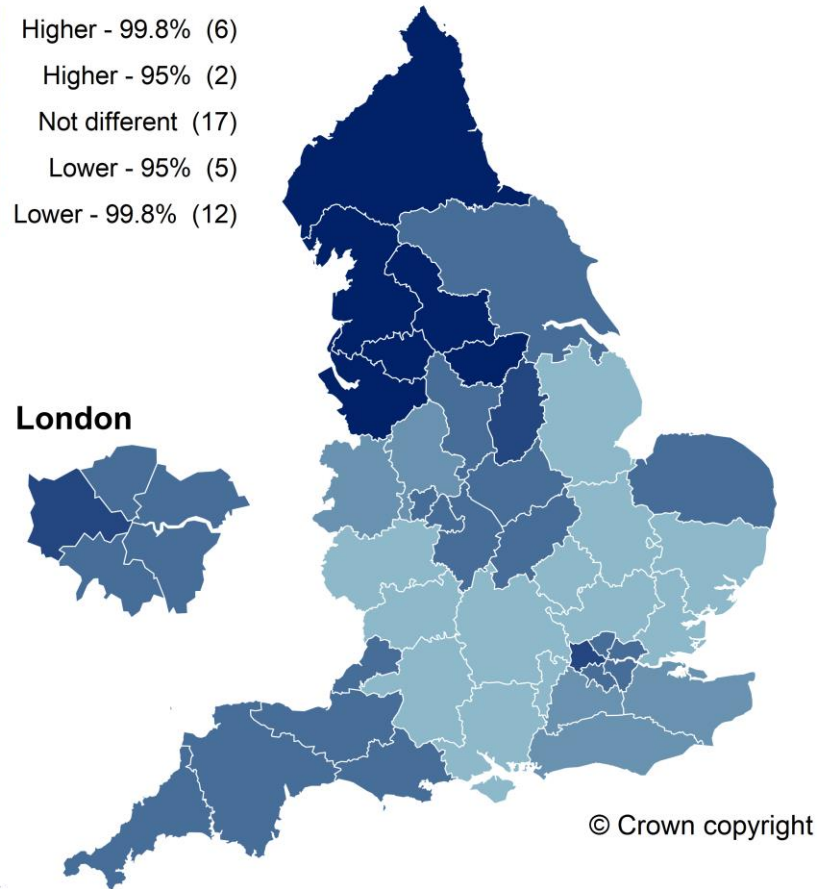
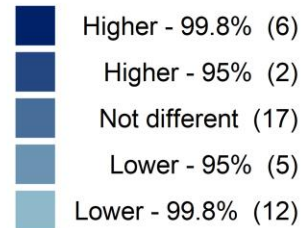
Map 2.11: Variation in incidence rate of head and neck cancer in males by ICB (2013 to 2020 pooled)

DSR per 100,000 population (optimum value: low)

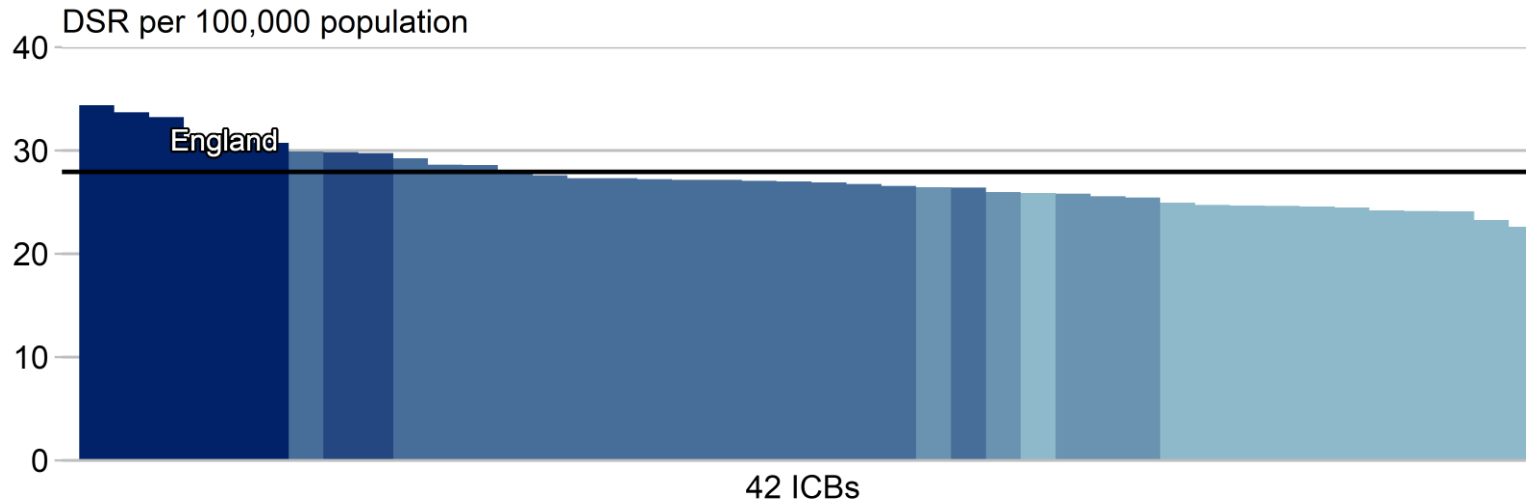
Equal-sized quintiles of geographies



Significance level compared with England



Bar chart 2.11: Variation in incidence rate of head and neck cancer in males by ICB (2013 to 2020 pooled)



The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 22.6 per 100,000 population to 34.4 per 100,000 population, which is a 1.5-fold difference between ICBs. The England value for 2013 to 2020 pooled was 27.9 per 100,000 population.

Of the 42 ICBs, 8 were statistically significantly higher than the England value (2 at the 95% confidence level and 6 at the 99.8% confidence level) and 17 were statistically significantly lower than the England value (5 at the 95% confidence level and 12 at the 99.8% confidence level).

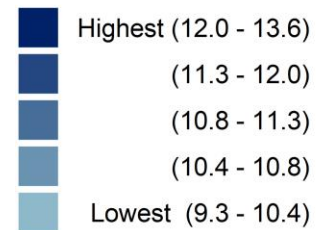
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.12: Variation in incidence of head and neck cancer in females

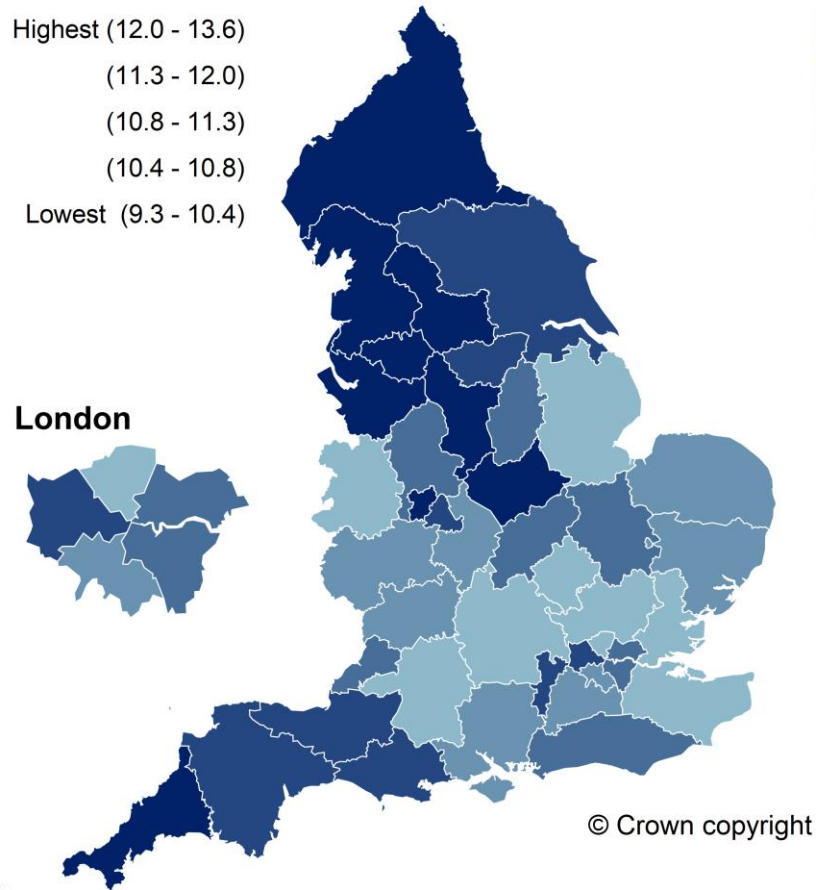
Map 2.12: Variation in incidence rate of head and neck cancer in females by ICB (2013 to 2020 pooled)

DSR per 100,000 population (optimum value: low)

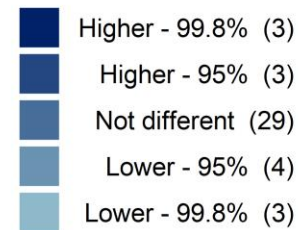
Equal-sized quintiles of geographies



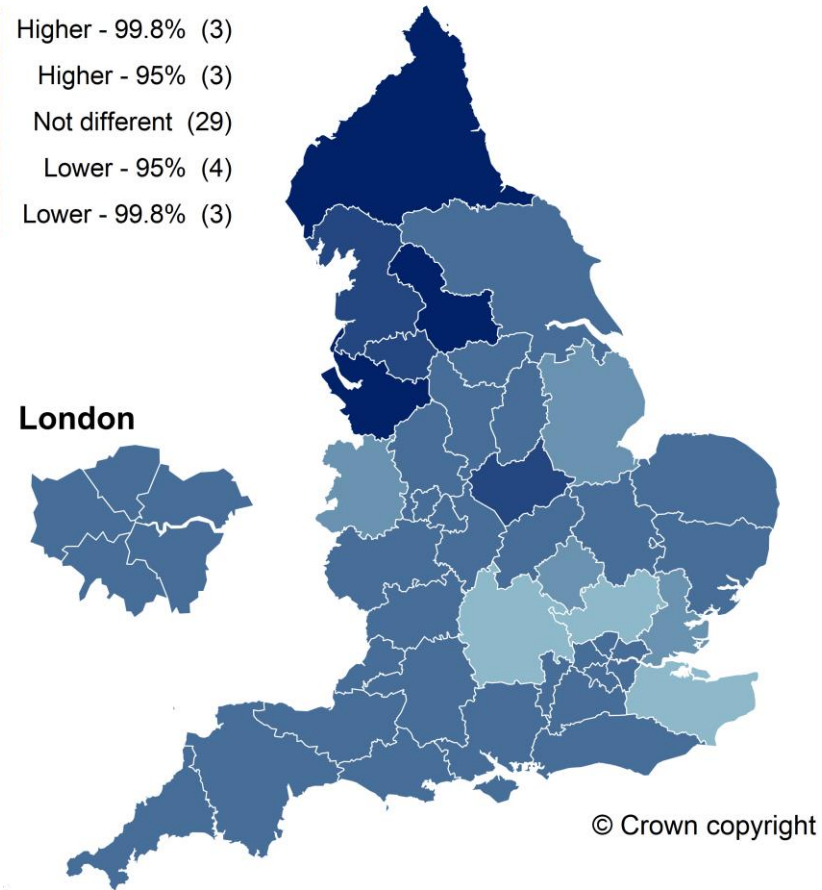
London



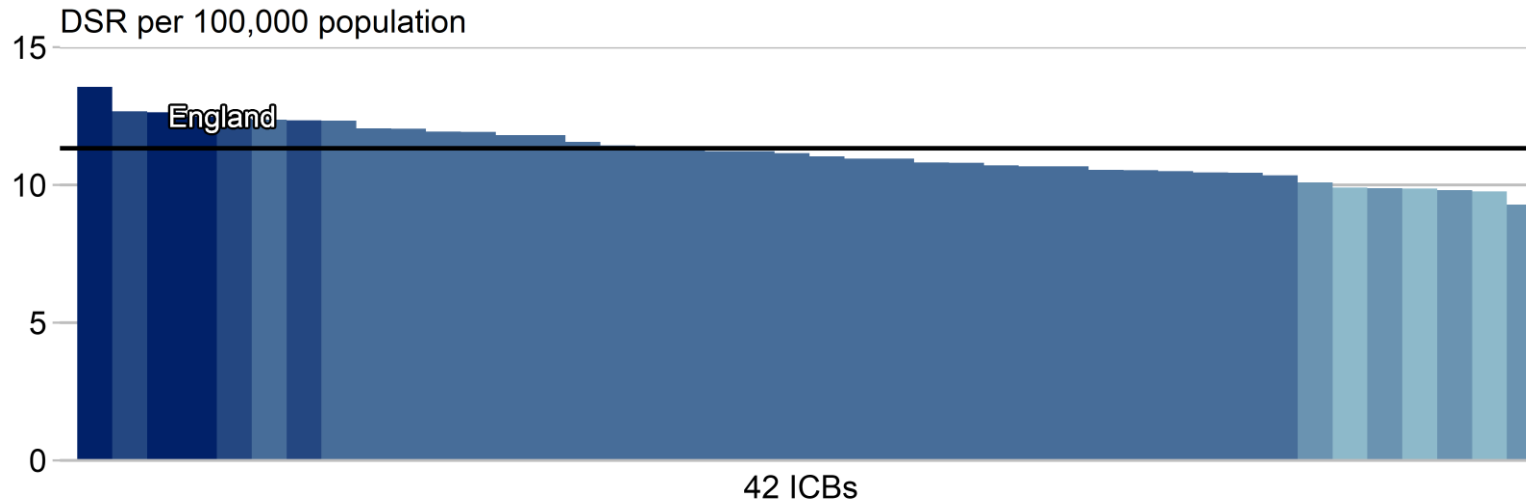
Significance level compared with England



London



Bar chart 2.12: Variation in incidence rate of head and neck cancer in females by ICB (2013 to 2020 pooled)



The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 9.3 per 100,000 population to 13.6 per 100,000 population, which is a 1.5-fold difference between ICBs. The England value for 2013 to 2020 pooled was 11.3 per 100,000 population.

Of the 42 ICBs, 6 were statistically significantly higher than the England value (3 at the 95% confidence level and 3 at the 99.8% confidence level) and 7 were statistically significantly lower than the England value (4 at the 95% confidence level and 3 at the 99.8% confidence level).

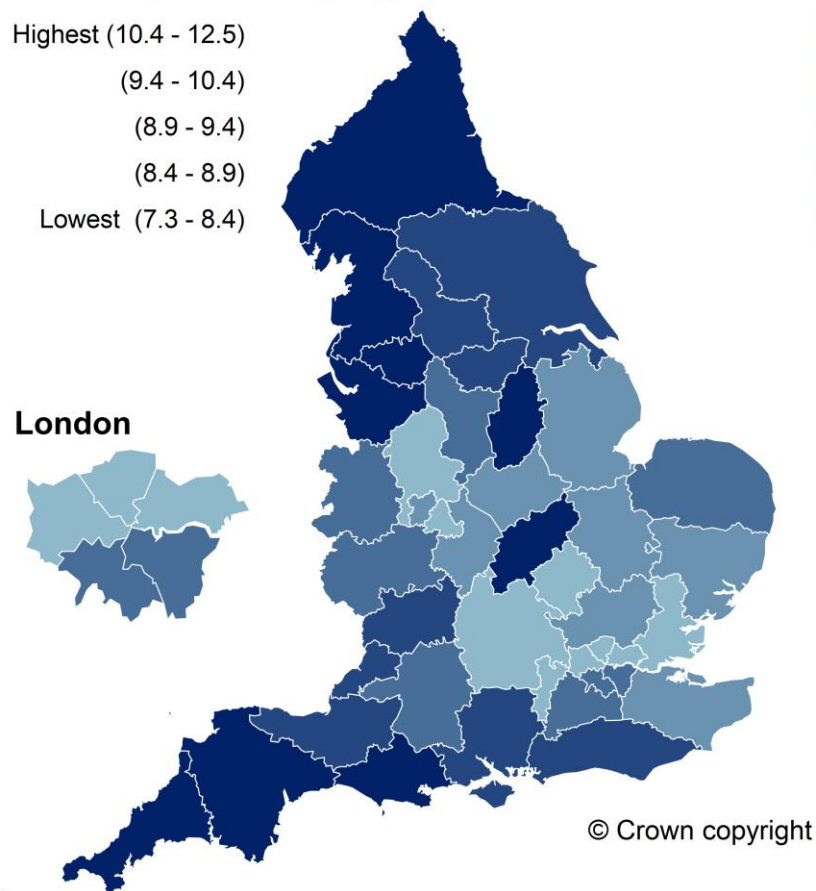
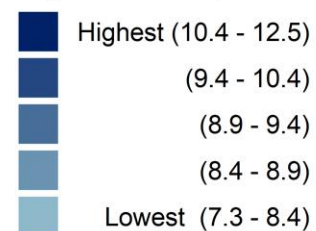
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.13: Variation in incidence of oropharyngeal cancer in males

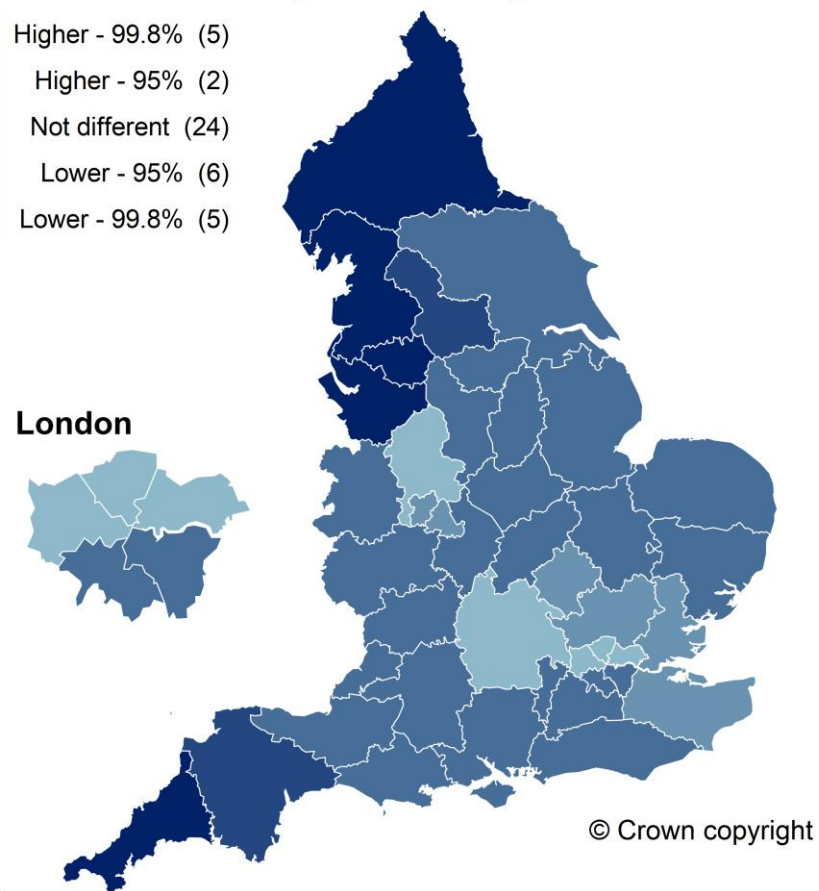
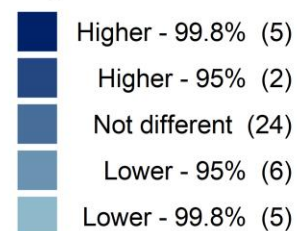
Map 2.13: Variation in incidence rate of oropharyngeal cancer in males by ICB (2013 to 2020 pooled)

DSR 100,000 population (optimum value: low)

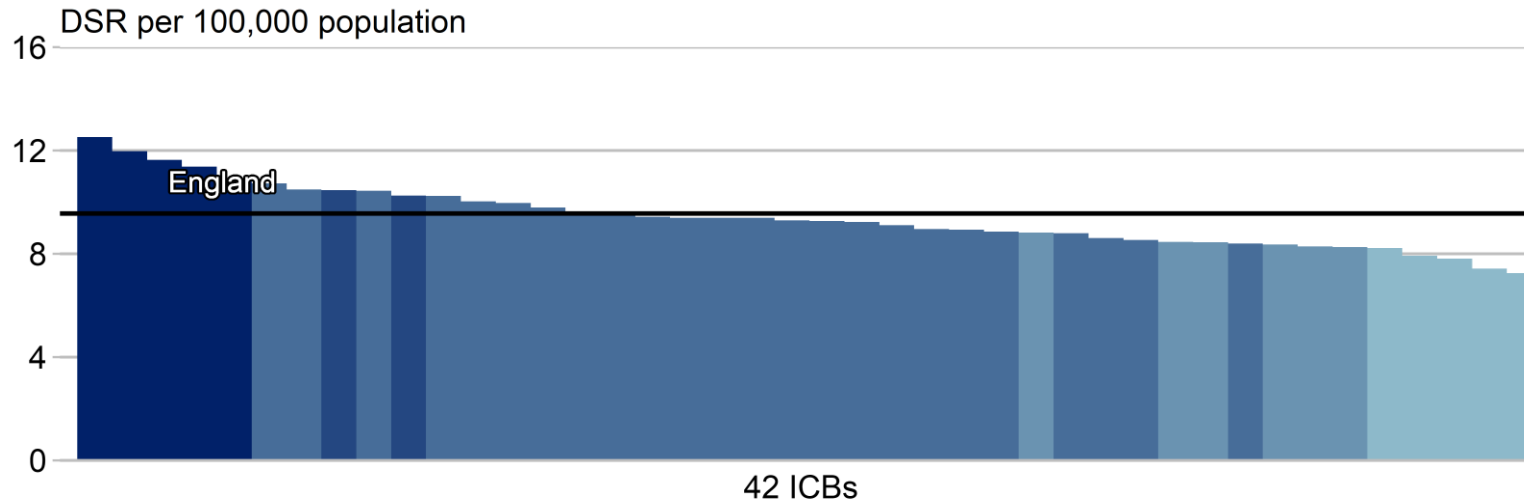
Equal-sized quintiles of geographies



Significance level compared with England



Bar chart 2.13: Variation in incidence rate of oropharyngeal cancer in males by ICB (2013 to 2020 pooled)



The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 7.3 per 100,000 population to 12.5 per 100,000 population, which is a 1.7-fold difference between ICBs. The England value for 2013 to 2020 pooled was 9.6 per 100,000 population.

Of the 42 ICBs, 7 were statistically significantly higher than the England value (2 at the 95% confidence level and 5 at the 99.8% confidence level) and 11 were statistically significantly lower than the England value (6 at the 95% confidence level and 5 at the 99.8% confidence level).

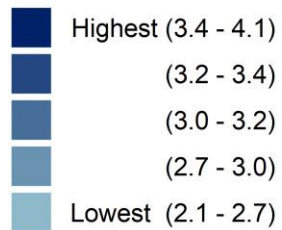
The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.14: Variation in incidence of oropharyngeal cancer in females

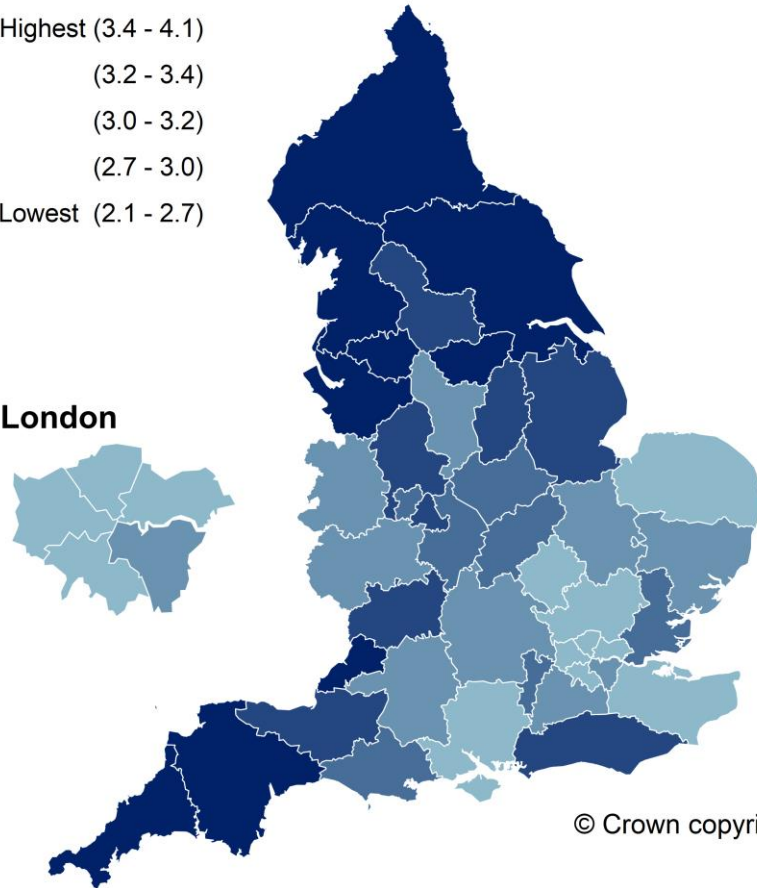
Map 2.14: Variation in incidence rate of oropharyngeal cancer in females by ICB (2013 to 2020 pooled)

DSR per 100,000 population (optimum value: low)

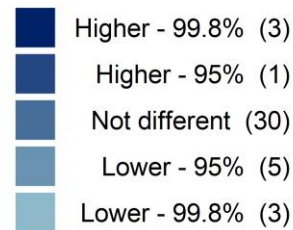
Equal-sized quintiles of geographies



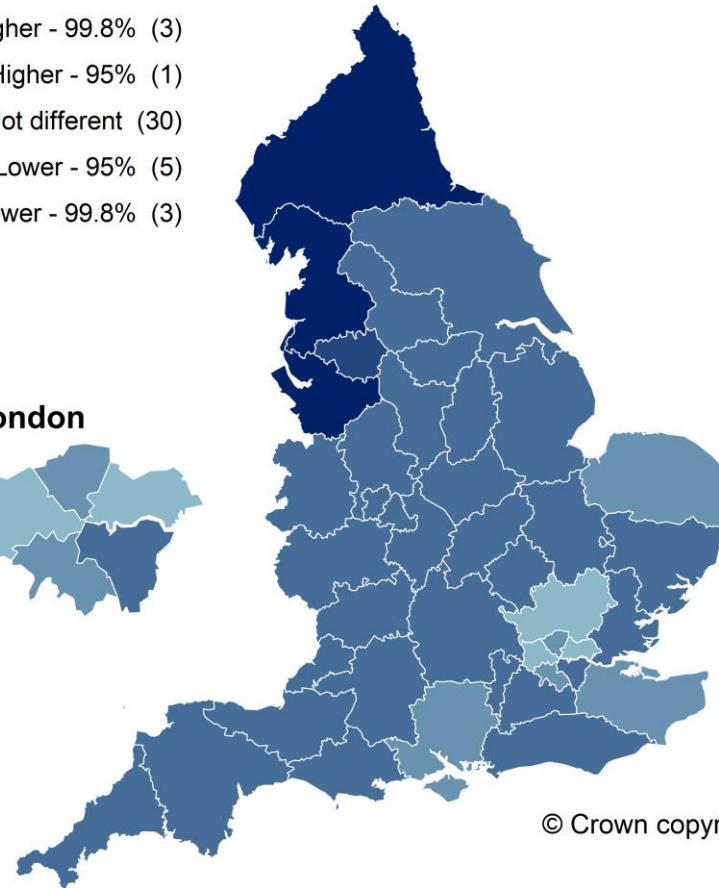
London



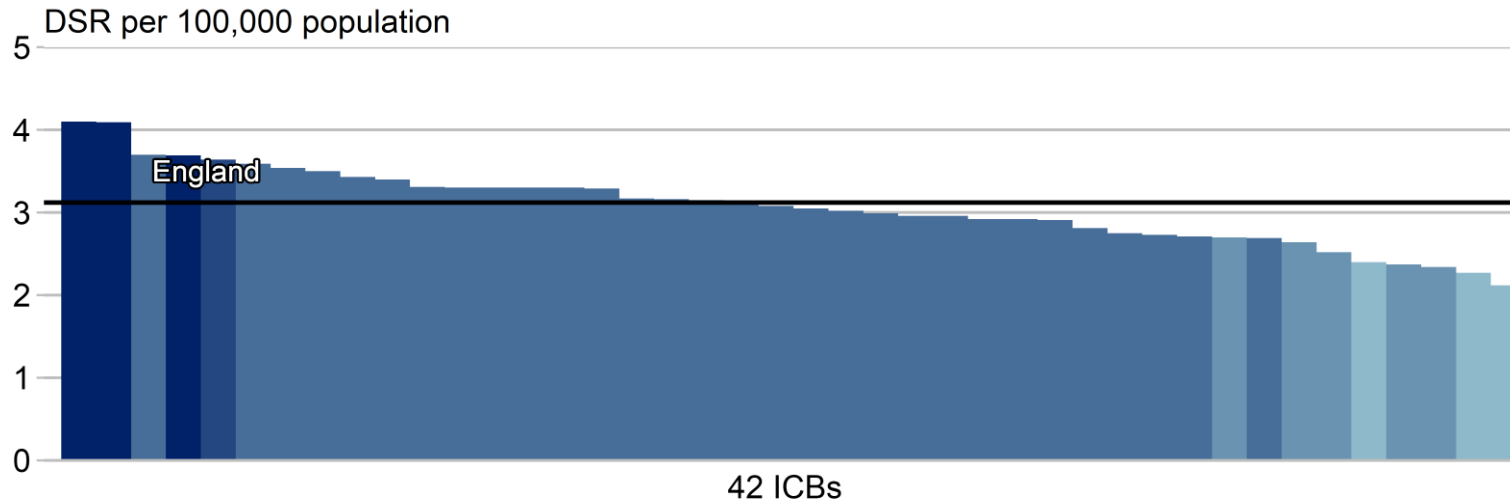
Significance level compared with England



London



Bar chart 2.14: Variation in incidence rate of oropharyngeal cancer in females by ICB (2013 to 2020 pooled)



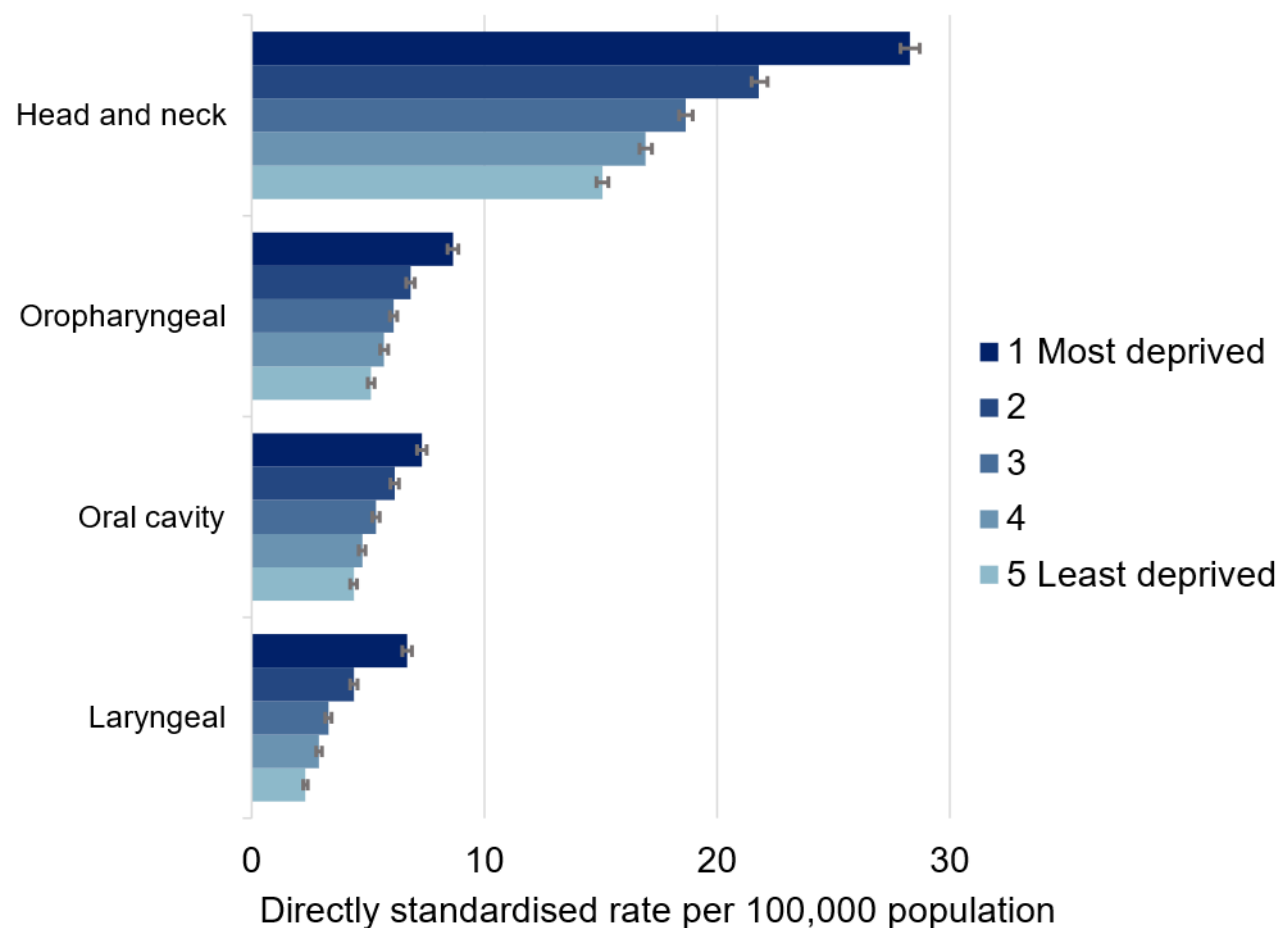
The maps and column chart display data for 2013 to 2020 pooled, during which ICB values ranged from 2.1 per 100,000 population to 4.1 per 100,000 population, which is a 1.9-fold difference between ICBs. The England value for 2013 to 2020 pooled was 3.1 per 100,000 population.

Of the 42 ICBs, 4 were statistically significantly higher than the England value (1 at the 95% confidence level and 3 at the 99.8% confidence level) and 8 were statistically significantly lower than the England value (5 at the 95% confidence level and 3 at the 99.8% confidence level).

The data showing the values for all ICBs is available in the [head and neck cancer atlas data file](#).

2.15: Variation in incidence rate of head and neck, oral cavity, oropharyngeal and laryngeal cancer by deprivation quintile

Bar chart 2.15: Variation in incidence rate of head and neck, oral cavity, oropharyngeal and laryngeal cancer by LSOA deprivation quintile in England (2013 to 2020 pooled)



The most deprived quintile value for head and neck cancer incidence was 28.3 per 100,000 population. The least deprived quintile value was 15.1 per 100,000 population. There is a 1.9-fold difference between the most and least deprived quintiles.

The most deprived quintile value for oropharyngeal cancer incidence was 8.6 per 100,000 population. The least deprived quintile value was 5.1 per 100,000 population. There is a 1.7-fold difference between the most and least deprived quintiles.

The most deprived quintile value for oral cavity cancer incidence was 7.3 per 100,000 population. The least deprived quintile value was 4.4 per 100,000 population. There is a 1.7-fold difference between the most and least deprived quintiles.

The most deprived quintile value for laryngeal cancer incidence was 6.7 per 100,000 population. The least deprived quintile value was 2.3 per 100,000 population. There is a 2.9-fold difference between the most and least deprived quintiles.

The data showing the values for all deprivation quintiles is available in the [head and neck cancer atlas data file](#).

Reasons for variation in the incidence of head and neck cancers

Postulating the reasons for variation in head and neck cancer incidence is complicated by the complex nature of this cancer and the heterogeneity of the cancer subsites.

Head and neck cancer incidence is generally higher in ICBs in the north of England compared with the south. Geographical variation in the incidence of head and neck, oral cavity, oropharyngeal and laryngeal cancers across the ICBs in England is likely to be attributable to variation in socio-economic deprivation, smoking, other tobacco use, alcohol consumption and regional differences in ethnicity and age profiles of local populations.

The increase in incidence of head and neck cancer in males compared with females is likely to be attributable to differences in alcohol consumption, smoking, other tobacco use and human papillomavirus (HPV) prevalence. Of note, although there are stark differences in the incidence of head and neck cancer between males and females, oral cavity cancer incidence ranged from 4.9 to 9.7 per 100,000 population in males and 3.6 to 5.6 per 100,00 population in females across ICBs, therefore differences by sex in some head and neck cancer sub-sites may be less.

There is geographical variation in the incidence rate of head and neck cancer in people aged 0 to 69 years and people aged 70 years and over. This could be due to variation in socio-economic deprivation, risk factors such as smoking, HPV prevalence, other tobacco use and the age profile of the local population.

Greater geographical variation in the incidence rate of oral cavity cancer in England is observed in people aged 0 to 69 years than people aged 70 years and over. The role of socio-economic status and variation in smoking and alcohol consumption may have a greater role in oral cavity cancer incidence in the younger age group compared with those over 70 years of age.

Additionally, greater geographical variation is observed in the incidence rate of oropharyngeal cancer in the 0 to 69 years compared with the 70 years and over age group. Risk factors, such as trends in sexual behaviour, may have a greater role in explaining the geographical variation in the younger age group.

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