



Office for Health
Improvement
& Disparities

Atlas of health variation in head and neck cancer in England

Stage at diagnosis

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3. Stage at diagnosis

Cancer stage

The stage of a cancer describes the size of the tumour and how far it has spread. The earlier a cancer is diagnosed, the better the outcomes, the prognosis and chance of survival.⁸ The ['Union for International Cancer Control TNM staging system'](#) is used as a basis for decision-making on treatment management and individual prognosis. Staging can also be used to inform and evaluate treatment guidelines, national cancer planning and research. The tumour, node, metastasis (TNM) system derives a stage from 1 to 4 based on three individual categories, where T describes the primary tumour site and size, N describes the regional lymph node involvement and M describes the presence or otherwise of distant metastatic spread.

Head and neck cancers of stage 1 and 2 are considered early stage disease. They are localised, easier to treat and have a better prognosis.⁸ Stages 3 and 4 are considered late or advanced stage disease. Additional analysis for head and neck cancer shows that in England in 2019 42.6% (4,573) people presented at a late stage of diagnosis and in 2020 47.4% (4,749) people presented at a late stage of diagnosis. Advanced stage disease is associated with greater treatment complexity, with only palliative care available in some cases.

There are many factors that affect the timing of clinical presentation. These include public awareness of signs, symptoms, delay in seeking help, fear of wasting a clinician's time, propensity and capacity to seek help, including affordability of dental treatment, which is in turn influenced by socio-demographic characteristics. Delays in presentation can result in presentation at a more advanced stage of disease.

Tumour related factors that influence stage of diagnosis include site of presentation and speed of tumour progression. Health system factors include access to primary care services (NHS and private) and nature of the cancer pathway, which may result in delays from first presentation to referral for specialist assessment and delays from specialist referral to diagnosis. Health professional factors include the ability of healthcare professionals to recognise the signs and symptoms of head and neck cancer and refer patients in a timely manner.^{8 60 63}

It is important to note that variation in the proportion of cancers diagnosed at a late stage by integrated care board (ICB) includes data from 2020 and therefore may reflect regional variation in the impact of the COVID-19 pandemic on health services including access to general practitioners (GPs). There was a reduction in new cases diagnosed during 2020.

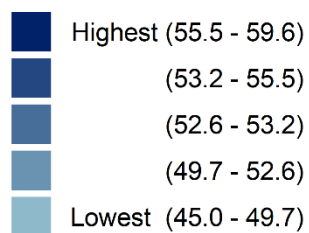
Note: The staging system for head and neck cancers changed from TNM 7 to TNM 8 between 2017 and 2018 diagnoses and this change is seen in the 2018 to 2019 data.² The change in definition reduced the number of 'oropharynx including base of tongue, soft palate and tonsils' tumours diagnosed at stage 4 and increased the number diagnosed at stage 1 and 2. The changes to the TNM staging were in recognition of the improved survival in human papillomavirus (HPV)-positive oropharyngeal cancers, compared to HPV-negative cases.⁶⁴ The pooled data for this analysis includes data using both TNM 7 and TNM 8.

3.1: Variation in percentage of head and neck cancer patients diagnosed at a late stage

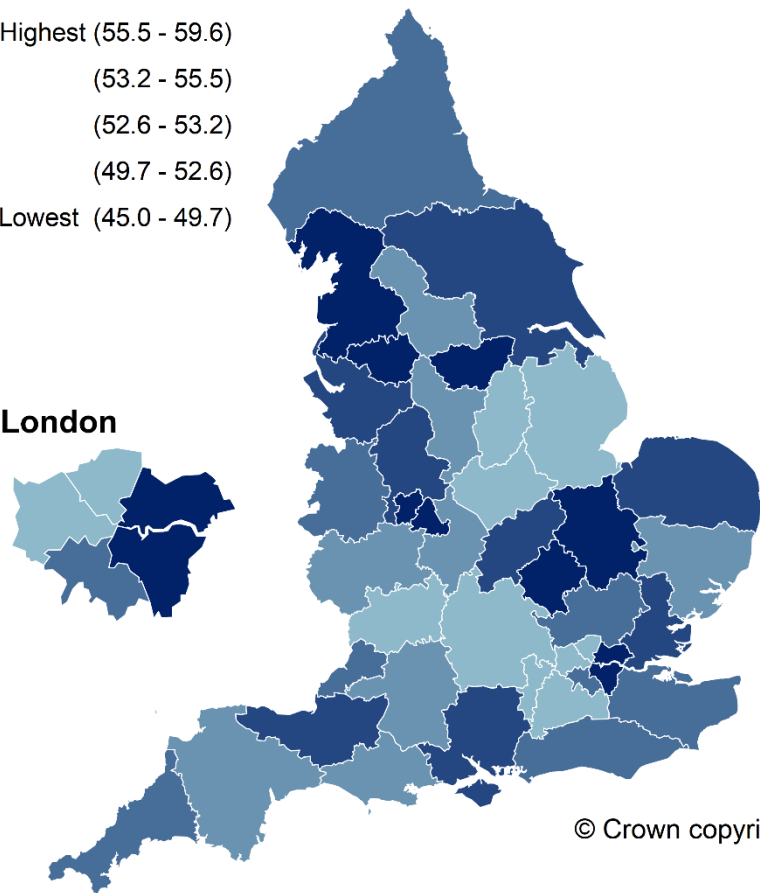
Map 3.1: Variation in percentage of head and neck cancer patients diagnosed at a late stage (stage 3 and 4) by ICB (2013 to 2020 pooled)

Optimum value: low

Equal-sized quintiles of geographies

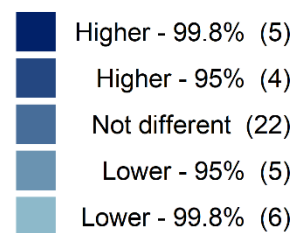


London

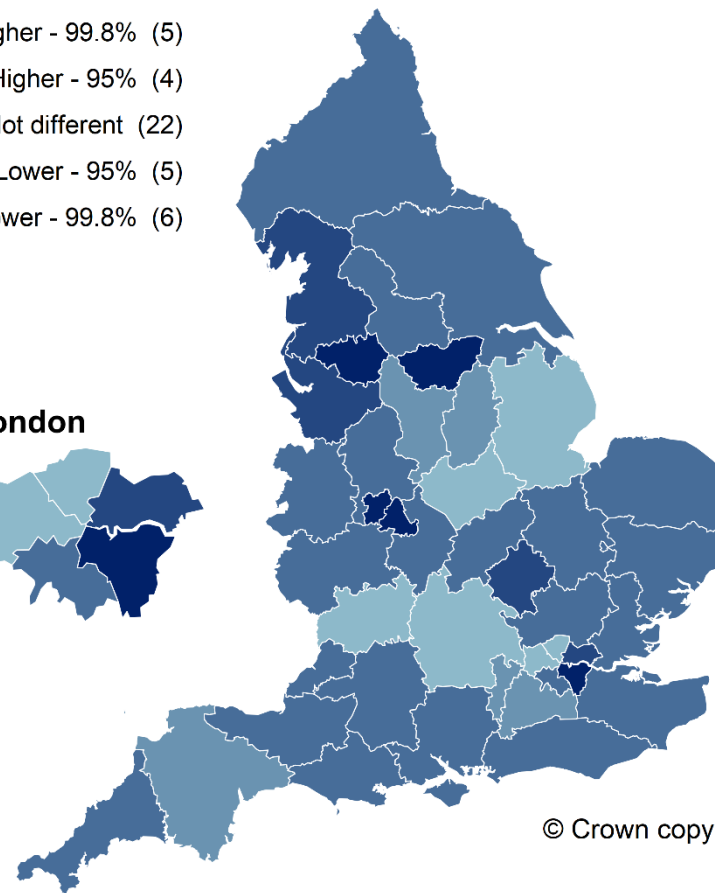


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Significance level compared with England

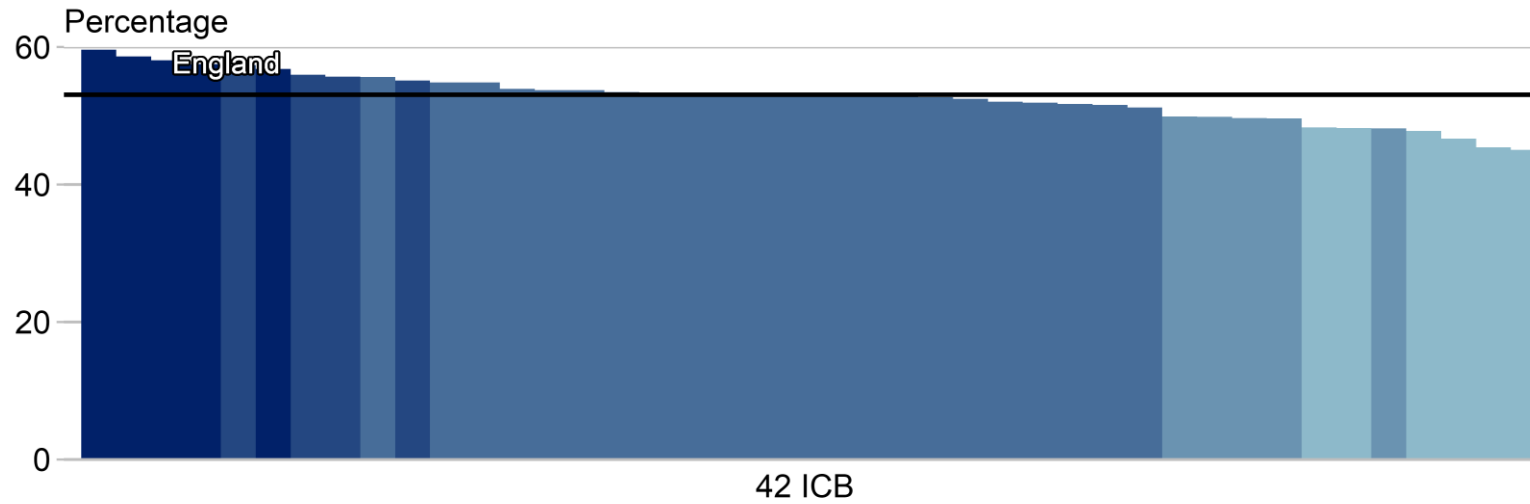


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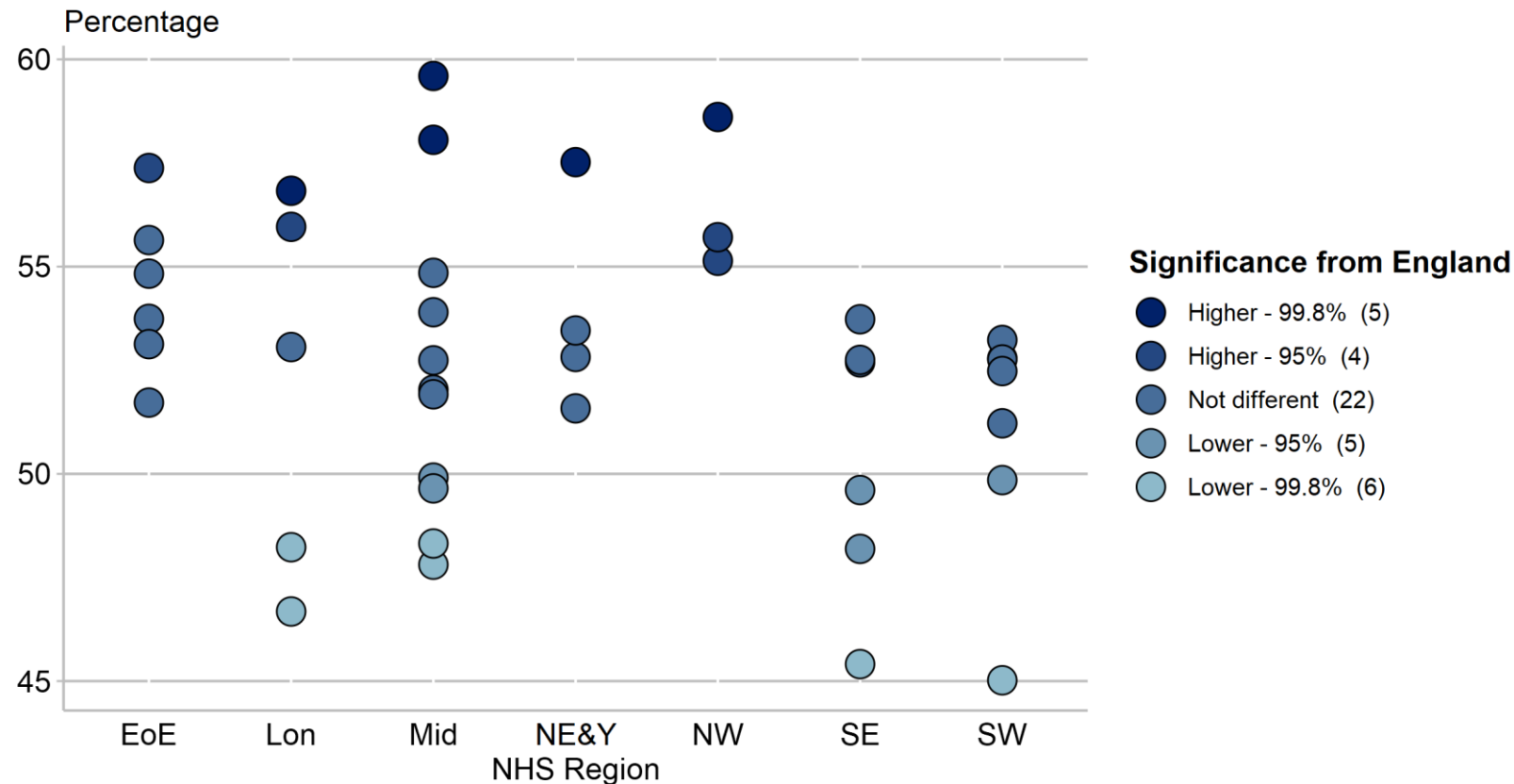


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Bar chart 3.1: Variation in percentage of head and neck cancer patients diagnosed at a late stage (stage 3 and 4) by ICB (2013 to 2020 pooled)



Regional dot plot 3.1: Variation in percentage of head and neck cancer patients diagnosed at a late stage (stage 3 and 4) by ICB and NHS region (2013 to 2020 pooled)

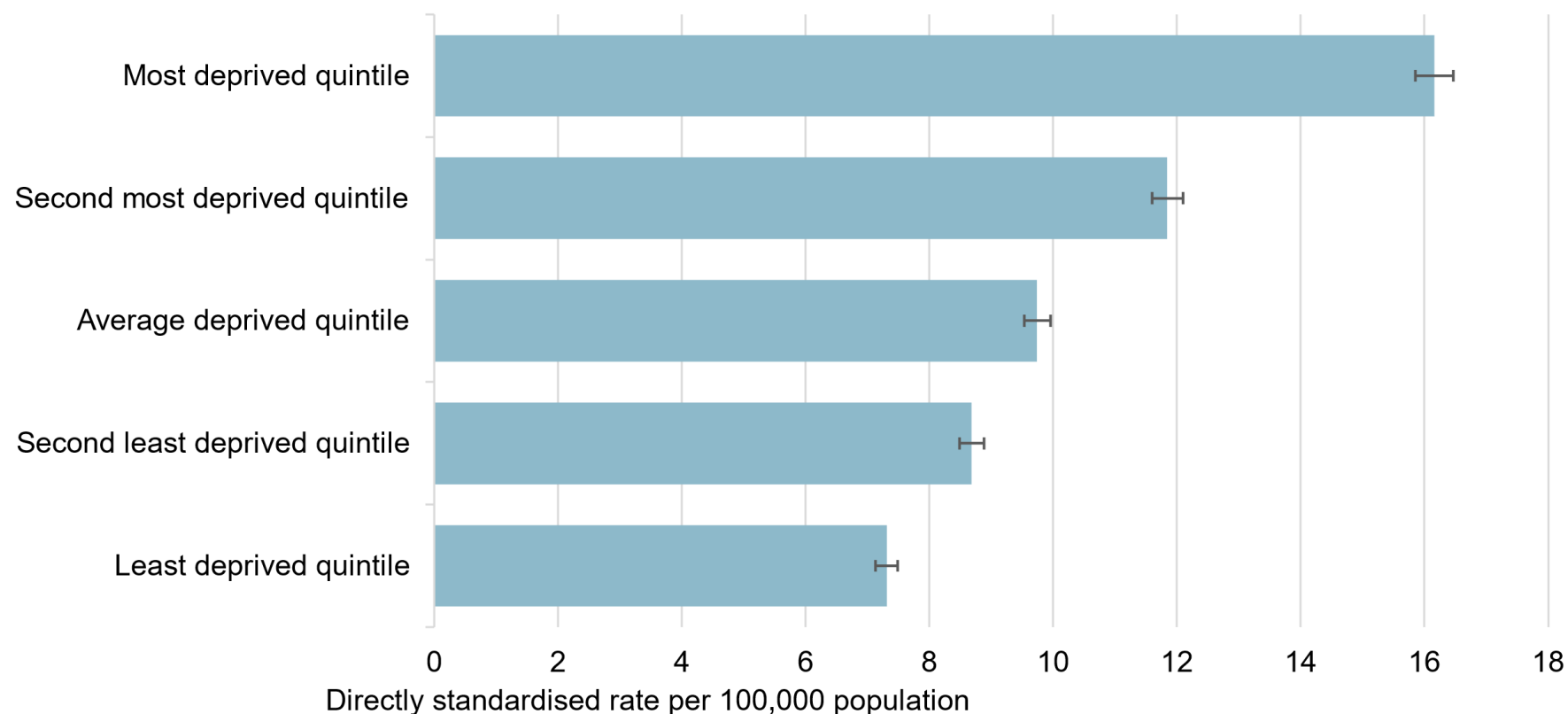


The maps, column chart and regional dot plot display data for 2013 to 2020 pooled, during which integrated care board (ICB) values ranged from 45.0% to 59.6%, which is a 1.3-fold difference between ICBs. The England value for 2013 to 2020 pooled was 53.1%.

Of the 42 ICBs, 9 were statistically significantly higher than the England value (4 at the 95% confidence level and 5 at the 99.8% confidence level) and 11 were statistically significantly lower than the England value (5 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](#).

3.2: Variation in incidence of late stage diagnosis for head and neck cancer by deprivation quintile

Bar chart 3.2: Variation in incidence rate of late stage diagnosis (stage 3 and 4) for head and neck cancer patients by lower super output area (LSOA) deprivation quintile in England (2013 to 2020)



The incidence rate in the most deprived quintile was 16.2 per 100,000 population. The least deprived quintile rate was 7.3 per 100,000 population. There is a 2.2-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 percentage of head and neck cancer patients diagnosed at a late stage

There was geographical variation across ICBs, the percentage of patients diagnosed at a late stage (stages 3 and 4) varied between 45.0% and 59.6%. Reasons for variation in the proportion of head and neck cancers diagnosed at a late stage may include differences in:^{8 60}

- population factors such as:
 - socio-economic factors
 - differences in the ethnicity and age profile
 - ability to recognise symptoms of concern and seek timely care
- health system factors such as:
 - access to primary care medical and dental services
 - referral pathways and processes

People living in the most deprived areas were more likely to be diagnosed with head and neck cancer at a late stage than those living in the least deprived areas. Possible reasons for a higher proportion of late stage diagnosis in more deprived groups have been explored in the literature and include:^{8 60}

- lower health literacy resulting in reduced confidence to access, understand and evaluate healthcare needs and utilise healthcare services
- lower capacity to communicate and assert healthcare needs and decisions
- greater use of emergency services and less use of preventative services
- poorer access to dental services, for example due to cost and the administrative burden of obtaining free dental treatment
- multiple consultations

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