

Statistical bulletin

# Deprivation and the impact on smoking prevalence, England and Wales: 2017 to 2021

Cigarette smoking prevalence among adults in England and Wales by the Index of Multiple Deprivation, including proportions and distribution of smokers within each decile.



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# 1 . Main points

- Approximately one-third (33.1%) of all smoking adults in England lived in the two most deprived deciles in 2021, up from 29.5% in 2017.
- Just over one-tenth (10.9%) of all smoking adults in England lived in the two least deprived deciles in 2021, down from 12.1% in 2017.
- Just under one-third (28.9%) of all smoking adults in Wales lived in the two most deprived deciles in 2021, the same as in 2017.
- Just under one-tenth (9.3%) of all smoking adults in Wales lived in the two least deprived deciles in 2021, down from 10.9% in 2017.
- Of people aged 18 years and over in England, 23.8% living in the most deprived neighbourhoods were current smokers in 2021, compared with 6.8% living in the least deprived neighbourhoods.
- Of people aged 18 years and over in Wales, 22.4% living in the most deprived neighbourhoods were current smokers in 2021, compared with 6.6% living in the least deprived neighbourhoods.

It is important to note that deprivation is dispersed across England and Wales, with many local authority districts containing at least one of the most deprived neighbourhoods.

## Statistician's comment

“This is new analysis by the Office for National Statistics (ONS) on the impact of deprivation on smoking prevalence. Our results show that the proportion of people who smoke in the most deprived areas of England and Wales was more than three times higher than in the least deprived areas in 2021. Our analysis also shows that over a quarter of smokers in England and Wales live in the most deprived areas.

“These data will provide important insight for policy makers and those involved in smoking reduction, so that support can be tailored for communities who need it the most and where smoking rates are highest.”

James Tucker, Data and Analysis for Social Care and Health Division, Office for National Statistics

Follow James Tucker on Twitter [@ONSJames](https://twitter.com/ONSJames)

## 2 . Smoking prevalence by deprivation based on data from the Annual Population Survey (APS)

Data from the Annual Population Survey (APS) was linked to the [Index of Multiple Deprivation](#) (IMD), and the [Welsh Index of Multiple Deprivation](#) (WIMD), to understand how smoking prevalence varied by level of deprivation, from 2017 to 2021. In England, data on smoking prevalence for 32,844 Lower layer Super Output Areas (LSOAs) or neighbourhoods (as referred to in this release) were collated alongside the IMD decile for each area. The IMD splits the 32,844 neighbourhoods into 10 equal groups (or deciles) based on their deprivation rank. Similarly, in Wales, data on smoking prevalence for 1,909 Lower Super Output Areas (LSOAs) or neighbourhoods were collated alongside the WIMD decile for each area. The WIMD splits the 1,909 neighbourhoods into 10 equal groups (or deciles) based on their deprivation rank.

The IMD and WIMD are both measures of deprivation in their respective countries, but they use different methodologies to calculate deprivation scores for each area. This means that the scores produced by the IMD and WIMD cannot be directly compared with each other, as they represent different dimensions of deprivation that are specific to the areas they cover.

Smoking is a significant public health issue that has a far-reaching impact on individuals, families, and communities. Despite significant reductions in smoking prevalence over the past decade, as shown in our [Adults smoking habits in the UK: 2021 bulletin](#), smoking still remains a leading cause of preventable death and disease globally. [The World Health Organisation](#) estimates that tobacco use causes more than 8 million deaths each year, while around 1.2 million are the result of non-smokers being exposed to second-hand smoke.

One of the factors that is associated with smoking prevalence is deprivation. IMD and WIMD are measures of deprivation based on factors such as access to resources, opportunities, and assets that are essential for a healthy and fulfilling life. Deprivation can be related to various aspects of life, including income, employment, education, and living conditions.

### Smoking prevalence and deprivation in England and Wales

In England, between 2017 and 2021, smoking prevalence declined at every level of deprivation. Smoking prevalence was higher in the most deprived neighbourhoods compared with the least deprived, and this was [statistically significant](#).

In 2021, 23.8% (around 930,000) of people aged 18 years and over living in England's most deprived neighbourhoods were current smokers, this was a statistically significant decline from 26.2% in 2017.

Meanwhile, 6.8% (around 270,000) of people aged 18 years and over living in the least deprived neighbourhoods were current smokers, down from 7.6% in 2017.

In 2021, in England, the proportion of current smokers, aged 18 years and over, was highest in the male population across all deciles compared with the female population. With 27.6% of the male population living in the most deprived neighbourhoods being current smokers, compared with 20.3% of the female population.

Similarly, in the least deprived neighbourhoods, the proportion of current smokers was highest in the male population compared with the female population, at 8.4% and 5.3%, respectively. More information on proportions of current smokers, including confidence intervals can be found in the [accompanying dataset](#).

### Figure 1: Smoking prevalence declined at every level of deprivation in England from 2017 to 2021

Proportion who were current smokers, all persons aged 18 years and over, England, 2017 to 2021

Notes:

1. Confidence intervals for estimates of smoking prevalence can be found in the [accompanying dataset](#).
2. The [accompanying dataset](#) includes data on smoking prevalence by IMD decile, including sex from 2017 to 2021.
3. The national average smoking prevalence was 13% in England in 2021.

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Official smoking prevalence estimates for Wales should be taken from [Adult lifestyle \(National Survey for Wales\)](#).

In Wales, between 2017 and 2021, smoking prevalence declined at almost every level of deprivation.

In 2021, 22.4% (around 49,000) of people aged 18 years and over living in Wales' most deprived neighbourhoods were current smokers, this was a statistically significant decline from 29.7% in 2017.

Meanwhile, 6.6% (around 16,000) of people aged 18 years and over living in the least deprived neighbourhoods were current smokers, the same as in 2017.

In 2021, in Wales, the proportion of current smokers aged 18 years and over living in the most deprived neighbourhoods was higher in the female population compared with the male population, at 25.9% and 18.3%, respectively.

While in the least deprived neighbourhoods, the proportion of current smokers was higher in the male population at 8.6%, compared with the 4.8% in the female population.

More information on proportions of current smokers, including confidence intervals can be found in the [accompanying dataset](#).

## **Figure 2: Smoking prevalence declined at most levels of deprivation in Wales from 2017 to 2021**

**Proportion who were current smokers, all persons aged 18 years and over, Wales 2017 to 2021**

### **Notes:**

1. Official smoking prevalence estimates for Wales should be taken from [devolved health](#) or national surveys.
2. Confidence intervals for estimates of smoking prevalence can be found in the [accompanying dataset](#).
3. The [accompanying dataset](#) includes data on smoking prevalence by WIMD decile, including sex, from 2017 to 2021.
4. The national average smoking prevalence was 14.1% in Wales in 2021.

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## Distribution of current smokers, in England and Wales, 2021

In 2021, in England, almost one-third (33.1%) of all current smokers aged 18 years and over were living in the two most deprived deciles, compared with around one-tenth (10.9%) living in the two least deprived deciles.

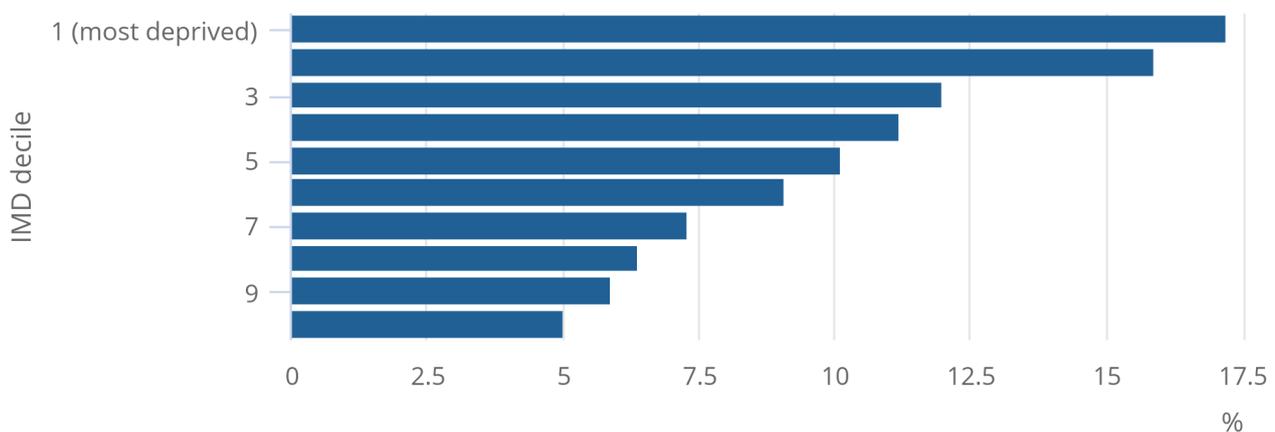
In 2021, the proportion of current smokers living in the two most deprived deciles increased to 33.1% (3.6 percentage points), compared with 29.5% in 2017. This increase in the proportion of current smokers who are living in the two most deprived deciles could be because of slower rates of current smokers quitting compared with less deprived neighbourhoods.

### Figure 3: Almost a third (33.1%) of all current smokers were living in the two most deprived decile in England, 2021

Distribution of current smokers, aged 18 years and over, England, 2021

#### Figure 3: Almost a third (33.1%) of all current smokers were living in the two most deprived decile in England, 2021

Distribution of current smokers, aged 18 years and over, England, 2021



Source: Annual Population Survey from the Office for National Statistics

#### Notes:

1. Confidence intervals for estimates of smoking prevalence can be found in the [accompanying dataset](#).
2. The [accompanying dataset](#) includes data on smoking prevalence by IMD decile, including sex from 2017 to 2021.

Official smoking prevalence estimates for Wales should be taken from Adult lifestyle (National Survey for Wales).

In Wales, in 2021, over a quarter (28.9%) of all current smokers aged 18 years and over were living in the two most deprived deciles, compared with just less than one-tenth (9.3%) living in the two least deprived deciles.

In 2021, the proportion of current smokers remained at 28.9% in the two most deprived deciles, compared with 2017. While the proportion of current smokers living in the two least deprived deciles decreased to 9.3%, compared with 10.9% in 2017.

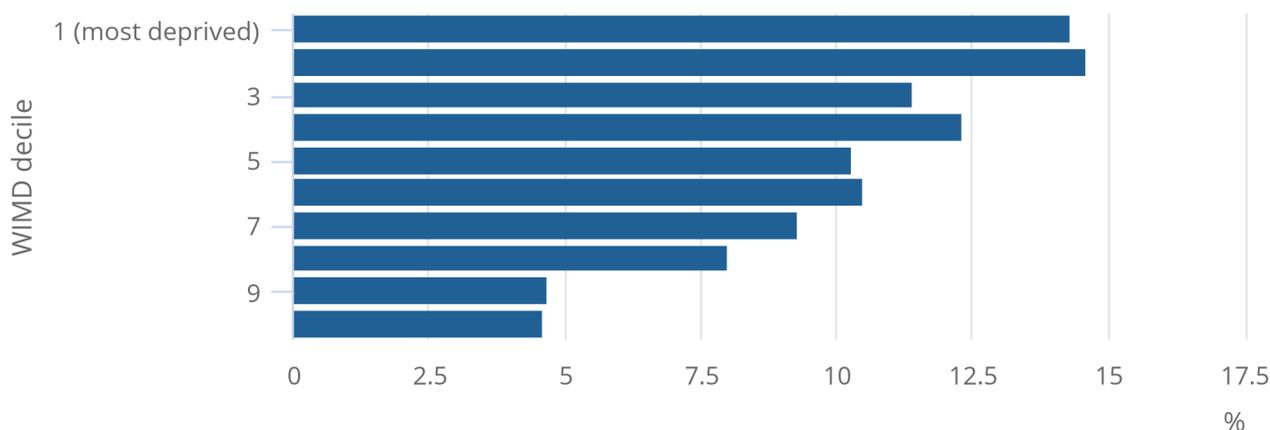
People living in deprived areas may be more likely to smoke because of different perceptions of smoking in their community, as shown in [Public Health England's Health matters: smoking and quitting in England guidance, published 15 September 2015](#). They may also be more likely to encounter peer pressure and be influenced by others who smoke, for more information see the [Trends in Social Norms Towards Smoking Between 2002 and 2015 Among Daily Smokers, published by Oxford Academia](#). This can create a cycle of smoking that is difficult to break and can lead to higher smoking rates among people living in deprived areas.

**Figure 4: Current smokers continue to be more concentrated in deprived neighborhoods in Wales, 2021**

Distribution of current smokers, aged 18 years and over, Wales, 2021

Figure 4: Current smokers continue to be more concentrated in deprived neighborhoods in Wales, 2021

Distribution of current smokers, aged 18 years and over, Wales, 2021



Source: Annual Population Survey from the Office for National Statistics

Notes:

1. Official smoking prevalence estimates for Wales should be taken from [devolved health](#) or national surveys.
2. Confidence intervals for distribution of smoker can be found in the [accompanying dataset](#).
3. The [accompanying dataset](#) includes data on distribution of current smokers by WIMD, including sex, decile from 2017 to 2021.

While the estimates for smokers' distribution are more widely dispersed, it is important to note that the analysis is based on a weighted survey. This means that the results have been adjusted to account for differences in response rates across different groups within the population.

## Impact of employment and education on smoking prevalence

Education and employment are associated with smoking prevalence in England, as shown in our [Adult smoking habits in the UK: 2021 bulletin](#). In 2021, 25.7% of unemployed adults were current smokers compared with 13.3% of employed adults.

Moreover, those with no qualifications were more likely to smoke than those with higher education qualifications. These findings are particularly relevant when examining smoking prevalence by IMD and WIMD decile, as both IMD and WIMD scores are calculated using several indicators, including employment and education levels, to identify areas of deprivation.

Lower scores indicate greater levels of deprivation, and individuals who are unemployed or have low levels of education are more likely to reside in deprived areas. Therefore, it is essential to consider the impact of education and employment on smoking behaviour when analysing the relationship between deprivation and smoking prevalence.

## 3 . Smoking deprivation, England and Wales data

[Deprivation and the impact on smoking prevalence, England and Wales](#)

Dataset | Released 21 April 2023

Cigarette smoking prevalence in England and Wales by the Index of Multiple Deprivation, including proportions and distribution of smokers within each decile.

## 4 . Glossary

### Annual Population Survey

The data on smoking habits in the UK come from the Annual Population Survey (APS). This survey has an annual sample size of approximately 320,000 respondents, making it possible to generate statistics for small geographic areas. The data on smoking is collected on the Labour Force Survey (LFS), which forms a component of the APS. Further information on the APS and survey methodology is available.

### Lower layer Super Output Area

Lower layer Super Output Areas (LSOAs) are small areas designed to be of a similar population size, with an average of approximately 1,500 residents or 650 households. There are 32,844 LSOAs in England and 1,909 LSOAs in Wales. LSOAs are a standard statistical geography produced by the Office for National Statistics for the reporting of small area statistics.

### Decile

One of a number of equal groups into which a population can be divided according to the distribution of values of a particular variable, in this case deprivation. In England and Wales, there are 10 deciles of deprivation, of which decile 1 is the most deprived and decile 10 is the least deprived. For more information, see the [Ministry of Housing, Communities and Local Government's English Indices of Deprivation 2019 \(PDF, 433KB\)](#), and [Stats Wales' Welsh Index of Multiple Deprivation 2019 by rank, decile and quintile, Lower-layer Super Output Area \(LSOA\)](#).

## Index of Multiple Deprivation (IMD) and Welsh Index of Multiple Deprivation (WIMD)

National deciles and quintiles of area deprivation are created through ranking small geographical populations known as LSOAs based on their deprivation score from most to least deprived and grouping them into 10 (deciles) or 5 (quintiles) divisions based on the subsequent ranking. The IMD and WIMD are created using separate indicators, and thus should not be compared.

IMD and WIMD are scores based on the area as a whole, and not everyone within a LSOA necessarily experiences the same level or type of deprivation. For example, some unemployed individuals live in less deprived LSOAs, while some higher-income individuals live in more deprived LSOAs. Similarly, deciles are a broad grouping and the levels of deprivation and the underlying factors determining the LSOA-level deprivation score will vary within the decile. Those LSOAs at the higher and lower end of each specific decile may vary considerably from each other.

We have used the 2019 IMD and WIMD because this is the most up-to-date version at the time of publishing. A consultation to update the English IMD has been completed, and a response published (see [Indices Future: Updating the English Indices of Deprivation \(IoD\) – consultation, published on GOV.UK](#)). There are currently no dates agreed for an update to the English or Welsh IMD. The 2019 IMD and WIMD use Census 2011 geographical boundaries; 1,031 LSOAs that were present in 2011 have either split into separate LSOAs or have been combined with other LSOAs in 2021, representing 3.1% of all LSOAs in 2021.

## 5 . Measuring the data

### Annual Population Survey (APS)

The data on smoking habits in the UK come from the APS. The survey covers residents of the UK aged 18 years and over. Further information on the APS and survey methodology is available in our [Annual Population Survey QMI](#).

The change from mixed-mode to telephone-only data collection for the APS in March 2020 resulted in a potentially biased sample, with estimates from telephone interview potentially underestimating smoking prevalence. To address this, we updated our weighting methodology to improve comparability. Details of this update can be found in our [Adult smoking habits in the UK methodology](#).

### Analysis

The analysis reported in this release used survey weights to calculate estimates representative of the population. Survey weights take into account non-response and attrition as well as the distribution of population characteristics such as sex and age, where someone lives, and socio-economic characteristics.

## 6 . Strengths and limitations

### Strengths

Robust methods are adopted for the Annual Population Survey (APS) and weighting strategies to limit the impact of bias. Quality assurance procedures are undertaken throughout the analysis stages to minimise the risk of error.

The sample size of the APS is large, approximately 164,751 respondents, making it possible to generate statistics for small geographic areas.

## Limitations

Comparisons between periods and groups must be done with caution as estimates are provided from a sample survey; as such, [confidence intervals](#) are included in the [accompanying dataset](#) to present the sampling variability. These should be taken into account when assessing differences between periods, as true differences may not exist.

There are differences when comparing estimates of smoking prevalence from different surveys. These differences are attributable to a range of factors, for example:

- different survey questions
- different methods of sampling
- different methods of weighting

## 7 . Related links

### [Adult smoking habits in the UK: 2021](#)

Statistical bulletin | Released 6 December 2022

Cigarette smoking habits among adults in the UK, including the proportion of people who smoke, demographic breakdowns, changes over time and use of e-cigarettes.

### [Likelihood of smoking four times higher in England's most deprived areas than least deprived](#)

Article | Released 14 March 2018

A person's likelihood of smoking increased in line with the level of deprivation in their neighbourhood.

### [Adult smoking habits in the UK methodology](#)

Methodology | Released 6 December 2022

Methodology information for the Adult smoking habits in the UK annual statistical bulletin.

## 8 . Cite this statistical bulletin

Office for National Statistics (ONS), released 21 April 2023, ONS website, statistical bulletin, [Deprivation and the impact on smoking prevalence, England and Wales: 2017 to 2021](#)