# Public Health England

Protecting and improving the nation's health

# Calculation of confidence intervals for smoking prevalence using the Annual Population Survey

## About the Annual Population Survey

The Annual Population Survey (APS) is a continuous household survey run by the Office for National Statistics, covering the UK. Each year around 320,000 people (160,000 in England) are asked questions regarding a variety of measures related to health, employment and unemployment, housing, education, ethnicity and religion.

## What has changed in the confidence interval method?

In July 2018, working in collaboration with the Office for National Statistics (ONS), we have modified the confidence interval method used for the smoking prevalence estimates calculated from the Annual Population Survey (APS). Previously the normal approximation method was used, however this was not able to take into account the design of the survey and how this can affect the precision of the estimates. In order to improve this, the latest confidence interval estimates are calculated using the linearised-Jacknife method. For further details of how the calculation is carried out please see here and the ONS website.

## How has this affected the results?

The following indicators are affected by this change:
- Smoking prevalence in adults – current smokers (APS)
- Smoking prevalence in adults – ex-smokers (APS)
- Smoking prevalence in adults – never smoked (APS)
- Smoking prevalence in adults in routine and manual occupations – current smokers (APS)
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Comparison of the confidence intervals on the 2016 smoking prevalence data for current smokers showed that for the majority of geographical areas the confidence intervals had widened, with estimates for only two lower tier local authorities narrowing.

Using the confidence intervals to calculate a RAG rating (red for significantly higher than England, yellow for not significantly different to England, and green for significantly lower than England), 19 local authorities that were significantly different to England using the old method became not significantly different to England with the new method (9 of which were previously lower than England, and 10 were previously higher than England).

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Published: August 2018

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