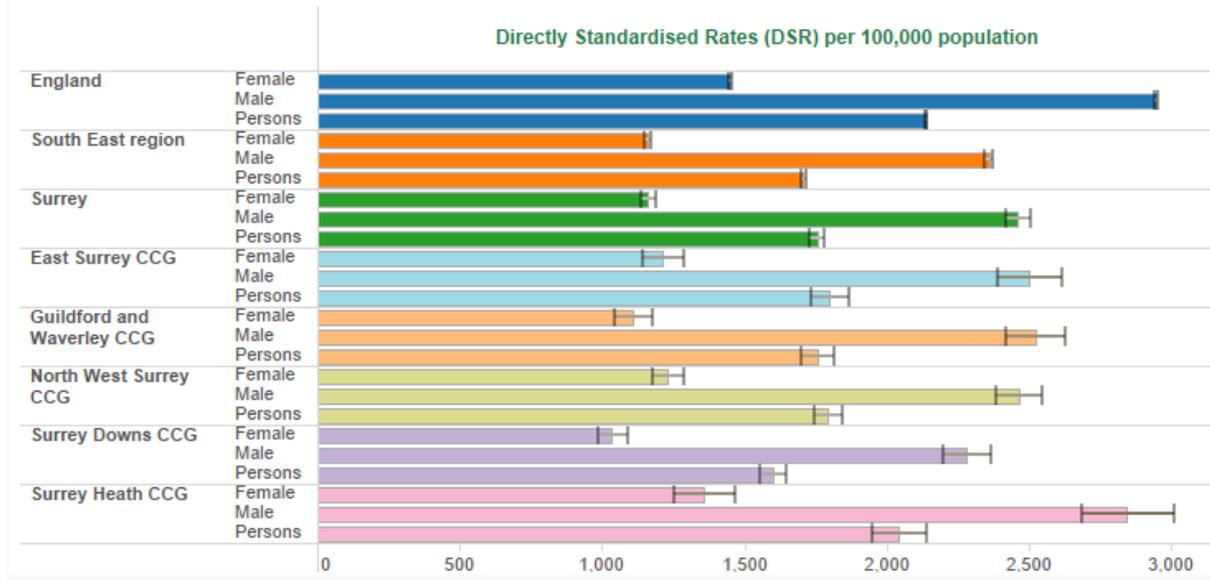


# Understanding Estimates and Confidence Intervals

Throughout this document you will see figures similar to the one below or see statistical estimates reported in the text. This box explains how to understand this information.

**Figure 1: Directly standardised admission episodes for alcohol-related conditions, 95% confidence intervals (CI) – 2014/15**

## 9.01 - Admission episodes for alcohol-related conditions (Broad), 2014/15



Standardisation is a method used to mitigate the effect of extraneous factors such as age and sex when comparing populations. In the example above, the age-specific rates for alcohol-related admissions has been applied to the same standard population (here, what is called the European Standard Population) for all the populations so that they have the same age structure and can be compared without the effect of age distorting the comparison. Standardisation may be direct or indirect – see APHO Technical Briefing 3 (<https://fingertips.phe.org.uk/profile/guidance>) for more details.

The standardised admission rates shown above are statistical estimates, which use a sample of information to estimate what the real rates are likely to be. For this reason, there is a degree of uncertainty about the estimate because a different sample might lead to a slightly different estimate. However, the degree of uncertainty around the rate can be quantified and is called a confidence interval. We show 95% confidence intervals in the figure above (the horizontal bars with vertical lines at either end) - these give the range within which the real rates are likely to be. This same approach is used for all statistical estimates in this report.

As a rule of thumb, where we are able to sample lots of information, for example from larger areas like England, there is less uncertainty about the numbers we estimate and confidence intervals are very narrow. For smaller areas like wards or CCGs, on which the estimates are based on much smaller counts (and hence less information), the uncertainty about where exactly the estimate lies is greater and confidence intervals are correspondingly bigger. You can see the width of the confidence interval in the figure above is much smaller for England than it is for the CCGs. If the confidence intervals for two estimates overlap, then we cannot say with confidence that the actual numbers are different, even if the estimates differ. In the Figure above, although the Surrey Downs rate is lower than that for Guildford and Waverley

CCG, the confidence intervals overlap so we cannot say that the rates are statistically different in these two CCGs.

## Definitions

Acronym	Term	Definition
DSR	Directly Standardised Rate	Standardisation is a method that takes into account age and possibly sex differences between populations (and possibly other nuisance factors). This allows comparisons across different areas to be made as it removes the effect of these distorting factors from the comparison.
SAR	Indirectly age standardised ratio	Indirectly age standardised admission ratio (SAR) is the ratio of the observed number of admissions against an expected number based on the England rate of admissions. Age standardisation takes into account age differences between populations.
	Incidence	Incidence is the rate of new (or newly diagnosed) cases of the disease. It is generally reported as the number of new cases occurring within a period of time (e.g., per month, per year)
	Prevalence	Disease in a population at a given time as a proportion of the population in question.
	Prevalence gap	Prevalence gap is the difference between the proportion of people diagnosed with the condition and the proportion that might be expected based on a model. The prevalence gap gives an indication of how many people in the local population are undiagnosed and so supports measures for case finding.
	Synthetic estimates	Synthetic estimates are estimates based on a model describing the relationship between the metric of interest and demographic and social characteristics which applied to a geographic area will give an estimate of the expected value of the indicator for that area.
HLE	Healthy Life Expectancy	An average number of years a person is expected to live in a state of 'Good' health, under the assumption that he/she experiences the specific population mortality and health rate in a given time period throughout his/her life. (ONS)
LSOA	Lower Super Output Area	Lower Super Output Areas (LSOAs) are areas designed by the Office of National Statistics to improve reporting of small area statistics and ensure a consistent population size of 1,000 and 3,000 people (with a mean of 1500 people)

# Acronyms

Acronym	Term
A&E	Accident and Emergency
ACRE	Action with Communities in Rural England
AF	Atrial Fibrillation
AIS	Adults Information System
APC	Admitted Patient Care
APMS	Adult Psychiatric Morbidity Survey
ASC	Adult Social Care
BCF	Better Care Fund
CCG	Clinical Commissioning Group
CHD	Coronary Heart Disease
CI	Confidence Interval
CKD	Chronic Kidney Disease
CMD	Common Mental Disorders
CMO	Chief Medical Officer
COPD	Chronic Obstructive Pulmonary Disease
DCLG	Department for Communities and Local Government
DMFT	Decayed, Missing or Filled Teeth
GP	General Practitioner
GRT	Gypsy, Roma and Traveller
HES	Hospital Episode Statistics
IAPT	Improving Access to Psychological Therapies
ICD10	International Classification of Diseases (Version 10)
IMD	Index of Multiple Deprivation
JSNA	Joint Strategic Needs Assessment
LA	Local Authority
LAPE	Local Alcohol Profiles for England
LCI	Lower Confidence Limit
LD	Learning Disability
LE	Life Expectancy
LTC	Long Term Conditions
NCIN	National Cancer Intelligence Network
NCVIN	National Cardiovascular Intelligence Network
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
ONS	Office for National Statistics
PAD	Peripheral Arterial Disease
PANSI	Projecting Adult Needs and Service Information
PH	Public Health
PHE	Public Health England
PHOF	Public Health Outcomes Framework
POPPI	Projecting Older People Population Information
PYLL	Potential Years of Life Lost
QOF	Quality and Outcomes Framework
SAP	Standard Assessment Procedure

SCC	Surrey County Council
SII	Slope Index of Inequality
SMI	Serious Mental Illness
SMR	Standardised Mortality Ratio
TIA	Transient Ischaemic Attack
UCI	Upper Confidence Limit
UK	United Kingdom