Discontinuities in results for health-related lifestyle and general health between the Welsh Health Survey and National Survey for Wales[1]

In 2016-17, the National Survey for Wales (NSW) replaced the Welsh Health Survey (WHS) as the source of data on health-related lifestyles, general health, and illness among adults. Results from the two surveys are not comparable due to the change in survey methodology. This statistical article explores the extent of the differences for selected topics.

Key points

The extent of discontinuities between WHS and NSW vary – for some topics they are large and clear, for others less so, but we advise caution and against making any direct comparisons between results from the two surveys. Trends should start to become clearer again once more data is available from NSW.

Results for the following topics are lower in NSW than WHS:

- fruit and vegetable consumption (5 a day)
- physical activity (active 150 minutes a week)
- alcohol consumption (over 4 units (men) / 3 units (women) in a day)
- reported illness

Results for the following topics are higher in NSW than WHS:

- fair / poor general health

While results for the following topics appear similar at national level, this often masks differences in particular sub-groups, some of which can be quite large:

- smoking
- overweight & obesity
- limiting long-standing illness

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1 Notes on the use of statistical articles can be found at the end of this document.

Section 1: Introduction

Background

The National Survey for Wales (NSW) began in its original form in 2012 and it was one of five large-scale social surveys carried out in Wales by Welsh Government (WG) and its sponsored bodies; the others were: the Welsh Health Survey (WHS), Active Adults Survey, Arts in Wales Survey and the Welsh Outdoor Recreation Survey. A review of the way social surveys were carried out in Wales concluded that a viable approach was to bring together the five surveys into a single National Survey, and this was the approach adopted from 2016-17.

'Identifying potential discontinuities in the new National Survey for Wales' was a study previously commissioned to investigate whether the new survey would produce different results and what this means for understanding trends over time. It compared key results from a large-scale test of the new National Survey (summer 2015) with results for the same topics from the predecessor surveys.

What this article covers

This statistical article compares results for the 1st year of the new NSW (2016-17) with the final year of the old WHS (2015). 2017-18 data is also used to analyse trends. The focus of this article is on a selection of key health-related lifestyle variables, and for completeness it also includes some general health and illness variables. Although similar topics were covered in the two surveys, methodological differences and some changes in the detail of what was collected mean that it's to be expected that there may be some differences in the results. This article explores the extent of those differences.

Limitations

This article provides a subjective indication of the extent to which there may be differences between the results of the two surveys rather than any formal or objective measure. The article suggests whether there are apparent differences, but does not attempt to re-base any results to produce a more consistent time series. In some cases, results suggest there are obvious discontinuities; in others, it's less clear. The addition of future years of data from the new survey, when available, should help make the picture clearer.

Scope and method

This article investigates the results for key health-related lifestyle variables and a small number of general health and illness variables. All results are for adult aged 16 and over only. The variables covered are:

- smoking
- overweight or obese (and obesity as a separate measure)
- fruit and vegetable consumption (at least 5 a day)
- physical activity (150 minutes a week)

- alcohol consumption (over old daily guidelines[2])
- general health (fair or poor)
- limiting longstanding illness (and illness which limits a lot as a separate measure)
- any illness
- selected key illnesses (high blood pressure, mental, respiratory, musculoskeletal and diabetes).

Questionnaires for the WHS[3] and the NSW[4] are available on the Welsh Government website. Where questions changed between the surveys, this is noted in the article. However, even where they remained essentially the same there may have been some minor changes to accommodate the move from a self-completion paper questionnaire (WHS) to a computerised interview (NSW). The change in mode could in itself have an impact on responses, as could other methodological and contextual differences between the surveys.

The article explores the results for Wales as a whole and for key subgroups (sex, age, deprivation quintile). Results by Local Health Board (LHB) are not shown, as the smaller sample size can make these more volatile.

The article reports on:

- Change in overall trends between WHS and NSW (results for NSW 2017-18 as well as NSW 2016-17 are included for completeness).
- Differences between the 2015 WHS and 2016-17 NSW (both in terms of percentage points and percentage difference). This gives an indication of both the size and direction of differences and is helpful for looking at how consistent the effect is across different sub-groups.
- Whether there is a significant difference between results for the 2015 WHS and the 2016-17 NSW. Within this article, significant difference is based on whether Confidence Intervals (CIs) around each measure overlap rather than a formal test. However, whether or not CIs overlap does not necessarily indicate a discontinuity or a lack of one, but reflects more on the degree of uncertainty in estimates based on survey sample size. Differences here would need to be quite large to be statistically significant (typically at least 2 percentage points at national level for the main lifestyle variables and greater for sub-groups). Therefore this is probably a more useful measure of the presence of a discontinuity than the lack of one, and looked at on its own is of limited use.

[2] Drinking over 4 units for men and 3 for women
[3] Welsh Health Survey 2015 Questionnaire for Adults: http://gov.wales/docs/statistics/2015/150324-health-survey-2015-quesionnaire-adult-en.pdf
[4] National Survey for Wales 2016-17 Questionnaire: http://gov.wales/docs/caecd/research/2016/160817-national-survey-questionnaire-2016-17-en.pdf

- Changes for England and Scotland are considered for those variables where there was a large apparent discontinuity between WHS and NSW. The results for England[5] and Scotland[6] are based on their own health surveys (which have not changed). Although these surveys were different from the WHS and the results were not directly comparable, trends often move in a similar direction for the 3 countries, thus this may give some indication of whether an abrupt change in Welsh trends is plausible.
- Changes in smoking from the Office for National Statistics' (ONS) Annual Population Survey (APS) are considered for some groups. The APS has a large sample for Wales and questions for smoking have been asked since 2011.

[5] Health Survey for England: https://digital.nhs.uk/areas-of-interest/public-health/health-survey-for-england
[6] Scottish Health Survey: http://www.gov.scot/Topics/Statistics/Browse/Health/scottish-health-survey

Section 2: Results

A summary of the results is below. An overview table is in the annex and more detailed tables are available online.

Smoking

At first glance, the discontinuity in adult smoking appears small at an overall national level (chart 1). However, when breaking down the results by subgroup, some larger (although not statistically significant) differences appear (chart 2). There is a general tendency for slightly lower figures in most groups, but there are some exceptions, and the size of the difference varies.

Chart 1: Trends in smoking

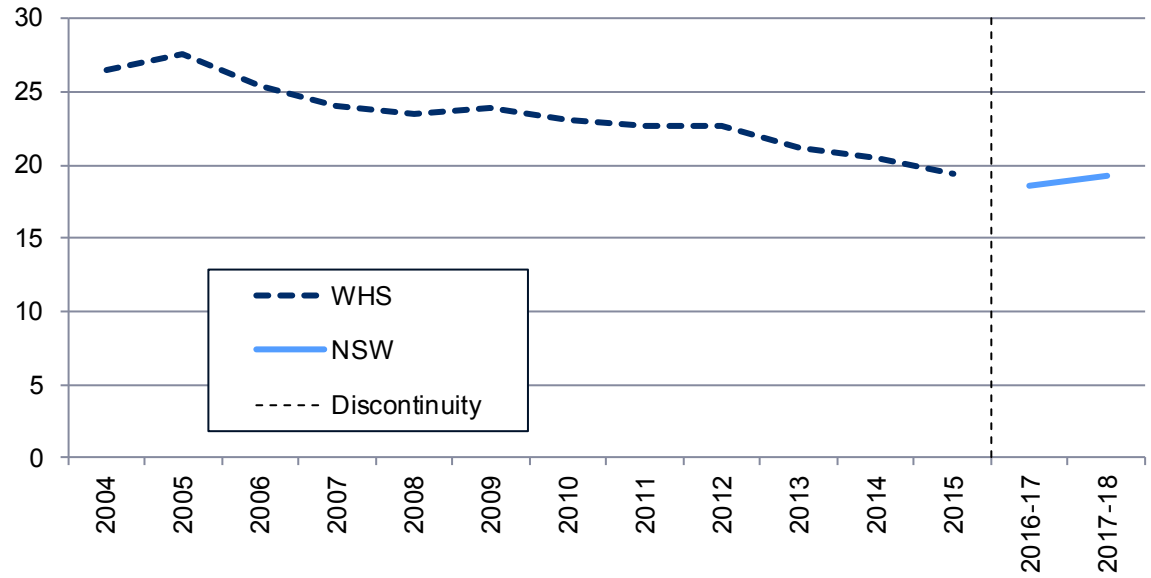
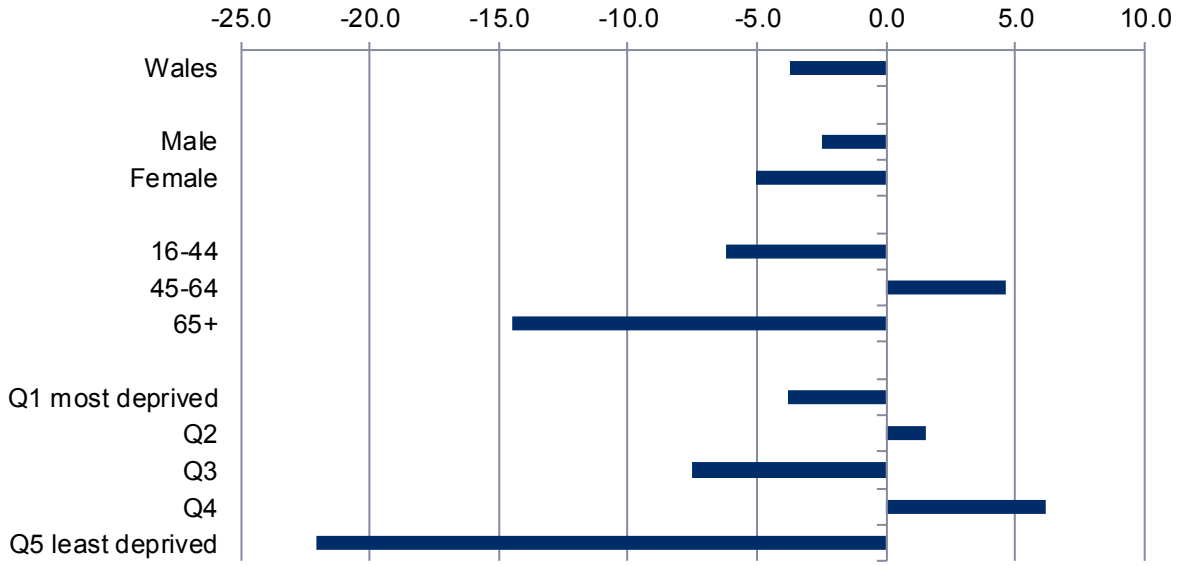


Chart 2: Percentage change in adult smokers between 2015 (WHS) and 2016-17 (NSW)



In terms of age groups, there appears to be a slight increase in smoking among 45-64 year-olds between the 2015 WHS and the 2016-17 NSW, and a relatively large decrease among those aged 65+, however neither of these were seen in the APS Welsh data. NSW data for 2017-18 has just become available, and this suggests that rates for these two age groups have changed again (slight drop for 45-64 year-olds, slight increase for 65+, neither change being statistically significant), taking rates for those groups back to levels more similar to those seen previously.

In terms of deprivation, there appears to be a large drop in smoking in the least deprived quintile (quintile 5), but this was not seen in the APS Welsh data (in fact, APS data suggested a larger decrease in the most deprived quintile, quintile 1). NSW data for 2017-18 is available, and this shows smoking rates in the least deprived quintile have increased back to levels more similar to those seen previously.

Overall, the results suggest that there may be some small discontinuities in the WHS and NSW results, but they affect different groups differently and so are masked in the overall national figures. However, it's possible these are simply fluctuations between two years or that 2016-17 results for some sub-groups were an anomaly. Future data may help clarify this.

Overweight & obese

The discontinuity in overweight/obese and obese appears small at an overall national level (chart 3). However, it's difficult to judge whether this is also true for sub-groups – there is a general tendency to slightly lower figures, but there are some exceptions (chart 4). For obesity alone, the discontinuity appears slightly larger than for overweight/obese (though still not large or statistically significant) – however the differences are bigger for some of the subgroups (such as women). It appears that NSW may produce very slightly lower obesity results than WHS; but the effect varies for different groups and any differences are small. However, it's possible these are simply fluctuations between two years. More data may help clarify the picture.

Chart 3: Trends in overweight & obesity

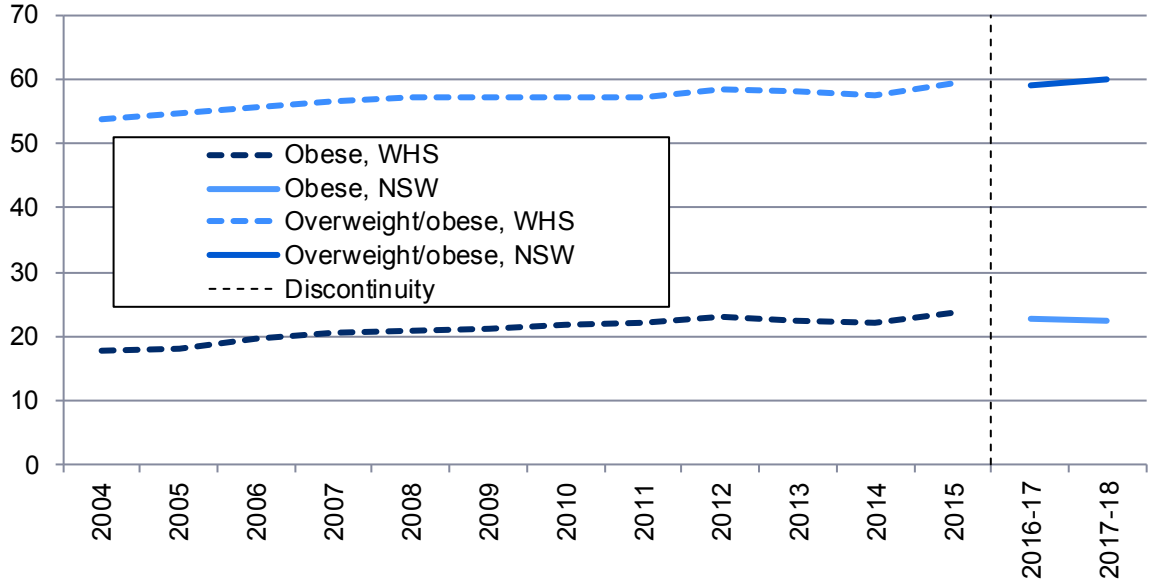
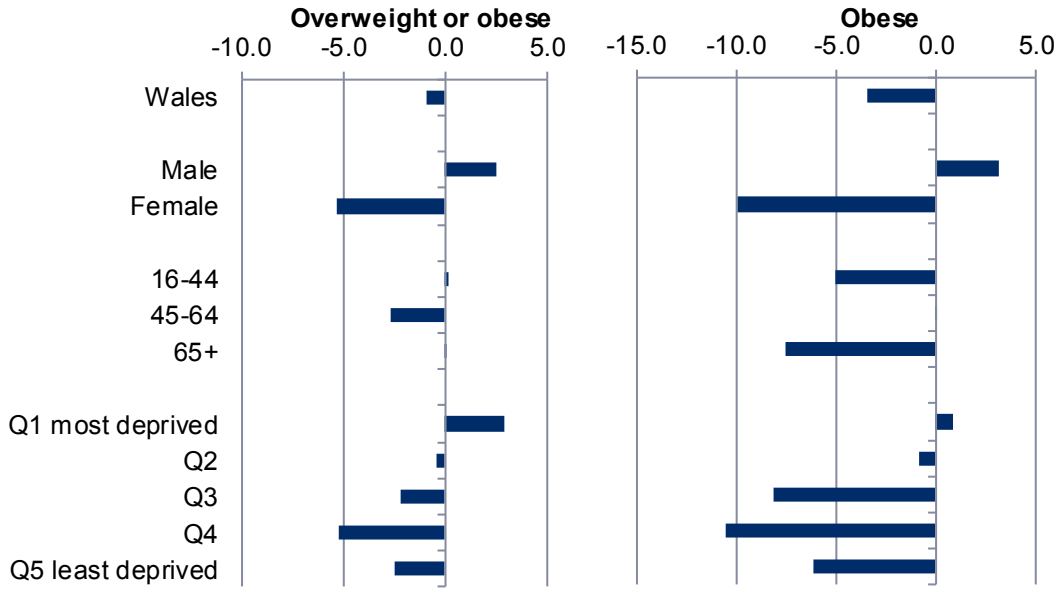


Chart 4: Percentage change of overweight & obese adults between 2015 (WHS) and 2016-17 (NSW)



Fruit & vegetable consumption

Looking at adults eating at least 5 portions of fruit and vegetables the previous day, there is a clear discontinuity in fruit & vegetable consumption (chart 5) between the two surveys. A large drop is seen which is statistically significant. The drop is seen across all groups (chart 6). Similar drops were not observed in Scotland and England (where their health surveys have not changed). Fruit & vegetable consumption results from the two surveys should not be compared.

Chart 5: Trends in fruit & vegetable consumption (5 a day)

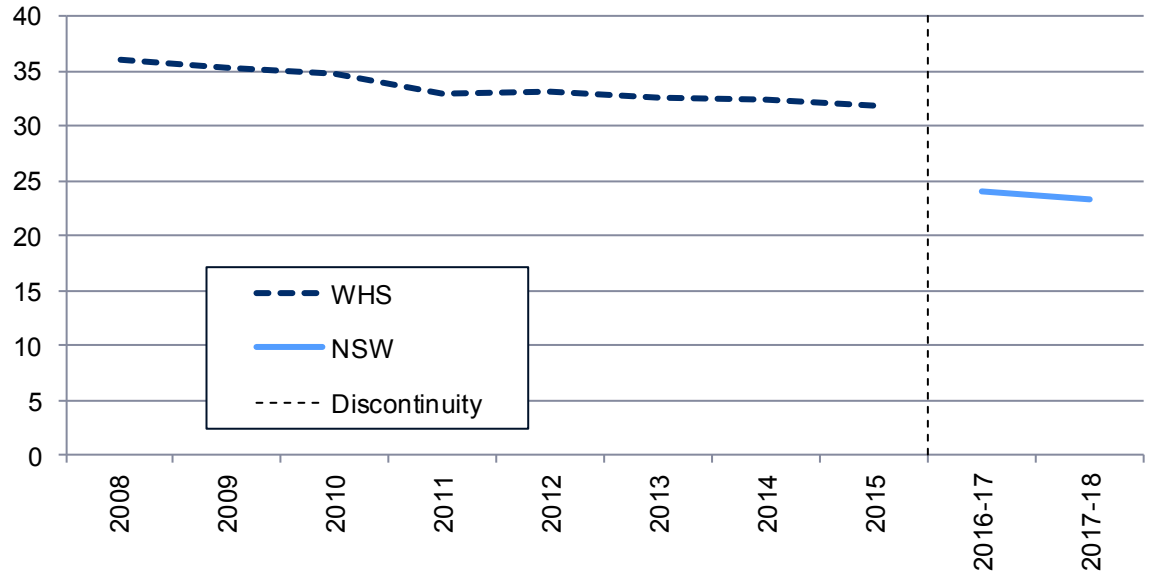
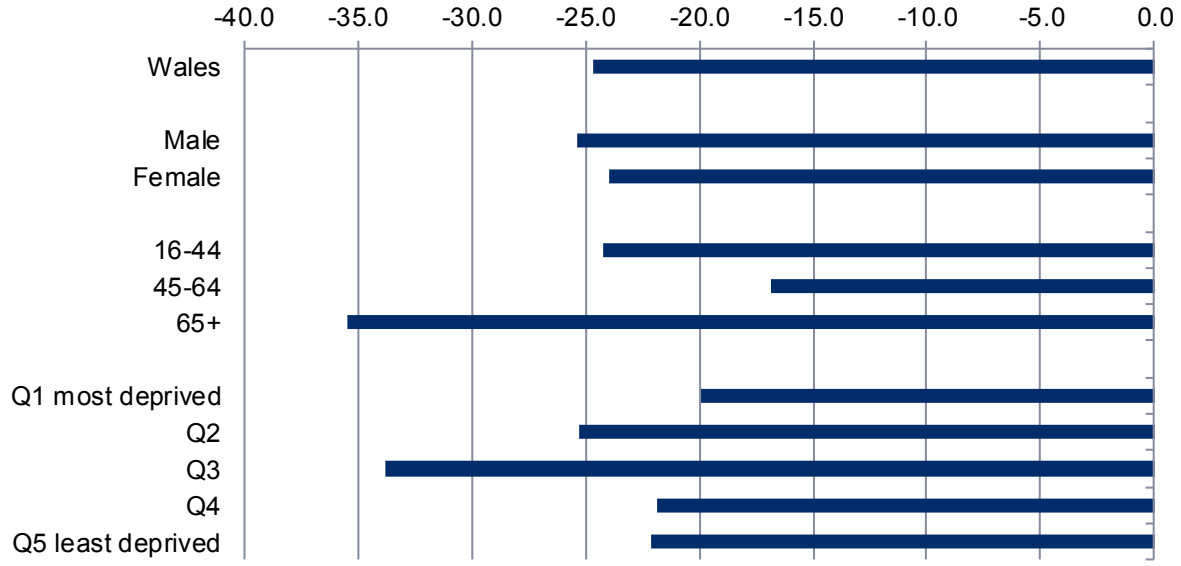


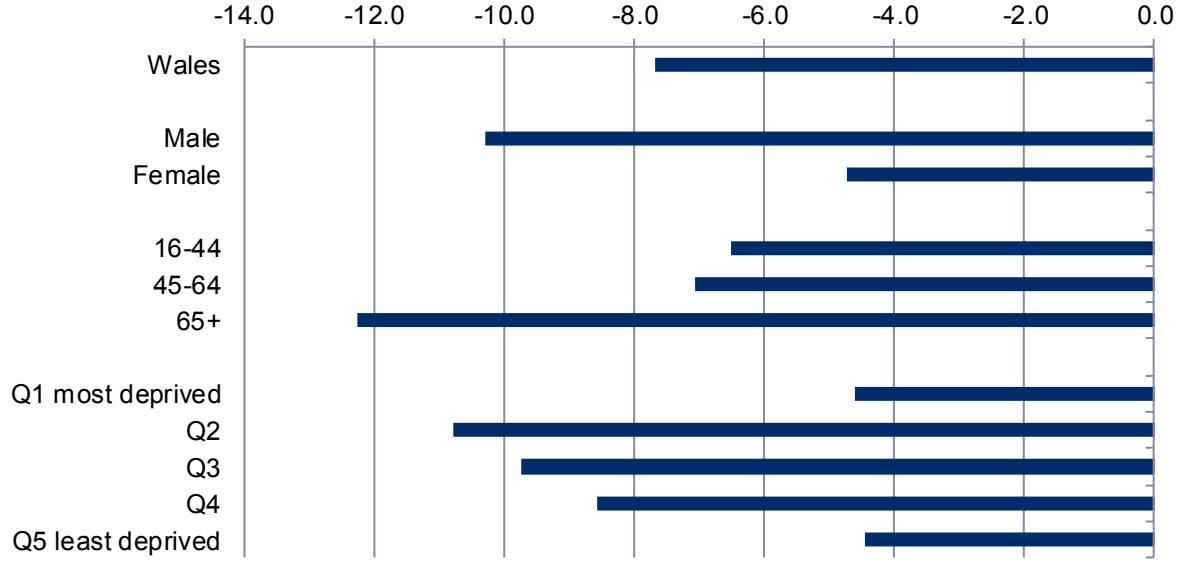
Chart 6: Percentage change in fruit & vegetable consumption (5 a day) between 2015 (WHS) and 2016-17 (NSW)



Physical activity

The physical activity measure is based on newer guidelines of 150 minutes of moderate activity (or equivalent) a week, which were collected for the first time in the 2015 WHS; so there are no long-term trends. Looking at adults active for at least 150 minutes the previous week, there is a clear discontinuity in physical activity (chart 7). A large drop is seen which is statistically significant. The drop is seen across all groups. A similar drop was not seen in Scotland. The information is only reported periodically in England, but no change was seen between the two most recent time periods (2012 and 2016). Physical activity results from the two surveys should not be compared.

Chart 7: Percentage change in physical activity (150 minutes a week) between 2015 (WHS) and 2016-17 (NSW)



Alcohol

Looking at adults drinking over 4 units (men) or 3 units (women) on a day the previous week, there is a clear discontinuity in alcohol consumption (chart 8). A large drop is seen, which is statistically significant. The drop is seen across all groups (chart 9). Similar drops were not observed in Scotland and England. Note that this measure is based on the old daily alcohol guidelines – the main measure now reported is the new weekly alcohol guidelines of 14 units, which was not collected under WHS. Alcohol results from the two surveys should not be compared.

Chart 8: Trends in alcohol consumption (over 4/3 units in day)

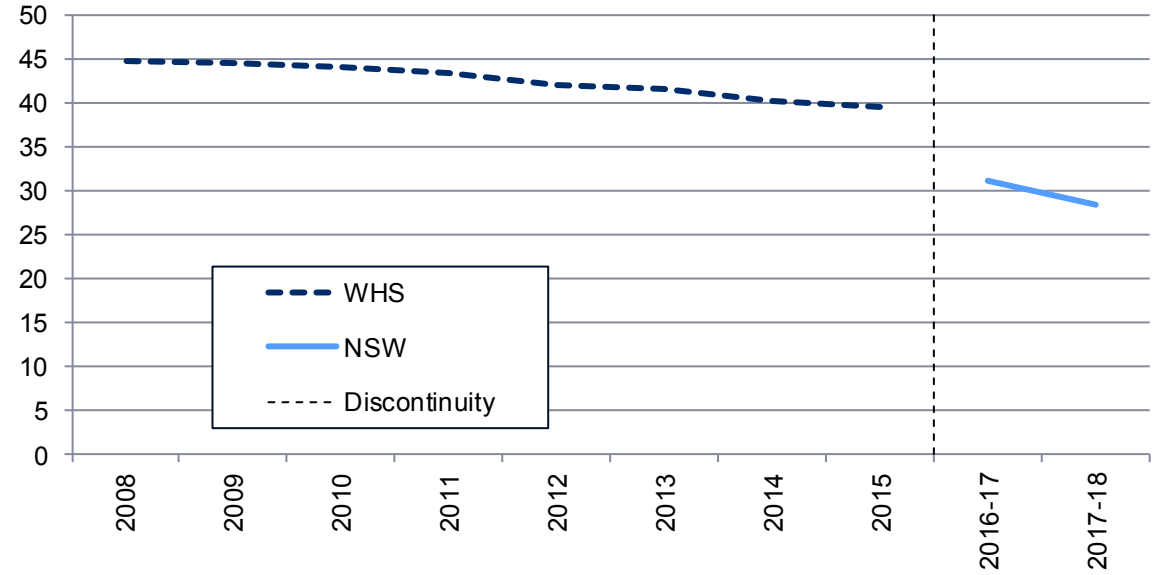
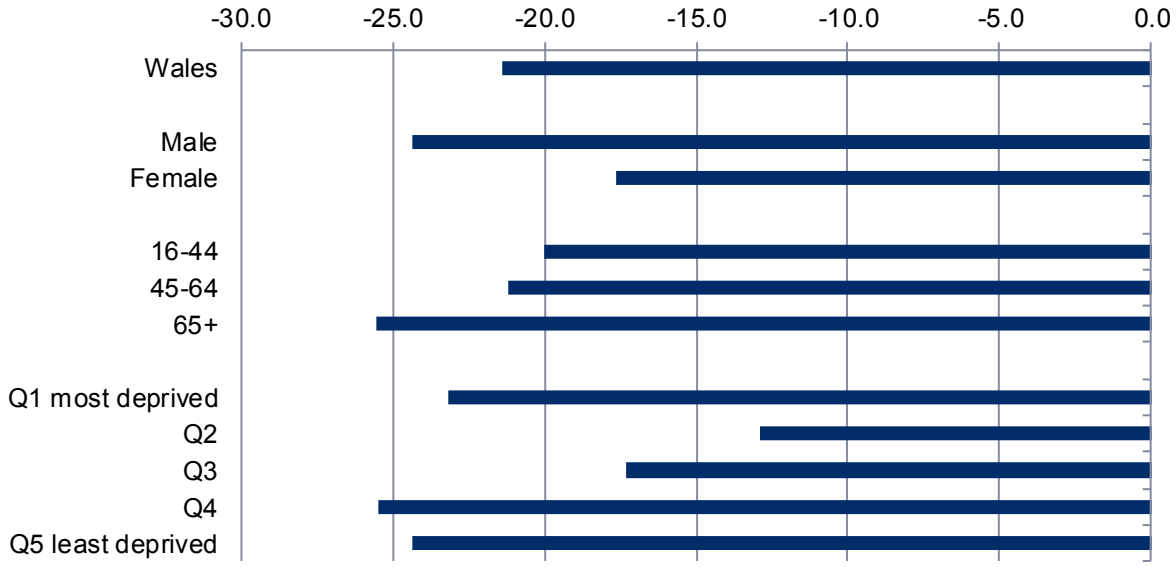


Chart 9: Percentage change in alcohol consumption (over 4/3 units in day) between 2015 (WHS) and 2016-17 (NSW)



General health fair or poor

The answer options for general health have changed, and it's therefore expected that there will be a discontinuity. This article shows results for those not in good health – for WHS, this is those saying they were in fair or poor health and for NSW, those in fair, bad or very bad health (there was no option for very poor heath in WHS). There is a clear discontinuity (chart 10). A large increase is seen which is statistically significant. The increase is seen across all groups (chart 11). A similar increase was not seen in England or Scotland. Fair/poor general health results from the two surveys should not be compared.

Chart 10: Trends in fair / poor general health

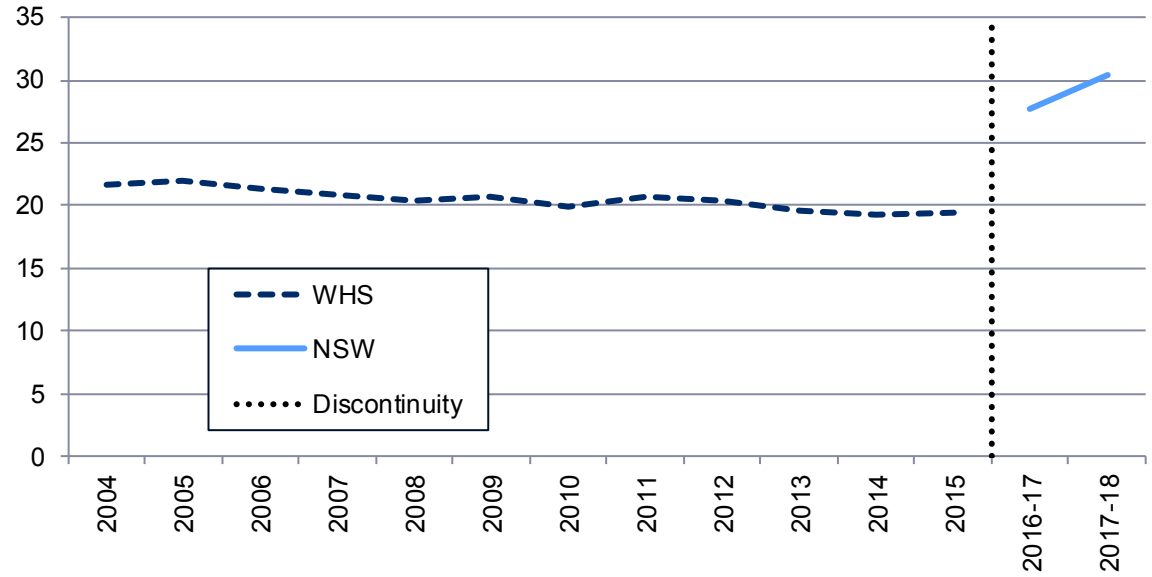
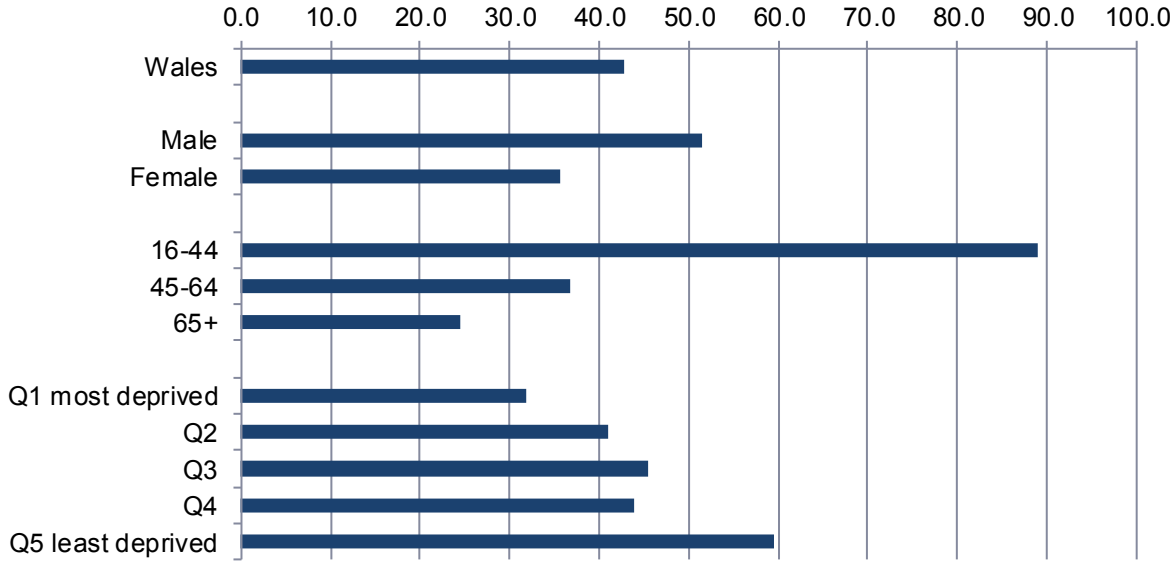


Chart 11: Percentage change in fair / poor general health between 2015 (WHS) and 2016-17 (NSW)

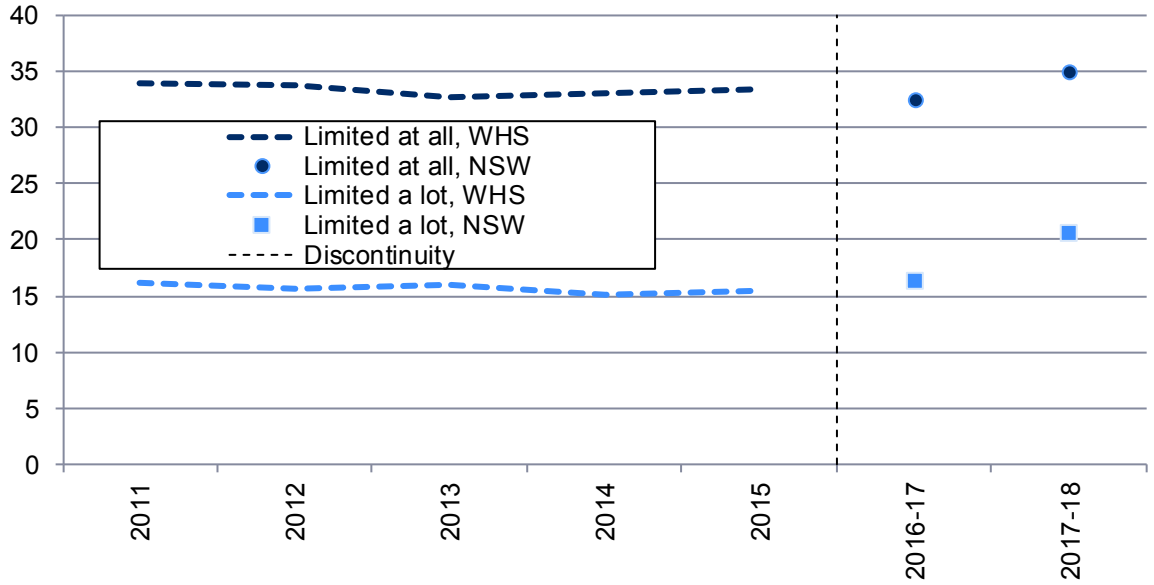


Limiting longstanding illness

The question for limiting longstanding illness has changed, and this is likely to affect the results. For those reporting being **limited at all** by a longstanding illness or condition, the discontinuity appears small at an overall national level; however there are some large (and significant) differences for sub-groups,

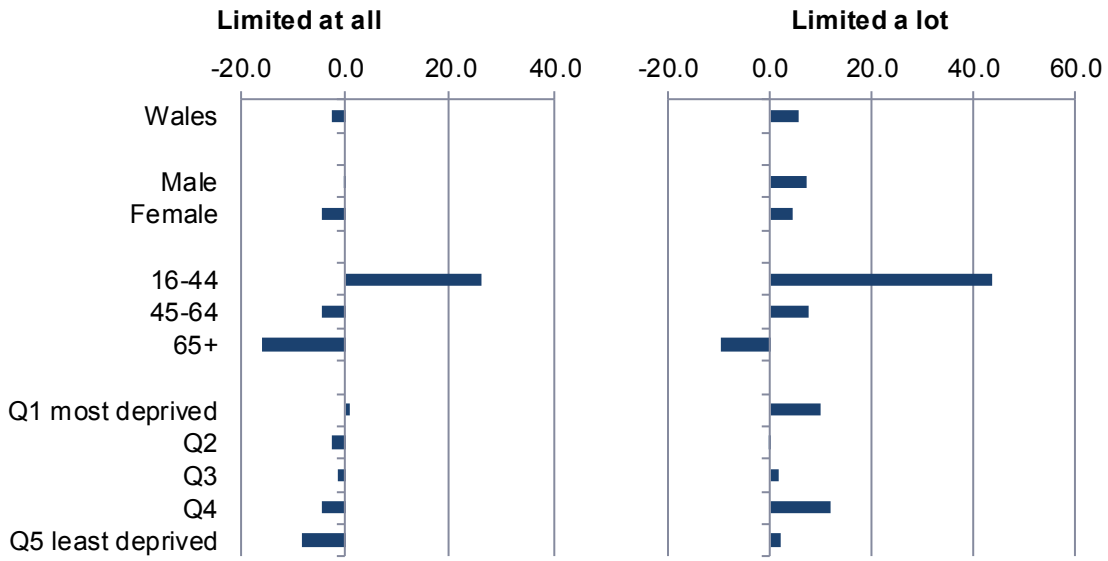
including a large increase for younger people and a large decrease for older people (charts 12 and13). There is a general tendency to slightly lower figures in NSW, with the exception of the large increase seen for younger people. For those reporting being **limited a lot**, again the discontinuity at overall national appears small, but there is a large (and significant) increase for younger people. The general tendency is for slightly higher figures in NSW (considerably higher for younger people), but with a slight reduction for older people. Taken together, this suggests some discontinuities in results for limiting longstanding illness, affecting different groups (and in particular different age groups) differently, which is masked in the overall national results. Limiting longstanding illness results from the two surveys should not be compared. Note that the question changed again for 2017-18, which is reflected in a further discontinuity, with rates for 2017-18 being higher than for 2016-17, however results for these two years should not be directly compared either.

Chart 12: Trends in limiting longstanding illness (a)



(a) There is a discontinuity for limiting longstanding illnesses between NSW 2016-17 and 2017-18

Chart 13: Percentage change in limiting longstanding illness between 2015 (WHS) and 2016-17 (NSW)



Illnesses & health conditions

Questions about illnesses have changed. In WHS, respondents were asked whether they were currently being treated for a range of illnesses – a checklist of specific illnesses was provided for respondents to answer about each one. In NSW, respondents were asked whether they had a longstanding illness or condition, and if so asked to say what it was – they could name up to 6 conditions. The change in question means that it's expected there will be differences in the results, and there is a clear discontinuity (chart 14). Looking at whether respondents report any illness, a decrease is seen which is statistically significant. The decrease is seen across all groups (chart 15). A similar decrease was not seen in Scotland (the information is not routinely reported for England). Results for reporting any illness from the two surveys should not be compared.

Chart 14: Trends in any reported illness

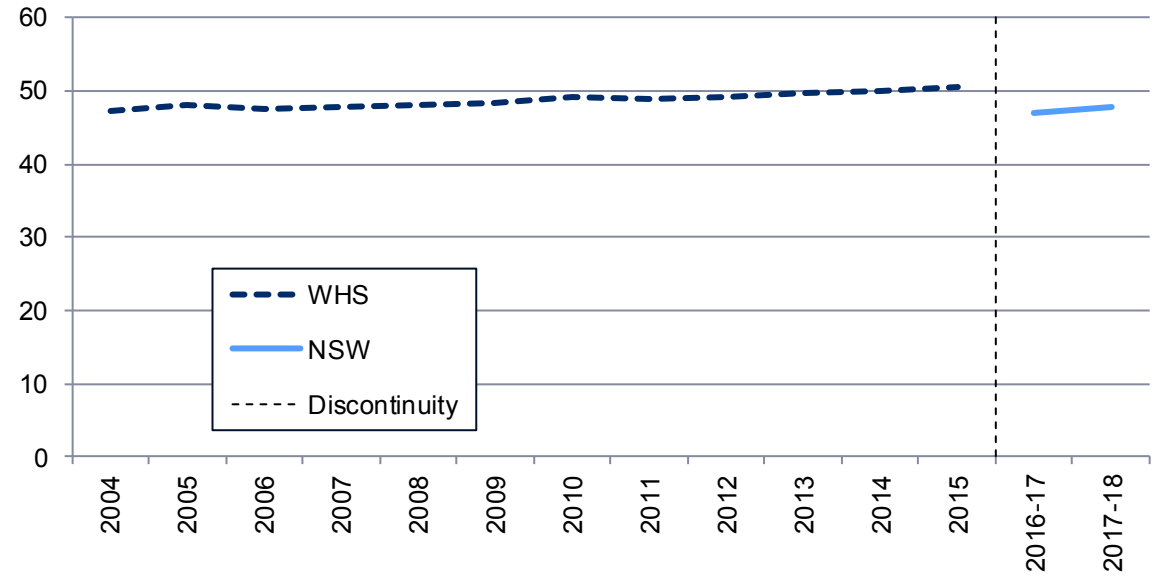
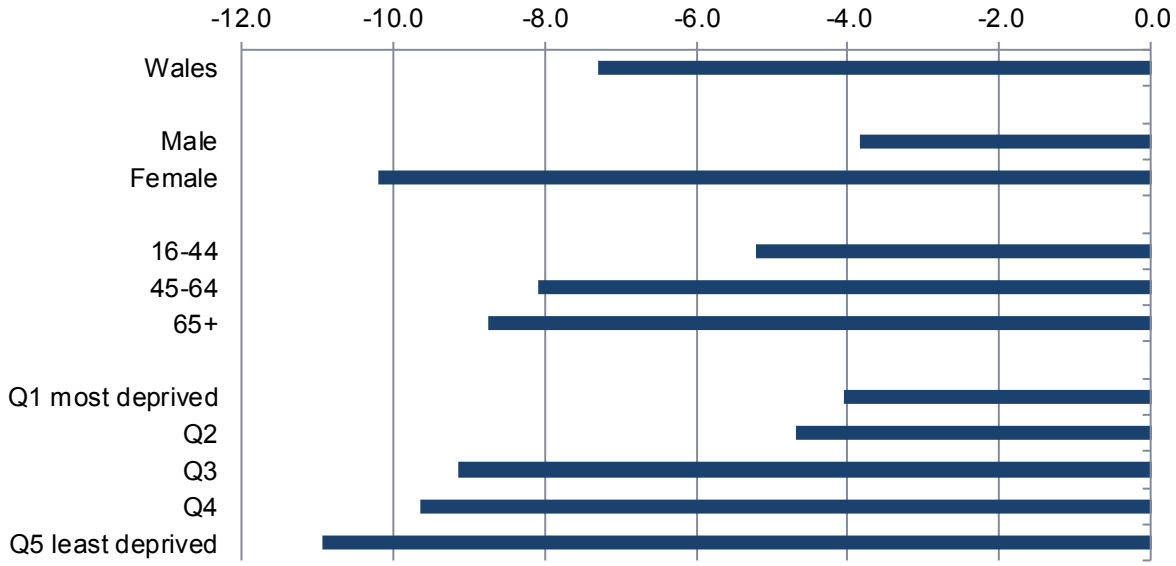
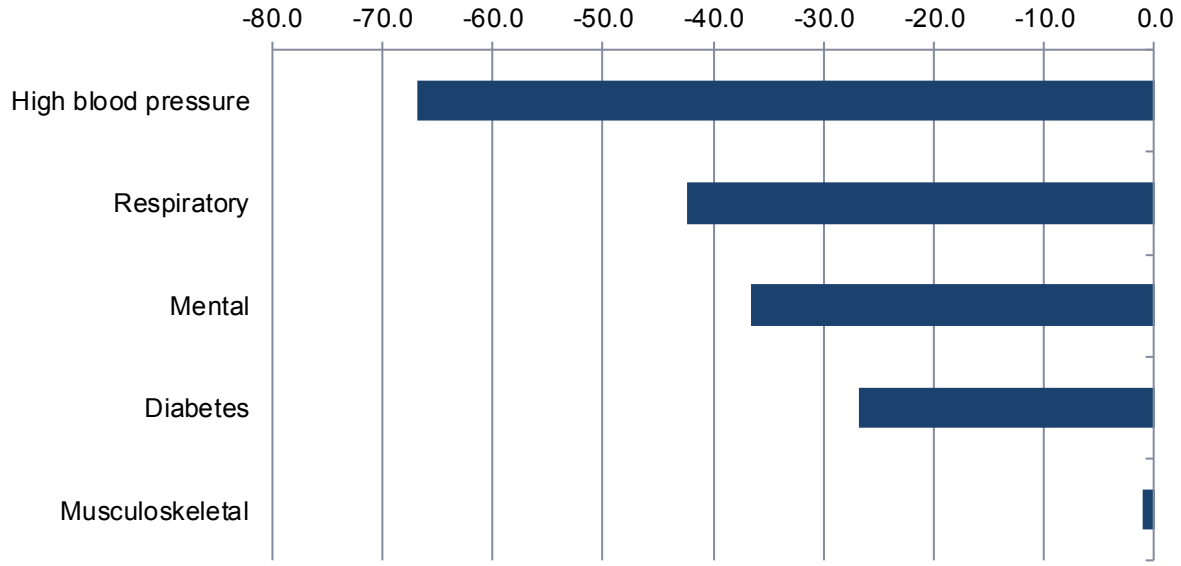


Chart 15: Percentage change in any reported illness between 2015 (WHS) and 2016-17 (NSW)



Looking at specific conditions, there isn't an exact match between the old and new conditions, but it's possible to make a fairly close match for some of the key conditions, and results for these have been compared. This article looks at high blood pressure, respiratory illness, mental illness, diabetes, and musculoskeletal conditions (for WHS, arthritis or back pain was used). As noted above, it's expected that there will be differences in the results given the change in question, and there are clear discontinuities. With the exception of musculoskeletal, all the key conditions showed a large drop which was statistically significant (chart 16). The drop was seen across all groups. The nature of the revised questions means that respondents have to spontaneously identify the conditions affecting them rather than being prompted by a check list, and this may be one reason for the substantial drop in many conditions. Also, the new question is about longstanding illness and conditions (rather than currently treated illness). The drop is particularly large for high blood pressure – it's possible that some respondents may not think to mention this, or that it may be controlled by treatment and therefore is no longer high. The picture for musculoskeletal conditions is slightly different from the other key illnesses - although the discontinuity appears small at overall national level, there are some larger differences for sub-groups, suggesting that there may be some discontinuities in musculoskeletal results which affect different groups differently and are masked in the overall national results. High blood pressure, respiratory, mental illness, diabetes and musculoskeletal results from the two surveys should not be compared.

Chart 16: Percentage change in selected conditions between 2015 (WHS) and 2016-17 (NSW)



Section 3: Conclusions and recommendations

Conclusions

The extent of discontinuities between WHS and NSW vary – for some topics they are large and clear, for others less so, but we advise caution and against making any direct comparisons between results from the two surveys. Trends should start to become clearer again once more data is available from NSW.

Recommendations

There are discontinuities between WHS and NSW for general health and lifestyles and results should not be compared.

Discontinuities for the following are particularly clear:

- fruit & vegetable consumption
- physical activity
- alcohol
- fair/poor general health
- reporting any illness, including:
    - high blood pressure
    - respiratory
    - mental illness
    - diabetes
    - musculoskeletal

Although overall discontinuities for the following appear smaller, there are larger discontinuities for some sub-groups:

- smoking
- overweight & obese
- limiting longstanding illness

Annex

Summary table: Difference between WHS (2015) and NSW (2016-17), adult lifestyles, general health and illnesses

Per cent

			Difference between 2015 and 2016-17:	
	WHS 2015	NSW 2016-17	Absolute	Percentage
Smoker	19.4	18.6	-0.7	-3.7
Overweight or obese	59.4	58.9	-0.5	-0.9
Obese	23.5	22.7	-0.8	-3.5
Fruit & veg - at least 5 a day	31.9	24.0	-7.8	-24.6
Physical activity - 150 minutes in week	58.2	53.7	-4.5	-7.7
Alcohol - above 4/3 units in day	39.6	31.2	-8.5	-21.4
General health fair / bad	19.4	27.7	8.3	42.8
Limited at all by longstanding illness	33.4	32.5	-0.9	-2.6
Limited a lot by longstanding illness	15.5	16.3	0.9	5.7
Any reported illness / condition	50.6	46.9	-3.7	-7.3
High blood pressure	19.7	6.5	-13.2	-66.9
Respiratory illness	14.2	8.2	-6.0	-42.3
Mental illness	12.8	8.1	-4.7	-36.6
Diabetes	7.3	5.3	-1.9	-26.7
Musculoskeletal condition	17.5	17.3	-0.2	-1.0

See reports for full definitions

Notes on the use of statistical articles

Statistical articles generally relate to one-off analyses for which there are no updates planned, at least in the short-term, and serve to make such analyses available to a wider audience than might otherwise be the case. They are mainly used to publish analyses that are exploratory in some way, for example:

Introducing a new experimental series of data;

A partial analysis of an issue which provides a useful starting point for further research but that nevertheless is a useful analysis in its own right;

Drawing attention to research undertaken by other organisations, either commissioned by the Welsh Government or otherwise, where it is useful to highlight the conclusions, or to build further upon the research;

An analysis where the results may not be of as high quality as those in our routine statistical releases and bulletins, but where meaningful conclusions can still be drawn from the results.

Where quality is an issue, this may arise in one or more of the following ways:

- being unable to accurately specify the timeframe used (as can be the case when using an administrative source);
- the quality of the data source or data used; or
- other specified reasons.

However, the level of quality will be such that it does not significantly impact upon the conclusions. For example, the exact timeframe may not be central to the conclusions that can be drawn, or it is the order of magnitude of the results, rather than the exact results, that are of interest to the audience.

The analysis presented does not constitute a National Statistic, but may be based on National Statistics outputs and will nevertheless have been subject to careful consideration and detailed checking before publication. An assessment of the strengths and weaknesses in the analysis will be included in the article, for example comparisons with other sources, along with guidance on how the analysis might be used, and a description of the methodology applied.

Articles are subject to the release practices as defined by the release practices protocol, and so, for example, are published on a pre-announced date in the same way as other statistical outputs.

Missing value symbols used in the article follow the standards used in other statistical outputs, as outlined below.

..	The data item is not available
.	The data item is not applicable
-	The data item is not exactly zero, but estimated as zero or less than half the final digit shown
*	The data item is disclosive or not sufficiently robust for publication