2017

Health and its determinants in Wales
Informing Public Health Wales strategic planning

Interim Report Technical Guide

INTERIM

This document is to be used in conjunction with the Health and its determinants in Wales (Interim) report produced to inform Public Health Wales strategic planning, to help assist with interpretation and understanding of indicators contained within it.

The information product consists of:

- Executive summary
- Report
- Technical guide

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1. Demography

1.1   Slide 8 & 9 – Percentage of the population by age and sex

Indicator definition	Percentage of the population by age group and/or sex.
Who/what does it measure?	All persons, all ages.
Period	Slide 8: 2015 Slide 9: 2015 and 2039
Geography	Slide 8: Wales and the rest of the UK Slide 9: Wales
Data source	2015 Mid-year population estimates (MYE), Office for National Statistics (ONS)
Method	Percentages are calculated by dividing the count of the population in each age group and gender by the total population and multiplying by 100.
Caveats	• Population estimates are based on census data which is the most complete source of information about the population available. • Further information on population estimates is available at: http://www.wales.nhs.uk/sitesplus/922/page/50298
Rationale	Age is a major determinant of morbidity and mortality. Different groups of the population, such as children and older people, have different health needs. Information about the age structure of the population in Wales, and how it is likely to change, is vital for strategic planning in the health service. This data shows the age and sex structure of the population now, and what it is likely to be in 2039.

1.2   Slide 9 – Population projections

Indicator definition	9(a): The projected percentage of the population by age group and/or sex. 9(b): The projected percentage change in population from 2015 to 2039 for persons aged 80+ for Wales.
Who/what does it measure?	9(a): Males and females, all ages. 9(b): All persons aged 80+.
Period	9(a): 2039 9(b): 2016-2039

Geography	Wales
Data source	2014-based population projections, Office for National Statistics (ONS)
Method	Percentages are calculated by dividing the count of the population in each age group and gender by the total population and multiplying by 100. Population projections are calculated and published by ONS. Further details on how these are calculated are available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections#datasets Percentage change is calculated by taking the counts of population in the selected age group away from the counts in the age group in 2015, dividing the counts in the age group in 2015 and then multiplying by 100.
Caveats	• Population projections provide estimates of the size of the future population and are based on assumptions about births, deaths and migration. The assumptions are based on past trends and do not account for any changes in these trends that may occur in the future. Further information on population projections is available at: http://www.publichealthwalesobservatory.wales.nhs.uk/population-estimates-projections • Population estimates are based on census data which is the most complete source of information about the population available. Further information on population estimates is available at: http://www.publichealthwalesobservatory.wales.nhs.uk/population-estimates-projections
Rationale	The Wellbeing of Future Generations Wales (Act) shifts the focus of our attention from describing the past, to considering the future. Population change since 2015 through to 2039 has been included to show how the age distribution of the Welsh population is changing. Age has an impact on the health and health risk, with changes likely to impact on the burden of disease in Wales. Knowledge of these changes is essential for strategic planning within the health service and more broadly through the Public Services Boards and the development of local well-being assessments and plans.

1.3   Slide 10 – Percentage change of the population by broad age groups

Indicator definition	Projected absolute and relative change in the population by broad age group.
Who/what does it measure?	All persons in Wales by broad age group.

Period	2015 and 2039
Geography	Wales
Data source	2015 Mid-year population estimates (MYE), Office for National Statistics (ONS) 2014 based population projections, Office for National Statistics (ONS)
Method	Absolute change shows the difference in the counts of the population between 2015 and 2039, rounded to the nearest 100. Relative change shows the percentage change in the count of the population within each age bracket by 2039 compared to 2015. Percentage change was calculated for each age group by dividing the difference between the 2015 population estimate and 2039 projected estimate by the 2015 population estimate and multiplying by 100.
Caveats	• Population projections provide estimates of the size of the future population and are based on assumptions about births, deaths and migration. The assumptions are based on past trends and do not account for any changes in these trends that may occur in the future. Further information on population projections is available at: http://www.publichealthwalesobservatory.wales.nhs.uk/population-estimates-projections • Population estimates are based on census data which is the most complete source of information about the population available. Further information on population estimates is available at: http://www.publichealthwalesobservatory.wales.nhs.uk/population-estimates-projections
Rationale	Age is a major determinant of morbidity. Information about the age structure of the population in Wales, and how it is likely to change, is vital for strategic planning of health services. This data shows the age and sex structure of the population now, and the likely relative and absolute changes by 2039.

2. Life expectancy

2.1   Slide 12 - Life expectancy, healthy life expectancy and disability-free life expectancy

Indicator definition	Life expectancy – estimate of the average number of years newborn babies could expect to live, assuming that current mortality rates for the area in which they were born applied throughout their lives. Healthy life expectancy – estimate of the average number of years that newborn babies could expect to live in good health, assuming that current mortality rates and levels of good health for the area in which they were born applied throughout their lives. Disability free life expectancy - estimate of the average number of years that newborn babies could expect to live a disability free life, assuming that current mortality rates and levels of good health for the area in which they were born applied throughout their lives.
Who/what does it measure?	Males, females.
Period	2009-11
Geography	UK and UK nations
Data source	Health expectancies data, Office for National Statistics (ONS)
Method	Life expectancy is the average number of years a person is expected to live before death. This is usually calculated from the time of birth, but can also be calculated from any specified age. This estimates the remaining further number of years a person, on average, can expect to live given their age. Health expectancies are extensions of life expectancies which combine morbidity and mortality data to produce estimates of the span of life that a person can expect to live in very good or good health; Healthy Life Expectancy (HLE), or without a limiting long-standing illness or disability; Disability-Free Life Expectancy (DFLE). This partitioning of length of life into periods spent in various health states provides a quality dimension to life expectancy. These metrics provide an informative summary measure of the health status of a population. The data is available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies The method used to calculate life expectancy, healthy life expectancy and disability-free life expectancy by the ONS is available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocia

	lcare/healthandlifeexpectancies/qmis/healthexpectanciesqmi
Caveats	• HLE and DFLE are calculated using subjective self-reports of health status collected in national population surveys, which are then combined with data on mortality. • No assumptions are made about future changes in mortality or health prevalence.
Rationale	Life expectancy indicators are extremely important summary measures of overall health of the population. Life expectancy is considered one of the fundamental indicators of population health and development internationally. Healthy life expectancy and disability-free life expectancy provide richer indicators of health by providing information on the estimated length of life combined with an estimate of how much of that time is lives in good health. They complement supporting indicators, setting the context in which Wales can assess the other indicators and identify the drivers of life expectancy and healthy life expectancy.

2.2   Slide 13 – Life expectancy at birth

Indicator definition	Estimate of the average number of years newborn babies could expect to live, assuming that current mortality rates for the area in which they were born applied throughout their lives.
Who/what does it measure?	Males, females.
Period	1990-2015
Geography	UK nations, Iceland and Sweden
Data source	Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015), Global Health Data Exchange (IHME). The study uses local data sources to compile its estimates: Scotland - General Register Office for Scotland Northern Ireland - Northern Ireland Statistics and Research Agency (NISRA) Wales and England - Office for National Statistics (ONS) Iceland – Human Mortality Database (HMD) Sweden – National Board of Health and Welfare (Sweden)
Method	Information on how the life expectancy at birth for Iceland, Sweden and the UK nations is available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)31012-1.pdf

Caveats	The Global Burden of Disease study uses a different methodology to calculate life expectancies compared to the Office for National Statistics (ONS). This means there may be some small differences in the data between these two sources.
Rationale	Life expectancy is an extremely important summary measure of the health of the population. It complements supporting indicators by showing the overall trend population health, setting the context in which Wales can assess the other indicators and identify the drivers of life expectancy. The indicators can be used to assess how life expectancy varies within in the UK nations and also how it compares to countries with a similar demographic and societal structure to the UK.

2.3   Slide 14 – Healthy life expectancy at birth

Indicator definition	Estimate of the average number of years that newborn babies could expect to live in good health, assuming that current mortality rates and age-specific levels of good health for the area in which they were born applied throughout their lives.
Who/what does it measure?	Male, females.
Period	1990-2015
Geography	UK nations, Iceland and Sweden
Data source	Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015), Global Health Data Exchange (IHME)
Method	Results from the Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015) for all-cause mortality, cause-specific mortality, and non-fatal disease burden were use to derive healthy life expectancy and disability-adjusted life years. Healthy life expectancy was estimated using the Sullivan method, this draws from age-specific deaths rates and years of life lived with disability per capita. Further information on how the healthy life expectancy at birth for Iceland, Sweden and the UK nations is available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)31012-1.pdf
Caveats	The Global Burden of Disease study uses a different methodology to calculate life expectancies compared to the Office for National Statistics (ONS). This means there may be some small differences in the data between these two sources.
Rationale	Healthy life expectancy is an extremely important summary measure of the health of the population. It adds a quality of life element to a standard life expectancy and is an indicator of national development. It

	shows the overall trends in a major population health measure, setting the context in which Wales can assess the other indicators and identify the drivers of healthy life expectancy. The indicator can be used to assess how healthy life expectancy varies within in the UK nations and also how it compares to countries with a similar demographic and societal structure to the UK.

2.4 Slide 15 – Comparison of life expectancy and healthy life expectancy at birth, with Slope Index of Inequality (SII)

Indicator definition	**Life expectancy** - an estimate of the average number of years newborn babies could expect to live, assuming that current mortality rates for the area in which they were born applied throughout their lives. **Healthy life expectancy** - an estimate of the average number of years that newborn babies could expect to live in good health, assuming that current mortality rates and levels of good health for the area in which they were born applied throughout their lives. **Slope Index of Inequality** - a measure of the absolute difference in years of life expectancy at birth between the least and most deprived, whilst taking into account the distribution across all deprivation fifths. Results are reported as the slope of the regression line across all fifths within an area.
Who/what does it measure?	Males, females.
Period	2005-2009 and 2010-2014
Geography	Wales
Data source	Public Health Mortality (PHM): Office for National Statistics (ONS) Mid-year population estimates by LSOA and single year of age (unrounded): ONS Welsh Index of Multiple Deprivation (WIMD) 2014: Welsh Government (WG) Welsh Health Survey (WHS), Welsh Government (WG)
Method	Life expectancy was calculated using the preferred method of the Office for National Statistics for calculating life expectancy at birth for small areas, as described by Eayres & Williams[1] and Toson & Baker[2]. This method has been shown to be sufficiently reliable for populations larger than 5000. It utilises population estimates and mortality data to calculate a life table, from which the probability of surviving each 5-year age group, given that the previous age group has been survived, is calculated. It estimates the average number of years of life expected for any particular age. This output presents the average number of years of life expected from birth. Healthy life expectancy was calculated using the Sullivan method which

is the preferred method of the Office for National Statistics for calculating healthy life expectancy at birth[3,4].

Its calculation involved combining health status data from the Welsh Health Survey with the mortality and population data used for life expectancy. It was produced for each area and for each fifth of deprivation.

The health states were based on the Welsh Health Survey questions asking those aged 16 and over "In general would you say your health is? Excellent, Very Good, Good, Fair, Poor" and asking a parent or guardian "How is the child's health in general? Very good, good, fair, bad, very bad". 'Healthy' was judged to be a response of excellent, very good or good for adults and very good or good for children.

The SII was calculated following the methods published by Low & Low[5]. This used ordinary least squares regression in Stata, a statistical software package, where the independent variable was life expectancy, the dependent variable is the population mid-point of the deprivation fifth and the analytical weight was the square root of the fifths population.

This means then that a regression model was run to produce a line of best fit across all deprivation fifths, the gradient of which was the SII. A 95 per cent confidence interval for the slope was produced at the same time. No autocorrelation adjustment was made as previous studies had shown this to have little impact on the estimation of the SII[5].

This statistical approach assumes that data exhibit a linear relationship, i.e. a diagonal straight line could roughly be drawn across the values by increasing deprivation fifth. The calculation is consistent with that of the Marmot indicator for England[6] on "inequality in life expectancy at birth" although it is based on deprivation tenths not fifths and on a different deprivation index, which only covers England. The local estimates for England and Wales may be roughly comparable but the figure for England as a whole is not calculated specifically but is the median of the local figures.

References:

1. Eayres D.P. & Williams E.S., Evaluation of methodologies for small area life expectancy estimation, *J Epidemiol Community Health.* 2004;58:243-249.
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3. Jagger, C. *Health Expectancy Calculation by the Sullivan Method: A Practical Guide.* NUPRI Research Paper Series No 68. 1999. Toyko.
4. ONS. *Health expectancies at birth and at age 65, United Kingdom, 2009–11*. 2014. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/healthexpectanciesatbirthandatage65intheunitedkingdom/2014-11-18 [Accessed 30th March 2017].
5. Low A. & Low A. Measuring the gap: quantifying and comparing local health inequalities. *J Public Health*. 2004;26(4):388-395.

	6. London Health Observatory. *Marmot Indicators for Local Authorities in England.* LHO; 2012. Available at: http://www.lho.org.uk/LHO_TOPICS/NATIONAL_LEAD_AREAS/MARMOT/MARMOTINDICATORS.ASPX [Accessed 30th March 2017].
Caveats	• At the time of analysis, 2014 population data was unavailable. For this reason, 2013 mid-year estimates have been used as a proxy for 2014. • The Welsh Health Survey data is self-reported and may be affected by individuals' perception of their own health. • The Sullivan method includes an adjustment for people living in communal establishments. As there were no reliable and timely data available, this adjustment was not made in this analysis. • Further information on life expectancy, healthy life expectancy and SII in life expectancy at birth is available at: http://www2.nphs.wales.nhs.uk:8080/PubHObservatoryProjDocs.nsf/85c50756737f79ac80256f2700534ea3/297792ca5a14123080257ff60051cab6/$FILE/MeasuringInequalities2016_TechnicalGuide_InternalRelease_v1.pdf
Rationale	This is a key high-level health inequalities outcome. Reducing health inequalities is core to the aims of public health and is a focus of the Wellbeing of Future Generations (Wales) Act. It highlights inequalities in life expectancy and healthy life expectancy at birth across Wales as a whole. The provision of national figures for two time periods allows reflection on the impact of actions to reduce health inequalities in all areas.

3. Burden of disease

3.1   Slide 18 & 21 to 23 - Disability-adjusted life years (DALYs) by cause

Indicator definition	One disability-adjusted life year (DALY) can be thought of as one lost year of "healthy" life. The sum of these DALYs across the population can be thought of as a measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability.
Who/what does it measure?	Males and females.
Period	Slide 18 & 23: 2015 Slide 21: 1990 - 2015 Slide 22: 1990 & 2015
Geography	Slide 18, 22 & 23: Wales Slide 21: UK nations, Iceland and Sweden
Data source	Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015), Global Health Data Exchange (IHME)
Method	Disability-adjusted life years (DALYs) were calculated by summing years of life lost and years of life lived with disability for each geography, age group, sex and year. Slide 22: Absolute change shows the difference in the DALY counts between 1990 and 2015. Relative change shows the percentage change since 1990. Percentage change was calculated for each cause by dividing the difference between the DALYs for 1990 and 2015 by the number of DALYs in 1990 and multiplying by 100. Further information on how the disability-adjusted life-years (DALYs) by cause has been calculated is available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)31460-X.pdf
Caveats	The Global Burden of Disease Study 2015 (GBD 2015) provides internationally comparable burden of diseases estimates. • The methods allow for differing availability and quality of data. • The report provides modelled estimates not direct measurements and the results should therefore not be compared to any direct measures reported for Wales. • Uncertainty in any of the raw data or parameters used in the model will result in imprecision in the estimates themselves. • The rankings provided are only an indication of the relative contribution of different risk factors to the burden of disease and the certainty of the ranking will depend on the strength of underlying evidence. • The method used attributes DALYs to the risk factors based on the conditions they are known to be associated with, there can therefore be a lag period between the occurrence of the risk factors and the manifestation of the health impact which can be considerable in some cases.

	• The methods used to produce DALYs in the GBD reports produced before 2010 has been criticised for favouring younger adults and immediate years of life gained; more recent reports use a method that has rectified this.
Rationale	Disability-adjusted life years (DALYs) combines important information on which causes/conditions contribute most to morbidity and mortality in the population. Whereas traditional mortality data only looks at the cause of death, DALYs also give an indication of the burden of disease in the living population because it takes into account years lived with a disease, as well as the ultimate cause of mortality. This data shows the main causes/conditions that lead to disability and death today, and how these have changed over time, contributing more or less to the burden of disease in the population.

3.2   Slide 19 & 24 – Years lived with disability (YLD)

Indicator definition	Years lived with disability (YLDs) are a measurement of the burden of disease. They are calculated by multiplying the prevalence of a disorder by the short- or long-term loss of health associated with that disability (the disability weight). When YLDs are added to the years of life lost for a certain disease or disorder, DALYs can be calculated for the disease or disorder.
Who/what does it measure?	Males and females.
Period	2015
Geography	Wales
Data source	Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015)
Method	Information on how YLD has been calculated is available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)31678-6.pdf
Caveats	The Global Burden of Disease Study 2015 (GBD 2015) provides internationally comparable burden of diseases estimates. • The methods allow for differing availability and quality of data. • The report provides modelled estimates not direct measurements and the results should therefore not be compared to any direct measures reported for Wales. • Uncertainty in any of the raw data or parameters used in the model will result in imprecision in the estimates themselves. • The rankings provided are only an indication of the relative contribution of different risk factors to the burden of disease and the certainty of the ranking will depend on the strength of underlying evidence. • The method used attributes DALYs to the risk factors based on the conditions they are known to be associated with, there can

	therefore be a lag period between the occurrence of the risk factors and the manifestation of the health impact which can be considerable in some cases. • The methods used to produce DALYs in the GBD reports produced before 2010 has been criticised for favouring younger adults and immediate years of life gained; more recent reports use a method that has rectified this.
Rationale	YLD is a key contributory factor to DALYs and the burden of disease in the living population. Nonfatal outcomes and chronic conditions are a measure of population health, accounting for a large proportion of healthcare activity, and need to be considered alongside mortality in the prioritisation of health resources.

3.3   Slide 20 & 25 – Years of life lost (YLL) by cause

Indicator definition	The number of deaths multiplied by the standard life expectancy at the age at which death occurs.
Who/what does it measure?	Males and females.
Period	2015
Geography	Wales
Data source	Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015), Global Health Data Exchange (IHME)
Method	Information on how YLL has been calculated is available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)31012-1.pdf
Caveats	The Global Burden of Disease Study 2015 (GBD 2015) provides internationally comparable burden of diseases estimates. • The methods allow for differing availability and quality of data. • The report provides modelled estimates not direct measurements and the results should therefore not be compared to any direct measures reported for Wales. • Uncertainty in any of the raw data or parameters used in the model will result in imprecision in the estimates themselves. • The rankings provided are only an indication of the relative contribution of different risk factors to the burden of disease and the certainty of the ranking will depend on the strength of underlying evidence. • The method used attributes DALYs to the risk factors based on the conditions they are known to be associated with, there can therefore be a lag period between the occurrence of the risk factors and the manifestation of the health impact which can be considerable in some cases. • The methods used to produce DALYs in the GBD reports produced before 2010 has been criticised for favouring younger adults and

	immediate years of life gained; more recent reports use a method that has rectified this.
Rationale	YLL is a key contributory factor to DALYs and thus the burden of disease. YLL take into account the age at which deaths occur by giving greater weight to deaths at younger age and lower weight to deaths at older age. Identifying which cause or conditions contribute the greatest number of YLL can assist the planning of targeted preventative measures which aim to increase life expectancy.

3.4   Slide 26 - Premature death from key non-communicable diseases

Indicator definition	European age-standardised rate of deaths from key non-communicable diseases (cancer, circulatory disease, diabetes and respiratory disease) per 100,000 population in persons aged 30 to 70 years.
Who/what does it measure?	All persons aged 30 to 70.
Period	2005-07 to 2012-14
Geography	Wales
Data source	Public Health Mortality (PHM), Office for National Statistics (ONS) Mid-year population estimates, Office for National Statistics (ONS)
Method	Counts of deaths with an underlying cause of death between ICD-10 codes I00-I99, C00-C97 (excl C44), E10-E14, J30-J99 registered between 2005-07 and 2012-14 (rolling three years) were extracted from the PHM dataset for persons aged 30-70. ICD-10 codes: - I00 – I99 Diseases of the circulatory system - C00 – C97 Malignant neoplasms except C44 - E10 – E14 Diabetes mellitus - J30 – J99 Diseases of the respiratory system except infectious European age-standardised rates per 100,000 population were calculated using the 2013 European standard population. Further information on the 2013 European Standard Population is available at: http://www.ons.gov.uk/ons/guide-method/user-guidance/health-and-life-events/revised-european-standard-population-2013--2013-esp-/index.html
Caveats	• There have been two recent revisions to the manner in which the text about causes of death on death certificates are translated by the Office for National Statistics into International Classification of Diseases codes. These changes mean that unrevised data may not be comparable across years. The main change relates to the rules that

	govern which cause of death detailed on the death certificate is selected as the underlying cause. In general, the impact of these changes can be quantified and the data can be adjusted through the use of 'comparability ratios' which are used to adjust the number of deaths and to calculate adjusted mortality rates. • This indicator has not used comparability ratios. For more details on comparability ratios see Public Health England (PHE) guidance available at: http://www.apho.org.uk/resource/item.aspx?RID=126646 • Details on deaths from non-communicable disease can be found on the World Health Organisation website: http://www.who.int/mediacentre/factsheets/fs355/en/
Rationale	Respiratory diseases, circulatory diseases, cancers and diabetes are among the top causes of death in Wales in the under 70's. Deaths occurring before they might be expected can be evidence of health inequalities. Many of these deaths are considered preventable and monitoring the trend in premature mortality from non-communicable diseases provides important information on the impact of preventative activities on the health of the population.

3.5   Slide 27 – Adults that reported being in good, very good or excellent health

Indicator definition	The age-standardised percentage of adults who reported being in good, very good or excellent health.
Who/what does it measure?	Persons aged 16+
Period	2003/04 – 2015
Geography	Wales
Data source	Welsh Health Survey (WHS), Welsh Government (WG)
Method	Age-standardised percentages were calculated using aggregated weightings from the 2013 European Standard Population. The Welsh Health Survey adult questionnaire included a standard set of 36 health status questions known as SF-36 (version 2). SF-36 questions asked respondents about their own perception of their physical and mental health and the impact it has on their daily lives. The SF-36 questions include a question asking respondents to rate their own general health on a five-point scale ranging from excellent to poor. Responses rated as good, very good and excellent have been combined for this indicator. Welsh Health Survey results are available at: http://gov.wales/statistics-and-research/welsh-health-survey/?lang=en
Caveats	• The Welsh Health Survey data is self-reported and may be affected by individuals' perception of their own health.

	• The Welsh Health Survey does not include adults living in institutional settings such as care homes or nursing homes etc. It should be noted that people living in institutions are likely to be on average, in poorer health than those in private households. This should be kept in mind when considering results from this survey. • Welsh Health Survey methods and definitions available at: http://gov.wales/docs/statistics/2016/160622-welsh-health-survey-local-authority-local-health-board-trends-2003-04-2015-en.xlsx • Welsh Health Survey technical guide available at: http://gov.wales/docs/statistics/2016/160929-welsh-health-survey-2015-technical-report-en.pdf
Rationale	Self-assessed health status provides an indication of the perceived levels of health in a population. Self-assessed health status has been validated as a useful indicator of health for a variety of populations and allows for broad comparisons across different conditions and populations. Older people (aged 65+), on average, use health and social care services more frequently than those of a working age (aged 16-64) and are more likely to have complex needs and long-term conditions. Self reported good health in older people is important measure of how well health is being maintained and managed into older age.

3.6   Slide 28 – Percentage of adults who have 2 or more illnesses

Indicator definition	Adults who reported having 2 or more illnesses.
Who/what does it measure?	Persons aged 16+.
Period	2015
Geography	Wales
Data source	Welsh Health Survey (WHS), Welsh Government (WG)
Method	The survey asked adults aged 16 years and over whether they were currently being treated for a range of illnesses. Welsh Health Survey results are available at: http://gov.wales/docs/statistics/2016/160622-welsh-health-survey-2015-health-status-illnesses-other-conditions-en.xls Further information on health status, illnesses, and other conditions is available at: http://gov.wales/docs/statistics/2016/160622-welsh-health-survey-2015-health-status-illnesses-other-conditions-en.pdf
Caveats	• The Welsh Health Survey data is self-reported and may be affected by individuals' perception of their own health. • The Welsh Health Survey does not include adults living in institutional settings such as care homes or nursing homes etc. It should be noted that people living in institutions are likely to be on

	average, in poorer health than those in private households. This should be kept in mind when considering results from this survey. • Welsh health survey technical guide available at: http://gov.wales/docs/statistics/2016/160929-welsh-health-survey-2015-technical-report-en.pdf
Rationale	The impact of multiple long-term health conditions is likely to be multiplicative both in terms of its impact on the individual and in terms of the complexity of their health care needs. The likelihood of having multiple long-term conditions increases with age. The increasing prevalence of co-morbidities with age is an important consideration for the design of care delivery and strategic planning.

3.7   Slide 29 – Adults who reported being currently treated for any mental illness

Indicator definition	The percentage of adults who reported being currently treated for a mental illness.
Who/what does it measure?	Persons aged 16+.
Period	2003/04 - 2015
Geography	Wales
Data source	Welsh Health Survey (WHS), Welsh Government (WG)
Method	Adult respondents were classified as having any mental illness if they reported currently being treated for depression, anxiety or 'another' mental illness. Welsh Health Survey results are available at: http://gov.wales/docs/statistics/2016/160622-welsh-health-survey-trends-2003-04-04-2015-en.xlsx Further information on health status, illnesses, and other conditions is available at: http://gov.wales/docs/statistics/2016/160622-welsh-health-survey-2015-health-status-illnesses-other-conditions-en.pdf
Caveats	• The Welsh Health Survey is self reported and may be susceptible to respondent bias. • The Welsh Health Survey does not include adults living in institutional settings such as care homes or nursing homes etc. It should be noted that people living in institutions are likely to be on average, in poorer health than those in private households. This should be kept in mind when considering results from this survey. • Welsh health survey technical guide available at: http://gov.wales/docs/statistics/2016/160929-welsh-health-survey-2015-technical-report-en.pdf

Rationale	Mental health is the foundation for well-being for an individual and for a community. Mental health is increasingly seen as fundamental to physical health and quality of life and thus needs to be addressed as an important component of improving overall health and well-being.

3.8   Slide 30 – Prevalence of selected chronic conditions

Indicator definition	Adults who reported currently being treated for diabetes, adults who reported currently being treated for any respiratory illness and adults who reported currently being treated for any heart condition (excluding high blood pressure).
Who/what does it measure?	Persons aged 16+.
Period	2003/04 to 2015
Geography	Wales
Data source	Welsh Health Survey (WHS), Welsh Government (WG)
Method	Adult respondents were asked whether they were currently being treated for diabetes, making no distinction between type 1 and type 2 diabetes. If they responded positively, they were asked how their diabetes was controlled (by injection, tablets or diet). Adult respondents were classified as having any heart condition if they reported ever having been treated for a heart attack or currently being treated for angina, heart failure or 'another heart condition'. Results for high blood pressure are excluded because it is a risk factor for heart disease rather than an actual heart condition. Adult respondents were classified as having any respiratory illness if they reported currently being treated for asthma, pleurisy, bronchitis, or 'another respiratory illness'. Welsh Health Survey results are available at: http://gov.wales/docs/statistics/2016/160622-welsh-health-survey-trends-2003-04-04-2015-en.xlsx Further information on health status, illnesses, and other conditions is available at: http://gov.wales/docs/statistics/2016/160622-welsh-health-survey-2015-health-status-illnesses-other-conditions-en.pdf
Caveats	• Welsh Health Survey is self reported and may be susceptible to respondent bias. • The Welsh Health Survey does not include adults living in institutional settings such as care homes or nursing homes etc. It should be noted that people living in institutions are likely to be on average, in poorer health than those in private households. This should be kept in mind when considering results from this survey. • Welsh health survey technical guide available at:

	http://gov.wales/docs/statistics/2016/160929-welsh-health-survey-2015-technical-report-en.pdf
Rationale	Respiratory diseases, circulatory diseases, and diabetes are among the top causes of morbidity in Wales. Monitoring the trend in morbidity from these non-communicable diseases is important to provide information on the health of the population.

3.9 Slide 31 – Outbreaks of gastrointestinal and acute respiratory infections in Wales

Indicator definition	Number of new outbreaks reported by week of detection for: • All outbreaks • Gastrointestinal (GI) outbreaks • Acute respiratory illness (ARI) outbreaks.
Who/what does it measure?	Counts of events. The events under surveillance include: • Outbreaks formally declared by an Incident Management Team (IMT) under the Wales outbreak plan • Incidents where the Health Protection Team (HPT) has convened or participated as part of an IMT or Outbreak Control Team (OCT) • An increase in cases of a particular syndrome or infection above that expected, where the HPT or local authority has investigated and taken public health measures or given advice • Other institutional outbreaks where the HPT has been informed
Period	Week 12 2016 to week 12 2017
Geography	Wales
Data source	Reported outbreaks from Health Protection Teams via the incident and outbreak surveillance system.
Method	Outbreak numbers are collected weekly, by type of infection, health protection team, setting and risk assessment.
Caveats	• Newly reported outbreaks only.
Rationale	Infectious diseases have historically been a large contributor the burden of disease, but recent advancements in hygiene, prevention and treatment has reduced this considerably. However outbreaks of infectious diseases, such as gastrointestinal and respiratory infections, are still relatively frequent; with anti-microbial resistance threatening to increase the rate and severity of outbreaks. Detection of outbreaks therefore provides an evidence based approach to monitoring and planning for the demands of gastrointestinal and acute respiratory infections across Wales.

3.10   Slide 32 – Estimated disability-adjusted life years (DALYs) lost for selected communicable diseases

Indicator definition	Estimated DALYs for Influenza, Hepatitis C, Clostridium difficile, Norovirus, Gonorrhoea, Hepatitis B, Campylobacter and Tuberculosis. One DALY can be thought of as one lost year of "healthy" life. The sum of these DALYs across the population can be thought of as a measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability.
Who/what does it measure?	Males and females.
Period	2015
Geography	Wales
Data source	Public Health Wales Communicable Disease Surveillance Centre using SWS, CoSURV and IBID, and ETS data.
Method	Estimates produced by CDSC are incidence based using 2015 data and applying the number of DALYs per estimated case as described by the following study: Van Lier A, McDonald SA, Bouwknegt M, et al. Disease Burden of 32 Infectious Diseases in the Netherlands, 2007-2011. Gregori L, ed. *PLoS ONE*. 2016;11(4):e0153106. doi:10.1371/journal.pone.0153106. With the exception of C. difficile which applies the number of DALYs per estimated case as quoted in the following study: Cassini A, Plachouras D, Eckmanns T, Abu Sin M, Blank H-P, Ducomble T, et al. (2016) Burden of Six Healthcare-Associated Infections on European Population Health: Estimating Incidence-Based Disability-Adjusted Life Years through a Population Prevalence-Based Modelling Study. PLoS Med 13(10): e1002150. doi:10.1371/journal.pmed.1002150
Caveats	• Estimates only.
Rationale	This information has been included to demonstrate the infections associated with the highest burden of diseases and to compare the burden between selected communicable diseases. Some of the infections included have relatively short duration of illness when compared to chronic conditions, which is reflected in the number of DALYs attributable.

3.11   Slide 33 – Influenza outcomes

Indicator definition	Annual estimates for influenza outcomes (lower and upper estimates).
Who/what does it measure?	All persons, all ages.

Period	2017
Geography	Europe
Data source	European Centre for Disease Control and Prevention (ECDC)
Method	Estimates produced by ECDC using published literature: 1. Flemming D *et al.* Influenza-attributable burden in United Kingdom primary care. *Epidemiology and Infection* 2016. Vol144(3):537-547 2. Matias G *et al*. Modelling estimates of age-specific influenza-related hospitalisation and mortality in the United Kingdom. *BMC Public Health* 2015. Vol 16(481) DOI 10.1186/s12889-016-3128-4
Caveats	• Estimates only.
Rationale	This information demonstrates the burden of disease associated with influenza infection. Outbreaks of influenza and other respiratory infections place additional strain on the health and social care sectors during the winter month and its prevention and management are of strategic importance.

3.12 Slide 34 – Laboratory confirmed cases of Hepatitis B and C and reported cases of Tuberculosis

Indicator definition	Counts of laboratory confirmed cases of Hepatitis B and C and counts of reported cases of Tuberculosis.
Who/what does it measure?	All persons, all ages.
Period	2007 - 2015
Geography	Wales
Data source	Hepatitis B & C: CoSURV (pre-2013) and Information bureau for infectious disease (IBID) (post 2013) Tuberculosis: Enhanced Tuberculosis Surveillance scheme in Wales
Method	Hepatitis B and C: Data was de-duplicated by date of birth and sex within 10 rolling years, provided neither date of birth or sex was missing. When duplicates were identified, the earliest report was kept, prioritising tests with a known local heath board. IBID records all positive tests automatically. Whilst this avoids underreporting, it may allow positive results from known cases into the system. This problem should be removed by de-duplication by date of birth and sex, this will only work if the lab had previously reported that

	case, as mentioned above. Tuberculosis: Tuberculosis is a **notifiable disease** in the UK. Suspected and confirmed diseases must be notified within 3 working days.
Caveats	• Laboratory confirmed and reported cases only. • In late 2013, the database system changed from CoSURV to IBID. Therefore, trends recorded following this change may not be comparable.
Rationale	At risk groups to Hepatitis B and C and blood borne viruses include those originally from high risk countries and those who inject drugs. Immunisation is one of the most effective healthcare interventions available and vaccines can prevent illness and hospital admissions among these groups of people. Tuberculosis is an airborne bacterial infection which can be cured if treated with correct antibiotics. Antibiotic resistance can occur and multiple antibiotics may need to be taken over a prolonged period which places a burden on services. Controlling communicable diseases is an essential part of reducing the burden of disease.

3.13   Slide 35 – Laboratory confirmed E.coli bacteraemia

Indicator definition	E.coli bacteraemia counts 2011/12 -2016/17.
Who/what does it measure?	Blood culture samples where a Gram negative organism has been identified submitted from locations in Wales.
Period	April 2011 – March 2017
Geography	Wales
Data source	Datastore
Method	i) Data as at Jan 2017 iii) Data are de-duplicated on the basis of 14 days between positive tests
Caveats	• Welsh residents with blood cultures taken in hospitals or GPs in England are not included in the data. • Data for Jan-Mar 2017 have been estimated to provide a complete data set for the 2016/17 financial year. The Jan-Mar 2017 estimate has been based on the average number for the previous 9 months.
Rationale	Escherichia coli infection is associated with contact with contaminated food, water, animals or other people who have the illness. It can cause severe stomach pain, bloody diarrhoea and kidney failure. A low Escherichia coli rate is indicative of good overall infection control practices.

3.14　Slide 35 – Laboratory confirmed Clostridium difficile

Indicator definition	*Clostridium difficile* counts 2011/12 -2016/17.
Who/what does it measure?	Samples from locations in Wales in persons aged 2 years and over.
Period	April 2011 – March 2017
Geography	Wales
Data source	Datastore
Method	i) Data as at 2nd March 2017
	ii) Surveillance includes only specimens with a positive GDH test and a positive *C. difficile* toxin test
	iii) Data are de-duplicated on the basis of 28 days between positive tests
Caveats	• Welsh residents with samples taken in hospitals or GPs in England are not included in the data.
	• Data for Mar 2017 have been estimated to provide a complete data set for the 2016/17 financial year. The Mar 2017 estimate has been based on the average number for December 16 to February 17.
Rationale	Clostridium difficile infection is associated with patient harm, including in some cases death. A low Clostridium difficile rate is also indicative of good overall infection control practices and good antibiotic usage. A higher than expected count over a long period of time could be indicative of discrepancies in clinical care practice.

3.15　Slide 36 – Reported cases of Chlamydia and Gonorrhoea

Indicator definition	Counts of reported cases of Chlamydia and Gonorrhoea.
Who/what does it measure?	All persons, all ages.
Period	2007 -2015
Geography	Wales
Data source	SWS surveillance system (Diagnostic reports from sexual health clinics in Wales)
Method	i) SWS data corresponding to the following KC60/SHHAPT codes were used: gonorrhoea (B, B1, B2); Chlamydia (C4, C4A, C4C)

	ii) Diagnoses made in clinics in Carmarthenshire and Pembrokeshire, reported on paper SHHAPT forms, have also been included
Caveats	• Reported cases only.
Rationale	Chlamydia and Gonorrhoea cause avoidable sexual and reproductive ill-health, including symptomatic acute infections and complications such as pelvic inflammatory disease, ectopic pregnancy and tubal-factor infertility. Screening is recommended for all sexually active young people under age 25 annually or on change of partner (whichever is more frequent). Inclusion of this indicator allows monitoring of progress to control Chlamydia and Gonorrhoea and the delivery of accessible Chlamydia screening.

INTERIM

4. Health behaviours

4.1   Slide 38, 39, 40 – Risk factors for disability-adjusted life years (DALYs)

Indicator definition	Risk factors for disability-adjusted life years by cause.
Who/what does it measure?	Slide 38 & 39: Persons. Slide 40: Persons by age group (15-49, 50-69 and 70+).
Period	Slide 38 & 40: 2015 Slide 39: 1990 & 2015
Geography	Wales
Data source	Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015), Global Health Data Exchange (IHME)
Method	Disability-adjusted life years (DALYs) are calculated by summing years of life lost (YLL) and years of life lived with disability (YLD) for each geography, age group, sex and year. The method used attributes DALYs to the risk factors based on the conditions they are known to be associated with. Slide 39: Absolute change shows the difference in the DALY counts between 1990 and 2015. Relative change shows the percentage change since 1990. Percentage change was calculated for each risk by dividing the difference between the DALYs for 1990 and 2015 by the number of DALYs in 1990 and multiplying by 100. Further information on how the disability-adjusted life-years (DALYs) by cause has been calculated is available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)31460-X.pdf
Caveats	The Global Burden of Disease Study 2015 (GBD 2015) provides internationally comparable burden of diseases estimates. • The methods allow for differing availability and quality of data. • The report provides modelled estimates not direct measurements and the results should therefore not be compared to any direct measures reported for Wales. • Uncertainty in any of the raw data or parameters used in the model will result in imprecision in the estimates themselves. • The rankings provided are only an indication of the relative contribution of different risk factors to the burden of disease and the certainty of the ranking will depend on the strength of underlying evidence. • The method used attributes DALYs to the risk factors based on

	the conditions they are known to be associated with, there can therefore be a lag period between the occurrence of the risk factors and the manifestation of the health impact which can be considerable in some cases. • The methods used to produce DALYs in the GBD reports produced before 2010 has been criticised for favouring younger adults and immediate years of life gained; more recent reports use a method that has rectified this.
Rationale	Risk factors for DALYs provide important information on the causes of morbidity and mortality. Whereas traditional mortality data only looks at the cause of death, DALYs also give an indication of the burden of disease in the living population because it takes into account years lived with a disease, as well as the ultimate cause of mortality. Identifying risk factors means a targeted, primary prevention approach can be taken to reducing DALYs in the future.

4.2   Slide 41 – Risk factors for years lived with disability (YLD)

Indicator definition	Counts of the top 20 risk factors for years lived with disability.
Who/what does it measure?	Persons.
Period	2015
Geography	Wales
Data source	Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015), Global Health Data Exchange (IHME)
Method	Years lived with disability (YLDs) are a measurement of the burden of disease. They are calculated by multiplying the prevalence of a disorder by the short- or long-term loss of health associated with that disability (the disability weight). When YLDs are added to the years of life lost for a certain disease or disorder, DALYs can be calculated for the disease or disorder. Information on how YLD has been calculated is available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)31678-6.pdf
Caveats	The Global Burden of Disease Study 2015 (GBD 2015) provides internationally comparable burden of diseases estimates. • The methods allow for differing availability and quality of data. • The report provides modelled estimates not direct measurements and the results should therefore not be compared to any direct measures reported for Wales. • Uncertainty in any of the raw data or parameters used in the model will result in imprecision in the estimates themselves. • The rankings provided are only an indication of the relative

contribution of different risk factors to the burden of disease and the certainty of the ranking will depend on the strength of underlying evidence. The method used attributes YLD to the risk factors based on the conditions they are known to be associated with, there can therefore be a lag period between the occurrence of the risk factors and the manifestation of the health impact which can be considerable in some cases.

• The methods used to produce DALYs in the GBD reports produced before 2010 has been criticised for favouring younger adults and immediate years of life gained; more recent reports use a method that has rectified this.

Rationale	YLD is a key contributory factor to DALYs and the burden of disease in the living population. Nonfatal outcomes and chronic conditions are a measure of population health and need to be considered alongside mortality in the prioritisation of health resources. Risk factors for YLD provide important information on the causes of morbidity. Identifying risk factors means a targeted approach can be taken to preventing YLD and DALYs in the future.

4.3   Slide 42 – Risk factors for years of life lost (YLL)

Indicator definition	Counts of the top 20 risk factors for years of life lost (YLL).
Who/what does it measure?	Persons.
Period	2015
Geography	Wales
Data source	Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015), Global Health Data Exchange (IHME)
Method	Information on how YLL has been calculated is available at: http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)31012-1.pdf
Caveats	The Global Burden of Disease Study 2015 (GBD 2015) provides internationally comparable burden of diseases estimates. • The methods allow for differing availability and quality of data. • The report provides modelled estimates not direct measurements and the results should therefore not be compared to any direct measures reported for Wales. • Uncertainty in any of the raw data or parameters used in the model will result in imprecision in the estimates themselves. • The rankings provided are only an indication of the relative contribution of different risk factors to the burden of disease and the certainty of the ranking will depend on the strength of underlying

	evidence. • The method used attributes YLL to the risk factors based on the conditions they are known to be associated with, there can therefore be a lag period between the occurrence of the risk factors and death which can be considerable in some cases. • The methods used to produce DALYs in the GBD reports produced before 2010 has been criticised for favouring younger adults and immediate years of life gained; more recent reports use a method that has rectified this.
Rationale	YLL is a key contributory factor to DALYs and thus the burden of disease. YLL take into account the age at which deaths occur by giving greater weight to deaths at younger age and lower weight to deaths at older age. Risk factors for YLL provide important information on the causes of mortality. Identifying risk factors means a targeted approach can be taken to preventing YLL and DALYs in the future.

4.4   Slide 43, 45, 46 & 47 - Negative health behaviours in adults

Indicator definition	Smoking - The age-standardised percentage of people who reported smoking daily or occasionally (current smokers). Drinking above guidelines – The age-standardised percentage of adults reporting drinking above guidelines on the heaviest drinking day in the past week.
Who/what does it measure?	Persons aged 16+.
Period	2008-2009 to 2014-2015
Geography	Wales
Data source	Welsh Health Survey (WHS), Welsh Government (WG) Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
Method	Age-standardised percentages were calculated using aggregated weightings from the 2013 European Standard Populations. The WHS asked adults whether they smoked (daily or occasionally), used to smoke (daily or occasionally), or had never smoked. Drinking above guidelines: Men drinking more than 4 units, women drinking more than 3 units.
Caveats	Smoking • Self-reported prevalence of smoking may be more probe to respondent bias i.e. smokers may be less likely to answer questions about smoking. Drinking above guidelines • Survey data on alcohol consumption are known to be

	underestimated and likely to only capture 60% of consumption.
	• Data from the Welsh Health Survey only reflects the week before the survey, whereas binge drinking may depend on events that do not occur weekly e.g. birthday celebrations. It may also be difficult to estimate the amount of alcohol poured without a measure.
	• Welsh Health survey methods and definitions available at: http://gov.wales/docs/statistics/2016/160601-welsh-health-survey-2015-health-related-lifestyle-en.pdf
	• Welsh Health survey technical guide available at: http://gov.wales/docs/statistics/2016/160929-welsh-health-survey-2015-technical-report-en.pdf
Rationale	This indicator has been included to show how important health risking behaviours in adults are changing over time in Wales. Smoking is the most important cause of preventable ill health and premature mortality in the UK. Smoking is a major risk factor for many diseases, such as lung cancer, chronic obstructive pulmonary disease and heart disease. It is also associated with cancers in other organs. Alcohol consumption is a contributing factor to hospital admissions and deaths from a diverse range of conditions such as liver disease and mental health. Alcohol consumption and smoking are modifiable lifestyle risk factors; effective tobacco and alcohol control measures can reduce the prevalence of smoking and consumption of alcohol in the population.

4.5 Slide 44 – Percentage of adults reporting to be a current smoker, UK nations, Iceland & Sweden

Indicator definition	The percentage of adults who report being a current smoker.
Who/what does it measure?	Wales, England, Scotland and Northern Ireland: Male and females aged 16+.

Iceland and Sweden: Males and females aged 15+. |
| **Period** | 2014 |
| **Geography** | UK nations, Iceland and Sweden |
| **Data source** | Welsh Health Survey (WHS), Welsh Government (WG)

Opinions and Lifestyle Survey (OPN), Health & Social Care Information Centre (HSCIC)

Scottish Health Survey (SHeS), Scottish Government (SG)

Health survey Northern Ireland (HSNI),

Organisation for Economic Co-operation and Development (OECD) |
| **Method** | Information on how the percentage of adults reporting to be a current smoker has been calculated is available at: |

	Wales http://gov.wales/docs/statistics/2015/150603-welsh-health-survey-2014-health-related-lifestyle-en.pdf England http://content.digital.nhs.uk/catalogue/PUB20781/stat-smok-eng-2016-rep.pdf Scotland http://www.gov.scot/Topics/Statistics/Browse/Health/scottish-health-survey Northern Ireland https://www.health-ni.gov.uk/publications/smoking-prevalence-by-sex-and-deprivation-quintile-201011-201516 Iceland & Sweden http://stats.oecd.org/wbos/fileview2.aspx?IDFile=4b75ea51-2ba2-4744-a9c4-d6b04b669db5
Caveats	• Self-reported prevalence of smoking may be more prone to respondent bias i.e. smokers may be less likely to answer questions about smoking.
Rationale	The indicator has been included to show how smoking levels vary within the UK nations and also how it compares to countries with a similar demographic and societal structure to the UK. Smoking is an important cause of preventable ill health and premature mortality in the UK. Smoking is a major risk factor for many diseases, such as lung cancer, chronic obstructive pulmonary disease and heart disease. It is also associated with cancers in other organs, including lip, mouth, throat, bladder, kidney, stomach, liver and cervix. Smoking is a modifiable lifestyle risk factor; effective tobacco control measures can reduce the prevalence of smoking in the population.

4.6   Slide 48 - Alcohol-specific and alcohol-attributable mortality, by deprivation fifth

Indicator definition	The European age-standardised (3-year rolling average) mortality rate per 100,000 from alcohol-specific and alcohol-attributable conditions, adjusted for ICD-10 coding change in 2011.
Who/what does it measure?	Persons, all ages.
Period	2003-05 to 2010-12
Geography	Wales
Data source	Annual District Deaths Extract (ADDE), Office for National Statistics (ONS)

	Mid-year populations estimates (MYE), Office for National Statistics (ONS)
	Welsh Index of Multiple Deprivation (WIMD) 2011, Welsh Government (WG)
Method	Counts of deaths registered between 2003 and 2012 were extracted from the Annual District Deaths Extract (ADDE). Rates of alcohol-specific and alcohol-attributable mortality for Wales and by deprivation fifths were calculated using mid-year population estimates. These rates were directly age-standardised using the European standard population, to adjust for the effect of age in comparisons between areas. Using a method proposed by Dobson et al[1], 95 per cent confidence intervals were also added to the rates. References 1. Dobson A.J. et al (1991) Confidence intervals for weighted sums of Poisson parameters. Stat Med 10(3):457-462 Further information on these indicators are available in the Alcohol and health in Wales technical guide available at: http://www2.nphs.wales.nhs.uk:8080/PubHObservatoryProjDocs.nsf/85c50756737f79ac80256f2700534ea3/65ed28d06e1f44fd80257d73002a4e75/$FILE/AlcoholAndHealthInWales_TechnicalGuide_v2a.pdf
Caveats	• Attributable fractions are the proportions of deaths or hospital admissions that are thought to be caused by a particular exposure, for example alcohol. Fractions are calculated for conditions where there is sufficient evidence of a causal relationship between the exposure and the disease or injury. • In 2014, the alcohol-attributable fractions that are applied to mortality and hospital admission data were updated to take into account new epidemiological evidence for the association between alcohol consumption and health-related outcomes. This exercise resulted in some important changes to the number of health conditions and external causes that are identified as being alcohol-related and also a recalculation of the attributable fractions for some of the existing health measures. • Mortality counts are derived from an annual mortality extract supplied by ONS and are based on the original underlying cause of death for which there is nearly 100% coverage on the mortality register. There is the potential for the underlying cause of death to be incorrectly attributed on the death certificate and, therefore, the cause of death misclassified. • The registration of death is mandatory in the UK, so the dataset should be a near complete record of mortality. However, the assigning of cause of death on the medical certificate is known to vary, for example between areas.
Rationale	Alcohol consumption is a contributing factor to hospital admissions and deaths from a diverse range of conditions. Alcohol misuse has both

	health and societal costs. The Welsh Government's 10 year substance misuse strategy, Working Together to Reduce Harm (2008-18), is clear that a multi-pronged approach involving individuals, the health service, the alcohol industry and government is required if we are to make significant progress in tackling this public health challenge.

4.7   Slide 49 - Alcohol-related deaths

Indicator definition	Age-standardised rates per 100,000 for alcohol-related deaths.
Who/what does it measure?	Males and females, all ages.
Period	1994 to 2015
Geography	UK nations
Data source	Office for National Statistics (ONS) National Records of Scotland (NRS) Northern Ireland Statistics and Research Agency (NISRA)
Method	Methodology used to calculate alcohol related deaths is available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/alcoholrelateddeathsintheunitedkingdom/registeredin2015
Caveats	• Alcohol related deaths are those caused by diseases known to be related to alcohol consumption, such as cirrhosis of the liver.
Rationale	Alcohol is a major cause of death and illness in Wales. Most deaths result from long-term drinking and its role in increasing risks of diseases such as cancer and cardiovascular disease. This indicator has been included to show how the age-standardised rate per 100,000 male and females for alcohol-related deaths has changed over time for each of the UK nations.

4.8   Slide 50 to 53 – Positive health behaviours in adults

Indicator definition	Fruit and vegetable consumption – the age-standardised percentage of adults reporting eating five or more pieces of fruit and vegetables on the previous day. Physical activity – the age-standardised percentage of adults who reported that they met the physical activity guidelines in the previous week (at least 30 minutes of moderate or vigorous exercise on 5+ days).
Who/what does	Persons aged 16+.

it measure?	
Period	Slide 50: 2008-2009 to 2014-2015
	Slide 51 & 53: 2008 to 2015
	Slide 52: Wales (2009), England (2008), Scotland (2009), Northern Ireland (2005-06)
Geography	Slides 50, 51 & 53: Wales
	Slide 52: Wales, England, Scotland and Northern Ireland
Data source	Slide 50: Welsh Health Survey (WHS), Welsh Government (WG)
	Slide 51 & 53: Welsh Health Survey (WHS), Welsh Government (WG) and Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
	Slide 52: Welsh Health Survey (WHS), Welsh Government (WG), Health Survey for England (HSE), Health and Social Care Information Centre (HSCIC), Northern Ireland Health & Social Wellbeing Survey (NIHSWS), Scottish Health Survey (SHS), Scottish Government (SG)
Method	For Welsh Health Survey data, age-standardised percentages were calculated using aggregated weightings from the 2013 European Standard Population for those respondents who were aged 16 and over who stated they met physical guidelines in the previous week (at least 30 minutes of moderate or vigorous exercise on 5+ days). For fruit and vegetable consumption it was for those respondents who were aged 16 and over who reported eating five or more portions of fruit or vegetables the previous day. Further information on this can be found in the Public Health Outcomes Framework for Wales reporting tool – Technical guide, available at: http://www2.nphs.wales.nhs.uk:8080/PubHObservatoryProjDocs.nsf/85c50756737f79ac80256f2700534ea3/8bc8d8f565c803418025805d002baf7c/$FILE/PHOF_TechnicalGuide2016_v2.pdf Information on the methodology used to calculate percentage for the respective countries available at: England http://www.content.digital.nhs.uk/catalogue/PUB22610 Scotland http://www.gov.scot/Topics/Statistics/Browse/Health/scottish-health-survey Northern Ireland https://www.health-ni.gov.uk/publications/health-survey-northern-ireland-first-results-201415
Caveats	• Self reported behaviours may be prone to respondent bias i.e. overestimating or underestimating their behaviour to give a more favourable response. • There may be misclassification of physical activity e.g. some housework may be 'moderate' rather than 'light'.

| Rationale | Diet and nutrition are important for health and poor diet is a major risk factor for ill-health and premature death. Regular physical activity is associated with improved physical and mental health and better weight control. The indicators have been included to show how positive health behaviours such as meeting the recommended physical activity guidelines and the consumption of fruit and vegetables has changed over time and also how it varies amongst the UK nations. |

4.9   Slide 54 – Percentage of adults reporting to be overweight or obese

Indicator definition	The age-standardised percentage of adults reporting to be overweight or obese.
Who/what does it measure?	Persons aged 16+.
Period	UK nations (2015), Iceland (2012) and Sweden (2014)
Geography	UK nations, Iceland and Sweden
Data source	Welsh Health Survey (WHS), Welsh Government (WG) Health Survey for England (HSE) 2015, Health and Social Care Information Centre (HSCIC) Scottish Health Survey (SHeS), Scottish Government (SG) Health Survey Northern Ireland (HSNI), Northern Ireland Statistics and Research Agency (NISRA) Organisation for Economic Co-operation and Development (OECD)
Method	The Welsh Health Survey asked adults to report their height and weight in order for their Body Mass Index (BMI) to be calculated. Overweight and obese are defined as BMI 25+ and 30+ respectively. BMI is calculated as weight in kilograms (kg) divided by the height squared (m^2). Pregnant women and respondents providing invalid measurement data were excluded. Further information on the methods used in the Welsh Health Survey available at: http://gov.wales/docs/statistics/2016/160622-welsh-health-survey-2015-health-status-illnesses-other-conditions-en.pdf Information on the methods used by respective countries can available in the following links: England http://www.content.digital.nhs.uk/catalogue/PUB22610 Scotland

	http://www.gov.scot/Topics/Statistics/Browse/Health/scottish-health-survey Northern Ireland https://www.health-ni.gov.uk/publications/health-survey-northern-ireland-first-results-201415 Iceland and Sweden http://stats.oecd.org/wbos/fileview2.aspx?IDFile=d9d15800-d62c-41bd-b8d8-e3d6b4d96e0c
Caveats	• Height and weight are self-reported. There is evidence to show that some people tend to under report weight and/or over report height resulting in an underestimation of the prevalence of overweight and obesity. • English BMI data has been calculated using nurse measured heights and weights. All other survey data is self-reported which can suffer from reporting bias (overestimating height and underestimating weight).
Rationale	The UK is experiencing increasing prevalence of obesity affecting both adults and children and is recognised as a major determinant of premature mortality and avoidable ill health. Obesity contributes to many health problems and places an increased demand on health services. This indicator has been included to show how the percentage of adults reporting to be overweight or obese varies among the UK nations, Iceland and Sweden, and how it differs between genders.

5. Healthy start

5.1   Slide 56 – Infant mortality

Indicator definition	Infant mortality is defined as the rate of deaths within the first year of life per 1,000 live births.
Who/what does it measure?	Persons aged <1 year.
Period	2013-2015
Geography	UK nations, Iceland, and Sweden
Data source	StatsWales, Welsh Government (WG) Children and Young People's Health Services (CYPH), Public Health England (PHE) Northern Ireland Statistics and Research Agency (NISRA) Information Services Division (ISD Scotland) Organisation for Economic Co-operation and Development (OECD)
Method	Calculations for the crude rate per 1,000 live births were calculated as per the below formulae. $\dfrac{\text{Deaths within first year of life}}{\text{Live births}} \times 1{,}000$
Caveats	• Live births were assigned to geographical areas by ONS using the postcode of mother's usual residence and the National Statistics Postcode Directory (NSPD).
Rationale	A population's general health and health inequality can be viewed through the analysis of the infant mortality rate. This analysis can express the association of causes of infant mortality and upstream determinants of population health such as economic, social, and environmental conditions. Combating the infant mortality rate in Wales is a part of the Welsh Governments Well-being Objectives (Welsh Government, 2016). Further information is available at: Welsh Government (2016) *Taking Wales Forward: Welsh Government's Well-being Objectives (2016)*. Welsh Government: UK http://gov.wales/docs/caecd/publications/161104-well-being-a-en.pdf

5.2   Slide 57 – Babies with low birth weight by deprivation fifth

Indicator definition	The percentage of babies with low birth weight by deprivation fifth.

Who/what does it measure?	Children (Wales residents), all singleton live births.
Period	Trend: 2006 – 2015 (calendar year)
	Latest period: 2015 (calendar year)
Geography	Wales
Data source	National Community Child Health Database (NCCHD), NHS Wales Informatics Service (NWIS) Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
Method	The number of singleton live born babies with a birth weight below 2500g divided by the total number of singleton live born babies with a known birth weight times 100. This analysis uses national deprivation fifths. Further details available at: http://gov.wales/statistics-and-research/welsh-index-multiple-deprivation/?lang=en
Caveats	• Only births with a known birth weight are included (i.e. missing data and birth weights <=500g and 6000g and over are excluded). • Analysis excludes multiple births. • Analysis includes live births only. Further work which has been carried out on the NCCHD is available at: http://gov.wales/statistics-and-research/births-national-community-child-health-database/?lang=en
Rationale	Low birth weight can increase the risk of childhood mortality and of developmental problems for the child and is associated with poorer health in later life. At a population level there are inequalities in low birth weight and a high proportion of low birth weight births could indicate lifestyle issues of the mothers and/or issues with the maternity services. This indicator has been included to show the social gradient that is evident between deprivation and low birth weight and also to show how the percentage of babies with a low birth weight is changing over time.

5.3   Slide 58 – Breastfeeding at 10 days

Indicator definition	Percentage of live born babies with known breastfeeding status - i.e. live births who were breastfed at birth divided by live births who were or were not breastfed at birth.
Who/what does it measure?	• Total live births • Persons aged 10 days, percentage

Period	2014-2015 (financial year)
Geography	Wales
Data source	National Community Child Health Database (NCCHD), NHS Wales Informatics Service (NWIS) Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
Method	The number and percentage of babies exclusively breastfed at 10 days following birth out of all live births where breastfeeding status is recorded.
Caveats	• The definition of breastfeeding at birth is the method of feeding established at the time of discharge from maternity care. • The definition of exclusively breastfed are those receiving milk exclusively through breastfeeding or receiving breast milk by any other means e.g. tube, cup, syringe etc and essential medication. • The record must have a valid response to method of feeding to be included in the calculations, null responses have been omitted. Some care must be used when interpreting the results as some local authorities have low reporting rates.
Rationale	Breast milk provides all the nutrients babies need for the first six months of life as well as immunological protection against a variety of infectious diseases. Having been breastfed as a baby protects children's health as they grow up, making them less prone to obesity, high blood pressure, and heart disease. This indicator has been included to examine the social gradient between deprivation and breastfeeding.

5.4   Slide 59 – Vaccination rates at age 4

Indicator definition	Percentage of children who received the following scheduled vaccinations at age 4: - Four in one pre-school booster (against diphtheria, tetanus, pertussis and polio) - Hib/men C booster (against Haemophilus influenza type b (Hib) disease and meningococcal C disease) - Two doses of MMR (Measles, Mumps and Rubella)
Who/what does it measure?	Persons aged 4.
Period	Trend:2008-09 to 2015-16 (financial years)
Geography	Wales
Data source	Vaccine Preventable Disease Programme (VPDP), Public Health Wales Communicable Disease Surveillance Centre (CDSC) National Community Child Health Database (NCCHD), NHS Welsh Informatics Service (NWIS)

Method	The analysis was carried out by the Vaccine Preventable Disease Programme and Communicable Disease Surveillance Centre. The number of children who received the scheduled vaccinations detailed above divided by the number of children aged 4 multiplied by 100. This measure is calculated using appropriate booster immunisation or final course doses. Figures are calculated for children living and resident in Wales as at the end of March in each year.
Caveats	• Caution should be taken when interpreting trend data as different vaccinations have been recorded between 2008 and 2016[1]: 2008-2010: MMR dose 2, '4 in 1' preschool booster, MenC dose 3. 2010-2016: MMR dose 2, '4 in 1' preschool booster, HibMenC booster. • The Pneumococcal conjugate booster is excluded from this analysis between 2011 and 2016 as it is not advised to give this vaccine after two years of age. Although this raises an inconsistency with reports published at the time, it is the most operationally useful measure for health boards. • HibMenC booster and pneumococcal conjugate booster are not included in calculations relating to 2008-2010 as they were not part of the routine schedule for children in this age-group at that time (the third dose of the Men C primary is used here instead). • Data for 1,012 children was recorded in unknown health boards between 2008/09 - 2015/16, this information has not been included in the analysis. • National level figures and health board/local authority breakdowns of this composite measure of immunisation uptake have been published by Public Health Wales VPDP and CDSC since 2011-12 in annual and quarterly COVER report. • The 'up to date by 4y' measures for years 2008-9 to 2010-11 have been calculated using the historical immunisation datasets (the source of which is the NCCHD) which were used in production of Annual COVER reports. Data prior to these years are not available in a format which would allow production of the composite measure. References: 1. Public Health Wales. The UK childhood immunisation schedule. [Online]. 2013. Available at: http://www.wales.nhs.uk/sites3/page.cfm?orgid=457&pid=54151 [Accessed 30th March 2017]
Rationale	Children and young people in Wales are protected against many serious infectious diseases through vaccinations, which are offered in accordance with the UK Department of Health routine immunisation schedule. This indicator has been included to show immunisation uptake across Wales and illustrates that whilst it has risen over previous years it still remains below the target uptake of 95%. The NHS and Welsh Government can use this indicator to identify if the populations uptake is at the recommended 95% level, as this level of uptake provides a measure of protection for individuals who have not developed immunity.

	The percentage up to date with immunisations is also a general indicator of health and health inequality.

5.5   Slide 60 – Tooth decay among 5 year olds

Indicator definition	The average number of decayed, missing or filled teeth (dmft) in children aged 5 years.
Who/what does it measure?	Persons aged 5 years (school year 1) in state primary schools who have been examined as part of the Welsh Dental Survey.
Period	2014-15 *Survey conducted at different dates for different areas within this time frame
Geography	Wales
Data source	Welsh Dental Survey, Welsh Oral Health Information Unit (WOHIU) Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
Method	The average number of dmft in children in this survey was calculated using British Association for the Study of Community Dentistry (BASCD) guidelines[1]. This analysis uses national deprivation fifths. References: 1. Welsh Oral Health Information Unit. 2014/2015 Dental Survey Protocol. Epidemiological survey of school year 1 (5-year-old) children in Wales. Available at: http://www.cardiff.ac.uk/__data/assets/word_doc/0008/218591/2014-Dental-Survey-Protocol-5yo-v1.docx [Accessed 30th March 2017]
Caveats	• The data was collected using positive consent and cannot be compared with data collected across the UK prior to 2007 or in Scotland after 2007. • WOHIU: Dental examiners and recorders attend training to ensure standardisation of procedures. Data cleansing and analysis is undertaken by the Welsh Oral Health Information Unit to ensure a common method is used. Data undergo a three way data handling process to ensure continued data quality. • Deprivation and rural and urban status has been classified by the schools location rather than the residents address. • For further information please see the survey of five year olds oral health 2014-2015 full data report: http://www.cardiff.ac.uk/__data/assets/pdf_file/0006/218589/Picture-of-Oral-Health-2016.pdf
Rationale	Analysing DMFT data provides a measure of the decay experience of the average child, therefore defining a burden of disease which in theory could have been prevented. In Wales DMFT are used widely as outcome indicators in a health behaviour context. These analyses are essential in

	evaluating efforts to prevent DMFT rates in young children.

5.6   Slide 61 – Percentage of children who are overweight or obese, Wales and England

Indicator definition	The percentage of children who are overweight or obese.
Who/what does it measure?	Boys and girls aged 4-5.
Period	2014/15
Geography	Wales and England
Data source	Child Measurement Programme for Wales (CMP), Public Health Wales (PHW) National Child Measurement Programme (NCMP), Health & Social Care Information Centre (HSCIC)
Method	Information on the methodology used to calculate the percentage of boys and girls who are overweight or obese is available from the following link: Wales http://www.wales.nhs.uk/sitesplus/888/page/67762 England http://content.digital.nhs.uk/ncmp
Caveats	-
Rationale	This indicator has been included to compare the prevalence of childhood obesity between England and Wales for the latest time period (2014/15). The WHO has highlighted that obesity amongst children is one of the most serious challenges of the 21st Century and prevalence is increasing at an alarming rate. Overweight and obesity in children can be used as an indicator for conditions such as type ll diabetes, helping to reflect the scale of the challenge as well as being a general indicator of health and health inequality.

5.7   Slide 62 – Percentage of children who are overweight or obese – UK nations and Health Behaviour in School-aged Children regions

Indicator definition	Percentage of young people (aged 15 years) whose self-reported height and weight gives them a body mass index (BMI) which classifies them as overweight or obese.
Who/what does it measure?	Boys and girls aged 15.
Period	2013/14

Geography	UK nations and the highest/lowest HBSC regions
Data source	Health Behaviour in School-aged Children (HBSC)
Method	Health Behaviour in School-aged Children (HBSC) is a school-based survey with data collected through self-completion questionnaires administered in the classroom. The international standard questionnaire enables the collection of common data across participating countries and thus enables the quantification of patterns of key health behaviours, health indicators and contextual variables. These data allow cross-national comparisons to be made. The respondents (aged 15 years) were asked how much they weigh without clothes and how tall they are without shoes, and to record these in country appropriate units (centimetres versus inches, pounds versus kilograms). These data were (re)coded in centimetres and kilograms, respectively, to compute the body mass index (BMI) as weight (kg) divided by height $(m)^2$. The analysis presented uses the international BMI standards for young people adopted by the International Obesity Taskforce (IOTF), called the IOTF BMI cut-off points. Further information can be found in the report below '2013/14 Health Behaviours in School-aged Children (HBSC) Wales: key findings' published by Welsh Government: http://gov.wales/docs/caecd/research/2015/151022-health-behaviour-school-children-2013-14-key-findings-en.pdf
Caveats	Height and weight are self-reported. There is evidence to show that some people tend to under report weight and/or over report height resulting in an underestimation of the prevalence of overweight and obesity.
Rationale	The indicator has been included to compare the prevalence of overweight and obesity amongst boy and girls in the UK nations and HBCS regions. The WHO has highlighted that obesity amongst children is one of the most serious challenges of the 21st Century and prevalence is increasing at an alarming rate. Overweight and obesity in children can be used as an indicator for conditions such as type ll diabetes, helping to reflect the scale of the challenge, as well as being a general indicator of health and health inequality.

5.8   Slide 63 – Percentage of children eating vegetables once a day or more - UK nations and Health Behaviour in School-aged Children regions

Indicator definition	Percentage of young people (aged 15 years) who self-reported eating vegetables at least once a day. Response options ranged from never to more than once a day.
Who/what does it measure?	Boys and girls aged 15.
Period	2013/14

Geography	UK nations and the highest/lowest HBSC regions
Data source	Health Behaviour in School-aged Children (HBSC)
Method	Health Behaviour in School-aged Children (HBSC) is a school-based survey with data collected through self-completion questionnaires administered in the classroom. The international standard questionnaire enables the collection of common data across participating countries and thus enables the quantification of patterns of key health behaviours, health indicators and contextual variables. These data allow cross-national comparisons to be made. Further information can be found in the report below '2013/14 Health Behaviours in School-aged Children (HBSC) Wales: key findings' published by Welsh Government: http://gov.wales/docs/caecd/research/2015/151022-health-behaviour-school-children-2013-14-key-findings-en.pdf
Caveats	• Self reported data may be prone to respondent bias i.e. overestimating or underestimating their behaviour to give a more favourable response.
Rationale	Diet and nutrition are important for health and poor diet is a risk factor for ill-health and premature death. Eating habits are established in childhood and adolescence, and therefore the diet and eating habits of young people are of concern to policy makers. The government also encourages good eating habits through the Change 4 Life campaign which takes a more holistic approach to child and parent health and includes diet as a major element. The indicator has been included to show how levels of vegetable consumption varies amongst boys and girls within the UK nations and how they compare to the highest and lowest HBSC regions.

5.9   Slide 64 – Percentage of children who smoke at least once a week - UK nations and Health Behaviour in School-aged Children regions

Indicator definition	The percentage of young people (15 year olds) who self-reported smoking at least once a week. Response options ranged from never to every day.
Who/what does it measure?	Boys and girls aged 15.
Period	2013/14
Geography	UK nations and the highest/lowest HBSC regions
Data source	Health Behaviour in School-aged Children (HBSC)
Method	Health Behaviour in School-aged Children (HBSC) is a school-based survey with data collected through self-completion questionnaires

	administered in the classroom. The international standard questionnaire enables the collection of common data across participating countries and thus enables the quantification of patterns of key health behaviours, health indicators and contextual variables. These data allow cross-national comparisons to be made. 0 means less than ±0.5%. Further information can be found in the report below '2013/14 Health Behaviours in School-aged Children (HBSC) Wales: key findings' published by Welsh Government: http://gov.wales/docs/caecd/research/2015/151022-health-behaviour-school-children-2013-14-key-findings-en.pdf
Caveats	• Self reported data may be prone to respondent bias i.e. overestimating or underestimating their behaviour to give a more favourable response.
Rationale	This indicator has been included to show how smoking levels amongst boys and girls vary within the UK nations and how they compare to the highest and lowest HBSC regions. Smoking is a major cause of preventable morbidity and premature death. There is a large body of evidence showing that smoking behaviour in early adulthood affects health behaviours later in life.

5.10   Slide 65 – Percentage of children who drink alcohol at least once a week - UK nations and Health Behaviour in School-aged Children regions

Indicator definition	The percentage of young people (15 years old) who self-reported drinking any alcoholic beverage (beer, wine, spirits, alcopops or any other drink that contains alcohol) at least every week. . Response options ranged from never to every day.
Who/what does it measure?	Boys and girls aged 15.
Period	2013/14
Geography	UK nations and the highest/lowest HBSC regions
Data source	Health Behaviour in School-aged Children (HBSC)
Method	Health Behaviour in School-aged Children (HBSC) is a school-based survey with data collected through self-completion questionnaires administered in the classroom. The international standard questionnaire enables the collection of common data across participating countries and thus enables the quantification of patterns of key health behaviours, health indicators and contextual variables. These data allow cross-national comparisons to be made.

	0 means less than ±0.5%. Further information can be found in the report below '2013/14 Health Behaviours in School-aged Children (HBSC) Wales: key findings' published by Welsh Government: http://gov.wales/docs/caecd/research/2015/151022-health-behaviour-school-children-2013-14-key-findings-en.pdf
Caveats	• Self reported data may be prone to respondent bias i.e. overestimating or underestimating their behaviour to give a more favourable response.
Rationale	This indicator has been included to show how levels of alcohol consumption amongst boys and girls vary within the UK nations and how they compare to the highest and lowest HBSC regions. The normalisation of drinking at a young age, particularly when associated with binge drinking, is especially harmful and is linked with poor educational performance, sexual health problems in early life and sets the pattern for harmful drinking behaviour in adulthood. The Welsh Government's 10 year substance misuse strategy, Working Together to Reduce Harm (2008-18), is clear that a multi-pronged approach involving individuals, the health service, the alcohol industry and government is required if we are to make significant progress in tackling this public health challenge.

5.11   Slide 66 – Percentage of children who reported fair/poor health - UK nations, and highest & lowest Health Behaviour in School-aged Children regions

Indicator definition	Percentage of young people (15 year old) who self-reported their health as either fair or poor when asked to describe their health (Would you say your health is ...?). Response options were excellent, good, fair and poor.
Who/what does it measure?	Boys and girls aged 15.
Period	2013/14
Geography	UK nations and the highest/lowest HBSC regions
Data source	Health Behaviour in School-aged Children (HBSC)
Method	Health Behaviour in School-aged Children (HBSC) is a school-based survey with data collected through self-completion questionnaires administered in the classroom. The international standard questionnaire enables the collection of common data across participating countries and thus enables the quantification of patterns of key health behaviours, health indicators and contextual variables. These data allow cross-national comparisons to be made.

	Further information can be found in the report below '2013/14 Health Behaviours in School-aged Children (HBSC) Wales: key findings' published by Welsh Government: http://gov.wales/docs/caecd/research/2015/151022-health-behaviour-school-children-2013-14-key-findings-en.pdf
Caveats	-
Rationale	This indicator has been included to show how levels of self-rated health amongst boys and girls vary within the UK nations and how they compare to the highest and lowest HBSC regions.

5.12   Slide 67 – Percentage of children who are active 60 minutes every day - UK nations and Health Behaviour in School-aged Children regions

Indicator definition	Percentage of young people (aged 15 years)) who self-report that they were physically active for at least 60 minutes every day during the last week.
Who/what does it measure?	Boys and girls aged 15.
Period	2013/14
Geography	UK nations and the highest/lowest HBSC regions
Data source	Health Behaviour in School-aged Children (HBSC)
Method	Health Behaviour in School-aged Children (HBSC) is a school-based survey with data collected through self-completion questionnaires administered in the classroom. The international standard questionnaire enables the collection of common data across participating countries and thus enables the quantification of patterns of key health behaviours, health indicators and contextual variables. These data allow cross-national comparisons to be made.

Further information can be found in the report below '2013/14 Health Behaviours in School-aged Children (HBSC) Wales: key findings' published by Welsh Government: http://gov.wales/docs/caecd/research/2015/151022-health-behaviour-school-children-2013-14-key-findings-en.pdf |
| **Caveats** | • Self reported data may be prone to respondent bias i.e. overestimating or underestimating their behaviour to give a more favourable response. |
| **Rationale** | This indicator has been included to show how levels of physical activity amongst boys and girls vary within the UK nations and how they compare to the highest and lowest HBSC regions. Physical inactivity is a risk factor for ill health. People who have a physically active lifestyle have a lower risk of cardiovascular disease, coronary heart disease and stroke compared to those who have a sedentary lifestyle. Regular physical activity is also associated with a reduced risk of diabetes, obesity, osteoporosis, and with improved mental health. |

6. Living conditions

6.1   Slide 70 – Children living in poverty

Indicator definition	The percentage of children living in families in receipt of out of work (means-tested) benefits or in receipt of tax credits where their reported income is less than 60 per cent of the median income (£211 per week).
Who/what does it measure?	All persons aged under 20.
Period	2010
Geography	Lower super output area (LSOA) in Wales
Data source	Department for Work and Pensions (DWP)
Method	Child Benefit records are matched to Income Support (IS) or Job Seekers Allowance (JSA) claimant records in DWP. The matched records are then transferred to HMRC and matched to the tax credits database in order to identify children in families in receipt of IS or JSA. These DWP paid families are then combined with the tax credits data to ensure that the measure covers all children in families in receipt of IS or JSA and that no family or child is counted twice or ignored. The following calculation was then used: $$\frac{\text{Number of children living in families in receipt of CTC whose reported income is less than 60 per cent of the median income or in receipt of IS or (Income-Based) JSA}}{\text{Total number of children in the area}}$$ Health board data were aggregated from local authority level data.
Caveats	• Data should be complete as the estimates are based on finalised awards tax credit data, and as such are derived from a full set of administrative records rather than a sample. DWP, IS and JSA records relate to August to be consistent with the tax credits and Child Benefit data. • Duplicate records may occur in the dataset due to administrative errors, data matching issues and family breakdown (where a separate claim begins before the other ends). Where possible, any duplicate records have been removed from the dataset. • Health board data have been aggregated from local authority data. Estimates have been rounded to the nearest 5 units, therefore aggregating the individual estimates may not sum the given totals for an area.
Rationale	This indicator has been included to show how the percentage of children living in poverty varies across small areas in Wales. The percent of

children living in poverty is a general indicator for health inequalities, education and economic outcomes. The Welsh Government aims to eradicate child poverty by 2020. One of the strategic objectives set out in the Child Poverty Strategy for Wales is to reduce inequalities that exist in health, education and economic outcomes of children and families by improving the outcomes of the poorest.

6.2   Slide 71 – Adverse Childhood Experience (ACE)

Indicator definition	Percentage of adults who have suffered ACEs during their childhood (taken from Adverse Childhood Experience reports for England and Wales).
Who/what does it measure?	Adults ages 18 to 69 years.
Period	Wales: 2015 England: 2013
Geography	England and Wales
Data source	National survey of Adverse Childhood Experiences
Method	Over 2,000 adults aged 18-69 years participated in the ACE Study for Wales, providing anonymous information on their exposure to ACEs before the age of 18 years and their health and lifestyle as adults. The study achieved a compliance rate of 49.1% and the sample was designed to be representative of the general population in Wales[1]. The English national ACE study interviewed nearly 4000 people (aged 18-69 years) from across England in 2013. Around six in ten people asked to participate agreed and we are grateful to all those who freely gave their time[2]. Further information on ACEs can be found online: http://www.cph.org.uk/case-study/adverse-childhood-experiences-aces/ References: 1. Adverse Childhood Experiences and their impact on health-harming behaviours in the Welsh adult population. Available at: http://www.cph.org.uk/wp-content/uploads/2016/01/ACE-Report-FINAL-E.pdf [Accessed 30th March 2017] 2. Bellis MA, Hughes K, Leckenby N, Perkins C, Lowey H. National household survey of adverse childhood experiences and their relationship with resilience to health-harming behaviors in England. *BMC Medicine* 2014, 12:72. Infographic available at: http://www.cph.org.uk/wp-content/uploads/2014/05/ACE-infographics-BMC-Medicine-FINAL-3.pdf [Accessed 30th March 2017]
Caveats	• Samples were designed to be representative of the general population.

	• These surveys are self reported and may be susceptible to respondent bias.
Rationale	This indicator is included to show how the proportion of adults who report that they experienced ACEs as a child varies between Wales and England. ACEs are traumatic experiences that include suffering from verbal, mental, sexual and physical abuse, to being raised in a household where domestic violence, alcohol abuse, parental separation or drug abuse is present. Evidence shows children who experience stressful and poor quality childhoods are more likely to develop health-harming and anti-social behaviours, more likely to perform poorly in school, more likely to be involved in crime and ultimately less likely to be a productive member of society. Cymru Well Wales has committed to addressing ACEs and their impact in Wales by; making all public services in Wales able to respond effectively to prevent and mitigate the harms from ACEs, and by building protective factors and resilience in the population to cope with ACEs that cannot be prevented.

6.3   Slide 72 – Mean PISA scores, UK Nations, Iceland and Sweden

Indicator definition	Mean Programme for International Student Assessment (PISA) scores for science, mathematics and reading.
Who/what does it measure?	Persons aged 15.
Period	2015
Geography	UK Nations, Iceland and Sweden and Singapore (international best)
Data source	Organisation for Economic Co-operation and Development (OECD)
Method	Programme for International Student Assessment (PISA) is a triennial international survey which aims to evaluate education systems worldwide. In 2015 over half a million students, representing 28 million 15-year-olds in 72 countries and economies, took the internationally agreed two-hour test. Students were assessed in science, mathematics, reading, collaborative problem solving and financial literacy. Further information is available on the OECD PISA website: http://www.oecd.org/pisa/
Caveats	• The three-year cycle of this survey provides countries with timely information that includes data and analyses to consider the impact of policy decisions and related programs. If it were more frequent it would not allow sufficient time for changes and innovations to show improvement or decline, and if it were less frequent it would mean declines in performance could not be promptly addressed. • The average age of 15 was chosen because at this age young

	people in most OECD countries are nearing the end of compulsory education.
	• The selection of schools and students is as inclusive as possible, so that the sample of students comes from a broad range of backgrounds and abilities.
	• Sampling procedures for schools and students are quality assured and the achieved samples and corresponding response rates are subject to an adjudication process that verifies that they have complied with the standards set. If any country's response rate falls below the specified threshold this is reported.
	• Further information of response rates for PISA can be found on the OECD's PISA website, and specific information on participation rates for individual countries can be found in Volume I and Volume II of the PISA 2015 results available at:
	http://www.oecd.org/pisa/publications/
	• PISA 2015 was the first computer based test. For the small number of countries who were not ready for computer-based delivery it was possible for them to take the tests on paper. Student performance is comparable between the computer-based and paper-based tests within PISA 2015 and also between PISA 2015 and previous paper-based cycles. More information on the comparability of computer and paper-based tests can be found in Annex A5 of Volume I of the PISA 2015 Results.
	• Not all students answer the same question since the test is designed to provide an assessment of performance at the country level and not at the individual student level. PISA adopts an efficient design in which the full set of test material is distributed among 13 different test booklets, which are randomly assigned to the randomly sampled students who participate in the test. This procedure enables the OECD to obtain a much greater coverage of the content than if all students completed the same version of the test.
Rationale	This indicator has been included to show how education in Wales compares to other UK nations, Sweden and Iceland. Educational attainment is a predictor of health outcomes and is critical to personal social and economic development. Educational attainment and health are closely linked and pupils with better health and well-being are likely to achieve better academically.

6.4   Slide 73 – People not in education, employment or training

Indicator definition	Young people not in education, employment or training in Wales (NEET).
Who/what does it measure?	16-18 year olds and 19-24 year olds.
Period	2005 to 2014
Geography	Wales

Data source	Statistical First Release (SFR), Office for National Statistics (ONS).
	Labour Force Survey/Annual Population Survey (APS) (ONS). The APS is a household survey carried out by the ONS. The survey provides rolling four-quarter labour market data for UK countries and regions and also for local areas.
Method	Percentages were provided by Labour Force Survey/Annual Population Survey (ONS).
Caveats	• The SFR is the most robust source for young people NEET data. However, it is only available at Wales level, by gender and by age groups 16 to 18, 19 to 24. SFR NEET was chosen over APS NEET as this data is more robust. SFR uses the APS as one of its data sources. • As the data comes from a survey, the results are sample-based estimates and are therefore subject to differing degrees of sampling variability, i.e. the true value for any measure lies in a differing range about the estimated value. • Further information about the quality of the APS can be found online: http://www.ons.gov.uk/ons/guide-method/method-quality/specific/labour-market/labour-market-statistics/index.html.
Rationale	The indicator is included to demonstrate the trend over the decade in the proportion of young people not in education, employment or training in Wales. Young people who are not in education, employment or training are at greater risk of a range of negative outcomes, including poor physical and mental health, early parenthood, and lack employment opportunities in later life. Increasing the participation of young people in learning and employment not only makes a lasting difference to individual lives, but is also central to improving social mobility and stimulating economic growth.

6.5   Slide 74 – Overcrowding by tenure type

Indicator definition	The percentage of households with dependent children and more than 1.5 persons per bedroom by tenure type.
Who/what does it measure?	Households
Period	2011
Geography	Wales
Data source	Census 2011, Office for National Statistics (ONS)
Method	The number of households with dependent children aged 0-15 years or 16-18 years and in full time education where there are more than 1.5 persons per bedroom by tenure type.

A household is defined as one person living alone, or a group of people (not necessarily related) living at the same address who share cooking facilities and share a living room or sitting room or dining area. A household must contain at least one person whose place of usual residence is at the address. A group of short-term residents living together is not classified as a household, and neither is a group of people at an address where only visitors are staying[1].

A dependent child is a person aged 0 – 15 in a household (whether or not in a family) or aged 16 – 18 in full-time education and living in a family with his or her parent(s). It does not include any children who have a spouse, partner or child living in the household[1].

Tenure provides information about whether a household rents or owns the accommodation that it occupies and, if rented, combines this with information about the type of landlord who owns or manages the accommodation. Tenure defined below:

Tenure, Owned:
Accommodation that is 'owned' includes accommodation that is either 'owned outright' or 'owned with a mortgage or loan'.

Tenure, Social rented:
Accommodation that is 'social rented' includes accommodation that is rented from a council or local authority, or from a registered social landlord, housing association, housing co-operative or charitable trust.

Tenure, Private rented:
Accommodation that is 'private rented' includes accommodation that is rented from a private landlord or letting agency, employer of a household member, relative or friend of a household member, or other non-social rented accommodation.

Tabulated from the 2011 Census returns, the number of households with dependent children and more than 1.5 persons per bedroom, expressed as a percentage of all households by tenure type.

References:

1.   Office for National Statistics. *2011 Census Glossary of Terms.* Office for National Statistics Census Programme, 2013. Available at: http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/2011-census-definitions/2011-census-glossary.pdf   [Accessed 30th March 2017]

Caveats	• The data is taken from the 2011 Census and is the most recent source of data with universal population coverage. • The data are likely to be an accurate indicator of household composition at the time of collection.
Rationale	This indicator has been included to highlight the issue of overcrowding across different types of tenure. People living in cramped conditions report a detrimental effect on physical and mental health, education and general well-being.

6.6　　Slide 75 – People able to afford everyday goods and activities

Indicator definition	Percentage of households able to afford everyday goods and activities by deprivation fifth.
Who/what does it measure?	Households.
Period	2014/15 (financial year)
Geography	Wales
Data source	National Survey for Wales (NSW), Welsh Government (WG) Welsh Index of Multiple Deprivation (WIMD) 2014, (WG)
Method	Percentages and 95% confidence intervals were supplied by WG. Households were defined as: 'a group of people (not necessarily related) living at the same address who share cooking facilities **and** share a living room or sitting room or dining area'[1,2]. All respondents except those using another language were asked the following questions to determine household material deprivation: - Do you [and your family / and your partner] have a holiday away from home for at least one week a year, whilst not staying with relatives at their home? - If they answered yes to option 2 or 3 of the above question- do you [and your family / and your partner] have a holiday away from home for at least one week a year, whilst staying with relatives at their home? (if they answered yes to option 2 and 3 of the above question) - Do you (and your family / and your partner) have enough money to keep your home in a decent state of decoration? - Do you (and your family / and your partner) have household contents insurance? - Do you (and your family / and your partner) make regular savings of £10 a month or more for rainy days or retirement? - Do you (and your family / and your partner) replace any worn out furniture? - Do you (and your family / and your partner) replace or repair major electrical goods such as a refrigerator or a washing machine, when broken? - Respondents were asked to look at a showcard then asked on a slightly different note do you have a small amount of money to spend each week on yourself, not on your family? - Respondents were given a selection of statements and asked which statement best describes how well you are keeping up with your bills and credit commitments at the moment? - In the last 12 months have you used the services of any organisation which provides advice and support for people having

problems with debt?

This analysis uses national deprivation fifths. Further information can be found on the WG website:
http://gov.wales/statistics-and-research/welsh-index-multiple-deprivation/?lang=en

Further details on the questionnaire can be found online:
http://gov.wales/docs/caecd/research/2014/140430-national-survey-questionnaire-2014-15-en.pdf

References:

1. Welsh Government. National Survey for Wales Field Test Technical Report. 2016. Available at:
   http://gov.wales/docs/caecd/research/2016/160315-national-survey-field-test-technical-report-en.pdf [Accessed 30th March 2017]
2. National Survey for Wales, 2014-15 Technical Report. Available at:
   http://gov.wales/docs/caecd/research/2015/151005-national-survey-2014-15-technical-report-en.pdf [Accessed 30th March 2017]

Caveats	• Data represents households, not individuals. • The NSW is a major study being conducted by the Welsh Government which involves conducting more than 14,000 interviews with a randomly selected sample of people aged 16 and over across Wales per year (approximately 660 interviews in each local authority)[1]. • A large randomly selected sample allows analysis by population sub-groups and local authority areas and for the results to be as representative as possible of the people in Wales[2]. • The overall response rate achieved for 2014-2015 was 62 per cent. The target response rate in 2014-2015 was 70 per cent[1]. Although the response rate is reasonably high, there are still a substantial proportion of sampled individuals who do not take part. This is likely to affect the accuracy of the estimates produced[2]. • As the survey is based on self-reported data, the results are prone to respondent bias i.e. people may under or over estimate their behaviour to give a more favourable response. • Robust analyses for small areas (i.e. sub-local authority level) and groups are not possible without combining two or more years' worth of data, or making use of small area estimation techniques[2]. • The information collected is used to inform the development of policy and the delivery of public services[1]. • The survey results are weighted to ensure that the age and sex distribution of the responding sample matches that of the population of Wales. • The survey began in January 2012 and closed in April 2015. As such, the 2014-15 survey represents the final wave of the survey in its current form[1]. Data for Wales can be accessed using StatsWales as follows: https://statswales.gov.wales/Catalogue/National-Survey-for-Wales References: 1. National Survey for Wales, 2014-15 Technical Report. July 2015. Available at:

	http://gov.wales/docs/caecd/research/2015/151005-national-survey-2014-15-technical-report-en.pdf [Accessed 30th March 2017] 2. National Survey for Wales, Quality Report, 2015. Available at: http://gov.wales/docs/caecd/research/2015/150609-nsfw-quality-report-en.pdf [Accessed 30th March 2017]
Rationale	This indicator has been included to show how the ability to afford everyday goods and activities varies across deprivation fifths. Poverty is an important issue for public health. The Marmot Review (2010) suggests there is evidence that poverty leads to premature mortality and poor health outcomes. Reducing the numbers of people who experience poverty should improve these health outcomes and increase healthy life expectancy.

6.7   Slide 76 – Keeping up with bills and commitments

Indicator definition	Percentage of people who are able to keep up with bills and commitments without difficulty by age and year.
Who/what does it measure?	Persons aged 16 and over.
Period	2012/13 to 2014/15 (financial years)
Geography	Wales
Data source	National Survey for Wales (NSW), Welsh Government (WG)
Method	Percentages and 95% confidence intervals were supplied by WG. All respondents except those using another language were asked: Which one of the statements on this card best describes how well you are keeping up with your bills and credit commitments at the moment? • Keeping up with all bills and commitments without any difficulties • Keeping up with all bills and commitments but it is a struggle from time to time • Keeping up with all bills and commitments but it is a constant struggle • Falling behind with some bills or credit commitments • Having real financial problems and have fallen behind with many bills or credit commitments • Have no bills This indicator presents the percentage of people responding as Keeping up with all bills and commitments without any difficulties Further details on the questionnaire can be found online:

	http://gov.wales/docs/caecd/research/2014/140430-national-survey-questionnaire-2014-15-en.pdf
Caveats	• The NSW is a major study being conducted by the Welsh Government which involves conducting more than 14,000 interviews with a randomly selected sample of people aged 16 and over across Wales per year (approximately 660 interviews in each local authority)[1]. • A large randomly selected sample allows analysis by population sub-groups and local authority areas and for the results to be as representative as possible of the people in Wales[2]. • The overall response rate achieved for 2014-2015 was 62 per cent. The target response rate in 2014-2015 was 70 per cent[1]. Although the response rate is reasonably high, there are still a substantial proportion of sampled individuals who do not take part. This is likely to affect the accuracy of the estimates produced[2]. • As the survey is based on self-reported data, the results are prone to respondent bias i.e. people may under or over estimate their behaviour to give a more favourable response. • Robust analyses for small areas (i.e. sub-local authority level) and groups are not possible without combining two or more years' worth of data, or making use of small area estimation techniques[2]. • The information collected is used to inform the development of policy and the delivery of public services[1]. • The survey results are weighted to ensure that the age and sex distribution of the responding sample matches that of the population of Wales. • The survey began in January 2012 and closed in April 2015. As such, the 2014-15 survey represents the final wave of the survey in its current form[1]. Data for Wales can be accessed using StatsWales as follows: https://statswales.gov.wales/Catalogue/National-Survey-for-Wales References: 1. National Survey for Wales, 2014-15 Technical Report. July 2015. Available at: http://gov.wales/docs/caecd/research/2015/151005-national-survey-2014-15-technical-report-en.pdf [Accessed 30th March 2017] 2. National Survey for Wales, Quality Report, 2015. Available at: http://gov.wales/docs/caecd/research/2015/150609-nsfw-quality-report-en.pdf[Accessed 30th March 2017]
Rationale	This indicator has been included to illustrate personal financial stability. Poverty is an important issue for public health. The Marmot Review (2010) suggests there is evidence that poverty leads to premature mortality and poor health outcomes. Reducing the numbers of people who experience poverty should improve these health outcomes and increase healthy life expectancy.

6.8   Slide 77 – Childcare for children aged 0 to 14

Indicator definition	Percentage of parents who find it easy or difficult to get and afford childcare for children aged 0 to 14.
Who/what does it measure?	Parents with children ages 0 to 14.
Period	2014/15 (financial year)
Geography	Wales
Data source	National Survey for Wales (WG)
Method	Percentages were supplied by WG. Respondents were asked how easy or difficult they find the following: • Childcare after school • Childcare during school holidays • Childcare that fits in with working hours • Afford childcare Further details on the questionnaire can be found online:: http://gov.wales/docs/caecd/research/2014/140430-national-survey-questionnaire-2014-15-en.pdf
Caveats	• The NSW is a major study being conducted by the Welsh Government which involves conducting more than 14,000 interviews with a randomly selected sample of people aged 16 and over across Wales per year (approximately 660 interviews in each local authority)[1]. • A large randomly selected sample allows analysis by population sub-groups and local authority areas and for the results to be as representative as possible of the people in Wales[2]. • The overall response rate achieved for 2014-2015 was 62 per cent. The target response rate in 2014-2015 was 70 per cent[1]. Although the response rate is reasonably high, there are still a substantial proportion of sampled individuals who do not take part. This is likely to affect the accuracy of the estimates produced[2]. • As the survey is based on self-reported data, the results are prone to respondent bias i.e. people may under or over estimate their behaviour to give a more favourable response. • Robust analyses for small areas (i.e. sub-local authority level) and groups are not possible without combining two or more years' worth of data, or making use of small area estimation techniques[2]. • The information collected is used to inform the development of policy and the delivery of public services[1]. • The survey results are weighted to ensure that the age and sex distribution of the responding sample matches that of the population of Wales. • The survey began in January 2012 and closed in April 2015. As such, the 2014-15 survey represents the final wave of the survey in its

	current form[1].
	Data for Wales can be accessed using StatsWales as follows: https://statswales.gov.wales/Catalogue/National-Survey-for-Wales
	References: 1. National Survey for Wales, 2014-15 Technical Report. July 2015. Available at: http://gov.wales/docs/caecd/research/2015/151005-national-survey-2014-15-technical-report-en.pdf [Accessed 30th March 2017] 2. National Survey for Wales, Quality Report, 2015. Available at: http://gov.wales/docs/caecd/research/2015/150609-nsfw-quality-report-en.pdf [Accessed 30th March 2017]
Rationale	This indicator has been included to show how easy or difficult parents in Wales find it to get and afford childcare. Affordable and high quality childcare has been shown to impact on child development. Unequal access to childcare can intensify already present socioeconomic inequalities and can limit parents access to employment

6.9   Slide 78 – Unpaid care

Indicator definition	79(a) – Percentage of people providing unpaid care by age group. 79(b) - Percentage of people providing unpaid care by hours worked per week.
Who/what does it measure?	Persons all ages.
Period	2011
Geography	Wales
Data source	Census 2011, Office for National Statistics (ONS)
Method	A person is a provider of unpaid care if they look after or give help or support to family members, friends, neighbours or others because of long-term physical or mental ill health or disability, or problems related to old age. This does not include any activities as part of paid employment. 79(a): Tabulated from the 2011 Census returns, the number usual residents providing unpaid care by age group, expressed as a percentage of all residents by age group. 79(b): Tabulated from the 2011 Census returns, the number usual residents providing unpaid care by hours worked, expressed as a percentage of all residents.
Caveats	• The data is taken from the 2011 Census and is the most recent

	source of data with universal population coverage.
	• No distinction is made about whether any care that a person provides is within their own household or outside of the household, so no explicit link can be made about whether the care provided is for a person within the household who has poor general health or a long-term health problem or disability.
Rationale	This indicator has been included to show the current percentage of the population providing unpaid care in Wales and how this varies by age. Unpaid care makes a vital contribution to the supply of care, and impacts the employment and social opportunities of those providing it. The provision of unpaid care can result in a detrimental effect on physical and mental health. The provision of unpaid care is increasing and people are increasingly likely to become providers of care at some point in their lives.

6.10   Slide 79 – School leavers with skills and qualifications

Indicator definition	The number of 15 year old pupils who have achieved the "Level 2 threshold" and "Level 2 inclusive threshold" consisting of 5 A*-C GCSEs or equivalents (including English or Welsh First Language and Mathematics).
Who/what does it measure?	Pupils, boys and girls, aged 15 on 31st August at the start of the academic year.
Period	2014
Geography	Wales
Data source	Welsh Examinations Database, Welsh Government (WG) Welsh Index of Multiple Deprivation (WIMD) 2014, WG
Method	The number of pupils that were aged 15 at the start of the academic year who achieved the "Level 2 threshold" and "Level 2 inclusive threshold" consisting of 5 A*-C GCSEs or equivalents (including English or Welsh First Language and Mathematics) divided by the all 15 year old pupils who participated in the Welsh Examinations Database (WG) The WIMD education indicators for deprivation fifths have been created by combining the deprivation tenths (i.e. 1 and 2 = 1, 3 and 4 = 2 etc.), with 1 being the most deprived and 5 being the least deprived. Education Indicator data for the original geographies can be found here: https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Welsh-Index-of-Multiple-Deprivation/WIMD-Indicator-Analysis This analysis uses national deprivation fifths. Further information can be found on the WG website:

	http://gov.wales/statistics-and-research/welsh-index-multiple-deprivation/?lang=en
Caveats	• National data broken down by sex includes independent schools. The remaining data for this indicator is based on maintained schools – this means it excludes independent schools and NEWBES (Pupils who arrived from a non English/Welsh based education system), but includes Pupil Referral Units (PRUs) and special schools. Further information on this indicator can be found online: http://gov.wales/docs/statistics/2016/160721-key-stage-4-performance-measures-changes-comparability-en.pdf • Data is based on the number of 15 year olds in the school at the start of the academic year; therefore it won't necessarily reflect the number of school leavers.
Rationale	This indicator has been included to show how the level of qualification varies across deprivation fifths. Academic and vocational qualifications are associated with employed and income levels. School leavers with skills and qualifications are less likely to experience a range of negative outcomes, including poor health, depression or early parenthood.

6.11   Slide 80 & 81 – Community cohesion

Indicator definition	Slide 81: Percentage of people who agreed with statements about their local area. Slide 82: Percentage of people agreeing with all three community cohesions questions of: belonging to the area; that people from different backgrounds get on well together; that people treat each other with respect.
Who/what does it measure?	Persons aged 16 and over.
Period	2014/15 (financial year)
Geography	Wales
Data source	Slide 81: National Survey for Wales (WG) Slide 82: National Survey for Wales (WG) and Welsh Index of Multiple Deprivation (WIMD) 2014, WG
Method	Percentages were supplied by WG. Respondents were asked the three community cohesion questions: 1. To what extent would you agree or disagree that you belong to your local area? 2. To what extent do you agree or disagree that this local area is a place where people from different backgrounds get on well together? 3. To what extent do you agree or disagree with the following statement? People in my local area treat each other with respect and

	consideration.
	Slide 81: Presents the percentages of people who agreed with questions 1 & 2 above by age.
	Slide 82: Those who agreed to all three of the community cohesion questions above were included in this analysis and results are presented by national deprivation fifths. Further information on deprivation fifths can be found on the WG website:
	http://gov.wales/statistics-and-research/welsh-index-multiple-deprivation/?lang=en
	Please note that these questions were sub-sampled, with a total of 1,800 respondents.
	Further details on the questionnaire can be found online:
	http://gov.wales/docs/caecd/research/2014/140430-national-survey-questionnaire-2014-15-en.pdf
Caveats	• The NSW is a major study being conducted by the Welsh Government which involves conducting more than 14,000 interviews with a randomly selected sample of people aged 16 and over across Wales per year (approximately 660 interviews in each local authority)[1].
	• A large randomly selected sample allows analysis by population sub-groups and local authority areas and for the results to be as representative as possible of the people in Wales[2].
	• The overall response rate achieved for 2014-2015 was 62 per cent. The target response rate in 2014-2015 was 70 per cent[1]. Although the response rate is reasonably high, there are still a substantial proportion of sampled individuals who do not take part. This is likely to affect the accuracy of the estimates produced[2].
	• As the survey is based on self-reported data, the results are prone to respondent bias i.e. people may under or over estimate their behaviour to give a more favourable response.
	• Robust analyses for small areas (i.e. sub-local authority level) and groups are not possible without combining two or more years' worth of data, or making use of small area estimation techniques[2].
	• The information collected is used to inform the development of policy and the delivery of public services[1].
	• The survey results are weighted to ensure that the age and sex distribution of the responding sample matches that of the population of Wales.
	• The survey began in January 2012 and closed in April 2015. As such, the 2014-15 survey represents the final wave of the survey in its current form[1].
	Data for Wales can be accessed using StatsWales as follows: https://statswales.gov.wales/Catalogue/National-Survey-for-Wales
	References:
	1. National Survey for Wales, 2014-15 Technical Report. July 2015. Available at:
	http://gov.wales/docs/caecd/research/2015/151005-national-survey-2014-15-technical-report-en.pdf [Accessed 30th March 2017]

	2. National Survey for Wales, Quality Report, 2015. Available at: http://gov.wales/docs/caecd/research/2015/150609-nsfw-quality-report-en.pdf [Accessed 30th March 2017]
Rationale	These indicators have been included to assess levels of community cohesion in the Welsh population. The environment in which a person lives can greatly impact their health and well-being. Positive assessments of community cohesion are associated with better physical and mental health.

6.12   Slide 82 – Air quality

Indicator definition	74(a) Average nitrogen dioxide (NO_2) concentration at residential dwelling locations (µg/m³) trend. 74(b) Average nitrogen dioxide (NO_2) concentration at residential dwelling locations (µg/m³) by local authority and Wales.
Who/what does it measure?	Residential dwelling locations.
Period	74(a): 2007 to 2014 74(b): 2014
Geography	74(a): Wales 74(b): Wales and local authorities
Data source	UK-AIR: Air Information Resource, Department for Environment, Food and Rural Affairs (DEFRA), Welsh Government (WG), Office for National Statistics (ONS) and Ordnance Survey (OS).
Method	Annual Average levels of nitrogen dioxide (NO_2) pollution exposure measured in µg/m³. Figures are calculated by modelling annual average concentrations, calibrated against national monitoring data, of nitrogen dioxide. A value is obtained for each square kilometre of Wales, and these are weighted by the population density or number of dwellings in each square kilometre, estimated from Census data, in order to calculate a national (or local authority) population average[1].
Caveats	• The WG has used published data to assign an average concentration of NO_2 to each residential dwelling in Wales based on which square kilometre of Wales it sits in. In reality, air quality will vary within any given square kilometre, depending on proximity to busy roads and other sources of air pollution. Therefore, these assigned values should not be taken to be correct for any individual dwelling. Furthermore, modelled average concentrations for a given square kilometre should not be compared with measurements taken by the busiest roads within the same square kilometre[2]. • For each Census output area, WG has then averaged the pollutant

concentrations associated with each dwelling within it to give an average NO_2 concentration across the Census output area. Census output areas are statistical geographic units comprising of around 150 dwellings, and for which a variety of Census and demographic data exist, for example population counts. As a result they are suitable for use as building blocks for deriving average concentration data for larger geographical units, such as (in this case) local authorities and Wales as a whole[2].

• For each local authority and health board, WG have then calculated a population-weighted average over its constituent Census output areas to give an average NO_2 concentration based on where people live in those local authorities or health boards. WG have also repeated the same calculation over all Census output areas, to give a comparable figure for the whole of Wales[2].

References:

1. National Indicators for Wales as required by section 10(1) of the Well-being of Future Generations (Wales) Act 2015. *How to measure a nation's progress? National Indicators for Wales: Technical document.* Available at: http://gov.wales/docs/desh/publications/160317-national-indicators-for-wales-technical-document-en.pdf [Accessed 30th March 2017]

2. Air quality- concentration at residential dwelling locations, 2007 to 2014. Available at: http://gov.wales/docs/statistics/adhocrequests/2016/160808-air-quality-concentration-residential-dwelling-locations-2007-to-2014-en.ods [Accessed 30th March 2017]

| **Rationale** | This indicator has been included to show how the air quality in Wales has continued to improve in recent years and the variation across local authorities in Wales. Poor air quality is a significant public health issue. Elevated levels of air particulates and long term exposure to air pollution can lead to conditions affecting health. People with existing respiratory or cardiovascular conditions may be more vulnerable to the effects of air pollution. Reducing air pollution levels can also reduce the burden of disease from stroke, heart disease, lung cancer and respiratory diseases. |

7. Projections

7.1   Slide 85 – Percentage of adults who self reported to be current smokers

Indicator definition	Estimated percentage of adults who self reported to be current smokers. Current smokers are defined as those who say they smoke daily or occasionally.
Who/what does it measure?	Wales' residents aged 16+.
Period	Observed data – 2003/04-2015 Projected data **–** 2016-2025
Geography	Wales
Data source	Welsh Health Survey (WHS), Welsh Government (WG)
Method	The number of adults whose self reported smoking daily or occasionally (and hence were classed as current smokers) divided by the total number of adult survey respondents. Full details of the projection method can be found here.
Caveats	• Smoking status from the WHS is self-reported, that is, the survey relies on the respondent's honesty when reporting their smoking status. There may be systematic bias if some groups are less likely to be honest about their smoking status than others, for example across age groups or socio-economic classifications. This is unlikely to have a large impact on the results. However, the overall estimate of prevalence is more likely to be an underestimate rather than an overestimate of the true percentage of people who smoke, since people may prefer not to report themselves as smokers due its perceived social unacceptability. • Changes that are contrary to the overall trend may be due to sampling variation rather than evidence of a sudden change. • The Welsh Health Survey excludes people living in institutions (e.g. care homes, student halls). Therefore, this indicator may not be an accurate estimate for general practices with a high proportion of such patients.
Rationale	This indicator has been included to show that smoking rates are projected to decline based on past trends and assuming unchanged cessation activity. Smoking is the most important cause of preventable ill health and premature mortality in the UK. Smoking is a major risk factor for many diseases, such as lung cancer, chronic obstructive pulmonary disease and heart disease. It is also associated with cancers in other organs. Smoking is a modifiable lifestyle risk factor; effective tobacco control measures can reduce the prevalence of smoking in the population.

7.2   Slides 86 & 87 – Estimated smoking prevalence projections

Indicator definition	Estimated smoking prevalence projection based on 15 year olds already smoking, 16+ year old starting to smoke and the 16+ population that quit each year.
Who/what does it measure?	Wales residents aged 16+.
Period	Observed data – 2004/05-2015 Projected data **–** 2016-2039
Geography	Wales
Data source	Smoking prevalence data: Welsh Health Survey (WHS) 2003/04-2015, Welsh Government (WG) Smoking prevalence data for 15 year olds: 2013/14 Health Behaviour in School-Aged Children (HBSC) Wales (WG) Population data: 2003/04-2015 – Mid-year population estimates, Office for National Statistics (ONS) 2016-2036 – Local Authority population projections (2014-based), ONS
Method	The method has been taken from smoking prevalence projections in Scotland. Full details of the method can be found in Appendix A. http://www.scotpho.org.uk/downloads/scotphoreports/scotpho100602_smokingprevtrends_rep.pdf
Caveats	• Smoking status from the WHS and HBSC is self-reported, that is, the survey relies on the respondent's honesty when reporting their smoking status. There may be systematic bias if some groups are less likely to be honest about their smoking status than others, for example across age groups or socio-economic classifications. This is unlikely to have a large impact on the results. However, the overall estimate of prevalence is more likely to be an underestimate rather than an overestimate of the true percentage of people who smoke, since people may prefer not to report themselves as smokers due its perceived social unacceptability. • Changes that are contrary to the overall trend may be due to sampling variation rather than evidence of a sudden change. • The Welsh Health Survey excludes people living in institutions (e.g. care homes, student halls). • The projections of smoking prevalence are estimates. They are based on various assumptions which may or may not hold true in the future. The uncertainty of the projections is demonstrated by the fact that they change dramatically as a result of small changes to the user-defined parameters.
Rationale	This indicator has been included to show the complex nature of reducing smoking prevalence. There is a large body of evidence showing that smoking behaviour in early adulthood affects health behaviours later in life. This indicator shows that in addition to focusing on reducing the prevalence of smoking among adults (primarily through quitting), the issue of reducing the uptake of smoking among children must also be addressed. Smoking is the most important cause of preventable ill

	health and premature mortality in the UK. Smoking is a major risk factor for many diseases, such as lung cancer, chronic obstructive pulmonary disease and heart disease. It is also associated with cancers in other organs. Smoking is a modifiable lifestyle risk factor; effective tobacco control measures can reduce the prevalence of smoking in the population.

7.3   Slide 88 – Percentage of adults who self reported selected lifestyle factors (overweight and obesity & fruit and vegetable consumption)

Indicator definition	Overweight and obesity **–** The annual Welsh Health Survey asks adults to report their height and weight. From this the BMI of respondents can be calculated. Persons with a BMI of 25+ and 30+ are defined to be overweight and obese respectively. Fruit and vegetable consumption – The annual Welsh Health Survey asks adults about their fruit and vegetable consumption. Respondents are defined as achieving the recommended fruit and vegetable consumption if they consumed five or more portions on the previous day.
Who/what does it measure?	Wales' residents aged 16+.
Period	Overweight and obesity: Observed data – 2003/04-2015 Projected data – 2016-2025 Fruit and vegetable consumption: Observed data – 2008-2015 Projected data – 2016-2025
Geography	Wales
Data source	Welsh Health Survey (WHS), Welsh Government (WG)
Method	Overweight and obesity – The number of adults whose self reported heights and weights meant they had a BMI of 25+ (and hence were classed as overweight and obese) divided by the total number of adult survey respondents. Fruit and vegetable consumption - The number of adults who self reported consuming fewer than five portions of fruit or vegetables the previous day divided by the total number of adult survey respondents. Full details of the projection method can be found here.
Caveats	• Overweight and obesity - Height and weight of respondents are self-reported, and there is evidence to show that some people tend to under report weight and/or over report height resulting in an under-estimation of the prevalence of persons who are overweight or obese. • BMI does not distinguish between mass due to body fat and mass due to muscular physique, nor does it take account of the distribution of fat. Ethnicity may affect BMI. • Fruit and vegetable consumption - Self-reported data of fruit and vegetable consumption may be prone to respondent bias i.e.

	overestimating their behaviour to give a more favourable response. Although portion size guidance was provided, interpretation may have been difficult for respondents. Also, the respondents were asked about the previous day's behaviour and so this might not reflect overall eating patterns. • The Welsh Health Survey excludes people living in institutions (e.g. care homes, student halls).
Rationale	These indicators have been included to show past trends in overweight and obesity levels and fruit and vegetable consumption and how these have been projected to change in the future if trends continue unchanged. The UK is experiencing a rise in the prevalence of obesity affecting both adults and children and obesity is recognised as a major determinant of premature mortality and avoidable ill health. Obesity is a major public health concern. It contributes to many health problems and places an increased demand on health services. Diet and nutrition are important contributors to obesity and also have many other impacts on health; poor diet is a major risk factor for ill-health and premature death.

7.4   Slide 89 – Predicted percentage change of people with selected health conditions

Indicator definition	Adults predicted to have selected health conditions including: Limiting long term illness (LLTI) – Adults who self reported having illnesses or were limited by a health problem/disability. Heart condition – Adults who self reported ever having been treated for a heart attack, or currently being treated for angina, heart failure or 'another heart condition'. Diabetes – Adults who self reported currently being treated for type 1 or type 2 diabetes. Stroke **–** Adults who self reported ever having been treated for stroke.
Who/what does it measure?	LLTI, heart condition and stroke – Wales residents aged 18 and over Diabetes – Wales residents aged 25 and over.
Period	2015-2035
Geography	Wales
Data source	Daffodil projections, Institute of Public Care
Method	Prevalence rates by age and sex have been extracted for each condition and applied to population projections to give estimated numbers. The estimated percentage change was calculated by dividing the value in each year by the value in 2015 and multiplying by 100.
Caveats	• The Daffodil system applies Wales-level prevalence figures to projected population estimates for the areas in question to give a projected number of people who will have these conditions in the future. In doing so, a number of assumptions which may or may not hold true in the future are made and should be borne in mind when interpreting the results.

	• The Welsh Health Survey is a source of information about the health and health-related lifestyle of people in Wales. The findings are based on a sample of the general population living in private households in Wales. The prevalence rates have been applied to population projections to give estimated numbers predicted to have each health condition, to 2035.
Rationale	This indicator has been included to show how living longer impacts on the age related conditions which will result in increased demand for healthcare services. Respiratory diseases, circulatory diseases, and diabetes are among the top causes of morbidity in Wales. Monitoring the trend in morbidity from these non-communicable diseases is important to provide information on the health of the population.

7.5   Slide 90 – Persons predicted to be treated for any heart condition excluding high blood pressure

Indicator definition	Adults who self reported ever having been treated for a heart attack, or currently being treated for angina, heart failure or 'another heart condition'.
Who/what does it measure?	Wales residents aged 18 and over.
Period	2015-2035
Geography	Wales
Data source	Daffodil projections, Institute of Public Care
Method	Prevalence rates by age and sex have been extracted for each condition and applied to population projections by age group to give estimated numbers.
Caveats	• The Daffodil system applies Wales-level prevalence figures to projected population estimates for the areas in question to give a projected number of people who will have these conditions in the future. In doing so, a number of assumptions which may or may not hold true in the future are made and should be borne in mind when interpreting the results. • The Welsh Health Survey is a source of information about the health and health-related lifestyle of people in Wales. The findings are based on a sample of the general population living in private households in Wales. The prevalence rates have been applied to population projections to give estimated numbers predicted to have each health condition, to 2035.
Rationale	This indicator has been included to show the effect of ageing populations on the likelihood of chronic conditions. Cardiovascular disease is one of the top causes of morbidity and mortality in Wales. Monitoring the trend in morbidity from cardiovascular disease, and modelling how these may continue into the future, is important to provide information on the health of the population.

7.6   Slide 91 – Persons predicted to have dementia

Indicator definition	Estimated number of people with dementia based on the 'Expert Delphi Consensus'.
Who/what does it measure?	Wales residents aged 65 and over.
Period	2015-2035
Geography	Wales
Data source	Daffodil projections, Institute of Public Care
Method	Prevalence rates by age and sex have been extracted for each condition and applied to population projections by age group to give estimated numbers. Full details of the methodology used to calculate dementia prevalence can be found here: https://www.alzheimers.org.uk/downloads/file/2/full_dementia_uk_report
Caveats	• The Daffodil system applies Wales-level prevalence figures to projected population estimates for the areas in question to give a projected number of people who will have these conditions in the future. In doing so, a number of assumptions which may or may not hold true in the future are made and should be borne in mind when interpreting the results.
Rationale	This indicator has been included to show the effect of an ageing population on age related conditions. Wales has an ageing population and the number of very old people is predicted to increase dramatically. The increase in this population group is likely to lead to an increase in age related conditions, such as dementia. Information about the age structure of the population in Wales, and how it is likely to change, is vital for strategic planning in the health service.

8. Emerging threats

8.1 Slide 93 – Environmental concerns

Indicator definition	Adults reporting the most important environmental issues facing their country today.
Who/what does it measure?	Persons aged 16-64.
Period	2011
Geography	Great Britain & Global nations
Data source	Ipsos MORI Global @dvisor
Method	Ipsos conducted an online survey 2nd-14th February 2011 where respondents were asked 'What are the three most important environmental issues facing your country today?' The survey was conducted in 24 countries around the world via the Ipsos Online Panel system. The countries included Argentina, Australia, Belgium, Brazil, Canada, China, France, Great Britain, Germany, Hungary, India, Indonesia, Italy, Japan, Mexico, Poland, Russia, Saudi Arabia, South Africa, South Korea, Spain, Sweden, Turkey and the United States of America. The international sample included 18,675 adults. Those interviewed were aged 18-64 in the US and Canada, and 16-64 in all other countries. Approximately 1000+ individuals participated on a country by country basis via the Ipsos Online Panel with the exception of Argentina, Belgium, Indonesia, Mexico, Poland, Saudi Arabia, South Africa, South Korea, Sweden and Turkey, where each have a sample approximately 500+. Weighting was employed to balance demographics and ensure that the sample's composition reflects that of the adult population according to the most recent country Census data, and to provide results intended to approximate the sample universe. A survey with an un-weighted probability sample of this size and a 100% response rate would have an estimated margin of error of +/-3.1 percentage points for a sample of 1,000 and an estimated margin of error of +/- 4.5 percentage points 19 times out of 20 per country of what the results would have been had the entire population of adults in that country had been polled.
Caveats	• All sample surveys and polls may be subject to other sources of error, including, but not limited to coverage error, and measurement error. • This data is opinion based and subjected to the personal biases of the respondents.

Rationale	Health and well-being are impacted by the natural and built environments that we inhabit. This indicator has been included to show the public's perceived environmental concerns

8.2   Slide 94 – Income Share

Indicator definition	Income share of the top 1% taken from The World Wealth and Income Database.
Who/what does it measure?	All persons aged 20 and over.
Period	1970 to 2015
Geography	UK, USA, France, Germany, Italy and Spain
Data source	The World Wealth and Income Database (WID.world)
Method	The World Wealth and Income Database (WID.world) combines different data sources: national accounts, survey data, fiscal data, and wealth rankings allowing comparisons between countries and over long time periods. Further details on the methodology and research papers presenting methods and assumptions can be found online: http://wid.world/methodology/
Caveats	• The "fiscal income" concept used in WTID varies over time and across countries, which in some cases might create biases. • The different data sources used are not always fully consistent with one another but it is believed that by combining the data sources in the most explicit manner can contribute to a better informed public debate. • Further information on the various sources and caveats associated with each are online: http://wid.world/methodology/
Rationale	This indicator has been included to show the growing disparity in wealth in many Western nations. Poverty is a cause of health inequalities. Wealth disparity contributes to a less equal society.

8.3   Slide 95 – Global Greenhouse Gas Emissions

Indicator definition	Projected Global Greenhouse Gas Emissions based on various scenarios: • Using 2005 baseline • Unconditional Intended Nationally Determined Contributions (INDCs) • Conditional INDCs

	• Current policy trajectory • 2°C scenario • 1.5°C scenario
Who/what does it measure?	Gigatonnes of carbon dioxide equivalent (GtCo$_2$e) per year.
Period	2025, 2030 and 2030
Geography	Global
Data source	United Nations Environment Programme (UNEP)

Method	This data uses international studies to present data for projected emissions based on the following scenarios:
	• The baseline scenario reflects emission projections that assume no additional climate policies have been put in place from 2005 onwards.
	• The current policy trajectory scenario reflects the best estimates of global emissions taking into account currently adopted and implemented policies.
	• The Intended Nationally Determined Contribution (INDC) describe how global greenhouse gas emissions might evolve under full implementation of two Intended Nationally Determined Contribution cases:
	   ○ Unconditional Intended Nationally Determined Contribution case: assuming full implementation of unconditional Intended Nationally Determined Contributions.
	   ○ Conditional Intended Nationally Determined Contribution case: assuming full implementation of both unconditional and conditional Intended Nationally Determined Contributions.
	• The 1.5°C and 2°C scenarios represent least-costs global scenarios consistent with a likely chance of limiting warming to below 2°C and 1.5°C above pre-industrial levels.
	
	Further details are available in *The Emissions Gap Report 2016*, which can be found online:
	http://wedocs.unep.org/bitstream/handle/20.500.11822/10016/emission_gap_report_2016.pdf?sequence=1&isAllowed=y

Caveats	• The baseline scenario assumes no additional climate policies have been put in place from 2005 onwards. • The current policy trajectory scenario takes into account currently adopted and implemented policies. • Unconditional and conditional INDC scenarios assume that the different levels of commitments made in Paris will be fully implemented. • The 1.5°C and 2°C scenarios represent the least expensive paths with a greater than 50% likelihood of limiting warming below the scenario level. Further details are available in *The Emissions Gap Report 2016*, which can be found online:

	http://wedocs.unep.org/bitstream/handle/20.500.11822/10016/emission_gap_report_2016.pdf?sequence=1&isAllowed=y
Rationale	This indicator has been included to show that current policy projects an increase in yearly global greenhouse emissions. Climate change has the potential to cause many changes in our environment. The impact of these changes on health is not yet clear, and there may be positives and negatives.

8.4   Slide 96 – Emission reductions

Indicator definition	Percentage of greenhouse gas emission reductions achieved since 1990.
Who/what does it measure?	Emissions which are assigned on an end-user consumption basis.
Period	1990 compared to 2013
Geography	UK nations
Data source	Sustainable Development and Climate Change Annual Report, Welsh Government (WG)
Method	Since 1990 (baseline value), greenhouse gas emissions from all sources have been measured in Megatonnes of carbon dioxide equivalent (MtCo$_2$e) per year. The percentage reduction has been calculated by dividing the difference between the values in 2013 and 1990 by the baseline value and multiplying by 100. Emissions have been assigned on an end-user consumption basis, further information is available at: http://gov.wales/docs/desh/publications/160315-sustainable-development-and-climate-change-annual-report-2015-en.pdf
Caveats	• Shipping and aviation data has been excluded from the published by-source inventory for Scotland to make emissions coverage comparable.
Rationale	The indicator has been included to show how the reduction achieved in emissions varies between the UK nations. Climate change has the potential to cause many changes in our environment. The impact of these changes on health is not yet clear, and there may be positives and negatives.

8.5   Slide 97 – Projected climate change

Indicator definition	100(a) – Observed and projected daily summer maximum surface temperature (^{o}C) in Cardiff. 100(b) - Observed and projected 5-day cumulative winter rainfall

	accumulation (mm) in Cardiff.
	Projections are bases on low (10th percentile), central (50th) and high (90th) probabilistic projections.
Who/what does it measure?	Values of a 20-year return period for daily maximum surface temperature in summer (June-August), and accumulated rainfall over five consecutive days in winter (December-February).
Period	Observed: 1961-1990
	Projected: 2041-2060
Geography	Cardiff
Data source	Brown et al. (2014), CCRA2 Evidence Report, via ASC (2016)
	UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Wales
Method	For each national capital, estimated observed values for 1961-1990 are compared with values for the 10th (low), 50th (central) and 90th (high) percentiles of probabilistic projections for 2041-2060 under the A1B emissions scenario. Projections are obtained by applying the UKCP09 methodology to predict future changes in parameters controlling the properties of statistical EVD. The examples provided show cases where the results are robust to plausible variations in the methodology, based on sensitivity tests assessing the degree of consistency between the global and regional modelling components of UKCP09.
	Further information is available at:
	https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Wales-National-Summary.pdf
	Further information on the UKCP09 can be found online: http://ukclimateprojections.metoffice.gov.uk/23208
Caveats	• The probabilistic projections assume that the medium emissions scenario used holds true for the duration of the projection.
Rationale	This indicator has been included to show how summer maximum temperature and cumulative winter rainfall is forecast to change. Climate change has the potential to cause many changes in our environment. The impact of these changes on health is not yet clear, and there may be positives and negatives.

8.6   Slide 98 – Risks and opportunities due to climate change

Indicator definition	Risks and opportunities identified from the UK Climate Change Risk Assessment 2017 Evidence Report national summary for Wales.
Who/what does	Risks, opportunities and priorities relating to climate change.

it measure?	
Period	2017
Geography	Wales
Data source	UK Climate Change Risk Assessment 2017 (UKG)
Method	Further information on the UK Climate Change Risk Assessment is available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/584281/uk-climate-change-risk-assess-2017.pdf
Caveats	**-**
Rationale	This indicator has been included to show the priority risks and opportunities for Wales in relation to climate change. Climate change has the potential to cause many changes in our environment. The impact of these changes on health is not yet clear, and there may be positives and negatives.

8.7   Slide 99 – Heat-related and cold-related deaths

Indicator definition	Heat-related and cold-related deaths per 100,000 population of all ages.
Who/what does it measure?	Persons all ages.
Period	2000 - 2080
Geography	Wales, North East England, Scotland and Northern Ireland
Data source	Health Protection Agency
Method	Estimates of heat and cold-related deaths were calculated based on an ensemble of nine climate model realisations. Further details of the method can be found online: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/371103/Health_Effects_of_Climate_Change_in_the_UK_2012_V13_with_cover_accessible.pdf
Caveats	• The estimates assume that the ensemble of the climate model realisations will hold true. As the projections are forecast further, the forecasts are likely to become less accurate.
Rationale	The indicator has been included to show how deaths relating to heat and cold are predicted to change over time and how it varies between areas in the UK. Climate change has the potential to cause many changes in our environment. The impact of these changes on health is not yet clear, and there may be positives and negatives.

8.8   Slide 100 – Laboratory confirmed cases of Lyme borreliosis

Indicator definition	Cases of Lyme borreliosis in Wales.
Who/what does it measure?	Persons all ages.
Period	2009-2016
Geography	Wales
Data source	Lyme Reference Service, Public Health England (PHE)
Method	Diagnosis of Lyme borreliosis follows an internationally accepted two-tier methodology. The screening test is a C6 antigen based ELISA (combined IgG and IgM) which can be undertaken by a local laboratory, followed by a confirmatory Western blot (separate IgG and IgM) which is undertaken by the Rare and Imported Pathogens Laboratory (RIPL) at Public Health England. PCR is also available and may be useful in testing joint fluid and biopsies of rashes. It has poor sensitivity on CSF and antibody detection is the preferred first line test on CSF. PCR is not usually performed on blood as the duration of bacteraemia is short. Further information is available at: http://www.wales.nhs.uk/sitesplus/documents/888/Lyme%20disease%202017.docx
Caveats	• The low awareness of the condition in the UK population may result in some cases going unrecognised.
Rationale	This indicator has been included to highlights the potential for new epidemics caused by changes in host, pathogen or environment. Climate change has the potential to cause many changes in our environment. The impact of these changes on health is not yet clear, and there may be positives and negatives.

9. Data sources

9.1 Annual Population Survey

What the data tells you?	• The Annual Population Survey (APS) seeks information on respondents' personal circumstances, including their labour market status and their education and training activity[1].
How are the data collected?	• The APS is a household survey carried out by the Office for National Statistics (ONS). The survey provides rolling four-quarter labour market data for UK countries and regions and also for local areas[1]. • The APS datasets are derived from a sample of approximately 21,000 people of working age across Wales, with a minimum of around 700 people of working age in most local authorities. However, for 16-18 year olds there are around 1,200 respondents in the sample. Similarly for 19-24 year olds there are around 2,000 respondents in the sample[2].
How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• As the data comes from a survey, the results are sample-based estimates and are therefore subject to differing degrees of sampling variability, i.e. the true value for any measure lies in a differing range about the estimated value[2]. • Further information about the quality of the APS can be found here: http://www.ons.gov.uk/ons/guide-method/method-quality/specific/labour-market/labour-market-statistics/index.html
Who manages the data?	Office for National Statistics (ONS)
References	1. Annual Population Survey (APS) available at: http://gov.wales/statistics-and-research/annual-population-survey/?lang=en [Accessed 30th March 2017] 2. Welsh Government. Statistics related to young people not in education, employment or training (NEET) Quality Report 2016. Available at: http://gov.wales/statistics-and-research/young-people-not-education-employment-training/quality-report/?lang=en [Accessed 30th March 2017]

9.2 Health Behaviour in School-aged Children

What the data tells you?	The Health Behaviour in School-aged Children (HBSC) survey provides an in-depth understanding of young people's health and well being, including the social determinants of health. The HBSC research network is an international alliance of researchers that collaborate on the cross-national survey of school students[1]. For our analysis we will be using HBSC Wales specific data.
How are the data	• The HBSC is a survey which collects data every four years on

collected?	• secondary school children (aged 11-16 in school years 7 to 11) in Wales carried out through interviewer administered paper self-completion sessions in class[2]. • Fieldwork for the study was conducted between November 2013 and March 2014[2]. • The sampling frame was a complete list of all maintained and independent schools in Wales, but excluded special schools and sixth form colleges[2]. • The sampling frame was stratified by local authority and proportion of pupils eligible for free school meals. In total, 181 schools were sampled with probability proportionate to the school register[2].
How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• The data in this report are based on a representative sample of 9,055 11 to 16 year olds across Wales. By the standards of survey research this is a very large sample, allowing us to report with some confidence on the behaviour of pupils of different age/sex groups, affluence levels and health board areas[2]. Disproportionate stratification was used to allow larger sample sizes in smaller health boards[2]. • Within each school, interviewers randomly selected one mixed ability class group for each of the five curriculum years to provide a representative sample of secondary school pupils[2]. • There was a pupil-level response rate of 91 per cent and a school-level response rate of 46 per cent in the 2013/14 HBSC study. On average 24 pupils per class were interviewed. • There may be some systematic bias as pupils who were absent on the day of the survey were not followed up. • The use of self-reported surveys administered in schools under examination conditions is particularly appropriate for the nature of the questions asked, with previous research finding that young people are most likely to report risky/sensitive behaviours accurately with this methodology. However, there is still a possibility that some respondents give socially acceptable, rather than accurate, responses[2]. • Two types of weights were applied to the survey results: *design weights* were applied to correct for different probabilities of being selected to answer the survey; *non-response weights* were applied to correct for different levels of response among particular groups[2].
Who manages the data?	The international Health Behaviour in School-aged Children (HBSC) research network conducts the survey on behalf of the Welsh Government for Wales: www.gov.wales/statistics-and-research/health-behaviour-school-aged-children
References	1. Health Behaviour in School-aged Children (HBSC): http://www.hbsc.org/about/index.html [Accessed 30th March 2016] 2. 2013/14 Health Behaviour in School-aged Children (HBSC) Wales: key findings: http://gov.wales/docs/caecd/research/2015/151022-health-behaviour-school-children-2013-14-key-findings-en.pdf [Accessed 30th March 2017]

9.3   Mid-year population estimates

What the data tells you?	Mid-year population estimates provide an estimate of the resident population of an area (as at 30th June each year).
How are the data collected?	Population estimates are based on births, deaths and an estimate of migration since the last Census. They are produced using a well established demographic approach called the cohort component method by the Office for National Statistics (ONS). In simple terms, population estimates are calculated by: - Taking the previous years' population estimate. - Taking out special population groups. - Ageing every person on one year. - Adding births and subtracting deaths. - Allowing for inward and outward migration. - Adding back in the special population groups.
How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• Population estimates are based on Census 2011 data which is the most complete source of information about the population available. • The estimated resident population of an area includes all people who usually live there, whatever their nationality[1]. • Members of the UK and non-UK armed forces stationed in the UK are included[1]. • UK forces stationed outside the UK are excluded[1]. • Students are taken to be resident at their term time address[1]. • The estimates include long term international migrants (defined as somebody who changes his or her country of usual residence for a period of at least one year)[1]. • The estimates do not include short term migrants (people who come to or leave the UK for less than a year)[1]. • The Census and therefore mid-year population estimates are thought to underestimate the population in some areas e.g. areas of multi-occupancy housing. • It has recently come to light that the population aged 85+ has been underestimated in some areas by the Office for National Statistics population estimates. In most parts of Wales the impact of this issue will be small. Further details of the impact of the issues are available in this brief paper. • Full guidance on the methodology used by ONS to calculate population estimates can be accessed at: www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/pop-ests/index.html
Who manages the data?	Office for National Statistics (ONS)
References	Office for National Statistics. *Methods guide for mid-2014 Population Estimates* [Online]. 2011. Available at: http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/pop-ests/population-estimates-for-las/index.html [Accessed 30th March 2017].

9.4   National Community Child Health Database

What the data tells you?	The National Community Child Health Database (NCCHD) includes details relating to maternal and child health related indicators such as births, immunisation screening, safeguarding children and breastfeeding.
How are the data collected?	Each of the seven health boards in Wales has a Child Health System database which they manage locally. Anonymised records for all children born, resident or treated in Wales and born after 1987 are collated from each of the local databases each quarter to create the NCCHD[1,2].
How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• The NCCHD birth figures are not meant to replace the Office for National Statistics (ONS) birth registration statistics which are the official births statistics for Wales. The NCCHD is usually used when the information are not available from the ONS dataset e.g. breastfeeding, gestation and vaccination coverage[2]. • The statistics relate to live births born to Welsh residents during the relevant calendar year. The analyses are for live births only and do not include stillbirths. However births occurring in Wales (whether to Welsh or non Welsh residents) can also be counted by the NCCHD[3]. • Some key indicators are not useable from this source, primarily due to issues with completeness e.g. details of delivery (e.g. onset of labour, method of delivery) and mothers' characteristics (e.g. whether the mother smokes at 36 weeks) are incomplete for some areas. The NHS Wales Informatics Service (NWIS) are working with the health boards to try to resolve this issue[2]. • The NCCHD is refreshed from local reports and so relies on notifications of immunisations given being returned to local Child Health Offices and entered onto their database. • Coverage data is calculated on the basis of area of residence. Some children may reside within one health board area, but may receive immunisations from GPs or school nursing services in neighbouring areas. This should be kept in mind when interpreting coverage statistics.
Who manages the data?	NHS Wales Informatics Service (NWIS)
References	1. Welsh Government. Births in Wales, 2005-2015: Data from the National Community Child Health Database. Cardiff: Welsh Government; 2016. Available at: http://gov.wales/statistics-and-research/births-national-community-child-health-database/?lang=en [Accessed 30th March 2017] 2. Welsh Government. Birth Statistics from the National Community Child Health Database (NCCHD) Quality Report. Cardiff: Welsh Government; 2012. Available at: http://wales.gov.uk/topics/statistics/publications/birthsquality/?lang=en [Accessed 6th July 2016] 3. Welsh Government. Birth Statistics from the National Community Child Health Database (NCCHD) Quality Report. 2013. Available at: http://gov.wales/docs/statistics/2013/130730-births-in-wales-quality-report-en.pdf [Accessed 6th July 2016]

9.5   National Survey for Wales

What the data tells you?	National Survey for Wales (NSW) provides detailed information about the views and well-being of people living in Wales[1].
How are the data collected?	• The NSW is a major study being conducted by the Welsh Government which involves conducting more than 14,000 interviews with a randomly selected sample of people aged 16 and over across Wales per year (approximately 660 interviews in each local authority)[1]. • It is based on a representative sample of people living in private households in Wales, selected using a random sample from the Post Office's Postcode Address File. This method also ensures that no household would be selected for the NSW that had previously been selected for any large scale Office for National Statistics (ONS) surveys within the last three years[1]. • Reporting years run from April each year to March/ April the following year. • The survey asked respondents about a range of topics, including: - use of, and views on, their local public services. - experience of living in their local area. - views on local and national government. - their well-being.
How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• A large randomly selected sample allows analysis by population sub-groups and local authority areas and for the results to be as representative as possible of the people in Wales[2]. • The overall response rate achieved for 2014-2015 was 62 per cent. The target response rate in 2014-2015 was 70 per cent[1]. Although the response rate is reasonably high, there are still a substantial proportion of sampled individuals who do not take part. This is likely to affect the accuracy of the estimates produced[2]. • As the survey is based on self-reported data, the results are prone to respondent bias i.e. people may under or over estimate their behaviour to give a more favourable response. • Robust analyses for small areas (i.e. sub-local authority level) and groups are not possible without combining two or more years' worth of data, or making use of small area estimation techniques[2]. • The information collected is used to inform the development of policy and the delivery of public services[1]. • The survey results are weighted to ensure that the age and sex distribution of the responding sample matches that of the population of Wales. • The survey began in January 2012 and closed in April 2015. As such, the 2014-15 survey represents the final wave of the survey in its current form[1].
Who manages the data?	The data is owned and managed by the Welsh Government.

References	1. National Survey for Wales, 2014-15 Technical Report. July 2015. Available at: http://gov.wales/docs/caecd/research/2015/151005-national-survey-2014-15-technical-report-en.pdf [Accessed 30th March 2017] 2. National Survey for Wales, Quality Report, 2015. Available at: http://gov.wales/docs/caecd/research/2015/150609-nsfw-quality-report-en.pdf [Accessed 30th March 2017]

9.6   Public Health Mortality

What the data tells you?	• Public Health Mortality (PHM) is a dataset containing each individual death of a resident that is registered in the particular year. • The information presented in the Public Health Outcomes Framework reporting tool relates to deaths that have been registered between 2002 and 2014.
How are the data collected?	Individual records for death registrations are sent on a weekly basis from the Registrars' offices across England and Wales to the Office for National Statistics (ONS). The ONS collates and validates the data. The data are based on the underlying cause of death e.g. if an individual dies from pneumonia but had been made vulnerable to that disease by end-stage cancer, then cancer (rather than pneumonia) is recorded as the underlying cause of death.
How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• It is a legal requirement to register a death and so PHM provides a reliable and complete data source. • There have been two recent revisions to the manner in which the death certificates are translated by the Office for National Statistics into International Classification of Diseases codes (10th revision). These changes mean that unrevised data are not comparable across years. The main change relates to the rules that govern which cause of death detailed on the death certificate is selected as the underlying cause. Comparability ratios have not been used in these analyses and therefore caution should be exercised when interpreting trends. For more details on comparability ratios see Public Health England (PHE) guidance available at: www.apho.org.uk/resource/item.aspx?RID=126646 • Cause of death is based on the medical certificate of cause of death. This is completed by the certifying doctor for about three quarters of deaths and by a coroner for the remainder. Most of the deaths certified by a coroner do not involve an inquest or any suspicion of violence, but are referred to the coroner because they were sudden and unexpected, or because there was no doctor in attendance during the deceased's last illness. There will be a long delay in registering a small number of deaths for which a coroner's ruling is required e.g. suicide, homicide, undetermined intent. • It is important to note that with many thousands of doctors writing certificates, the differences in their training, habits and knowledge mean that there would inevitably be variations in the quality of medical certificates of cause of death[1].

	• The cause of death is easier to define in younger people. Older people are far more likely to have many underlying health conditions, making it more difficult to determine the underlying cause of death[2].
Who manages the data?	Office for National Statistics (ONS)
References	1. Office for National Statistics. *Mortality Statistics: Deaths registered in England and Wales (Series DR), 2014*. Newport: ONS 2015. Available at: http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregisteredinenglandandwalesseriesdr/2015-11-09 [Accessed 30th March 2017]. 2. Gorina Y, Lentzner H. Multiple Causes of Death in Old Age. *Aging Trends* 2008; 9:1-9. Available at: www.cdc.gov/nchs/data/ahcd/agingtrends/09causes.pdf [Accessed 30th March 2017].

9.7   Welsh Health Survey

What the data tells you?	The Welsh Health Survey (WHS) provides information about the health of people living in Wales, the way they use health services and their health related lifestyle.
How are the data collected?	• The WHS is based on a representative sample of adults (aged 16 and over) living in private households in Wales (plus some information for children living in those households). • Private households in Wales are selected using a random sample from the Post Office's Postcode Address File[1]. • The adult survey was established in 2003 and runs all year round. The information relating to children has been collected since 2007. • Families with children aged under 16 are eligible for the child elements of the survey. In households with three or more children, two children are selected at random to avoid respondent burden. Information is collected on households through a short interview and on individuals through a self-completion questionnaire. One of three age-specific questionnaires are used for children. Two are designed for parents to complete on behalf of children aged 0-3 and 4-12. A third questionnaire is given to children aged 13-15 to complete on their own behalf. Adults (aged 16+) complete their own questionnaire. • At each household, all adults and a maximum of two children are eligible for inclusion in the survey. • Each year, a sample of around 15,000 adults and 3,000 children is collected, to include a minimum of 600 adults for each local authority area.

How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• The survey is the most comprehensive survey into the health of the population at local authority level across Wales. However, as with all surveys of a sample of the population results are subject to sampling error i.e. the difference between the estimates derived from the sample and the true population values. • The survey achieves high response rates e.g. in 2013, 79 per cent of eligible households took part and self-completion questionnaires were obtained for 79 per cent of adults and 76 per cent of children in participating households. • Survey data is usually presented at a Wales level. Combining data from more than one year improves the precision of the estimate due to the larger sample size. This allows results to be presented at lower levels e.g. age group and smaller geographies. • As the survey is based on self-reported data, the results are prone to respondent bias i.e. people may under or over estimate their behaviour to give a more favourable response. • The survey results are weighted to ensure that the age and sex distribution of the responding sample matches that of the population of Wales. • The Postcode Address File covers more than 99 per cent of private households in Wales; the small percentage of people not covered by the Postcode Address File, for example those living in institutions were not covered by the Welsh Health Survey and therefore results do not include adults living in institutional care homes or nursing homes etc. • Non-responding adults were more likely than those who responded to have been described as having good general health. However, the converse is true for children i.e. children who responded to the survey were more likely to be described as having good general health than non-responding children[2]. • The WHS will cease in its current form at the end of 2015. The WHS will be replaced with a new survey of adults starting during 2016-17. Further information on this change in approach is available at: http://gov.wales/statistics-and-research/national-survey/?lang=en
Who manages the data?	The National Centre for Social Research (NatCen) conducts the survey on behalf of the Welsh Government (www.natcen.ac.uk).
References	Welsh Health Survey technical guide available at: http://gov.wales/docs/statistics/2016/160929-welsh-health-survey-2015-technical-report-en.pdf [Accessed 30th March 2017]. Sadler et al. Welsh Health Survey 2011 Technical Report. National Centre for Social Research; 2012. Available at: http://gov.wales/docs/statistics/2012/120919technicalreporten.pdf [Accessed 30th March 2017].

9.8   Welsh Index of Multiple Deprivation

What the data	• The Welsh Index of Multiple Deprivation (WIMD) 2014 is a measure of multiple deprivation at small area level. The fifth

tells you?	edition of the WIMD was released in August 2014 and replaced WIMD 2011. WIMD is made up of eight separate domains of deprivation: income; employment; health; education; housing; access to services; environment; and community safety[1]. • WIMD is used to give an overall deprivation rank for each of the 1,909 Lower Super Output Areas (LSOA) in Wales and to give ranks for the separate deprivation domains for each of the LSOAs.
How are the data collected?	• Deprivation ranks are calculated for each LSOA in Wales. One area has a higher deprivation rank than another if the proportion of people living there that are classed as deprived is higher. The most deprived area is ranked as one and the least deprived area is ranked as 1,909. • Each of the eight domains are based on a range of different indicators. The domain indices are weighted and combined into an overall index of multiple deprivation. The weighting is the adjustment of the contribution the domain indices make to the overall index when they are combined. Income and employment are classed as the most important indicators and are given the biggest weighting in the overall index. • To obtain deprivation fifths geographical areas are ranked from highest to lowest by the deprivation rank and then split into five bands of similar size, ranging from least deprived to most deprived fifth.
How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• The WIMD provides a deprivation rank for each of the 1,909 LSOAs in Wales. • Not everyone living in a deprived area is deprived and not all deprived people live in deprived areas. An area itself is not deprived, it is the circumstances and lifestyle of people who are living there that affects its deprivation ranks. • The WIMD cannot illustrate how much more deprived one LSOA is than another. If one area is ranked as the 100th most deprived and another area as the 300th most deprived, it doesn't mean that one area is three times more deprived than the other. • Deprivation ranks cannot be compared with scores from a previous index. • The WIMD ranks cannot be compared with those from deprivation indices of other UK countries. • There are no official health board and local authority fifths. • WIMD is an ecological measure whereas individuals within an area (LSOA in this instance) may vary. • The overall WIMD index includes a health measure and so it can be argued that assessing health experiences against WIMD can have a circular effect. • Unlike measures of material deprivation some of the factors do not relate directly to material deprivation e.g. access to services. • It is important to note that low deprivation does not equate to affluence.
Who manages the data?	Welsh Government's Statistical Directorate and the Local Government Data Unit (Wales)

References	1. Welsh Government. *Welsh Index of Multiple Deprivation 2014 Technical Report*, 2014. Available at: http://gov.wales/docs/statistics/2014/141218-wimd-2014-technical-en.pdf [Accessed 30th March 2017]

9.9   Global Health Data Exchange

What the data tells you?	• The Global Health Data Exchange (GHDx) is a comprehensive catalogue of surveys, censuses, vital statistics and health-related data. This ranges from data on administrative health to population census data.
How are the data collected?	• Data are collated from a number of different countries, repositories and archives. • Where data are available, indicator measures including DALYs, prevalence and YLDs have been calculated broken down by context, sex and age. • Further information on the data sources used in the GHDx are available at: http://ghdx.healthdata.org/data-sites-we-love
How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• Where possible, data used in the GHDx has come from national data sources which would be expected to be of good quality. • However when comparing data across countries, there are likely to be comparability issues both in terms of methods used for calculation and quality of data.
Who manages the data?	Institute for Health Metrics and Evaluation, University of Washington
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9.10   Organisation for Economic Co-operation and Development (OECD)

What the data tells you?	• OECD has a wealth of information on a broad range of topics which it uses to help government's foster prosperity and fight poverty through economic growth and financial stability. It ensures that environmental implications of economic and social development are taken into account.
How are the data collected?	• OECD has 35 member countries which contribute to the data they collect and policies they review. • Further information on the what OECD do and how they do it are available at http://www.oecd.org/about
How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?	• Comparability across countries is acknowledged and appropriate comparative statistics are produced where possible. Necessary details are captured in the publications.

Who manages the data?	Organisation for Economic Co-operation and Development (OECD)
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