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The Public Health Implications of Brexit in Wales:

A Health Impact Assessment Approach

Technical Report: Part 2

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This Health Impact Assessment is in three parts:

1. **The Public Health Implications of Brexit in Wales: A Health Impact Assessment Approach. Executive Summary**

2. **The Public Health Implications of Brexit in Wales: A Health Impact Assessment Approach. Main Findings**

3. **The Public Health Implications of Brexit in Wales: A Health Impact Assessment Approach. Technical Report**
   a. Technical Report: Part 1
   b. Technical Report: Part 2 **(this document)**

This Health Impact Assessment (HIA) has been undertaken at a time of ongoing uncertainty and a rapidly evolving Brexit agenda. The HIA will continue to be reviewed and monitored post publication to reflect changing context, evidence and events, and where possible updated.

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1 Community Health Profile

This section contains the population health data used to inform the HIA.

As part of the HIA of the Public Health Implications of Brexit, a number of groups were identified by members of the advisory group and the participatory workshop, which were deemed to be vulnerable to the impacts of the United Kingdom (UK) leaving the European Union (EU). These included:

- Families impacted by uncertain / new immigration regulations
- EU citizens living in Wales
- People who are living on low income
- People who are unemployed / at risk of unemployment
- People living in areas with poor economic and health indicators
- People living in areas where large employers may move away from
- Areas of Wales that have been significant beneficiaries of EU funding
- People in need of health and social care services
- Young adults
- Black and minority ethnic groups
- Children and young people
- Sex and Gender groups
- Farmers / rural communities
- Small business owners / employees
- Port towns
- Coastal towns

In this section routine data sources, for example National Survey for Wales and high level evidence, for example Welsh Government reports, were reviewed to provide an overview of the different population groups and to identify any potential impacts to these groups, following departure of the UK from the EU. All data sources and literature used within this report can be found within the References section on page 80.

The impact of the UK leaving the EU is an unknown. Any assumptions made in the report have, where possible, been clearly stated to provide transparency around the reasoning behind why certain impacts for specific groups have been highlighted.

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In 2016, an estimated 176,600 people born outside the UK were resident in Wales including 79,100 from other EU Member states (5.8% and 2.6% of the Welsh population)
Annual migration flows to Wales from the EU is approximately 7,000 people per year
Migrants from EU member states who arrived in Wales in the last 5 years may not be entitled to permanent residency
The majority of people who reported their ethnicity as "White other" (i.e. White, non-British, non-Irish) are within the young adults and working age population (20 to 44 years), and in the age group of 0 to 4 years
4% of all Wales-resident children (>20,000) live in a household where at least one person is an EU citizen
Around 900,000 UK citizens were long-term residents in other EU countries in 2010 and 2011 and 190,000 people who receive a British pension depend on European Health Insurance Card (EHIC) for their health care

Health and well-being
In 2017, across the UK, over 60,000 people from non-UK EU countries worked in the NHS and 90,000 worked in adult social care
In Wales, it is estimated that at least 1,462 EU nationals are directly employed by the NHS (1.6% of workforce)
Around 10,000 doctors who work in the NHS in the UK qualified in the EEA
In Wales 4% of GPs gained their primary medical qualification in the EEA
The number of people from the EEA on the Nursing and Midwifery Councils register in March 2018 compared with March 2017, fell by 8% from 38,024 to 35,115
15% of dentists working in Wales gained their primary qualification in the EEA
Based on English data, it has been estimated that 3% of the social care workforce are EEA citizens
An estimated 23% of Welsh residents report a long-term illness
Economic crises have the potential to negatively impact on mental well-being
Legislation for protecting social welfare and strong safety nets can increase the resilience of communities to economic shocks and protect mental health
45 million patient packs of medicines go to the EEA every month and over 37 million patient packs of medicines come to the UK
The main health protection functions in the EEA include: risk assessment, disease surveillance and coordination functions
Between 2008 and 2013, the UK received €8.8 billion of EU science funding
The life sciences sector, which includes health and pharmaceuticals research, employs around 5,000 EU nationals across the UK

Economy and Employment
Many economic analysts report that leaving the EU will have a negative impact on UK GDP per capita
Following the UK leaving the EU, the greatest price rises would potentially be in transport, alcohol, food and clothing
The industry sectors that employ the highest number and proportion of the Welsh workforce are health and social care, wholesale & retail and manufacturing
Sectors particularly dependent on skills from the EEA are the food and drink manufacturing industry, veterinary sector and NHS workforce
In 2014/15, 4% of students in Welsh Universities were from the EEA
Any changes in prices, wages and employment are expected to be felt across the whole income distribution
Lower income households spend more on essentials such as food and drink than higher income households and are therefore at greater risk of food poverty if food prices rise
Gwynedd, Blaenau Gwent, Rhondda Cynon Taf and Merthyr Tydfil Local Authority (LA) areas have the highest estimated proportion of households living in fuel poverty in Wales
Key factors that may influence food supply following the UK leaving the EU, are the labour market, the regulatory framework and the future of tariffs and trade
30% of food purchased by households in the UK is imported, of which 70% is from the EU
Changes in the costs of imports, will affect the cost of getting imported food products onto supermarket shelves and therefore impact on prices
In 2014, more than 600 firms across Wales exported goods worth over £5 billion to the EU, equivalent to 43% of the total exports of goods
Industries that export a large proportion of their total output to the EU are mining, clothing and textiles, chemicals, pharmaceuticals and refining and machinery and equipment
Approximately 200,000 people in Wales (14% of the workforce) are in jobs (direct and indirect) that depend on exports to the EU
In Wales, 21% of men classed as low educated, work in industries that are very highly exposed to changes in trade deals with the EU
There are opportunities for industries from trade barriers, as consumers may substitute away from imports towards products made by UK industries
Mass unemployment events have the potential for detrimental consequences for the employees made redundant, the local economy & labour market and local communities
Despite the rates of poverty and deprivation increasing in Ireland following the economic crisis, the impact on population health are not yet evident in most health statistics
The three areas in Wales with the highest proportion of the workforce employed by a large employer (250+ employees) were Cardiff (52.7%), Newport (52.6%) and Flintshire (49.7%)
Flintshire (25%) had the largest percentage of employment in non-UK owned enterprises, followed by Bridgend (22.2%) and Neath Port Talbot (21.6%)
Wales has some of the poorest regions in the EU and so receives a disproportionately larger amount of EU funding
Wales is a net beneficiary of EU membership, currently receiving about £680 million in EU funding each year

Communities
Asian / Asian British and Black / Black British ethnic groups may be more affected when the UK leave the EU, as they tend to work in services industries, which are more likely to suffer in a no deal scenario (notably finance and other business services)
In 2016, there was a rise in racially or religiously aggravated offences during the EU referendum campaign, to a peak in offences after the result
Analysis suggests that both gender groups may be affected to a similar degree, although women will be slightly more affected in the event of a no deal scenario
Gender equality is recognised as a fundamental right in EU law and working women have gained significantly from this strong underpinning to their rights
Key issues for children and young people include: erosion of guarantees of their fundamental rights; undermining of social cohesion; loss of EU funding to support disadvantaged communities; loss of the voices of children and young people and risks to existing cross border safeguarding structures
The number of young people not in education, employment or training (NEET) varies by area, age and disability
An estimated 4.1% of employment in Wales arises from the agriculture sector
It is estimated that EU subsidies make up 80% of farm income in Wales
It is estimated that Welsh ports directly support 18,400 jobs in Wales and handle over 56.4 million tonnes of UK freight, equivalent to 11% of total UK trade by volume
At present, over 70% of Irish cargo passes through Wales
There are concerns that freight will be displaced from Welsh ports; there will be technological and logistical challenges and there is a lack of appropriate infrastructure and physical capacity to accommodate new border controls and customs checks
There are currently no Border Inspection Posts at Welsh ports or Designated Points of Entry in Wales

Environment
A series of EU directives designed to improve air quality have had a major impact on health. However, the UK has often lagged behind in the implementation and enforcement of these directives
There has been a downward trend in air pollutants across Wales since 1990
Outdoor air pollutants increase the risk of poor health and mortality and can disproportionately affect vulnerable population groups
In Wales each year, the equivalent of around 1,600 deaths are attributed to Particulate Matter (PM) $PM_{2.5}$ exposure and 1,100 deaths to NO_2 exposure
Compared to 1990 levels, Wales has reduced carbon emissions by 14% (Welsh Government's non-statutory target is a 40% reduction by 2020)
European water policy has played an important role in protecting water resources
The coastal and marine environment contributes £6.8 billion to the economy of Wales and supports more than 92,000 jobs
Over 60% of the population of Wales live and work in the coastal zone, with all major cities and many important towns located on the coast

1 Introduction

As part of the HIA of the Public Health Implications of Brexit, a number of groups were identified by members of the Advisory Group and the participatory workshop, which were deemed to be vulnerable to the impacts of the change to the UK leaving the EU. These included:

- Families impacted by uncertain / new immigration regulations
- EU citizens living in Wales
- People who are living on low income
- People who are unemployed/at risk of unemployment
- People living in areas with poor economic and health indicators
- People living in areas where large employers may move away from
- Areas of Wales that have been significant beneficiaries of EU funding
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Routine data sources, for example National Survey for Wales and high-level evidence, for example Welsh Government reports, were reviewed to provide an overview of the different population groups and to identify any potential impacts to these groups, following departure of the UK from the EU. All data sources and literature used within this report can be found within Section 8 (References).

The impact of the UK leaving the EU is an unknown.Any assumptions made in the report have, where possible, been clearly stated to provide transparency around the reasoning behind why certain impacts for specific groups have been highlighted.

2 Migration

Key points

Families impacted by uncertain / new immigration regulations
Migration accounted for over 90% of the population increase in Wales between 2001 and 2011 (from UK, EU and internationally)
79,100 people born outside the UK and currently resident in Wales are from other EU Member states (2.6% of the Welsh population)
Annual migration flows to Wales from the EU is approximately 7,000 people per year
The three most common foreign nationalities of residents in the UK on census day were Polish, Irish and Indian
Migrants from EU member states who arrived in Wales in the last 5 years may not be entitled to permanent residency
The majority of people who reported their ethnicity as "White other" (i.e. White, non-British, non-Irish) are within the young adults and working age population (20 to 44 years), and in the age group of 0 to 4 years
4% of all Wales-resident children (>20,000) live in a household where at least one person is an EU citizen
UK citizens living / travelling to the EU
Around 900,000 UK citizens were long-term residents in other EU countries in 2010 and 2011
Approximately 190,000 people receiving British pensions who live in the EU27 countries, depend on the EHIC for their health care

2.1 Vulnerable group: Families impacted by uncertain/new immigration regulations

2.1.1 EU citizens living in Wales

The 2011 census reported that the population in Wales was 3.06 million, comprised of 1.50 million men and 1.56 million women. There were 1.3 million households in Wales on census night. The average household size was 2.3 residents per household in 2011 (ONS, 2012a).

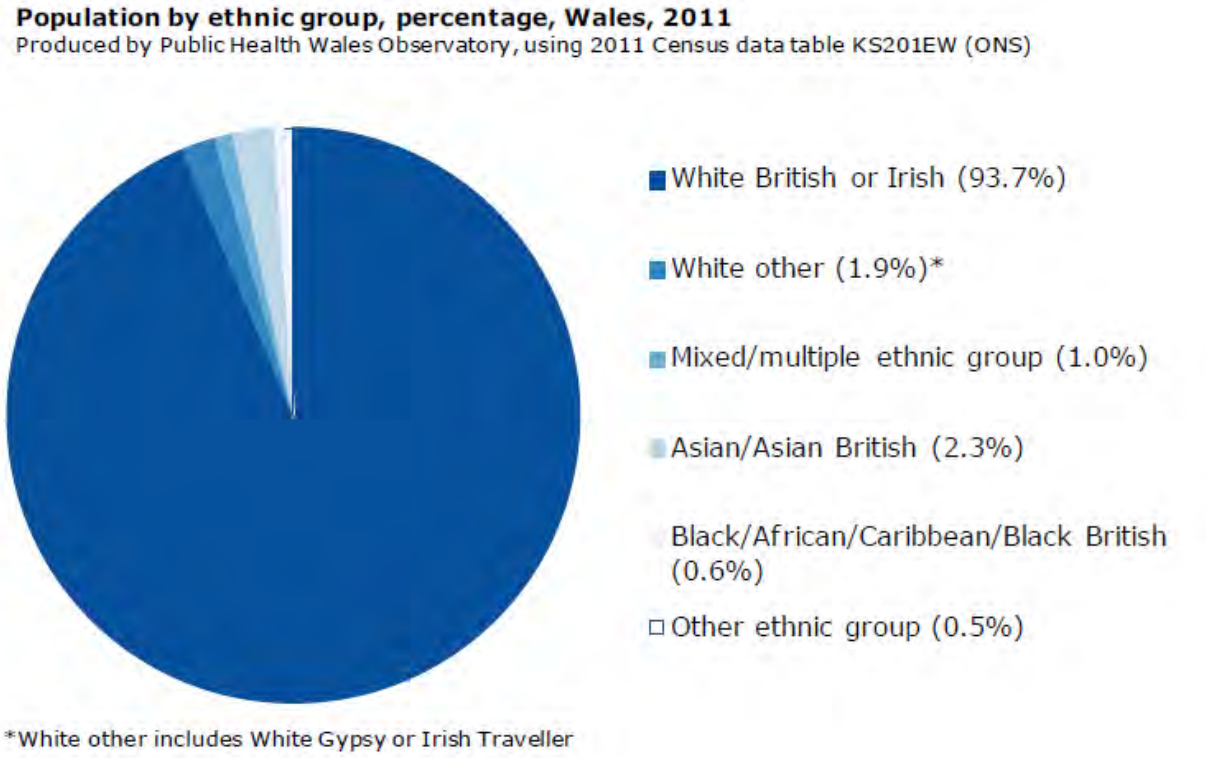
The population grew by 153,300 in the 10 years since the last census, rising from 2.9 million in 2001, an increase of 5.3% (ONS, 2012a). While the difference between births and deaths led to a small increase in the population (8% of the total population increase), migration accounted for over 90% of the population increase between 2001 and 2011. This includes both international migration and migration from elsewhere within the UK (ONS, 2012a).

All areas of Wales saw population growth between 2001 and 2011 except Blaenau Gwent, which saw a small decline. The unitary authorities with the largest percentage growth in population were Cardiff (12%), Pembrokeshire (8%), and Bridgend (8%) (ONS, 2012a).

Wales is less ethnically diverse than any of the regions of England with the exception of the

North East of England. In Wales, 93.7% of usual residents described their ethnicity as White British or Irish. 1.9% described themselves as White other (non-British, non-Irish), which includes white Gypsy or Irish Traveller (ONS, 2012b).

Figure 1: Population by ethnic group, percentage, Wales, 2011



Source: Figure 3, page 10. Ethnicity and Health in Wales. Public Health Wales Observatory. 2015

The percentage of the population of Wales who define themselves as not White British or Irish has doubled from 3% to 6% between 2001 and 2011. People describing themselves as not White British or Irish are concentrated in urban centres, particularly Cardiff and Newport (Public Health Wales Observatory, 2015).

Based on figures from the Labour Force and Annual Population Surveys the total migrant population in Wales is 176,600 (5.8% of the Welsh population) of whom 79,100 are from the EU (2.6% of the Welsh population). Of these, approximately 30,000 residents arrived less than 5 years ago. This is broadly consistent with the data from the International Passenger Survey (ONS data), which estimates annual migration flows to Wales from the EU at approximately 7,000 (Welsh Government, 2017a).

In comparison, there was a net inflow to Wales from the rest of the UK in every year between 2001 and 2011, at an average of 6,800 residents per year, and the majority of migration flows were between Wales and England (ONS, 2012a).

Under EU and EEA law, individuals only currently become entitled to a right of permanent residence after 5 years of legal residence in a country. Therefore, many migrants from EU member states who arrived in Wales in the last 5 years may not be entitled to permanent residency (Welsh Government, 2017a).

Table 1 shows the breakdown of internal and international migration flows between 2012 and 2017. Table 2 shows that Cardiff and Swansea had the highest net international migration in Wales during 2016-17, while the Vale of Glamorgan and Newport had the highest net internal migration (from other UK countries).

Table 1: Components of population change, by time period and component, Wales, 2012-13 till 2016-17

	Population at start of period	Net migration and other changes during period							Net migration and other changes during period	Population at end of period
		Net internal migration during period		Net internal migration during period	Net international migration during period		Net international migration during period	Other changes, including unattributable changes, during period		
		Inward internal migration (Inflow)	Outward internal migration (Outflow)		Inward international migration (Inflow)	Outward international migration(Outflow)				
2012 to 2013	3074067	55014	55679	-665	13725	6414	7311	-127	6519	3082412
2013 to 2014	3082412	57484	57319	165	15180	9283	5897	260	6322	3092036
2014 to 2015	3092036	57518	56678	840	16699	10777	5922	293	7055	3099086
2015 to 2016	3099086	58654	55275	3379	16826	7150	9676	247	13302	3113150
2016 to 2017	3113150	67690	60304	7386	15230	10140	5090	413	12889	3125165

Source: STATS Wales, 2018
Based on mid-year population estimates, Office for National Statistics

Table 2: Components of population change, by local authority and component, Wales, 2016-17

		Population at start of period	Net internal migration during period	Net international migration during period	Population at end of period
Wales		3113150	7386	5090	3125165
Wales	Isle of Anglesey	69665	193	71	69794
	Gwynedd	123323	173	439	123742
	Conwy	116820	472	75	116863
	Denbighshire	94984	346	55	95159
	Flintshire	154626	352	59	155155
	Wrexham	135408	-212	-148	135571
	Powys	132337	562	130	132515
	Ceredigion	73665	-461	99	73076
	Pembrokeshire	124237	755	89	124711
	Carmarthenshire	185754	884	163	186452
	Swansea	244462	67	1267	245480
	Neath Port Talbot	141678	526	101	142090
	Bridgend	143408	735	202	144288
	Vale of Glamorgan	128891	1578	60	130690
	Cardiff	361168	-1287	1486	362756
	Rhondda Cynon Taf	238179	428	342	239127
	Merthyr Tydfil	59714	66	89	59953
	Caerphilly	180453	235	19	180795
	Blaenau Gwent	69630	54	41	69609
	Torfaen	91994	259	26	92264
	Monmouthshire	93276	563	49	93590
	Newport	149478	1098	376	151485

Source: Source: STATS Wales, 2018
Based on Mid-year population estimates, Office for National Statistics

The most common foreign nationality of residents in the UK on census day was Polish with 558,000 residents; this was followed by Irish (372,000) and Indian (315,000) residents. These three nationalities together account for 30 per cent (1.2 million) of all non-UK nationals resident in England and Wales in 2011 (ONS, 2013).

Table 3 shows, that between 2001 and 2011 census, there has been a shift in migration patterns, with a larger proportion of usual residents being born within the EU region.

Table 3: Most reported countries of birth of non-UK born usual residents

England and Wales, 2001 and 2011, all non-UK born usual residents

Thousands, per cent

	2001			2011		
	Country	Number	Per cent	Country	Number	Per cent
1	Republic of Ireland	473	10	India	694	9
2	India	456	10	Poland	579	8
3	Pakistan	308	7	Pakistan	482	6
4	Germany	244	5	Ireland	407	5
5	Bangladesh	153	3	Germany	274	4
6	Jamaica	146	3	Bangladesh	212	3
7	United States of America	144	3	Nigeria	191	3
8	South Africa	132	3	South Africa	191	3
9	Kenya	127	3	United States	177	2
10	Italy	102	2	Jamaica	160	2

Census: Table 3, page 15, 2011 Census: Key Statistics for England and Wales, March 2011. Office for National Statistics, 2012b

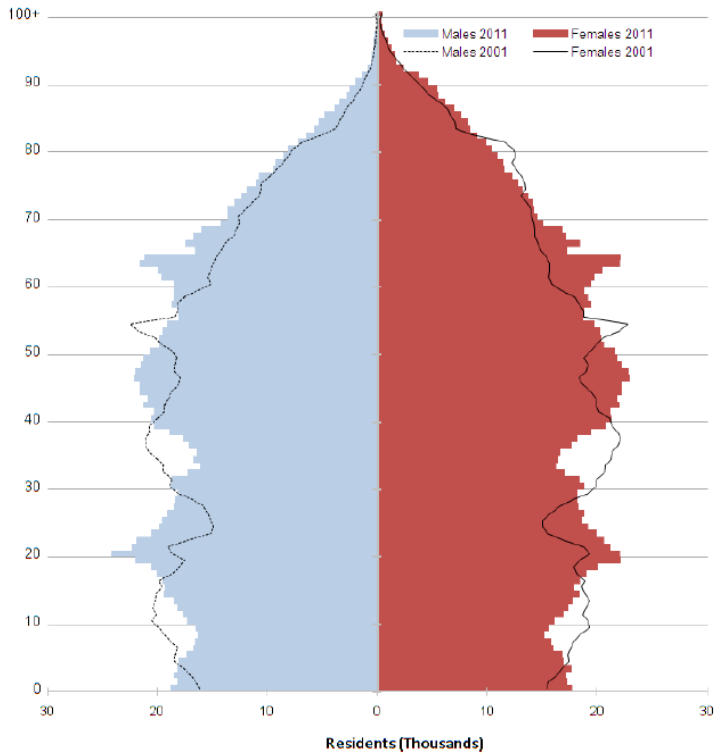
2.1.2 Population pyramids

The median age of the population in Wales on census day was 41 (men was age 40 and for women it was 42) (ONS, 2012a). The changing structure of the population of Wales, defined by age and sex can be visualised using a population pyramid. Figure 2 shows the changes in the resident population over the last 10 years (ONS, 2012a).

The detail of the pyramid shows more specific events. Fluctuations in the width of the pyramid mainly reflect periods of high and low numbers of births. In the 2011 pyramid, the wide areas for those aged 40-49, and 63-64, represent the 1960s baby boom and the post Second World War spike in births (ONS, 2012a).

The base of the 2011 pyramid widens from age nine downward showing an increased number of births in recent years. This increase is due to an increase in both the total fertility rate and the number of women of childbearing age in the usually resident population over the 10-year period. The increased number of women of childbearing age (15-45) is mainly due to the migration into Wales over the last decade (ONS, 2012a).

Figure 2: Resident population of Wales by age and sex, 2001 and 2011

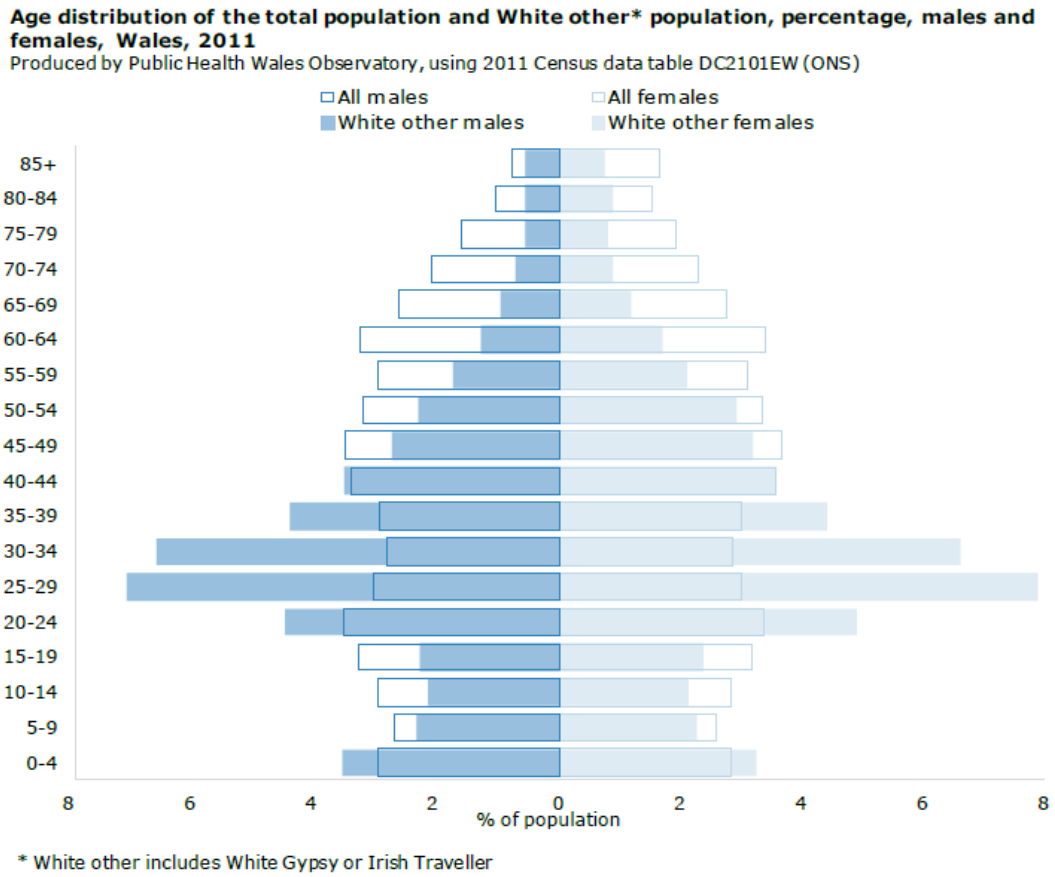


Source: figure 4, page 10, 2011 Census: Population and Household Estimates for Wales, March 2011, ONS 2012a

Since the accession of ten countries (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic and Slovenia) to the EU in 2004 and 2007, there has been an increase in immigration to the UK from these countries. The pattern exhibited in the 'white other' population pyramid is likely to be a reflection of the increase in eastern European immigration as people arrive seeking employment (Public Health Wales Observatory, 2015).

Figure 3 shows that the majority of the White other population group are concentrated within the young adults and working age population (20 to 44 years), plus in the age group of 0 to 4 years. This would suggest that the vast majority of EU citizens are part of a family unit and it is estimated that there are more than 20,000 children (of all nationalities) resident in Welsh households, where at least one person is an EU citizen; this represents 4% of all Wales-resident children (Welsh Government, 2017a).

Figure 3: Age distribution of the total population and White other* population



Source: Figure 4, page 11. Ethnicity and Health in Wales. Public Health Wales Observatory, 2015

2.1.3 UK citizens living / travelling to the EU

Around 900,000 UK citizens were long-term residents in other EU countries in 2010 and 2011. There is no available data about how many of these UK nationals are from Wales (Welsh Government, 2017a).

Around 27 million people hold EHIC (used to show home country coverage) issued by the UK. These provide cover by the NHS for people who are travelling to the EU for work, study, or leisure (Fahy et al, 2017).

The potential loss of the EHIC for UK citizens will mean increased costs for travellers, who in future may require health insurance. These costs are likely to impact most on the oldest and most vulnerable (Menon, 2018).

There are about 53 million visits made to the EU from the UK each year, and 25 million visits from the EU to the UK. Only around 1% of these visits results in an EHIC claim (Welsh NHS Confederation, 2018).

It is estimated that approximately 190,000 people receiving British pensions who live in the EU27 countries (in particular Spain, France, Ireland, and Cyprus), depend on these arrangements for their health care (Fahy et al, 2017). In comparison, 5,800 EU citizens are retired and live in the UK (Welsh NHS Confederation, 2018).

3 Health and well-being

Key points

People in need of health and social care services **NHS and social care staff**
In 2017, across the UK, over 60,000 people from non-UK EU countries worked in the NHS and 90,000 worked in adult social care
In Wales, it is estimated that at least 1,462 EU nationals are directly employed by the NHS (1.6% of workforce)
Around 10,000 doctors who work in the NHS in the UK qualified in the EEA
Specialties with the highest reliance on non-UK graduates are: Obstetrics and Gynaecology, Ophthalmology, Paediatrics, Psychiatry and Pathology
In Wales 4% of GPs gained their primary medical qualification in the EEA
The number of people from the EEA on the Nursing and Midwifery Council's register in March 2018 compared with March 2017, fell by 8% from 38,024 to 35,115.
15% of dentists working in Wales gained their primary qualification in the EEA
Powys and Hywel Dda have the greatest proportion of EEA dentists
Based on English data, it has been estimated that 3% of the social care workforce are EEA citizens

Morbidity and mortality
The potential staffing issues coupled with the health consequences attributed to economic difficulties and unemployment has the potential to increase the demand for health and social care services
An estimated 23% of Welsh residents report a long-term illness
Cwm Taf and Abertawe Bro Morgannwg University Health Board (ABMUHB) have significantly higher rates of premature deaths in adults aged 30 to 70 years compared to the rest of Wales
Betsi Cadwaladr and Cardiff and Vale University Health Board (UHB) have a significantly higher percentage of working age adults who are free from long-term illness than compared to Wales
Powys and Betsi Cadwaladr UHB have a significantly higher percentage of older people who are free from limiting long term illness, compared to the rest of Wales
Powys teaching HB have a significantly higher percentage of working age adults & older people who rate their life satisfaction as ≥7 out of 10, compared to the rest of Wales
Scores for mental well-being among adults is significantly lower for people living in the most deprived and next most deprived areas than compared to those living in the least deprived fifth
People living in material deprivation were more likely to be lonely, than compared to those who are not in material deprivation
Across the UK, there have been improvements in levels of anxiety between 2012 and 2018. In 2018, just over 40% of adults rated their level of anxiety as very low
Mental health problems are known to be related to deprivation, poverty, inequality and other social and economic determinants of health

Morbidity and mortality continued
Economic crises have the potential to negatively impact the mental well-being of the population
Legislation for protecting social welfare and strong safety nets can increase the resilience of communities to economic shocks and protect mental health

Medicine management
45 million patient packs of medicines go to the EEA every month and over 37 million patient packs of medicines come to the UK

Public Health
The main health protection functions in the EEA include: risk assessment, disease surveillance and coordination functions

Research and development
Between 2008 and 2013, the UK received €8.8 billion of EU science funding
The life sciences sector, which includes health and pharmaceuticals research employs around 5,000 EU nationals across the UK

There are potentially a number of indirect impacts on the NHS and social care, from the UK leaving the EU. These assumptions include (Menon, 2018):

- Public finances: Forecast of lower economic growth;
- Staffing: EU nationals play a crucial role in staffing the health and social care sectors;
- Patients: Future access to NHS services will depend on a citizen's status;
- Drugs and medical devices: Potential delay in access;
- Public health: Including communicable disease surveillance and public health legislation.

The Economist Intelligence Unit has estimated across the UK there could be an increase in NHS costs of £7·5 billion a year, out of a total expenditure of £177 billion, due to the UK leaving the EU (Fahy et al, 2017).

3.1 Vulnerable group: People in need of health and social care services

3.1.1 NHS and social care staff

The health and social care workforce is especially vulnerable to the effects of the UK leaving the EU due to the potential negative impact on recruitment and retention of EU nationals working within the sector. It is estimated that within the UK, in 2017, over 60,000 people from non-UK EU countries worked in the NHS and 90,000 worked in adult social care (Fahy et al, 2017).

According to the latest figures (April 2018), 1,462 individuals directly employed by the NHS in Wales identified themselves as EU nationals (1.6% of the total workforce) on the Electronic Staff Record, this is self-recorded and maybe an underestimation (Welsh NHS Confederation, 2018).

3.1.2 Doctors

Doctors from Europe make a vital contribution to health services across the UK. Currently in Wales there are 104 General Practitioners (GPs) (4% of total) on the General Medical Council (GMC) register who gained their primary medical qualification from another country in the EEA. To date, the vote to leave the EU has not affected overall numbers of non-UK trained doctors registered to work in the UK (Welsh NHS Confederation, 2018).

A recent British Medical Association (BMA) survey of 1,193 doctors from the EEA who are currently working in the UK, found that (BMA, 2017):

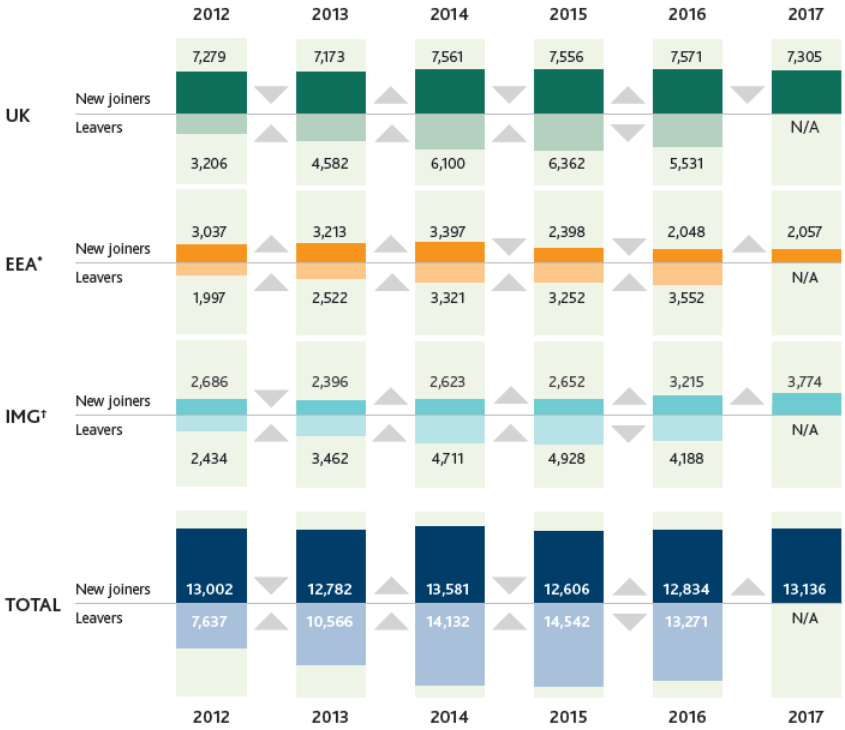
- Around 10,000 doctors who work in the NHS qualified in the EEA;
- More than four in 10 doctors, from the EEA, who work in the UK are considering leaving following the EU referendum result;

The specialties with the highest reliance on non-UK graduates are obstetrics and gynaecology (55%), ophthalmology (48%), and paediatrics (46%), while psychiatry and pathology have more than 40% of their doctors drawn from this cohort (GMC, 2017).

However, between 2012 and 2017, there has been a 37% drop among licensed doctors from Oceania, which includes Australia and New Zealand, a 24% cut in doctors from Northern America and a 20% reduction in doctors from north western Europe (GMC, 2017).

Figure 4 shows, that the numbers of doctors from the EEA who are gaining a licence to practise medicine in the UK has fallen since 2012, while the number relinquishing their licence has increased, leading to a net loss of doctors form the EEA on the GMC medical practice register (GMC, 2017).

Figure 4: Number of doctors relinquishing or gaining a licence to practise, from 2012 to 2017



Notes:* EEA graduates are doctors who gained their primary medical qualification in the EEA, but outside the UK, and who are EEA nationals or have European Community rights to be treated as EEA nationals.

† International medical graduates (IMGs) are doctors who gained their primary medical qualification outside the UK, EEA and Switzerland, and who do not have European Community rights to work in the UK

Source: Figure 5, page 39, The state of medical education and practice in the UK, GMC, 2017

3.1.3 Nursing and Midwifery

Table 4 shows the number and proportion of nurses and midwives on the Nursing and Midwifery Council's register whose initial registration into the profession was obtained in the EEA. This number / proportion rose between March 2014 and March 2017, but has fallen over the last 12-month period (NMC, 2018).

Table 4: Nurses and midwives initial registration in the EEA

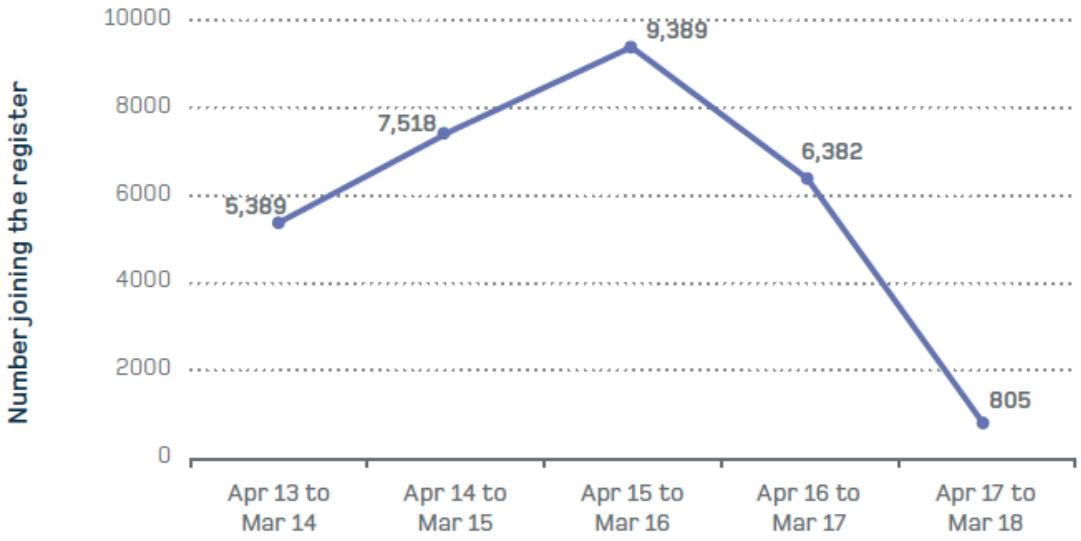
Month and year	Total on our register	Total EEA nurses and midwives	Proportion of our register
March 2014	680,899	20,916	3.1%
March 2015	686,811	27,012	3.9%
March 2016	692,556	34,572	5.0%
March 2017	690,773	38,024	5.5%
March 2018	690,278	35,115	5.1%

Source: Figure 5, page 10, NMC register, NMC, 2018

Table 4 shows that there were 2,909 fewer people from the EEA on the Nursing and Midwifery Council's register in March 2018 compared with March 2017, a decrease of 8% (NMC, 2018). Figures 5 and 6 show that:

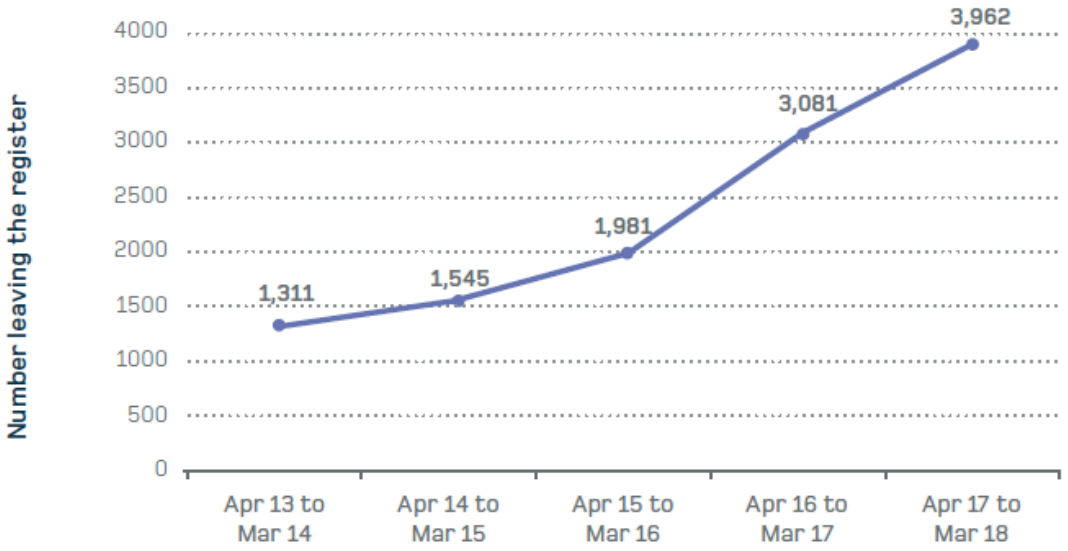
- 5,577 fewer people from the EEA joined the register in 2017/2018 than in 2016/2017 (a drop of 87%);
- 881 more people from the EEA left the register (an increase of 29%).

Figure 5: Nurses and midwives from the EEA joining the register for the first time



Source: Figure 6, page 10, NMC register, NMC, 2018

Figure 6: Nurses and midwives from the EEA who left the register



Source: Figure 7, page 11, NMC register, NMC, 2018

3.1.4 Dentists

There are 1801 dentists working within in Wales* of these 59% (n=1007) did not graduate in Wales. Non-Welsh trained dentists obtained their dental degree from the following areas (Welsh Government, 2012):

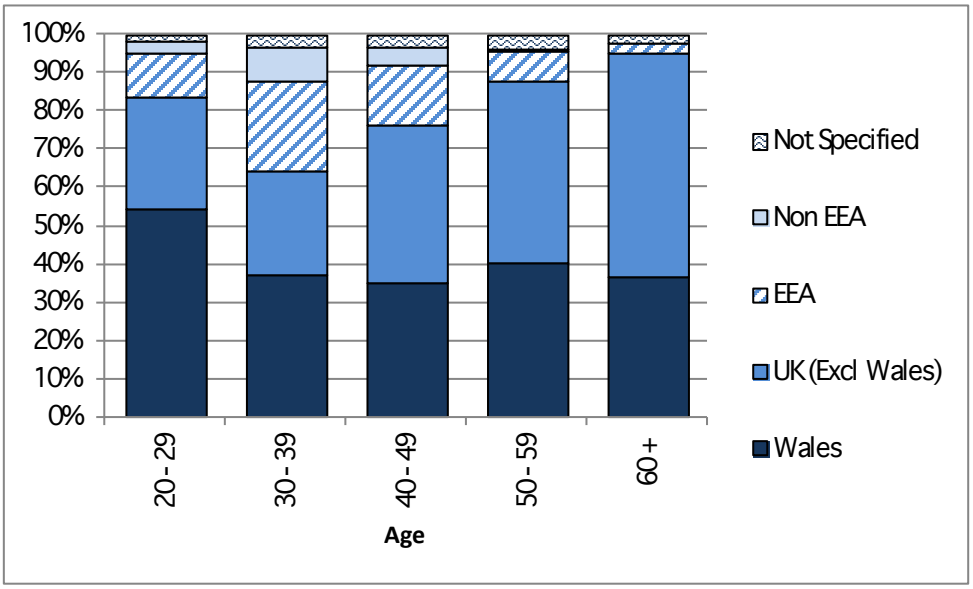
- 57% in England (34% of Wales' total number of dentists);
- 15% in the EEA;
- 5% graduated outside the EEA.

* 105 of these dentists work entirely in the private sector. However, due to data availability issues, they are excluded from the following figures.

Powys and Hywel Dda Health Boards (HBs) have the greatest proportion of EEA dentists. These areas also have lower proportions of Welsh-trained dentists. This seems to suggest that dental employers in these areas have had to look outside the UK to mitigate recruitment and retention difficulties. However, the proportion of EEA dentists working in Wales is slightly less than the UK average, (16.5%) (Welsh Government, 2012).

Figure 7, shows that a higher proportion of dentists from EEA countries are within the younger age brackets.

Figure 7: Proportion of dentists from different geographical regions in each age band



Source: Graph 6, page 13, Analysis of Dental workforce in Wales, Welsh Government, 2012

3.1.5 Social care

The number of EU nationals working in social care is far greater than those working in the NHS. Nearly one in five care workers were born outside of the UK (approximately 266,000 people across the UK), of whom 28% were born in the EU (Welsh NHS Confederation, 2018).

Based on English data, it has been estimated that 3% of the social care workforce are EEA citizens (Welsh Government, 2017a).

3.1.6 Satisfaction with access to services

It is envisaged that the potential staffing issues within the NHS and social care sector following the UK leaving the EU alongside the health consequences attributed to economic difficulties and unemployment has the potential to increase the demand for health and social care services (Menon, 2018, Public Health Wales, 2017 and WHO, 2011).

Table 5, shows that a significantly lower percentage of residents in Gwynedd Local Authority (LA) (60.6%) and Powys LA (67.6%) were satisfied with their ability to get to / access facilities and services they need, than compared to Welsh average (77.1%) (This is the percentage of adults who report being very or fairly satisfied with their ability to get to services and facilities for example shops, parks, schools and GP surgeries, within 15 to 20 minutes walk from their home). A significantly higher percentage of residents in Flintshire, Carmarthenshire and Cardiff LAs were satisfied with their ability to get to / access facilities and services they need (85.9%, 85.2% and 86.5% respectively) (Welsh Government, 2018a).

Table 5: Percentage of people satisfied with their ability to get to/access facilities and services they need

	2017-18		
	Percentage of adults (16+)	Lower CI (%)	Upper CI (%)
Wales	77.1	74.8	79.3
Isle of Anglesey	71.0	60.1	82.0
Gwynedd	60.6	50.0	71.1
Conwy	81.8	72.9	90.8
Denbighshire	71.3	59.1	83.5
Flintshire	85.9	79.4	92.4
Wrexham	77.1	67.7	86.6
Powys	67.6	62.6	72.6
Ceredigion	73.1	64.4	81.8
Pembrokeshire	78.2	69.0	87.3
Carmarthenshire	85.2	79.8	90.6
Swansea	80.3	73.8	86.7
Neath Port Talbot	66.3	57.5	75.1
Bridgend	85.1	73.5	96.6
Vale of Glamorgan	77.9	63.4	92.4
Cardiff	86.5	81.0	92.1
Rhondda Cynon Taf	63.5	49.6	77.3
Merthyr Tydfil	84.6	72.7	96.4
Caerphilly	75.6	65.3	85.8
Blaenau Gwent	68.9	52.7	85.0
Torfaen	83.3	73.0	93.6
Monmouthshire	*	*	*
Newport	83.7	74.2	93.3

Source: STATS Wales using National Survey for Wales. Welsh Government, 2018a

*This data item is disclosive or not sufficiently robust for publication; CI = Confidence Interval.

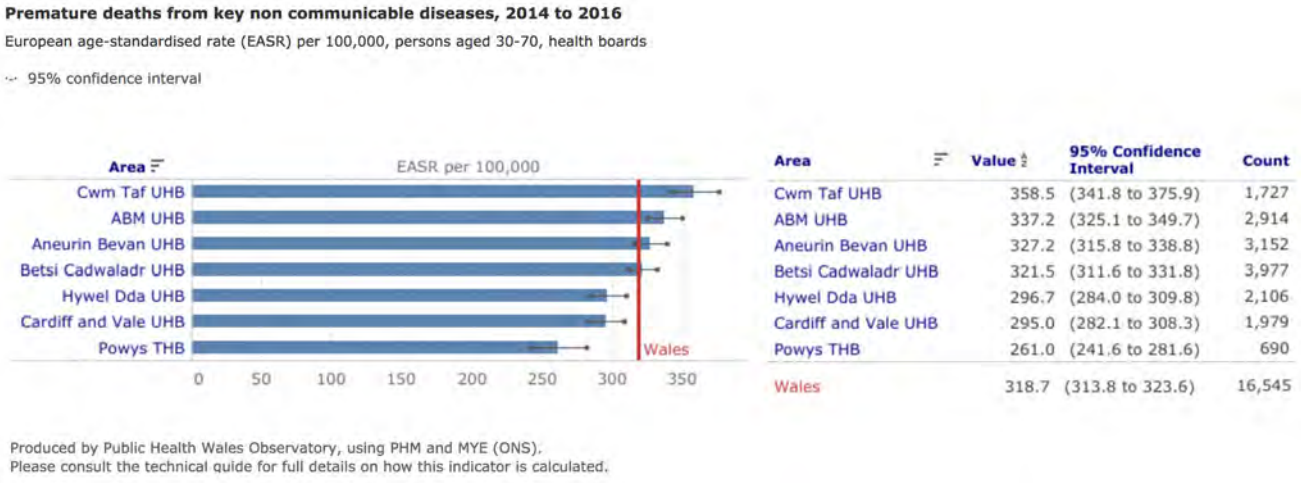
3.2 Morbidity and mortality

In the 2011 census, Wales had a higher percentage of residents with a long-term illness, (23%, 696,000 people), than any England region. This was also true in 2001 (ONS, 2012b).

3.2.1 Premature deaths from non-communicable disease

Cwm Taf HB (358.5 per 100,000) and ABMU HB (337.2 per 100,000) have significantly higher rates of premature deaths in adults aged 30 to 70 years than compared to the Welsh rate overall (318.7 per 100,000) (Public Health Wales Observatory, 2018a).

Figure 8: Premature deaths from key non-communicable diseases, 2014 to 2016



Area	Value	95% Confidence Interval	Count
Cwm Taf UHB	358.5	(341.8 to 375.9)	1,727
ABM UHB	337.2	(325.1 to 349.7)	2,914
Aneurin Bevan UHB	327.2	(315.8 to 338.8)	3,152
Betsi Cadwaladr UHB	321.5	(311.6 to 331.8)	3,977
Hywel Dda UHB	296.7	(284.0 to 309.8)	2,106
Cardiff and Vale UHB	295.0	(282.1 to 308.3)	1,979
Powys THB	261.0	(241.6 to 281.6)	690
Wales	318.7	(313.8 to 323.6)	16,545

Produced by Public Health Wales Observatory, using PHM and MYE (ONS).
Please consult the technical guide for full details on how this indicator is calculated.

Source: PHOF data, Public Health Wales Observatory, 2018a

Table 6, shows that ABMU HB have a significantly lower percentage of working age adults who are free from long-term illness than compared to the Wales percentage (67.5% vs. 73.0%). Betsi Cadwaladr UHB and Cardiff & Vale UHB have a significantly higher percentage of working age adults who are free from long-term illness (75.4% and 77.2% respectively).

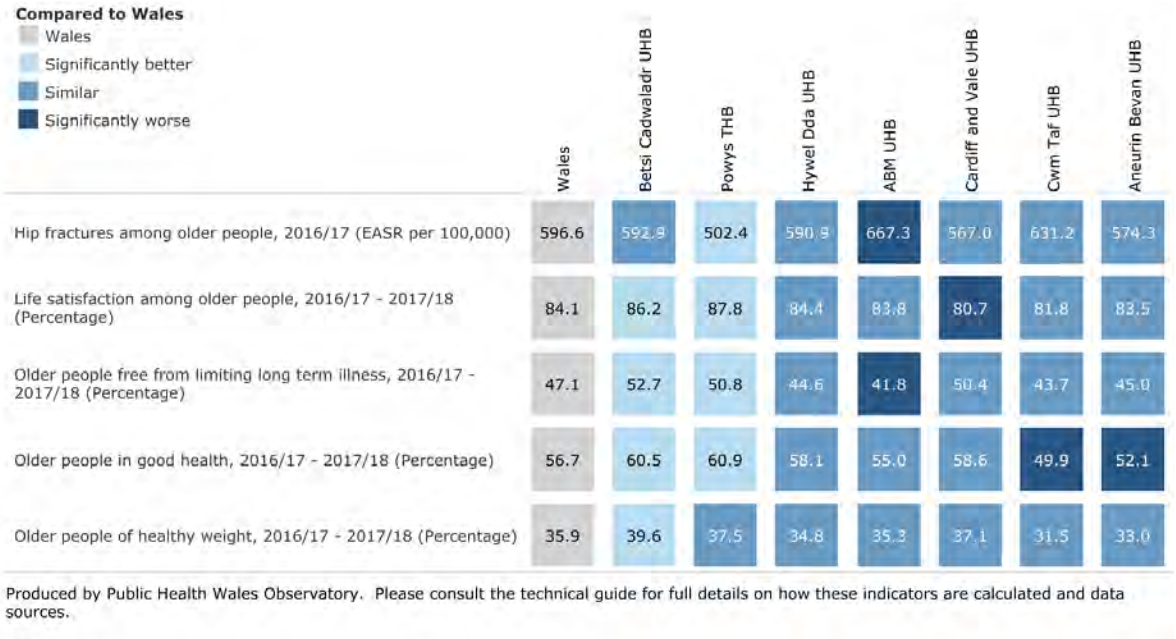
Table 6: Comparison of life satisfaction, and health indicators in working age adults

Produced by Public Health Wales Observatory. Please consult the technical guide for full details on how these indicators are calculated and data sources.

Source: PHOF data, Public Health Wales Observatory, 2018a

Table 7, shows that Powys teaching HB (50.8%) and Betsi Cadwaladr UHB (52.7%) have a significantly higher percentage of older people who are free from limiting long term illness, than compared to Wales overall (47.1%). However, ABMU HB have a significantly lower percentage (41.8%).

Table 7: Comparisons of life satisfaction and health indicators, older people



Source: PHOF data, Public Health Wales Observatory, 2018a

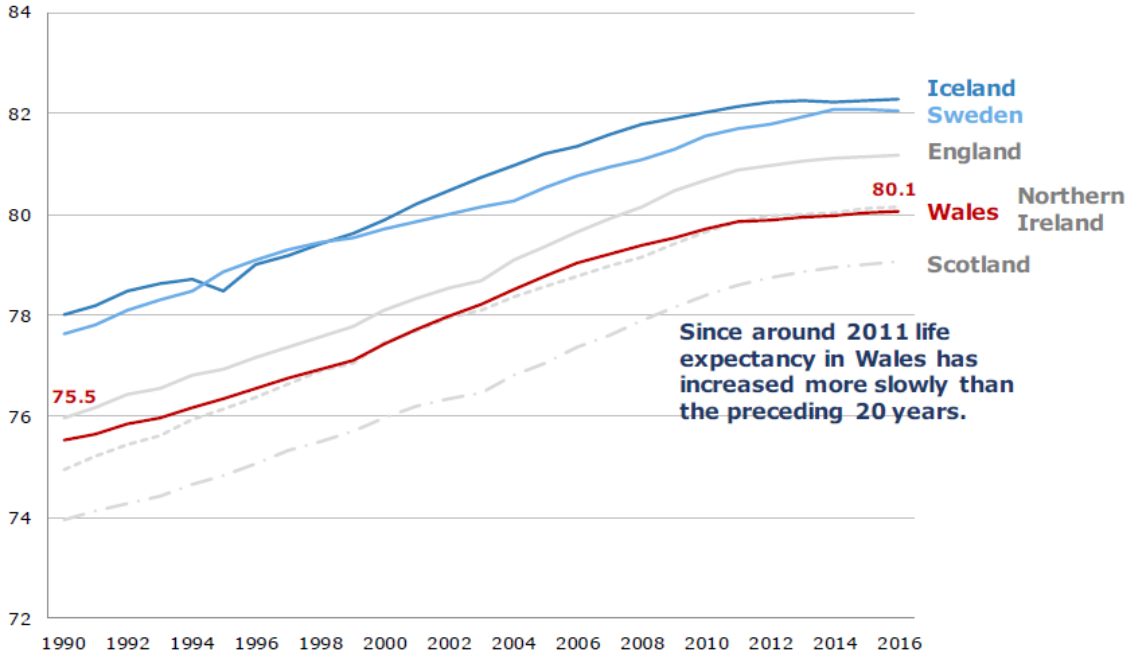
3.2.2 Life expectancy

The mortality rate in Wales has been declining since the Second World War, however, since around 2011 this decline has faltered and rates have shown little change. A plateau in life expectancy in Wales is also visible since around 2011 (Figure 9). This phenomenon has been repeated across much of Western Europe, but in Wales the effect occurred earlier and only Scotland now has lower life expectancy. The faltering of the decline in the overall mortality rate has been driven by increased deaths in the 85-89 and 90+ age groups. However, mortality rates among 55-84 year olds are also no longer in decline (Public Health Wales Observatory, 2018b).

Mortality rates rose significantly in 2015, attributed at least in part to increases in deaths from flu and pneumonia, and dementia and Alzheimer's disease among those aged 75+. The levelling off of mortality rates in Wales, in conjunction with a growing vulnerable elderly population, may mean that increases in mortality such as that seen in 2015 will be more likely in the future (Public Health Wales Observatory, 2018b).

The slowing of the improvement in mortality in Wales is a cause for concern and work is ongoing to monitor the pattern of mortality and to explore the underlying factors (Public Health Wales Observatory, 2018b).

Figure 9: Life expectancy at birth, UK nations, Iceland and Sweden, 1990-2016

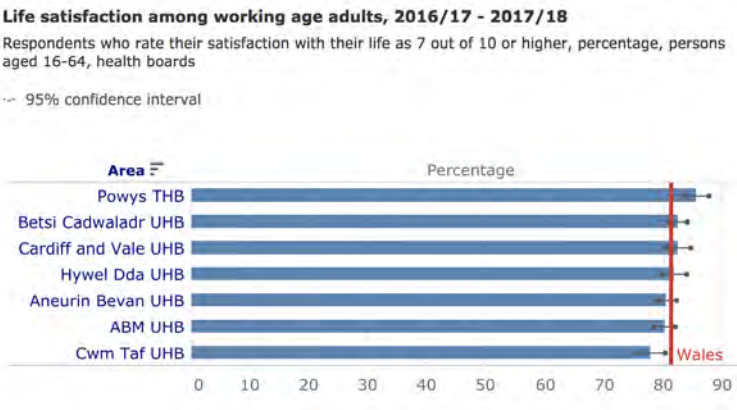


Source: Figure 2, page 7, Mortality in Wales, Public Health Observatory, 2018b
Produced by Public Health Wales Observatory, using Global Health Data Exchange (IHME)

3.2.3 Mental health and well-being

Figure 10, shows that Powys Teaching HB have a significantly higher percentage of working adults who rate their life satisfaction as ≥7 out of 10, than compared to the Welsh percentage (85.6% vs. 81.3%). No HB area had significantly lower levels than the Welsh percentage.

Figure 10: Life satisfaction among working age adults, 2016/17 to 2017/18

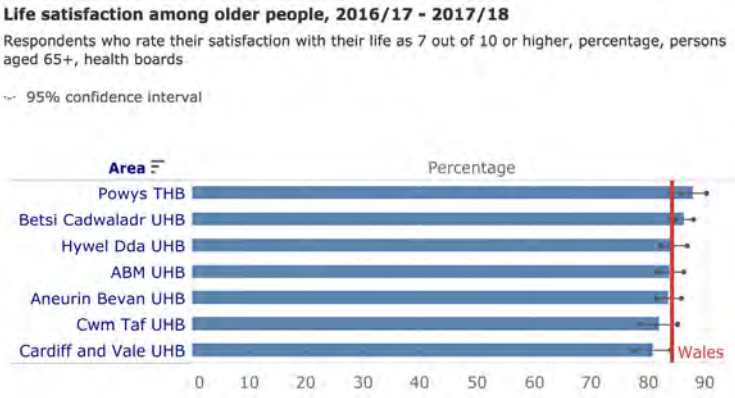


Area	Value	95% Confidence Interval	Count
Powys THB	85.6	(83.5 to 87.7)	N/A
Betsi Cadwaladr UHB	82.5	(80.9 to 84.0)	N/A
Cardiff and Vale UHB	82.5	(80.5 to 84.6)	N/A
Hywel Dda UHB	81.8	(79.7 to 83.9)	N/A
Aneurin Bevan UHB	80.6	(79.0 to 82.2)	N/A
ABM UHB	80.2	(78.3 to 82.0)	N/A
Cwm Taf UHB	77.8	(75.3 to 80.3)	N/A
Wales	81.3	(80.6 to 82.1)	N/A

Source: PHOF data, Public Health Wales Observatory, 2018a

In addition, a significantly higher proportion of older people (aged 65+) in Powys Teaching HB reported life satisfaction as ≥7 out of 10, than compared to the welsh percentage (87.8% vs. 84.1%).

Figure 11: Life satisfaction among older people, 2016/17 to 2017/18



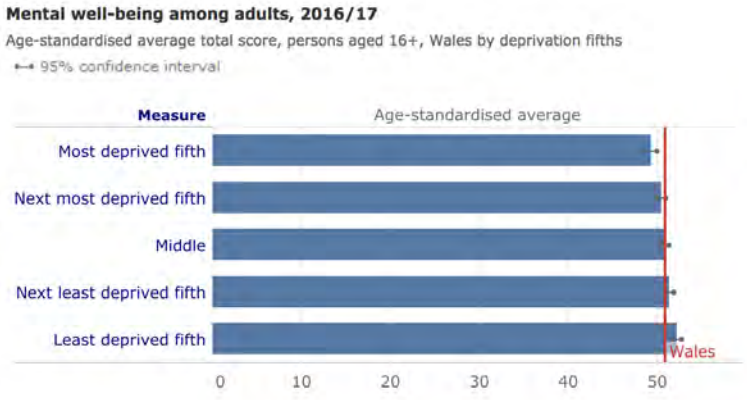
Area	Value	95% Confidence Interval	Count
Powys THB	87.8	(85.5 to 90.1)	N/A
Betsi Cadwaladr UHB	86.2	(84.5 to 87.8)	N/A
Hywel Dda UHB	84.4	(82.1 to 86.7)	N/A
ABM UHB	83.8	(81.4 to 86.1)	N/A
Aneurin Bevan UHB	83.5	(81.3 to 85.7)	N/A
Cwm Taf UHB	81.8	(78.6 to 85.0)	N/A
Cardiff and Vale UHB	80.7	(77.5 to 83.8)	N/A
Wales	84.1	(83.2 to 85.0)	N/A

Produced by Public Health Wales Observatory, using NSW (WG).
Please consult the technical guide for full details on how this indicator is calculated.

Source: PHOF data, Public Health Wales Observatory, 2018a

Figure 12 shows that scores for mental well-being among adults is significantly lower for people living in the most deprived fifth (49.3) and the next most deprived fifth (50.4) than compared to those living in the least deprived fifth (52.2).

Figure 12: Mental well-being among adults, 2016/17



Measure	Value	95% Confidence Interval	Count
Most deprived fifth	49.3	(48.7 to 49.9)	N/A
Next most deprived fifth	50.4	(49.9 to 50.9)	N/A
Middle	50.8	(50.4 to 51.3)	N/A
Next least deprived fifth	51.4	(50.9 to 51.8)	N/A
Least deprived fifth	52.2	(51.7 to 52.7)	N/A
Wales	50.9	(50.7 to 51.1)	N/A

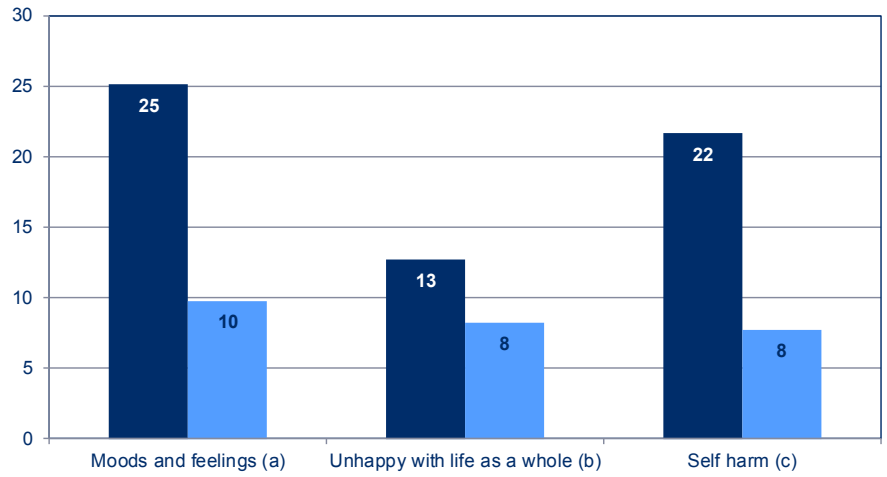
Produced by Public Health Wales Observatory, using NSW and WIMD 2014 (WG).
This is a national indicator. Scores range from 14 to 70, a higher score suggests stronger mental wellbeing. Please consult the technical guide for full details on how this indicator is calculated.

Source: Public Health Wales Observatory, 2018a

The mean mental well-being score for children is taken from the Strengths and Difficulties Questionnaire (SDQ). The mean SDQ score for Wales was 10.9 in 2013/14. This sits within the 'average or normal' total difficulties score. There has been little change since 2009/10. The Wales total difficulties score was not significantly different from the UK average (Welsh Government, 2017b).

However, Figure 13 shows mental well-being varies between boys and girls, with a higher percentage of girls reporting feeling unhappy with life as a whole (13 vs. 8) and a higher percentage have self-harmed (22% vs. 8) (Welsh Government, 2018b).

Figure 13: Mental well-being results for boys and girls aged 14, Wales

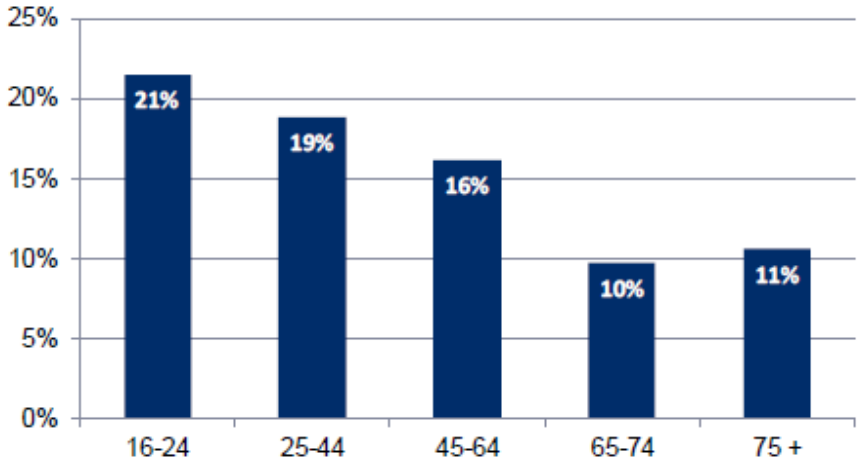


(a) % with high score (12 or more out of 26) on Moods & Feelings scale
(b) % with low score (below mid-point) for happiness with life as a whole
(c) % who have hurt themselves on purpose in any way in the past year
Source: Millennium Cohort Study

Source: Well-being of Wales, 2017-18: Charts and associated data, Welsh Government, 2018b

The National Survey for Wales reported that 16% of people in Wales reported feeling lonely. Highest rates of loneliness were reported in younger age groups. In addition, people in material deprivation were much more likely to be lonely, with 37% of those in material deprivation found to be lonely, compared with 12% of people who are not in material deprivation (Welsh Government, 2018a).

Figure 14: People who are lonely, by age



Source: Chart 10, page 11, National Survey for Wales: Headline results, April 2017 – March 2018, Welsh Government, 2018a

Personal well-being is measured using four measures (ONS, 2018a):

- Satisfaction with life overall;
- Feeling that the things done in life are worthwhile;
- Feeling happiness yesterday;
- Feeling anxiety yesterday.

In the year ending March 2018, a larger proportion of people in Wales reported low levels of feeling worthwhile (4.3%) and happiness (9.4%) ratings compared with the UK average (3.6% and 8.3% respectively). However, it is does not state if these differences are statistically significant (ONS, 2018a).

Figure 15 shows that across the UK there have been improvements in levels of anxiety between 2012 and 2018. In 2018, just over 40% of adults rated their level of anxiety as very low (ONS, 2018a).

Figure 15: Personal well-being ratings, year ending March 2012 to year ending March 2018

Source: Figure 1, Personal well-being in the UK: April 2017 to March 2018, ONS, 2018a

Mental health problems are known to be related to deprivation, poverty, inequality and other social and economic determinants of health. Economic crises therefore have the potential to negatively impact the mental well-being of the population as protective factors are weakened and risk factors are increased (WHO, 2011).

Table 8: Determinants of population mental health

Protective factors	Risk factors
Social capital and welfare protection	Poverty, poor education, deprivation, high debt
Healthy prenatal and childhood environment	Poor prenatal nutrition, abuse, harsh upbringing, poor relationship to parents, intergenerational transmission of mental health problems
Healthy workplace and living	Unemployment, job insecurity, job stress
Healthy lifestyles	Alcohol and/or drug use

Source: Table 1, page 4, Impact of Economic crisis on mental health, World Health Organisation, 2011

Evidence suggests that legislation for protecting social welfare can increase the resilience of communities to economic shocks and mitigate the mental health effects of unemployment

and the stress related consequences of economic downturns. Economic downturns result in smaller changes in the mental health of the population in countries where strong social safety nets are available (WHO, 2011).

Current research suggests that the mental health effects of economic crises depend on action in five key areas (WHO, 2011):

- Active labour market programmes;
- Family support programmes;
- Control of alcohol prices and availability;
- Primary care for the people at high risk of mental health problems;
- Debt relief programmes.

In addition, if an economic downturn leads to mass unemployment events then early mobilisation of a multi-sector response, including health and community perspectives is required, with an emphasis on supporting the redundant workers with re-employment, financial, health and well-being support as well as support for the family members and the wider community (Public Health Wales, 2017).

3.3 Medicines management

Over 2,600 medicinal products have some stage of manufacture based in the UK. This equates, to 45 million patient packs of medicines supplied from the UK to other EU27 and EEA countries every month. Over 37 million patient packs of medicines come the other way, supplied from the EU27 and EEA to the UK (Welsh NHS Confederation, 2018).

3.4 Public Health: Health protection / health security

During the UK's 45 years of EU membership, arrangements for international health protection have been shaped across Europe in order to respond to the increasingly complex requirements of a robust health security network (FPH, 2018).

The main health protection functions across the EEA include (FPH, 2018):

- Risk assessment of infectious diseases;
- A hub for data analysis and interpretation to enable disease surveillance across borders;
- Coordination between national public health agencies during outbreaks and emergencies (FPH, 2018).

In June 2018, the UK Secretary of State for Health and Social Care, highlighted that "improving health security will form an important part of our negotiating position." As such the UK government aims for an "agreement that allows us to maintain the important and mutually beneficial collaboration with Europe on health issues" and which "guarantees equivalent or higher standards of health protection." (FPH, 2018).

The UK, as a current member of the EU, benefits from and contributes to, a number of specific European Communicable Disease Control (ECDC) systems that fall under these domains including (FPH, 2018):

I. The Early Warning Response System (EWRS): This surveillance system notifies member states of information regarding emerging communicable disease threats and control measures, progression of current epidemics, unusual disease phenomena or new threats from disease of unknown origin and proposed mechanisms to prevent and control communicable disease threats, particularly in emergency situations.

II. The European Surveillance System (TESSy): This is a unified data collection system comprising all data on communicable diseases provided by member states.

III. The Epidemic Intelligence Information System (EPIS): Is a web-based communication platform that allows nominated public health experts to exchange technical information to assess whether current and emerging health threats have a potential impact in the EU.

IV. The Threat Tracking Tool (TTT): Is a database of verified events used to detect and assess emerging communicable disease threats.

V. The Field Epidemiology (EPIET) and Public Health Microbiology (EUPHEM) fellowships: These 2-year fellowship programmes train practitioners from across Europe in either intervention epidemiology or public health microbiology.

3.5 Research and development

Between 2008 and 2013, the UK received €8.8 billion of EU science funding (Welsh NHS Confederation, 2018).

Currently, there are 1,500 clinical trials being conducted in multiple EU member states that have a UK-based sponsor, and over half of these trials are scheduled to continue beyond March 2019. The UK has the highest number of phase I clinical trials (those testing a new drug or treatment for the first time) in the EU and the second highest number of phase II and phase III clinical trials. It also has the highest number of trials across the EU for both rare and childhood diseases, many of which are scheduled to continue beyond March 2019 (Welsh NHS Confederation, 2018).

In addition, there is also a concern in the life sciences sector, which includes health and pharmaceuticals research, where around 5,000 EU nationals are employed across the UK.

4 Economy and Employment

Key points

Many economic analysts report that leaving the EU will have a negative impact on UK Gross Domestic Product (GDP) per capita
Following the UK leaving the EU the greatest price rises would potentially be in transport (an increase of between 4% and 7.5%), alcohol (4% to 7%), food (3% to 5%) and clothing (2% to 4%)
Living standards of every income group could be lower, due to higher prices. However, those on middle incomes would suffer slightly more in proportionate terms than the richest and poorest households and those employed in higher paid sectors are more likely to be negatively affected
The industry sectors that employ the highest number and proportion of the Welsh workforce are health and social care (16.5%), wholesale and retail (13.7%) and manufacturing (9.4%)
Sectors particularly dependent on skills from the EEA are the food and drink manufacturing industry, veterinary sector and NHS workforce
4% of students in Welsh Universities (2014/15) are from the EEA

People who are living on low income

The effects on prices, wages and employment are expected to be felt across the whole income distribution
Uncertainty on future UK-EU trading relationships may increase the risk of price rises, falls in real wages, lower employment and lower tax revenues, all of which can have a significant effect on the poorest within our communities
Working-age poverty in the UK has become increasingly dominated by poverty among working families due to low pay and insecure work
Economic recession can potentially increase the social exclusion of vulnerable groups and widen health inequalities
The least well-educated are often at greatest risk of ill health after job loss
Cwm Taf UHB has a significantly lower percentage of people who are able to afford everyday goods and activities, than compared to the rest of Wales
Lower income households spend more on essentials such as food and drink than higher income households
Gwynedd, Blaenau Gwent, Rhondda Cynon Taf and Merthyr Tydfil LA areas have the highest estimated proportion of households living in fuel poverty in Wales
Lower income households, spend a greater proportion of their income on food and are therefore at greater of food poverty if food prices rise
It has been suggested that there are three key challenges to food supply following the UK leaving the EU, namely the labour market, the regulatory framework and the future of tariffs and trade
30% of food purchased by households in the UK is imported, of which 70% is from the EU
Changes in the costs of imports, will affect the cost of getting imported food products onto supermarket shelves and therefore impact on prices

People living in areas with poor economic and health indicators
The effects of extreme poverty on children include deficits in cognitive, emotional and physical development, and the consequences on health and well-being are lifelong
ABMU, Cwm Taf and Aneurin Bevan HB have a significantly lower healthy life expectancy at birth than compared to the rest of Wales
People who reside in the most deprived areas of Wales experience significantly poorer mental well-being than those in the least deprived areas

People who are at risk of unemployment
The geographical implications (of the workforce) of leaving the EU differ depending on the measure used
It is assumed that tariffs on exports and imports, the labour market, the economy and loss of access to knowledge and innovation networks will influence the UK workforce
In 2014, more than 600 firms across Wales exported goods to the EU worth over £5 billion, equivalent to 43% of the total exports of goods
Industries that export most to the EU relative to their total output are mining, clothing and textiles, chemicals, pharmaceuticals and refining and machinery and equipment
Approximately 200,000 people in Wales (14% of the workforce) are in jobs (direct and indirect) that depend on exports to the EU
In Wales, 21% of men classed as low educated work in industries that are very highly exposed to changes in trade deals with the EU
There are opportunities for industries from trade barriers as consumers may substitute away from imports towards products made by UK industries

People who are unemployed
For the period May 2018 to July 2018, 22.2% of the Welsh population (aged 16 to 64) were economically inactive
The percentage of children living in workless households has fallen since a high of 20% in 2009 to 12.6% in 2017. The UK percentage is 10.9%

Small business owners / employees
Across Wales, the vast majority of enterprises (89.1%) and local units (83.1%) are micro industries who employ 0 to 9 staff

People living in areas where large employers may move away from
Mass unemployment events have the potential for detrimental consequences for the employees made redundant; a marked impact on the local or regional economy and labour market, and create a social shock to the local or regional community
People who experience unemployment, impoverishment and family disruptions are at greater risk of physical and mental health problems, such as death, cardiovascular disease, depression, alcohol use disorders and suicide
Despite the rates of poverty and deprivation increasing in Ireland following the economic crisis, the impacts on population health are not yet evident in most health statistics
The three areas in Wales with the highest proportion of the workforce employed by a large employer (250+ employees) were Cardiff (52.7%), Newport (52.6%) and Flintshire (49.7%)
Flintshire (25%) had the largest percentage of employment in non-UK owned enterprises, followed by Bridgend (22.2%) and Neath Port Talbot (21.6%)

Communities that have been significant beneficiaries of EU funding
Wales has some of the poorest regions in the EU and so receives a disproportionately larger amount of EU funding compared with other parts of the UK
Wales is a net beneficiary of EU membership, currently receiving about £680 million in EU funding each year

Many economic analysts report that leaving the EU will have a negative impact on UK GDP per capita and that trade costs may increase due to (Breinlich et al, 2018):

- Higher tariff barriers between the UK and the EU;
- Higher non-tariff barriers to trade (for example, arising from border controls, etc.);
- Non-participation in future steps the EU takes towards the reduction of non-tariff barriers.

The Centre for Economic Performance modelled the potential changes to household expenditure by different income groups and household types based on estimates of changes in the prices of goods and services after leaving the EU. They report that the greatest price rises would be in transport (an increase of between 4% and 7.5%), alcohol (4% to 7%), food (3% to 5%) and clothing (2% to 4%). This is because these product groups rely on imports. In addition, they reported that living standards of every income group would be lower after leaving the EU due to these higher prices. However, those on middle incomes would suffer slightly more in proportionate terms than the richest and poorest households (Breinlich et al, 2018). However, the Institute for Public Policy Research state that when the data on Gross Value Added (GVA) impacts and price impacts are reviewed, there is a relatively weak relationship between the expected impact of leaving the EU by sector and a sector's average wage, with higher paid sectors somewhat more likely to be negatively affected. They also found that price impacts have a broadly neutral effect on income inequality and that it is unlikely to worsen income inequality, as all income groups - including the poorest - will face negative impacts. At the same time, there is little evidence that post-Brexit trade deals will benefit the worst-off overall; any reductions in import tariffs would be unlikely to compensate for the increase in prices due to Brexit-induced trade barriers between the UK and the EU (Morris, 2018).

The industry sectors that employ the highest number and proportion of the Welsh workforce are health and social care (16.5%), wholesale and retail (13.7%) and manufacturing (9.4%) (ONS, 2018b).

Table 9: Workforce jobs by industry section in Wales (SIC 2007) - seasonally adjusted (June 2018)

	Wales (Level)	Wales (%)
Total	1,537,000	-
A : Agriculture, Forestry And Fishing	60,000	3.9
B : Mining And Quarrying	3,000	0.2
C : Manufacturing	144,000	9.4
D : Electricity, Gas, Steam And Air Conditioning	7,000	0.5
E : Water Supply; Sewerage, Waste Management	12,000	0.8
F : Construction	122,000	7.9
G : Wholesale And Retail Trade; Repair Of Vehicles	211,000	13.7
H : Transportation And Storage	47,000	3.1
I : Accommodation And Food Service Activities	123,000	8.0
J : Information And Communication	36,000	2.3
K : Financial And Insurance Activities	29,000	1.9
L : Real Estate Activities	16,000	1.0
M : Professional, Scientific And Technical Activities	75,000	4.9
N : Administrative And Support Service Activities	90,000	5.9
O : Public Administration And Defence	89,000	5.8
P : Education	136,000	8.8
Q : Human Health And Social Work Activities	254,000	16.5
R : Arts, Entertainment And Recreation	38,000	2.5
S : Other Service Activities	43,000	2.8
T : Activities Of Households As Employers;...	2,000	0.1

Source: ONS workforce jobs by industry (SIC 2007) - seasonally adjusted
Notes: % is a proportion of is proportion of total workforce jobs

Note: Seasonally adjusted indicates that the figures in this dataset are adjusted to compensate for seasonal variations in employment.

Source: Page 7, Labour Market Profile – Wales, NOMIS, ONS 2018b

Table 10 outlines the percentage of workers in each industry that are from EEA countries.

Table 10: Proportion of workforce who are from the EEA, by industry sector, Wales

Industry sector	Percentage of workforce who from the EEA
Tourism	5%
Manufacturing	7%
Construction	2%
Food and Drink manufacturing	27%
Veterinary sector	44% (newly registered veterinary surgeons)
Meat inspection occupational vets	90% (UK●)
Doctors	7% (UK●)
Dentists	15%
Local authority and independent sector carer roles*	3%
Higher Education	7% 22% (Veterinary schools)

Source: Brexit and Fair Movement of People, Welsh Government 2017a and An analysis of the Dental workforce in Wales, Welsh Government, 2012

●UK level data

*Based on English data

Some sectors are particularly dependent on the skills of migrants from the EU for example the food and drink manufacturing industry, veterinary sector and NHS workforce (Welsh Government, 2017a).

Since 2011 Wales has seen a 63% increase in the number of people born in the EU employed in food and drink manufacturing sector. A similar growth of 57% has been seen between 2011-2015, in the number of EEA citizens employed in the total manufacturing sector (Welsh Government, 2017a).

In addition to the EU migrants who work in Wales, there were 5,424 EU students at Welsh universities in 2014/15, equivalent to 4% of the student population (Welsh NHS Confederation, 2018). It is estimated that EU students currently provide at least £24m to Welsh universities, and the overall impact to Wales attributable to income from EU students was £47m. An EU student studying in Wales on average generates £19.7k for Wales, £9.8k of Welsh GVA and 0.19 Full Time Equivalent (FTE) jobs. Additional impact is also generated in the rest of the UK from students studying in Wales. These are likely to be a conservative estimates according to the Higher Education Funding Council for Wales (HEFCW) (National Assembly for Wales, 2017a).

4.1 Vulnerable group: People who are living on low income

People who reside in deprived areas or are living on low incomes already face inequalities in health outcomes and may be particularly disadvantaged by the UK leaving the EU. The impact on poverty depends on how people on the lowest incomes are affected relative to those who are better off. Overall, the effects on prices, wages and employment are expected to be felt across the whole income distribution, rather than impacting disproportionately on those at the bottom (JRF, 2018).

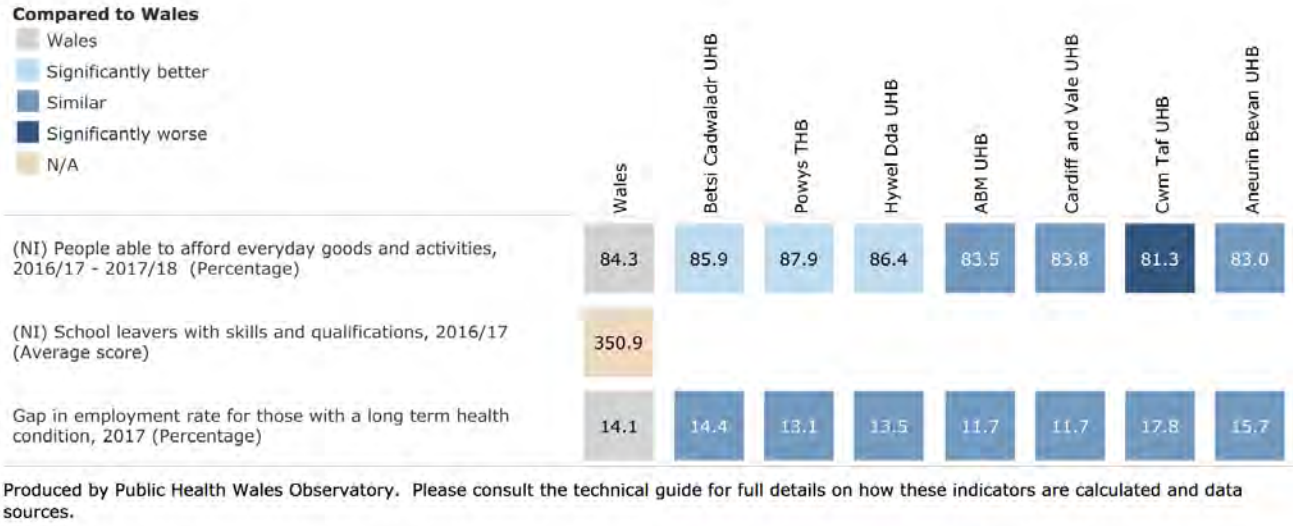
However, there is an increased risk that people living in poorer areas will be adversely affected due to their exposure to changes in trade agreements and any loss of regional funding from the EU. In addition the uncertainty of a future UK-EU trading relationship may increase the risk of price rises, falls in real wages, lower employment and lower tax revenues, all of which can have a significant effect on the poorest within our communities (JRF, 2018). Over the last 20 years, working-age poverty in the UK has become increasingly dominated by poverty among working families due to low pay and insecure work (JRF, 2018).

The evidence suggests that an economic recession can potentially increase the social exclusion of vulnerable groups, low-income people and people living near the poverty line. Such vulnerable groups include children, young people, single-parent families, unemployed people, ethnic minorities, migrants and older people (WHO, 2009). In addition, social inequality in health can widen (Kondo et al, 2008 and Morrell et al, 1994) with the least well-educated at greatest risk of ill health after job loss (Edwards, 2008).

Across Wales, one quarter of children in Wales live in poverty. At small area level (Lower Super Output Area), this varies considerably from 4% to 64% of children living in poverty (Public Health Wales Observatory, 2018c).

Figure 16 shows that Cwm Taf University Health Board (UHB) area has a significantly lower percentage of people who are able to afford everyday goods and activities, than compared to the rest of Wales (81.3% vs. 84.3%).

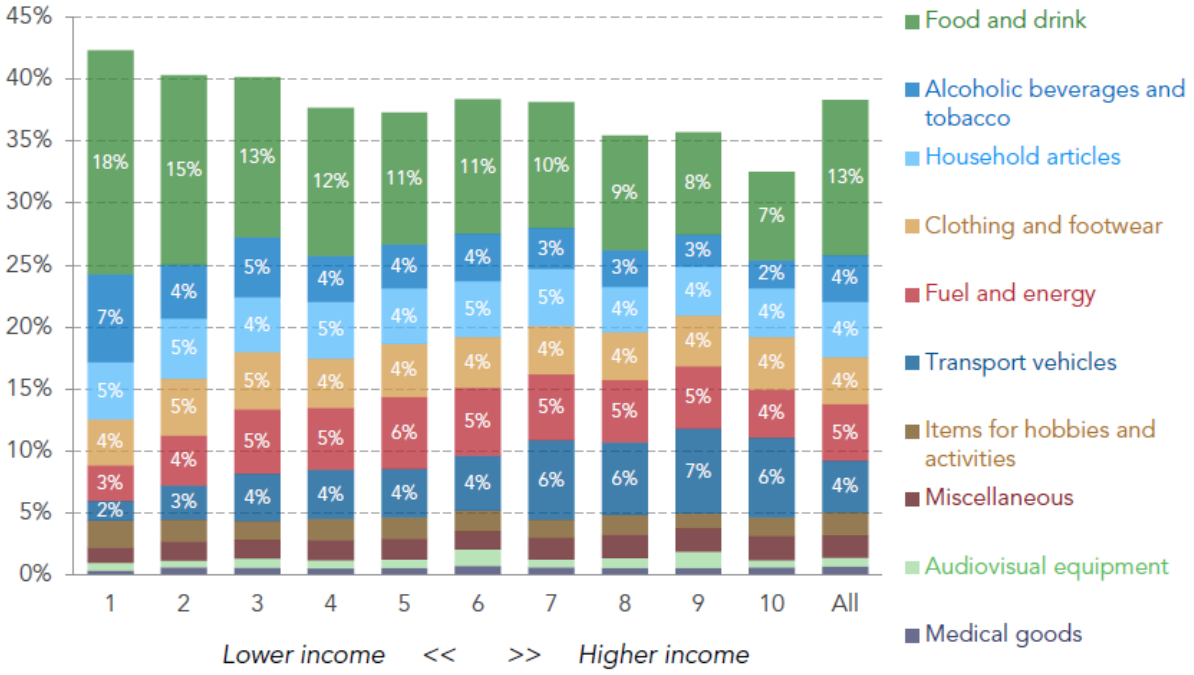
Figure 16: Comparison of economic and educational indicators



Source: PHOF data, Public Health Wales Observatory, 2018a

Table 11 shows that lower income households spend more on essentials such as food and drink (which are affected by tariff changes) than higher income households.

Table 11: Spending on products affected by tariff changes as a share of total spending

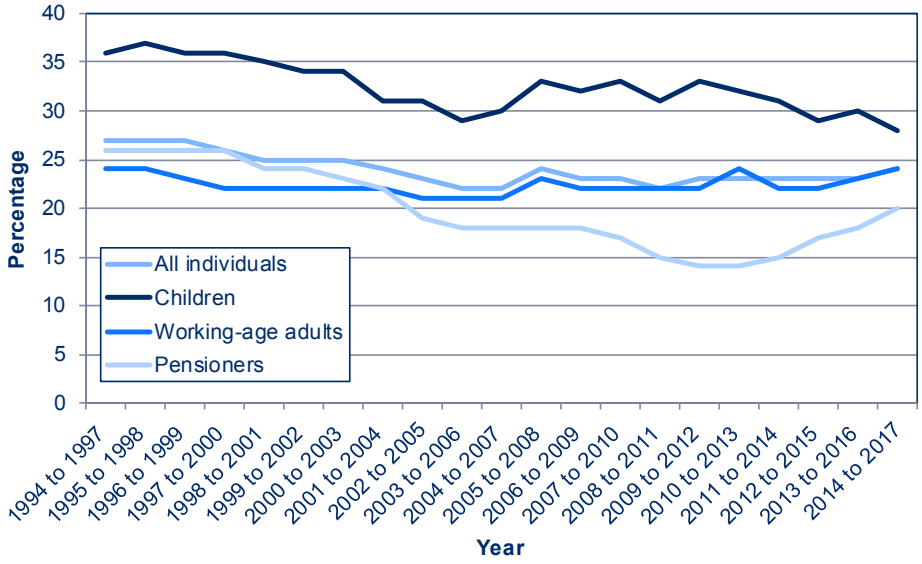


Source: Figure 4, page 13, Changing Lanes: The impact of different post-Brexit trading policies on the cost of living, Clarke, Serwicka and Winters, 2017

Notes: 'Household articles' refers to spending on items such as carpets, furniture, kitchenware, etc.

Figure 17, shows that levels of poverty vary between different age groups.

Figure 17: Percentage of all people, children, pensioners and working-age adults living in relative income poverty in Wales, 1994 to 2017. After Housing Costs, three year averages (financial years) 1994-95 to 1996-97, to 2014-15 to 2016-17



Source1: Poverty: StatsWales

Source 2: Households Below Average Income data tables for Wales (Excel): Welsh Government

Source: Well-being of Wales, 2017-18: Charts and associated data Welsh Government, 2018b

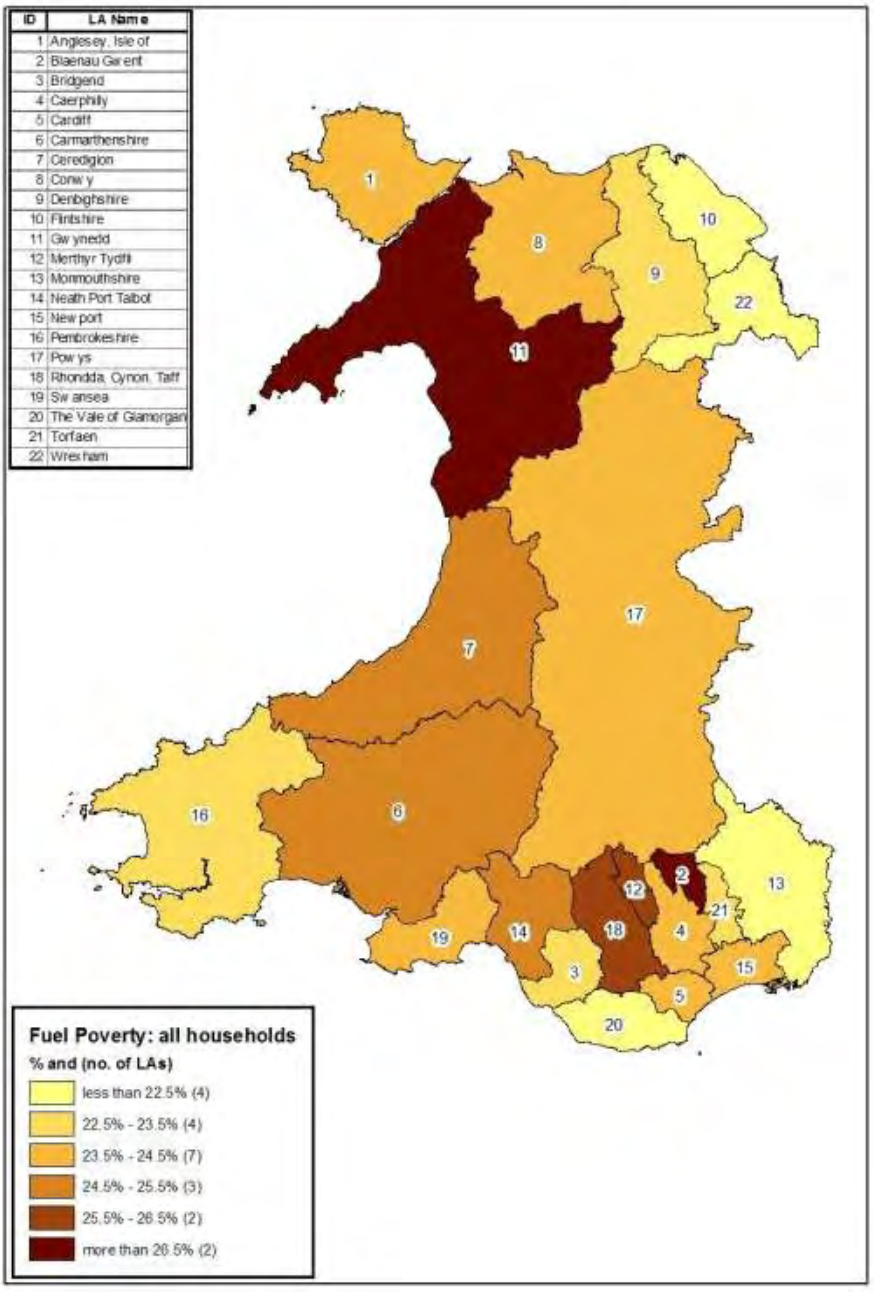
4.2 Fuel poverty

The Welsh Government defines 'fuel poverty' as households who spend 10% or more of their income on energy costs. A household is defined as being in severe fuel poverty if it has to spend 20% or more of their income on energy costs. People who struggle to heat their homes usually have low incomes and are often the most vulnerable people in our communities. The latest estimate is that there are 291,000 households living in fuel poverty, equivalent to 23% of households in Wales (Welsh Government, 2018c).

The 2008 Living in Wales dataset was used to model fuel poverty levels in Wales for 2012 to 2016 (Welsh Government, 2016a). The predicted LA level results have been displayed in Figure 18 with each LA coloured to reflect the average proportion of fuel poverty in that area. Lighter colours indicate lower overall fuel poverty proportions and darker colours show higher proportions. The values in brackets give the number of LAs in each category. However, it should be noted that there is a wide range of estimated fuel poverty levels within LAs when data is reviewed at a Lower Super Output Area (Welsh Government, 2018c).

In four LA areas in Wales, over a quarter of the population are estimated to be living in fuel poverty: Gwynedd and Blaenau Gwent (more than 26.5%), Rhondda Cynon Taf and Merthyr Tydfil (between 25.5% and 26.5%) (Welsh Government, 2018c).

Figure 18: Estimated Fuel Poverty (by Local Authority)



Source: The Production of Estimated Levels of Fuel Poverty in Wales: 2012-2016. Welsh Government 2016a

4.3 Food Poverty

The average share of total spending that households allocate to food is approximately 16%. However, the lowest-income tenth of households allocate 23% of their spending to food, compared with 10% for the highest-income tenth. Poor households are therefore more affected by rises in the general level of food prices (Levell, O'Connell and Smith, 2018).

Food poverty can be defined as the inability to afford, or have access to foods which make up a socially and culturally acceptable healthy diet and is underpinned by a number of different factors including: affordability; availability; cooking skills and education (Public Health Network Cymru, 2018).

An estimated 3.7 million children in the UK are part of families who earn less than £15,860 and would have to spend 42% of their after-housing income on food to meet the costs of the Government's nutrition guidelines, making a healthy diet most likely unaffordable. Therefore, people on low incomes have the lowest intakes of fruit and vegetables and are far more likely to suffer from diet-related diseases such as cancer, diabetes, obesity and coronary heart disease (Scott, Sutherland and Taylor, 2018).

The first Welsh food bank opened in Newport, Gwent, in 1998 followed by the opening of the Prestatyn food bank in 2005. By the end of 2010 the number of food banks had grown to a total of 16. Between June 2010 and December 2015 the number of food banks grew by 141, bringing the total number to 157 throughout Wales alone (WISERD, 2017).

It has been suggested that there are three key challenges to food supply following the UK leaving the EU, namely the labour market, the regulatory framework and the future of tariffs and trade (House of Lords, 2017).

Around 30% of food purchased by households in the UK is imported. The major source of total food imports is the EU (which accounts for 70% of gross food imports). This means changes in the costs of imports for example through changes to tariffs or movements in exchange rates, are likely to affect the cost of getting imported food products onto supermarket shelves and have a big impact on the price consumers pay for food (Levell, O'Connell and Smith, 2018).

4.4 Vulnerable group: People living in areas with poor economic and health indicators

The effects of extreme poverty on children include deficits in cognitive, emotional and physical development, and the consequences on health and well-being are lifelong (Marmot and Bell, 2009).

Table 12 shows that life expectancy at birth and healthy life expectancy at birth varies by HB area, with ABMU, Cwm Taf and Aneurin Bevan* HB having significantly worse rates than compared to the rest of Wales (*except life expectancy at birth for men).

Table 13 shows that the gap in life expectancy and healthy life expectancy between the most and the least deprived fifth of the population is similar for health boards across Wales, with the exception of Powys and Hywel Dda, which have a significantly lower gap in healthy life expectancy compared with Wales.

Table 12: Life expectancy and healthy life expectancy at birth, 2010 to 2014

Compared to Wales
Wales
Significantly better
Similar
Significantly worse

	Wales	Betsi Cadwaladr UHB	Powys THB	Hywel Dda UHB	ABM UHB	Cardiff and Vale UHB	Cwm Taf UHB	Aneurin Bevan UHB
Healthy life expectancy at birth (females), 2010 to 2014 (Years)	66.7	69.2	68.7	67.6	65.0	67.6	62.6	65.3
Healthy life expectancy at birth (males), 2010 to 2014 (Years)	65.3	67.6	68.2	66.2	63.9	65.7	61.2	63.8
Life expectancy at birth (females), 2013 to 2015 (Years)	82.3	82.5	83.5	82.8	81.9	82.9	80.6	82.0
Life expectancy at birth (males), 2013 to 2015 (Years)	78.4	78.8	80.3	79.1	77.7	78.6	76.8	78.3

Produced by Public Health Wales Observatory. Please consult the technical guide for full details on how these indicators are calculated and data sources.

Source: PHOF data, Public Health Wales Observatory, 2018a

Table 13: Gap in life expectancy and healthy life expectancy, by deprivation, 2010 to 2014

Compared to Wales
Wales
Significantly better
Similar

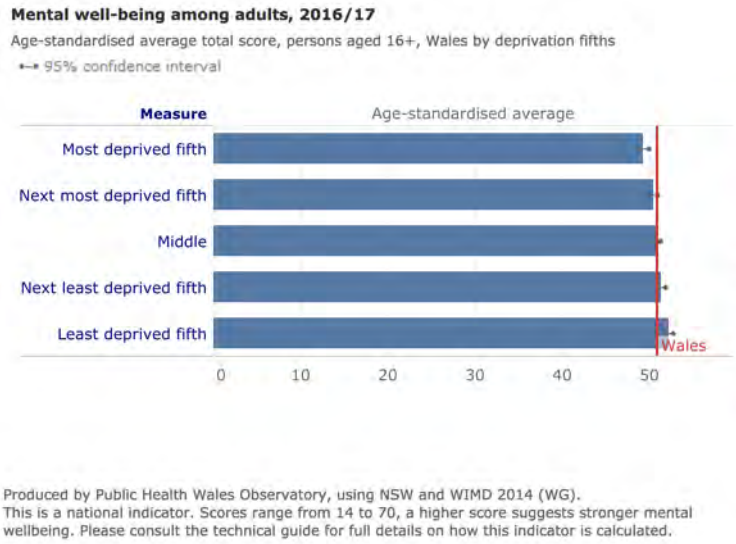
	Wales	Betsi Cadwaladr UHB	Powys THB	Hywel Dda UHB	ABM UHB	Cardiff and Vale UHB	Cwm Taf UHB	Aneurin Bevan UHB
(NI) The gap in healthy life expectancy at birth between the most and least deprived fifth (females), 2010 to 2014 (Years)	18.2	13.8	14.4	12.2	18.3	21.9	15.0	18.6
(NI) The gap in healthy life expectancy at birth between the most and least deprived fifth (males), 2010 to 2014 (Years)	18.7	13.3	10.4	12.2	20.8	23.2	14.8	18.3
The gap in life expectancy at birth between the most and least deprived (females), 2013 to 2015 (Years)	6.9	6.2	5.2	4.1	6.9	8.3	3.9	7.3
The gap in life expectancy at birth between the most and least deprived (males), 2013 to 2015 (Years)	9.0	8.8	5.2	4.9	9.6	10.6	7.5	8.5

Produced by Public Health Wales Observatory. Please consult the technical guide for full details on how these indicators are calculated and data sources.

Source: PHOF data, Public Health Wales Observatory, 2018a

As well as differences in life expectancy and health life expectancy between different areas, people who reside in the most deprived areas of Wales experience significantly poorer mental well-being than the least deprived areas.

Figure 19: Mental well-being among adults, by deprivation 2016/17



Measure	Value	95% Confidence Interval	Count
Most deprived fifth	49.3	(48.7 to 49.9)	N/A
Next most deprived fifth	50.4	(49.9 to 50.9)	N/A
Middle	50.8	(50.4 to 51.3)	N/A
Next least deprived fifth	51.4	(50.9 to 51.8)	N/A
Least deprived fifth	52.2	(51.7 to 52.7)	N/A
Wales	50.9	(50.7 to 51.1)	N/A

Produced by Public Health Wales Observatory, using NSW and WIMD 2014 (WG).
This is a national indicator. Scores range from 14 to 70, a higher score suggests stronger mental wellbeing. Please consult the technical guide for full details on how this indicator is calculated.

Source: PHOF data, Public Health Wales Observatory, 2018a

4.5 Vulnerable group: People who are at risk of unemployment

The geographical implications of leaving the EU differ depending on the economic measure used. For example, analysis of potential impacts by the London School of Economics (LSE), suggests that GVA impacts in London and the South East will be greatest because they have the highest concentration of services industries; on the other hand, analysis of EU exposure by City-REDI indicates that the Midlands and the north of England are most at risk because they have stronger trade links with the EU. The Institute for Public Policy Research suggest that when analysed using new Her Majesty's Revenue and Customs (HMRC) goods trade data, areas outside of London will be impacted, including Flintshire and Wrexham, Sunderland, Telford and Wrekin, south and west Derbyshire, and Luton, as these areas are most dependent on EU goods exports (Morris, 2018).

The Welsh Economy Research Unit (2017), suggest that different industries could potentially be affected to different degrees by the UK leaving the EU (Figure 20). The main factors identified are (Welsh Economy Research Unit, 2017):

- Effects of tariffs on exports and imports;
- Effects on the labour market;
- Effects on the economy;
- Loss of access to knowledge and innovation networks.

Figure 20: Summary of how sectors were rated on different aspects of risk

	Effects of tariffs on sector export trade directly and indirectly	Effects of tariffs on inputs	Effects of non-tariff barriers on trade and activity	Labour market risks	Effects in regional economy of changes in activity of firms	Effects linked to loss of access to EU knowledge and innovation networks and frameworks	Current age and structure of assets in Wales, susceptibility to corporate investment cycles	Positioning in corporate networks, embeddedness and likely options to displace Welsh activity
Aerospace systems and services	Medium/High	Medium	High	Medium	High	High	Medium/High	Medium
Automotive, transportation and related	High	High	Medium	Low	High	Medium	High	Medium-High
Business services	Low	Low	Low	Low	Low-Medium	Low	Low	Low-Medium
Construction and civil engineering	Low	Low	Low	Low-Medium	Medium/High	Low	Low	Low
Elec. Eng.components, semiconductors	High	High	Medium	Low	Medium/High	Medium	Medium-High	Medium-High
Energy & utilities	Low	Low	Low	Low	High	Low	Low	Low
Financial services	Low	Low	Low	Low	High	Low	Low	Low-Medium
Food and drink	Medium	Medium	Low	Medium	High	Low	Low	Low
Information and communications technology	Medium	Low	Low-Medium	Medium	Low-Medium	High	Low-Medium	Low-Medium
Insurance	Low	Low	Low	Low	Medium/High	Low	Low	Low-Medium
Medical/health products and services	Low-Medium	Medium/High	Medium	Low	Medium	High	Low-Medium	Medium
Other adv. manufacturing and engineering	Medium-High	Medium	Medium	Low	Low-Medium	Low-Medium	High	Medium-High
Paper, wood, wood products	Low	Low	Low	Low	Medium	Low	Medium	Low-Medium
Process and chemicals	High	Low	Medium	Low	Medium/High	Low	Medium-High	Low-Medium
Steel	High	Low	Medium	Low	High	Low	Medium-High	Medium
TV production and creative	Low	Low	Low	Low-Medium	Medium	Low	Low	Low

Source: page 5, EU Transition and Economic Prospects for Large and Medium Sized Firms in Wales, Welsh Economy Research Unit, 2017

Colour	Strength of Effect
Red	High
Brown	Medium/ High
Orange	Medium
Yellow	Low/Medium
Green	Low

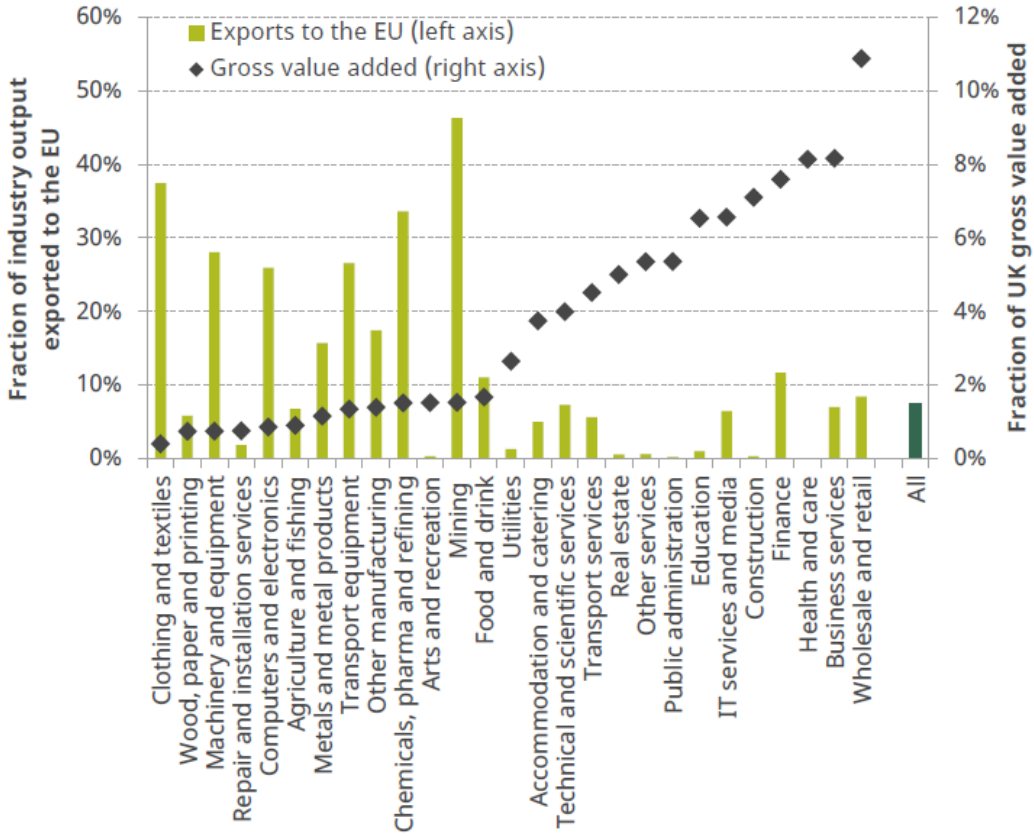
Many industries across Wales have both a direct and indirect contribution to the Welsh economy. For example the automotive, transportation sector and aerospace systems and services are well-paid and are high value-adding sectors, which directly employ very high numbers of people and in addition support high levels of employment across the rest of the Welsh economy (Welsh Economy Research Unit, 2017).

Potential changes to trade agreements may impact on different industries, workers and regions as it is envisaged that importing and exporting costs will rise and, in turn, affect the UK workforce (Levell and Keiller, 2018).

At present, the EU accounts for 44% of UK exports (equal to 13% of GDP) and more than half of UK imports (17% of GDP). Those industries that export most to the EU relative to their total output are (Levell and Keiller, 2018):

- Mining (46%);
- Clothing and textiles (37%);
- Chemicals, pharmaceuticals and refining (34%);
- Machinery and equipment (28%).

Figure 21: Exports to the EU and gross value added by industry, 2014



Note: Industries are ranked according to their contributions to the UK's gross value added.

Source: Authors' calculations using ONS analytical input–output tables 2014.

Source: Figure 10.2, page 5, The exposure of different workers to potential trade barriers between the UK and the EU, Levell and Keiller, 2018

In 2014, more than 600 firms across Wales exported goods to the EU worth over £5 billion, equivalent to 43% of the total exports of goods. In addition, 500 firms from other EU countries have operations in Wales, providing more than 57,000 jobs (National Assembly for Wales, 2017a).

Research by the Centre for Economics and Business Research (CEBR - March 2014) found that over 4 million direct and indirect jobs in the UK depend on exports to the EU. Approximately 200,000 of these jobs are in Wales, around 14% of the workforce (National Assembly for Wales, 2017a).

Table 14 shows the proportions of male and female employees from different education groups who work in industries classed as having low, medium, high and very high exposure to/ from changes to trade agreements. For example, 14% of workers in the UK are employed in industries, which are classified as very highly exposed. Of men who are classed as low educated, 19% work in very high exposure industries (Levell and Keiller, 2018).

Table 14: Exposure of workers to new trade barriers under the World Trade Organization (WTO) rules scenario

	Number employed ('000s)	Mean change in employer value added	Fraction of group employed in ...			
			Low-exposure industries	Mid-exposure industries	High-exposure industries	Very-high-exposure industries
All	26,500	−2.5%	45%	22%	19%	14%
Women: All	13,100	−2.0%	47%	25%	19%	10%
Low-educated	4,400	−2.5%	42%	17%	28%	12%
Mid-educated	3,800	−1.9%	52%	19%	20%	9%
High-educated	4,900	−1.7%	47%	35%	10%	8%
Men: All	13,400	−3.0%	43%	20%	19%	17%
Low-educated	5,100	−3.5%	45%	11%	24%	19%
Mid-educated	3,700	−3.1%	45%	16%	21%	18%
High-educated	4,600	−2.4%	40%	32%	13%	15%

Source: Table 10.1, page 24, The exposure of different workers to potential trade barriers between the UK and the EU, Levell and Keiller, 2018

Note: Employees are assigned an estimated change in value added based on their main industry of employment. Workers are classed as 'low-educated' if their highest educational qualification is at GCSE level or lower, as 'mid-educated' if their highest educational qualification is at A-level or is another form of further education below degree level, and as 'high-educated' if they hold a degree or degree-equivalent qualification. 'Very-high-', 'high-', 'mid-' and 'low-' exposure industries are those that are estimated to experience a reduction in value added of more than 5%, more than 3% but less than or equal to 5%, more than 1% but less than or equal to 3%, and less than or equal to 1% or an increase in value added, respectively.

Authors' calculations using ONS analytical input–output tables 2014 and the Quarterly Labour Force Survey 2017 quarters 1-4.

Table 15 shows, that across Wales it is estimated that 21% of men classed as low educated work in industries that are very highly exposed to changes in trade (Levell and Keiller, 2018).

Table 15: Fraction employed in very highly exposed industries under the WTO rules scenario by region, education and gender

	Men			**Women**		
	Low education	Mid education	High education	Low education	Mid education	High education
UK	19%	18%	15%	12%	9%	8%
Wales	21%	17%	11%	9%	7%	7%
Scotland	16%	16%	15%	11%	8%	8%
Northern Ireland	25%	19%	12%	13%	6%	7%

Source: Adapted from table 10.3, page 31, The exposure of different workers to potential trade barriers between the UK and the EU, Levell and Keiller, 2018

Note: Employees are assigned an estimated change in value added based on their main industry of employment. Workers are classed as 'low-educated' if their highest educational qualification is at GCSE level or lower, as 'mid-educated' if their highest educational qualification is at A level or is another form of further education below degree level, and as 'high-educated' if they hold a degree or degree-equivalent qualification. 'Very highly' exposed industries are those that are estimated to experience a reduction in value added of more than 5%.

Authors' calculations using ONS analytical input–output tables 2014 and the Quarterly Labour Force Survey 2017 quarters 1-4.

However, there are opportunities for industries such as agriculture who may benefit from trade barriers, as consumers will substitute away from imports towards products made by UK industries (Levell and Keiller, 2018).

4.6 Vulnerable group: People who are unemployed

Following the financial difficulties in the Republic of Ireland in 2008, the Irish rate of unemployment increased sharply during the crisis, from under 5% at the end of 2007 to just under 14% at the end of 2012. Rates of unemployment among the younger population were higher still, at over 30% for males aged 15–24 years in 2012, while at the end of that year, long-term unemployment (defined as out of work for more than a year) accounted for nearly 60% of total unemployment (Nolan et al, 2014).

Household incomes and poverty rates also were affected, with household incomes falling by over 12% in nominal terms, the "at risk of poverty" rate increasing from 14.4 to 16.0% and the proportion of the population experiencing two or more types of enforced deprivation (for example without heating in the last year, unable to afford a hot meal, etc.) increasing from 13.8 to 24.5% over the period 2008 to 2012 (Nolan et al, 2014).

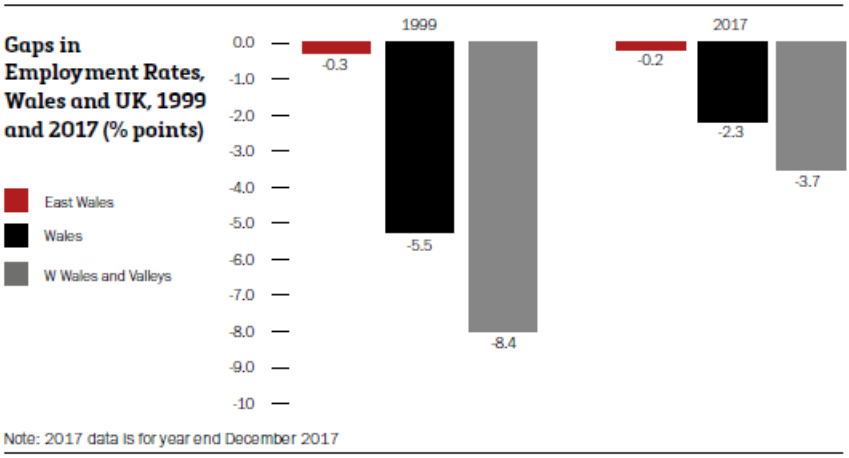
However, despite the rates of poverty and deprivation increasing in Ireland following the economic crisis in 2007, the impact on population health are not yet evident in most health

statistics. There was evidence of an association between the impact of the economic crisis and suicide and evidence of an increase in calls to mental health support services. In addition, there is evidence of a decline in alcohol consumption with the onset of the economic crisis. However, there is little evidence that perceptions of health have declined over the period of the crisis in Ireland (Nolan et al, 2014).

In the West Wales and the Valleys region, where EU funded investment is concentrated, employment levels have grown faster than Wales as a whole. Since devolution, the proportion of people in employment across both Wales and, particularly, West Wales and the Valleys, has increased at a faster rate than across the UK as a whole. Economic inactivity across both Wales and West Wales and the Valleys has fallen at a faster rate than across the UK as a whole over the same period (Welsh Government, 2018d).

Figure 22 shows that the gap in employment rates between Wales and the UK as a whole has narrowed between 1999 and 2017 (Welsh Government, 2018d).

Figure 22: Gaps in Employment Rates, Wales and UK, 1999 and 2017



Source: Page 6, Reforming UK funding and fiscal arrangements after Brexit: Securing Wales' Future, Welsh Government, 2018d

Table 16 and 17 show the level of economic activity and inactivity across Wales for the period May 2018 to July 2018. During this period, 22.2% of the Welsh population (aged 16 to 64) were economically inactive (ONS, 2018b).

The term economically active refers to people aged 16 and over who are either in employment or unemployed. The term economically inactive consists of people aged 16 and over without a job who have not sought work in the last four weeks and/or are not available to start work in the next two weeks. The main economically inactive groups are students, people looking after family and home, long-term sick and disabled, temporarily sick and disabled, retired people and discouraged workers (ONS, 2018c).

Table 16: Economic activity: Headline indicators - seasonally adjusted (May 2018-Jul 2018)

	Wales (Level)	Wales (%)
All People		
Economically Active†	1,540,000	77.8
In Employment†	1,482,000	74.8
Unemployed§	59,000	3.8
Economically Inactive‡	420,000	22.2
Males		
Economically Active†	819,000	82.4
In Employment†	786,000	78.9
Unemployed§	34,000	4.1
Economically Inactive‡	166,000	17.6
Females		
Economically Active†	721,000	73.3
In Employment†	696,000	70.6
Unemployed§	25,000	3.5
Economically Inactive‡	254,000	26.7

Source: Labour Force Survey
† - level are for those aged 16 and over, % are for those aged 16-64
‡ - level and % are for those aged 16-64
§ - level and % are for those aged 16 and over. % is a proportion of economically active

Source: Page 2, Labour Market Profile – Wales, NOMIS, ONS 2018b

Table 17, describes the main categories within the economically inactive population.

Table 17: Economic inactivity, Wales (Apr 2017-Mar 2018)

	Wales (Level)	Wales (%)
All People		
Total	446,100	23.5
Student	112,900	25.3
Looking After Family/Home	86,400	19.4
Temporary Sick	7,200	1.6
Long-Term Sick	129,000	28.9
Discouraged	2,100	0.5
Retired	67,500	15.1
Other	41,000	9.2
Wants A Job	108,300	24.3
Does Not Want A Job	337,800	75.7

Source: ONS annual population survey

Source: Page 2, Labour Market Profile – Wales, NOMIS, ONS 2018b

Notes: numbers are for those aged 16-64.

% is a proportion of those economically inactive, except total, which is a proportion of those aged 16-64

Table 18 shows the continued gap in employment rates between disabled and non-disabled adults in Wales (Welsh Government, 2018b).

Table 18: Disability employment rate gap, year ending March 31st 2014 to year ending March 31st 2018

Percentage / Percentage Points

	Employment Rate		
Year ending March 31st	Disabled	Not Disabled	Gap
2014	41.6	76.8	35.2
2015	42.4	76.5	34.2
2016	43.3	78.7	35.5
2017	44.7	78.7	34.0
2018	45.2	80.3	35.1

Source: StatsWales

Source: Well-being of Wales, 2017-18: Charts and associated data, Welsh Government, 2018b

4.7 Vulnerable group: Small business owners / employees

Across Wales, the vast majority of enterprises (89.1%) and local units (83.1%) are micro industries who employ 0 to 9 staff.

Table 19: UK Business Counts (2018)

UK Business Counts (2018)			
	Wales (Numbers)	Wales (%)	United Kingdom (Numbers)
Enterprises			
Micro (0 To 9)	92,235	89.1	2,384,805
Small (10 To 49)	9,550	9.2	233,040
Medium (50 To 249)	1,430	1.4	41,380
Large (250+)	315	0.3	10,220
Total	103,530	-	2,669,440
Local Units			
Micro (0 To 9)	105,095	83.1	2,568,280
Small (10 To 49)	17,665	14.0	384,895
Medium (50 To 249)	3,210	2.5	79,800
Large (250+)	500	0.4	12,070
Total	126,470	-	3,045,040

Source: Inter Departmental Business Register (ONS)
Note: % is as a proportion of total (enterprises or local units)

Source: Page 7, Labour Market Profile – Wales, NOMIS, ONS 2018b

4.8 Vulnerable group: People living in areas where large employers may move

Mass unemployment events (MUEs) are defined as a high number of actual or potential job losses from a single large employer, following large industry closure or downsizing. There is the potential for detrimental consequences for those employees made redundant; a marked impact on the local or regional economy and labour market; and a social shock to the local or regional community (Public Health Wales, 2017).

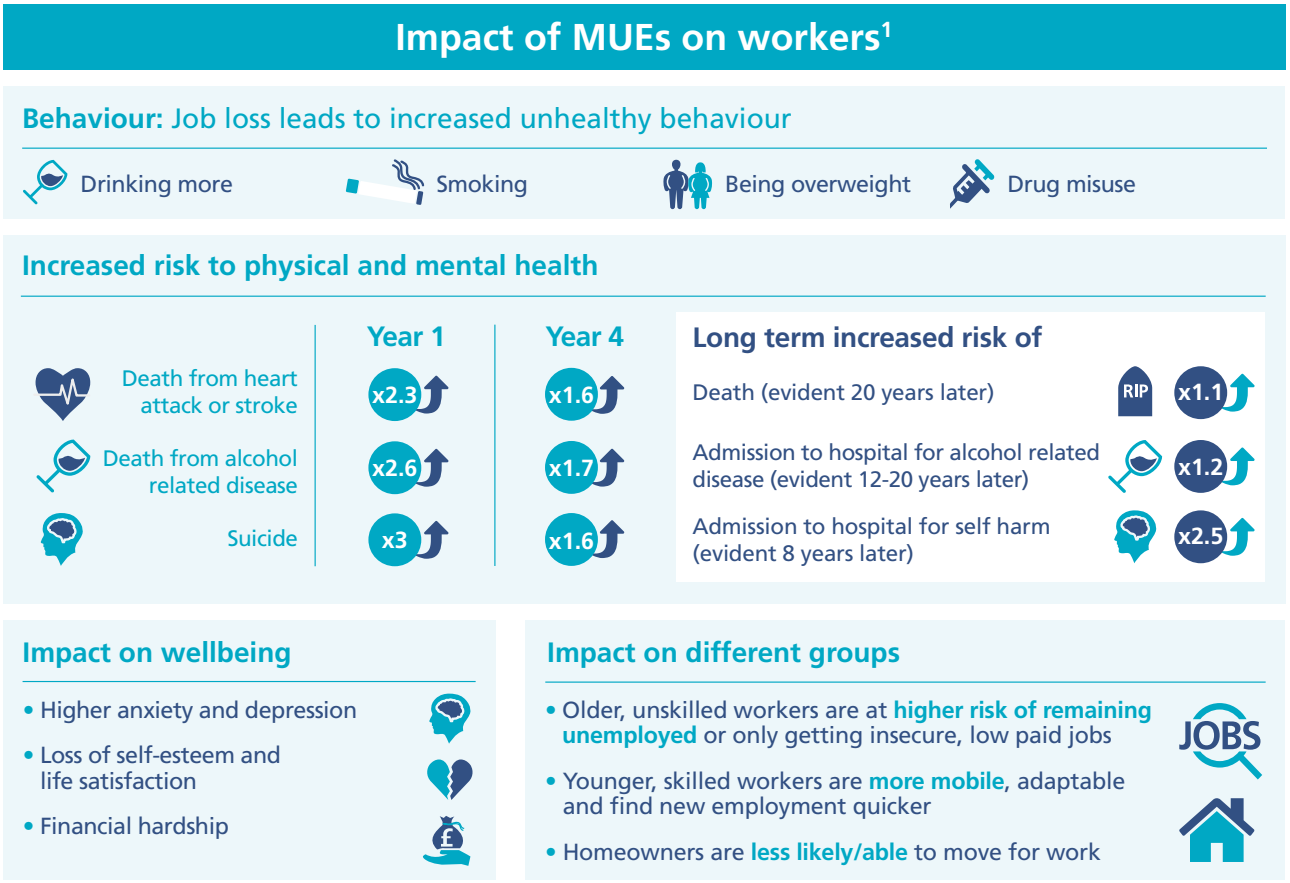
In addition, research suggests that people who experience unemployment, impoverishment and family disruptions have a significantly greater risk of mental health problems, such as depression, alcohol use disorders and suicide, than their unaffected counterparts (WHO, 2011).

The effects of MUEs on health and well-being include (Public Health Wales, 2017):

- Exacerbation of pre-existing poor health behaviours, such as increased alcohol consumption, tobacco smoking, illegal and prescription drug misuse, and being overweight;
- A decline in overall health and well-being, including circulatory and cardiovascular health;
- Creation or exacerbation of health inequalities; detrimental impact on an individual's mental health and well-being, including loss of self-esteem and increased anxiety;
- Increased risk of mortality, immediately following redundancy.

In addition, MUEs can also have a wider impact on the household and family members, including increased conflict and domestic violence; increased unplanned pregnancy and reduced infant growth. In addition, financial hardship has been shown to contribute to spousal and child ill health; affect parenting; and result in poorer child mental health and reduced educational attainment. MUEs can also lead to the loss of community networks, contact with colleagues and friends, and can contribute to feelings of grief and social isolation (Public Health Wales, 2017).

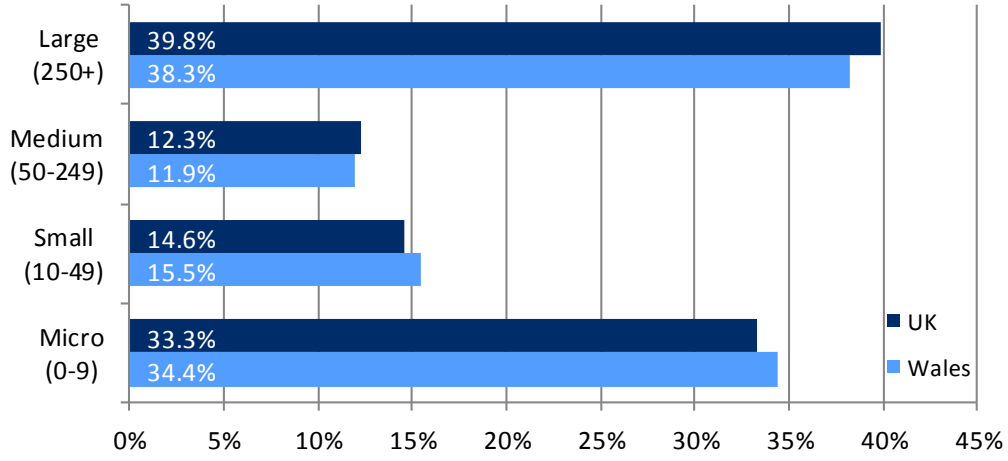
Figure 23: Impacts of mass unemployment events on workers



Source: Page 1, Mass Unemployment Events (MUEs): Prevention and Response from a Public Health Perspective, Public Health Wales, 2017

The three areas in Wales, with the highest proportion of the workforce, employed by a large employer (250+ employees) were Cardiff (52.7%), Newport (52.6%) and Flintshire (49.7%) (ONS, 2017).

Table 20: Employment shares by employee size-band, 2017



Source: Page 1, Size Analysis of Active Businesses in Wales, 2017, ONS, 2017

Table 21: Size-band analysis of employment by Welsh authorities, 2017

	Employment (000s)					Percentage of total			
Area	Micro (0 - 9)	Small (10 - 49)	Medium (50 - 249)	Large (250+)	**Total**	Micro (0 - 9)	Small (10 - 49)	Medium (50 - 249)	Large (250+)
Isle of Anglesey	10.0	4.1	2.0	5.1	**21.2**	47.2	19.1	9.5	24.2
Gwynedd	23.6	8.5	5.6	14.5	**52.2**	45.2	16.2	10.7	27.8
Conwy	17.5	8.1	4.8	10.2	**40.6**	43.1	20.0	11.8	25.1
Denbighshire	14.2	7.2	3.3	9.2	**34.0**	41.9	21.1	9.8	27.1
Flintshire	18.5	9.7	8.2	35.9	**72.2**	25.6	13.4	11.4	49.7
Wrexham	13.8	7.5	7.2	18.2	**46.7**	29.5	16.2	15.4	39.0
Powys	29.8	9.5	6.1	11.2	**56.6**	52.6	16.8	10.8	19.8
Ceredigion	15.9	5.4	2.1	7.9	**31.3**	50.8	17.3	6.6	25.2
Pembrokeshire	22.5	9.1	5.7	9.3	**46.6**	48.2	19.5	12.3	20.0
Carmarthenshire	27.3	10.7	6.1	19.6	**63.7**	42.8	16.9	9.6	30.7
Swansea	27.5	13.9	10.4	39.5	**91.3**	30.2	15.2	11.4	43.2
Neath Port Talbot	12.8	6.4	6.5	17.1	**42.8**	30.0	14.9	15.2	40.0
Bridgend	12.9	7.6	6.2	19.5	**46.2**	27.9	16.5	13.4	42.2
The Vale of Glamorgan	15.7	6.1	4.6	10.5	**36.9**	42.4	16.6	12.4	28.5
Rhondda Cynon Taf	18.6	9.8	8.7	24.9	**62.1**	30.0	15.9	14.1	40.1
Merthyr Tydfil	4.4	2.7	2.2	7.8	**17.0**	25.7	15.7	12.9	45.8
Caerphilly	16.5	7.5	8.3	18.6	**50.9**	32.4	14.7	16.3	36.5
Blaenau Gwent	5.8	2.4	2.2	7.1	**17.4**	33.3	13.5	12.5	40.7
Torfaen	8.4	5.2	4.8	10.7	**29.2**	28.8	17.7	16.6	36.8
Monmouthshire	16.7	5.6	4.1	9.8	**36.2**	46.1	15.4	11.3	27.1
Newport	14.6	7.8	7.1	32.7	**62.2**	23.5	12.5	11.4	52.6
Cardiff	45.8	22.1	20.1	98.1	**186.1**	24.6	11.9	10.8	52.7
North Wales	97.6	45.0	31.2	93.1	**266.9**	36.6	16.9	11.7	34.9
Mid Wales	45.7	14.9	8.2	19.1	**87.9**	52.0	17.0	9.3	21.7
South West Wales	90.1	40.1	28.7	85.4	**244.3**	36.9	16.4	11.8	35.0
South East Wales	159.4	76.8	68.3	239.8	**544.3**	29.3	14.1	12.5	44.1
West Wales and the Valleys	237.9	108.4	79.0	221.0	**646.4**	36.8	16.8	12.2	34.2
East Wales	154.8	68.3	57.4	216.5	**496.9**	31.2	13.7	11.5	43.6
Wales	***392.7***	***176.7***	***136.4***	***437.5***	***1,143.3***	***34.4***	***15.5***	***11.9***	***38.3***

Source: Figure 4.2, page 11, Size Analysis of Active Businesses in Wales, 2017, ONS, 2017

In 2017, around 0.4 per cent of enterprises active in Wales were non-UK owned, accounting for 13.6 per cent of employment in 2017. This relatively high employment share is due to non-UK enterprises having a higher proportion of large enterprises than small and medium enterprises (SMEs) (ONS, 2017).

Flintshire had the largest percentage of employment in non-UK owned enterprises (25.0 per cent) followed by Bridgend (22.2 per cent) and Neath Port Talbot (21.6 per cent). Ceredigion had the lowest percentage of employment in non-UK owned enterprises (3.7 per cent) followed by Pembrokeshire (4.8 per cent) (ONS, 2017).

East Wales had a larger percentage of foreign owned enterprises than West Wales and the Valleys (0.7 per cent compared to 0.4 per cent). This was also reflected in employment with 15.6 per cent in East Wales compared to 12.1 per cent in West Wales and the Valleys (ONS, 2017).

4.9 Vulnerable group: Communities that have been significant beneficiaries of EU funding

The 2014-2020 European Regional Development Fund (ERDF) and European Social Fund (ESF) Structural Fund programmes, together with the European Agricultural Fund for Rural Development (EAFRD) and European Maritime and Fisheries Fund form what are collectively known as the European Strategic Investment (ESI) Funds in Wales. The ERDF and ESF are known as the Structural Funds (Welsh Government, 2015).

EU funding that is currently administered on a Welsh level includes European Structural Funds; Rural Development Programme and Common Agricultural Policy (CAP) Pillar one support; and the Ireland Wales Cross Border Programme (jointly with Ireland) (Welsh NHS Confederation, 2018).

Wales is home to some of the poorest regions in the EU and so receives a disproportionately larger amount of EU funding compared with other parts of the UK. In budgetary terms, Wales is a net beneficiary of EU membership, currently receiving about £680 million in EU funding each year (Welsh Government, 2017c).

- £295 million in EU Structural Funds from the European Social Fund (ESF) and European Regional Development Fund (ERDF);
- £274 million in direct payments to farmers from the CAP;
- £80 million in funding from the Rural Development Programme;
- £31 million in other funding.

The EU Structural Funds in Wales help support people into work and training, youth employment, research and innovation, business (SMEs) competitiveness, renewable energy and energy efficiency, and connectivity and urban development, reduce inequalities in health, tackle poverty and contribute to the promotion of well-being of the Welsh people (Welsh Government, 2018e). Table 22 highlights the key indicator achievements during this time.

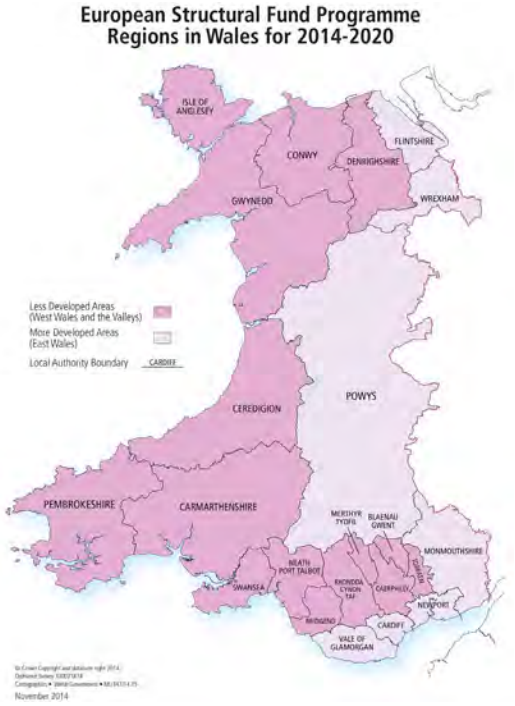
Table 22: 2014-20 Programmes: Key indicator achievement by programme area

Unitary Authority	Enterprises assisted[1]	Enterprises created[2]	Jobs created[3]	Participants assisted	Participants supported into employment	Participants gaining qualifications	Participants in education / training
Wales	**5,442**	**972**	**8,414**	**168,942**	**11,195**	**68,866**	**7,704**
of which:							
West Wales and the Valleys	**3,563**	**676**	**5,796**	**112,212**	**8,206**	**42,861**	**4,516**
East Wales	**1,806**	**296**	**2,576**	**48,327**	**2,651**	**21,561**	**2,587**
Out of area	3	-	-	61	-	30	-
Location to be confirmed	70	-	43	8,342	338	4,414	601

Source: WEFO, 30/09/2018
[1] Aggregate of the Enterprises receiving non-financial support indicators under the ERDF Operational Programmes
[2] Aggregate of the New enterprises supported indicators under the ERDF Operational Programmes
[3] Aggregate of the Employment increase in supported enterprises indicators under the ERDF Operational Programmes

Source: Programme Progress 2014-2020, Welsh Government, 2018e

Figure 24: European Structural Fund Programme Regions



Source: Page 7, A Summary of the ERDF and ESF Structural Fund Programmes in Wales, Welsh Government, 2015

Table 23 and 24, provide an overview of how the European Regional Development Fund (ERDF) and European Social Fund would be allocated by the Welsh Government as stated in their 2015 report (Welsh Government, 2015). The values provided in the tables relate to the EU funds only and do not include the required co-financing or match funding. When this is included, the total programme investment is expected to be around £3bn over the 2014 – 2020 funding period (Welsh Government, 2015).

Table 23: European Regional Development Fund (ERDF) allocation

	European Regional Development Fund allocation	
ERDF Priority	**West Wales & Valleys**	**East Wales**
Research and Innovation	£239,454,065	£71,281,253
SME Competitiveness	£166,394,723	£31,896,377
Renew. Energy & Energy Efficiency	£136,658,790	£17,920,313
Connectivity	£401,044,614	£38,298,865
Technical Assistance	£19,256,167	£3,252,996
Total	£962,808,359	£162,649,803

Source: Financial tables and Summary table, pages 9-30, A Summary of the ERDF and ESF Structural Fund Programmes in Wales, Welsh Government, 2015

Table 24: European Social Fund (ESF) allocation

	European Social Fund allocation	
ESF Priority	**West Wales & Valleys**	**East Wales**
Tackling Poverty through Sustainable Employment	£156,771,550	£35,027,991
Skills for Growth	£276,492,211	£76,387,124
Youth Employment Attainment (Youth Employment in East Wales)	£195,771,033	£47,981,692
Technical Assistance	£12,837,445	£3,252,996
TOTAL	£641,872,238	£162,649,803

Source: Financial tables and Summary table, pages 9-30, A Summary of the ERDF and ESF Structural Fund Programmes in Wales, Welsh Government, 2015

The UK Government has largely guaranteed funding for projects agreed prior to 2020 (Welsh Government, 2017a).

5 Communities

Key Points

Black and minority ethnic groups
Around 6% of the Welsh population define themselves as not White British/ Irish
The Black and Minority Ethnic (BME) population has a younger age profile than the White British / Irish group
Asian / Asian British and Black / Black British groups may be more affected when the UK leave the EU, as they tend to work in services industries, which are more likely to suffer in a no deal scenario (notably finance and other business services)
In 2016, there was a rise in racially or religiously aggravated offences during the EU referendum campaign, to a peak in offences after the result
People at increased risk of personal hate crime include: young adults aged 16 to 24; in particular young men; those of Muslim faith; People with Asian backgrounds and those who are single or divorced

Sex and gender groups
Analysis suggests that both gender groups may be affected to a similar degree, although women will be slightly more affected in the event of a no deal scenario
Gender equality is recognised as a fundamental right in EU law and working women have gained significantly from this strong underpinning to their rights
When leaving the EU, future equality and human rights protections from the EU are not binding in UK law and existing ones may be removed. Employment rights and funding for women's services are areas of particular concern

Children and young people
Key issues include erosion of guarantees of fundamental rights for children and young people; undermining of social cohesion; loss of EU funding to support disadvantaged communities; loss of the voices of children and young people and risks to existing cross border safeguarding structures
The percentage of children living in workless households has fallen from a high of 20% in 2009 to 12.6% in 2017. However, the Welsh percentage remains higher than the UK average of 10.9%

Young adults
35.1% of the adult population in Wales achieved a qualification of National Vocational Qualification Level 4 (NVQ4) and above and 8.7% of adults have no qualifications
Young people (aged 16 years), who reside in the most deprived areas are significantly more likely to leave school with no skills or qualifications
The number of young people not in education, employment or training (NEET) varies by area, age and disability
Highest levels of NEETS are seen in South East Wales, those aged 19 to 24 years and in those with a disability

Farming / rural communities
An estimated 4.1% of employment in Wales arises from the agriculture sector
It is estimated that EU subsidies make up 80% of farm income in Wales
Rural communities can experience different health and well-being outcomes compared to people who reside in urban areas
Young people have higher qualifications on leaving year 11, adults are more likely to feel a sense of community and more able to afford everyday goods and activities. There is a lower percentage of low birth weight. However, rates of suicide are higher in rural communities (not statistically significant)

Port towns
It is estimated that Welsh ports directly support 18,400 jobs in Wales and handle over 56.4 million tonnes of UK freight, equivalent to 11% of total UK trade by volume
At present, over 70% of Irish cargo passes through Wales
There are concerns that freight will be displaced from Welsh ports; there will be technological and logistical challenges and there is a lack of appropriate infrastructure and physical capacity to accommodate new border controls and customs checks
There are currently no Border Inspection Posts at Welsh ports or Designated Points of Entry in Wales

Community cohesion
The most deprived communities have a significantly lower sense of community than the least deprived fifth

Culture and Arts
People residing in the most deprived areas and those with no qualifications are significantly less likely to have attended an arts event during the preceding year

5.1 Vulnerable group: Black and minority ethnic groups

Wales is less ethnically diverse than all areas of England except the North East. Only just over 6% of the population define themselves as not White British or Irish. However, this represents a doubling of the proportion since the previous Census in 2001. The population defining themselves as not White British or Irish is not distributed evenly across Wales. Rather it is concentrated in urban centres. Cardiff has the highest proportion with just under 20% of its population not being White British or Irish. In rural areas and the south Wales valleys the proportion is as low as 2.5%. Even within cities like Cardiff the spread is not even. In some areas in the south of the city over 50% of the population are not White British or Irish, compared with less than 10% in parts of the north of the city (Public Health Wales Observatory, 2015).

The BME population has a younger age profile than the White British or Irish group. In Swansea 14% of the school age population is non-British, non-white and in Cardiff it is 32% (Children in Wales, 2018a).

The Black / African / Caribbean / Black British group has the highest percentage who are long term unemployed or never worked. In the 16 to 24 age group, the ethnic group with the lowest percentage with no qualifications is Asian/Asian British (7.9%). The ethnic group with the highest percentage aged 16 to 24 with no qualifications is White other (16%) (Public Health Wales Observatory, 2015).

The White British or Irish group exhibits higher levels of car ownership, is far less likely to reside in non-owner occupied housing, and has a much lower percentage living in overcrowded households than all other groups (Public Health Wales Observatory, 2015).

After accounting for age, the White British or Irish group has a higher percentage of its population reporting limiting illness than the other groups with the exception of the Mixed multiple ethnic group (Public Health Wales Observatory, 2015).

The Institute for Public Policy Research estimated the different impacts on the UK from leaving the EU based on sectoral GVA analysis and weighting of the sectoral impacts using data on ethnic employment patterns from the Labour Force Survey. This provides a measure of the relative extent of the GVA impacts on each ethnic group i.e. the more an ethnic group is concentrated in a negatively affected sector, the larger the weighted average for that ethnic group (Morris, 2018).

Using this approach, the Institute for Public Policy Research did not find any evidence that the GVA impacts will affect ethnic groups differently in the case of a soft Brexit*. However, they did find that Asian/Asian British and Black/Black British groups are somewhat more affected in the case of a hard Brexit*, because they tend to work in services industries, which are more likely to suffer in a no deal scenario (notably finance and other business services) (Morris, 2018). Overall, the analysis suggests that the GVA impacts from leaving the EU, could have a slightly greater effect on ethnic minority groups than people of a White ethnicity. TThe main reason for this is that ethnic minority groups tend to be more likely to work in services sectors (for example retail, finance, and other business activities) which are considered to have more negative GVA impacts from leaving the EU (Morris, 2018).

*A 'soft' Brexit is defined as the UK continues continuing to participate in the single market, but not within a customs union (which would entail some non-tariff barriers). A 'hard' Brexit is defined as withdrawal without any deal, which would result in the UK trading with the EU on WTO terms (which would entail tariff barriers and significant non-tariff barriers) (Morris, 2018) (Morris, 2018).

5.1.1 Hate crime

Hate crime is defined as 'any criminal offence which is perceived, by the victim or any other person, to be motivated by hostility or prejudice towards someone based on a personal characteristic.' There are five centrally monitored strands of hate crime (Home Office, 2018):

- Race or ethnicity;
- Religion or beliefs;
- Sexual orientation;
- Disability;
- Transgender identity.

Police recorded crime data reports that in 2017/18 there were 94,098 hate crime offences recorded by the police in England and Wales, an increase of 17% compared with the previous year. This continues the upward trend in recent years with the number of hate crimes recorded by the police having more than doubled since 2012/13 (from 42,255 to 94,098 offences; an increase of 123%). This increase is thought to be largely driven by improvements in police recording, although there were spikes in hate crime following certain events such as the EU referendum and the terrorist attacks in 2017 (Home Office, 2018).

Breaking down the headline number of hate crime offences by the five centrally monitored strands showed there were (Home Office, 2018):

- 71,251 (76%) race hate crimes;
- 11,638 (12%) sexual orientation hate crimes;
- 8,336 (9%) religious hate crimes;
- 7,226 (8%) disability hate crimes; and
- 1,651 (2%) transgender hate crimes.

It is possible for a hate crime offence to have more than one motivating factor which is why the above numbers sum to more than 94,098 and the proportions to more than 100 per cent (Home Office, 2018).

Table 25: Hate crimes recorded by the police, by monitored strand 1, 2, 2011/12 to 2017/18

Numbers and percentages — **England and Wales, recorded crime**

Hate crime strand	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	% change 2016/17 to 2017/18
Race	**35,944**	**35,845**	**37,575**	**42,862**	**49,419**	**62,685**	**71,251**	**14**
Religion	**1,618**	**1,572**	**2,264**	**3,293**	**4,400**	**5,949**	**8,336**	**40**
Sexual orientation	**4,345**	**4,241**	**4,588**	**5,591**	**7,194**	**9,157**	**11,638**	**27**
Disability	**1,748**	**1,911**	**2,020**	**2,515**	**3,629**	**5,558**	**7,226**	**30**
Transgender	**313**	**364**	**559**	**607**	**858**	**1,248**	**1,651**	**32**
Total number of motivating factors	43,968	43,933	47,006	54,868	65,500	84,597	100,102	**18**
Total number of offences	**N/A**	**42,255**	**44,577**	**52,465**	**62,518**	**80,393**	**94,098**	**17**

Source: Police recorded crime, Home Office

1. Hate crimes are taken to mean any crime where the perpetrator's hostility or prejudice against an identifiable group of people is a factor in determining who is victimised. For the agreed definition of hate crime see: http://www.report-it.org.uk

2. Data were collected from 44 police forces in England and Wales and cover notifiable offences only (see the User Guide for more information).

Source: Table 2, page 12, Hate Crime, England and Wales, 2017/18, Home Office, 2018

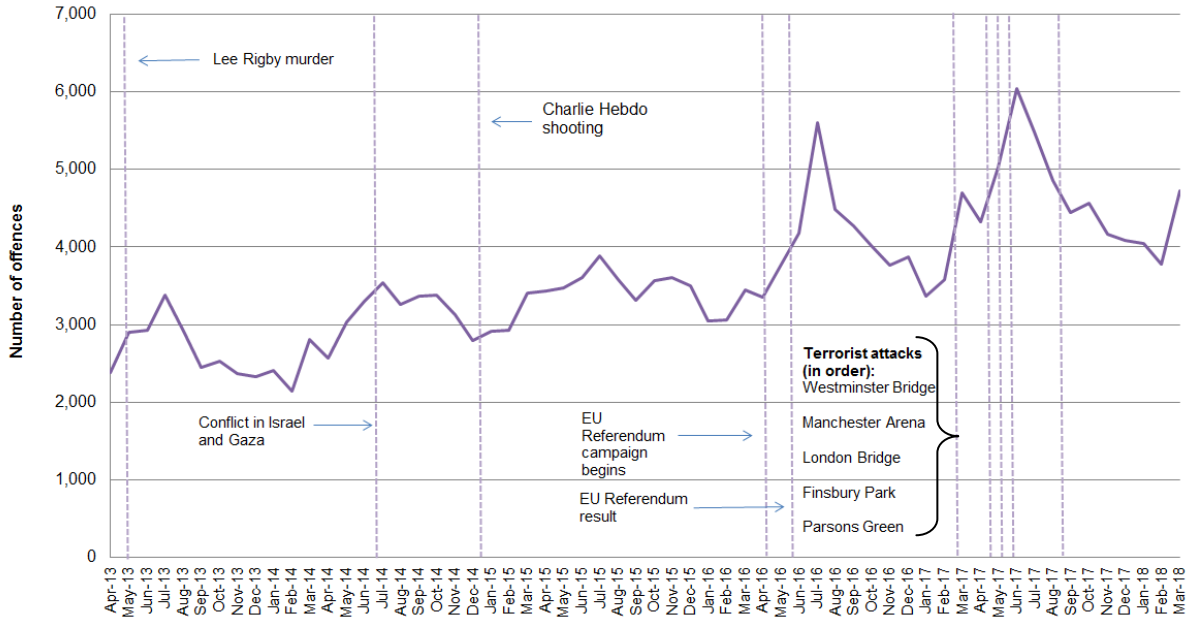
Victims of hate crime were more likely to report being affected by the incident rather than victims of all crime reported in the Crime Survey for England and Wales (CSEW). For example, 36% of hate crime victims said they were 'very much' affected compared with 13% for all CSEW crime (Home Office, 2018).

5.1.2 Race hate crime

Race hate crime is defined as a hate crime including any group defined by race, colour, nationality or ethnic or national origin, including countries within the UK, and Gypsy or Irish Travellers. It automatically includes a person who is targeted because they are an asylum seeker or refugee as this is intrinsically linked to their ethnicity and origins (Home Office, 2018).

Race hate crime was the most commonly recorded strand of hate crime in all 44 police forces and the number of race hate crimes increased by 14% between 2016/17 and 2017/18. Over the same period, religious hate crime increased by 40%. It is thought that the sharp increase in religious hate crimes is due to a rise in these offences following the terrorist attacks in 2017 (see Figure 25) (Home Office, 2018).

Figure 25: Number of racially or religiously aggravated offences recorded by the police by month, April 2013 to March 2018



Source: Figure 2.2, page 14, Hate Crime, England and Wales, 2017/18, Home Office, 2018

Figure 25 shows (Home Office, 2018):

- A general increase in the number of racially or religiously aggravated offences over the five-year period, reflecting improvements in crime recording by the police;
- A peak in July 2013 in racially or religiously aggravated offences following the Lee Rigby murder;
- A rise in racially or religiously aggravated offences during the EU referendum campaign, from April 2016, to a peak in offences after the result, in July 2016;
- An apparent increase in racially or religiously aggravated offences in March 2017

following the Westminster Bridge attack. However, as police recorded crime data are predominantly on a financial year basis, there are commonly 'increases' in crime in March of each year as police forces reconcile their annual data; and

- A sharp increase in hate crime in June 2017 following terrorist attacks in May and June.

Analysis of victimisation by personal and household characteristics showed that for personal hate crime (as with CSEW crime overall) the risk of being a victim varied by sociodemographic characteristics. However, it should be noted that differences in victimisation rates between ethnic groups may be at least partly attributable to factors other than ethnicity, such as age profile within ethnic groups with some having a larger proportion of young people, who are at higher risk of crime (Home Office, 2018).

The risk of being a victim of personal hate crime in the 2015/16 to 2017/18 CSEW was highest, for example, among (Home Office, 2018):

- People aged 16 to 24 (0.3% experienced personal hate crime);
- In particular, men aged 16 to 24 (0.5% compared with fewer than 0.03% of men aged 75 and over);
- Those with the religious group Muslim (0.6% compared with 0.1% of Christian respondents);
- People with Asian backgrounds (0.4% compared with 0.1% with White adults);
- Those whose marital status was single or divorced (0.3% compared with 0.1% of married adults).

While the risk of being a victim of household hate crime was highest among people who (Home Office, 2018):

- Were social renters (0.4% compared with 0.1% of owner occupiers);
- Lived in a household with a total income of less than £10,000 (0.3% compared with 0.1% among those with a total income of ≥£50,000).

5.2 Vulnerable group: Sex and Gender

The Institute for Public Policy Research estimated the different impacts of the UK from leaving the EU based on sectoral GVA analysis and weighting of the sectoral impacts using data on the employment patterns of men and women. This weighted average provides an indication of the relative impact on each gender group i.e. the more concentrated the gender group is within a negatively affected sector, the greater the weighted average for that gender group (Morris, 2018).

Although it is predicted that the negative impacts are larger in certain goods sectors where men tend to work (for example, chemicals and electrical equipment), these are relatively small sectors. In addition, there are some male-dominated sectors where impacts are predicted to be positive (for example agriculture, paper and publishing). While in contrast, women tend to work in services sectors (for example, education, health and social care, and retail), where the London School of Economics (LSE) analysis indicates that GVA impacts will be more negative (Morris, 2018).

Therefore, the analysis suggests that both gender groups may be affected to a similar

degree, although women will be slightly more affected in the event of a hard Brexit* (Morris, 2018).

Gender equality is recognised as a fundamental right in EU law and since the UK joined the EU in 1973, working women have gained significantly from this strong underpinning to their rights including (TUC, 2016):

- Expanded the right to equal pay, strengthened protection from sex discrimination and improved remedies and access to justice for women who have been unfairly treated;
- Strengthened protection for pregnant women and new mothers in the workplace and created new rights that have helped women balance work with care and encouraged men to play a greater role in family life too;
- Benefited the many women who work part-time or on a temporary basis, improving their pay and conditions and giving them access to rights at work that they were previously disqualified from.

5.2.1 Human rights

There is the potential for a negative impact on human rights after the UK leaves the EU due to the loss of the EU Charter of Fundamental Rights. The UK will not have to comply with the Charter when making laws and administrative decisions in areas previously within EU competence, such as consumer protection or workers' rights (National Assembly for Wales, 2018a).

The Charter contains rights beyond those in the UK's Human Rights Act, and in particular, it covers many social and economic rights, which are not well recognised in UK law. They include (National Assembly for Wales, 2018a):

- A range of social and workers' rights, including the right to fair working conditions, protection against unjustified dismissal, and access to health care, social and housing assistance;
- A guarantee of human dignity (including bioethics);
- A right to physical and mental integrity (including rights around personal data).

Therefore, the UK's withdrawal from the EU may mean that future equality and human rights protections from the EU are not binding in UK law and that existing ones may be removed. Employment rights and funding for women's services are areas of particular concern (Equality and Human Rights Commission, 2018).

*A 'soft' Brexit is defined as the UK continues continuing to participate in the single market, but not within a customs union (which would entail some non-tariff barriers). A 'hard' Brexit is defined as withdrawal without any deal, which would result in the UK trading with the EU on WTO terms (which would entail tariff barriers and significant non-tariff barriers) (Morris, 2018) (Morris, 2018).

5.3 Vulnerable group: Children and young people

The UK is currently a member of the following EU agencies and agreements, and it is crucial that current levels of participation and cooperation are maintained, in order to safeguard children and young people, while in the UK and when travelling or visiting the EU (The Children's Society, 2018):

- Europol;
- Eurojust;
- European Arrest Warrant;
- European Criminal Records Information System;
- The second generation Schengen Information System (SIS II);
- The European Protection Order.

Children in Wales in partnership with the Observatory on Human Rights of Children produced a joint briefing paper, which focuses on the emerging key thematic priorities for children and young people in Wales arising from EU withdrawal. This paper was discussed at the National Assembly for Wales Cross-Party Group on Children seminar (18 October 2017). They reported that the key priority areas of concern are (Children in Wales, 2018b):

- The erosion of guarantees of fundamental rights for children and young people;
- The undermining of social cohesion, including the increase in negative attitudes, tensions and reporting of hate crime;
- The loss of EU funding to support disadvantaged communities;
- The need to engage and hear the voices of children and young people;
- Consideration of UK wide matters impacting on Wales, which include existing cross border safeguarding structures and the future status of EU national children and young people.

In addition, concern was expressed for the mental health and emotional well-being of children and young people, due to the continuing fear and uncertainty about a post-EU future. In addition, delegates were concerned for existing services for children and young people, which may be threatened by leaving the EU, due to loss of funding and loss of EU citizens working in this sector. Concerns were also raised on the indirect effect on children and young people from any reduction of legislative protections for specific employment rights in respect of maternity / paternity rights, parental leave, staff pay, work life balance, and recruitment (Children in Wales, 2018b).

In addition, the potential negative impact on the UK economy and levels of unemployment following the UK leaving the EU will have an indirect effect on children and young people. It is well recognised that increased levels of poverty and unemployment can impact on the health and well-being of children and young people (Marmot and Bell, 2009, Public Health Network Cymru, 2018, Public Health Wales, 2017 and WHO, 2009).

Table 26 shows that in Wales, the percentage of children living in workless households has fallen since a high of 20% in 2009 to 12.6%. However, the Welsh percentage remains higher than the UK average of 10.9%.

Table 26: Percentage of children living in workless households, Wales and UK

	Percentage in workless households	
	Wales	UK
2004	18.7	15.7
2005	17.5	15.6
2006	17	15.7
2007	18.4	15.5
2008	17.3	15.8
2009	20	16.5
2010	18.8	16.6
2011	18.7	16.1
2012	17.8	15.1
2013	16.6	14.4
2014	14.6	13.4
2015	13.7	12.1
2016	13.9	11.6
2017	12.6	10.9

Source: APS, Children by the combined economic activity status of household members by NUTS area: Table C1 NUTS

Source: Well-being of Wales, 2017-18: Charts and associated data, Welsh Government, 2018b

However, a number of opportunities have been identified to address some of the issues identified, including (Children in Wales, 2018b):

- Development of the new school curriculum to support children in regard to identified issues;
- Reform current process, to improve the ability of third sector organisations to access funding and to review the present priorities and simplifying the monitoring, reporting and accountability mechanisms;
- Development of Wales's specific rights laws in response to any repeal of existing UK legislation by the UK Government for example The Rights of Children and Young Person (Measure) 2011.

5.4 Vulnerable group: Young adults

Table 27 shows the percentage of adults (aged 16 to 64 years) who have different levels of qualifications. Across Wales, 35.1% of adults achieved a qualification of NVQ4 and above and 8.7% of adults have no qualifications (ONS, 2018b).

Table 27: Qualifications (Jan 2017-Dec 2017)

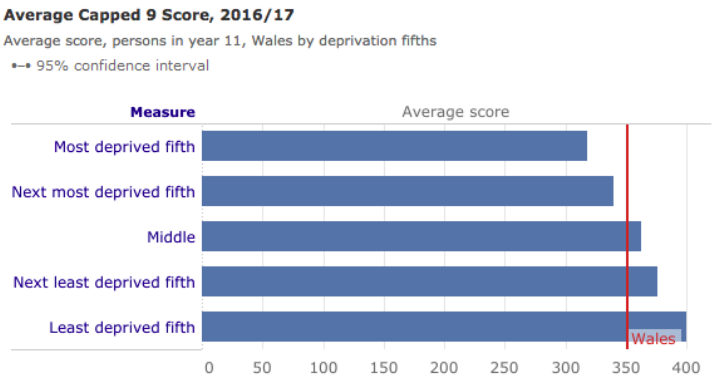
	Wales (Level)	Wales (%)
Individual Levels		
NVQ4 And Above	663,900	35.1
NVQ3	336,700	17.8
Trade Apprenticeships	63,600	3.4
NVQ2	337,900	17.9
NVQ1	211,000	11.2
Other Qualifications	114,200	6.0
No Qualifications	164,200	8.7
Composite Levels		
NVQ4 And Above	663,900	35.1
NVQ3 And Above	1,032,300	54.6
NVQ2 And Above	1,402,000	74.1
NVQ1 And Above	1,613,100	85.3

Source: ONS annual population survey
Notes: For an explanation of the qualification levels see the definitions section.
level and % are for those aged 16-64
% is a proportion of resident population of area aged 16-64

Source: Page 4, Labour Market Profile – Wales, NOMIS, ONS 2018b

Living in a deprived area can affect the educational attainment of young people and adults. Young people leaving school at year 11 (age 16) who reside in the most deprived and next most deprived areas are significantly more likely to leave school with no skills or qualifications (Public Health Wales Observatory, 2018a).

Figure 26: School leavers with skills and qualifications, persons in year 11, Wales, by deprivation fifths, 2016/17



Measure	Value	95% Confidence Interval	Count
Most deprived fifth	318.1	-	N/A
Next most deprived fifth	340.2	-	N/A
Middle	362.2	-	N/A
Next least deprived fifth	376.3	-	N/A
Least deprived fifth	399.5	-	N/A
Wales	350.9	-	N/A

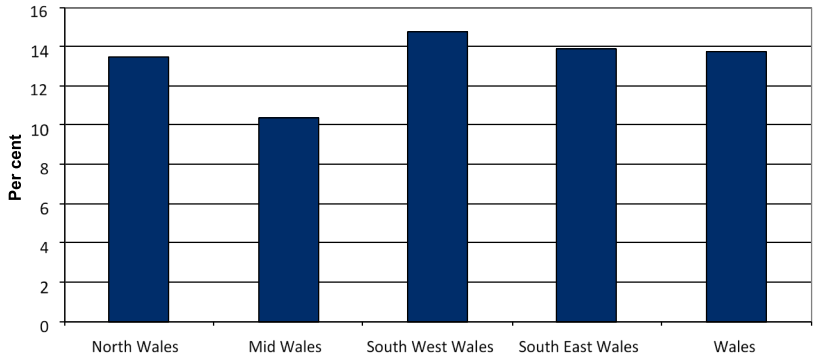
Produced by Public Health Wales Observatory, using WED, PLASC, WIMD 2014 (WG).
This is a national indicator. Please note that this is a different measure than used in previous years.
A higher average score indicates higher levels of skills/qualifications. Please consult the technical guide for full details on how this indicator is calculated.

Source: PHOF data, Public Health Wales Observatory, 2018a

The number of young people not in education, employment or training (NEET) varies by area, age and disability. Mid Wales had the lowest percentage (10.4%) and South West Wales (14.8%) the highest. Young people aged between 19 and 24 years of age, were more likely to not be in education, employment and training than compared to younger age groups (16 to 18 years).

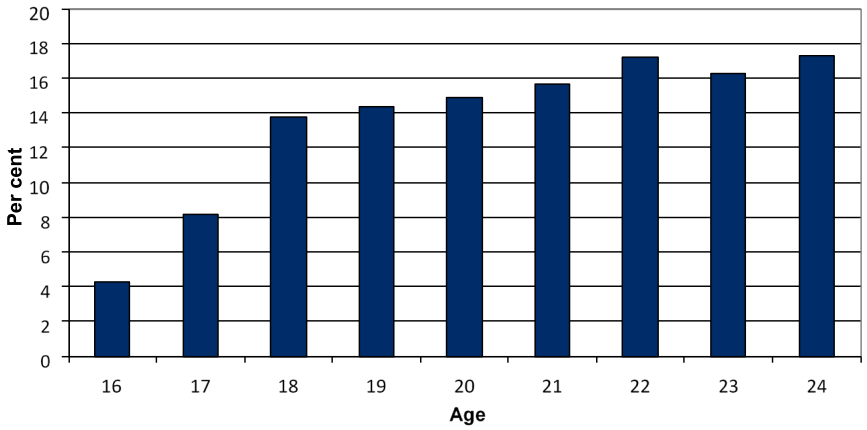
The proportion of young people who are NEET is higher for disabled people for both age groups, than compared to non disabled young people. The proportion of disabled people who are NEET rises from 18.2 per cent at age 16-18 to 39.4 per cent at age 19-24 (Welsh Government 2018f).

Figure 27: Young people aged 16-24 not in education, employment or training in Wales, by region (average of years ending 2016Q1, 2017Q1, 2018Q1)



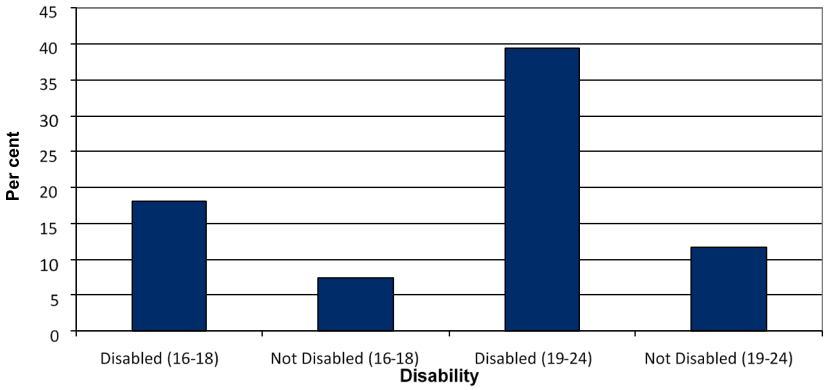
Source: Chart 7, page 8, Young people not in education, employment or training (NEET) Year to 31 March 2018. Welsh Government 2018f

Figure 28: Young people not in education, employment or training in Wales, by age (average of years ending 2016Q1, 2017Q1, 2018Q1)



Source: Chart 5, page 7, Young people not in education, employment or training (NEET) Year to 31 March 2018. Welsh Government 2018f

Figure 29: Young people not in education, employment or training in Wales, by age and disability status* (average of years ending 2016Q1, 2017Q1, 2018Q1)



* In line with GSS harmonised standards the definition used reflects the Equality Act 2010 legal definition of disabled. (Data was previously on the basis of those with a disability as defined by Disability Discrimination Act or a work-limiting disability).

Source: Chart 6, page 7, Young people not in education, employment or training (NEET) Year to 31 March 2018. Welsh Government 2018f

5.5 Vulnerable group: Farming / rural communities

Agriculture contributes £370m to the Welsh economy (0.7% of GVA), with significant regional variation. Estimated GVA for forestry and related sectors is £530m (0.9% of GVA), although this incorporates secondary processing (Welsh Government, 2018g).

While 23,500 people in Wales cite agriculture, forestry and fisheries as their main sector of employment, 55,000 are involved in these sectors, including contractors, suppliers, and family members, with an estimated 4.1% of employment in Wales from agriculture (Welsh Government, 2018g).

Table 28, shows the total number of jobs in the agriculture sector for both Wales and the UK and highlights how dependent the Welsh economy is on the agriculture sector when compared to the UK (National Assembly for Wales, 2017a).

Table 28: Total number of jobs in the agriculture sector for both Wales and the UK

	Wales	UK
Total farmers, partners, directors and spouses	41,619	294,000
Total farm workers	16,700	183,000
Total	58,319	476,000
Agricultural share of employment	4.07%	1.42%

Source: DEFRA

Source: Page 11, External Affairs and Additional Legislation Committee Implications for Wales of leaving the European Union, National Assembly for Wales, 2017a

Many farmers rely on the Common Agricultural Policy Pillar I and II funding to keep their businesses viable, and any substantial reductions in the level of support would have a significant impact on both the agriculture sector and the wider rural economy. It has been estimated that EU subsidies make up 80% of farm income in Wales (House of Lords, 2017).

Table 29: CAP allocations in the UK 2014–2020

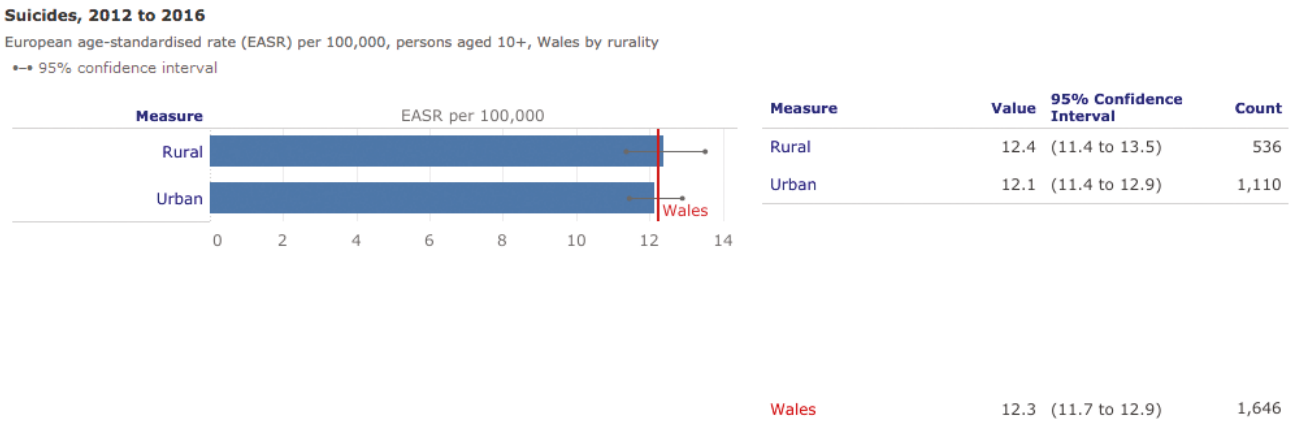
	Pillar I € million (approximate number, non-inflation adjusted)	% share	Pillar II € million (approximate number, non-inflation adjusted)	% share
England	16,421	65.5	1,520	58.9
Northern Ireland	2,299	9.2	227	8.8
Scotland	4,096	16.3	478	18.5
Wales	2,245	8.96	355	13.7
Total UK	**25.1 billion**		**2.6 billion**	

Source: House of Commons Library, Brexit: impact across policy areas, Briefing Paper 07213, August 2016, p54

Source: Table 1, page 58, Brexit: agriculture, House of Lords, 2017

Rural communities can experience different health and well-being outcomes compared to people who reside in urban areas, including higher qualifications of young people on leaving year 11 (age 16), People are significantly more likely to feel a sense of community (57.7% vs. 46.2%) and are significantly more likely to be able to afford everyday goods and activities (86.8% vs. 83.1%). In addition, babies born in rural areas have a lower percentage of low birth weight, although this is not statistically significant. However, rates of suicide are higher in rural communities, although this difference is not statistically significant (Public Health Wales Observatory, 2018a).

Figure 30: Rates of suicide per 100,000, persons aged 10+, Wales, by rurality



Measure	Value	95% Confidence Interval	Count
Rural	12.4	(11.4 to 13.5)	536
Urban	12.1	(11.4 to 12.9)	1,110
Wales	12.3	(11.7 to 12.9)	1,646

Produced by Public Health Wales Observatory, using PHM, MYE and RUC2011 (ONS).
Due to improvements in suicide coding and the reduction of hard-to-code narrative verdicts since 2011, caution should be taken when interpreting suicide rates. Please consult the technical guide for full details on how this indicator is calculated.

Source: PHOF data, Public Health Wales Observatory, 2018a

5.6 Vulnerable group: Port towns

Wales has 32 ports, ranging from harbours like Tenby to major ports like Milford Haven. Of these, there are seven that the UK Government's Department for Transport classifies as "major ports". These are Milford Haven, Fishguard, Holyhead, Newport, Cardiff, Port Talbot and Swansea (National Assembly for Wales, 2017b).

It is estimated that Welsh ports directly support 18,400 jobs, and three of the Welsh Government's eight Enterprise Zones (Anglesey, Haven Waterway, and Port Talbot Waterfront) contain ports, reflecting their economic significance (National Assembly for Wales, 2017b).

Each year, Welsh ports handle over 56.4 million tonnes of UK freight, equivalent to 11% of total UK trade by volume. The busiest port in Wales in terms of freight transport is Milford Haven, which handled 37.7 million tonnes of freight traffic in 2015. This is the fourth highest of all UK ports by tonnages, behind Grimsby and Immingham, and London. At present, over 70 per cent of Irish cargo passes through Wales (National Assembly for Wales, 2017b).

There are three main areas of concern for ports following the UK leaving the EU, including (National Assembly for Wales, 2017b):

- Displacement of traffic from Welsh ports to ports in England and Scotland via Northern Ireland to the Republic of Ireland;
- The technological and logistical challenges to ports;
- A lack of appropriate infrastructure and physical capacity to accommodate new border controls and customs checks.

There are currently no Border Inspection Posts at Welsh ports or Designated Points of Entry in Wales (WLGA, 2018).

5.7 Community cohesion

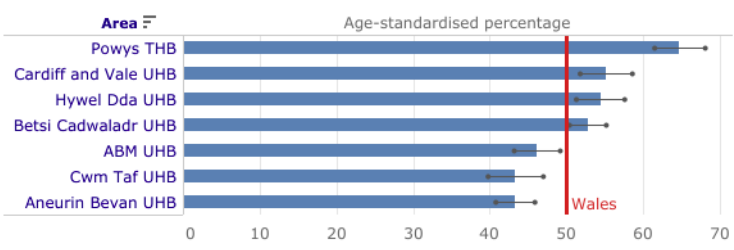
Residents of the Powys Teaching HB have the greatest sense of community; this is significantly higher than the Welsh rate. The areas with the lowest sense of community are Cwm Taf and Aneurin Bevan University HBs.

Figure 31: Percentage of adults who feel a sense of community, 2016/17

A sense of community, 2016/17

Age-standardised percentage, persons aged 16+, health boards

95% confidence interval



Area	Value	95% Confidence Interval	Count
Powys THB	64.7	(61.4 to 68.0)	N/A
Cardiff and Vale UHB	55.1	(51.7 to 58.5)	N/A
Hywel Dda UHB	54.4	(51.2 to 57.5)	N/A
Betsi Cadwaladr UHB	52.7	(50.3 to 55.1)	N/A
ABM UHB	46.1	(43.1 to 49.1)	N/A
Cwm Taf UHB	43.3	(39.7 to 46.9)	N/A
Aneurin Bevan UHB	43.2	(40.7 to 45.8)	N/A
Wales	50.0	(48.8 to 51.2)	N/A

Produced by Public Health Wales Observatory, using NSW (WG).
This is a national indicator. Please consult the technical guide for full details on how this indicator is calculated.

Source: PHOF, Public Health Observatory, 2018a

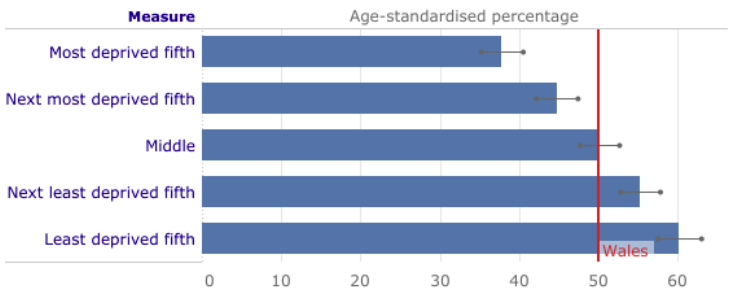
Figure 32 shows the gradient in the level of a sense of community across the deprivation fifths, with the least deprived and next least deprived fifth having significantly higher levels of a sense of community than compared to the Welsh average (Public Health Wales Observatory, 2018a).

Figure 32: Percentage of adults who feel a sense of community, Wales, by deprivation fifths 2016/17

A sense of community, 2016/17

Age-standardised percentage, persons aged 16+, Wales by deprivation fifths

95% confidence interval



Measure	Value	95% Confidence Interval	Count
Most deprived fifth	37.8	(35.2 to 40.4)	N/A
Next most deprived fifth	44.7	(42.1 to 47.3)	N/A
Middle	50.1	(47.6 to 52.6)	N/A
Next least deprived fifth	55.2	(52.7 to 57.7)	N/A
Least deprived fifth	60.2	(57.5 to 62.9)	N/A
Wales	50.0	(48.8 to 51.2)	N/A

Produced by Public Health Wales Observatory, using NSW and WIMD 2014 (WG).
This is a national indicator. Please consult the technical guide for full details on how this indicator is calculated.

Source: PHOF data, Public Health Wales Observatory, 2018a

5.8 Culture and Arts

People residing in the most deprived fifth and the next most deprived fifth in Wales, are significantly less likely to have attended an arts event* in Wales during the preceding year (data from 2014/15) (STATS Wales, 2016).

Table 30: Visited any of these arts events* in Wales in the last 12 months, by WIMD deprivation score, 2014-2015

	Have you been to any of these events in Wales					
	Yes			No		
	%	Lower CI	Upper CI	%	Lower CI	Upper CI
WIMD deprivation score 1 Most deprived 20%	**45**	*42*	*47*	**55**	*53*	*58*
Q2	**53**	*51*	*55*	**47**	*45*	*49*
Q3	**61**	*59*	*64*	**39**	*36*	*41*
Q4	**62**	*60*	*64*	**38**	*36*	*40*
Q5 Least deprived 20%	**65**	*63*	*68*	**35**	*32*	*37*

Sample size: 14,200

Source: National Survey for Wales, 2015, STATS Wales, 2016

*Play / drama / pantomime / musical / comedy event / Opera / classical music performance / other live music event / Film at an arts centre Carnival / street arts / arts festival (for example music, dance, Eisteddfod) / Exhibition or collection of art, craft, photography or sculpture / Event including video art or electronic art / Event connected with books or writing / Circus (not involving animals) / Dance performance / Other arts/music/cultural event

Individuals with higher qualifications (NQ framework level 3 and above) are significantly more likely to have attended an arts event* in the preceding 12 months (data from 2014/15) than compared to people with fewer qualifications. Only 32% with no qualifications, reported attending an arts event in the preceding 12 months (STATS Wales, 2016).

Table 31: Visited any of these arts events* in Wales in the last 12 months, by highest qualification, 2014-2015

	Have you been to any of these events in Wales					
	Yes			No		
	%	Lower CI	Upper CI	%	Lower CI	Upper CI
Highest qualification National Qualification Framework levels 4-8	**75**	*74*	*77*	**25**	*23*	*26*
National Qualification Framework level 3	**66**	*63*	*69*	**34**	*31*	*37*
National Qualification Framework level 2	**53**	*51*	*56*	**47**	*44*	*49*
Below National Qualification Framework level 2	**47**	*44*	*51*	**53**	*49*	*56*
No qualification	**32**	*30*	*35*	**68**	*65*	*70*

Sample size: 13,300

Source: National Survey for Wales, 2015, STATS Wales,2016

*Play / drama / pantomime / musical / comedy event / Opera / classical music performance / other live music event / Film at an arts centre Carnival / street arts / arts festival (for example music, dance, Eisteddfod) / Exhibition or collection of art, craft, photography or sculpture / Event including video art or electronic art / Event connected with books or writing / Circus (not involving animals) / Dance performance / Other arts/music/cultural event.

6 Environment

Key points

Air quality
The air pollutants of greatest public health concern are particulate matter (PM) and nitrogen dioxide (NO_2)
A series of EU directives designed to improve air quality have had a major impact on health. However, the UK has often lagged behind in the implementation and enforcement of these directives
There has been a downward trend in air pollutants across Wales since 1990
Outdoor air pollutants increase the risk of poor health and mortality and can disproportionately affect vulnerable population groups
In Wales each year, the equivalent of around 1,600 deaths are attributed to $PM_{2.5}$ exposure and 1,100 deaths to NO_2 exposure.

Climate change
Compared to 1990 levels, Wales has reduced carbon emissions by 14% (Welsh Government's non-statutory target is a 40% reduction by 2020)

Water quality
European water policy has played an important role in protecting water resources
In 2017, 103 of the 104 designated Welsh bathing waters met the standards set by the Bathing Water Directive
The coastal and marine environment contributes £6.8 billion to the economy of Wales and supports more than 92,000 jobs
Over 60% of the population of Wales live and work in the coastal zone, with all major cities and many important towns located on the coast

6.1 Air quality

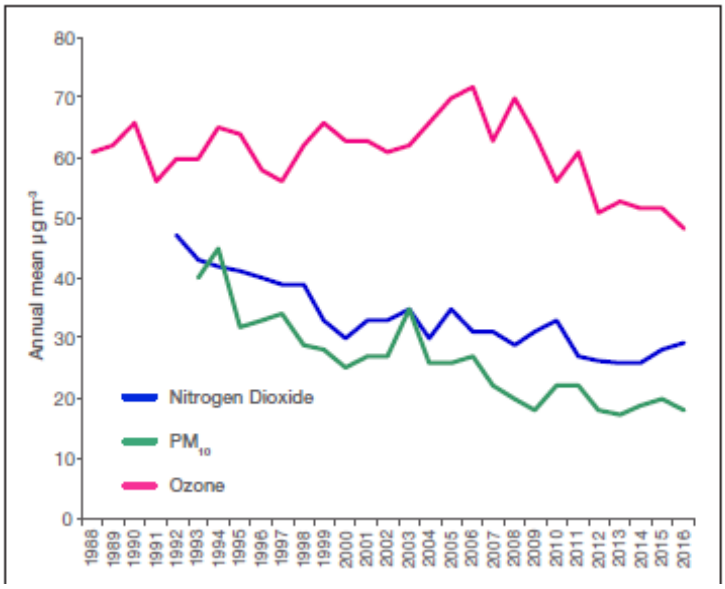
The air pollutants of greatest public health concern are particulate matter (PM) and nitrogen dioxide (NO_2). Air pollution combines with other aspects of the social and physical environment to create an inequitable disease burden on more deprived parts of society (Public Health Wales, 2018).

Most local air pollution problems are caused by emissions from road vehicles. However, other sources may also influence air quality for example industrial, agricultural and residential / domestic sources.

A series of EU directives designed to improve air quality have had a major impact on health. Following restrictions on the sulphur content of fuel, there has been an 80% decline in sulphur dioxide emissions. However, the UK has often lagged behind its neighbours in the implementation and enforcement of these directives (Fahy et al, 2017).

Figure 33 shows that there has been a downward trend in air pollutants across Wales since 1990 (Welsh Government, 2016b).

Figure 33: Ambient Pollutant Trends in Wales 1990-2016



Source: Figure 4.1, page 7, Air Pollution in Wales 2016, Welsh Government, 2016b

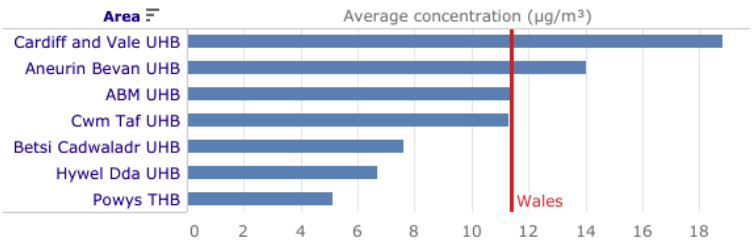
Three HB areas, Cardiff and Vale HB, Aneurin Bevan HB and ABMU HB had Nitrogen Dioxide (NO_2) concentrations at residential locations above the Welsh average (data from 2016) (Public Health Wales Observatory, 2018a).

Figure 34: Nitrogen dioxide (NO_2) concentration at residential locations, 2016

Nitrogen dioxide (NO_2) concentration at residential dwelling locations, 2016

Average concentration (µg/m³), health boards

95% confidence interval



Area	Value	95% Confidence Interval	Count
Cardiff and Vale UHB	18.8	-	N/A
Aneurin Bevan UHB	14.0	-	N/A
ABM UHB	11.5	-	N/A
Cwm Taf UHB	11.3	-	N/A
Betsi Cadwaladr UHB	7.6	-	N/A
Hywel Dda UHB	6.7	-	N/A
Powys THB	5.1	-	N/A
Wales	11.4	-	N/A

Produced by Public Health Wales Observatory, using modelled air quality data (DEFRA), MYE and dwelling counts (ONS).
This is a national indicator. Please consult the technical guide for full details on how this indicator is calculated.

Source: PHOF, Public Health Wales, Observatory, 2018a

Exposure to outdoor air pollutants increases the risk of poor health and mortality and contributes to increased health service costs and lost workdays. Air pollution can disproportionately affect vulnerable population groups for example children, older people, those with underlying disease, and those exposed to higher concentrations because of living or commuting in urban or deprived locations (Public Health Wales, 2018).

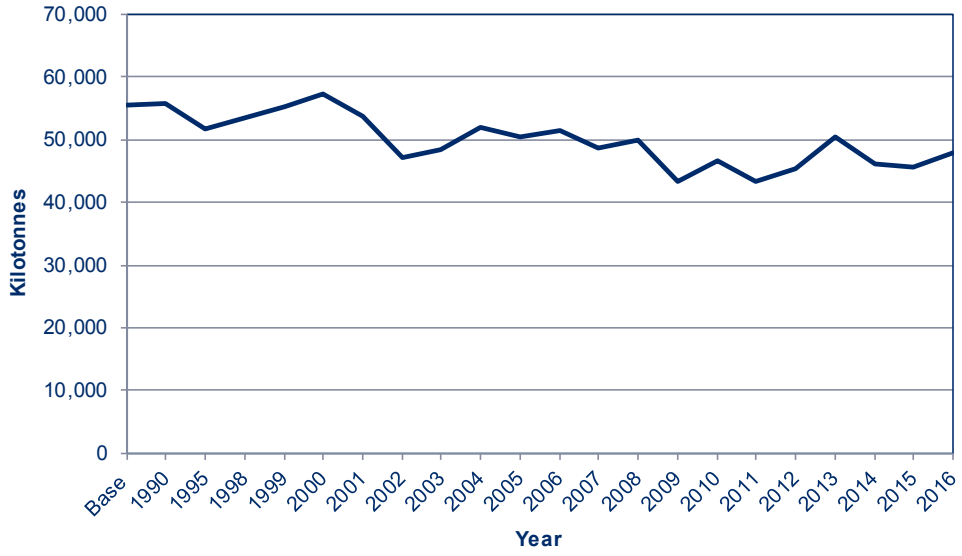
Across the UK each year, 40,000 early deaths and a reduced average life expectancy of 7-8 months are attributable to exposure to air pollutants (Public Health Wales, 2018). In Wales each year, the equivalent of around 1,600 deaths are attributed to PM2.5 exposure and 1,100 deaths to NO_2 exposure (Public Health Wales, 2018).

6.2 Climate change

Compared to 1990 levels, Wales has reduced greenhouse gas emissions by 14%, which is some way off from the Welsh Government's Climate Change Strategy (2010) non-statutory target of a 40% reduction by 2020 (National Assembly for Wales, 2018b).

Although the UK has made some real progress with regards to reducing Greenhouse Gas emissions, reduction of Welsh emissions has not been as successful, with an average annual increase of 1.4% from 2009-2016. Total emissions in Wales increased by 5% in 2016. This follows falls in emissions in 2014 and 2015 (National Assembly for Wales, 2018b).

Figure 35: Greenhouse Gas Emissions (Kilotonnes), 1990 to 2016

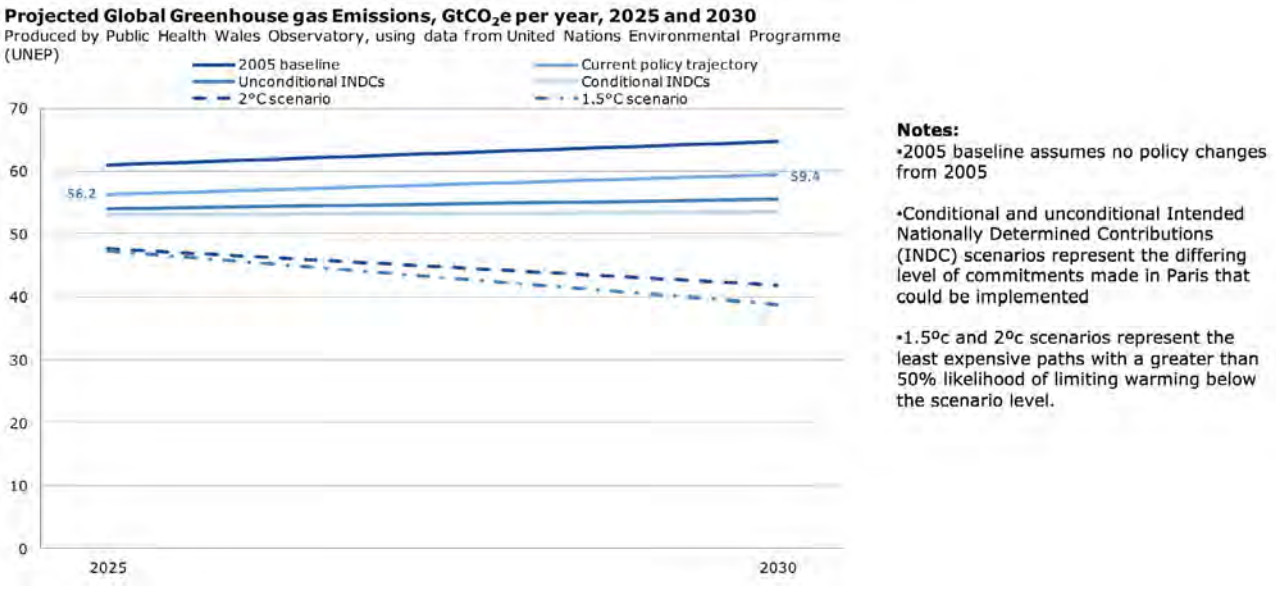


Source: Greenhouse Gas: StatsWales

Source: Well-being of Wales, 2017-18: Charts and associated data, Welsh Government, 2018b

Figure 36, shows the projected global greenhouse gas emissions, modelled on a range of scenarios.

Figure 36: Projected Global Greenhouse gas Emissions, GtCO2e per year, 2025 and 2030



Source: Page 95, Health and its determinants in Wales: Informing strategic planning, Public Health Wales Observatory, 2018c

6.3 Water quality

European water policy has played an important role in protecting water resources, and the quality of Welsh bathing sites is a good example of this. The first European bathing water legislation, in the form of the Bathing Water Directive, came into force in 1976. The revised Bathing Water Directive was adopted in 2006, and 2015 was the first year it was fully implemented in the UK. Management and surveillance methods for bathing waters have been changed and new tighter microbiological standards brought in (NRW, 2017).

Water quality at designated bathing water sites in Wales is assessed by Natural Resources Wales (NRW). From May to September, regular assessments measure current water quality, and at a number of sites daily pollution risk forecasts are issued. Annual ratings classify each site as excellent, good, sufficient or poor based on measurements taken over a four year period (NRW, 2018).

The top five sources of bathing water pollution are (NRW, 2018):

- Pollution from sewage;
- Water draining effluent from farms and farmland;
- Animal and bird excrement on or near beaches;
- Water draining from populated areas for example following heavy rain;
- Domestic sewage.

In 2017, 103 of the 104 designated Welsh bathing waters met the standards set by the Bathing Water Directive. Of the 104 bathing waters assessed in Wales, 80 were of an excellent standard, 18 achieved a good standard and 5 were classified as the minimum, sufficient, standard. One Welsh bathing water failed to comply with the Directive standards and was classified as poor – Cemaes, on Anglesey. This is the same bathing water that was non-compliant in 2016 (NRW, 2017).

6.4 Vulnerable group: Coastal towns

Wales' bathing waters are of great importance for the economy, for local communities and for tourism. A study commissioned by WWF Cymru in 2012, "Valuing Wales' seas and coasts" stated that "The coastal and marine environment is an incredible natural asset, contributing £6.8 billion to the economy of Wales and supporting more than 92,000 jobs" (NRW, 2017).

In addition, over 60% of the population of Wales live and work in the coastal zone, with all our major cities and many important towns located on the coast (NRW, 2017).

7 Summary

The impact of the UK leaving the EU is unknown. However, if the reported assumptions are realised and there are adverse effects on the UK economy, levels of employment and a rise in the cost of living, then there is the potential for negative impacts on the health and well-being of many people and communities across Wales.

Population groups highlighted in this report who are at greatest risk of an impact following the UK leaving the EU, include people living in the most deprived areas of Wales, people on low incomes, people who are unemployed or at risk of unemployment and those with health and social care needs.

In addition, communities at greatest risk of an impact following the UK leaving the EU include areas who previously had a high degree of investment from the EU for example West Wales and the Valley regions, areas with a single large employer, rural farming communities and port towns.

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2 Matrix of evidence of impact across the determinants of health

Referencing in the matrix is as follows:

- Section numbers (for example Section 2.1) refers to population data from the Community Health Profile (See Section 1 of this report)
- Participatory stakeholder workshop refers to stakeholder evidence from the HIA participatory workshop
- INTn for example INT 13, refers to evidence from a specific stakeholder interview
- References to documentary sources from the Community Health Profile above are labelled as **"References from Community Health Profile"** and can be found in Section 1 of this report
- References to documents from the Literature Review are labelled as "**References from Literature Review"** and a reference list for these sources is at the end of this document

The matrices use the following descriptors of impact throughout:

Type of impact	Positive	Impacts that are considered to improve health status or provide an opportunity to do so
	Negative	Impacts that are considered to diminish health status
Likelihood of impact	Confirmed	Strong direct evidence for example from a wide range of sources that an impact has already happened or will happen
	Probable	More likely to happen than not. Direct evidence but from limited sources
	Possible	May or may not happen. Plausible but with limited evidence to support
Intensity / severity of impact	Major	Significant in intensity, quality or extent. Significant or important enough to be worthy of attention, noteworthy
	Moderate	Average in intensity, quality or degree
	Minimal	Of a minimum amount, quantity or degree, negligible
Duration of impact	Short term (S)	Impact seen in 0 – 3 years
	Medium term (M)	Impact seen in 3 – 10 years
	Long term (L)	Impact seen in >10 years

Potential Determinants of Health and Wellbeing affected

Determinant	Potential Impact i.e. positive; negative; neutral	Direct / indirect	Magnitude / significance i.e. minimal; moderate; major	Likelihood / certainty i.e possible; probable; confirmed	Duration i.e short term / medium / long term	Scope i.e local; regional; national	Evidence source: journal; technical; qualitative (workshop / interview etc)
Access to Services: Health care							
Health care: Staffing	Negative impact: • NHS staffing levels and recruitment **Key policy pathways / mechanisms of Brexit impact**: • End of freedom of movement and changes to immigration policies (non-devolved) • Rights of EU Nationals to live and work in the UK (non-devolved) • Increased uncertainty over the future	Direct	Major in the context of existing challenges to medical, nursing and dentistry recruitment in Wales, in particular in highly specialist posts, Paediatrics, and General Practice	Confirmed	Short to medium term	Local and national, with higher level impacts in areas that already struggle to recruit for example rural areas	INT 1, 7, 10, 10a, 15 **References from Literature Review:** (Welsh NHS Confederation, 2018) (Royal College of Nursing, 2018) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018b) (Nursing and Midwifery Council, 2018) (Middleton and Weiss, 2016) (Torjesen, 2017) (Gallagher, 2018) (Dr Sarah Wollaston MP, 2016) (House of Commons Library, 2018) (Welsh Government, 2017a) (Welsh Government, 2018a) (National Institute of Economic and Social Research, 2018) (British Medical Association, 2018) **References from Community Health Profile:** **Section 2.1** ONS, 2012a **Section 3.1** Fahy et al, 2017 Welsh NHS Confederation, 2018 BMA, 2017 GMC, 2017 and Figure 4 NMC, 2018 and Table 4 and Figure 5 and 6 Welsh Government, 2012 and Figure 7 **Participatory stakeholder workshop**

Medicines	Negative impact: • Access and supply • Licensing • R&D • Approvals • Clinical trials • Regulation • Pharmacovigilance • Nuclear medicine **Key policy pathways / mechanisms of Brexit impact**: • Terms of future trade policy and trade agreements (devolved and non-devolved) • Reduced access to key coordinating public health systems (devolved and non-devolved) • Reduced access to data, intelligence and evidence sharing mechanisms (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • Regulatory divergence increasing customs requirements at borders • Loss or reduced access to EU funding for research	Direct	Major	Probable	Short to medium term	Local, regional and national	INT 1, 2, 3, 9, 10a, 13, 16 **References from Literature Review:** (Welsh NHS Confederation, 2018) (Office of Health Economics, 2017) (Life Science Industry Coalition, 2017) (Nuffield Trust, 2017) (Fahy and Hervey, 2017) (McCall, 2018) (Gallagher, 2018) (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018) (Welsh Government, 2018a) (Department of Health and Social Care, 2018) (Department for Exiting the European Union, 2018) (HM Government, 2018) **References from Community Health Profile: Section 3.3** Welsh NHS Confederation, 2018 **Participatory stakeholder workshop**

Medicines	Long term positive impact: • Increase UK based development and manufacturing of medicines **Key policy pathways/ mechanisms of Brexit impact**: • Terms of future trade policy and trade agreements (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved)	Direct	Moderate	Possible	Long term only	Local, regional and national	**Positives** **References from Literature Review:** (Fahy and Hervey, 2017) (Nuffield Trust, 2017) (Duttagupta, Yampolsky and Chowdhury, 2015) **Participatory stakeholder workshop**
Health protection: including pandemics; infectious diseases	Negative impact: • Loss of membership of key co-ordinating bodies for example ECDC, EEA role of risk assessment, data analysis, surveillance and coordinating public health systems • Loss of information / data and knowledge sharing **Key policy pathways / mechanisms of Brexit impact**: • Reduced access to key coordinating public health systems (devolved and non-devolved)) • Reduced access to data, intelligence and evidence sharing mechanisms (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved)	Direct	Moderate	Probable	Short, medium term	Local, regional and national	INT 3, 10, 10a **References from Literature Review:** (Welsh NHS Confederation, 2018) (Brexit Health Alliance, 2018a) (National Assembly for Wales Research Service, 2018b) (Faculty of Public Health, 2018b) (Gulland, 2016) (Welsh Government, 2018a) (Fahy, et al., 2017) (HM Government, 2018) (Department for Exiting the European Union, 2018) **References from Community Health Profile: Section 3.4** FPH, 2018 **Participatory stakeholder workshop**

Reciprocal healthcare	Negative impact: • Higher costs for travellers which may impact on access to holidays / work / study opportunities • Possible higher demand on NHS of returning UK Nationals with significant health needs **Key policy pathways / mechanisms of Brexit impact** • End of freedom of movement and changes to immigration policies (non-devolved) • UK Citizens no longer EU citizens	Direct	Major	Probable	Short to medium	National	INT 8, 10, 10a **References from Literature Review:** (Welsh NHS Confederation, 2018) (Fahy and Hervey, 2017) (Fahy et al., 2017) (House of Commons Library, 2018) (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018) (Welsh Government and Plaid Cymru, 2017) (Welsh Government, 2018a) (HM Government, 2018) (Department for Exiting the European Union, 2018) **References from Community Health Profile: Section 2.1.3** Fahy et al, 2017 Menon, 2018 Welsh NHS Confederation, 2018 **Participatory stakeholder workshop**
Rare diseases	Negative impact: • Leaving European Reference Groups and rapid access to specialist clinical care for rare diseases and participation in clinical trials **Key policy pathways / mechanisms of Brexit impact** • Reduced access to key coordinating public health systems (devolved and non-devolved)) • Reduced access to data, intelligence and evidence sharing mechanisms (devolved and non-devolved)	Direct	Minimal at population level Major for individuals	Probable	Short, medium term	National	INT10a **References from Literature Review:** (Welsh NHS Confederation, 2018) (Brexit Health Alliance, 2018b) (Leake, 2018) (Welsh Government, 2018a) (HM Government, 2018) (Department for Exiting the European Union, 2018) **Participatory stakeholder workshop**

Access to services: Social care							
Social care staffing	Negative impact: • Staffing levels and recruitment. • Estimated 4% social care workforce is from EU Nationals **Key policy pathways / mechanisms of Brexit impact**: • End of freedom of movement and changes to immigration policies (non-devolved) • Rights of EU Nationals to live and work in the UK (non-devolved)	Direct	Major – due to cumulative impact which could exacerbate existing service sustainability factors including: high service demand, ageing population, and challenges with recruitment	Probable	Short, medium and long term	Local, regional and national	INT 7, 10a, 15 **References from Literature Review**: (Welsh NHS Confederation, 2018) (Royal College of Nursing, 2018) (Welsh Local Government Association, 2018) (Middleton and Weiss, 2016) (National Institute of Economic and Social Research, 2018) (Nuffield Trust, 2017) (Fahy, et al., 2017) (Dr Sarah Wollaston MP, 2016) (Welsh Government, 2017a) (Welsh Government, 2018) (HM Government, 2018) **References from Community Health Profile: Section 3.1.5** Welsh NHS Confederation, 2018 Welsh Government, 2017a **Participatory stakeholder workshop**

Lifestyles: Access to healthy, safe and affordable food							
Food safety	Negative impact: • Regulatory, legislation, risk assessment and risk management functions • Rapid alert systems • 90% legislation originates from EU • Potential for future regulatory divergence in new trade agreement terms • Wales has no inspection facilities at ports • Workforce issues **Key policy pathways / mechanisms of Brexit impact**: • Terms of future trade policy and trade agreements (devolved and non-devolved) • End of freedom of movement and changes to immigration policies (non-devolved) • Rights of EU Nationals to live and work in the UK (non-devolved) • Reduced access to key coordinating public health systems (devolved and non-devolved) • Reduced access to data, intelligence and evidence sharing mechanisms (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • Regulatory divergence increasing customs requirements at borders	Direct	Major – high potential for disruption and cumulative impact with implementation of FSA major change programme: "Regulating our Future Programme".	Probable	Short to medium term	Local, regional and national	INT 3, 4, 6, 12 **References from Literature review:** (Brexit Health Alliance, 2018a) (Which?, 2018) (Lang, Lewis, Marsden and Millstone, 2018) (The Health Foundation, 2018) (Messenger, 2018) (Ainsworth, 2017) (Food Standards Agency, 2017) (Hancock, 2018) (Welsh Government, 2018h) (Kent County Council, 2018a) (Kent County Council, 2018b) (Food and Drink Wales, 2018) (HM Government, 2018) (Department for Exiting the European Union, 2018) **Participatory stakeholder workshop**
Food safety	Long term positive impact to: Adapt role of Official veterinarians (OVEs) to become a "certifying officer" and train local staff in these roles.	Direct	Minimal	Possible	Long term	National	**Participatory stakeholder workshop**
Food safety	Long term positive to: • Increase biosecurity unilaterally	Direct	Moderate	Possible	Long term	National	**Participatory stakeholder workshop**

Food safety	Negative or positive impact: • Dependent on terms of future trade and regulatory standards	Direct	Moderate	Possible	Long term	National	**References from Literature review:** (Faculty of Public Health, 2018a) (NHS Confederation European Office, 2018a) (Brexit Health Alliance, 2018a)
Food standards	Negative or positive impact: • Dependent on terms of future trade and regulatory standards **Key policy pathways / mechanisms of Brexit impact**: • Leaving single market and / or customs union (non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Reduced access to key coordinating public health systems (devolved and non-devolved) • Reduced access to data, intelligence and evidence sharing mechanisms (devolved and non-devolved)	Direct	Major	Possible	Long term	National	INT 3, 4, 6, 12 **References from Literature review:** (Lang, Lewis, Marsden and Millstone, 2018) (The Health Foundation, 2018) (Which?, 2018) (Brexit Health Alliance, 2018a) (Hancock, 2018) (HM Government, 2018) (Department for Exiting the European Union, 2018) (Friel, Gleeson, Thow et al., 2013) **Participatory stakeholder workshop**
Sustainable food production	Positive impact: • Review agriculture policy and payments to focus on sustainability • Increase local food production and supply • Reduce food miles **Key policy pathways / mechanisms of Brexit impact**: • Leaving single market and / or customs union (non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved)	Direct	Moderate	Possible	Long term	Local, regional and national	**References from literature review:** (Lang, Lewis, Marsden and Millstone, 2018) (Brexit Health Alliance, 2018a) (The Health Foundation, 2018) (Welsh Government, 2018h) (Food and Drink Wales, 2018) (Welsh Government 206, 210) (HM Government, 2018) (Department for Exiting the European Union, 2018) (House of Lords, 2017) **Participatory stakeholder workshop**

Food supply	Negative impact if: • Loss of EU workforce • Future tariffs on imports • Regulatory divergence – customs checks **Key policy pathways / mechanisms of Brexit impact**: • End of freedom of movement and changes to immigration policies (non-devolved) • Rights of EU Nationals to live and work in the UK (non-devolved) • Regulatory divergence increasing customs requirements at borders • Leaving single market and /or customs union (non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved)	Direct	Major	Possible Probable in a no deal scenario	Short term	Local, regional and national	INT 12 **References from Literature Review**: (Brexit Health Alliance, 2018a) (Lang, Lewis, Marsden and Millstone, 2018) (Dhingra and De Leon, 2018) (The Health Foundation, 2018) (Gulland, 2016) (House of Commons Library, 2018) (Welsh Government and Plaid Cymru, 2017) (Welsh Government, 2018h) (Food and Drink Wales, 2018) (Department for Exiting the European Union, 2018) (Kent County Council, 2018a) (Kent County Council, 2018b) **Participatory stakeholder workshop**
Cost of food	Negative impact if: • Economic impact causes inflationary pressures • Changes in tariffs **Key policy pathways / mechanisms of Brexit impact**: • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets • Leaving single market and / or customs union (non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved)	Direct	Major	Probable	Short to medium term	Local, regional and national	**References from Literature Review:** (Lang, Lewis, Marsden and Millstone, 2018) (Which?, 2018) (Breinlich, Leromain, Novy and Sampson, 2017) (Dhingra and De Leon, 2018) (Brexit Health Alliance, 2018a) **References from the Community Health Profile:** **Section 4.3** House of Lords, 2017 Levell, O'Connell and Smith, 2018 **Participatory stakeholder workshop**

Lifestyles: Alcohol							
Use and regulation of alcohol	Positive or negative impact dependent on: • Future regulation impacted by future trade agreements for example labelling • If there is an economic recession alcohol consumption may increase or decline • Price rises may impact consumption **Key policy pathways / mechanisms of Brexit impact**: • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets • Leaving single market and / or customs union (non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved)	Direct – regulation Indirect – consump-tion	Moderate	Possible	Medium to long term	Local, regional and national	**References from Literature Review:** (Department for Exiting the European Union, 2018) (Grieshaber-Otto, Sinclair and Schacter, 2000) (Zeigler, 2006) (Baumberg and Anderson, 2008) (World Health Organization, 2011) (Davies, Homolova, Grey and Bellis, 2017) (Nolan, Barry, Burke and Thomas, 2014) (Breinlich, Dhingra, Sampson and Van Reenan, 2016) **Participatory stakeholder workshop**

Lifestyles: Tobacco							
Use and regulation of tobacco	Positive or negative impact dependent on: • Future regulation impacted by future trade agreements for example labelling • New images required for cigarette packets • If there is an economic decline tobacco consumption may increase or decline **Key policy pathways / mechanisms of Brexit impact**: • Leaving single market and / or customs union (non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets	Direct	Moderate	Possible	Short, medium and long term	National	**References from Literature Review:** (Department for Exiting the European Union, 2018) (Zeigler, 2006) (Sy and Stumberg, 2014) (Crosbie, Eckford and Bialous, 2018) (Elliott et al., undated) (Davies, Homolova, Grey and Bellis, 2017) **Participatory stakeholder workshop**

Working conditions							
Health and safety	Positive or negative impact: • Dependent on future approach to legislation, regulation and terms of future trade agreements **Key policy pathways / mechanisms of Brexit impact:** • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • The loss of jurisdiction of the EU Charter of Fundamental Rights in the UK (non-devolved)	Direct	Major	Possible depending on future policy and political scenarios	Medium to long term	National	INT 10a, 12 **References from Literature Review:** (Welsh NHS Confederation, 2018) (Trade Union Congress, 2016) (Fahy, et al., 2017) (Nuffield Trust, 2017) (Equality and Human Rights Commission, 2018) (Rimmer, 2016) (Steadman, 2018) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018a) (Welsh Government, 2018a) (National Assembly for Wales Research Service, 2018d) (UK Government Cabinet Office, 2018) (HM Government, 2018) (Department for Exiting the European Union, 2018)

Workers' rights and equality	Positive or negative impact: Dependent on future approach to legislation, regulation and terms of future trade agreements **Key policy pathways / mechanisms of Brexit impact:** • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • The loss of jurisdiction of the EU Charter of Fundamental Rights in the UK (non-devolved)	Direct	Major	Possible depending on future policy and political scenarios	Medium to long term	National	INT 1, 10, 10a, 13 **References from Literature Review:** (Welsh NHS Confederation, 2018) (Trade Union Congress, 2016) (Fahy, et al., 2017) (Steadman, 2018) (Nuffield Trust, 2017) (Rimmer, 2016) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018a) (Welsh Government, 2018a) (National Assembly for Wales Research Service, 2018d) (UK Government Cabinet Office, 2018) (HM Government, 2018) (Department for Exiting the European Union, 2018) **References from Community Health Profile:** Section 5.2 TUC, 2016 Section 5.2.1 National Assembly for Wales, 2018a Equality and Human Rights Commission, 2018 **Participatory stakeholder workshop**
Working hours	Positive or negative impact: Dependent on future approach to legislation, regulation and terms of future trade agreements **Key policy pathways / mechanisms of Brexit impact:** • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • The loss of jurisdiction of the EU Charter of Fundamental Rights in the UK (non-devolved)	Direct	Major	Possible depending on future policy and political scenarios	Medium to long term	National	INT 10, 10a, 13 **References from Literature Review:** (Welsh NHS Confederation, 2018) (Rimmer, 2016) (Steadman, 2018) (Nuffield Trust, 2017) (Fahy, et al., 2017) (Welsh Government, 2018a) (National Assembly for Wales Research Service, 2018d) (UK Government Cabinet Office, 2018) (HM Government, 2018) (Department for Exiting the European Union, 2018) **Participatory stakeholder workshop**

Living Environment: Environmental regulations							
Environmental regulations e.g. Air quality	Positive or negative impact: Dependent on future approach to legislation, regulation and terms of future trade agreements Good progress under EU legislation Higher concentration of pollutants in deprived areas and urban areas **Key policy pathways / mechanisms of Brexit impact:** • Terms of future trade policy and trade agreements (devolved and non-devolved) • Reduced access to key coordinating public health systems (devolved and non-devolved) • Reduced access to data, intelligence and evidence sharing mechanisms (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • The loss of jurisdiction of the EU Charter of Fundamental Rights in the UK (non-devolved) and European Court of Justice • Leaving single market and / or customs union (non-devolved)	Direct	Major – in particular in context of low adherence to current legal thresholds on air quality	Possible depending on future policy and political scenarios	Medium to long term	National	INT 3, 7, 11, 12, 17 **References from Literature Review:** (Welsh NHS Confederation, 2018) (Brexit Health Alliance, 2018a) (Nesbit and Watkin, 2018) (Gulland, 2016) (Dr Sarah Wollaston MP, 2016) (UK Government Cabinet Office, 2018) (National Assembly for Wales Climate Change, Environment and Rural Affairs Committee, 2018) (Welsh Government, 2018b) (Department for the Environment, Food and Rural Affairs, 2018) (HM Government, 2018) (Department for Exiting the European Union, 2018) (NHS Confederation European Office, 2018a) (Faculty of Public Health, 2018a) (Fahy et al., 2017) **References from Community Health Profile:** Section 6.1 Fahy et al, 2017 Welsh Government, 2016b, figure 43 Public Health Wales, 2018 Public Health Wales, Observatory, 2018a, Figure 44 **Participatory stakeholder workshop**

Bathing water quality (EU Blue Flag Scheme)	Positive or negative impact: • Dependent on future approach to legislation, regulation and terms of future trade agreements • EU played an important role in protecting water resources **Key policy pathways / mechanisms of Brexit impact:** • Reduced access to key coordinating public health systems (devolved and non-devolved) • Reduced access to data, intelligence and evidence sharing mechanisms (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved)	Direct	Major	Possible	Medium to long term	Local, regional and national	INT 3, 7, 11, 12, 17 **References from Literature Review:** (Welsh NHS Confederation, 2018) (Brexit Health Alliance, 2018a) (Nesbit and Watkin, 2018) (Gulland, 2016) (Faculty of Public Health, 2018a) (Dr Sarah Wollaston MP, 2016) (UK Government Cabinet Office, 2018) (Department for the Environment, Food and Rural Affairs, 2018) (HM Government, 2018) (Department for Exiting the European Union, 2018) (National Assembly for Wales Climate Change, Environment and Rural Affairs Committee, 2018) (Welsh Government, 2018b) **References from the Community Health profile:** Section 6.3 NRW, 2017 NRW, 2018

Economic conditions affecting health: Employment and skills							
Loss of key workers in key sectors linked to health and well-being for example health, social care, food production, academia	Negative: **Key policy pathways / mechanisms of Brexit impact:** • End of freedom of movement and changes to immigration policies (non-devolved) • Rights of EU Nationals to live and work in the UK (non-devolved)	Direct	Major	Confirmed	Short, medium and long term	Local, regional and national	INT 1, 3, 10a, 14, 15 **References from Literature Review:** (Welsh NHS Confederation, 2018) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018b) (Brexit Health Alliance, 2018a) (Brexit Health Alliance, 2018b) (Life Science Industry Coalition, 2017) (Lang, Lewis, Marsden and Millstone, 2018) (Welsh Local Government Association, 2018) (Middleton and Weiss, 2016) (Torjesen, 2017) (Hurlow, 2016) (Watson, 2018) (The Observer, 2017) (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018) (House of Commons Library, 2018) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a) (Welsh Government and Plaid Cymru, 2017) (Welsh Government, 2017a) (Welsh Government, 2018a) (Welsh Government, 2018) (HM Government, 2018) (House of Lords, 2017) (Department for Exiting the European Union, 2018) **References from the Community Health Profile:** Section 3.1 Fahy et al, 2017 Welsh NHS Confederation, 2018 BMA, 2017 GMC, 2017 Figure 4 NMC, 2018 Table 4, Figure 5 and 6 Welsh Government, 2012 Figure 7

							Welsh NHS Confederation, 2018 Welsh Government, 2017a Section 4 ONS, 2018b, Table 9 Welsh Government 2017a Welsh Government, 2012, Table 10 National Assembly for Wales, 2017a **Participatory stakeholder workshop**
Potential to attract more skilled workers in key sector to Wales	Positive impact linked to: • A scenario where there is potential for increased competition between UK nations for skilled workers, Wales could develop more attractive working conditions and quality of life. **Key policy pathways / mechanisms of Brexit impact:** • End of freedom of movement and changes to immigration policies (non-devolved)	Indirect	Moderate	Possible	Long term	Local, regional and national	**Participatory stakeholder workshop**
Job availability	Positive impact: • Potentially higher vacancy rates for unemployed people i.e. NEETs **Key policy pathways / mechanisms of Brexit impact:** • End of freedom of movement and changes to immigration policies (non-devolved) **Additional** Opportunities for industries such as agriculture who may benefit from trade barriers, as consumers will substitute away from imports towards products made by UK industries	Direct	Minimal – limited due to demo-graphics and skills base	Possible	Short, medium, long term	Local, regional and national	**References from Literature review:** (Guardian reporting on ONS data, 2018) (CIPD, 2018) **References from Community Profile:** Section 4.5 Levell and Keiller, 2018

Job security in sectors linked to exports / exposure to changes in tariff and non-tariff barriers	Negative impact: • Mass Unemployment Events where areas are dependent on single large employer • Industries dependent on imports and exports to the EU **Key policy pathways / mechanisms of Brexit impact:** • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved) • Increased uncertainty over the future for example investment (devolved and non-devolved) • Regulatory divergence increasing customs requirements at borders (devolved and non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved)	Direct	Major	Probable	Short, medium and long term	Local, regional and national	INT 3, 17 **References from Literature Review:** (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a) (Levell and Keiller, 2018) (Welsh Economy Research Unit, 2017) (Confederation of British Industry, 2017) (Airbus, 2018) **References from Community Profile:** Section 4 Breinlich et al, 2018 Morris, 2018 ONS, 2018b, Table 9 Section 4.8 Public Health Wales, 2017 Figure 23 WHO, 2011 Section 4.5 Welsh Economy Research Unit, 2017 Figure 20 Levell and Keiller, 2018 National Assembly for Wales, 2017a Figure 28 Table 14 and 15 **Participatory stakeholder workshop**

Opportunity for increasing skills in Wales	Negative impact: • Loss of EU funding for skills and employability **Key policy pathways / mechanisms of Brexit impact:** • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved) • Loss of EU funding (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • End of freedom of movement and changes to immigration policies (non-devolved)	Direct	Moderate	Probable	Medium to long term	Local, regional and national	(Welsh Government and Plaid Cymru, 2017) **Participatory stakeholder workshop**
Opportunity for increasing skills in Wales	Positive impact: **Key policy pathways / mechanisms of Brexit impact:** • End of freedom of movement and changes to immigration policies (non-devolved)	Direct	Moderate	Possible - if sufficient investment and supportive policy in place	Long term	Local, regional and national	**Participatory stakeholder workshop**

Economic conditions: EU Funding							
Community, economic and infrastructure investment addressing inequalities	Negative impact: • Loss of access to future EU investment programmes targeted at areas of deprivation / high inequalities • Uncertainty on future UK Shared Prosperity Fund – both in terms of level of funding and decision making **Key policy pathways / mechanisms of Brexit impact:** • Leaving EU (non-devolved) • Leaving single market and / or customs union (non-devolved) • Increased uncertainty over the future e.g. investment decisions (devolved and non-devolved) • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved) • Loss of EU funding (devolved and non-devolved)	Direct	Major	Probable	Medium to long term	Local, regional and national	INT 2, 7, 10, 10a, 11, 13, 16, 17 **References from Literature Review:** (Welsh NHS Confederation, 2018) (British Medical Association, 2018a) (Welsh Local Government Association, 2018) (Brexit Health Alliance, 2018a) (Sheffield Political Economy Research Institute / The UK in a Changing Europe, 2016) (BBC, 2016) (Dr Sarah Wollaston MP, 2016) (Welsh Government, 2017b) (Welsh Government, 2018f) (UK Government and European Union, 2018) (National Assembly for Wales Research Service, 2018a) (UK Government Ministry of Housing, Communities and Local Government, 2018) (HM Government, 2018) (Department for Exiting the European Union, 2018) **References from Community Health Profile:** Section 4.9 Welsh Government, 2017c Welsh Government, 2018e Table 21 Table 22 Welsh Government, 2015 Tables 23 and 24 **Participatory stakeholder workshop**

Community, economic and infrastructure investment addressing inequalities	Positive impact: • Potential for alternative models of funding to be tested • UK Government has largely guaranteed funding for projects agreed prior to 2020 **Key policy pathways / mechanisms of Brexit impact:** • Leaving EU (non-devolved) • Leaving single market and / or customs union (non-devolved) • Increased uncertainty over the future e.g. investment decisions (devolved and non-devolved)	Direct	Moderate	Possible	Medium to long term	Local, regional and national	**References from Literature Review:** (Welsh Local Government Association, 2018) (The Health Foundation, 2018) (National Assembly for Wales Finance Committee, 2018) **References from Community Health Profile:** Section 4.9 Welsh Government, 2017a **Participatory stakeholder workshop**
Agricultural and land management policy and funding	Negative impact: • Uncertainty and high volume of change in Common Agricultural Policy and payments • Loss of EU subsidies on which Welsh farmers are reliant • 4.1% of employment in Wales in agricultural sector • EU subsidies make up 80% of farm income in Wales **Key policy pathways / mechanisms of Brexit impact:** • Terms of future trade policy and trade agreements (devolved and non-devolved) • End of freedom of movement and changes to immigration policies (non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • Regulatory divergence increasing customs requirements at borders (devolved and non-devolved) • Loss of EU funding (CAP) (devolved and non-devolved) • Increased uncertainty over the future e.g. investment decisions (devolved and non-devolved)	Direct	Major	Confirmed	Short to medium term	Local, regional and national	INT10a **References from Literature Review:** (Farmers' Union of Wales, 2016) (NFU Cymru and CBI Wales, 2018) (Country Landowners Association, 2016) (Centre for Economic Performance, 2018) (Brexit Health Alliance, 2018a) (BBC, 2016) (Dr Sarah Wollaston MP, 2016) (Welsh Government and Plaid Cymru, 2017) (Welsh Government, 2018h) (Welsh Government, 2018f) (Department for Exiting the European Union, 2018) **References from Community Health Profile:** Section 5.5 Welsh Government, 2018g National Assembly for Wales, 2017a, Table 28 House of Lords, 2017, Table 29 Public Health Wales Observatory, 2018a, Figure 30 **Participatory stakeholder workshop**

Agricultural and land management policy and funding	Positive impact: • Adapt agriculture and forestry policy to be more sustainable and better meet Wales' economic, social and environmental ambitions **Key policy pathways / mechanisms of Brexit impact:** • Terms of future trade agreements (non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved)	Direct	Major	Probable	Medium to long term	Local, regional and national	**References from Literature Review:** (Welsh Local Government Association, 2018) (Welsh Government, 2018h) (House of Lords, 2017) **Participatory stakeholder workshop**
Research and Development Funding for health related technology and treatment advancement	Negative impact: • Loss of current levels of access to EU research funding • Reduction in future access EU research funding • Leaving key academic and research collaborations • Potential reduction in access to academic expertise from EU countries • Non UK EU National academics may leave Wales. Not able to attract academics to Wales? • UK researchers may leave **Key policy pathways / mechanisms of Brexit impact:** • End of freedom of movement and changes to immigration policies (non-devolved) • Rights of EU Nationals to live and work in the UK (non-devolved) • Leaving EU, single market and / or customs union (non-devolved) • Reduced access to key coordinating public health systems (devolved and non-devolved) • Reduced access to data, intelligence and evidence sharing mechanisms (devolved and non-devolved) • Loss of EU funding or reduced access (devolved and non-devolved)	Direct	Major	Confirmed	Short, medium	Local, regional and national	INT 10, 10a **References from Literature Review:** (Welsh NHS Confederation, 2018) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018b) (Brexit Health Alliance, 2018b) (Life Science Industry Coalition, 2017) (Middleton and Weiss, 2016) (McCall, 2018) (Webb, 2016) (Watson, 2018) (The Observer, 2017) (House of Commons Library, 2018) (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018) (Welsh Government, 2018a) (Welsh Government, 2018f) (UK Government and European Union, 2018) (UK Government Ministry of Housing, Communities and Local Government, 2018) (National Assembly for Wales Research Service, 2018a) (Department for Exiting the European Union, 2018) (HM Government, 2018)

							References from Community Health Profile: Section 3.5 Welsh NHS Confederation, 2018 Menon, 2018 **Participatory stakeholder workshop**

Citizens and Human Rights							
Loss of application of the EU Charter of Fundamental Rights in UK	Negative impact: • A range of social and workers' rights and access to health care, social and housing assistance • A guarantee of human dignity (including bioethics) • A right to physical and mental integrity (including rights around personal data) **Key policy pathways / mechanisms of Brexit impact:** • Changing regulatory standards and legal frameworks (devolved and non-devolved) • UK Citizens no longer EU citizens (non-devolved) • The loss of jurisdiction of the EU Charter of Fundamental Rights in the UK (non-devolved)	Direct	Moderate	Possible – dependent of future policy and political stance on human rights	Medium to long term	National	(INT1,10,10a,13, 16) **References from Literature Review:** (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018a) (National Assembly for Wales Research Service, 2018d) (Equality and Human Rights Commission, 2018) Loss of Rights generally were discussed at the participatory stakeholder workshop **References from Community Health Profile:** Section 5.2 TUC, 2016 Section 5.2.1 National Assembly for Wales, 2018a Equality and Human Rights Commission, 2018

3 Matrix of evidence of impact across the population groups

Referencing in the Matrix is as follows:

- Section numbers (for example Section 2.1) refers to population data from the Community Health Profile (See Section 1 of this report)
- Participatory stakeholder workshop refers to stakeholder evidence from the HIA participatory workshop
- INTn for example INT 13, refers to evidence from a specific stakeholder interview
- References to documentary sources from the Community Health Profile above are labelled as **"References from Community Health Profile"** and can be found in Section 1 of this report
- References to documents from the Literature Review are labelled as "**References from Literature Review"** and a reference list for these sources is at the end of this document

The matrices use the following descriptors of impact throughout:

Type of impact	Positive	Impacts that are considered to improve health status or provide an opportunity to do so
	Negative	Impacts that are considered to diminish health status
Likelihood of impact	Confirmed	Strong direct evidence for example from a wide range of sources that an impact has already happened or will happen
	Probable	More likely to happen than not. Direct evidence but from limited sources
	Possible	May or may not happen. Plausible but with limited evidence to support
Intensity / severity of impact	Major	Significant in intensity, quality or extent. Significant or important enough to be worthy of attention, noteworthy
	Moderate	Average in intensity, quality or degree
	Minimal	Of a minimum amount, quantity or degree, negligible
Duration of impact	Short term (S)	Impact seen in 0 – 3 years
	Medium term (M)	Impact seen in 3 – 10 years
	Long term (L)	Impact seen in >10 years

Matrix of evidence of impact across the population groups

Population group	Potential Impact i.e positive, negative or neutral	Direct / indirect	Magnitude / significance i.e. minimal; moderate; major	Likelihood / certainty i.e unlikely, possible; probable; confirmed	Duration i.e short term / medium / long term	Scope i.e local; regional; national	Evidence source: journal; technical; qualitative (workshop / interview etc)
Non UK EU Citizens living in Wales	Negative impact: • Status in relation to work, residency and access to services uncertain due to changes in freedom of movement and immigration rules • Higher impacts on those who have been here for less than 5 years **Key policy pathways / mechanisms of Brexit impact:** • End of freedom of movement and changes to immigration policies (non-devolved) • Rights of EU Nationals to live and work in the UK (non-devolved) • Increased uncertainty over the future (devolved and non-devolved)	Direct	Major	Probable	Short, medium and long term	Localised impact dependent on number in each area	**References from Literature Review:** (National Assembly for Wales Research Service, 2018c) (NHS Confederation European Office, 2018b) (House of Commons Library, 2018) (Welsh NHS Confederation, 2018) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a) (Fahy et al., 2017) (Torjesen, 2017) (Hurlow, 2016) (Equality and Human Rights Commission, 2018) (Messenger, 2018) (Gallagher, 2018) (The Observer, 2017) (Welsh Government, 2018) (Welsh Government and Plaid Cymru, 2017) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018b) (Middleton and Weiss, 2016) (Dr Sarah Wollaston MP, 2016) **References from Community Health Profile:** Section 2 ONS, 2012a STATS Wales, 2018 and Table 2 Welsh Government, 2017a Public Health Wales Observatory, 2015 and Figure 3 **Participatory stakeholder workshop**

Children born into families with a parent from Non UK EU Country	Negative impact: • Disruption to family, community, social relationships and education **Key policy pathways / mechanisms of Brexit impact**: • End of freedom of movement and changes to immigration policies (non-devolved) • Rights of EU Nationals to live and work in the UK (non-devolved) • Increased uncertainty over the future (devolved and non-devolved)	Direct	Major	Probable	Short, medium and long term	Local, regional and national	**References from the Literature Review:** (National Assembly for Wales Research Service, 2018c) (NHS Confederation European Office, 2018b) **References from Community Health Profile:** Section 2.1.2 Welsh Government, 2017a **Participatory stakeholder workshop**

People living on low income, including people living in food and fuel poverty	Negative impact: • Inflation: cost of living could increase • Potential loss of employment **Key policy pathways / mechanisms of Brexit impact**: • Leaving single market and / or customs union (non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved)	Direct	Major - also cumulative effect of welfare reform in Wales on those in receipt of benefits	Probable	Short, medium and long term	Local, regional and national	**References from Literature Review:** (Breinlich, Dhingra, Sampson and Van Reenan, 2016) (Breinlich, Leromain, Novy and Sampson, 2017) (International Monetary Fund, 2018) (Bank Of England, 2018) (Beatty and Fothergill, 2016) (Beatty and Fothergill, 2017) **References from Community Health Profile:** Economy: Section 4 JRF, 2018 WHO, 2009 Kondo et al, 2008 Morrell et al, 1994 Edwards, 2008 Public Health Wales Observatory, 2018a Figure 16 Public Health Wales Observatory, 2018c Clarke, Serwicka and Winters, 2017, Table 11 Fuel poverty: Section 4.2 Welsh Government, 2018c Welsh Government 2016a Figure 18 Food poverty: section 4.3 Levell, O'Connell and Smith, 2018 Public Health Network Cymru, 2018 WISERD, 2017 Community: Section 5.7 Public Health Wales Observatory, 2018a, Figure 31 Section 5.8 STATS Wales, 2016 Table 30 and 31 **Participatory stakeholder workshop**

People at risk of unemployment	Negative impact: • Industries and jobs highly exposed to changes in export tariffs, non-tariff barriers and trade terms • Regionally important companies that move away **Key policy pathways / mechanisms of Brexit impact**: • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • Regulatory divergence increasing customs requirements at borders (non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Increased uncertainty over the future for example investment (devolved and non-devolved) Additional: • Single large employer and MUE	Direct	Major	Probable	Short, medium and long term	Local, regional and national	**References from Literature Review:** (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a) (Levell and Keiller, 2018) (Welsh Economy Research Unit, 2017) (Confederation of British Industry, 2017) (Airbus, 2018) (Kentish, 2018) (Partingdon, 2018) (Davies, Homolova, Grey and Bellis, 2017) (World Health Organisation, 2009) (World Health Organization, 2011) (Elliott et al., undated) **References from Community Health Profile:** Section 4.5 Welsh Economy Research Unit, 2017 Levell and Keiller, 2018 National Assembly for Wales, 2017a Table 15 Section 4.8 Public Health Wales, 2017 Figure 23 WHO, 2011 **Participatory stakeholder workshop**

People at risk of unemployment	Positive impact: • Potentially higher vacancy rates for unemployed people i.e. NEETs **Key policy pathways / mechanisms of Brexit impact** • End of freedom of movement and changes to immigration policies (non-devolved) Additional • Opportunities for industries such as agriculture who may benefit from trade barriers, as consumers will substitute away from imports towards products made by UK industries	Direct	Minimal – limited due to demographics and skills base	Possible	Short, medium and long term	Local, regional and national	**References from Literature Review:** (CIPD, 2018) (Guardian reporting on ONS data, 2018) (Kentish, 2018) **References from Community Health Profile:** Section 4.5 Levell and Keiller, 2018
People who are unemployed	Negative impact: • Possible loss of investment in public services due to economic downturn • Risks to labour market programmes • Fewer jobs due to economic downturn **Key policy pathways / mechanisms of Brexit impact** • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • Regulatory divergence increasing customs requirements at borders (non-devolved)	Direct	Major	Probable	Short and medium term	Local, regional and national	**References from Literature Review:** (Fahy, et al., 2017) (Welsh Economy Research Unit, 2017) (Bank Of England, 2018) (Confederation of British Industry, 2017) (Airbus, 2018) (Breinlich, Dhingra, Sampson and Van Reenan, 2016) (HM Government, 2018) (British Medical Association, 2018a) (Welsh Government and Plaid Cymru, 2017) (Levell and Stoye, Brexit, the public finances and the NHS, 2018) (Nolan, Barry, Burke and Thomas, 2014) (World Health Organisation, 2009) (World Health Organization, 2011) **References from Community Health Profile:** Section 4.6 ONS, 2018b, Table 9 and 10 Welsh Government, 2018b, Table 18

	• Terms of future trade policy and trade agreements (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Increased uncertainty over the future for example investment (devolved and non-devolved)						Nolan et al, 2014 Section 5.3 Welsh Government, 2018b Table 26 **Participatory stakeholder workshop**
Young adults	Negative impact: • Loss of opportunity: freedom of movement for work / study • Possible loss of investment in public services due to economic downturn • Loss of opportunity due to economic downturn • Young people leaving school who reside in the most deprived areas are majorly more likely to leave school with no skills or qualifications • Proportion of NEETS varies by age, region and disability • Young adults at increased risk of personal hate crime **Key policy pathways / mechanisms of Brexit impact** • End of freedom of movement and changes to immigration policies (non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • The loss of jurisdiction of the EU Charter of Fundamental Rights in the UK (non-devolved)	Direct	Major	Probable	Short, medium and long term	Local, regional and national	**References from Literature Review:** (Welsh Government and Plaid Cymru, 2017) (Sheffield Political Economy Research Institute / The UK in a Changing Europe, 2016) (Bank Of England, 2018) (HM Government, 2018) (Partingdon, 2018) (Dr Sarah Wollaston MP, 2016) (Welsh Government, 2018g) (Welsh Government, 2017b) (National Assembly for Wales Finance Committee, 2018) (The Home Office, 2018) **References from Community Health Profile:** Section 5.4 Public Health Wales Observatory, 2018a, Figure 26 Welsh Government 2018f, Figure 27, 28 and 29 Section 5.1.2 Home Office, 2018 **Participatory stakeholder workshop**

	• Leaving single market and / or customs union (non-devolved) • Regulatory divergence increasing customs requirements at borders (non-devolved) • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved) • Increased uncertainty over the future (devolved and non-devolved)						
Children	Negative impact: • Possible loss of investment in public services due to economic downturn • Increase in child poverty • Potential increases in workless households and associated health risks • Change in overarching right **Key policy pathways / mechanisms of Brexit impact** • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved) • Increased uncertainty over the future (devolved and non-devolved) • Loss of jurisdiction of EU Charter of Fundamental Rights(non-devolved)	Direct	Moderate	Possible	Short, medium and long term	Local, regional and national	**References from Literature Review:** (Children in Wales, 2018) (Children in Wales and Observatory on Human Rights of Children, 2017) (The Childrens Society, 2018) (Brexit Health Alliance, 2018a) (Welsh Government and Plaid Cymru, 2017) (Davies, Homolova, Grey and Bellis, 2017) **References from Community Health Profile:** Section 5.3 Welsh Government, 2018b Table 26 Section 4.8 Public Health Wales, 2017, Figure 23 WHO, 2011 **Participatory stakeholder workshop**

People in need of health and social care e.g. people with life limiting illness, older adults, care leavers	Negative impact: • Workforce challenges in health and social care • Possible loss of investment in public services due to economic downturn • Challenges to access and availability for medicines and devices • Increased physical and mental health conditions due to higher unemployment • Increased demand for NHS services **Key policy pathways / mechanisms of Brexit impact** • Terms of future trade policy and trade agreements (devolved and non-devolved) • End of freedom of movement and changes to immigration policies (non-devolved) • Rights of EU Nationals to live and work in the UK (non-devolved) • UK Citizens no longer EU citizens (non-devolved) • Reduced access to key coordinating public health systems (devolved and non-devolved) • Reduced access to data, intelligence and evidence sharing mechanisms (devolved and non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Loss or reduced access to EU research funding (devolved and non-devolved)		Major - cumulative impact with ageing population, social care service sustainability challenges, austerity	Probable	Short, medium and long term	Local, regional and national	**References from Literature Review:** (House of Commons Library, 2018) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a) (Welsh NHS Confederation, 2018) (Royal College of Nursing, 2018) (Welsh Local Government Association, 2018) (Middleton and Weiss, 2016) (National Institute of Economic and Social Research, 2018) (Nuffield Trust, 2017) (Fahy et al., 2017) (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018) (Welsh Government, 2017a) (Welsh Government, 2018) (British Medical Association, 2018a) (Brexit Health Alliance, 2018a) (Welsh Government and Plaid Cymru, 2017) (Office of Health Economics, 2017) (Life Science Industry Coalition, 2017) (Fahy and Hervey, 2017) (McCall, 2018) **References from Community Health Profile:** Section 3.1 Menon, 2018, Public Health Wales, 2017 WHO, 2011 Section 3.2 ONS, 2012b Welsh Government, 2018a WHO, 2011 and Table 8 Section 4.4 Marmot and Bell, 2009 Public Health Wales Observatory, 2018a Table 12 and 13 and Figure 19

	• Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved) • Potential staffing issues coupled with the health consequences attributed to economic difficulties and unemployment has the potential to increase the pressure on health and social care services (non-devolved) • Higher levels of poor physical and mental health in deprived areas (devolved and non-devolved)						**Participatory stakeholder workshop**
Black and minority ethnic groups	Negative impact: **Key policy pathways / mechanisms of Brexit impact** • End of freedom of movement and changes to immigration policies (non-devolved) • Affected due to working in sectors that may be negatively impacted • Increase in hate crime correlated with EU referendum	Indirect	Moderate	Probable	Short, medium and long term	Local, regional	**References from Literature Review:** (Paradies, Ben, Denson, Elias and Priest, 2015) (Priest, Paradies, Trenerry, Truong et al., 2013) (Lewis and Starkey, 2014) (Heald, Vida and Bhugra, 2018) (Hambly et al., 2018) **References from Community Health Profile:** Section 5.1 Public Health Wales Observatory, 2015 Children in Wales, 2018 Morris, 2018 Home Office, 2018, Table 25 and Figure 25 Heald et al. in the Lancet (2018) Burnett (2017) Devine (2018)

Gender (Women) (low and mid educated men in sectors exposed to WTO rules)	Negative impact: • Adversely affected due to working in sectors that may be negatively impacted • Loss of EU Fundamental rights • Possible increase in caring responsibilities if health and social care under strain • Predicted that the negative impacts are larger in certain goods sectors where men tend to work. However, these are relatively small sectors. • Some male-dominated sectors may be positively impacted • Women tend to work in services sectors where GVA impacts will be more negative • Therefore both gender groups may be affected to a similar degree, although women will be slightly more affected in the event of a no deal scenario • Loss of employment rights **Key policy pathways / mechanisms of Brexit impact** • The loss of jurisdiction of the EU Charter of Fundamental Rights in the UK (non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved)	Direct	Moderate	Possible	Long term	Local, regional and national	**References from Literature Review:** (Levell and Keiller, 2018) (Equality and Human Rights Commission, 2018) (National Assembly for Wales Research Service, 2018d) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018a) **References from Community Health Profile:** Section 5.2 Morris, 2018 TUC, 2016 National Assembly for Wales, 2018a Equality and Human Rights Commission, 2018

	And indirect mechanisms: • Economic decline, inflation and linked reduction in funding for public sector, infrastructure and key community assets (devolved and non-devolved)						
Farmers / rural communities	Negative impact: • 4.1% of employment in Wales from agriculture • EU subsidies make up 80% of farm income in Wales • Loss of EU subsidies • Major employer in rural areas • Different health and wellbeing outcomes in rural areas (higher suicide rates – not majorly higher) **Key policy pathways / mechanisms of Brexit impact:** • Leaving single market and / or customs union (non-devolved) • Regulatory divergence increasing customs requirements at borders (non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved) • End of freedom of movement and changes to immigration policies (non-devolved) • Loss of EU funding (devolved and non-devolved) • Increased uncertainty over the future for example agricultural payments (devolved and non-devolved)	Direct	Major	Probable	Short and medium term	Local, regional and national	**References from Literature Review:** (Farmers' Union of Wales, 2016) (NFU Cymru and CBI Wales, 2018) (Centre for Economic Performance, 2018) **References from Community Health Profile:** Section 5.5 Welsh Government, 2018g National Assembly for Wales, 2017a, Table 28 House of Lords, 2017, Table 29 Public Health Wales Observatory, 2018a, Figure 30 **Participatory stakeholder workshop**

Farmers	**Positive mitigating factors** Majorly higher levels of a sense of community and majorly more likely to be able to afford everyday goods						**References from Community Health Profile:** Section 5.5 Public Health Wales Observatory, 2018a
	Positive impact: • Review agriculture policy and payments to focus on sustainability • Increase local food production and supply **Key policy pathways / mechanisms of Brexit impact:** • Leaving single market and / or customs union (non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved)	Direct	Major	Probable	Long term	Local, regional and national	**References from Literature Review:** (Lang, Lewis, Marsden and Millstone, 2018) (Brexit Health Alliance, 2018a) (The Health Foundation, 2018) (Food and Drink Wales, 2018) (National Assembly for Wales Climate Change, Environment and Rural Affairs Committee, 2017) (House of Lords, 2017) (Welsh Government, 2018h) **Participatory stakeholder workshop**

Small business owners / employers who export	Negative impact: • Uncertainty on trade terms and customs and regulatory requirements • Additional administration • Possible higher barriers to trade with EU • vast majority of enterprises in Wales (89.1%) and local units (83.1%) are micro industries who employ 0 to 9 staff **Key policy pathways / mechanisms of Brexit impact:** • Terms of future trade policy and trade agreements (devolved and non-devolved) • End of freedom of movement and changes to immigration policies (non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved) • Leaving single market and / or customs union (non-devolved) • Regulatory divergence increasing customs requirements at borders (non-devolved)	Direct	Moderate	Probable	Short to medium term	Local, regional and national	**References from Community Health Profile:** Section 4.7 ONS 2018b **Participatory stakeholder workshop** (Swansea University Morgan Academy, 2018)

Port towns	• Technological and logistical challenges to ports will operate; • A lack of appropriate infrastructure and physical capacity to accommodate new border controls and customs checks • There are currently no Border Inspection Posts at Welsh ports or Designated Points of Entry in Wales • Possible displacement of traffic from Welsh ports to ports in England and Scotland via Northern Ireland to the Republic of Ireland **Key policy pathways / mechanisms of Brexit impact:** • Leaving single market and / or customs union (non-devolved) • Regulatory divergence increasing customs requirements at borders (non-devolved) • Terms of future trade policy and trade agreements (devolved and non-devolved)	Direct	Cannot define at present	Cannot define at present	Cannot define at present	Regional	**References from Community Health Profile:** Section 5.6 National Assembly for Wales, 2017b WLGA, 2018 **Participatory stakeholder workshop** (Food Standards Agency, 2018b)

Coastal towns / Tourism	• EU contributed to protecting water quality and water quality important to coastal towns and tourism • Tourism workforce affected by retention / recruitment **Key policy pathways / mechanisms of Brexit impact:** • End of freedom of movement and changes to immigration policies (non-devolved) • Changing regulatory standards and legal frameworks (devolved and non-devolved)	Direct	Cannot define at present	Cannot define at present	Cannot define at present	Regional local	**References from Literature Review:** (Faculty of Public Health, 2018a) (Fahy, et al., 2017) (Dr Sarah Wollaston MP, 2016) (Welsh Government, 2017a) (Gulland, 2016) (Brexit Health Alliance, 2018a) **References from Community Health Profile:** Section 6.4 NRW, 2017 Section 4 ONS 2018b, table 4 Welsh Government, 2017a Welsh Government, 2012 Table 10

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Public Health Wales
what we do
We exist to protect and improve health and wellbeing and reduce health inequalities for people in Wales. We work locally, nationally and internationally, with our partners and communities, in the following areas:
Health Protection
Providing information and advice and taking action to protect people from infectious diseases and environmental hazards
Microbiology
Providing a network of microbiology services which support diagnosis and management of infectious diseases
Health Improvement
Providing information, advice and taking action, across sectors, to promote health, prevent disease and reduce health inequalities
Screening
Providing screening programmes which assist the early detection, prevention and treatment of disease
Health intelligence
Providing public health data analysis, evidence finding and knowledge management
Policy, research and international development
Influencing policy, supporting research and contributing to international health development
Safeguarding
Providing expertise and advice to help protect children and vulnerable adults
NHS quality improvement and patient safety
Providing the NHS with information, advice and support to improve patient outcomes
Primary, community and integrated care
Strengthening public health impact through policy, commissioning, planning and service delivery

WHIASU
Wales Health Impact Assessment Support Unit
Uned Gymorth Asesu Effaith ar Iechyd Cymru

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