Department
for Environment
Food & Rural Affairs

Correction notice – Wales High TB Area Herd Prevalence

Production checks have subsequently revealed an error with the method for publishing Wales High TB Areas herd prevalence. No other measures are affected. What was labelled as High East should have read High West, and correspondingly High West should have read High East. This affects the statistics that were published in this notice in Tables 1 and 2, the chart in Figure 6a and the 'Herd prevalence – Wales areas' worksheet of the 'Headline statistics' download file.

Department for Environment Food & Rural Affairs

Quarterly publication of National Statistics on the incidence and prevalence of tuberculosis (TB) in Cattle in Great Britain – to end December 2017

These statistics were released on Wednesday 14 March 2018.
The next quarterly notice is to be updated on Wednesday 13 June 2018.
The underlying monthly datasets will next be updated on Wednesday 18 April 2018.

Key points

- In England overall, the herd incidence rate and herd prevalence have increased for the 12 months of 2017 compared to 2016 (table 1).
- In Scotland, which has had officially TB-free (OTF) status since 2009, and in the Low Risk Area of England, herd incidence and herd prevalence remain very low and stable.
- In Wales overall, herd incidence and herd prevalence have increased on the previous 12 months. Following the introduction of Wales TB areas in October 2017 statistics for the five areas are now included.
- Total animals slaughtered due to a TB incident in England in the 12 months to December 2017 increased 14% on the previous 12 months to 33,238. In Wales the number slaughtered was 10,053, an increase of 1% (table 3).

Table 1: Herd incidence and herd prevalence

	Herd incidence: New herd incidents per 100 herd years at risk		**Herd prevalence:** Disease restricted herds as a percentage of registered herds at end	
	12 months to end December 16	12 months to end December 17	12 months to end December 16	12 months to end December 17
England	10.1	11.0	5.8	6.4
High risk area	17.9	19.2	11.7	12.4
Edge area	6.7	7.7	3.3	4.8
Low risk area	1.0	1.0	0.2	0.3
Scotland	0.6	0.9	0.2	0.2
Wales	7.0	7.8	4.9	5.6
High West	12.3	12.5	6.6	8.7
High East	10.8	12.3	9.6	9.9
Intermediate North	4.7	7.9	3.3	4.5
Intermediate Mid	2.8	3.8	1.9	2.0
Low	1.6	1.1	0.6	0.6

Short term changes in these statistics should be considered in the context of long term trends. The charts in this statistical notice give the latest indication of how trends in bovine TB have changed since 1996.

Enquiries to: tbstatistics@defra.gsi.gov.uk

General Enquiries 03459 33 55 77 (UK only)
+44 20 8225 7318 (outside UK)
Media Enquiries to: 020 8225 7318 (Press Office)

The headline measure of **herd Incidence** is the rate of new herd incidents per 100 herd years at risk. The rate is based around the total amount of time that herds tested were unrestricted and at risk of infection since the end of their last TB incident or negative herd test, rather than the total number of tests carried out on those herds. The rate in England is 11 in the year 2017, which means for every 100 unrestricted herds undergoing bTB surveillance in that period APHA detected 11 new breakdowns. A document describing the herd years at risk measure is at: www.gov.uk/government/statistics/data-and-methodology

Herd prevalence - the percentage of herds which were not Officially TB Free (OTF) due to a TB incident - at end December 2017 compared to December 2016 increased by varying proportions in all countries as a whole. However, within countries the number of new TB herd incidents in 2017 compared to 2016 decreased in low risk area of England, and low area of Wales (table 2).

Table 2: New herd incidents and non-OTF herds

	New herd incidents			Herds not officially TB free at the end of the period due to a bovine TB incident **(non-OTF herds**)		
	12 months to end Dec 16	12 months to end Dec 17	Year-on-year change	12 months to end Dec 16	12 months to end Dec 17	Year-on-year change
England	3,762	3,824	2%	2,971	3,221	8%
High risk area	3,236	3,261	1%	2,689	2,824	5%
Edge area	393	437	11%	235	336	43%
Low risk area	133	126	-5%	47	61	30%
Scotland	36	40	11%	24	26	8%
Wales	711	789	11%	576	676	17%
High West	323	330	2%	183	247	35%
High East	261	300	15%	310	329	6%
Intermediate North	36	63	75%	30	43	43%
Intermediate Mid	53	68	28%	37	40	8%
Low	38	28	-26%	16	17	6%

In Scotland the number of non-OTF herds is very low and approximately 57% of cattle herds are now exempt from routine TB surveillance testing. In Scotland and the LRA, there are proportionately more false positive results to the tuberculin skin test than elsewhere in GB[1]. Consequently it is also important to consider the number of new herd TB incidents where officially TB free (OTF) status is withdrawn (OTFW) following confirmation of TB by post-mortem examination or laboratory culture of tissue samples.

Table 2a: OTFW new herd incidents and OTFW herd incidence

	New herd incidents where OTF status is withdrawn (OTFW)			New herd incidents OTFW per 100 herd years at risk	
	12 months to end Dec 16	12 months to end Dec 17	Year-on-year change	12 months to end Dec 16	12 months to end Dec 17
England	2,548	2,573	1%	6.9	7.4
High risk area	2,311	2,277	-1%	12.9	13.5
Edge area	195	251	29%	3.4	4.4
Low risk area	42	45	7%	0.3	0.4
Scotland	8	13	63%	0.1	0.3
Wales	409	412	1%	6.2	6.8
High West	176	159	-10%	11.8	11.7
High East	176	187	6%	9.6	11.3
Intermediate North	25	32	28%	4.2	6.0
Intermediate Mid	22	24	9%	2.3	2.6
Low	10	10	0%	0.7	0.6

In Wales, some TB incidents have OTF status withdrawn for epidemiological reasons only, in the absence of post-mortem confirmation. These are included in “new herd incidents OTFW per 100 herd years at risk” in Table 2a, but for technical reasons, it is currently not possible to include them in the count of OTFW incidents.

[1] See for example: veterinaryrecord.bmj.com/content/vetrec/177/10/258.summary.pdf and veterinaryrecord.bmj.com/content/177/10/258

In the low risk area of England:

- During the 12 months ending December there were 45 OTFW incidents compared to 42 in the previous 12 months.

In Scotland:

- There were 13 OTFW incidents in the period ending December 2017, and 8 in the previous 12 months.
- The OTFW herd incidence rate of breakdowns per 100 herd-years at risk was 0.3 in the 12 months to end December 2017 and 0.1 in the previous 12 month period.

In the newly introduced low area of Wales:

- The OTFW herd incidence rate of breakdowns per 100 herd-years at risk was 0.6 in the 12 months to end December 2017 and 0.7 in the previous 12 month period.

Table 3: Total animals slaughtered*

	12 months to end December 16	12 months to end December 17	Year-on-year change
England	29,230	33,238	14%
High risk area	25,336	28,090	11%
Edge area	3,293	4,226	28%
Low risk area	601	922	53%
Scotland	187	273	46%
Wales	9,906	10,053	1%
High West	6,463	6,455	0%
High East	1,924	2,373	23%
Intermediate North	500	715	43%
Intermediate Mid	727	423	-42%
Low	292	87	-70%

* Includes test reactors, direct contacts and inconclusive reactors (reported for Wales only since April 2017).

There continues to be increases in the number of cattle slaughtered due to a TB incident in high risk area (HRA) and Edge Areas of England. As previously reported, much of the rise number cattle slaughtered in England and Wales is attributable to changes in the testing policy for **non-OTF herds**, in particular:

- In herds undergoing recurrent or persistent incidents there is increased use of the **interferon-gamma blood test.** This is more sensitive than the standard skin test and discloses more reactors per breakdown.
- Since April 2016 all herds with a TB incident in the HRA of England, irrespective of post-mortem and laboratory findings, must undergo **two successive skin tests at severe interpretation** in order to regain their OTF status (the same policy was introduced in the Edge Area in December 2013). Severe interpretation of skin test results is intended to improve the probability that all infected animals in a herd are removed before incidents are closed and restrictions lifted.

In Wales overall there was a small increase in the number of animals slaughtered in 2017 compared to 2016. Across the Wales TB areas there are variations in the number of animals slaughtered in the years 2016 and 2017. A paper exploring reasons for increases in animals slaughtered in Wales has been published on the Welsh Government website at: http://gov.wales/topics/environmentcountryside/ahw/disease/bovinetuberculosis/cattlecontrols/testing/?skip=1&lang=en

Notes on the data:

These statistics are obtained from the Animal and Plant Health Agency (APHA) work management IT support system (SAM), used for the administration of TB testing in GB. They are a snapshot of the position on the date on which the data was extracted. These statistics may be subject to small revisions until all test results are available. In particular, figures for the previous two calendar years and the current year will be subject to further revision as test and incident records are completed. Detailed guidance on how these measures are calculated at www.gov.uk/government/statistics/data-and-methodology.

From 1 October 2017, a regionalised approach to TB eradication applies in Wales with the introduction of Low, Intermediate and High TB Areas. Data pre-Oct 2017 which had previously been reported at county and country level has been analysed to produce data series for each of the five areas. For herd counts the sum of the TB areas data does not precisely match the previously published Wales total. This is not a new issue, as we were aware that some historical CPHs do not map directly to the admin boundaries.

List of tables

Table	Measure	Geography	Timing
1	Herd incidence and herd prevalence	GB, England risk areas, Wales TB areas	12 months
2	New herd incidents and non-OTF herds	GB, England risk areas, Wales TB areas	12 months
2a	OTFW new herd incidents and OTFW herd incidence	GB, England risk areas, Wales TB areas	12 months
3	Total animals slaughtered	GB, England risk areas, Wales TB areas	12 months

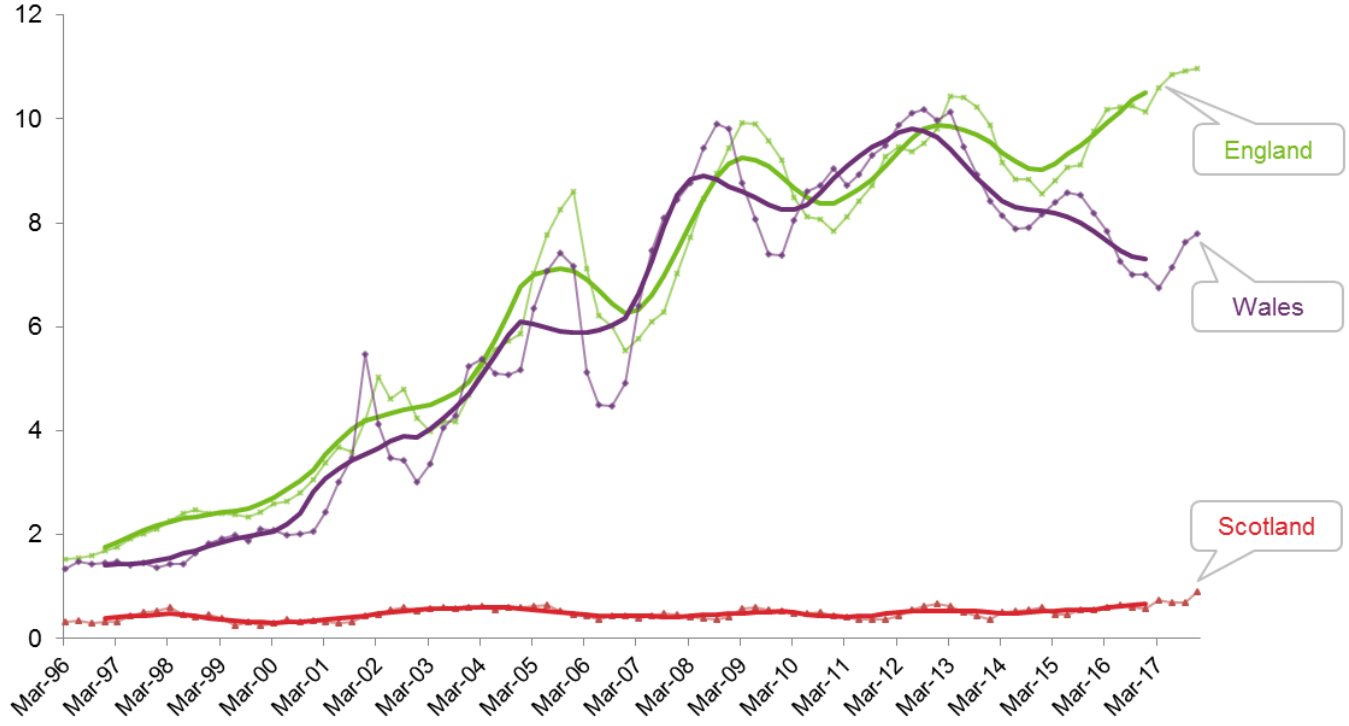
The charts published in this statistical notice, together with the data from January 1996 onwards, are also available in spreadsheet (ODS) format at www.gov.uk/government/collections/bovine-tb

List of figures

Figure	Measure	Geography	Timing
1	New herd incidents per 100 herd years at risk of infection during the year	GB	quarterly
2	New herd incidents per 100 herd years at risk of infection during the year	England risk areas	quarterly
2a	New herd incidents per 100 herd years at risk of infection during the year – Wales, per quarter	Wales TB areas	quarterly
3	New herd incidents with officially TB-free status withdrawn (OTFW) per 100 herd years at risk of infection during the year	GB	quarterly
4	New herd incidents with officially TB-free status withdrawn (OTFW) per 100 herd years at risk of infection during the year	England risk areas	quarterly
4a	New herd incidents with officially TB-free status withdrawn (OTFW) per 100 herd years at risk of infection during the year – Wales, per quarter	Wales TB areas	quarterly
5	Number of herds under disease restrictions at the end of the period as a percentage of registered and active herds	GB	monthly
6	Number of herds under disease restrictions at the end of the period as a percentage of registered and active herds	England risk areas	monthly
6a	Number of herds under disease restrictions at the end of the period as a percentage of registered and active herds – Wales	Wales TB areas	monthly

Herd incidence

Figure 1: New herd incidents per 100 herd years at risk of infection during the year - GB, per quarter



Bold lines represent 24 month centred rolling averages.

Figure 2: New herd incidents per 100 herd years at risk of infection during the year – England, per quarter

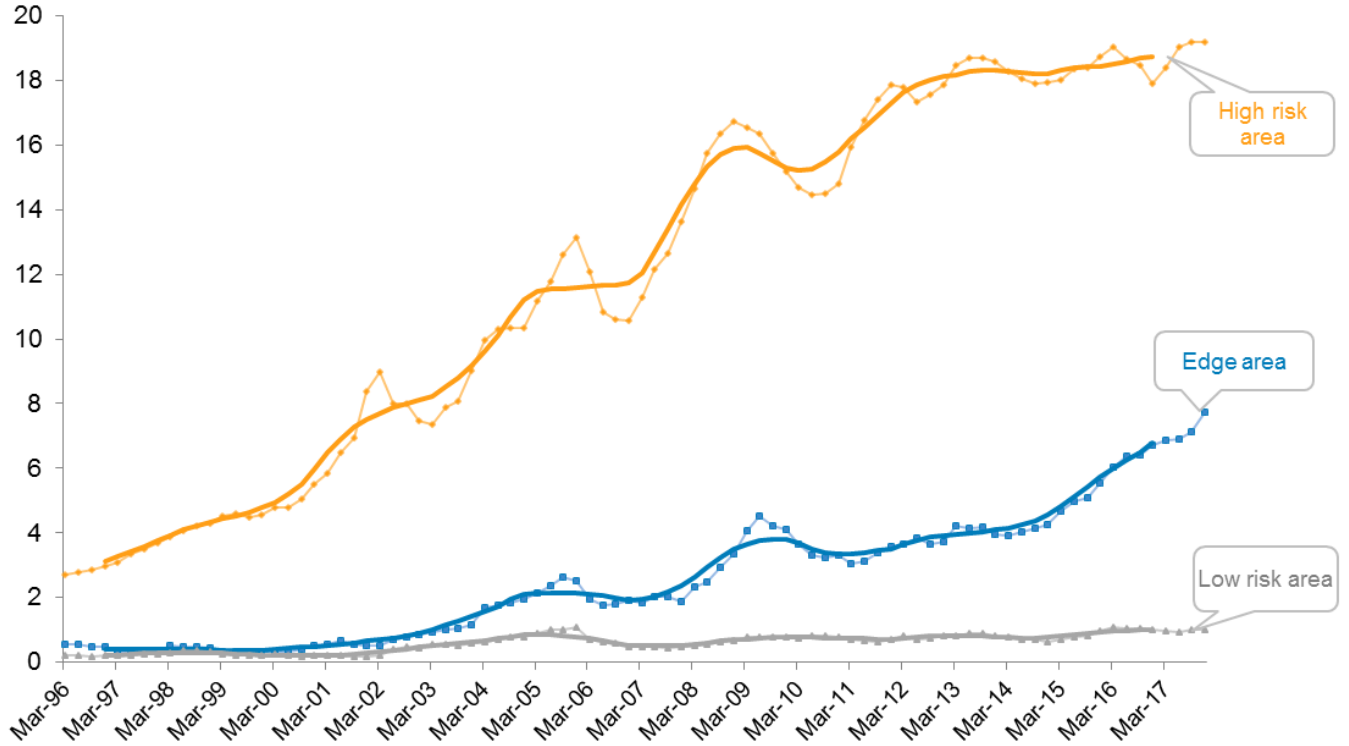
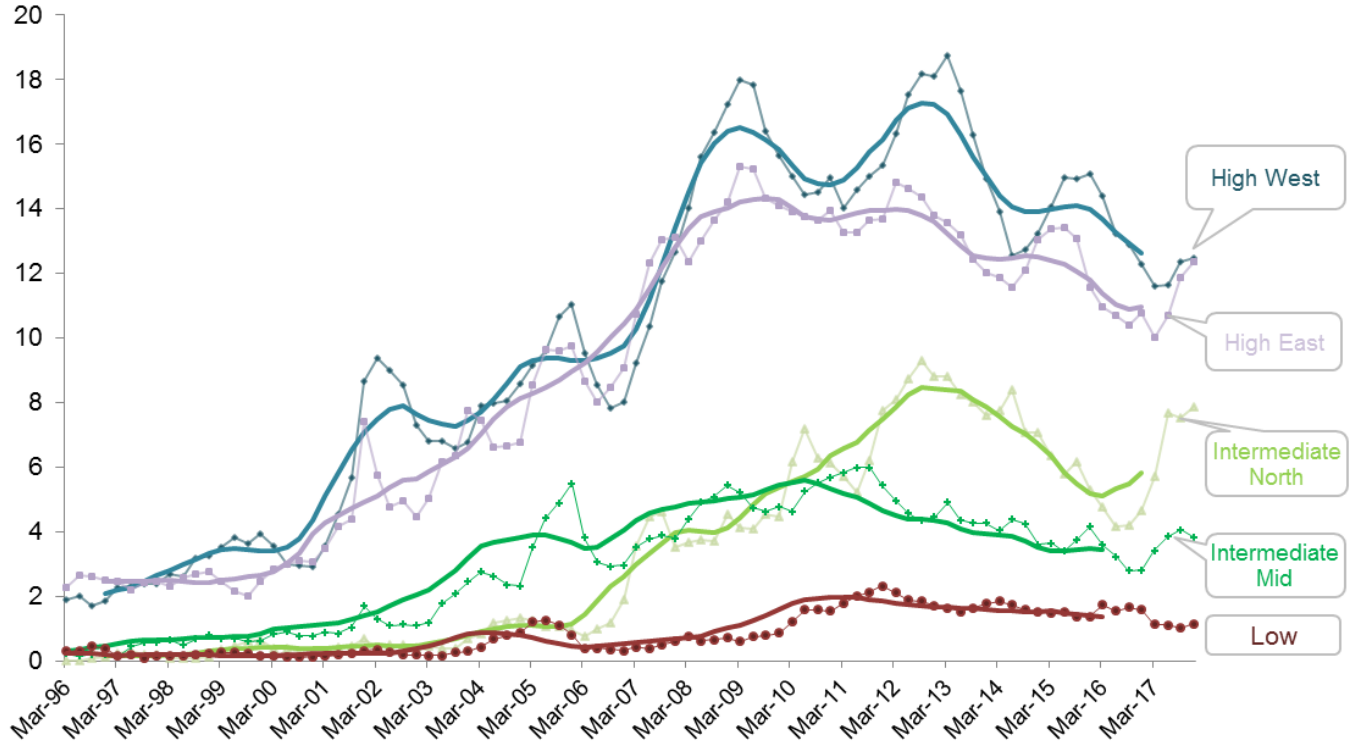
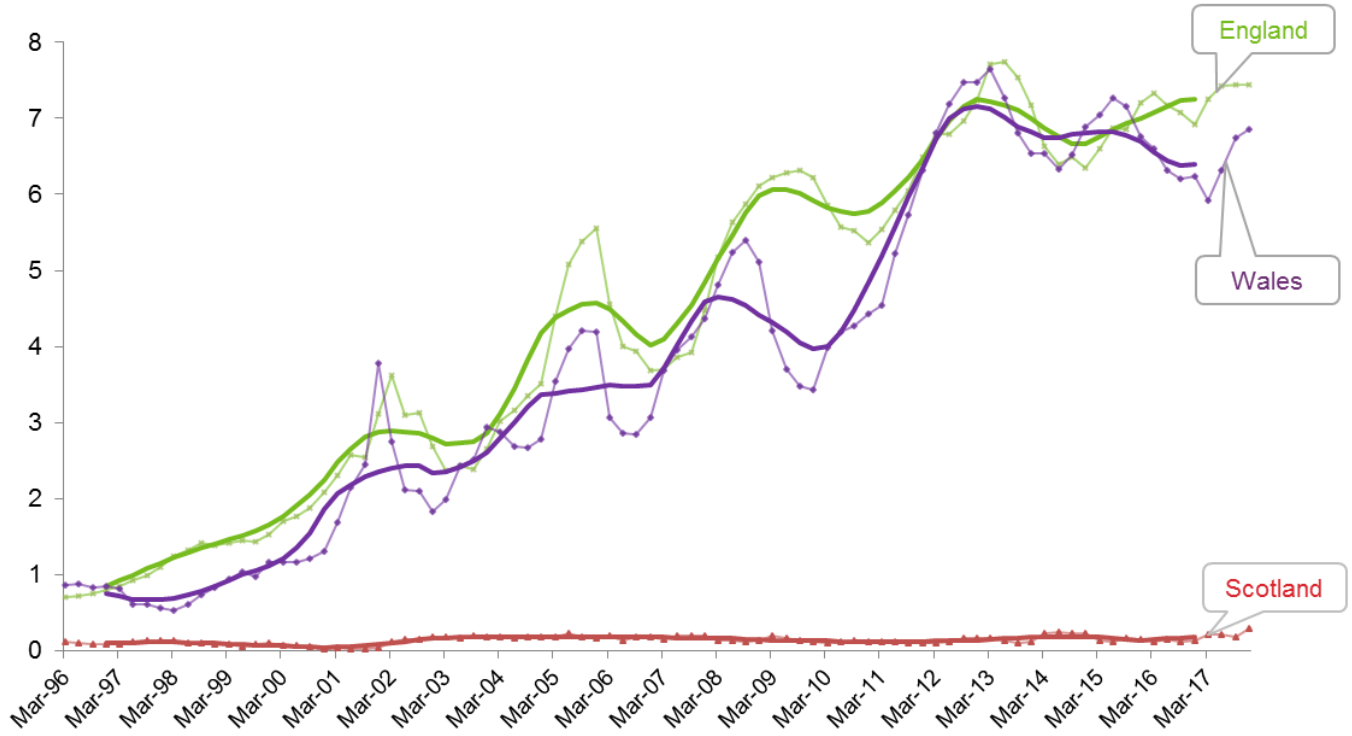


Figure 2a: New herd incidents per 100 herd years at risk of infection during the year – Wales, per quarter



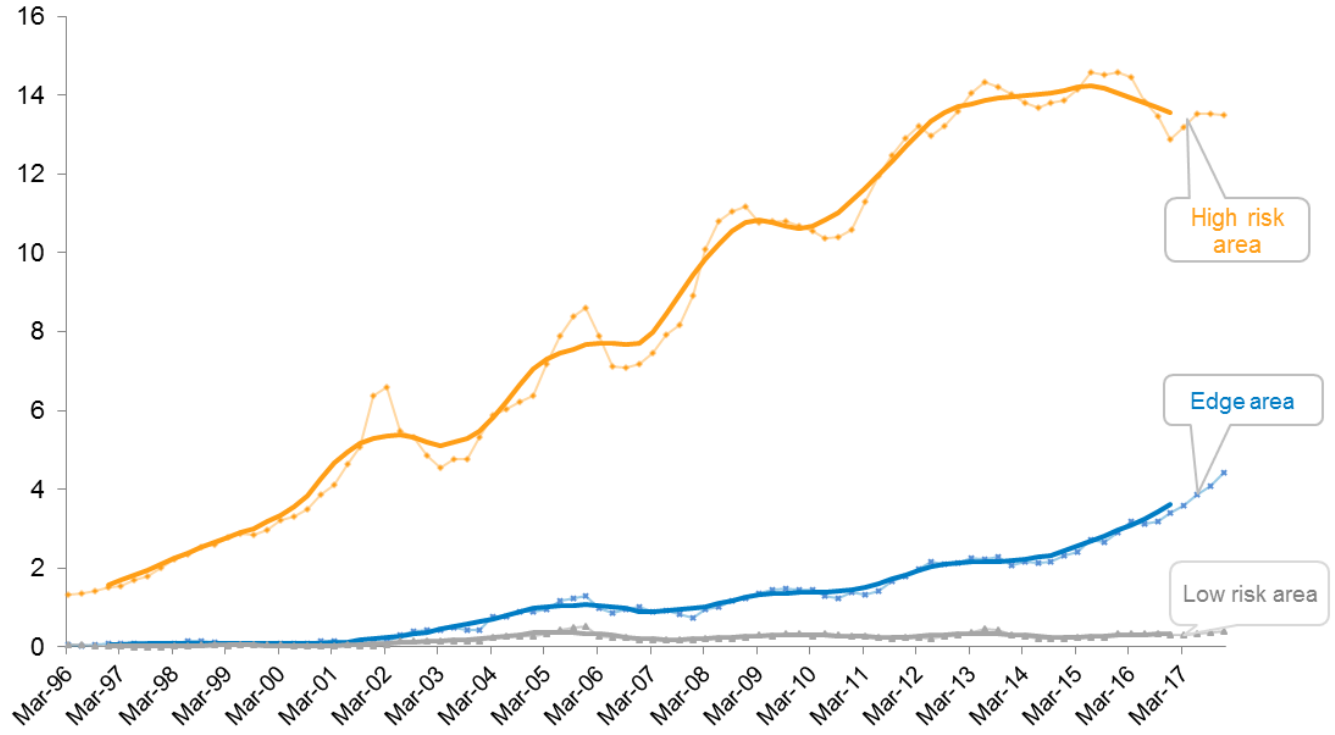
Bold lines represent 24 month centred rolling averages.

Figure 3: New herd incidents with officially TB-free status withdrawn (OTFW) per 100 herd years at risk of infection during the year – GB, per quarter



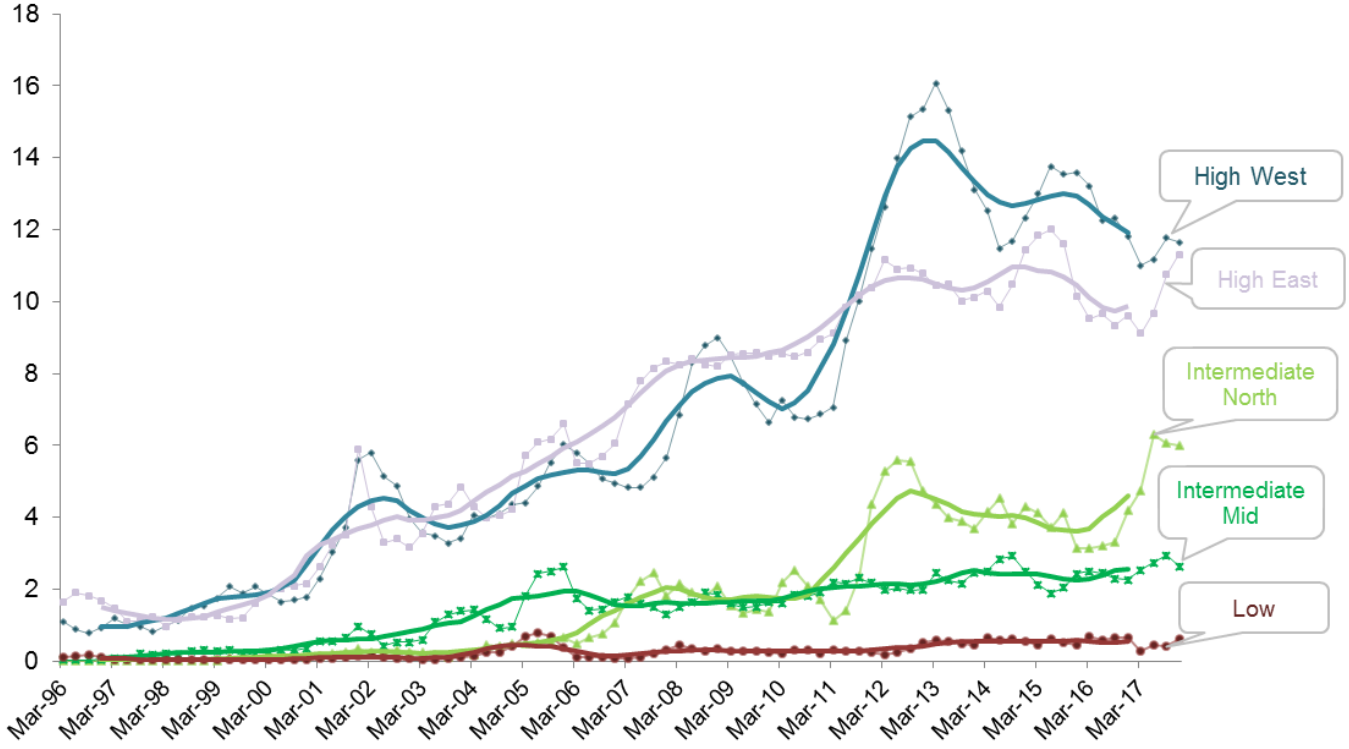
NOTE: from 2011, the figures presented above for OTFW incidents per 100 herd years at risk in Wales are not directly comparable to England or Scotland. This is due to the inclusion of some incidents in Wales that have their OTF status withdrawn for epidemiological reasons only, in the absence of post-mortem confirmation. The figures presented here are not comparable with those for Wales in the spreadsheet downloads.

Figure 4: New herd incidents with officially TB-free status withdrawn (OTFW) per 100 herd years at risk of infection during the year – England, per quarter



Bold lines represent 24 month centred rolling averages.

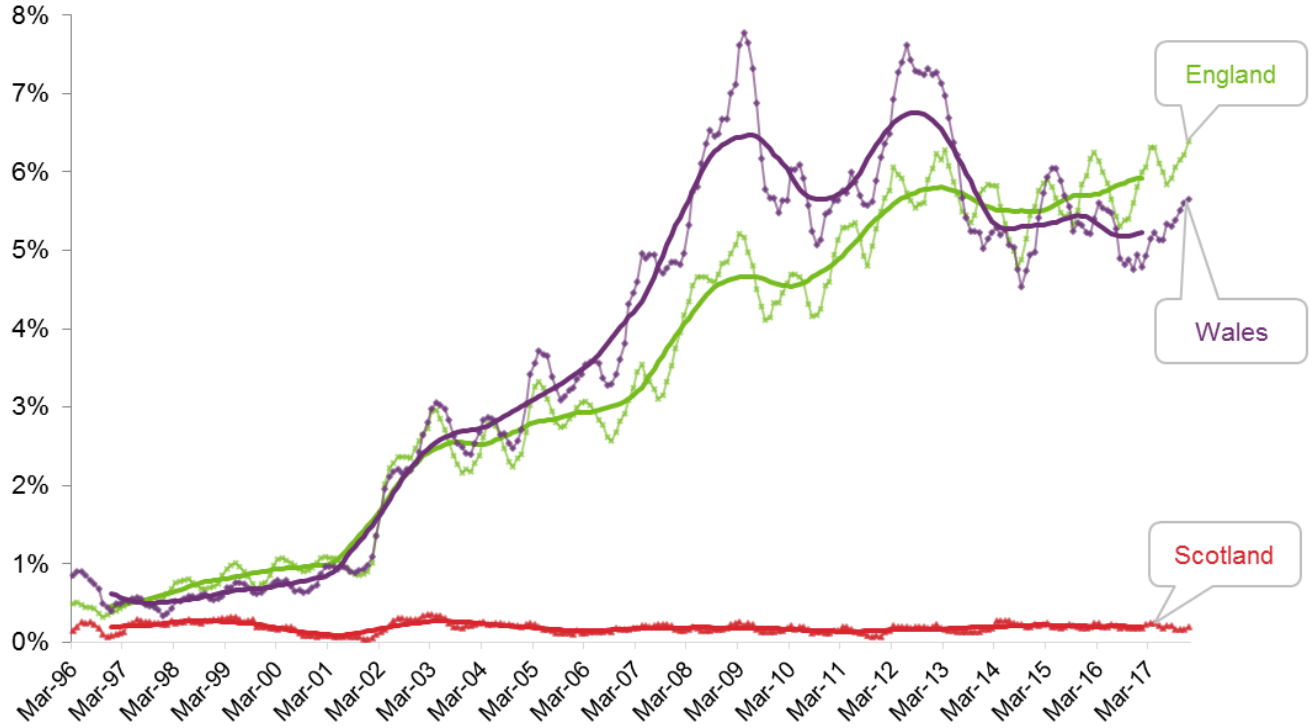
Figure 4a: New herd incidents with officially TB-free status withdrawn (OTFW) per 100 herd years at risk of infection during the year – Wales, per quarter



Bold lines represent 24 month centred rolling averages.

Herd prevalence

Figure 5: Number of herds under disease restrictions at the end of the period as a percentage of registered and active herds – GB



Bold lines represent 23 month centred rolling averages.

Figure 6: Number of herds under disease restrictions at the end of the period as a percentage of registered and active herds – England

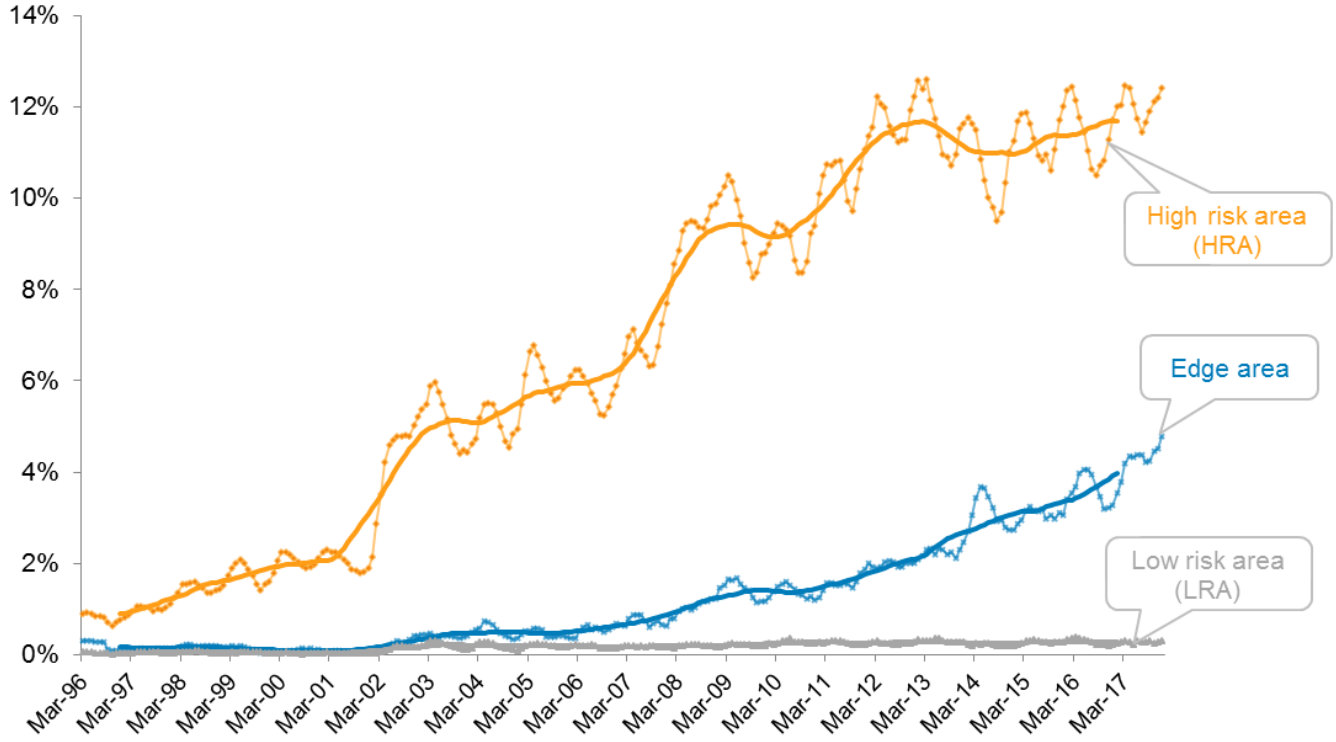
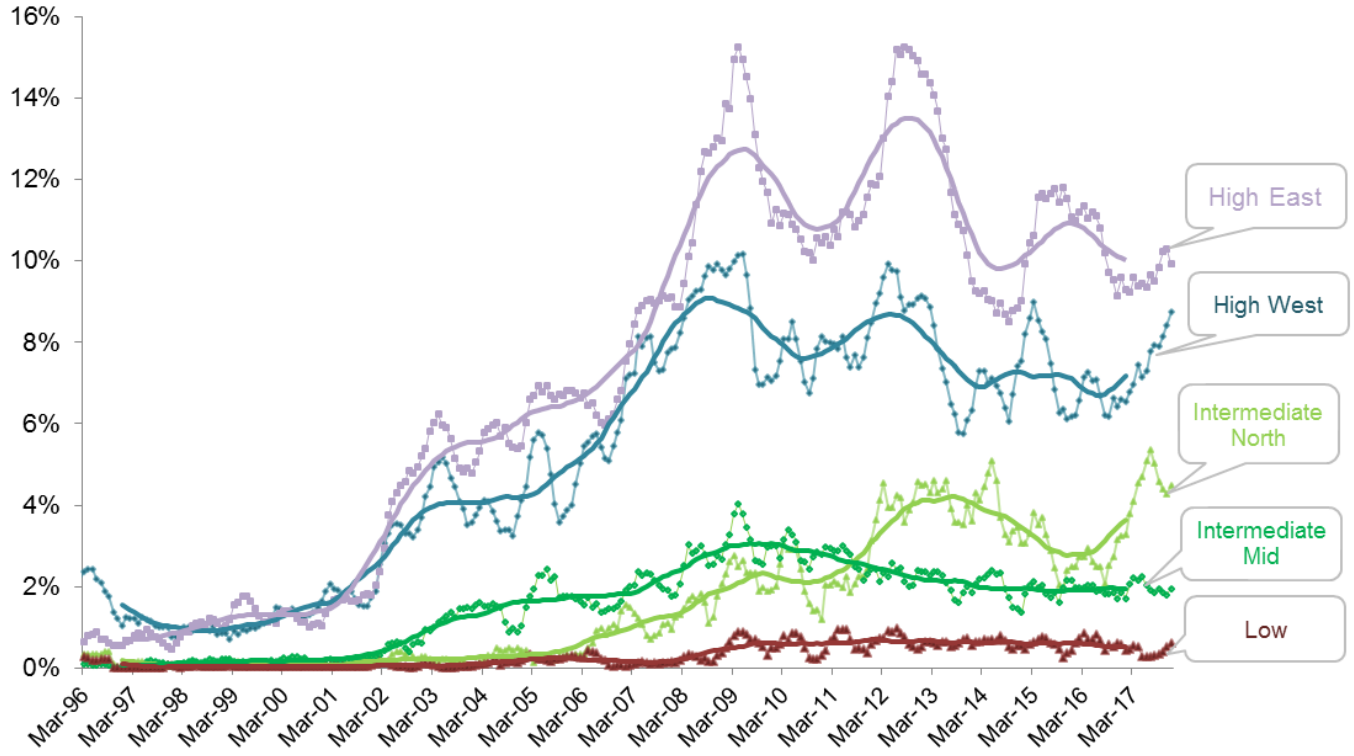


Figure 6a: Number of herds under disease restrictions at the end of the period as a percentage of registered and active herds – Wales



Bold lines represent 23 month centred rolling averages.

Commentary on incidence and prevalence of TB in Cattle in Great Britain

Trends in TB

There has been an overall long-term upward trend in the incidence of TB in cattle herds in England and Wales since 1996 (when these statistical series begin); although there is evidence that the rate of new incidents is levelling off in most areas of the country.

There was a fairly steady increase in the herd incidence rate until early 2001 when there was an outbreak of foot and mouth disease (FMD) from February to October. During this period TB testing was suspended. In the meantime, new bTB breakdowns continued to be detected on farms through routine post-mortem meat inspection of cattle carcases in abattoirs. Following the 2001 FMD outbreak there was a gradual resumption in TB testing.

There appears to be a three-year cycle in the bTB herd incidence rate from 2001 onwards. This can be observed in figures 1 to 4, above, with peaks in 2005, 2008 and (to a lesser extent) 2013, and troughs in 2006 and 2009. This pattern has stabilised somewhat in recent years. There is no clear explanation for this pattern, because bTB is a chronic disease with a complex epidemiology and reservoirs of infection in cattle and, in some areas of GB, wildlife. There has been no stable time series until recently because of surveillance and testing changes. For example, there have been different herd testing frequencies in each parish over time, ranging from annual to four-yearly and changing every year until those frequencies were unified in Wales in 2010 (annual) and in England in 2013 (annual and four-yearly).

There are several possible explanations:

1. The smoothed trend represents true seasonal changes in the transmission risk and prevalence of infection in wildlife and cattle populations. However, there is no strong evidence to support this.

2. After FMD, higher risk herds were tested every 3 to 4 years and could have contributed to a cyclically higher incidence rate. However, breakdowns in the 4-yearly (and formerly 3-yearly) testing areas represent a small and decreasing proportion of the breakdowns in any given year.

3. When testing resumed in 2002 following the 2001 FMD outbreak, high-risk herds may have been identified and put under restrictions if a reactor was identified, then control tested for a period (when they cannot generate a new incident). Once the bTB incident has been resolved and OTF herd status is restored, the herd becomes susceptible to a new incident as it undergoes post-breakdown surveillance tests at 6 and 18 months after regaining OTF status.

4. The incidence rate reflects changes to testing policy unrelated to the FMD outbreak, in particular increases in testing in 2005 and 2008.

In terms of prevalence (the percentage of herds with an open TB incident), figure 5 shows an increase in England and Wales at the beginning of 2002. This may have been the result of the suspension of TB testing during the FMD outbreak in February-October 2001 (including the 60-day tests of TB-infected herds to regain OTF status) along with the detection of new breakdowns through routine slaughterhouse surveillance. Although TB herd testing gradually resumed from

the end of 2001, a proportion of higher-risk herds were put under TB restrictions pending completion of their overdue tests. Prevalence continued to increase steadily from 2002. In Wales there were peaks in 2009 and 2012, following which there has been a decline and stabilisation of the trend. After a peak in England in early 2013 the trend appears to have stabilised. However, for both England and Wales it is too early to conclude that this is part of a new longer term trend.

Regional differences

The regional and county-level statistics published as part of this statistical notice (available at www.gov.uk/government/statistical-data-sets/tuberculosis-tb-in-cattle-in-great-britain) show that there are considerable differences in the distribution and frequency of bovine TB across GB.

Comparability of Wales data. Since 2011, the trends for the herd incidence rate showing incidents with officially TB-free status withdrawn (OTFW) per 100 herd years at risk of infection during the year (i.e. table 2a and figure 3) are not directly comparable for Wales and the other countries of GB. In Wales the number of incidents includes those where there is no confirmation of TB via post mortem examination or bacteriological culture, but where the herd's OTF status is withdrawn for epidemiological reasons. The overall herd incidence rate (figure 1 and table 1) should be used to compare countries.

Scotland, which has had officially TB-free (OTF) status since 2009, has relatively few herd breakdowns. The herd incidence is very low and stable and is largely driven by sporadic introductions of infected cattle into Scotland.

In **Wales**, TB incidence and prevalence varies across regions. From 1 October 2017, a regionalised approach to TB eradication applies in Wales with the introduction of Low, Intermediate and High TB Areas. This means that measures can be tailored to address the varying risks and disease. A map of the areas is available at:
http://gov.wales/docs/drah/publications/170622-wales-tb-regionalisation-map.pdf
All herds in Wales are tested for the disease at least annually. The strategically-located Intensive Action Area (north Pembrokeshire and small parts of Ceredigion and Carmarthenshire) has one of the highest incidence rates of bovine TB in Wales. Here there are extra measures in place to control the disease, such as stricter cattle controls, 6-monthly testing and improved biosecurity.

In **England**, there are wide geographical variations in the incidence and prevalence of bTB. This is reflected in the division of the country into three different epidemiological areas, with different disease control strategies and herd testing regimes applied in each of them:

- In the *Low Risk Area* of the North, East and South East of England, the incidence of bTB is very low and stable and most cattle herds are routinely tested every four years. Similar to Scotland, the majority of breakdowns in the Low Risk Area can be linked to movements of undetected infected cattle from other areas of GB.

- In the *Edge* Area, which spans most of Cheshire, parts of the counties of Derbyshire, Warwickshire, Oxfordshire and East Sussex and the whole of Nottinghamshire, Leicestershire, Northamptonshire, Buckinghamshire and Hampshire, the herd incidence is higher than in the Low Risk Area, although this varies from county to county. After a relatively stable period, prevalence has been increasing in more recent years Figure 6.

- In the *High Risk Area* of the West Midlands and South West of England, the incidence and prevalence of infected cattle have increased steadily to relatively high levels. This is partly a result of a reservoir of endemic *M. bovis* infection in the local wildlife. There is evidence of a slowing down in both the incidence and prevalence rates since around 2012. Figure 2 and Figure 6.

From January 2018 the five part Edge, part HRA split counties: Cheshire, Derbyshire, East Sussex, Oxfordshire and Warwickshire, will be re-classified as fully in the Edge Area. Testing intervals for 2018 are set out at: https://www.gov.uk/guidance/bovine-tb-testing-intervals-2018

Trends in herd tests

From October 2015 to November 2016 there were steady decreases in the number of TB tests completed on herds. The decrease is mainly as a result of changes in APHA testing procedures made in November 2015, and more specifically to testing of cattle that have moved out of TB-infected herds before detection of the disease ("TB forward tracings"). Changes to these "tracing" tests include:

- Bespoke tracing tests of individual animals are no longer performed in England if a whole-herd (or similar) test is already due in the herd of destination within 60 days of the tracing test date, and in Wales if the tracing test is due within the existing herd test window.

- Combining multiple tracing tests for a herd where the traced cattle originate from more than one holding and where test deadlines are within a one month period. Such tests were previously counted separately.

TB tracing tests are included in the "Herd tests" and the "Total cattle tests" measures and these changes are thought to account for much of the decrease in the herd test measures.

Factors affecting statistics on incidence and prevalence of TB in cattle

Short term changes in these statistics should be considered in the context of long term trends. Variation in the monthly and quarterly statistics can occur for a number of reasons, including:

- **Disease**: an increase in the trend can be the result of a higher proportion of herds experiencing a breakdown because of an increase in the underlying incidence of bTB.

- **Surveillance policy** (including the frequency of testing): Cattle herds in high risk areas are tested annually and cattle herds in low risk areas are usually tested every four years. In Scotland approximately 57% of cattle herds are now exempt from routine TB surveillance testing. See Surveillance policy in GB If cattle herds in a low prevalence region are tested more frequently than every four years, the increase in the number of bTB tests will not necessarily be followed by a similar increase in the detection of infected cattle and so this may result in a decline in the incidence rate.

- **Seasonality**: more animals are tested when they are housed, during winter months, compared with when they are grazing outdoors in summer months. This is simply because it is easier to gather and test the cattle when they are already contained within a building. The trend lines in Figures 1 and 2 account for this by presenting the 2 year moving average.

- Number of **testing days** in a given month: tests tend to be carried out at the beginning of the working week and the results collected and entered into the data system towards the end of the week. Months containing five Fridays may therefore have more positive test results than months containing four.

An extreme example of the impact of testing on the incidence rate can be seen in the statistics for 2001, when bTB testing was significantly reduced for most of the year due to the outbreak of Foot and Mouth Disease but new bTB breakdowns continued to be detected through disease surveillance in slaughterhouses. This led to an unusually high incidence rate for 2001 and 2002, when effectively two years' worth of breakdowns were identified in one year when the normal testing regime resumed.

Surveillance policy in GB

bTB surveillance and control policy – including how frequently animals are tested for bTB – varies between England, Wales and Scotland and has changed over time.

Timeline:

1990s: most herds in GB tested every four years and background testing intervals determined on a parish basis. Herds in parishes with a high incidence of bTB breakdowns (in the South West of England and in parts of Wales) are tested on an annual or biennial basis, with a smaller number of three-yearly testing herds.

2004 to 2010: the proportion of parishes and herds in England and Wales with annual testing increases gradually as the disease spread, with a corresponding decrease in the proportion of parishes with four-yearly testing.

October 2009: the European Commission designates Scotland as an officially bTB free region of the UK.

January 2010: In England, a core annual testing area is established, spanning entire counties in the South West and West Midlands (the 'high risk area') and surrounded by a 'buffer' of two-yearly testing parishes. Most of the rest of England remains on background four-year testing. The Welsh Government puts all cattle herds in Wales on annual bTB testing (with herds in the small Intensive Action Area of West Wales put on 6-monthly bTB testing).

2011 and 2012: further expansion of the annual testing area in England to the east and north.

January 2013: herd testing intervals are determined on a county basis and England is split into annual testing and four-yearly testing counties. Annual testing of herds is extended to all the counties at the edge of the high risk area (more detail below). Three- and two-yearly testing is abolished.

January 2015: all cattle herds in the edge area of Cheshire are put on six-monthly testing.

Current differences in surveillance policy in GB

England is divided into two cattle bTB testing frequency areas that broadly reflect the geographically clustered nature of the disease. The majority of bTB breakdowns are found in the High Risk Area and the Edge Area (counties of the South West, West Midlands and East Sussex). These herds are tested for bTB annually (or every six months in the Edge Area of Cheshire) and represent nearly 60% of all herds in England. In the rest of England most herds are tested every four years. Herds that have a high risk of contracting bTB or present a potential public health risk (e.g. producer-retailers of unpasteurised milk) are tested annually regardless of their location.

All herds in **Wales** are tested at least annually, with 6 monthly testing in the Intensive Action Area. TB areas reflecting differences in the disease picture across Wales, were introduced in October 2017, though this did not change the frequency of surveillance testing. There are 2 High TB areas, 2 Intermediate TB areas and a Low TB area. This regionalisation brought some changes to Pre- and Post- movement testing rules. From 1 October 2017 pre-movement testing is not required for movements within the Low TB Area and from the Low TB Area to other parts of Wales. Cattle moved into the Low TB Area from other areas (not including the English LRA) require a post-movement test.

Scotland has in place a risk-based routine herd testing policy. This targets testing at higher risk herds. Around 57 per cent of herds are considered low risk herds and are exempt from routine testing. These are herds which have 50 or fewer animals, minimal import of animals from high

risk areas and send a high proportion of animals to slaughter. Herds that are not exempt are tested every four years.

Methodology

For a description of the data sources and methodology used in the calculation of the TB statistics, together with notes on data revisions policy etc., please refer to the 'Background and Methodology' annex document at www.gov.uk/government/statistics/data-and-methodology.

Inconclusive reactors data series pre-April 2017

A inconclusive reactor (IR) is an animal showing a positive reaction to bovine tuberculin that was not strong enough for it to be deemed a reactor. However, instead of being tested again after 60 days (the normal procedure in this case) the animal was compulsorily slaughtered. This applies in certain circumstances in Wales, where some IRs in persistent breakdown herds are automatically removed with compensation. The policy came into force in Wales in 2016 however these animals were classified as Direct Contacts (DCs) up to March 2017 because a suitable code had not yet been created in Sam in order to capture them as IRs.

Prior to April 2017, some animals slaughtered as reactors or direct contacts were incorrectly classified as IRs on Sam, and reported as IRs in the National Statistics and Official Statistics. These animals are now reported under "total animals slaughtered', and they have been removed from the historical IR series.

Background Information on Bovine Tuberculosis

What is bovine tuberculosis?

Bovine tuberculosis (bTB) is a chronic infectious disease of cattle. The risk bTB poses to human health is low, largely due to milk pasteurisation. The disease is detected either on farms (through mandatory skin tests of cattle herds for bTB at regular intervals) and at slaughterhouses (through post-mortem meat inspection of cattle carcases).

What are the impacts of bTB?

Bovine TB presents serious challenges to the food and farming industries and has economic and social impacts. The economic costs of a bTB breakdown are shared by farmers and government[2]. Costs are incurred for a number of reasons:

- Cattle which are found (or are highly likely) to have bTB are slaughtered. This loses the farmer the value of the animal and its output. Government pays farmers compensation for slaughtered animals which is based on the market value of cattle.

- There are costs associated with testing animals for bTB. Farmers incur costs from gathering animals together, such as paying workers for their time, and government pays the vets' fees for carrying out tests on the herd (and in the event of a breakdown on herds in neighbouring farms).

[2] Economic analysis based on research report SE3112 for Defra, 2004

- When an animal in a herd tests positive for the disease, the whole herd is put under movement restrictions until all the remaining animals are tested repeatedly with negative results. This presents costs to farmers, for example because they are unable to move their cattle to market or buy in replacements for animals that are slaughtered.

Other impacts of high bTB levels can include:

- Restrictions on international trade in cattle and cattle products.
- Significant stress amongst famers, their families and local communities[3]
- The infection spilling over to domestic and wild animals [4].

Why monitor statistics about bTB?

Legal requirements: EU Member States are legally required to have accelerated bTB eradication plans in place in order to achieve officially TB free (OTF) status. Defra policy is to achieve OTF status for England by 2038, and Welsh Government policy is to achieve OTF status between 2036 and 2041. Scotland achieved OTF status in September 2009. bTB statistics are used in England and Wales to measure progress towards their targets, and to support the annual case for Scotland to retain its OTF status, as the qualification is based on herd incidence.

Monitoring policy effectiveness: Statistics on the incidence of bTB in cattle herds and the number of cattle slaughtered as a result of bTB are used by policymakers to monitor the spread and concentration of the disease and to inform decisions around the potential approaches to controlling it. Existing controls include routine testing in cattle based on the disease incidence (or risk) in a given area, restricting movements of cattle from herds where an animal has tested positive for the disease and addressing the problem of disease spread through wildlife (principally badgers).

Further information on bovine TB

More information on bovine TB in Great Britain can be found at

- England:

www.gov.uk/government/policies/bovine-tuberculosis-bovine-tb.

- Wales:

gov.wales/topics/environmentcountryside/ahw/disease/bovinetuberculosis/?lang=en.

- Scotland:

www.gov.scot/Topics/farmingrural/Agriculture/animal-welfare/Diseases/disease/tuberculosis.

Data for Northern Ireland is not presented alongside the GB figures and is not produced on a comparable basis. It can be found at:
www.daera-ni.gov.uk/articles/tuberculosis-statistics-northern-ireland

Headline data from 1996 onwards is available to download for GB countries, England risk areas, and Wales TB areas at:
www.gov.uk/government/statistical-data-sets/tuberculosis-tb-in-cattle-in-great-britain

This statistical notice and a wide range of other statistics are available on the internet at:
www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/about/statistics

[3] See for example research report SE3120 for Defra, 2008

[4] For example Broughan, J. M., Downs, S. H., Crawshaw, T. R., Upton, P. A., Brewer, J. & Clifto-Hadley, R. S. (2013) *Mycobacterium bovis* infections in domesticated non-bovine mammalian species. Part 1: review of epidemiology and laboratory submissions in Great Britain 2004-2010. *Veterinary Journal* **198**, 346-35. See also webarchive.nationalarchives.gov.uk/20140405112558/http:/www.defra.gov.uk/ahvla-en/publication/pub-survreport-tb/

Glossary of key terms

A more detailed description of measures is included in the Background and Methodology document at: www.gov.uk/government/statistics/data-and-methodology

Term	Description
Bovine tuberculosis (bTB)	bTB is caused by the bacterium *Mycobacterium bovis* (*M. bovis*). Cattle are the natural host of the bacterium. Many other species, including wildlife such as badgers and less commonly deer, are also susceptible to *M. bovis and* can develop TB and transmit the infection to other species.
Breakdown	A *breakdown* is the term used to describe the occurrence in a herd of at least one animal with a positive reaction to the skin test, or the identification of *M. bovis* in an animal with TB lesions detected at routine slaughter. The affected herd is then placed under restrictions and loses its Officially TB Free (OTF) status.
Direct Contact (DC)	An animal in an OTFW incident that, although not a test reactor, was considered to have been exposed to Mycobacterium bovis and compulsorily slaughtered.
Inconclusive reactor (IR)	An animal showing a positive reaction to bovine tuberculin that was not strong enough for it to be deemed a reactor. Such animals are usually isolated and subjected to a second skin test after 60 days, unless removed earlier as DCs or IFN-γ test reactors or voluntarily slaughtered by their owner.
Incidence and prevalence	
Incidence	The incidence of a disease is the disease occurrence in new cases in a defined population over a designated time period.
Headline herd incidence New herd incidents per 100 herd years at risk of infection during the year	Herds which were previously OTF but either had cattle that reacted to a tuberculin test or had a tuberculous animal disclosed by routine meat inspection at slaughter, during the 12 months ending the date shown, divided by the amount of time herds tested during that period were unrestricted and at risk of infection. Figures for Wales include incidents where OTF status has been withdrawn for epidemiological reasons only.
Herd-years at risk	The sum of the time (days, months or years) herds in the population are unrestricted and are therefore at risk of a new incident, among the group of herds that have had a herd-level test during the period of interest.
Time at risk	Time spent not under restriction and at risk of having bTB during the observation period.
Prevalence	The prevalence of a disease is the disease presence in a defined population (at animals or herd level) in a designated time.
Herd prevalence	Herds which were not officially TB-free (i.e. herds under movement restrictions with OTF status suspended or withdrawn) due to a TB incident, at the end of the period as percentage of The number of herds registered on the APHA's Sam (computer) system.

Term	Description
England risk areas up to 2017	See also www.gov.uk/guidance/bovine-tb-testing-intervals-2017 for 2017 intervals.
High Risk Area	In West Midlands and South West of England, the incidence and prevalence of infected cattle have increased steadily to relatively high levels. This is partly a result of a reservoir of endemic M. bovis infection in the local wildlife. Herds are tested for bTB annually.
Edge Area	In the *Edge* Area, which spans most of Cheshire, parts of the counties of Derbyshire, Warwickshire, Oxfordshire and East Sussex and the whole of Nottinghamshire, Leicestershire, Northamptonshire, Buckinghamshire and Hampshire, the herd incidence is higher than in the Low Risk Area, although this varies from county to county. Herds are tested for bTB annually or every six months in the Edge Area of Cheshire.
Low Risk Area	North, East and South East of England, the incidence of bTB is very low and stable and most cattle herds are routinely tested every four years. Similar to Scotland, the majority of breakdowns in the Low Risk Area can be linked to movements of undetected infected cattle from other areas of GB.
Officially bovine tuberculosis free (OTF) statuses	
Officially bovine tuberculosis free herd status suspended (OTFS)	Incidents where OTF status was suspended because of reactors in the herds, but post-mortem evidence of TB is not detected. The status remains suspended until further herd tests confirm no infection remains on the farm. Figures for Wales include incidents where OTF status has been withdrawn for epidemiological reasons only.
Officially bovine tuberculosis free herd status withdrawn (OTFW)	Incidents where OTF status was withdrawn from the herd due to the detection of lesions typical of TB during post-mortem examination of one or more test reactors or inconclusive reactors, or where samples from one or more reactor, inconclusive reactor or a slaughterhouse case produce positive culture results for *Mycobacterium bovis*. Figures for Wales do not include incidents where OTF status has been withdrawn for epidemiological reasons only. These are currently included within the OTFS figures.
Officially TB Free (OTF) status of a country or region	“OTF Status" takes its meaning from European law: for a region or Member State of the EU to be considered to be OTF the annual incidence of herds with confirmed *M. bovis* infection must not have exceeded 0.1% and at least 99.9% of the herds within it must have been free from bTB at the end of the year for at least six consecutive years.
Testing	
Single intradermal comparative cervical test (SICCT)	The tuberculin skin test: if tuberculin (a purified sterile cocktail of proteins derived from *M. bovis* cultures) is injected into the skin of an animal infected with *M. bovis*, this will cause a localised allergic reaction characterised by temporary swelling of the skin, which is measured 72hrs after the injection. The principle is very similar to the skin tests for TB in humans.
Gamma interferon test (IFN-γ or gIFN)	Laboratory-based blood test approved as an ancillary diagnostic tool that measures the release of γ-IFN in whole blood cultures stimulated with tuberculin.

Term	Description
Statistical Terms	
24 or 23 -month moving average centred	The moving average line has been included in the charts to help identify trends with seasonality smoothed. The centred 24-month moving average has been calculated as the average of the values for the quarter and the previous 3 quarters and subsequent 4 quarters, giving each quarter equal weight. The centred 23-month moving average has been calculated as the average of the values for the month and the previous 11 months and subsequent 11 months, giving each month equal weight.