



Animal &
Plant Health
Agency

Livestock Demographic Data Group:

Pig Enhanced Demographics – summary for external report 2018

2017 - 2018



© Crown copyright 2020

You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v.3. To view this licence visit www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ or email PSI@nationalarchives.gsi.gov.uk

This publication is available at www.gov.uk/government/publications

Any enquiries regarding this publication should be sent to us at

Department of Epidemiological Sciences
Animal and Plant Health Agency
Weybourne Building, Level 2, Area F
Woodham Lane, Addlestone, Surrey, KT15 3NB
LDDG@apha.gov.uk
www.gov.uk/apha

The Animal and Plant Health Agency (APHA) is an executive agency of the Department for Environment, Food & Rural Affairs, and also works on behalf of the Scottish Government and Welsh Government.

Contents

LDDG Pig Enhanced Demographics Summary 2017-18	1
Executive Summary	1
Introduction to document	2
Demographics and indicators of disease transmission risk.....	3
2.1 Pig holding type.....	3
2.2 Registered pig pyramids.....	6
2.3 Porcine semen collection centres.....	6
2.4 Captive wild boar premises	8
2.5 Slaughterhouses dealing with pigs	9
2.6 Rendering plants and knacker's yards dealing with pigs	10
2.7 Pig gatherings	10
2.8 Imports of live pigs and germplasm.....	11

LDDG Pig Enhanced Demographics Summary 2017-18

A report of work done within APHA Contract G 2017-18

Report prepared by

Richard Smith, Department of Epidemiological Sciences (DES), APHA

Contributions from

Susanna Williamson, Veterinary Lead, Pig Expert Group, Surveillance Intelligence Unit (SIU), APHA

Ryan Martin, Data System Group, Department of Epidemiological Sciences (DES), APHA

Joanna Tye, Database Manager, Department of Epidemiological Sciences (DES), APHA

Daniel Gilson, Data System Group, Department of Epidemiological Sciences (DES), APHA

Jonathan Smith, Knowledge and Information Management, Defra

Executive Summary

The aim of the Animal and Plant Health Agency's Livestock Demographic Data Groups (LDDGs) is to enhance knowledge of livestock demographics; including the development of the means to establish baseline measures to allow changes over time to be monitored for a set of indicators, selected as being of potential relevance to the risk of introduction or spread of disease in pigs. This report focuses on the work on these indicators for the pig LDDG completed in 2017-2018 with some amendments to allow external publication.

Eight indicators were selected for study following consultation and are included in this report. For each, datasets with relevant information were reviewed for their suitability for analysis. The eight indicators were pig holding type, registered pig pyramids, porcine semen collection centres, captive wild boar premises, slaughterhouses dealing with pigs, rendering plants and knacker's yards dealing with pigs, pig gatherings and imports of live pigs and germplasm.

Datasets of domestic pig movement records were used to identify temporary gatherings (such as markets and shows) and slaughterhouses, and the datasets were also used to infer the holding type for farms. Algorithms were used to evaluate the types of pigs moved and the types of holdings that pigs were moved to, in order to characterise premises into one of five holding types. As detailed in the [2017 LDDG pig population report](#), the number of pig movements was used to characterise five categories of holding size, with categories 3-5 estimated to be commercial-sized holdings. The results indicate that over a third of

commercial holdings are feeders (farms consisting of only growing/ finishing pigs that move to slaughter), while around a quarter were breeder-finishers. The remainder were breeding herds, nursery farms or holdings that could not be categorised. Yorkshire and Humber contained the largest number of commercial-sized holdings, and these were estimated to be mainly high intake breeding/nursery or feeder units, whereas the East of England contained the most low intake breeding herds of any region. The pig movement data also suggests that the total number of slaughterhouses for pigs may be reducing yearly and this reduction was also shown in the [Agriculture and Horticulture Development Board \(AHDB\) pig pocketbook](#). Markets and shows may represent events of potential high risk, as pigs and other livestock from different sources have direct or indirect contact, and it will be useful to monitor the number, distribution and scale of these events over time.

Relatively few holdings were registered within production pyramids that were exempt from movement standstills, or for ownership of farmed or captive wild boar (referred to as captive boar). The datasets did indicate that some registered holdings within production pyramids were dispersed through Great Britain. Some of the farms with captive boar (*Sus scrofa*) were registered to offices within areas of high pig density. Investigations indicated that the dataset may underestimate the number of these holdings and identification of farms with captive boar by an annual survey through the electronic movement reporting scheme would be a more accurate method of collecting this information in the future.

Data on fallen stock collector sites indicated that they were numerous and spread throughout Great Britain, allowing pig keepers access to local sites. The number of holdings registered for trade in porcine semen remained fairly static between 2013-2017. The analysis identified that some centres were within regions known to have large pig populations, and with commercial-sized holdings in a three kilometre vicinity, which could represent a risk of localised disease spread to or from these premises. Lastly, data on UK imports of live pigs and germplasm were collated from three different data sources. The results indicated that imports from third countries remain relatively low and that live pig imports from continental Europe (not including Ireland) are mainly breeding stock and that pigs are usually moved directly from ports to farms after importation, rather than direct to slaughter or other.

Monitoring of these eight indicators over time will help identify changes in trends which can be assessed to determine whether they affect the risk of disease introduction and/or transmission in the pig population. The availability of this information is also of benefit in a disease outbreak situation.

Introduction to document

The aim of the Livestock Demographic Data Groups (LDDGs) is to enhance knowledge of livestock demographics with two key objectives:

1. Provision of population maps, data tables and quality statements for cattle, sheep and goats, pigs, poultry and horses,

2. Provision of a set of indicators which can be used to monitor changes in risk of introduction or transmission of disease.

The need to better understand our livestock populations, their movements and behaviours was identified as a lesson learned from previous FMD outbreaks and was raised to the Veterinary Risk Group (VRG).

This report presents work completed on the set of indicators and describes evaluations of data from several sources within and external to APHA. These data were deemed, in consultation with the Pig Expert Group (consisting of APHA staff, with representation from the pig industry, SAC consulting veterinary services, Pig Veterinary Society, academia and others), to be of potential value as indicators to monitor in relation to the risk of disease introduction or transmission in the pig population in Great Britain (GB). A list of indicators was then agreed and prioritised and the usefulness and biases of identified data sources in providing an estimate of the indicators were evaluated. This report describes work completed to provide baselines for, and identify trends within, the selected indicators to inform Government and industry of factors which may affect the risk of disease threats occurring. Details of geographical locations of sites of interest have been removed, and some analyses have been omitted, to ensure data confidentiality.

It should be noted that not all of the datasets investigated in this report were from the same time period. Up to date data were requested for most of the indicators. However, the pig movement dataset included the period from 2014 and 2015, as used for the 2017 Pig Population report.

Demographics and indicators of disease transmission risk

2.1 Pig holding type

Source of data:

The use of pig movements to define herd type has been described by others using German pig movement data to characterise traders (Koeppel et al., 2018 Automatic classification of farms and traders in the pig production chain). For this assessment of GB data, a list of pig holdings was generated using the eAML2 and ScotEID databases for pig movements within England, Wales and Scotland from 2014 to 2015. Holdings identified as not being those where pigs were kept (i.e. pig farms, or smaller pig residences), such as markets or slaughterhouses, were classified as such, distinct from holdings where pigs were resident. As detailed in the 2017 Pig Population report, the number of pigs moved by each holding over the 24-month period was used to provide an estimated holding size category. All holdings that were size category 3 or above, indicating that they moved at least 300 pigs in the 24-month period and were likely to be commercial holdings, were selected for analysis. For each of the selected commercial-sized holdings, the most

common type of pig that was moved on or off was assessed, along with the most common destination type for the pigs moved off.

Each farm was put into one of five categories: feeder (holdings that include only rearing pigs up to finisher stage); breeder-finisher; low intake breeding herd; high intake breeder farms/ nursery units; and unknown. A holding type was defined by an algorithm which identified holdings with movement characteristics that would be common on that particular holding type. Feeder farms were primarily defined by the common movement type being finisher pigs being sent to slaughter. Breeder-finisher farms also sent finishers to slaughter, however they had a greater proportion of pigs moving off the farm than moving on, in contrast to feeder farms. High intake breeding and nursery farms had to be combined in one category due to difficulties in distinguishing nursery farms from the movement data and their similarity in sending pigs to other farms, rather than to slaughter. The movement data did not capture growing pigs as a pig category making nursery farms difficult to identify. Low intake breeding herds were differentiated by a very low number or absence of incoming pigs. The remaining holdings were classified as unknown. Validation of the algorithms was completed by comparing matched holdings against holding type data held in other datasets.

Results

The total number of holdings within the movement dataset from 2014-2015, which were estimated to be commercial-sized pig farms, was 3,252. The majority of farms were allocated as feeders (40.4%), whereas the combination of high and low intake breeding farms represented over a quarter (27.7%) of all farms (Table 1). This baseline for holding type will be useful in defining trends within the industry, such as further integration of the industry through changes from breeder-finisher holdings to multi-site production. Such data are also of relevance for risk profiling during disease outbreaks. Further work will be undertaken to assess how breeding herds and nursery units can be separated for future reports.

Table 1: Number of farms by estimated holding type, based upon pig movement data characteristics.

Holding Type	No. Farms	% of total farms
Feeder	1,315	40.4
Breeder-Finisher	811	24.9
High intake breeding or nursery	456	14.0
Low intake breeding	447	13.7
Unknown	223	7.0

Figure 1 (image below) shows the distribution of the holding types in GB. The Yorkshire and Humber region contained a large proportion of the total high intake breeding/ nursery farms (46%), breeder-finisher farms (26%) and feeder farms (39%), whereas the low intake breeding units were mainly located in the East of England (29%). Scotland contained 44% of all the holdings with an unknown type, possibly due to less information being supplied within the Scottish movement dataset.

Pig holding Types Aggregated to NUTS 1

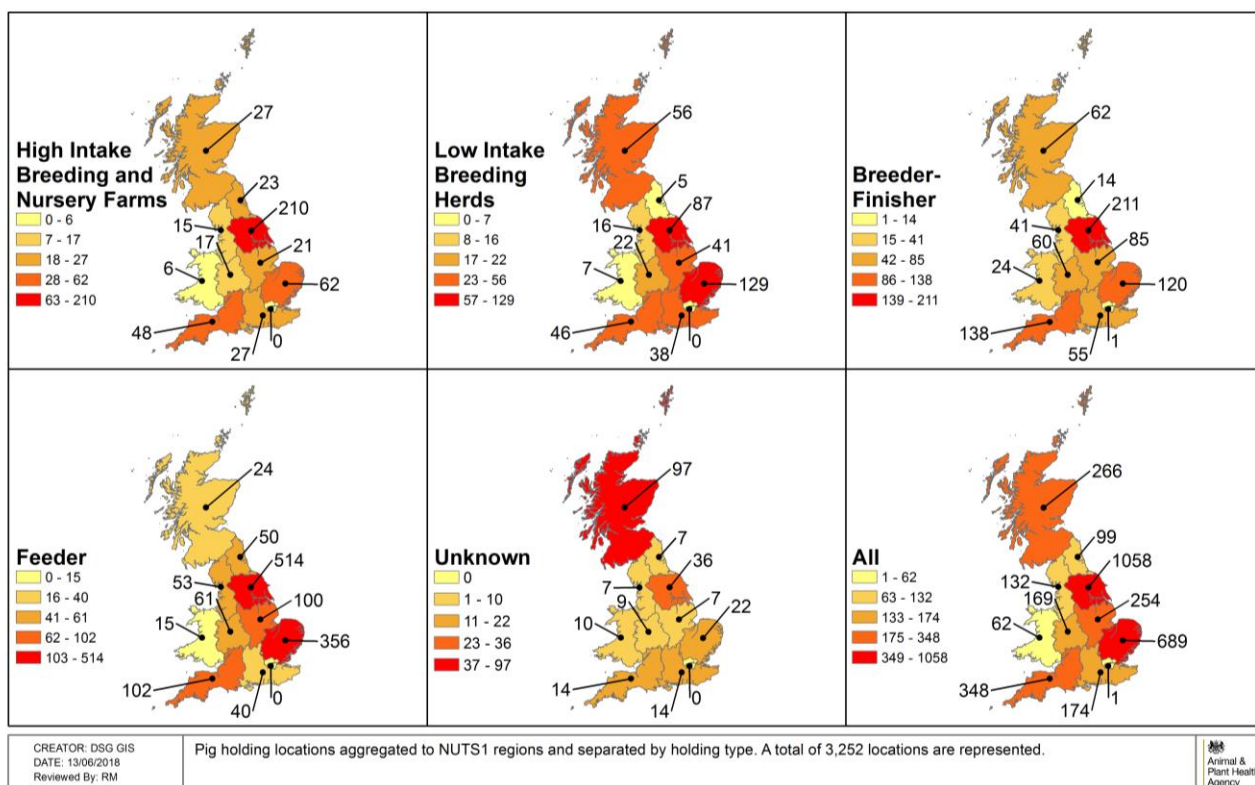


Figure 1: Choropleth map of the estimated numbers of each type of holdings in each of the eleven NUTS1¹ geographical regions (colour categorisation was determined using natural breaks methods to inform size intervals).

Although the definition of herd type was not fully accurate when compared with other datasets held at APHA, it is acknowledged that no gold standard exists of a dataset with confident interpretation of herd type for a large population of holdings from all holding types. The categorisation of holdings through the algorithm, using data such as whether farms predominantly send pigs to slaughter or have very few incoming pig movements, remains useful in defining changes to characteristics in the pig industry over time. It is worth noting that AHDB are utilising pig movement characteristics, such as type of pigs moved, to validate information in the electronic Medicine Book, which confirms confidence in the quality of the data.

¹ NUTS (Nomenclature of Territorial Units for Statistics) is a geocode standard of Eurostat for referencing the subdivisions of a country for statistical purposes.

2.2 Registered pig pyramids

Source of data:

Data on farms within pig production pyramids, registered under PRIMO (Pigs Records, Identification and Movement Order 2011), were collected from the Customer Service Centre – One Health (APHA) on January 2018. Pyramids are registered and approved to allow movements between the premises to be exempt from 20-day standstill requirements. These standstills are normally applied to movements of pigs, where no movements of pigs are allowed off the premises for 20 days from the date of movement of pigs onto the premises. Movements under PRIMO should still be reported to eAML2. All PRIMO approved pyramid units are subject to an annual inspection by an APHA officer.

Results

A total of 18 production pyramids were registered under PRIMO at the time of data extraction. These consisted of 107 farm locations, with between 1 and 26 farms within each pyramid (mean of 6). The registered farms within the dataset were nucleus, nucleus multiplier and multiplier herds along with their linked grow-out units and gilt mating units. Not all farms within a production pyramid may be registered, as owners may only register those that they consider to be most affected by standstill requirements.

The 20-day standstill requirement from which premises are exempt under PRIMO aims to reduce the risk of disease (primarily notifiable disease) spread, as the 20 days allow time for disease to become apparent before the next movement of pigs off the premises. The assessment and registration of pig production pyramids under PRIMO must therefore take the pyramid structure and enhanced biosecurity standards into account.

2.3 Porcine semen collection centres

Source of data:

Since 2013, the Centre for International Trade (CIT) at APHA Carlisle has been responsible for the approval and monitoring of porcine semen collection centres, also known as artificial insemination centres or boar stud farms. Data on the current records of registered sites of porcine semen collection were extracted from the CIT on 1st September 2017. The data include details of each location in the United Kingdom approved for intra-community trade in the EU and those approved only for domestic trade. The dataset does not include information on the use of porcine semen within a breeding pyramid. There is no obligation for “own use exemption” inseminations to be recorded other than for the farmer’s own records. However, the new EU Animal Health Regulation may require more stringent recording of this when it comes into force. A dataset of holdings with pig movements recorded between 2014 and 2015 was used to identify those within a three kilometre radius of the approved centres.

Results

In 2017, there were 14 centres approved for intra-community EU trade and two approved only for domestic trade of porcine semen (Table 2). The size of the porcine semen industry is fairly static and does not change greatly from year to year, with just a small number of centres changing their approval status from 2013 to 2017. The general animal health requirements governing intra-Union trade of semen of domestic animals of the porcine species are laid down in [Council Directive 90/429/EEC](#). Biosecurity on these centres is generally of a high standard given the need to protect their health status and trade. The centres are also subject to compulsory routine testing for Brucellosis, Aujeszky's Disease and Classical Swine Fever (for intra-Union trade only).

Table 2: Number of holdings registered for trade of porcine semen, with the number of holdings that have had licensed approved or revoked in that year.

Year	2013	2014	2015	2016	2017
Intra-EU Trade	14	14	16	15	14
<i>Change since previous year</i>	-2	0	+3/-1	-1	+1/-2
Domestic trade only	5	6	5	3	2
<i>Change since previous year</i>	0	+1	+1/-2	-2	-1

Four of the EU trade centres registered in 2017 were located in Northern Ireland. Seven of the 12 approved centres in GB were located within or adjacent to East England and Yorkshire, which are known areas of high pig farm density. The centres in GB had between 1-10 pig holdings within the standard notifiable disease outbreak protection zone three kilometre radius (Table 3), when assessed against holdings identified in the 2017 pig demographics report. This could represent a potential risk of localised disease spread to and from these premises and thus a risk to their domestic or international trade. However, the majority (58%) of centres did not have a pig holding estimated to be of commercial size (size categories 3 to 5, indicating that they moved at least 300 pigs in a 24-month period) within that radius.

Table 3: Number of holdings reporting a movement in 2014-2015 within a three kilometre radius of each of 12 British porcine semen collection centres, stratified by estimated size of the holdings (estimated by number of pigs moved in a 24-month period).

No. holdings with estimated holding size*

Collection Centre ID	Category1	Category2	Category3	Category4	Category5	Total no. holdings
----------------------	-----------	-----------	-----------	-----------	-----------	--------------------

1	5	2	0	0	0	7
2	2	1	1	0	1	5
3	4	2	0	0	0	6
4	4	2	2	0	0	8
5	6	4	0	0	0	10
6	3	1	0	2	2	8
7	1	2	0	0	0	3
8	2	2	0	0	0	4
9	1	0	0	0	0	1
10	5	2	1	0	0	8
11	2	3	0	0	0	5
12	3	2	0	0	2	7

*Holding sizes are estimated from pig movements within a 24-month period: category 1 = 1-25 pigs; cat. 2 = 26-300; cat. 3 = 301-2,000; cat. 4 = 2,001-8,000; cat. 5 = 8,000 and above.

2.4 Captive wild boar premises

Source of data:

The keeping of captive or farmed wild boar (*Sus scrofa*), hereon referred to as captive boar, is controlled under the Dangerous Wild Animals Act 1976 and anyone farming wild boar must have a licence from the Local Authority. The keeping of captive boar for exhibition to the public in zoos and wildlife parks is controlled by the Zoo Licensing Act 1981. A dataset was produced in August 2017 by the APHA Customer Registration team in Cardiff by checking all pig registrations for the presence of captive boar which were registered for Dangerous Wild Animal licensing purposes (Dangerous Wild Animal Act 1976) by Local Authorities. Hybrid or cross-bred animals may also require a licence, depending upon the degree of cross-breeding and how far removed the hybrid is from its wild ancestor. The data only included holdings in England and Wales, as Scottish holdings register with their local authorities and this information is not collated centrally.

Each individual licence states the maximum permitted number of animals on the holding, broken down to pig production categories, although these numbers may not be the same as the numbers present on the holding. The duration of licences appears to range from three months to two years and numbers of captive boar could fluctuate in this time period.

Results

The results show that in 2017, 13 holdings were registered under a Dangerous Wild Animal license, with between 1 and 150 (mean 22) wild boar stocked on those holdings. The number of captive boar on each holding is defined as their usual stock number rather than the number present at any single time point. Herds were registered at APHA offices across England and Wales.

The total number of registered holdings was small, with only one holding containing a substantial number of captive boar. The locations of holdings in or close to pig-dense areas emphasises the importance for the licence requirements to be fulfilled, in particular suitable fencing to keep the wild boar captive. The APHA farm registration data was shown to be a more effective way of collecting data on captive boar than contacting local authorities directly. However, internet searches suggest there are premises containing wild boar that are missing from the dataset and the dataset was also missing Scottish premises. Some holdings may not have been registered due to the regulations on some cross-bred pigs not needing to be registered. This dataset is clearly separate from data on free-living feral wild boar populations, which represent a different disease risk in relation to the pig population.

This data source will be used in future reports to assess trends in the captive boar population. However, the collection of data through a yearly survey of pig holdings through the eAML2 pig movements system is the preferred option to collect and maintain a comprehensive and reliable dataset on all non-free-living wild boar, captive and farmed.

2.5 Slaughterhouses dealing with pigs

Source of data:

Details of unique slaughterhouses processing pigs were provided using the eAML2 and ScotEID databases for pig movements within England, Wales and Scotland. The data from 2014 and 2015 were interrogated to identify those holdings with either an MHS (Meat Hygiene Service) identifier, to identify them as a registered slaughterhouse, or those recorded as an abattoir in the ScotEID data or which included a site name related to pig slaughter (abattoir, bacon, meats) and had a size category indicating a commercial-sized holding (size category 3 to 5) or at least 10,000 pigs moved on during a two-year period.

Results

The number of slaughterhouses that recorded incoming pig movements in 2014 and 2015 was 116. This number is less than the number referenced in the previous report, which reported 165 in 2012, 155 in 2013 and 127 in 2014. The previous assessments of the number of premises included those identified through the RADAR data warehouse as an abattoir, which may have included meat wholesalers and butchers. However, the previous analysis did not include ScotEID data and so would not have included Scottish slaughterhouses that only had movements from within Scotland. Only future trend analysis using the new specification for detailing a slaughterhouse will provide clarification of any downward trend.

There are several factors influencing where pigs are sent for slaughter other than proximity of a slaughter house to the pig premises. These include the capacity of different slaughterhouses for pigs, whether they accept cull sows, whether the farm is under any restriction (e.g. for TB), the specifics of contracts of farmers with processors or retailers,

and whether pigs are suitable for the export market. Analysis of the movements to slaughterhouses could be assessed in the next report, providing parameters for each slaughterhouse on proportion of adult pigs moved, proportion of movements from a market, and average and maximum distances travelled from farm to slaughterhouse.

2.6 Rendering plants and knacker's yards dealing with pigs

Source of data:

The National Fallen Stock Company (NFSCo) was contacted in October 2017 for a list of all their registered sites that received pigs, from which all GB sites were identified. Not all fallen stock collectors are registered with NFSCo so this population is not completely described. However, it was believed that their registered list would be the most accurate and with sufficient coverage to provide representative estimates for future comparisons. Previous use of data on sites voluntarily registered for TSE surveillance may have underrepresented the number of sites and did not indicate whether they collected pigs or not.

Results

The results show that in 2017 there were 79 fallen stock collector locations registered with NFSCo dealing with pigs spread over most of Great Britain. The spread of NFSCo-registered fallen stock collector sites appears to provide coverage across Great Britain and allows for the collection of fallen stock in areas with few pig farms. However, not all collectors are registered under this service and some significant collectors of pigs are known to operate outside NFSCo.

2.7 Pig gatherings

Source of data:

Details of show sites, animal collection centres and markets dealing with pigs were provided using the eAML2 and ScotEID databases for pig movements within England, Wales and Scotland. The data from 2014-2015 were interrogated to identify those holding locations with a related name (market, mart, auction, show, fair, fete etc.) and/or a temporary Country Parish Holding number (i.e. a holding number that began with an eight).

Results

The data source recorded 192 temporary holdings during 2014-2015, with 139 shows and 53 markets. This number was in excess of the 143 locations in 2013, and 120 in 2014, which were defined as 'temporary gatherings' in the previous report. The difference in

numbers is likely to be due to the previous data omitting those holdings registered only within the ScotEID database i.e. those locations recording solely movements within Scotland. The majority (53.6%) of shows and markets recorded in 2014-15 were of the smallest holding size category (category 1; <26 pigs moved on or off), with 5.7% of shows and 45.3% of markets in size categories 3-5 (Table 4). The largest size of shows may have been markets and incorrectly assigned to 'show' due to their holding name.

Table 4: Distribution of holding size categories for market and show locations in 2014-15.

Size cat	Numbers of pigs moved in 24 month period	Market	% of total	Show	% of total
1	1-25	20	37.4	83	59.7
2	26-300	9	17.0	48	34.5
3	301-2000	7	13.2	6	4.3
4	2001-8000	9	17.0	1	0.7
5	8000+	8	15.1	1	0.7

Movements of pigs to markets and shows are associated with a risk of infectious disease spread, as pigs may have direct or indirect contact with pigs of different disease statuses from different sources and/or contact other livestock species. Some commercial pig farmers who show take the precaution of only showing finisher pigs and moving them to slaughter from market instead of returning to their original premises.

The new definition of markets and shows provides greater clarity on the number and risk profile of these types of locations, which will allow useful trend analysis in subsequent years. Possible additional analysis in the next report could include a comparison of the numbers and types of pigs, distances moved, numbers and types of premises involved at different markets and shows to further explore potential risks.

2.8 Imports of live pigs and germplasm

Source of data:

Data on the movement of live pigs were collected from the TRACES (TRAde Control and Expert System) system, used to record intra-Community trade in live animals, their products and germplasm. TRACES records EU trade and also third country imports. Data on the importation of porcine germplasm was supplied by CIT Carlisle. Both datasets indicate movements to the UK rather than GB. The figures shown in TRACES may not indicate actual movements as certificates may be reissued when non-compliance is noticed (for example, cattle imported for breeding not slaughter) or consignments are cancelled at short notice. Summaries of germplasm and live pigs imports were produced for 2014 and 2016, with a further detailed summary of EU live pigs imports from 2010-2016. Data of GB-to-GB movements were omitted from the analysis. Imports from third

countries that have moved through the EU would be recorded as having the third country departure location unless they remained in an EU country for six weeks or more.

The National Pig Association (NPA) supplied data for 2016 and 2017 on data for pig imports from ferry crossings that had been voluntarily supplied to them by ferry companies. However, it is known that another main ferry route for pig imports did not supply data to the NPA and so the information cannot be used to define exact numbers of imports but was used to inform which types of pigs were imported.

Details of live pig imports were also provided using the eAML2 and ScotEID databases for pig movements within England, Wales and Scotland. The data from 2014-2015 was used to indicate the destination of movements of imported live pigs once they had arrived in GB, which was determined by assessing movements of pigs from locations listed as “Ports” in the dataset.

Results

Data from TRACES indicate that the large majority of live pig imports are from within the EU (Table 5). The results show no change in trend was apparent from 2014-2016, and there was a decrease in live pig and germplasm imports from 2015 to 2016 from the EU, whereas the imports of live pigs from third countries increased from 2014 to 2015 and the data show that there were no germplasm imports in 2016.

Table 5: Number of live pig and porcine germplasm import into the UK for years 2014-2016 as reported through TRACES¹.

Product	2014		2015		2016	
	EU Movements	Units	EU Movements	Units	EU Movements	Units
Live pigs	3,421	618,142	3,366	617,833*	2,747	472,769
Germplasm	2,462	99,944	2,890	109,584	2,249	82,678

Product	2014		2015		2016	
	Third Countries Movements	Units	Third Countries Movements	Units	Third Countries Movements	Units
Live pigs	2	121	8	660	8	511
Germplasm	14	121	10	128	0	0

¹The information provided is a true reflection of that accessed through the Trade Control and Expert System (TRACES). The accuracy of this data cannot be guaranteed, as the information added into TRACES is by a third party; # the unit for live pigs are individual animals, whereas the unit for germplasm is a insemination dose or individual embryo; *Includes two movements of 16 pigs from Norway (non-EU country).

All imports of germplasm from Third Countries were from the USA, whereas live pig imports came from Canada and the USA (Table 6). The live pig movements from within

the EU are predominantly from the Republic of Ireland (99.7%), with the second largest importer (Denmark) supplying only 0.2% of pigs (Table 7). Anecdotal evidence suggests that movements from the Republic of Ireland are typically finisher pigs being moved to slaughter in the UK, whereas pigs imported from Denmark would be breeding pigs. In total, the numbers of imported live pigs from the EU appears to be reducing, with a decline from 717,800 in 2010 to 472,769 in 2016; although a large number of pigs (956,813) were imported in 2013.

Table 6: Number of pigs imported into the UK from Third Countries 2014-2016

Importing Country	Year		
	2014	2015	2016
Canada	1	357	360
USA	120	303	151
Total	121	660	511

Table 7: Number of pigs imported into the UK from EU member states 2010-2016

Importing Country	Year						
	2010	2011	2012	2013	2014	2015	2016
Austria	-	19	-	-	-	-	-
Belgium	28	-	88	13	38	39	12
Germany	55	8	10	-	978	751	101
Denmark	1,047	578	499	1,630	2,244	1,948	1,442
France	944	265	269	2	-	24	-
Ireland	715,639	713,485	684,544	954,782	614,520	614,816	471,081
Netherlands	4	105	13	4	29	67	133
Sweden	83	153	190	382	333	172	-
Total	717,800	714,613	685,613	956,813	618,142	617,817	472,769

The pig import data supplied to the NPA identified 13 shipments of pigs in 2016, made up of 501 breeding pigs (boars, gilt or sows), 94 boars and 1 pet pig. Whereas in 2017, there were 23 shipments on that route of 1,386 breeding pigs, 134 boars and one shipment provided no information. This was an increase of at least 255% additional imported pigs in 2017.

The pig movement data indicated that 16 ports (airports and sea ports) had movements recorded during 2014-2015, with nine of these reporting imports of pigs and seven only recording export movements. As detailed in the previous report, almost all imported pigs recorded from 2010-2011 were moved from ports to animal residences, with a single movement of 10 pigs to an AI centre in 2010. In the current dataset from 2014-2015, the majority of movements were to animal residences but there were also 36 movements from two ports to a single slaughterhouse (Table 8). The majority of imported pigs were to a small number of animal residences, with 93% of imported pigs going to three individual holdings and one holding representing 68% of the total pigs imported. The dataset also indicated nine occasions where pigs were moved on the same day from the same port to

between 2-3 animal residences, although it is unknown whether the imported pigs were from the same destination or travelled on the same aeroplane or ferry.

The numbers of pigs moved and number of movements supplied from the pig movement data were not in agreement with those recorded in Table 7 from TRACES data. This may be related to some movements, such as those direct to slaughter, not being correctly recorded in the pig movement dataset. This inconsistency reduces the confidence in the insight provided by the pig movement data and further exploration is needed to understand this issue.

Table 8: Destination of pig movements from port locations in Great Britain

Year	Animal residence destination		AI centre destination		Slaughterhouse destination	
	No. of animals moved to	No. of movement to	No. of animals moved to	No. of movements to	No. of animals moved to	No. of movements to
2010	742	17	10	1	0	0
2011	286	9	0	0	0	0
2014	125,299	127	0	0	3,199	20
2015	126,908	163	0	0	2,831	16

Importation of live pigs represents a potential route for introduction of certain non-statutory exotic pathogens, exotic strains and diseases unless the importers take action to assure freedom of the herds of origin or imported pigs. In 2014, in response to the threat of virulent porcine epidemic diarrhoea (PED) virus, there was voluntary temporary cessation of live pig imports from North America and this is reflected in the lower numbers imported from third countries in that year. Although the number of imports from third countries increased in 2015, the number remains relatively low.

The data from ferry imports shows that live pigs introduced were almost entirely breeding stock. The National Pig Association import protocol for live pigs (<http://www.npa-uk.org.uk/hres/NPA%20imports%20protocol%20Feb%202019>) provides guidance for breeding companies and other importers of live pigs in addition to statutory requirements to ensure implementation of strict pre- and post-import protocols, strict biosecurity during transport, and strict biosecurity measures on farms receiving pigs and isolation procedures to prevent exotic pathogen introduction and spread.

The pig movement data consistently shows that imported pigs are mainly moved directly to farms, although this may not reflect immediate mixing with the UK pig population as pigs may be moved to an isolation farm for a quarantine period. No movements were registered where imported pigs went direct to a market, which could be a particular risk and it would be difficult to trace pigs moved from the market back to their original source. The increase in the number of pig movements recorded in the latest extract of data may reflect improvements in ensuring these movements are recorded in the databases rather than actual increases in the number of pigs moved, as the numbers are still below the movement data recorded in TRACES.

It should be noted that data on the number of hauliers moving pigs into the UK was not assessed, and this may represent a separate risk factor for introduction of exotic diseases.