

# PRODCOM Technical Report

**June 2015**

Edition No.: 1  
Editor: **William Barnes**  
Office for National Statistics



2015

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# 1. Introduction

This report describes the methodological and technical procedures used by the Office for National Statistics (ONS) to produce the UK Manufacturers' Sales by Product (PRODCOM) estimates.

It is intended for users who want to know more about different aspects of the survey, including: the background; history and survey development; uses and users of PRODCOM estimates; and concepts and statistical methods underlying the survey. This report further provides information on a variety of the processes that occur, such as: sample design; questionnaire design and development; data collection; results processing; publications; and how data quality is improved.

This technical report will be revised in line with major survey developments, and therefore the PRODCOM team welcome any comments and would be particularly interested in any suggested improvements. Please contact us via email: [prodcompuplications@ons.gsi.gov.uk](mailto:prodcompuplications@ons.gsi.gov.uk) or telephone William Barnes on +44 (0)1633 455711.

## 1.1 Overview

The UK Manufacturers' Sales by Product survey, more commonly known as PRODCOM, is the most comprehensive annual business survey conducted by ONS covering product sales in the manufacturing industry.

Manufacturers' Sales by Product surveys<sup>1</sup> are carried out annually by all European Union (EU) member states, under EU regulation, which require each member state to provide information on the Mining, Quarrying and Manufacturing activities defined in the Nomenclature of Economic Activities (NACE). In the UK, it is a compulsory survey that is administered under the statutory powers of the Statistics of Trade Act 1947 for Great Britain and under the Employment (NI) Orders 1988 for Northern Ireland.

PRODCOM is intended to collect product-based statistics on industrial production. Businesses are therefore asked to provide information on:

- the value (in pounds sterling or Euro) and the volume (kilograms, number of items etc.) of product sales; although the data collected is based on invoiced sales, for certain products, total production and production intended for sale are collected instead
- non-manufacturing income: merchant goods; work done; sales of waste products; all other income; and total turnover

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<sup>1</sup> Eurostat encourages the use of administrative data where this is available.

The provision of product sales information and non-manufacturing income, allows analysis of the proportion of manufacturing and non-manufacturing activity in each manufacturing industry. PRODCOM thus provides a comprehensive picture of industrial production in the UK.

Personalised questionnaires<sup>2</sup> are administered annually by ONS to around 21,500 UK manufacturers from a total of around 234 manufacturing and mineral extraction industries<sup>3</sup> covering approximately 3,800 products and some services<sup>4</sup> as specified by the European Statistical Office (Eurostat).

Although every business is classified to a specific manufacturing industry, each business can produce a variety of products, depending on the nature of its activities. This enables businesses to contribute to multiple industries' product sales. There are therefore two ways to consider the PRODCOM data which are:

- products corresponding to an industry - product information, either individual products or total product sales relates to products corresponding to an industry SIC irrespective of which industry SIC the business making the product is classified to
- businesses classified to an industry - all other variables refer to the activity of businesses classified to the SIC in question

A more detailed explanation of the distinction and the variables covered by the survey is available in the PRODCOM user guide which is published on the [ONS website](#).

Provisional estimates are published via the [ONS website](#) six months after the end of the reference period. Intermediate and final estimates are published 12 and 24 months respectively after end of reference period. The sum of production of all manufacturers per product is aggregated and a national total submitted to Eurostat.

PRODCOM outputs may be used to answer questions such as:

- what was the total value of UK manufacturers' product sales in 2014?
- which UK manufactured product(s) had the highest sales value in 2014?
- what are the top 10 UK manufacturers' sales products in 2014?
- which industries contributed most to product sales growth between 2013 and 2014?
- what percentage did UK contribute to EU manufacturers' product sales in 2014?

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<sup>2</sup> The questionnaire is tailored to include only the products that are manufactured by the business.

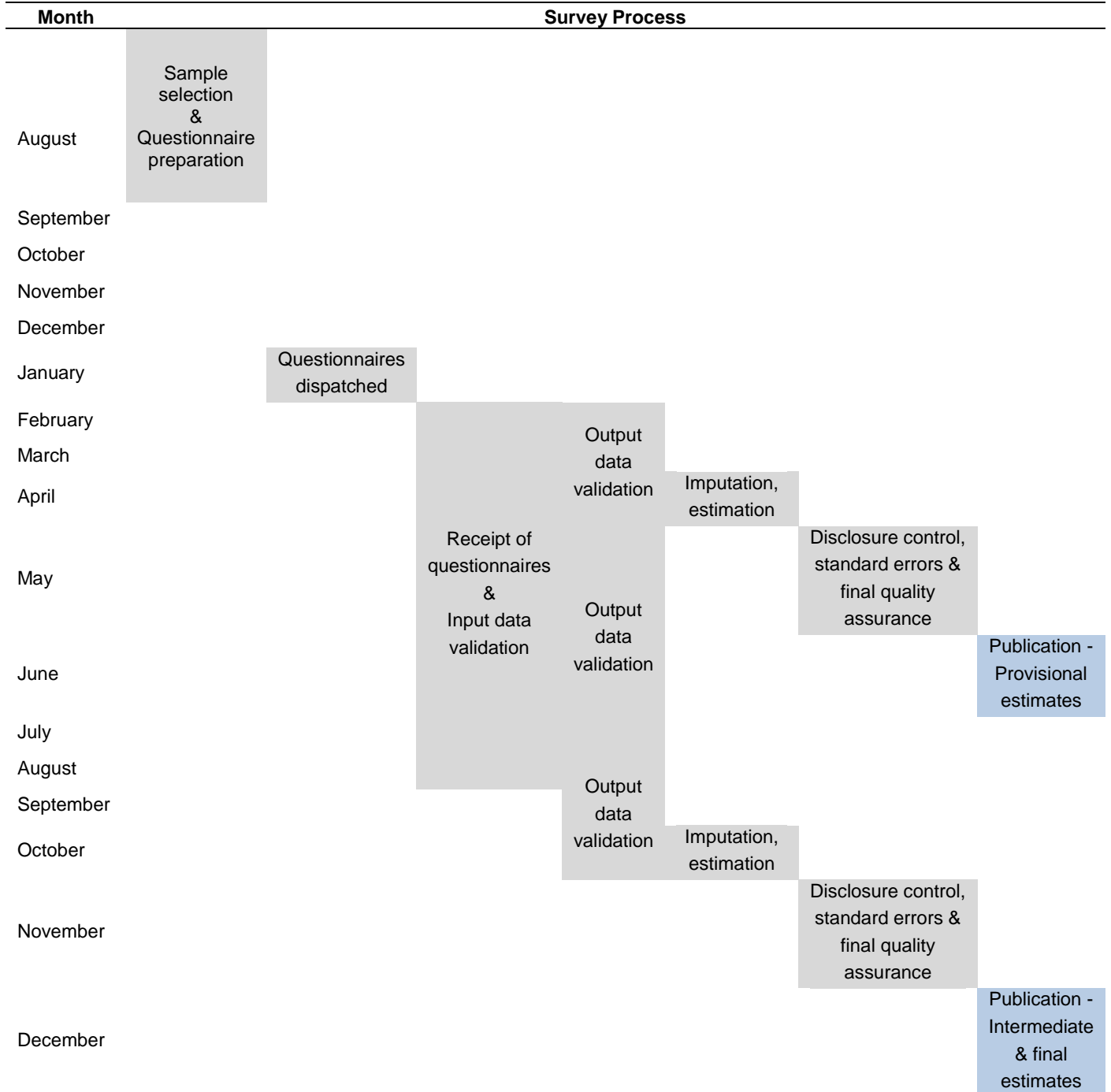
<sup>3</sup> These industries are defined at the 4-digit SIC level. SIC is a Standard Industrial Classification used to classify business establishments by the type of economic activity they are engaged in. SIC07 is the latest revision of SIC.

<sup>4</sup> The services cover repair and maintenance involving major reconstruction of the product, assembly work and finishing (treatment).



The key facts about the survey are listed in Appendix 1, Diagram 1.1 summarises the PRODCOM survey process from sample selection through to the publication of the final estimates and Appendix 7 provides a glossary of concepts used in this publication.

Diagram 1.1 - Summary of the survey process



## 1.2 Key users and uses of the data

The wide range of users that view, download and use PRODCOM estimates include:

- ONS internal users such as National Accounts
- Government departments such as the Department for Business, Innovation and Skills (BIS) and the Department for the Environment, Food and Rural Affairs (DEFRA)
- Devolved administrations such as the Scottish and Welsh Governments as well as local authorities
- Other users such as policy makers, business/market analysts and researchers; trade associations; the media; academics; and the general public

PRODCOM estimates are generally used as a key resource for understanding the detailed structure and performance of UK manufacturing, specifically UK manufactured products.

Within ONS, PRODCOM statistics are used to:

- produce the UK National Accounts Supply and Use Tables, an integral part of estimating UK Gross Domestic Product (GDP)
- create a sampling frame for ONS Producer Price Index (PPI). The PPI is a monthly survey that measures the price changes of goods bought and sold by UK manufacturers and provides a key measure of inflation

On an international level, PRODCOM statistics:

- are required by Eurostat to meet the European Economic Community (EEC) Council Regulation, which requires all European Member States to supply production data, based on a specified list of products; this is deemed necessary to monitor the impact of the European Commission's community policy regarding trade and industry and for the EC and national governments to monitor industries and markets and to develop their corresponding policies
- allows international comparisons between, and analysis of, different Member States. Eurostat is able to provide official estimates to the various users who require reliable and comparable figures regarding the range of products covered by PRODCOM regulations; for example, the EC and national governments require such information for defining, implementing and analysing policies and legislation

Eurostat makes comparisons and, where possible, produces a picture of emerging developments in an industry or product in a European context; the latest data for all EU member states can be found on the [Eurostat website](#).

Many users utilise the information in PRODCOM statistics to gauge market share, while businesses or manufacturers use it to evaluate and better understand how to establish new markets or opportunities for their products. There is an emerging domestic policy demand for detailed product level data which is currently not available from other ONS surveys (such as the [Annual Business Survey](#)<sup>5</sup> (ABS)).

Appendix 2 contains a more detailed list of PRODCOM users, including those mentioned above, and lists specific examples of some different uses made of PRODCOM estimates.

The ONS has identified three distinct types of web users - the 'Expert Analyst', 'Information Foragers' and 'Inquiring Citizens'. To improve our understanding of PRODCOM users a medium term strategy for engaging with users will be implemented from 2015. Supplementary information on users and uses of the PRODCOM statistics is provided in our [User Engagement Report](#), published on the ONS website.

### 1.3 History

Collection of information on UK business dates back to the formation of the Board of Trade (the forerunner of the modern Department for Business, Innovation and Skills) in 1786. In 1832, the Board of Trade created its own statistics department, and began a statistical yearbook, which included information on commercial activities and trade.

PRODCOM is from the French 'PRODUCTION COMMUNAUTAIRE' (Community Production). Prior to 1993, product information was collected through the Annual and Quarterly Sales Inquiries (ASI/QSI), introduced in 1969 and 1989 respectively. The inquiries were continually subject to review, conducted by the Department of Trade and Industry (DTI), with a view to striking a balance between the burdens placed on business and meeting the needs of Government for data. In the UK, the survey was formerly known as the 'Products of the European Community (PRODCOM) Survey' and later renamed the 'Annual PRODCOM Survey PRODUCTS of the European COMMUNITY'. From the 2014 reference year, it has been called the 'UK Manufacturers' Sales by Product Survey'.

At the EU level, the evolution of PRODCOM dates back to 1985 when there were the first meetings of the European working party on "Production Statistics", whose objective was to harmonise the various ways industrial production statistics were collected in the Member States. Although statistics on production were collected in most countries, these were specific to each national situation, and as such national nomenclatures were used and different survey methods were applied.

Eurostat, in conjunction with national statistical offices and European trade associations, developed a harmonised system for the collection of product statistics covering all EU member

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<sup>5</sup> The ABS collects total turnover and other variables similar to those collected by PRODCOM. However, it is not specific to the product classification, but the business industrial classification.

states. Their work led to the adoption of the first regulation ([3924/91](#)) on 19 December 1991, establishing a community survey of industrial production. This was necessary for the EC to monitor the impact of its policy regarding trade and industry

This need became more pressing with the creation of the single European market in 1992 and, with rapid changes occurring in Europe, the statistical system had to adapt to these changes and meet the demand from industry for information, such as market size and penetration rates.

In establishing the harmonised system, Eurostat aimed for:

- a degree of detail that will be of sufficient benefit to users
- production statistics that should ideally be comparable with trade statistics in order to ensure the calculation of useful data about the size of the markets. This meant that the products and the units of measuring the quantity should be comparable;
- a common list of products
- product descriptions that are linked to the coding system<sup>6</sup> already used by the European Commission to classify products when collecting trade data from customs procedures

In 2004 an amending regulation (912/2004) was established clarifying ambiguities such as the survey population<sup>7</sup>, the observation/statistical unit and coverage rules<sup>8</sup>, and allowing the list of products to be established every year as Commission Regulation.

Several measures have been implemented as part of the initial Council regulation (EEC) No 3924/91 and amending regulation (EEC) No 912/2004. They include to:

- undertake the PRODCOM survey only once a year in each Member State
- reduce the number of product codes; products being reported have reduced from around 5,600, prior to 2014 to the current number of around 3,805
- promote electronic questionnaires
- encourage the exchange of information between administrations

The key events in the evolution of PRODCOM statistics since its inception are summarised below.

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<sup>6</sup> This is known as the ‘Combined Nomenclature’ or CN codes.

<sup>7</sup> The survey population are Enterprises whose principal activity or one of its secondary activities is listed in sections B and C of the classification of economic activities in the European Community (NACE).

<sup>8</sup> The 90% representativeness rule; 1% exemption rule; 20+ employees rule.

## 1.4 Timeline

Table 1.1 Key events in the development of PRODCOM

<b>PRODCOM Council Regulation</b>	December 1991 - the PRODCOM Regulation was adopted by the Council.
<b>First PRODCOM List</b>	November 1993 - the first PRODCOM List was set up. It contained 5,765 headings and was published in all nine official languages of the then EU
<b>Monthly Iron and Steel</b>	March 2003 - the Statistical Programme Committee (SPC) meeting adopted a proposal to integrate monthly Iron and Steel statistics in PRODCOM. This decision was a consequence of the expiry of the Iron and Steel Treaty.
<b>Commission Regulation on the PRODCOM List</b>	2003 - it was recognised that the PRODCOM List was not valid unless it was supported by an annual Commission Regulation.
<b>Commission Regulation on implementation of the Council Regulation</b>	April 2004 - a Commission Regulation implementing the PRODCOM Council Regulation was adopted.
<b>Simplification of PRODCOM</b>	<p>November 2003 - efforts made to simplify the increasingly complex PRODCOM List so that the Member States could concentrate their efforts on the most important products.</p> <p>June 2004 - the following simplifications were agreed:</p> <ul style="list-style-type: none"> <li>• Remove the detailed optional headings from the PRODCOM List;</li> <li>• Remove the concept of production intended for sale and use sold production instead;</li> <li>• Remove quarterly data;</li> <li>• Where possible, remove z-headings and keep only the Z-headings (aggregates of the more detailed z-headings) that enable a link to be made to the CN;</li> <li>• Remove the N-headings. These were intended to provide a breakdown of products according to the class of origin, but were poorly reported;</li> <li>• Remove the second volume unit for all headings;</li> <li>• Remove energy headings that should be reported to Eurostat under energy statistics.</li> </ul> <p>2005 - the number of headings in the PRODCOM List was reduced from 5,700 in 2004 to 4,500.</p>
<b>Estimation of missing figures</b>	2004 - the estimation of missing data was discussed and a method was approved.
<b>Removal of monthly Iron and Steel</b>	2006 - monthly reporting for Iron and Steel headings was no longer required.

<b>Confidentiality charter</b>	2006 - the PRODCOM confidentiality charter was changed to ensure that EU aggregates were not suppressed unnecessarily. Implementation of these changes resulted in the number of EU aggregates that must be suppressed for confidentiality reasons being reduced by about 20%.
<b>Reporting of production involving subcontracting</b>	<p>For several years, discussions with reporting countries have been conducted to achieve harmonisation of production reported when it has been undertaken by sub-contractors. This is important since varying national practices can cause distortions in the EU aggregates.</p> <p>The conclusion was that countries should respect the stipulation in the PRODCOM regulation, and report production actually carried out on their territory and not production carried out in another country on behalf of one of their enterprises.</p>
<b>Application of rounding to protect the confidential national data</b>	2008 onwards - Eurostat has applied controlled rounding to EU aggregates for all years in order to allow the publication of all EU aggregates, without revealing confidential national data. By this means EU aggregates that are sufficiently accurate to provide useful information can be published, but with an element of uncertainty that prevents users from gaining too much information about the confidential national data.
<b>PRODCOM package within the framework of FRIBS</b>	2012 onwards – ongoing discussions on FRIBS which is a Framework Regulation Integrating Business Statistics which aims to bring together existing regulations such as the structural business statistics (SBS), statistics on the production of manufactured goods (PRODCOM), short-term statistics (STS) and trade statistics (INTRASAT and FATS) and establish a legal framework for the systematic compilation, transmission and dissemination of European business statistics.
<b>Burden reduction measures</b>	2014 - ongoing discussions on burden reduction measures at PRODCOM Working Group and Task-Force meetings

Further information on the latest developments is available on the [PRODCOM news page](#).

ONS has an on-going process of survey developments and improvements. The drivers for change for PRODCOM include Eurostat and internal UK/ONS assessments and reviews. Appendix 3 shows a summary of ‘The changing face of PRODCOM 1996 - 2014’ under the following headings:

- minimising burden on data suppliers
- improving public confidence in the integrity and validity of outputs
- improving the quality and relevance of service to customers
- improving value for money

The PRODCOM survey methodology is explained in greater detail in the chapters that follow.

## 2. Sampling procedure and design

### 2.1 Sampling frame

#### 2.1.1 The Inter-Departmental Business Register

A sampling frame is a list of a population from which the sample is drawn. The sampling frame for the UK Manufacturers' Sales by Product Survey (PRODCOM) is the list of UK businesses on the Inter-Departmental Business Register (IDBR) classified to the manufacturing industry.

Businesses are added to the IDBR if they are:

- registered for Value Added Tax (VAT) with HM Revenue and Customs (HMRC)
- registered for a Pay As You Earn (PAYE) scheme with HMRC
- an incorporated business registered at Companies House

The IDBR covers businesses in all parts of the economy, except:

- some very small businesses
- those without employees which are not registered for PAYE
- those with low turnover which are not registered for VAT
- some non-profit making organisations

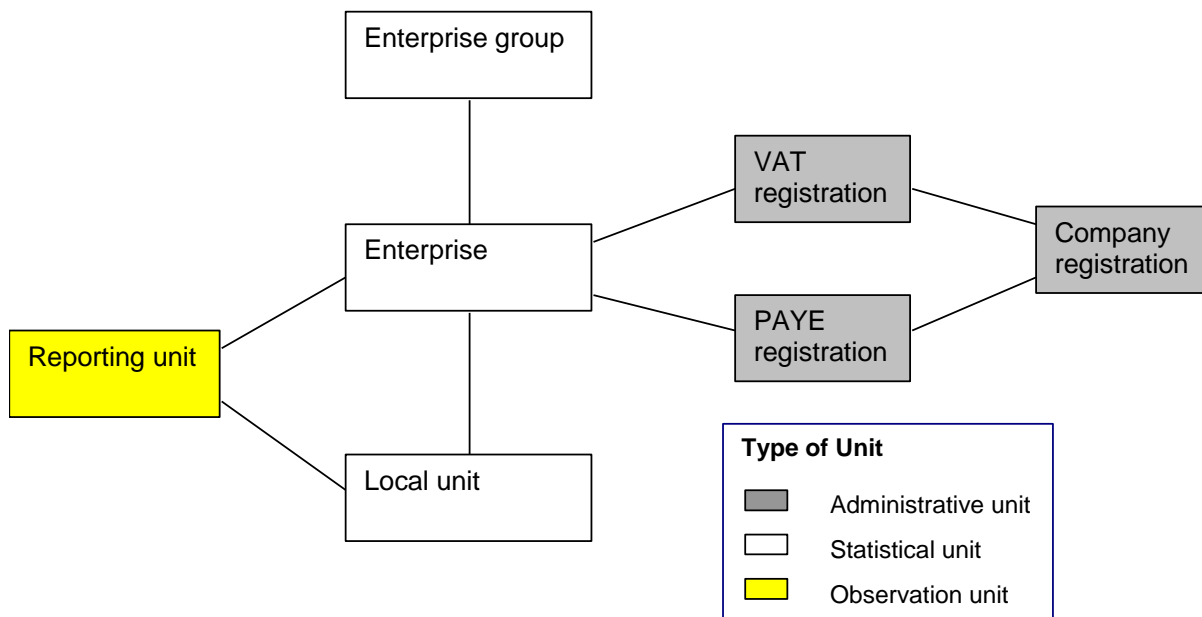
There are 2.1 million businesses on the IDBR; covering nearly 97% of UK economic activity. It is used by government departments, including ONS, as the sampling frame for most UK business surveys.

Administrative data from these sources are supplemented by data from surveys such as the Business Register and Employment Survey (BRES) to keep information on the IDBR up-to-date. Further information on the IDBR can be found on the ONS [IDBR web pages](#).

### 2.2 Reporting units

The business unit to which PRODCOM questionnaires are sent is called the reporting unit (Diagram 2.1). The response from the reporting unit can cover the enterprise as a whole, or parts of the enterprise identified by lists of local units. Other than for a minority of larger businesses which have a complex structure, the reporting unit is usually the same as the enterprise. For these larger businesses, the reporting unit is the relevant part of the enterprise that reports on manufacturing the product.

Diagram 2.1 - Relationship between local units, enterprises, enterprise groups, and reporting and administrative units



### 2.3 Standard Industrial Classification

Each enterprise is classified according to the Standard Industrial Classification of Economic Activities (SIC) system. The UK is required by European legislation to have a system of classification consistent with [NACE](#).

An extensive revision of [NACE](#) in 2007 led to a revision of the UK [Standard Industrial Classification](#) (SIC UK), bringing both of the classifications in line. This resulted in changes to published PRODCOM estimates since the reference year 2008. All PRODCOM industry sectors now align to the NACE classification.

Other industry reclassification occurred in 1958, 1968, 1980, 1992, 1997, and 2003. ONS investigated the possibility of creating back series prior to 2008. Total UK Manufacturers' product sales prior to 2008, for example, have now been published.

However there may be comparability issues between the pre and post-2008 estimates. This is due to the differences in sample and which businesses were in scope of the survey. For example, the definition of Manufacturing under SIC 2007 is different to the definition under SIC 2003. Some activities that were previously defined to be manufacturing are no longer defined as manufacturing under the 2007 classification and vice versa. So, the series are discontinuous. Further updates on this investigation will be published on the [PRODCOM news page](#).

The UK SIC (2007) is divided into 21 sections, each denoted by a single letter from A to U. The letters of the sections can be uniquely defined by the breakdown to the divisions (denoted by 2 digits) which are then broken down into groups (3 digits), then into classes (4 digits) and, in some but not all cases, again into subclasses (5 digits).



For example, in SIC 2007:

Section	C	manufacturing (comprising divisions 10 to 33)
Division	10	manufacture of food products
Group	10.5	manufacture of dairy products
Class	10.51	operation of dairies and cheese making
Subclass	10.51/1	liquid milk and cream production

Each local unit is assigned a single SIC code, which corresponds to the unit's principal activity. Where more than one type of economic activity is carried out by a local unit or enterprise, its principal activity is the activity in which most of the people are employed, and it does not necessarily account for 50% or more of the total employment of the unit.

Classification of Products by Activity (CPA) and the PRODCOM List (see section 3.6) provide further breakdowns of SIC 2007 to the products level.

## 2.4 Sample design

PRODCOM draws its sample from approximately 136,600 business reporting units from the Mining and Manufacturing sectors (SIC 2007 sections B and C) which are in scope for the survey<sup>9</sup>. PRODCOM data are collected annually by ONS from around 21,500 businesses in the UK. Table 2.1 shows the number of returned questionnaires in recent years.

Table 2.1 - Number of returned questionnaires

Reference year	Initial Sample Size	Number of questionnaires returned
2014	21,857	19,989
2013	21,699	19,731
2012	21,699	20,502
2011	20,950	20,459

Blank questionnaires may be returned for businesses that may have ceased trading, in liquidation or are no longer in scope of the survey.

### 2.4.1 Sample selection

The PRODCOM sample selection for Great Britain and Northern Ireland in a given year is carried out from August, about 4 months prior to questionnaire despatch. Sample selection is carried out using a stratified random sample design. Due to the structure of the data, a stratified sample design is more efficient than a simple, non-stratified random sample (it gives much more accurate estimates for the same sample size).

<sup>9</sup> Product information is collected from businesses in SIC sections B and C which cover 25 manufacturing divisions (see Appendix 5).

Businesses are sampled according to the following strata:

- five employment size-bands: 0-9, 10-19, 20-49, 50-99 and 100+
- industry class: 4-digit SIC UK 2007 classification

There are 3 employment size-band thresholds (of 20, 50 and 100) where all respondents above this point are included in the sample. Each of the industries has a cut-off threshold which has been calculated with respect to the product contribution within each stratum. For the businesses with employment below the threshold, a simple random sampling method based on a Permanent Random Number (PRN) is used for selection.

The sample allocation for PRODCOM is based on the most optimal number of businesses within each industry and size-band group, to ensure suitable quality estimates of products. The number of businesses required for sampling within each industry and size-band group (or strata) depends on the variability of the returned product sales values. The more variable or volatile the returned values, the more businesses ONS needs to sample to obtain an accurate estimate.

To ensure the EU regulation<sup>10</sup> is met:

- all manufacturing businesses with employment of more than 100 are selected to complete the PRODCOM questionnaire every year
- in some industries, where product sales are more variable, businesses with employment of more than 20 are sampled every year
- a small proportion of smaller businesses are selected, and they stay in the sample for 10 years

There are advantages of using stratified sampling as opposed to sampling from the population without the strata. It is possible to:

- treat each strata differently, for example, only sample 5 businesses from the smallest size-band but sample all businesses from the largest size-band
- look at information for each strata separately

The next table shows the approximate percentage of businesses selected in each employment size band (as a percentage of overall sample size).

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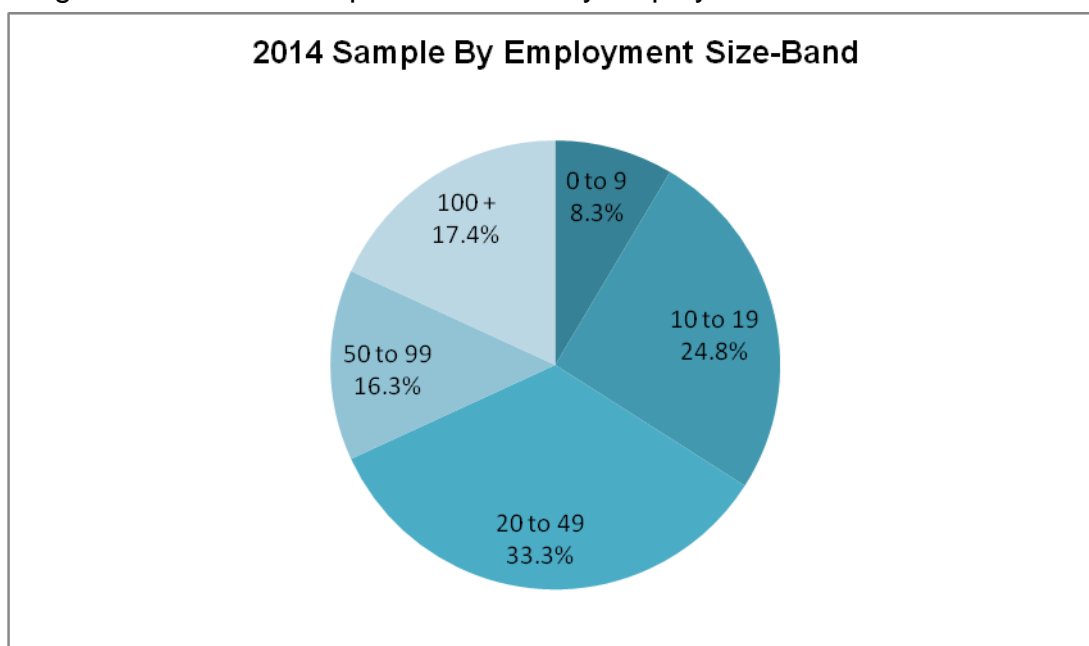
<sup>10</sup> The regulation stipulates that national survey methods should ensure that 90% coverage of the mining and manufacturing activities across the whole 4-digit NACE class is achieved.

Table 2.2 – Distribution of sample by employment size-band

Strata	Employment band	Reference year	
		2014	2013
1	0 to 9	8.3%	8.3%
2	10 to 19	24.8%	25.3%
3	20 to 49	33.3%	32.5%
4	50 to 99	16.3%	16.3%
5	100 +	17.4%	17.6%

The figures are very close year-on-year, demonstrating the consistency of the current PRODCOM sampling methodology. A breakdown for 2014 is shown in Diagram 2.2.

Diagram 2.2 - 2014 sample distribution by employment size-bands



### 2.4.2 Sample rotation

There are two main types of rotation and the amount of rotation differs with respect to the size of the strata. They are:

- pseudo rotation which occurs when there are births or deaths in the sample (eg. a new business is formed or a business goes bust or simply a re-classification has occurred)
- forced rotation which is when the rotation of the sample is forced

The PRODCOM sample has a 10 year rotation policy, which requires 10% of the sample to be replaced every year. This should mean that a new reporting unit is sampled for 10 consecutive years, and then is not sampled for at least the next year. In practice, rotation should result in a new sample after 10 years.

The 10 year rotation policy is longer than most ONS business surveys because it:

- reflects the complexity and detailed nature of PRODCOM estimates
- ensures year on year estimates for each product are comparable
- minimises the sampling error that results from any sample survey

The 0-9 employment size-band has a maximum number of 1,500 respondents and most businesses within this size-band are covered by the [Osmotherly rules](#), which came into effect in 1997<sup>11</sup>. These rules guarantee businesses a survey holiday of three years, which means a business with 0-9 employment which has been selected, is rotated out after one year, and it will have no chance of being reselected for at least three years following selection. These rules are therefore intended to reduce the burden.

### 2.4.3 Key contributors

As mentioned in the previous chapter, the PRODCOM Survey is carried out under EU regulation, which requires each EU member state to cover 90% of the Mining and Manufacturing activities defined in the European Classification of Economic Activities. This requires robust sampling methods, to ensure suitable quality results, while minimising the burden on businesses.

The 10 year rotation policy is therefore subject to restriction for identified “key contributors”. These are businesses deemed to have a particular impact on the data returned within a given sample. A business is identified as a “key contributor” if it contributes at least 20% of the total turnover for the 5-digit SIC group it belongs to. Due to the detailed nature of PRODCOM data, there are currently around 3,000 “key contributors” in the sample.

It is ONS policy to periodically review the samples for all surveys, and the last review for PRODCOM was in 2009. The next review of the methodology surrounding the selection of key contributors and sample rotation is planned for 2015/16. The results from this investigation, and any plans to revise the sample design, will be published on the [PRODCOM news page](#) and reflected in future editions of this technical report.

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<sup>11</sup> See ‘Statistical Surveys: Easing the Burden on Business’ - a report by Edward Osmotherly.

## 3. Questionnaire Design

### 3.1 Overview

The PRODCOM questionnaire contains:

- questions which are tailored to the requirements of the business
- a number of generic questions, or standard headings, which are included on every questionnaire

A tailored or personalised questionnaire ensures that businesses are only asked to provide the sales value and volume for products that are applicable to them, thus minimising respondent burden. An example of a PRODCOM questionnaire is attached at Appendix 4.

The questionnaire is split into 5 sections:

- **Section A, Products** - This section contains the tailored questions, or lists the specified products that are relevant to the business. ONS usually contacts newly sampled businesses to ascertain what products they manufacture, and questions relating to these products are then incorporated into their personalised questionnaires prior to despatch. Newly selected businesses who are not contacted by ONS prior to questionnaire dispatch are not provided with a tailored questionnaire.
- **Section B, Additional Products** - In this section of the questionnaire, respondents can add any (minor) products not covered in Section A, giving a description of the product or item, Combined Nomenclature number (CN) if known and the value of sales.
- **Section C, Other Income** - This section contains the generic Standard Heading questions that are asked of all respondents. As described in Table 3.1, they include merchanted goods, work done, waste products and non-production income. The standard headings are used internally by ONS in balancing the National Accounts and form a necessary part of the PRODCOM validation process.
- **Section D, Company Totals** - The total turnover is the sum of all values in Sections A, B and C.
- **Section E, Your Comments** - Respondents can leave feedback or provide supplementary information for some questions in this section. For example, they may give reasons for significant fluctuations in their figures or provide further details of new products.

### 3.2 Questionnaire types

PRODCOM has two questionnaire types - a standard GB questionnaire and a different version for Northern Ireland (NI) which ONS dispatch and process on behalf of NI. Each questionnaire is personalised to the business, so that only information on the sale of products they manufacture is requested, as well as the standard headings.

### 3.3 Questionnaire development

As explained earlier, all PRODCOM questionnaires include the standard heading questions. However each questionnaire is designed to evolve constantly, so that if a manufacturer produces and sells new products they are asked to add it at Section B. This product item will be added to the questionnaire (at Section A) for the next survey round. Similarly, if a business ceases making a product for two consecutive years or a product code changes, then that question or product item is automatically removed from future questionnaires.

Tailoring the questionnaires to the respective business in this way helps to minimise the burden on respondents. There is a further section where respondents are able to write in information for any additional products, and this allows analysts to assign these products to the appropriate PRODCOM commodity code.

Changes to the PRODCOM list or product specifications from Eurostat can also trigger a change to the questionnaire in any reference period (see section 3.6).

Newly selected businesses are usually telephoned before the questionnaire is sent to them to ensure the correct product classification codes and to personalise their questionnaire. If this is not possible, then they receive, upon request, a list of products for their industry and they choose the relevant products. They are encouraged to write in their product(s) on the questionnaire and the correct PRODCOM codes are allocated by the ONS, after confirming with the respondent. The questionnaire is then personalised for the next survey collection round.

### 3.4 Questionnaire review

PRODCOM has been in existence since 1993 and changes to the questionnaire have tended to be small. However with the planned implementation of the electronic data collection programme and more specifically the expected questionnaire changes as a result of the regulation changing to require the collection of sub-contracted information, an in-depth questionnaire review is being considered for 2017.

Occasionally, there are minor questionnaire revisions that are necessary to enhance data quality. Revisions made since the 2013 reference year include:

- a change in the survey title; the questionnaire title was revised from 'Products of the European Community' to 'UK Manufacturers' Sales by Product Survey' to accurately reflect what was required from UK respondents.
- providing clearer instructions for respondents to include a small number of services such as repair and maintenance

All major questionnaire reviews and changes will have to be endorsed by the ABS/PRODCOM Management Board. Major changes will also have to be rigorously tested to ensure that quality information is received from those who complete the questionnaire and that businesses can understand and provide the information.

### 3.5 Variables collected

The main variables that are collected on the survey are described in Table 3.1.

Table 3.1 - Description of main survey variables

Variable	Description
Value of product sales	The value of sold production.
Volume of product sales	The physical volume of sold production, (volume units are dependent on product, eg. number of items, kilograms, gross tonnage etc.).
Merchanted Goods	The value of sales of goods that have been bought and resold without being subject to any manufacturing process.
Minor Products	The value of sales of all other products not covered elsewhere.
Non-Production Income	Income derived from the provision of services and other non-production activities not listed in the other variables above. This could include freight costs, payments for repairs, maintenance and installation of customers' plant and equipment (where not covered by an industrial services product code), amounts received for use of patents, trademarks, copyrights, royalties, technical knowledge, rent etc.
Total volume produced	The physical volume of total production manufactured is collected for certain products.
Waste Products	The value of sales of waste products and residues left over after manufacture.
Work Done	The amount charged to a customer by a business, for work done on material provided by the customer. The business does not report the final product in product sales as the materials are owned by the customer, not the business..
Total Turnover	The sum of all values returned on the questionnaire exclusive of VAT. This also excludes separately charged freight costs, capital receipts from the disposal of assets, interest and dividends.

### 3.6 PRODCOM List

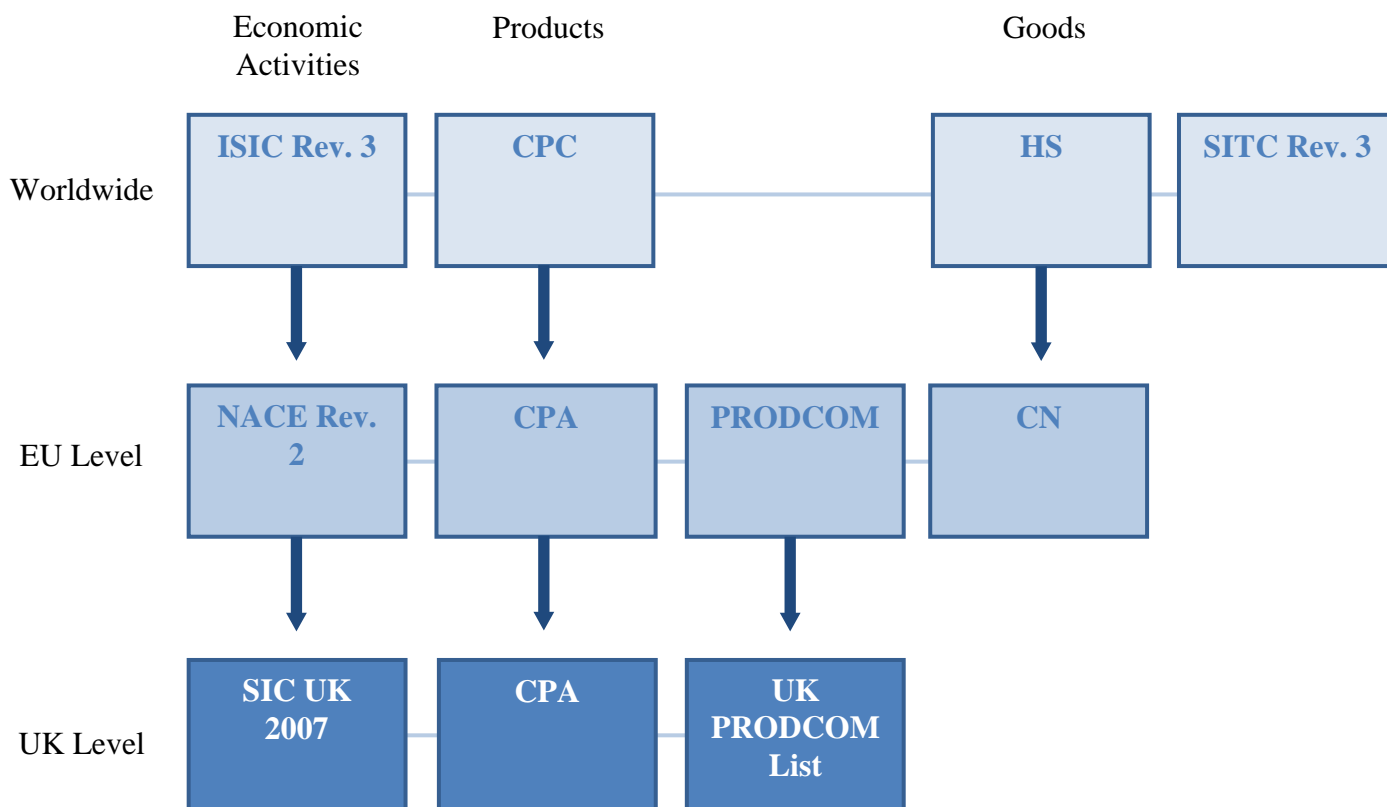
The [PRODCOM List](#) is a document that describes the industrial products (including some services) for which the statistics must be collected and reported to Eurostat by every Member State. This document is distributed by Eurostat.

The List is developed in close association with a number of integrated statistical classifications as shown in Diagram 3.1 including:

- the Combined Nomenclature (CN) which is the European classification of goods, used by international trade
- European Classification of Economic Activities (NACE)
- the European Classification of Products by Activity (CPA)

Further information regarding this integration is available in the PRODCOM [Quality and Methodology Information Report \(301.5 Kb Pdf\)](#).

Diagram 3.1 - Integrated statistical classifications

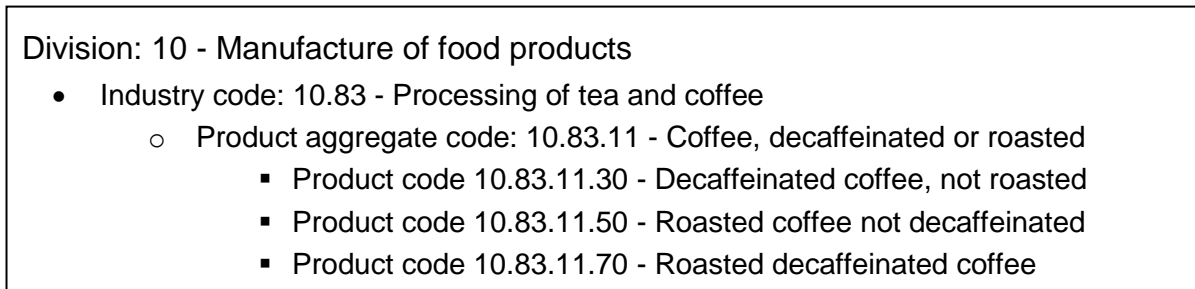


ISIC = International Standardised Classification of all Economic Activities of the United Nations  
 CPC = Central Product Classification of the United Nations  
 HS = Harmonised Commodity Description and Coding System of the World Customs Organisation  
 SITC = Standard International Trade Classification of the United Nations  
 NACE = European Classification of Economic Activities  
 CPA = European Classification of Products by Activity  
 CN = Combined Nomenclature – European Classification of Goods



As illustrated in Diagram 3.2, each product that is described in the PRODCOM List is identified by an 8-digit PRODCOM commodity or product code. The first 4 digits of the code correspond to the classes of NACE2 (which corresponds to SIC07 in the UK<sup>12</sup>). The first 6 digits are the CPA code, while the last 2 digits show the classification of a question within this CPA code.

Diagram 3.2 - Breakdown of 8 Digit Prodcom Code



The first PRODCOM List that was set up in November 1993 contained around 5,765 product codes. Over the years this number has decreased to reduce the burden on businesses. In 2014 the List contained around 3,805 codes.

The benefits of the list are it:

- ensures the product definitions are standardised across the EU to give comparability between member states' data
- permits alignment between production statistics and external trade statistics

The List is usually updated annually though there is on-going discussion at the PRODCOM taskforce to introduce minimal changes each year and more important reviews every 5 years, to maintain the stability of the list. Revisions could include:

- improving the descriptions of some product codes
- merging of some product codes into a new code
- deletion of some product codes
- creation of new codes or the introduction of headings to cover new product types
- change to Prodcom code structure as a result of changes in an industry

Drivers for changing the PRODOM list could be due to:

- aligning the PRODCOM list closer with the European Classification of Products (CPA) and also maintain links with the Combined Nomenclature (CN) which is the European classification of goods, used by international trade;
- proposals from some member states or user requests

<sup>12</sup> SIC is a Standard Industrial Classification used to classify business establishments by the type of economic activity they are engaged in. SIC07 is the latest revision of SIC.

## 4. Data collection

### 4.1 Timetable of questionnaire despatch

Questionnaires are printed and despatched in January (the first working day of the year) which is the start of the data collection round. Around 21,000 questionnaires are sent out in total to collect information from businesses relating to the previous 12 months which is known as the reference year. The questionnaires are required to be returned to ONS, in a pre-paid envelope, within 4 weeks.

### 4.2 Welsh questionnaires

ONS Welsh standards give an option for Welsh business respondents to request a Welsh language version of the questionnaire. This option is clearly shown and written in Welsh on the front page of the PRODCOM questionnaire. A dedicated Welsh helpdesk has been set up to respond to queries from Welsh speaking respondents.

### 4.3 Euro respondents

Respondents who prefer to provide their product sales values in the euro currency are provided with a euro questionnaire upon request.

### 4.4 Expected questionnaire receipt

To meet the minimum accuracy standards required by users, the PRODCOM questionnaire's target response rate is 80% of businesses by the end of June following the reference year (see section 4.8).

### 4.5 Reminder letters

Reminder letters are sent to businesses who have not returned a completed questionnaire by the given deadline. The first reminder is despatched at the beginning of February and the second and final reminder is sent at the end of February. The second reminder is accompanied by a duplicate questionnaire.

All non-responders with employment of 1,000 or more are sent a Chief Executive Letter (CEL), and a duplicate questionnaire, rather than a second reminder as their impact on provisional estimates is the greatest. The CEL is a stronger reminder to inform the chief executive or managing director that the business has not responded, and as a reminder of the legal requirement to respond. The CEL further outlines the non-compliance penalties prior to any enforcement procedures.

## 4.6 Response chasing

Telephone response chasing starts after the last reminders have been despatched and continues, if necessary, up to the final result run. It is intended to encourage the completion of the questionnaire and address any respondent issues in a timely and efficient manner, which all leads to the production of a quality output.

ONS has a strategy which targets the most economically important businesses or “key contributors” that are selected to complete the questionnaire. Key contributors are those businesses which are important either to an industry or a specific product. To be considered as ‘key’, the business will return a figure for one or multiple products that accounts for more than 20% of the total returned turnover for that product. A respondent may be key for the SIC it is selected under, or, for a different SIC due to the product headings answered.

The targeted response rate for “key contributors” is set at a minimum of 95% but ONS strives to achieve 98%, while for other responding non-key contributors the target is 75%. A manual exercise is undertaken during the data collection cycle to identify industries with a low response.

## 4.7 Enforcement strategy

PRODCOM carries out enforcement action under the [Statistics of Trade Act 1947](#). Enforcement action is used to maintain response rates, and hence the quality of the survey. It is used only as a last resort, after attempts to encourage businesses to complete the survey following telephone calls and reminder letters.

If enforcement action is carried out, the business will be issued with a summons to court. In this case, the business can still choose to respond to the survey, and the case will be withdrawn. This option is only allowed once. If the business becomes subject to enforcement a second time the business will be prosecuted. Businesses can be fined up to a maximum of £2,500 for non-response.

In NI, the survey and associated enforcement procedures are carried out by ONS on behalf of the Department of Finance and Personnel under the Statistics of Trade and Employment (Northern Ireland) Order 1988, with article 8 covering penalties for non-response.

## 4.8 Response rates

During the data collection period, response rates for PRODCOM returned data are monitored regularly. As reported in the chapters that follow, the data is subsequently validated and information published on ONS website and provided to Eurostat.

Table 4.1 shows the achieved response rates in recent years.

Table 4.1 - Overall response rates

Publication period	Reference Year			
	2011	2012	2013	2014
Provisional Response Rate	80.3%	79.9%	80.1%	79.8%
Intermediate Response Rate	84.2%	83.5%	84.1%	Released December 2015
Final Response Rate	83.4%	84.0%	Released December 2015	Released December 2016

## 5. Converting respondent data into published estimates

### 5.1 Editing and validation

Completed questionnaires that are returned to ONS are scanned into the processing system and stored electronically. The questionnaires go through different phases of cleaning and processing systems to improve data quality. This process is explained in more depth, and illustrated by a process map as follows.

**Step 1:** Completed questionnaires are electronically scanned into the data store.

**Step 2:** Questionnaires are subjected to pre-validation checks. If a questionnaire passes this phase, it is moved through to a validation process. Questionnaires that fail this step are not accepted, and may be queried with the respondent. Common reasons failing pre-validation include:

- duplicate questionnaire
- there is an invalid question number on the questionnaire
- no questions have been completed
- the data are for periods other than the required year

**Step 3:** The validation process now occurs. This comprises a variety of automatic corrections including:

- **Automatic totalling:** if the total turnover is missing the sum of returned figures is entered and marked as constructed
- **Automatic rounding:** total turnover is requested to the nearest thousand pounds. Where an actual (that is non-rounded) total turnover is returned it is common for the responses to other questions to also be returned as actual values and these are then automatically rounded to the nearest thousand pounds

The automatic corrections described above are only possible if previous data are available and corrections are within tolerated limits compared with previous data.

- **Automatic batch construction:** questionnaires where there is a value question completed but missing volume are automatically constructed (see section 5.3)

Following these automatic corrections, the data are checked against a set of validation gates, with parameters that vary by question. Common reasons for a question failing validation include:

- large volume or percentage movements in value data;
- large volume or percentage movements in volume data; and
- large movements in sales per head.

**Step 4:** Selective editing. A selective editing method was developed in 2012 to investigate all question failures. It allows each response to be scored according to a set of agreed criteria which attempt to give high scores to the errors that will have the largest influence on estimates, and those responses with the highest score are prioritised for editing and validation. This increases the efficiency of the editing process by focussing on the responses with the highest impact and importance.

The standard selective editing that is used across ONS is:

$$score_{ij}^t = 100 \times \frac{a_{ij}^t |z_{ij}^t - \hat{y}_{ij}^t|}{\hat{T}_{jd}^{t-1}}$$

Where:

$a_{ij}^t$  is the sample design weight for variable  $j$ , unit  $i$  at time  $t$

$z_{ij}^t$  is the unedited variable  $j$  value for unit  $i$  at time  $t$

$\hat{y}_{ij}^t$  is a predicted variable  $j$  value for unit  $i$  at time  $t$

$\hat{T}_{jd}^{t-1}$  is the previous period's total variable  $j$  estimate for domain  $d$ .

Under the standard selective editing process, the overall questionnaire score would be calculated as either the average or the total of all key question scores. Thresholds are then set for all questionnaires, where only those questionnaires scoring above a set threshold will be manually edited. Those that are not edited are left as the raw data value.

In the case of PRODCOM, the key variables would just be product values and product volumes. An item score would be calculated for each product value and each product volume on a respondents' questionnaire. In practice, the selective editing formula defined above would mean that the score of a respondents' returned product value or volume would be calculated as:

Question score =  $(100 \times \text{sampling weight} \times \frac{\text{absolute difference between current year's raw value and previous year's edited value}}{\text{weighted question total in previous year}})$

Questions are automatically set to the maximum score if:

- the question is written in manually by the respondent
- the respondent is defined as key for a product
- there is no question total available in the previous year and the respondent has provided a non zero value this year

Each questionnaire is assigned the largest score received by any of its questions, and every questionnaire's score is compared against a designated threshold based on analysis of 2009 and 2010 datasets. It is the maximum level the threshold could be set without causing product

heading value questions (excluding standard heading questions) to change by more than 20%. The threshold level is reviewed regularly.

In instances where the respondent does not have a previous value available to use as their predictor variable, a predictor variable would be calculated as:

*value questions* - sales per head (SPH) for the product (at the industry level) in the previous period multiplied by the contributors employment in the current period

*volume questions* - predicted value for the corresponding value question divided by the aggregate unit value for the product in the previous period

The sampling weight is simply defined as the number of respondents in the population divided by the number sampled, at the industry and size stratum level.

**Step 5:** The questionnaire is then categorised depending on its performance at steps 3 and 4.

- Category A: failing validation with a score above threshold
- Category B: passing validation with a score above threshold
- Category C: failing validation with a score below threshold
- Category D: passing validation with a score below threshold

Some questionnaires may pass selective editing as they are below the threshold but fail validation for one of many reasons: they may require a re-classification; the questionnaire may contain a comment, attachment, or change of address; there may be a continuity issue; or it may require de-selection. These errors would be checked but the questionnaire data is not flagged as suspicious as the score is below the threshold.

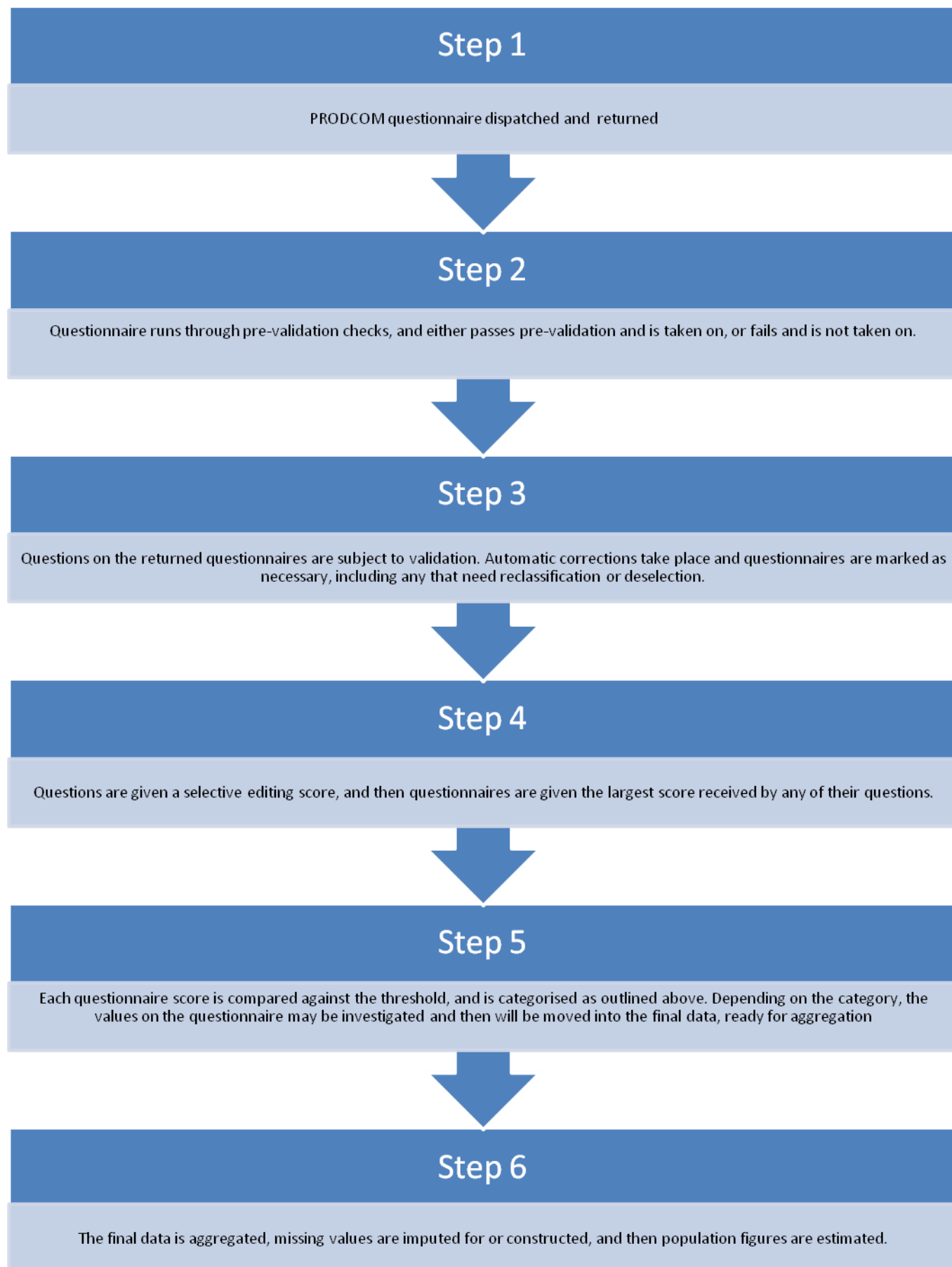
Depending on the category, the action taken to rectify the issue identified will vary.

- Category A: Failing questions will require clearance while passing questions above the threshold will be investigated
- Category B: Questions with a score above threshold do not require checking and any question failures are cleared automatically
- Category C: Failing questions are automatically cleared or not flagged as suspicious.
- Category D: No question failures are present

**Step 6:** When a sufficient number of questionnaires have been returned and cleared to ensure data quality, the final data are aggregated. This involves using statistical programs to impute and batch construct for any missing data, before estimation techniques are used to create population values.

The steps are summarised in Diagram 5.1. Further detail on the methodology behind imputation, construction and estimation is explained in the following sections.

Diagram 5.1 - Converting respondent data into published estimates





## 5.2 Imputation

The imputation method for PRODCOM was revised in 2011. The basic principle is that in the absence of a returned questionnaire, ONS imputes the sales value for a product basing the imputation on previously reported sales of the product and the current sales of other businesses making the product. Imputation therefore replaces missing data with a probable value based on other available information. An example is shown in Table 5.1.

Automatic imputation, using a ratio estimator for businesses classified by homogenous industry and size-band, is used when unit non-response occurs. If previous period data are not available, then imputation is based on the imputed value used for the previous period. If there is no previous value (imputed or returned) then the non-response is dealt with in the estimator (see section 5.4).

The ratio of means method is widely used to impute for missing values across ONS business surveys.

$$R = \frac{\sum_{impclass} y_{i,t}}{\sum_{impclass} y_{i,t-1}}$$

Where:

$R$  is the growth factor.

$\sum_{impclass} y_{i,t}$  is the sum of all current period returned values.

$\sum_{impclass} y_{i,t-1}$  is the sum of previous returned values.

The ratio is calculated as the sum of all current period returned values divided by the sum of all corresponding previous returned values. No trimming takes place at all.

Table 5.1 - Example of imputation

Respondent	Value in previous period	Value in current period
A	5,195	4,721
B	3,724	3,155
C	15,819	16,704
D	4,048	5,288
E	1,459	?
F	34	4

The imputation ratio is calculated =  $(4721+3155+16704+5288+4)/(5195+3724+15819+4048+34) = 1.037$ .

The imputed value for respondent E =  $(1.037 \times 1459) = 1513$ .

This method is often referred to as the ratio of the means. This is because it can also be calculated as the mean current total divided by the mean previous total. The number of respondents (used in the denominator of both mean calculations) would cancel in both when calculating the overall ratio and as such the answer would be exactly the same as calculating the total current value divided by the total previous value, as shown above.

The other method is the mean of ratios, which would be the sum of the ratios divided by the number of respondents in both periods;  $(0.909+0.847+1.055+1.306+0.118)/5 = 0.847$ . This method is used less frequently as it is more sensitive to outliers (the 0.118 F ratio).

### 5.3 Construction

In the absence of volume data for the current period, an estimate can be constructed provided the respondent has provided value data. Construction is therefore only done when respondents have returned product sales value but NOT a volume figure.

The two methods of construction are based on multiple or single periods.

#### **Multiple Period Method:**

The respondent has volume data (returned or constructed) for the previous period.

#### **Theory**

- Calculate the unit value (UV) for the previous period  

$$UV = (\text{Value} \times 1,000) / \text{Volume}$$
- Note that the value is multiplied by 1,000 to account for the fact that respondents return value sales in £000
- Once there is a value for the current period, the unit value is applied from the previous period to construct a volume for the current period  

$$\text{Volume (current period)} = (\text{Value (current period)} \times 1,000) / \text{Unit Value (obtained from previous period)}.$$
- If a volume has been constructed then it is marked appropriately

#### **Example**

- Respondent B returns a value of 500 and a volume of 50 for question y for the 2013 survey
- Unit value in 2013 for question y =  $(500 \times 1,000) / 50 = 10,000$
- In 2014, respondent B returns a value of 700 but no volume data for question y. Therefore, volume is constructed using the unit value obtained in the previous period
- Volume (current period) =  $(\text{Value (current period)} \times 1,000) / \text{Unit value (obtained from previous period)} = (700 \times 1,000) / 10,000 = 70$

#### **Single Period Method:**

Respondent does not have volume data (returned or constructed) for the previous period. Construction is based on the returns of other respondents within the current period.

## Theory

- Identify all respondents making the product with both volume and value sales figures available (returned or imputed) and then calculate their unit values
- If no such respondents exist, then volume is marked as zero
- If there are more than 10 respondents, order the respondent unit values and remove the top and bottom 5% of respondents. If 10 respondents or less this stage is not undertaken
- Calculate total value sales of respondents after trimming has taken place (m)
- Calculate total volume sales of respondents after trimming has taken place (n)
- Calculate the overall unit value of respondents after trimming has taken place  $((m \times 1,000) / n)$ . This is referred to as the construction unit value
- Volume sales is constructed by using the value sales in the current period for the respondent and this construction unit value
- $\text{Volume (current period)} = (\text{Value (current period)} \times 1,000) / \text{construction unit value}$
- This constructed volume figure is marked appropriately

## Example

- Respondent C has returned a value of 800 but no volume data for question z
- Respondent does not have any volume data in the previous period for question z
- Therefore, there is the need to use the other respondents within the current period to construct a volume (in this example no trimming takes place as there aren't enough respondents)
- There are 5 other respondents, and the value and volume data for question z is given in the table below

Table 5.2 - Example of construction

Respondent	Value data	Volume data
A	400	30
B	700	45
D	1,000	60
E	800	40
F	300	10
Total	3,200	185

- Calculate the construction unit value (CUV) as follows:

$$CUV = (\text{Value Data} \times 1,000) / \text{Volume Data} = (3,200 \times 1,000) / 185 = 17,297$$

- Therefore, constructed volume for respondent C =  $(800 \times 1,000) / 17,297 = 46.25$
- This would then be rounded to the nearest whole unit, so the constructed volume would be 46

## 5.4 Estimation of totals

The PRODCOM survey uses a sample of businesses instead of carrying out a census (which would involve sending a questionnaire to all businesses), due to the amount of extra time and money this would require and burden on businesses.

However, as PRODCOM provides turnover at a UK level, there is a need to estimate for those businesses who are not sampled or who did not return the questionnaire (and values weren't able to be constructed or imputed). The total UK manufacturer sales for a product are therefore actually composed of 2 parts:

Total UK manufacturers' sales  
 = Total returned sales of companies (including imputed & constructed)  
 + Estimated sales of businesses who didn't return the questionnaire or were not in the sample.

The share of estimated data in the published data for all manufactured goods since 2010 is shown in Table 5.3.

Table 5.3 - Estimated share of total sales

Year	Percentage estimation (%)
2010	9.8
2011	7.6
2012	7.7
2013	7.0

Note: Excludes AMRI SIC's

### 5.4.1 Weighted element

Data are weighted to produce figures for the whole universe (businesses that were not selected or did not return the questionnaire) rather than just the sampled businesses. The weighting factor is calculated separately for each strata and each SIC (each cell has a different weighting factor).

The 'weighted element' is calculated at product level, using the following formula:

$$= SPH * PP * (E_{ns} + E_{nr})$$

Where:

SPH = sales per head

PP = product propensity

$E_{ns}$  = employment in non-selected units in the population

$E_{nr}$  = employment in selected units where there is no response and no data available for imputation or construction

- "Sales Per Head" is the sum of sales divided by the sum of employment within that product group, after outliers have been removed

- “Product Propensity” is the probability of a company in a particular industry and size band making the product for which the weighted element is being calculated
- The employment figures for companies not sampled ( $E_{ns}$ ) or never returned ( $E_{nr}$ ) is found through the IDBR

### 5.4.2 Weighting procedure

The addition of the weighted element to the returned sales is called the weighting procedure. PRODCOM estimation procedure is based on the sales per head of the returned data. The ONS has auxiliary information about the businesses being estimated for such as their employment (obtained from the IDBR). The product propensity which is also used effectively gives the probability of a respondent making a particular product. An example using hypothetical data is shown in Table 5.4.

Table 5.4 - Example: (Total UK manufacturer sales for product 15131110 (classified to industry 15131 using hypothetical data)

Employment size-band	Strata	Number of businesses in population	Number of businesses in sample	Number of businesses in sample that make 15131110	Total Regular employment of businesses making 15131110	Returned sales of 15131110
100+	5	40	40	10	17,687	2,317
50-99	4	25	25	12	1,094	1,129
20-49	3	45	15	5	137	126
10-19	2	50	12	3	42	59
0-9	1	140	5	2	15	23
					18,975	3,654

Note that the shaded strata are in the size bands below the 100% sampling threshold on employment for this product. Here, every business with at least 50 people in employment is included in the sample.

1. From these figures the SPH is calculated;  

$$SPH = 3,654/18,975 = \text{£}0.19\text{k/person}$$
2. The next step is to look at all businesses classified to industry 15131 by examining each stratum in turn. For brevity, this example will only work through stratum 1, the 0-9 size band.
3. The number of businesses who actually make product 15131110 is calculated. Here this is 2 businesses out of 5 sampled. Therefore the PP =  $2/5 = 0.4$ .
4. Now the total sales for product 15131110 are summed, giving £23k.

5. Employment in those businesses comprising the never returned and non-sampled part of the population must be totalled. In stratum 1 there were 135 businesses not sampled, and from IDBR data their employment is 510. In addition, there are 2 businesses that were sampled but have never returned their questionnaire and these have a total employment of 7, again from the IDBR.
6. The weighting element for Stratum 1 can now be calculated:  

$$\text{SPH} * (E_{ns} + E_{nr}) * \text{PP} = 0.19 * 517 * 0.4 = \text{£}39.292\text{k}$$
7. The weighting element is now added to the original total for stratum 1, known as the weighting procedure  

$$\text{£}23\text{k} + \text{£}39.292\text{k} = \text{£}62.292\text{k}$$
8. This procedure is repeated for all other strata. It is worth noting that in fully sampled strata above the employment threshold, there are no businesses not sampled, so the employment figure for these will be zero and accordingly the weighted element in these strata will be zero.

#### 5.4.3 “Carry-in” and “Carry-Out” figures

Although products are classified within an industry, businesses outside these industries can also make these products. In the same vein, businesses within an industry classification can manufacture products that are outside their industry. Each business can therefore contribute to a variety of products.

Here, after steps 1 to 7 have been carried out for all strata and their values added together, an estimated total of sales for 15131110 for businesses classified to 15131 is calculated. However, this is not the published value, since sales of this product by businesses classified to an industry outside of 15131 have not been considered. These figures are referred to as “carry-in”. The same process to that above is used for the carry-in industries, and once all of these values have been calculated, the values are added together to get the published value for the product. Similarly, figures for those businesses that make product 15131110 but are not classified to industry 15131 would be classed as “carry-out” figures.

#### 5.5 Identification and treatment of outliers

An outlier is a business that reports valid data on the questionnaire, but is considered not to be representative of the population due to an extreme value or unique circumstances. They are therefore excluded from the calculation of the sales per head figure for the businesses that are not sampled or have never returned figures. However, data from an outlier are still included in the total returned sales of businesses.

The two types of outlier identification methods are:

- **Automatic outliers:** some outliers are trimmed automatically where there are at least 10 companies making a product; the sales per head of each business are calculated, and after ordering the businesses, the top and bottom 5% of values are treated as outliers
- **Manual outliers:** these are simply companies that the data analysts consider do not have typical data and so would not provide an accurate estimate if they were included. In these cases, the values must be manually identified as outliers

Outliers are left in the returned data for aggregation, but are excluded for any imputation, construction, and estimation purposes.

## 5.6 Post validation checks

This is the stage where final checks are carried out by various teams on the estimates before they are published.

### 5.6.1 Quality Assurance

This involves carrying out procedures to check the final PRODCOM results in the publication reference tables and associated statistical bulletin. The checks are usually carried out by the PRODCOM Quality and Publication Teams and include:

- checking all divisional and product tables for consistency within and between tables
- investigating large movements or estimates
- ensuring disclosive data are correctly suppressed and clearly marked in the published tables
- aligning figures mentioned within the statistical bulletin with those in the reference or publication tables

### 5.6.2 Quality Measures

Two key quality measures are published with each data release to inform users of the precision and hence the quality of PRODCOM data. This is in line with the Code of Practice for Official Statistics that encourages data producers to, 'ensure that official statistics are produced to a level of quality that meets users' needs, and that users are informed about the quality of statistical outputs, including estimates of the main sources of bias and other errors, and other aspects of the European Statistical System definition of quality'.

Users are provided with information for each PRODCOM Commodity Code (PCC) within an industry. They include:

- published estimate for the product
- estimates of Standard error (SE)
- standard error as a percentage of the published value ie. the coefficient of variation (CV)

- number of companies providing data for the product - the number of companies in the PRODCOM sample who make the product
- total employment of businesses providing data for the product

The SE is a measure of uncertainty and indicates the extent to which the estimates would be expected to vary over repeated random sampling. To aid comparison and interpretation, the SE is also expressed as a percentage of the product’s estimated total sales. This quantity is sometimes called the coefficient of variation and it allows the standard errors to be put into context. For example, a SE of £0.3 million may only represent 1% of the published value for some products but 100% for another product.

The SE can be used to construct a confidence interval. As long as the CV is not too high it is possible to say the confidence interval can be interpreted as if 100 random samples were selected the estimate of the population total would fall in this range for 95 out of 100 samples.

E.g. Estimated total = £20 million  
 Standard error estimate = £3 million  
 Coefficient of variation = 15%

Therefore, the population total is between £14million and £26million.

The formula for calculating the variance of a product is as follows:

$$\begin{aligned}
 &Var\{\hat{T}(a, c) - T(a, c)|X\} \\
 &\sim \beta_{ca}^2 \sum_h \frac{\pi_{cah}(1 - \pi_{cah})}{n_{ah}} \left(\sum_{i \in r_{ah}} X_{ahi}\right)^2 + \beta_{ca}^2 \sum_h \pi_{cah}\{1 - \pi_{cah}\} \sum_{i \in r_{ah}} X_{ahi}^2 \\
 &\quad + \frac{\sigma_{ca}^2}{\sum_h \sum_{i \in s_{ah}} \pi_{cah} X_{ahi}^2 / v_{cah}(X_{ahi})} \left\{ \sum_h \frac{\pi_{cah}(1 - \pi_{cah})}{n_{ah}} \left(\sum_{i \in r_{ah}} X_{ahi}\right)^2 + \left(\sum_h \pi_{cah} \sum_{i \in r_{ah}} X_{ahi}\right)^2 \right\} \\
 &\quad + \sigma_{ca}^2 \sum_h \pi_{cah} \sum_{i \in r_{ah}} v_{cah}(X_{ahi}).
 \end{aligned}$$

where:

$$\hat{\beta}_{ca} = \frac{\sum_h \sum_{i \in s_{ah}} \Delta_{cahi} Y_{cahi} X_{ahi} / v_{cah}(X_{ahi})}{\sum_h \sum_{i \in s_{ah}} \Delta_{cahi} X_{ahi}^2 / v_{cah}(X_{ahi})} = \text{Sales per head (at industry level)}$$

$$\hat{\pi}_{cah} = \text{Product Propensity (at industry and size stratum level)}$$

$$n_{ah} = \text{Sample size (at industry and size stratum level)}$$

$$s_{ah} = \text{Sampled units (at industry and size stratum level)}$$

$$r_{ah} = \text{Non-sampled units (at industry and size stratum level)}$$



$X_{ahi}$  = Employment of the i-th unit (i.e. contributor at industry and size stratum level)

$$\hat{\sigma}_{ca}^2 = \frac{1}{\sum_h \sum_{i \in s_{ah}} \Delta_{cahi} - 1} \sum_h \sum_{i \in s_{ah}} \Delta_{cahi} (Y_{cahi} - \beta_{cah} X_{ahi})^2 / v_{cah}(X_{ahi})$$

= the product variance of returned values at industry level

$Y_{cahi}$  = the i-th unit's (contributor's) returned value for a product (within a particular industry and stratum)

$$v_{cah}(X_{ahi}) = X_{ahi} \quad \text{or} \quad v_{cah}(X_{ahi}) = X_{ahi}^2$$

$\Delta_{cahi} = 1$  when  $Y_{cahi} > 0$  (i.e. when there is a non-zero return for a respondent for a particular product) and  $\Delta_{cahi} = 0$  otherwise.

The Government Statistical Service (GSS) [guidance](#) for official statistics producers suggest that estimates with a CV between:

- 0-5% should be considered precise or reliable
- 5-10% should be considered reasonably precise or reliable
- 10-20% should be considered acceptable
- higher than 20% should be used with caution

Further information on PRODCOM quality assurance and quality measures is available in the [Quality and Methodology Information](#) report.

## 6. Disclosure Control and Data Confidentiality

The term 'Disclosure control' refers to the methods used to reduce the risk that confidential information is published in any official statistics, and these methods are applied if ethical, practical or legal considerations require the data to be protected. It involves aggregating or suppressing data using standard disclosure rules so that the risk of identifying individuals is reduced, but at the same time attempts to find a balance between improving confidentiality protection and maintaining an acceptable level of quality in the published data.

### 6.1 Confidentiality protection - legal requirement and policy

The need to keep records of individuals, businesses or events used to produce official statistics confidential is enshrined in law. However, this does not prevent the release of anonymised or aggregated data.

The [Code of Practice for Official Statistics](#) and the National Statistician's guidance: [Confidentiality of Official Statistics](#) provides the Government Statistical Service (GSS) policy framework for official statistics in this regard. The Code of Practice guarantees confidentiality to those who provide private information for the production of Official Statistics. Principle 5 of the Code states:

*Private information about individual person (including bodies corporate) compiled in the production of official statistics is confidential, and should be used for statistical purposes only.*

Furthermore, ONS surveys are conducted on behalf of the UK Statistics Authority, and all outputs are subject to Section 39 of the [Statistics and Registration Service Act \(2007\)](#) (SRSA).

Business surveys operating within the United Kingdom are governed under the [Statistics of Trade Act \(1947\)](#). This makes participation in the surveys compulsory, and confidentiality requirements that relate to published data are specified in Section 9 of the act. It also states that tables should not be published that would disclose any information relating to an individual business, unless there is expressed consent in writing from that business. In addition, data should not be published that would reveal the exact number of respondents contributing to a cell if there are fewer than  $n$  respondents.

### 6.2 ONS Confidentiality Pledge

The confidentiality pledge is an assurance of confidentiality given to survey respondents.

*'The information you provide is treated with the strictest confidence by the Office for National Statistics (ONS), as directed by the National Statistics Code of Practice. It is used to produce anonymous statistics for decision-making in government and for genuine research purposes only.'*

Different ONS Business surveys often include a shortened version of the pledge, such as:

*'All the information you provide is kept strictly confidential. It is illegal for us to reveal your data or identify your business to unauthorised persons.'*

### 6.3 Statistical Disclosure Control and ONS

The ONS' [statistical disclosure control policy](#) sets out the standards for safeguarding the information provided in confidence to the organisation. Statistical disclosure control (SDC) concerns safeguarding the confidentiality of the information that ONS releases about people and businesses, in order to be compliant with Section 39 of the Statistics and Registration Service Act (SRSA, 2007).

Disclosure control methods are applied to the PRODCOM data to ensure compliance with the policy.

### 6.4. Identifying disclosive data for PRODCOM

Disclosure is a particularly sensitive issue in business surveys, given the commercial confidentiality of the data collected. In general, the following rules are applied to the PRODCOM estimates, unless all respondents who could have values disclosed by an estimate are willing to allow the data to be published.

In the discussion below, a 'cell' refers to an element of a published table, containing the aggregated data (as described above), not to the sampling cells described in Section 3.2. For tables of total values published by PRODCOM, the three criteria which must be met in order for the published value to be deemed non-disclosive are the:

- minimum threshold rule: this rule states that there must be at least  $n$  reporting units (businesses) in a cell
- $p\%$  rule: this rule states that the total contribution of the  $m$  largest contributors to the cell aggregated total must be less than  $p\%$  of the total in that cell. Sometimes this rule can be applied multiple times, with different values of  $m$  and  $p$
- dominance rule: this rule states that the estimated total of all the units in the cell (including those not included in the sample) without the  $d$  largest units from the sample must be at least  $s\%$  of the largest  $b$  unit values in the sample

The values of  $m$ ,  $p$ ,  $d$ ,  $b$  and  $s$  should remain confidential. Knowing these values could allow information on individual businesses to be calculated.

In this example, which uses hypothetical data and disclosure thresholds, (Table 6.1), there are ten businesses in a cell, of which four have returned their total turnover estimates, and  $n = 3$ ,  $m = 1$ ,  $p = 95\%$ ,  $d = 3$ ,  $b = 2$  and  $s = 5\%$

Table 6.1 - Example of disclosure control

Business	A	B	C	D	E	F	G	H	I	J
Product sales value (£000s)	-	20	30	-	5	-	1,500	-	-	-

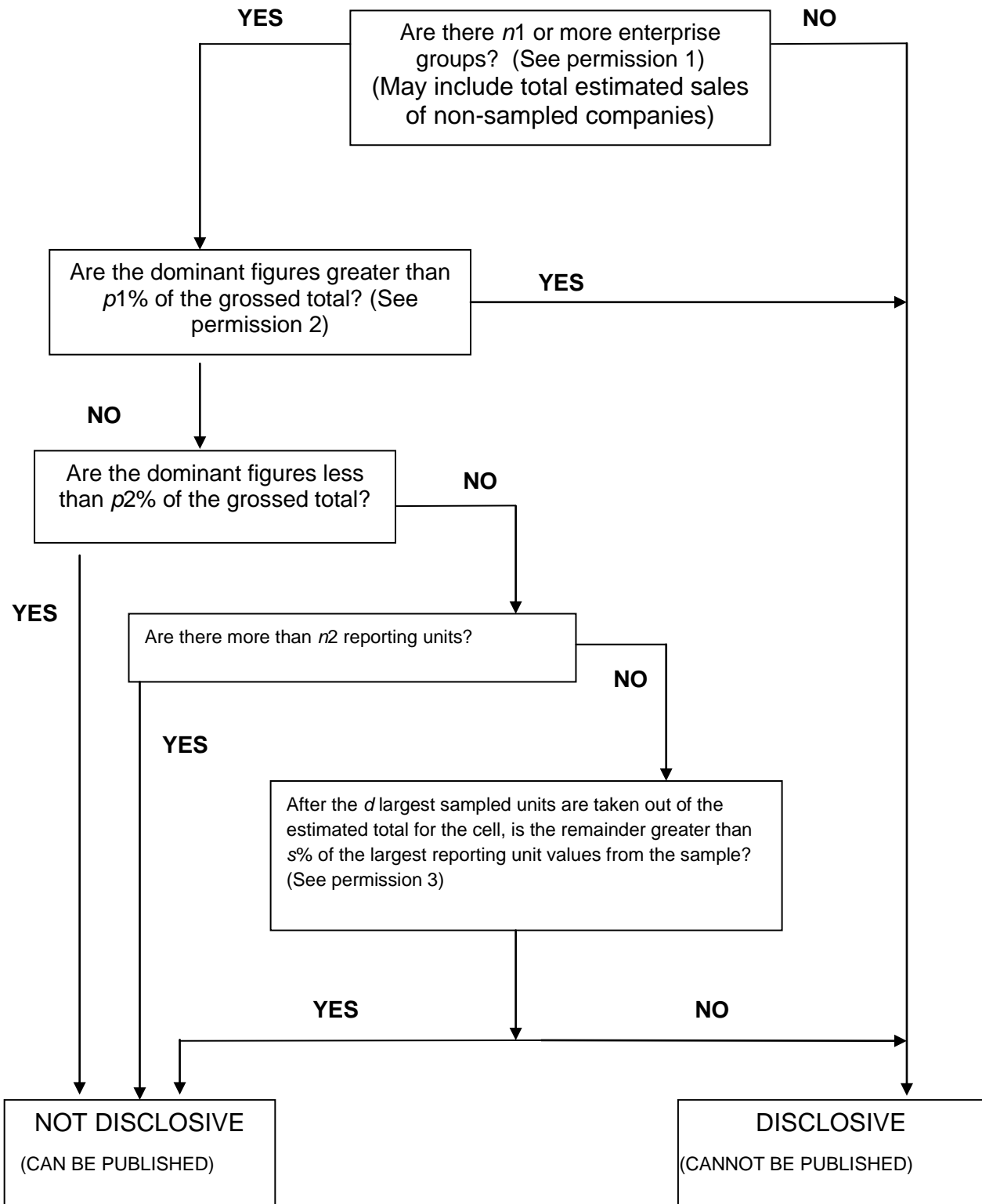
The three criteria that are applied to the data are the:

- minimum threshold rule:
  - there are four businesses which have reported values. The minimum threshold,  $n$ , is 3, so the cell is not disclosive under this rule
- $p\%$  rule:
  - total product sales value =  $\pounds(20+30+5+1,500)\text{k} = \pounds1,555\text{k}$
  - $m$  is one, and the largest respondent is business G, with a sales value of  $\pounds1,500\text{k}$
  - so, the percentage contribution of business G to the total product sales value in the cell is:
    - $(1,500 / 1,555) \times 100\% = 96.5\%$
  - 96.5 is greater than 95%, so under this rule, the cell is disclosive
- dominance rule:
  - total returned turnover of the cell =  $\pounds(20+30+5+1,500)$  thousand =  $\pounds1,555\text{k}$
  - $d$  is 3, and the total without the 3 largest respondents (B, C and G) is  $\pounds5\text{k}$ ,  $b$  is 2, and the sum of the 2 largest respondents is  $\pounds1,530\text{k}$ .
  - $\pounds5/\pounds1,530 = 0.33\%$ , and as this is less than 5% the cell is disclosive under the dominance rule.

A product must pass all 3 criteria in order to be published, and as this product has not, it is identified as disclosive, and so disclosure control methods must be applied before publication. The process is repeated for the industry group total.

Diagram 6.1 illustrates the disclosure procedure,

Diagram 6.1 PRODCOM disclosure process



Permissions References

1. Seek permission to publish from the enterprise group(s).
2. Seek permission from the dominant figure(s).
3. Seek permission from the largest reporting unit(s).

## 6.5 Disclosure control methods

There are several standard techniques for controlling disclosure used on PRODCOM results. These are described below.

- Cell suppression: This is the standard method used to protect tables with disclosive cells. The disclosive cells are suppressed, with values replaced by the appropriate marker. This is known as primary suppression.

Other, non-disclosive cells must sometimes also be suppressed, to prevent the values of the primary suppressed cells from being calculated by subtraction of all the other cells from the total; these are known as secondary suppressions and is the main method used by PRODCOM to suppress disclosive values.

- Cell Aggregation: Cell values may also be combined to prevent publication of disclosive data; for example where there are very few companies in a specific industry, a higher level industry classification will be used instead.
- Rounding: Monetary estimates in standard PRODCOM releases are rounded to the nearest thousand or million pounds. Percentages or rates displayed in PRODCOM releases must be derived from the unrounded values and then percentages rounded to one decimal place. The sum of constituent items in tables may not always agree exactly with the totals shown but sometimes rounding can help protect against disclosure.

## 6.6 Understanding PRODCOM Disclosure Markers

The symbols that are used in the PRODCOM publication tables are described as:

- S suppressed as disclosive
- S\* suppressed as disclosive but included in the aggregated for UK Manufacturer Sales of "Other" products aggregated for UK in the Sales and Turnover table.
- N/A data not available
- E data has low response, and therefore a high level of estimation, which may impact on the quality of the estimate

## 6.7 Seeking consent to publish data

The detailed level of PRODCOM estimates often leads to high rates of suppression. This is often due to the small number of producers for a specific product or the existence of a dominant producer, both of which increase the risk of disclosing the sales figures for an individual business.

As earlier mentioned, there is a process in place to request consent from businesses to publish their data where there is a risk the data is disclosive. Respondents are sent a "PRODCOM

survey - Permission to Publish" pro-forma with an attached letter (see Appendix 6). Agreement to publish is always obtained in writing.

The respondent may choose one of three options on the questionnaire.

- Permission: Where 'blanket' permission is given by the respondent for ONS to publish any items which are disclosive.
- Specific: Specific permission to publish individual totals, for the products listed on the disclosure respondent.
- Refusal: Where a respondent chooses not to give ONS permission to publish the figures.

### **6.8 Review of PRODCOM disclosure control methods**

The disclosure control method used by PRODCOM is in line with the Government Statistical Service (GSS) [Disclosure Control Policy](#).

ONS plans to carry out a further review of the disclosure control methods for PRODCOM. This will determine if PRODCOM estimates are over-suppressed and identify any methods that may be more suitable, to improve the utility of the estimates. Any recommendations implemented from this review will be noted in future editions of this report.

## 7. Publication and Data Dissemination

### 7.1 Publication of the PRODCOM Survey results

PRODCOM estimates have been published annually since 2005. Data are published in reference tables, supported by a Statistical Bulletin. The publication cycle is:

- provisional results are published at the end of June, six months following the end of the survey period
- intermediate results are published in December, twelve months following the end of the survey period
- final results are also published in this December release for the previous survey period

The PRODCOM survey publishes product information from approximately 21,500 businesses covering 234 industries (of the manufacturing sector) and around 3,800 products described in the [PRODCOM list](#) (see section 3.6).

Product information is available by sales volume and value and by unit value (i.e. the cost by item, kg, etc). Other variables published include total turnover, merchanted goods, work done, sales of waste products and all other income (see section 3.5 for further detail).

In previous releases, estimates of intra and extra EU imports and exports, were also reported alongside PRODCOM estimates, however this was discontinued from December 2013 onwards due to comparability issues (see section 11.1.2 for further detail).

Data from the PRODCOM survey is available from its inception in 1993. Publications of the PRODCOM results for survey periods 2008 to 2013 are available on the PRODCOM release pages and earlier releases of the PRODCOM survey data are available in Microsoft Word or PDF format upon email request at: [prodcompublishments@ons.gsi.gov.uk](mailto:prodcompublishments@ons.gsi.gov.uk).

In addition, a [PRODCOM user guide](#) has been published to aid the interpretation of PRODCOM estimates. It illustrates how the estimates can be effectively understood and analysed.

Product information is available on request from the PRODCOM Research, Analysis and Publication team. Please contact: [prodcompublishments@ons.gsi.gov.uk](mailto:prodcompublishments@ons.gsi.gov.uk) or telephone +44 (0)1633 456746.

### 7.2 Dissemination of the PRODCOM Survey results

The UK transmits PRODCOM data to Eurostat which is used for the production of European statistics. Reporting countries mark some data as confidential and Eurostat is legally bound not to reveal such data when publishing EU totals.



**7.2.1 Dissemination and access via Eurostat**

Table 7.1 – Dissemination and access via Eurostat

Media	Description	Frequency	Format
Eurostat website	Database: EUROPROMS via Easy-Comext and the Data Explorer	Monthly	Europroms refers to the combination of Production data from PRODCOM with Import and Export data from the External Trade database, and is composed at a European level. The UK’s PRODCOM data is submitted bi-annually to Eurostat and can be viewed from the Eurostat website in Easy-Comext format. In addition a new interface, the <a href="#">Data Explorer</a> , allows users to access the data in a different way. The data are supported by their corresponding <a href="#">statistical metadata</a> , and are released free of charge.
Paper Publications	Eurostat Yearbook Pocketbook: Key figures on Europe Statistics in Focus Statistics Explained Eurostat/Rosstat co-publication	Annual	These publications include extracts or summaries of the PRODCOM data. The publications can be downloaded free of charge on the Eurostat website
Distribution on DVD		Monthly	Monthly creation by Comext team of DVD containing External Trade and PRODCOM data and Europroms.  The DVDs are distributed to subscribers and have a user interface identical to the internal Comext database

## 7.2.2 Dissemination and access via ONS

Table 7.2 - Dissemination and access via ONS

Access to publications and published data via ONS website	<p>Users can search ONS publications and published data <a href="#">by theme</a></p> <p>Excel <a href="#">reference tables</a> (see section 7.3)</p> <p><a href="#">Open datasets</a> (see section 7.4)</p> <p>Statistical <a href="#">Bulletin</a></p>
Access to unpublished data	<p>Access to micro-data is governed by the ONS Micro-data Release Procedure (MRP), which must be completed before the data can be provided.</p>
Virtual Micro-data Laboratory (VML) and UK Data Service (UKDS)	<p>PRODCOM submits the micro-data underpinning its results to the <a href="#">Virtual Micro-data Laboratory</a>, and through this it is also submitted to the <a href="#">UKDS</a>. This allows approved researchers who are generally from other government departments or academics access to the data, subject to conditions.</p>
Ad Hoc releases	<p>The ONS carries out additional statistical analyses that have not been included in our standard publications on an ad hoc basis as a result of user request. There are charges for this service and all releases are published on the ONS webpage,</p>

## 7.3 Excel reference tables

The excel reference tables for PRODCOM were redesigned for the December 2014 publication following the decision to remove HMRC trade data. This was due to comparability issues between the data sources; further information can be found in the [Quality and Methodology Information](#) report. In addition to the removal of trade data, further changes that have been made to the tables based on user feedback to improve usability of the data and to aid navigation are:

- time series data are presented in the same table
- ordering of the SIC totals table and removal of codes not required by users
- all data is available in one excel workbook, rather than having to separately download different workbooks for each division

## 7.4 PRODCOM data using the Data Explorer

The [ONS data explorer tool](#), which was introduced in December 2015, enables users to flexibly extract or interrogate the PRODCOM data. Whereas the Excel reference tables provide data in separate worksheets for each division, the data explorer can provide all information in one dataset, allowing easier comparisons between products classified to different divisions, and between SIC total variables classified to different divisions.

Currently only product sales information is available in the data explorer. Variables such as non-production income and turnover by industry will be included in future. Guidance on the use of the ONS data explorer tool is provided in the [PRODCOM user guide](#).

The PRODCOM team aims to continuously improve its outputs and would welcome thoughts on the revised excel format, as well as comments on any further improvements that would help users. Please contact us via email: [prodcompublishments@ons.gsi.gov.uk](mailto:prodcompublishments@ons.gsi.gov.uk) or telephone on +44 (0)1633 651785.

## 8. Revisions policy

ONS strives to ensure that published estimates are as accurate as possible. However, sometimes revisions are made to source data after publication, for example, following discussions with respondents or new data being received, leading to revisions of estimates produced. ONS has a clear [policy](#) detailing how revisions are handled across the organisation, and the specific procedure for PRODCOM is outlined below. The background notes to the Statistical [Bulletin](#) provide further details.

### 8.1 Planned revisions

As mentioned in section 7.1, provisional survey estimates are published six months after the end of the reference period; intermediate estimates 12 months after the end of the reference period and a final set of estimates 24 months after the reference period.

Planned revisions usually occur due to the receipt of additional data from late responding businesses or the correction of errors to existing data by businesses responding to PRODCOM queries. Table 8.1 illustrates revisions, to the total value of UK manufacturing sales, for the last four years.

Table 8.1 - Total value of sales £ billion

Reference Year	Provisional Results	Intermediate Results	Final Results
2010	323.9	329.4	324.8
2011	339.7	338.0	341.0
2012	342.2	341.7	342.0
2013	354.5	N/A	N/A

Other revisions can be considered unplanned, and these are dealt with as required according to the guidelines below.

### 8.2 Unplanned revisions

In addition to planned revisions to the current and previous survey years, additional unplanned revisions may be published if they are considered to be large enough and of sufficient interest to users such that a delay until the next standard release is not justifiable, or if they affect data in more than just the current and previous survey years. The timing with which these revisions are released will take into account:

- the need to make the information available to users as soon as is practicable
- the need to avoid two or more revisions (to the same data items) in quick succession, where this might cause confusion to users

## 9. Minimising respondent burden

### 9.1 Respondent burden

Respondent burden can be viewed in terms of ‘actual response burden’ which is the time taken to respond to a questionnaire and ‘perceived response burden’ which describes respondents’ perceptions of their survey experience; (this is associated with factors such as the mode of data collection, who is conducting the survey and whether the produced statistics are useful to the business and or society).

### 9.2 Burden in the Code of Practice for Official Statistics

The [Code of Practice for Official Statistics](#) provides guidance that relate to measuring the burden on respondents and compliance procedures. Principle 6 of the Code states:

*The cost burden on data suppliers should not be excessive and should be assessed relative to the benefits arising from the use of the statistics.*

The emphasis is to strive to develop methods that will reduce the costs to individual organisations or people.

### 9.3 Measures that have been taken to minimise respondent burden

The ONS currently applies the following practices or methods to reduce the burden on businesses.

Table 9.1 - Current burden minimisation measures

	<b>Measures</b>
<b>Sampling</b>	<ul style="list-style-type: none"> <li>• The Osmotherly rules (see section 2.4.2) ensures that small businesses are only considered for the sample once every 3 years;</li> <li>• Sample rotation spreads the burden over more businesses;</li> </ul>
<b>Data collection</b>	<ul style="list-style-type: none"> <li>• Businesses receive personalised or tailored survey questionnaires. Once a business has confirmed its products and product codes have been assigned, these product codes are held on the PRODCOM system and appear on the questionnaire for as long as the business is selected for the survey. Over time, should a business diversify, change, add or remove products, the product questions are reviewed and the questionnaire is amended to contain only the product questions which are relevant.</li> <li>• GB businesses that are new to the survey are usually contacted to find out what products they manufacture so that the questionnaire can be personalised.</li> <li>• The degree of contact with respondents is minimised by ensuring the instructions are clear and the layout is uncluttered.</li> <li>• Respondents are asked to provide informed estimates where they are unable to provide exact figures.</li> <li>• When a respondent is unable to provide figures for the calendar year, data for the nearest equivalent period are accepted.</li> <li>• If the total annual sales of products have each got a value of less than £25,000, these products can be combined and recorded together under ‘Minor</li> </ul>

	products' rather than being split by product.
	<ul style="list-style-type: none"> <li>The Annual Mineral Raised Inquiry (AMRI)<sup>13</sup> and International Steel Statistics Bureau (ISSB)<sup>14</sup> are used as alternative data sources for final published estimates primarily to avoid duplication and reduce burden on businesses.</li> </ul>
<b>Estimation</b>	<ul style="list-style-type: none"> <li>Estimating for the total production by product through a sample of businesses, instead of collecting information on production from all businesses classified to Mining and Manufacturing activities. The non-sampled members of the population are estimated for and UK totals calculated using a defined methodology (see section 5.4).</li> <li>PRODCOM's approach to processing returned questionnaires and investigating non-response has been designed to minimise the burden on respondents (see chapter 5).</li> </ul>

#### 9.4 Possible burden reduction measures

This includes:

- introducing electronic data collection (EDC) across ONS business surveys; EDC appears to be the mode of collection preferred by big/medium sized businesses and small companies who pay an external accountant to complete their tax information, fill forms etc. PRODCOM will move to EDC in 2017/18 and smaller pilots will be held prior to this to quantify the impact of this change
- review of PRODCOM questionnaire with the view to improve data requirements, the clarity of questions and guidance notes and overall design of the questionnaire; the review will be undertaken by Data Collection Methodology (DCM) and cognitively tested, which is tentatively planned for 2018
- review of the PRODCOM sampling design, to ensure we have the adequate number of key respondents for each industry (SIC); key respondents significantly contributes to an industry (see section 2.4.3)
- a review of the 10 year rotation cycle to assess if this can potentially be lowered;
- aligning the PRODCOM list closer with the European Classification of Products (CPA) which has less product codes than the Prodcom list (see section 3.6)
- widening user engagement to ensure the estimates produced is better related to user needs

Progress of the identified further burden reduction measures will be posted on the PRODCOM news page and also updated in future editions of this report.

<sup>13</sup> See section 11.1.6.

<sup>14</sup> ISSB provides data in respect of iron and steel statistics related to SIC2007 industries 24.10; 24.32 and 24.33. These are included in the PRODCOM statistics submitted to EuroStat, but not published as part of ONS release.

## 10. Survey strengths and limitations

Details on the survey strengths and limitations can be found in the [Quality and Methodology Information](#) report and PRODCOM Statistical [Bulletin](#). A summary is provided below.

### 10.1 Major strengths of the survey

The key strengths of the survey include:

- comprehensiveness - the survey covers many products at a far greater level of detail than most other ONS releases
- international comparability - as PRODCOM is enforced by Eurostat, it is easy to compare the UK's figures with those of other EU member states
- response rate - for PRODCOM this is consistently above 80% by the time intermediate results are published
- respondent burden - tailoring questionnaires to each business helps to minimise the burden placed on respondents
- understanding turnover - the high level of detail in PRODCOM statistics permits a thorough analysis of where turnover is generated in production industries, and which products are driving or restricting growth in these industries (or even sub industries)

### 10.2 Limitations of the survey

The most notable limitations of the survey are:

- constructed data - volume data is difficult to collect from some respondents so is often largely constructed
- small strata - by their nature, strata with a small number of businesses are more volatile and include a large proportion of estimation
- data suppression - the detailed level of PRODCOM estimates often leads to data being suppressed because there may either be a small number of producers or there is a dominant producer and the risk of disclosing the sales figure for an individual business is high
- carry in from other divisions - the sampling frame for PRODCOM only includes UK SIC 2007 divisions 8-33, so excludes businesses who manufacture but are classified outside of these divisions
- potentially small sample - for some products, there are not enough manufacturers in the UK for a detailed and robust analysis
- backwards comparability - PRODCOM codes were impacted by the change to UK SIC 2007 from the 2003 edition, so data is not fully comparable backwards beyond 2008 with the exception of the total product sales which cover 2003 to 2014. Many PRODCOM codes change each year, and so creating a consistent back series is challenging

- aggregation - some products are aggregated with others, so it is not always easy to give a sales value for individual products
- cross sectional - PRODCOM is designed to be analysed within a single period or short time series, rather than over long periods, for example values are only available in current prices; meaning that they have not been adjusted for inflation; this is important for users to bear in mind when comparing value changes over time

### 10.3 Future survey developments

Future survey developments that may help to address some of the issues listed in the previous section include:

- a questionnaire review - the questionnaire will be reviewed, to ensure data requirements are clearer and easy to understand
- methodological review - the methodology described in this technical report will be reviewed regularly to improve the accuracy and reliability of PRODCOM estimates
- the framework Regulation Integrating Business Statistics (FRIBS) - this covers a number of developments, including: statistical units (Kind of Activity Unit); sub contracted operations; improved data transparency and burden reduction measures
- joint ABS / PRODCOM Government User Group - following consultation, PRODCOM will join the government user group set up by the Annual Business Survey
- Scottish & Welsh boosts - PRODCOM is currently investigating the possibility of increasing the number of Scottish and Welsh companies sampled, to provide more detailed data to the devolved Scottish and Welsh governments



## 11. Comparability of PRODCOM estimates

### 11.1 Comparability with other data sources

The coherence between PRODCOM and other data sources is documented within the PRODCOM Statistical [Bulletin](#), the [Quality and Methodology Information](#) report and on the [PRODCOM news page](#). Supplementary information is provided in this chapter.

#### 11.1.1 Annual Business Survey (ABS)

PRODCOM and the ABS align closely, as ABS collects total turnover and other variables similar to the standard headings collected by PRODCOM. The feasibility therefore exists of collecting the standard headings on behalf of PRODCOM. There are, however, difficulties associated with this such as:

- while data at the individual respondent level are required by both surveys, ABS collection allows financial year-end whereas PRODCOM collects a calendar year
- employment size-bands are different to PRODCOM. This could lead to considerable differences in sales values for individual product headings in the smaller size-band because ABS collects data on total sales of own manufactured products, not sales of individual manufactured products
- PRODCOM statistics relates to products and not activities and are therefore not strictly comparable with activity-based statistics such as ABS or Structural Business Statistics; The ABS is therefore at the less detailed industry level, and not specific to the product classification, but the business' industrial classification; The total value of production for business in an industry group may be different to the turnover reported by ABS for the same industry group, as there are many cases where an enterprise will carry out other activities besides production that contribute to its turnover; Hence, the reported turnover values may still be close, but different none the less
- if ABS collect data on behalf of PRODCOM it would not be possible to meet all of the Eurostat regulation in terms of timeliness for data submission

#### 11.1.2 External trade statistics

Prior to the 2013 Intermediate publication in December 2014, Intra and extra EU imports and exports data, together with the trade balance and the UK net supply data were published alongside estimates of PRODCOM sales. This data was collected by HMRC and matched with the corresponding PRODCOM codes, before inclusion within the PRODCOM tables to show the UK trade balance and UK net supply by product.

Ideally, matching PRODCOM estimates and International Trade statistics should help to provide a more complete picture of domestic sales, consumption of goods and the UK trade balance. However, there are several differences between these data sources.

- **Coverage** - export values may include products not produced in the UK. Additionally, a product may cross borders more than once in the reporting period.
- **Volume units** - a comparison of trade and PRODCOM data is not possible if two different volume units are used, which is the case for several PRODCOM products. These known differences in volume units are highlighted on the front page of the excel reference tables (for 2012 Intermediate Estimates onwards).
- **Valuation** - PRODCOM products are valued at the price at which they are sold by the manufacturer. The trade statistics use the values of the good when they are exported, which may include transport costs, and profits of intermediaries among other things. There may also be differences in the time of recording the transaction.

For comparability reasons highlighted above and following discussion with users, ONS has ceased including HMRC trade data in PRODCOM releases. Users who require the trade data could obtain them directly from the [HMRC website](#).

### 11.1.3 Index of Production (IOP)

The Index of Production collects total production turnover but not data about individual products manufactured. Some differences in the data sources that could compromise the coherence between the outputs at industry level are:

- the 'volume' measurement for IOP is a chained volume index opposed to the 'volumes' collected by PRODCOM which equate primarily to units measured, for example litres, tonnes, or number of items
- PRODCOM estimates the value of production sold during the reference period - this may not be the same as Total production, which is estimated by IOP due to production not sold, e.g. stock to be held

### 11.1.4 International comparisons

PRODCOM is designed in accordance with Eurostat regulations (EU Regulation 3924/919) to ensure comparability across European Union Member States. A key aspect of this is the use of the UK SIC, which is consistent with the European Union's NACE system of industry classification.

For 2002 data onwards the unit values for each country have been calculated and compared with those for other countries. To achieve this, Eurostat calculate the ratio of each country's unit value to the median unit value of all countries for each product. Whichever was larger of the country/median ratio and the median/country ratio is taken so that a large distance from the median is always represented by a high value.

To get comparable results at the EU level, the national PRODCOM surveys are coordinated with respect to the definition of the population, the type of statistical unit, the definitions of the variables, the reporting on each type production, and so on.

Comparability at EU level is determined strongly by the quality of the survey results at National level. In this context National Quality Reports are an important means of assessing the quality of the statistics produced by the Member States in order to get comparable and reliable outcomes at EU level.

### 11.1.5 Administrative data

Businesses usually submit a Value Added Tax (VAT) return to HM Revenue and Customs (HMRC) every quarter. The VAT returns records information such as the total sales and purchases. It therefore shows the total turnover and for products attracting duty, such as alcohol, drinks and tobacco, a breakdown of some product detail although at a much more aggregated level than PRODCOM.

It is not considered viable to collect PRODCOM through such administrative data due to the level of detail required on products and volumes. Additionally unless there was an increase in the burden on businesses to include PRODCOM on all VAT returns, there would be difficulties with sampling and grossing. There are also legal aspects to collecting statistical data through fiscal returns.

### 11.1.6 Annual Minerals Raised Inquiry (AMRI)

The Annual Minerals Raised Inquiry collects information on minerals that are mined or quarried within Great Britain. This survey is administered by ONS on behalf of the Department for Communities and Local Government (DCLG). Since 1995 data collected by AMRI are used in the PRODCOM survey to avoid duplication and minimise respondent burden.

The specific industries covered are:

- 08110 - Quarrying of Stone for Construction
- 08110 - Quarrying of Limestone, Gypsum and Chalk
- 08110 - Quarrying of Slate
- 08120 - Operation of Gravel and Sand Pits
- 08120 - Mining of Clay and Kaolin
- 08930 - Production of Salt

However the minerals that are mined and used by the mine/quarry for its own use is treated as 'sales' - this is slightly different from what is required by Eurostat ie manufacturers' sales of a product. Information for minerals that are extracted and sold is given as volume (tonnage). There is on-going discussion to improve the data quality.

## 11.2 Comparing PRODCOM data over time

Comparable time series are available going back to the year 2008. Results for PRODCOM are available on the SIC UK 2003 system for the reference years 1993-2007. However, following the 2007 review, SIC UK 2003 was updated to SIC UK 2007, to reflect changes to the structure of the European economy, for example, the growth in technology industries.

As a result, PRODCOM estimates from reference year 2008 onwards are published according to UK SIC 2007, and these are not directly comparable with the earlier results published on UK SIC 2003.

## Appendices

### Appendix 1 - Key facts

Name of survey	UK Manufacturers' Sales by Product (PRODCOM) Survey
Year commenced	1993
Statutory or voluntary	Statutory
Frequency of survey	Annual
Previously related surveys	Annual Sales Inquiry (ASI) and Quarterly Sales Inquiry (QSI)
Survey population	UK businesses active in the Mining and Manufacturing sectors (Standard Industrial Code 2007 (SIC 2007) Sections B and C).
Sample <ul style="list-style-type: none"> <li>• Size</li> <li>• Coverage</li> <li>• Design</li> <li>• Method</li> </ul>	<p>Approximately 21,500</p> <p>Approximately 240 subsectors of the Mining and Manufacturing industry</p> <p>Stratified random sample where strata are defined by SIC and employment size of a business.</p> <p>All businesses above an employment threshold which varies in each strata between 20, 50 or 100 employees are selected. Smaller businesses are randomly sampled.</p>
Sampling frame	Inter-departmental Business Register (IDBR)
Variables	Sales value and volume, merchanted goods, work done, sales of waste products, all other income and total turnover.
Level of detail	Information collected on around 3,800 products and some services.
Mode of data collection	Personalised paper questionnaire
Response rate	79.8% (2014 Provisional)
Weighting and Estimation	Estimates are produced using a non-linear estimator. An estimate is made for the number of businesses by stratum that make a particular product and then a separate estimate is made for the average Sales Per Head (SPH) by industry for those businesses that make that particular product. These 2 estimates are finally multiplied together to give an estimate of total sales for the product.
Imputation	Automatic imputation, using a ratio estimator for businesses classified to homogenous industry and size-band, is used when unit non-response occurs. An influential key responder would have its details manually constructed if it did not respond based on previously provided product breakdowns.
Outliers	Outlier trimming, the removal of atypical responses, occurs based on SPH (SPH = Value of commodity sales/employment) on the top and bottom 5% of SPH for the home industry where there are 10 or more observations. The same rule is applied where there are ten or more observations in carry-in industries.
Statistical disclosure	The National Statistics Code of Practice, guarantees that, 'no statistics will be produced that are likely to identify an individual unless specifically agreed with them' so disclosure rules are applied before publication.
Key releases and publications	<ul style="list-style-type: none"> <li>• Statistical <a href="#">Bulletin</a> - UK Manufacturers' Sales by Product</li> <li>• <a href="#">Reference tables</a> (in Excel and Open data format)</li> <li>• <a href="#">User guide</a> - to aid data interpretation</li> <li>• Quality and Methodology Information (QMI) <a href="#">paper</a></li> <li>• Technical <a href="#">report</a></li> </ul>
Timeliness of data	Provisional, intermediate and final estimates are available 6, 12 and 24 months respectively after end of reference year.

**Appendix 2 - Users and uses**

User groups	How they use PRODCOM estimates
International users, for example, Eurostat: <ul style="list-style-type: none"> <li>• Trade in Goods Statistics</li> <li>• Enterprise Statistics</li> <li>• Environmental Statistics and Accounts</li> <li>• Food Safety Statistics</li> </ul>	Measurement and monitoring of production in the EU, such as: <ul style="list-style-type: none"> <li>• policy setting.</li> <li>• statistics on products such as hazardous chemicals, manufacturing impact on greenhouse gases and other products with an environmental impact.</li> <li>• to monitor the manufacture of food and beverage.</li> </ul>
The United Nations	<ul style="list-style-type: none"> <li>• to compile the Industrial Commodity Statistical Yearbook publication.</li> </ul>
EU Trade Associations	International comparisons
ONS including: <ul style="list-style-type: none"> <li>• National Accounts</li> </ul>	<ul style="list-style-type: none"> <li>• Supply Use Tables as an integral part of measurement of Gross Domestic Product (GDP).</li> </ul>
<ul style="list-style-type: none"> <li>• Producer Price Indices (PPI)</li> </ul>	<ul style="list-style-type: none"> <li>• PRODCOM survey data identifies businesses that make particular products, and are therefore used to create a sampling frame and weights for the PPI.</li> </ul>
Other Government Departments, such as: <ul style="list-style-type: none"> <li>• Scottish, Welsh, Northern Ireland Governments</li> <li>• Technology Strategy Board (TSB)</li> <li>• Department for Business Innovations and Skills (BIS)</li> <li>• Department for Environment Food and Rural Affairs (DEFRA)</li> <li>• Marine Management Organisation</li> </ul>	Examples of Government Departments uses are: <ul style="list-style-type: none"> <li>• to demonstrate the contribution of specific industries to the economy;</li> <li>• in the compilation of their indices of Production estimates. Some regional information on businesses available from the IDBR is used with PRODCOM the Scottish Executive create Supply Use Tables.</li> <li>• to monitor production in new technology industries.</li> <li>• development of new strands of research in a range of policy areas and as part of regular BIS publications</li> <li>• to investigate the drivers of rural business growth, decline and stability.</li> <li>• to report fish processing data to the EC.</li> </ul>
Trade Associations	To monitor trends in an industry or product group, and for information or evidence in advocacy work.
Businesses, Market Analysts and Market Researchers	Uses include: <ul style="list-style-type: none"> <li>• to showcase the attractiveness of a sector, and predict trends</li> <li>• to see what impact economic trends have on sales</li> <li>• to help companies in a product's supply chain to determine market size.</li> </ul>
The Public <ul style="list-style-type: none"> <li>• Research institutes; Students; Media</li> </ul>	Varied interests and purposes such as: <ul style="list-style-type: none"> <li>• trends in sales of products or industry groups</li> <li>• to determine which industries are driving growth in manufacturing.</li> </ul>

### Appendix 3 - The changing face of PRODCOM 1996 - 2014

#### Minimising burden on data suppliers

Year	Development	Reason	Result
2014 onwards	Planning for electronic data collection (EDC)	In the age of technological advancement, most businesses keep electronic records and have said they would find it helpful to provide data electronically.	ONS has launched an EDC program, and is making continuous progress towards collecting data electronically.
2011/2012	Introduce selective editing to PRODCOM	Current validation approach, where data validation is carried out on all failures even if they have a small impact on results, may not be the most efficient approach.	Selective editing introduced in conjunction with validation gates, reducing the requirement to contact all businesses failing gates, reducing burden on business and making efficiency savings.  The selective editing tool, increases editing efficiency and statistical quality. It allows questionnaires with the highest impact on estimates to be prioritised for editing.
2010	Review the possibility of a PRODCOM bi-annual sample	To reduce the cost and burden of the PRODCOM survey.	Feasibility study carried out. No suitable solution
2006	Review of sample design	Review the current sample design and make recommendations that maintain quality, reduce burden and realise efficiencies.	Sample reviewed and redesigned resulting in a sample reduction from 24,000 to 21,500.
2005	Quarterly Survey is no longer administered	Following an easing in EU regulation, formal agreement was given to no longer conduct the quarterly survey.	PRODCOM became wholly annual from 2005 with a cost saving to ONS and a reduction in the compliance burden to business. Improved the timeliness of annual estimates.
2002	Removed the necessity for all volumes to be measured, in agreement with Eurostat	Most respondents found it difficult to provide volume units of measurement for a number of products.	User feedback from the Triennial review identified problematic industries. Agreement reached on those excluded for providing volume measurements.

#### Improving value for money

Year	Development	Reason	Result
2010	Introduce automatic £'000's validation and batch volume construction	Manual intervention for £'000's errors and volume construction for missing data.	Reduced requirement to manually amend data, realised efficiency saving and improved quality.
2010	Review of validation gates	Review all validation gates held within the take-on system to improve quality, reduce burden and realise efficiencies.	Validation gates for values reviewed and updated. Realising an efficiency saving of approximately 10%.
1997/1998	Introduction of electronic scanning of questionnaire, intelligent character recognition (ICR) and electronic questionnaire	All data manually keyed into computer systems.	Automates data collection and data entry to inquiry processing system, reducing the need for manual intervention.

## Improving public confidence in the integrity and validity of outputs

Year	Development	Reason	Result
2011	Apply the new code and published revised estimates	Known error in calculation of standard errors	Standard errors have been calculated using an improved formula. Information on change included in the background note of the Statistical Bulletin.
2008	Move to SIC 2007 to align with international classification.	This follows a review of the European NACE classification system.	SIC 2007 is a significant revision, which, amongst other things, reflects the growth of new technologies and industries.
2007	Statistics and Registration Service Act	The Statistics and Registration Services Act is passed, to promote the quality and integrity of official statistics which serve the public good.	An independent body - the UK Statistics Authority (UKSA), is created as a non ministerial department reporting directly to Parliament.
2003	Move to SIC 2003	SIC 2003 makes minor changes to SIC 1992, including additional detail at the subclass level together with some minor renumbering and revisions, in response to user demand.	Implementation created linkages with international nomenclatures such as the European Classification of Product Activity (CPA).
2000	Create and publish standard errors alongside outputs	No quality measures of PRODCOM outputs available.	Quality measures published for annual and quarterly surveys <ul style="list-style-type: none"> <li>- Published estimate for the product</li> <li>Estimates of Standard error</li> <li>- Standard error as a percentage of the published value</li> <li>- Number of companies providing data for the product</li> <li>- The number of companies in the PRODCOM sample who make the product</li> <li>- Total employment of companies providing data for the product.</li> </ul>
2000	Statistics Commission and 'National Statistics' established		The Statistics Commission and 'National Statistics' are established.
1996/1997	Review of sample design and estimation methods	Sample design not optimal given coverage stipulated in the Regulation and sample rotation required. Sampling errors not available.	Optimal sample design for 1998 survey onwards. Improvement expected in precision. Future calculation and publication of sampling errors now possible.
1996	Office for National Statistics formed		The Office for National Statistics is formed by merging the Central Statistics Office, the Office of Population Censuses and Surveys, and the statistics division of the Department of Employment.

## Improving the quality and relevance of service to customers

Year	Development	Reason	Result
2008	Publish all estimates at a single point in time within the time limit, as set by Eurostat	Industries published intermittently.	All data now published as a single output by 30 June deadline
1998/1999	New estimation and publication processing system developed.	Inquiry processing system to be adapted to implement developments and improve timeliness.	Earlier publication of data possible in future years



## Improving access to data

Year	Development	Reason	Result
2014	Published a user guide	To aid users in the interpretation of data	A PRODCOM User Guide was developed and published on the ONS website.
2014	Introduced open data format	This is consistent with ONS policy to make estimates available to users in a format that is user friendly and more accessible.	PRODCOM data is available to users via Open Data. Web analyses will be undertaken to gauge usage.
2014	Reformatted reference tables in excel spreadsheet	An aspect of this change was the removal of trade data information which users could obtain directly from the HMRC website.	Users have welcomed the improved presentation of the estimates and the tables.
2010	Introduced a Statistical Bulletin at time of data release	No commentary associated with outputs	Since June 2011 a Statistical Bulletin has accompanied the associated Excel data files, highlighting key points, providing commentary and background information.
2008	Created all outputs in Excel format	Published estimates produced as PDF files as could not be manipulated by the user, as highlighted through the 2007 Quinquennial review feedback	Since 2008 all data has been published in Excel spreadsheets and continues to be enhanced through user feedback

**Appendix 4 - An example of a PRODCOM ‘tailored’ questionnaire**



*Notice is given under section 1 of the Statistics of Trade Act 1947*

**UK Manufacturers' Sales by Product  
(Prodcom) Survey**



**Please do not discard this important document - your response is legally required**

00002  
CONTACT NAME  
OFFICE FOR NATIONAL STATISTICS  
GOVERNMENT BUILDINGS  
CARDIFF ROAD  
NEWPORT  
NP10 8XG  
\*\*\* TEST: STANDARD \*\*\*

Please write any changes to your name and address in the box below, using black ink

**To be completed for:** THE BUSINESS NAMED ABOVE

**Please complete and return by 30 January 2015**

Dear Sir or Madam,

Please find the 2014 questionnaire for the UK Manufacturers' Sales by Product (Prodcom) Survey attached. Please complete for the calendar year 2014 (1 January 2014 to 31 December 2014). If actual figures are not available, please provide informed estimates. Once complete, the questionnaire can be returned by post or fax using the details in the box below.

Prodcom collects annual data on products. Products refer to goods and a small number of services, such as repair and maintenance. These services are classified by the Standard Industrial Classification into the manufacturing sector and therefore contribute to the measure of industrial production (or manufacturers' sales) for the UK.

The information you supply feeds into the National Accounts and the Producer Price Index (which is a primary measure of inflation). The statistics have a variety of uses such as policy making and assessing trends. Prodcom statistics are also required by European regulation to enable the UK and EU to measure and compare industrial production with other Member States and monitor changes over time.

**You are required by law to complete this questionnaire.** If you do not complete and return this questionnaire by 30 January 2015, penalties may be incurred (under section 4 of the Statistics of Trade Act 1947). All the information you provide is kept strictly confidential. It is illegal for us to reveal your data or identify your business to unauthorised persons.

Thank you for your co-operation,  
Office for National Statistics

**Questionnaire return details**

**To return via fax:** 01633 652707

**To return via post:** Please use the prepaid envelope provided which is addressed to:  
Office for National Statistics, Government Buildings, Cardiff Road, Newport, NP10 8XG

**Contact numbers**

Er mwyn gwneud cais am ffurflen Gymraeg (To request a questionnaire in Welsh) 0300 1234 921

If you would like to use our Minicom service for the Deaf 01633 815044

For any other queries, please contact **Jen Dyer** 01633 456006  
or go to [www.ons.gov.uk/surveys](http://www.ons.gov.uk/surveys)

**When contacting the office you may be asked for the following information**

**Survey code:** 014      **Reference number:** 20520 014 499 0000 002S      **Period:** 201412

● Telephone calls may be recorded for training and quality purposes

014 0001 20520

49900000002 S 00000000 A 014 201412 001

F P G 0 1 4

**A-PROD**







**SECTION B - ADDITIONAL PRODUCTS**

Enter the amount of sales for any products not covered in Section A. (See notes above Section A).

Describe all products with sales greater than £25,000 in as much detail as possible using basic terminology, brand names, common usage names or brief advertising/marketing material. If you are familiar with Customs and Excise CN codes (commodity tariff codes) used for exports/imports please provide these as they can be linked directly to PRODCOM codes. Alternatively a comprehensive list of products for your industry (or related industry) is available on request.

Products with sales of less than £25,000 can be grouped together in the box for minor products at the bottom of this page.

<p><b>Product description</b></p> <p>CN code (if known) <span style="float: right;">£</span></p>	<div style="border: 1px solid black; padding: 5px; width: 100px; margin: 0 auto;"> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> </div> <p>107209701</p>
<p><b>Product description</b></p> <p>CN code (if known) <span style="float: right;">£</span></p>	<div style="border: 1px solid black; padding: 5px; width: 100px; margin: 0 auto;"> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> </div> <p>107209711</p>
<p><b>Product description</b></p> <p>CN code (if known) <span style="float: right;">£</span></p>	<div style="border: 1px solid black; padding: 5px; width: 100px; margin: 0 auto;"> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> </div> <p>107209721</p>
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**PLEASE CONTINUE IN COMMENTS BOX IF NECESSARY**

<p><b>Minor Products</b> - Include all other products where the total sales value for each product line is less than £25,000.</p> <p style="text-align: right;">£</p>	<div style="border: 1px solid black; padding: 5px; width: 100px; margin: 0 auto;"> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> <div style="border-bottom: 1px solid black; height: 20px;"></div> </div> <p>107209801</p>
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**SECTION E - YOUR COMMENTS**

Please include details of any significant impacts upon your data resulting from changes in the accounting approaches you have taken e.g. moving from UK accounting standards (UK GAAP) to International Accounting Standards (IAS/IFRS).

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- We cannot guarantee to pick up your comments unless they are inside this box.
- Please use this space to comment on the figures included in this questionnaire. For example, please explain significant fluctuations in your figures compared with those of the previous period, or provide further details of new products. This may save us having to contact you again later.
- We would also welcome feedback on the design of this questionnaire, or any contact you have had with staff.

Thank you for completing this questionnaire.  
 You may find it useful to keep a copy of this completed questionnaire for your records or for further queries.

Signature:

Date:

Where available we have printed your details below. Please make any amendments in the boxes provided, using BLOCK CAPITALS.

Name of person to contact:

CONTACT NAME

Telephone Number:

Ext.

01633

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Fax Number:

01633

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Web Address:

FDG

QVA

QVE

QVF

QVI

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## Appendix 5 - Industry coverage

Division	Title
8	Other mining and quarrying
10	Food products
11	Beverages
12	Tobacco products
13	Textiles
14	Wearing Apparel
15	Leather and related products
16	Wood and of products of wood and cork (except furniture); articles of straw and plaiting materials
17	Paper and paper products
18	Printing and reproduction of recorded media
19	Coke and refined petroleum products
20	Chemicals and chemical products
21	Basic pharmaceutical products and pharmaceutical preparations
22	Rubber and plastic products
23	Other non-metallic mineral products
24	Basic metals
25	Fabricated metal products (except machinery and equipment)
26	Computer, electronic and optical equipment
27	Electrical equipment
28	Machinery and equipment, not elsewhere classified
29	Motor vehicles, trailers and semi-trailers
30	Other transport equipment
31	Furniture
32	Other manufacturing
33	Repair and installation of machinery and equipment



## Appendix 6 - An example of a 'Permission to publish' letter and pro-forma



TEST PRINT

Office for National Statistics  
Newport NP10 8XG

Your contact for help and queries:  
**FRONT CONTACT**  
Telephone: 01633 000000  
Fax: 01633 000000

Please quote:

Dear Respondent

### **UK Manufacturers' Sales by Product (Prodcom) Survey - Permission to Publish**

Your business provides valuable information to the above survey, the results of which are available, via bespoke analysis or free of charge at "www.ons.gov.uk".

The figures that we produce for each category are estimates of the total value/volume of sales of all UK manufacturers. Your business's figures form a significant part of the sales for one or more categories listed on the attached sheet. I am writing to ask for your permission to release the aggregated totals to the users of the data via bespoke analyses or publication. Without your consent, we may not be able to make these estimates available, thereby reducing the usefulness of our product for yourselves, customers and trade associations.

The strict confidentiality provisions of the Statistics of Trade Act 1947 require that we do not disclose information that could reveal any particulars about an individual business, unless it is with that business's written consent. All the information you provide is kept strictly confidential. It is illegal for us to reveal your data or identify your business to unauthorised persons.

### **What we would like you to do**

Please read the attached authorisation questionnaire carefully, complete Sections A, B or C and return to us within 14 days, using the attached prepaid envelope or by fax. It is important that a representative, holding the appropriate authority, completes the questionnaire e.g. Company Secretary, Managing or Financial Director etc.

If you require further assistance in completing this questionnaire, the contact on the above telephone number will be glad to help.

Yours faithfully

Prodcom Survey Manager

Our Ref: 00000/49900000000/201300

**A: Permission**

I hereby give permission, for the Office for National Statistics to publish any totals of which our figures may form the whole or a significant part relating to the Prodcum Survey for 2013.

Signed ..... Date .....

Position in Company .....

Name of Company .....

**B: Specific Permission**

(A complete listing of the products involved is printed below. If you complete this section, please cross out the products that you do not give your permission to publish).

I hereby give permission, for the Office for National Statistics to publish any totals of which our figures may form the whole or a significant part relating to the Prodcum Survey for 2013.

Tyre cord fabric of high tenacity yarn of nylon, other polyamides, polyesters or viscose rayon  
139615001 value in £000

New pneumatic tyres, of rubber, of a kind used on motorcycles or bicycles  
221112001 value in £000  
221112002 volume in Number of items

Signed ..... Date .....

Position in Company .....

Name of Company .....

## Appendix 7 - PRODCOM Glossary

All other income	Income derived from the provision of services and other non-production activities not elsewhere specified. This is a standard question which appears on every PRODCOM questionnaire.
AMRI	Annual Minerals Raised Inquiry. This is carried out by the Department of Communities and Local Government and covers production of Great Britain companies classified to industries 08110, 08120 & 08930. These businesses are not sent a PRODCOM questionnaire. ONS collect data from Northern Ireland respondents in these industries and businesses who carry in sales to these industries as long as they are situated in Northern Ireland.
Carry in	Sales of products classified to industry A made by businesses not classified to industry A.
Carry out	Sales of products classified to industry B made by businesses classified to industry A are carry out from industry A.
Complaint	Any communication of censure or criticism about ONS that requires a substantive response is defined as a complaint. The communication may be from anybody or person outside of ONS, except from other government departments or agencies and may be written or verbal. The response would typically require some investigation, for example selection and response history, and may be written or verbal.
Eurostat	The <a href="#">European Statistics Office</a> . The PRODCOM survey is carried out under a European regulation and provided to the European Statistical Office (Eurostat).
Grievance	A grievance may appear as a comment written on a questionnaire or a remark passed during a telephone conversation. It will usually concern one particular survey and relate, for example, to the time spent completing the questionnaire. A grievance is usually dealt with by the ONS' validation branch and will generally not require any further action.
IDBR	The <a href="#">Inter Departmental Business Register</a> is "a comprehensive list of UK businesses used by government for statistical purposes". It covers over 2.1 million businesses. The sampling frame for the PRODCOM Inquiry is taken out of the IDBR.
Industry	For PRODCOM, an industry normally refers to a classification under either UK SIC or NACE, to determine what area of the economy a business operates in or to

	which a group of products are classified. It is frequently a four digit reference code, eg 1081: Manufacture of sugar. PRODCOM publish statistics for 249 industries in the manufacturing sector.
ISSB	<a href="#">Iron and Steel Statistics Bureau</a> . This body is responsible for the collection and publication of production statistics for industry 2410. Data for this industry is therefore not collected by PRODCOM
Merchant goods	The value of sales of goods that have been bought and resold without any further manufacturing process. This is a standard question which appears on every PRODCOM questionnaire.
Minor products	Sales of products which are each less than £25,000. This is a standard question and appears on every PRODCOM questionnaire. These data are grouped with product totals which have been suppressed in the PRODCOM publications and called "All other income".
NACE	This is an acronym for the French " <i>Nomenclature statistique des Activités économiques dans la Communauté Européenne</i> ". It is a four digit code for an industry, and <a href="#">NACE Rev2</a> aligns with the first four digits of the UK SIC (2007)
Net Carry In/ Carry Out	Carry In - Carry Out.
Non-production income	Income derived from provision of services and other non-production activities. Includes – freight costs, payment for repairs, maintenance and installation of customers' plant and equipment; Amounts receivable for use of patents, trademarks, copyrights, royalties, technical knowledge, rent.
Osmotherly	A set of regulations applied to minimise the burden of surveys on very small businesses (0-9 employees). For example, if a business of this size has been selected for any ONS survey, it is guaranteed a 3 year holiday period, where it will not be selected for any ONS survey.
Producer Price Indices (PPI)	PRODCOM data is used by <a href="#">PPI Operations and Development</a> branches for weighting, selection of the sample and rebasing.
Permanent Random Number (PRN)	Each company on the IDBR is assigned such a random number for sample selection purposes.
PRODCOM	This is the <a href="#">UK Manufacturers Sales by Product</a> survey, formerly known as PRODUcts of the European COMMunity. It is conducted by all European countries who are a part of Eurostat under a European Council regulation. It collects information about sales of manufactured goods, with a harmonised classification system for comparability.
PRODCOM Commodity Code (PCC)	An eight digit product classification usually determined by Eurostat. The first four digits of this code indicate the NACE class to which the product belongs.
PRODCOM List	The directory of all PRODCOM Commodity Codes which are currently in use for the PRODCOM survey. This list is produced annually by Eurostat.

PRODCOM Sales	PRODCOM estimate of sales for each product by value (£000) and also by volume (in one or more units, for example number of items, kilograms).
Product propensity (PP)	The proportion of companies in a particular stratum in the sample making a particular product. This is used to estimate the proportion of businesses in the population making the product.
Question library	The directory of all questions (including value and volume questions) which are or have been used in the UK PRODCOM inquiry.
Sales per Head	Sales per head is calculated as the company Total Turnover divided by their employment. The product sales per head for a business is used to determine outliers during the estimation process and is calculated as the total business sales of a product divided by the company's employment. The product sales per head for an industry is also used in the estimation process and is calculated as the total sales of a product made by all businesses classified to an industry divided by the total employment of these businesses.
SIC(2007)	Standard Industrial Classification version 2007. This is the five digit industry code (the first four digits are the same as the NACE class).
Stratum	Stratifying involves dividing respondents into similar groups. The PRODCOM sample is stratified by industry and IDBR employment size bands: 0-9, 10-19, 20-49, 50-99 and 100+ employees.
Trade Data	Imports and Exports data supplied by HM Customs and Excise and matched with PRODCOM Commodity Codes for publication in the PRODCOM reports. Trade data is no longer published with PRODCOM estimates.
Unit Value	The average price per unit: The sales value (£000) divided by the volume (for example, number of items, kilogram).
Waste Products	Sales of waste products and residues. This is a standard question which appears on every PRODCOM questionnaire.
Work Done	Income derived from work done on materials supplied by the customer. This is a standard question which appears on every PRODCOM questionnaire.