An Phríomh-Oifig Staidrimh
Central Statistics Office

# Standard SIMS Report:

## Community Innovation Survey (CIS)

# Single Integrated Metadata Structure (SIMS) Report

# For

# Community Innovation Survey (CIS)

This documentation applies to the reporting period:
**2020 – 2022 inclusive**

Last edited: 18/06/2024

# 1 Table of Contents


1 Table of Contents ... 3
2 Introduction ... 6
3 Contact ... 6
4 Metadata Update ... 6
4.1 Metadata last certified ... 6
4.2 Metadata last posted ... 6
4.3 Metadata last update ... 6
5 Statistical Presentation ... 7
5.1 Data Description ... 7
5.2 Classification System ... 7
5.3 Sector Coverage ... 7
5.3.1 Main Economic Sectors Covered -NACE Rev 2 ... 7
5.3.2 Sector Coverage – Size Class ... 8
5.4 Statistical Concepts and definitions ... 9
5.5 Statistical Unit ... 9
5.6 Statistical Population ... 9
5.7 Reference Area ... 10
5.8 Time Coverage ... 10
5.8.1 Participation in the CIS Waves ... 10
5.9 Base period ... 10
6 Unit of Measure ... 10
7 Reference Period ... 10
8 Institutional Mandate ... 11
8.1 Legal Acts and other agreements ... 11
8.1.1 National legislation ... 11
8.2 Data Sharing ... 11
9 Confidentiality ... 11
9.1 Confidentiality – policy ... 11
9.2 Confidentiality – data treatment ... 11
10 Release Policy ... 12
10.1 Release Calendar ... 12
10.2 Release calendar access ... 12
10.3 User access ... 12
11 Frequency of Dissemination ... 12
12 Accessibility and clarity ... 12
12.1 News release ... 12
12.1.1 Availability of the releases ... 12
12.2 Publications ... 13
12.3 On-line database ... 13
12.3.1 AC 1. Data tables - consultations ... 13
12.4 Micro-data Access ... 13
12.4.1 Dissemination of Microdata ... 13
12.5 Other ... 13
12.5.1 AC2. Metadata consultations ... 13
12.6 Documentation on Methodology ... 13
12.6.1 AC3 – Metadata completeness – rate ... 14
12.7 Quality Documentation ... 14
13 Quality Management ... 14
13.1 Quality Assurance ... 14
13.2 Quality Assessment ... 14
14 Relevance ... 14
14.1 User Needs ... 14
14.1.1 Main National Users ... 15
14.1.2 Principal External Users ... 15
14.1.3 Needs at National Level ... 15

14.2 User Satisfaction ..... 15
14.3 Data Completeness ..... 15
14.3.1 Data Completeness rate ..... 15
15 Accuracy and reliability ..... 15
15.1 Overall accuracy ..... 15
15.2 Sampling Error ..... 15
15.2.1 A1. Sampling error indicator ..... 16
15.2.2 Variance Estimation Method ..... 16
15.3 Non-sampling Error ..... 16
15.3.1 Coverage error ..... 16
15.3.2 Measurement error ..... 16
15.3.3 Non-Response Error ..... 17
15.3.4 Processing error ..... 18
15.3.5 Model assumption error ..... 18
16 Timeliness and punctuality ..... 18
16.1 Timeliness ..... 18
16.1.1 TP1. Time lag – First results ..... 18
16.1.2 TP2. Time lag – Final results ..... 18
16.2 Punctuality ..... 19
16.2.1 TP3. Punctuality – Punctuality - delivery and publication ..... 19
17 Comparability ..... 19
17.1 Comparability – Geographical ..... 19
17.1.1 CC1. Asymmetry for mirror flow statistics ..... 19
17.1.2 National Questionnaire – compliance with Eurostat model questionnaire ..... 19
17.1.3 National Questionnaire – additional questions ..... 19
17.2 Comparability over time ..... 20
17.2.1 Length of Comparable Time series ..... 20
17.3 Coherence – cross domain ..... 20
17.3.1 Coherence – Sub annual and annual statistics ..... 20
17.3.2 Coherence with National Accounts ..... 20
17.3.3 Coherence with Structural Business Statistics (SBS) ..... 20
17.4 Coherence – internal ..... 21
18 Cost and Burden ..... 21
19 Data Revision ..... 21
19.1 Data Revision Policy ..... 21
19.2 Data Revision Practice ..... 21
19.2.1 Data Revision – Average size ..... 21
20 Statistical processing ..... 21
20.1 Source Data ..... 21
20.1.1 Population and sampling frame (or census frame) ..... 22
20.1.2 Sampling design ..... 22
20.1.3 Survey size (Target population and Sample size) ..... 22
20.1.4 Data source for pre-filled variables ..... 22
20.1.5 Data source and variables used for derivation and weighting ..... 22
20.1.6 Survey technique ..... 23
20.2 Frequency of data collection ..... 23
20.3 Data Collection ..... 23
20.3.1 Type of Survey/Process ..... 23
20.3.2 Combination of sample survey and census data ..... 23
20.3.3 Census criteria ..... 23
20.3.4 Questionnaire (including explanations) ..... 23
20.3.5 Survey Participation ..... 24
20.3.6 Data Capture ..... 24
20.3.7 Data collection method ..... 24
20.4 Data Validation ..... 24
20.5 Data Compilation ..... 25
20.5.1 Imputation (for Non-Response or Incomplete Data Sets) ..... 25

20.5.2 Grossing and Weighting ..... 25
20.5.3 Weights calculation ..... 25
20.6 Adjustment ..... 26
Regional data uses the NUTS regions for Ireland ..... **Error! Bookmark not defined.**
20.6.1 Seasonal Adjustment ..... 26
21 Comment ..... 26

# 2 Introduction

The Community Innovation Survey (CIS), also known as Innovation in Irish Enterprises (IIE) is a biennial survey whose primary subject is to collect information regarding innovation statistics in Ireland and other EU Member States.

The survey covers Industry and selected Services sector enterprises with 10 or more persons engaged.

# 3 Contact


| | |
|---|---|
| **Contact Organisation:** | Central Statistics Office |
| **Contact Organisation Unit:** | Structural Business Statistics |
| **Contact Name:** | Devin Zibulsky (Analysis & Publications)<br>Tony Zheng (Data collection) |
| **Contact person function:** | Statistician |
| **Contact Mail address:** | Central Statistics Office<br>Skehard Road<br>Cork<br>T12 X00E |
| **Contact email address:** | Business_stats@cso.ie |
| **Contact Phone Number:** | (+353) 21 453 5000 |
| **Contact Fax Number:** | |


# 4 Metadata Update

## 4.1 Metadata last certified

18/06/2024

## 4.2 Metadata last posted

18/06/2024

## 4.3 Metadata last update

18/06/2024

# 5 Statistical Presentation

## 5.1 Data Description

The Community Innovation Survey (CIS) is a survey about innovation activities in enterprises. The survey is designed to collect information on different types of innovation, various aspects of the development of an innovation, objectives of innovation activities, sources of information, and public funding or expenditure on innovation. Its aim is to measure the innovativeness of sectors and enable the analysis of the factors of innovation.
The latest version of the survey collects information about product and process innovation, as well as organisational and marketing innovations and other key variables during the three-year period 2020-2022 inclusive. Most questions cover new or significantly improved goods or services or the implementation of new or significantly improved processes, logistics or distribution methods.

The CIS provides statistics by type of innovators, economic activities and size class of enterprises. The survey is currently carried out every two years across the EU Member States, EFTA countries and EU candidate countries.

## 5.2 Classification System

Indicators related to the enterprises are classified by country, economic activity (NACE Rev. 2), size class of enterprises, NUTS 2 region, and type of innovation.

The main typology of classification of enterprises in reference to innovation is the distinction between innovation-active enterprises (INN) and not innovation-active enterprises (NINN).
The enterprise is considered as innovative (INN) if during the reference period it successfully introduced a product or business process innovation, had ongoing innovation activities, abandoned innovation activities, or was engaged in in-house R&D or R&D contracted out. Non-innovative (NINN) enterprises had no innovation activity mentioned above whatsoever during the reference period.

## 5.3 Sector Coverage

CIS covers main economic sectors according to NACE Rev.2 broken down by size class of enterprises and type of innovation activity.

### 5.3.1 Main Economic Sectors Covered -NACE Rev 2

In accordance with Commission Regulation 2019/2152 on business statistics, the following industries and services are included in the core target population. Results are made available with these following breakdowns:

**All NACE** – Core NACE (NACE Rev. 2 sections & divisions B-C-D-E-46-H-J-K-71-72-73 )

**CORE INDUSTRY (excluding construction) (NACE Rev. 2 SECTIONS B_C_D_E)**
10-12: Manufacture of food products, beverages and tobacco
13-15: Manufacture of textiles, wearing apparel, leather and related products
16-18: Manufacture of wood, paper, printing and reproduction
20: Manufacture of chemicals and chemical products
21: Manufacture of basic pharmaceutical products and pharmaceutical preparations
19-22: Manufacture of petroleum, chemical, pharmaceutical, rubber and plastic products
23: Manufacture of other non-metallic mineral products
24: Manufacture of basic metals
25: Manufacture of fabricated metal products, except machinery and equipment
26: Manufacture of computer, electronic and optical products
25-30: Manufacture of fabricated metal products (except machinery and equipment), computer, electronic and optical products, electrical equipment, motor vehicles and other transport equipment

31-33: Manufacture of furniture; jewellery, musical instruments, toys; repair and installation of machinery and equipment

**D: ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY**

**E: WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES**
36: Water collection, treatment and supply
37-39: Sewerage, waste management, remediation activities

**CORE SERVICES (NACE Rev. 2 sections & divisions 46-H-J-K-71-72-73** (NACE code in the tables = G46-M73_INN)
46: Wholesale trade, except of motor vehicles and motorcycles

**H: TRANSPORTATION AND STORAGE**
49-51: Land transport and transport via pipelines, water transport and air transport
52-53: Warehousing and support activities for transportation and postal and courier activities

**J: INFORMATION AND COMMUNICATION**
58: Publishing activities
61: Telecommunications
62: Computer programming, consultancy and related activities
63: Information service activities

**K: FINANCIAL AND INSURANCE ACTIVITIES**
64: Financial service activities, except insurance and pension funding
65: Insurance, reinsurance and pension funding, except compulsory social security
66: Activities auxiliary to financial services and insurance activities

**M: PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES**
71: Architectural and engineering activities; technical testing and analysis
72: Scientific research and development
73: Advertising and market research
71-73: Architectural and engineering activities; technical testing and analysis; Scientific research and development; Advertising and market research

#### 5.3.1.1 Main Economic Sectors Covered – NACE Rev 2.- National Particularities

None.

### 5.3.2 Sector Coverage – Size Class

In accordance with Commission Regulation 995/2012 on innovation statistics, the following size classes of enterprises according to number of employees are included in the core target population of the CIS:

- 10 - 49 employees
- 50 - 249 employees
- 250 or more employees

#### 5.3.2.1 Sector Coverage – Size Class – National Particularities

No deviations

## 5.4 Statistical Concepts and definitions

**PRODUCT INNOVATION:**
The market introduction of a new or a significantly improved good or service with respect to its capabilities, user friendliness, components or sub-systems. The product innovation could either be new to the market or new to the firm.

**PROCESS INNOVATION:**
The implementation of a new or significantly improved production process, distribution method, or support activity for goods and services. The process innovation could either be new to the market or new to the firm.

**NEW TO MARKET INNOVATION:**
An innovation activity, which saw the introduction of a new or significantly improved good or service by the firm onto its operating market before other competitors.

**NEW TO FIRM INNOVATION:**
An innovation activity which saw the introduction of a new or significantly improved good or service to the firm, and which was already available from competitors in the operating sector.

**INNOVATION EXPENDITURE:**
Spending on activities to support and implement production or process innovations.

**ORGANISATIONAL INNOVATION:**
The implementation of new or significant changes in firm structure or management methods that are intended to improve your firm's use of knowledge, the quality of your goods and services or the efficiency of work flows.

**MARKETING INNOVATION:**
The implementation of a new marketing concept or strategy that differs significantly from your enterprise's existing marketing methods and which has not been used before. It requires significant changes in product design or packaging, product placement, product promotion or pricing.

**TECHNOLOGICAL INNOVATION:**
Technological innovations comprise new products or processes, whether ongoing or abandoned during the survey period.

**NON TECHNOLOGICAL INNOVATION:**
Non Technological innovations refer to either organisational or marketing innovations.

Further description of concepts, definitions and main statistical variables is available in CIS 2018 European metadata file (ESMS) Results of the community innovation survey 2018 (CIS2018) (inn_cis11) in Eurostat database available at this link https://ec.europa.eu/eurostat/cache/metadata/en/_cis11_esms.htm

## 5.5 Statistical Unit

The main statistical unit is the enterprise.

## 5.6 Statistical Population

CIS2022 is conducted under Commission Regulation No 2019/2152. This Regulation defines the mandatory target population of the survey referring to enterprises in the Core NACE economic sectors (see section 3.3.) with at least 10 employees. Further activities may be covered on a voluntary basis in national datasets. Most statistics are based on the 3-year reference period (t, t-1, t-2), but some use only one calendar year (t or t-2).

## 5.7 Reference Area

Results are not broken down by region. The results (at 2-digit NACE level) are available at a national level only.

## 5.8 Time Coverage

2003-2022 Several rounds of Community Innovation Survey have been conducted so far at two-year interval since end of 90s.

### 5.8.1 Participation in the CIS Waves

| CIS wave | Reference Period | Participation | Comment Deviation from Reference period |
|---|---|---|---|
| CIS2 | 1994-1996 | Yes | Conducted by a different Irish organisation called Forfás |
| CIS3 | 1998-2000 | Yes | Conducted by a different Irish organisation called Forfás |
| CIS Light | 2002-2003* | Yes | Conducted by a different Irish organisation called Forfás |
| CIS4 | 2002-2004 | Yes | Conducted by a different Irish organisation called Forfás |
| CIS 2006 | 2004-2006 | Yes | |
| CIS 2008 | 2006-2008 | Yes | |
| CIS 2010 | 2008-2010 | Yes | |
| CIS 2012 | 2010-2012 | Yes | |
| CIS 2014 | 2012-2014 | Yes | |
| CIS 2016 | 2014-2016 | Yes | |
| CIS 2018 | 2016-2018 | Yes | |
| CIS 2020 | 2018-2020 | Yes | |
| CIS 2022 | 2020-2022 | Yes | |

*Two reference periods can be distinguished for CIS light: 2002-2002 and 2001-2003

## 5.9 Base period

Not applicable.

# 6 Unit of Measure

Results are generally expressed as performing enterprises as a percentage of the enterprise population. In addition, monetary amounts are used to present results related to innovation expenditure expenditure.

# 7 Reference Period

2020 – 2022 inclusive. For CIS 2022, the time covered by the survey is the 3-year period from the beginning of 2020 to the end of 2022 Some questions and indicators refer to one year — 2022.

The list of indicators covering the 3-year period and referring to one year according to the HDC is available in the Annex section of the European metadata (ESMS)
https://ec.europa.eu/eurostat/cache/metadata/en/inn_cis11_esms.htm

# 8 Institutional Mandate

## 8.1 Legal Acts and other agreements

CIS surveys are based on the Commission Regulation No 2019/2152, implementing Decision No 1608/2003/EC of the European Parliament and of the Council on the production and development of Community statistics on science and technology.

This Regulation establishes innovation statistics on a statutory basis and makes the delivery of certain variables compulsory e.g., innovation activities, cooperation, development, expenditures and turnover (see the Regulation). Each survey wave may additionally include further variables.

In addition, the Regulation defines the obligatory cross-coverage of economic sectors and size class of enterprises.

### 8.1.1 National legislation

A Statutory Instrument is used for each CIS wave. CIS 2020-2022 is carried out under S.I. No. 223/2023 – Statistics (Community Innovation Survey) Order 2023
https://www.irishstatutebook.ie/eli/2023/si/223/made/en/print

## 8.2 Data Sharing

Not applicable.

# 9 Confidentiality

## 9.1 Confidentiality – policy

All information supplied to the CSO is treated as strictly confidential. The Statistics Act, 1993 sets stringent confidentiality standards: Information collected may be used only for statistical purposes, and no details that might be related to an identifiable person or business undertaking may be divulged to any other government department or body.

These national statistical confidentiality provisions are reinforced by the following EU legislation: Council Regulation (EC) No 223/2009 on European statistics for data collected for EU statistical purposes. Further details are outlined in the CSO's Code of Practice on Statistical Confidentiality.

For more information on the CSO confidentiality policy please visit:
https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/statisticalconfidentiality/

## 9.2 Confidentiality – data treatment

In line with Section 33 of the Statistics Act, 1993 all data are treated as strictly confidential. In order to ensure confidentiality, results are produced at NACE sectional level. Appropriate confidentiality checking is run on data and as per the usual CSO requirements.

The three main rules used are:

1) fewer than 3 enterprises in a cell
2) one enterprise has 80% share
3) top two enterprises have 90% share,

We will then make certain cells secondary confidentiality where this is primary confidentiality issues.

# 10 Release Policy

## 10.1 Release Calendar

The date of dissemination of all statistics released by CSO can be found in the Release Calendar published in CSO.ie. This calendar is regularly updated.

## 10.2 Release calendar access

The release calendar can be accessed via the CSO website, www.cso.ie, or directly from this link: https://www.cso.ie/en/csolatestnews/releasecalendar/

## 10.3 User access

In accordance with Principle 6 of the European Statistics Code of Practice all users of CSO statistics have equal access via the CSO website at the same time of 11 am. Any privileged pre-release access to any outside user is limited, controlled and publicised. In the event that leaks occur, pre-release arrangements are revised so as to ensure impartiality.

The CSO recognises that in very limited circumstances a business need for pre-release access may be substantiated. Any form of pre-release access is a privilege and a strict CSO pre-release access policy is adhered to for these special requests. The full pre-release access policy can be accessed at https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/csopolicyonpre-releaseaccess/

The various results are published nationally in statistical release format as well as on the CSO website (www.cso.ie). Selected extracts from the results are posted on the CSO's data dissemination database, PxStat.

# 11 Frequency of Dissemination

CIS is conducted and disseminated at two-year interval in even years.

# 12 Accessibility and clarity

## 12.1 News release

There is no news release associated with Community Innovation Survey.

### 12.1.1 Availability of the releases

| Dissemination and access | Availability | Comments, links, ... |
|---|---|---|
| Press release | No press release for CIS 2020-2023 | n/a |
| Access to public free of charge | Yes | https://www.cso.ie/en/statistics/technologyandinnovation/innovationinirishenterprises/ |
| Access to public restricted (membership/password/part of data provided, etc) | Research Microdata Files for approved users | https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/dataforresearchers/rmfapplicationprocedure/ |

## 12.2 Publications

The published release can be found in the CSO website or directly from this link
https://www.cso.ie/en/statistics/technologyandinnovation/innovationinirishenterprises/

## 12.3 On-line database

The data tables associated to this release can be found in the CSO's dissemination database PxStat. They are available directly from these links.

- Innovation in Irish Enterprises NACE Sector https://data.cso.ie/product/iiens
- Innovation in Irish Enterprises Persons Engaged https://data.cso.ie/product/IIEPE
- Innovation in Irish Enterprises Nationality of Ownership https://data.cso.ie/product/iieno

### 12.3.1 AC 1. Data tables - consultations

Not calculated.

## 12.4 Micro-data Access

Microdata access is available and researchers can apply using the following guidelines
https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/dataforresearchers/rmfapplicationprocedure/

### 12.4.1 Dissemination of Microdata

| Mean of Dissemination | Availability of Microdata | Comments, Links… |
|---|---|---|
| Eurostat SAFE Centre | | |
| National SAFE Centre | | |
| Eurostat: Partially Anonymised data | | |
| National: Partially Anonymised data | Yes | https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/dataforresearchers |

## 12.5 Other

Specific user requests are acceded to where possible, and where confidentiality issues do not arise.

Data which is submitted to Eurostat can be viewed at:
Community Innovation Survey

### 12.5.1 AC2. Metadata consultations

Not calculated.

## 12.6 Documentation on Methodology

CIS 2022 concepts and its underlying methodology are based on the Oslo Manual (2018) 4th Edition
https://www.oecd.org/science/oslo-manual-2018-9789264304604-en.htm

Further information on the methodology that applies to this release can be found in the CSO's methods page:
https://www.cso.ie/en/methods/scienceandtechnology/innovationinirishenterprisesformerlyknownascommunityinnovationsurvey/

#### 12.6.1 AC3 – Metadata completeness – rate

Not calculated.

### 12.7 Quality Documentation

Further information on the quality documentation associated with this output can be found on the Methods page in cso.ie
https://www.cso.ie/en/methods/scienceandtechnology/innovationinirishenterprisesformerlyknownascommunityinnovationsurvey/

## 13 Quality Management

### 13.1 Quality Assurance

**Quality Management Framework**
The CSO avails of an office wide Quality Management Framework (QMF). This framework allows all CSO processes and outputs to meet the required standard as set out in the European Statistics Code of Practice (ESCOP). The QMF foundations are based on establishing the UNECE's Generic Statistical Business Process Model (GSBPM) as the operating statistical production model to achieve a standardised approach to Quality Management. All and any changes implemented to CSO processes and outputs require adherence to the QMF.

### 13.2 Quality Assessment

Coefficient of variation (%) for key variables by NACE categories and for enterprises with 10 and more H

| NACE | Size class | (1) | (2) | (3) |
|---|---|---|---|---|
| Core NACE (B-C-D-E-46-H-J-K-71-72-73) | Total | | | |
| Core industry (B_C_D_E - excluding construction) | Total | | | |
| Core Services (46-H-J-K-71-72-73) | Total | | | |

[1] = Coefficient of variation for the percentage of innovative enterprises (INN) in the total population of enterprises (ENT20)
[2] = Coefficient of variation for the turnover of product innovative enterprises with new or improved products (TUR_PRD_NEW_MKT), as a percentage of total turnover of product innovative enterprises [TUR20,INNO_PRD].
[3] = Coefficient of variation for percentage of product and/or process innovative enterprises (incl. enterprises with abandoned and or on-going activities) involved in any innovation co-operation arrangement [COOP_ALL,INN], as a percentage of innovative enterprises (INN).

## 14 Relevance

### 14.1 User Needs

In the National Statistics Board Strategy for Statistics 2003- 2008, the Boards articulated a medium-term strategy to support the development of Ireland's statistical system. In particular, the Board in conjunction with a CSO Expert Group produced a 'Policy Needs for Statistical Data on Enterprises' report in November 2005.
This report included a specific recommendation (recommendation 13) that the Community Innovation Survey should be jointly conducted by the CSO and Forfás. The 5th (2004-2006), 6th (2006-2008) and 7th

(2008-2010) editions of the survey were thus jointly conducted by CSO/Forfás. Since the 8th (2010-2012) edition, the CSO now solely conducts the CIS.

Results are primarily used to inform policy makers with regard to data on innovation indicators.

#### 14.1.1 Main National Users

- Department of Enterprise, Trade, and Employment (formerly Department of Jobs, Business and Innovation and Forfás)
- Other Departments
- Other agencies and interest groups
- General public

#### 14.1.2 Principal External Users

- Eurostat

#### 14.1.3 Needs at National Level

| User Group | Short Description of user group | Main Needs For CIS data of the User Group Users' needs |
|---|---|---|
| Social Actors | An enterprise statistics liaison group (ESLG) An annual meeting with key stakeholders to allow for feedback | Research department need to update innovation data |

### 14.2 User Satisfaction

No user satisfaction survey was conducted.

### 14.3 Data Completeness

There are no data completeness issues. Data for all compulsory variables are collected and transmitted to Eurostat.

#### 14.3.1 Data Completeness rate

100%

## 15 Accuracy and reliability

### 15.1 Overall accuracy

Response rate and non-response bias are factors that can impact overall data accuracy. Responses from large enterprises can have a major impact on grossing and reported figures, and survey non-response can cause a high degree of variability over time.

### 15.2 Sampling Error

A representative sample is taken of all enterprises with 10 to 49 persons engaged and a full census of enterprises with 50+ persons engaged is also taken. Some editing of the sample takes place to remove duplicates or enterprises that have ceased trading.
Eurostat determines the target population. The core NACE categories generally remain consistent across each survey. Every effort is made to ensure that there are a sufficient number of responses in each cell to be representative of the sample and to ensure that confidentiality is maintained.

### 15.2.1 A1. Sampling error indicator

The main indicator used to measure sampling errors for CIS data is the coefficient of variation (CV).

### 15.2.2 Variance Estimation Method

The formula used to calculate the variances is:

Coefficient of Variation= (Square root of the estimate of the sampling variance) / (Estimated value)

## 15.3 Non-sampling Error

Non sampling errors for this release arise mainly from register coverage issues, measurement errors and non-response. Details on each of those are specified below.

### 15.3.1 Coverage error

The Central Business Register in CSO is used as the frame for sampling. There may be some multiple listings (duplicates) and ceased companies when the sample is first selected. They are removed from the sample when discovered.

#### 15.3.1.1 A2. Over coverage rate

Not calculated.

#### 15.3.1.2 A3. Common units – proportion

Not calculated.

#### 15.3.1.3 Under covered groups of the target population

Not detected.

#### 15.3.1.4 Coverage errors in coefficient variation

Not calculated

### 15.3.2 Measurement error

Measurement Error is not formally calculated for the survey.

#### 15.3.2.1 Measures for reducing measurement errors

Even though these errors are not calculated, CSO takes a number of steps to reduce any such errors

a) Questionnaire - we ensure that the questionnaire is clear with definitions provided where appropriate. The majority of questions are tick box style questions which makes the form easier to complete.

b) Data collection method - there is only 1 data collection method: by electronic questionnaire (eQ). This method is unlikely of itself to be a source of measurement error and because of validations which are part of the e-form, this method of return is likely to reduce potential errors

c) Respondent - survey data can contain sensitive and confidential information. The form makes reference to Section 33 of the Statistics Act, 1993 guaranteeing the confidentiality of all data returned to ensure that respondents are not reluctant to provide accurate information.

d) Where monetary values are returned for In-house R&D expenditure in the CIS, comparison is made to the estimated in-house expenditure returned in the previous Business Expenditure on Research & Development Survey and where significant changes in data arise, it is queried with the enterprise thereby reducing measurement error.

### 15.3.3 Non-Response Error

**Unit non-response** – The response rate for the Community Innovation Survey 2020-2022 was 55.3%. The main reasons for unit non-response are as follows:

1. Company Gone-Away from the address on the survey form
2. Duplicate – company received two forms with different reference numbers
3. Company has ceased trading
4. There is a query about the survey form
5. Company refuses to respond

The section investigates these issues and resolves them as appropriate e.g. ringing the company for confirmation of information, removing the company from the survey, etc.

**Item non-response** – Item non- response is not formally measured in the survey. Where a part of the form is not completed the following is done:

1. An attempt is made to automatically update the form using edit checks.
2. A manual check to see if the variable was captured in the last running of the survey for the particular enterprise in question and if the answer can be reused.
3. Reference is made depending on the variable in question to see if information is available from the latest Business Expenditure on Research and Development (BERD) survey.
4. Missing values estimated using averages from other responding enterprises by NACE and employment size
5. Contact enterprise to confirm the details on the survey form.

#### 15.3.3.1 Unit non-response rate

| NACE | Number of eligible units with no response | Total number of eligible units in the sample | Un-weighted unit non-response rate (%) | Weighted non-response rate |
|---|---|---|---|---|
| Core NACE (B-C-D-E-46-H-J-K-71-72-73) | | | 55.3% | |
| Core industry (B_C_D_E - excluding construction) | | | | |
| Core Services (46-H-J-K-71-72-73) | | | | |

There were in total 4 reminders issued.

#### 15.3.3.2 Item non-response rate

Item non-response rate for Turnover (in Core NACE: B-C-D-E-46-H-J-K-71-72-73 enterprises with 10 or more employees).

| | Item non response rate (unweighted) | Imputation | If imputed, describe method used, mentioning which auxiliary information or stratification is used |
|---|---|---|---|
| Turnover | 0 | | In order to reduce burden, data on turnover for enterprises sampled in this survey is collected from various sources including SBS, administrative data, Business register and other business surveys |

### 15.3.4 Processing error

Responses are received via online forms so the risk of processing errors arising from manipulating questionnaires is low.

Data Edits are run which check for the following:

- That all the relevant questions have been answered
- There is internal consistency in answers within the form

If the edit cannot be resolved locally, then the enterprise is contacted to confirm the returned data. The return is manually changed if required.

NACE Code and NACE division are linked to the enterprise number as part of the original register information. This means that the possibility of a NACE misclassification error is very low.

### 15.3.5 Model assumption error

There is no formal imputation for non-response. However, use is made of imputation for both unit and item non-response on a manual basis from data held by CSO for previous returns (e.g. CIS 2018-2020 and BERD 2021-2022).

In the absence of any other source for missing monetary amounts in the case of research and development expenditure, missing values are estimated using averages from other responding enterprises by NACE and employment size. The grossing factors are verified by comparing the grossed values for turnover and employment to the latest available results of the Census of Industrial Production (CIP) and Annual Services Inquiry (ASI).

# 16 Timeliness and punctuality

## 16.1 Timeliness

Final results were produced 18 months from the end of the reference period.

### 16.1.1 TP1. Time lag – First results

Not applicable.

### 16.1.2 TP2. Time lag – Final results

18 months from the end of the reference period

## 16.2 Punctuality

The release of the IIS was originally scheduled for the 15/5/2024 however it was finally published on the 20/06/2024

### 16.2.1 TP3. Punctuality – Punctuality - delivery and publication

Delivery was made on time. Publication was delayed by approximately one month.

# 17 Comparability

## 17.1 Comparability – Geographical

In order to ensure comparability across countries, Eurostat together with the countries developed a Harmonised Data Collection (HDC) questionnaire accompanied by a set of definitions and methodological recommendations.

CIS 2022 concepts and its underlying methodology are based on the Oslo Manual (2018) 4th Edition.

The review of the CIS 2022 aimed to meet several objectives:

1. Reduce subjectivity and biases in the main CIS indicators
2. Improve reporting about innovation activities and capabilities in the firm
3. Ensure international comparability (including compliance with the OM4)
4. Broaden the basis CIS information on enterprise management
5. Take better account the diversity of enterprises in the EU
6. Improve reporting about external drivers and enablers of innovation
7. Improve timeliness
8. Ensure the feasibility of data collection
9. Ensure continuity with the CIS 2020
10. Improve reporting about the output and impact of innovation

### 17.1.1 CC1. Asymmetry for mirror flow statistics

Not applicable.

### 17.1.2 National Questionnaire – compliance with Eurostat model questionnaire

Methodological deviations from the CIS Harmonised Data Collection (HDC)

| Questions not included in national questionnaire compared to HDC | Comment |
|---|---|
| All compulsory harmonised questions asked | The following optional questions were not asked: |
| Yes | |

| Changes in the filtering compared to HDC | Comment |
|---|---|
| No | |

### 17.1.3 National Questionnaire – additional questions

Methodological deviations from the CIS Harmonised Data Collection (HDC)

| Additional questions in national questionnaire (not included in HDC) | Comment |
|---|---|
| None | |

## 17.2 Comparability over time

The Community Innovation Survey (CIS) for 2004-2006 survey was carried out using the business classification NACE Rev 1.1. The business classification used for CIS 2006-2008, onwards has been NACE Rev 2. As a result, a break in series was declared between results of the CIS2006-2008 and previous results from the CIS and no conclusions should be drawn regarding the direction or scale of any real changes between CIS 2004-2006 (CIS5) and CIS 2006-2008 (CIS6).

CIS 2006-2008 onwards are based on NACE Rev.2 and are therefore comparable. In addition, as a standardised survey is carried out across all member states of the European Union, results can be compared and cross referenced against other states.

Due to important methodological changes in CIS 2018 driven by Oslo Manual 2018, the data from 2018 onwards cannot be directly compared with previous CIS waves.

### 17.2.1 Length of Comparable Time series

The most recently time series that is comparable consists of the last 3 iterations, 2016-2018, 2018-2020, 2020-2022.

## 17.3 Coherence – cross domain

Turnover and employment figures generated by the grossing exercise are compared to results from the Census of Industrial Production (CIP) and the Annual Services Inquiry (ASI) for those NACE codes where results were available. Where results deviate from expected results, data is reviewed and updated if required. In general, there are no directly comparable results available for comparison, and there are no directly comparable short-term results.

### 17.3.1 Coherence – Sub annual and annual statistics

Not applicable.

### 17.3.2 Coherence with National Accounts

Not applicable

### 17.3.3 Coherence with Structural Business Statistics (SBS)

This part compares key variables for aggregated CIS data with SBS data

Definition of relative difference between CIS and SBS data: DIFF = (SBS/CIS)*100

Comparison between SBS and CIS data (relative difference) by NACE categories and for enterprises with 10 or more employees: **Not available**

| NACE | Size class | Number of enterprises (SBS/CIS)* | Number of employees (SBS/CIS)* | Total Turnover (SBS/CIS)* |
|---|---|---|---|---|
| **Core NACE (B-C-D-E-46-H-J-K-71-72-73)** | **Total** | Not available | Not available | Not available |
| **Core industry (B_C_D_E - excluding construction)** | **Total** | | | |
| **Core Services (46-H-J-K-71-72-73)** | **Total** | | | |

### 17.4 Coherence – internal

Not applicable.

## 18 Cost and Burden

Estimates of Cost and Burden can be obtained from the Response Burden Barometer
https://www.cso.ie/en/statistics/multisectoral/responseburdenbarometer/

Survey specific information is available via CSO's dissemination database PxStat.
https://data.cso.ie/product/RBB

## 19 Data Revision

### 19.1 Data Revision Policy

Revisions refer to changes made to published statistical data when the information used in its production has been updated or corrected. This information includes all data used in compiling the statistic e.g. respondent data, administrative data, weights and factors, methodology, classifications, definitions, modifications to survey questionnaires, survey scope and data collection methods. The data revision policy that CSO statistics adheres to can be found via the following link:
https://www.cso.ie/en/methods/quality/treatmentofrevisions/

### 19.2 Data Revision Practice

Not applicable.

#### 19.2.1 Data Revision – Average size

Not applicable.

## 20 Statistical processing

### 20.1 Source Data

The data was collected via electronic web questionnaire between 18/6/2023 and 22/12/2023

Supplementary information was used from the following sources:

- CSO Business Register data
- CSO Structural Business Statistics (SBS) data

- CSO Business Expenditure on Research and Development (BERD) survey data

### 20.1.1 Population and sampling frame (or census frame)

The sampling Frame is taken from the Central Business Register.

The survey population is made of all relevant enterprises as laid down in the Eurostat Regulation. This consists of all enterprises in NACE Rev 2 sectors 05-39, 46, 49-53, 58- 63, 64-66, 71-73 with 10+ persons engaged.

### 20.1.2 Sampling design

The frame population is subdivided into strata at 2-digit NACE by employment size class: namely enterprises with 10 to 49 persons engaged, 50 to 249 persons engaged and 250+ persons engaged.

A census is conducted of all enterprises with 50 or more persons engaged, while a census is also conducted for certain strata in the less than 50 persons engaged category where the number of enterprises in the strata is low.

Finally, a sample of enterprises is taken for those remaining enterprises with less than 50 persons engaged that are not included in the census. Neyman allocation is used to select the sampling fraction in each of these remaining strata. The actual enterprises selected are selected using random selection.

### 20.1.3 Survey size (Target population and Sample size)

Data is collected through a combination of both census and sample

| Sample/census indicator | Number of Enterprises |
|---|---|
| Target population | 2465 |
| Sample | 4455 |
| **In case of combination sample/census** | |
| Sampled units | |
| Enumerated units/census | |
| Overall sample rate (overall sample/target population | 55.3% |

### 20.1.4 Data source for pre-filled variables

Variables and indicators filled or prefilled from other sources.

| Variables/Indicators | Source | Reference year |
|---|---|---|
| Turnover | SBS | 2021 |
| | Business Register | 2021 |
| | Corporation Tax returns (admin data) | 2022 |
| | Companies Registration Office (CRO) (admin data) | 2022 |

### 20.1.5 Data source and variables used for derivation and weighting

| Item | Response |
|---|---|
| Data source used for deriving population totals | Our Business Register is used to derive the population for the sample. |
| Variables used for weighting | Weighting is not used for the derivation of results |

#### 20.1.6 Survey technique

The 2020–2022 survey was only available for completion on the CSO website as an e-form. This data is captured by the CSO's Data Management System (DMS), where it can be viewed and amended as required. SAS programs are used for the transfers and management of the survey.

## 20.2 Frequency of data collection

According to the Commission Regulation (UE) 2019/2152, the innovation statistics shall be provided to Eurostat every two years in each even year. The data collection takes place every second year in year t-2 preceding the data provision.

## 20.3 Data Collection

Web survey
https://www.cso.ie/en/media/csoie/methods/communityinnovationsurvey/CIS_2022_Paper_Spec_post_eQ-en-IE.pdf

#### 20.3.1 Type of Survey/Process

The survey is a combination of stratified random sampling and census. No administrative data sources are used.

#### 20.3.2 Combination of sample survey and census data

A census is conducted of all enterprises with 50 or more persons engaged, while a census is also conducted for certain strata in the less than 50 persons engaged category where the number of enterprises in the strata is low. Finally, a sample of enterprises is taken for those remaining enterprises with less than 50 persons engaged that are not included in the census.

#### 20.3.3 Census criteria

A census is conducted of all enterprises with 50 or more persons engaged, while a census is also conducted for certain strata in the less than 50 persons engaged category where the number of enterprises in the strata is low.

#### 20.3.4 Questionnaire (including explanations)

The questionnaire is available at:
https://www.cso.ie/en/methods/surveyforms/innovationinirishenterprises/

The Community Innovation Survey (CIS) collects information about product and process innovation, as well as organisational and marketing innovations and other key variables during a three-year reference period.
The principal variables collected in CIS 2020-22 relate to:

- General information about the Enterprise;
- Product Innovation, including Turnover from new to market and new to firm product
- innovations;
    - Business Process Innovation, including Process, Organisational and Marketing Innovation;
    - Ongoing and abandoned innovation;
    - Innovation activities and expenditure;
    - Innovation co-operation;
    - Factors hampering innovation activities;
    - Intellectual Property Rights;
    - Impacts of climate change;
    - Innovations with environmental benefits;

### 20.3.5 Survey Participation

Participation is compulsory under Statistics (Community Innovation Survey) Order 2023 (S.I. No. 223 of 2023) made under the Statistics Act, 1993 and with EU law.

### 20.3.6 Data Capture

The 2020–2022 survey was only available for completion on the CSO website as an e-form. This data is captured by the CSO's Data Management System (DMS), where it can be viewed and amended as required. SAS programs are used for the transfers and management of the survey.

### 20.3.7 Data collection method

| Survey method | Yes/No | Comment |
|---|---|---|
| **Face-to-face interview** | No | |
| **Telephone interview** | No | |
| **Postal questionnaire** | No | |
| **Electronic questionnaire (format Word or PDF to send back by email)** | No | |
| **Web survey (online survey available on the platform via URL)** | Yes | |
| **Other** | No | |

## 20.4 Data Validation

The data received from the survey e-forms is uploaded into DMS and edited on-screen. Multiple edit rules are set up on the DMS to check for inconsistencies in the companies' returns. Edit programs are run also on SAS software to perform checks on consistency of returns between separate questions and for an examination of returns with monetary amounts for research and development related expenditure.

The edits carried out include:

1. Where an enterprise indicates that it was engaged in product innovation new to market but did not indicate the percentage of turnover attributed to new or improved goods and services that were new to market.
2. Where an enterprise indicates that it was engaged in product innovation new to the firm but did not indicate the percentage of turnover attributed to new or improved goods and services that were new to firm.
3. Enterprises who indicates that they carried out some aspect of research and development but who did not indicate their expenditure on research and development.

A listing of all the failed edits is sorted by enterprise number and printed. The image of the form is called up on the PC screen and the reason for the edit failure is identified on the form. Each failed edit is checked for any comment on the form that may explain the failure. A limited number of returns from the previous survey data are manually compared to some returns for consistency purposes.

It should be noted that to reduce response burden automatic updates are used in general but if the edit failure cannot be resolved locally using automatic updates, then the enterprise is contacted to attempt to resolve the issue. Once all errors are amended a copy is made of the clean dataset. Reports are run during the survey period recording the number of forms returned by NACE group and employment size and to ensure that there is a response in every stratum used for grossing so that it will be possible to gross all strata. In addition, reports are run to estimate the number of edits outstanding.

## 20.5 Data Compilation

### 20.5.1 Imputation (for Non-Response or Incomplete Data Sets)

There is no formal imputation for non-response. However, use is made of imputation for both unit and item non-response on a manual basis for data held, for example, from the previous CIS and BERD 2021/2022 survey for previous returns. In the absence of any other missing data, missing values are estimated using averages from other responding enterprises by NACE and employment size. The grossing factors are verified by comparing the grossed values for turnover and employment to the latest available results of the Census of Industrial Production (CIP) and Annual Services Inquiry (ASI).

#### 20.5.1.1 A7. Imputation rate

Not calculated.

### 20.5.2 Grossing and Weighting

In the absence of any other source for missing monetary amounts in the case of research and development expenditure, missing values are estimated using averages from other responding enterprises by NACE and employment size

Grossing is performed using SAS software. Grossing factors for the CIS are calculated using the inverse of the number of valid respondents divided by the relevant population from the CBR.

There are 3 grossing factors used: the number of enterprises, persons engaged and turnover. The factors which are calculated are then applied to the survey results to gross the data up to the relevant populations. The grossing factors are verified by comparing the grossed values for turnover and employment to the latest available results of the Census of Industrial Production (CIP) and Annual Services Inquiry (ASI).

Weighting is not used for the derivation of results.

| Item | Response |
|---|---|
| Data source used for deriving population totals | Our Business Register is used to derive the population for the sample |
| Variables used for weighting | Weighting is not used for the derivation of results |

### 20.5.3 Weights calculation

| Method | Selected applied method | Comments |
|---|---|---|
| Inverse Sampling Fraction | Census: All enterprises with 50+ persons engaged. Stratified random sample: 10 to 50 persons engaged<br>(It should be noted that a census is conducted for certain strata in the less than 50 persons engaged category where the number of enterprises in the strata is low.)<br>Enterprises with less than 10 persons engaged are not surveyed. | |
| Non-Respondent Adjustments | We gross up for non response. Grossing factors for the CIS are calculated using the inverse of the number of valid respondents divided by the relevant population from | |

| | | |
|---|---|---|
| | the CBR. Grossing is calculated for strata of 2-digit NACE by employment size class.<br>There are 3 grossing factors used: the number of enterprises, persons engaged and turnover. The factors which are calculated are then applied to the survey results in order to gross the data up to the relevant populations. | |

## 20.6 Adjustment

### 20.6.1 Seasonal Adjustment

Not applicable

# 21 Comment