Report on Methods and Quality for Country of Residence Survey

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1 Overview

The Country of Residence Survey forms the basis of the results of the monthly rolling three month release Overseas Travel Release. It collects information on the country of residence of visitors entering and leaving the Republic of Ireland through the ports and airports. However, travel by residents of Northern Ireland into or out of the Republic of Ireland or domestic travel within the Republic of Ireland is excluded. It is a voluntary survey where CSO enumerators interview a sample of passengers from selected flights and sailings inwards and outwards from Ireland. Passengers are interviewed at Dublin, Cork, Shannon, Kerry and Knock Airports as well as the ports at Rosslare, Ringaskiddy, Holyhead, Dun Laoghaire and Dublin Port. Data is collected on a daily basis and results (rolling three month release) are usually published within 28 days of end of the reference period. The sample size, for example, for the three month period November 2014- January 2015 was just under 80,400 passengers. The survey population is the number of passengers on each incoming and outgoing airline and ferry route to/from Ireland. This information is supplied to the CSO by each airport authority and ferry company on a monthly basis. The principal outputs are the number of overseas trips by Irish residents and the number of overseas trips to Ireland by country of residence. It is one of several CSO surveys conducted to comply with the requirements of Regulation (EU) No 692/2011 Of The European Parliament And Of The Council of 6 July 2011 concerning European statistics on tourism and repealing Council Directive 95/57/EC. The data is also used extensively by all tourism agencies (e.g. Failte Ireland, Tourism Ireland), the National Accounts and Balance of Payments Divisions within the CSO, academia and the general pubic.

2 General Information

2.1 Statistical Category

Primary statistical survey.

2.2 Area of Activity

Tourism and Travel.

2.3 Organisational Unit Responsible, Persons to Contact

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2.4 Objectives and Purpose; History

The primary purpose of the survey is to record the country of residence of all visitors entering and leaving the Republic of Ireland. It is the survey underpinning the monthly (rolling three month) Overseas Travel release. The survey commenced in 2000 and was redesigned in 2005.

2.5 Periodicity

The survey is conducted continuously and results from the survey are published under the heading of the Overseas Travel Release on a monthly basis. The Overseas Travel Release was published on a monthly basis up to survey period June 2010. It was then published on a quarterly basis from survey period Quarter 3 2010 to Quarter 2 2011. It then changed to a monthly rolling three month release from survey period May- July 2011 to present. Each month, a representative sample of flights/sailings is selected for surveying from which a 1 in 5 systematic sample of passengers is selected and their country of residence is recorded.

2.6 Client

National Regulation (EU) No 692/2011 of the European Parliament and of the Council of 6 July 2011.

2.7 Users

- Failte Ireland.
- Tourism Ireland.
- Research centres and universities.
- International Embassies in Ireland.
- Balance of Payments section in the CSO.
- CSO Tourism & Travel release and Household Travel Survey.
- Eurostat and other International Tourism Organisations.
- Northern Ireland Tourism Board.
- The general public.

2.8 Legal basis

The survey is one of a number of CSO Tourism & Travel surveys carried out to meet the requirements of Regulation (EU) No 692/2011 of the European Parliament and of the Council of 6 July 2011.

3 Statistical Concepts, Methods

3.1 Subject of the Statistics

The subject matter is the number of overseas trips taken by Irish residents and the number of trips taken to Ireland by country of residence. A trip is defined as a journey (usually including the return) from one place to another.

The Eurostat methodology, which is applied in this survey, defines a 'Visitor' as 'any person travelling to a place other than that of his/her usual environment for less than twelve months and whose main purpose of trip is other than the exercise of an activity remunerated from within the place visited'. However, as the Country of Residence Survey does not establish the reason for an individual's trip or length of stay, those travelling for reason of remuneration or for more than one year to this country cannot be excluded. Therefore, for the purposes of this survey, 'Trips' includes those travelling for remuneration in Ireland. Commercial Drivers travelling on sea routes are excluded.

Country of residence is defined as the country in which a person has resided during the last year.

3.2 Units of Observation/Collection Units/Units of Presentation

The survey population are individuals arriving and departing on selected flights and sailings in a particular reference month. The unit of collection is the residency of these persons entering and leaving the country. All data is presented in terms of the number of trips taken to Ireland or the number taken abroad by Irish Residents.

3.3 Data Sources

All survey information at the airports/ports is obtained from individuals by interview. Population data, i.e. the total volume of passengers departing and arriving on each flight/sailing at each airport/port is obtained directly from the airports/ferry companies.

3.4 Reporting Unit/Respondents

The reporting units differ from the respondent units in that the former are the number of overseas trips taken by Irish residents and the number of trips to Ireland by country of residence. The respondents are passengers at the ports and airports from whom travel information is obtained by enumerators.

3.5 Type of Survey/Process

Sample survey.

3.6 Characteristics of the Sample/Process

3.6.1 Population and Sampling Frame

The reference population is all persons travelling through Ireland's airports and ports:

(1) the total volume of passengers on flights to and from various Irish airports broken down by route supplied by the Irish Airports.

plus

(2) The total volume of passengers on sailings to and from various Irish ports broken down by route (port to port) and type (foot or car).

3.6.2 Sampling Design

A sample of flights and sailings is selected for surveying. This selection is done in such a way as to ensure proper representation of airport/port pairing, day and night and weekday and weekend flights/sailings.

On these flights/sailings, a 1 in 5 systematic sample of passengers is selected and their country of residence is recorded.

Sample results are grossed up to total passenger numbers travelling for each airport or port pairing, as provided by the airports and ferry companies.

Where there was no coverage in a survey month for an airport to airport (e.g. Dublin-Heathrow) or port to port (e.g. Dublin-Holyhead) route, results are imputed on the basis of 'nearest neighbour'.

3.7 Survey Technique/Data Transfer

The survey is carried out using Person assisted paper interviewing (PAPI) by CSO enumerators at airports and ports as listed in Section 1. The enumerators transmit the data back to the CSO by post. Further information can be found in section 4.1

3.8 Questionnaire (including explanations)

The survey questionnaire is completed by the enumerator who interviews one in five passengers from selected flights/sailings. See Section 3.10 for details of information collected:

A copy of the questionnaire is available at the following link http://www.cso.ie/en/surveysandmethodology/tourismandtravel/

3.9 Participation in the Survey

Voluntary.

3.10 Characteristics of the Survey/Process and its Results

Data collection

The enumerator interviews one in five passengers from selected flights and sailings and the following are the main information collected by personal interview and a questionnaire (form) is completed for each flight or sailing:

- Date.
- Scheduled time of flight/sailing to be sampled.
- Direction (i.e. in or out of Ireland).
- Destination: country code and airport code.
- Stratum (combination of port, route, mode of travel and type of carrier)
- Flight or sailing type (flight scheduled/unscheduled, sailing foot/coach passengers).
- Port code.
- Residency of respondent.

The sample is then grossed according to the total passenger numbers provided by the Airport Authorities and Ferry companies. Results are published according to the principal categories listed in section 3.11.

Data published

The number of overseas trips taken by Irish residents for the reference three month period. The number of trips taken to Ireland broken down by country of residence for the reference three month period.

3.11 Classifications used

The principal categories published are

- The number of Irish trips overseas
- The total number of trips to Ireland, which is further broken down by Residency into the following
 - Trips to Ireland by residents of Great Britain
 - Trips to Ireland by residents of Other Europe
 - Trips to Ireland by residents of North America
 - Trips to Ireland to residents of Other Areas

Table 5 of the monthly release gives a further detailed breakdown of the number of trips to Ireland by residency. The main country groupings are as follows:

Other Europe Other Europe includes the following countries:

EU	
Austria	Latvia
Belgium	Lithuania
Bulgaria	Luxembourg
Cyprus	Malta
Czech Republic	Netherlands
Denmark	Poland
Estonia	Portugal
Finland	Romania
France	Slovakia
Germany	Slovenia
Greece	Spain
Hungary	Sweden
Italy	Croatia

Other countries included are:

Aland Islands Albania Andorra Belarus Bosnia and Herzegovina Faroe Islands Gibraltar Guernsey Iceland Isle of Man Jersey Liechtenstein Macedonia, the Former Yugoslav Republic of Moldova, Republic of Monaco Montenegro Norway Russian Federation San Marino Serbia Switzerland Turkey Ukraine Vatican City

North America North America includes the following countries:

Canada United States

Other Areas Other Areas includes the following groups of countries:

Africa Australia, New Zealand and Other Oceania Central, South and Other Americas Eastern Asia, Middle Asia and Other Asia

Central, South and Central, South and Other Americas includes the following countries: **Other Americas**

Anguilla Antigua and Barbuda Argentina Aruba Bahamas Barbados Belize Bermuda Bolivia Brazil Cayman Islands Chile Colombia Costa Rica Cuba Dominica Dominican Republic Ecuador El Salvador Falkland Islands (Malvinas) French Guiana Greenland Grenada Guadeloupe Guatemala Guyana Haiti

Honduras Jamaica Martinique Mexico Montserrat Nicaragua Panama Paraguay Peru Puerto Rico Saint Kitts and Nevis Saint Lucia Saint Pierre and Miquelon Saint Vincent and the Grenadines Suriname Trinidad and Tobago Turks and Caicos Islands Uruguay Venezuela Virgin Islands, British Virgin Islands, US

Africa	Africa includes the following countries:	
	Algeria Angola Benin Botswana Burkina Faso Burundi Cameroon Cape Verde Central African Republic Chad Comoros Congo Congo, the Democratic Republic of the Cote d'Ivoire Djibouti Egypt Equatorial Guinea Eritrea Ethiopia Gabon Gambia Ghana Guinea-Bissau Kenya Lesotho Liberia Libya Madagascar Malawi Mali	Mauritania Mauritius Mayotte Morocco Mozambique Namibia Niger Nigeria Reunion Rwanda Saint Helena Sao Tome and Principe Senegal Seychelles Sierra Leone Somalia South Africa South Sudan Sudan Swaziland Tanzania, United Republic of Togo Tunisia Uganda Western Sahara Zambia Zimbabwe
Eastern Asia	Eastern Asia includes the following countries: China	
	Hong Kong Japan Korea, Republic of	Korea, Democratic People's Republic of Mongolia Taiwan, Province of China
Middle East	Middle East includes the following countries:	
	Afghanistan Bahrain Iran, Islamic Republic of Iraq Israel Jordan Kuwait Lebanon	Oman Palestinian Territory, Occupied Qatar Saudi Arabia Syrian Arab Republic United Arab Emirates Yemen

Other Asia

Other Asia includes the following countries:

Armenia Azerbaijan Bangladesh Bhutan British Indian Ocean Territory Brunei Darussalam Cambodia Georgia India Indonesia Kazakhstan Kyrgyzstan Lao People's Democratic Republic Macao Malaysia Maldives Myanmar Nepal Pakistan Philippines Singapore Sri Lanka Tajikistan Thailand Timor Leste Turkmenistan Uzbekistan Vietnam

Australia, New Zealand And Oceania

Australia, New Zealand and Oceania includes the following countries: American Samoa Antarctica Australia Christmas Island Cocos (Keeling) Islands Cook Islands Fiji French Polynesia French Southern Territories Guam Heard Island and McDonald Islands Kiribati Marshall Islands Micronesia, Federated States of Nauru New Caledonia New Zealand

Niue Norfolk Island Northern Mariana Islands Palau Papua New Guinea Pitcairn Samoa Solomon Islands South Georgia and the South Sandwich Islands Svalbard and Jan Mayen Tokelau Tonga Tuvalu United States Minor Outlying Islands Vanuatu Wallis and Futuna

3.12 Regional Breakdown of Results

The enumerators do not ask passengers which regions in Ireland were visited by overseas visitors (if interviewed on departure) or which regions they plan to visit (if interviewed on arrival). For this reason regional data is not available in the Overseas Travel Release.

4 Production of the Statistics, Data Processing, Quality Assurance

4.1 Data Capture

Data is collected continually by Tourism Enumerators at all airports and ports in the State by means Personal Assisted Papering Interviewing (PAPI). The CSO enumerator enters the relevant details from respondents on a form at airports/ports. These completed forms are sent back to the Tourism and Travel Section in CSO, Cork. The forms are then scanned and verified using Teleform by members of the Tourism and Travel Section of the CSO.

4.2 Coding

The population data is received from the airports and ports. Staff in Tourism and Travel Section will code missing values for any missing codes e.g. Irish port/airport code, foreign port/airport, country code (of foreign port/airport).

The enumerators interview passengers at the ports and airports. They write this data on the CRS (Country of Residence) form and also code the form as required e.g. insert country code (of foreign port), airport/port code, airline, sailing (car or foot), country of residence code, direction (in or out). Staff in Tourism and Travel Section will insert any missing codes as required.

4.3 Data Editing

At a micro level, SAS edit programmes are run to test for inconsistencies within the data (e.g. ensuring that each foreign airport code has the correct matching country code). The corrections are done manually on the data file and these programmes are run again to ensure all inconsistencies are cleared up. At a macro level, final monthly figures are checked for plausibility against the results for previous months and also against the results for same month in the previous year.

4.4 Imputation (for Non-Response or Incomplete Data Sets)

In any given month, it is not possible to survey all flights coming in and leaving the country. As a result, the population data supplied by the airports will contain flight information for which we do not have matching sample data from the survey in that month. In such cases, the proportion of passenger numbers for each nationality is imputed.

Imputation for item non-response is carried using nearest neighbour methodology. For example, if the country of residency breakdown for the outward journey of a particular route (for example Dublin-Heathrow route) was missing from the sample data, then this figure is imputed by taking the inward residency proportions for this route/pairing. If this is not available then the next most appropriate method of imputation is selected.

4.5 Grossing and Weighting

For each month, sample results are summarised into different strata (these strata are the various combinations of Irish port, foreign port, country (of foreign port), trip type (air, sea (foot) and sea (car/coach), direction (inwards and outward) and residency grossed up to the total passenger numbers travelling for each airport or airport pairing as provided by the airport and ferry companies.

4.6 Computation of Outputs, Estimation Methods Used

The grossed figures are aggregated by country of residence and direction. The overall number of trips taken by each country of residence is taken as the average of the number of trips to and from Ireland.

Seasonally adjusted quarterly data is also available in one of the tables in the Overseas Travel release. Visitor numbers to Ireland are subject to a high degree of seasonality. To facilitate interpretation of underlying trends, visitor numbers are adjusted to remove these seasonal trends. The adjustments are completed by applying the X-12-ARIMA model, developed by the U.S. Census Bureau to the unadjusted data.

4.7 Other Quality Assurance Techniques Used

Results for each month are checked against the same month from the previous year for consistency. In analysing the results for each month, account is taken of once off events in Ireland which may cause the figures to differ substantially from the corresponding period in the previous year. Examples of this are major sporting events such as the Heineken Cup or International Rugby games.

5 Quality

5.1 Relevance

The survey is one of several surveys conducted by the CSO to satisfy EU regulatory needs. It is a monthly indicator of the number of foreign trips taken by Irish residents and of the main foreign visitor markets for Irish Tourism. The data is used extensively by Tourism agencies such as Failte Ireland and Tourism Ireland. The data is also used for compilation of National Accounts and Balance of Payments estimates for Tourism by the CSO.

5.2 Accuracy and Reliability

5.2.1. Sampling Effect & representivity

Estimation of survey results using the above sampling design introduces a statistical variability which would not be present if all passengers for every flight/sailing had been sampled. This means that the survey results are best estimates based on the information collected for the sample.

This variability is expressed by the standard error calculation. The standard error gives the relative size of the 'sampling error' (variability) present in an estimate compared with the estimate itself. In general, estimates can be said to have a relative precision of twice their standard error.

The effect of sampling error is greater for small estimates and may, in particular, make it more difficult to compare figures for different time periods.

Standard error data for most recent quarters are shown in Background Notes of the Overseas Travel Release.

5.2.2. Non-Sampling Effects

5.2.2.1 Quality of the Data Sources used

Data on the total volumes of passengers on flights/sailings to and from various Irish airports/ports broken down by route is the only external data source to the survey. This data is received from all the ports and airports.

5.2.2.2 Register Coverage

The sampling frame is:-

(1) the total volume of passengers on flights to and from various Irish airports broken down by route supplied by the Irish Airports.

And

(2) The total volume of passengers on sailings to and from various Irish ports broken down by route (port to port) and type (foot or car).

5.2.2.3 Non-response (Unit and Item)

The effect of item non response is not quantifiable. It is impossible for the CSO to preselect passengers on flights/ferry sailings for interview for the survey. Instead, the Tourism enumerator will select 1 in every 5 passengers from the selected flights and sailings. If a passenger does not wish to take part in the survey the enumerator will simply move on to the next passenger. It is not possible to determine what effect, if any, this would have on the overall estimates.

5.2.2.4 Measurement Errors

Data supplied from the airports/ports is the actual number of persons travelling through each airport/port each month so therefore it is very reliable. At the moment, there is no actual indication of the level of non sampling error but the following issues may contribute:

a) Questionnaire

- The CRS form is completed by the CSO enumerator and the questions on it are short and quite straightforward so that the risk of misinterpretation is quite low.
- Many of the details required, for example, flight number, airline code are readily available from passengers' travel tickets and boarding passes.
- All responses categories are mutually exclusive.

b) Data collection method

- The data collection method is by PAPI.
- The survey form is quite straightforward and has not changed significantly over time. Enumerators are briefed of any changes if they arise.
- The information collected is factual and generally is not open to interpretation, for example, specific details on airline and flight code, country of residence etc.

c) The Interviewer

Enumerators at the airports and ports report directly to the Tourism and Travel section of the CSO. The likelihood of interpretational error by the enumerator is quite low due to the nature of the survey form as described above.

d) Respondent

- It is a voluntary survey. Response is usually best at departure gates where the respondents have more time. At arrival gates it is very difficult to ask passengers to stop and answer questions on their travel. For this reason the enumerators usually go to an area in arrivals suitable for interviewing passengers.
- All the information requested of the passenger is readily available from their documentation. Issues such as recall or personal questions should not arise.
- Questions asked of respondents are specific and not subject to interpretational issues.

5.2.2.5 Processing Errors

a. Data capture errors

All valid survey forms are scanned and verified when they are returned to the office. Any information not identified by the scanning process are shown as edits and are checked by Tourism Section staff.

b. Data editing

A series of edit programs are then run to test for inconsistencies and especially missing values within the data, examples include:

- incorrect airport code.
- incorrect country code.

Some missing data is imputed (e.g. routes not surveyed) and nearest/next neighbour imputations are performed based on the current month's results.

c. Coding error

The population data is received from the airports and ports. Staff in Tourism and Travel Section will code missing values for any missing codes e.g. Irish port/airport code, foreign port/airport, country code (of foreign port/airport).

The enumerators interview passengers at the ports and airports. They write this data on the CRS (Country of Residence) form and also code the form as required e.g. insert country code (of foreign port), airport/port code, airline, sailing (car or foot), country of residence code, direction (in or out). Staff in Tourism and Travel Section will insert any missing codes as required.

5.2.2.6 Model-related Effects

The imputation process using nearest neighbour assumes that the profile of flights used by country of residence is similar. The effect on data quality is unknown.

5.3 Timeliness and Punctuality

5.3.1 Provisional Results

Provisional results are not published for the Country of Residence Survey.

5.3.2 Final Results

Final results are published on a monthly basis within 28 days of the end of the reference period.

5.4 Coherence

The total number of trips taken is the average of the number of passengers entering and leaving the country by air or sea. The total number of passengers is obtained directly from the data received from the airports and ferry companies. The residency breakdown comes from the survey data and it is not possible to check the quality of this as there is no comparable data

5.5 Comparability

The survey has been carried out continuously since 2001 and was redesigned in 2005. The redesign has lead to more efficient and accurate grossing procedures. The following factors may also have an effort on the results over time.

1. Seasonality

The number of trips taken to Ireland and those by Irish residents abroad will vary according to the time of the year.

2. Events - one off - sports etc

As mentioned previously, once off events for a particular month will give rise to inconsistency with the same month for the previous year. For example, an event like the Special Olympics will lead to an increase over and above what would normally be expected for visitors to Ireland for that period in question.

3. Easter

Easter falls each year on a Sunday between March 22nd and April 25th, inclusively. In 2015 Easter Sunday is on April 5th, while in 2014 it fell on April 20th. Visitor numbers each year are greatly influenced by when Easter falls.

5.6 Accessibility and Clarity

5.6.1 Assistance to Users, Special Analyses

The monthly Overseas Travel release is available on the CSO website (see section 5.6.3.1). The background notes in the release provide some detail on the survey. Some methodological information is also available at. <u>http://www.cso.ie/en/surveysandmethodology/tourismandtravel/</u>

5.6.2 Revisions

The data in the Overseas Travel Release is revised as required.

5.6.3 Publications

5.6.3.1 Releases, Regular Publications

The Overseas Travel results are published on a monthly basis - rolling three month release. Currently, there are no publications. The latest release can be found at:

http://www.cso.ie/en/releasesandpublications/tourismandtravel/

5.6.3.2 Internet

Copies of latest releases are at

http://www.cso.ie/en/releasesandpublications/tourismandtravel/

5.6.4 Confidentiality

The confidentiality of all information provided to the CSO by individual respondents is guaranteed by law under the Statistics Act 1993. All CSO office and field personnel become 'Officers of Statistics' on appointment and are liable to penalties under this Act if they divulge confidential information on any individual or organisation to any outside person or body. Since the questionnaires that are completed at airports/ports do not contain any information on the individual, it is therefore not possible to identify anybody from the disaggregated data. Results are published at an aggregated level by country of residence. Data received from the airports/ports is in aggregated form and thus it is not possible to identify any person from this data. Data on the Airport Pairings database is released with a two month time lag to protect any commercial sensitivities and this is with the express agreement of all the Airport Authorities.

6 Additional documentation and publications

Details of the survey methodology can be found at the back of the monthly release, further details are located at:

http://www.cso.ie/en/surveysandmethodology/tourismandtravel/

Airport Pairings Database:

This data relates to the total volume of passengers on every direct flight in and out of Ireland by airport pairing (e.g. Dublin – JFK New York). The data is obtained from the Airports in Ireland and is available by month from January 2006 to most recent month For details please go to: http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=CTM01&PLanguage=0

Statistical Yearbook of Ireland:

http://www.cso.ie/en/releasesandpublications/statisticalyearbookofireland/