Methodology

NI Passenger Survey – Survey and analysis methodology

Background

The methodology for the NI Passenger Survey (NIPS) was revised in 2010. This document outlines the methodology implemented from January 2010.

Survey data is collected via face-to-face interviews with passengers exiting through NI sea ports and airports. A multi-stage sampling design is employed. This involves sampling a port on a given day and within a given period of the day (referred to as a 'shift'); and within the shift, certain passengers passing an interview line are systematically chosen for interview at fixed intervals from a random start.

There are two sample intervals applied at each shift to all passengers crossing the interviewing line. Each of the passengers contacted through application of the sample interval is screened to assess whether they are overnight visitors to NI and/or RoI or if a frequent visitor to NI (at least once each week). If the passenger is an overnight visitor, they will be asked about their visit to NI and/or RoI. If the passenger is not an overnight visitor or is a frequent visitor, no further questions will be asked but the contact will be recorded as non-eligible.

Passengers sampled using the first fixed interval (every 5th passenger from 2010) are asked a number of questions relating to their visit e.g. Country of residence, number of overnights spent in NI, number of overnights spent in ROI, reason for visit to NI, total expenditure in NI.

Passengers sampled using the second fixed interval (every 20th passenger from 2013) are asked the same questions as those using the first fixed interval plus additional questions regarding their trip to NI and/or RoI

Passengers who are selected for interview and who complete the whole of the interview are classified as 'completes' and those who complete the majority of the questionnaire as 'partial'. Some respondents who give very limited information, but enough for them to be included in the weighting calculations are classified as 'minimum'. Where passengers can't be contacted or are contacted and refuse to give any information are classified as 'non-contacts'.

Table 1: 2016 NIPS Sample

NI Passenger Survey	2016
Sample size	49,100
Non-eligible	28,700
Non-contacts	3,900
Visitors (complete, partial and minimum responses)	17,200

Figures rounded to the nearest 100.

Weighting

The data from all respondents to the NIPS questionnaire is weighted/calibrated to the passenger traffic known to have exited NI through that port during the reference period. The total passenger numbers are obtained from the Civil Aviation Authority (CAA) and the ferry companies.

The weighting is carried out on data collected from complete, partial, minimum and non-eligible respondents. Non-contacts are omitted from the weighting calculation as no information is available for these passengers.

1. Design weights

The design weight accounts for the probability of sampling a specific passenger.

The survey data is split into strata by port, day type(weekend/weekday), shift time(am/pm) and quarter.

The survey design weights are calculated for each strata within the sample as follows:

D_w = (number of possible shifts/ number of shifts)*(Sampling interval i.e. 1/5)

2. Non-Response Weighting

The non-response weight adjusts for contacts selected for interview but who were subsequently not interviewed, either because it was not possible to contact them or they refused to participate.

Non-response weights are calculated by port and by weekend/weekday at the two largest airports.

The non-response weights are calculated monthly:

W_{nr} = ($\sum W_1$ over all the passenger at the port) / ($\sum W_1$ over all the responding passenger at the port)

3. Post – stratification Weights

The post-stratification weight, weights the sample to the whole population using monthly weights. The weights are calculated using the following formula by port and month, with all ferry ports treated as a single port.

W_{ps} = (Total number of pax using the port)$_{ps}$ / $\sum_{ps}$ [Design Weight * Non-Response Weight]

4. Final weight for the Short Questionnaire

The final weight to be used in the analysis of all data obtained from the short questionnaire is calculated from the 3 separate weights as follows:

$W_{short} = W_{design} * W_{non\text{-}response} * W_{post\ strata}$

5. Calibration weight for data collected from the long questionnaire

As some data was only collected from passengers selected to complete the long questionnaire (every 10th passenger per shift) an additional weight is calculated to weight responses from those respondents to the whole population.

Dealing with missing expenditure data

The total expenditure in NI is requested from all eligible respondents. In cases where the total expenditure is missing, a mean value is calculated within the following strata: country of residence, reason for visit and month. This mean expenditure is then applied to all missing cases within the strata.

Calculating confidence intervals

Confidence intervals are calculated for visitor numbers and expenditure to provide users with an indication of the variability of the estimates produced.

The confidence intervals relating to a selection of NIPS 2016 estimates at 95% confidence interval are shown in table 2.

Table 2: Sampling error associated with NIPS estimates 2016

Country of residence	Respondents	95% Confidence Interval (Lower)	95% Confidence Interval (Higher)	Standard Error
Great Britain	1,259,100	1,179,800	1,338,500	79,300
Other Europe	131,800	118,000	145,700	13,900
North America	62,700	56,400	69,100	6,400
Rest of the World	71,600	64,200	79,000	7,400

Figures rounded to the nearest 100.