



An Phríomh-Oifig Staidrimh
Central Statistics Office

information

notice

Revisions to labour market estimates, November 2012

Background

The Quarterly National Household Survey (QNHS) is the official source of estimates of employment and unemployment for Ireland. As the QNHS is a sample survey, independent population estimates are required each quarter to provide a weighting basis for estimates from the QNHS. The process of deriving these population estimates involves using the population counts from the most recent Census of Population as a base, and updating them using estimates of births, deaths and migration. These estimates are then subject to revision once a new Census of Population has been completed.

Specifically, the published labour market estimates up to and including the quarter 2 2012 publication, were weighted by population estimates which had been based on quarterly updates from the 2006 Census of Population. Once the results from the 2011 Census of Population became available, the CSO commenced a process of revising the population estimates from Q3 2006 on, based on the new benchmark population totals for 2011. The results of this revision process were published on the 27th September 2012¹.

Given the critical importance of accurate labour market estimates, the CSO, as a matter of standard practice, also revises labour market estimates using the updated population benchmarks.

The particular focus of the labour market estimates derived from the QNHS is the working age population (persons aged 15 or more). The original population estimate for the second quarter of 2011 for the working age population was 3,502,700. The revised benchmark population estimate for the same period is now 3,599,100, a difference of 2.8% (96,400). This note outlines the impact of these new population estimates on key labour market indicators.

In addition to the updated population estimates, the CSO has introduced some changes to the processes surrounding the QNHS which have an impact on published estimates. These are:

- The definitions of indicators have been fully aligned with the definitions applied by the EU Commission in deriving labour market estimates at EU level. The impact of these definitional changes is minor but will create full consistency between estimates published nationally and by the EU Commission.
- Weighting practices have been updated. Specifically, calibration practices have been introduced. The impact of this change on key indicators is low. This issue is discussed in more detail later in this note.

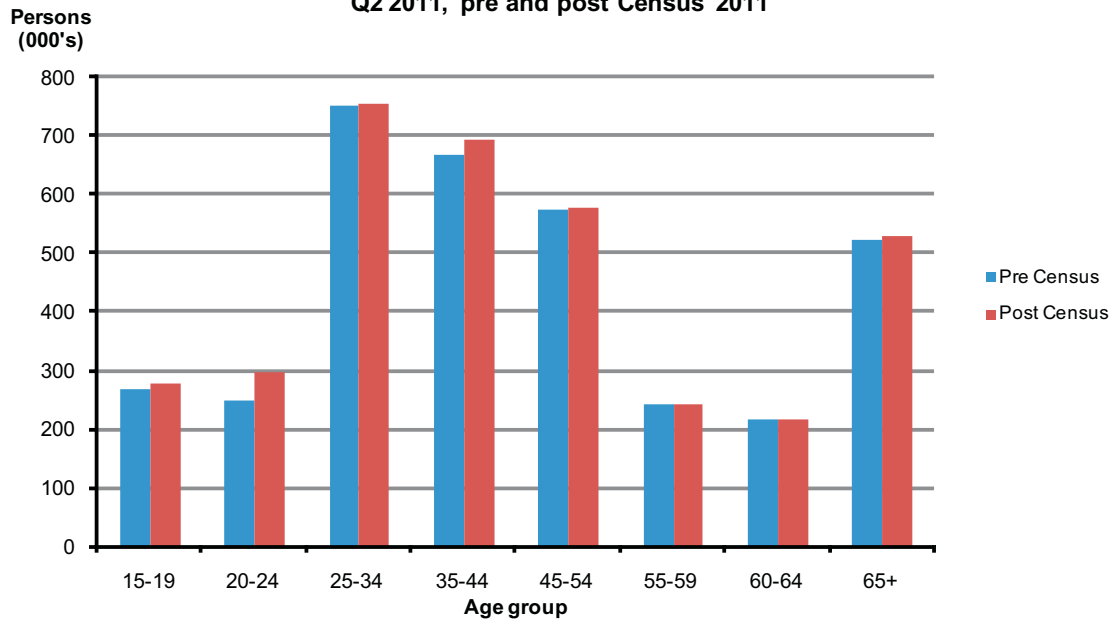
Of these changes, by far the greatest impact is created by the updated population estimates.

Changes in population estimates

As already mentioned the overall difference between the existing Q2 2011 population estimate and the revised estimate following the 2011 Census was 96,400 (2.8%). However, this difference was not split evenly across all sub-groups within the population. Specifically the difference was highly concentrated in migratory age groups. Figure 1 shows the population aged 15 and over in Q2 2011 broken down by age group, both before and after the 2011 Census.

¹ See http://www.cso.ie/en/media/csoie/releasespublications/documents/population/2012/popmig_2012.pdf

Figure 1 - Population estimates by age group (working age population), Q2 2011, pre and post Census 2011



It can be seen that the greatest changes are concentrated in the 20 to 24 and 35 to 44 year age groups. The exact level of change by age group is summarised in table 1.

Table 1 - Population estimates by age group (working age population), Q2 2011, pre- and post Census 2011

	Pre Census	Post Census	Change	% Change	Proportion of total old	Proportion of total new
	(000's)	(000's)	(000's)	(%)	(%)	(%)
15-19	269.2	281.1	11.9	4.4	7.7	7.8
20-24	249.8	298.7	48.9	19.6	7.1	8.3
25-34	752.4	756.4	4.0	0.5	21.5	21.0
35-44	668.2	692.6	24.4	3.7	19.1	19.2
45-54	576.6	578.0	1.4	0.2	16.5	16.1
55-59	243.9	243.5	-0.4	-0.2	7.0	6.8
60-64	218.4	217.2	-1.2	-0.5	6.2	6.0
65+	524.2	531.6	7.4	1.4	15.0	14.8
All	3,502.7	3,599.1	96.4	2.8	100.0	100.0

Half of the total difference of 96,400 was recorded in the 20 to 24 year age group (48,900 representing a change of 19.6% among this age group). Approximately one quarter of the difference was recorded among 35 to 44 year olds (24,400 or +3.7%) with a further 11,900 (+4.4%) recorded for 15-19 year olds.

In proportional terms by far the greatest impact is seen for the 20 to 24 year age group. On the basis of the existing population estimates this group accounted for 7.1% of the total working age population. Following the revisions this increased to 8.3%. The proportional changes among the other age groups were far less significant.

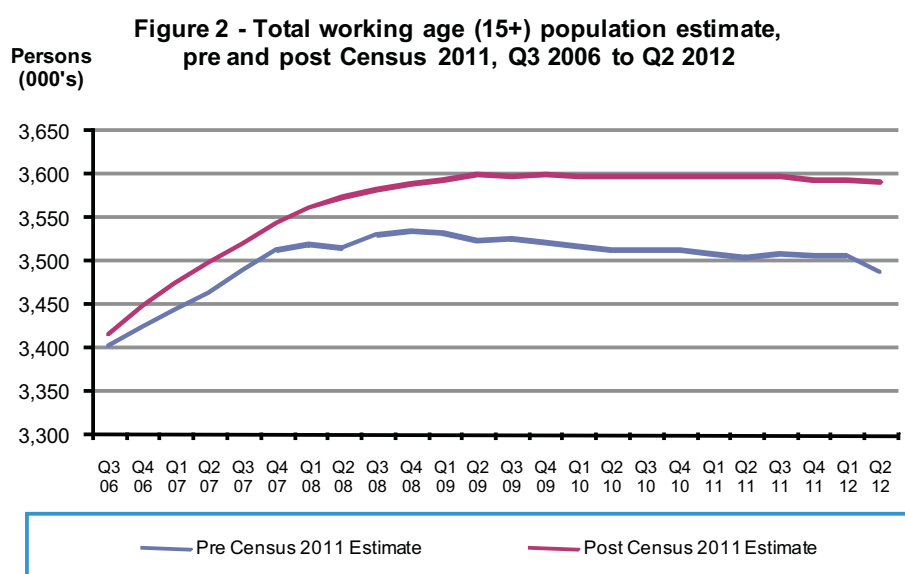
Another clear element of the difference between the old population estimates and the Census results related to the breakdown of the population by nationality. The updated non-Irish national working age population for Q2 2011 was 103,100 (27.6%) higher than the previously published estimate from the QNHS. See Table 2.

Table 2 - Population by nationality, pre and post Census, Q2 2011

	Pre Census	Post Census	Difference
	(000's)	(000's)	(000's)
Irish nationals	3,128.9	3,122.2	-6.7
Non-Irish nationals	373.8	476.9	103.1

Various other differences could be seen if analysing the pre and post Census 2011 population breakdown in detail, however the age and nationality differences were the most substantial.

A final point to note regarding the changes in population estimates is that revisions have been made to all estimates from Q3 2006 to Q2 2012. The introduction of the difference has been incremental in nature with relatively lower differences in the earlier periods, with the difference increasing over time as shown in figure 2.



Revisions to Labour Market Estimates

The process of revising the labour market estimates derived from the QNHS involved updating the weighting using the new population estimates. The existing weighting procedures involved benchmark population totals based on a matrix of 5 year age groups (18), NUTS3 regions (8) and sex (2). This created 288 control totals for each quarter. Weights were derived by dividing these control totals by the actual number of respondents in each of the 288 cells for the relevant quarter.

In line with this practice the most substantial element of the revision process involved updating the 288 control totals for each quarter using the post Census 2011 estimates. However, this methodology would not directly address the discrepancy in the breakdown of the population by nationality. Specifically, given that close to 90% of the population were Irish nationals, the large majority of the population difference would be shown among Irish nationals if existing weighting practices were maintained.

To rectify this difference the CSO decided to update existing weighting practices by introducing a calibration procedure. This procedure allows the existing 288 cell structure to continue to be used, but in addition allows nationality control totals to be introduced.

To facilitate this change in practice quarterly population estimates now include a breakdown by nationality grouping (5), age (2, namely 0 to 14 and 15 and over) and sex (2). The 5 nationality groupings are:

- Irish
- UK
- EU 15 excluding UK and Ireland
- EU 15 to 27 states
- Rest of the World

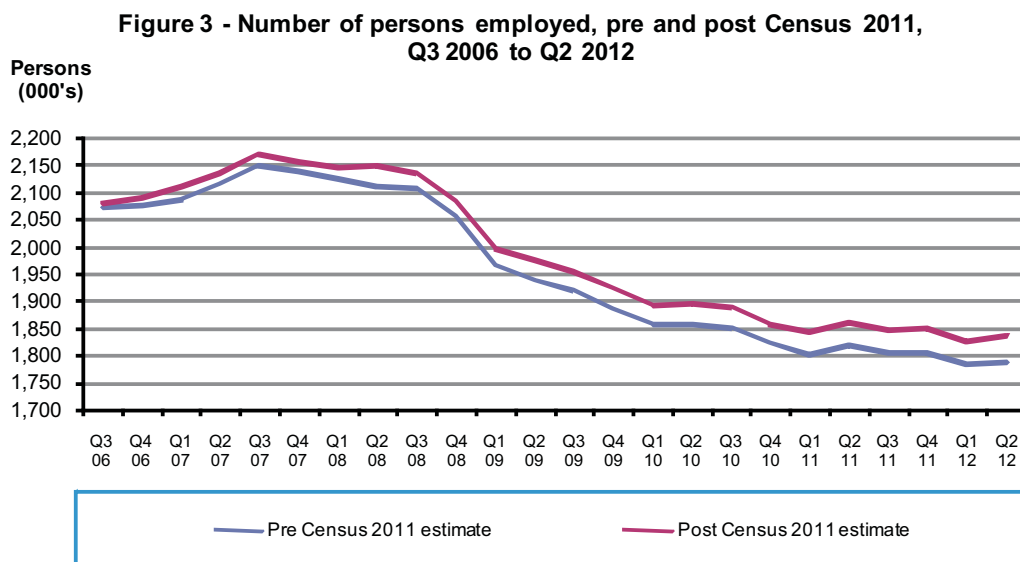
The primary impact of the introduction of these nationality control totals will be that the population totals presented on the annex 1 table will now be controlled, giving less volatility and making them less susceptible to under-representation of non-Irish nationals in the results generated.

Impact of revisions on estimates

All QNHS series have been revised from Q3 2006 to Q2 2012 inclusive in line with the population estimates revisions. The clearest impact is seen on volume estimates, e.g. the total number of persons employed and unemployed. Trends and rates, while revised, display relatively lower levels of difference. These changes are more clearly explained by analysing their impact on two key series, namely employment and unemployment.

Impact on employment estimates

Given the higher estimated population the revised employment estimates are higher than those previously published. This is shown in figure 3 below. Specifically, the previously published estimate of employment for Q2 2012 was 1,787,900. The revised estimate is 1,836,200, a difference of 48,300.



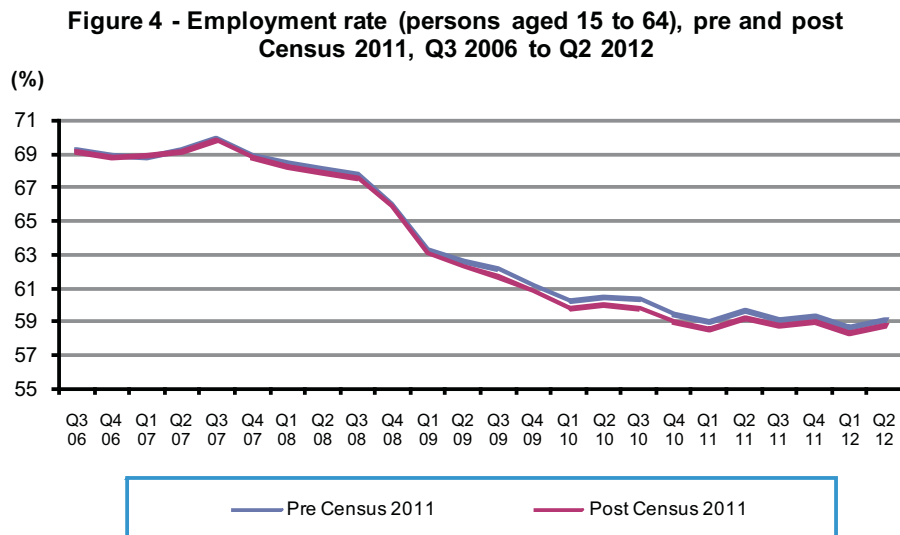
As with the population estimates themselves the difference is lower in the earlier period, increasing over time. As per table 3 annual average employment post revisions was 1% higher in 2007, 1.4% higher in 2008, 1.7% higher in 2009, 1.9% higher in 2010 and 2.2% higher in 2011.

Table 3 - Annual average employment, pre and post Census 2011, 2007 to 2011

	2007	2008	2009	2010	2011
Pre Census 2011 estimate (000's)	2,122.8	2,099.7	1,928.6	1,847.9	1,809.7
Post Census 2011 estimate (000's)	2,143.1	2,128.4	1,961.3	1,882.2	1,849.1
Difference (000's)	20.3	28.7	32.7	34.3	39.4
Difference %	1.0	1.4	1.7	1.9	2.2

If the difference in population was evenly spread across groups in the population then, even though the total number of persons employed would be higher, the employment rate (the proportion of working age people in employment) would not change as a result of the revision process. However as described earlier this was not the case with the population difference being highly concentrated in a limited number of age groups and nationalities.

Figure 4 shows the original and revised employment rates. As can be seen the level of difference is relatively low. The previously published employment rate for Q2 2012 was 59.1%. This compares with a revised rate of 58.8%.



This difference can be attributed to the fact the greatest population difference was recorded for the 20-24 age group. This age group accounted for half the difference in population and, in recent years has had an employment rate below the overall average. Specifically while the average employment rate in Q2 2012 (revised) was 58.8%, the rate for the 20-24 year age group was 46.5%. The fact this age group now accounted for a larger proportion of the population would therefore exert a downward influence on the overall employment rate.

It can be noted that among the different age groups very little difference was recorded in employment rates as a result of the revisions, with either no change, or a difference of plus or minus 0.1 percentage points in the large majority of cases over the 6 year period covered.

With reference to estimates of employment by other classifications (economic activity, occupation, region) the differences recorded were broadly in line with those seen at national level and they will not be discussed in detail in this note.

The final point which can be noted relates to the impact on trends. The fact that the difference in population was introduced incrementally over the period does create an impact on trends, i.e. the positive population adjustment is greater in later periods causing negative changes to be lower and positive changes to be higher. This can be shown with reference to annual averages as illustrated in table 4.

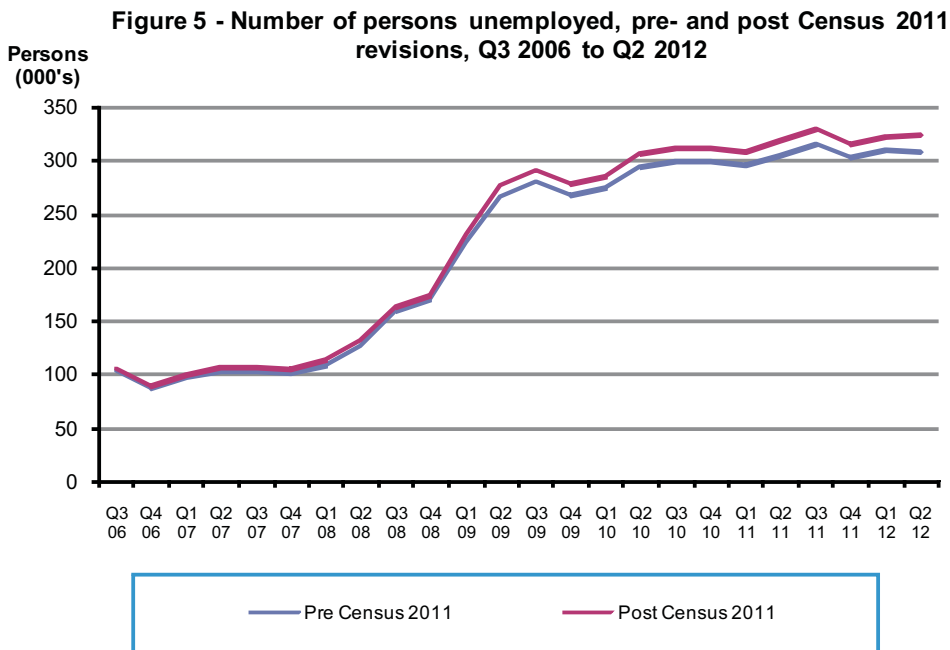
Table 4 - Annual average employment, pre and post Census 2011, 2007 to 2011

	2007	2008	2009	2010	2011
Pre Census 2011 estimate (000's)	2,122.8	2,099.7	1,928.6	1,847.9	1,809.7
Post Census 2011 estimate (000's)	2,143.1	2,128.4	1,961.3	1,882.2	1,849.1
Annual Change (000's)					
Pre Census 2011		-23.1	-171.1	-80.7	-38.2
Post Census 2011		-14.7	-167.1	-79.1	-33.1
Annual Change (%)					
Pre Census 2011		-1.1	-8.1	-4.2	-2.1
Post Census 2011		-0.7	-7.9	-4.0	-1.8

Specifically the rate of decline recorded in each period is now lower than that previously recorded, that is the case as the gap between the original and revised population estimates grew over time. By and large this effect was not very substantial. The greatest difference was recorded for 2011. The previously published rate of decline in employment between 2010 and 2011 was 2.1%, on a revised basis this was 1.8%. For the most recently published period, Q2 2012, the annual decline in employment is revised downwards from 1.8% to 1.3%.

Impact on unemployment estimates

The impact on estimates of unemployment was subject to the same influences as the employment estimate. Namely the overall number of persons unemployed was higher due to the higher population total. The previously published estimate of the number of persons unemployed for Q2 2012 was 308,500, this is now revised to 323,000. As shown in figure 5 this difference was initially small in 2006 and increased over the period up to 2012.



If the difference was equally distributed across different population sub-groups this would not necessarily have changed the unemployment rate as both the numerator (number of persons unemployed) and the denominator (number of persons in the labour force) would have increased in proportion with one another. However, as described earlier, this was not the case and most significantly the population difference was greatest among 20-24 year olds, who have a higher than average unemployment rate (29% as of Q2 2012). As such in addition to the higher volume of unemployed persons now recorded, the unemployment rate is also revised upwards.

Table 5 - Annual average unemployment rate, pre and post Census 2011, 2007 to 2011

	2007	2008	2009	2010	2011
	(%)	(%)	(%)	(%)	(%)
Pre Census 2011	4.6	6.3	11.8	13.6	14.4
Post Census 2011	4.7	6.4	12.0	13.9	14.6
Revision	+0.1pp	+0.1pp	+0.2pp	+0.3pp	+0.2pp

The level of revision is shown in table 5, starting at 0.1 percentage points in 2007 and 2008 then increasing to 0.2 percentage points in 2009, 0.3 percentage points in 2010 and 0.2 percentage points in 2011. The unadjusted unemployment rate for Q2 2012 was previously published as 14.7%, this is now revised upwards by 0.3 percentage points to 15.0%.

Impact on other series

All other published labour market series are now revised for the period Q3 2006 to Q2 2012 inclusive based on the revised population estimates. Further to this, the alignment of estimates with definitions used by the EU Commission creates minor revisions to published estimates for the period from Q1 1998 to Q2 2006.

All existing seasonally adjusted series have been fully re-estimated based on the new unadjusted series.

Updated tables for all series are available via the CSO website.

New series

In addition to the revisions to existing series, the CSO has made some changes to the range of estimates published. Most notably new indicators of potential labour supply have been developed and are included in table S6 which can be found on the CSO website. Three of these indicators correspond closely to the previously published S1, S2 and S3 series. An additional indicator has been created using new EU definitions which have been developed following extensive international discussion surrounding the need for new indicators to supplement the unemployment rate. The coverage of each of these indicators is outlined in the footnotes to table S6.

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