

175 Years of Mismeasuring Ireland?: Some Traps Set by Historical Data¹

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Abstract: This paper outlines potential pitfalls in interpreting some Irish official statistics through history. We describe and discuss somewhat misleading aspects of statistics relating to agriculture, migration, age and vital statistics over the last 175 years. In signposting these issues, we aim to help future researchers to better avoid these potential hazards.

Keywords: Official statistics, Ireland

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1. 175 YEARS OF MISMEASURING IRELAND?

The difficulties in interpreting Ireland's national accounts will have been well-known to members of this society long before Paul Krugman's reference to "Leprechaun Economics" in an infamous tweet in 2016.² The criticisms and caveats put forward by a number of Irish economists had clearly articulated the limitations of the Irish accounts and warned against the uncritical use of official data just because they were 'there' (*inter alia* Central Statistics Office 1996; Honohan and Walsh, 2002; Fitzgerald, 2015). Nonetheless, even in Ireland, despite the efforts of the Central Statistics Office (CSO) and others to bring transparency to the issue, headlines based on these misleading statistics still make it into the public discourse. Egregious recent examples include "Irish economy growing at the fastest rate in EU ... gross domestic product (GDP) surged by a massive 21.1pc in the second quarter of this year, compared with the same period in 2020, another EU high" (*Irish Independent*, 7 September 2021), and "Ireland ranks in last place in OECD in investment in education" (*The Irish Times*, 16 September 2021).³

When the truth is told, relative Irish performance since the 1970s, viewed through the prism of household consumption rather than GDP, is impressive but hardly outstanding. Figure 1, which compares Ireland to five of its west European neighbours between 1970 and 2020, shows Irish GDP per capita at the bottom in 1970 but surpassed only by Denmark in 2008, while Irish consumption rose from being bottom to being mid-range over the same period. Before the crisis of 2008/9, Ireland had been catching up but had not become by any means the richest of the rich.

Adding to the complication is the continued use of GDP and GNI as a denominator to make international comparisons on debt or spending levels, leading to Ireland being presented as 'best in class' or 'worst in class' depending on the particular political axe that is being ground (Wren and Fitzpatrick 2020). Thus, as noted above, OECD data present a very misleading picture of Irish spending on education, but the confusion is compounded

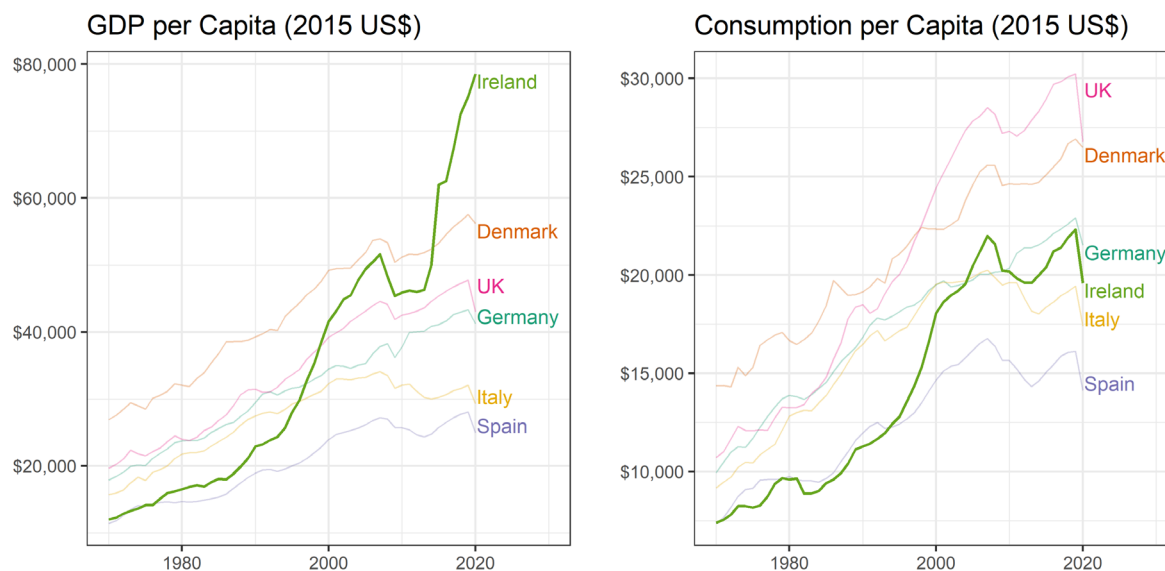
¹ For presentation at SSISI, 26 May 2022. We are particularly grateful to Michael Connolly (CSO) and Shane Whelan (UCD) for marking our cards on macroeconomic and demographic data. We also thank Eoin McLoughlin, Breandán Mac Suibhne, Pól Ó Duibhir, and Peter Solar for useful comments and sources.

² Paul Krugman tweet, 12 July 2016

³ Honohan (2021) highlights the distortions of Ireland's ranking in the UNHDI and the Gender Development Index.

when the Union of Students in Ireland invokes those very data to assert that “Ireland invests just 0.8% of GDP in tertiary education which is well below the 1.5% OECD average”. Using the Central Statistics Office’s own preferred denominator would increase the Irish share to a less sensationally low 1.3%.⁴ The costs and benefits of the distortions to our national accounts are financial too, with GDP still widely used to scale debt levels and to assess some of Ireland’s contributions to EU funds. Ireland’s ‘Own Resources’ contribution to the EU budget is estimated to be €0.6 billion higher using GNI instead of the CSO’s preferred measure, Modified GNI or GNI* (Department of Finance, 2020).⁵

Figure 1. GDP and Consumption per Capita, 1970-2020



The problem of uncritical use of statistics is of course not just confined to Ireland’s national accounts, nor are economists immune to these problems more broadly. According to economic historian Greg Clark, “Among modern economists there is a hunger by the credulous for numbers, any numbers however dubious their provenance, to lend support to the model of the moment.”⁶ Some economic historians nowadays are prone to the same temptation, particularly when it comes to official data, or even when those data are published in a refereed journal. Yet as Irish economic historians have become more quantitative, we think that it is fair to say that they have not been as credulous as the economists targeted by Clark when it comes to measuring the Irish economy in the past. Indeed, casting a cold eye on data has been one of the hallmarks of Irish economic history since the 1960s: consider Austin Bourke’s analysis of the agricultural statistics in the 1841 census, Joe Lee’s reservations about aspects of the same and earlier censuses, Peter Solar’s critiques of the trade statistics produced by the Irish Railway Commissioners in the mid-1830s and the agricultural statistics of the 1850s, or Brendan Walsh’s and John Coward’s studies of the limitations of Irish civil registration data, and, again, Joseph Lee’s comments on age-misreporting in the 1911 census.

At the opening of the fifth session of this Society in November 1851 Sir Robert Kane described its main aim as “the collection and digestion of all those classes of facts which come within the recognised, though somewhat indefinite domain of statistical inquiry, by affording information as to the finances of the state, the resources of our territory, the numbers, the condition, the habits, or the industry of the people” (Kane 1851). Of course, the state-sponsored collection of such data in Ireland had long preceded the foundation of the Society; it can be traced

⁴ OECD, *Compare Your Country: Education at a Glance 2021* [<https://www.compareyourcountry.org/education-at-a-glance-2021/en/5/3059+3060+3061+3062+3063+3064/default>]; The Union of Students in Ireland, *Opening Remarks on the Future Funding of Higher Education*, 8 March 2022

[https://data.oireachtas.ie/ie/oireachtas/committee/dail/33/joint_committee_on_education_further_and_higher_education_research_innovation_and_science/submissions/2022/2022-03-08_opening-statement-claire-austick-president-union-of-students-in-ireland-usi_en.pdf]; CSO, *National Income and Expenditure 2020* [<https://www.cso.ie/en/releasesandpublications/ep/p-nie/nie2020/mainaggregates/>].

⁵ An explanatory note from the Department of Finance highlights that “by raising the level of GNI without generating additional revenue, this type of activity [redomiciled publicly limited companies] imposes a cost on the national finances via higher contributions to the EU budget” (Department of Finance, 2018).

⁶ Greg Clark in a review in the *Journal of Economic History*, 69[4] (2009), 1156-1161.

back to the land valuations of Sir William Petty in the mid-seventeenth century, if not earlier. Trade statistics also date back to the seventeenth century and they were compiled annually between the 1660s and 1825. Those data are deemed broadly reliable and they form the cornerstone of Louis Cullen’s seminal *Anglo-Irish Trade 1660-1800* (1968), but those collected by the Railway Commissioners in 1836-37 less so, while comprehensive trade data would not be collected again until the 1900s (Solar 1985; Adams 1909). The first attempt at a nationwide population census in 1812-3 was at best a partial success; and Joe Lee (1981: 56) has warned us that “whatever the population of Ireland may have been in 1821, 1831, and 1841, it was not that recorded in the censuses”.⁷ Official statistics came into their own in the 1840s, with the most comprehensive census of population so far in 1841 and the collection of agricultural statistics from 1847.

In this paper we will survey and explore some of the challenges and pitfalls of measuring Ireland over the last 175 years. The challenges we present are not an exhaustive list but rather relate to a selection of data issues over the period. They have a demographic and agrarian bias. Naturally, the reliability of statistics and their proper interpretation is something in which this society has taken a keen interest in over its history, a fact we will be reminded of throughout this paper. As such our inquiry is guided by the words of Professor C.H. Oldham writing as President of this Society in December 1925⁸, words that are worth quoting in full. Even in the 21st century, they are as relevant as ever:

“Irish Statistics are hieroglyphics that express chunks of Irish Life to those who can read them. But figures are not scientific evidence to any thinking mind unless one knows by what method the measurement of the massed facts was done. We ought to be told that whenever the statistics are published. Even when we can read through the figures to the massed facts that stand behind them, we must then proceed to the next step of interpreting, of perceiving the significant meaning of what we are told. It is ridiculous to merely fling down figures, in the traditional British manner, without supplying the public with all the information needed in order to interpret the meaning of the statistics.”

C.H. Oldham (1927 p.204)

2. AGRICULTURAL STATISTICS

He had unstrapped
The heavy ledger, and my father
Was making tillage returns
In acres, roods, and perches...

“Any other root crops?
Mangolds? Marrowstems? Anything like
that?”

“No.” But was there not a line
Of turnips where the seed ran out
In the potato field?

Seamus Heaney, ‘A Constable Calls’

The annual ritual described in Seamus Heaney’s poem, whereby the constabulary collected data on crops and livestock farm by farm, goes back to 1847, also the year in which this Society was formed. Collecting and collating comprehensive annual statistics on Irish agriculture was a formidable achievement in the circumstances. A trial run carried out in 1845 in Bailieborough Poor Law Union, an area of 87,000 statute acres, was deemed “quite

⁷ And note that Lee’s proposed corrections imply that demographic adjustment before the Famine was more dramatic than implied by the official data (Lee 1981: 54). Assuming a figure of 5 million for 1800, the annual percentage growth rates between censuses are as follows:

<i>Period</i>	<i>Official</i>	<i>Lee</i>
1800-21	1.5	1.7
1821-31	1.3	0.9
1831-41	0.5	0.6

Since Lee’s adjustment to the 1831 figure is modest, Brian Gurrin’s case for the accuracy of the 1831 figure (‘The 1841 census commissioners vs. the 1821 and 1831 censuses’, *Beyond 1922*, 17 July 2020; https://beyond2022.ie/?page_id=2#vision, accessed 15 April 2022) is also consistent with more adjustment than implied by the official figures.

⁸ This would be the last of twenty papers presented to the Society by Oldham between 1896 and 1925. He died on 20 February 1926.

correct enough for all useful purposes of comparison”, but it collected data on crop acreages only, whereas the annual agricultural statistics also included data on crop yields and on livestock numbers and ages.⁹ Comparing crop acreages in Bailieborough Poor Law Union in 1845 and 1847 is a sobering exercise (Table 1). The drastic reduction in the acreage under potatoes caused by the blight is far greater than the resultant increases in acreages under oats, turnips, wheat, and rye. ‘Other’ consisted mainly of pasture (40,105 acres in 1845), plantation (1,113 acres), bog and waste (8,593 acres).

Table 1. Crop Acreages in Bailieborough PLU in 1845 and 1847

<i>Crop (statute acres)</i>	<i>1845</i>	<i>1847</i>	<i>Change [%]</i>
Wheat	212	670	216.0
Barley	226	209	-7.5
Oats	19,809	23,071	16.5
Rye	51	167	227.5
Flax	454	362	-20.3
Potatoes	11,492	1,071	-90.7
Turnips	220	1,918	771.8
Clover/meadow	3,408	4,397	29.0
Other	50,452	55,827	10.7
Total	86,324	87,692	1.6

The agricultural statistics informed economic policy and have long been invoked by agricultural and economic historians. Again, they pose challenges for the unwary historian, although mainly in the early years. First, the age classifications of livestock changed more than once, particularly in the 1850s. Second, the timing of the enumeration also changed; in 1847 the collection did not begin until December¹⁰; thereafter up to 1856 the constabulary did their work in August and September but from 1858 they shifted to the beginning of June as a better time to assess crop acreages and livestock numbers (CSO 1997: 37). Third, the methods used for measuring crop yields were changed in 1855, when estimates made by the constabulary in January and February. In a review of Michael Turner’s *After the Famine* (1996), Peter Solar (1998) was critical of how Turner failed to confront these shortcomings of the official data.

This Society was formed at a time when Ireland was being subjected to unprecedented statistical scrutiny by the authorities.¹¹ Six years previously, the 1841 Census had shed statistical light on many aspects of the Irish economy for the first time. The census was far from being just a head count; its data on housing, education, occupations, age structure, marital status, migration, agriculture, and more remain cornerstones of statistical analysis of Ireland on the eve of the Famine (Mokyr 1985). William Farr, chief architect of the English census, paid Thomas Larcom, his Irish counterpart (and a founding vice-president of the Dublin Statistical Society, forerunner of the SSISI), the compliment of describing it as “one of the best in Europe”.¹²

Austin Bourke, renowned agricultural meteorologist and historian of the potato addressed this society twice, in October 1959 and in March 1968. In his first address on the extent of the potato crop on the eve of the Famine Bourke (1959/60: 25-26) berated the editors of the recently-published *The Great Famine* (1956), R. Dudley Edwards and T. Desmond Williams, for making “direct comparisons of the 1841 Census figures with the 1847 and with the 1851 Census returns of farm size as an accurate reflection of the effect of the famine on the agricultural economy, when in fact what is being presented is predominantly the difference between the Irish and the statute acre”. Bourke was correct, although one would not have thought so from the predominantly hostile reception his findings met. In fact, two of the contributors to the Edwards-Williams volume had fallen into the trap (Edwards and Williams 1956: 123-4, 328). The annual agricultural statistics used statute acres from the outset; the Bailieborough experiment marked a halfway house, whereby the data were collected in Irish acres, but with totals recalculated in statute acres. Bourke gained the impression that as a meteorologist, historians were not prepared to take his research seriously; and as a result he would be awarded his PhD by UCC’s Faculty of Dairy Science in 1965. Bourke’s second contribution, the last piece of what he called “a large and complex jigsaw

⁹ *The Anglo-Celt*, 23 October 1846; BPP, ‘Summary of the Agricultural Statistics of the Bailieborough Union, in Ireland, for the year 1845’, B.P.P. 1847 (68), LIX; Lee 1969: 66.

¹⁰ *Kerry Examiner*, 17 December 1847 (‘The police are about to be employed in Ireland to collect agricultural statistics’).

¹¹ For an excellent history of the Society, with references to earlier histories, see Whelan 2022b.

¹² National Library of Ireland, Ms. 7526, William Farr to Thomas Larcom, 26 October 1844. We are grateful to John McHugh for this reference.

which covered the whole agricultural economy of 1845”, dealt with how the potato crop was disposed of; on that occasion he argued that Raymond Crotty’s claim that crop acreages were not drastically reduced by the failure of the potato sprung from the same misunderstanding (Bourke 1967/8: 95, 72fn3).

Another important difficulty surrounding nineteenth and early twentieth-century *Agricultural Statistics* relates to the data on the number and size of landholdings. Tables reporting the distribution of landholding size by county and poor law union were reported during the late 19th and into the 20th century – much discussed figures, no doubt, in the context of the political struggle over the ‘Land Question’ in Ireland over the period. These figures have been used to examine changes in the structure of landholding in Ireland over the period (*inter alia* Crotty 1966; CSO 2016). However, the figures for the period before 1914 were compiled in such a way as to introduce a significant overstatement of the total number of holdings in Ireland. The number of small holdings was also overstated while the number of large holdings was understated (Oldham, 1924; Turner, 1996; McLaughlin 2019).¹³ This reporting inaccuracy was outlined in the 1914 volume of the *Agricultural Statistics* derived from how the aggregate figures were compiled from townland returns:

“The figures published in previous reports were considerably too high in the case of holdings from 1 to 100 acres and appreciably too low in the case of holdings over 200 acres. Some of the latter holdings were cut by townland boundaries and were counted as two or more smaller holdings. This appears to have added as many to the class from 100 to 200 acres as were deducted from this class by the fact that some were divided by townland boundaries and counted as two or more holdings under 100 acres” (Dept. of Agriculture 1916, p. xvii).

Although the unit of area for statistical purposes was changed in 1910 to the enumeration district, which went some way to correcting this problem, the more accurate figures did not begin until 1914 as “publication of these new figures has been delayed until experience had shown that they were reliable” (Ibid. 1916, p. xviii). The result was that the number of recorded holdings in Ireland fell from 608,074 in 1913 to 566,137 in 1914, or a decline of about 7% (Dept. of Agriculture 1914; Dept. of Agriculture 1916). In terms of the impact on the distribution of holdings, the Department of Agriculture provided a ‘rough corrective’ table to adjust earlier figures, as shown in Table 2 below.

Table 2. Suggested Adjustment to pre-1914 Landholding Distribution

<i>Acres</i>	<i>1909</i>	<i>1910</i>	<i>Change [%]</i>
>1	85,644	86,270	+0.7
1-5	61,936	51,365	-17.1
5-15	153,565	131,782	-14.2
15-30	136,216	122,744	-9.9
30-50	75,658	70,284	-7.1
50-100	58,510	56,080	-4.2
100-199	22,835	22,598	-1.0
200-499	7,893	8,455	+7.1
500 +	1,570	2,218	+41.3
Total	603,827	551,796	-8.6
Source: <i>Agricultural Statistics of Ireland</i> , 1914 p. xviii			

The adjustments are certainly of a magnitude sufficient to prompt a reassessment of land inequality in Ireland in the 19th Century. Comparing the figures used for 1909 and 1910 used to generate Table 2 suggests that there were about 50,000 fewer holdings between 1 and 30 acres, and implies that their true share of the total acreage was 17.3 rather than 19.4%, while the share of holdings of over 200 acres was 39.9 rather than 36.8%. Figures for “Occupiers” as opposed to “Holders” are also reported in the statistics, (although not at the Poor Law Union level). These figures are also reportedly too high before the enumeration change, although the size of the suggested adjustments are smaller (-3% for all occupiers).

3. MIGRATION STATISTICS

Measuring migration is notoriously difficult. As some of the older members of this Society may recall, the publication of the results of the 1979 population census caused quite a stir. It turned out that population was 3% higher than would have been expected from the annual population estimates produced by the Central Statistics Office in the years since the previous census in 1971. Initial disagreement about the cause of the discrepancy

¹³ A number of other ‘perplexities’ are identified by Oldham in a paper read before the society in May 1924.

added to the confusion. It prompted an *Irish Times* correspondent to call for “a revamp of the statistical service” and to assert that the 1971 census “substantially” underestimated population in that year, particularly in the border counties of Ulster. A well-known economist also attributed the unexpected rise “in large measure to substantial underestimations in the 1971 census.” The latter suggestion was quickly rebuffed by a somewhat embarrassed CSO, who blamed instead a cumulative underestimation of net immigration by a whopping 107,000 in the period between the two censuses.¹⁴ Economists had somewhat of a field day at the expense of the poor CSO, one pointing out that it “had available current estimates much more accurate than the ones actually published!” (B. M. Walsh, as cited in Hughes 1980: 145; see too Whelan 1977; Kirwan 1982).

As this episode suggests, even at the height of the Troubles migration across the Irish Sea had proven difficult to track. In what might be regarded as an apology for his former colleagues in the CSO, R.C. Geary, then of the ESRI, wrote to *The Irish Times* (24 Sept 1979):

All statistics are wrong, but Census statistics are less wrong than most. The discrepancy of the order of 100,000 between Census figure and contemporaneous annual estimate occurred more than once in the past, in my experience. In the huge passenger movement from which it is estimated, migration is a needle in a bundle of hay, and consequent error or estimate of population is exacerbated by the length of the interval (in this case eight years) since last Census.

Emigration data in the post-Famine era were also fallible. During and after the Famine, emigration made Irish economic history unique. Did emigration make things better or worse for those who left and those who remained? Relying on official data, Swansea-based economic historian S. H. Cousens, who published several useful papers on Irish demographic history before and after the Famine in the 1950s and 1960s, claimed that after the Famine a poverty trap hindered people from emigrating from the poorer western counties of Ireland, implying, in effect, that emigration increased regional income disparities instead of reducing them (Cousens 1961, 1964). Later, Ó Gráda (1975, 1977) and the late David Fitzpatrick (1980) separately showed how reliance on official data had distorted perceptions of both emigrants’ destinations and their regional origins within Ireland. More especially, the data seriously underestimated the relative importance of migration to Britain, particularly in the immediate post-Famine decades. Age-cohort comparisons suggested that emigration was not hindered by a poverty trap; rather, throughout the post-famine decades emigration rates ran highest in the poorer counties. This had the important implication that from the Famine onwards emigration tended to *reduce* regional inequalities, as evidenced by the significant convergence in wages across Irish counties between 1850 and 1870 (Ó Gráda 1994: 237).

4. AGE HEAPING 1841- 1941

“I may notice a curious anomaly which I have discovered between former returns on this subject, viz., the uncertainty whether the fifth and tenth years were included with those which preceded, or those which followed them. I am led to think this has been a fertile source of error in comparing returns of ages in different countries with each other.”

Capt. Thomas Larcom, Census Commissioner in Ireland in 1841¹⁵

The tendency of respondents to report ages in round numbers has long been a feature of historical censuses in Ireland and elsewhere. Measures of this tendency have been widely used by economic historians as proxies for ‘quantitative literacy’ or, indeed, human capital more generally, in the past (A’Hearn *et al.* 2009). The 1841 census published data on ages by single year, accompanied by ‘Curves representing the number of persons living at every age in the several provinces, in the City of Dublin and the Rural District of Mayo—and in the whole of Ireland’ (1841 Census, Plate V). These data led to estimates of age-heaping, widely regarded as a proxy for numeracy, in Ireland in 1841. The most commonly used measure of age-heaping is the Whipple Index (WI), widely used for its simplicity and favoured by United Nations demographers since the 1970s. It measures the extent to which those aged between 23 and 62 years in a particular population group are inclined to report ages ending in 0 or 5, by adding the number choosing 0 or 5, multiplying it by 5, and dividing by the total aged 23-62 (inclusive). The index is then obtained by multiplying the outcome by a hundred.¹⁶ Ruling out negative heaping due to zeros and

¹⁴ Ken O’Brien, ‘Have ‘phantom Irish’ spawned economic woes?’, *Irish Times*, 20 August 1979; *id.*, ‘Census shows leap of 386,633 in eight years’, *Irish Times*, 8 September 1979; *id.*, ‘No widespread undercounting in 1971 census’, *Irish Times*, 14 September 1979; *Evening Press*, “Census Misaid 114,000 People”, 17 August 1979, citing Brendan Whelan.

¹⁵ Larcom 1843: 325.

¹⁶ $WI = (500)(n_{25}+n_{30}+n_{35} \dots + n_{60})/(n_{23}+n_{24}+ \dots + n_{61}+n_{62})$, where n_i is the number aged i . The *UN Demographic Yearbook* has proposed the following groupings: Highly Accurate data [WI<105]; Approximate data [110-124.9]; Rough data [125-174.9]; Very Rough data [175+].

fives being avoided, the value of the index can range from 100 (no age heaping) to 500 (complete age-heaping). The WI values for Dublin City in 1841 turn out to have been 191 for males and 215 for females, while for rural Mayo they were 228 and 235, respectively, and for Ireland as a whole, 204 and 213. These values reflect the common finding that in poor economies WI values are high, with females recording higher values than males.

So far, so good; but what is one to make of WI values of 230 and 217 for inhabitants of New York City’s heavily Irish First Ward in 1855? Does this mean that the Irishmen and Irishwomen who emigrated before 1855 were less numerate and, to that extent, were adversely selected? And why did women age-heap less than men in New York? It was this kind of data that led Mokyr and Ó Gráda (1982) to reject the hypothesis that “prefamine emigration constituted in any sense a ‘brain drain’ from Ireland”. But they were almost certainly wrong! Although their findings have often been cited, they got it wrong because they took the published data at face value. The reason why the New York 1855 census and the US 1860 census imply greater age-heaping among the Irish abroad than at home is almost certainly that the Irish 1841 census was more carefully administered than the US censuses. The census data are as much a reflection of numeracy as the care taken with enumeration (A’Hearn *et al.* 2009; A’Hearn *et al.* 2022).

The implications of age heaping for the understanding of demography has long been recognised. However, recent research has cast serious doubt on its use as a cross-county or cross-temporal measure of numeracy or human capital. An important paper by A’Hearn *et al.* (2022) indicates that the variations in age-heaping in Italy are a not just a construct of education, but also of the economic, cultural and institutional context. For example, the culture of celebrating birthdays, which may have reminded people of their ages each year, was not a feature of 19th century Italy – more commonly the ‘name day’, the feast of the saint after whom the person was named, was celebrated – and in Ireland, too, birthday celebrations are a relatively recent cultural import.

In the case of Ireland, a particularly revealing experiment conducted in the process of compiling the 1941 register of population shows that age-heaping, still a clear feature of the 1936 census, was mostly the product of how age was ascertained. Although the 1941 Register, taken during the Emergency, was not a full census, it was the first register of the population to ask respondents to report date of birth and not age (Dept. of Industry and Commerce, 1944). Information in the appendix of the report, reproduced here, describes an experiment undertaken by the authors in which age heaping was compared between a sample of thirty DEDs in 1941 and the returns of the 1936 census. Table 3 below reproduces the information. It expresses the number reporting ages ending in the digits 9 and 1 relative to those reporting ages ending in zero.

Table 3. Age heaping, 1936 and 1941

Central Age	Age ending in digit (1936)			Central Age	Age ending in digit (1941)		
	9	0	1		9	0	1
30	86.7	100.0	70.7	30	108.1	100.0	99.7
40	80.0	100.0	61.7	40	87.8	100.0	126.6
50	69.2	100.0	56.8	50	70.7	100.0	92.1
60	72.3	100.0	57.3	60	79.7	100.0	101.0
Total	77.4	100.0	61.9	Total	87.8	100.0	105.3

The experiment concluded that the change from reporting age to date of birth clearly reduced the extent of age heaping, as can be seen in the table, where the number reporting an age ending in 9 or 1 relative to those reporting an age ending in zero, increases markedly between 1936 and 1941. Still, age-heaping persisted in the form of the ‘126.6’ in the final column, which amounts to indicating that over one-fifth of those who claimed to have been born in 1900 were not born in that year.

A further examination in the explanatory notes of the 1946 Census (volume V, part I), which also asked for particulars of date of birth instead of age, confirms what was uncovered in 1941. In fact, age heaping almost entirely disappears. That age heaping was so dramatically reduced within this relatively short interval, indicates individuals had a better sense of when they were born than the extent of age heaping in earlier censuses might suggest.

5. AGE MISREPORTING IN 1911

I wonder what age he put me down – 76?
Oh, tell a good one while yer at it.

Percy French¹⁷

The old age pension was introduced in the United Kingdom on 1 January 1909. Its disproportionate impact on Ireland did not take long to attract the attention of the media and political commentators in the United Kingdom. Chancellor of the Exchequer Lloyd George at first charitably attributed this to emigration: the young had left but the old remained. Later he announced that during the first eight months of its existence the number of pensions per thousand population in Ireland was 42, compared to only 15 in Scotland and 11 in England. Expenditures per head of the population were 7s, 2s 5d, and 1s 10d, respectively (*Kerry Weekly Reporter*, 2 Jan 1909; *Western People* 25 Sept 1919). A fellow parliamentarian who remarked in the Commons that the death rate among Irish old age pensioners was lower than among English and Scottish pensioners drew Irish cheers, but the cheering stopped when he added that “it would be unsafe to draw any inference from that fact, given the short period the act was in operation” (*Evening Herald*, 13 May 1909).

The greater uptake of the pension in Ireland was due in part to relative Irish poverty, but what would today be called welfare fraud was also a significant factor. In many cases, neither the incomes nor the ages of claimants in Ireland could be easily ascertained. Ages were an issue because civil registration did not begin in Ireland until 1864, and so formal evidence of claimants’ ages was often lacking. Often, the evidence of a baptismal certificate was enough to satisfy officials, but often too, such evidence was not available. This prompted thousands of would-be pensioners to exaggerate their ages in the hopes of qualifying for a pension. Sometimes, in order to prevent fraud, the authorities tried to find claimants in the 1841 and 1851 census enumeration forms, being absent providing prima facie evidence, if not proof, of age exaggeration. This may have made sense but it virtually guaranteed that ages would be misreported in future censuses (Ó Gráda 2002: 136)

The pension was a boon to the elderly Irish poor. It gave them a new dignity and increased their bargaining power within the household. It kept many of them out of the workhouse. The first pension day, 1 January 1909, was a red-letter day across Ireland and the elation and the merriment lasted for months. The ubiquitous road races for OAPs, typically of 100 yards, during the rural and small-town summer festivals of 1909 were symptomatic. At the annual sports held Crolly Bridge in northwest Donegal, “much interest was centred in a challenge by Owen Boyle, a centenarian, to run any old pensioner a mile for £5”, although on the morning of the sports “it was ascertained that the old veteran was lying on his bed”. In Ballinamore, County Leitrim, another centenarian, Thomas Horan, beat five septuagenarians in the OAP event to loud cheering. However, since the only likely Thomas Horan living within twenty miles of Ballinamore at the time was aged only 65 in the 1901 census and 76 in 1911, one is surely entitled to suspect that if this Thomas Horan was a genuine pensioner, he was not a genuine centenarian.¹⁸

Our interest here is the impact of the pension on some official statistics. In a lecture on the 1911 census to this Society in March 1913, Registrar-General William Thompson (1912/3: 58, 55) attributed the drop in the numbers on poor relief between 1901 and 1911 to the pension but, rather ludicrously, dismissed the jump in the number of those aged over 55 years as unsurprising, “having regard to the numerous cases of extreme longevity recorded in the public press from time to time in this country”. Thompson presented a version of the same paper to the Royal Statistical Society two months later. Those who questioned him on the issue of ages included the father of the Yule distribution, George Udny Yule. Yule confessed that “the more he had looked into them the more he had been puzzled as to the explanation of the facts”. He described the notion put forward (presumably by Thompson) in the 1911 census that the pension had prompted people to find out their correct ages as “a gracious and kindly theory to account for the facts, but of course it was not the theory that first occurred to people with unpleasant minds, who thought that the granting of Old Age Pensions would operate in a different way.” Yule found the numbers very odd indeed and “not so very easily accounted for either by a substitution of truth for falsehood or a substitution of falsehood for truth, or a substitution of direct and intentional falsehood for merely casual falsehood”. Puzzled by the shift in patterns across age-cohorts he was left musing whether the pension had prompted people with an entitlement to the pension to return to Ireland from abroad (in Thompson 1913: 659). Thompson’s reply to Yule’s comments was so lame that it is worth quoting:

¹⁷ Percy French, ‘Michael O’Ryan gets the pension’, in *id. Prose, poems, and Parodies* (Dublin, 1929), p. 199.

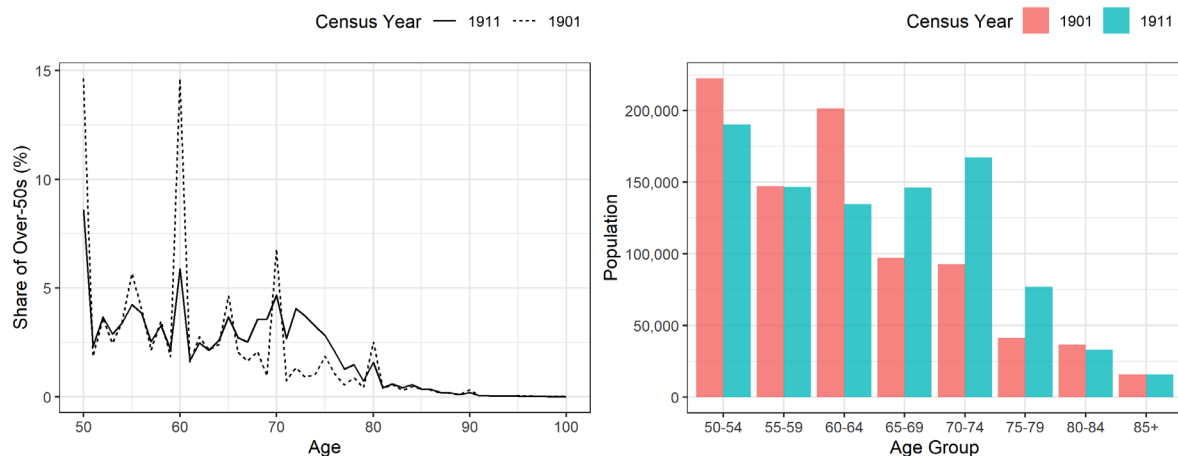
¹⁸ *Derry Journal*, 30 May 1910; *Leitrim Observer*, 28 August 1909; 1901 Census, <http://www.census.nationalarchives.ie/pages/1901/Leitrim/Stralongford/Ballynameeltoge/1482361/>

With regard to age groups, that was not easily explained, especially with regard to those over 70, but there was one fact that they must bear in mind, that they were dealing now with old people of a population of over 8 millions. In 1841 the Irish population was over 8 millions, but now it was less than 4.5 millions. He thought that altogether accounted for the greater proportion of old people in Ireland than in England and Scotland. He was sure that the population in England had more than doubled that of seventy years ago, and the same thing applied to Scotland. Therefore, in England and Scotland they were dealing with the old people of half the population they had at the present time, whereas in Ireland they were dealing with double the number.

In a further comment on the 1911 Irish census in the *Journal of the Royal Statistical Society*, another prolific English statistician, Thomas Welton noted “a tendency to exaggerate the numbers at ages 65 and upwards”. He was left in no doubt that the numbers were “clearly wrong, even if the 1901 figures are pretty nearly right” (Welton 1914: 212-3).

Figures 2[a] and 2[b] compare the proportion of over-50s in Ireland in 1901 and 1911, according to the census of those years. Figure 2[a] shows that there was a significant reduction in age-heaping, but that it was accompanied by a tendency for people to exaggerate their true age. It would seem that the bulk of the over-70s in 1911 were from the age-heapers (50, 55, 60, 65) in 1901. There is also a hint from the numbers declaring that they were 67-69 in 1911 that people began to exaggerate in anticipation of applying for a pension. And the fact that there was less age-heaping at 70 in 1911 than in 1901 suggests that some of those really aged 70 were also adding a few years. Some of those anchored their reported age to being 70 in 1908/9, so that their census declaration would tally with the age they declared when they obtained the pension. In figure 2[b], population totals in 1901 and 1911 are divided into five-year blocks. Note in particular the increases in the 65-69, 70-74, and 75-79-year-old age cohorts, and the sharp reduction in the 60-64-year-old cohort. There are about 50,000 more declaring they are 70-74 years in 1911 than in 1901.

Figures 2[a] and 2[b] Proportion of over-50s in Ireland in 1901 and 1911



Figures 3[a] and 3[b] compare ages over 50 reported by Irish-born and others in the 1901 and 1911 censuses of England and Wales. At first, it is perhaps the proneness of the Irish-born to age-heap that stands out most. But where the patterns for the non-Irish are almost identical in both years, those for the Irish born closely echo the patterns already described for the Irish in Ireland. It would appear that many of those in their 50s and 60s, and particularly of those who gave their age as 60 in 1901, exaggerated their ages in 1911. This hints at the likelihood that age exaggeration was less where it was more difficult, general registration having been established in England and Wales in 1837.

Figure 3[a] the Irish-born and Others in England and Wales in 1901 and 1911: Over 50s

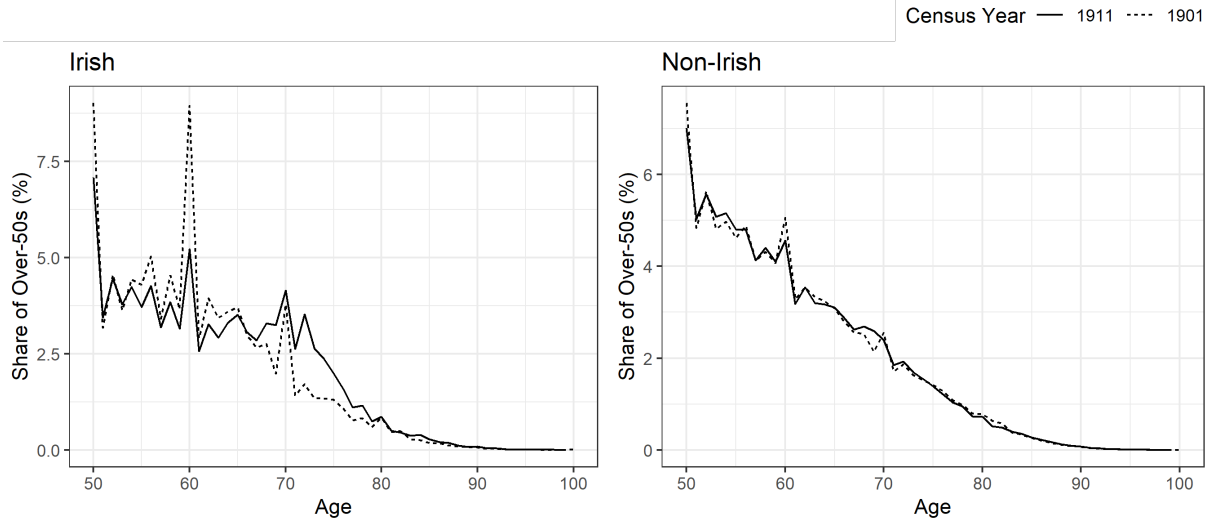


Figure 3[b] The Irish-born and Others in England and Wales in 1901 and 1911: Populations



Figures 4[a] and 4[b] shift the focus to a related issue: the impact of the pension in reports of ages at death. Is the age exaggeration in the census continued when deaths are registered? Our source here is the recently digitised data available at www.irishgenealogy.ie. Figure 4[a] compares the numbers of deaths at ages 50 and over in 1907-1910 relative to 1906. A slight tendency to report higher ages relative to 1906 is discernible in 1907 and 1908, but it is nothing compared to 1909 and 1910. The tendency toward less age-heaping in the census is mimicked in the numbers for 60 and 65 in the death registers in 1909 and 1910. The pillars in Figure 4[b] confirm that age exaggeration began at a relatively early age, and repeats the dramatic outcome for the 70-to-74 year old cohort.

Figure 4[a] Deaths 1907-1910 Compared to 1906

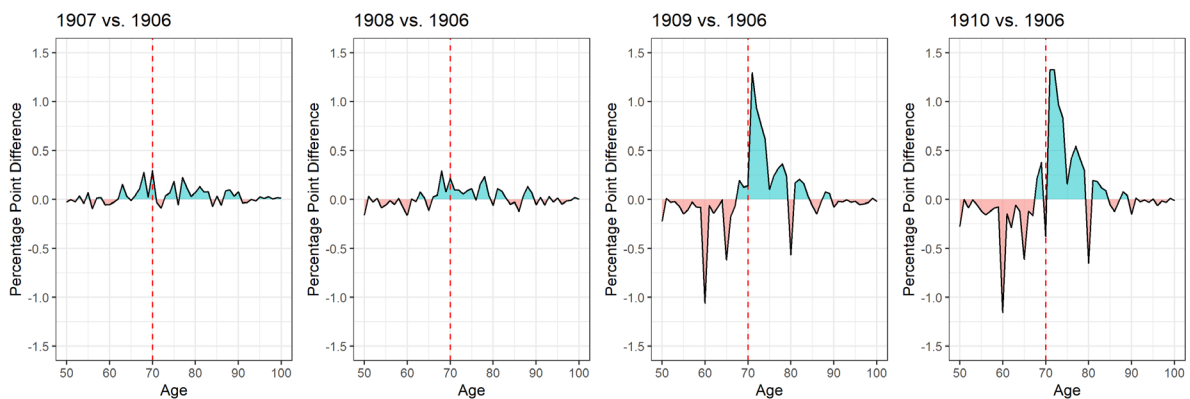
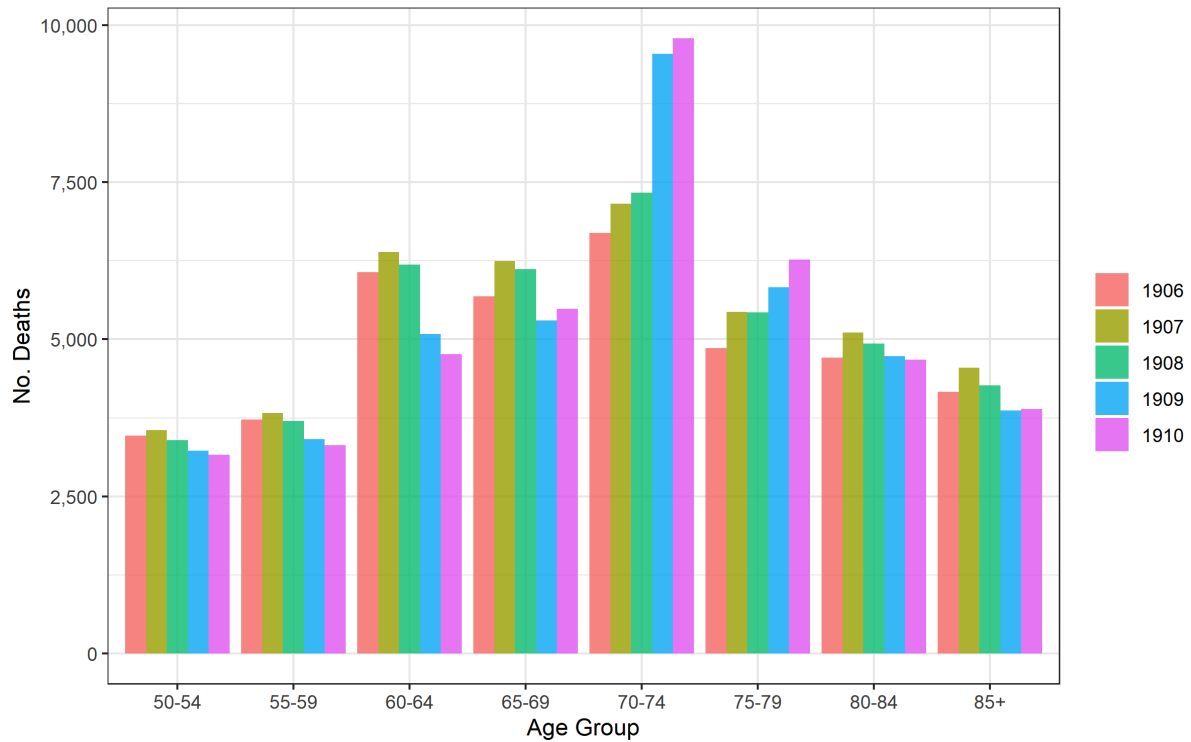


Figure 4[b] Deaths 1906-1910: The Over 50s



What are the implications for life tables of this age-reporting anomaly? Using the Irish genealogy website, we created life tables for both 1901 and 1911. Columns 2 and 3 of Table 4 describe the outcome for a range of ages. The increase of 3 to 4 years over the decade is rather remarkable and presumably due in large part to the age exaggeration described above, as already pointed out by Shane Whelan (2008; 2022a: 15-19; compare Walsh 2017). We accordingly constructed a counterfactual life-table wherein the total number of deaths and total population size are distributed according to the 1901 population structure. Now we can see that true life expectancy rose a little between 1901 and 1911. This is because the Crude Death Rate dropped from 18.1 per 1,000 to 16.7 per 1,000. However, the 1911 life expectancy as reflected in ages registered at death is far greater than it should have been.

Table 4. Life Expectancy at Various Ages, 1901-1911

Age	1901	1911	1911 'True'
0	47	51	48
1	52	57	53
5	52	56	53
30	32	36	33
50	19	22	19

The age distortion induced by the old age pension in the 1911 census was still present in the first Irish Free State Census in 1926. The incentive was still there, particularly since the 1841 and 1851 enumeration forms had gone up in smoke in the bombing of the Four Courts in late June 1922. Comparing age-distributions at provincial level between 1881 and 1926, it emerges that age distortion was more severe in Connacht and 3-county-Ulster than in Munster and especially Leinster (Figure 5). Finally, Figure 6 compares a low-income DED (Belmullet) with well-off Rathdown in 1926. The outcome is an extreme version of Figure 5.

Figure 5. Population Distributions 1881-1926

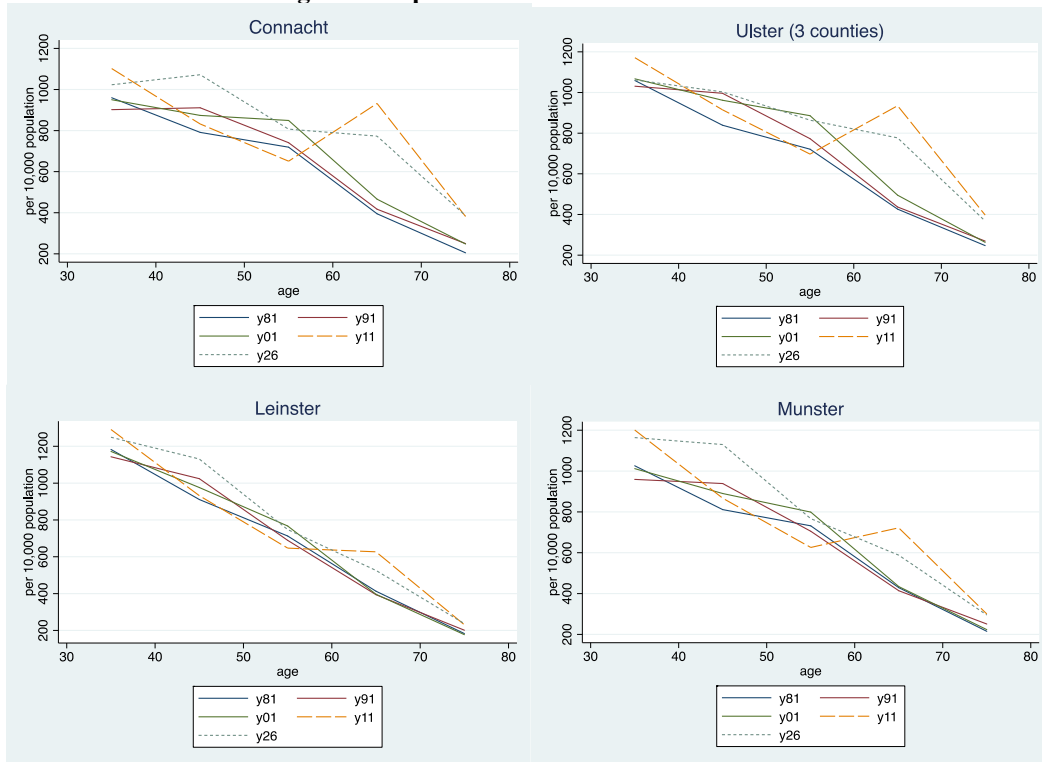
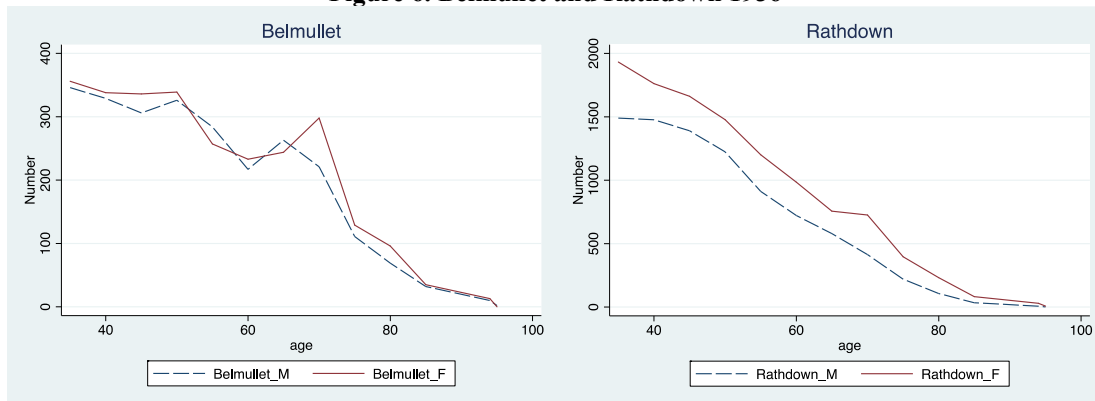


Figure 6. Belmullet and Rathdown 1936



6. THE REGISTRATION OF BIRTHS

Registrar - Why "gentlemen"? I'm the only person here.
 Exuberant Father - Then I'd better go back and count the twins again.

*Evening Echo, 1938*¹⁹

As we have already noted, civil registration came slightly later to Ireland than elsewhere in the UK. Nonetheless the annual reports of the registrar general published since 1864 offer a wealth of detailed information on Ireland's demography and society from the second half of the 19th Century through to today, a resource that was carefully and expertly summarised and explored in John FitzGerald's Presidential address to this society in 2016 (FitzGerald 2016). The statistics not only allow for comparisons between Ireland and elsewhere but can also illuminate differences within Ireland. And, as Fitzgerald notes, the society itself played a leading role in initiating the collection of vital statistics, contributing to the preparation of the bill that established the formal civil registration system.

¹⁹ *Evening Echo*, Friday August 12, 1938, p.3

Prior to the introduction of general registration in 1864, the picture of births, deaths and marriages in Ireland is less clear. Mokyr (1985: 34, 37) put the birth rate in Ireland on the eve of the Famine at 38-40 per thousand and infant mortality rate 223-224 per thousand. The earliest civil registration data however put the former at 25 per thousand and the latter at less than 100 per thousand in the mid-1860s, and suggested that they remained at broadly those levels until the early 1910s (Mitchell 1975: 110, 117, 128, 130). Such a decline in IMR in the wake of the Famine would have been truly remarkable. A more plausible reading is that increasing registration of births hid a decline in the infant mortality rate, a case that has been forcefully argued in Verrière's unduly neglected *Population de l'Irlande* (1979). Verrière reckoned that under-registration led to infant mortality being underestimated by nearly two-fifths c. 1870.²⁰ His calculations would still allow for a significant fall in IMR between the early 1840s and the late 1860s. In gentle swipes at a paper in this Journal (Barry 1941) and at Delaney et al. (2009) in a paper written shortly before his death, Brendan Walsh (2017: 129fn3), who reckoned that Verrière and others may have exaggerated under-reporting, nevertheless noted that "The high rates of under-reporting in the west of Ireland should be borne in mind in connection with the claim that life expectancy in the mid-twentieth century was higher in Connacht than in Dublin".

The underreporting of births then is unlikely to have been a purely 19th Century issue. Comparing annual births from the vital statistics to population by age cohort from various censuses, Coward (1982) estimated that underestimation of births was somewhere between 3 - 10% in the period between 1916 and 1941. A particularly illuminating episode is the dramatic increase in registered births in Ireland in 1942.

Neutrality did not shield Ireland from WW2. The resultant "Emergency" reduced living standards and arguably resulted in excess mortality in the low thousands, not from starvation but from hunger-related illnesses and debility (Ó Gráda and O'Rourke 2022: 349). A comparison with trends in the UK suggests that, using data on overall and infant mortality and the death rate from tuberculosis, whereas the early years of the war were the toughest in all parts of the UK, but in southern Ireland the worst was in 1943 and 1944. In this respect the rise in the birth rate in Ireland in 1942 to a level sustained thereafter is somewhat baffling, until one bears in mind that changes in public health policy influenced the numbers.

Hughes (1977), in a report on emigration for the ESRI, highlighted the unusual increase in births from 56,780 in 1941 to 66,117 in 1942, a 16% increase. He noted that the authors of the 1946 Census report attributed this change to the shortening of the birth to registration lag following the introduction of food rationing in 1942. Hughes remained sceptical, however, and argued that this explanation cannot explain why the birth rate remained elevated in subsequent years. He also dismissed the idea that such a large increase could have been caused by an increase in marital fertility or the number of marriages, as suggested in the report of the Emigration Commission in 1956 (Ireland 1956). Instead, Hughes argues that the introduction of rationing in 1942, and Children's Allowances in 1944, created strong incentives for births to be registered. The increase in births from the early 1940s therefore is likely to reflect the registration of births that previously would have gone unregistered.

Coward (1982) examines this hypothesis by comparing recorded births to the population of young children in the 1946 census. His findings are consistent with the arguments put forward by Hughes, with evidence of over registration of births in 1942 and 1944 and under registration in previous years, 1936-41 of around 4-5%.²¹

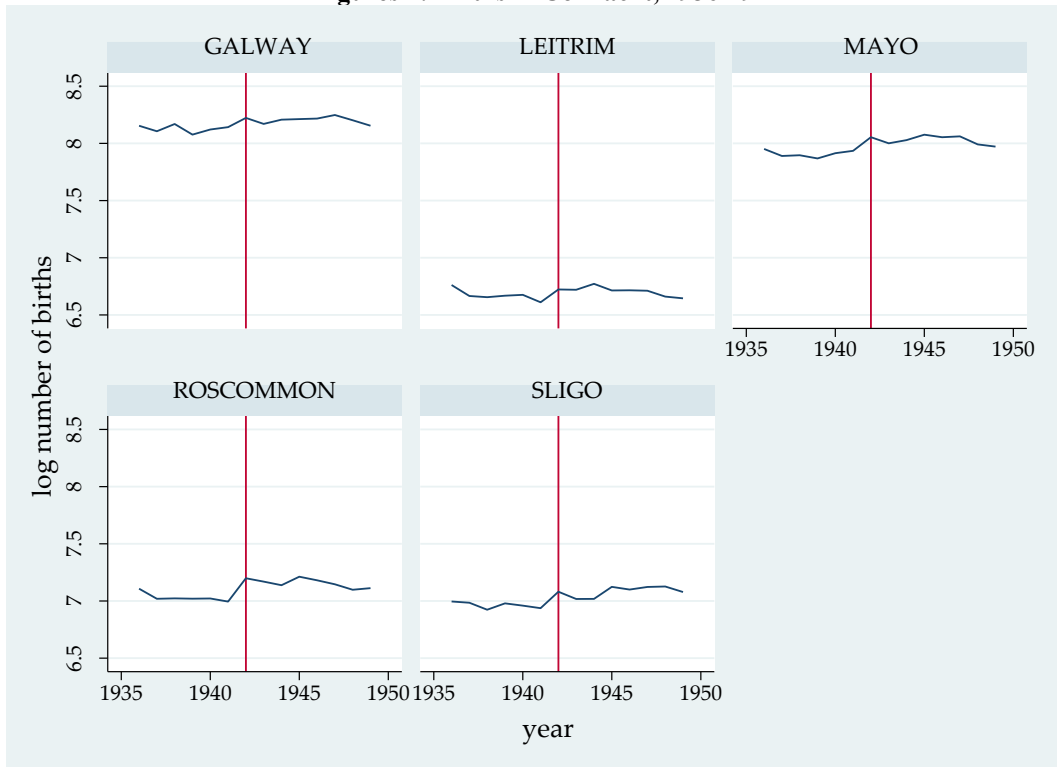
Did under registration vary geographically? Coward explores registration by province and finds that under registration appears to have been more of an issue in Connacht and Ulster prior to 1942 but is cautious due to the assumptions required for these calculations.²² In Figures 7-11 below we illustrate the changes in birth in 1942 by county, for both Ireland and Northern Ireland, using Registrar General Reports available from the Database of Irish Historical Statistics (Kennedy *et al.* 1997).

²⁰ TD James Dillon argued in the Dáil in 1937, in relation to missing birth certificates for those claiming the Old Age Pension, that under-registration in rural areas in 19th century Ireland was driven by a fear of vaccination, an early example of vaccine hesitancy (Dáil Éireann, 1937).

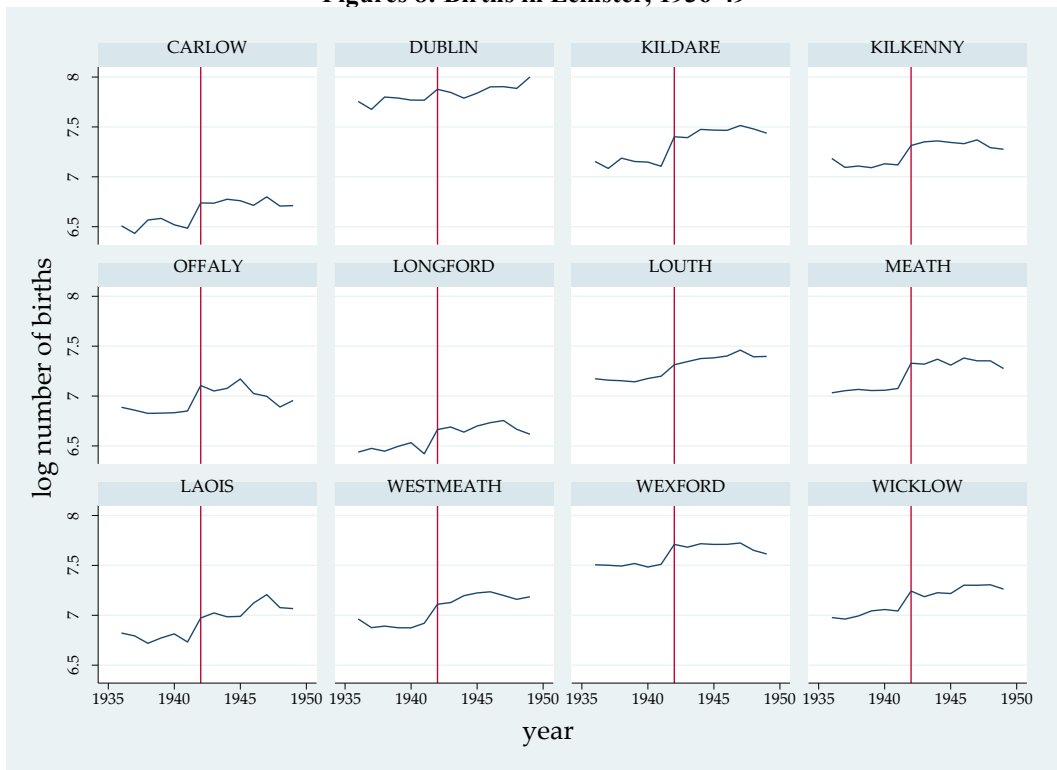
²¹ Estimates of the extent of under registration depend on assumptions regarding mortality and migration.

²² For example, Coward assumes national mortality rates and zero net migration in his calculations.

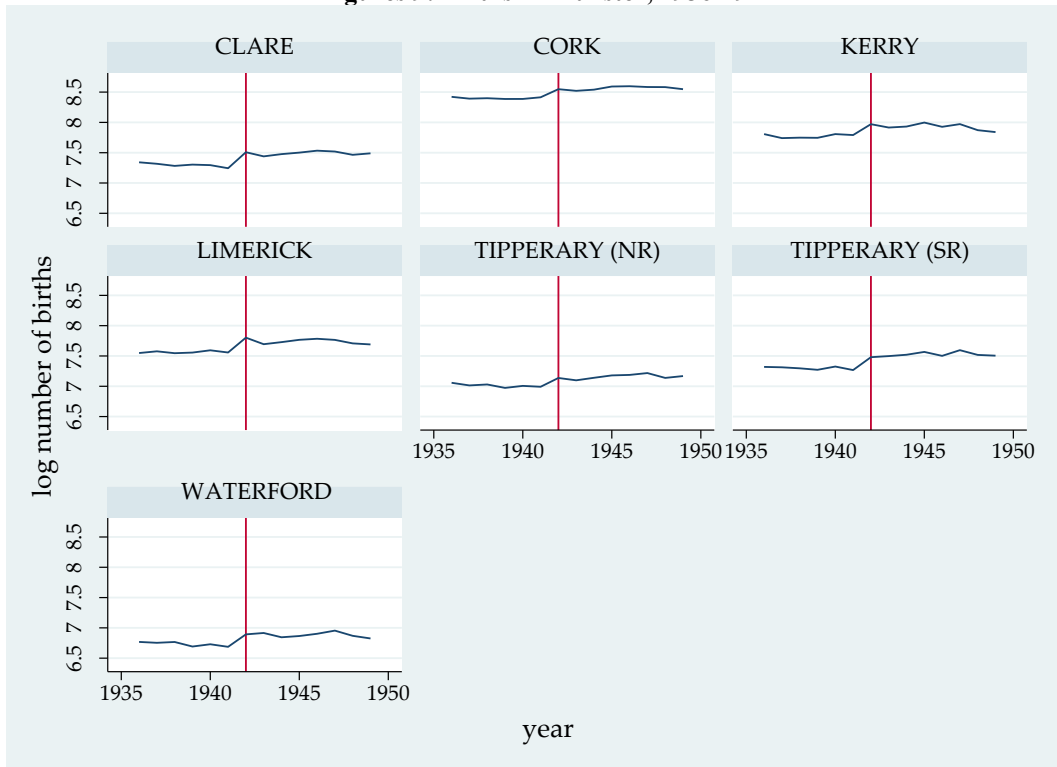
Figures 7: Births in Connacht, 1936-49



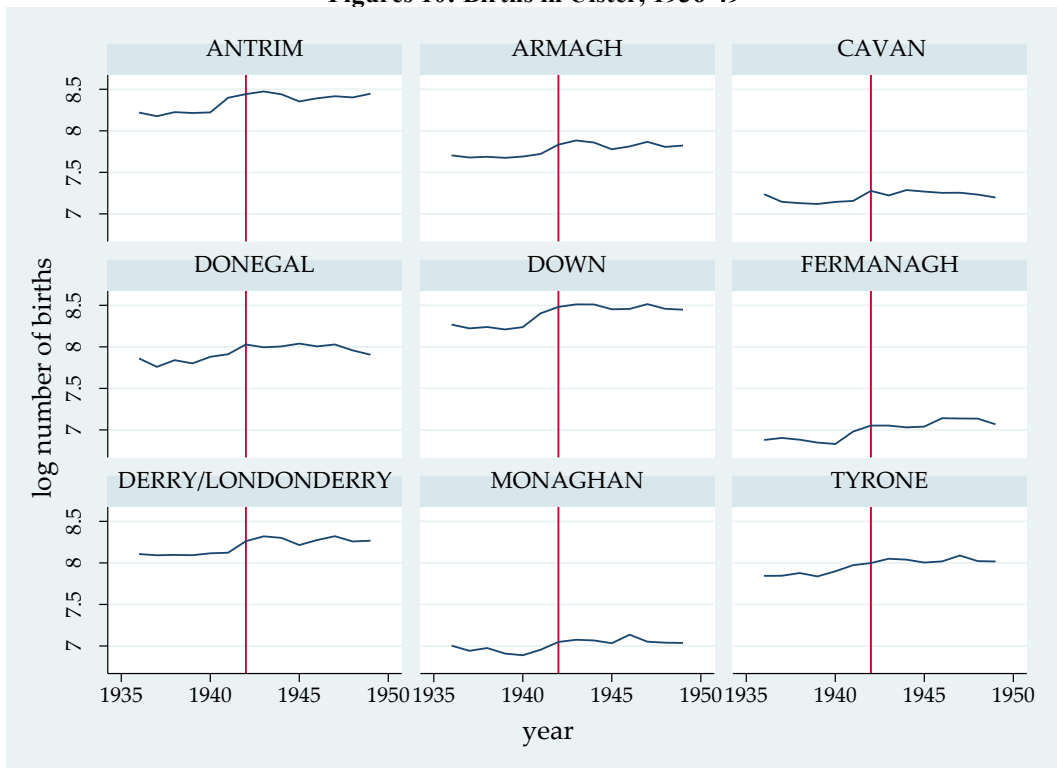
Figures 8: Births in Leinster, 1936-49



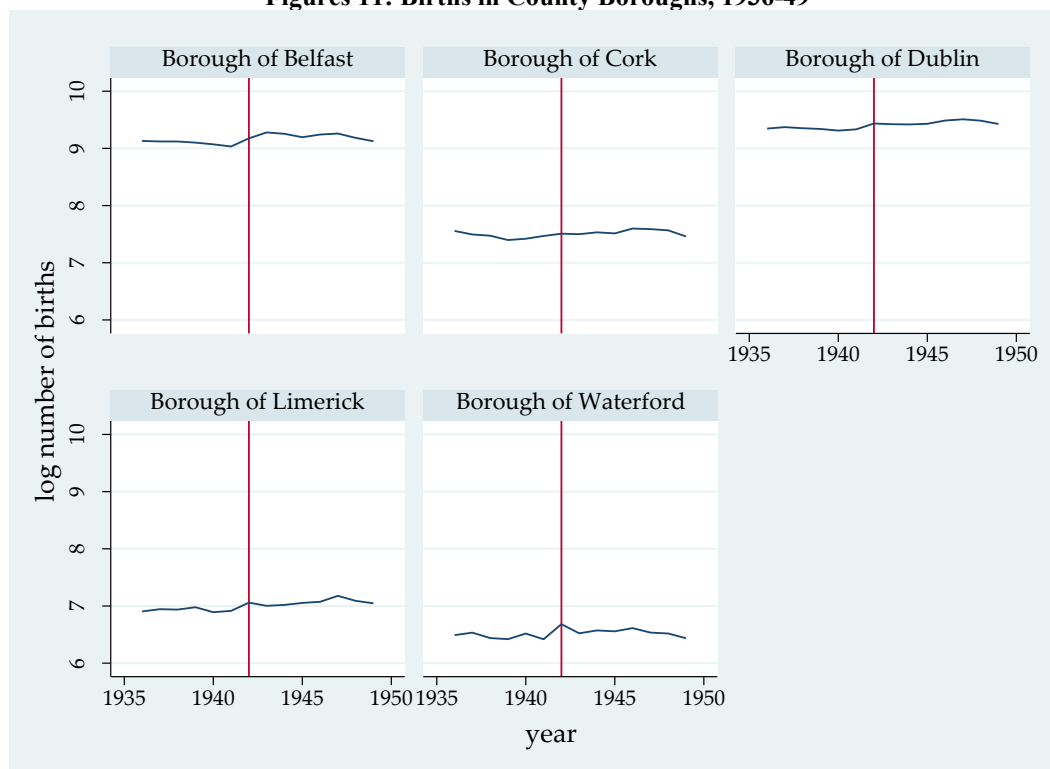
Figures 9: Births in Munster, 1936-49



Figures 10: Births in Ulster, 1936-49



Figures 11: Births in County Boroughs, 1936-49



The figures reveal some interesting patterns. First, as the red lines indicate, there is a sharp rise in births in 1942 in *all* southern counties (excluding some county boroughs). What is also clear is that the increase in 1942 is sustained over the rest of the decade, indicating that this was not a once-off increase driven by a reduction in the registration lag due to rationing (Hughes, 1977).²³ The abrupt and sustained increase in births is most apparent for counties in Leinster and Munster (see appendix for figures by province). Second, however, such rises are not as clearly evident for Northern Ireland; any rises do not constitute sharp discontinuities like they do in the South. Third, the rises in urban areas, with the exception of Waterford, (Figure 11) were more modest, presumably because the registration of births was already more complete in the cities.²⁴ Fourth, there were significant rises too in some counties between 1943 and 1944 corresponding to the introduction of Children’s Allowances in 1944. There were big rises in Kildare (8.6%) and in Westmeath (7.1%), and there were rises in all Connacht counties except Sligo. The children's allowance effect was generally much weaker than rationing effect, however, presumably because most of the work had been done in 1942. Tellingly, perhaps, in the latter period no area in Northern Ireland registered an increase in births.

To further explore the extent of under-registration we can again utilise the 1941 Register of Population. The register was initiated by the Emergency Powers (No. 116) Order “with a view to furnishing the Department of Supplies with a list of the names and addresses of all persons in Eire for the purpose of issuing ration books.” (Dept. of Industry and Commerce 1944). Enumeration took place on 16 November 1941. What makes the Register particularly useful for the estimation of the extent of under registration is that it created an incentive for all infants to be counted for ration book purposes, while not affecting the incentive to register births before 16 November 1941. Combining information on the population by county/province under one year of age in 1941 with Registrar General returns on births and infant mortality allows for a closer look at the number of “missing” births by county/province. The calculations for provinces are shown in Table 5.

²³ The Register of Population (Dept. of Industry and Commerce 1944) estimates that, based on rationing system figures, the actual number of births during the calendar year of 1942 was 62,131.

²⁴ Table VII of the 1950 *Annual Report the Registrar-General on Births, Marriages, and Deaths in Ireland* notes ‘a tendency towards uniformity’ between urban and rural areas between 1938 and 1950, though does not give a reason for it.

Table 5. Estimating Under Registration of Births in 1941

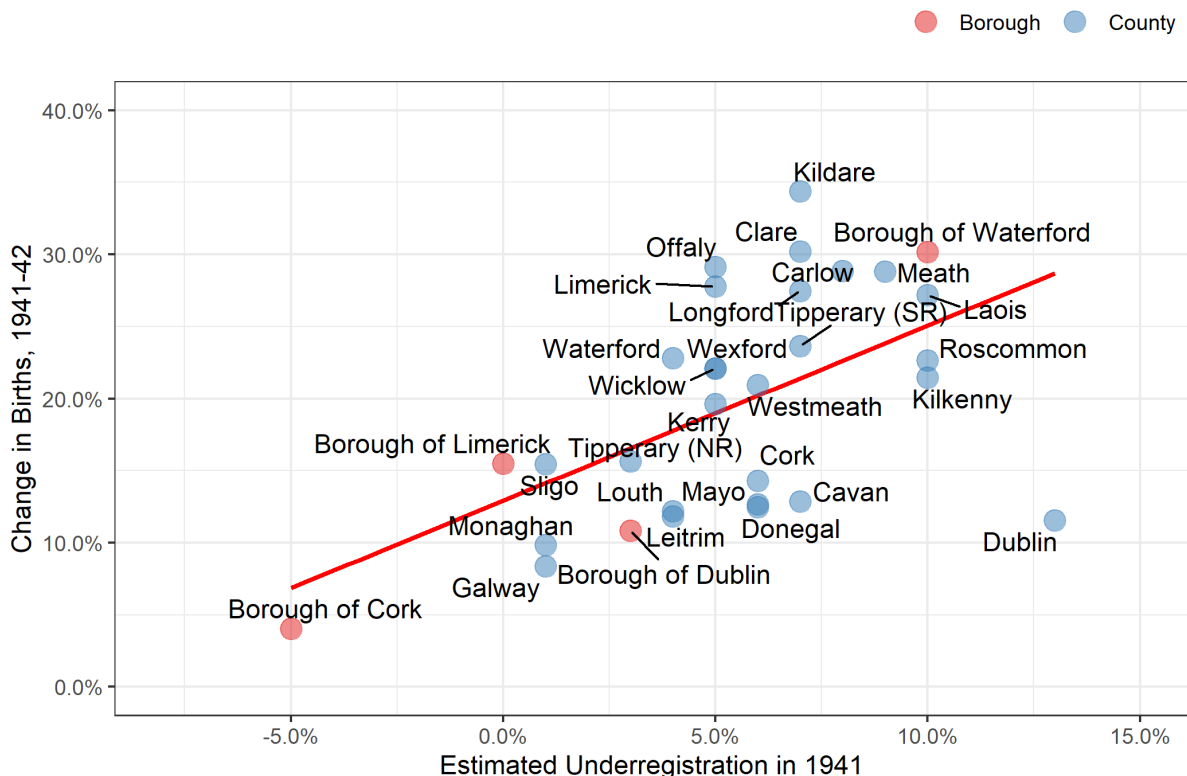
Province	Population Under 1	Births	Deaths Under 1	Surviving Infants	Under-registration
Leinster	24,807	25,684	2,293	23,391	0.06
Munster	16,463	16,943	1,182	15,761	0.04
Connacht	9,034	9,095	419	8,676	0.04
Ulster (3 Cos.)	5,051	5,058	281	4,777	0.05
Total	55,355	56,780	4,175	52,605	0.05

Note: "Under-registration" is calculated as 1 minus the ratio of surviving births to the number enumerated as under 1 year in 1941 [$1 - (\text{Surviving to 1/Pop under 1})$]

The population under 1 year old was recoded as 55,355 in 1941, while the number of births and infant deaths were 56,780 and 4,175 respectively, giving an estimate of "missing births" of around 5%. Table 6 is estimated based on the assumption of zero net migration and the accurate recording of deaths. Taking the issue of "missing deaths" first, the under registration of deaths would have the effect of reducing the number of surviving births after 1 year. If deaths are undercounted therefore, the estimate of under registration of births would actually increase, albeit by a very small amount. Migration assumptions are potentially more consequential. However, to square the number of registered births in 1941 with the number of one-year olds in each county from the register, you would have to assume net immigration to Ireland of one-year olds for the year 1941 of close to 2,750. While some overall net immigration of small children is possible, it is less plausible that net in-migration was experienced in Mayo or Roscommon of the scale required to overturn the conclusion of under registration. If net out-migration is assumed instead, as is plausible for most counties, the scale of under registration increases. Either way, focusing on a single year helps to minimise the scale of assumptions required.

Looking at the regional variation does not reveal a geographical pattern of under-registration that might be expected. Although the figures in the final column of Table 5 indicate some amount of under counting of births across all provinces, as with increases in births, under registration seems marginally more pronounced in Leinster. Figure 12 explores this relationship further, showing the correlation between the percentage change in births between 1941 and 1942 and the estimated level of under registration in 1941 by county. The picture is quite revealing in that a relatively strong (0.6) correlation exists.

Figure 12. 'Under registration', 1941 and increase in registered births, 1941-42
Correlation = +0.552



The implications of the under-registration of births, and indeed, of deaths have a bearing on Irish economic history beyond demography. As Hughes (1977: 13) remarked:

“This is a matter on which some work needs to be done because if there was substantial under-registration of births before 1942 without a compensating under-registration of deaths, a number of demographic series, including the net migration series presented here, would have to be revised to take account of this. The net migration estimates for 1926-41 would, of course, understate emigration and overstate immigration if the under-registration of births was not offset by under-registration of deaths over this period”.

We conclude on a more poignant note, with the account of the tragic deaths of two Mayomen in late December 1944. On Christmas Day Patrick Grealis’s wife gave birth to a boy on the small island of Inishbiggle, located half-way between Achill and the mainland at Ballycroy. On the following day Grealis (36) and a friend, Michael O’Boyle (19), both migratory labourers, set off for Ballycroy on the mainland in a currach to register the birth. On a good day the crossing took only ten minutes. But the two faced heavy seas on their return and, having duly registered the birth, their currach capsized and both drowned. The birth certificate was found in Grealis’s clothing; he left a widow and eight children.²⁵ Why, one may wonder, the rush to register the birth? The answer is that in order for a child to qualify for entitlements to rationed food and children’s allowances, one needed evidence of birth. The quest of Patrick Grealis for those entitlements, and others more fortunate, left its mark at macro level on trends in the Irish birth rate during the emergency.

Figure 13. The grave of Patrick Grealis



7. CONCLUSION

Official statistics provide us with invaluable measures of Irish and society life over the last 175 years. But the statistics themselves are also shaped by the economic, social and political context of the time. Likewise, the accuracy and completeness of statistics are determined not just by the dedication and attention to detail of the enumerators and compilers, but by the incentives of those whom the statistics hope to record. This inevitably leads to inaccuracies, inaccuracies that, as Budd and Guinnane (1991) argue, themselves hold valuable clues for economic historians regarding the society being measured.

In these aspects of course, Irish statistics are not unique; all countries have faced similar challenges and the quality of Irish historical statistics likely compares well to those of others. The pitfalls of the statistics highlighted in this paper are presented to guide future researchers, not to be critical of those that produced them. The statisticians and public servants who compiled the statistics, worked tirelessly to continuously improve the quality and accuracy of statistics. This society played a crucial role in this pursuit, of which the journal archive is an invaluable and lasting testament.

The material outlined in this paper has implications for understanding aspects of Irish economic and social history such as fertility, infant mortality, life expectancy and emigration. What then are the general lessons for the social

²⁵ *Irish Press*, ‘Two lost in currach tragedy’, 6 January 1945; *Connacht Tribune*, ‘Ballycroy double drowning tragedy: appeals for subscriptions dependents’, 31 March 1945.

scientists who wish to make use of Irish historical statistics? We do not profess, by any means, to have identified all potential traps. Rather our examples serve as illustrations which prompt some general reflections. Firstly, while modern statistics are not immune to errors, a certain amount of ‘learning by doing’ applies to the collection and compilation of official statistics. As a rule of thumb then, greater caution is recommended the further a statistical series is traced back. Secondly, peculiarity can be detected through comparison across time and place. Plotting a data series can reveal breaks driven by changes in classification for example, while comparing Irish historical statistics with those from other countries can identify when statistics are patently implausible – as is the case with Irish GDP today. Indeed, international comparison is essential to the interpretation of Irish statistics as C.H. Oldham (1927 p.206) acknowledged: “Nobody can know Ireland who only Ireland knows”.

Finally, incentives matter for collecting statistics. Financial incentives appear to have influenced the collection of Irish statistics on a number of occasions, be it rationing or the old age pension. Indeed as we have seen in the case of the Old Age Pension, the attempt to verify age through earlier censuses, may have led to persistent distortion – connecting census returns to social welfare claims likely undermined the impartiality of subsequent censuses in ways we do not know.

In 1847, James A. Lawson, the founding secretary and future President, concluded the first address to the newly-formed society by setting out its objectives:

“To supply satisfactory Statistical information is the duty and the business of a government, and they alone can effectually do it; but though our operations must be on a limited scale, we may, I hope, at least, suggest something that may be useful, and correct much that is false.”

J.A. Lawson (1847 p.9)

In this address, 175 years later, we may, we hope, at least, offer something that may be useful.

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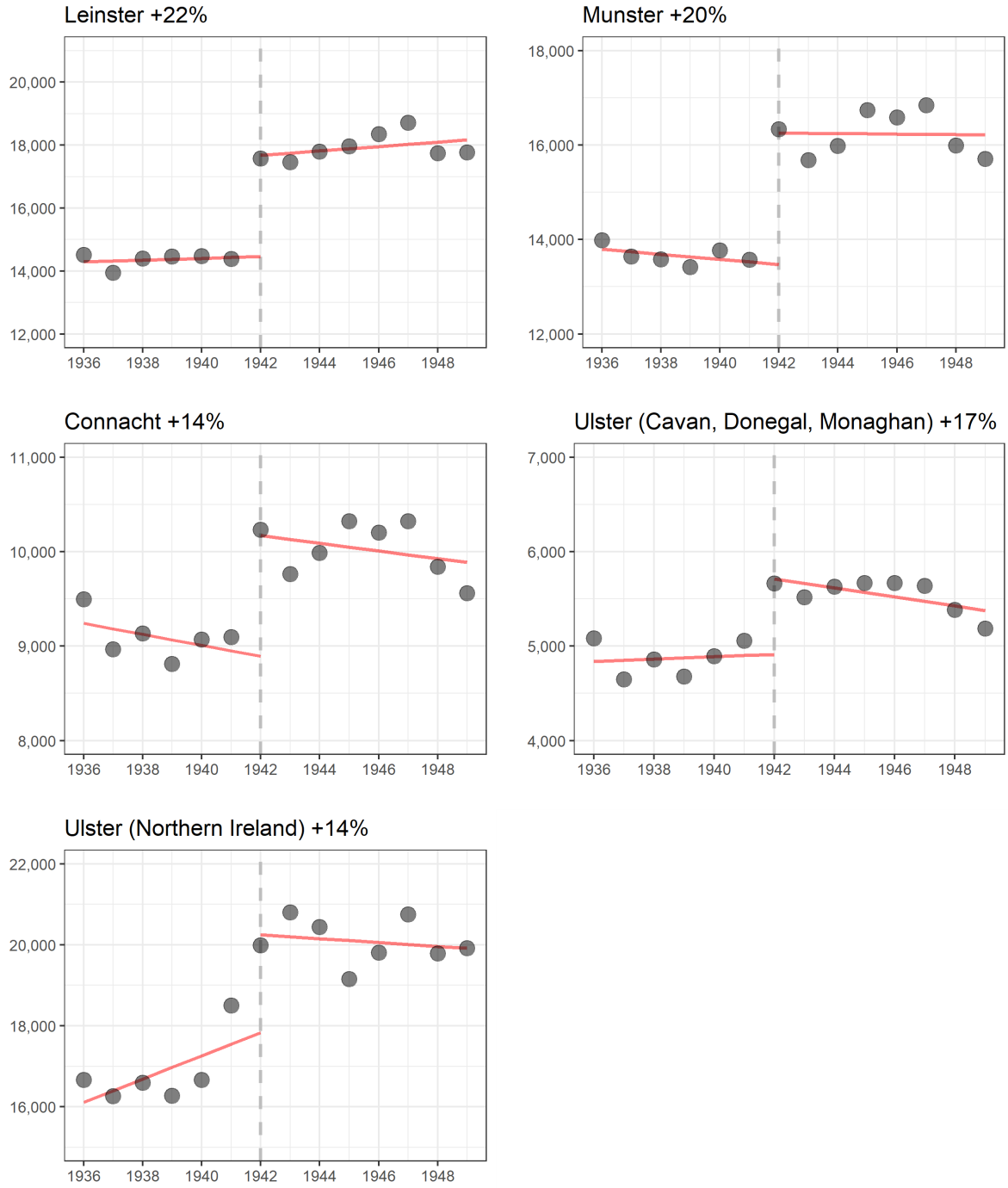
APPENDIX

Table 1. Estimating Under Registration of Births in 1941

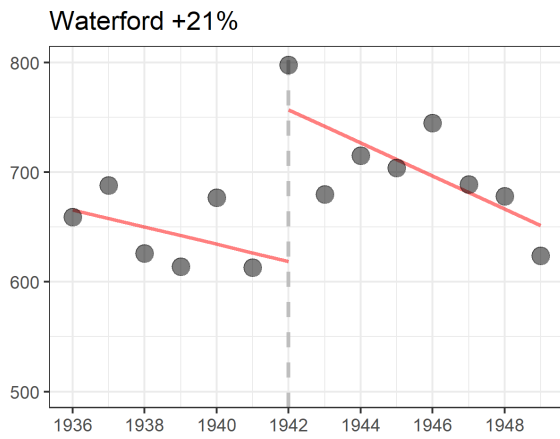
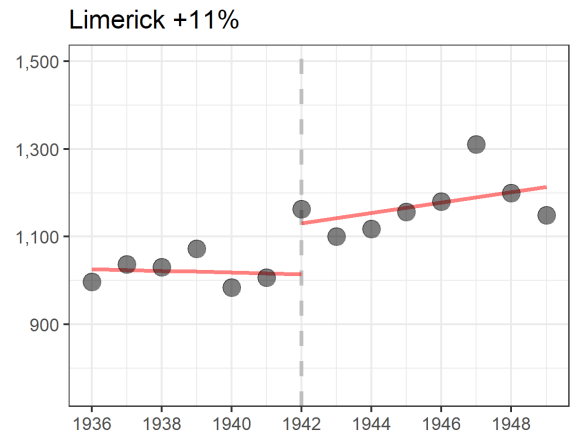
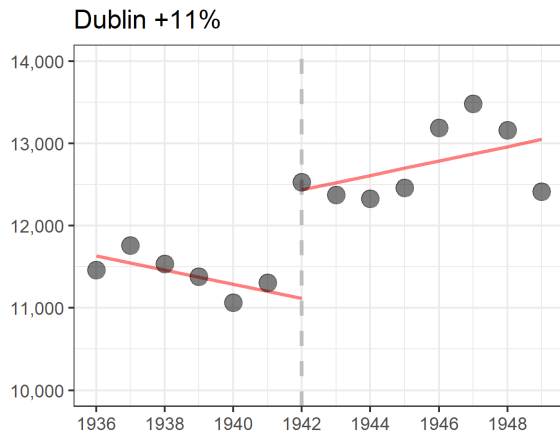
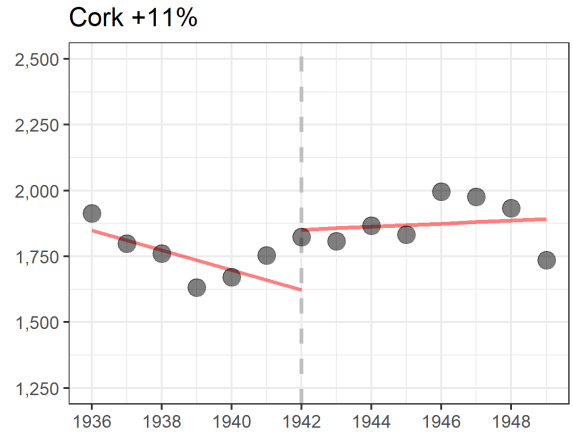
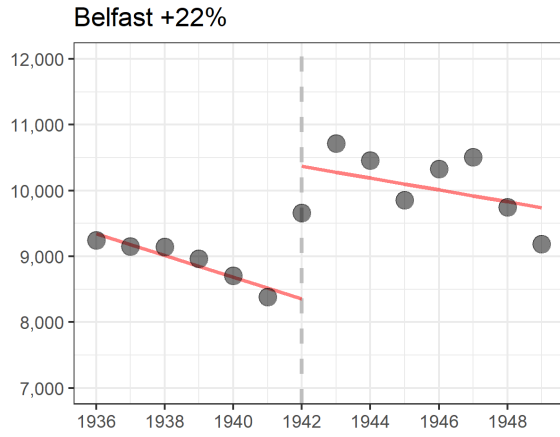
County	Province	Population under 1	Births	Deaths under 1	Surviving infants	Under Registration?
Galway	Connacht	3306	3437	152	3285	-0.01
Leitrim	Connacht	737	743	37	706	-0.04
Mayo	Connacht	2848	2794	125	2669	-0.06
Roscommon	Connacht	1161	1091	45	1046	-0.10
Sligo	Connacht	982	1030	60	970	-0.01
Borough of Dublin	Leinster	10283	11305	1293	10012	-0.03
Carlow	Leinster	653	655	56	599	-0.08
Dublin	Leinster	2515	2364	174	2190	-0.13
Kildare	Leinster	1216	1219	87	1132	-0.07
Kilkenny	Leinster	1266	1236	100	1136	-0.10
Laois	Leinster	868	839	59	780	-0.10
Longford	Leinster	610	615	45	570	-0.07
Louth	Leinster	1307	1338	86	1252	-0.04
Meath	Leinster	1244	1183	54	1129	-0.09
Offaly	Leinster	928	944	63	881	-0.05
Westmeath	Leinster	1001	1013	72	941	-0.06
Wexford	Leinster	1799	1828	121	1707	-0.05
Wicklow	Leinster	1117	1145	83	1062	-0.05
Borough of Cork	Munster	1535	1753	143	1610	0.05
Borough of Limerick	Munster	914	1007	90	917	0.00
Borough of Waterford	Munster	625	613	53	560	-0.10
Clare	Munster	1418	1400	80	1320	-0.07
Cork	Munster	4427	4512	331	4181	-0.06
Kerry	Munster	2387	2420	147	2273	-0.05
Limerick	Munster	1883	1915	121	1794	-0.05
Tipperary (NR)	Munster	1050	1088	66	1022	-0.03
Tipperary (SR)	Munster	1434	1433	104	1329	-0.07
Waterford	Munster	790	802	47	755	-0.04
Cavan	Ulster	1294	1282	75	1207	-0.07
Donegal	Ulster	2756	2728	144	2584	-0.06
Monaghan	Ulster	1001	1048	62	986	-0.01
<i>TOTAL</i>		<i>55355</i>	<i>56780</i>	<i>4175</i>	<i>52605</i>	<i>-0.05</i>

Notes: "Under registration" is calculated as 1 minus the ratio of surviving births to the number enumerated as under 1 year old in 1941. (1- (Surviving to 1/Pop under 1))

Figures A1: Births by Province, 1936-49



Figures A2: Births in County Boroughs, 1936-49



FIRST VOTE OF THANKS BY JOHN FITZGERALD, TRINITY COLLEGE DUBLIN AND ESRI

I am very happy to propose the vote of thanks to the authors Alan de Bromhead, Alan Fernihough, Cormac Ó Gráda, for a fascinating paper which is in the best traditions of the society – a suitable ending to the Society's 175th session.

It provides salutary warnings to researchers how the nature of the data we rely on is often affected by the purpose for which it is collected or by external factors affecting the incentives of those who provide the raw information. The authors begin by looking at the very good set of agricultural data available for Ireland, which goes back to the foundations of the Society in the 1840s. They show how mistakes in interpreting measurement units have affected the interpretation of the data in the past. In one case a switch from Irish acres to statute acres made a significant difference to how one interpreted the data.

When I began my career fifty years ago I spent a number of months perusing ledgers in the National Library containing the trade data for Ireland for the late 18th century. It took me some time to discover that one of the measures used for quantities of grain – a barrel – was a different quantity depending on the port from which the grain was shipped. This certainly complicated matters in comparing data for different ports.

In another instance the authors show how the prospect of rationing, and later the introduction of children's allowances, affected birth registrations. In the autumn of 1939 the UK held a security enumeration of all the population. This formed the basis for the allocation of ration cards. Ireland held a similar "Census" in December 1941. People knew what had happened in the UK and they knew serious rationing was on the way: it began in early 1942. Thus if your children were not registered you would receive no food allowances for them. As the authors show, this was a powerful incentive to register births.

The authors also show how the introduction of the old age pension incentivised people to exaggerate their ages to qualify. While, the Census 1911 data were confidential, as the authors show there was a significant exaggeration of their ages by those who were between 50 and 70. They were clearly preparing to seek the old age pension while still under age. This meant the response on the age question was different from that in the 1901 Census, where old age pensions were not yet in prospect.

It is now possible to search the Censuses for Ireland, GB, the US, Canada and Argentina from 1840 through to 1920 looking for individual records. However, one can also search in each census for people born in Ireland by age and by regional location. The numbers reported as a result of such searches replicate the published summary figures in the Censuses.

Here, for each country and each census I have collected the number of Irish-born people by the year in which they say they were born, beginning in 1760. Because of the problem of "heaping" discussed by the authors, I have grouped people into 10 year cohorts by age at the time of each census. I have then compared the numbers in one census with the numbers in the cohort that was 10 years older in the next census. If people declared the correct age in each census and if there was no migration this would show the survival rate for the population at different ages.

The attached Table shows the results on survival rates for the period 1841-51, 1871-81 and 1901-11. (For simplicity I omit the intervening years.) The left hand column shows the age of a cohort at the time of the census in the first year – 1841, 1871 and 1901. US and Canadian Censuses began in 1850 and the data for Scotland are not available for 1911.

Looking at the data for the Census years 1901-11, it can be seen that the survival rate for Irish born people living in Ireland aged 60-70 in 1901, was 82%. This is dramatically higher than the survival rate for this cohort in England and Wales, the US and Canada, and it is also dramatically different from the rate for that cohort in earlier decades. This provides additional evidence supporting the authors' already robust conclusions on the distortions caused in the 1911 Census by the incentive to qualify for an old age pension.

The Table also shows a higher survival rate for the two younger cohorts living in Ireland. If one assumed that return migration was much more difficult from the US and Canada, the survival rates there probably represent an undistorted picture of the underlying survival rate, absent migration and incentives to misreport. The very low survival rate for England and Wales for over 40s then stand out. This would suggest that in these age groups there was significant return migration which reduced the survival rate in England and Wales and boosted it in Ireland. (Because the numbers of Irish in the relevant age cohorts living in England and Wales were only around 20% of

those living in Ireland, significant return migration would have had a much bigger effect on the survival rate in England and Wales than in Ireland.)

Not surprisingly the Table also shows much lower survival rates in Ireland in the period spanning the Great Famine, 1841-51. However, the survival rates of over one in GB indicates that there was significant emigration by people in older age groups during that decade, something that does not appear to have been replicated in later decades.

The data for 1871-81 for the US and Canada are probably not greatly affected by return migration and, thus, they provide a benchmark against which to compare the data for Ireland and GB. This suggests that, especially in older age groups, survival rates were higher in the US and Canada than in Ireland or GB. The very low GB rates for the younger cohorts suggests some return migration effects. However, for the oldest two cohorts the low rates may reflect genuinely lower survival rates for Irish emigrants compared to both those who remained in Ireland or those who emigrated to North America. This could say something about the relative long-term benefits of emigrating to GB and to the US and Canada.

The final example where lack of attention to data has produced research conclusions, which have subsequently been disproved, is the frequently cited work of Giavazzi and Pagano, 1990. Their work used data for Ireland and Denmark and purported to show what they referred to as an expansionary fiscal contraction (EFC) in Ireland in the late 1980s. They argued that, while there was a very tough fiscal contraction in Ireland in the 1987-9 period, the economy expanded because of Ricardian equivalence: households believed that the tough fiscal measures would result in a lower tax burden in the future, and households then responded by raising consumption in anticipation of this future improvement in their circumstances (despite the very negative impact of the fiscal contraction).

This paper has been very widely cited. Bradley and Whelan, 1997, provided strong evidence that the Giavazzi and Pagano conclusions were wrong, but this paper did not receive much attention.

During the Financial crisis, when the IMF came to Dublin they were concerned that the supposed expansionary fiscal contraction (EFC), based on the Irish 1980s experience, was being widely touted as having relevance to the problems that many European economies were then facing. They suspected that the EFC hypothesis was not valid and that applying it to the then current circumstances in Europe could be damaging. This triggered a re-examination of the evidence. Perotti, 2013, went back and looked at the data used in Giavazzi and Pagano and found that the data were wrong. They had taken the data from an OECD data base. In his 2013 paper Perotti says that the OECD acknowledged that the data for Ireland that had been taken from their database were seriously wrong. He quotes OECD as saying that they had failed to incorporate later CSO revisions and that “The OECD has communicated to me that the Irish CSO data are more appropriate for historical analysis.”

This is a salutary lesson for researchers. Trusting online data sources is too easy – the data need to be carefully checked before use. Wherever, possible national statistical sources are to be preferred over international. Each step of transferring data allows the possibility of errors to increase, and international sources may not pay heed to very important revisions by national authorities.

Another case where international data have been seriously misleading is government bond yields for Ireland in the 1960s. As FitzGerald and Kenny, 2018, showed in a paper to this society, bond yields in Ireland in the 1960s were very different from the data that the IMF continued to publish. Another case where checking of international sources was important.

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Table: Survival Rates of Irish-born individuals for older cohorts

Living in	Ireland	England & Wales	Scotland	Canada	US
<i>Censuses/ age cohorts</i>	<i>1841-51</i>	<i>1841-51</i>	<i>1841-51</i>		
70-80	0.29	0.44	0.44		
60-70	0.33	0.84	0.88		
50-60	0.59	1.01	0.96		
40-50	0.65	1.13	1.08		
<i>Censuses/ age cohorts</i>	<i>1871-81</i>	<i>1871-81</i>	<i>1871-81</i>	<i>1871-81</i>	<i>1871-81</i>
70-80	0.33	0.22	0.21	0.39	0.41
60-70	0.45	0.40	0.54	0.56	0.55
50-60	0.72	0.59	0.51	0.76	0.76
40-50	0.79	0.69	0.72	0.82	0.74
<i>Censuses/ age cohorts</i>	<i>1901-11</i>	<i>1901-11</i>	<i>1901-11</i>	<i>1901-11</i>	<i>1901-11</i>
70-80	0.33	0.17		0.26	0.28
60-70	0.82	0.44		0.48	0.50
50-60	0.76	0.53		0.67	0.70
40-50	0.78	0.58		0.85	0.80

SECOND VOTE OF THANKS PROPOSED BY JENNIFER BANIM, CENTRAL STATISTICS OFFICE

It is my pleasure to propose a vote of thanks to Alan de Bromhead, Alan Fernihough and Cormac Ó Gráda for a very interesting paper and a significant block of work on some of the key measurement challenges for Irish society and economy over the past 175 years. The issues discussed in the paper – globalisation and issues with agriculture and demography statistics – remain as challenging areas for today’s compilers of official statistics and this evening, I’d like to describe some of the comparable current measurement issues and the opportunities and developments that will help compilers to address these challenges.

Recent & Recurring Challenges - Globalisation

Reflecting the complexities of activity in highly globalised economies in single headline indicators (such as Gross Domestic Product and Gross National Product) is an on-going challenge as innovations and changing economic conditions drive changes in globalisation-related practices and activities. The international standards for National Accounts set out a detailed framework for the statistics and provide both whole-of-economy indicators (Gross Domestic Product, Gross National Product, Net National Income) along with indicators that give more targeted views of economic activity such as the Personal Consumption Expenditure indicator which measures household spending on goods and services. The National Accounts indicators, compiled to meet the international standards and audited for quality by the international organisations, are important information for national decision and policy makers, and users can be confident that the results are comparable across countries. Additionally, complementary products build on the core National Accounts framework, such as the Institutional Sector Accounts which is a valuable source of detailed information on the household sector.

However, the globally integrated nature of the Irish economy, and the disproportionate impact of a number of globalisation activities on the traditional indicators, support a need for supplementary indicators that can provide users with insight on Ireland’s underlying domestic activity. A set of modified indicators – including modified Gross National Income (GNI*) and modified Domestic Demand (MDD) - has been developed by the CSO and these indicators exclude effects such as the impact of the relocation to Ireland of intellectual property products and the impact caused by the concentration of aircraft leasing activity in Ireland. The modified indicators are now regularly quoted alongside the traditional, and their usefulness and limitations are appreciated by national and international users.

Agriculture Statistics

As activities change in different economic sectors, the statistical definitions and classifications must also change to better reflect the new and evolving practices. The paper highlights the impact of changes to classifications, timing of data collection and changes to measurement methodologies on agricultural statistics from the mid-1800s and the potential pitfalls faced by users due to these changes.

Balancing the competing needs of different users is a constant challenge for compilers of official statistics and in the case of changing definitions, classifications and methodologies, it is important to balance the policy makers' needs for frequent, timely data that reflect current activities with the needs of the researchers for longer time series of consistent data to support analysis over time. Retrospection of series can be challenging to implement, and official statisticians recognise the importance of providing back series for key indicators when new standards are introduced and the importance of communicating the impact of the new standards on the indicators. The requirement for retrospection when new standards and definition are introduced is now regularly part of the EU legislation covering an area of official statistics.

For Agriculture Statistics, future developments of the standards will be closely aligned with developments in Environment & Climate statistics. Managing the changes across comparable and complementary agriculture and environment-related series will be an important challenge for compilers to meet in order to help users avoid those same pitfalls faced when comparing data over time in the 1850's.

Demographic & Vital Statistics

The authors note the measurement challenges for migration statistics and the quality issues that can occur in demographic statistics when data are misreported or when data are collected for both statistical and non-statistical purposes. But as user needs for more timely, frequent and detailed statistics continue to grow, the focus for compilers of official statistics is increasingly on the use of new data sources, including data collected for administrative purposes. The paper highlights the challenges that can be caused by the motivation of the respondents and to manage that risk in today's statistical production processes, quality evaluation is an important part of the integration of administrative data into existing statistical products or as the main data source for new products. The CSO's Administrative Data Centre works closely with government departments and agencies, and through the Irish Government Statistical System, on access to data and on data quality issues as part of the CSO's strategy to manage response burden while meeting user needs by using secondary data sources. Access to privately held data is also increasingly part of the strategic and legislative initiatives underway across the European Statistical System aimed at meeting emerging user needs for new and more detailed outputs using new data sources.

An interesting example of the potential of administrative data for demographic statistics is IPEADS – Irish Population Estimates from Administrative Data Sources. By linking and integrating 17 administrative data sources, a population estimate for 2020 was produced as part of the CSO's Frontier Series of experimental statistics. IPEADS opens the possibility of producing more timely and more frequent (annual) population estimates, in a cost-effective way, while providing users with a much-enhanced suite of demographic statistics for Ireland. <https://www.cso.ie/en/statistics/population/irishpopulationestimatesfromadministrativedatasources/>

To conclude, I would again like to congratulate the authors on a very stimulating paper and it is my great pleasure to propose a vote of thanks. Thank you.