
CGAP Briefing Note 10

Give or take a few billion: the wide confidence intervals around annual estimates of charitable donations in the UK

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Surveys of charitable giving in the UK often present their results as if they provided a single definitive answer. For example, the recent UK Giving 2012 report (CAF/NCVO, 2012) claims that annual donations to charity have decreased by 20% in real terms, or £2.3 billion in today's money. This briefing note explains why it is unwise to take such figures at face value. Further interpretation reveals how:

- based on information provided in the same report, the total amount donated in 2011/12 is estimated to lie anywhere between £8.2 billion and £10.2 billion;
- the actual amount may fall outside that range;
- results from a larger scale survey of household spending suggest that the value of donations to charity did not decrease significantly in 2011.

Measuring charitable giving in the United Kingdom

In order to appreciate the challenges of estimating annual change in charitable giving, it is instructive to look at two main annual sources of information on levels of giving, the UK Giving Survey and the Living Costs and Food Survey.

The UK Giving Survey (UKG) is a module of the Office for National Statistics (ONS) Opinions and Lifestyle Survey and involves roughly 3,000 participants per financial year, spread over the months June, October and February. The Living Costs and Food Survey (LCF) is carried out on a rolling basis from January to December and comprises approximately 5,500 households each calendar year.

In addition to the deviations in scale and the time of year, there are important differences between each survey's focus (UKG concentrates on charitable giving while LCF encompasses all types of household spending), the definitions of charitable giving (UKG includes purchases in charity shops; the LCF charitable donations and subscriptions variable excludes such purchases), the methods of collection (UKG is based on interviews in which respondents are asked to recall their charitable giving; households in the LCF record their spending in diaries) and the time periods covered (UKG asks about donations over the past month; LCF diaries are completed over two weeks). A fuller comparison of the forerunners¹ to both surveys is offered by Lee *et al.* (1995).

While such differences inevitably lead to large discrepancies between estimates for the proportion of people giving to charity and the size of typical donations, both surveys are used to monitor trends in charitable giving over time due to consistency in their respective methodologies (see e.g. CAF/NCVO, 2010).

However, a major caveat for both UKG and LCF is that they permit only imprecise estimates of aggregate amounts donated to charity by the wider population. Great care must be taken when drawing any direct year-on-year comparisons of such estimates.

The next section looks at how supplementary information presented in UK Giving 2012 can be used to calculate a range of possible values for the aggregate amount donated, and to suggest why there might not have been such a large fall in giving as has been reported.

Potential values for aggregate donations based on UK Giving 2012

The foreword to UK Giving 2012 refers to an estimate of £9.3 billion for the total amount donated and, comparing this with the previous year's inflation-adjusted estimate of £11.6 billion, states, "the overall impact is that giving fell by 20% between 2010/11 and 2011/12." Unfortunately, nothing is said of the margins of error around these aggregate estimates, i.e. how sure one can be about the 20% drop. Yet the full report does contain information that can be used to deduce a potential range of values for the aggregate level of giving in the population.

According to footnote 2 on page 6 of UK Giving 2012, the confidence interval around the estimate for the proportion of people giving to charity runs from 53% to 57% (the level of confidence itself is not stated).

On page 7, the estimate for the mean monthly donation is given as £27. In footnote 4 it is explained that the difference of £4 from the previous year's estimate is not statistically significant. In other words, the confidence intervals around last year's estimate and this year's estimate overlap. This means that at the level of statistical significance the authors set for themselves, they were not confident that the true mean average monthly

¹ The UK Giving Survey was developed from the Individual Giving Survey and earlier Charity Household Survey. The Living Costs and Food Survey is the successor to the Expenditure and Food Survey and is an amalgamation of the former Family Expenditure and National Food Surveys.

donation for the population in 2011/12 lay below the true mean average from 2010/11. Put another way, in nominal terms, the average donation might well have risen. The midpoint in the confidence interval is the sample mean of £27. Since the difference of £4 is not statistically significant it is reasonable to assume that the confidence interval for 2011/12 runs from at most £25 to at least £29.

At whatever level of confidence the authors of UK Giving used, the total annual amount given by individuals could have been as high as £10.2 billion or as low as £8.2 billion, based on the estimate for the UK adult (aged 16 and over) population of 51.4 million as provided on page 6.²

The estimate for the total amount given by individuals in 2010/11 is stated as £11.0 billion. On page 16 it is explained that the methodology and weighting are the same as they were for UK Giving 2011. Therefore it is plausible that the corresponding range for the total amount given by individuals in 2010/11 ran from about £10 billion to about £12 billion. This range then intersects with the range for 2011/12.

Four percentage points in the participation rate and four pounds in the mean average monthly donation may not seem much, but when an estimate for the total amount given per year is extrapolated from them, the margins of error run into the billions of pounds.

It is stated that a £6 difference between the mean average monthly donation in 2011/12 and the mean average monthly donation in 2010/11, adjusted for inflation, is statistically significant (footnote 4, page 7). However, this does not mean that one can be particularly confident about the £6. It simply means that there is a statistically significant difference from zero. In other words, the authors are confident that the average donation has fallen in real terms, but they are not confident about the extent of the fall.

While the authors write about statistical significance, unfortunately they do not state the level of significance. It could be the 5% level, which would mean that in twenty repetitions of the survey, nineteen would be expected to produce a confidence interval containing the true mean. One in twenty would produce a confidence interval that does not capture the population average.

The authors explain that due to the sensitivity of the mean to extreme values, the median donation is a better measure for tracking the behaviour of a typical donor. In the report, the median monthly donation is shown to have fallen from £11 to £10.³ The authors also acknowledge on page 9 that “changes in the total amount donated can be due to relatively small shifts in the sample mean, rather than necessarily being a genuine change in the total amount of money donated.” Yet the calculation of a 20% fall in total donations, which is based on unstable sample mean values, not the more reliable medians, is what has made headlines in the national press.⁴

In the following section, annual estimates of giving are extracted from the ONS Family Spending publications (which are based on LCF data) and these are then used to illustrate how adjusting the level of confidence matters in terms of the conclusions that can be drawn about differences between years.

² Multiply the lower (upper) limits of the confidence intervals with the UK population estimate to arrive at £681 (£850) million per month, or £8.2 (£10.2) billion per year.

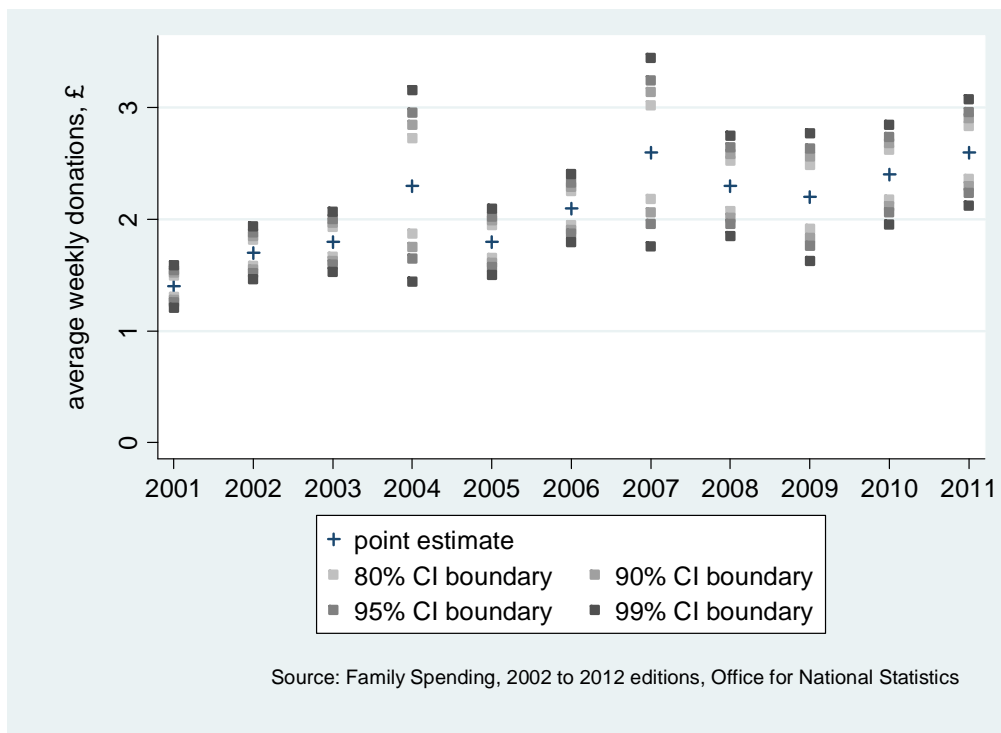
³ Note at the level of precision presented in the report, the median could have fallen only marginally from £10.50 to £10.49.

⁴ See e.g. www.bbc.co.uk/news/uk-20304267

Estimates and confidence intervals from the LCF

The following graphs display estimates for the mean average weekly donation made to charity by households in the UK for the years 2001 to 2011.⁵ The first graph presents the estimates in nominal terms; amounts in the second graph have been converted to October 2012 pounds using the Consumer Prices Index. The data include zeros from households that did not record any charitable donations in their spending diaries and therefore also account for any changes in the proportion of households that give to charity.

The point estimates from the annual samples are represented by crosses.⁶ In addition to the point estimates, 80%, 90%, 95% and 99% confidence intervals are presented for each year's estimate.⁷



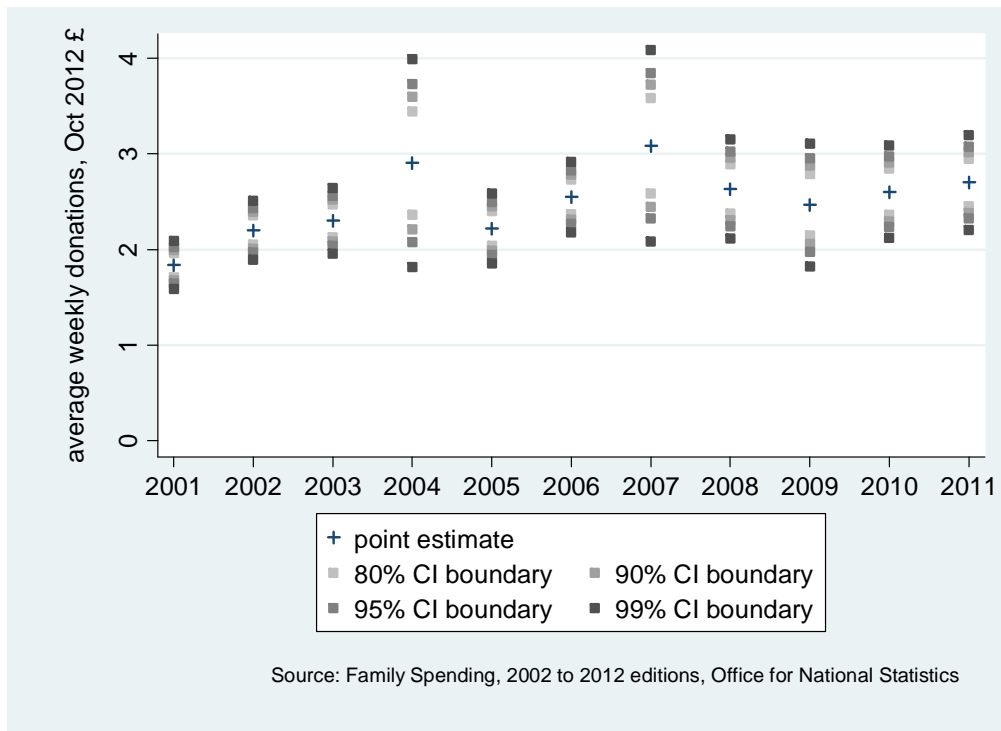
As can be seen in the graphs, the estimate for the average donation in the calendar year 2011 is higher than the corresponding estimate for 2010, both in nominal and real terms. However, although the point estimate is higher, note how the confidence intervals overlap. The confidence intervals become wider as the level of confidence is increased, yet even at the 80% level (shown here in light grey), the upper limit in 2010 is at roughly the midpoint of the 2011 confidence interval in the first graph and lies clearly above the

⁵ See ONS (2012) and earlier editions. Until 2005, the survey was based on the financial year running from April to March. The data points for 2001 represent the period running from April 2001 to March 2002, 2002 represents April 2002 to March 2003, etc. From 2006 the format switched to the calendar year (January to December).

⁶ As with the UKG figures, these estimates of the mean are weighted to address structural differences between the sample and the population and to counter non-response bias.

⁷ The confidence intervals have been constructed using the corresponding standard errors provided in the ONS Family Spending tables. The noticeably wider intervals in 2004 and 2007 correspond with greater standard errors which will have been caused by outliers (extreme values) in those years' samples.

2011 point estimate in the second graph.



An 80% level of confidence means that in five repetitions of the survey, only four of the intervals calculated would contain the true (population) mean. One can be more confident that the true mean lies within the 99% interval as only one in one hundred repetitions of the survey should have produced a point estimate and corresponding interval that would not have contained the true mean. But the overlap of the 99% confidence intervals between years is greater than the overlap of intervals at lower levels of confidence. At the 99% confidence level it is therefore less likely that conclusions can be drawn about any year-on-year difference in the population averages.

As more data points are added to the time series, the potential for recognising significant trends increases. But it is difficult to ascribe changes between any pair of successive years to anything more than random variation in the samples.

Did people give more, less or about the same to charities in 2011?

UK Giving 2012 suggests that the amount donated to UK charities fell last year while data from the LCF suggest the opposite. Due to differences between the surveys as outlined in this briefing note it is not unreasonable to expect different outcomes. UK Giving 2012 also contains data from one month in 2012.

However, the wide confidence intervals around the estimates mean that it is not possible to provide a firm answer to the question of whether the total amount changed in any significant way. Estimates of the amount can vary from year to year by a few billion pounds even when the true population average has seen only little change.

References

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ONS (2012): *Family Spending, 2012 Edition*, Office for National Statistics.

About CGAP

The ESRC Centre for Charitable Giving and Philanthropy (CGAP) is the first academic centre in the UK dedicated to research on charitable giving and philanthropy. Three main research strands focus on individual and business giving, social redistribution and charitable activity, and the institutions of giving. CGAP is a consortium including the Universities of Strathclyde, Southampton and Kent, University of Edinburgh Business School, Cass Business School and NCVO. CGAP's coordinating 'hub' is based at Cass Business School. CGAP is funded by the ESRC, the Office for Civil Society, the Scottish Government and Carnegie UK Trust.

For further information on CGAP, visit www.cgap.org.uk