

Updating the definition of Primary Urban Areas

Prepared for:
Centre for Cities

December 2015

Mike Coombes and Colin Wymer

RR2015/06



Updating the definition of Primary Urban Areas

Report to the Centre for Cities

November 2015

CURDS (Centre for Urban & Regional Development Studies, Newcastle University)

Centre for Urban and Regional Development Studies (CURDS)

CURDS is ranked as one of the most influential places in the world for the study of economic geography, ranked second globally to UCLA (University of California at Los Angeles) in terms of the number of highly cited papers over recent decades. As well as an academic centre of excellence, CURDS has always aimed to be a source of pragmatic and policy relevant research, leading to studies for organisations ranging from regional and national governments to the European Union and OECD. Work more directly related to this assignment includes formative involvement in the State of the Cities study for the Blair government and our current projects for the Joseph Rowntree Foundation and the Office for National Statistics.

Further information about our work can be found at www.ncl.ac.uk/curds.

Summary

This report covers research leading to a set of updated definitions of Primary Urban Areas (PUAs).

The report takes the following form:

- the method for defining PUAs is explained
- the process of updating with 2011 data is outlined
- the results are briefly summarised.

Method

The method for defining PUAs was originally devised as a foundation step of the research that led to the report¹ on the State of the English Cities. This method uses key statistical and cartographic datasets, each of which can need compiling from several sources due to the responsibility for much UK official statistics being dispersed across three different organisations (one each for England & Wales, Scotland, N.Ireland). Most of the data used for that foundation research related to the year 2001: the objective here is to update the definitions with data for 2011.

The statistical and boundary datasets needed are given the following simplified names in this report:

settlements	physically built-up (urban) areas as officially identified for the Census
population	Census usual residents (unless there is reference to “workday population” ²)
zones	Lower-layer Super Output Areas, and their equivalents in Scotland/N.Ireland
LAs	lower tier local authority areas (eg. Districts in the English ‘Shire’ Counties)
TTWAs	Travel to Work Areas, the set of functional economic areas which are official statistical areas.

The **existing** PUAs were defined in 2003 by a method that can be summarised as six basic steps:

- 1) the settlement boundaries are the basis for the definitions, with the initial analysis involving ‘overlying’ upon them³ the boundaries of TTWAs; if a settlement has parts in more than one TTWA then the only parts retained for consideration as a ‘candidate’ PUA are those which have larger populations than any other settlement in their TTWAs (*nb. this step ‘trims off’ outlying parts of the officially defined built-up areas with little functional link to the main city*)
- 2) all these settlement/TTWA intersections which involve more than one TTWA are subdivided into separate ‘candidate’ PUAs where a TTWA boundary cuts through them **provided that** this boundary only passes for a short distance through the settlement (*nb. this splits up any officially defined built-up area which embraces urban areas which are only marginally linked, not only in terms of urban fabric but also functionally*)

¹ Parkinson M, Champion T, Evans R, Simmie J, Turok I, Cookston M, Katz B, Park A, Berube A, Coombes M, Dorling D, Glass N, Hutchins M, Kearns A, Martin R and Wood P (2006) *State of the English Cities* ODPM, London

² The calculation of workday populations involves counting people in work at their workplace location, and adding them to the non-working residents of that area

³ all the analyses after this step are based on ‘best-fits’ of these original boundaries to the set of zones, of which there are more than 40,000

- 3) these revised settlement definitions are tested to see if their populations exceed 125,000 and those which do are deemed PUAs (*nb. this step yields the 'basic' definitions of PUAs; they are 'basic' not only because their extent is limited to urbanised areas, but also because they are expressed in terms of the fine-grained set of zones*)
- 4) given that a key requirement is for a set of 'best-fit' allocations of LAs, the set of 'basic' PUA definitions is then analysed to first identify the LA which includes the largest proportion of the population of that PUA, to which is added any other LA where the majority of its population falls within that PUA (*nb. this step ensures that at least one LA is allocated to every PUA*)
- 5) given that another requirement is a second set of PUAs which cover whole functional areas, each of the 'basic' PUA definitions from step 3 is extended to include all the zones which are within the TTWA(s) that this PUA lies within **provided that** this is the PUA with the largest share of the population in that TTWA (*nb. this proviso is required because some 'basic' PUAs lie within TTWAs which also cover larger PUAs; as a result, there can be urban-only PUAs which become absorbed into other PUAs at this wider functional area scale of PUAs*)
- 6) finally the step 4 process to 'best-fit' to whole LAs is applied to the wider functional area PUA definitions from step 5 (*nb. this completes the process which creates four sets of definitions, allocating not only the fine-grained zones but also whole LAs, both to the initial urban PUAs and then also to the whole functional area versions of the PUAs*).

The relationship between the last four steps, and the four sets of PUA definitions they produce, is summarised in the accompanying chart.

		type of PUA definition		
		urban		functional
definition in terms of...	zones	step 3	→	step 5
	LAs	step 4		step 6

Updating

There is little choice but to update the definitions in one way or another, because there have been changes to both sets of 'building block' areas for them: the zones and the LAs. As a result of this, even if the intention was to keep the existing boundaries unchanged there would have to be some changes to the detail of those boundaries because current datasets are no longer made available for those areas as they were in 2003. In particular there was a substantial grouping of English LAs across those Shire Counties that were made into unitary LAs. To give one example, County Durham now must be allocated as an undivided building-block when previously just a minority of its Districts had been part of the Newcastle PUA at the wider functional area scale: thus the updated boundary cannot replicate the current one. N.Irish LAs have recently seen similarly substantial changes. Throughout all parts of the UK, the zones used for reporting data from the Census at a much finer grain of detail – the zones which provide the building-blocks for the detailed PUA definitions here – have also been revised.

The inevitability of some changes to the PUA definitions negated any possible preference for stable boundaries over updated ones. As a result it was timely to also take account of the fact that the 2011 Census was also linked to an updating of the definitions of both settlements (built up areas) and the TTWAs. In general terms, there was an agreement as to approach to be taken in defining settlements in the separate parts of the UK (England & Wales was one exercise, with separate ones

carried out in Scotland and in N.Ireland). In practice differences arose and the approach in N.Ireland differed sufficiently for the 2001 definition of Greater Belfast to be used here as a nearer equivalent to the 2011 updating of built-up area definitions on the mainland.

Rather more obviously perhaps, the population size of any area was liable to have changed in the ten years since the 2001 Census whose values were used in the original definitions. In fact the population of the UK has grown by around 7% over that decade so that keeping the same 125,000 threshold for PUA status would lead to the creation of several more PUAs due to this trend (in a way that is analogous to inflation leading to more poorly paid people starting to pay tax if the earnings threshold is not raised). The decision was made by the Centre for Cities that the threshold should rise to 135,000 in consequence. At the same time it was decided that this threshold measure in step 3 would be applied to workday populations, rather than to counts of residents, as this change would focus attention on cities' economic significance.

It is possible to very briefly summarise the impact of each statistical and boundary dataset change:

settlements	there were major changes in some areas, due to an altered definition method ⁴
population	the workday populations had slightly more impact than the raised threshold
zones	changes to these small areas only influenced the detail of the boundaries
LAs	these changes affected only a few places, but there some impacts were large
TTWAs	most changes were slight, but in a few places there were more major impacts.

Results

The outcome of the updating process with 2011 data is a set of 63 PUAs at the 'basic' scale of the built-up or urbanised area. This total represents a reduction of one when compared to the original 2001-based PUAs, a reflection of the 'loss' of four of that original set and a 'gain' of three new ones. There are two reasons why some of the original PUAs are no longer identified using data for 2011:

- Bolton along with Rochdale are part of a greater Manchester built-up area *but* in the original analyses they were the basis of separate TTWAs and so became distinct PUAs; now in the 2011-based TTWAs they are in a larger Manchester-centred TTWA, so not separable PUAs
- Grimsby and also Hastings have seen some population growth, but with the change to using workday population as the size criterion for PUA status they have fallen from just over to just under the threshold.

As for the new PUAs, Exeter has become a PUA due to using workday population as size criterion: in terms of its resident population it would fall below the threshold, but its strength as employment focus for the surrounding area makes the difference. The size of Basildon has increased so it too now passes the threshold, although this is largely due to its changed official built-up area definition. Slough is the other PUA 'gain' and in this case it is the TTWA definitions which changed between those based on 2001 and the latest version.

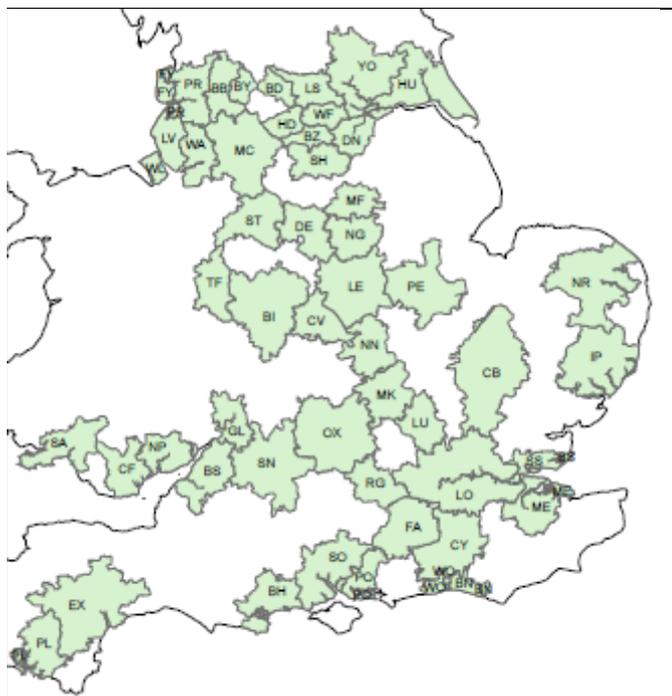
Turning finally to the broader functional area TTWA-based versions of the PUAs, there are now only 60 2011-based PUAs. Slough is in fact one of the 'urban' PUAs to become merged at this point (step 5 in the procedure above): it is part of the Slough & Heathrow TTWA and the majority of the

⁴ Office for National Statistics (2013) **2011 Built-up Areas – methodology and guidance**

<http://www.ons.gov.uk/ons/guide-method/geography/products/census/key-statistics-for-built-up-areas-user-guidance.pdf>

population of that TTWA lies within London so the whole TTWA is thereby part of a wider functional London PUA composed of two TTWAs. In the same way Basildon becomes merged with Southend, and also Wigan becomes merged with Warrington at the wider functional scale of PUAs.

The map below shows that at this wider functional scale, PUAs cover a large proportion of the land of central and south-east England, along with south Wales. (PUAs not mapped here and so not listed below are Newcastle, Sunderland, Middlesbrough, Glasgow, Edinburgh, Dundee, Aberdeen and also Belfast.)



- HD Huddersfield
- HU Hull
- IP Ipswich
- LE Leicester
- LO London
- LS Leeds
- LU Luton
- LV Liverpool
- MC Manchester
- ME Medway
- MF Mansfield
- MK Milton Keynes
- NG Nottingham
- NN Northampton
- NP Newport
- NR Norwich
- OX Oxford
- PE Peterborough
- PL Plymouth
- PO Portsmouth
- PR Preston
- RG Reading
- SA Swansea
- SH Sheffield
- SN Swindon
- SO Southampton
- SR Sunderland
- SS Southend
- ST Stoke-on-Trent
- TF Telford
- WA Warrington
- WF Wakefield
- WL Birkenhead
- WO Worthing
- YO York

- BB Blackburn
- BD Bradford
- BH Bournemouth
- BI Birmingham
- BN Brighton
- BS Bristol
- BY Burnley
- BZ Barnsley
- CB Cambridge
- CF Cardiff
- CV Coventry
- CY Crawley
- DE Derby
- DN Doncaster
- EX Exeter
- FA Aldershot
- FY Blackpool
- GL Gloucester



**Centre for Urban & Regional Development Studies (CURDS),
School of Geography, Politics and Sociology,
Claremont Bridge,
Newcastle University
NE1 7RU**

Tel: 0191 208 7691

Fax: 0191 208 7741

www.ncl.ac.uk/curds/

www.ncl.ac.uk/gps/geography/