

Impact case study (REF3)

Institution: Newcastle University		
Unit of Assessment: 14 Geography and Environmental Studies		
Title of case study: Setting International Standards in the Definition of Official Boundaries for Regional Statistics		
Period when the underpinning research was undertaken: 2000–2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Mike Coombes	Professor of Geographic Information Emeritus Professor Senior Research Investigator	1978-2017 2017-2020 July 2020-
Period when the claimed impact occurred: 1 August 2013-31 December 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Good spatial policy decisions depend upon analyses of data for appropriately defined areas. The appropriate areas for economic development policy are 'functional economic areas' such as labour market areas (LMAs). The method for defining LMAs developed by Coombes is used by the UK's Office for National Statistics to produce official statistical boundaries. Two recent major reviews of LMA definition methods, conducted by Eurostat and the OECD, both ended by recommending the Newcastle method to member countries (who together cover most of the global economy). A growing number of countries had already used the Newcastle method to define appropriate LMA boundaries for official statistics and/or to help improve policy delivery in geographical contexts ranging from rural Ireland to industrial Italy.</p>		
2. Underpinning research		
<p>UK official statistics and regional policy since the 1960s have used LMA boundaries called TTWAs (Travel to Work Areas). TTWA boundaries are re-defined after each Census so they reflect changed settlement and commuting patterns. Since 1980 Coombes has led research to update TTWAs, working with the Office for National Statistics (ONS) and its predecessor bodies [GRANTS1, 2, 5]. This co-production of knowledge allowed for methodological innovation, while ensuring that the defined TTWAs were robust to scrutiny in Parliament.</p> <p>A radical methodological review [GRANT2] by the Newcastle team in 2007 devised the new and intuitive iterative procedure which was used to define the 2001-based TTWAs [PUB1]. The fundamental innovation was to replace the long-established approach to regionalisation, in which each LMA needs a single urban core, with a flexible method that can reflect the new mobility of the labour force [PUB2]. In this way the Newcastle method identifies as a valid LMA any substantial cluster of commuting flows, whether it is urban, rural or polycentric.</p> <p>The Newcastle method is also innovative in having just 4 parameters that ensure that all the LMAs defined meet key requirements in terms of labour market size, and level of commuting self-containment (a core element of the LMA concept). The method is an algorithm in which very many iterations of a procedure define the final set of LMAs. A further vital innovation made the process non-hierarchical: it keeps the allocation of areas repeatedly 'under review' so that the final LMAs are more optimal in terms of the objectives set with the 4 parameters. A review of LMA definition methods used in several countries found that these innovations made the Newcastle method unique in giving equal weight to all types of commuting flows, thereby providing a complete and more consistent mapping of a country's LMAs [PUB3].</p> <p>The next challenge was to establish that the benefits of the Newcastle method would also apply to analyses of countries with very different geographies to the UK. This cross-national transferability of methods is a key concern for international bodies. Newcastle research for Eurostat [GRANT4] identified the variety of LMA definition methods used in European Union countries. The research then showed empirically that only the Newcastle method could define appropriate LMAs in such different countries as the UK, Sweden and Spain [PUB4].</p>		

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Subsequent research [PUB5] has provided a conceptual basis for identifying metrics that can show which set of LMAs provides the most appropriate mapping of a country, with these metrics validated empirically by applying them to several thousand sets of LMAs in the USA.

Other innovative applications of the Newcastle method include its use to define housing market areas for a government agency, which involved analysing both commuting and migration flows [GRANT3]. A further form of transferability of the method was demonstrated when the scale of interest was shifted from local areas such as LMAs up to city regions [PUB6]. Applications of the Newcastle method are increasingly diverse, highlighting the flexibility of the innovative procedure developed for the definition of the 2001-based TTWAs.

3. References to the research

- PUB1** Coombes, M. and Bond, S. (2008) Travel-to-Work Areas: the 2007 review. Office for National Statistics, London. <http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/other/travel-to-work-areas/travel-to-work-area-final-report.zip>
- PUB2** Coombes, M. (2010) Defining labour market areas by analysing commuting data: innovative methods in the 2007 review of Travel-to-Work Areas. In *Technologies for Migration and Population Analysis: Spatial Interaction Data Applications* J. Stillwell, O. Duke-Williams and A. Dennett (eds.) IGI Global:Hershey, PA (USA). <https://www.igi-global.com/chapter/defining-labour-market-areas-analysing/42729>
- PUB3** Casado-Díaz, J. and Coombes, M. (2011) The delineation of 21st century local labour market areas: a critical review and a research agenda. *Boletín de la Asociación de Geógrafos Españoles*, 57, pp 7-32. <https://bage.age-geografia.es/ojs/index.php/bage/article/view/1390/1313>
- PUB4** Coombes, M., Casado-Díaz, J.M., Martínez-Bernabeu, L. and Carausu, F. (2012) Study on comparable Labour Market Areas, Eurostat: Luxembourg. <https://ec.europa.eu/eurostat/cros/system/files/Study%20on%20comparable%20Labour%20Market%20Areas.pdf>
- PUB5** Martínez-Bernabeu, L., Coombes, M. and Casado-Díaz, J.M. (2020) Functional regions for policy: a statistical ‘toolbox’ providing evidence for decisions between alternative geographies. *Applied Spatial Analysis and Policy*. 13, pp 739-758. <https://link.springer.com/article/10.1007/s12061-019-09326-2>
- PUB6** Coombes, M. (2014) From city region concept to boundaries for governance: the English case. *Urban Studies*. 51, pp 2426-2443. <https://doi.org/10.1177/0042098013493482>

Grant	PI	Sponsor	Period	Value to NU
GRANT1: Travel to Work Areas and the 2001 Census	Coombes	Office for National Statistics	2004–5	GBP9,847
GRANT2: Travel to Work Area analyses	Coombes	Office for National Statistics	2007	GBP28,787
GRANT3: The geography of housing market areas	Coombes	National Housing and Planning Advisory Unit	2009-10	GBP37,100
GRANT4: Comparable labour market areas	Coombes	Eurostat	2011-12	GBP18,857
GRANT5: Travel to Work Area analyses	Coombes	Office for National Statistics	2014-15	GBP23,533

Evidence of the quality of the research is its funding by national and international agencies, and its publication in internationally esteemed peer reviewed journals [e.g. **PUBS 5 & 6**].

4. Details of the impact

Supporting policy design and analysis in the UK

It is widely recognized that TTWAs are the ‘gold standard’ definition of the UK’s functional economic areas. Functional areas such as LMAs reflect the geography of local economies, and this makes them valued for place-based policy because most of the impact of a policy

intervention in a TTWA can be expected to occur within that boundary. TTWAs are an official statistical geography of the ONS, who plan to work with Newcastle when updating TTWAs following the 2021 Census. ONS continues to depend on TTWAs for the publication of a range of official statistics on local economic conditions. These datasets are extensively downloaded by policy-makers and other users, who value TTWAs because they are the only areas that provide a “*statistically consistent geography for the whole country*” [IMP1].

The significance of TTWAs for place-based policy interventions is evidenced by government guidance on making the case for public investments. HM Treasury’s Green Book sets out how to appraise policies, programmes and projects, and it specifies the use of TTWAs where local labour market analysis is needed to calculate place-based employment effects [IMP2]. The UK Government’s Head of Geography Profession observes more generally that TTWAs “*are an important part of the tool kit for analysts across the UK seeking to analyse differences in the UK economy between different areas ...[including] government users wanting to use a statistical geography that provides a functional economic area*” [IMP3].

Changing international organisations’ understanding of, and policy on, defining LMAs

The Newcastle method for defining LMAs, the basis of the 2001-based TTWAs, was recently recognised as ‘best practice’ at an international scale. Until 2020 neither Eurostat nor the OECD had recommended a method of defining LMAs to their member states, who together cover most of the world’s economic activity. However economic development policy-makers in many countries have increasingly queried the ‘default’ use of administrative areas for policy and instead recognized that adopting the use of “functional areas can enhance the analysis of policy challenges, the appropriate design of policy action, and the delivery of positive outcomes for residents” [IMP4 (p.17)].

In its 2020 report European harmonised Labour Market Areas: methodology on functional geographies with potential, Eurostat summarised the findings of several years’ co-ordinated cross-national research in numerous countries. The research involved parallel analyses in European countries with contrasting geographical conditions (and/or commuting datasets very different to the UK’s). The conclusion was that the Newcastle method’s 4 adjustable parameters enabled countries beyond the UK to define appropriate LMAs. Using the same method in each country enabled a “harmonised” system of sufficiently comparable LMA definitions to be produced across the continent. The Newcastle method defined LMAs whose boundaries matched the “social and economic reality at which European decisions and projects need to be targeted” [IMP5 (p.8)].

Also in 2020 the OECD published the report Delineating Functional Areas in All Territories that drew conclusions from research undertaken following calls from several member states. The report states that LMAs “are necessary for collecting and publishing labour market statistics in a coherent and consistent manner” [IMP4 (p.15)]. The research had assessed various approaches to the definition of LMAs in order to identify one method to recommend. A crucial factor in selecting the recommended method was that it should be relevant to all areas and this militated against those well-established approaches to LMA definitions that focus exclusively on more urbanised areas. A policy using purely urban LMA definitions will clearly leave ‘off the map’ more rural and remote areas.

Whereas urban-centred functional area definitions only take account of commuting flows into larger cities from surrounding areas, with the Newcastle method every flow in every direction is considered in the analysis. The result of this more holistic approach of the Newcastle method is that its definition of LMAs covers a country completely, from metropolitan areas through to remote rural regions. These advantages over urban-centred definitions of LMAs (in which many relevant flows are ignored, and many areas then omitted) are highlighted in the 2019 report by the Swiss Federal Statistical Office documenting their adoption of the Newcastle method to define their national set of LMAs [IMP6 (Figure G1)] (see below).



policy agency commissioned research which drew on the Newcastle method in the 2019 definition of the “BA-regioner” set of LMAs that the agency needed for policy purposes [IMP11]. Another case is the Rural Economic Development Zones (REDZ) policy in Ireland. The government in 2016 allocated several million euros for projects whose spatial framework is a new set of LMAs defined with the Newcastle method solely for this purpose. It is notable that this policy use of functional areas was explicitly welcomed by the government Minister: “[o]ne of the strengths of the REDZ initiative is that it encourages Local Authorities and other stakeholders to work across administrative boundaries in neighbouring counties” [IMP12].

To date the European countries where official statistics are published for LMAs defined with a form of the Newcastle method are Denmark, France, Italy, Switzerland and the UK [IMP13]. Other countries involved in the Eurostat or the OECD analyses of the Newcastle method’s transferability are Spain, Sweden, Bulgaria, Finland, Hungary, Poland, Portugal, Canada, Estonia, Korea, Mexico, and the USA, while the method was also used for a study of cross-border LMAs that involved Belgium, Germany and the Netherlands [IMP13].

5. Sources to corroborate the impact

NOTE: the significant impacts of the Newcastle method is evidenced in these Sources mostly by reference to TTWAs (Travel to Work Areas), or to publications by Coombes

IMP1: Testimonial by the Head of Geography Products, Office for National Statistics

IMP2: HM Treasury (2020) *The Green Book: Central Government guidance on appraisal and evaluation* HM Treasury, London <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government/the-green-book-2020>

IMP3: Testimonial by the Head of Geography Profession, UK Government

IMP4: OECD (2020) *Delineating Functional Areas in All Territories* OECD Territorial Reviews, OECD Publishing, Paris. <https://doi.org/10.1787/07970966-en>

IMP5: Eurostat (2020) *European harmonised Labour Market Areas: methodology on functional geographies with potential* Eurostat Statistical Working Paper, European Union, Luxembourg <https://ec.europa.eu/eurostat/documents/3888793/10992115/KS-TC-20-002-EN-N.pdf/5a6258be-6c53-64fa-971c-2b19908ab442>

IMP6: Federal Statistical Office (2019) *Labour Market Areas 2018: explanatory report* Federal Statistical Office, Neuchâtel www.bfs.admin.ch/bfs/fr/home/statistiques/themes-transversaux/analyses-spatiales/niveaux-geographiques/regions-analyse.assetdetail.8948838.html

IMP7: United Nations (2019) *The Global Statistical Geospatial Framework* UN Department of Economic and Social Affairs, New York http://ggim.un.org/meetings/GGIM-committee/9th-Session/documents/The_GSGF.pdf

IMP8: Istat (2015) *La nuova geografia dei sistemi locali* Istat, Rome www.istat.it/it/archivio/172444

IMP9: Ministero dello sviluppo economico (2017) *Aree di crisi industriale non complessa* Ministero dello sviluppo economico, <https://www.mise.gov.it/index.php/it/impresa/competitivita-e-nuove-imprese/aree-di-crisi-industriale/crisi-industriale-non-complexa> Rome

IMP10: Istat (2020) *Rapporto Annuale 2020: La situazione del paese* Istat, Rome <https://www.istat.it/it/archivio/230897>

IMP11: Gundensen F, Holmen RB and Hansen W (2019) *Inndeling I BA-regioner 2020* Institute of Transport Economics, Oslo www.toi.no/getfile.php?mmfileid=50675

IMP12: Merrion Street (2016) *€5.3m REDZ funding will stimulate economic development in rural towns and their hinterlands – Minister Humphreys* Irish Government News 28 November 2016, Dept. of Culture, Heritage and the Gaeltacht, Dublin https://merrionstreet.ie/en/category-index/art-sport-culture/%E2%82%AC5_3m_redz_funding_will_stimulate_economic_development_in_rural_towns_and_their_hinterlands_%E2%80%93_minister_humphreys.118645.shortcut.html

IMP13: List of countries where the Newcastle method has been applied, adopted or adapted (with accompanying web links as evidence): it is available on request