

Institution: University of Sheffield
Unit of Assessment: 17B - Geography, Environmental Studies and Archaeology: Geography
Title of case study: Understanding social and spatial inequalities
<p>1. Summary of the impact</p> <p>Research by the Social and Spatial Inequalities (SASI) research group, led by Prof Danny Dorling, has for more than a decade been at the forefront of analysis and visualisation of social inequalities. SASI's research is global in scope and focuses on the statistical analysis of trends, causes and consequences of inequality and on methodological innovations in the effective visualisation and communication of those inequalities. Reaching beyond the academic community to effect real change in society is a core objective for the SASI group, leading to significant impacts in three different ways:</p> <ul style="list-style-type: none"> • enhanced public understanding of inequality via extensive media coverage, television programmes reaching more than 2 million viewers, over 500 public talks and a website with more than 174 million hits; • significant contributions to UK policy debate and policy making at both local and national levels; • award-winning improvements to the teaching and learning of Geography in schools.
<p>2. Underpinning research</p> <p>Inequality is often described as one of the most pressing social and economic problems of the modern era and the SASI group are internationally recognised to be at the forefront of its analysis and visualisation. Formed in the Department of Geography at the University of Sheffield in 2003, the group's research has been based on the contributions of Professor Danny Dorling, Dr Ben Hennig, Dr Bethan Thomas, Dr Dimitris Ballas, Dr Dan Vickers and their PhD students.</p> <p>One strand of SASI's work focuses on the analysis of changing post-war trends in inequality in the UK and globally, the causal factors driving those trends and their social consequences. This work involves statistical analyses of survey, census and administrative data. While most inequality research focuses on national-level trends, SASI examine <i>sub-national patterns and trends</i> as in the group's <i>Tale of Two Cities</i> report on inequalities between small areas in Sheffield [R6]. Their work also goes beyond current cross-sectional research on spatial inequalities at one point in time to emphasise <i>longitudinal analyses</i>, seen for example in their geographical analyses of changing social inequalities in the UK during the 1990s [R2]. This work has required the use of complex small area estimation methodologies in order to overcome data challenges [R1, R2]. The group's work also examines the harmful <i>consequences of inequalities</i> in health, life expectancy, crime and happiness. The group's work culminated in the best-selling books <i>Injustice</i> [R3] and <i>Fair Play</i> [R4] which the Chief Executive of the RSA described as a "brilliant analysis of the nature of inequality".</p> <p>A second strand of SASI's research has pioneered new methods for visualising inequality including the creation of various atlases of geographical inequality and the development (with colleagues from Michigan) in the <i>Worldmapper</i> project of a new algorithm for creating social cartograms which resize places (e.g. countries) based on their characteristics rather than their standard geographical area and boundaries. The <i>Worldmapper</i> project was funded by a £50k grant from the Leverhulme Trust and led to a website with >700 social cartograms which powerfully convey a range of different global inequalities through engaging visualisations. <i>The Atlas of the Real World</i> [R5] reproduced >300 of these cartograms with commentaries on the visualisations and has been translated into seven languages. Later work, also funded by the Leverhulme Trust (£142k), extends the cartogram methodology via a revolutionary gridded cartogram map projection which enables more spatially detailed and more arresting visualisations.</p> <p>Since 2003, SASI have received over £1m in funding from ESRC, Leverhulme and the Joseph Rowntree Foundation plus numerous pieces of commissioned research including from the BBC,</p>

Impact case study (REF3b)

Trust for London and Shelter. SASI members have published 22 books and >100 peer reviewed papers since 2003. Dorling was the first geographer to deliver the Royal Statistical Society's prestigious Beveridge Memorial Lecture (2012). He won the RGS Back Award (2009), the Geographical Association's Gold Award (2009) and their Award for Excellence in Leading Geography (in both 2007 and 2013). Hennig was awarded a prestigious German Study Award in 2012 (including a €30,000 prize) for his work in developing a new gridded cartogram methodology.

3. References to the research

- R1. BALLAS, D., Clarke, G., DORLING, and Rossiter, D. (2007) 'Using SimBritain to model the geographical impact of national government policies', *Geographical Analysis*, 39(1), pp.44-77 doi: [10.1111/j.1538-4632.2006.00695.x](https://doi.org/10.1111/j.1538-4632.2006.00695.x) [5 year impact factor = 1.814]
- R2. BALLAS, D., Clarke, C., DORLING, D., Eyre, H., THOMAS, B. and Rossiter, D. (2005) 'SimBritain: A spatial microsimulation approach to population dynamics', *Population, Space and Place*, 11, pp13-34 doi: [10.1002/psp.351](https://doi.org/10.1002/psp.351) [5 year impact factor = 2.054]
- R3. DORLING, D (2010) *Injustice: Why social inequality persists*. Bristol: Policy Press [text removed for publication]
- R4. DORLING, D (2012) *Fair Play: A Daniel Dorling reader on social justice*. Bristol: Policy Press [text removed for publication]
- R5. DORLING, D., Newman, M and BARFORD, A (2008) *The Atlas of the Real World*. London: Thames and Hudson [Translated into seven languages and now in its second edition]
- R6. THOMAS, B., PRITCHARD, J., BALLAS, D., VICKERS, D. and DORLING, D. (2009) *A Tale of Two Cities: The Sheffield Project*. Sheffield: Social and Spatial Inequalities research report

4. Details of the impact

SASI's research has had significant impacts on: public understanding of inequality; policy debate and policy making; and secondary school education.

Enhancing public understanding of inequality

The Chief Executive of the Geographical Association describes Dorling as "*one of the few academic geographers who is both willing and able to channel the outcomes of his research into the public debate. Through his regular appearances in the national media, Danny is seen to advance the public standing of the subject and share some of the unique insights which human geography can bring to debates about inequality, welfare and population change*" [S1].

The *Worldmapper* website presents over 700 engaging cartograms which visualise a wide range of global inequalities and has become a powerful platform to stimulate, engage and inform the public. It has received international press coverage from *TIME* magazine, the *New York Times*, *Washington Post*, *Rheinische Post* and *Der Spiegel*. The website has received >174 million hits since its launch in January 2007 and continues to receive around 2m additional hits per month. This engagement is truly international including 75m hits from the USA, 21m from the UK, 50m from Europe, 11m from Asia, 4m from Australasia and 1.3m from Africa [S2]. Its ability to challenge conventional thinking and to help people understand inequality more effectively is confirmed by Anna Barford's PhD research with teachers in the UK, Kenya and Mexico who described how *Worldmapper* visualisations helped their students understand inequalities.

Dorling is a regular contributor to public debate through frequent television and radio appearances as well as regular newspaper articles and public talks. In 2010 Dorling contributed to the BBC's *Maps: Power, Plunder and Possession* television programme discussing cartograms from the *Worldmapper* project on topics such as HIV/AIDS and global income inequality. The programme received 300,000 live viewings and a further 72,000 on BBC Player [S3]. In 2011 he featured on Andrew Marr's *This is Britain* television programme discussing variations in UK health and life

Impact case study (REF3b)

expectancy. The programme reached 1.83 million viewers live and a further 16,000 on iPlayer [S3].

Since 2003 Dorling has written >70 articles in the *Guardian*, *Observer*, *Times*, *Independent* and *New Statesman* and has been referred to in >300 further newspaper articles [S4]. He is an associate writer for the *New Statesman* and the *Guardian* newspaper maintains his research profile permanently online. Dorling's books are accessible to academic and public audiences alike: his books with Policy Press alone have sold [text removed for publication] copies with *Injustice* selling [text removed for publication] copies [S5]. *The Atlas of the Real World* won the Geographical Association's 2009 Gold Award for best publication due to its engaging cartograms and accompanying commentaries depicting different dimensions of modern global inequality and has been translated into seven languages.

Dorling is also committed to reaching non-academic audiences directly and since 2003 has given around 500 talks (an average of roughly one per week for an entire decade) in schools, pubs, cinemas, bookshops, demonstrations and festivals, at The British Library, Women's Institutes and political meetings. Reflecting on Dorling's 'Crazy Maps' talk and animated film presentation at Sheffield's Festival of the Mind, the Chief Executive of the Geographical Association commented that "*once again, [Dorling's] willingness to adapt research findings for public interest and consumption was exemplary*" [S1].

Engaging the public with his research on inequality in these ways, Dorling has been described as a "geographer extraordinaire" (Crossbench Member of the House of Lords), "our leading human geographer" (President of the RSA) and "geography's Brian Cox" (teachsecondary website). In April 2010 he was the subject of a *Guardian* newspaper feature ('In praise of Danny Dorling') which described him as "that rare university professor: expert, politically engaged and able to explain simply why his subject matters".

Influencing local and national policy debate and policy making

At the local policy level, SASI was commissioned by a Sheffield Member of Parliament to analyse social inequality in Sheffield and to consider linkages between inequality and wellbeing across the city. The research generated a debate in the local media and within Sheffield City Council that led to tackling inequality becoming a strategic priority for the council and to the establishment of its Sheffield Fairness Commission to achieve this aim. Describing the importance of Dorling's work, a local MP confirms that the Fairness Commission "*arose as a direct result of a Tale of Two Cities*" providing the momentum to galvanise change and, indeed, the Fairness Commission's 2013 strategy document cites the *Tale of Two Cities* report as a key part of its evidence base to tackling inequality in the city [S6]. Dorling also provided expert oral evidence around health and wealth inequalities to the Fairness Commission and he was influential in shaping and guiding its recommendations and the resulting policy priorities of Sheffield City Council. The Policy and Improvement Officer at Sheffield City Council states that as a direct result of Dorling's evidence and recommendations the council have: (i) established an explicit commitment to tackling health inequalities in the city and have established the Joint Health and Wellbeing Strategy to achieve this; (ii) have established a commitment to a 20mph speed limit as the default position for residential areas and have begun rolling this policy out across the city; (iii) introduced a Living Wage for the staff it directly employs and with a commitment to extend this to Trusts and contractors in order to show substantial progress by 2015 [S7]. The Policy and Improvement Officer of Sheffield City Council concludes that: "*There is a clear impact from this evidence with a direct read across from the evidence Professor Dorling presented to the Commission on health inequalities; child road traffic casualties and the living wage through to the aims and recommendations made by the Commission in its report.*" [S7]

At the national level SASI's work has achieved significant impacts on the development of national policy on child poverty. A Local Delivery Team Leader of the Department for Education's Child Poverty Unit confirms that "*Danny's work – in particular his Injustice book – helped Child Poverty Unit officials to frame the child poverty debate in the context of broader measures and indicators of inequality. This broad-based approach to understanding the causes and consequences of child*

Impact case study (REF3b)

*poverty became central to the Coalition Government's approach to tackling child poverty" [S8]. Equally influential, in research commissioned by the BBC (£37k), SASI's analysis of widening geographical inequalities and segregation across England over the past 40 years was one of only six citations within the Conservative Party's *Big Society, Not Big Government* strategy document (page 3).*

In recognition of this work, Dorling won the Royal Geographical Society (RGS) Back Award in 2009 for his 'contributions to public policy'.

Improving teaching and learning in secondary schools

The Geographical Association (GA) describes *Worldmapper* as a "*challenging and thought provoking resource for teachers and a striking way for students to take a different view of the world*". One south London secondary school teacher confirms this view, reporting that *Worldmapper* is a "*fantastic visual aid...that makes [students] ask questions and be more critical. For me this is a vital skill that is not taught enough in schools currently...When I have used it much discussion is generated about what the map shows, how it shows it and what the distribution of the data means to us. It is a great resource for starting such discussion and then leading onto more focussed aspects of a topic. I use the poverty map a lot with my U6th for their conflicts module and it really starts to challenge the kids' assumptions*" [S9].

Dorling has written about *Worldmapper* for the GA's *Teaching Geography* magazine (read by several thousand secondary school teachers). The GA itself regularly uses *Worldmapper* in its publications such as the GCSE Toolkit on uneven development as well as in their student events and teacher workshops. Indeed, the GA have created resource packs and lesson plans to support teachers in using *Worldmapper* and made these freely available from their website. Further web links and teaching resources can also be found on the UK's teachsecondary website and on the US Library of Congress website.

The impact of these visualisations on teaching and learning led Dorling to receive the Geographical Association's Excellence in Leading Geography award in 2007 and 2013 as well as their Gold Award in 2009 for 'materials that make a significant contribution to geographical education and professional development'.

5. Sources to corroborate the impact

- S1. Email correspondence from the Chief Executive of the Geographical Association corroborates the claim of Dorling's impacts on public engagement and debate.
- S2. *Worldmapper* web statistics were provided by the Avstats website analysis software on 19 Aug 2013.
- S3. Dorling's television viewing figures were provided by a BBC Executive Producer.
- S4. Statistics on Dorling's newspaper contributions were provided by the Newsbank media content analysis software on 19 Aug 2013.
- S5. Book sales statistics were provided by the Sales and Distribution manager at Policy Press.
- S6. Email correspondence from a Sheffield Member of Parliament corroborates the claim that the Fairness Commission arose as a direct result of the research undertaken.
- S7. Email correspondence from the Policy and Improvement Officer at Sheffield City Council corroborates the impact of the research on Sheffield City Council's policy debate and policy making within the Fairness Commission.
- S8. Email correspondence from the Project Lead, UK Department for Education, corroborates that the research was central to the Coalition Government's approach to tackling child poverty.
- S9. Email correspondence from a secondary school Geography teacher corroborates the impact

of *Worldmapper* on school teaching.