

<b>Institution:</b> City, University of London		
<b>Unit of Assessment:</b> Business & Management		
<b>Title of case study:</b> Innovative use of administrative data enabling local and national organisations to better cost, plan and deliver services		
<b>Period when the underpinning research was undertaken:</b> 2000 - ongoing.		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b>	<b>Role(s) (e.g. job title):</b>	<b>Period(s) employed by submitting HEI:</b>
Prof Les Mayhew	Professor of Statistics	2001 – current
Gill Harper	UPTAP Research Fellow Research Fellow/Data Analyst	06/2008 – 12/2009 07/2015 – 09/2017
<b>Period when the claimed impact occurred:</b> 2014 – ongoing.		
<b>Is this case study continued from a case study submitted in 2014?</b> Y		
<p><b>1. Summary of the impact</b></p> <p>Professor Les Mayhew and Gill Harper have been developing a system for the exploitation of administrative data and estimating and profiling populations in a commercial capacity since 2000, under the name ‘Neighbourhood Knowledge Management’ (nkm). To date over 60 projects, enabled by the methodology, have been completed for more than 20 local authorities, healthcare organisations, central government and the third sector following a wide range of commissions. Users of Mayhew’s work have gained access to more accurate, detailed, and relevant data which have helped them make better evidence-based policy and planning decisions and to save money. The methodology has been applied to education, public health, housing, health and social care, crime, service design, economic evaluation, transport planning, equality impact assessments, investigations into chronic disease and Joint Strategic Needs Assessments (JSNA) for Primary Care Trusts.</p>		
<p><b>2. Underpinning research</b></p> <p>Administrative data refers to information collected primarily for administrative (not research) purposes. These types of data are collected by government departments and other organisations for the purposes of registration, transaction, and record keeping, usually during the delivery of a service. Examples of administrative data include that collected for welfare, tax and health purposes and via educational record systems. The potential for these data to be accessed for the purposes of social science research is increasingly recognised, although it has not yet been fully exploited.</p> <p>A growing body of evidence indicates that the official population statistics based on the decennial census are inaccurate at the local authority level—the fundamental administrative unit of the UK. In order to address this issue Professor Mayhew and co-author Gill Harper started developing a unique system for the exploitation of administrative data and measuring populations. Their method involves the use of truth tables for combining different data sources with different population coverage according to defined and therefore replicable set of rules. The result is current and geographically more flexible data which are more cost-effective to produce than a survey-based census [3.1] [3.2]. The research also demonstrated that data sets produced following this methodology are accurate than traditional statistics because they use current data sources, are more economical to produce as they do not involve labour intensive and costly surveys and contain richer demographic and socio-economic information unavailable elsewhere [3.3].</p> <p>The innovative methodological features of their approach, approved by the Information Commission, include secure systems for data handling, legally binding data sharing protocols, information governance certification, algorithms for cleaning and linking data at the person and address levels, algorithms for combining data to produce population estimates and innovative analytical and modelling tools for processing and reporting data.</p>		

Administrative data sets and registers at household are linked and analysed. Combining these different sources is essential to maximise coverage in the absence of one single comprehensive register that captures the entire local population. Data sets can originate from a variety of sources such as the GP Register, which is the most comprehensive of these data sets because it records the majority of a population and contains age and gender information. Data are then linked together at address level, using the universally available Local Land and Property Gazetteer, and processed via algorithms according to a specific set of rules which are applied in a series of stages with the outputs from one stage carrying forward to the next. Residuals, such as duplications, are addressed and the process produces the 'minimum' confirmed population. Subsequently the results are subjected to a series of 'reasonability' checks to ensure that the results are sensible, taking into account timing and definitional differences [3.2] [3.3] [3.4].

The utility of the data platform is demonstrated by the wide range of commissions undertaken in education, public health, housing, service design, economic evaluation, transport planning, and equality impact assessments [3.4]. In addition to population estimation, nkm has been involved in projects such as the 2012 Olympic preparations and aftermath, investigations into chronic disease, epidemiological applications [3.5] and Joint Strategic Needs Assessments (JSNA) for Local Authorities [3.6].

### 3. References to the research

- [3.1] Harper, G. and **Mayhew, L.** (2012). Applications of Population Counts Based on Administrative Data at Local Level. *Applied Spatial Analysis and Policy*, 5(3), pp. 183-209. Doi: 10.1007/s12061-011-9062-z
- [3.2] Harper, G. and **Mayhew, L.** (2015). Using Administrative Data to Count Local Populations. *Appl. Spatial Analysis* (2012) 5: 97. Doi: 10.1007/s12061-011-9063-y
- [3.3] Harper G. & **Mayhew L.** (2010). Using administrative data to estimate the population and applications, *Understanding Population Trends and Processes (UPTAP)*, September.
- [3.4] Eversley J. & **Mayhew L.** (2011). Using local administrative data to evaluate social and community cohesion. In P. Ratcliffe & I. Newman (Eds.), *Promoting social cohesion: Implications for policy and evaluation*. London: Policy Press.
- [3.5] Pat Sturdy, Stephen Bremner, Gill Harper, **Les Mayhew**, Sandra Eldridge, John Eversley, Aziz Sheikh, Susan Hunter, Kambiz Boomla, Gene Feder, Keith Prescott, Chris Griffiths (2012) Impact of Asthma on Educational Attainment in a Socioeconomically Deprived Population: A Study Linking Health, Education and Social Care Datasets. *PLOS One*, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0043977>
- [3.6] Harper, G. and **Mayhew, L.** (2015). Using Administrative Data to Count and Classify Households with Local Applications. *Appl. Spatial Analysis* (2016) 9: 433. <https://doi.org/10.1007/s12061-015-9162-2>

Research was published in journals that apply a stringent peer-review process prior to accepting articles for publication, including highly sighted PLOS One (IF 2.740 – 2019, 688k cumulative citations) and cross-disciplinary industry specific Applied Spatial Analysis and Policy (IF 2.28 2018, Geography, Regional & Urban Planning)

### 4. Details of the impact

Professor Mayhew's research has had considerable influence and impact at both local and national levels. Specific examples can be found: i) on the local level in his extensive collaboration with the London borough of Tower Hamlets (LBTH); ii) in the charity sector and his work for Buttle UK; iii) at the national level via his expert testimony in Parliament and continued involvement in the development and planning of the Census for the future.

### **Supporting Councils & Local Authorities**

Mayhew, via nkm, was invited to lead the “Whole Systems Data Project” (WSDP) for the London borough of Tower Hamlets. The project targets health inequalities within Tower Hamlets and is the first of its kind to be launched in the field, making Prof. Mayhew’s contribution and the project itself unique. This is evidenced in the guide for the creation of the project, which explicitly states that the analytics are “Based on earlier work by Harper and Mayhew” and references Mayhew’s research 14 times [5.1]. The project launched in 2017 and involved the linking and analysis of administrative records in housing, health, social care with individual medical records and involved a significant amount of negotiation with the Department of Health and NHS Digital. The work is ongoing and results are being used by LBTH and clinical commissioning groups to evaluate, plan and deliver local services [5.2]. An illustration of the impact the WSDP is having can be found in the nkm report on health inequalities and health care consumption (2019). This report allowed the council to identify previously overlooked health and social issues such as the high correlation (>90%) between deprivation and health costs, the fact that older people in deprived areas have more long-term health conditions on average, the increased secondary care costs for persons living in social housing (£100/year) or benefits (£300/year), and other issues such as mental health and obesity [5.1]. These findings feed into the Joint Strategic Needs Assessments and inform the council’s decisions and actions in tackling these issues.

LBTH and Professor Mayhew have collaborated extensively in other successful initiatives, chief among them was the launch of the Selective Licensing Scheme, the decision for which was based on Prof Mayhew’s research and report, that highlighted the link between private rented properties and anti-social behaviour (ASB) [5.2] [5.3]. The scheme was launched in 2016 on a five-year cycle, is covering three wards and an estimated 5900 properties. According to the council’s own consultations, the majority of tenants/business was supportive of the scheme, indicating that Prof Mayhew’s advice resonates not only with the local authorities but also with the people directly affected. His contribution is considered of such critical value that at the end of the first 5-year cycle (2021) he is expected to review and report on the outcomes [5.3].

Around 20 local authorities have commissioned Professor Mayhew to conduct similar reporting of housing, ASB and private licencing schemes. Examples include the Enfield Council, which attributed “considerable weight” to his report when deciding to implement the scheme [5.4] and subsequently relied on Mayhew’s expert testimony when defending the scheme from legal challenges [5.4]. Likewise, Cornwall County Council relied on Mayhew’s research during its review of their PRS sector. Council Inquiry members praised the way in which complex statistical analysis was presented in a clear and understandable format. The recommendations of the inquiry are still being formed but it appears likely that the Council will rely heavily on analysis provided by MHA (i.e. nkm) [5.5]. As of October 2020, 700 landlords across Cornwall have already joined its voluntary Responsible Scheme, who between them own or manage 10,000 properties [5.5]. The Brent Council based its decision (in part) to extend its Selective Licensing Scheme on Mayhew’s work [5.6] and Ealing Council relied on Mayhew’s work for its “Impact of Poor Housing on Health” report as part of the Scrutiny Review Panel work which resulted in a slew of recommendations and a long-term drive for affordable housing in the borough [5.7].

### **Contributions and Impact in Charities**

Beyond the substantial work with local authorities, Professor Mayhew has contributed his expertise to charities and private businesses alike, by applying his research to produce highly influential analysis and reports that help shape debate and prompt action in a variety of sectors. A prominent example of this kind of impact is the Crisis Points report for Buttle UK [5.8]. The report was hailed by Buttle for helping the charity to raise awareness of the poor circumstances in which some families and young people live. Furthermore, it provided the charity with its most comprehensive set of data, at that point, allowing them to focus their efforts on areas of unexpected crisis [5.8] [5.9]. The impact achieved by Mayhew’s work is also evident in the influence it has exerted on Buttle’s attempts to identify and tackle child poverty via the ‘Chances for Children’ campaign, which was shaped to a large extent by nkm’s reporting. The campaign aims to raise £20 million, which translates into £133 million of public expenditure saved over the next fifteen years [5.9].

Mayhew’s research has also contributed to other areas of larger social benefit such as

healthcare, which has provided him with access to many, hitherto unexploited, data sets. For example, Mayhew worked with Specsavers Audiologists to prepare the “Listen Up Report”, which called attention to hearing loss issues that affect an ageing population. It also underlined the enormous costs associated with the current situation by calculating that hearing loss is costing the UK economy more than £1 billion a year due to NHS costs, disability benefits costs, and lost output [5.10]. This helped to strengthen the overall call to action on the issue by revealing the unrecognised consequences of a particular aspect of ageing.

### **National Stage: Steering the Debate on the Census**

Professor Mayhew’s research has also achieved impact at a national level, specifically in the use of administrative data in the decennial Census of Population, last undertaken in 2011. Prof Mayhew’s past contributions are already a matter of public record [REF2014] and since then he has been instrumental in further shaping the debate. The Office of National Statistics (ONS) has approached Mayhew and his associate to further discuss development of methodologies and has publicly acknowledged the importance of their research and the fresh perspective it offers [5.11]. Mayhew’s contributions in shaping the debate culminated in an invitation to provide expert testimony and written evidence to the Public Administration Select Committee (PASC) at its Fifteenth Report of Session 2013–14, entitled “Too Soon to Scrap the Census”. His expert testimony was deemed influential, which was reflected in the outcome of the session and the committee’s recommendations that mirror Mayhew’s advice [5.12]. Mayhew’s persistent championing of the value of using associative matching of administrative data has culminated in the adoption of these methodologies, via the recommendations of the National Statistician and the ONS [5.11] as is evident in the “Help Shape our Future” White paper. This paper lays out the direction of the production of official statistics in the future, with administrative data at the heart of the system as the Minister for the Constitution states mirroring Mayhew’s suggestions. This adoption is expected to produce a wide range of benefits for multiple users, as laid out in the white paper, from service planning and policy-making to market analysis and academic research.

### **5. Sources to corroborate the impact**

- [5.1]** Tower Hamlets Council, “Guide to the creation of a Whole Systems Data Set” Sept 2017, Project Sponsor: Tower Hamlets Together. Accompanied by WSDS Report on “Case studies in health inequalities and health care consumption” (July 2019)
- [5.2]** Testimonial – Tower Hamlets Head of Environmental Health and Trading Standards
- [5.3]** Tower Hamlets Council, Licensing of the Private Rented Housing Sector Report, 2 February 2016, Section 3, Paragraphs 3.2, 3.15, 3.19, 3.50. Accompanied by the LBTH Licensing of the Private Rented Housing Sector Decision.
- [5.4]** Enfield Council, MUNICIPAL YEAR 2014/2015 REPORT NO: 114  
Subject: Proposal to implement a borough-wide additional licensing scheme for private sector landlords. Paragraphs 3.12, 4.2, 5.3. Accompanied by Witness Statement, Administrative Court, Case number CO/3170/2014
- [5.5]** The Private Rented Sector in Cornwall – Report. Accompanied by Landzone article: “*Cornish landlords to face selective licensing in five key towns*” (07/10/20)
- [5.6]** Council of Brent - The case for extending Selective Licensing in Brent & Cabinet Decisions 19062017. Accompanied by “The case for extending Selective Licensing in Brent” Report.
- [5.7]** Ealing Council - The Impact of Poor Housing on Health Report (08/09/2016). Accompanied by the Scrutiny Review Panel Final Year Report (2016/17)
- [5.8]** Buttle UK, Online Announcement & declaration on the value of the Crisis Points report. Accompanied by the Crisis Points Report

**[5.9]** Testimonial - Buttle UK Director of Fundraising & Marketing. Accompanied by Buttle UK, The Real Face of Child Poverty in the UK in 2017 Report, Section 2

**[5.10]** Specsavers Listen Up! Hearing Loss in an ageing society Report. Accompanied by "Hearing loss costs UK economy one billion" article (12 May 2017)

**[5.11]** Occupied address (household) estimates from Administrative Data - Office for National Statistics ONS acknowledging Mayhew & Harper's work in developing alternative household classification systems using administrative data.

**See also** Research outputs estimating the size of the population in England and Wales: 2016 release

**[5.12]** House of Commons Public Administration Select Committee (PASC), Fifteenth Report of Session 2013–14 "*Too soon to scrap the Census*" April 2014