



ESCAP

Economic and Social Commission
for Asia and the Pacific

Small area estimation: From experimentation to official statistics

Regional Workshop for Asia and the Pacific on Small Area
Estimation Using Earth Observation Data

21-25 October 2024



- What might be some of the challenges in using SAE for Official Statistics?
 - Lack of interest and support from the top management, hence lack of resource;
 - Lack of dedicated resources for SAE research and implementation.
 - Lack of in-house technical capacity;
 - Lack of proper input data;
 - Reluctance about the use of model-based estimates;
 - Difficulties in communicating the technical aspects to users



- Development of Small Area Income Estimates first considered in 1990s
 - Strong user need for income question on 2001 Census, but concerns re: respondent acceptance and accuracy of responses
 - No national IDs/significant challenges to using linked administrative data
- The estimates were first published in 2003 for the 1998/99 financial year, providing estimates at electoral ward level (c. 6,500 wards in England & Wales)
 - For subsequent releases estimates moved to 'Middle-level Super Output Area', in line with new ONS Geography policy (c. 7,200 MSOAs in England & Wales, comprising 2,000 – 6,000 households)
- Estimates published roughly every three years
 - Most recent estimates for 2019/20 financial year



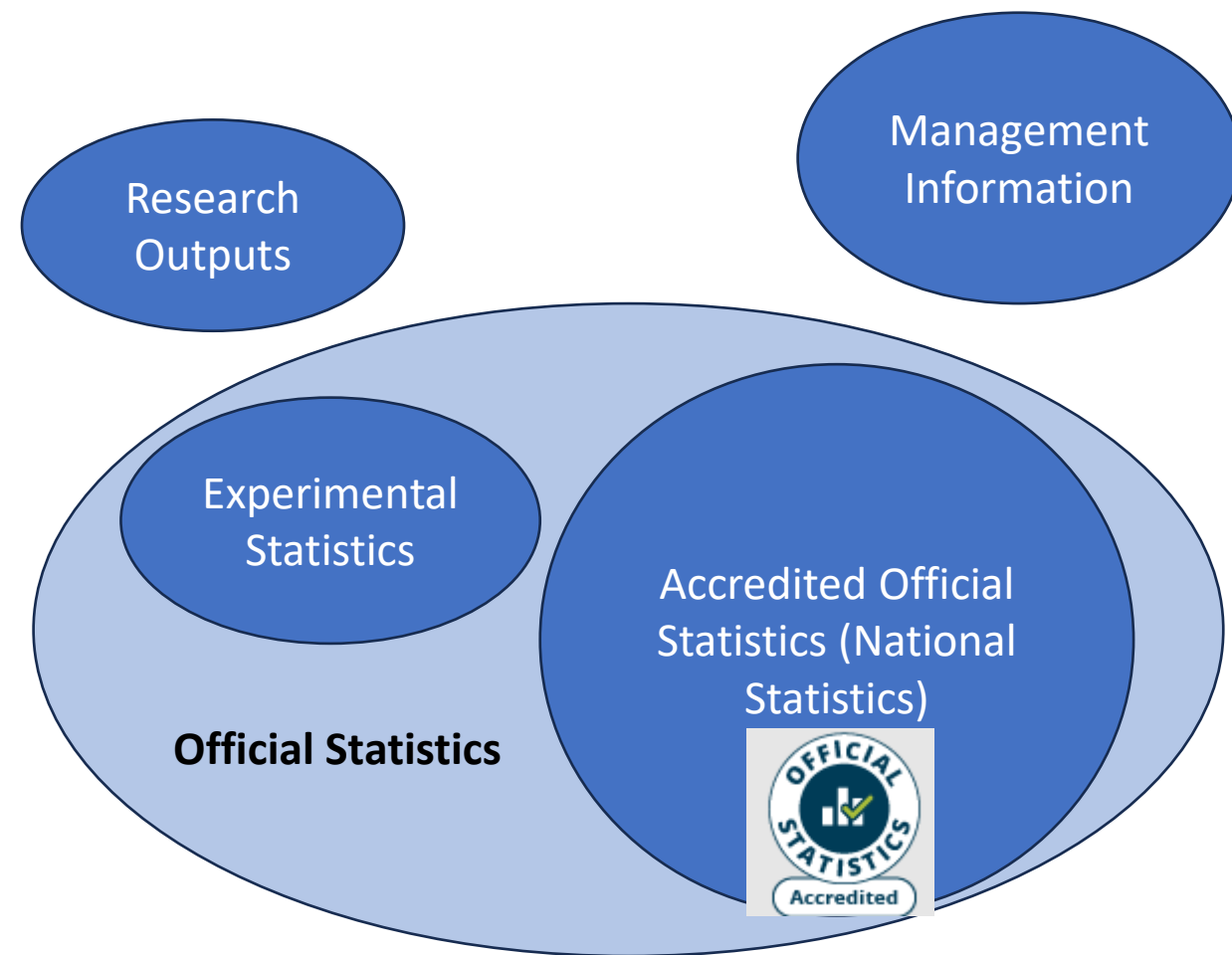
- Uses the Family Resources Survey – survey of income and living conditions with an annual achieved sample of c. 20,000 households
- Data sources for covariates have changed over time due to availability/selection process:
 - Census
 - Department for Work and Pensions benefit claimant counts
 - Valuation Office Agency (VOA) Council Tax Bandings
 - Office for National Statistics, House Price Statistics for Small Areas
 - Department of Energy and Climate Change, Energy Consumption data
 - Her Majesty's Revenue and Customs, Pay As You Earn (PAYE) data
- Estimates benchmarked to direct survey estimates at regional (10) level



- **Involve experts in development**
 - In developing new methods UK ONS commonly work with leading academic experts (e.g. University of Southampton for on SAE)
 - This has contributed to increase in number of UK academics working on issues relating to methods for official statistics (e.g. Economic Statistics Centre of Excellence)
- **Publish research outputs**
 - Present at conferences
 - Discuss challenges openly
 - Consider more formal peer review of methods
- **Consider publishing 'Experimental Statistics' prior to full 'Official Statistics'**
 - explain the nature of development and consider information users need to maintain confidence and support their understanding
 - E.g. what the statistics are, the need for them, the data sources and methods used, any coverage or quality concerns, and information about the nature of testing and its outcome



- **Official Statistics:** Statistics produced by Crown bodies, on behalf of the UK Government or devolved administrations
- **Accredited Official Statistics:** Official Statistics that have been independently reviewed and confirmed to comply with Code of Practice for Official Statistics
 - Previously known as National Statistics
- **Experimental Statistics** (Official Statistics in Development: Official Statistics undergoing development, and will be tested with users)



UK SAIE first accredited as National Statistics in 2011, following assessment by the UK Office for Statistical Regulation



Income estimates for small areas, England and Wales: financial year ending 2020

Small area model-based income estimates covering local areas called Middle layer Super Output Areas (MSOAs) in England and Wales.

This is the latest release. [View previous releases](#)



Contact:
[Andrew Zelin](#)

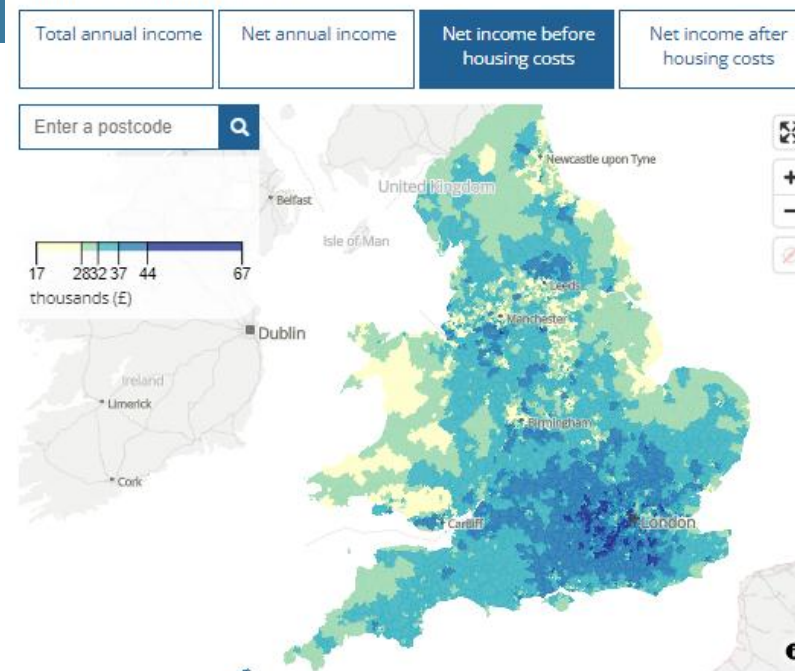
Release date:
11 October 2023

1. Main points

- Mean household disposable (net) income, equivalised to account for household size, before housing costs in local areas of England and Wales differed by around £50,000.
- Of the 50 local areas with the highest incomes before housing costs, 47 were in London, including areas within the local authorities of Westminster, Kensington and Chelsea, Wandsworth and Camden.
- Of the 50 local areas with the lowest incomes, over half were in Yorkshire and the Humber with a further quarter in the East Midlands.

Figure 1: Enter a postcode to see the average household income for the local area (based on areas of between 2,000 and 6,000 households called Middle layer Super Output Areas (MSOAs))

Mean average equivalised disposable annual household income, before and after housing costs, for local areas (MSOAs), financial year ending March 2020, England and Wales



- Consider the information needed by different users
 - Policy/Decision makers, analysts, academics, public etc.

Table of contents

1. Main points

2. Things you need to know about this release

3. Total weekly household income

4. Net weekly household income

5. Net weekly household income before
housing costs (equivalised)

- ‘Things you need to know’:
 - Key information needed to understand what the statistics are and how they can (and can’t) be used
 - Non-technical language
 - No detailed methodological information



- Consider the information needed by different users
 - Policy/Decision makers, analysts, academics, public etc.

6. Glossary

7. Measuring the data

8. Strengths and limitations

9. Future developments

10. Related links

11. Cite this statistical bulletin

- Glossary
 - Definitions of all the key terminology e.g. net income, equivalization, confidence intervals
- Measuring the data
 - Brief summary of methods, with link to accompanying technical report
- Strengths and limitations
 - More detailed guidance on use of data including on making comparisons between areas and over time

- All data tables contain published confidence intervals & upper/lower confidence limits for point estimates



Technical report

- Detailed description of methodology and data sources
- Details of final models, including all covariates
- Full quality report, including details of diagnostic checks
 - Residuals plotted against modeled estimates
 - Comparison of modelled estimates to direct estimates
 - Coverage diagnostic – overlap of CIs of modelled & survey estimates
 - Distinguishability - % of MSOAs with lowest estimates with CIs overlapping with CIs of highest
 - Wald statistic – goodness of fit
 - Stability analysis (RRMSE<0.5)
 - Coefficient of Variation (normally <20% though <30% may be accepted)
- Guidance on use and measuring change



Regional Workshop for Asia and the Pacific on Small Area Estimation Using Earth Observation Data

21- 25 October 2024

Alpha Room, Novotel Bangkok on Siam Square,
Bangkok, Thailand



Evaluation: Regional Workshop on Small Area Estimation Using Earth Observation Data





Thank you

Follow us:

