

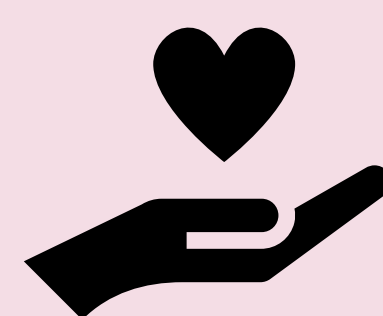
# The distribution of healthcare workforces relative to population ill health in England: repeated cross-sectional analysis of Census data 2001-2021

## 1 Background

The Inverse Care Law was First defined by Julian Tudor Hart in 1971 to describe how people who most need care are least likely to receive it.

*“Getting the right people with the right skills and competences in the right place at the right time to deliver services that provide the best possible patient care”*

There are differing levels of workforce at different healthcare groups – those with highest paid jobs or private health were living in places with relatively low population need (so more need, less workforce, and less need, more workforce).



## 2 Study design and objectives

To update and expand Shaw and Dorling’s previous study using 2001, 2011, and 2021 Census data to determine:

- whether the extent of inverse distribution of healthcare professional workforces relative to population measures of ‘need’ has changed over the past two decades;
- how great are the differences in distribution between healthcare professional groups;
- whether there is still a strong positive care law for informal caregiving.



## 3 Analysis

### Correlation analysis

- Weighted correlation coefficients for:
1. Ill health and unpaid care (positive care law)
  2. Ill health and health profession (inverse care law)

### Geographical analysis

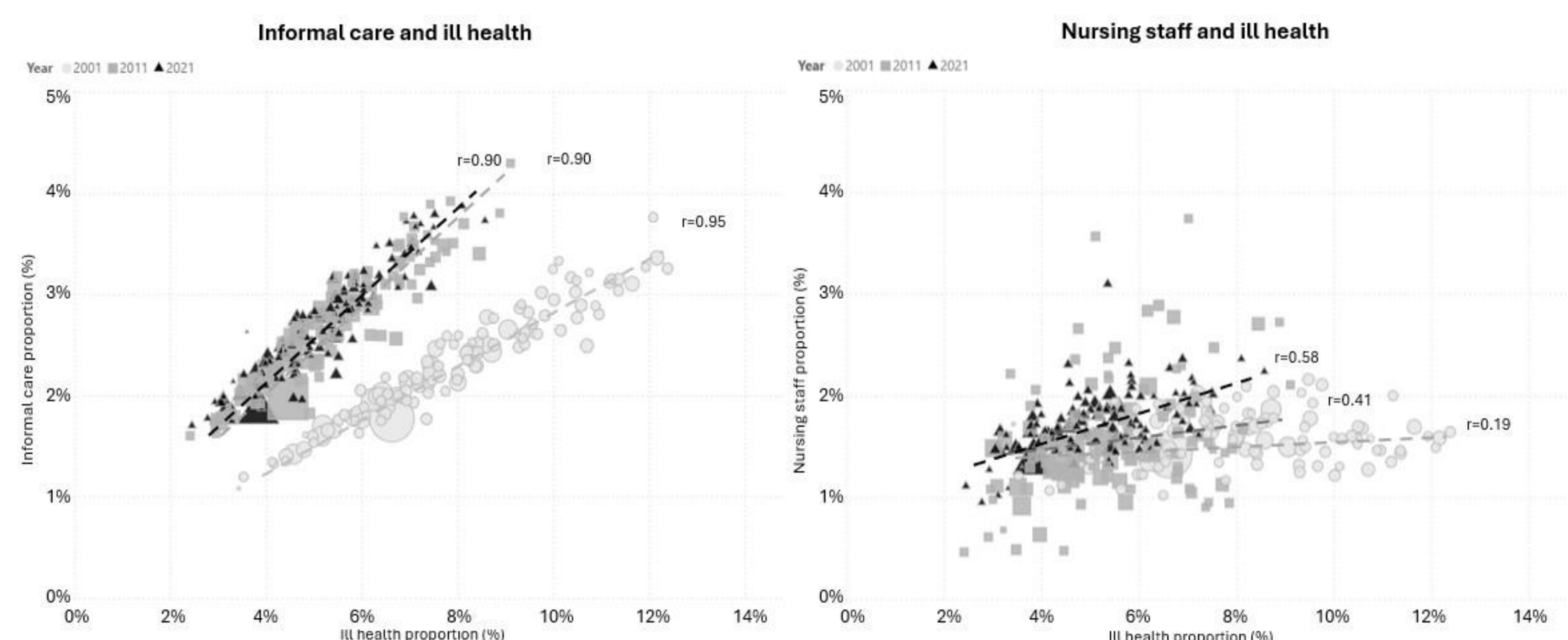
Analysis at local authority level for 2001, 2011, and 2021, and ICB for 2021 to account for geographic variation and commuting patterns.

### Detailed Occupational analysis

Using 2021 Census occupational data provided nuanced insights into workforce distribution patterns.

## 4 Key findings

	Percentage of population		
	2001	2011	2021
Ill health	7.23%	5.05%	4.77%
Informal caring (50+ hr / week)	2.16%	2.53%	2.49%
Nursing Staff	1.58%	1.49%	1.64%
Health Associates and Therapy Professionals	0.58%	0.60%	0.77%
Medical Practitioners	0.63%	0.87%	1.10%



## 5 Discussion and conclusion

- The distribution of medical workforce continues to conform to the inverse care law. Shaw and Dorling’s Positive Care Law is shown to hold in 2011 and 2021.
- The most recent Census data shows that one pattern does not apply to all healthcare professional groups within the broad occupational categories available in 2001.
- Census data are collected by self-complete questionnaire administered every 10 years and may be limited by a change in question format.
- Distance travelled to work and digital provision of remote healthcare are potentially important unmeasured confounders in the current analyses.
- Our study found evidence for persistent inequitable geographical distribution of healthcare workforces across England, but with substantial variation between different healthcare professional groups.

## 6 Key references and funding

For a full list of references, a data sharing statement, and appendix, please access here: DOI: 10.1016/j.puhe.2025.106090

1. Tudor Hart J. The Inverse Care Law. *The Lancet*. 1971;297(7696):405-412. doi:10.1016/S0140-6736(71)92410-X
2. Watt G. The inverse care law revisited: a continuing blot on the record of the National Health Service. *British Journal of General Practice*. 2018;68(677):562-563. doi:10.3399/bjgp18X699893
3. Watt G. Julian Tudor Hart: medical pioneer and social advocate. *The Lancet*. 2021;397(10276):786-787. doi:10.1016/S0140-6736(21)00453-0

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