

NHS-funded hip replacements and the Inverse Care Law

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Equity of access to NHS-funded hip replacements in England and Wales: Trends from 2006 to 2016



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Summary

Background Elective hip replacement is a cost-effective means of improving hip function. Previous research has suggested that the supply of hip replacements in the NHS is governed by the inverse care law. We examine whether inequities in supply improved in England and Wales between 2006 and 2016.

Methods We compare levels of need and supply of NHS funded hip replacements to adults aged 50+ years, across quintiles of deprivation in England and Wales between 2006 and 2016. We use data from routine health records and a large longitudinal study and adjust for age and sex using general additive negative-binomial regression.

Findings The number of NHS-funded hip replacements per 100,000 population rose substantially from 272.6 and 266.7 in 2002, to 539.7 and 466.3 in 2018 in England and Wales respectively. Having adjusted for age and sex, people living in the most deprived quintile were 2.36 (95% CI, 1.69 to 3.29) times more likely to need a hip replacement in 2006 than those living in quintile 3, whereas those living in the least deprived quintile were 0.45 (95% CI, 0.39 to 0.69) as likely. Despite this, people living in the most deprived quintile were 0.81 (95% CI, 0.78 to 0.83) times as likely in England and 0.93 (95% CI, 0.84 to 1.04) as likely in Wales to receive an NHS-funded hip replacement in 2006 than those living in quintile 3. We found no evidence that these substantial inequities had reduced between 2006 and 2016.

Interpretation With respect to hip-replacement surgery in England and Wales, policy ambitions to reduce health-care inequities have not been realised.

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Keywords: Hip replacements; Equity; Trends; Socio-economic deprivation

Introduction

Elective hip replacement is a common form of planned surgery where a damaged hip joint is replaced with an artificial one. 109.6 thousand hip replacements were carried out in England and Wales in 2019, 85% of which were funded by the National Health Service (NHS).¹

97% of patients receiving an NHS-funded hip replacement in 2018–19 reported an improvement in hip function and 93% thought that the result of their operation was good or better.² The cost-effectiveness has been estimated at approximately £7,200 per quality adjusted life year (QALY), considerably lower than the current UK National Institute for Health and Care Excellence (NICE) threshold of £20,000–30,000 per QALY.^{3,4}

The principle of equity requires that health services are distributed in line with a population's ability to benefit. Patients with similar levels of need should have an equivalent chance of accessing a service irrespective of their personal characteristics or the area in which they

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Population	A	B	C
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Population	A	B	C	Total
Population size	50,000	50,000	50,000	150,000

Population	A	B	C	Total
Population size	50,000	50,000	50,000	150,000
Need	4,000	2,000	1,000	7,000

Population	A	B	C	Total
Population size	50,000	50,000	50,000	150,000
Need	4,000	2,000	1,000	7,000
Supply (high)				7,000

Population	A	B	C	Total
Population size	50,000	50,000	50,000	150,000
Need	4,000	2,000	1,000	7,000
Supply (high)	4,000	2,000	1,000	7,000

Population	A	B	C	Total
Population size	50,000	50,000	50,000	150,000
Need	4,000	2,000	1,000	7,000
Supply (high)	4,000	2,000	1,000	7,000
Supply (low)				3,500

Population	A	B	C	Total
Population size	50,000	50,000	50,000	150,000
Need	4,000 ← x2	2,000 → x1/2	1,000	7,000
Supply (high)	4,000 ← x2	2,000 → x1/2	1,000	7,000
Supply (low)	2,000 ← x2	1,000 → x1/2	500	3,500

The principle of equity

The distribution of a service over a set of subpopulations should follow the distribution of need for that service.

Equity of access to....

...NHS-funded hip replacements...
(primary and revision)

...over quintiles of deprivation...

...in England and Wales...

...between 2006 and 2016.

Key data sources

Need

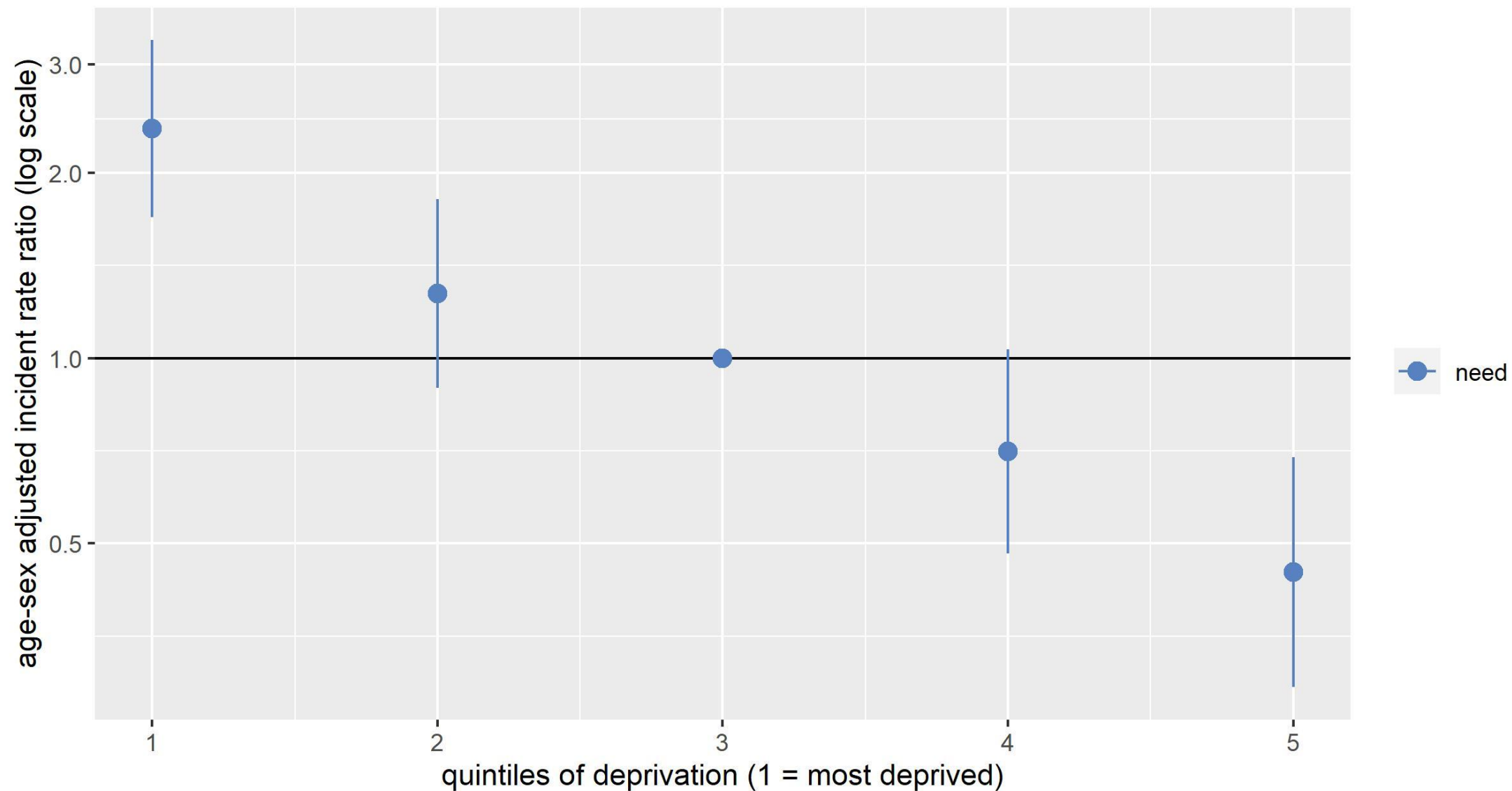
English Longitudinal
Study of Ageing (ELSA)

Supply

Hospital Episode Statistics (HES) &
Patient Episode Dataset Wales (PEDW)

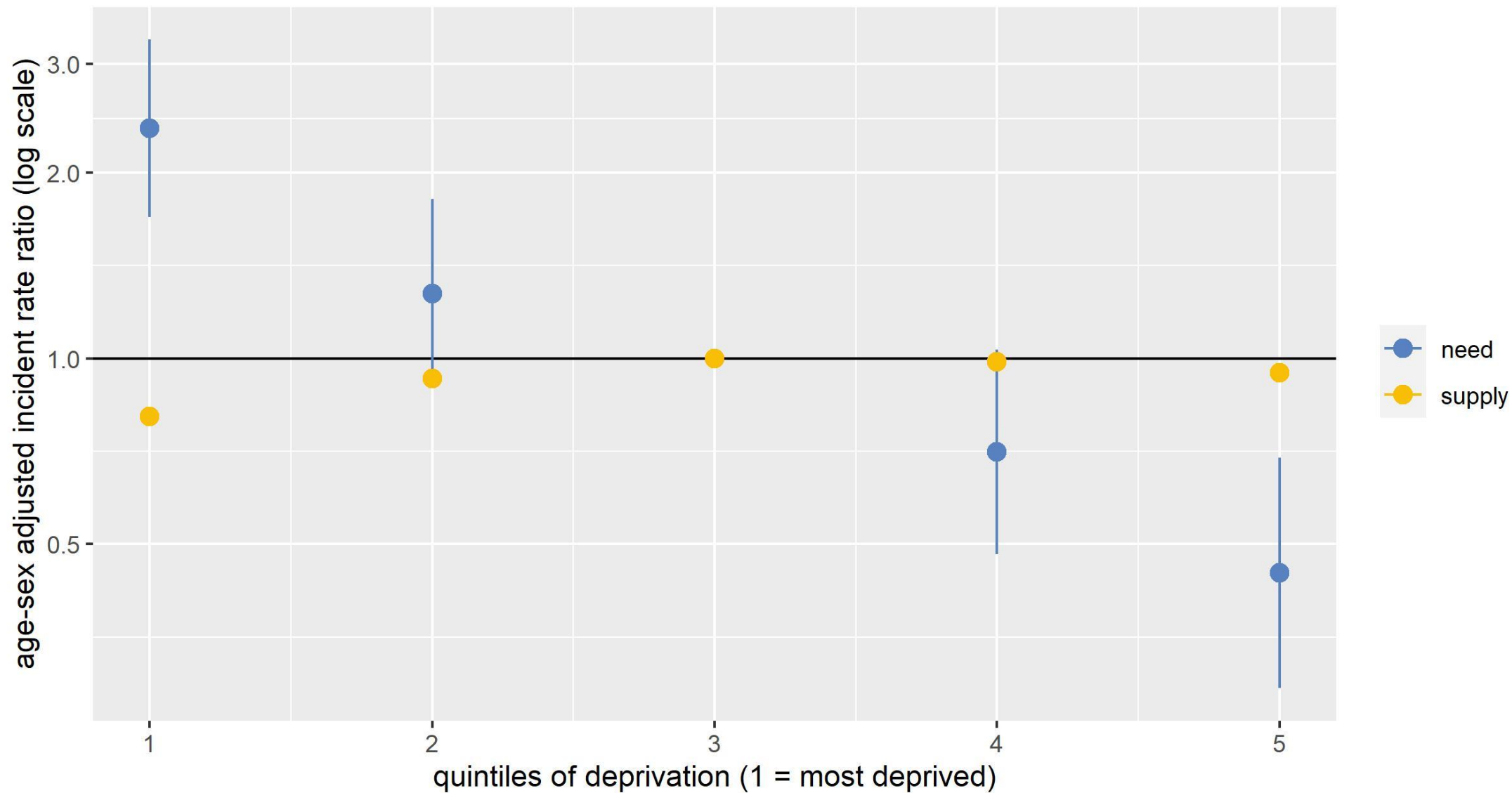
Distribution of need for hip replacements over quintiles of deprivation

England | 2006



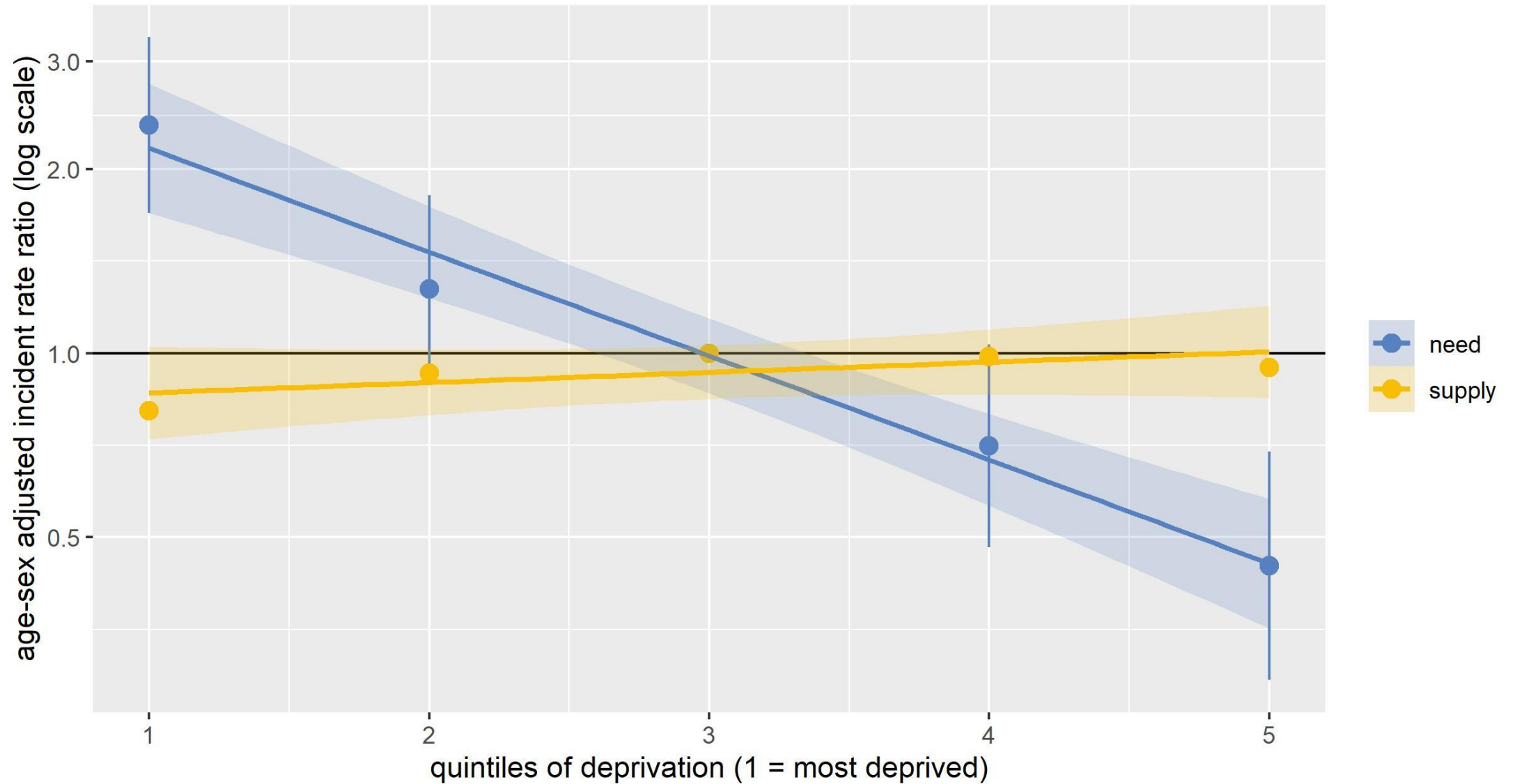
Distribution of need for and supply of hip replacements over quintiles of deprivation

England | 2006



Distribution of need for and supply of hip replacements over quintiles of deprivation

England | 2006



Julian Tudor-Hart

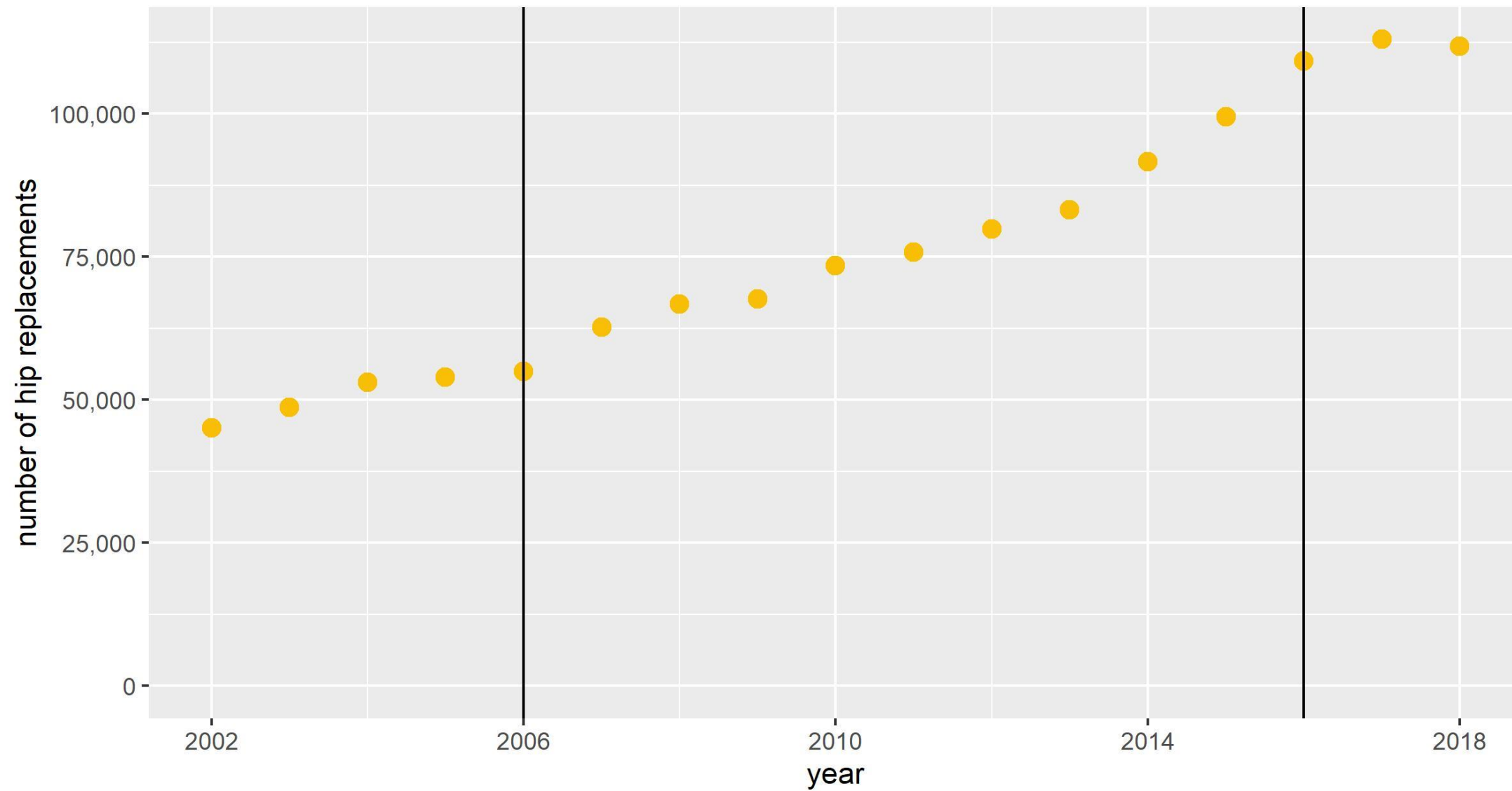


The Inverse Care Law

The availability of good medical care tends to vary inversely with the need for it in the population served.

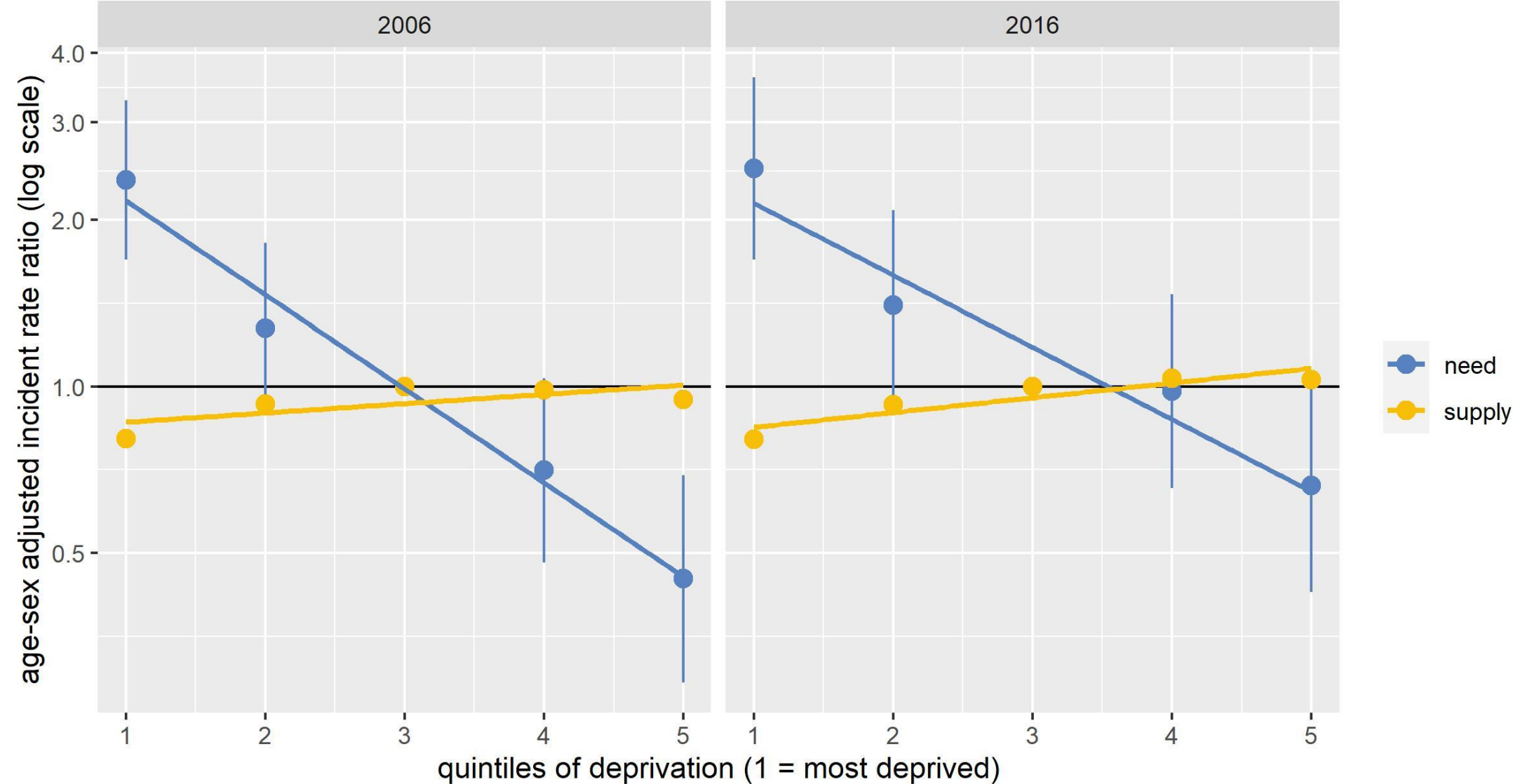
NHS-funded hip replacements by year

2002-2018 | England



Distribution of need for and supply of hip replacements over quintiles of deprivation

England | 2006 & 2016



Conclusions

Substantial inequity in provision of NHS-funded hip replacements in 2006.

No evidence of improvement in equity by 2016 despite considerable increase in supply levels.

More potent policies required to improve equity of access.

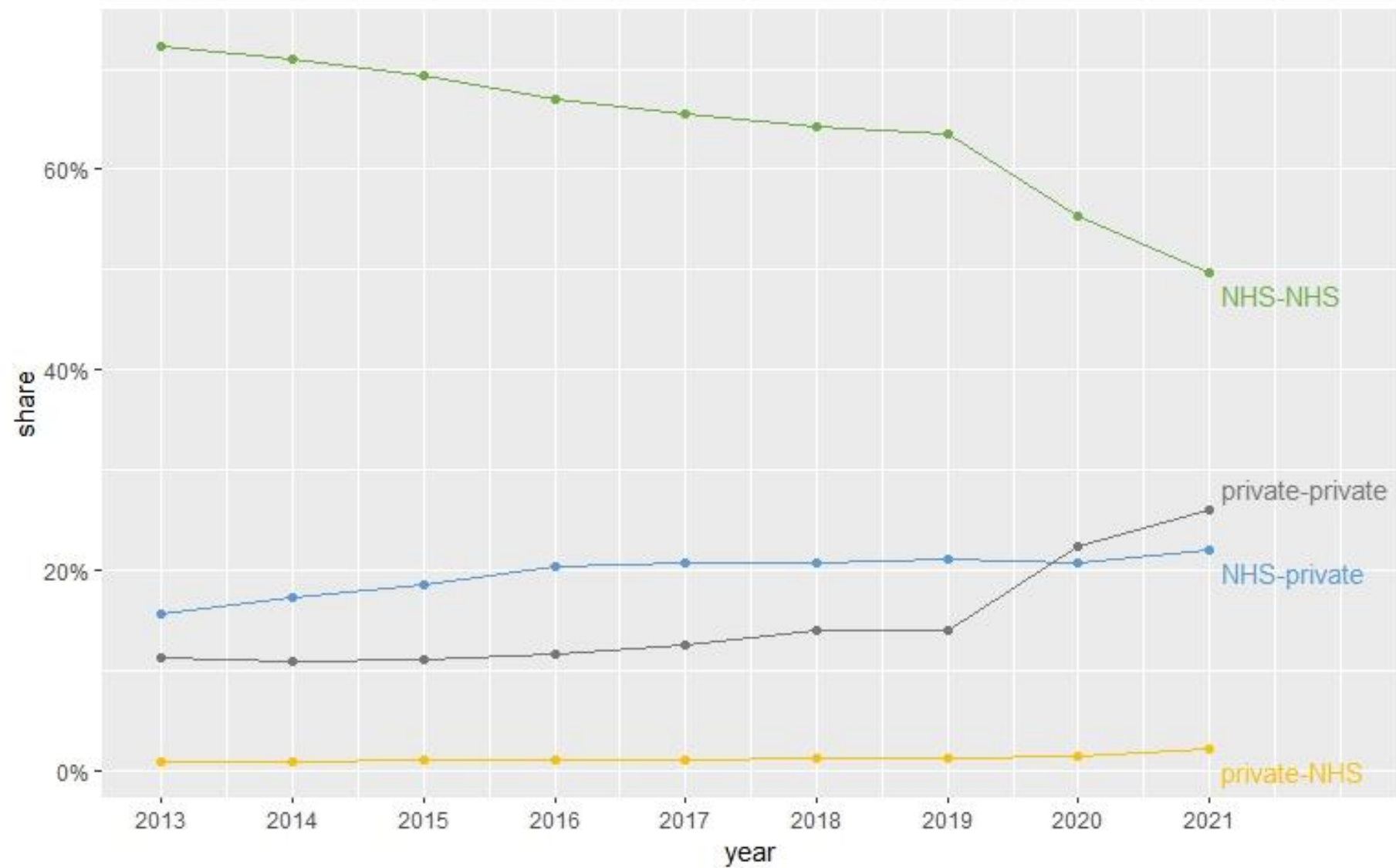
		funding	
		NHS	private
delivery	NHS	A	B
	private	C	D

		funding	
in 2013		NHS	private
delivery	NHS	72%	1%
	private	16%	11%

		funding	
in 2021		NHS	private
delivery	NHS	50%	2%
	private	22%	26%

Share of elective hip replacements by funding and provider type

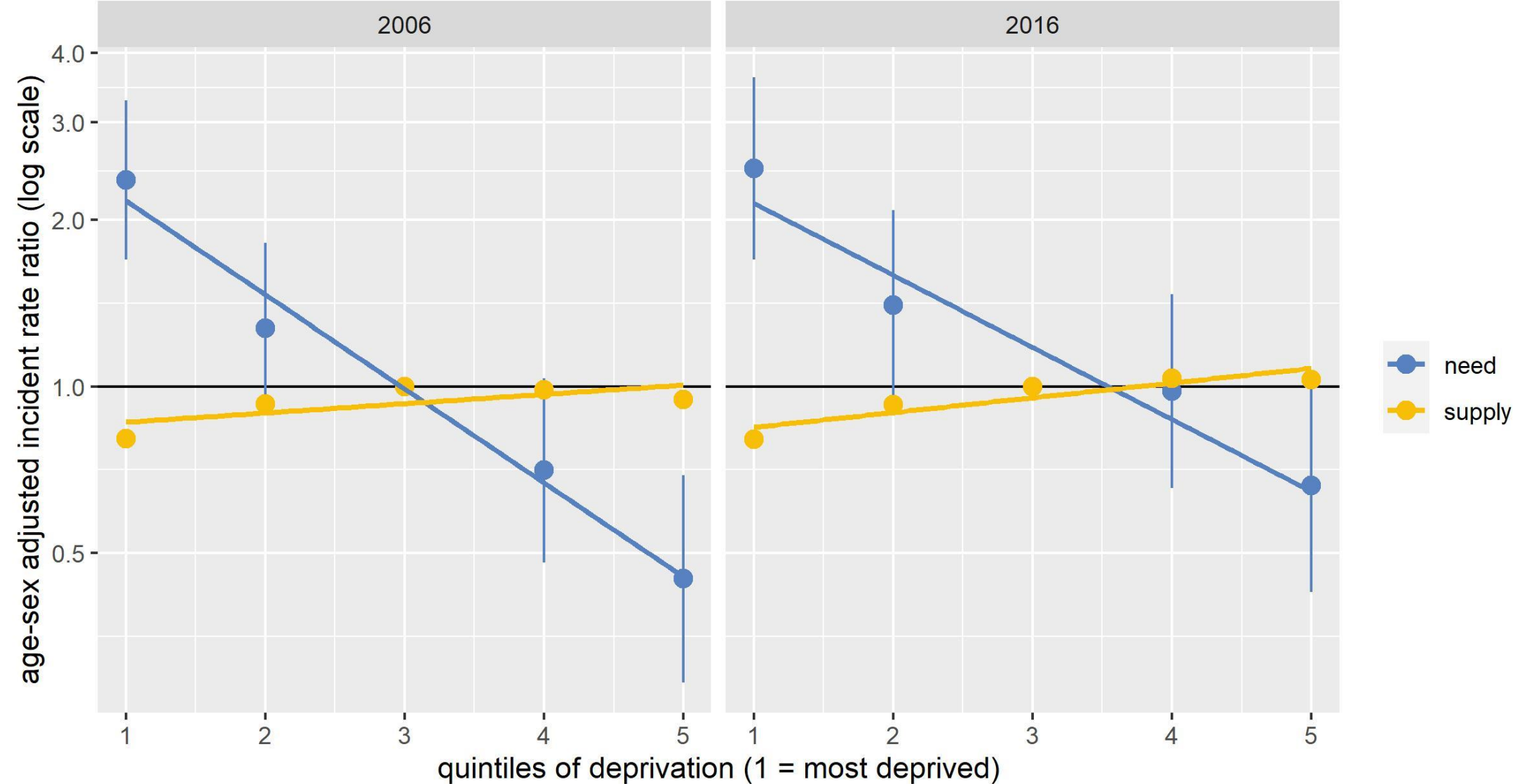
England, Wales and Northern Ireland | 2013-2021



source: National Joint Registry

Distribution of need for and supply of hip replacements over quintiles of deprivation

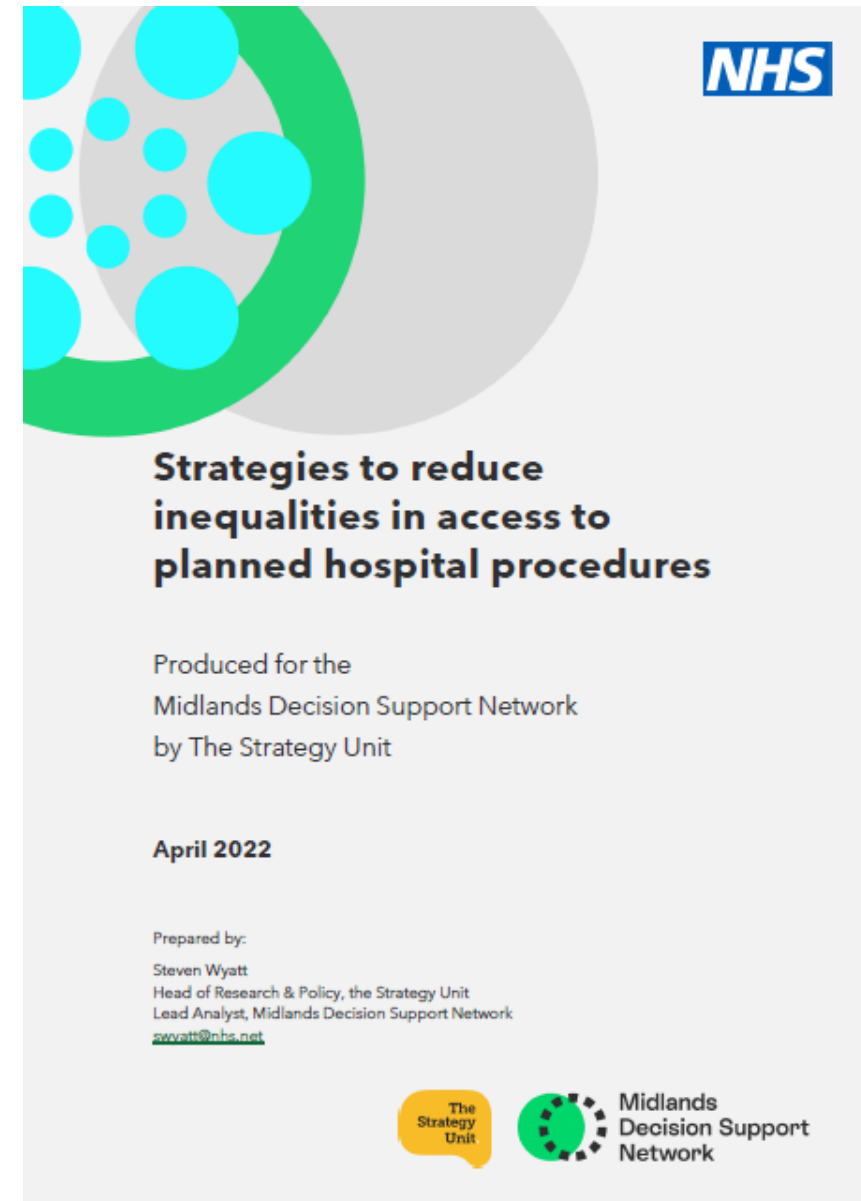
England | 2006 & 2016



where & why?



so what?



Comments and questions welcomed?

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