

# Social inequalities in grip strength, physical function and falls among community dwelling older men and women: findings from the Hertfordshire Cohort Study

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# Background: sarcopenia, physical function and falls

- Sarcopenia, the loss of muscle mass and strength with age, reduced physical function (PF) and falls are major problems in older people with adverse consequences for disability, morbidity, mortality and healthcare costs.
- Screening tools and interventions are needed but progress has been slow and it is unclear how best to target interventions.
- Identification of subgroups of the older population who experience the greatest burden of these problems would inform public health policy and help to target intervention and resources to those who might benefit most.

# Background: social inequalities

- Social inequalities in health have been recognised for centuries.
- Even in generally wealthy Western countries, material deprivation and poverty are not uncommon and, irrespective of absolute standards of living, health inequalities exist across relative levels of deprivation.
- Inequality in the health of the UK population has widened in the late 20th century. By 1997-99, men and women of professional occupations had 7.4 and 5.7 years greater life expectancy at birth than those of unskilled manual occupations (National Statistics).
- Social inequalities in mobility impairment and disability have been established but little is known about social inequalities in grip strength, physical function and falls.

# Objective

- To explore social inequalities in grip strength, physical functioning and falls history using data from the 3,225 community dwelling older men and women, aged 59-73 years, who participated in the Hertfordshire Cohort Study (HCS)

# Methods

## *Social position and deprivation*

- Social class in adulthood
- Age left full time education
- Housing tenure
- Car availability



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## *Potential confounders and co-morbidities*

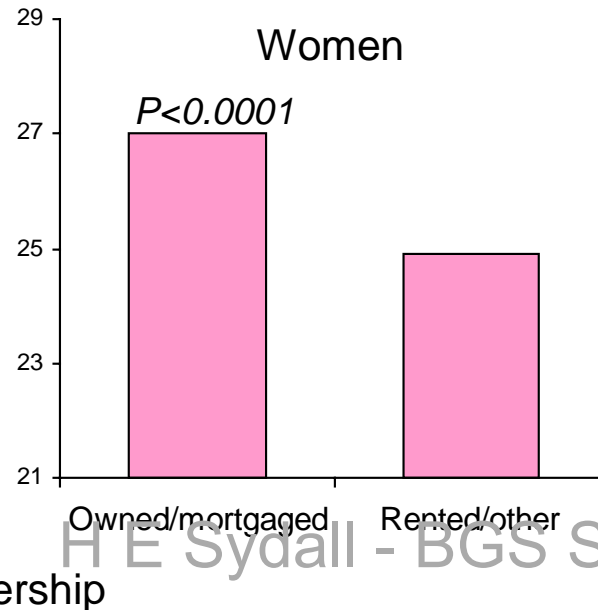
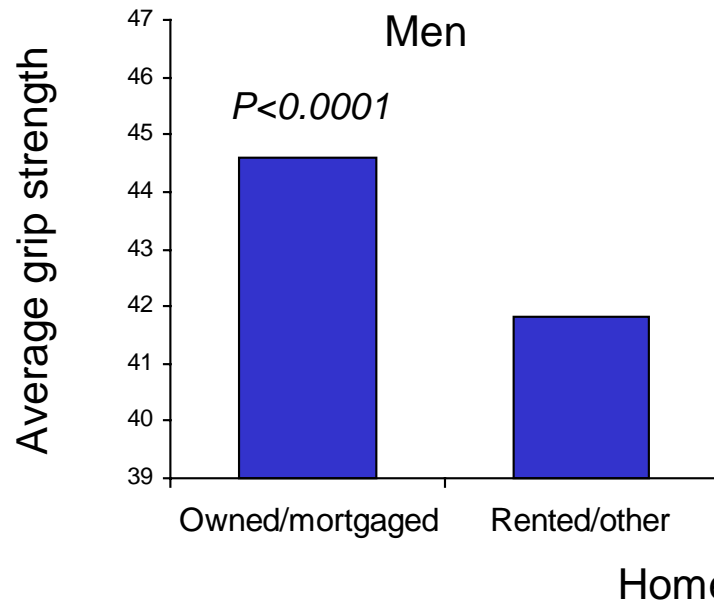
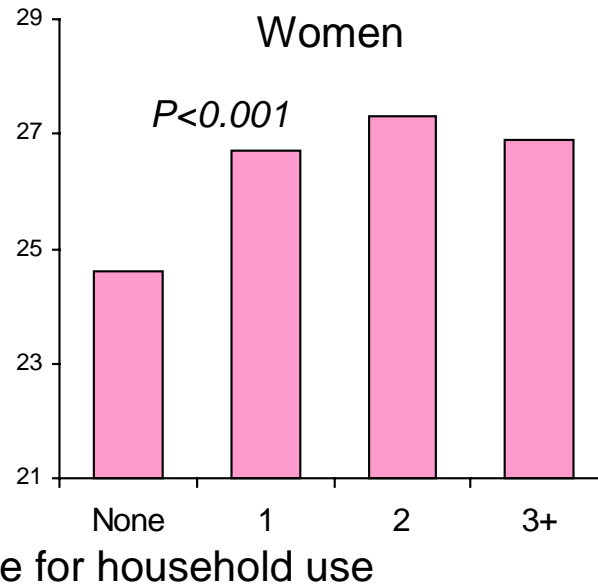
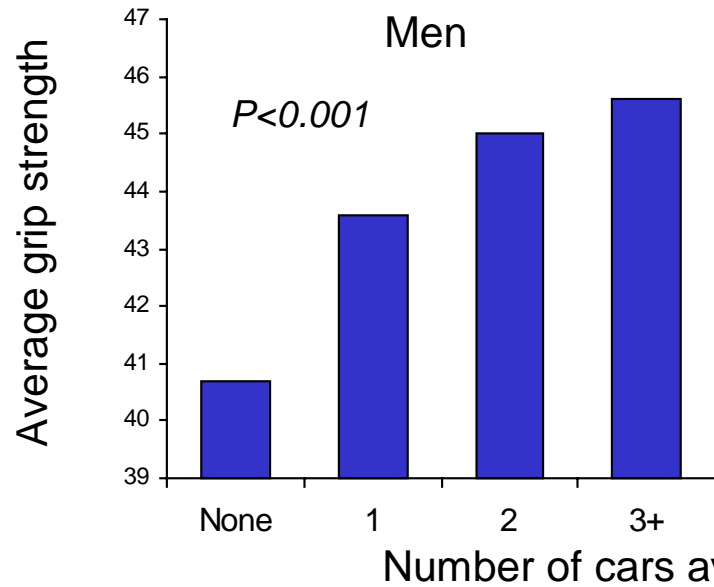
- Age, height, weight, smoking, alcohol, marital status, walking speed
- IHD, stroke/TIA, hypertension, bronchitis, diabetes, minor trauma fracture since age 45 years, hand OA, prescribed medications.

# Results: descriptive statistics

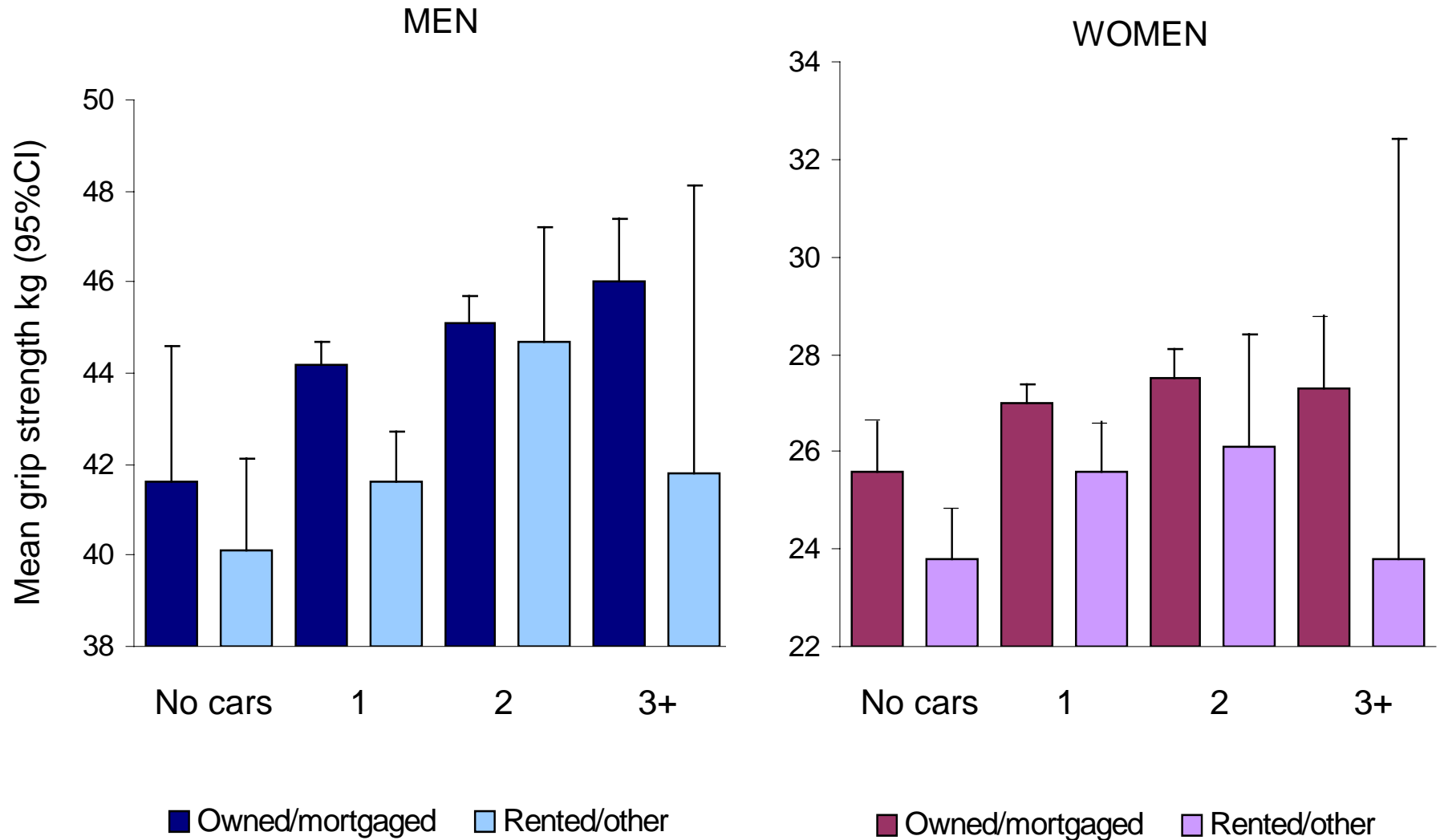
		Men (N=1,684)	Women (N=1,541)
Housing tenure N(%)	Owned/mortgaged	1357 (80.7)	1185 (76.9)
	Rented/other	325 (19.3)	356 (23.1)
Number of cars available N(%)	None	107 (6.4)	273 (17.7)
	1	898 (53.5)	893 (58.0)
	2	552 (32.9)	330 (21.4)
	3	122 (7.3)	45 (2.9)
Grip strength kg (mean [SD])		44.0 (7.5)	26.5 (5.8)
History of falling in past year N(%)		140 (14.9)	316 (22.6)
Age years (mean [SD])		65.6 (2.9)	66.6 (2.7)

N = number; SD = standard deviation

# Results: social inequalities in grip strength



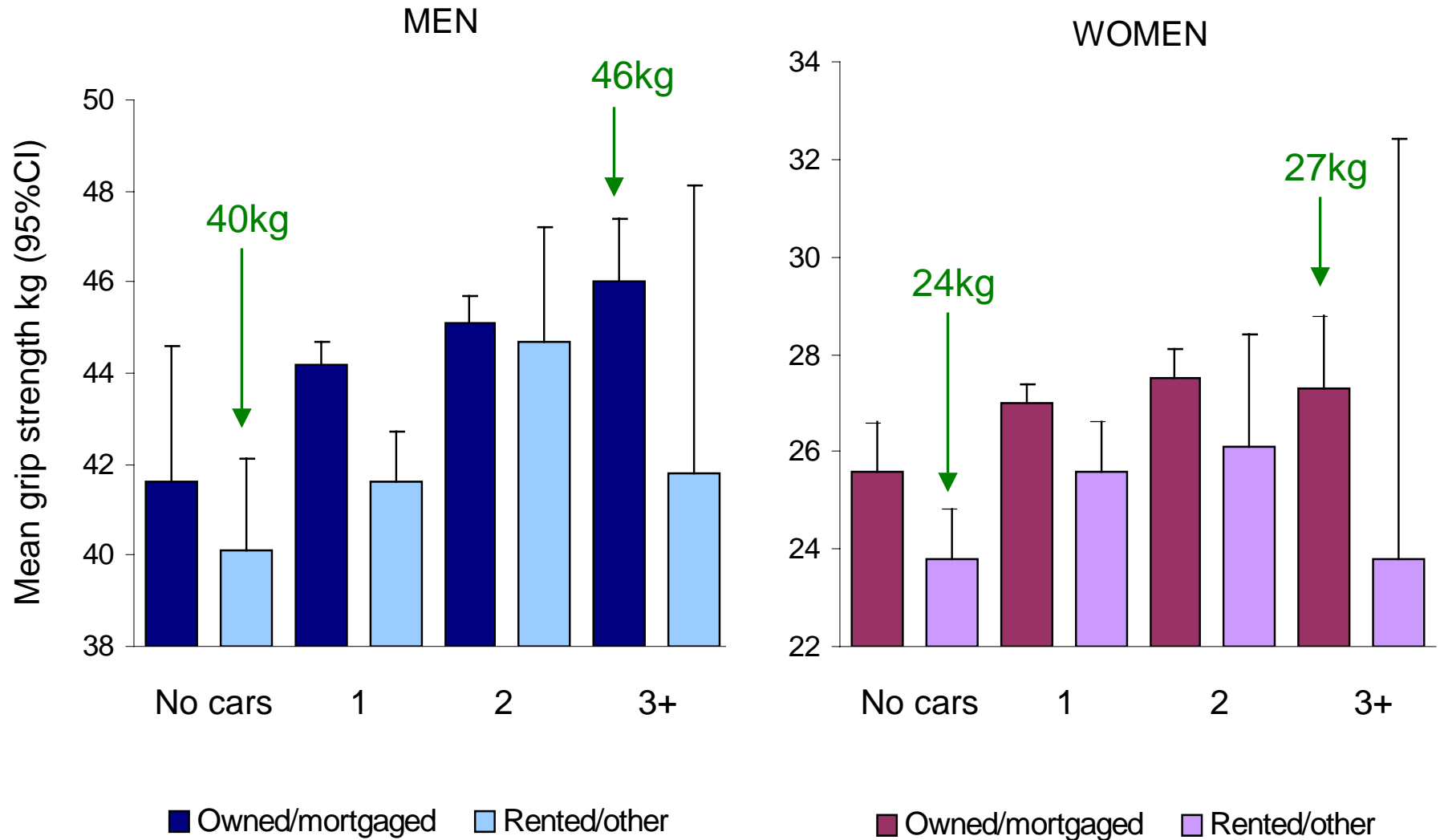
# Results: social inequalities in grip strength



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Fully adjusted p-values: p=0.02 for housing tenure and p=0.03 for car availability in men; p=0.004 for housing tenure and p=0.002 for cars in women

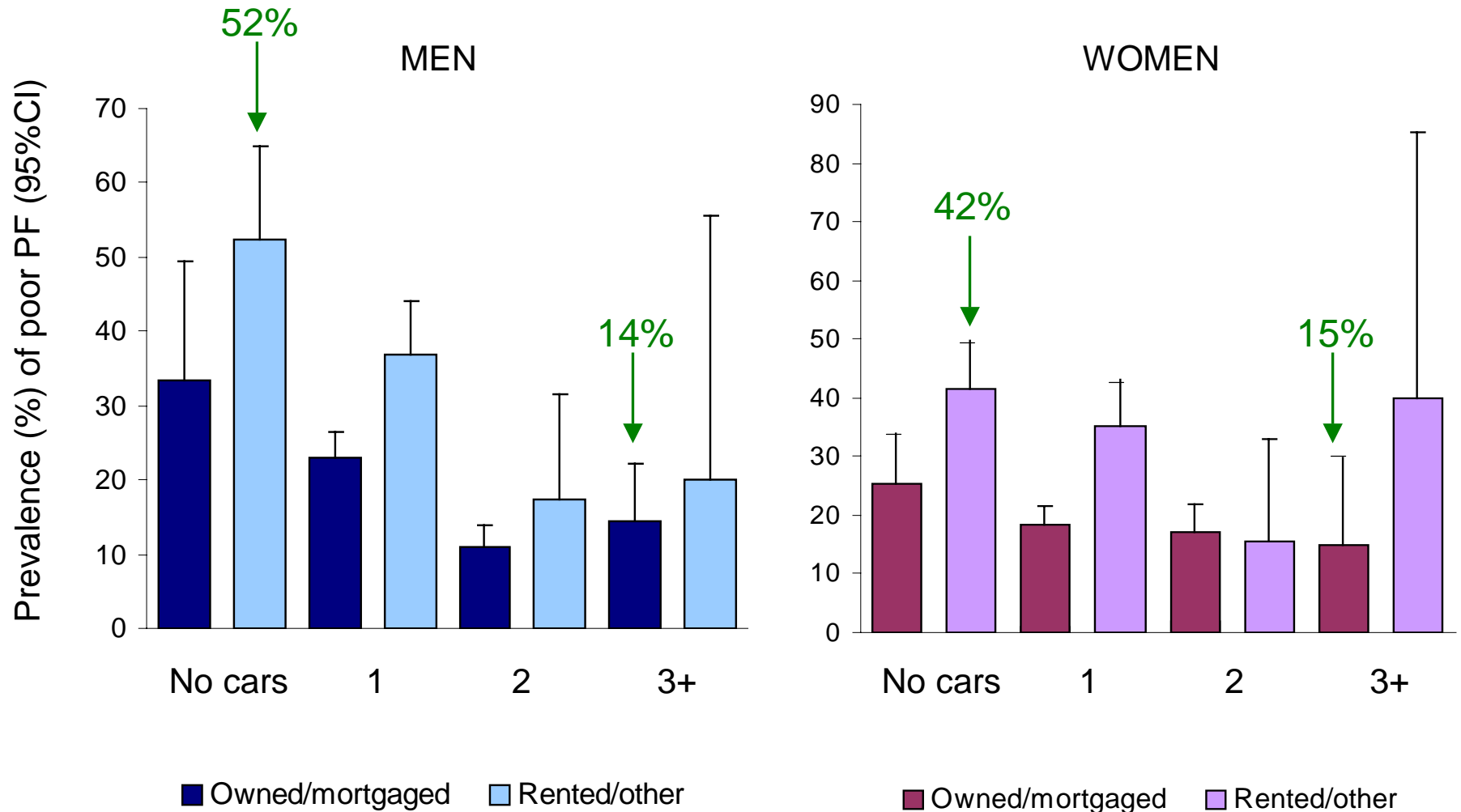
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# Results: social inequalities in physical functioning



Poor PF defined as a score in the lowest fifth of the sex-specific distribution ( $\leq 75$  for men;  $\leq 60$  for women)  
 Fully adjusted p-values:  $p=0.003$  for housing tenure and  $p<0.001$  for car availability in men;  $p=0.12$  for housing tenure and  $p=0.05$  for cars in women

# Results: social inequalities in history of falls

Men:

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		<u>N(%) having fallen during past year</u>
Number of cars available	None	22 (31.9)
	1	76 (14.6)
	2	32 (11.0)
	3	10 (16.1)

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Fully adjusted odds ratio for no cars versus any: 2.8 (1.5,5.3), p=0.001

Women:

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		<u>N(%) having fallen during past year</u>
Social class in adulthood	I, Professional	13 (17.1)
	II, Management and technical	65 (20.3)
	IIINM, Skilled non-manual	43 (22.3)
	IIIM, Skilled manual	115 (21.9)
	IV, Partly skilled	63 (27.3)
	V, Unskilled	17 (34.0)

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Fully adjusted odds ratio per lower band of social class: 1.1 (1.0,1.2), p=0.05

# Discussion

- Our findings are consistent with the limited literature on social inequalities in grip strength, PF and falls among older people.
- Inequalities in grip strength, PF and falls could be a mechanism contributing to social inequalities in mobility disability in old age.
- Our results call in to question the relevance of conventional, occupationally based, measures of socio-economic position (social class) to post-working older people.
- Markers of material deprivation may provide a better reflection of the current social circumstances of older people.
- We have previously shown that HCS participants are comparable with those in the nationally representative Health Survey for England (Syddall *et al*, *IJE* 2005) which limits concerns about bias and generalisability of results.

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# Conclusions

- There are clear social inequalities in grip strength, physical function and falls among community dwelling older people.
- These inequalities do not appear to be attributable to the greater prevalence of chronic disorders and co-morbidities that occurs among socially disadvantaged individuals.
- Interventions designed to reduce the personal and public health burden of sarcopenia, reduced physical function and falls should consider the contribution of social inequalities to the problem.
- Future work should consider markers of social-inequality which best reflect the social circumstances of older people.

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