"Hear, oh ye people, and listen oh ye nations!
The Great MacNeil of Barra having finished his meal, the princes of the world may dine!"

Rory the Turbulent, (35th Chief, late16th/early17thC)

Moving on Ethnocentrism

Does the socio-economic gradient in all-cause mortality apply across equality subgroups in Scotland?

Faculty of Public Health Scotland Conference, Dunblane, Thursday 7th November 2013

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Background

- Some population characteristics are protected against discrimination (Equality Act 2010)

- Income, health and protected characteristics interact.
   (Equally Well 2008)

- Socio-economic position is influenced by individual characteristics.
(Marmot review 2010)

- Although SES disadvantage had an impact on the health experience of ethnic minorities, so also did racial harassment and discrimination (Nazroo 2001)

- But there is little systematic work in the UK on how all these interact. Our study uses innovative methods to research the interaction, and to map the results.

Research question:

Is inequality in health outcomes by social class and area deprivation the same within the protected characteristics as it is across the whole population?

Objectives

Using a 5% sample of the Scottish population aged 0-64 in April 1991, compare risk of death up to December 2009 by social class and deprivation stratified by:

- age group,
- sex,
- ethnicity,
- disability,
- religion/belief.

Methods

- Linked census and mortality data for each social class and each deprivation decile,

- Calculated, for each sex, by stratum, the all-cause mortality risks,

- Calculated the relative index of inequality (RII) for mortality risk by sex by stratum,

- Displayed using Heat maps

Hazard ratios for mortality in men and women by social class (compared to unemployed women)
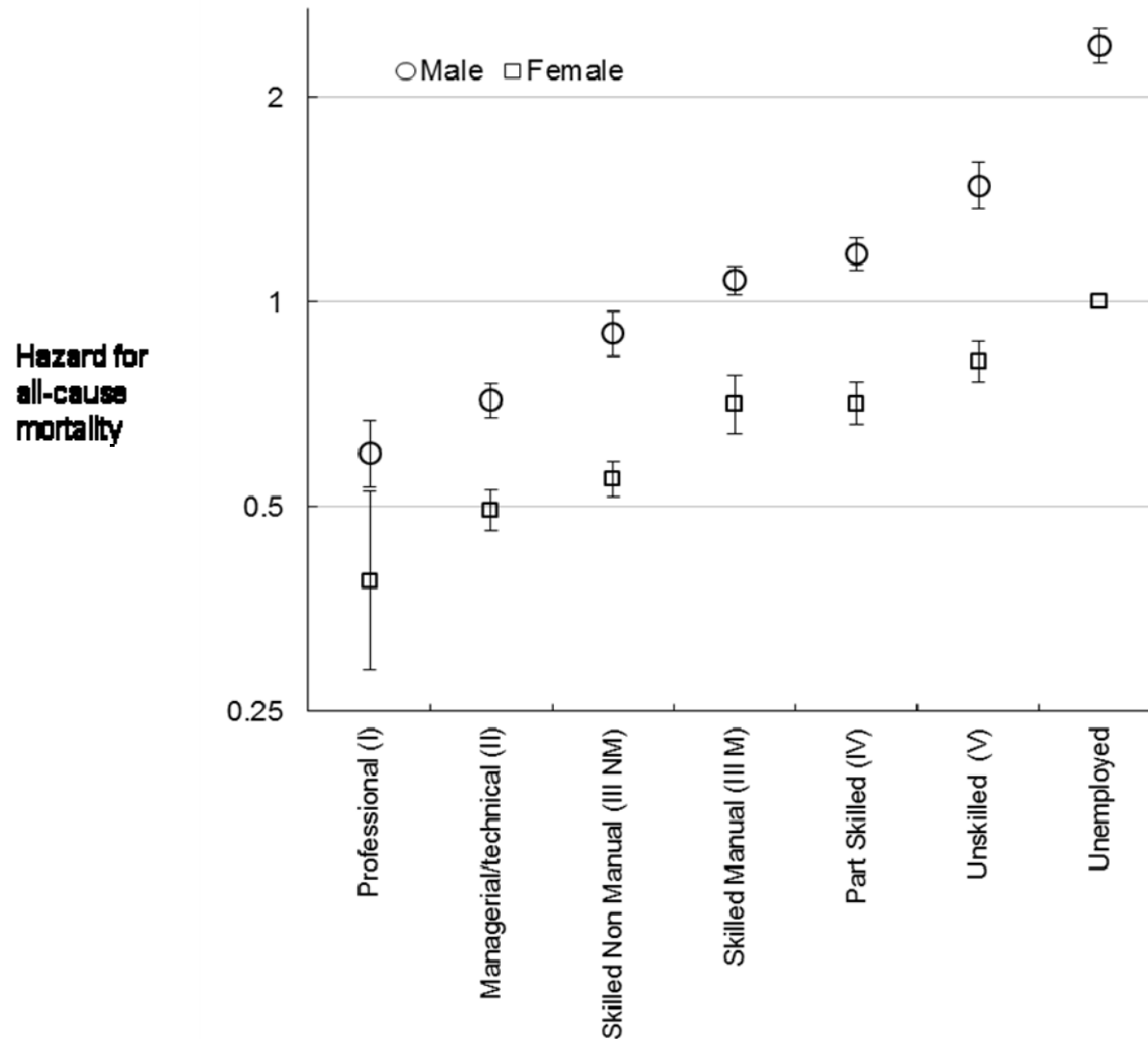
Hazard ratios for mortality by Carstairs (1991) decile in White men and Asian men (compared to White men in decile 10 most deprived)
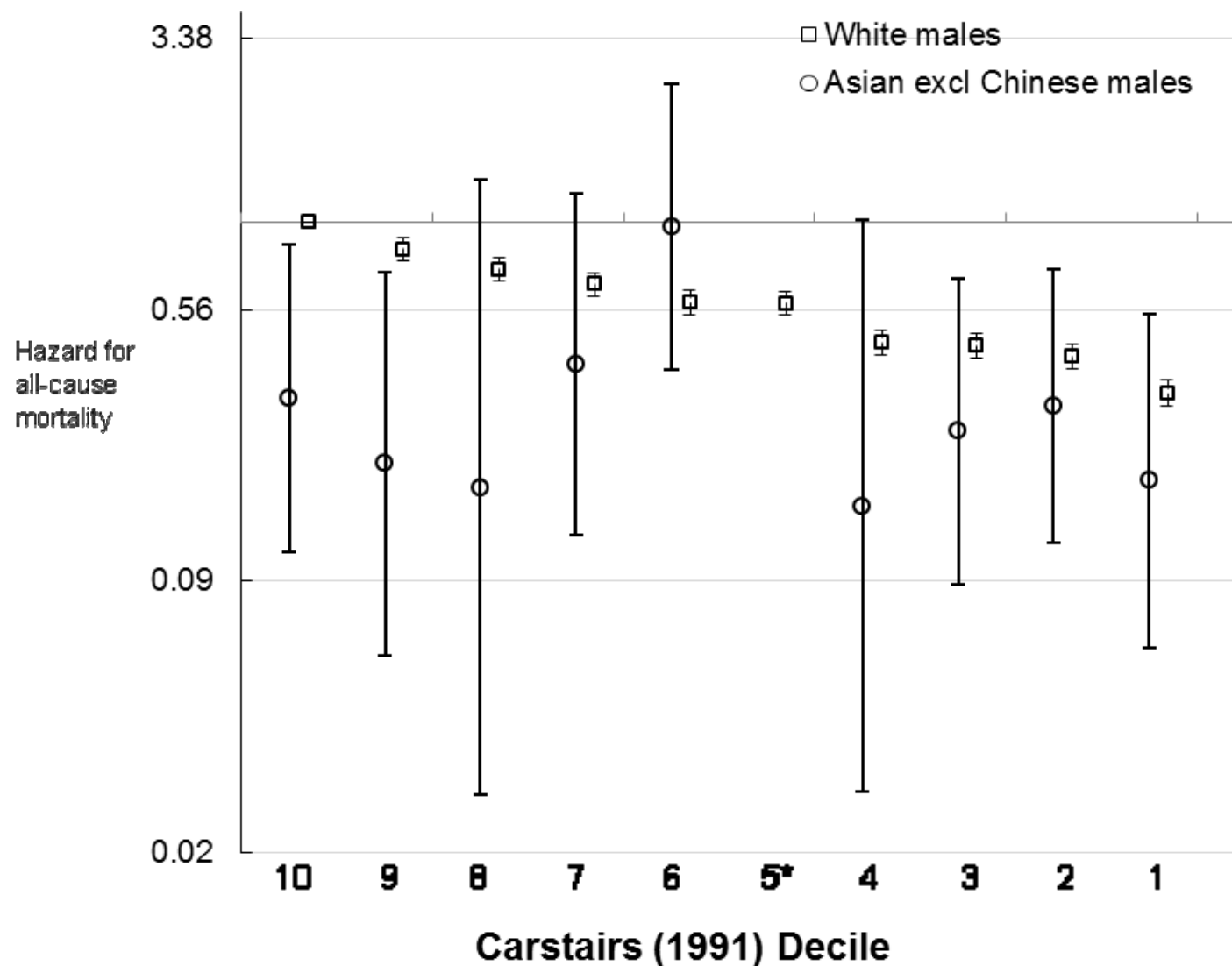
Hazard ratios for mortality in disabled and non-disabled women by social class (compared to unemployed non-disabled women)
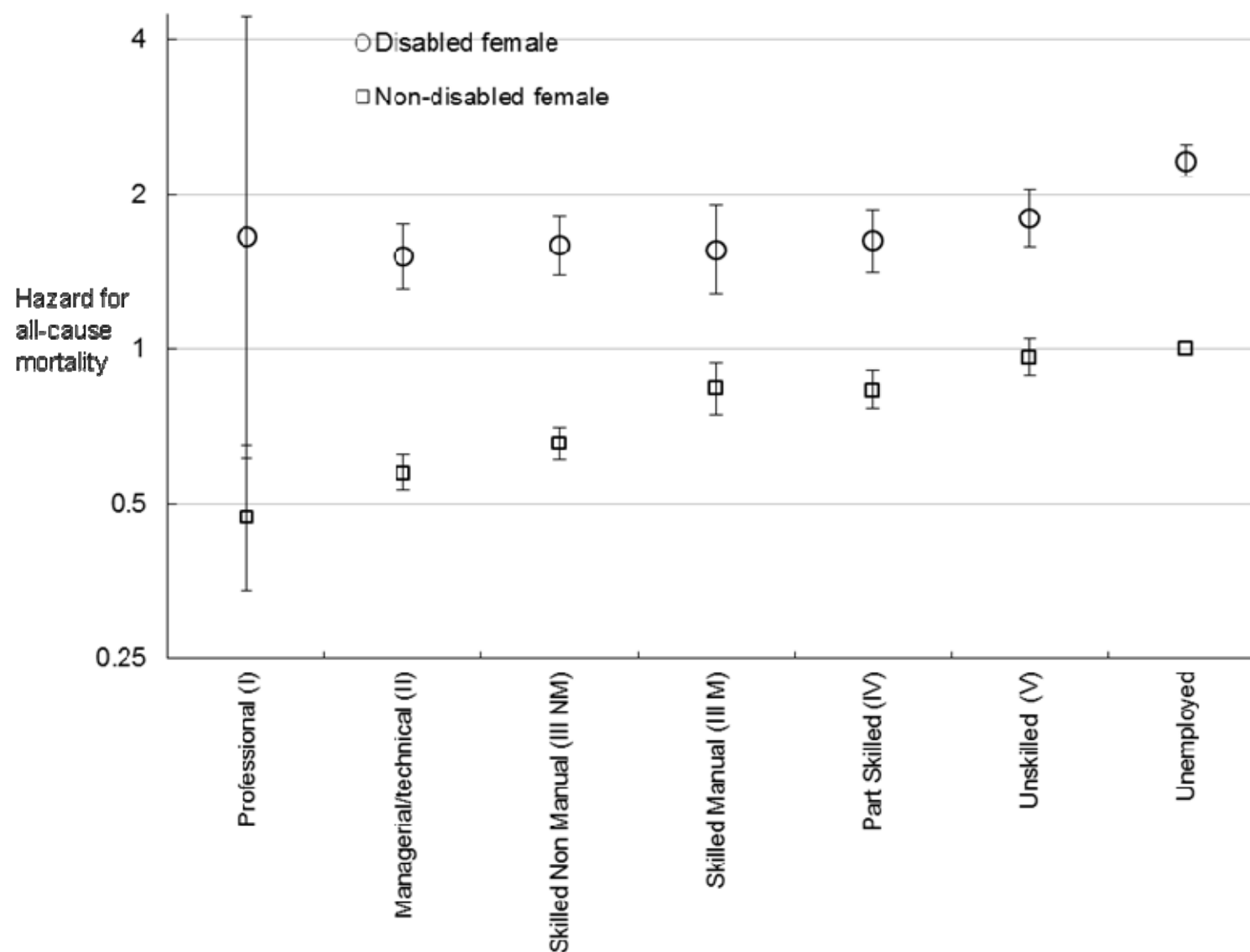
Hazard ratios for mortality by religion in women by Carstairs 1991 deprivation decile (compared to women of No religion in Carstairs decile 10 – most deprived)
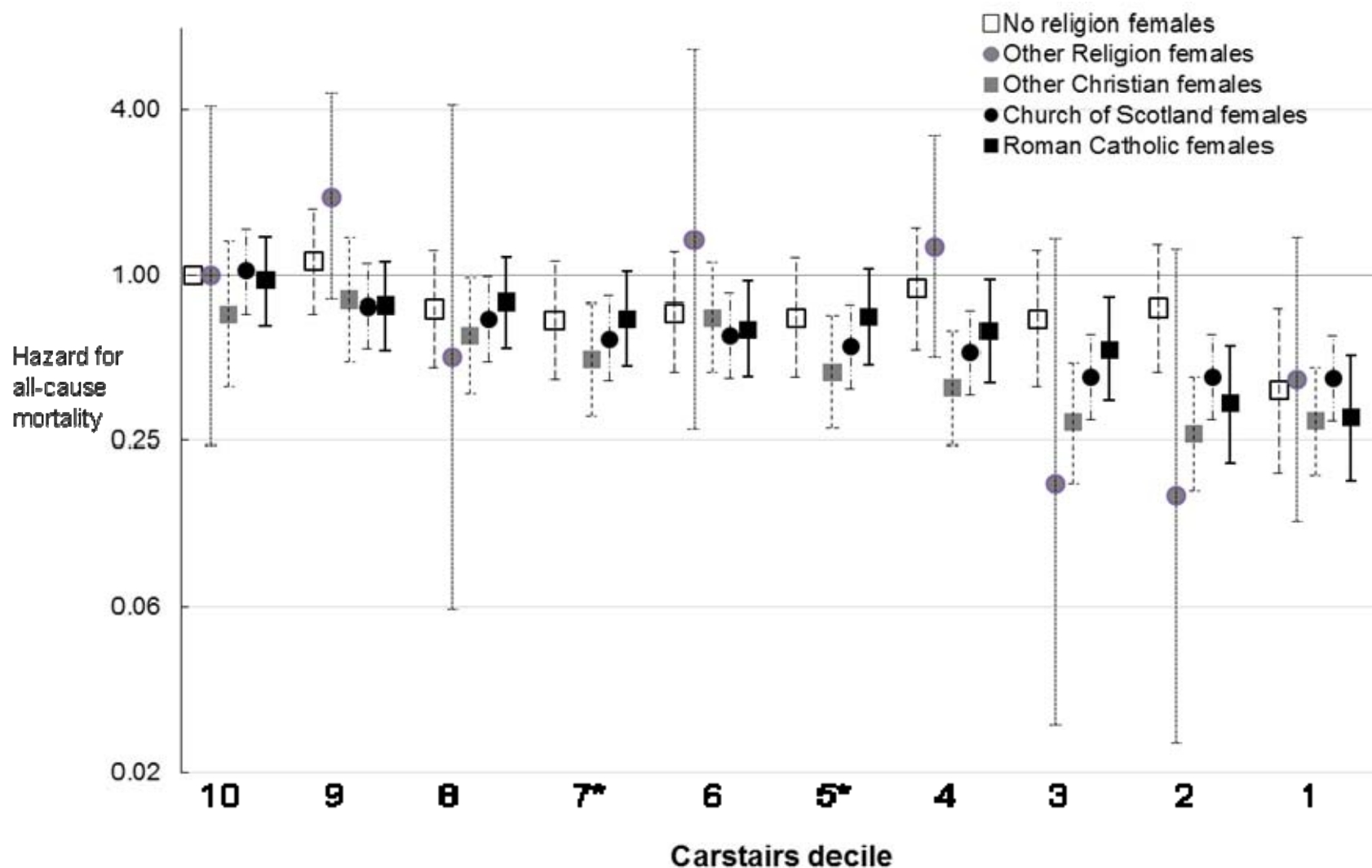
Hazard ratios for mortality in men by age group by social class (compared to professional men in each age group)

European Age Standardised Mortality Rates Comparison

European Age Standardised Mortality Rates per 100,000 population 1991-2009 by area deprivation (from our study)

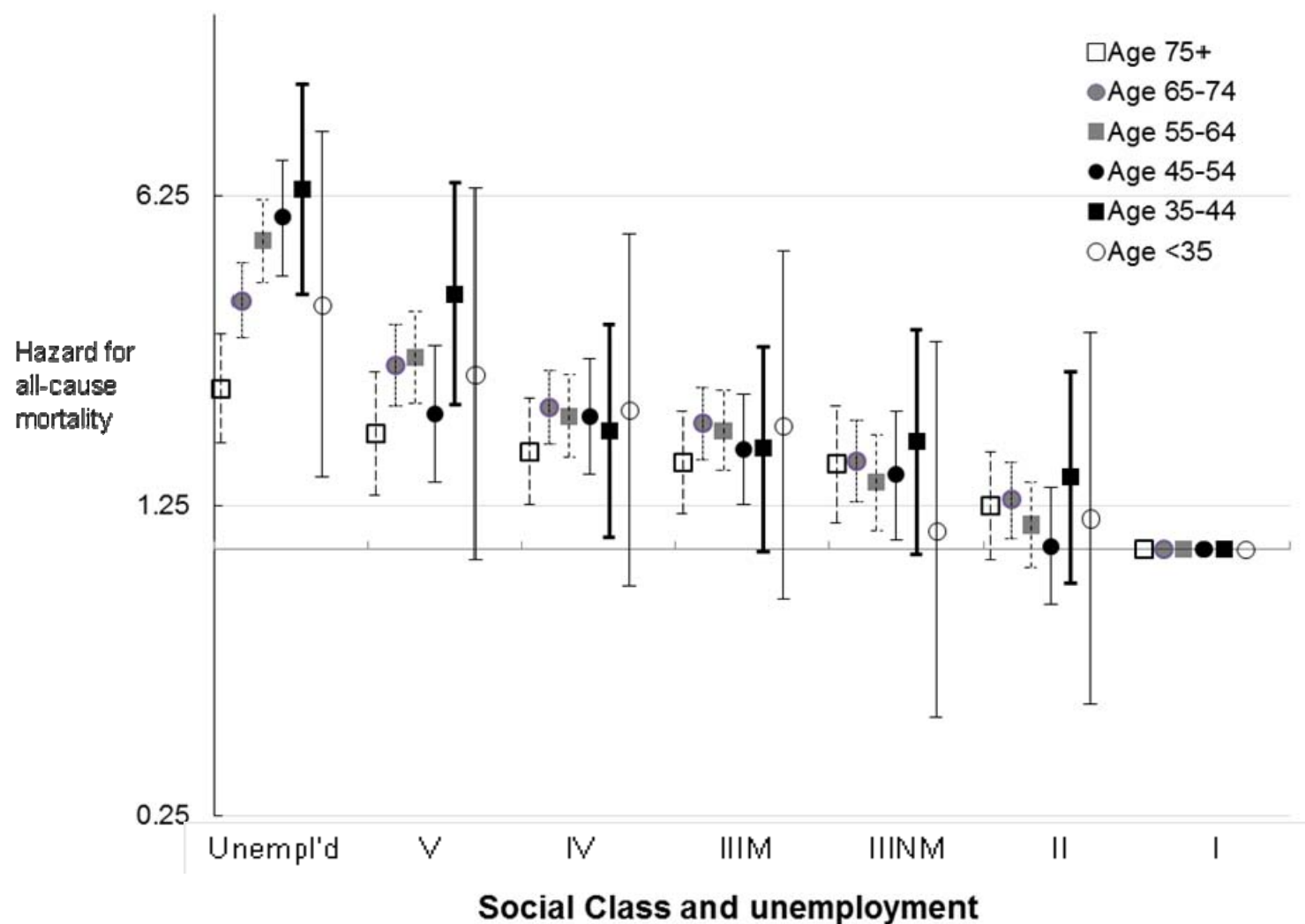| Carstairs 91 decile	EASR (Men)	EASR (Women)
1 (Least deprived)	409	305
2	511	303
3	535	337
4	554	420
5	697	452
6	761	480
7	806	511
8	888	541
9	994	630
10 (Most deprived)	1168	774

European Age Standardised Mortality Rates (EASRs) per 100,000 population (National Records Scotland 2012)

	All ages		Under 75 years	
Year	Male	Female	Male	Female
1991	1177	746	698	407
2001	983	648	572	334
2009	799	560	454	283

Key to Hazards Heat maps

Hazard	Textual reference code and shade
<0.2	Level 1
0.2–0.39	Level 2
0.4–0.79	Level 3
0.8–1.59	Level 4
1.6–3.19	Level 5
3.2+	Level 6

Heat map showing the hazard ratios for mortality (95% CL in brackets) by social class, long term unemployment, and sex 1991-2009, for age range 16-64 years in April 1991

Social class	I	II	IIINM	IIIM	IV	V	Unemployed
Males	0.60 (0.54–0.67)	0.72 (0.68–0.76)	0.90 (0.83–0.97)	1.1 (1.0–1.1)	1.2 (1.1–1.3)	1.5 (1.4–1.6)	2.4 (2.3–2.5)
Females	0.39 (0.29–0.53)	0.49 (0.46–0.53)	0.55 (0.52–0.58)	0.71 (0.64–0.78)	0.71 (0.66–0.76)	0.82 (0.76–0.87)	1 (reference)

Heat map showing the hazard ratios for mortality (95% CL in brackets) by area deprivation (Carstairs 1991) and ethnicity for age range 0-64 in April 1991

	Carstairs decile (10=most and 1=least deprived)	1	2	3	4	5	6	7	8	9	10
Males	White	0.32 (0.30–0.35)	0.41 (0.38–0.45)	0.44 (0.41–0.48)	0.45 (0.42–0.49)	0.59 (0.54–0.63)	0.59 (0.55–0.64)	0.66 (0.62–0.72)	0.73 (0.68–0.72)	0.84 (0.78–0.90)	1 (reference)
Males	Asian (ex-Chinese)	0.18 (0.55–0.06)	0.30 (0.12–0.74)	0.25 (0.09–0.69)	0.15 (0.02–1.0)	*	0.97 (0.38–2.5)	0.39 (0.13–1.2)	0.17 (0.02–1.3)	0.2 (0.06–0.72)	0.31 (0.11–0.86)
Females	White	0.37 (0.33–0.40)	0.38 (0.34–0.42)	0.43 (0.39–0.47)	0.54 (0.49–0.59)	0.59 (0.54–0.65)	0.61 (0.56–0.67)	0.64 (0.59–0.70)	0.71 (0.65–0.78)	0.81 (0.74–0.88)	1 (reference)
Females	Asian (ex-Chinese)	0.64 (0.23–1.8)	0.17 (0.02–1.3)	0.23 (0.06–0.94)	0.32 (0.05–2.0)	0.69 (0.17–2.9)	*	0.8 (0.27–2.3)	1.3 (0.4–4.0)	0.51 (0.13–2.0)	0.59 (0.19–1.9)

Heat map showing the hazard ratios for mortality (95% CL in brackets) by area deprivation (Carstairs 1991) and disability for age range 0-64 years in April 1991.

Carstairs decile (10=most and 1=least deprived)		1	2	3	4	5	6	7	8	9	10
Males	Disabled	1.0 (0.84–1.2)	1.1 (0.93–1.3)	1.2 (1.02–1.4)	1.2 (1.0–1.3)	1.4 (1.2–1.6)	1.3 (1.2–1.5)	1.5 (1.3–1.7)	1.5 (1.3–1.6)	1.6 (1.4–1.8)	1.8 (1.6–2.0)
	Non-disabled	0.35 (0.32–0.40)	0.45 (0.41–0.50)	0.47 (0.43–0.52)	0.48 (0.43–0.53)	0.6 (0.54–0.66)	0.61 (0.56–0.68)	0.66 (0.60–0.73)	0.74 (0.67–0.81)	0.84 (0.77–0.92)	1 (reference)
Females	Disabled	1.4 (1.1–1.7)	1.0 (0.85–1.3)	1.1 (0.95–1.4)	1.4 (1.2–1.7)	1.6 (1.4–1.8)	1.6 (1.4–1.8)	1.5 (1.3–1.7)	1.5 (1.3–1.7)	1.6 (1.4–1.8)	2.0 (1.8–2.3)
	Non-disabled	0.41 (0.36–0.46)	0.43 (0.39–0.49)	0.48 (0.42–0.54)	0.59 (0.53–0.66)	0.62 (0.55–0.69)	0.64 (0.57–0.71)	0.69 (0.62–0.77)	0.76 (0.69–0.85)	0.85 (0.76–0.94)	1 (reference)

Heat map showing the hazard ratios for mortality (95% CL in brackets) by social class, long term unemployment, and religious group over the period 1991-2009 for age range 16-64 years in April 1991

	Social Class	I	II	IIINM	IIIM	IV	V	Unemployed
Males	Catholic	0.38 (0.22–0.63)	0.5 (0.37–0.67)	0.51 (0.36–0.72)	0.6 (0.46–0.79)	0.68 (0.51–0.90)	0.75 (0.54–1.1)	0.86 (0.65–1.1)
	Church of Scotland	0.29 (0.22–0.39)	0.33 (0.25–0.43)	0.42 (0.32–0.56)	0.46 (0.36–0.60)	0.51 (0.39–0.66)	0.61 (0.46–0.80)	0.93 (0.71–1.2)
	Other Christian	0.25 (0.17–0.39)	0.27 (0.19–0.36)	0.44 (0.30–0.66)	0.36 (0.26–0.50)	0.4 (0.28–0.58)	0.55 (0.32–0.94)	0.63 (0.40–0.98)
	Other religion	0.1 (0.01–0.71)	0.29 (0.15–0.56)	0.23 (0.05–1.0)	0.40 (0.16–1.0)	1.3 (0.49–3.6)	0.96 (0.23–4.0)	0.16 (0.02–1.1)
	No religion	0.38 (0.22–0.69)	0.46 (0.32–0.65)	0.43 (0.27–0.66)	0.63 (0.46–0.84)	0.61 (0.44–0.85)	0.87 (0.57–1.3)	1 (reference)
Females	Catholic	0.33 (0.09–1.3)	0.5 (0.38–0.65)	0.58 (0.45–0.75)	0.61 (0.42–0.89)	0.63 (0.48–0.83)	0.69 (0.54–0.89)	0.8 (0.64–0.99)
	Church of Scotland	0.51 (0.32–0.82)	0.41 (0.33–0.50)	0.47 (0.39–0.58)	0.58 (0.46–0.75)	0.61 (0.49–0.76)	0.68 (0.55–0.84)	0.64 (0.52–0.78)
	Other Christian	0.16 (0.05–0.50)	0.31 (0.22–0.42)	0.33 (0.22–0.45)	0.51 (0.31–0.84)	0.54 (0.36–0.81)	0.63 (0.42–0.94)	0.46 (0.35–0.61)
	Other religion	*	0.42 (0.12–1.4)	0.58 (0.25–1.3)	0.58 (0.08–4.3)	0.64 (0.10–4.0)	*	0.71 (0.37–1.4)
	No religion	*	0.58 (0.38–0.89)	0.64 (0.44–0.92)	0.68 (0.39–1.2)	0.56 (0.37–0.85)	0.81 (0.56–1.2)	1 (reference)

Heat map showing the hazard ratios for mortality (95% CL in brackets) by social class, long term unemployment, and adjusted age group over the period 1991-2009 for age range 16-64 years in April 1991

	Social Class	I	II	IIINM	IIIM	IV	V	Unemployed
Males	<35	1 (reference)	1.2 (0.44–3.1)	1.1 (0.42–2.9)	1.9 (0.77–4.7)	2.1 (0.82–5.1)	2.5 (0.9–6.5)	3.6 (1.5–8.7)
	35–44	1 (reference)	1.5 (0.84–2.5)	1.8 (0.98–3.1)	1.7 (0.99–2.9)	1.8 (1.1–3.2)	3.8 (2.1–6.7)	6.5 (3.8–11)
	45–54	1 (reference)	1.0 (0.75–1.4)	1.5 (1.1–2.1)	1.7 (1.3–2.2)	2.0 (1.5–2.7)	2.0 (1.4–2.9)	5.6 (4.2–7.5)
	55–64	1 (reference)	1.1 (0.91–1.4)	1.4 (1.1–1.8)	1.8 (1.5–2.3)	2.0 (1.6–2.5)	2.7 (2.1–3.5)	5 9 (4.0–6.1)
	65–74	1 (reference)	1.3 (1.1–1.6)	1.6 (1.3–2.0)	1.9 (1.6–2.3)	2.1 (1.7–2.5)	2.6 (2.1–3.2)	3.6 (3.0–4.4)
	75+	1 (reference)	1.3 (1.0–1.7)	1.6 (1.1–2.1)	1.6 (1.2–2.1)	1.7 (1.3–2.2)	1.8 (1.3–2.5)	2.3 (1.7–3.1)
Females	<35	1 (reference)	0.78 (0.18–3.4)	1.0 (0.24–4.1)	1.2 (0.27–5.3)	0.91 (0.21–3.9)	1.0 (0.19–5.1)	1.5 (0.37–6.2)
	35–44	1 (reference)	2.1 (0.52–8.8)	3.6 (0.88–14)	4 (0.95–17)	4.5 (1.1–18)	5.2 (1.3–22)	9.9 (2.5–39)
	45–54	1 (reference)	2.6 (0.96–7.0)	2.7 (1.0–7.3)	3.2 (1.2–8.9)	3.6 (1.3–9.7)	4.0 (1.5–11)	6.5 (2.4–17)
	55–64	1 (reference)	1.6 (0.80–3.0)	1.5 (0.80–2.9)	2.1 (1.1–4.1)	2 (1.0–3.8)	2.3 (1.2–4.5)	3.4 (1.8–6.6)
	65–74	1 (reference)	1.0 (0.6–1.8)	1.2 (0.67–2.0)	1.6 (0.90–2.9)	1.6 (0.9–2.8)	1.7 (1.0–2.9)	1.9 (1.1–3.3)
	75+	1 (reference)	0.67 (0.35–1.3)	0.87 (0.46–1.7)	0.98 (0.5–1.9)	0.94 (0.49–1.8)	1.2 (0.64–2.3)	1.2 (0.61–2.2)

cotland

Key to RII heat maps

Relative index of inequality (RII)	Reference code and shade
1.0–1.9	Level 1
2.0–2.9	Level 2
3.0–3.9	Level 3
4.0–4.9	Level 4
5.0–5.9	Level 5
6.0+	Level 6+

Heat map showing the relative inequality in mortality hazard 1991-2009 (95% CL in brackets) by social class within the whole population for age range 16-64 in April 1991

	Disability	Ethnicity	Religion	Age group (years)
Males	Disabled 1.4 (1.2–1.6)	Asian 4.4 (0.8–25)	Roman Catholic 1.7 (1.3–2.2)	<35 2.6 (1.5–4.4)
			Church of Scotland 1.9 (1.8–2.3)	35–44 2.2 (1.5–3.1)
			Other Christian 1.9 (1.3–2.8)	45–54 2.5 (2.0–3.0)
	Non-disabled 2.3 (2.1–2.5)	White 2.2 (2.1–2.4)		55–64 2.6 (2.2–3.0)
			Other religion 8.5 (2.1–35)	65–74 2.3 (2.0–3.5)
			No religion 1.9 (1.3–2.8)	75+ 1.6 (1.3–1.9)
Females	Disabled 1.2 (1.0–1.5)	Asian 1.5 (0.1–30)	Roman Catholic 1.5 (1.1–1.9)	<35 1.3 (0.6–2.7)
			Church of Scotland 1.9 (1.6–2.2)	35–44 3.0 (2.0–4.5)
			Other Christian 2.6 (1.6–4.2)	45–54 1.8 (1.4–2.4)
	Non-disabled 1.9 (1.7–2.1)	White 1.9 (1.7–2.1)		55–64 1.7 (1.4–2.1)
			Other religion 1.7 (0.2–16)	65–74 2.0 (1.7–2.3)
			No religion 1.4 (0.8–2.4)	75+ 1.9 (1.5–2.4)

Heat map showing the relative inequality in mortality hazard 1991-2009 (95% CL in brackets) by area deprivation (Carstairs 1991) within population subgroups for age range 0-64 in April 1991

	Gender	Disability	Ethnicity	Religion	
Males	Men 3.2 (3.0–3.4)	Disabled 1.7 (1.5–1.9)	Asian 3.2 (3.0–3.4)	Roman Catholic 2.8 (2.2–3.4)	
				Church of Scotland 2.5 (2.2–2.8)	
				Other Christian 2.3 (1.6–3.3)	
		Non-disabled 2.8 (2.6–3.1)	White 1.5 (0.4–5.1)	Other religion 1.2 (0.3–5.1)	
				No religion 2.6 (1.9–3.8)	
Females	Women 2.9 (2.7–3.2)	Disabled 1.6 (1.4–1.9)	Asian 2.9 (2.7–3.2)	Roman Catholic 2.5 (2.0–3.2)	
				Church of Scotland 2.4 (2.1–2.8)	
				Other Christian 3.4 (2.3–5.2)	
		Non-disabled 2.6 (2.4–2.9)	White 2.2 (0.4–11)	Other religion 6.4 (1.3–32)	
				No religion 1.8 (1.2–2.8)	

Heat map showing the relative inequality in mortality hazard 1991-2009 (95% CL in brackets) by area deprivation (Carstairs 91) within the whole population for age range 16-64 in April 1991

	Disability	Ethnicity	Religion	Age group (years)
Males	Disabled 1.8 (1.6–2.0)	Asian 3.2 (3.0–3.4)	Roman Catholic 2.9 (2.3–3.7)	<35 3.3 (2.5–4.5)
			Church of Scotland 2.6 (2.3–3.9)	35–44 3.5 (2.5–4.9)
			Other Christian 2.4 (1.6–3.4)	45–54 3.9 (3.2–4.8)
	Non-disabled 2.8 (2.6–3.1)	White 1.4 (0.5–4.5)		55–64 3.8 (3.3–4.3)
			Other religion 1.2 (0.3–4.9)	65–74 3.1 (2.7–3.4)
			No religion 2.8 (1.9–4.0)	75+ 2.0 (1.6–2.3)
Females	Disabled 1.7 (1.4–2.0)	Asian 2.9 (2.7–3.2)	Roman Catholic 2.7 (2.1–3.4)	<35 1.5 (1.0–2.3)
			Church of Scotland 2.5 (2.2–2.9)	35–44 4.2 (2.9–6.1)
			Other Christian 3.7 (2.5–5.6)	45–54 3.5 (2.8–4.4)
	Non-disabled 2.6 (2.4–3.0)	White 2.2 (0.5–9.7)		55–64 3.5 (3.0–4.1)
			Other religion 5.5 (1.4–23)	65–74 2.8 (2.5–3.1)
			No religion 1.9 (1.2–3.0)	75+ 2.3 (1.9–2.8)

Heat map showing the relative inequality in mortality hazard 1991-2009 (95% CL in brackets) by social class within population subgroups for age range 16-64 in April 1991

Gender	Disability	Ethnicity	Religion
Males			
Men 2.3 (2.1–2.4)	Disabled 1.3 (1.1–1.6)	Asian 3.7 (0.7–21)	Roman Catholic 1.7 (1.3–2.1)
			Church of Scotland 2.0 (1.7–2.2)
			Other Christian 2.0 (1.4–3.0)
	Non-disabled 2.3 (2.1–2.5)	White 2.2 (2.1–2.4)	Other religion 6.7 (1.4–31)
			No religion 1.9 (1.3–2.7)
Females			
Women 1.9 (1.7–2.1)	Disabled 1.2 (1.0–1.5)	Asian 1.8 (0.1–42)	Roman Catholic 1.5 (1.1–1.9)
			Church of Scotland 1.9 (1.6–2.2)
			Other Christian 2.6 (1.6–4.4)
	Non-disabled 1.9 (1.7–2.1)	White 1.9 (1.7–2.1)	Other religion 1.8 (0.2–16)
			No religion 1.3 (0.8–2.2)

SC, Whole population ranks

	Disability	Ethnicity	Religion	Age group (years)
Males	Disabled 1.4 (1.2–1.6)	Asian 4.4 (0.8–25)	Roman Catholic 1.7 (1.3–2.2)	<35 2.6 (1.5–4.4)
			Church of Scotland 1.9 (1.8–2.3)	35–44 2.2 (1.5–3.1)
			Other Christian 1.9 (1.3–2.8)	45–54 2.5 (2.0–3.0)
	Non-disabled 2.3 (2.1–2.5)	White 2.2 (2.1–2.4)	Other religion 8.5 (2.1–35)	55–64 2.6 (2.2–3.0)
				65–74 2.3 (2.0–3.5)
			No religion 1.9 (1.3–2.8)	75+ 1.6 (1.3–1.9)
Females	Disabled 1.2 (1.0–1.5)	Asian 1.5 (0.1–30)	Roman Catholic 1.5 (1.1–1.9)	<35 1.3 (0.6–2.7)
			Church of Scotland 1.9 (1.6–2.2)	35–44 3.0 (2.0–4.5)
			Other Christian 2.6 (1.6–4.2)	45–54 1.8 (1.4–2.4)
	Non-disabled 1.9 (1.7–2.1)	White 1.9 (1.7–2.1)	Other religion 1.7 (0.2–16)	55–64 1.7 (1.4–2.1)
				65–74 2.0 (1.7–2.3)
			No religion 1.4 (0.8–2.4)	75+ 1.9 (1.5–2.4)

Carstairs, population subgroup ranks

	Gender	Disability	Ethnicity	Religion
Males	Men 3.2 (3.0–3.4)	Disabled 1.7 (1.5–1.9)	Asian 3.2 (3.0–3.4)	Roman Catholic 2.8 (2.2–3.4)
				Church of Scotland 2.5 (2.2–2.8)
				Other Christian 2.3 (1.6–3.3)
		Non-disabled 2.8 (2.6–3.1)	White 1.5 (0.4–5.1)	Other religion 1.2 (0.3–5.1)
				No religion 2.6 (1.9–3.8)
Females	Women 2.9 (2.7–3.2)	Disabled 1.6 (1.4–1.9)	Asian 2.9 (2.7–3.2)	Roman Catholic 2.5 (2.0–3.2)
				Church of Scotland 2.4 (2.1–2.8)
				Other Christian 3.4 (2.3–5.2)
		Non-disabled 2.6 (2.4–2.9)	White 2.2 (0.4–11)	Other religion 6.4 (1.3–32)
				No religion 1.8 (1.2–2.8)

Carstairs, Whole population ranks

	Disability	Ethnicity	Religion	Age group (years)
Males	Disabled 1.8 (1.6–2.0)	Asian 3.2 (3.0–3.4)	Roman Catholic 2.9 (2.3–3.7)	<35 3.3 (2.5–4.5)
			Church of Scotland 2.6 (2.3–3.9)	35–44 3.5 (2.5–4.9)
			Other Christian 2.4 (1.6–3.4)	45–54 3.9 (3.2–4.8)
	Non-disabled 2.8 (2.6–3.1)	White 1.4 (0.5–4.5)	Other religion 1.2 (0.3–4.9)	55–64 3.8 (3.3–4.3)
				65–74 3.1 (2.7–3.4)
			No religion 2.8 (1.9–4.0)	75+ 2.0 (1.6–2.3)
Females	Disabled 1.7 (1.4–2.0)	Asian 2.9 (2.7–3.2)	Roman Catholic 2.7 (2.1–3.4)	<35 1.5 (1.0–2.3)
			Church of Scotland 2.5 (2.2–2.9)	35–44 4.2 (2.9–6.1)
			Other Christian 3.7 (2.5–5.6)	45–54 3.5 (2.8–4.4)
	Non-disabled 2.6 (2.4–3.0)	White 2.2 (0.5–9.7)	Other religion 5.5 (1.4–23)	55–64 3.5 (3.0–4.1)
				65–74 2.8 (2.5–3.1)
			No religion 1.9 (1.2–3.0)	75+ 2.3 (1.9–2.8)

SC, population subgroup ranks

	Gender	Disability	Ethnicity	Religion
Males	Men 2.3 (2.1–2.4)	Disabled 1.3 (1.1–1.6)	Asian 3.7 (0.7–21)	Roman Catholic 1.7 (1.3–2.1)
				Church of Scotland 2.0 (1.7–2.2)
				Other Christian 2.0 (1.4–3.0)
		Non-disabled 2.3 (2.1–2.5)	White 2.2 (2.1–2.4)	Other religion 6.7 (1.4–31)
				No religion 1.9 (1.3–2.7)
Females	Women 1.9 (1.7–2.1)	Disabled 1.2 (1.0–1.5)	Asian 1.8 (0.1–42)	Roman Catholic 1.5 (1.1–1.9)
				Church of Scotland 1.9 (1.6–2.2)
				Other Christian 2.6 (1.6–4.4)
		Non-disabled 1.9 (1.7–2.1)	White 1.9 (1.7–2.1)	Other religion 1.8 (0.2–16)
				No religion 1.3 (0.8–2.2)

Main findings

▪ High hazards

Disabled	men+ women by class + carstairs
White	men by class and carstairs
Men	by class and carstairs
Roman Catholic, No religion	Men and women, class and carstairs
Middle aged	Especially 35-44 year old women and men by class, and men <35 yrs by carstairs

▪ High Inequality

Non-disabled	men by class and carstairs
Asian	men by class and carstairs
Men	by class and carstairs
Other religion, Other Christian, No religion	Other religion women (Carstairs) men (class), Other Christian women by class and carstairs, Roman Catholic by Carstairs, No religion by Carstairs
Middle aged	35-44 year old women by class and carstairs

Main findings – relative hazards

- Relative hazards varied by equality subgroup as well as by socio-economic group

- High hazards: White, male, disabled, Roman Catholic, No religion, young men, women in early middle age, especially the less skilled and the more deprived

- High inequality: Asians, males, able bodied, other religions

- Socio-economic gradient was usually clear

- Socio economic gradient was less strong than for other groups in disabled people, especially women, and unclear perhaps owing to small

Inequality patterns

- Gender specific with higher inequality levels for men, but socio-economic gradients were shared across genders.

- The highest inequalities often occurred in the smallest sub groups – Asian men and women and men and women of other religions, and in younger age groups.

- Disabled people had lower inequality than able bodied

- Women aged 35-44 had high inequality especially driven by less skilled and more deprived, though the pattern was clear in all social classes. Women under 35 years seemed protected from inequality.

- The high inequality seen in Other religion showed a reverse by gender. It was high in men for class and high in women for deprivation

Strengths

- Large sample by most standards,
- High linkage and census response rates,
- Modeling of survival time, not just mortality,
- Long follow up time
- All cause mortality not subject to shifts in risk by disease group over time
- Powerful methodology can adjust for multiple confounding factors,
- Time dependent covariates adjusted age group for aging during the study,
- Multiple analysis methods for extra validation,
- Linkage method allows new analyses of existing data,

Weaknesses

- 1991 data has limited numbers for ethnicity and religion (and nothing on sexual orientation or transgender).

- Age range 0-64 at April 1991 limited the numbers of deaths (but increased mean follow up time for individuals)

- Had to exclude some ethnic groups and combine others

Fit with other work

- Scottish Health Ethnicity Linkage study

- Greater inequality and hazard for men

- Health inequalities by age group are greatest in middle age(Leyland et al 2007).

- Socio-economic position and area deprivation were compared for England recently (Baker et al 2013)

Conclusions

- The pattern of inequality *is* different across subgroups within protected characteristics compared to the population generally.

- But the SES gradient in mortality risk is overwhelmingly the strongest pattern.

Public Health Implications

- Improve the health of the worst affected groups
  - Further discussions
  - Views on disadvantage
  - Views on participation

Hear, oh ye people, and listen oh ye nations!

Welcome to the feast!

Thank you,
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