

Association of socioeconomic deprivation with 30-day survival following out-of-hospital cardiac arrest in Scotland

Authors: Laura A.E. Bijman^{1,2,3}, Rosemary Chamberlain¹, Gareth Clegg^{1,2,3}, Andrew Kent³, Nynke Halbesma^{1,2,3}

¹Usher Institute, University of Edinburgh, ²Resuscitation Research Group, University of Edinburgh, ³Scottish Ambulance Service, Edinburgh



Introduction

An out-of-hospital cardiac arrest (OHCA) is a sudden ceasing of cardiac mechanical activity, evidenced by absent signs of circulation outside of the hospital.¹ The cause may be cardiac, such as myocardial infarction, or non-cardiac, such as severe blood loss or drug overdose.² There is a well-established pattern of higher incidence of out-of-hospital cardiac arrest in more socioeconomically deprived areas, but patterning of survival is less clear.

Objectives

- Quantifying the crude association of socioeconomic deprivation with OHCA survival in Scotland.
- Considering whether this was explained by age, sex and urban/rural location.

Methods

- Population-based study of 20,913 non-traumatic, non-Emergency Medical Services (EMS) witnessed OHCA with resuscitation attempted by the Scottish Ambulance Service (SAS), between April 2011 and March 2020.
- The data linkage process³ was conducted by an analytics team from the Scottish Ambulance Service and is shown in figure 1.
- Deprivation was measured by Scottish Index of Multiple Deprivation (SIMD) at the home address of the patient.
- Survival was measured at 30 days post-OHCA.
- Crude and confounder-adjusted associations of SIMD quintile with survival were estimated using logistic regression.
- Effect modification by age and sex and was assessed by stratification.

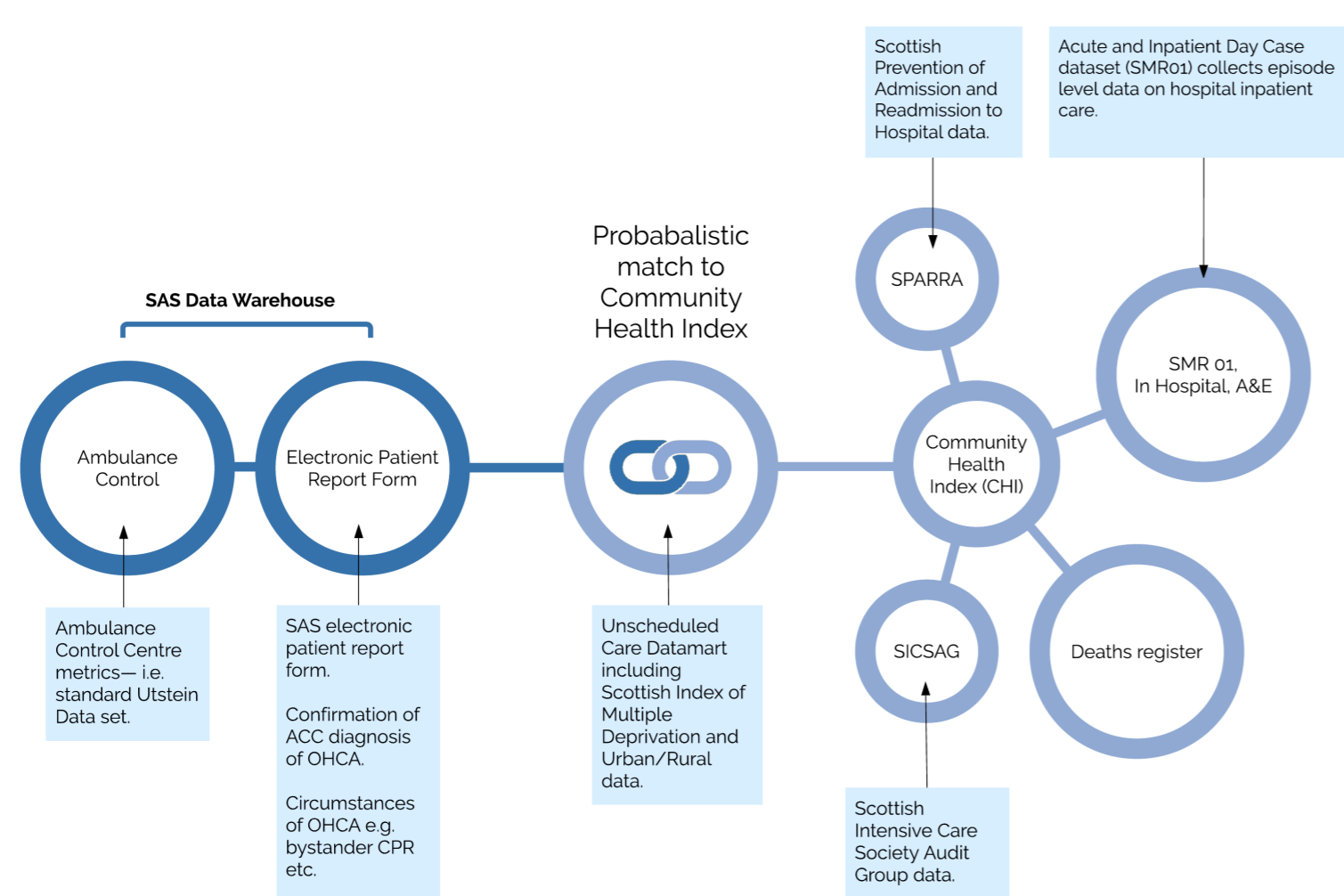


Figure 1. Data linkage

Results

- People in SIMD quintile 1 (most deprived) have a lower chance of 30-day survival after OHCA compared with people living in quintile 5 (least deprived); age, gender and urban/rural location taken into account (OR 0.63 (95%CI 0.53-0.75); figure 1).
- Age and gender stratified analyses show a stronger association in the younger male age groups, and no association in those aged ≥ 80 years or in females. The effect estimates shown are all adjusted for age, sex and urban/rural location (figure 2).

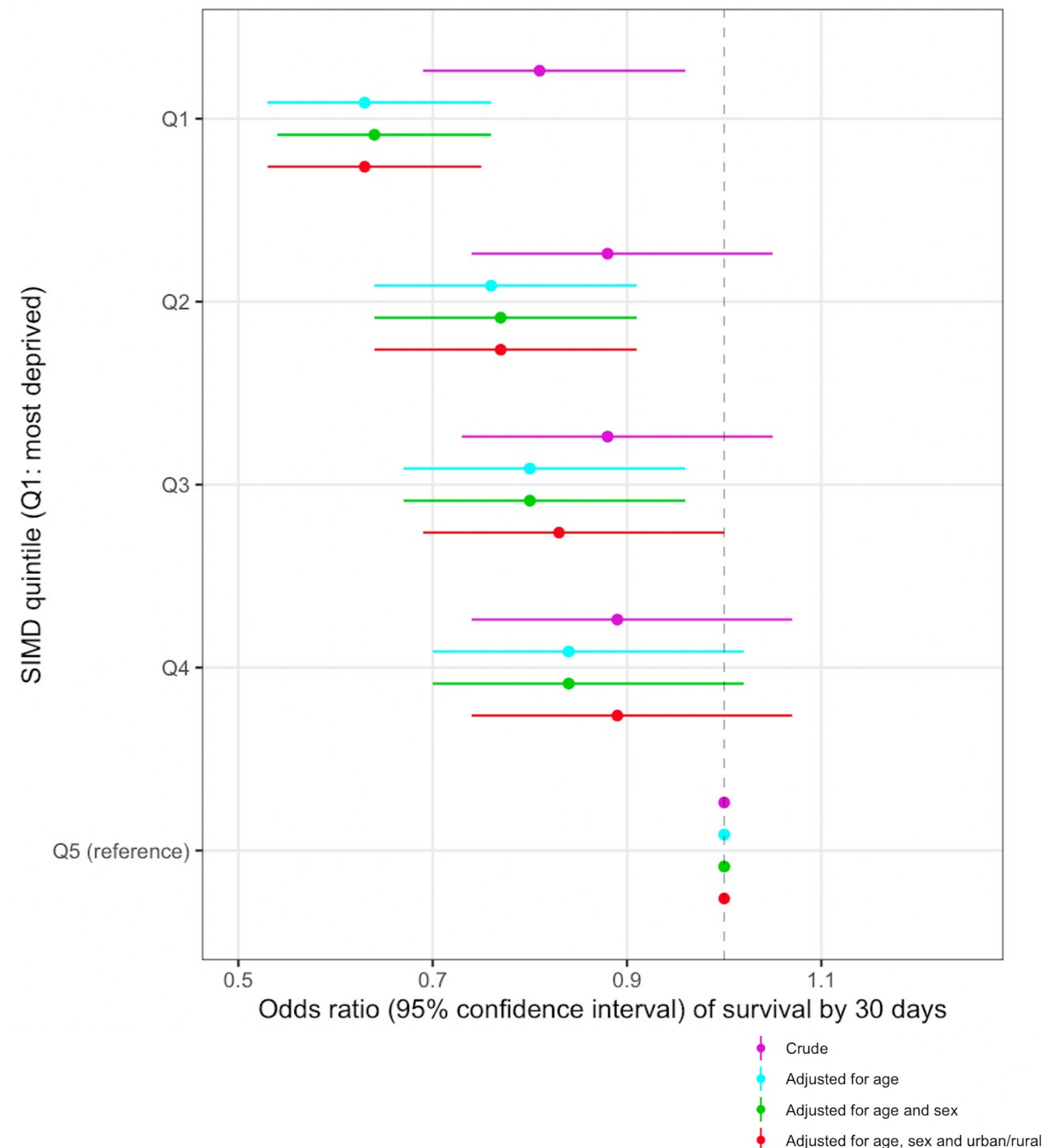


Figure 1: Association of SIMD quintile with survival by 30-days post-OHCA, adjusted for age, sex, and urban/rural location

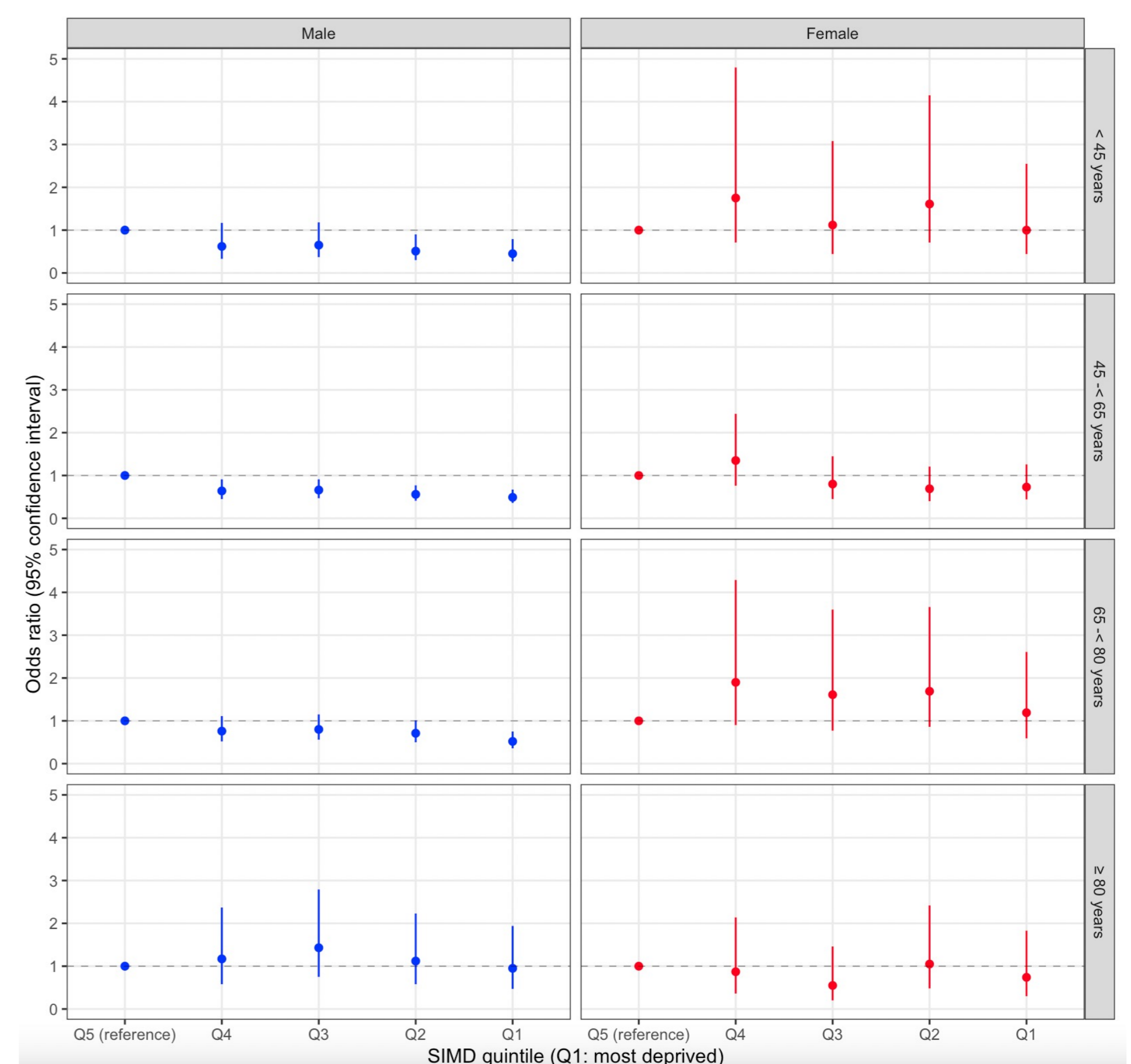


Figure 2: Association of SIMD quintile with survival by 30-days post-OHCA, stratified by age and sex

Conclusions

- There is a socioeconomic disparity in OHCA survival in Scotland.
- This is not explained by confounding by age, sex or urban/rural residency.
- The deprivation-survival association is stronger in the younger male age group.