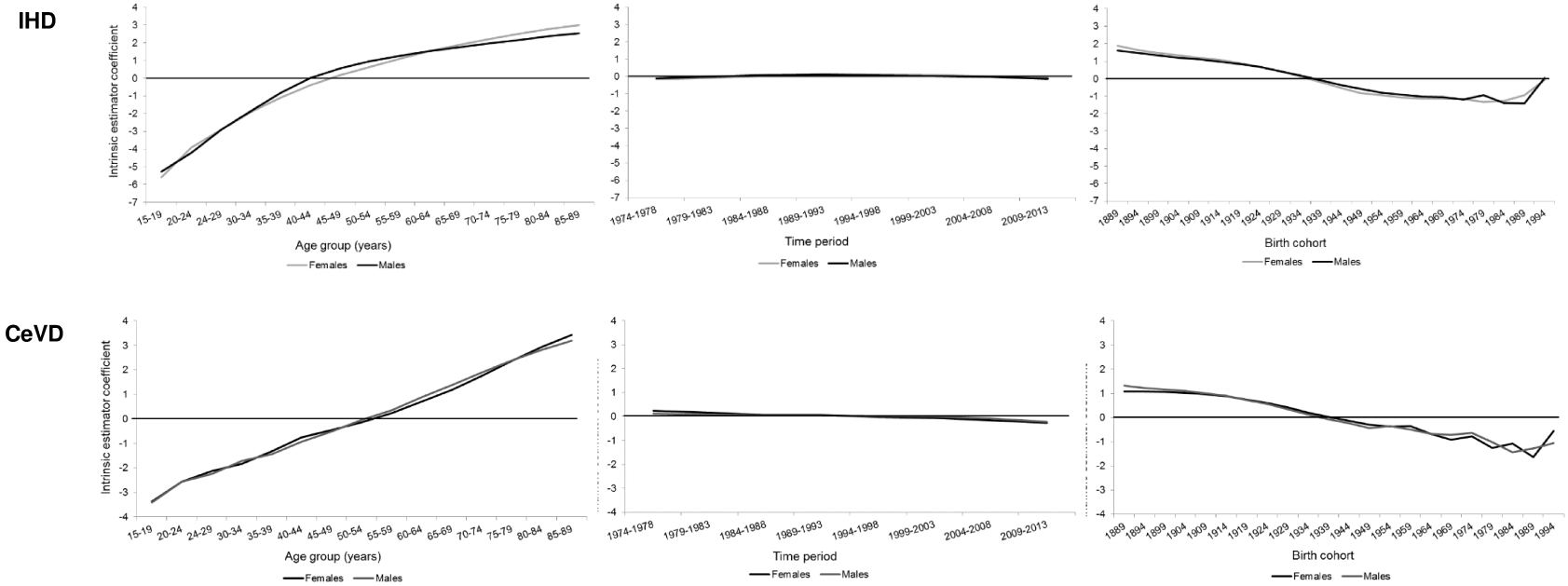
# Appendix 1: Intrinsic Estimator regression analysis

Intrinsic estimator regression modelling was performed as described in Parkinson et al 2017 and 2018.* As data were over dispersed, best fit negative binomial models were used. These were fitted separately for each sex and deprivation strata with dispersion factors to obtain a 1/degree of freedom deviance close to one. For both ischaemic heart disease (IHD) and cerebrovascular disease (CeVD) females in quintile 4 and 5 group, the 1994 cohort data were replaced with that of the 1989 cohort to obtain a suitable model. This involved replacing data for the 15-19 year age group of period 2009-2013 with data for the same age group of period 2004-2008. As the replacement was made at the subgroup level, it would not have significantly affected the trends.

**Figure 1** Intrinsic Estimator coefficients for age, period and birth cohort effects for IHD and CeVD mortality in Scotland 1974-2015, by sex

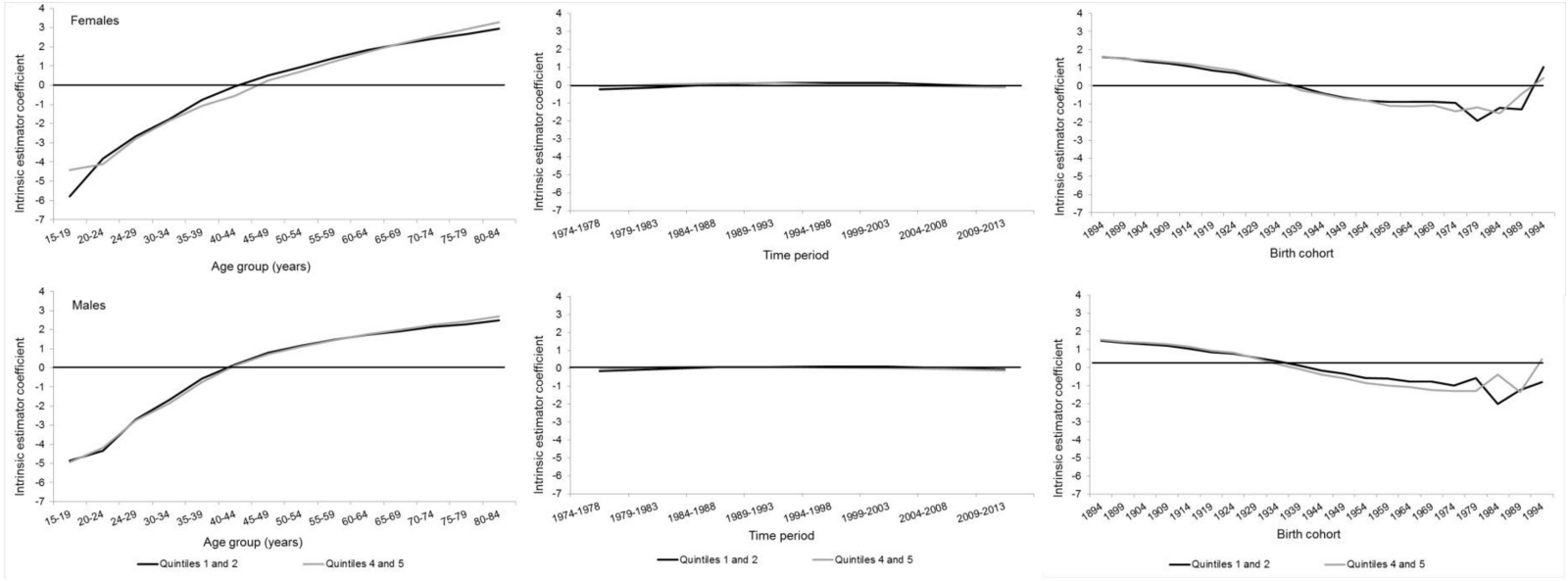



* Parkinson J, Minton J, Lewsey J, et al. Recent cohort effects in suicide in Scotland: a legacy of the 1980s? *J Epidemiol Community Health* 2017;71:194-200 doi:10.1136/jech-2016-207296

Parkinson J, Minton J, Lewsey J, et al. Drug-related deaths in Scotland 1979–2013: evidence of a vulnerable cohort of young men living in deprived areas. *BMC Public Health* 2018;18:357-365 doi:10.1186/s12889-018-5267-2

**Figure 2** Intrinsic Estimator coefficients for age, period and birth cohort effects for IHD and CeVD mortality in Scotland 1974-2013, by sex and deprivation

**IHD**




**CeVD**