Supplemental Table 1 Examples of natural experimental studies to evaluate population health interventions

Population	Intervention	Comparator	Outcome	Analysis method	Results	Reference
Sri Lanka - whole population	Legal restriction on pesticide imports	Suicide rates pre-ban; method specific suicide rates; rates of non-fatal self-poisoning	Overall suicide mortality and mortality mortality from suicide by self-poisoning with pesticide	Graphical analysis of trends	Import bans reduced method-specific and overall suicide mortality	Gunnell et al 2007[16]
UK - 12-17 year olds	Restriction on prescribing SSRIs to people aged <18	Suicidal behaviour pre-restriction	Hospitalisations for self-harm; suicide mortality	Joinpoint regression	Restriction on prescribing of SSRIs was not associated with changes in suicidal behaviour	Wheeler et al 2008[18]
Finland - men and women aged >15	Reduction in alcohol taxes	Alcohol related mortality before the tax change	Alcohol-related mortality	Poisson regression to obtain relative rates; time-series analysis	Alcohol-related mortality increased, especially among the unemployed	Herttua et al 2008,[40] Herttua et al 2011[41]
Hong Kong - whole population	Legislation to restrict sulphur content of fuel	Mortality pre-restriction, overall and by district	All-cause and cause specific mortality	Poisson regression of change in seasonally adjusted death rates	Cardiovascular, respiratory and overall mortality fell post-restriction; decline greater in districts with larger falls in SO_2 concentrations	Hedley et al 2002[26]
Dublin – whole population	Ban on coal sales	Mortality pre-ban, and in the rest of Ireland	Non-trauma, respiratory and cardiovascular mortality	Interrupted time-series	Non-trauma, respiratory and cardiovascular death rates fell post-ban	Clancy et al 2002[25]

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Scotland – patients admitted to 9 hospitals	Legislative ban on smoking in public places	Hospitalisations pre-ban and in England	Hospitalisations for acute coronary syndrome	Comparison of numbers of admissions pre and post ban	Admissions for acute coronary syndrome fell among both smokers and non-smokers post-ban	Pell et al 2008[23]
England – patients aged >17	Legislative ban on smoking in public places	Hospitalisations pre-ban	Emergency admissions for myocardial infarction	Interrupted time-series	Small but significant fall in emergency admissions in the first year post-ban	Sims et al 2010[24]
India – pregnant women	Cash incentives to use a health facility to give birth	Districts with low rates of take up; births to women not receiving payments	Use of health facilities; infant and maternal mortality	Matched and unmatched comparisons of recipient and non-recipient births; difference-in-differences analysis of district level usage and mortality rates	Higher rates of take-up of the incentives were associated with higher proportions of births within health care facilities; use of health care facilities to give birth was associated with fewer perinatal and neonatal deaths. There was a non-significant reduction in maternal deaths	Lim et al 2010[30]
England – general practitioners	Abolition of GP fundholding	Non-fundholding practices; pre-abolition admission rates	Referral for elective and emergency admissions	Difference-in-difference analysis of referrals from fundholders and non-fundholders	Fundholders had lower rates of elective referral while fundholding was in operation and their rates of referral increased more than those of non-fundholders following abolition. There was no difference in emergency admissions pre or post abolition.	Dusheiko et al 2003[31]
USA – low income families with children	Headstart - help with parenting, nutrition, health and social services and schooling	US counties with poverty levels above the cutoff used to allocate help	Mortality from causes of death amenable to Headstart	Regression discontinuity design, comparing regressions of	For Headstart-related causes, there was a discontinuity in mortality rates at the cutoff, but no difference in deaths from other causes or among children too old to	Ludwig and Miller 2007[28]

aged 3-5		with accessing Headstart funding	services	mortality on poverty for counties above and below the cutoff	qualify for Headstart services	
USA – patients admitted to hospital with acute myocardial infarction	Invasive cardiac treatment (catherisation followed by revascularisation)	Non-invasive cardiac treatment	Long term (i.e. 7-year) mortality	Instrumental variable analysis using regional catherisation rates as the instrument	Cardiac catherisation was associated with lower mortality; instrumental variable analyses produced smaller estimates of effect than analyses (multivariate risk adjustment, propensity score-based methods) that only adjust for observed prognostic factors	Stukel et al 2007[39]