Web appendix: Supplementary material

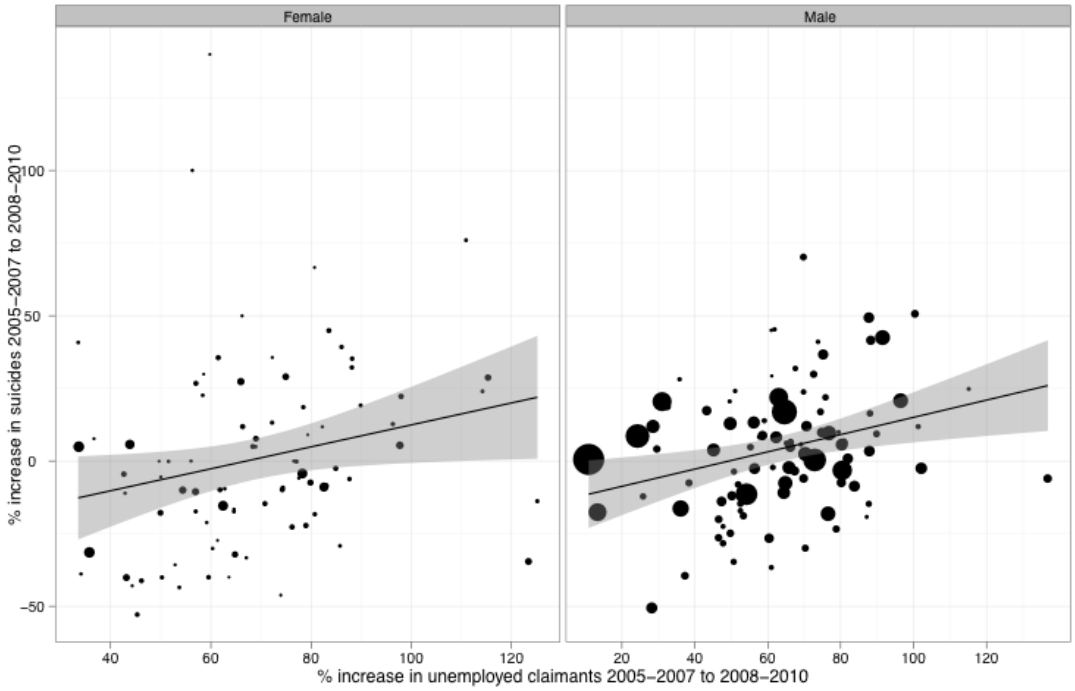
Web Appendix 1. Descriptive Statistics, 2000-2010

Variable	Number of Local Area-Years	Mean	Min	Max	Source
Male suicides	1023	35.24 (24.82)	2	139	National Clinical and Health Outcomes Database (NCHOD)
Female suicides	1023	11.89 (9.36)	0	55	National Clinical and Health Outcomes Database (NCHOD)
Male claimants	1023	6528.07 (6720.90)	928	53287	The Office for National Statistics (ONS) NOMIS
Female claimants	1023	2396.55 (2734.65)	377	27130	The Office for National Statistics (ONS) NOMIS
Male suicide change	1023	0.05 (0.42)	-0.81	4.5	National Clinical and Health Outcomes Database (NCHOD)
Female suicide change	1017	0.16 (0.81)	-1	9	National Clinical and Health Outcomes Database (NCHOD)

Web Appendix 2. Unadjusted associations, pre- and post-recession

The figure below shows the unadjusted association of the increase in unemployment in each area before (years 2005-2007) and after (2008-2010) the onset of recession with the change in suicides. While a significant association is observed for both men (r = 0.29, p=0.005) and women (r = 0.25, p=0.014), this unadjusted correlation may over estimate the association as compared to the fixed effects model.

Figure: Unadjusted association of the percentage increase in the number of unemployed men and women with the percentage increase in the number of suicides, before- and after- the 2008 recession, by sex



Notes: Each dot represents a local area (classified based on NUTS3 areas of county Councils and groups of unitary authorities); points shading representing weighting for the number of suicides in 2005-2007.

Web Appendix 3. Modelling lead and lagged effects, 1993-2010

Table 3a. Lags

	Male Suicide	Female Suicide
Current Unemployment Change	1.8%** [0.7,2.9]	-1.5% [-6.9,4.6]
Previous Year's Unemployment Change	-0.8% [-1.9,0.3]	0.6% [-1.4,2.6]
Previous Two Year's Unemployment Change	0.6% [-0.9,2.1]	-0.8% [-2.9,4.5]
Number of local area-years	1395	1385
R^2	0.037	0.038

95% confidence intervals in brackets
*p< 0.05, **p< 0.01, ***p< 0.001

Since unemployment is a 'lagging indicator of the economy, it has been speculated that the anticipation of unemployment may create fear and anxiety, corresponding to elevated risks of suicides. As shown below, such effects were not observed in our model.

Table 3b. Leads

	Male Suicide	Female Suicide
Two Year's Prior to Unemployment Change	-0.1% [-1.4,1.1]	-1.8 [-3.7,0.1]
Year Prior to Unemployment Change	0.6% [-0.2,1.4]	-1.2 [-0.7,3.0]
Current Unemployment Change	2.2%** [0.051,0.39]	-0.9 [-3.8,2.0]
Number of local area-years	1395	1386
R^2	0.040	0.045

95% confidence intervals in brackets
*p< 0.05, **p< 0.01, ***p< 0.001

Web Appendix 4. Replication of table 1 for longest available time-series (1993-2010), years of falling unemployment (1993-2005) and years of rising unemployment (2006-2010), with and without controls for time-trends.

Controlling for time-trends

	Percentage Change in Suicide Rates		
	All years	1993-2005 (years of falling unemployment)	2006-2010 (years of rising unemployment)
Men			
10% change in the number claimants	1.6** [0.9,2.4]	2.5* [0.4,4.5]	1.5** [0.5,2.4]
Women			
10% change in the number claimants	0.80 [-1.1,2.7]	-0.9 [-4.1,2.4]	1.0 [-1.7,3.7]

Notes: 95% confidence intervals in brackets based on robust standard errors clustered by local area to reflect non-independence of sampling. Model based on equation 1. Number of local area years is 1581 for all years,1116 for 1993-2005 and 465 for 2006-2010.
*p< 0.01, **p< 0.001.

Test for effect heterogeneity between time periods, for male model, p=0.35, Seemingly Unrelated Estimation (SUEST) Test

Without Controlling for time-trends

	Percentage Change in Suicide Rates		
	All years	1993-2005 (years of falling unemployment)	2006-2010 (years of rising unemployment)
Men			
10% change in the number claimants	1.2*** [0.7,1.8]	1.4* [0.1,2.8]	0.15*** [0.6,2.3]
Women			
10% change in the number claimants	0.7 [-0.5,0.2]	-0.05 [-2.2,2.1]	1.6 [-0.6,3.8]

Notes: 95% confidence intervals in brackets based on robust standard errors clustered by local area to reflect non-independence of sampling. Model based on equation 1 but without controls for time-trends. Number of local area years is 1581 for all years,1116 for 1993-2005 and 465 for 2006-2010.
*p< 0.01, **p< 0.001

Model equation:

Equation 1: $\Delta Suicide_{i,t} = \beta\, \Delta Unemp_{i,t} + \mu_i + \mu_i x\, t + t + \varepsilon_{i,t}$

Where *i* is the English area (based on the NUTS3 area classification) and *t* is the year. Δ is the first-year difference of log suicides and claimants, expressed as the percentage change; β is the coefficient describing the percentage increase in suicides associated with each percentage increase in the number of unemployed claimants. μ is a set of region dummy variables, and *t* is a time-trend.

Web Appendix 5. Replication of table 2, excluding undetermined injuries.

	Male Suicide Rates	Female Suicide Rates
10% rise in the number of male claimants	1.3%* [95% CI: 0.35% to 2.3%]	—
10% rise in the number female claimants	—	-0.2% [95% CI: -3.2% to 2.8%]

Notes: 95% confidence intervals in brackets. Model based on equation 1. Number of local area years is 1022 among men and 990 among women.
*$p < 0.001$