

**Online supplementary resource** Detailed equations of the models used for the analyses

Main model:

(E1):

$$\log(\lambda_{s,a,c,y}) = \log(\text{pop}_{s,a,c,y}) + \alpha_{s,a,c} + (\beta_{1,c} + \beta_{2,a} + \beta_{3,s}) \times t(y) + \gamma_c \times \text{UnemployVar}_y$$

European sensitivity analyses:

(E2):

$$\log(\lambda_{s,a,c,y}) = \log(\text{pop}_{s,a,c,y}) + \alpha_{s,a,c} + (\beta_{1,c} + \beta_{2,a} + \beta_{3,s}) \times t(y) + \gamma_c \times \text{UnemployVar}_y + \delta_c \times \text{Crisis}$$

(E3):

$$\log(\lambda_{s,a,c,y}) = \log(\text{pop}_{s,a,c,y}) + \alpha_{s,a,c} + \gamma_c \times \text{UnemployVar}_y$$

French sensitivity analyses:

(F1):

$$\log(\lambda_{s,a,r,y}) = \log(\text{pop}_{s,a,r,y}) + \alpha_{s,a,r} + (\beta_{1,r} + \beta_{2,a} + \beta_{3,s}) \times t(y) + \gamma \times \text{UnemployVar}_{r,y}$$

(F2):

$$\log(\lambda_{s,a,r,q}) = \log(\text{pop}_{s,a,r,q}) + \alpha_{s,a,r} + \alpha'_{r,q} + (\beta_{1,r} + \beta_{2,a} + \beta_{3,s}) \times t(y, q) + \gamma \times \text{UnemployVar}_{r,q}$$

(F3):

$$\log(\lambda_{s,a,r,q}) = \log(\text{pop}_{s,a,r,q}) + \alpha_{s,a,r} + \alpha'_{r,q} + (\beta_{1,r} + \beta_{2,a} + \beta_{3,s}) \times t(y, q) + \gamma \times \text{UnemployVar}_{r,q t(y,q-i)}$$

$\lambda$ : expected value of the number of suicides

*pop*: population count

$\alpha, \beta, \gamma, \delta$ : coefficients to be estimated by the model

*Crisis*: dummy variable taking the value 0 for 2000-2007 and 1 for 2008-2010

*UnemployVar*: variation of unemployment rate compared to 2000 and multiplied by 10

$$\text{UnemployVar}_y = 10 \times \frac{\text{Unemployment rate}_y}{\text{Unemployment rate}_{2000}}$$

*s*: sex

*a*: age group

*c*: country

*y*: year

*r*: region

*q*: quarter

Linear time trends:

$$t(y) = y$$

$$t(y, q) = y + \frac{q-1}{4}$$

Time lag:

$$t(y, q - i) = y + \frac{q-1-i}{4}$$