

“Death by despair” and socioeconomic indicators: evidence from Spain

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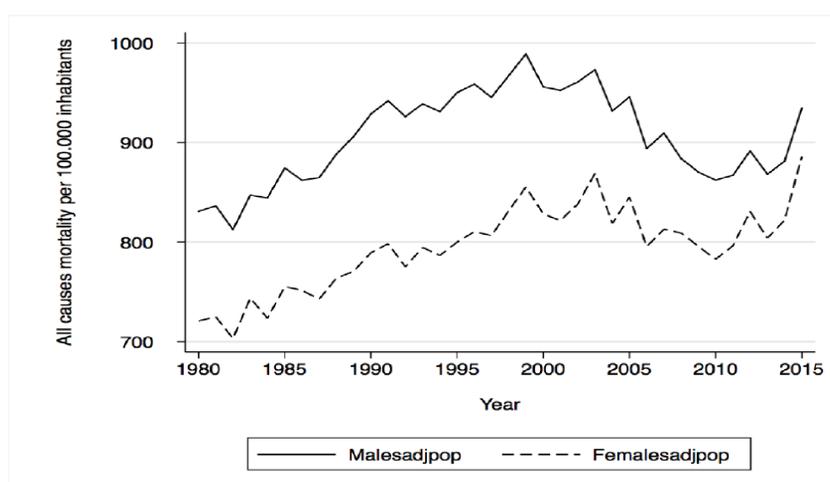
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Introduction

Case & Deaton (2015, 2017) have highlighted that U.S. mortality for non-Hispanics Whites (NHW) is rising for the first time in decades, and now stands at higher levels than most European countries. Case & Deaton (2017) showed that mortality differences can be attributed to “deaths by despair” (drug overdose, alcohol or suicide) in U.S for NHW (mainly for the age cohort 45-55).

One European country of interest is Spain where general adjusted mortality has been increasing since 2010 for both males and females, following ten years of a decreasing tendency.



We contribute to the existing literature by describing the trends in Spain relating to the “death by despair” and determine statistical relationships between death by despair and socioeconomic variables.

Methods

Data

Data is collected from the INE. Mortality data is disaggregated by cause, Autonomous Community, age cohort, gender and year (1980-2015). The age cohorts for the analyses are the following: 15-29, 30-44, 45-54, 55-64 and ≥ 65 .

“Death by despair” is the sum of the following variables by gender adjusted by 100,000 population (1980-2015):

- **Suicides and self-induced lesions**
- **Accidental poisoning by psychoactives drugs and abuse drugs**
- **Mental disorders induced by the use of alcohol and drugs**

Independent variables (INE and Eurostat): Education attainment level, Gross Domestic Product (GDP) per capita and Unemployment rate (%).

Methods

The statistical relationships are analysed empirically through panel data models:

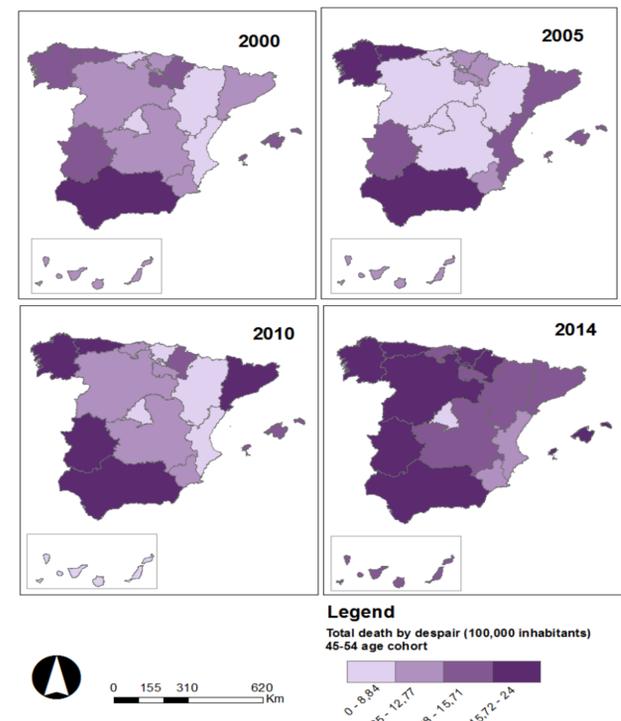
- 1) Testing for **cross-sectional dependence, stationarity and cointegration.**

Cointegration: linear combination of several I(1) series is stationary, the series are said to be cointegrated. Implies that the I(1) series are in long-run equilibrium (i.e. they move together).

- 2) Controlling for the **birth cohort (t)** (i.e. a proxy for labour market entry). Age cohort 30-64 and from 2002 to 2014.

$$y_{it} = \alpha + \beta_1 2ndSecondary_{it} + \beta_2 Higher_{it} + \beta_3 Unemp.rate_{it} + \beta_4 GDPpercapita_{it} + d_t + c_i + u_{it}$$

Total death by despair (100,000 population) in the Spanish (45-54)



Results

1) Cointegration tests: Death by despair

	Death by despair Males				
	15-29	30-44	45-54	55-64	≥ 65
1	0.1337* / 0.0000**	0.0005 / 0.0002	0.0000 / 0.0000	0.3636 / 0.0000	0.1971 / 0.0000
2	0.0542 / 0.0004	0.3774 / 0.0032	0.0189 / 0.0002	0.0705 / 0.0027	0.1905 / 0.0001
3	0.0323 / 0.0087	0.4179 / 0.0380	0.0332 / 0.0155	0.0704 / 0.0630	0.1916 / 0.0026
4	0.1437 / 0.2142	0.2876 / 0.1186	0.0008 / 0.0732	0.1032 / 0.2405	0.1720 / 0.3259

	Death by despair Females				
	15-29	30-44	45-54	55-64	≥ 65
1	0.3365 / 0.0000	0.0704 / 0.0000	0.0134 / 0.0000	0.2356 / 0.0001	0.0155 / 0.0000
2	0.2051 / 0.0001	0.0204 / 0.0004	0.0321 / 0.0026	0.1338 / 0.0043	0.0192 / 0.0013
3	0.2054 / 0.0053	0.0206 / 0.0178	0.0364 / 0.0738	0.1458 / 0.0872	0.0174 / 0.0330
4	0.0954 / 0.4858	0.3841 / 0.1694	0.3667 / 0.0457	0.0000 / 0.1382	0.1364 / 0.1270
Regions	17	17	17	17	17
Years	2002-2014	2002-2014	2002-2014	2002-2014	2002-2014

Notes: Variables of each test: (1) 2nd stage Secondary educ. + Higher educ. + GDP per capita + Unemp.rate. (2) 2nd stage Secondary educ. + Higher educ. + GDP per capita. (3) 2nd stage Secondary educ. + Higher educ. (4) GDP per capita. All variables are logged. + Death by despair includes: suicides, drug accidental death and mental disorders due to alcohol and drugs. Tests: *Kao p-value: Modified Dickey-Fuller t - **Pedroni p-value: Modified Phillips-Perron t
Ho: No cointegration / Ha: All panels are cointegrated
Both tests show cointegration

- 2) **Panel data models: labour market entry.** 2nd stage of Secondary education -- significant and negatively associated to suicides and death by despair. GDP per capita is negative and significant for females suicides.

Discussion

- **Death by despair increases in Spain from 2010 onwards (45-54).**
- **Cointegration, death by despair and independent variables: for males, 45-54 and females, 30-44, 45-54 and ≥ 65 .**
- **Education is a potential suggestion mechanism to reduce death by despair.**

Even if these analyses do not provide full exposure of underlying causal relationships between these variables, it does attempt to highlight what is left to explain in any trends in the rates of change in these variables.