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The value of publishing data on domestic violence-related deaths in Spain: Can the introduction of an anti-violence law be useful?

Topic 5 – Who uses statistics, what do they need and how should we engage with them?

Keywords: Domestic violence, use of statistics, impact analysis

Introduction

The aim of this research study is to determine whether the Law Against Domestic Violence (Ley Contra la Violencia de Género – Ley 1/2004, Spanish Government) is effective in the long term. To do so, we will take as our reference the cases of domestic violence-related deaths (DVD) from month to month, comparing their long-term trend before and after the application of the Law. DVD are (fortunately) relatively infrequent in advanced western countries, but throughout the whole of Spain there are an average of about 5 murders per month (from the year 2000 till the present), which gives rise to family and social anguish due to the loss of human lives. As pointed out by the United Nations (2015), one of the possible causes (and possible effects, we might add) of the inequality between men and women is violence against women, which leaves its mark in those who suffer it and in the children who witness that abuse. Undoubtedly the worst kind of abuse is that which ends up in murder. Our hypothesis is that DVD follow an autoregressive pattern in time (by memorising the mean number of DVD committed every month, and previous values for DVD) and that they also depend on the implementation of measures established by the Law.

Methods / Problem statement

The official figures for DVD in Spain were analysed, by months, from January 2000 to February 2016. The data for the years 2000 to 2002 were collected from the Spanish Ministry of Equal Rights website (2009), and for the period from 2003 until the end of the study they were taken from the Spanish Government's Ministry of Health, Social Services and Equality website (2016). In an attempt to prevent biases in the results, we eliminated the outlier values that fell outside the confidence interval of 99% ($|z| \geq 2.57$), which meant that 3% of the data in our sample were outliers (6 items of data). We propose a time series model that takes into account the following parameters: Yt = f (Month, Previous values of DVD, Trend, Law effect, Trend*Law effect) (1) where each value of the number of DVD is represented by Yt| Month is a set of 11 dummy variables (values: 1 or 0) that represent each month of the year| Previous values of DVD = [Yt-1, Yt-2, …, Yt-p] is the autoregressive memory component of DVD| Trend is a tendency of the data represented by the inverse function (1/t), so that as time goes by (or t , months of measurement, increases), its effect approaches a value of zero| Law effect will be identified by a dummy variable (D_Lw), with the values of 0 (months prior to the introduction of Law 01/2004) from January 2000 until December 2007 (from t = 1 to t = 96), and with the values of 1 from January 2008 until the end (from t = 97 until t = 194).

Results / Proposed solution

We also consider the hypothesis that there is a trend, represented by (1/t), t being the month measured (from 1 to 194), and a change in trend due to the effect of the Law, represented by the interaction (1/t)*D_Lw. The data are analysed at an $\alpha = .05$. Results The results obtained were: Yt = 3.81 + [1.76·D_Ja + .04·D_Fe + .65·D_Mr + .26·D_Ap + 1.47·D_My +.06·D_Jn + 1.01·D_J l+ 1.25·D_Au + .34· D_Se + 1.04·D_Oc + 1.06·D_No] + [.24·Yt-11] + [-22.63·(1/t)] + [-3.03·D_LW] + [345.11·(1/t)*D_LW] + et (2) We have placed the terms corresponding to each part of the hypothesis inside square brackets, in accordance with Equation 1. All the

variables are significant, except the variable Month (p = .267), but we have left it because it is part of our hypothesis and because the effect of January is significant in comparison to the reference month, December (p = .025). Equation (2) can be broken down into two different equations, one for before the effect of the Law and the other for after the effect of the Law.

Conclusions

It is observed that the series has a memory of 11 months (autoregressive component) and of 12 months (monthly means), in addition to a change of intercept (significant Law effect) and which also changes tendency from before to after the Law effect ((1/t)*D_LW statistically significant). With Equation 2 it is possible to obtain a short-term prediction within their respective intervals (before and after the Law). Likewise, it is also possible to calculate the long-term prediction (Y*), bearing in mind that the month effect would be the mean of the twelve months (0.746), that Yt = Yt-1 = … = Yt = Y*, and that when t has a high value, (1/t) = 0, Y* before the Law will yield approximately 6 DVD per month, whereas after the implementation it gives 2 DVD per month. These data indicate that Law 1/2004 Against Domestic Violence: (a) has prevented, in the long term, around 4 deaths per month due to this cause, (b) the long-term DVD 'horizon' will be 2 DVD per month| given the current tendency, it will be very difficult to achieve mean values below this figure, and (c) official statistics are a useful tool for studying the trends of social processes and for assessing the impact of laws on the population under study.