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## Gender inequality and violence against women in Spain, 2006–2014: towards a civilized society

Erika M. Redding<sup>a</sup>, María Teresa Ruiz-Cantero<sup>b,c</sup>, José Fernández-Sáez<sup>b,\*</sup>, and Marta Guijarro-Garvi<sup>b,d</sup>

<sup>a</sup>School of Nursing and Health Sciences, University of Miami, Miami, FL, USA

<sup>b</sup>Grupo de Investigación de Salud Pública, Universidad de Alicante, Campus San Vicente del Raspeig, Alicante, Spain

<sup>c</sup>CIBER de Epidemiología y Salud Pública (CIBERESP), Spain

<sup>d</sup>Facultad de Ciencias Económicas y Empresariales, Universidad de Cantabria, Santander, Spain

### Abstract

**Objective**—Considering both the economic crisis of 2008 and the Gender Equality Law (2007), this study analyses the association between gender inequality in Spanish Autonomous Communities (AC) and intimate partner violence (IPV) from 2006 to 2014 in terms of socio-demographic characteristics.

**Methods**—Ecological study in the 17 Spanish AC on the correlation between the reported cases by IPV and deaths and the Gender Inequality Index and its dimensions: empowerment, participation in the labour market and adolescent birth rates; and their correlation with Young People Not in Education, Employment or Training (NEET).

**Results**—In 2006, IPV mortality rates were higher in autonomous communities with greater gender inequality than AC with more equality (4.1 vs.  $2.5 \times 10^6$  women >14 years), as were reporting rates of IPV (OR = 1.49; 95% CI: 1.47–1.50). In 2014, the IPV mortality rates in AC

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\*Corresponding author. j.fernandez@ua.es (J. Fernández-Sáez).

#### Editor in charge

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#### Transparency declaration

The corresponding author on behalf of the other authors guarantee the accuracy, transparency and honesty of the data and information contained in the study, that no relevant information has been omitted and that all discrepancies between authors have been adequately resolved and described.

#### Authorship contributions

E.M. Redding has contributed to the literature review; data collection, analysis and interpretation; manuscript writing, and approval of final version to be published. M.T. Ruiz-Cantero has contributed to the conception and hypothesis design; data interpretation; manuscript writing; critical review of the intellectual content, and approval of final version to be published. J. Fernández-Sáez has contributed to the data collection, analysis, interpretation and presentation; manuscript writing, and approval of final version to be published. M. Guijarro-Garvi has contributed to the methodological design; data analysis and interpretation; manuscript writing; critical review of the intellectual content, and approval of final version to be published.

#### Conflicts of interest

None.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.gaceta.2016.07.025](https://doi.org/10.1016/j.gaceta.2016.07.025).

with greater gender inequality fell to just below the mortality rates in AC with more gender equality (2.5 vs.  $2.7 \times 10^6$  women >14 years). Rates of IPV reports also decreased (OR = 1.22; 95% CI: 1.20–1.23). Adolescent birth rates were most associated with IPV reports, which were also associated with the burden of NEET by AC ( $p_{2006} = 0.494$ ,  $p_{2014} = 0.615$ ).

**Conclusion**—Gender-sensitive policies may serve as a platform for reduced mortality and reports of IPV in Spain, particularly in AC with more gender inequality. A reduction of NEET may reduce adolescent birth rates and in turn IPV rates.

### Keywords

Intimate partner violence; Violence against women; Gender and health; Indexes

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### Introduction

Intimate partner violence (IPV) and IPV homicides are important issues throughout the world, as thousands of women are affected by it each year.<sup>1,2</sup> It is important to recognize community traits as well as individual characteristics that influence IPV incidence. While these approaches are inherently different, both are crucial in beginning to understand predictors of IPV.<sup>3</sup>

When bearing in mind the individual level approach to IPV, there are recurring themes showed throughout literature; like the role that income and economic solvency play in IPV incidence.<sup>4–6</sup> Women who experience less economic security are at a higher risk for experiencing IPV.<sup>4</sup> Additionally, an increase in education, ideally of both the woman and her partner, decreases a woman's risk of IPV.<sup>6–10</sup>

The community approach to understanding IPV, however, is different from that of the individual one. Neighborhoods of lower socioeconomic status increase a woman's risk of experiencing IPV. Due to the stressors created from living in impoverished Spanish Autonomous Community (AC) and attempting to regulate the disorder that is an inherent aspect of these neighborhoods, women experience higher IPV rates.<sup>11</sup>

In studies conducted pertaining to the gender wage gap, it was found that a reduction in this gap also lead to a decrease in IPV and that male dominated control of resources lead to an increase in IPV.<sup>12</sup> The findings support the idea that an increase in women's economic empowerment leads to a decrease in IPV incidence. The economic situation of a certain AC and the stressors related to this can also have an impact on IPV occurrence. In Spain, regional unemployment has had an effect on the IPV rate reported. Women who live in areas with higher rates of male employment are at a higher risk for experiencing IPV.<sup>13</sup>

In 1980, during the emergence of the democratic Spain, there was an increase in emphasis on the values of a decent and civilized society. Meaning, the institutions do not humiliate the people under their authority are not in place to humiliate people through totalitarian authority, and whose members of said society cannot humiliate or harm each other.<sup>14</sup> In 2004, the specific violence against women legislation, covering the areas of health, education, social services, judicial system, police, and media, entitled Organic Law 1/2004,

of 28th December, on Comprehensive Protection Measures Against Gender-Based Violence was enacted.<sup>15,16</sup> Moreover, in Spain, two consecutive events, the adoption of the Organic Law 3/2007, of 22 March, for effective equality of women and men<sup>17</sup> and the economic crisis beginning in 2008, had important implications on the rate and occurrence of IPV during the period.

The Gender Inequality Index (GII) rises according to paradigm shifts in developmental rights, equal opportunities for both sexes, the prioritization of autonomy, and the recognition of the women's worth as agents able to participate in resource management and political decision-making processes rather than be instruments used by others.<sup>18</sup> The GII is especially important in IPV research due to its new dimensions: women empowerment and reproductive health. The addition of this last dimension is important because includes the adolescent fertility, a vulnerable population in the European countries where the frequency of youth who are not educated, employed or in training (NEET) has increased during the crisis.<sup>19</sup> The production of information is needed on the ensuing new challenges about them, to develop some specific social policies, because the youth European agenda is at risk of being subordinated to other priorities.<sup>20</sup>

Monitoring inequality and effectiveness of policies is needed.<sup>21,22</sup> Our hypothesis is that in Spain the burden of IPV has changed due to cultural shifts related to the economic crisis and the implementation of gender equality and violence against women policies. Based on this, our research calculates the GII within each Spanish AC, to analyze the association between gender inequality within AC and mortality and reporting rates of IPV in 2006 and 2014, respect to socio-demographic characteristics.

## Methods

An exploratory ecological study was developed based on number of the total official reports of violence and deaths attributed to IPV in women over 15 years by a current or former intimate partner in Spain in 2006 and 2014. The unit of analysis was each AC of Spain ( $n = 17$ ). Table 1 describes the GII, its dimensions and indicators, and data sources used to its construction. We calculated the GII for each AC following the methodology proposed by the UN

The GII reflects three dimensions of human development that usually situate women in disadvantaged positions in respect to men: empowerment, economic status and reproductive health. The GII ranges between 0 (women and men fare equally) and 1 (either gender fares as poorly as possible in the three dimensions).

We calculated mortality rates and IPV report rates per every 1,000,000 women over the age of 15 within each Spanish AC. The number of reports due to IPV was subtracted from the total population of women over the age of 15 years in order to calculate the number of women who did not report gender violence. This value was used in the association analysis between the GII (and its dimensions) and IPV reports.

The median values of the GII in Spain in 2006 and 2014 (0.104 and 0.070, respectively) were used to classify the Spanish AC into two groups for each year: AC with values less

than or equal to the median had overall gender equality, while the others had overall gender inequality.

The medians of the empowerment dimension (0.551 in 2006 and 0.571 in 2014) were used to classify the AC as those with more empowerment and those with less empowerment. We did the same in the case of participation in the labor force (0.458 in 2006 and 0.592 in 2014) and reproductive health (0.652 in 2006 and 0.678 in 2014). We calculated the probability of reporting gender violence within the population of women that lived in Spanish AC with more gender inequality; less empowerment, less participation in the labor market, and more adolescent fertility. This was compared to the probably of women living in AC with more gender equality; empowerment and participation in the labor market, and less adolescent fertility, respectively. We estimated the odds ratio (OR) with their confidence interval (CI95%).

To analyze the degree of association between the rankings of the AC according to the GII and the IPV reports rate, the Spearman's rank correlation coefficient,  $\rho$ , was used. This nonparametric association measurement ranges from  $-1$  (high discordance) to  $1$  (high concordance). This coefficient is obtained, also, to analyze the level of association between the percentage of NEET and adolescent fertility.

The average annual change that has taken place between 2006 and 2014 in the GII and its dimensions, as well as the rate reporting within the AC is analyzed through the compound annual growth rate.

The Spearman coefficient is also used to study the association degree between the average variation of the GII (and its dimensions) pertaining to various AC and the average variation of IPV report rates between 2006 and 2014.

The analysis was done with Microsoft Office Excel 2007 and Epidat3.1

## Results

The IPV mortality rates in the Spanish AC, as well as IPV reporting rates, decreased between 2006 and 2014 (range of values: 0–7.1 and 0–6.3, respectively). This picture of IPV occurs in a country with a GII that overall improved their values of equality from 2006 (0.052–0.144) to 2014 (0.047–0.112), and overall the ranking bettered in the AC with more gender inequality (see these descriptive data in Appendix 1 online).

The IPV mortality rate decreased in 2014 as compared to 2006 in all Spanish AC with the exception of Catalonia (3.3 in 2006 to 3.8 in 2014) and Madrid ( $1.9$  to  $2.5 \times 10^6$  from 2006 to 2014, respectively). Both are gender inequality AC. Galicia, a gender equality AC in 2014, experienced no IPV related deaths in in 2006, but its IPV mortality rate was 4.8 in 2014. The Balearic Islands has the highest mortality rates of all Spanish AC, although their rates decreased from 7.1 in 2006 to 6.3 in 2014 (Appendix 1).

In 2014, there was a reduction in IPV mortality in the AC with more gender inequality as compared to 2006 (2.5 and 4.1, respectively). IPV mortality is maintained in the AC with more gender equality (2014: 2.7, and 2006: 2.5) (Table 2).

Consistent with IPV mortality in 2006, the major risk of IPV reports exists in AC with the most gender inequality (OR = 1.49; CI95%: 1.47–1.50;  $p < 0.001$ ). In 2014, following the observed reduction in IPV mortality rates in AC with more gender inequality, the risk of IPV reports was reduced but remained higher than regions with more gender equality (OR = 1.22; CI95%: 1.20–1.24;  $p < 0.001$ ) (Table 3).

In respect to the GII dimensions, in 2006 there was a significant association between more adolescent fertility and the high IPV reporting rates (OR = 1.62; CI95%: 1.60–1.64;  $p < 0.001$ ). The other GII dimensions show the reverse: in AC with more gender inequality pertaining to political empowerment and participation in the labor market, there is less probability of IPV reports. In 2014, the same occurrence is observed: in the AC with more adolescent fertility there exists a greater probability of IPV reports (OR = 1.49; CI95%: 1.47–1.51;  $p < 0.001$ ); while in contrast this probability is lower in the AC with more inequality pertaining to political and labor market participation (Table 3).

There is a high and significant association between the rankings of the AC by their GII and IPV reporting rates in 2006 ( $\rho = 0.895$ ;  $p < 0.01$ ). While this association decreases, it continues to persist in 2014 ( $\rho = 0.522$ ;  $p < 0.05$ ) (Fig. 1).

The values of the compound annual growth rate between 2006 and 2014 of the GII, its dimensions, and the IPV reports rate in the Spanish AC are shown in Table 4. The AC that have the least amount of average reduction in their GII, in general, have the highest average increase in the IPV reports rate in 2014 as compared to 2006. In contrast, AC with an average reduction of inequalities between 2006 and 2014 experienced the greatest average decrease in IPV reports rate ( $\rho = -0.533$ ;  $p < 0.05$ ).

When the average reduction in adolescent fertility is lower, the average increase of IPV reports rate is higher within AC that experienced such increases between 2006 and 2014. Asturias is the only AC that experienced an average increase in fertility rate and had the greatest average increase in IPV reporting rates as compared to all AC of Spain. AC that had high reductions in adolescent fertility rates, on average, also experienced a lower average decrease of IPV reports rates ( $\rho = -0.629$ ;  $p < 0.01$ ) (Table 4).

Related to adolescent fertility, the % NEET in 2014 was 20.7% (men: 20.5%; women: 20.9%), ranging from 14% to 25.6% within the various AC; which has increased from the 12.9% (men: 9.9%; women: 16%) of 2006, ranging from 8.9% to 16.8% in the AC. There is a significant degree of association between the rankings of the AC according to their percentage of NEET and their adolescent fertility rate in 2006 ( $\rho = 0.494$ ;  $p < 0.05$ ). There is an increase in this association in 2014 ( $\rho = 0.615$ ;  $p < 0.05$ ). Through stratifying the analysis by sex, it is observed that the degree of association between the rankings of the AC pertaining to the adolescent fertility rate and the percentage of NEET is higher in women than in men. Therefore, in 2006, in the case of men, the degree of association between the rankings of the AC determined by these variables is less than that obtained in the total

population ( $\rho = 0.360$ ). Although the association increases and the result is significant in 2014 ( $\rho = 0.495$ ;  $p < 0.05$ ), this value is still lower than when the entire population is considered. The level of association, in the case of women, is not only higher than in men in 2006 and 2014, but the result is also significantly larger than when the entire population was measured, both in 2006 ( $\rho = 0.564$ ;  $p < 0.05$ ) and especially in 2014 ( $\rho = 0.748$ ;  $p < 0.01$ ) (Fig. 2).

## Discussion

The main findings indicate that a protective factor against IPV is associated with living in AC with higher rates gender inequality in 2014 as compared to 2006. Consistent with these results, the risk of IPV reports decreased in the AC with less gender equality. Another important finding is the association between reports of IPV and the fertility rate of adolescents, specifically among NEET adolescents. Our study has implications for the Spanish and possibly the global community because it seems that politic measures pertaining to gender equality, even in times of economic crisis, could contribute to a more civilized society. An understanding of this is critical to appreciate how large-scale community and even national factors can affect the health of an individual, in these case women.

The study, however, should be interpreted in the context of its limitations. Secondary data was used to determine the results. While this is not always ideal, the data reported by the Spanish Ministry of Health allowed for the application of the findings to all 17 Spanish AC. Despite using secondary data, our findings were still in accordance with previous studies pertaining to the various topics included in our study. Mortality rates should be considered with caution since come from small figures; this discouraged their standardization by groups.

There have been several studies done, pertaining to gender inequality/development and the incidence of violence against women.<sup>12,13,23–26</sup> However, to our knowledge, this study is the first of its kind to find that in AC of less gender equality in Spain, there was a decline in IPV deaths in the 2006–2014 eight-year period and the IPV mortality rate of women stayed about the same in AC with higher gender equality.

There was an overall decrease in the IPV mortality rate between 2006 and 2014. It is important to note the role that the Law for the Effective Equality of Women and Men had on the overall reduction of violence against women. This Law created a space for increased equality pertaining to the treatment of women, putting in place regulation related to the treatment of women within the economy, education, political participation, and reproductive health. These are the dimensions of GII influencing Spanish AC, where this type of gender equality did not exist before.<sup>17</sup>

When considering gender inequality and reports of IPV pertaining to the relationship between adolescents' fertility and IPV, studies that show that pregnant women are at a higher risk for experiencing IPV<sup>27–29</sup>. We found that an increase in adolescent fertility lead to a higher incidence of IPV mortality in 2006. In 2014, however, in AC where there was more

adolescent fertility, there were slightly lower rates of IPV homicides. Also, an increase in female education also reduces the probability they will experience IPV.<sup>10,30</sup> The occurrence of the economic crisis allowed us to analysis the complex relationship between IPV, adolescent fertility, and the burden of NEET. In Spain, the number of NEET is strongly associated with the number and increase in adolescent fertility. The NEET also brings up the importance of female participation in the labor force, as a lack of education also influences a woman's ability to obtain a job. The ability to work provides a woman with a level of empowerment and independence that she would not otherwise have if she were financially dependent on her partner or family. Financial dependence, and the withholding of funds, seems an effective way that men are able to manipulate and even abuse their spouses/partner.<sup>4</sup>

Governmental stances on female equality and relative 'back-wardness' or 'progressiveness' within a government are strongly related to IPV incidence. In fact, it is shown that low female participation in politics is the greatest risk factor for femicide.<sup>31</sup> The incidence in reporting of IPV is consistent with higher levels of empowerment within AC supported by studies that suggest the protective nature of contextual factors related to engendered protective measures and IPV incidence.<sup>10,11</sup> In 2015, the Spanish Governmental Organization against Gender Violence perpetuated the idea that the legal infrastructure as well as the protection of women, which varies amongst the Spanish AC, influences the rate at which women report IPV.<sup>32</sup>

Pertaining to female participation in the labor market, previous studies have determined that more economic autonomy decreases a woman's risk for experiencing IPV.<sup>4,12,33</sup> However, we found that in 2014 the AC with more female labor market participation had more IPV deaths and reports of IPV against women as compared to those with less participation. This reveals that changes in the context of violence are influenced by the interaction between traditional and contemporary gender roles; such as participation in the labor market. While these interactions can have positive women's health effects, unfortunately, they can also be negative.<sup>34</sup> Studies have shown that being the primary breadwinner in a household is important for many men.<sup>33</sup> Therefore, it is important to note that in Spain, regional male unemployment, particularly after the 2008 economic crisis, increased a woman's risk for experiencing IPV.<sup>13</sup> This could be due to the reversal of gender roles that can occur when a male becomes unemployed. Oftentimes men attempt to maintain the traditional power structure, which exists within many Spanish families, through the perpetuation of violence.<sup>13</sup> Therefore, while increased participation in the labor market and consequently financial independence is generally a benefit for the overall reduction of IPV, due to the implications of the economic crisis and male unemployment, it can actually increase a woman's risk for IPV.

This study reveals that, while there are factors such as the implementation of policy and economic unrest that influence IPV rates, it is important to consider the significance of the relationship between GII and IPV, as well as the influence the economy has on not only family dynamics but also the availability of resources for abused women. In fact, women face more difficulties to end a violent relationship in a context of economic constraints.<sup>33,35</sup> This study can be implemented in other countries worldwide, as the findings from other such

studies could uncover important connections between inequality and violence against women, improving the situation of women globally.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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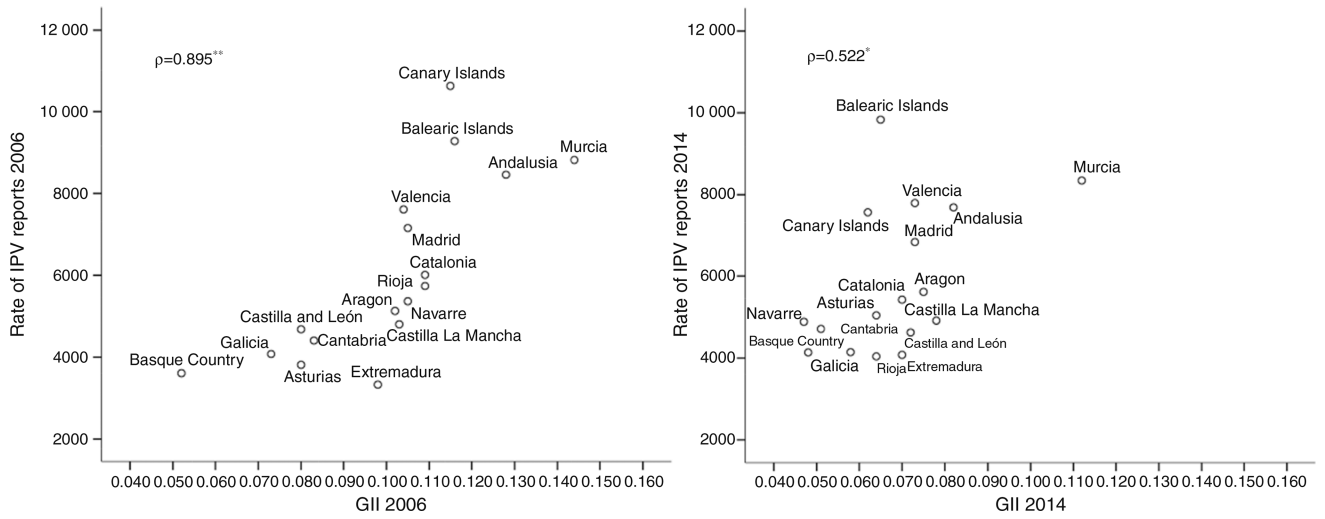
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**What is known about the topic?**

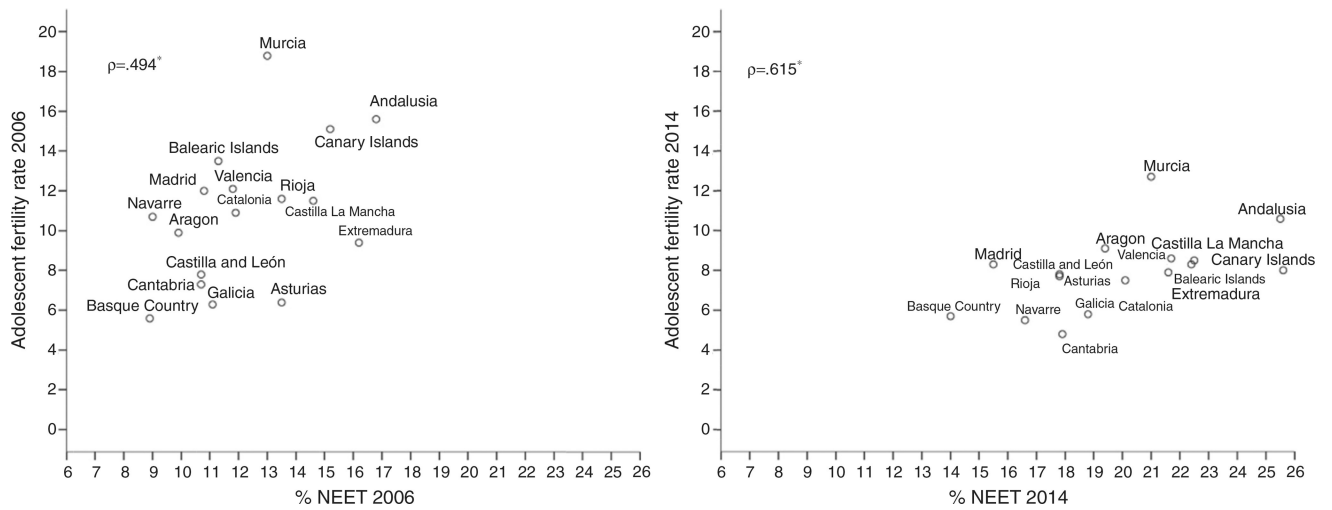
Democratic delays in terms of gender equality seem to be a relevant factor in the cause of death of women through gender violence. The rates of regional unemployment and wage inequalities increase the probability of violence against women by an intimate partner. In times of economic recession, like the economic crisis in Spain, this association can be translated into an increase in the vulnerability of women to intimate partner violence.

**What does this study add to the literature?**

It was determined that in autonomous communities with more gender inequality, there was a reduction in the deaths of women caused by intimate partner violence in the 8-year period between 2006 and 2014. During this period these autonomous communities reached levels of violence similar to those with more gender equality. The context of the economic crisis permits the complete analysis of the relationship between intimate partner violence, adolescent fertility, and the rate of uneducated and unemployed youth. We observed an association between the rate of reports of intimate partner violence and adolescent fertility. This association was most significant amongst uneducated and unemployed adolescents.



**Figure 1.** Relationship between Gender Inequality Index and reports rate of intimate partner violence in the Spanish regions, 2006 and 2014.



**Figure 2.** Relationship between young people who neither study nor work and adolescent fertility rates in the Spanish regions, 2006 and 2014.  $\rho$  = Spearman rank coefficient measures the degree of association between the ranking of the Spanish regions according to the proportion of NEET and the adolescent fertility rate.<sup>a</sup> $p < 0.05$ .

**Table 1**

Definitions and data sources of the study variables.

Variable	Definition	Data sources
Intimate partner violence mortality rate	Number of deaths due to IPV per every 1,000,000 women over the age of 14	Ministry of Health, Social Services, and Equality
Intimate partner violence reports rate	Number of intimate partner violence reports per every 1,000,000 women over the age of 14	Ministry of Health, Social Services, and Equality
Not in education, employment or training	Percentage of young people aged 15 to 29, who in an interview said that during an average week not gainfully employed and had not followed any training study within four weeks prior to the interview	Ministry of Education, Culture and Sports
Gender Inequality Index	The Gender Inequality Index reflects gender inequalities in three dimensions: reproductive health, empowerment and labor market participation.	Own elaboration following the methodology proposed by the United Nations Development Program ( <a href="http://hdr.undp.org/sites/default/files/hdr14_technical_notes.pdf">http://hdr.undp.org/sites/default/files/hdr14_technical_notes.pdf</a> )
Maternal mortality rate	Number of dead women during pregnancy or during the first 42 days after giving birth per every 100,000 live births	Spanish National Institute of Statistics
Adolescent fertility rate	Number of births from women ages 15–19 years, per every 1,000 women	Spanish National Institute of Statistics
Education	Percentage of females and males, ages 25 years, with at least some secondary education	National Health Survey of Spain
Political participation	Percentage of parliamentary seats occupied by females and males	Regions Parliamentary Websites
Labour market participation	Labor force participation rate of female and male populations between ages 15–64	Labor Force Survey of Spain, Spanish National Institute of Statistics

**Table 2**  
Mortality rate due to intimate partner violence according to the Gender Inequality Index in the Spanish regions, 2006 and 2014.

	2006			2014		
	Deaths	Women >15 years	Rate × 1,000,000	Deaths	Women >15 years	Rate × 1,000,000
<i>Gender Inequality Index</i>						
Inequality	54	13,305,829	4.1	39	15,357,198	2.5
Equality	15	5,932,917	2.5	13	4,775,919	2.7
<i>Empowerment</i>						
Less	39	9,029,448	4.3	32	12,491,984	2.6
More	30	10,209,298	2.9	20	7,641,133	2.6
<i>Labor market</i>						
Less	36	8,872,531	4.1	19	7,835,413	2.4
More	33	10,366,215	3.2	33	12,297,704	2.7
<i>Adolescent fertility</i>						
More	58	13,857,669	4.2	28	12,443,517	2.3
Less	11	5,381,077	2.0	24	7,689,600	3.1

**Table 3**  
 Reports due to intimate partner violence according to the Gender Inequality Index in the Spanish regions, 2006 and 2014.

	2006				2014					
	Reports	Non-reports	OR	CI95%	P	Reports	Non-reports	OR	CI95%	P
<i>Gender Inequality Index</i>										
Inequality	85,467	11,168,680	1.49	(1.47– 1.50)	< 0.001	98,394	14,784,786	1.22	(1.20– 1.24)	< 0.001
Equality	40,826	7,943,773				28,348	5,221,589			
<i>Empowerment</i>										
Less	51,680	8,140,876	0.93	(0.92– 0.94)	< 0.001	73,326	11,925,611	0.93	(0.92– 0.94)	< 0.001
More	74,613	10,971,577				53,416	8,080,764			
<i>Labor market</i>										
Less	50,931	8,011,099	0.93	(0.92– 0.94)	< 0.001	25,591	5,675,865	0.64	(0.63– 0.65)	< 0.001
More	75,362	11,101,354				101,151	14,330,510			
<i>Adolescent fertility</i>										
More	85,165	10,707,679	1.62	(1.60– 1.64)	< 0.001	89,476	12,354,041	1.49	(1.47, 1.51)	< 0.001
Less	41,128	8,404,774				37,266	7,652,334			

OR: odds ratio; CI95%: confidence interval of 95%.

**Table 4**

Values of the compound annual growth rate between 2006 and 2014 of the Gender Inequality Index and its dimensions, and intimate partner violence reports rate in the Spanish regions.

Autonomous Community	Gender Inequality Index	Labor force	Empowerment	Adolescent fertility	Intimate partner violence reports
Andalusia	-0.0541	0.8511	0.0054	-0.0470	-0.0119
Aragón	-0.0372	0.8362	0.0040	-0.0116	0.0113
Asturias	-0.0263	0.8235	0.0062	0.0241	0.0355
Balearic Islands	-0.0692	0.8514	0.0067	-0.0588	0.0073
Basque Country	-0.0088	0.8131	0.0045	0.0009	0.0172
Canary Islands	-0.0753	0.8406	0.0042	-0.0763	-0.0415
Cantabria <sup>d</sup>	-0.0586	0.8239	0.0072	-0.0496	0.0084
Castilla and León	-0.0124	0.8261	0.0077	-0.0017	-0.0015
Castilla-La Mancha	-0.0351	0.8447	0.0114	-0.0371	0.0028
Catalonia	-0.0529	0.8344	0.0033	-0.0448	-0.0128
Extremadura	-0.0406	0.8433	0.0035	-0.0228	0.0256
Galicia <sup>d</sup>	-0.0276	0.8159	0.0073	-0.0094	0.0020
Madrid	-0.0441	0.8270	0.0066	-0.0457	-0.0058
Murcia	-0.0310	0.8408	0.0045	-0.0479	-0.0068
Navarre <sup>d</sup>	-0.0943	0.8143	0.0061	-0.0788	-0.0117
Rioja	-0.0638	0.8253	0.0113	-0.0539	-0.0429
Valencian C. <sup>d</sup>	-0.0425	0.8232	0.0027	-0.0412	0.0030
Spearman rank coefficient <sup>a</sup>	-0.533 <sup>b</sup>	-0.137	-0.100	-0.629 <sup>c</sup>	

<sup>a</sup> Spearman rank coefficient between the compound annual growth rate of the GII (and its dimensions) and the compound annual growth rate of IPV reports rate.

<sup>b</sup>  $p < 0.05$ .

<sup>c</sup>  $p < 0.01$

<sup>d</sup> These regions have no deaths caused by IPV in 2006.