REGIONAL DIFFERENCES OF FERTILITY IN SPAIN IN 1981–2011 BASED ON BASIC SUMMARY INDICATORS FROM PERIOD FERTILITY TABLES

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Abstract
In this paper, regional differences in fertility behavior across the Spanish NUTS2 regions are analyzed for the years 1981, 1991, 1999, and 2011 using basic summary indicators from period fertility tables. The indicators used are parity- and age-adjusted total fertility rate, table mean age of mother at birth, and parity progression ratios. The results show that the differences in the quantum of fertility across Spanish regions have been disappearing over the years, but still persist in some form, most noticeably in relation to first-order births. Two groups of regions were identified using the parity progression ratios. The first group is characterized by the existence of two subpopulations, while the second one has no such subpopulations. The two subpopulations present in some regions consist of women who have had two children, and women who are more likely to go on to have a fourth child or more. Specific local attributes of fertility behavior in, for example, Madrid, Asturias, Andalusia and Murcia, Galicia are discussed.

Keywords: period tables, fertility, parity, Spain, regional differences **Demografie,** 2021, **63: 105–118**

INTRODUCTION

Spain and Italy were among the first countries in which fertility rates fell to below 1.3 children per woman in the 1990s (*Kohler – Bilari – Ortega*, 2002). This phenomenon, which soon occurred in many other countries as well, became the subject of many demographic studies. Fertility levels below 1.3 children per woman were designated by Ortega and Kohler (2002) as the "lowest-low fertility". They concluded that such low rates occur when fertility is postponed and the proportion of children born in higher birth orders decreases. In Spain, the sharper decrease in fertility began as early as the mid-1970s. At that time, up to 35% of children were born in the third and higher birth orders, but by 1995 that figure was only 12%. This trend was accompanied by a significant increase in the mean age of the mother at childbirth, rising from 28.5 years in around 1975 to almost 31.0 years by the end of the millennium (*Human Fertility Database,* 2019ab).

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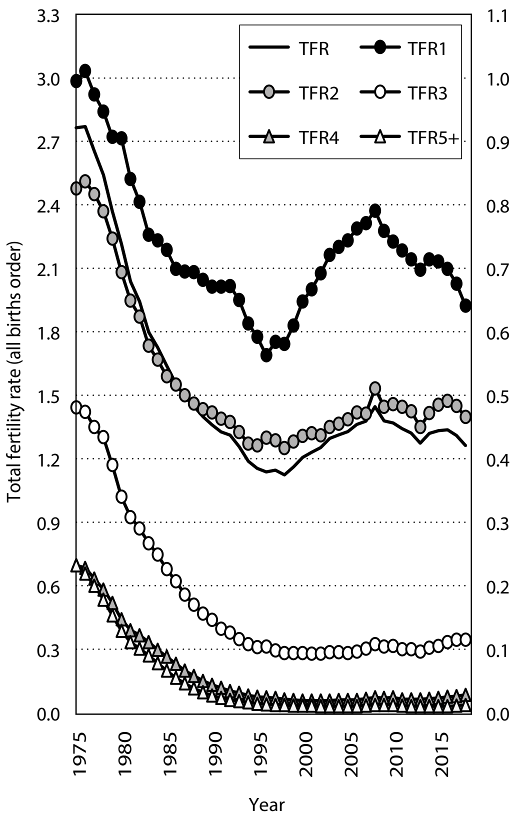
These changes in reproductive behavior were followed by different patterns after 2000, with the fertility rate in Spain stabilizing at lower levels, and even rising slightly between 2005 and 2010 (Figure 1). The increase in the mean age of mothers at childbirth has remained. However, a closer look at mean age by birth order reveals that mother's age at first birth rose most significantly between 1975 and 2015 (by about 5.5 years), while for third-born children the increase was two years, and for higher birth orders there were no noticeable shifts in the timing of fertility (Figure 2) (*Human Fertility Database,* 2019ab). As already mentioned, this was associated with a decrease in the proportion of third-order and higher births, which can be explained by many different hypotheses: for example, that women "have left it too late to give birth to more than two children" having delayed the onset of parenthood. Questions were raised about the extent to which postponed fertility is physically compensable at an older age (*Leridon,* 2010) and so attempts were made to reflect the potential compensation in period fertility indicators.

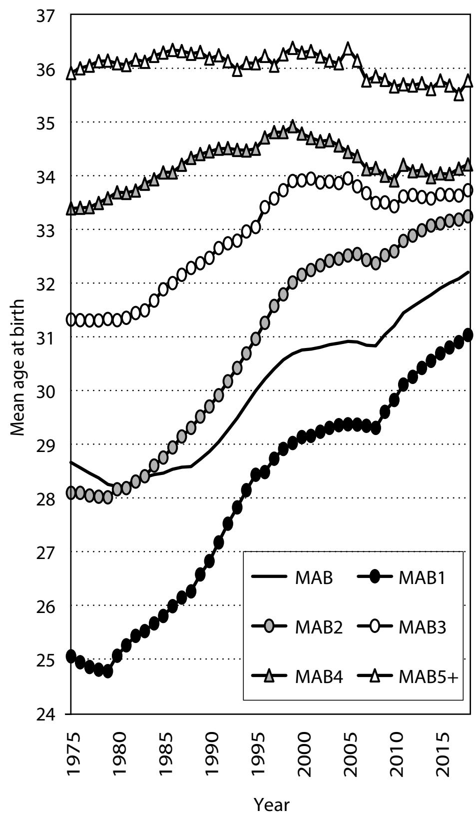
The indicator that is conventionally used to express fertility is the total fertility rate, which can be defined as "the total number of children born or likely to be born to a woman in her life time if she were subject to the prevailing rate of age-specific fertility in the population" (*World Health Organization*, 2020). But in the 1990s, the distribution of age-specific fertility rates changed significantly, and, in some cases, the total fertility rate lost its explanatory power. Therefore "it is appropriate to use alternative fertility indicators

Figure 1 **Total fertility rate, total (TFR) and by birth order (TFR1–TFR5+), Spain, 1975–2018**



Sources of data: Human fertility database (2019a).

Figure 2 **Mean age at birth, total (MAB) and by birth order (MAB1– MAB5+), Spain, 1975–2018**



Sources of data: Human fertility database (2019a).

in addition to the commonly used total fertility rate" (*Zeman*, 2011). One option is to use the period fertility tables constructed by the Human Fertility Database (HFD). According to the HFD (2019), changes in the timing of births tend to have less impact on the indicators obtained by this method.

The aim of this paper is to analyze fertility in Spain applying the period fertility table indicators. Spain is a fairly heterogeneous country, and this is reflected in the social, economic, and cultural spheres (*Gutiérrez Sanchís,* 2019). For example, according to Eurostat, regions such as Andalusia, Murcia, Castille-La Mancha, and Extremadura differ from other NUTS2 regions in Spain in terms of unemployment rate, GDP per capita, and take-up of early childhood education. Baizán (2009) explores the relationship between these variables and the higher fertility rates in these regions. However, the purpose of this paper is not to examine the factors affecting the regional differentiation of fertility, but to identify and describe these differences using alternative fertility indicators. This is done at the NUTS2 regional level, which corresponds to the Spanish Autonomous Communities (AC), for selected years between 1981 and 2011.

METHODOLOGY AND DATA

Period fertility tables (PFT), constructed using the HFD methodology, are multistate models. Each state is defined by women's parity, which refers to the number of children born to a woman over her lifetime. The principle underpinning the construction of the tables is that women move between these parity states and that the likelihood of these transitions can be determined based on the probability of having an *ith* birth at age interval [x, x+1) (denoted as $q_i(x)$, see Table 1). The probabilities are calculated using an indirect method based on empirical conditional age- and parity-specific fertility rates (denoted as $m_i(x)$, see Table 1). The construction of $m_i(x)$ requires the disaggregation of women by age and parity as well. Such data are available in census years, or in some cases can be replaced by fertility survey data. That is why 1981, 1991, 1999, and 2011 have been selected as the years of analysis in this paper. The resulting period fertility tables consist of table functions that are always attached to a certain parity (denoted *i*). The notation and the definitions of the functions are given in Table 1.

The basic summary indicators of the PFTs are the parity- and age-adjusted total fertility rate (PATFR) and table mean age of mother at birth (TMAB), both of which can be calculated either for all birth orders combined or for each birth order separately ($PATFR_i$ and $TMAB_i$) (*Jasilioniene et al.,* 2009). The formulae used for this purpose are defined according to the HFD Methods Protocol:

$$PATFR_i = \frac{\sum_{x_{min}}^{x_{max}} b_i(x)}{10000}$$

$$TMAB_i = \frac{\sum_{x_{min}}^{x_{max}} \bar{x} \times b_i(x)}{\sum_{x_{min}}^{x_{max}} b_i(x)}$$

Note: $\bar{x}$ is simplified by x+0.5

Table 1 **Period fertility table functions**

$w_i(x)$	Relative distribution of female population exposure by parity (population weights): $\sum_i w_i(x) = 1$
$E_i(x)$	Female population exposure by parity: $E_i(x) = w_i(x) \times E(x)$
$m_i(x)$	Conditional age-specific fertility rates in age interval [x, x+1)
$q_i(x)$	Probability of having an *ith* birth in age interval [x, x+1)
$l_i(x)$	Table population of parity *i* at age *x*
$b_i(x)$	Table number of births of order *i* in age interval [x, x+1)
$L_i(x)$	Table population exposure of women of parity *i* in age interval [x, x+1)
$Sb_i(x)$	Cumulative (in respect to age) births of order *i* by exact age *x*

Source: Jasilioniene et al., 2009.

The PTF can also be used to calculate parity progression ratios (a_i), which express the probability of a woman with *i–1* children giving birth to an *ith* child. Jasilioniene et al. (2009) define this indicator using cohort fertility tables, but Rallu and Toulemon (1994) state that a_i is an example of a period fertility indicator. In the present paper, probabilities of having second, third and fourth child are studied. Probability of having first child equals to $PATFR_1$ and is analyzed in the part of fertility level and timing analysis. The parity progression ratio is calculated using the formula:

$$a_i = \frac{PATFR_{i+1}}{PATFR_i}$$

Data from the Statistical Office of Spain and IPUMS are entered into the PFT. IPUMS is "a project of the Minnesota Population Centre and national statistical agencies, dedicated to collecting and distributing census data from around the world" (*Ruggles et al.*, 2015). The entry data for the years 1981, 1991, and 2011 are a combination of data from the Spanish population registers and yearbooks, which are provided by Statistical Office of Spain. To get parity distributions of women, data from censuses held in those years were downloaded from IPUMS. The exception is the parity data for women in 1999, which was obtained from the fertility survey. These data were taken from aforementioned Statistical Office of Spain too. There are limitations to working with such data (the statistical set is smaller than that from the census), but these data most closely resemble the data in the 2001 census. In the 2001 census, women in Spain were not asked how many biological children they had.

RESULTS

Regional differences in terms of fertility level and timing

Figures 3–5 show the Spanish Autonomous Communities divided into four categories that represent all the various combinations of the low and high values of table mean age of mother at birth (TMAB) and the parity- and age-adjusted total fertility rate (PATFR); both indicators are specified by birth order. The cut-off point separating ACs with higher TMABs or PATFRs from ACs with lower ones is the average of all regional values. The simple arithmetic mean was computed from TMAB and PATFR specified by birth order of a child.

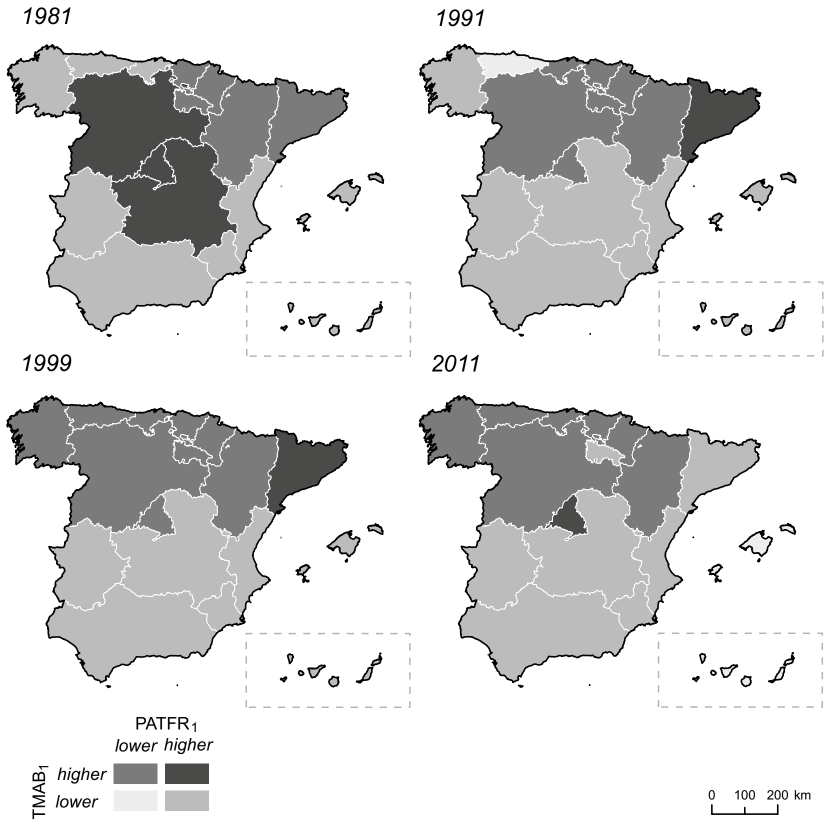
For all birth orders and years, the ACs in the south (excluding the Canary Islands) were characterized by higher fertility. This finding corresponds to results published in other studies (*Bussler*, 2016; *Baizán,* 2009; *Gutiérrez Sanchíz*, 2019); however, these other studies used the conventional total fertility rate, not PATFR. The authors also concluded that the northern ACs could be described as exhibiting lower fertility levels. In our study, this spatial pattern did not apply to third-order births (as can be seen in Figure 5), especially in 2011. The regions with above-average parity- and age-adjusted total fertility rate for third-order births ($PATFR_3$) were located in central and northern Spain, and two ACs in the south (Andalusia and Murcia). Thus, the statement that "the North-South divide [higher fertility in the south and lower in the north] still persists in some aspects of demographic behavior" (*Arpino – Tavares*, 2013) no longer applies to all birth orders. For example, ACs in the north – Catalonia, Navarra, La Rioja, and the Basque Country[3)] – did not fit this pattern in 2011, as the parity- and age-adjusted total fertility rate was higher for second- and third-order births ($PATFR_2$ and $PATFR_3$).

At first glance, the regional differences concerning second- and third-order births seem to have the same spatial distribution as in 1991, when, in addition to Madrid, there were three macro-regions (Figures 4 and 5). The significant differences in reproductive behavior between the Autonomous Communities within these macro-regions in 1991 may have been caused by differences in first-order birth fertility.

Andalusia and Murcia are the only ACs in Spain with above-average PATFR for each birth order, in each year and a lower mean mother's age at birth, except for third-order births in 1999. Andalusia was one of the few ACs with a high proportion of third-order and higher births. After calculating the relative share of $PATFR_1$, $PATFR_2$ and $PATFR_3$ in relation to total PATFR, in 1999 parity- and age-adjusted total fertility rate for third-order births ($PATFR_3$) accounted

3) The locations of the regions and their names (and the abbreviations used later in the paper) are given in Appendix 1.

Figure 3 **Autonomous Communities grouped by PATFR and TMAB, first-order births**



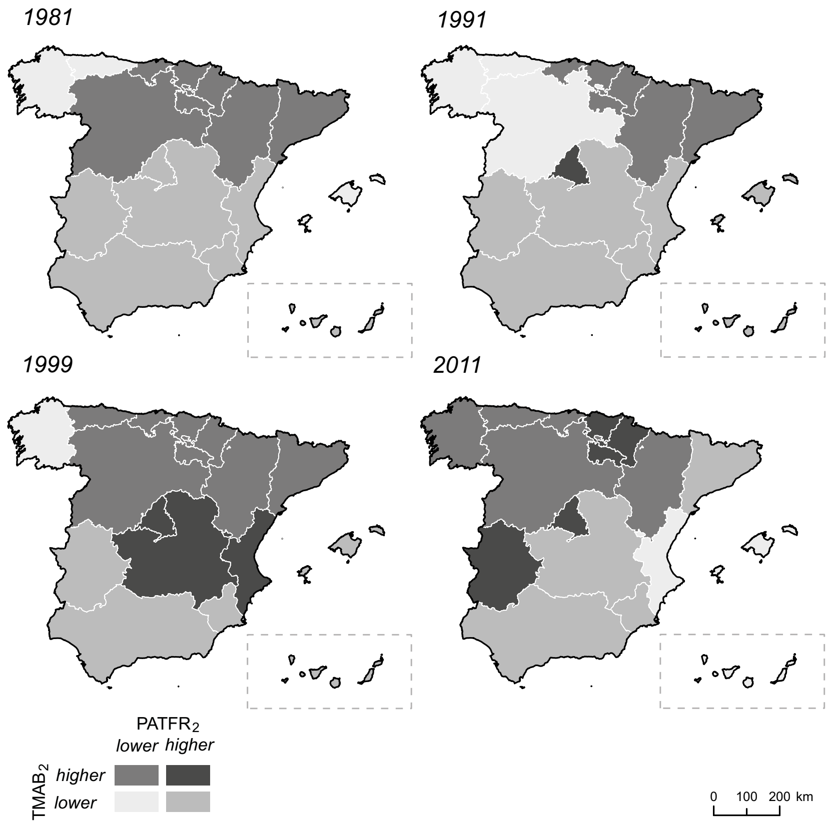
Sources of data: INE (2019), IPUMS (2019); **Sources of shapefiles:** Eurostat (2020).

for more than 7% of total PATFR, and almost 10% after fourth- and higher order births are added. In the other ACs, in 1999 fertility for third- and higher order births constitutes less than 5% of total fertility. As in Andalusia, third- and higher order births could be found more frequently in Extremadura, Castille-La Mancha, Murcia, and the Balearic Islands (Figure 5). This could lead to the conclusion that, in these regions, the overall shift in table mean age of mother at birth (TMAB) for all orders in 1999 had not yet resulted in a more pronounced decrease in fertility intensity in higher birth orders. Thus, the populations living in Castille-La Mancha, Extremadura, Murcia, the Balearic Islands, and Andalusia were not so keen on having fewer children and continued to have larger families despite the mothers being older. This can be seen in the fact that it was only in these ACs that the proportion of $PATFR_{3+}$ was more significant.

Aragon, on the other hand, is the only AC with a lower fertility rate and higher mother's mean age at childbirth for each year observed. This may be linked to the observations Baizán (2009) made: namely, that Aragon has a lower unemployment rate (*Gutiérrez Sanchís*, 2019) and lower take-up of early childhood education, which may be reflected in a higher TMAB over the long term.

Like Aragon, Galicia has lower fertility, and mean mother's age at birth is also lower (except in 2011) (Figures 3–5). However, first-order fertility is different: in 1991 and 1981, Galicia had a higher $PATFR_1$ than other regions did. This can be explained, for example, by the fact that in the first two years observed, people in Galicia were more focused on having their first child than women in other ACs: both the TMAB and PATFR for later birth orders were lower in 1991 and 1981 than in many other Spanish regions.

Figure 4 **Autonomous Communities grouped by PATFR and TMAB, second-order births**

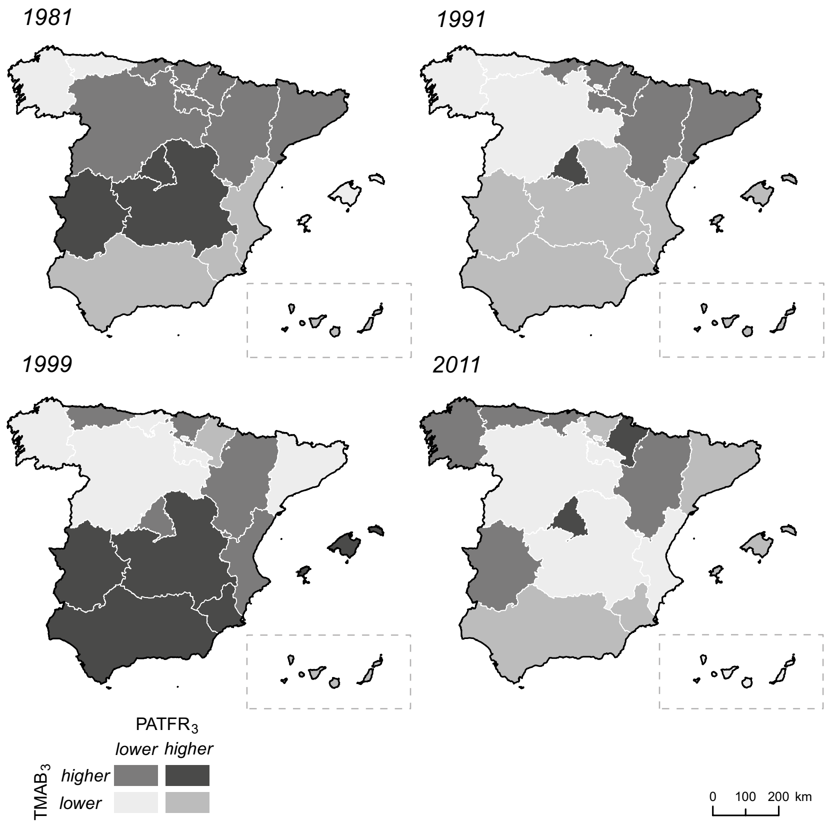


Sources of data: INE (2019), IPUMS (2019); **Sources of shapefiles:** Eurostat (2020).

Madrid had both a higher mean mother's age at birth and PATFR in 2011. Whereas at the end of the last millennium, it was mainly in the cities that fertility postponement led to a reduction in the fertility rate, recently, in more advanced regions, or states, fertility rates have tended to be higher than is the case in the superior territorial units. Baizán (2009) gives the example of Nordic countries, where there are higher female labor-force participation rates (conventionally taken as a sign the country is more advanced) and higher fertility. On this basis, Baizán (2009) concludes that the relationship between the women's labor-force participation rate and the total fertility rate is U-shaped. Madrid is Spain's most developed region, as measured by various economic indicators (*Eurostat*, 2019). So, when considering the relationship between level of development and fertility described by Baizán (2009), it may be that this also explains why Madrid had a consistently higher PATFR in 2011. In 1991 and 1999, Madrid's $PATFR_1$ was lower than the Spanish mean, while $PATFR_2$ was higher than the mean. Madrid may therefore have had a relatively higher proportion of women who remained childless in 1991 and 1999, but when they did go on to have children, they were more likely to have more than one, despite being older than average at birth, compared to women in other ACs.

A final point worth mentioning is that this method of analysis has several weaknesses relating to the use of average values. These are sensitive to outlier observations and do not account for marginal differences between regions. For example, looking at first-order births in 1981, in every region $PATFR_1$ ranged between 0.97 and 1.00 children per woman, but Figure 3 shows that at least five regions are classified as having lower fertility.

Figure 5 **Autonomous Communities grouped by PATFR and TMAB, third-order births**



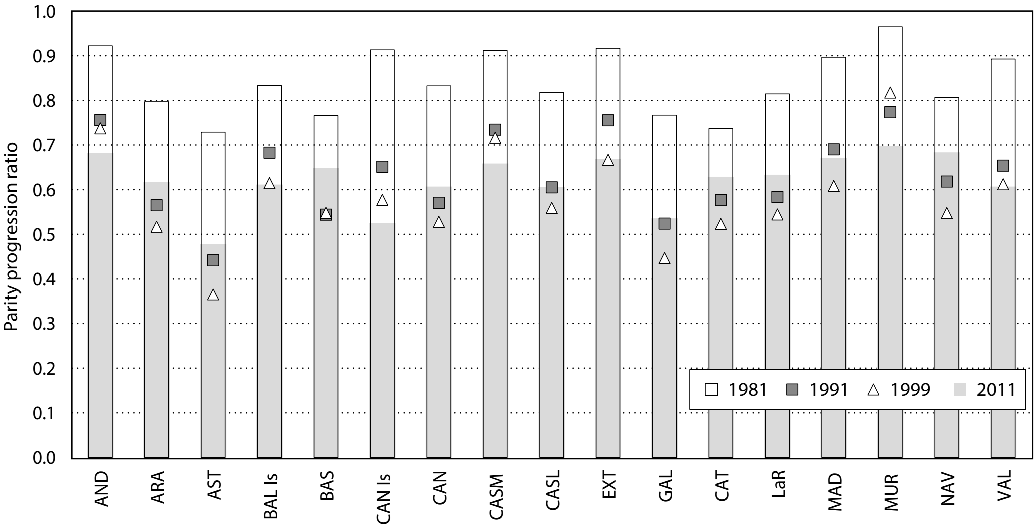
Sources of data: INE (2019), IPUMS (2019); **Sources of shapefiles:** Eurostat (2020).

Regional differences in terms of parity progression ratios

In all ACs the probability of a woman giving birth to a second child (parity progression ratio from first to second child, denoted a_1) was higher in 1981 than it was in 2011 (Figure 6). In regions that typically had higher fertility rates, such as Murcia, Andalusia, or Extremadura, a_1 exceeded 0.9 in 1981, indicating that in those regions less than 10% of female exposure remained one-child, according to the fertility schedule used in the PFT. In all regions except Murcia, a_1 was slightly higher in 1991 than in 1999. In Murcia, the probabilities were higher in all years. In 1981, in the Basque Country, Catalonia, and Navarra, parity progression ratios for women with a second child were relatively lower than in the other ACs, but did not fall so steeply between 1981 and 2011. Thus, the difference between 1981 and 2011 in those ACs is lower, than in the rest of the regions, which indicates, that in 2011 they were not the ones with relatively lower a_1 anymore. Asturias is also worth mentioning: just under half the women there went on to give birth to a second child in 1991, 1999, and 2011.

Next, the parity progression ratio from second to third child (a_2) was analyzed (Figure 7). In 1981, in regions such as Andalusia, the Canary Islands, Castille-La Mancha, Extremadura, and Murcia, almost half the women transitioned from second to third child, whereas in 2011 the a_2 in those regions fell to close to 0.2. The exception was again Murcia, where a_2 was close to 0.3. In contrast, in Catalonia, there is no difference between 1981 and 2011: a_2 was 0.25 in both years. Other Spanish regions where the parity progression ratios from second to third child were not so high in 1991 did not experience a steep decline in a_2 either.

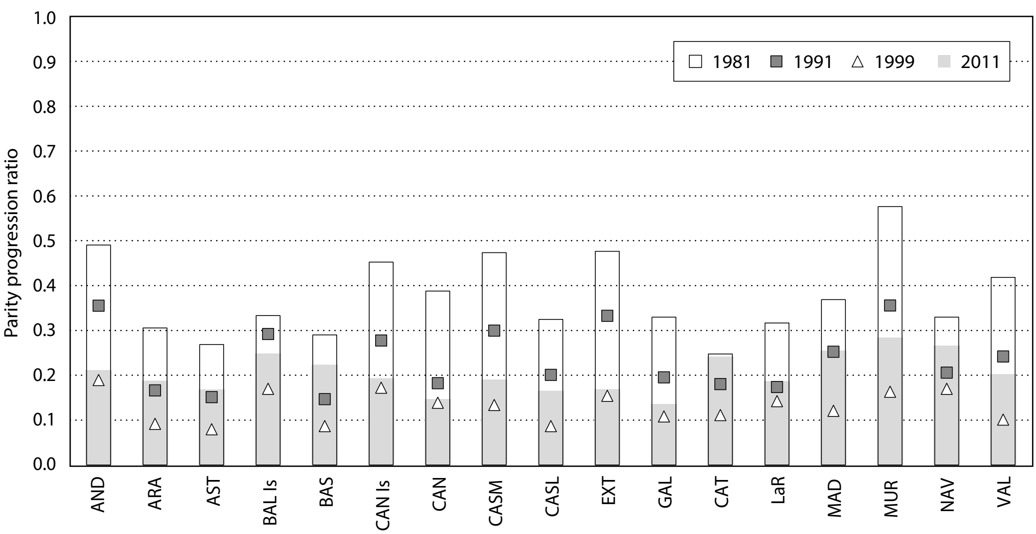
Figure 6 **Parity progression ratio of women with one child**



Sources of data: INE (2019), IPUMS (2019).
Note: For an explanation of the abbreviations see Appendix 1.

In certain regions, the parity progression ratios to third child for 1991 and 1999 share similarities. The Basque Country, Cantabria, La Rioja, and Navarra are both geographically closer, being located in the north of the country (Appendix 1), and had a similar a_2 in both 1991 and 1999. In this respect, these regions are noticeably different from, for example, Andalusia, Castille-La Mancha, Extremadura, or Murcia, where between 1991 and 1999 the parity progression ratio for a woman with two children fell dramatically.

Figure 7 **Parity progression ratio of women with two children**



Sources of data: INE (2019), IPUMS (2019).
Note: For an explanation of the abbreviations see Appendix 1.

The more pronounced decline in a_2 in these more southern ACs seems to have occurred after 1991. Not earlier, as was the case in most of the northern regions, where a_2 either fell much less steeply between 1991 and 1999, or remained the same.

Figure 8 shows the parity progression ratio from three to four children (a_3). The evolution of a_3 can be contrasted with that for lower-order births: in some regions, the parity progression ratio to fourth child was lower in 1981 than it was in 2011. This may be because the indicator selects highly family-oriented women, who having had three children are highly likely to have a fourth as well.

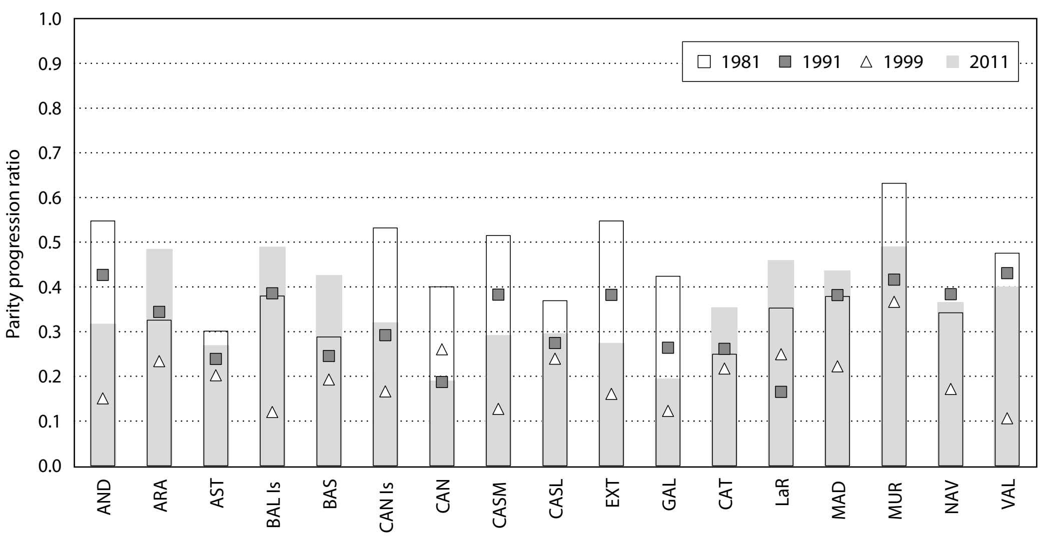
It is also worth comparing Figures 7 and 8. In 1981, a_2 and a_3 were similar, but in 2011 the values of a_3 exceeded those of a_2 in many regions. This indicates that while women were equally likely to have three or four children in 1981, two subpopulations had emerged by 2011 in some regions (Aragon, the Balearic Islands, the Basque Country etc.). The first subpopulation comprises women who were likely to stop at two children, while the second subpopulation was more likely to go on to have at least four children, but less likely to stop at three.

CONCLUSION

In recent decades, significant changes have been observed in the reproductive behavior of populations in virtually all European countries. Spain is one of the most prominent cases, having had one of the highest fertility rates in Europe until the 1970s (between 1960 and 1975 the total fertility rate was 2.8–3.0 children per woman), but by 1995 it ranked bottom of the list (at 1.16 children per woman) (*Cabré Pla*, 2003). Significant changes in reproductive behavior at the national level tend to indicate even greater differences at the regional level.

Spain, like many other developed countries in Europe, is characterized by significant differences in the intensity and structure of basic demographic indicators across its regions[4]. In this paper, the parity- and age-adjusted total fertility rate, table mean age at birth, and parity progression ratios were used to examine fertility differences among the Spanish NUTS2 regions. These alternative fertility indicators point to a slight increase in the heterogeneity of fertility behavior in 1981–2011 and an associated weakening of the typical North–South regionalization in Spain, but still persisting in some form in 2011.

Figure 8 **Parity progression ratio of women with three children**



Sources of data: INE (2019), IPUMS (2019).
Note: For an explanation of the abbreviations see Appendix 1.

4) See for example: https://ec.europa.eu/eurostat/statistical-atlas/gis/viewer/?

The North–South divide is mainly down to differences in the fertility of first-time mothers (Figure 3). In higher birth orders, especially in 2011, the "softening" of this divide may be down to higher parity- and age-adjusted total fertility rates in, for example, the Basque Country, Navarra, La Rioja, and Catalonia. In these regions, along with Madrid, Aragon, and the Balearic Islands, the parity progression ratios from third to fourth child were higher in 2011 than in 1981. Perhaps this is what distinguishes these regions from the remaining ACs. If so, one could conclude that Spain is no longer a state with "higher fertility and younger mothers in the south" and "lower fertility and older mothers in the north". But the regionalization can be viewed from another angle; the parity progression ratios in the Basque Country, Navarra, La Rioja, Catalonia, Madrid, Aragon, and the Balearic Islands may indicate the existence of two subpopulations of women, where the first comprises mothers with a maximum of two children and the second mothers with more than three children. During the studied period, both probability of having second child and probability of having third child decreased in these regions. In 1981 the probability of having third child was approximately the same as the probability of having fourth. But, in these ACs, the probability of a woman with three children going on to have a fourth increased between 1981 and 2011, even though a_2 didn't. It is this fact, that makes these regions significantly different from the remaining ACs, because it indicates, that during the studied period two subpopulations emerged in them; one preferring two children or less, second more than three.

When the regional differentiation is viewed from this perspective, geographical location ceases to be the visual link between the regions. However, the ACs can still be divided into two groups depending on whether the patterns of a maximum two-child families or more than three-child families are implemented in the region, or not. Therefore, although the authors of some of the more recent studies note a slight reduction in differences in fertility between ACs in Spain (*Bussler*, 2016), the two ACs groups can still be identified, but northern or southern affiliation plays less of a role.

Reproductive behavior will continue to change in Spain, although perhaps not so markedly as over the last few decades. In the long term, the differences in, for instance, fertility and timing indicators will probably continue to decline in all the various regional classification units. Nevertheless, it can be assumed (as confirmed by the results of this study) that despite the significant changes in the past, certain regional patterns of reproductive behavior will maintain and will always reflect the specific local subpopulations.

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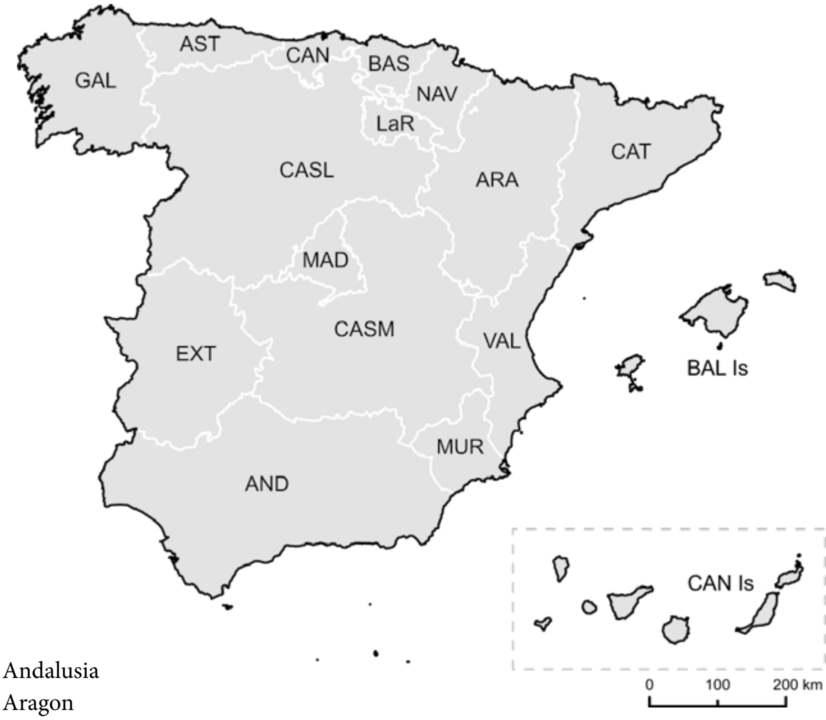
Appendix 1 **Spanish NUTS2 Regions (Autonomous Communities) and abbreviations**



AND	Andalusia
ARA	Aragon
AST	Asturias
BAL Is	Balearic Islands
BAS	Basque Country
CAN	Cantabria
CAN Is	Canary Islands
CASL	Castilla y Leon
CASM	Castilla-La Mancha
CAT	Catalonia
EXT	Extremadura
GAL	Galicia
LaR	La Rioja
MAD	Madrid
MUR	Murcia
NAV	Navarra
VAL	Valencian Community

Sources of data: Eurostat (2020).

Appendix 2 **Parity- and age-adjusted total fertility rate (PATFR) and table mean age of mother at birth (TMAB), Spain, Autonomous Communities, 1981 and 1991**

Year	Indicator	AND	ARA	AST	BAL Is	BAS	CAN	CAN Is	CASL	CASM	CAT	EXT	GAL	LaR	MAD	MUR	NAV	VAL
1981	**PATRF1**	1.00	0.98	1.00	0.99	0.97	0.99	1.00	0.99	1.00	0.99	1.00	1.00	0.98	0.99	1.00	0.97	0.99
1981	**PATFR2**	0.92	0.78	0.73	0.83	0.74	0.83	0.91	0.81	0.91	0.73	0.92	0.76	0.80	0.89	0.96	0.78	0.88
1981	**PATFR3**	0.45	0.24	0.19	0.28	0.22	0.32	0.41	0.26	0.43	0.18	0.44	0.25	0.25	0.33	0.55	0.26	0.37
1981	**PATFR4+**	0.25	0.08	0.06	0.10	0.06	0.13	0.22	0.10	0.22	0.05	0.24	0.11	0.09	0.12	0.35	0.09	0.18
1981	**TMAB1**	22.30	23.83	22.51	22.85	24.76	23.07	22.33	23.67	23.38	23.98	22.43	22.01	24.83	23.39	22.32	25.48	23.27
1981	**TMAB2**	28.23	29.55	28.60	28.33	30.12	28.97	28.37	29.78	28.89	29.44	28.50	28.09	29.71	28.93	27.53	30.77	28.52
1981	**TMAB3**	32.25	32.98	32.32	32.30	32.93	32.61	32.17	33.04	32.80	32.75	32.65	32.01	32.97	32.68	31.77	33.41	32.23
1991	**PATRF1**	0.79	0.70	0.70	0.82	0.62	0.67	0.80	0.64	0.76	0.77	0.76	0.74	0.67	0.67	0.82	0.68	0.75
1991	**PATFR2**	0.59	0.40	0.31	0.56	0.34	0.38	0.52	0.39	0.56	0.44	0.57	0.39	0.39	0.46	0.63	0.42	0.49
1991	**PATFR3**	0.21	0.07	0.05	0.16	0.05	0.07	0.14	0.08	0.17	0.08	0.19	0.08	0.07	0.12	0.23	0.09	0.12
1991	**PATFR4+**	0.09	0.02	0.01	0.06	0.01	0.01	0.04	0.02	0.06	0.02	0.07	0.02	0.01	0.04	0.09	0.03	0.05
1991	**TMAB1**	27.30	29.06	28.22	27.73	29.91	28.30	27.30	28.75	27.80	28.82	27.02	27.55	28.66	28.78	27.35	29.43	28.16
1991	**TMAB2**	29.64	31.06	30.12	29.74	31.31	30.80	29.98	30.29	30.06	30.77	29.51	29.86	30.93	30.74	29.67	31.26	30.22
1991	**TMAB3**	31.64	31.97	31.37	31.49	32.18	32.38	31.71	31.49	31.76	32.32	31.49	31.28	32.57	32.37	31.67	32.18	31.83

Sources of data: INE (2019), IPUMS (2019).
Note: For an explanation of the abbreviations see Appendix 1.

Appendix 3 **Parity- and age-adjusted total fertility rate (PATFR) and table mean age of mother at birth (TMAB), Spain, Autonomous Communities, 1999 and 2011**

Year	Indicator	AND	ARA	AST	BAL Is	BAS	CAN	CAN Is	CASL	CASM	CAT	EXT	GAL	LaR	MAD	MUR	NAV	VAL
1999	**PATRF1**	0.79	0.74	0.74	0.84	0.71	0.68	0.85	0.73	0.83	0.87	0.86	0.74	0.69	0.78	0.80	0.77	0.88
1999	**PATFR2**	0.58	0.38	0.27	0.52	0.39	0.36	0.49	0.41	0.59	0.46	0.58	0.33	0.38	0.47	0.66	0.42	0.54
1999	**PATFR3**	0.11	0.04	0.02	0.09	0.03	0.05	0.08	0.04	0.08	0.05	0.09	0.04	0.05	0.06	0.11	0.07	0.05
1999	**PATFR4+**	0.02	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.04	0.01	0.01
1999	**TMAB1**	29.17	30.61	30.29	29.28	31.89	31.03	28.84	30.97	29.59	30.59	29.26	30.37	30.78	30.86	29.19	31.74	30.15
1999	**TMAB2**	32.08	33.27	33.47	32.61	33.92	32.96	31.71	33.66	33.44	32.98	32.16	32.36	33.00	33.84	32.05	33.64	33.19
1999	**TMAB3**	34.29	35.85	34.40	34.06	35.19	32.20	33.58	33.18	34.98	33.68	34.68	33.37	31.70	34.71	34.21	33.42	35.43
2011	**PATRF1**	0.75	0.70	0.66	0.67	0.70	0.70	0.65	0.66	0.72	0.76	0.73	0.67	0.72	0.72	0.72	0.70	0.72
2011	**PATFR2**	0.51	0.43	0.31	0.41	0.45	0.42	0.34	0.40	0.48	0.48	0.49	0.36	0.46	0.48	0.50	0.48	0.44
2011	**PATFR3**	0.11	0.08	0.05	0.10	0.10	0.06	0.07	0.07	0.09	0.11	0.08	0.05	0.09	0.12	0.14	0.13	0.09
2011	**PATFR4+**	0.03	0.04	0.01	0.05	0.04	0.01	0.02	0.02	0.03	0.04	0.02	0.01	0.04	0.05	0.07	0.05	0.04
2011	**TMAB1**	29.83	30.72	31.10	29.79	31.48	30.89	29.75	31.15	30.24	30.08	30.42	31.42	30.40	30.66	29.38	30.99	30.33
2011	**TMAB2**	32.24	32.68	33.09	31.94	33.41	33.30	32.06	33.29	32.64	32.04	32.85	33.51	32.81	32.81	31.72	32.70	32.53
2011	**TMAB3**	32.40	33.20	33.25	32.05	32.56	34.28	31.93	32.70	32.67	32.16	32.80	34.22	31.71	33.16	31.97	33.38	32.16

Sources of data: INE (2019), IPUMS (2019).
Note: For an explanation of the abbreviations see Appendix 1.