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ORIGINAL ARTICLE



# Argentina's fertility regime (1980-2010): the end of the first demographic transition or an emergent second one?

Yasmin A. Mertehikian*

Argentina's fertility transition has exceptional characteristics. Compared to most Latin American countries, Argentina's fertility declined relatively early and, unlike fertility transitions in Western Europe, this decline did not lead to a high period of natural population growth. By the beginning of the twenty-first century, Argentina seemed to experience fertility stagnation despite women's increased formal education and labor force participation, and increased availability of contraceptives. Using the 1980, 1991, 2001, and 2010 Population Censuses, I demonstrate that fertility has continued its downward trend from 1980 to 2010. Changes in fertility behaviors are given by a decrease in the mean number of children per woman, but not by an increase in childlessness. However, there is evidence of postponement of childbearing. Results show that although Argentina is completing its first demographic transition, as it has not reached below-replacement fertility yet, this country could show signs of an emerging second demographic transition.

Keywords: Argentina. Demographic transition. Fertility.

* University of Pennsylvania, Philadelphia, PA United States (myasmin@sas.upenn.edu; https://orcid.org/0000-0003-3139-8990).

## Introduction

Argentina's fertility transition has exceptional characteristics. Fertility declined relatively early compared to most other Latin American countries, but this decline did not lead to a high period of natural population growth, as in the case of Western European fertility transitions (GOVEA BASCH, 2013; PANTELIDES, 2006). By the beginning of the twenty-first century, Argentina seemed to experience fertility stagnation despite women's higher rates of formal education, greater labor force participation, and increased availability of contraceptives. The most common hypothesis regarding fertility stagnation in Argentina suggests a correlation between household poverty in certain regions of the country and high fertility (GOVEA BASCH, 2013). The literature raises the question as to whether Argentina will complete its transitional process in the near future, or if the country's fertility rate will continue to stall rather than decline further.[1]

Despite the relevance of this question, few scholars have analyzed fertility trends in Argentina since 2001, and the studies that have continued the analysis after that date have not reached a consensus regarding the evolution of the Total Fertility Rate (TFR), nor have they sufficiently analyzed the mechanisms of such evolution. How has fertility evolved in Argentina after 2001? Is the decrease in fertility related to the emergence of an incipient second demographic transition, characterized in this paper mostly by increased childlessness,[2] or is it expressing the end of the first transition, characterized by a decline of fertility towards replacement level? Which are the birth cohorts that are driving this fertility decline? This article will answer these questions by examining the decrease in the TFR in Argentina between 1980 and 2010. Using the 1980, 1991, 2001, and 2010 Population Censuses, I argue that counter to the claims of previous scholars regarding fertility stagnation, fertility has continued its downward trend from 1980 to 2010. These changes in fertility behaviors are driven by a decrease in the mean number of children per woman, but not by an increase in childlessness. However, there is also evidence of postponement of childbearing. The results discussed in this article show that although Argentina is still completing its first demographic transition, as it has not reached below-replacement fertility yet, the country also shows signs of an emerging second demographic transition.

This article is structured as follows: first, I discuss the main arguments and assumptions of the literature on the first and second demographic transitions, and the extent to which they are useful to analyze the Argentine case. Secondly, I describe the data and methodology. Thirdly, I present the main results, focusing on the decrease of the TFR in Argentina, and

[1] A period of no decline in countries in transition is usually referred to as a stall in fertility. A stall implies that an ongoing fertility transition is interrupted by a period of no significant change in fertility before the country reaches the end of the transition (BONGAARTS, 2008, p. 8, quoted in GOVEA BASCH, 2013, p. 66).

[2] Although I am aware that there are other indicators of a second demographic transition, such as a rise in divorce rates, alternative forms of partnerships and parenthood outside marriage, an increase in the age at first marriage, and an increase in the mean age at first birth (LESTHAEGHE, 2010, 2014; VAN DE KAA, 2001, 2002; ZAIDI; MORGAN, 2017), the decision to focus on some fertility indicators (childlessness, birth last year, and number of children) is based on data availability. I develop this last point in more detail in the methods section.

the birth cohorts driving a decrease in the mean number of children women have at the end of their reproductive years. The article finishes by recovering the main results, stating the article's limitations, and introducing different agendas for future research.

## Literature review: demographic transitions and the Argentine case

### *Demographic transitions and fertility decline*

The first demographic transition (FDT) refers to the decline of fertility and mortality from high levels to low levels, with a period of rapid population growth caused by an earlier and more rapid decline in mortality than fertility (ZAIDI; MORGAN, 2017, p. 475-476). Warren Thompson elaborated an early version of the FDT in his 1929 article "Population" (FREJKA, 2016, p. 2). Thompson (1929, p. 959-962) argued that there are three types of countries in the world that can be categorized based on their population growth. Countries in the first group are characterized by rapidly declining birth and death rates, with the former declining more rapidly than the latter due to conception control practices, which leads to a decline in the rate of natural population increase as well. In the second group, the birth rates of these countries are coming under control in certain classes but rather slowly, and given that the death rates are declining more rapidly than the birth rates, the natural increase is rising or at least is not declining to any great extent. Finally, countries in the third group are characterized by their birth and death rates being subject to little voluntary control. Along the same lines, Frank Notestein (1945, p. 41, quoted in FREJKA, 2016, p. 3) defined three phases of the demographic transition: first, populations with high mortality as well as high fertility, which are likely to experience high population growth to the extent that societal and technical developments enable a decline in mortality; second, populations where both mortality and fertility are declining with the former declining more rapidly than the latter, and therefore experiencing transitional growth; and finally, populations with low mortality and fertility below replacement level, which contributes to incipient population decline.

While the beginning of the FDT occurred in northwest Europe around 1800, the process began in lower-income countries in the early twentieth century and accelerated after World War II (LEE, 2003). Following the end of the FDT, populations have lower fertility, longer lives, and older age structures (LEE, 2003). During the past centuries, developed countries have more than doubled the average life expectancy and halved the fertility rate. The FDT can be explained by an improvement in health technologies, which led to lower levels of mortality, and an increase in the survival of children to adulthood. The FDT was also driven by industrialization and social and economic development that increased children's likelihood of survival and increased their costs to parents (ZAIDI; MORGAN, 2017). These changes motivated preferences towards reduced family size but did not undermine the

universal expectation of marriage and parenthood (ZAIDI; MORGAN, 2017).[3] According to the economic theories of fertility, since social and economic development raise the cost of each child, parents decide to have fewer children with the aim of advancing the life-chances of each child (BECKER, 1981, 1991; CARLSON, 2019; LEE, 2003; WILLIS, 1973, 1994).

Scholars have also identified a second demographic transition (SDT) that has emerged in contemporary Europe and the Western world as a consequence of changes in the European family since the FDT (LESTHAEGHE, 2014; VAN DE KAA, 1996). The SDT is characterized by changes in partnership relationships, such as the systematic postponement of marriage and parenthood, rising divorce rates and alternative forms of partnerships, and parenthood outside marriage (LESTHAEGHE, 1995, 2014; ZAIDI; MORGAN, 2017). The SDT began in the 1960s with a series of social revolutions that attacked the gender hierarchy which subordinated women to men within family households (LESTHAEGHE, 2014, p. 18114; GOLDSCHEIDER; BERNHARDT; LAPPEGARD, 2015; SCHOEN, 2010). The introduction of hormonal contraception sparked a contraceptive revolution (LESTHAEGHE, 2014), resulting in an increase in the age at first marriage (GOLDIN, 2006, p. 14). As the age at first marriage increased, women were able to invest in their careers, and plan for an independent future before planning their marriages and families. The contraceptive revolution coincided with a broader sexual revolution that lowered the age of first sexual intercourse and increased rates of intercourse outside of marriage (LESTHAEGHE, 2014). These and other upheavals fueled a gender revolution against the male breadwinner household model, the gendered division of labor that accompanied it, and the ascribed gender hierarchy within households that remained intact through the FDT (CARLSON, 2019; LESTHAEGHE, 2014). These revolutions centered the primacy of individual choice while rejecting traditional forms of gendered authority (LESTHAEGHE, 2010, p. 216).

The SDT ushered in a multitude of new living arrangements beyond marriage, disconnected procreation from marriage, and contributed to a non-stationary population (LESTHAEGHE, 2010, p. 211, 2014, p. 18112; LESTHAEGHE; SURKYN, 2007, p. 82, quoted in ZAIDI; MORGAN, 2017, p. 474). These changes, in turn, help explain the main feature of the SDT: "the decline in fertility from somewhat above the replacement level of 2.1 births per woman[4] [...] to a level well below replacement" (VAN DE KAA, 1987, p. 5). Although the SDT built on the FDT, it does not constitute a simple continuation of the latter because the mechanisms that drive changes in family formation behavior are no longer the same: smaller family sizes no longer reflect greater investment in the quality of a child and childhood, as with the FDT, but instead, smaller family sizes in the SDT reflect postponed fertility and increased voluntary and definitive childlessness (LESTHAEGHE, 2010; VAN DE KAA, 2001, 2002; ZAIDI; MORGAN, 2017).

[3] Ariès (1980) refers to this period as the "child-king era", and argues that the fertility transition was carried forward by an altruistic investment in the quality of childhood and children, which in turn motivated a transition towards smaller families.

[4] According to Searchinger *et al.* (2013, p. 1), "replacement level fertility is the total fertility rate –the average number of children born per woman– at which a population exactly replaces itself from one generation to the next, without migration. This rate is roughly 2.1 children per woman for most countries."

*Demographic transitions in developing countries: the Argentine case*

While both the FDT and SDT approaches are useful to analyze developed countries, it is not clear how effective these frameworks are for understanding developing regions. There is a consensus that these regions have undergone or are still undergoing the FDT, but it is not clear that these societies are also entering the SDT. Particularly in Latin America, scholars continue to debate the validity of this theoretical approach to explain recent family changes (ARRIAGADA, 2014; ROSERO-BIXBY; CASTRO-MARTÍN; MARTÍN-GARCÍA, 2009). The debate on whether Latin American countries are also entering the SDT is explained by the strong cultural emphasis on family ties: despite the increase in women's access to the labor market and education, the family continues to be the main safety net against economic and social instability. This encourages the persistence of universal family formation, even as the timing of childbearing change (ROSERO-BIXBY; CASTRO-MARTÍN; MARTÍN-GARCÍA, 2009, p. 172).

Although the factors associated with low fertility in developed countries have been widely explored in the literature, studies of low and medium fertility in middle and low-income countries are scarce. In the case of Latin America, much of the literature focuses on the case of Brazil, while other countries are usually overlooked. For instance, using retrospective fertility histories of Brazilian women, Lam and Duryea (1999) demonstrate a strong negative relationship between fertility and schooling. Potter, Schmertmann, and Cavenaghi (2002) stress that while there is a strong and consistent relationship between the decline in fertility and changes in social and economic circumstances, the spread of new ideas regarding family formation and childrearing practices have also affected fertility preferences and attitudes toward contraception. Castanheira and Kohler (2013), using the 1991, 2000, and 2010 Brazilian Censuses, show that while human development was negatively associated with fertility across these three periods, gender equality and the ability of mothers with young children to work were positively associated with the odds of having higher-order births. Finally, using data from the Brazilian Censuses from 1980 to 2010, Miranda-Ribeiro and Garcia (2013) analyze whether it is possible to identify more than one stage of the fertility transition among Brazilian women according to their educational level. They argue that while highly educated women are undergoing the SDT, the least educated ones are still facing the FDT.

In the case of Argentina, there have been fewer studies of fertility behaviors since 2001, and there is no consensus on the evolution of the TFR over time or on the different mechanisms that explain such evolution. Pantelides (1995) emphasizes that people's access to education changed the fertility rate in Argentina from 1869 to 1947. The author stresses that the FDT began in the country at the end of the nineteenth century, and it showed distinctive patterns across regions. Buenos Aires and the most developed regions of the country followed the logic of the FDT. Yet, since Pantelides' analysis only focuses on six jurisdictions in Argentina (City of Buenos Aires, Buenos Aires, Santa Fe, Mendoza,

Tucumán, and Catamarca), her results cannot be expanded to the rest of the country. In an earlier paper, Pantelides (1989) examines the fertility trend in Argentina more broadly by focusing on the period between 1947 and 1980, and by extending her analysis to the entire country and its major administrative divisions. Within this period, the country's fertility rate peaked in 1950 and then declined until 1965. Pantelides argues that the fertility rate increased between 1970 and 1980, when the TFR was slightly higher than in 1950. Tentative estimates made by Pantelides (1989) for the years 1982 and 1984 suggest that the fertility rate would have resumed in the 1980s the values of the 1960s. However, her analysis does not describe more recent trends in the country's fertility rate.

Torrado (1993) relies on the national population censuses from 1869 to 1991 to identify fertility differentials between social classes in Argentina. The author argues that the demographic transition that began in 1890 was almost complete by 1930. She further shows that by 1980, the process of modernization of reproductive behaviors was completed among middle classes and skilled workers, who already showed very low fertility. Conversely, marginalized socioeconomic groups residing in less developed regions continued to exhibit high fertility.

More recently, Govea Basch (2013) analyzes household variables and levels of education at the departmental level to explain the evolution of the TFR from 1947 to 2001. The author shows that low educational levels and higher household poverty are related to higher fertility. A stagnation of improvements in education and poverty would explain why Argentina did not achieve a TFR below replacement level. However, as I will describe in the following sections, while it is true that Argentina had not reached below replacement fertility by 2001, the TFR declined steadily between 1980 and 2010. Additionally, Govea Basch (2007) analyzes subnational changes in fertility behaviors in Argentina between 1970 and 2001 and finds that, at the end of the twentieth century, there was an increase in the offspring of women aged 45 to 49 in the most populated provinces. This increase translated into the stalled fertility decline in Argentina through a compensatory mechanism: the most developed and populated provinces saw a rise in their fertility rates, while the less developed regions of the country saw a decline in their fertility levels.

Other studies have shown that the fertility rate after 2001 has continued to decline. However, the magnitude of such decline is under debate. Sacco and Borges (2018) explore the differential trends and variations in the convergence of the TFR according to region, educational level and occupation in Argentina and Brazil from 1970 to 2010 using census data. In the case of Argentina, although the authors do not report the overall national trend in the TFR, they show that from 1980 to 2010 the fertility rate by region in Argentina has declined without interruption. Using the 2010 Population Census of Argentina, Muhafra (2020) analyzes the differential fertility rate between urban and rural spaces. Although the author also documents the decline in the fertility rate from 1980 to 2010, she reports a fertility rate of 2.6 children per woman for 2010. This value, however, is not consistent with data published by the National Institute of Statistics and Census of the Argentine

Republic (Instituto Nacional de Estadísticas y Censos – INDEC), which reports a TFR of 2.4 for 2010 (INDEC, 2021).

Finally, research using the SDT framework to study changes in the family structure in Argentina is even scarcer. Sana (2001) suggests that to study the decline in fertility in Argentina since 1980, we must take into account the changes in patterns of family formation and dissolution, and for that purpose, it is necessary to test whether the SDT is a useful framework. However, he stops his analysis in 1997. In addition, Sana only raises the question regarding the future of fertility decline below replacement level in Argentina without addressing this concern. In turn, using more recent data from a survey carried out in Argentina in 2008, Binstock (2009, 2010) shows that among the younger generations there is a change in the family environment in which women and men enter a union and in which women become mothers, rather than a change in the timing of these events. She argues that the age at which the union begins has not changed as much as the type of relationship, with non-marital cohabitation becoming much more common. Binstock (2009, 2010) points out that women's age at first birth has not changed substantially either; rather, the main change is the context in which it occurs: outside marriage and more frequently within a consensual union or courtship. However, her analysis focuses only on large urban centers of Argentina to study the timing of family formation and the transition to motherhood.

In a more recent study, using information from household surveys, sexual and reproductive health surveys, and censuses, Binstock *et al.* (2016) describe changes in family formation in the Southern Cone. The authors show that there has been a change in the timing of union formation and that women (especially the highly educated) are delaying the age at which they enter a conjugal union. Binstock *et al.* (2016) also argue that both the most and the least educated women are typically entering a union through cohabitation, although for highly educated women cohabitation begins later. The proportion of women with children has decreased, but mainly among more educated women, since the least educated continue becoming mothers before the age of 25. However, the authors restrict their sample to women between 20 and 29 years old without considering older women, they do not carry out a cohort analysis, and they acknowledge that not all the variables of the 2010 census obtained from IPUMS-International are available for Argentina. As a result, they use the 2010 Permanent Survey of Households and the 2013 National Survey of Sexual and Reproductive Health to complement their analysis.

This paper adds to the literature both empirically and theoretically. Empirically, this article aims at solving the discussion on recent fertility trends in Argentina by including individual data from 1980 to 2010. This improves the estimation of previous research, which has usually relied on aggregated data provided by the Office of Statistics in Argentina for the year 2010. Theoretically, I apply the notion of the SDT in order to analyze the Argentine case as from 2001. Furthermore, by considering cohort variation over time, I unpack the mechanisms that explain the decline in fertility. Therefore, this paper improves upon previous research which only captures educational, occupational, and regional variations.

## Data and methods

### *Data and sampling*

I analyze changes in women's fertility levels and their mean number of children by using descriptive statistics and synthetic cohort OLS models. Synthetic cohort analysis is similar to cohort analysis, but instead of using successive observations of the same group of people, it treats the age distribution of the population as if it were a cohort passing through time. Censuses analyzed here do not follow the same people over time. Therefore, I design synthetic cohorts by categorizing individuals by their age-period identifiers and by following them for as long as the observation window allows. Since each cross-section is representative of the population, I can learn about changes in reproduction by examining the fertility behaviors of successive cohorts at the same phase in their life cycles.

In order to analyze the decrease of the TFR in Argentina between 1980 and 2010, I use individual data from the 1980, 1991, 2001, and 2010 Population Censuses. The databases for the census years 1980, 1991, and 2001 were downloaded from IPUMS-International. In the case of 2010, I extracted the data from REDATAM,[5] using a software called Redatam Converter (DE GRANDE, 2016). This allowed me to use data at the individual level, while other studies on fertility in Argentina analyze frequency distributions but not individual observations.

While there are other data sources in Argentina such as vital statistics,[6] in general, this type of information is aggregated at the provincial level, and when these data are disaggregated, they provide information mostly about the newborn rather than the mother, offering information only on women's age, jurisdiction of residence, and educational attainment. In addition, while vital statistics provide a very good birth registration system, they pose a problem in estimating the denominator for calculating the TFR because vital statistics do not contain reliable information on the total number of women of reproductive age (the denominator), since they are based on population projections. As stated by Parrado (2011, p. 1066) for the case of vital registration data in the United States, this can lead to miscalculations in projecting the number of women of reproductive age and, therefore, biases in the fertility estimates. Therefore, although I am aware that vital statistics would allow me to cover a more recent period, the population censuses provide a more reliable source of information on those women who had no births that year. Furthermore, the population censuses, unlike vital statistics, allow me to carry out a long-term cohort analysis that helps to disentangle the mechanisms by which the TFR has continued to decline after 2001.

[5] Database developed by the National Institute of Statistics and Census of the Argentine Republic (Instituto Nacional de Estadísticas y Censos – INDEC).

[6] For instance, see: https://www.argentina.gob.ar/salud/deis/datos/nacidosvivos.

*Dependent variables*

The main dependent variables (Y1 and Y2) for women *ith* in year *tth* are: the fertility rate – both Total Fertility Rate (TFR) and Age-Specific Fertility Rates (ASFR) –; and the total number of live births a woman has. Although the TFR and ASFR are rates at the aggregate level, the design of such fertility rates arises from the analysis of individual data.

In the case of the first dependent variables, they were measured by using a dichotomous indicator that captures if the woman had a birth in the previous year or not. The censuses of 1980, 1991, and 2001 explicitly asked this in the questionnaire. For those years, I created a dummy variable that would adopt the value of 1 if the woman had a birth last year, and 0 otherwise. In the case of the 2010 census, this question was not asked. Instead, I created a dummy variable capturing births the previous year (between January and December 2009) coded as 1, and 0 otherwise. The age-specific fertility rates were calculated by adding the number of live births that occurred during the previous year to mothers of age $x$ ($B_x$) over the total number of women of age $x$ ($W_x$), for each census year.

$$\text{ASFR} = \frac{B_x}{W_x} \quad (1)$$

Where $x$ goes from 15 to 49 years old.

I calculated the Total Fertility Rate by adding the age-specific fertility rates for individual ages for all women between 15 and 49 years old. Alternatively, I also calculated the TFR by forming seven five-year age groups, calculating the ASFR for them, adding up those rates, and multiplying them by five.

$$\text{TFR} = \Sigma(\text{ASFR}) \quad (2)$$

$$\text{TFR} = \left(\sum \text{ASFR}_x\right) * 5 \quad (3)$$

Where $x$ are five-year age groups from 15 to 49 years old.

In addition, I calculated fertility rates by distinguishing if the birth that occurred the previous year was the woman's first, second, or third child. As this indicator was not available in any of the census questionnaires, I calculated it considering those women who had a birth in the previous year and reported having only one child (first birth order); those women who had a birth in the previous year and reported having two children (second birth order); and finally, those women who had a birth in the previous year and reported having three children (third birth order).

The second dependent variable, the total number of live births, is relevant in capturing whether Argentina's fertility decline can be framed as the end of the FDT or an incipient SDT,

since this indicator allows capturing whether or not there is an increase in childlessness,[7] and if there is postponed fertility. The total number of births was calculated by adding the number of live births to women of age $x$ up to the time of answering the census questionnaire ($S_x$), over the total number of women of age $x$ ($W_x$), for each census year.

$$\text{Total Number of Live Births} = \frac{S_x}{W_x} \quad (4)$$

Where $x$ goes from 15 to 49 years old.

While the 1980, 1991, and 2001censuses asked about the total number of children the woman had, the 2010 census questionnaire asked whether a woman had children, and then, how many live-born children she actually had. This was used to construct a new variable from the two questions that adopts the value of 0 if the woman had no live births and takes on the numeric value of the number of children reported among those having at least 1. Finally, in 1980 higher-order births are grouped into a single category of 8 children born alive or more. To make the data comparable, I recoded the number of children born alive from 8 to 16 into a single category of 8 or more in the following census years.

While there are other indicators of the SDT related to, for example, a rise in alternative forms of partnerships (LESTHAEGHE, 1995, 2014; ZAIDI; MORGAN, 2017), my decision to focus only on some fertility indicators (childlessness, birth last year, and number of children) is based on data availability. Although it is true that the 2010 Population Census distinguishes between cohabitation and marriage, in the previous censuses the data only allow us to analyze whether people are in a couple; marriage and cohabitation are considered indistinctly, preventing us from analyzing the emergence of new living arrangements. Regarding postponement of parenthood, it is worth noting that although postponement of childbearing is discussed in this article, the results must be taken with caution since it has only been calculated from considering the total number of children the woman had, but not from age at first birth. The censuses do not ask at what age the woman had her first child, but only allow us to know, among those who had a child in the previous year, whether that child was the first one or not. However, the latter would bias the results since it would only consider those women who had or did not have a child in the previous year, and therefore the sample size would be small. Having information regarding the mother's mean age at first birth would allow us to analyze more accurately whether there has been postponed fertility or not, but unfortunately the available censuses do not provide this information.

[7] Although I am aware that there are coding errors regarding the record of childlessness in the Argentine censuses, especially in the oldest censuses analyzed here, the databases for the census years 1980, 1991, and 2001 were downloaded from IPUMS-International, for which I assume that the quality of the data has been checked and analyzed by IPUMS. I acknowledge that there may be coding problems, especially in older censuses, and I understand that in developing countries coding errors are generally more frequent. However, I trust that they have been later recoded by IPUMS to overcome this limitation and that the data has gone through different verification steps to guarantee its reliability. Furthermore, considering that the influence of coding errors tends to be reduced when the sample is large enough, the bias produced by problems in coding these responses would also be overcome. For these reasons, I consider that the population censuses continue to be the best data available for Argentina for these years, despite the limitations mentioned above.

*Independent variables*

Regarding the independent variables, age was recoded to form seven five-year age groups: 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49 years old. In addition, I created a birth cohort variable for all census years. Since none of the questionnaires include women's date of birth but only their age at the time of answering the census, I created the variable birth cohort by subtracting the year in which each census was carried out and the age of the woman at the time of answering that questionnaire, ending up with thirteen dummy variables.[8] As I do not have data for all the cohorts from the beginning to the end of their reproductive lives (since censuses in Argentina are carried out about every ten years, and I cannot identify the same women throughout the census years), I compare the specific birth cohorts and age groups presented in Table 1. Table A1 in the Appendix displays the descriptive statistics of each variable for each census year.

**TABLE 1**
**Birth cohorts and age groups**

| Age groups | 1931-1935 | 1936-1940 | 1941-1945 | 1946-1950 | 1951-1955 | 1956-1960 | 1961-1965 | 1966-1970 | 1971-1975 | 1976-1980 | 1981-1985 | 1986-1990 | 1991-1995 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15-19 | | | | | | | X | | X | | X | | X |
| 20-24 | | | | | | X | | X | | X | | X | |
| 25-29 | | | | | X | | X | | X | | X | | |
| 30-34 | | | | X | | X | | X | | X | | | |
| 35-39 | | | X | | X | | X | | X | | | | |
| 40-44 | | X | | X | | X | | X | | | | | |
| 45-49 | X | | X | | X | | X | | | | | | |

## Results

*The evolution of the TFR in Argentina*

Contrary to previous findings (GOVEA BASCH, 2007, 2013), the decline in the TFR has not stalled in Argentina. Table 2 and Figure 1 show fertility rates by census year. Including the 2010 census, I find that the TFR has decreased from 3.15 in 1980 to 2.35 in 2010, that is, almost one birth per woman in thirty years.[9] Therefore, this article helps to disentangle how fertility has behaved in Argentina after 2001, and also reveals the magnitude of its decline.

[8] Although it is true that the Argentine censuses analyzed here are not always separated by 10 years, this did not have an effect on how I created the birth cohorts since, regardless of whether or not the censuses provided the birth year of the woman, in order to avoid any kind of interference from this lack of temporal synchronicity, I have calculated the cohorts based on the year in which the census was carried out minus the age of the woman interviewed at the time of the census. In this way, I have controlled for the time lag between the censuses.

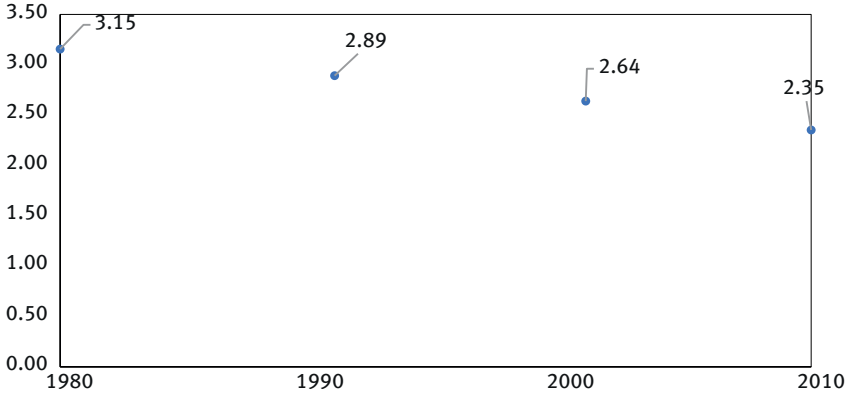
[9] To confirm that my data was reliable, I first compared the frequency distributions of the variables used in this article with the results published by Govea Basch (2013) for the years 1980, 1991, and 2001. Then, in the case of 1991, 2001, and 2010 I also compared the frequency distributions of the variables in question with the frequencies provided by REDATAM, which provides the official results of the National Institute of Statistics and Census of the Argentine Republic (INDEC). Additionally, to confirm that my calculations of the TFR at the national level were correct, I compared my results with the data provided by the World Bank. In both cases, the variation that I have found, especially for the fertility rate, is around 0.01.

**TABLE 2**
**Total Fertility Rate by census year**
**Argentina – 1980-2010**

| Census year | Total Fertility Rate |
|---|---|
| 1980 | 3.15 |
| 1991 | 2.89 |
| 2001 | 2.64 |
| 2010 | 2.35 |

Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.

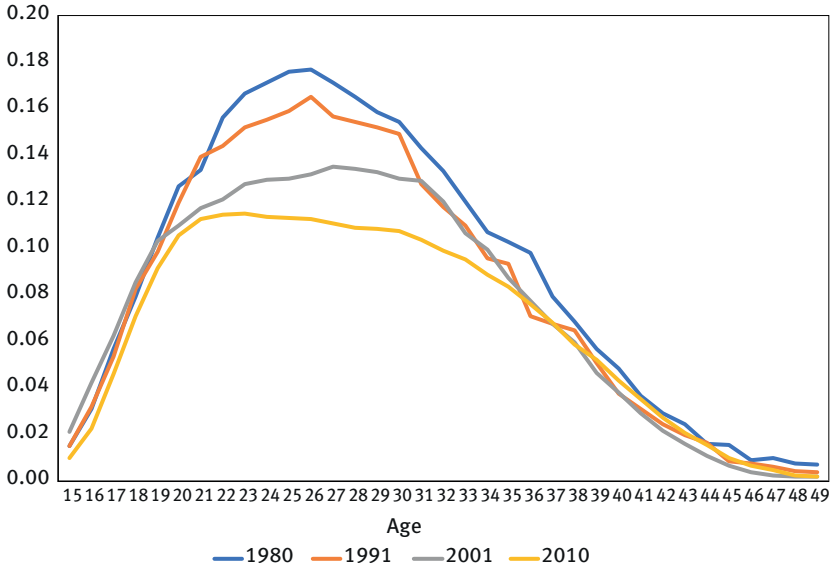
**FIGURE 1**
**Total Fertility Rate**
**Argentina – 1980-2010**




Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.

However, the data show that the decrease of the TFR is not homogeneously distributed across different ages. While the ASFR for women aged 15-19 and the fertility rate for women between 38 and 49 years old remains relatively constant throughout the census years, the data also show a decrease in this indicator among women aged 20-37 from 1980 to 1991, from 1991 to 2001, and from 2001 to 2010 (Figure 2).

FIGURE 2
Age-Specific Fertility Rates
Argentina – 1980-2010




Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.

Why might these ASFR be declining while others remain relatively constant? I hypothesize three possible scenarios that will be tested in the following sections:

- this group of women has fewer children on average, but they still decide to become mothers. This would constitute an indicator of the FDT;
- this group of women decides not to have children at all, leading to an increase in the proportion of women without children. This would be a key indicator of the SDT;
- this group of women is postponing their fertility calendar, which would demonstrate partial evidence of the SDT.

*Is the decline in the TFR an indicator of the end of the FDT? Mean number of children (1980-2010)*

Are women having fewer children on average over the period considered? Table 3 shows that the fertility rate of women with only one child remains stable throughout the census years. Moreover, the fertility rate associated with a second birth order decreases through the thirty years under analysis, and this decline is even more pronounced if we consider the fertility rate of a third birth order. Indeed, if we focus on the fertility rate associated with a first birth order, we see that there is a change of 0.60 percentage points between 1980 and 2010; when considering the second birth order, the change is 24.70 percentage points; and finally, in the case of the fertility rate associated with a third birth order, the change is 42.10 percentage points. If we analyze the contribution to the total change in

the TFR next (considering as the sample only women without children or with up to three children), the variation in the fertility rate associated with a first birth order explains only 1.08 percent of the total change in the TFR. In contrast, the variation in the fertility rate of a second birth order and of a third birth order explain 44.82 percent and 54.10 percent of the total change, respectively.

Table 3 also describes the decrease in the fertility rate by birth order between every intercensal period. The results show that between 1980 and 1991 and 1991 and 2001, the decline in the TFR is led by a decrease in the fertility rate associated with a second and third birth order, while the first birth order continues to increase in those intercensus periods. On the contrary, during the intercensal period 2001-2010 there is a decrease in both the fertility rate associated with a first birth order and the fertility rate of a second and third birth order, all contributing to the decline in the TFR. The latter supports the idea that Argentina is not only experiencing the end of its FDT and a decline in fertility toward replacement but could also be showing signs of an incipient SDT.

**TABLE 3**
**Total Fertility Rate by birth order**
**Argentina – 1980-2010**

| Indicator | First birth order | Second birth order | Third birth order |
|---|---|---|---|
| 1980 | 0.84 | 0.85 | 0.60 |
| 1991 | 0.87 | 0.79 | 0.58 |
| 2001 | 0.89 | 0.67 | 0.42 |
| 2010 | 0.83 | 0.64 | 0.35 |
| Percent change 1980-2010 (%) | -0.60 | -24.70 | -42.10 |
| Contribution to total change in TFR 1980-2010 (considering up to three children) (%) | 1.08 | 44.82 | 54.10 |
| Percent change 1980-1991 (%) | 4.41 | -7.29 | -2.71 |
| Contribution to total change in TFR 1980-1991 (considering up to three children) (%) | -89.64 | 150.09 | 39.55 |
| Percent change 1991-2001 (%) | 2.23 | -14.18 | -28.23 |
| Contribution to total change in TFR 1991-2001 (considering up to three children) (%) | -7.61 | 43.41 | 64.20 |
| Percent change 2001-2010 (%) | -6.88 | -5.34 | -17.07 |
| Contribution to total change in TFR 2001-2010 (considering up to three children) (%) | 36.37 | 21.32 | 42.30 |

Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.

Table 4 shows that the percentage of women who have only one child has grown over time. For example, taking 1980 as a reference, the percentage of women in their reproductive years (i.e., 15 to 49 years old) with one child is 15.37 percent. In 2010, this percentage amounts to 19.13 percent. If, instead, we assess the percentage of women with two children, the data show that it remains relatively stable throughout the years.

TABLE 4
Percentage of women by number of children and mean number of children by age group and census year
Argentina – 1980-2010

| Age groups | 0 | 1 | 2 | 3 | 4 or more | Cumulative percentage | Mean number of children |
|---|---|---|---|---|---|---|---|
| **1980** | | | | | | | |
| 15-49 | 36.89 | 15.37 | 21.03 | 12.53 | 14.18 | 100 | 1.84 |
| 15-19 | 88.18 | 8.52 | 2.61 | 0.56 | 0.13 | 100 | 0.16 |
| 20-24 | 56.36 | 20.29 | 13.94 | 6.13 | 3.28 | 100 | 0.81 |
| 25-29 | 30.37 | 21.04 | 24.67 | 12.93 | 10.99 | 100 | 1.62 |
| 30-34 | 18.20 | 15.63 | 29.36 | 18.54 | 18.27 | 100 | 2.23 |
| 35-39 | 13.86 | 13.16 | 28.08 | 20.16 | 24.74 | 100 | 2.62 |
| 40-44 | 12.75 | 13.42 | 28.05 | 18.76 | 27.02 | 100 | 2.76 |
| 45-49 | 13.58 | 14.78 | 28.67 | 16.96 | 26.01 | 100 | 2.70 |
| **1991** | | | | | | | |
| 15-49 | 37.89 | 14.67 | 19.36 | 13.62 | 14.46 | 100 | 1.79 |
| 15-19 | 88.06 | 8.62 | 2.35 | 0.64 | 0.33 | 100 | 0.17 |
| 20-24 | 58.37 | 20.36 | 12.96 | 5.56 | 2.75 | 100 | 0.75 |
| 25-29 | 32.94 | 21.32 | 21.88 | 12.70 | 11.16 | 100 | 1.56 |
| 30-34 | 18.90 | 15.78 | 26.34 | 18.73 | 20.24 | 100 | 2.25 |
| 35-39 | 13.72 | 12.04 | 26.19 | 22.33 | 25.73 | 100 | 2.60 |
| 40-44 | 13.05 | 11.66 | 26.62 | 22.37 | 26.29 | 100 | 2.64 |
| 45-49 | 13.08 | 12.55 | 28.14 | 21.18 | 25.06 | 100 | 2.60 |
| **2001** | | | | | | | |
| 15-49 | 38.21 | 16.41 | 18.38 | 12.56 | 14.44 | 100 | 1.80 |
| 15-19 | 87.50 | 10.08 | 1.93 | 0.36 | 0.13 | 100 | 0.16 |
| 20-24 | 58.93 | 22.82 | 11.53 | 4.39 | 2.34 | 100 | 0.70 |
| 25-29 | 36.99 | 23.22 | 19.64 | 10.37 | 9.78 | 100 | 1.40 |
| 30-34 | 19.66 | 19.28 | 25.57 | 16.29 | 19.21 | 100 | 2.15 |
| 35-39 | 12.46 | 13.72 | 27.41 | 20.87 | 25.54 | 100 | 2.60 |
| 40-44 | 9.99 | 11.56 | 26.41 | 22.83 | 29.22 | 100 | 2.81 |
| 45-49 | 9.37 | 11.42 | 26.48 | 23.44 | 29.29 | 100 | 2.83 |
| **2010** | | | | | | | |
| 15-49 | 38.42 | 19.13 | 19.44 | 11.49 | 11.52 | 100 | 1.64 |
| 15-19 | 86.90 | 10.90 | 1.80 | 0.28 | 0.11 | 100 | 0.16 |
| 20-24 | 58.69 | 25.89 | 10.97 | 3.32 | 1.13 | 100 | 0.63 |
| 25-29 | 39.16 | 26.86 | 19.81 | 8.77 | 5.40 | 100 | 1.17 |
| 30-34 | 23.24 | 23.69 | 26.83 | 14.02 | 12.22 | 100 | 1.78 |
| 35-39 | 14.03 | 17.42 | 29.57 | 18.81 | 20.16 | 100 | 2.34 |
| 40-44 | 10.83 | 13.75 | 28.60 | 21.37 | 25.45 | 100 | 2.63 |
| 45-49 | 9.89 | 12.34 | 27.26 | 22.61 | 27.90 | 100 | 2.75 |

Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.

However, this trend is reversed when considering the percentage of women with three children or more. If we focus on women between 15 and 49 years old with three children, in 1980 the percentage was 12.53, which declined to 11.49 percent by 2010. This trend can be explained not by women's behavior at the end of their reproductive years, but by

the behavior of women ages 20 to 39 (which is consistent with the previous conclusions on ASFR over time). If we consider ages 25-29 and 30-34 years, in 1980 the percentage of women with three children amounted to 12.93 percent and 18.54 percent respectively, whereas in 2010 the percentages for these age groups are 8.77 percent and 14.02 percent. In contrast, if we focus only on women aged 45 to 49 with three children, there are no substantive differences between 1991, 2001, and 2010 (21.18 percent, 23.44 percent, and 22.61 percent, respectively). The decrease in large family size becomes more pronounced if we examine the percentage of women with four children or more (1980 *versus* 2010).

These findings support the idea that in Argentina, the TFR has decreased from 1980 to 2010 since women choose to have fewer children, but do not necessarily decide to have no children at all. If we now consider the mean number of children by age groups, we see that, among women at the end of their reproductive lives, this quantity does not differ significantly between 1980, 1991, 2001, and 2010 (2.70 in 1980, 2.60 in 1991, 2.83 in 2001, and 2.75 in 2010), but it does change among younger women. For example, women ages 30-34 and 35-39 experience a decrease in the mean number of children between 1980 and 2010 (0.45 and 0.28 fewer children per woman, respectively).

Although the data cannot tell us the final number of children that women ages 30 to 39 in 2010 would have at the end of their reproductive years (which will be seen in the next census), if the trend is maintained, I can infer that the final parity of these women will be lower than in previous cohorts. Recovering Govea Basch's argument (2013, p. 116), these findings can be interpreted not as a mere postponement of the fertility calendar, but on the contrary, as women of reproductive ages deciding to have fewer children. From 1980 onwards (and especially in 2010) the proportion of women with three children or more decreases, bringing down the average number of children per woman, and thus supporting the hypothesis that Argentina is experiencing the end of its first demographic transition.

The data also introduce the idea that in Argentina there is a cohort effect on reproductive behaviors. Women who are 35 to 39 years old in 2010 are those women born in 1971-1975, who, along with the birth cohort of 1966-1970, are driving the decrease in the mean number of children within the period concerned. Table 5 and Figure 3 show the results of an OLS regression in which I estimate the mean number of children by birth cohorts and age groups during 1980-2010. This model includes dummy variables for each birth cohort and for each age group as independent variables, and the estimates are all statistically significant at $\alpha = 0.01$ (see Table A2 in the Appendix).

Table 5 and Figure 3 show that certain birth cohorts tend to have fewer children over the period analyzed and are the ones leading the overall decline in fertility. Prior to the birth cohorts of 1966-1970 and 1971-1975 the mean number of children remains stable, while for women born in these cohorts this indicator decreases. When we consider older age groups, for example ages 35 to 39, the mean number of children among women born in 1941-1945, 1951-1955, and 1961-1965 remains stable at 2.6 (p-value< 0.01). However, when we look at the same age group in the case of women born in 1971-1975, the mean

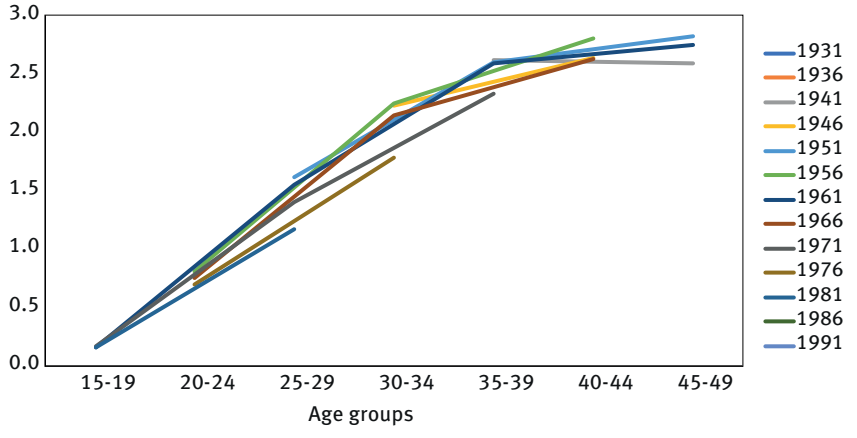
number of children drops to 2.34 (p-value< 0.01), decreasing by 0.26 points compared to the birth cohort of 1961-1965. Looking at women ages 40-44 reaching the end of their childbearing years, we also see that the mean number of children drops 0.13 points in the cohort of 1966-1970 compared to women born in 1936-1940.

**TABLE 5**
**Mean number of children by birth cohorts and age groups (synthetic cohort OLS)**
**Argentina – 1980-2010**

| Birth cohorts and age groups | Estimate | Standard error | T-value | P-value |
|---|---|---|---|---|
| 1931-1935: 45-49 | 2.70 | 0.00 | 707.61 | 0.00 |
| 1936-1940: 40-44 | 2.76 | 0.00 | 733.39 | 0.00 |
| 1941-1945: 35-39 | 2.62 | 0.00 | 738.96 | 0.00 |
| 1941-1945: 45-49 | 2.60 | 0.00 | 715.24 | 0.00 |
| 1946-1950: 30-34 | 2.23 | 0.00 | 673.95 | 0.00 |
| 1946-1950: 40-44 | 2.64 | 0.00 | 785.32 | 0.00 |
| 1951-1955: 25-29 | 1.62 | 0.00 | 506.02 | 0.00 |
| 1951-1955: 35-39 | 2.60 | 0.00 | 809.07 | 0.00 |
| 1951-1955: 45-49 | 2.83 | 0.00 | 847.92 | 0.00 |
| 1956-1960: 20-24 | 0.81 | 0.00 | 260.21 | 0.00 |
| 1956-1960: 30-34 | 2.25 | 0.00 | 717.03 | 0.00 |
| 1956-1960: 40-44 | 2.81 | 0.00 | 874.62 | 0.00 |
| 1961-1965: 15-19 | 0.16 | 0.00 | 52.21 | 0.00 |
| 1961-1965: 25-29 | 1.56 | 0.00 | 507.80 | 0.00 |
| 1961-1965: 35-39 | 2.60 | 0.00 | 830.83 | 0.00 |
| 1961-1965: 45-49 | 2.75 | 0.00 | 869.76 | 0.00 |
| 1966-1970: 20-24 | 0.75 | 0.00 | 253.18 | 0.00 |
| 1966-1970: 30-34 | 2.15 | 0.00 | 710.54 | 0.00 |
| 1966-1970: 40-44 | 2.63 | 0.00 | 855.35 | 0.00 |
| 1971-1975: 15-19 | 0.17 | 0.00 | 60.31 | 0.00 |
| 1971-1975: 25-29 | 1.40 | 0.00 | 494.88 | 0.00 |
| 1971-1975: 35-39 | 2.34 | 0.00 | 817.32 | 0.00 |
| 1976-1980: 20-24 | 0.70 | 0.00 | 266.42 | 0.00 |
| 1976-1980: 30-34 | 1.78 | 0.00 | 674.56 | 0.00 |
| 1981-1985: 15-19 | 0.16 | 0.00 | 59.24 | 0.00 |
| 1981-1985: 25-29 | 1.17 | 0.00 | 444.49 | 0.00 |
| 1986-1990: 20-24 | 0.63 | 0.00 | 243.40 | 0.00 |
| 1991-1995: 15-19 | 0.16 | 0.00 | 63.34 | 0.00 |
| Observations: 6,664,625 | | | | |
| $R^2$: 0.62 | | | | |

Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.
Note: Total observations are estimated using the weights provided by the census data.

FIGURE 3
Mean number of children by birth cohorts and age groups
Argentina – 1980-2010



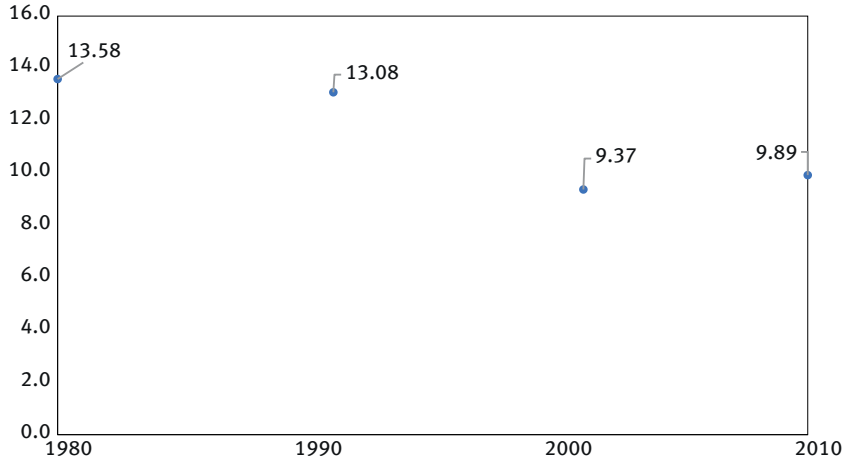

Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.

The birth cohorts of 1966-1970 and 1971-1975 constitute a turning point in reproductive behaviors since, among older age groups, the average number of children decreases from those cohorts onwards, and that downward trend persists for younger cohorts as well. So striking is the fact that the cohorts of 1966-1970 and 1971-1975 constitute a turning point that if we consider women aged 40-44 born in 1966-1970 and 35-39 born in 1971-1975, we see that the mean number of children corresponding to those women (2.63 and 2.34 respectively) matches perfectly well with the TFR of 2001 and 2010: 2.64 and 2.35, confirming that these birth cohorts are driving the decline in the fertility rate in Argentina during the period under review.

*Experiencing a SDT? Childlessness and postponement of childbearing in Argentina (1980-2010)*

Figure 4 shows that the percentage of childlessness among women aged 45 to 49 (i.e., women who are already at the end of their childbearing years) slightly decreases from 13.58 in 1980 to 13.08 in 1991, and then sharply decreases to 9.37 in 2001, with only a slight increase to 9.89 in 2010. In other words, from 1991 to 2001 there are almost 4 percent more women who have children at the end of their reproductive lives, with an increase of 0.52 percent in childless women from 2001 to 2010. The sharp decrease in the percentage of childlessness from 1991 to 2001 is the first evidence that Argentina is not undergoing a SDT in terms of fertility patterns.

FIGURE 4
Percentage of childlessness
Argentina – 1980-2010




Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.

Figure 4, however, does not consider cohort-driven variation in fertility patterns. While childlessness is measured in terms of women ages 45 to 49, here I also looked at the proportion of women without children across different age groups by birth cohort to analyze if the change in the percentage of women with no children also occurs among younger women. To analyze the proportion of women who do not have children by cohort, I estimated an OLS regression with dummy variables for each birth cohort and for each age group as independent variables, with a dependent dummy variable that takes the value of 1 if the woman had no children and 0 otherwise.[10] Table 6 and Figure 5 show the results of the OLS regression (all of them are statistically significant at $\alpha = 0.01$). Across all age groups, the proportion of women without children by birth cohort remains relatively stable over time. For example, if we consider ages 20-24, the proportion of women with no children remains constant between 0.56 and 0.59 across birth cohorts. While for the cohort born in 1956-1960 the proportion of women aged 20 to 24 who do not have children is 0.56 (p-value< 0.01), in the case of the 1986-1990 cohort, that is, those women born 30 years later, the proportion of women without children remains at 0.59 (p-value< 0.01). This trend also holds if we focus, for example, on ages 35-39: the proportion of women aged 35 to 39 born in 1941-1945 without children is 0.14 (p-value< 0.01), while in the case of women born in 1971-1975 this value remains the same. Therefore, any observed increases are slight. While younger women predictably show the highest proportions of women with no children and older women the lowest, the share of women without children across age groups does not vary over time by birth cohort. Even for those cohorts for which I do not

[10] Since I am only working with four census years, I only have completed fertility records for the cohort born in 1961-1965 and almost entirely for the cohort of 1966-1970 as well. Once the next census is available, I will be able to complete the missing data for the cohort born in 1971-1975.

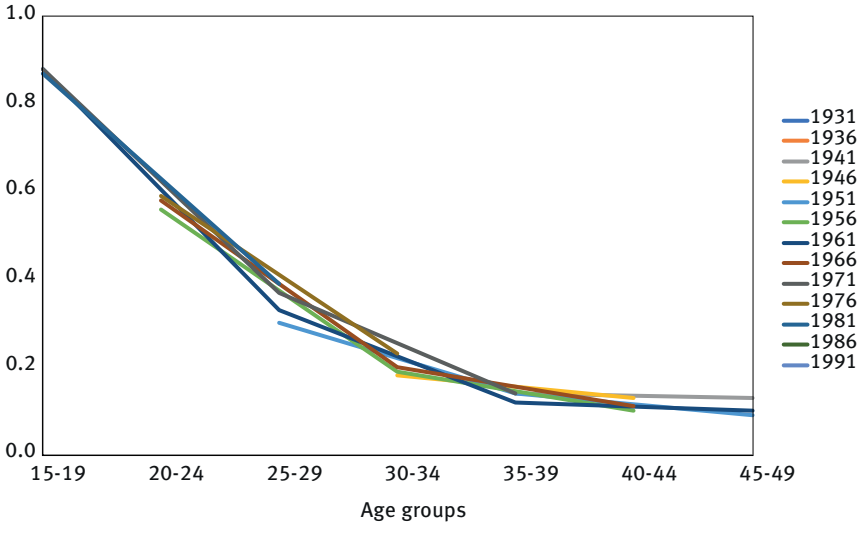
have complete data for all age groups, the proportion of women with no children remains stable for those ages where I do have information.

TABLE 6
Women without children by birth cohorts and age groups
Argentina – 1980-2010

| Age groups | 1931-1935 | 1936-1940 | 1941-1945 | 1946-1950 | 1951-1955 | 1956-1960 | 1961-1965 | 1966-1970 | 1971-1975 | 1976-1980 | 1981-1985 | 1986-1990 | 1991-1995 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15-19 | | | | | | | 0.88 | | 0.88 | | 0.87 | | 0.87 |
| 20-24 | | | | | | 0.56 | | 0.58 | | 0.59 | | 0.59 | |
| 25-29 | | | | | 0.30 | | 0.33 | | 0.37 | | 0.39 | | |
| 30-34 | | | | 0.18 | | 0.19 | | 0.20 | | 0.23 | | | |
| 35-39 | | | 0.14 | | 0.14 | | 0.12 | | 0.14 | | | | |
| 40-44 | | 0.13 | | 0.13 | | 0.10 | | 0.11 | | | | | |
| 45-49 | 0.14 | | 0.13 | | 0.09 | | 0.10 | | | | | | |

Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.

FIGURE 5
Proportion of women without children by birth cohorts and age groups
Argentina – 1980-2010




Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.

The evidence of the overall change in percent childlessness in Figure 4 and the OLS model show that, if we rely on an increase in the proportion of women without children as the main indicator of the SDT, then Argentina is not yet experiencing this demographic phenomenon. However, if we focus on an alternative indicator of the SDT such as postponement of childbearing, the reality is somewhat different. If we consider Table 5 and Figure 3 from the previous section again, and we focus on the age group 25 to 29, the mean number of children among women born in 1951-1955 is 1.62 (p-value< 0.01), falling to 1.40 (p-value< 0.01) for women born in 1971-1975, and even reaching

1.17 (p-value< 0.01) in the 1981-1985 cohort. A possible interpretation of this trend is that it corresponds to a postponement of childbearing. If this group of women ends up having on average a lower number of children than previous cohorts by the end of their reproductive years, this would prove to be an indicator of the beginning of the SDT. As we saw in the previous section, when we consider older age groups for the key cohorts driving the decline in fertility, we see that the mean number of children at the end of their childbearing years is indeed lower. As I described in the previous section, women born in 1966-1970 reach the end of their reproductive years with a mean number of children 0.13 points lower than women born in 1936-1940. In turn, this indicator highlights that while Argentina is still finishing its first demographic transition (given that it has not reached yet fertility below replacement level), it is also showing signs of an incipient SDT.

## Conclusions, limitations, and future steps

This article examined the decrease in the TFR in Argentina between 1980 and 2010. Fertility change in Argentina has not stalled but decreased from 3.15 in 1980 to 2.35 in 2010. Further, the decline in the TFR in Argentina is not evenly distributed among women of different ages but driven by a change in the reproductive behaviors of younger women. Furthermore, the mean number of children per woman decreased during the period under review. From 1980 onwards, and especially in 2010, the proportion of women with three children or more decreased. The latter provides evidence that Argentina is undergoing the end of its FDT. This decline in the mean number of children within the period concerned is cohort-driven. Cohorts born in 1966-1970 and 1971-1975 constitute a turning point in reproductive behaviors since, among older age groups, the average number of children decreases continuously from those cohorts onwards. Additionally, if we rely on an increase in childlessness as the main indicator of the SDT, then there is no evidence to suggest that Argentina is undergoing this phenomenon, since first, and above all, there is not an increase in the proportion of childless women and (at least not yet) a TFR that is below replacement level from 1980-2010. The data also showed that there is no change in the share of women without children between different birth cohorts, since the percentage of women with no children remains stable across age groups and cohorts. Although Argentina is not experiencing an increase in childlessness, the results of this analysis have nevertheless shown a postponement of childbearing. This postponement of the fertility calendar would highlight that, although Argentina is completing its first transition as it has not reached below-replacement fertility yet, this country could show signs of an incipient SDT.

The article, however, suffers from some limitations that will be covered in future research. The first limitation is that my discussion has focused mostly on childlessness, and secondarily on the postponement of childbearing, to disentangle whether Argentina is undergoing an emerging second demographic transition. In future research I will

complement this analysis with other relevant indicators of the second demographic transition (e.g., new living arrangements) that allow me to address whether Argentina is experiencing this demographic phenomenon more accurately.

Another limitation of this article is that the data collected here do not allow for an analysis of the end of the reproductive lives of many birth cohorts. Since I only rely on the last four national censuses, I can only observe the reproductive behaviors of a set of birth cohorts and, within them, certain age groups. The next census will allow analysis of the end of the childbearing years of younger birth cohorts considered in this article. In doing so, I will be able to analyze whether the trend described here for certain birth cohorts of women (specifically those born in 1966-1970 and 1971-1975) holds true for subsequent cohorts. Along the same lines, in future research I will seek to complement the population censuses analyzed here with other data sources to capture more recent trends. More up-to-date data from the Office of Statistics and Health Information of the Ministry of Health (ARGENTINA, 2021) have shown that the TFR has continued its downward trend in Argentina, reaching the value of 2.18 in 2020. The latter shows that the TFR in Argentina has reached almost replacement level and could continue to fall to below-replacement fertility, in line with the SDT framework. In future research I will collect provincial data disaggregated at the individual level that will allow me to continue the analysis of the decline in the mean number of children, the postponement of childbearing, and the change in the proportion of women without children by birth cohort until the end of the childbearing years of younger cohorts considered here.

Finally, it is worth noting that this article only establishes descriptive inferences rather than causal relationships. The decline in the fertility rate in Argentina during 1980-2010 is mainly driven by certain birth cohorts. However, this association does not allow us to say anything about why these cohorts are indeed driving the sustained decline in fertility in Argentina yet.

A possible explanation of this change in fertility patterns across cohorts could be women's broader access to higher education compared to women born in cohorts prior to 1966-1970 and 1971-1975. I can hypothesize that these birth cohorts play such a key role because they experienced greater access to secondary education and more.[11] The larger number of women with secondary school education shows that this educational level became less selective over time. Therefore, this higher educational attainment could explain why cohorts born in 1966-1970 and 1971-1975 mark a shift in reproductive behaviors. On this latter point, many authors (BECKER, 1981, 1991; CARLSON, 2019; LEE, 2003; WILLIS, 1973, 1994) have analyzed how educated women have a higher value of time that raises the opportunity costs of childrearing and staying at home, whereby couples decide to have fewer children.

[11] On this subject, Table A1 in the Appendix shows that the proportion of women with secondary school increased significantly between the 1980s and the beginning of 2000 (0.15 in 1980 and 0.37 in 2001). This shows that access to secondary education was losing selectivity despite the fact that this educational level was only made compulsory towards the end of 2006. This can also be seen but to a lesser extent in regard to access to university studies (0.02 in 1980 and 0.06 in 2001).

An alternative hypothesis could be that the decline in fertility is explained by a differential access to the labor market across cohorts, either in terms of the number of women employed, or the types of occupations in which they are concentrated. This last point has been highlighted by several theoretical approaches that hold that motherhood continues to have a major impact on women's paid work and that having more children implies more career penalties for women (BESAMUSCA, 2019; COOLS; MARKUSSEN; STROM, 2017; JACOBS; GERSON, 2004; LANCHIMBA; DIAZ-SANCHEZ, 2017). Thus, I can hypothesize that the identified cohort effect may be explained by different levels of access to the labor market across cohorts. In other words, lower fertility levels might be driven by an increase in women's employment over time, while in turn an increase in fertility would reduce the probability of women's labor force participation (CRUCES; GALIANI, 2007).

A third explanation could focus on the role of cultural changes caused by the 1983 democratic transition in Argentina. As stated by Pecheny and Petracci (2006), this democratic transition implied a "way out of silence" regarding human rights related to sexuality. Since 1983 women's civil rights have substantially evolved. Additionally, since the beginning of the twenty-first century, governments in Argentina have adopted many policies advancing sexual and reproductive rights, particularly the 2002 Program of Sexual Health and Responsible Parenthood.[12] Data from the next census will allow for a comparison of cohorts of women that were exposed to this new program, which serves as a causal lever to measure fertility change.

These possible explanations will be the core lines of future research.

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[12] The National Sexual Health and Responsible Parenthood Program provides contraceptive methods free of charge throughout the country, with the aim of preventing unwanted pregnancies.

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## About the author

*Yasmin A. Mertehikian* is a PhD candidate in Sociology and Demography at the University of Pennsylvania, where she also holds an MA in Sociology/Demography. Before coming to Penn, she did an MA in Social Sciences at Universidad Nacional de General Sarmiento – Instituto de Desarrollo Económico y Social and a BA in Sociology at Universidad de Buenos Aires, both in Argentina.

## Contact address

University of Pennsylvania
3718 Locust Walk, McNeil Building, Office 374
19104-6299 – Philadelphia-PA, United States

## Resumo

*O regime de fecundidade na Argentina (1980-2010): o fim da primeira transição demográfica ou uma segunda emergente?*

A transição da fecundidade na Argentina tem características excepcionais. Em comparação com a maioria dos países da América Latina, a fecundidade na Argentina diminuiu relativamente cedo e, diferentemente das transições de fecundidade na Europa Ocidental, esse declínio não levou a um período de alto crescimento natural da população. No início do século 21, a Argentina parecia experimentar uma estagnação da fecundidade, apesar do aumento da educação formal e da participação laboral das mulheres e de uma maior disponibilidade de contraceptivos. Utilizando os dados dos Censos Populacionais de 1980, 1991, 2001 e 2010, o presente trabalho mostra que a fecundidade continuou sua tendência de queda de 1980 a 2010. As mudanças no comportamento da fecundidade são dadas por uma diminuição no número médio de filhos por mulher, mas não por um aumento da nuliparidade. No entanto, há evidências de um adiamento da fecundidade. Os resultados mostram que, embora a Argentina esteja completando sua primeira transição demográfica, já que ainda não atingiu a fecundidade abaixo do nível de reposição, o país pode mostrar sinais de uma emergente segunda transição demográfica.

**Palavras-chave**: Argentina. Transição demográfica. Fecundidade.

## Resumen

*El régimen de fecundidad en Argentina (1980-2010): ¿El final de la primera transición demográfica o una segunda emergente?*

La transición de la fecundidad en Argentina tiene características excepcionales. Comparada con la mayoría de los países latinoamericanos, la fecundidad en Argentina disminuyó relativamente temprano y, a diferencia de las transiciones de fecundidad en Europa occidental, este descenso no condujo a un período de alto crecimiento natural de la población. A principios del siglo XXI, Argentina parecía experimentar un estancamiento de la fecundidad a pesar del aumento de la educación formal y de la participación laboral de las mujeres y de una mayor disponibilidad de anticonceptivos. Utilizando los Censos de Población de 1980, 1991, 2001 y 2010, demuestro que la fecundidad ha continuado su tendencia descendente desde 1980 hasta 2010. Los cambios en los comportamientos de fecundidad vienen dados por una disminución del número promedio de hijos por mujer, pero no por un aumento de la nuliparidad. Sin embargo, hay evidencia de un aplazamiento de la fecundidad. Los resultados muestran que, aunque Argentina está completando su primera transición demográfica, ya que aún no ha alcanzado una fecundidad por debajo del nivel de reemplazo, este país podría mostrar signos de una segunda transición demográfica emergente.


**Palabras clave**: Argentina. Transición demográfica. Fecundidad.

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## Appendix

**TABLE A1**
**Descriptive statistics**
**Argentina – 1980-2010**

| Variables | Observations | Mean | SD | Min | Max |
|---|---|---|---|---|---|
| **1980** | | | | | |
| Age | 626,548 | 29.95 | 9.901361 | 15 | 49 |
| Number of children | 626,548 | 1.939 | 2.105851 | 0 | 8 |
| Birth last year | 626,548 | 0.1112 | 0.3143974 | 0 | 1 |
| No children | 626,548 | 0.3508 | 0.4772123 | 0 | 1 |
| Less than primary education | 626,548 | 0.3231 | 0.4676654 | 0 | 1 |
| Primary education | 626,548 | 0.505 | 0.4999756 | 0 | 1 |
| High school education | 626,548 | 0.1518 | 0.3587792 | 0 | 1 |
| College or more | 626,548 | 0.02015 | 0.1405246 | 0 | 1 |
| **1991** | | | | | |
| Age | 1,025,107 | 30.3 | 9.962097 | 15 | 49 |
| Number of children | 1,025,107 | 1.676 | 1.781242 | 0 | 8 |
| Birth last year | 1,025,107 | 0.08585 | 0.2801491 | 0 | 1 |
| No children | 1,025,107 | 0.3763 | 0.4844685 | 0 | 1 |
| Less than primary education | 1,025,107 | 0.1373 | 0.3442018 | 0 | 1 |
| Primary education | 1,025,107 | 0.5513 | 0.497366 | 0 | 1 |
| High school education | 1,025,107 | 0.2705 | 0.4442075 | 0 | 1 |
| College or more | 1,025,107 | 0.04093 | 0.1981222 | 0 | 1 |
| **2001** | | | | | |
| Age | 890,908 | 30.2 | 10.01538 | 15 | 49 |
| Number of children | 890,908 | 1.628 | 1.781252 | 0 | 8 |
| Birth last year | 890,908 | 0.07953 | 0.270568 | 0 | 1 |
| No children | 890,908 | 0.3821 | 0.4859052 | 0 | 1 |
| Less than primary education | 890,908 | 0.0799 | 0.2711393 | 0 | 1 |
| Primary education | 890,908 | 0.4915 | 0.4999287 | 0 | 1 |
| High school education | 890,908 | 0.3651 | 0.4814684 | 0 | 1 |
| College or more | 890,908 | 0.06342 | 0.2437222 | 0 | 1 |
| **2010** | | | | | |
| Age | 4,122,062 | 30.09 | 9.91892 | 15 | 49 |
| Number of children | 4,122,062 | 1.672 | 1.76026 | 0 | 8 |
| Birth last year | 4,122,062 | 0.07227 | 0.2589327 | 0 | 1 |
| No children | 4,122,062 | 0.3451 | 0.47539 | 0 | 1 |
| Less than primary education | 4,122,062 | 0.1146 | 0.3184869 | 0 | 1 |
| Primary education | 4,122,062 | 0.4715 | 0.4991893 | 0 | 1 |
| High school education | 4,122,062 | 0.3677 | 0.4821768 | 0 | 1 |
| College or more | 4,122,062 | 0.04621 | 0.2099472 | 0 | 1 |

Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.
Note: Total observations are estimated using the weights provided by the census data.

**TABLE A2**
**Mean number of children by birth cohorts and age groups**
**Argentina – 1980-2010**

| Age groups | 1931-1935 | 1936-1940 | 1941-1945 | 1946-1950 | 1951-1955 | 1956-1960 | 1961-1965 | 1966-1970 | 1971-1975 | 1976-1980 | 1981-1985 | 1986-1990 | 1991-1995 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15-19 | | | | | | | 0.16 | | 0.17 | | 0.16 | | 0.16 |
| 20-24 | | | | | | 0.81 | | 0.75 | | 0.70 | | 0.63 | |
| 25-29 | | | | | 1.62 | | 1.56 | | 1.40 | | 1.17 | | |
| 30-34 | | | | 2.23 | | 2.25 | | 2.15 | | 1.78 | | | |
| 35-39 | | | 2.62 | | 2.60 | | 2.60 | | 2.34 | | | | |
| 40-44 | | 2.8 | | 2.64 | | 2.81 | | 2.63 | | | | | |
| 45-49 | 2.70 | | 2.60 | | 2.83 | | 2.75 | | | | | | |

Source: Prepared by the author based on the Argentine Population Censuses, 1980 to 2010.