The Cultural Origins of the Demographic Transition in France

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Abstract

This research shows that secularization accounts for the remarkably early fertility decline in France. The demographic transition, a turning point in history and an essential condition for development, began in France more than a century earlier than in any other country. Why it happened so early is one of the 'big questions of history' because it challenges traditional explanations and because of data limitations. Using a novel dataset crowdsourced from publicly available genealogies, I comprehensively document the decline in fertility and its timing with a representative sample of the population. Drawing on a wide range of sources and data, I document an important process of secularization in the eighteenth century and find a strong and robust association with the timing of the transition across regions and individuals. Finally, I explore the drivers of secularization and discuss the persistent impact of the transition on economic growth.

***JEL codes**: N33, O10, Z12*
***Keywords**: fertility, development, secularization*

> And the race of man cannot, by any efforts of reason, escape from it.
>
> –Thomas Malthus, *An Essay on the Principle of Population* (1798)

1 Introduction

The demographic transition is a watershed moment in the process of development. Before the transition, and for most of human history, the world was trapped in stagnation. During the nineteenth century, the course of history underwent sweeping transformations with unprecedented technological progress and mass education. However, it was the fertility decline during the demographic transition that triggered a dramatic leap away from stagnation, allowing living standards to rise above subsistence by overcoming the offsetting impacts of population growth. The fertility decline is traditionally attributed to technological advancements and the

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accumulation of human capital, yet important cultural upheavals also took hold during this period.

This research studies the earliest fertility transition in history to understand the role played by these cultural factors. The demographic transition began in France, with fertility declining in the eighteenth century, a century earlier than in any other country, during a period of economic stagnation and prior to the French Revolution.[1] Why it happened so early is an old puzzle challenging traditional explanations since, in many ways, France was a poor country at the time. In fact, historian Robert Darnton (1978) argued that it is one of "the big questions of history" (p. 132), while, according to Alfred Sauvy (1962), it is "the most important fact of all her [France] entire history" (p. 13). Additionally, the absence of comprehensive data or modern censuses has impeded a better understanding of the factors driving the transition. To answer this question, this paper comprehensively documents the decline in fertility with a representative sample of the population, using a novel dataset crowdsourced from publicly available genealogies; advances the hypothesis that secularization accounts for the decline; and provides empirical evidence supporting this hypothesis.

Because of the lack of data, the timing of the French fertility decline is still not fully understood. Using a novel crowdsourced genealogical dataset from online family trees on geni.com, I comprehensively document, for the first time, the fertility decline with a representative sample of the population at the time. The raw genealogical data from geni was made publicly available by Kaplanis et al. (2018). It spans centuries and contains millions of individuals. Using this data, I reconstruct a measure of fertility from the horizontal branches of family trees. To evaluate the degree of selection, I compare geni to census data, which is only available in the nineteenth century, and to a wide range of available representative sources or estimates; and show that the genealogies are a representative sample of the population, at the national and the local levels, and therefore provide the best available account of the decline in fertility. Using these lineages, I show that the transition took hold around 1760, earlier than previously thought.

Then, I hypothesize that a process of secularization, characterized by the waning influence of the Catholic Church, played a pivotal role in triggering the remarkably early demographic transition in France. As the Church's sway diminished and traditional religious moral constraints relaxed, the clergy could not oppose fertility controls anymore.

Using data on the language used in the opening statements of wills, on donations to the Church, on clerical recruitment, and on the first names given to newborns, I first document an important process of secularization that occurred in France at the same time. Secular language spread in wills, clerical recruitment fell, and religious naming declined, all in the decades preceding the French Revolution. The first names, in particular, provide a novel measure of the religiosity of ordinary individuals, constructed from millions of birth and baptism records scraped from familysearch and covering rural municipalities across eleven *départements* in France. Unlike existing evidence, mostly drawn from elites, these sources show that secularization was not

[1]The demographic transition comprises a mortality and a fertility transition. In France the fertility transition initiated it, and I use the two terms interchangeably.

an elite phenomenon, but rather one that penetrated the masses. As de Tocqueville (1856) writes, "irreligion was able to become a general and dominant passion in eighteenth-century France" (Book 3, Chapter 2).

To establish whether secularization contributed to the transition, I rely on a number of analyses. First, at the aggregate level, the timing of secularization coincides almost perfectly with that of the fertility decline, while no other variable changed significantly at the time. Second, I study the determinants of the transition across *départements*, using census data available after the transition, and across individuals, using the crowdsourced genealogical data.[2] I document a large and robust association between the timing of the fertility decline and secularization, captured, inversely, by the presence of refractory clergy in 1791 (Squicciarini, 2020; Tackett, 1986). The Civil Constitution of the Clergy required all clergy to take an oath of allegiance to the secular revolutionary state and made them civil servants. The presence of refractory clergy is highly correlated with subsequent, more direct measures of the importance of religion in people's lives, such as Easter attendance, which is only available in 1966, yet it is uncorrelated with proxies for religiosity before the onset of secularization.[3] I also validate the measure directly against the decline in religious naming: the municipalities that secularized most display a significantly lower share of refractory clergy in 1791. The oath therefore reflects the level of religiosity reached on the eve of the French Revolution, the outcome of secularization, rather than pre-existing differences in devotion.

Across *départements*, I estimate a strong and robust positive association between the presence of refractory clergy and the timing of the transition using census data available from 1831 to 1961. The regions that secularized experienced a decline in fertility more than a century earlier than those that did not–no other variable has an impact nearly as important. The difference between Provence, a stronghold of secularization, and Brittany, a bastion of Catholicism, is as large as the difference between France and England.

Additionally, I study the heterogeneous effects of the refractory clergy and find suggestive evidence that cultural and economic factors played complementary roles: the association between secularization and the decline in fertility appears larger in more densely populated places, suggesting that the relaxation of moral and social constraints allowed individuals to reach their desired level of fertility–which was lower in more developed regions. I also show that the estimated correlation is particularly robust, across thousands of alternative specifications, including with variable selection methods, and even after accounting for omitted variables and spatial dependence.

Drawing on the genealogical data, I find similar results at the individual level, further confirming the relevance of this data and of my hypothesis. Those born in places with refractory clergy had more children, and the correlation is large, statistically significant, and robust across specifications and methods. Merging the genealogies with the familysearch data, I also find suggestive evidence linking fertility to secularization instead of the level of devotion: those born in municipalities where religious naming declined most had fewer children. Then, using distribu-

[2]The cross-sectional analysis covers 85 *départements* and the individual-level analysis 440 districts.

[3]Note that, for the purpose of this paper, *the onset of secularization* refers to the mid-eighteenth century, when the decline began. However, secularization was a gradual and non-monotonic process with periods of revival.

tion regressions that estimate the relationship between the cumulative distribution function of fertility and the presence of refractory clergy across all fertility levels, I show that large families likely experienced the largest decline in fertility as secularization took place.

To account for unobserved institutional factors that could be driving the association, I rely on a range of empirical strategies. First, I add *département*-by-decade fixed effects, comparing individuals born in the same decade in different districts of the same *département*, to account for time-varying *département*-level institutional unobservables. Second, I compare the coefficient on the refractory clergy before and after the onset of the decline in fertility. I find that the presence of refractory clergy was positively associated with fertility after 1760 but had a null and insignificant effect before. Third, I study second-generation migrants at the time of the decline. I trace historical migrations in the genealogies and compare individuals born in the same district whose parents were born in different districts. I find that the presence of refractory clergy in the district of origin of the parents had a large association with fertility, which persisted for generations and through migrations. Taken together, these findings support a cultural interpretation of the association, although they do not provide causal identification or rule out a role for institutions.

Finally, I discuss the drivers of secularization and the persistent impact of the transition on economic growth. I argue that secularization arose as a backlash against religious authorities holding a monopoly on faith and bound, through the doctrine of Gallicanism, to an absolutist, divine-right monarchy that had granted this monopoly to the Counter Reformation centuries before. When religiosity rests on strong state-church integration, there can indeed be rapid and lasting reversals (Tremblay-Auger, 2026). To test this hypothesis, I first document such a reversal: the Church's hold gave way fastest where it had been strongest–municipalities with the most religious naming at the beginning of the eighteenth century are precisely those that secularized most. Then, I document that secularization was strongest where the religious monopoly and the extractive monarchy coincided–not where either existed in isolation. Last, but not least, I show that, although England was the cradle of the Industrial Revolution, the French achieved a comparable increase in income per capita after 1760, when the early decline in fertility limited population growth in France.

This paper makes several key contributions. First, I add to a large literature on the transition from Malthusian stagnation to sustained economic growth (Galor, 2011, 2022; Galor and Weil, 2000), in which a larger population generates more innovation (Kremer, 1993), natural selection favors traits complementary to development (Galor and Moav, 2002), and accelerating technological progress raises the returns to education until parents substitute child quality for quantity and fertility declines (Becker, Murphy and Tamura, 1990). According to this literature, the decline in fertility follows development. In France, it preceded it. My contribution is to highlight the French case and to provide evidence that culture played a significant role in the fertility transition there–and therefore in the transition to sustained growth.

Second, I add to a growing body of literature on the role of cultural factors in economic development (Mokyr, 2016; Squicciarini, 2020; Squicciarini and Voigtländer, 2015) and in historical fertility transitions (Beach and Hanlon, 2022; Delventhal, Fernández-Villaverde and Guner, 2024; Spolaore and Wacziarg, 2022). My contribution is to study the earliest fertility transi-

tion in history and to investigate its cultural roots. Additionally, while Spolaore and Wacziarg (2022) focus on the diffusion of the French fertility decline along cultural lines, my focus is on investigating the fundamental factors that initiated this transition.

Third, I add to an extensive body of literature in history, demography, and economic history that explores the early fertility transition in France, from the family reconstitutions pioneered by Louis Henry (Henry, 1972*a*,*b*, 1978; Henry and Houdaille, 1973; Houdaille, 1976) and the marital fertility indices of the Princeton European Fertility Project (Coale and Watkins, 1986) as well as more recent research on economic and cultural forces (Daudin, Franck and Rapoport, 2018; de la Croix and Perrin, 2018; Murphy, 2015; Perrin, 2021). Yet, because of the lack of data, the timing and causes of the decline are still not fully understood. Gay, Gobbi and Goñi (2026) document that the egalitarian inheritance rules imposed by the French Revolution reduced completed fertility where inheritance had previously been unequal. However, fertility declined before the Revolution: inheritance reform helps explain why the decline accelerated, not why it began. My contribution is twofold: using crowdsourced genealogical data, I am the first to empirically document the timing of the fertility decline at the national level, and the first to empirically investigate the origins of its onset.

Fourth, I add to a substantial literature on the history of religion in eighteenth-century France, which, since Vovelle (1973), has documented the waning influence of the Catholic Church using wills and bequests in case-studies of different regions (Chaunu, 1978; Dinet, 1991; Hoffman, 1984; Norberg, 1985) and, relying on this evidence, in France as a whole (Chartier, 1991; Tackett, 1986; Todd, 1990; Van Kley, 1996). My contribution is to comprehensively document the loss of influence of the Catholic Church at the national level among ordinary individuals. I also provide suggestive evidence on the roots of secularization, arguing that it arose as a backlash against both the Church and the monarchy to which it was bound, building on the historical accounts of Chartier (1991); Van Kley (1996) and the theoretical model of Tremblay-Auger (2026).

Fifth, I add to a growing literature on the economics of religion (Barro and McCleary, 2003; Becker and Woessmann, 2009; Becker, Nagler and Woessmann, 2017; Cantoni, Dittmar and Yuchtman, 2018; Iannaccone, 1998; Sinding Bentzen, 2019) and to a large literature in economics using names to capture identity (Abramitzky, Boustan and Eriksson, 2020; Assouad, 2021; Bazzi, Fiszbein and Gebresilasse, 2020; Beck Knudsen, 2024; Fouka, 2020; Fryer and Levitt, 2004; Weigand, Mohr and Cantoni, 2025) or religiosity (Andersen and Bentzen, 2022). However, while Andersen and Bentzen (2022) study the devotion of the elites, data on the devotion of the masses hardly exists. My contribution is to document the decline in religious naming among ordinary individuals in eighteenth-century France.

Finally, I add to an emerging literature using genealogies to study demographic change in periods without censuses (Galor and Klemp, 2019; Kaplanis et al., 2018; Minardi, Corti and Barban, 2024; Stelter and Alburez-Gutierrez, 2022). My contribution is to be the first to reconstruct a measure of fertility from such crowdsourced genealogical data–an approach already being adopted in subsequent papers (Blanc and Wacziarg, 2025; Gay, Gobbi and Goñi, 2026).

The paper is organized as follows. Section 2 presents the existing hypotheses and reviews the related literature on why fertility declined. Section 3 introduces the crowdsourced genealogical

data and documents the fertility decline. Section 4 documents the waning influence of the Catholic Church using a wide range of datasets and measures. Sections 5 and 6 establish the relationship between secularization and fertility across *départements* and individuals. Section 7 discusses the drivers of secularization. Section 8 concludes.

2 Hypotheses and related literature

Theoretical considerations. Throughout the vast majority of human history, life on earth was *nasty, brutish, and short*, dominated by starvation, poverty, wars, and pandemics. Although occasional innovations emerged, they translated into larger populations rather than improvements in living conditions. For that reason, Malthus (1798) believed that humanity was condemned to enduring stagnation. He was wrong because a larger population generated more innovations (Kremer, 1993; Romer, 1990) and selected for traits that were complementary to the process of development (Galor and Moav, 2002), creating a positive feedback loop between technology, population, and education (Galor, 2011, 2022; Galor and Weil, 2000).[4] As technological progress gradually accelerated over time, the returns to education increased, parents substituted quality for quantity, and fertility declined (Becker and Lewis, 1973; Becker, Murphy and Tamura, 1990). After fertility declined, standards of living were eventually allowed to rise above subsistence in a sustained way. However, the French case challenges this: fertility declined there first, although education and development lagged behind.

Historical fertility transitions. The demographic transition began in France. Figure 1 displays the estimated timing of the onset of the decline across regions, using modern census data, available after the 1830s, from Coale and Watkins (1986). Because there is no comprehensive data available before that, even the precise timing of the decline is uncertain. We only know that it took place in the eighteenth century, a century before any other country, and before the French Revolution, as discussed in Section 3. Why France led this demographic change, ahead of more developed nations, is still not definitively understood: "Why France preceded other countries (including more economically developed England) has never been conclusively established" (Van de Walle and Muhsam, 1995, p. 261).

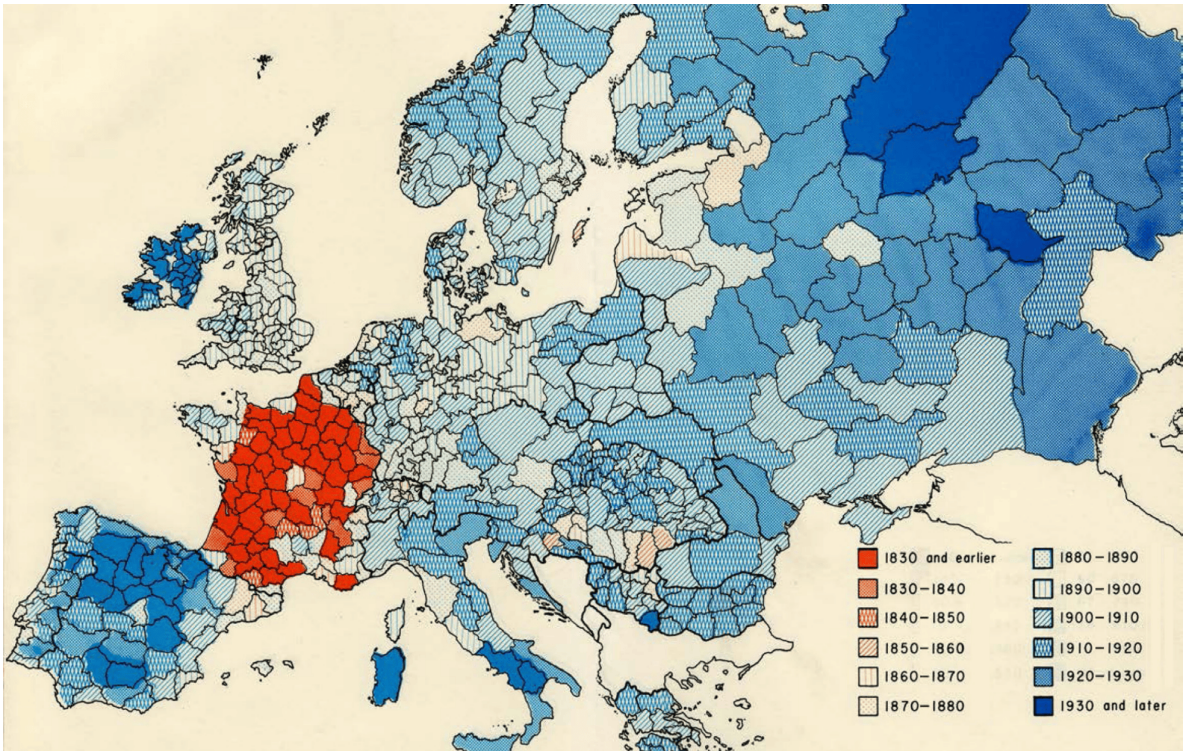
Did fertility decline because of economic or cultural factors, or because of their interaction?[5] Figure 2 shows human capital accumulation, structural transformation, and economic development in France and in England from 1500 to 1800. In the eighteenth century, France lagged one to two centuries behind England, the cradle of the Industrial Revolution. In 1750, literacy in France was about half that of England and Wales (Panel A). In 1800, the share of the labor force outside agriculture in France was still lower than in England in 1500 (Panel B). And

[4] Galor (2022) argues that these undercurrents "operated relentlessly, if invisibly, throughout the course of human history, and its long economic ice age, gathering pace until, at last, technological advancements in the course of the Industrial Revolution accelerated beyond a tipping point, where rudimentary education became essential for the ability of individuals to adapt to the changing technological environment. Fertility rates started to decline and the growth in living standards was liberated from the counterbalancing effects of population growth, ushering in long-term prosperity that continues to soar in the present day" (p. 6).

[5] Coale (1973); Coale and Watkins (1986) argue that three preconditions, reflecting both economic and cultural factors, are necessary: "the acceptance of calculated choice as a valid element in marital fertility, the perception of advantages from reduced fertility, and knowledge and mastery of effective techniques of control" (Coale, 1973, p. 69) in other words, *readiness*, *willingness*, and *ability*.

Figure 1: Timing of the decline in fertility (using modern census data)

Note: This figure displays estimated dates of a sustained decline – defined as a 10 percent decline – in marital fertility across regions of Europe (Coale and Watkins, 1986).



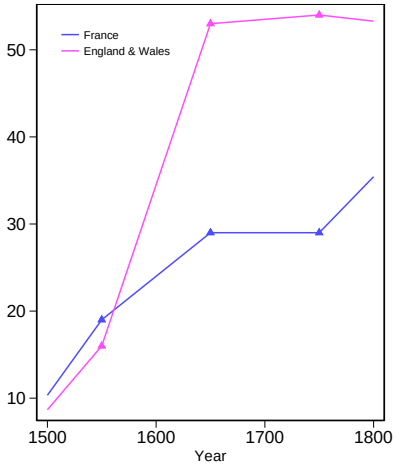
France only attained in 1800 a GDP per capita comparable to that of England and Wales in the mid-seventeenth century (Panel C).[6] Therefore, it is highly unlikely that economic factors alone played any major role.

A number of recent studies have explored the role played by cultural factors in fertility transitions across various contexts. Spolaore and Wacziarg (2022) document the gradual dissemination of the historical fertility transition along cultural and linguistic lines, from French-speaking regions to other parts of Europe: between 1830 and 1970, regions linguistically closer to French transitioned earlier, while economic variables explain the level of fertility rather than the timing of its decline. Delventhal, Fernández-Villaverde and Guner (2024) document, across the world and more than two centuries, that fertility transitions began earlier in countries geographically and culturally close to countries that had already transitioned, and unfolded faster the later they began, consistent with a process of diffusion. Beach and Hanlon (2022) document changing norms of fertility in England and in English-speaking countries following the Bradlaugh-Besant trial of 1877, which publicized methods of fertility control: culturally British households in Canada, the United States, and South Africa reduced their fertility sharply and simultaneously, relative to their neighbors.

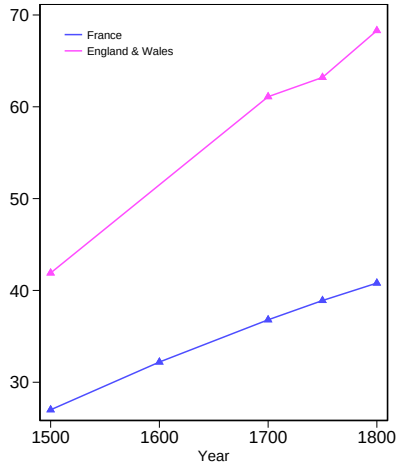
[6]Similarly, it took more than two centuries to achieve the rate of urbanization of 1750 England. And as in the rest of Europe, child mortality was high until the mid-nineteenth century, with about half of children dying before they reached five. Weber (1976) famously depicted the French as "peasants" and "savages", while Crouzet (2003) notes that "France remained fundamentally a peasant-based rural economy" (p. 236).

Figure 2: Human capital accumulation, structural transformation, and economic growth

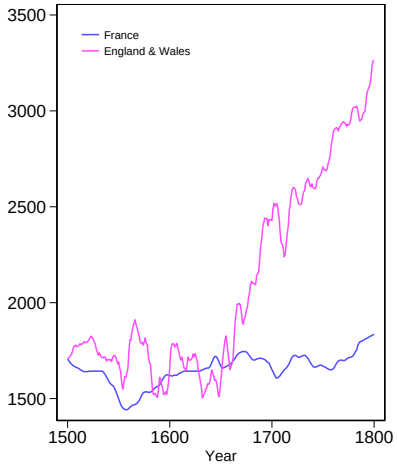
Note: This figure displays literacy rates, the share of the labor force not in agriculture, and real GDP per capita from 1500 to 1800 in France and in England and Wales. Sources: Buringh and van Zanden (2009) for literacy, Allen (2000) for the share of labor force in agriculture, Bolt and van Zanden (2014); Broadberry et al. (2015); Ridolfi (2016) for real GDP per capita (2011 USD). In Panels A and B, the scatter points represent the years for which data is available. In Panel C, the data is available annually.



(Panel A) Literacy rate



(Panel B) Share of the labor force not in agriculture



(Panel C) Real GDP per capita

However, a comprehensive investigation into the origins of the initial decline in fertility rates in France has yet to be undertaken. An older demographic literature, following the seminal work of Louis Henry, reconstructed fertility from parish records but did not attempt to identify the causes of the decline (Section 3.1 discusses these). More recent research has weighed the relative importance of economic and cultural forces across regions. de la Croix and Perrin (2018) structurally estimate a quantity-quality model of fertility and education across *départements* and find that economic incentives account for about 38 percent of the variation in fertility in the nineteenth century, with the residual pointing to cultural factors. Murphy (2015) examines the determinants of marital fertility across *départements* in the late nineteenth century, estimating multivariate regressions with a wide set of economic and cultural factors. The presence of refractory clergy in 1791 is associated with higher fertility in 1831. However, that paper only devotes a couple of paragraphs to this result and interprets it as capturing the French Revolution as one of many causes of the decline. Similarly, González-Bailón and Murphy (2013) use an agent-based model to simulate the diffusion of fertility control through social interactions, and show that interdependent fertility decisions reproduce the observed decline better than independent ones, suggesting that fertility limitations diffused culturally. Finally, using *département*-level data, Daudin, Franck and Rapoport (2018) show that internal migration diffused norms of limited fertility in the second half of the nineteenth century, while Perrin (2021) argues that regional differences in marriage patterns, gender relations, and openness to social change played a role.

Although this recent literature highlights the importance of cultural factors, the ultimate causes of the early French fertility transition remain elusive. This is, in part, due to the lack of

data in the eighteenth century: most studies rely on census data, which is only available in the nineteenth century, decades after the onset of the decline. An exception is Gay, Gobbi and Goñi (2026), who draw on the family reconstitutions of Henry and on the crowdsourced genealogical data that I introduce in this paper to document that the egalitarian inheritance rules imposed by the French Revolution in 1793 reduced completed fertility where inheritance had previously been unequal. However, fertility declined before the French Revolution: inheritance reform helps explain why the decline accelerated, not why it began.

3 The early decline in fertility

3.1 Existing historical data

Modern censuses and aggregate statistics from parish records. The timing of the transition remains uncertain because there is no representative data available so long ago, which in turn has hampered efforts to understand its origins. The most representative and reliable sources, modern censuses and the extraction of aggregate statistics from parish records, are not available in most countries until the nineteenth century. For example, in France, the first modern census was only conducted in 1851 (Brambor et al., 2020).[7]

Using population counts from censuses, the Princeton European Fertility Project (Coale and Watkins, 1986) reconstructed series of marital fertility in Europe after the 1830s, long after the onset of the demographic transition in France. Their index of marital fertility I_g measures the fertility of a population relative to the maximum that it might experience without any form of limitation–using the fertility of the Hutterites, an Anabaptist sect without controls–and given a particular age structure.[8] Because their data relies on modern censuses, Coale and Watkins (1986) only date the onset of the fertility decline to "1830 and earlier", as displayed in Figure 1.[9]

Using the extraction of aggregate statistics of births and marriages, by age, from vital records in more than 400 parishes, Wrigley and Schofield (1981) reconstructed series of total fertility in England as early as in the sixteenth century, which would not have been possible with censuses. Their series provides the best available account of the evolution of fertility over time in a pre-transition society, and captures fertility in both rural and urban places. Unfortunately, such data is not available in France.[10] Figure 4, Panel D displays the time series of the total fertility rate in England throughout the eighteenth and nineteenth centuries using the data provided by

[7] See Appendix Figure C1, which plots data on the timing of adoption of the modern census across countries.

[8] The index is constructed as follows: $(I_g)_i = B_i^m/(\sum_j M_{ij}G_j)$, where B_i^m is the total number of children born to married women in society i, M_{ij} the number of married women in age cohort j, and G_j the rate of fertility of Hutterites for age cohort j.

[9] In addition, this date is likely conservative, since I_g detects the initial stages of a fertility transition only with a delay (Guinnane, Okun and Trussell, 1994). Figure 4, Panels C and D, display the time series of marital fertility in France and in England after 1851 using the data provided by Coale and Watkins (1986).

[10] The aggregate nature of the data renders the process of collection relatively easy in a country such as England, which has a relatively small number of parishes. However, such a representative reconstruction is virtually impossible in France, with more than 36,000 municipalities. Blayo (1975*b*); Fleury and Henry (1958) attempted to do so with a sample of about 400 municipalities. However, these were also mostly rural, and more importantly marriages were not recorded, although it is essential to measure fertility rates. Weir (1994) makes a number of assumptions to reconstruct series of fertility using this data. Using econometric analysis to test for a structural break in these series, Cummins (2009, 2012) date the onset of the decline in fertility to 1776. Using the crude birth rates from this data, Delventhal, Fernández-Villaverde and Guner (2024) estimate the onset of the decline to 1763.

Wrigley and Schofield (1981). The series correlates remarkably well with the marital fertility index measured using census data.

Parish records and family reconstitutions. If there is no representative data available at the time, how can we know that fertility declined in France a century before it did everywhere else, in the second half of the eighteenth century and before the Revolution?

Only case studies are available in France, using complete family reconstitution from parish records, the only reliable source of fertility data in the eighteenth century, pioneered by Louis Henry in France (Henry, 1972*a*,*b*, 1978; Henry and Houdaille, 1973; Houdaille, 1976) and Tony Wrigley in England (Wrigley et al., 1997). Demographers searched through handwritten records of baptism, marriage, and death, which "life consists only of" (Wrigley et al., 1997, p. 12), to study the populations of selected small, rural villages, reconstituting the entire life histories of their inhabitants.

Figure 4, Panels C and D, plot the total fertility rates for married women estimated using the family reconstitutions data of Henry in France and Wrigley in England, based on 40 parishes in France and 26 in England. The data shows that the onset of the fertility decline occurred during the 1770s in France, approximately aligning with the estimation of Cummins (2009, 2012), who dated it to 1776. However, there is a difference in levels between the family reconstitutions data and available representative sources in the years when both sources are available.

Indeed, there are important issues with these studies (Alter, 2019; Ruggles, 1999; Schofield, 1972; Séguy, 2001). Henry and Wrigley could only select a handful of small rural villages, resulting in limited spatial variation, potential issues of representativeness, and migrations being unaccounted for. Additionally, the efforts required to undertake such data collection are colossal. To reconstruct fertility, researchers need a comprehensive knowledge of lineages, encompassing all births from specific parents. However, there are limited clues regarding where and when to find the different records containing this information. Furthermore, historical records often lacked essential details, because of changing names, incomplete or missing age and date of birth, and rounded dates. As a consequence, substantial efforts are necessary to cross-check and validate each piece of information. Last, but not least, other challenges that emerged from the quality of early registers are the issues of poor handwriting and dubious reliability. As a result, while family reconstitutions allowed the measurement of fertility in periods without census data, careful interpretation is crucial.

3.2 Crowdsourced genealogical data

The data. To alleviate these issues and comprehensively document the fertility decline with a representative sample of the population, I use a novel individual-level dataset crowdsourced from publicly available genealogies on geni.com.[11] The raw genealogical data, the

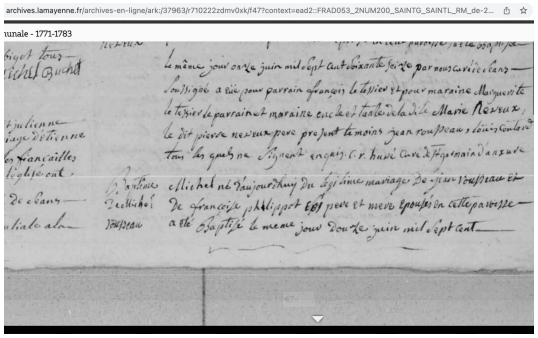
[11] In addition to alleviating the measurement issues discussed in the previous sub-section, genealogical data has several advantages. First, it provides, for each country, a unique continuous series spanning the entire eighteenth and nineteenth centuries, during which representative sources are typically not available or limited to restricted intervals, mostly towards the end of the period. For example, there are more than five different measures of historical urbanization, each offering significantly divergent estimates. Second, while demographers usually need to rely on population-level measures, such as life expectancy or the marital fertility index, which are constructed using available cross-sectional data for different age

familinx dataset, was downloaded, cleaned (in particular, to account for the double counting of individuals), and made publicly available by Kaplanis et al. (2018), from all public profiles on geni. It contains 86 million individuals, with direct intergenerational links. Approximately one-fifth were placed into latitude-longitude coordinates, with less than 10 million observed in Europe at some point after 1400. Among these, 370,242 were born, had their first child, or passed away in France.

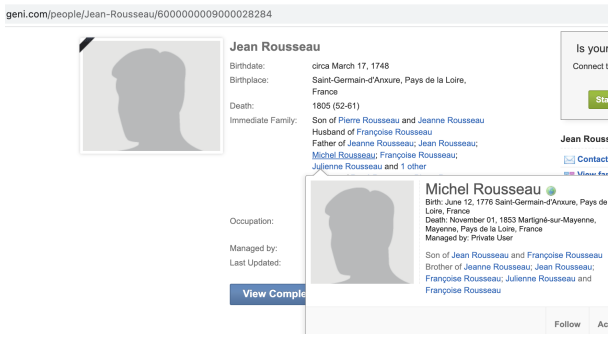
This data relies on the work of descendants reconstituting their family tree by searching through the same parish records as the ones used by demographers. In France, those records are scanned and available online with unrestricted access from the mid-seventeenth century onward. For example, in the village of Saint-Germain-d'Anxure, they are publicly available starting in 1629.[12] Figure 3, Panel A shows such a record, the baptism of Michel Rousseau on June 12, 1776. His descendants reconstituted their family tree, found this record, and created a profile for Michel Rousseau. Not only did they find his baptism record, but also those of his five siblings, Jeanne, Jean, Françoise, Julienne, and Françoise, all born between 1772 and 1788, and associated them with their father Jean Rousseau, whose profile on geni is displayed in Panel B. Panel C shows the observation for Jean Rousseau in the dataset used in this paper, recording his own fertility–his six children–alongside information about how many children his parents had.

Figure 3: From parish records to geni.com to crowdsourced genealogical data

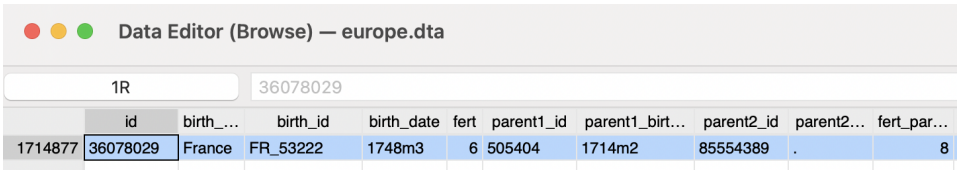
Note: This figure displays the birth record of Michel Rousseau on June 12, 1776 (Panel A), the page of Jean Rousseau, Michel's father on geni.com (Panel B), and the observation for Jean Rousseau in the main dataset used in this paper (Panel C). Panel A is a screenshot from **archives.lamayenne.fr/archives-en-ligne/ark:/37963/r710222zdmv0xk/f47** while Panel B is a screenshot from **geni.com/people/Jean-Rousseau/6000000009000028284**.



(Panel A) Parish record



(Panel B) geni.com



	id	birth_...	birth_id	birth_date	fert	parent1_id	parent1_birt...	parent2_id	parent2...	fert_par...
1714877	36078029	France	FR_53222	1748m3	6	505404	1714m2	85554389	.	8

(Panel C) Data

Using the *familinx* dataset, I clean and improve the geocoding of observations and augment

groups, the genealogies allow the measurement of longevity and fertility at the individual level.

[12] See **archives.lamayenne.fr/archives-en-ligne/ark:/37963/r710211zmqbftk/f1**.

the data with information on the urban status of municipalities at the time; construct estimates of fertility by tracing the horizontal lineages in the genealogies; and evaluate selection into the sample by comparing the data to the best available representative data. I provide a comprehensive and detailed account of each step below. First, to improve the geocoding, I merge together different coordinates associated with each location and link them to coordinates of 2016 local administrative units (municipalities) and NUTS statistical regions (*départements* and regions). Then, I merge the data with time-varying estimates of the urbanization of municipalities from Bairoch, Batou and Chèvre (1988) to capture rural-urban differences, account for migrations, and evaluate sample selection.

Finally, I generate a measure of fertility by searching through horizontal lineages. Measuring fertility requires counting siblings, found in horizontal branches, yet family trees predominantly record vertical lineages, with direct ancestors, rather than indirect ones (cousins, grandcousins, etc.). Appendix Figure B1 shows such a tree. I therefore focus throughout the paper on the *fertility sample*: the sample of individuals i with a recorded horizontal lineage, that is, with at least one parent in any of the four preceding generations, excluding individual i themselves, recorded as having more than one child. There are $31,553$ such individuals, approximately 10 percent of the main sample.[13] By construction, fertility is measured among individuals who had at least one child, since true childlessness cannot be distinguished from an unrecorded lineage in family trees. In practice, this is akin to measuring marital fertility, as out-of-wedlock births were rare and most married couples had at least one child.[14] This approach is already being adopted and discussed in subsequent papers (see Blanc, 2024; Gay, Gobbi and Goñi, 2026; Omenti, 2023, among others).

Evaluating selection into the sample. To assess the reliability of the genealogical data and the degree of selection in the fertility sample, I compare the genealogies to the best available representative sources over time. Throughout the paper, year is defined in the genealogies as the year of birth of the first child, except for mortality, where year is defined as the year of death. I show that the genealogical data is a representative sample of both the overall and the local population in the eighteenth and nineteenth centuries. Kaplanis et al. (2018) also find a high correlation with representative data, but only look at longevity, at a much more aggregated level, worldwide, after 1840.[15]

Representative data. To do this, I systematically leverage a particularly wide range of representative sources for longevity, urbanization, and fertility, from censuses to various estimations, spanning various historical periods. For longevity, I collect data on adult life expectancy from the Human Mortality Database (HMD, 2019), mostly based on censuses and available from

[13] Appendix Figure B2, Panel A plots the share of observations in the fertility sample over time. The increase over the seventeenth century reflects the improving recording of horizontal lineages, which reaches a plateau by the early eighteenth century–consistent with the stable quality of the data documented below. The share then decreases over the nineteenth century, as fewer individuals have an ancestor recorded with more than one child once fertility declines. If anything, this selection would bias measured fertility upward in the later period, which would bias results on fertility decline towards zero.

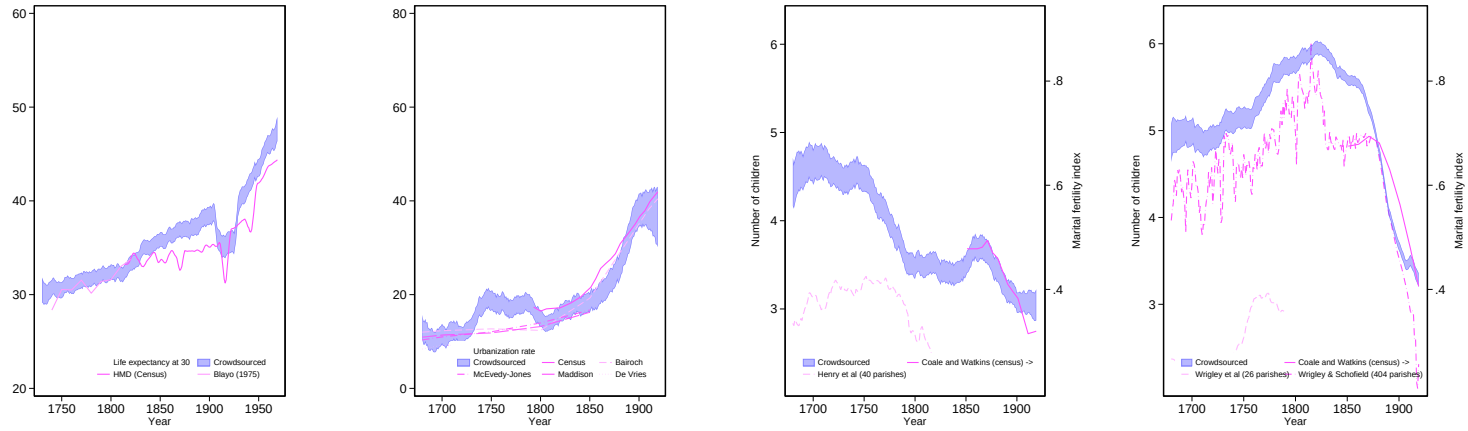
[14] Consistent with this focus, the decline operated within marriage (Appendix Table A7).

[15] A number of subsequent papers also find limited bias and selection in the geni data (see, e.g. Cozzani et al., 2023; Minardi, Corti and Barban, 2023). Examining mortality in Germany and the Netherlands, Stelter and Alburez-Gutierrez (2022) show that there is bias in the data only prior to circa 1800, that is, for individuals who were born before the late seventeenth century.

1816 to 2017; and from Blayo (1975*a*,*b*), available from 1740 to 1829.

Figure 4: Is geni.com a biased sample?

Note: This figure displays longevity, urbanization, and fertility series over time in the fertility sample of the crowdsourced genealogies in France (and England for fertility) and in representative data. Longevity is defined as the average age at death minus 30 years for individuals who died aged 30 years or older in a given year (in the genealogies), or as the life expectancy at 30 in a given year (in representative data). Urbanization is defined as the share of the population who had their first child in a given year and were born in a town coded as urban at the time of their birth (in the genealogies), or as the share of the population living in an urban town in a given year (in representative data). Fertility is defined as the average number of children born to individuals who had their first child in a given year (in the genealogies), or as the marital fertility index in a given year (in representative data). Year is therefore coded, in the genealogical data, as of the year of death in Panel A, or the year of birth of the first child in Panels B, C, and D. Further information on the data is provided in the accompanying text.



(Panel A) Longevity (France) **(Panel B)** Urbanization (France) **(Panel C)** Fertility (France) **(Panel D)** Fertility (England)

For urbanization, I collect estimates of the share of the population who lived in municipalities of more than 5,000 inhabitants from population counts (BDCassini, 2017), available from 1793 to 1999; and from a diverse array of sources. First, using rates of urbanization constructed by Paul Bairoch and co-authors from estimates of urban population of Bairoch, Batou and Chèvre (1988) and unknown estimates of total population, available from 1500 to 1800 (Bairoch, Batou and Chèvre, 1988, Table B5, p. 259), 1800 to 1910 (Bairoch and Goertz, 1986, Table 3, p. 288), and 1800 to 1980 (Bairoch, 1988, Table 13.4, p. 221). Estimates for a given year sometimes vary widely across sources. I rely on the average estimate. Second, combining estimates of urban population of Bairoch, Batou and Chèvre (1988) and estimates of total population of Bolt and van Zanden (2014); Ridolfi (2016), available from 1500 to 1850. Third, using rates of urbanization constructed by Acemoglu, Johnson and Robinson (2005) from estimates of urban population of Bairoch, Batou and Chèvre (1988) and estimates of total population of McEvedy and Jones (1978), available from 1500 to 1850. Finally, using rates of urbanization constructed by de Vries (1984) from his own estimates of urban population using a 10,000-inhabitant threshold and (unknown) various estimates of total population, available from 1500 to 1850.

For fertility, I collect data on marital fertility from census data (Coale and Watkins, 1986), available from 1851 to 1961 in France and in England; on total fertility from the aggregative extractions of vital statistics of Wrigley and Schofield (1981), available from 1541 to 2015 in England; and on total fertility from the family reconstitutions of Henry in France and Wrigley in England, available from 1670 to 1819 and 1580 to 1837, respectively.

Comparison with representative series. Figure 4 compares the genealogies to representative series over time, for individuals in the geni data who had their first child between 1675 and 1925, for the study of fertility and urbanization, or who died between 1725 and 1975, for the study of longevity. Before that, there is a high degree of selection into the sample, for example with an urban population much larger than the available representative estimates (Appendix Figure B3). During the two centuries or so considered in the paper, there are only limited differences, and the correlation between the genealogical data and representative series is well above 90 percent, for longevity, fertility, and urbanization (Appendix Table B1), suggesting that selection is limited.

For longevity and urbanization, representative sources are available throughout the period. The correlation with the genealogical data is particularly high both in the eighteenth and in the nineteenth centuries: while the Henry data only included individuals from small rural villages, the genealogical data is a representative sample including individuals from both rural and urban places. For fertility, there is also a particularly high correlation with the genealogical data when censuses are available, after 1851, and fertility in the genealogical data appears visually plausible prior to this period. Additionally, using data from the extractions of vital statistics in England (Wrigley and Schofield, 1981), I further establish a high correlation with representative fertility series in the eighteenth century, consistent with the results on urbanization and longevity.[16] The results therefore show that the data is a representative sample of the overall population in the eighteenth and in the nineteenth centuries, allowing me to comprehensively document the fertility decline. In subsequent research, Blanc (2024) systematically extends and standardizes this comparison to thirty European countries and finds similar results.

Across regions. Is the data also representative at the local level, across and within *départements*? This matters because the cross-sectional analysis in Section 6 rests on the genealogies reflecting regional variation in fertility, not merely the national trend documented above. To document this, Appendix Table B2 reports the relationship between the number of children (Panel A) or a dummy for being born in an urban town (Panel B) in the genealogies and, respectively, the census marital fertility index I_g and the urbanization rate of the individual's *département*. Across *départements*, I find that both relationships are strong, positive, and significant, even after holding the year fixed. With *département* fixed effects, however, the exact-year estimates remain positive but are imprecise, because matching observations exactly to census years leaves a small sample. To address this issue, I linearly interpolate the census measures of marital fertility and urbanization between consecutive censuses. This substantially expands the matched samples and, in both cases, yields positive within-*département* relationships, significant at the 5 percent level for fertility and at the 1 percent level for urbanization.

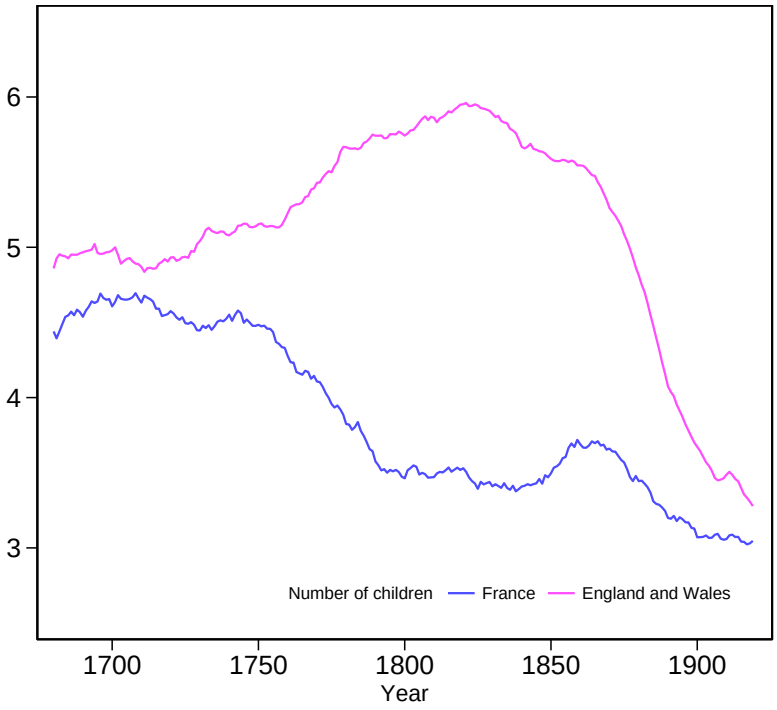
Selection and religiosity. I then assess whether selection into the genealogical data might differ between more and less religious places. First, in column 5 of both panels of Appendix Table B2, I include the share of refractory clergy in the individual's district of birth. Conditional on census fertility or urbanization, this coefficient is not statistically significant in either panel,

[16]Note also that child mortality is not well recorded in the genealogies, with rates close to zero. Indeed, observing infant and child mortality would require not only horizontal branches to be recorded (with births) but the vertical lineages of these horizontal branches to be recorded as well (with the subsequent deaths of these individuals being recorded).

suggesting that selection into the sample is not correlated with religiosity in a way that could drive my individual-level results. Second, using the broader sample of profiles in geni, including those not in the fertility sample or without recorded ancestry, I directly test whether these two forms of selection are correlated with religiosity in Appendix Table B3. This addresses whether the ancestry needed to build the fertility sample is less likely to be recorded in more or less religious places, as might occur if record survival or descendants' willingness to reconstruct their family tree varied across places. Both relationships are statistically insignificant once I compare individuals within *départements*. More importantly, neither relationship changes after 1760. Taken together, these results provide no evidence that selection varies systematically with religiosity.

Figure 5: The historical fertility transition

Note: This figure displays the fertility rate for France and for England and Wales over time, using the genealogical data. Fertility is defined as the average number of children ever born to individuals who had their first child in a given year. Further details are provided in the text. Source: geni.com, via Kaplanis et al. (2018).



Measurement of fertility. Does the geni data capture gross or net fertility? If the genealogies recorded only surviving children, fertility in geni would appear lower where mortality was higher. To address this, Appendix Table B4 correlates the observed number of children born to individuals in the genealogies with their *département*'s infant and child mortality rates, as well as marital fertility index I_g (as in Appendix Table B2).[17] While I find a negative corre-

[17]Since mortality is only measured in 1855, the analysis is restricted to the nineteenth century, and the coefficients on fertility are therefore not directly comparable (but similar) to those in Panel A of Appendix Table B2, which evaluates

lation with infant mortality, suggesting that there might be some under-recording of stillbirths and infants who died before reaching age one, the coefficient is not consistently statistically significant. Additionally, the coefficient on child mortality is zero and never statistically significant, suggesting that fertility in the genealogies predominantly captures gross fertility and records, to a large extent, children who later died (often without a recorded date of death). This is consistent with Figure 4, Panel D, where fertility in the genealogies tracks the total (gross) fertility rate of Wrigley and Schofield (1981) in England.

Fertility over time. Using crowdsourced genealogical data allows me to establish that the decline took hold around 1760, as displayed in Figure 5, which plots the number of children per woman in France and in England and Wales over time. There is particularly strong divergence between the two countries from the 1760s onwards. Since year is measured as of the birth of the first child, and the average reproductive period typically spans less than a decade, this shows that a significant portion of the decline occurred before the French Revolution, further indicating that the factors influencing this demographic shift were already in place prior to the socio-political upheavals of the French Revolution.

Additionally, the crowdsourced data indicates a slightly earlier and faster start to the decline than previously suggested. Since year is recorded as of the birth of the first child and childbearing spans roughly seven to eight years (Appendix Figure B4), an onset around 1760 in the genealogies implies declining births through the 1770s. The timing therefore remains consistent with Cummins (2009, 2012), who estimated that the decline began in 1776, with Delventhal, Fernández-Villaverde and Guner (2024), who estimated the onset of the decline to 1763, and with the family reconstitution studies of Henry (1972*a*,*b*, 1978); Henry and Houdaille (1973); Houdaille (1976), which show a noticeable decline in fertility starting in the 1770s.[18]

In less than forty years, the average number of children per woman in France declined to three and a half, while the average English woman was giving birth to almost six children, reflecting the persistence of the Malthusian mechanism in England, as in the rest of the world, for another century. Despite the Industrial Revolution bringing increased short-run prosperity to England, the additional wealth acquired was primarily allocated towards expanding family size. Before the fertility decline, in 1750, France had a population of approximately 25 million inhabitants, while England had 5.5 million. If the population of France had increased at the same rate as England's since 1750, it would stand at almost 250 million today.

4 The waning influence of the Catholic Church

Having established the timing of the fertility decline, I provide some historical background on the Catholic Church in France, document its waning influence in the eighteenth century, advance the hypothesis that it caused the fertility decline, and discuss methods of fertility control, including the Church's views on these methods.

the correlation until 1921.

[18]The timing of the decline implies that the French Revolution likely sustained, but did not initiate, it. While secularization is discussed as a potential cause, it possibly influenced both the initial demographic shift (directly) and the French Revolution, and therefore the later part of the fertility decline (indirectly), after 1789, as well. The findings of Gay, Gobbi and Goñi (2026), on the role played by inheritance change after the French Revolution, support this interpretation.

4.1 Historical background

During medieval times, France was depicted as "the eldest daughter of the Roman Catholic Church," with its kings holding the title "Rex Christianissimus" or 'most Christian king', and its people referred to as "God's chosen people" (Burleigh, 2005, p. 23). As a result, Protestantism reached only about 10 percent of the population by the mid-sixteenth century. After the Council of Trent (1545–63) launched the Counter Reformation, Catholics and Protestants fought the French Wars of Religion, culminating in the massacre of thousands of Protestants on Saint Bartholomew's Day in 1572 and the revocation of the Edict of Nantes by Louis XIV in 1685, ending a short-lived religious toleration. This Catholic monopoly became increasingly bound to the crown: under Gallicanism, the French Church asserted autonomy from Rome while depending on the monarchy for much of its temporal authority (Van Kley, 1996). I argue in Section 7 that this gave rise to the loss of influence of the Catholic Church.

4.2 Aggregate-level evidence on secularization

At least since de Tocqueville (1856), and later Chartier (1991); Tackett (1986); Todd (1990); Van Kley (1996), we know that secularization took hold in France in the mid-eighteenth century, before the French Revolution. Yet, documenting the loss of influence of the Catholic Church is challenging since the best available data on devotion, Easter attendance, is only measured two centuries after (Boulard, 1966). Although there are good proxies of the devotion of the elites before that (see Andersen and Bentzen, 2022), such data on the devotion of the *masses* hardly exists, in a country where more than 80 percent of the population was rural.

Case study: Provençal wills To document secularization, I first rely on Vovelle (1973), the first historian who documented the decline of Church influence, in Provence, which used to be one of the most religious regions of France (Agulhon and Coulet, 2018) and yet became a stronghold of secularization. Vovelle (1973) documents the transition to secular attitudes and beliefs using data on bequests, legacies for perpetual masses, offerings to the church, and requests for burials in holy places, as well as on the number of invocations of God, Jesus Christ, the Virgin Mary, and various saints in wills. The data also includes the universe of wills during the eighteenth century in a comprehensive sample of villages and cities. Although wealthier individuals were slightly more likely to leave a will, this is the best available data, and Vovelle (1973) shows they were left by individuals of all social classes and sometimes by more than 80 percent of the population. Importantly, as Todd (1990); Vovelle (1973) document, secularization was not merely an elite phenomenon but one that predominantly unfolded in rural society.

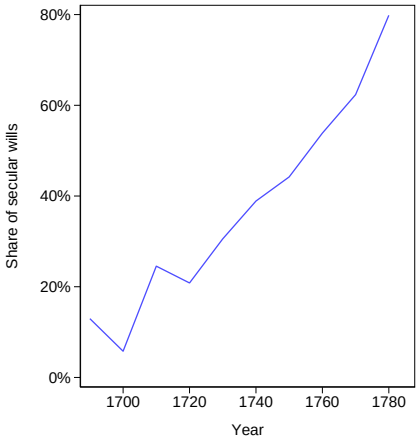
Figure 6, Panel A displays the share of secular wills over time, using the data from Vovelle (1973). The data shows that attitudes and beliefs towards death changed radically in the course of the eighteenth century. For example, Darnton (1978) explains that "In the late seventeenth and early eighteenth centuries, testators consistently described themselves as adherent of the holy, apostolic Roman Catholic Church, who were prepared to meet their Maker, God the Creator, and Jesus Christ, His Son, by whose death and passion they hoped to be pardoned

for their sins and to join the saints and angels in the Celestial Court of Paradise. ... By the 1780s most Provençal wills had reduced the traditional formula to a single clause: '*Having recommended his soul to God*'. The Virgin Mary and saintly intercessors were gone, the Celestial Court emptied of angels. Christ himself had receded into the background, while God the Father sometimes took the form of 'Divine Providence'. Many wills had become totally secularized, and some even described death as '*the indispensable tribute that we owe to Nature*'" (p. 126).

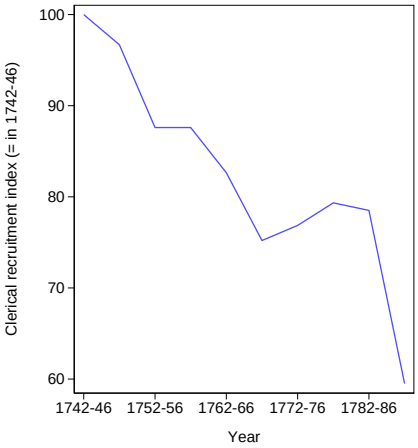
In the 1690s, only 13 percent of wills used secular language.[19] Interestingly, following the Great Plague of Marseille, which killed as many as 100,000 people in the 1720s, the share of secular wills temporarily decreased in places most affected by the plague. Yet, despite its deeply religious past, Provence underwent a significant decline in church influence.[20] After the 1730s, secularization took hold with a significant increase in the share of secular wills. On the eve of the French Revolution, nearly 80 percent of Provençal wills were secular.

Figure 6: The waning influence of the Catholic Church

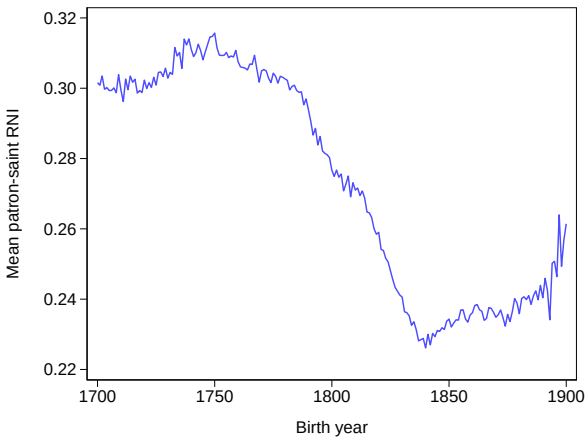
Note: This figure displays the share of testators using secular language in the opening statements of their wills, in Provence (Panel A); clerical recruitment, in France (Panel B); and the patron-saint religious-name index (RNI), the population-weighted mean of the name-level patron-saint RNI among newborns, in eleven *départements* (Panel C). Source: Vovelle (1973) for wills; Tackett and Langlois (1980) for clerical recruitment; and familysearch (Ardennes, Dordogne, Eure-et-Loir, Indre, Isère, Landes, Mayenne, Meurthe-et-Moselle, Nord, Saône-et-Loire, Vosges).



(Panel A) Secular wills (1690-1789)



(Panel B) Clerical recruitment (1745-1795)



(Panel C) Religious first names (1700-1900)

Additional case-studies and measures The use of wills as an indicator of the intensity of the devotion of those who left them goes back to Ariès (1974); Chaunu (1978). Chaunu (1978) finds remarkably similar results to Vovelle (1973) in parts of Paris. Using similar data and approaches, Hoffman (1984), Norberg (1985), and Dinet (1991) also find substantial secular changes in the rural parts of the diocese of Lyon, in the diocese of Grenoble, and in Burgundy

[19]This figure is likely underestimating devotion before dechristianization since, as Vovelle (1973) argues, it is mostly the result of illiteracy or clergy members deeming references to their faith too obvious.

[20]This can be further seen in data on Easter attendance in 1966 and on the presence of refractory clergy in 1791 (discussed in the next section). Historical data, such as wills in the 1690s and the extent of the Holy League in 1590 (from Black, 1996, p. 57, further discussed in Section 7) further attests to its religious nature in the past.

in the eighteenth century. In Brittany, which remains strongly Catholic, evidence that such a change occurred is indeed much more limited (Bois, 1960; Tingle, 2012).

Vovelle (1973) argued that the waning influence of the Church indicates a *mutation of collective sensibility*, or a loosening of traditional religious moral constraints. He also uses the word 'dechristianization', which generated extensive discussions in the history literature. For example, Tackett (2005) argues that, although "there can be no doubt that there was indeed a decline in the intensity of commitment to Christianity" (p. 149), this may have resulted from "intense anti-clericalism" (p. 150).

Other indicators of secularization, such as requests for requiem masses (perpetual masses for the dead), bequests, offerings to the church, invocations of the Virgin Mary, or even average weight of funeral candles, all declined significantly during that period (Vovelle, 1973). For example, Appendix Figure C2, Panel A shows a significant decline in requests for perpetual masses in the mid-eighteenth century. Panel B shows that this change was more important for the lower classes than for the elites (consistent with Appendix Table A2, which documents the positive correlation between religiosity and development); while Panel C shows a similar decline in invocations of the Virgin Mary in wills.

Clerical recruitment I next document this decline at the national level, drawing on the aggregate data from Tackett and Langlois (1980), who reconstruct clerical recruitment (the size of each entry cohort at the age of ordination) over time in France in the eighteenth century. Unlike the wills, which document a single region in depth, this series covers the entire country. Figure 6, Panel B shows clerical recruitment falling by roughly 40 percent from its 1740s peak. The reconstructed series tracks data on ordinations in fourteen *Ancien Régime* dioceses (Tackett and Langlois, 1980), and the timing of the decline also coincides with the increase in secular wills and fall in requiem masses and religious bequests documented above.

Religious first names Finally, to capture the waning influence of the Church, I study the first names of millions of ordinary individuals born in rural municipalities in France from 1700 to 1900, using records from familysearch. This follows a large literature in economics using names to capture identity (Abramitzky, Boustan and Eriksson, 2020; Assouad, 2021; Bazzi, Fiszbein and Gebresilasse, 2020; Beck Knudsen, 2024; Fouka, 2020; Weigand, Mohr and Cantoni, 2025). Since the *familinx* dataset does not record names, I scrape first names from birth (after 1793) and baptism (before that) records on familysearch, focusing on municipalities below 3,000 inhabitants in collections from eleven *départements*: Ardennes, Dordogne, Eure-et-Loir, Indre, Isère, Landes, Mayenne, Meurthe-et-Moselle, Nord, Saône-et-Loire, Vosges.[21]

[21] I select these collections in three steps. First, I search familysearch for birth records in three municipalities in each French *département* and keep the *départements* where all three report births. Second, I scrape the collections covering those *départements*. Finally, I drop three *départements* selected in the first step that end up having insufficient data: Ardèche, Haute-Saône, and Pyrénées-Orientales. Because of scraping restrictions (familysearch displays at most 4,900 results per query), I focus on municipalities with fewer than 3,000 inhabitants and split queries within each municipality. To ensure nearly continuous coverage, I retain municipalities with records in at least 95 of the 100 years from 1750 to 1849. Because the survival of these records depends on archival availability and varies across and within municipalities, I weight each observation by its municipality's 1793 population divided by its observed number of births from 1700 through 1793, so that each municipality contributes in proportion to its population rather than to its surviving records, and retain only municipalities with at least as many observed records as inhabitants in 1793 (99.59 percent of observations). In addition, to account for different archival availability and quality, I always include *département* fixed effects in specifications using this data.

The final sample includes 9,467,948 birth and baptism records across 2,234 municipalities and is similar to France in Easter attendance and in *Encyclopédie* subscriptions, although it is strongly biased towards rural municipalities: in 1793, the average French person lived in a municipality of 20,196 inhabitants, while the average person in the familysearch municipalities lived in a municipality of 967 inhabitants (Appendix Table C1). Additionally, I do not have any municipalities in Provence in the sample. Since the records are transcribed from handwritten registers by automated text recognition, I first clean and standardize first names to a canonical form before identifying them as religious or not.[22] Then, following Andersen and Bentzen (2022) and building on the measure introduced by Fryer and Levitt (2004), I assign each name a patron-saint religious-name index (RNI) that measures a name's overrepresentation among the patron saints of medieval churches (Buringh et al., 2020), relative to its frequency in the population.

Figure 6, Panel C plots the patron-saint RNI from 1700 to 1900. The data shows a marked decline in religious naming starting in 1750 and accelerating after the French Revolution. This coincides with the increase in secular wills and fall in clerical recruitment documented above. However, the decline in religious naming may also capture broader changes in naming practices associated with modernization and is therefore a more indirect measure of secularization than the other two measures, which more directly capture the loosening of religious attachment and the waning influence of the Church. Unlike the data in Andersen and Bentzen (2022), which is drawn mostly from elites, I document this decline among ordinary individuals born in rural municipalities of fewer than 3,000 inhabitants. The decline therefore extended beyond elites, consistent with the evidence from wills (Dinet, 1991; Hoffman, 1984; Norberg, 1985; Vovelle, 1973) and the more general descriptions of Tackett (1986) and Todd (1990, Ch. 6). The series also shows two periods of religious revival, as documented in the historiography in France (Gibson, 1989) or in Wales (Lowe, 2021), with an increase in the early eighteenth century, consistent with the spread of the Counter Reformation and Jansenism, and another in the second half of the nineteenth century: secularization is not a linear process.

Comparative evidence. To the best of my knowledge, there is no work documenting such a loss of influence of the Church in other countries in Europe at the time. Chartier (1991) documents the singularity of France directly: in Nice and in Savoy, just across the border from secularized Provence, requests for masses in wills remained near-universal throughout the century, with no decline comparable to the French one (p. 97). Germany did experience a separation of church and state, but it followed the spread of Protestantism rather than dechristianization (Cantoni, Dittmar and Yuchtman, 2018). Secularization took place there much later, as in the rest of Europe, and followed education (Becker, Nagler and Woessmann, 2017) rather than income (Becker and Woessmann, 2013). Todd (1990) argues that parts of the Catholic south of Europe–southern Italy and southern Spain–also secularized early. However, the data he relies on for these regions is far more limited–e.g., for Italy, there is no eighteenth-

[22] I keep the first token of the name string, standardize accents, capitalization, and mechanical spelling variants while preserving gender, and retain only forms that appear in INSEE's *Fichier des prénoms*, the list of all names attributed at least three times in France since 1900 (Insee, 2025). The filter removes 1.76 percent of records, mostly transcription errors or non-names such as *enfant mort-né* (stillborn child).

century evidence at all–whereas, for France, I rely on three sources of data that vary over time. Moreover, an early secularization of these regions would not contradict my results. It is consistent with the interaction between development and secularization that I document in Section 5.2, and with the argument of (Todd, 1990, p. 188): these regions were poorer and less literate than France, so the possible relaxation of religious constraints there could not lower fertility. What remains clear is that the weakening of Church influence in France was unusually early and broad, culminating in an explicit program of dechristianization during the French Revolution.

4.3 Contraception

Methods of contraception. How could the French have fewer children if modern methods of contraception only became widely available well after the onset of the fertility decline? In the eighteenth century, the enlightened elites and bourgeoisie of France practiced libertinage, *les plaisirs de la petite oie* ('pleasures of the little goose', mutual masturbation, see Van de Walle and Muhsam (1995)), and other pleasures alike. The libertine literature was particularly widespread in France (Darnton, 1991), with works such as *Venus in the Cloister* (1683), *The Indiscreet Jewels* (1748) by Diderot, or *Philosophy in the Bedroom* (1775) by the Marquis de Sade. In contrast, natural means of contraception have long been known, in particular *coitus interruptus* (withdrawal) (Himes, 1936), which was "frequently alluded to in libertine literature" (Van de Walle, 2005, p. 2). Other methods such as chastity, sodomy, abortion, or infanticide were not particularly relevant or widespread (Van de Walle, 2005). Delayed marriage, the customary check on fertility in early modern Europe, was widespread (Hajnal, 1965; Perrin, 2021; Voigtländer and Voth, 2013). But so, increasingly, was withdrawal. The practice was not confined to the elites. Referring to it, Jean-Baptiste Moheau (1778) famously argued, in 1778, that "already the fatal secrets *unknown to any animal but man* have penetrated in the countryside: *nature gets cheated* even in the villages," while Goudar (1756) wrote that "It is the same love of ease and convenience that is filling France with bachelors ... men who vanish from the world with all their posterity" (p. 271).

Catholic Church and contraception. The Catholic Church's position on contraception gradually hardened. Although "fruitfulness is a divine reward" (Noonan, 1965, p. 31), its pronouncements against contraception had long been discreet and indirect. The multiplicative purpose of marriage "received its strongest official approval" (Noonan, 1965, p. 276) in the *Exultate Deo* papal bull of 1439: "Through matrimony [the church] is corporally increased." However, it was not until the threat of the Protestant Reformation that the views of the Church on marriage permanently shifted, in the face of competition, towards 'be fruitful and multiply' (Noonan, 1965). By the eighteenth century, the clergy understood marriage and sex to be acts of procreation instead of pleasure: "religious dogmas, more severe than in antiquity, forbid the husband certain precautions that prudence dictates: *Interdictio semen effundendi extra vas debitum* [the prohibition on spilling seed outside the due vessel]" (Fourier, 1822, p. 405). According to Van de Walle and Muhsam (1995), the orthodox position held that "it is

considered sinful in marriage to ejaculate outside of the natural receptacle (*ex vas naturale*), and only somewhat less sinful to use 'unnatural positions'" (p. 269), and prominent Catholic figures such as Francis de Sales and Pierre de Bourdeilles argued that "*marital fertility should not be interfered with*" (Van de Walle and Muhsam, 1995). As a result, Chartier (1991) argues that the spread of contraception within marriage is the result of secularization (pp. 97–99).

5 Main findings across départements

5.1 The data

The refractory clergy. The main explanatory variable throughout the rest of the paper is the population-weighted share of refractory clergy in 1791.[23] In July 1790, during the French Revolution, the National Constituent Assembly passed the Civil Constitution of the Clergy, which required all clergymen to swear an oath of loyalty to the secular state. The oath had to be taken "on a Sunday at the conclusion of the mass" (Decree on the clerical oath). I use the share of clergymen that did not take the oath, known as refractory clergy, in 1791 to proxy for (the absence of) secularization at the onset of the French Revolution. According to Tackett (1986), "the regional reactions of clergymen in 1791 can be revealing of the attitudes and religious options of the lay population with which the clergymen lived" (p. xvi). The data on the oath is constructed from the choices of more than fifty thousand parish clergymen, who made up more than 90 percent of all priests and vicars holding posts (Tackett, 1986, p. 39). The share of refractory clergy is measured before the August 1792 decree that ordered all non-jurors to leave the country and before the War in Vendée, the Paris Commune, the Reign of Terror, and the establishment of anticlerical cults (the Cult of Reason and the Cult of the Supreme Being, among others). Moreover, before the 1792 decree, according to Tackett (1986), "the National Assembly ... allowed the continued presence of the refractory clergy." Hence, the refractory clergy in 1791 does not capture the effect of the main revolutionary events and policies of dechristianization but rather religious attitudes on the eve of the French Revolution.

Does the presence of refractory clergy capture (the absence of) secularization or pre-existing differences in religiosity?[24] It is well established that the presence of refractory clergy captures devotion on the eve of the French Revolution (Franck and Johnson, 2016; Squicciarini, 2020; Tackett, 1986). According to Tackett (1986), "The map of clerical reactions in 1791 was remarkably similar to the map of religious practice in the middle of the twentieth century" (p. xv). As documented in the literature, the share of refractory clergy correlates with later proxies for religiosity (Appendix Table A3 and Appendix Figure A1), including with the best available measure of devotion, Easter attendance, only available in 1966 (Boulard, 1966). However, it does not correlate with proxies for religiosity before the onset of secularization (Ap-

[23] Because it is measured at the district level, I use the district population-weighted average of the district-level share of refractory clergy in the analysis at the *département* level. I generate district boundaries with Thiessen polygons using the district capitals from Tackett (1986). In robustness, I also evaluate the robustness of the results to using the *département*-level share of refractory clergy.

[24] Note that this distinction is not critical for my central argument, since documenting both an overall trend of secularization and a correlation between religiosity and fertility would be enough to suggest that secularization drove the decline.

pendix Table A4), suggesting that it reflects the level of religiosity reached by 1791 rather than pre-existing differences.[25] This is consistent with Tackett (1986), who argues that the oath correlates far more closely with religious practice in the nineteenth and twentieth centuries than with any earlier regional characteristic: "nothing from the past seems to have correlated with the oath as well as the oath would correlate with the future patterns of religious practice in the nineteenth and twentieth centuries" (p. 299). Chartier (1991) reads the geography of the oath the same way, interpreting acceptance of the Civil Constitution as the expression of "a secularization already in progress" (p. 107). Yet, the measure might also reflect more than secularization alone–e.g., state legitimacy. To account for state legitimacy at the time of the French Revolution, I control for the share of deserters among conscripts in the French army between 1798 and 1805 (Forrest, 1989).

How does religiosity correlate with development? In Appendix Table A2, I find that the refractory clergy in 1791 is positively correlated with a range of proxies for development: log population in 1793, urbanization, *Encyclopédie* subscriptions per capita, and soldier height before 1760 (Komlos, 2006).[26] This is surprising, since the correlation between religiosity and development is usually negative (Barro and McCleary, 2003), and it further indicates that secularization took hold in poorer and more rural places first–consistent with what Hoffman (1984), Vovelle (1973), and Norberg (1985) find in Provence and the rural dioceses of Lyon and Grenoble. If anything, it biases my estimates towards zero: since development accelerates the fertility transition in unified growth theory (Galor, 2011, 2022; Galor and Weil, 2000), the greater development of more religious places works against any positive religiosity–fertility association I might estimate.

I test these interpretations directly using the familysearch data and the decline in religious naming documented in Section 4. Appendix Table C2 regresses the district-level share of refractory clergy in 1791 on secularization across the familysearch municipalities, measuring secularization as the proportional decline in the patron-saint religious-name index between 1700–1750 and 1850–1900. I find that the refractory clergy indeed captures (the absence of) secularization: the municipalities that secularized have a significantly lower share of refractory clergy, and this negative association is robust across specifications.[27] Moreover, secularization is distinct from the diffusion of the Enlightenment and not driven by development in the sample of familysearch municipalities, as argued by Chartier (1991); Van Kley (1996): when accounting for secularization, *Encyclopédie* subscriptions are positively associated with the refractory clergy, consistent with my results on religiosity and development (Appendix Table A2). However, because the refractory clergy varies across only 68 districts, I interpret this evidence as suggestive.

[25]Some dimensions of religiosity, in particular the duration of Jesuit presence, seem to have persisted through secularization, consistent with what Squicciarini (2020) finds when examining the role of historical plagues.

[26]Throughout, I control for proxies for religiosity before the onset of secularization, in order to capture the correlation of secularization rather than religiosity with development, and I report average marginal effects since the table only tests for the sign and significance of the relationship. The correlation with *Encyclopédie* subscriptions (Squicciarini and Voigtländer, 2015, 2016) weakens once I control for the duration of Jesuit presence, with which it is highly correlated.

[27]I also find that the municipalities with the most religious naming at the beginning of the eighteenth century are those with the lowest share of refractory clergy by 1791, confirming the reversal in devotion documented in Section 7 and consistent with a backlash against the Church.

Marital fertility. The primary variable of interest is the year of transition to a marital fertility index below 50 percent of the fertility of the Hutterites (Coale and Watkins, 1986).[28] The index is available for nineteen years from 1831 to 1961, averages 0.56 in 1831 and decreases to 0.33 in 1961 (Table A1, Panel A). In pre-transition societies like England, marital fertility averages roughly two thirds of the fertility of the Hutterites. Several *départements* had already experienced a fertility decline to below 0.5 by 1831, necessitating the use of both OLS and Tobit to account for the censored transition dates.

Controls. I account for proxies for religiosity before the onset of secularization, with the number of clergymen per capita (Tackett, 1986), the average rate of the tithe (Gagnol, 1911), the number of abbeys (BDCassini, 2017; Franck and Michalopoulos, 2017), the duration of Jesuit presence (Grendler, 2017), and the presence of Protestants (Mours, 1958).[29]

I also account for cultural factors, with a dummy that measures the presence of a printing press in 1500 (Clair, 1976; Febvre and Martin, 1958), the number of books printed in 1500 (ISTC, 2008), the log of *Encyclopédie* subscriptions per capita in the period 1776–79 as a proxy for the diffusion of the Enlightenment (Darnton, 1973), and linguistic distance from French in 1901 (Blanc and Kubo, 2026); institutional factors, with fixed effects for *pays*-status (fiscal regions in *Ancien Régime* France which may capture pre-existing differences in state capacity and democratization, from **Wikipedia**), and the share of deserters among conscripts in the French army between 1798 and 1805 (Forrest, 1989); education, using the literacy rate of conscripts in 1829 (SGF, 1878); pre-industrial development, with population density in 1831 (BDCassini, 2017) and average soldier height before 1760 (Komlos, 2006); and contemporary development, with the log rate of urbanization in 1831 (BDCassini, 2017), defined as the share of the population living in towns with more than five thousand inhabitants.

5.2 Baseline results

Determinants of year of transition. I study the cross-sectional determinants of transition date, the first year in which marital fertility declined below .5. I estimate Equation 1 with OLS and a Tobit model (by maximum likelihood) in order to account for the left-censoring nature of the data since about a quarter of *départements* had already transitioned in 1831. The main variable of interest is the share of refractory clergy in 1791.

$$(\text{Transition date})_i = \beta \times \text{Ref. clergy}_{i,1791} + \boldsymbol{X}_i'\delta + \varepsilon_i \tag{1}$$

[28] Importantly, the date of transition below 50 percent of the marital fertility of the Hutterites is defined as the first year we observe a value below .5 in the data, irrespective of data availability–indeed, data on marital fertility is missing for some *départements*, including Paris, at the beginning of the period. Improving the coding of this makes the results stronger. In addition, I focus on marital fertility rather than overall fertility because it is the standard measure to detect the presence of fertility control achieved through parity-specific means (Coale and Watkins, 1986), but I also explore over indices in robustness.

[29] The number of clergymen per capita is measured in 1791 since this is the earliest available data point. Because it is a stock, it should decline slowly and with a lag. Additionally, if it were to capture secularization, it would drive the coefficient on the share of refractory clergy to zero. I find limited evidence, quantitatively marginal, suggesting this: point estimates are slightly larger in most regressions without adding this control. The rate of the tithe is measured in 1750, the number of abbeys in 1756, and the duration of Jesuit presence in 1763, at the time of their expulsion. The share of Protestants is measured in 1815 because the only other available year for this variable is 1670, which would not capture the effect of their expulsion in 1685. Additionally, there was very limited change in the share of Protestants between 1750 and 1815.

Table 1 reports the results, along with robust standard errors. Appendix Figure A2 plots the scatterplot and partial residual plot. A 10-percentage-point increase in the share of refractory clergy is associated with a delay in the year of transition of about ten years (10.4 with the full set of controls). This is a particularly large effect: moving from the 25th to the 75th percentile of the distribution of refractory clergy is associated with a delay in the demographic transition of more than a standard deviation.

Table 1: Determinants of transition date

Note: This table displays the results of the cross-sectional regression of transition dates on the population-weighted share of refractory clergy in 1791. Transition date is defined as the first year with $I_g \leq .5$. Controls are described in Section 5. All observations are weighted by *département* population in 1831. Robust standard errors are reported. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

	dep var: Transition date						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Refractory clergy (1791)							
Ordinary Least Squares	97.23***	98.29***	83.99***	101.07***	101.39***	101.27***	103.78***
	(13.14)	(13.42)	(13.05)	(22.54)	(21.72)	(22.49)	(22.97)
Tobit (Maximum likelihood)	118.60***	117.55***	94.30***	113.16***	112.13***	111.65***	115.26***
	(16.90)	(16.74)	(15.52)	(24.19)	(23.35)	(24.08)	(24.70)
Controls							
Religiosity (pre-secularization)		Yes	Yes	Yes	Yes	Yes	Yes
Cultural and institutional factors			Yes	Yes	Yes	Yes	Yes
Region fixed effects				Yes	Yes	Yes	Yes
Education and schooling					Yes	Yes	Yes
Pre-industrial development						Yes	Yes
Contemporary development							Yes
Mean of dep var	1863	1862	1861	1861	1861	1861	1861
Left censored observations	24	24	23	23	23	23	23
Observations	85	80	77	77	77	77	76
Adjusted R^2 (OLS)	0.40	0.40	0.55	0.61	0.63	0.61	0.60
Log likelihood (Tobit)	-322.3	-293.6	-267.9	-254.2	-253.0	-252.9	-248.6

The estimates are stable and significant at the 1 percent level across all specifications. Specification 2 controls for proxies for religiosity before the onset of secularization in order to capture the effect of secularization. These controls include, notably, the number of clergymen per capita, the number of abbeys, and the average rate of the tithe collected by the church. Specification 3 controls for observed cultural and institutional factors. In particular, the share of deserters in the army during the French Revolution and fiscal status (*pays d'élection*, *d'État*, or *d'imposition*) in the *Ancien Régime* allow me to capture religiosity and not state legitimacy with the refractory-clergy measure. The specification also controls for linguistic distance to French (in order to capture the diffusion and adoption of new cultural norms (Spolaore and Wacziarg, 2022)) and *Encyclopédie* subscriptions (in order to capture the diffusion of the Enlightenment and the presence of local knowledge elites, who may have had an impact on cultural change and the modernization of society as a whole). Specification 4 adds twelve region fixed effects to account for unobserved cultural or economic factors that might confound the effect of the refractory clergy. For example, ancestry may have an effect on the diffusion of modernization, while the presence of nuclear family structure might influence both secularization and

fertility (Todd, 1990).[30] Specification 5 controls for literacy to account for the quantity-quality trade-off, while specifications 6 and 7 account for development. The results remain virtually unaffected.

Magnitude. Table 2 presents standardized beta coefficients for selected determinants of transition date. I evaluate and compare the magnitude of a number of factors that may have played a role in the early demographic transition in France, including religiosity but also *Encyclopédie* subscriptions, linguistic distance from the French language, literacy, and development. I report the results without any controls but also, in the last column, after accounting for the full set of controls.

The first column corresponds to the first specification of Table 1. In column (2), I evaluate the role of cultural attributes and find a large and significant correlation with subscriptions to Diderot and d'Alembert's *Encyclopédie*. Decreasing the number of subscriptions per capita by one standard deviation is predicted to delay the transition date by one-third of a standard deviation, with or without controls. This is the second-largest effect after the refractory clergy in 1791 and is consistent with the pattern documented by Squicciarini and Voigtländer (2015, 2016). Yet, it is unlikely that it played a major role in the French demographic transition because Enlightenment ideas diffused throughout most of Western Europe and especially England and Scotland.

Then, because religiosity could capture barriers to the diffusion of norms favoring limited fertility, rather than a direct effect of cultural differences, I look at linguistic distance from French in 1900 in (3).[31] Without controls, the effect is large and significant, but the standardized beta coefficient for the refractory clergy is about 2.8 times as large as that for linguistic distance, suggesting that the main independent variable is capturing a direct effect of religiosity rather than barriers. After accounting for the full set of controls, the estimated coefficient becomes null and statistically not different from zero. Finally, neither literacy, population density, nor urbanization had a significant or large effect on the timing of transition. These results suggest that the accumulation of human capital, pre-industrial development, and contemporary development were not drivers of the transition in France, in line with the evidence at the macroeconomic level.

Heterogeneity. Appendix Table A5 shows the heterogeneous effect of the refractory clergy to understand potential mechanisms. I interact the share of refractory clergy in 1791 with the same selected determinants used in the previous table, and all variables are standardized– therefore the baseline coefficient for the refractory clergy in 1791 corresponds to the case where the interacted variable is evaluated at its mean. I first estimate heterogeneity with respect to *Encyclopédie* subscriptions, since it is possible that local elites allowed secularization to impact fertility, for example through the diffusion of the libertine literature to the general population. The effect is small and not significant. Similarly, the effect of linguistic distance and literacy is

[30] After including fixed effects for family structure, the estimated OLS coefficient is 95.19, still significant at the one percent level.

[31] I use data from Blanc and Kubo (2026) to leverage granular variation in linguistic distance within linguistic areas. Results are similar when using the data from Spolaore and Wacziarg (2022).

Table 2: Magnitude of the determinants of transition date

Note: This table displays the results of the cross-sectional OLS regression of transition dates on a set of variables of interest. These are the population-weighted share of refractory clergy in 1791, the log of *Encyclopédie* subscriptions per capita in 1776–79, linguistic distance from French in 1901, the literacy rate of conscripts in 1829, population density in 1831, and the log rate of urbanization in 1831, defined as the share of the population living in towns with more than five thousand inhabitants. Transition date is defined as the first year with $I_g \leq .5$. Standardized beta coefficients are reported. All observations are weighted by *département* population. Sources: Tackett (1986) for the refractory clergy, Darnton (1973) for *Encyclopédie* subscriptions, Blanc and Kubo (2026) for linguistic distance, SGF (1878) for literacy, and BDCassini (2017) for population density and urbanization. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

	dep var: Transition date						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Standardized beta coefficients							
Refractory clergy (1791)	0.64***						0.69***
	(0.09)						(0.15)
log 1 + Encyclopedie (1776-79)		-0.28**					-0.30**
		(0.11)					(0.13)
Linguistic distance to French (1900)			0.23**				0.02
			(0.09)				(0.21)
Literacy (1829)				-0.13			0.34
				(0.11)			(0.20)
Population density (1831)					-0.03		-0.08
					(0.04)		(0.23)
log 1 + urbanization (1831)						-0.03	-0.10
						(0.09)	(0.11)
Full set of controls							Yes
Observations	85	87	85	86	88	86	76
Adjusted R^2	0.40	0.07	0.04	0.01	-0.01	-0.01	0.60

close to zero and not significant.

Importantly, I find an important interaction between cultural and economic factors. The effect of the refractory clergy is twice as large when population density is one standard deviation above its mean, suggesting that pre-industrial development was a necessary condition for the decline in fertility and that, before dechristianization, individuals had more children than their desired level of fertility because of the constraints imposed by the Church. Moorthy (2022) further documents this in France in a recent paper, and Coale and Watkins (1986); Spolaore and Wacziarg (2022) find a similar pattern in Europe as a whole. This result also suggests that overpopulation could have played a role, as suggested by Braudel (1986). However, I do not find the same pattern when looking at urbanization, another traditional proxy for development.

5.3 Robustness, sensitivity, variable selection, selection, and spatial correlation

Appendix 1 discusses robustness, sensitivity, variable selection, selection, and spatial correlation in detail. I summarize the results here.

Marital fertility. The refractory clergy is also associated with the level of marital fertility, not only the timing of the transition (Appendix Table A6).

Alternative fertility indices. The effect is concentrated in marital fertility and is null for illegitimate fertility (Appendix Table A7).

Alternative definitions of transition date. The results are robust to using alternative thresholds of marital fertility when defining the transition date, from 30 to 70 percent of the fertility of the Hutterites (Appendix Table A8). The coefficient is largest when defining the outcome as the first year in which marital fertility dropped below 0.6, corresponding to a roughly 10 percent decline from the average marital fertility in pre-transition Europe.

Infant and child mortality. Infant and child mortality play no role in the timing of the transition, and the effect of the refractory clergy is unaffected when these variables are included (Appendix Table A9).

Additional proxies of religiosity before the onset of secularization. The coefficient on the refractory clergy is unchanged after controlling for additional proxies of religiosity before the onset of secularization (Appendix Table A10).

Weighting. The results are unchanged without weighting observations and with an unweighted share of refractory clergy (Appendix Tables A11 and A12).

Survival analysis. The results are robust to using survival analysis, a natural way to model transition rates (Appendix Table A13).

Sensitivity and coefficient bounds. Across all 16,384 combinations of the fourteen controls, with region and *pays*-status fixed effects included in every specification, not a single specification returns a marginal effect of the refractory clergy below 75 years (Figure 7).

Variable selection. Under double-lasso, a supervised machine-learning technique, the refractory clergy is the variable that plays the most important role (Appendix Table A14).

Omitted variables. The OLS coefficient is biased downwards: selection on unobservables would have to be up to 10 times as strong as selection on observables to drive estimates to zero (Appendix Table A15).

Spatial dependence. Replacing the dependent and independent variables with spatially correlated noise returns significant coefficients in at most 1 percent of regressions once fixed effects are included, so the effect is not spurious and cannot be explained by simply fitting spatial noise (Appendix Table A16).

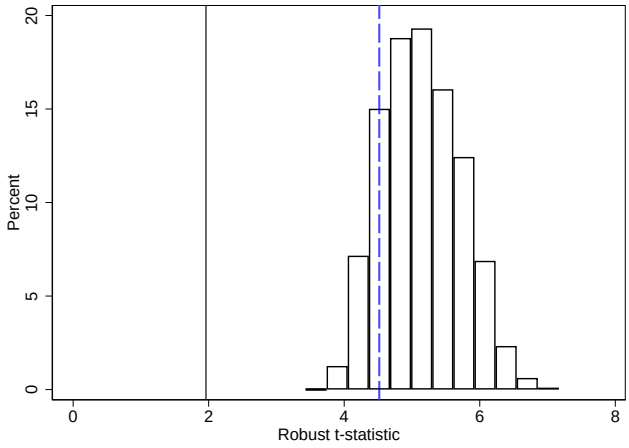
6 Individual-level results

6.1 Baseline results

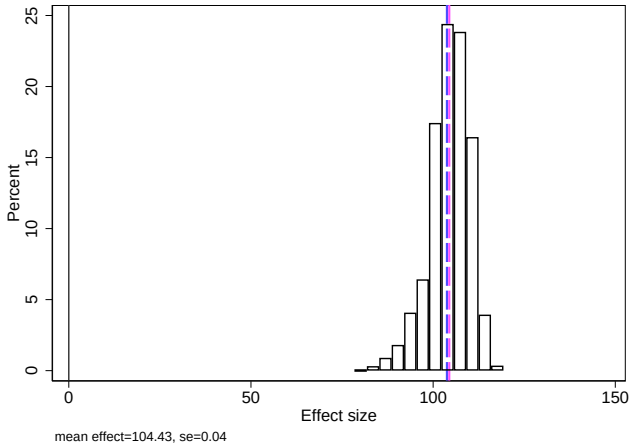
Empirical strategy. To further document the association between fertility and religiosity at the individual level, I rely on the genealogical data from geni.com. The data is a nationally

Figure 7: Distribution of coefficient estimates and t-statistics across all combinations of controls

Note: This figure displays the results of $2^{14} = 16,384$ cross-sectional regressions of transition dates on the population-weighted share of refractory clergy and all possible combinations of controls (with region and *pays*-status fixed effects included in all specifications). Panel A displays the distribution of t-statistics, while Panel B displays the distribution of coefficients. The blue line plots the coefficient estimated in Table 1 with the full set of controls (specification 7), and the red line plots the average coefficient across all combinations. The main explanatory variable is defined as the population-weighted share of refractory clergy in 1791. Transition date is defined as the first year with $I_g \leq .5$. Controls are described in Section 5. All observations are weighted by *département* population in 1831. Robust standard errors are reported. This figure was generated using the Stata program provided by Brodeur, Cook and Heyes (2020*b*).



(Panel A) t-statistic curve



(Panel B) Effect curve

representative sample from 1680 to 1920 (Section 3). All observations contain geocoded places of birth, which allows me to match individuals with the refractory clergy in 1791 at the level of their district of birth. Appendix Figure B2, Panel B displays the towns of birth included in the fertility sample. Appendix Table B5 shows summary statistics.[32]

I model the conditional mean of fertility in Equation 2, where $fert_{i,t}$ is the completed fertility of individual i in decade t. I exploit cross-sectional variation in fertility with decade fixed effects λ_t. Each individual is assigned the share of refractory clergy in 1791 of her district of birth $b(i)$. To account for the count nature of the dependent variable and to robustly estimate the conditional mean of fertility among recorded parents, I assume that the log of the conditional mean is a linear function of observables. Equation 2 is estimated using Poisson regressions, which consistently estimate the conditional mean among individuals recorded as parents.

$$\log \lambda_{i,t} = \beta \times \text{Ref. clergy}_{b(i),1791} + \boldsymbol{X}'_{i,t}\delta + \lambda_t \equiv \boldsymbol{z}'_{i,t}\gamma \quad (2)$$
$$\text{with} \quad fert_{i,t} \sim \mathcal{P}(\lambda_{i,t}) \quad \text{and} \quad \lambda_{i,t} = \lambda(\boldsymbol{z}_{i,t}) \equiv \mathbb{E}(fert_{i,t}|\boldsymbol{z}_{i,t})$$

The vector of controls includes a quadratic in the age at birth of the first child, in order to not capture delayed marriage but rather active, parity-specific controls; the number of abbeys and the duration of Jesuit presence at the district level, in order to account for religiosity

[32] Because the genealogies are crowdsourced, the data contains occasional implausible values despite cleaning. I therefore drop individuals recorded with more than 50 children, women whose first child is born after age 45, and men whose first child is born after age 65. The extreme values that remain in the table–a maximum of 36 children and a first birth at age 64–are rare but plausible, and likely reflect the right tail of a large genealogical sample.

before the onset of secularization; and a dummy that equals one if an individual's place of birth was coded as urban at the time, and the log of *Encyclopédie* subscriptions per capita in a 50-kilometre radius of the individual's place of birth, in order to account for cultural factors and development. Finally, since the dataset does not always contain both spouses, I include the two whenever possible and cluster all regressions at the couple level, thereby accounting for couples fully recorded, and I use a male dummy in order to account for possible differences in gender.

Main results. Table 3 presents the baseline results at the individual level for observations after 1760, when dechristianization and the decline in fertility started. The estimated coefficient is particularly large and stable throughout specifications, with the marginal effect of the refractory clergy estimated to be about one. This means that individuals born in a place with only refractory clergymen are predicted to have about one more child than those born in a place without any. This is roughly the size of the decline in fertility during the second half of the eighteenth century, when the number of children ever born went from 4.5 to 3.5 in about forty years (Figure 5).

Table 3: Determinants of fertility at the individual level

Note: This table displays the results of individual-level Poisson regressions of the total number of children ever born on the share of refractory clergy in 1791. The main explanatory variable is defined as the share of refractory clergy in 1791 at the district-of-birth level. All specifications include a male dummy and decade fixed effects. Individual-level controls include a quadratic in the age at birth of the first child interacted with the male dummy. Religiosity (pre-secularization) controls include the number of abbeys in 1756 and the duration of Jesuit presence until 1763 (both at the district-of-birth level; plus dummies). Development and Enlightenment controls include the urban status of the town of birth in the year of birth and the log of *Encyclopédie* subscriptions in $1776 - -79$ at the district level (plus a dummy for nonzero subscriptions). Two-way clustered standard errors (at the couple and district levels) are reported. Average marginal effects are reported. The results were generated using the Stata program provided by Correia, Guimarães and Zylkin (2020). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

	dep var: fertility			
	(1)	(2)	(3)	(4)
Refractory clergy (1791)	0.252***	0.297***	0.281***	0.233***
	(0.083)	(0.084)	(0.090)	(0.075)
Marginal effect of religiosity on fertility	0.893***	1.055***	0.997***	0.829***
Controls				
Individual-level		Yes	Yes	Yes
Religiosity (pre-secularization)			Yes	Yes
Cultural factors and development				Yes
Observations	11,887	11,728	11,728	11,727
Clusters (couples)	10,350	10,220	10,220	10,219
Clusters (districts)	440	440	440	440
Pseudo R^2	0.01	0.06	0.06	0.06

All specifications include a male dummy and decade fixed effects. Standard errors are two-way clustered at the district-of-birth and couple levels.[33] In specification 2, individual-level controls are included with a quadratic in the age at birth of the first child interacted with

[33]Information about both parents is not always available–about a quarter of individuals have spouses also included in the regressions.

the male dummy: the reduction in fertility was not achieved by delayed age of marriage but rather through parity-specific controls.[34] Specification 3 adds proxies for religiosity before the onset of secularization at the district level: the presence (dummy) and number of abbeys in 1756, and the presence (dummy) and duration of Jesuit presence before 1763. In the last column, I control for a (time varying) dummy capturing the urban status of the town of birth at the time and I control for the presence (dummy) and number of knowledge elites by using *Encyclopédie* subscriptions at the district level.[35] The results are statistically significant and stable throughout.

Robustness to method of estimation. Poisson regressions are appropriate for non-negative count dependent variables, yet they rely on the assumption of equality of the mean and variance. That said, the fact that the Poisson distribution is specified by only one parameter is attractive to the extent that, in the post-Malthusian period, it is likely that there was less variance as the mean fertility declined. While the use of clustered standard errors corrects for this potential overdispersion, Appendix Table B7 further evaluates the robustness of the results by estimating Equation 2 with OLS, overdispersed Poisson, and negative-binomial regressions. In overdispersed Poisson, the conditional variance is scaled by a parameter $\phi \equiv \chi^2_{Pearson}/p$ in order to directly account for the observed overdispersion. In negative-binomial regression, heterogeneity among individuals is accounted for by assuming that the outcome follows a negative-binomial distribution, hence adding variability that Poisson regression does not allow for. Results are essentially unchanged.

Distribution regressions. Is the effect of higher religiosity uniform at all levels of fertility? I estimate a distribution regression to trace out the effect of the share of refractory clergy on the cumulative distribution function (CDF) of fertility, following Chernozhukov, Fernández-Val and Melly (2013). This method allows the entire conditional distribution to be estimated and, importantly, does not require the outcome to have a smooth conditional density, as quantile regression does. It is therefore particularly well suited to fertility, which is a discrete outcome. For each observed fertility threshold f, I estimate Equation 3 by OLS, where $\mathbb{1}_{fert_{i,t} \leq f}$ is an indicator equal to one if individual i had at most f children.

$$\mathbb{1}_{fert_{i,t} \leq f} = \beta_f \times \text{Ref. clergy}_{b(i),1791} + \boldsymbol{X}'_{i,t}\delta + \lambda_t + \epsilon_{i,t} \tag{3}$$

Appendix Figure B5 plots the results at different levels of fertility. Increasing the share of refractory clergy in 1791 is always associated with an increase in the number of children–but

[34] Appendix Figure B4 plots age at birth of the first and last child (Panel A), the childbearing span (Panel B), and birth spacing (Panel C). All are dated by the birth year of the first child. Around 1760, age at first birth increases and age at last birth decreases. The decline is mostly a combination of delayed marriage or first birth with earlier last birth (stopping behavior). The time series of the childbearing span captures both and explains most of the variation in the time series of fertility. Birth spacing barely changes and explains little of the first wave of the decline in the eighteenth century.

[35] In Appendix Table B6, I control for soldier height before 1760 as a proxy for development at the town-of-birth level: this increases the point estimate of the share of refractory clergy in 1791. Then, I control for age at death, since longevity may confound the effect of the refractory clergy on fertility, as religiosity declines with age (Lechler and Sunde, 2020). The coefficient remains significant.

the shift in the CDF is larger for large families. The effect is indeed maximized when fertility is above the mean and median. For example, decreasing the share of refractory clergy by 100 percentage points (full secularization) is predicted to increase the probability of having fewer than six children by about 10 percentage points. Additionally, a property of distribution regressions is that the estimated coefficients on the CDF (with the linear-probability model) sum up to the negative of the OLS coefficient of the effect of the refractory clergy on fertility in Appendix Table B7. Hence, the distribution of coefficients fully characterizes the average effect of the refractory clergy on fertility.

Secularization and fertility. To further evaluate the relationship between religious change and fertility, I merge the genealogies with the familysearch measure of the long-run decline in religious naming. Appendix Table B8 reports the results of a regression of fertility on the secularization of the patron-saint religious-name index in the individual's municipality of birth, using decade and *département*-of-birth fixed effects. I find that those born where religious naming declined most had fewer children. The effect is large: the complete disappearance of religious naming is predicted to lower fertility by about two children. Adding the level of religious naming in the individual's municipality of birth in the year of birth of their first child leaves the coefficient on secularization broadly unchanged–further suggesting that it is the decline in religious naming, not the level of religiosity, that predicts lower fertility. With individual controls, the estimate is smaller and less precise. Because the sample is small and religious naming may also capture changing naming practices or modernization, I interpret these results as suggestive evidence.

6.2 Accounting for unobservables

Using the genealogical data allows me to employ three different strategies to account for some unobserved factors, such as pre-existing and institutional differences, that may confound the individual-level association between fertility and the presence of refractory clergy, my inverse proxy for secularization. Because these strategies do not generate exogenous variation, I do not interpret the results in this section as identifying a causal effect. Instead, I interpret these analyses as providing suggestive evidence on whether the relationship is more consistent with cultural or local institutional factors. To the best of my knowledge, these strategies have not previously been combined in the study of the French fertility decline.

First, it is possible to study within-*département* variation using fixed effects. In particular, *département*-by-decade fixed effects account for time-invariant *and* time-varying unobservables at the *département* level. This is particularly important to the extent that *départements* are the main administrative units, hence exploiting within-*département* variation allows me to account for most institutional differences. For example, some *départements* may have been more affected by the French Revolution than others (for example, during the War in the Vendée or during the Reign of Terror), or the crowdsourced data may be of higher quality in earlier periods in some *départements* since the records are kept in online *départemental* archives, which would

bias the results.[36]

Second, by extending the sample to individuals observed before dechristianization took place, it is possible to compare the coefficient on the refractory clergy before and after the onset of the fertility transition and secularization using a strategy similar to a difference-in-differences framework with continuous treatment. I use 1760 as the cutoff and compare the coefficient after 1760 with that before to examine whether places that would become secular already differed in fertility before the decline. However, the onset of the fertility transition and that of secularization are both unknown, since neither process was clear-cut nor began at the same time across space. Moreover, secularization was not a linear process and its geographic distribution is not well measured. Therefore, this strategy cannot strictly be interpreted as difference-in-differences, and I instead interpret it as a descriptive before-and-after comparison.

Finally, it is possible to study the fertility decisions of second-generation migrants while holding constant unobserved institutional characteristics of places of arrival, following Algan and Cahuc (2010); Fernández (2011); Guiso, Sapienza and Zingales (2004). This allows me to separate the effect of religious beliefs and norms passed through generations from that of confounding institutional and geographical characteristics that are location-specific. What is particularly novel in this setting is both the historical dimension and the fact that it accounts for institutional and cultural variation within the country. Indeed, the traditional approach only uses migrants surveyed recently, leverages between-country variation in place of origin, and assumes that there is no institutional variation within a country in either the place of origin or the place of arrival. Here I leverage variation in the refractory clergy at the district-of-origin level, holding constant district-of-birth characteristics.[37]

Table 4 displays the results. The first column displays the baseline results with the full set of controls at the individual, town, and district-of-birth levels. In the second and third columns, I add, respectively, fixed effects for *département* of birth and *département* of birth by decade. Point estimates increase, as suggested by the analysis in the rest of the paper, and the marginal effect of the refractory clergy on fertility is estimated to be between 1 and 1.3 children. All results are significant at the 1 percent level. In the fourth specification, I extend the sample to all individuals observed between 1680 and 1920. Interacting the refractory clergy in 1791 with a dummy that equals one if the individual was observed after the onset of the transition in 1760 allows me to show that the results do not capture unobserved pre-existing differences. I find that the refractory clergy had a null and statistically insignificant effect on fertility before 1760. Only after 1760 does it become associated with increased fertility. This timing is consistent with the relationship emerging alongside the fertility decline, although it is not a causal test.[38] For example, most French migrants to Quebec left in the seventeenth century from the regions around Paris, where most clergy later took the oath, and where fertility became lower. Yet, at

[36]This issue is known and has been acknowledged–for example, in Blanc and Wacziarg (2020); Henry (1972*a*,*b*, 1978); Henry and Houdaille (1973); Houdaille (1976); Séguy (2001). As a result, one would erroneously find that religious *départements* had higher fertility in the earlier years of the sample, before the Revolution, while they simply had less destruction during the French Revolution, or more thorough record-keeping.

[37]In order to account for correlation among parents (about one-third of second-generation migrants had parents born in different districts from each other), I also implement four-way clustered standard errors at the two parents and their respective districts of birth levels.

[38]Appendix Figure B6 displays the before-and-after comparison graphically.

Table 4: Determinants of fertility at the individual level: accounting for unobservables

Note: This table displays the results of individual-level Poisson regressions of the total number of children ever born on the share of refractory clergy in 1791 at the district-of-birth level (except in specification 5, in which it is evaluated at the district-of-birth-of-parents level and corresponds to the average level for the two parents, which ensures that individuals with a missing parent are not dropped). All specifications include the full set of controls. The baseline specification corresponds to the last specification in Table 3. Two-way clustered standard errors (at the couple and district levels) are reported in all specifications but the last. In specification 5, standard errors are four-way clustered at the district-of-birth-of-parents and parents levels. The table reports the counts for the first parent; for the second parent, there are 1,153 parent clusters and 238 birthplace clusters, including 237 observed districts and one "abroad or missing" category. Average marginal effects are reported. The results were generated using the Stata program provided by Correia, Guimarães and Zylkin (2020). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

	dep var: fertility				
	(1) Baseline specification	(2) Fixed Effects	(3) Time-varying FE	(4) Diff-in-diff	(5)[a,b] Second gen migrants
Refractory clergy (1791)[a]	0.233***	0.327***	0.363***	0.052	0.210**
	(0.075)	(0.118)	(0.125)	(0.171)	(0.096)
_____ × After 1760				0.357**	
				(0.166)	
Marginal effect of religiosity on fertility					
Between 1680 and 1759				0.175	
Between 1760 and 1919	0.829***	1.161***	1.290***	1.718***	0.753**
Sample					
Observed between 1680 and 1919				Yes	
Observed between 1760 and 1919	Yes	Yes	Yes		Yes
Controls					
Baseline controls	Yes	Yes	Yes	Yes	Yes
Département of birth fixed effects		Yes	Yes	Yes	
Département of birth by decade fixed effects			Yes	Yes	
District of birth fixed effects					Yes
Observations	11,727	11,727	11,525	16,503	1,438
Clusters (couples[b])	10,219	10,219	10,034	14,274	1,151
Clusters (districts[b])	440	440	429	451	235
Pseudo R^2	0.06	0.08	0.11	0.13	0.14

[a]district of birth of parents in (5), [b]more details in table notes

the time of their arrival, these migrants were known for their high fertility (e.g., see Galor and Klemp, 2019).

Last, but not least, a major concern is that local institutions caused both secularization and the decline in fertility. To account for such unobserved geographic and institutional factors that may confound the analysis, the last column restricts the sample to second-generation migrants and includes district-of-birth fixed effects. I find that the refractory clergy in the district of the parents has a persistent and significant association with fertility that was not location-specific, but rather related to beliefs and preferences since it was transmitted intergenerationally despite a different environment. Appendix Table B9 confirms this, following Nunn and Wantchekon (2011), by including the refractory clergy of both the parents' and the individual's districts of birth in the same regression (without district-of-birth fixed effects). Only the share of refractory clergy in the district of birth of the parents predicts fertility, while that in the individual's own district of birth is small and statistically insignificant. This pattern is consistent with beliefs and preferences persisting across generations and migration, although it may also reflect other persistent characteristics of parental origin. Taken together, these results support a cultural interpretation of the association, but they do not establish a causal effect or rule out a role for

institutions.

7 The drivers of secularization

What remains an open question is what caused secularization. Although the available evidence does not allow me to identify its origins, the regional case studies discussed in Section 4 (Bois, 1960; Chaunu, 1978; Dinet, 1991; Hoffman, 1984; Norberg, 1985; Tingle, 2012; Vovelle, 1973) and broader work (Boulard, 1966; Tackett, 1986; Todd, 1990) suggest that it began as a predominantly rural phenomenon in the Parisian region, in Provence, and in parts of the southwest. This geography is difficult to reconcile with development or traditional institutional explanations: these were among the most devout regions of France historically, yet, although Paris itself was rich, its surrounding region was not, while Provence was among the poorest in the country, with a different language and different fiscal rules.

Instead, I argue that secularization was a backlash against a Church that held a monopoly on faith and was closely bound to an absolutist monarchy (Van Kley, 1996). When religious authority rests on state-integrated institutions, such a backlash can generate a rapid and lasting reversal (Tremblay-Auger, 2026). Through Gallicanism, the French Church had asserted its independence from the pope with the Declaration of the French Clergy of 1682, which held that the king was subject to no ecclesiastical authority in temporal matters: he could not be deposed by the pope, nor could his subjects be released from obedience to him. The doctrine freed the Church from Rome only to subordinate it to the monarchy, on which its authority now depended. This mechanism may help explain why regions that combined the deepest devotion and the most extractive state reacted most strongly once Church and crown came under criticism.

The backlash's first target was the Church's monopoly on faith. In eighteenth-century France, the austere morality of the Counter Reformation could be imposed only because it had the coercive machinery of the absolutist state behind it. Braudel (1986) captures this religious face of the reaction: "the drama played out in the eighteenth century was a sort of revenge on the part of the Reformation. Having hesitated, two centuries earlier, between Rome and Luther, or rather between Rome and Calvin, France had chosen Rome, but the choice backfired" (p. 200). The spread of Jansenism helped channel this backlash. A rigorist Catholic movement critical of religious and political elites, and of the Jesuits in particular, it advocated predestination and penitence, appealed to the masses by translating the Bible into French against the interdiction of the Council of Trent, and, at first, embraced Gallican demands for autonomy from Rome (Maire, 1998, 2019). Tackett (1986) argues that "a whole series of affaires and causes célèbres, from the repression of the convulsionnaries in the 1730's through the billets de confessions in the 1750's and the expulsion of the Jesuits in the 1760's, had contributed in broadly publicizing and intensifying grievances toward the clergy" (p. 257).[39]

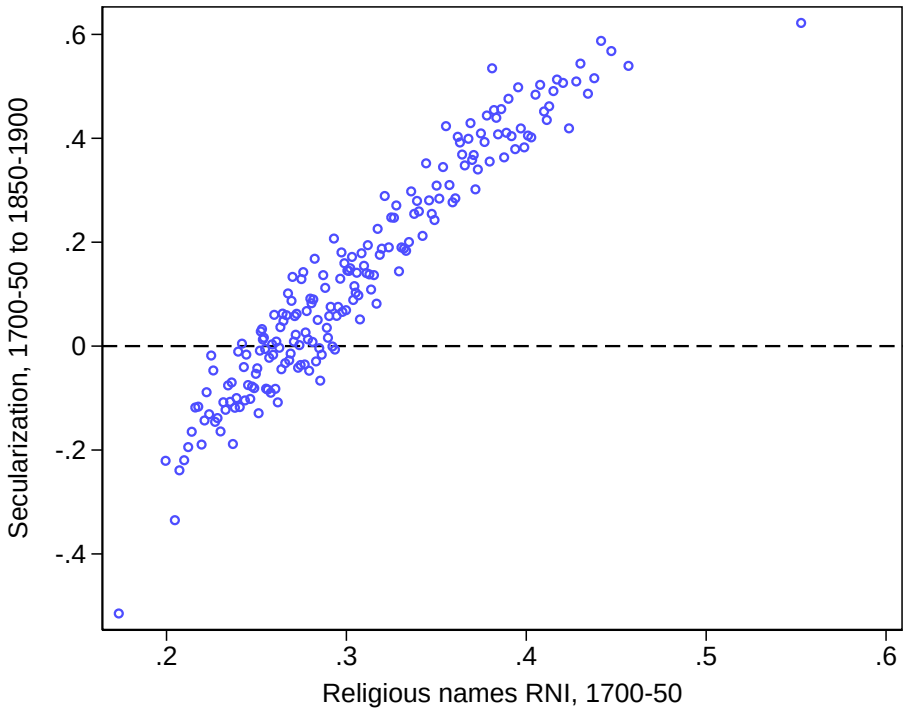
Its second target was the monarchy itself, since the Church had become bound to the Crown.

[39]Similarly, Hoffman (1984) writes that "the Counter Reformation's austere morality was imposed in full force ... not surprisingly, it was rejected by people who saw nothing wrong in combining devotion and gaiety" and that it "had the support of the royal government and of the urban elites, who had in the past tolerated a great deal more sexual license" (p. 138).

In the rest of Europe, where parliaments held more power, such an arrangement could endure (Van Kley, 1996). In France, altar and throne fell together (Chartier, 1991; Van Kley, 1996). Because of its ties to religious authorities, the monarchy could not tolerate Jansenism: Louis XIV demolished its center, the Abbey of Port-Royal des Champs, in 1709, and supported the *Unigenitus* papal bull of 1713 attacking the movement. Jansenist bishops appealed the bull, and received the support of the Parlement of Paris. The crown sided with the Jesuits and the bull's defenders, making it a law of the state in 1730 (Friedrich, 2022; Van Kley, 1975). As the monarchy enforced the bull, opposition to the Church increasingly became opposition to the state, and Jansenism helped turn parts of the population against both the Church hierarchy and the monarchy (Van Kley, 1996)–with fiscal resentment broadening this backlash as opposition to taxation mounted over time (Davoine, Enguehard and Kolesnikov, 2025; Giommoni, Loumeau and Tabellini, 2026). As Van Kley (1996) concludes, "if the Revolution could, with an astonishing facility, destroy the throne and the altar, it is because Jansenism, for more than a century, had destroyed the foundations of both" (p. 505). It was during the Revolution that the backlash against the monarchy fully unfolded, but secularization prefigured it.

Figure 8: Secularization where devotion had been highest

Note: This figure plots a binscatter of the secularization of the patron-saint religious-name index (RNI) from 1700–1750 to 1850–1900, against the RNI in 1700–1750, across municipalities in familysearch. Secularization is the proportional decline in the religious-name index between 1700–1750 and 1850–1900, computed as minus the change in the RNI over the period divided by its 1700–1750 baseline. Positive values denote a fall in religious naming. The RNI is constructed in Section 4. Source: familysearch (Ardennes, Dordogne, Eure-et-Loir, Indre, Isère, Landes, Mayenne, Meurthe-et-Moselle, Nord, Saône-et-Loire, Vosges).



I document this reversal directly. Using the familysearch data, Figure 8 shows that the municipalities with the most religious naming in the first half of the eighteenth century are precisely those that secularized most: the Church's hold gave way fastest where it had been

strongest–a pattern consistent with Tremblay-Auger (2026)–further suggesting a backlash. The pattern also appears in Provence, which was historically among the most devout regions in France (Agulhon and Coulet, 2018) and eventually became among its most secular (Vovelle, 1973). The same reversal emerges cross-sectionally in the results below, when examining the legacy of the French Wars of Religion.

To examine whether the cross-sectional evidence is consistent with this hypothesis, I collect data on the spread of the Counter Reformation and on the extractiveness of the state. Easter attendance should be lowest where both were strongest. I proxy the former with the presence of the Holy League at the height of the French Wars of Religion (Black, 1996, p. 57), and the latter with the price of the *gabelle*, a system of forced salt taxation whose rate varied across space by up to a factor of sixty (Davoine, Enguehard and Kolesnikov, 2025; Giommoni and Loumeau, 2025). The tax was among the most criticized in the *cahiers de doléances* (the grievance lists of 1789) (Shapiro and Markoff, 1998). Giommoni and Loumeau (2025) find that areas of high taxation developed particular cultural norms, while Davoine, Enguehard and Kolesnikov (2025); Giommoni, Loumeau and Tabellini (2026) document a stronger backlash against the monarchy in these areas, eventually leading to the French Revolution. A third measure, the number of Jansenist clergymen in each diocese in 1725 (Préclin, 1929), captures the local strength of Jansenism.

Table 5: Deep-rooted correlates of Easter attendance

Note: This table displays the results of the municipality-level cross-sectional regression of Easter attendance in 1966 on deep-rooted factors. Easter attendance (1966) is taken from Boulard (1966). Holy League (1590) is defined as a dummy that equals one in places where the Holy League was present in 1590, taken from (Black, 1996, p. 57) (see Appendix Figure C3). The value of the salt tax (gabelle) in 1770 is taken from Giommoni and Loumeau (2025). Jansenists (1725) is the inverse hyperbolic sine of the number of Jansenist clergymen in a diocese, taken from Préclin (1929). Standardized beta coefficients are reported. All observations are weighted by population in 1961. All specifications control for the log population in 1961 and latitude and longitude. Standard errors are clustered at the district and/or diocese levels. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

	dep var: Easter attendance (1966)				
	(1)	(2)	(3)	(4)	(5)
Standardized beta coefficients					
Holy League (1590)	-0.16***		0.38***		0.38***
	(-2.76)		(4.02)		(3.21)
Salt tax / gabelle (1770)		-0.40***	-0.08		-0.02
		(-6.34)	(-0.97)		(-0.15)
_____ × Holy League (1590)			-0.65***		-0.62***
			(-5.68)		(-4.00)
Jansenists (1725)				-0.38***	-0.18*
				(-3.58)	(-1.87)
Observations	33,756	33,295	33,295	33,756	33,295
Clusters (districts)	513	511	511	513	511
Clusters (dioceses)				133	132
Adjusted R^2	0.14	0.26	0.31	0.22	0.33

Table 5 reports the results.[40] The first column shows that municipalities where the Holy

[40] Appendix Table C3 documents similar patterns using the presence of refractory clergy in 1791.

League was present display lower Easter attendance in 1966, by 0.16 of a standard deviation, further documenting the reversal in religiosity in the cross-section, consistent with a backlash against the Counter Reformation. The second column shows a particularly large negative correlation, of 0.40 of a standard deviation, between extractive institutions in the *Ancien Régime* and Easter attendance, supporting the hypothesis that secularization was also a backlash against absolutism and divine-right monarchy. The third column adds the interaction of the two. The sign of the coefficient on the Holy League reverses and the correlation with the *gabelle* is no longer significant, while the coefficient on the interaction term is negative and statistically significant: 0.65 of a standard deviation, larger than either correlation on its own. The backlash was strongest where the religious monopoly and the extractive monarchy coincided, not where either existed in isolation. In regions where the Counter Reformation held sway during the French Wars of Religion but institutions were not extractive, such as Brittany, contemporary Easter attendance is higher. And it is lower where the counter-reformers led extractive institutions, such as Paris and Provence.

Finally, the last two columns turn to Jansenism. The fourth column shows that dioceses with more Jansenist clergymen in 1725 display lower Easter attendance in 1966, by 0.38 of a standard deviation. The fifth column includes all variables together: the interaction term is largely unchanged, while the Jansenist coefficient falls by half, to 0.18 of a standard deviation, indicating that the two capture overlapping variation, consistent with the historical hypothesis that Jansenism played a central role in the backlash against both Church and monarchy. The connection, and its role in the fertility transition, was already conjectured by Pierre Chaunu: "Place on the map the zones of widespread Jansenism, of early and persistent dechristianization, and of rapid, continuous, and steep declines in fertility, and you will see that they superimpose perfectly" (quoted in Chartier, 1991, p. 98).

Taken together, these results are consistent with the backlash interpretation, but they do not establish it. They are intended to spur further research on the origins of secularization.

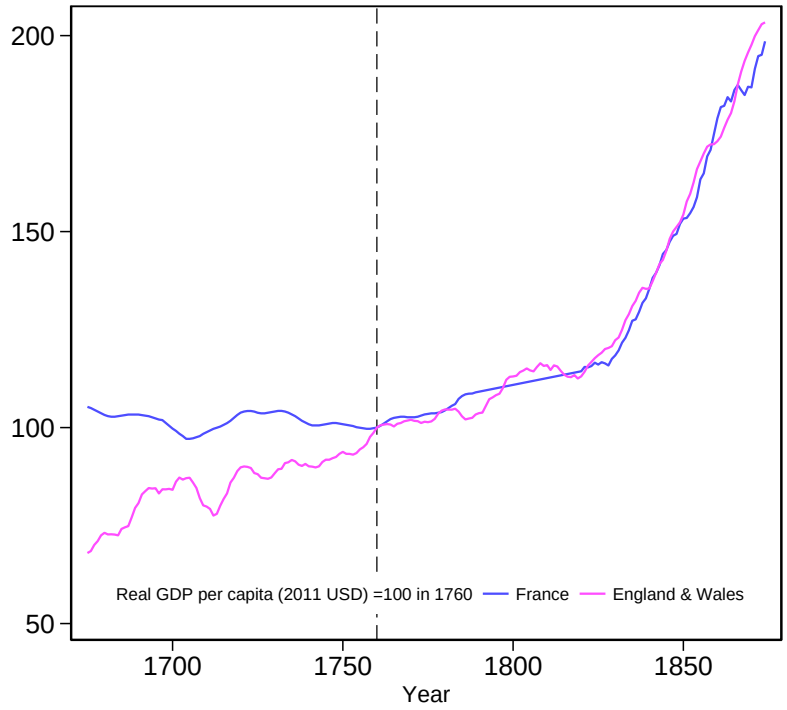
8 Concluding remarks

When and why fertility declined in France, more than a century before the rest of Europe, remain questions of the first order. Using novel datasets, I comprehensively document secularization and the fertility transition at the aggregate level for the first time. I then document a large and robust cross-sectional association between secularization and fertility at different levels of aggregation. Finally, I discuss the roots of secularization, arguing that it arose as a backlash against a Church that held a monopoly on faith and was tied to an absolutist monarchy. The same discontent prefigured the French Revolution.

The early fertility decline was a turning point for France. Braudel (1986) argues that "the entire course of French history since then has been influenced by something that happened in the eighteenth century" and asks "did France cease to be a great power not, as is usually thought, on 15 June 1815 on the field of Waterloo, but well before that, during the reign of Louis XV when the natural birth-rate was interrupted?" (p. 190). France was no longer the China of Europe, nor the dominant power in the world.

Figure 9: Accumulated economic growth after the French demographic transition

Note: This figure displays real GDP per capita (2011 USD) over time in France and in England and Wales, indexed to 100 in 1760 to show the cumulative rate of growth over time. Sources: Bolt and van Zanden (2014); Broadberry et al. (2015); Ridolfi (2016)



Its people, however, grew richer. Figure 9 shows that, although England was the birthplace of the Industrial Revolution, the French achieved a comparable increase in income per capita after 1760. This rise in income per capita did not stem from a transformation of the structure of production–France would not industrialize for another century. Instead, it was achieved, arguably, by challenging the authority of the Church and reducing fertility, thereby limiting the increase in the denominator of income per capita. This also had implications for the rest of the world: had France not begun its transition so early, it would likely have sent many more migrants to the New World during the Age of Mass Migration (Blanc and Wacziarg, 2025).

Finally, it marks a turning point in human history–the first time mankind escaped Malthusian stagnation. The cultural origins of the fertility transition in France provide further evidence that the transition from tradition to modernity played a central role in the transition from stagnation to growth (Mokyr, 2016). However, while the literature has concentrated on elites as the drivers of change, this paper studies ordinary men and women as agents of change in an age of modernization.

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The online appendix for this paper can be found **here**.