The impact of the Covid pandemic on natality and fertility in France

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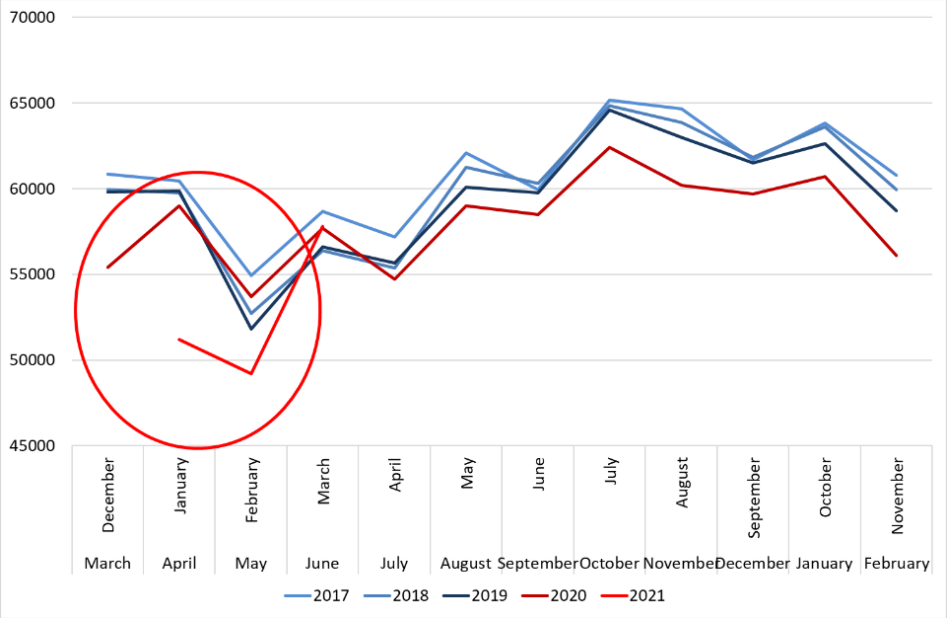
Context

At the end of January 2020, the first cases of Covid 19 are recorded in France. The first death from the disease is recorded at the end of February 2020. Due to the very strong increase of cases, the French government decided to confine the population (prohibition to move) for a first time from March 17 to May 10, 2020 (1 month and 23 days); nurseries, schools, colleges and high schools being closed, and 'teleworking' strongly advised. Containment restrictions have made it mandatory to temporarily close stores and businesses that are "not essential to the life of the nation", and places of sociability and leisure such as bars, restaurants, cafes, cinemas, casinos, and retail stores, with the exception of pharmacies and food stores. Beyond the stress linked to the health situation of the country and the confinement of individuals and families in sometimes small spaces, the apprehension of the economic consequences of the pandemic is strong from March 2020 (partial unemployment or not, closure of companies).

This stress related to the health and economic situation, combined with the confinement of families for more than a month and a half, was unfavourable to fertility in a context that was already anxiety-provoking (climate crisis, terrorism, economic problems). 50% of French people who had planned to have a child in 2020 said they were going to postpone it (Luppi et al., 2020). Indeed, as in many countries (Lindberg et al., 2020), and despite the increase in unwanted pregnancies (difficulty in accessing contraception and abortion) and the postponement of MAP procedures (The ESHRE COVID-19 Working Group et al., 2020), the number of births decline by 20% (Figure 1) and the fertility rate by 9%.

Figure 1. Births by months, 2017-2021.



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Objectives

But this decline has not been uniform across the country. The objective of this article is to draw up a first assessment of the consequences of the Covid-19 epidemic in terms of birth rate, 9 months after the "first wave", by showing the differential impact of the pandemic. The birth rate will be analysed according to different criteria: according to the level of mortality suffered in each department to grasp the impact of the stress linked to the health crisis on the postponement of pregnancies; according to the standard of living and the professions more or less affected by the economic crisis resulting from the health crisis (Neels et al., 2013; Vignoli et al., 2020); but also by distinguishing births according to the age of the mother, because we make the hypothesis that women and couples do not make the same decisions in terms of postponing fertility according to their age(Mills et al., 2011) (as well as according to whether the woman is nulliparous[3]) ; Finally, the birth rate will be analysed according to the housing areas (urban, peri-urban, rural) to test if the inhabitants of urban areas have suffered the confinement, and the sanitary crisis in general, more severely than those of the countryside, in particular because of the higher density of the cities and more cramped housing, more difficult to bear during the confinement. These analyses will be conducted at the national level for a first presentation and then at the departmental level to refine the analysis.

Data and methods

To carry out this work we have access to vital statistics data on births by month, age and municipality for the years 2020 and 2021. This allows us to study the effects of the March to May 2020 confinement on both births and fertility.

For fertility, we calculate quarterly fertility rates for different years by relating births by age to the corresponding population on 1 January. This makes it possible to avoid age structure effects in the comparison of levels and variations in the departmental indices. The quarterly birth and fertility indices for December 2020 to February 2021 (called later 'winter 2021' are then compared to the average of the equivalent quarters of the previous three years.

Preliminary findings: the consequences of the Covid pandemic on the fertility rate - France scale

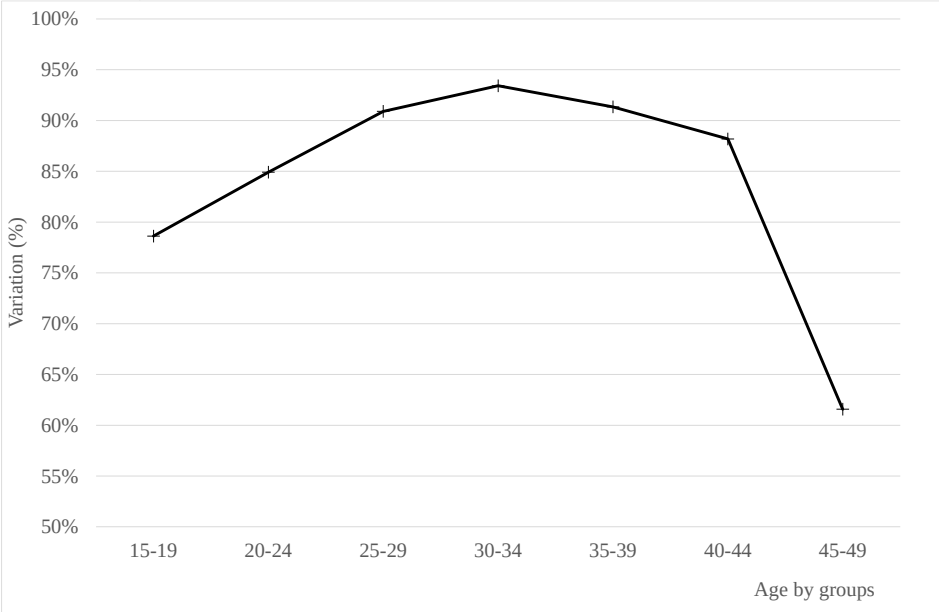
1. Decline in the fertility rate by age

Analysis of the decline in the fertility rate by maternal age shows that it declined for all age groups, but also that the postponement of childbearing did not affect women in the same way by age. It is the oldest women (over 40 years of age) and, to a lesser extent, the youngest (under 29 years of age) whose birth rate declined the most (by more than 10 percent) between the period December 2020 and February 2021 compared with the same period the previous year (Figure 2).

Thus, women whose ages are closest to the average age at childbearing in France (28.7 for the first child, 30.7 years in 2018) were the ones who postponed their birth plans the least during the first months of the pandemic. Younger women probably had more margin to postpone a pregnancy by a few months than older women who had arrived in a period of lower fertility (and, for some, who may have already been trying to get pregnant for some time). The sharp drop in the number of women over 40 years of age can probably be explained by the difficulties, for some of them at least, in accessing MAP services during the pandemic.

[3] Unfortunately, analysis by birth order is not possible with the available data. The hypothesis that we would have tested is that parents who already had one or more children and who wanted another were more likely to postpone their fertility plans than those who did not have any (or even to cancel them altogether for those for whom the confinement was particularly difficult).

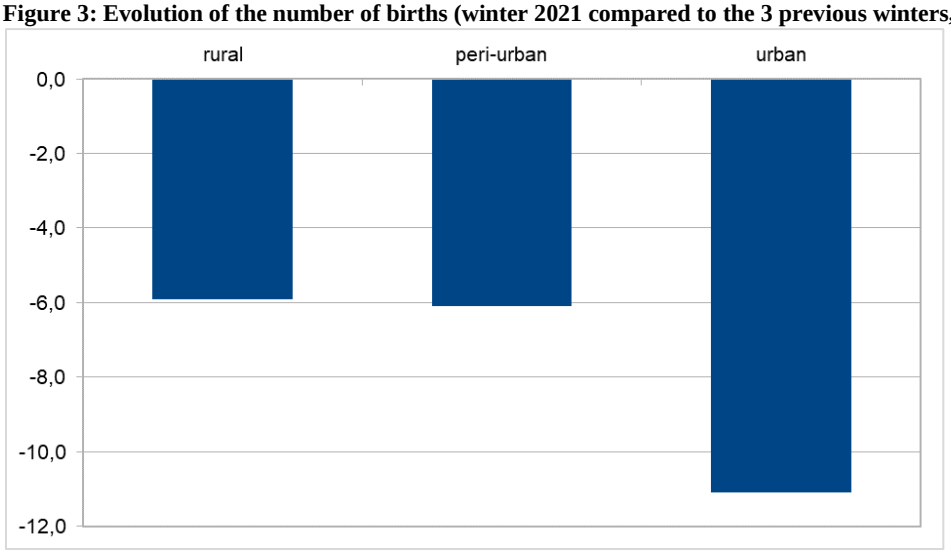
Figure 2. Observed decline in fertility rate by age of mother at delivery (%) (winter 2021 compared to the 3 previous winters, in %)



2. Decline in births by urban size/urban attraction

The birth rate in the winter of 2021, compared to the three previous winters, did not decline with the same intensity in all the communes of France. If we group them according to a classification that takes into account density into three categories: urban, rural peri-urban and rural outside the influence of an urban center, we can see that the decline in births is much stronger in cities than in rural areas, whether they are close to cities or not. It is likely that the conditions of confinement partly explain these differences: families in the cities had to remain confined in smaller dwellings, on average, than in the countryside, which may have slowed down the desire (or the possibilities) of pregnancy. Mortality may have been higher in cities, or may have been felt to be higher, precisely because of higher population densities and the use of public transport. Finally, the type of employment is also different in urban and rural areas, and it is possible that urban dwellers were more at risk of unemployment than rural dwellers. While it is not possible to measure births as a function of employment type because the data are not robust enough, it is possible to look at the decline in births as a function of living standards.

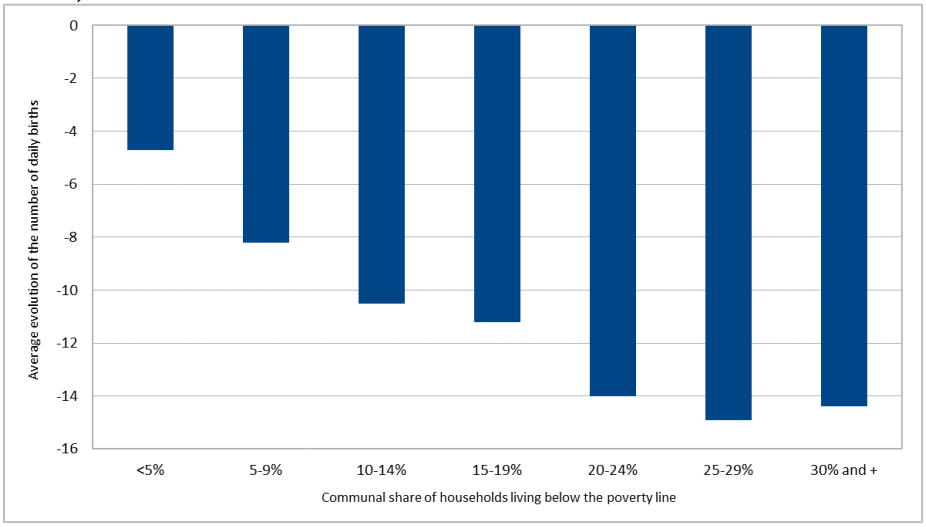
Figure 3: Evolution of the number of births (winter 2021 compared to the 3 previous winters, in %)



3. Decline in births by standard of living

Figure 4 clearly shows that the decline in the birth rate is highly differentiated according to the standard of living: the higher the proportion of households in the commune, the lower the birth rate. Thus, we observe a 14 percent drop in the birth rate between winter 2021 and the three previous winters for communes with 25 percent or more households living below the poverty line, compared to a drop of slightly less than 5 percent for the richest communes (less than 5 percent of households living below the poverty line). The poorest households were more affected by the health crisis at different levels: more Covid deaths but also more risk of job loss. The much stronger health and economic impact on the lowest income populations thus caused a threefold decline in the poorest communes than in the richest.

Figure 4. Evolution of the number of daily births according to income level (winter 2021 compared to the 3 previous winters)



4. Decline in birth rate based on excess mortality observed in March/April 2020

The epidemic did not affect all French regions with the same strength. The north-eastern quarter of the country, in particular, was much more severely affected than other regions. Unlike some other influenza epidemics of the 20th century, the Covid-19 epidemic mainly affected and killed people aged 70 years and older (at least during the first year). People of childbearing age were not directly affected by the disease. However, they may have been affected by the stress of the health situation, especially in the most affected departments. In addition, the impact of the virus on pregnancies was not well known in March and April 2020 and some women may have chosen to delay childbirth for fear of miscarriage or premature[4] delivery. During the lockdown, fathers were only allowed to attend the delivery (in some maternity hospitals) and only for the first 2 hours after their baby was born; this may have also led to some births being delayed.

Table 1. Level of birth decline observed in the French departments in dec2020-feb2021 according to excess mortality in March/April 2020.

Level of excess mortality	Average decline in birth rate between dec2020-feb 2021 and dec2019-feb2020	Average deviation from expectation in %.
40 or more	-10,7	-9,4
from 20 to less than 40	-7,1	-5,5
from 10 to less than 20	-7,9	-6,6
from 0 to less than 10	-4,8	-5,0
Less than 0	-6,3	-5,2
Total	-7,1	-6,2

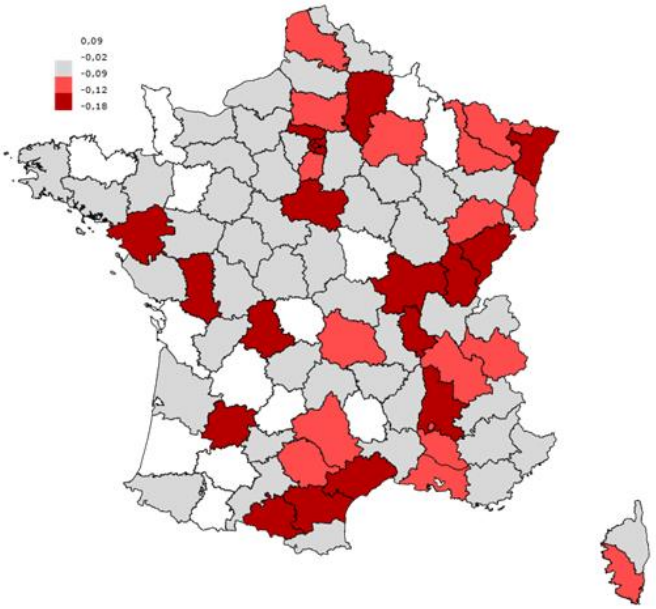
[4] The wearing of masks during childbirth, which may have deterred some, was not yet "strongly recommended" (or even mandatory) in March/April 2020.

If we assume that the higher the stress level, the greater the pandemic, it is interesting to analyze the decline in the birth rate at the departmental level according to the excess mortality observed (Table 1). A greater drop in the birth rate was indeed observed in the departments particularly affected by the first wave of the epidemic, whereas the drop in the birth rate was smaller in the departments that were spared.

Preliminary findings: the consequences of the Covid pandemic on the fertility rate - Department scale

The second part of the communication will focus on the differential impact of the pandemic according to the department scale (Figure 5). We will then analyse these differences with the same independent variables as mentioned above. The first analyses show that few of the independent variables that are significant in the bivariate analyses remain so "all other things being equal". Specific analyses of the age groups most affected by the decline in the different departments will be conducted and presented in the final paper.

Figure 5. Intensity of the decline by department (winter 2021 compared to the 3 previous winters, in %)



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