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The decline of fertility in Paris in the 19th century (Thread)

France is known for the anteriority of its fertility decline. I asked myself how things were in Paris in my doctoral thesis, which was later published under the title Paris the infertile.

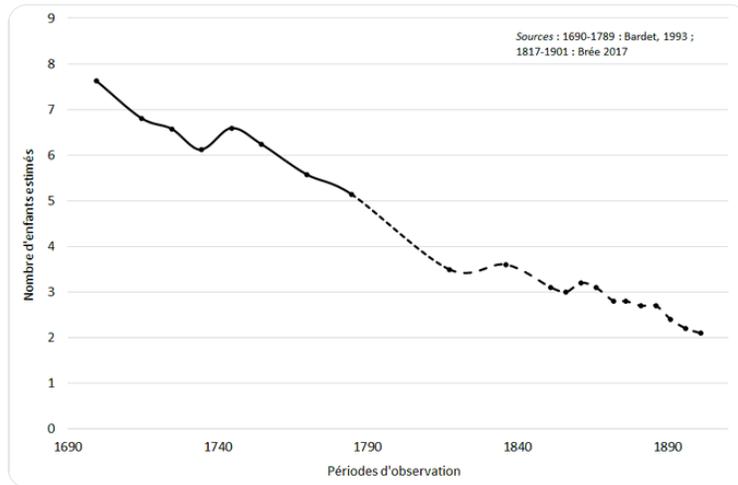


I have been able to estimate fertility thanks to the so-called Coale indices, which consist in measuring, thanks to the number of births and the structure by sex, age and marital status, the level of fertility of our population in relation to an unlimited fertility (Hutterites).

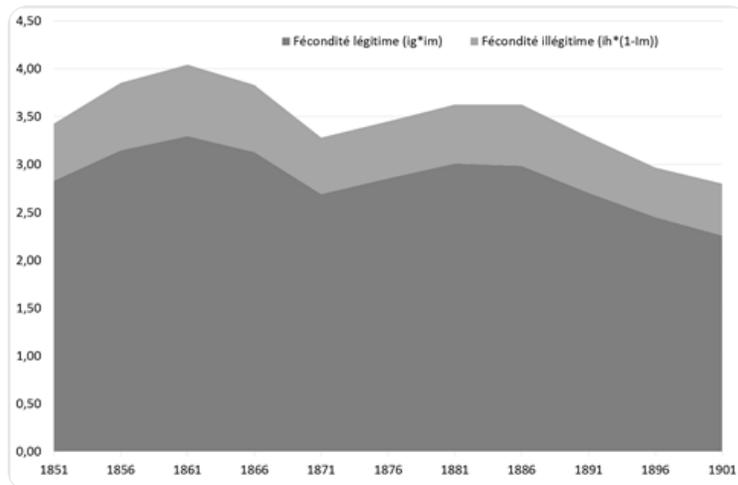
These indices make it possible to distinguish between the fertility of married couples (known as "legitimate") and fertility outside marriage (known as "illegitimate").

I was able to work on the period 1817-1901 at the city level, 1851 + 1876-1901 at the district level and 1881-1896 at the level of the 80 districts of Paris. I was also able to measure fertility in the suburban communes of the Seine department.

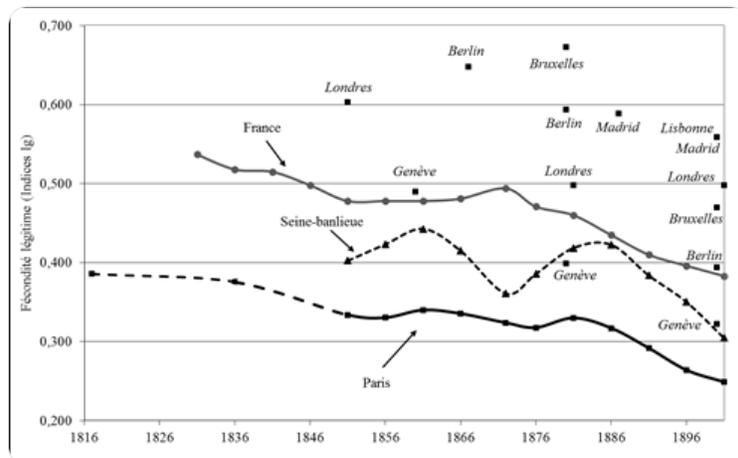
Between 1817 and 1901, the estimated number of children per woman fell from 3.5 in 1817 to 2.1 in 1901, which is consistent with the results of Bardet (1993) who estimated, in 1690-1719, a lifetime fertility of 7.62 children per woman and only 5.15 on average in 1780-89.



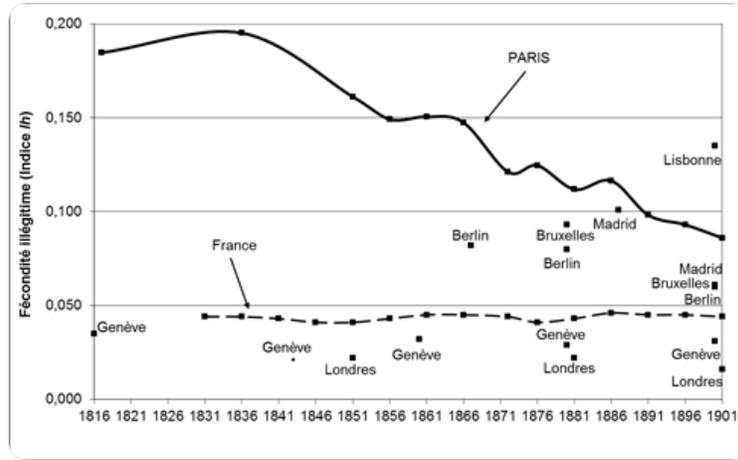
We see here the very high out-of-wedlock fertility rate in Paris (estimate of the number of children born in and out of wedlock), which makes it necessary to differentiate between these two types of births in the analysis.



Looking more specifically at the fertility of married couples, we can see that birth control is much stronger in Paris than in other European capitals.



As for fertility out of wedlock, it is on the contrary much higher in Paris than elsewhere!

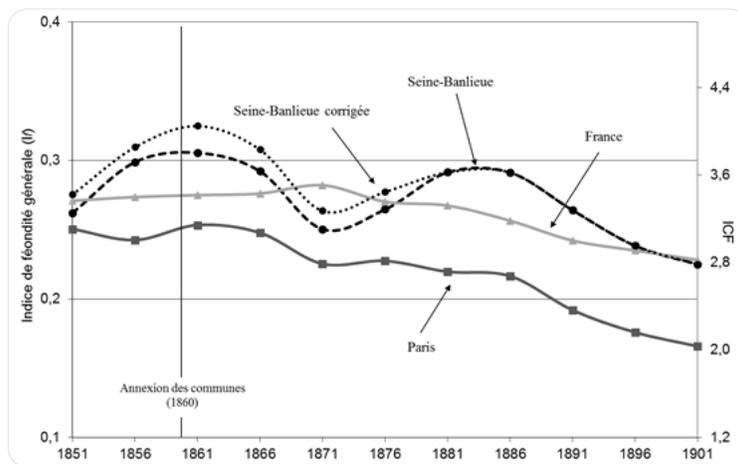


That's it for today! I will soon show you the spatial distribution of fertility within and outside marriage in the Parisian districts and neighbourhoods.

Today, I present the spatial distribution of general fertility (all births). Then (in the next few days), I will distinguish between births within and outside marriage, which will enable me to compare the data with socio-economic variables.

The interest in studying general fertility is that it allows an estimation of the number of children per woman based on the Coale indices that I have already mentioned (thanks to a good idea by Jean-Paul Sardon ! https://www.persee.fr/doc/pop_0032-4663_1995_num_50_1_5907#xd_co_f=NjNkZjRkZjgtMGRjYiooN2Q3LWJlZTUtN DU4ZjIoZGIzNzY4)

This figure shows the correspondence between the general fertility indices If and the number of children per woman (estimated by multiplying them by 12.44, i.e. the average number of children per woman of the famous Hutterites).



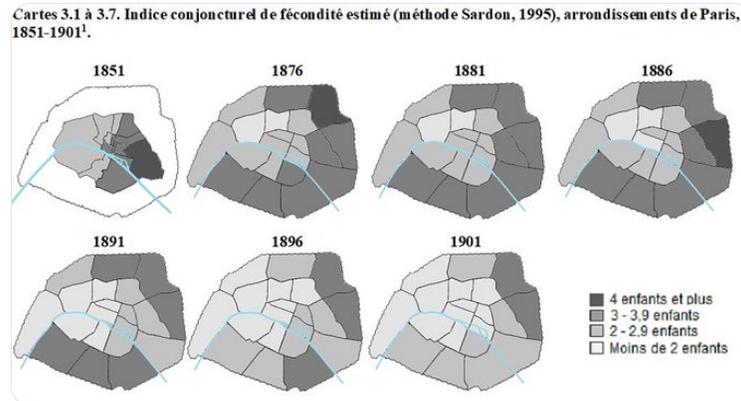
In Paris, between 1817 and 1901, the nbr of children per woman decreased from 3.5 to 2.1 and the number of girls per woman went from 1.7 to 1.0. At the end of the 19th c., even in the absence of mortality, the replacement of a mother by a daughter was barely assured in Paris.

Fertility can only be estimated for the suburbs from 1851 (the first year for which population structures are available) => fertility in the suburbs is higher than in Paris, and fairly close to national levels in the second half of the 19th century.

with a strong disturbance in the years 1870-71 (Franco-Prussian war, siege of Paris, Commune) then a strong upsurge in the 1880s => fertility movement in the suburbs close to the Parisian movement but with much more accentuated fluctuations.

In the suburbs, the number of children per woman fell from an average of 3.8 children in 1861 to 2.9 in 1901. The population of the suburbs remained above the population renewal threshold between 1861 and 1901 (3.0 to 2.4 children per woman), in contrast to its neighbour

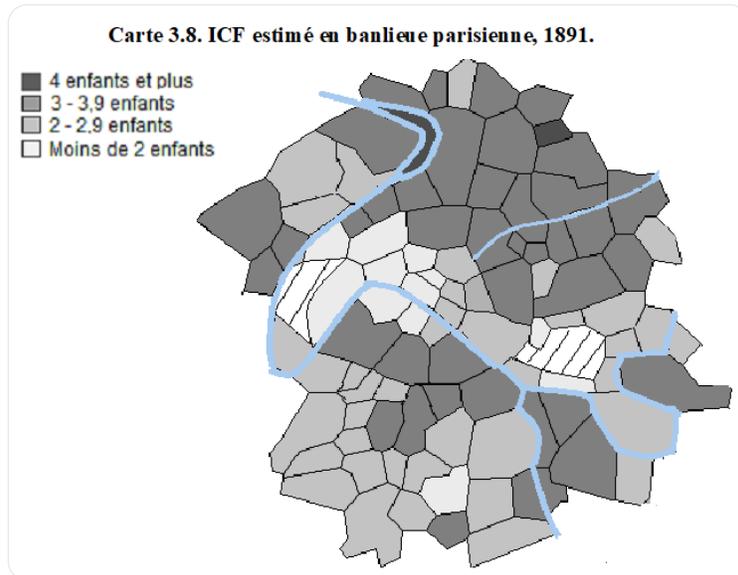
Fertility levels vary from single to triple from one arr. to another. From 1851 onwards, fertility was lower in the western boroughs. From 1876 (the first year of data availability for the post-annexation period), the 8th and 9th districts had levels of



particularly low fertility (- 2 children/woman), while some still have an average of more children/woman. Intense birth restriction extended from these two early settlements to the centre and west of the city, reaching half of the settlements in 1901.

In the outlying boroughs (except for the 16th and 17th boroughs in the west) where fertility was highest in 1876 (3 or more children on average), fertility is also falling and only the 19th and 20th arrondissement still have average indices above 3 children in 1901.

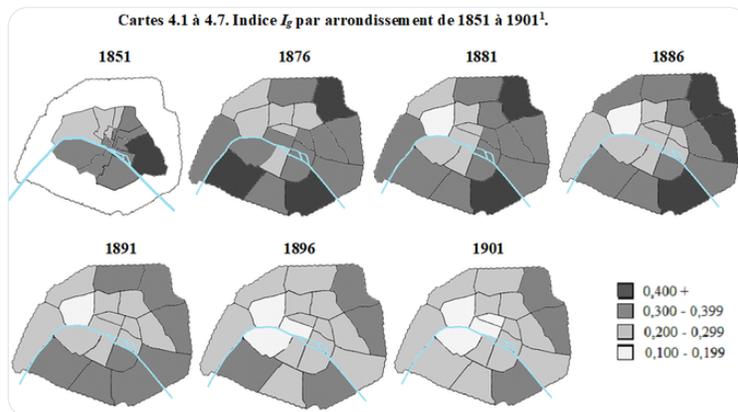
In the suburbs, there is a birth control zone starting in the bourgeois communes of north-west Paris and crossing the capital to reach the Bois de Vincennes and extending to the east and south-east of the suburbs. A second zone appears in the south of Paris.



There is also a large north-eastern quarter which is much more fertile than the other communes, as are the communes bordering the south-eastern arrondissements of Paris and those situated between the Seine and the Marne.

See you soon!

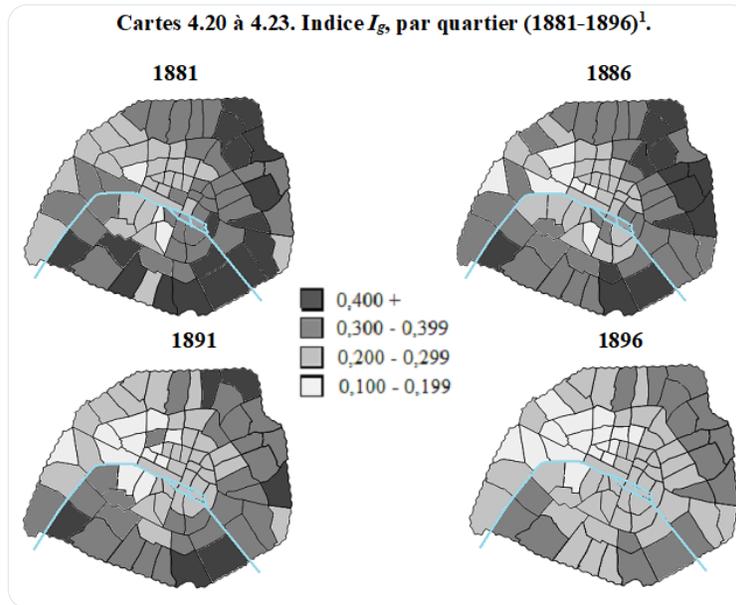
Hello! I will now move on to the spatial distribution of the fertility of married couples. As with general fert, the spatial differentiation is clear and it appears that birth control, which was strongest in the centre-west in 1851, is gradually spreading to the rest of the city



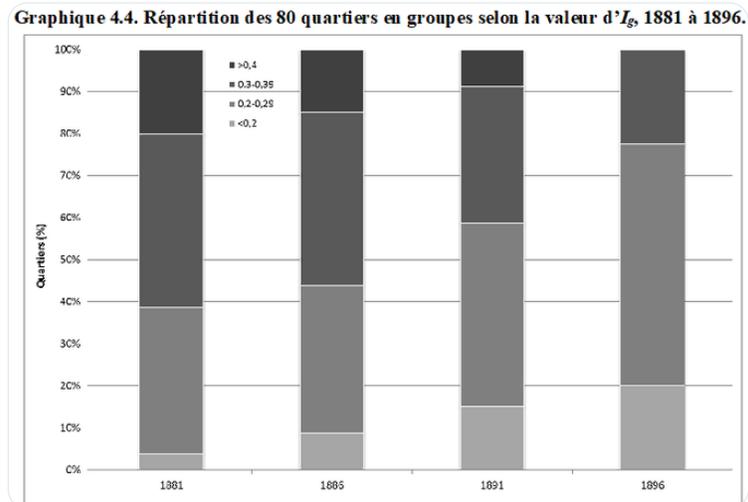
This small table summarises the spread of fertility of married couples in the city

Until 1881	Intense restriction in the centre-west. A few boroughs on the periphery still have I_g indices above 0.400
1886	The whole centre of Paris is affected by the intense restriction, as well as the 16th arrondissement. Little change elsewhere.
1891	Little change in the west. Catching up in the east: all the boroughs fall below the 0.400 threshold.
1896-1901	All the boroughs were affected by the intense restriction except those that were already behind in 1881. The centre-west is affected by extreme restriction.

The Paris Bureau of Statistics (which has existed since 1817) has issued many publications on population. These data are particularly detailed for the end of the 19th century and make it possible to know the spatial distribution of fertility for the 80 districts.



Between 1881 and 1896, fertility declined in an increasing number of neighbourhoods. In 1896, there were 5x as many neighbourhoods with very low fertility as in 1881 (16 against 3) and no neighbourhood had a fertility level higher than 0.40, compared to 16 in 1881.



The decline is stronger in the districts the most fertile at the beginning of the period. The gap then narrows and the fertility of the most fertile districts declines almost at the same rate as that of the most contraceptive, even if their fertility does not fall to the same levels

Table 4.6. Fertility level (I_g index) of Parisian neighbourhoods in 1881 and evolution of the I_g index .

Fertility level in 1881		Evolution between 1881 and 1886	Evolution between 1886 and 1891	Evolution between 1891 and 1896	Evolution between 1881 and 1896
Low	$I_g < 0.30$	+ 2 %	- 6 %	- 8 %	- 14 %
Medium	$0.30 < I_g < 0.39$	- 4 %	- 7 %	- 12 %	- 22 %
High	$I_g > 0.40$	- 14 %	- 7 %	- 10 %	- 29 %

The question then arises as to why this spatial distribution. By comparing the socio-economic levels of the districts, it is possible to understand what may have influenced the level of fertility. I have also been interested in the influence of the behaviour of the neighbours

To find out more about the variables used, the professions, levels of religious practice, proportion of migrants, level of education etc. are described in this document (free access) : <https://www.uclouvain.be/cps/ucl/doc/demo/documents/Bree2suri.pdf>

Statistical models show that the socio-economic level of the population explains a large part of the variance in legitimate fertility: the poorer the neighbourhood, the higher the legitimate fertility; conversely, the better the neighbourhood, the lower the fertility.

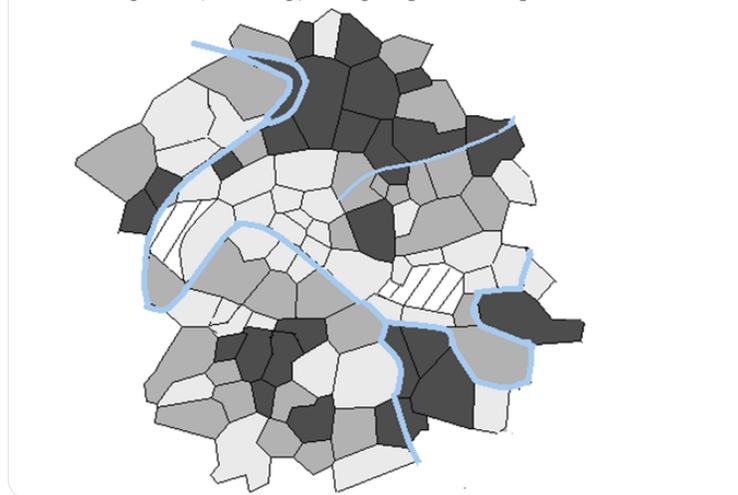
Education also seems to have an effect on fertility since the neighbourhoods with the lowest fertility are those where education is most widespread.

It also appears that the influence of proximity of more contraceptive neighbourhoods persists in the models even when socio-economic or cultural variables are added.

An article in preparation with my colleague Yoan Doignon from [@DemographieLLN](#) will allow us to explore these questions in greater depth!

In the suburbs, socio-economic and cultural variables explain the spatial distribution of fertility less well than in Paris. However, the coexistence of working class and agricultural populations shows interesting elements (on this subject: <https:// Cairn.info/revue-Annales-de-Demographie-Historique-2013-2-page-81.htm>).

Fécondité légitime (indices I_g) en région parisienne, par commune, en 1891



The working-class towns are, in general, those where fertility is the highest, which is in line with the research carried out in the industrial basins characterised by higher fertility (Eggerickx, 2004; Pétillon, 2006).

The agricultural towns have fertility levels between the working class towns and the better-off towns, which are the most contraceptive.

Farmers often have a land heritage to pass on that they do not wish to see fragmented into several parcels of land as the parisian region

heritage system is egalitarian. From this point of view, they therefore have an interest in limiting the number of their children, unlike the workers 'who feared the multiplication of heirs much less than the peasants, since they had neither rights nor heritage to bequeath'

(Le Bras, 1986, p. 173). As for the 'big landowners, [...] it was a question of avoiding an excessive division of inheritances' (Le Bras, 1986, p. 136).

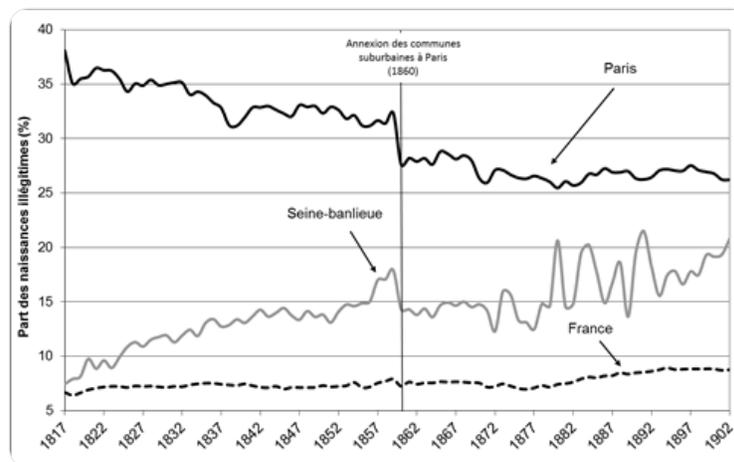
This confirms the analysis of Jean-Pierre Bardet (1995) distinguishing three models of birth control: radical in certain circles of the urban bourgeoisie, nuanced for the peasants, weak for the working classes.

Paris the infertile (continued): fertility outside marriage (known as "illegitimate")

Although general fertility is largely determined by the fertility of married couples, the weight of births outside marriage is not always negligible.



In France, they accounted for almost a tenth of births at the end of the 19th century (Nizard & Maksud, 1977: <https:// Cairn.info/revue-population-1977-6-page-1159.htm>), and in Paris, a quarter to a third of all births in the century.



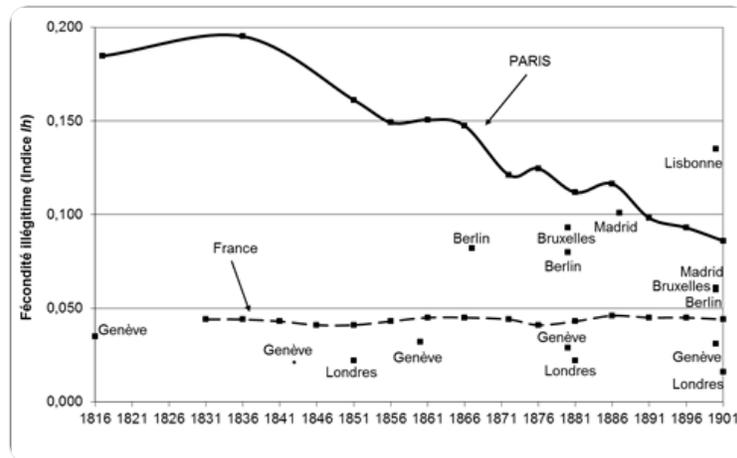
Illegitimacy is much higher in Paris than in France or in the rest of the urban population, even if the gaps narrowed sharply at the end of the century. This strong illegitimacy is not an exception, it is also observed in Toulouse, Bordeaux, Nancy, Lyon or Rouen.

In the parisian suburbs, illegitimacy was low at the beginning of the 19th century and close to the French level, but its movement tends - contrary to the capital - to increase.

The movement of illegitimacy (proportion of births out of wedlock) depends as much on the number of illegitimate births as on the fertile behaviour of married couples since it measures the proportion of births out of wedlock among all births (in and outside marriage).

To analyse out-of-wedlock fertility, the I_h (Coale's) index should therefore be used to report illegitimate births no longer to the general population, but to unmarried women aged 15-49.

The value of reporting illegitimate births to the number of unmarried women aged 15-49 is clear. In particular, this shows a different movement than that of the birth rate outside marriage.



Fertility outside marriage is much higher in Paris than in the rest of the country, and while France's I_h index has remained stable throughout the century, the illegitimate fertility of Parisian women is more than halved.

fertility (apart from the annexation of 1860) seem to be associated with periods of crisis: the early 1870s corresponding to the war, the siege of Paris and the Commune (1870-71), and the rise from 1886 to the serious crisis of 1883-87.

Unlike France, whose out-of-wedlock fertility level is within the European average, Paris has much higher levels than other capitals. Until the end of the 19th century, Paris remained the capital of illegitimacy.

Urban illegitimacy is known to be partly attributable to women from the surrounding countryside who come to give birth in the anonymity of the big city. In Paris, the proportion of illegitimate births increases by 1.2 points when the births of non-Parisian unmarried women are

taken into account. What about illegitimate fertility? Women who give birth in Paris when they do not live there do increase illegitimate fertility, but probably less than expected.

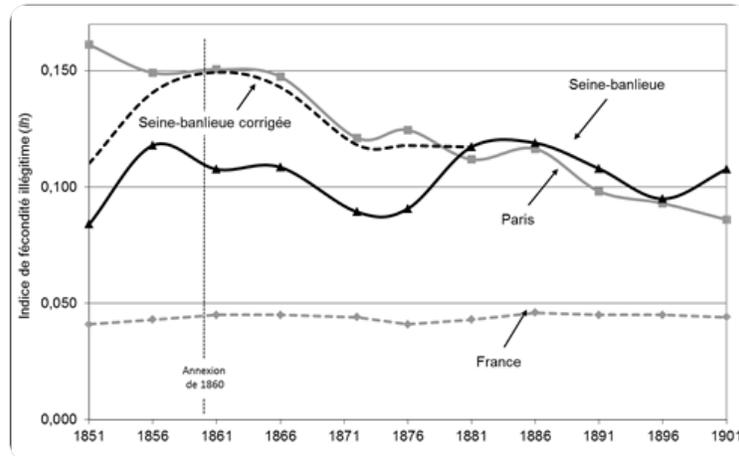
Women considered to be non-Parisian are those residing outside the capital (83.4% in the suburbs in 1876,

https://researchgate.net/publication/291337114_Les_accouchements_hors_domicile_a_Paris_au_XIXe_siecle) but a large number of women with an address in Paris are only there and will stay for a short time (Fuchs and Moch, 1990).

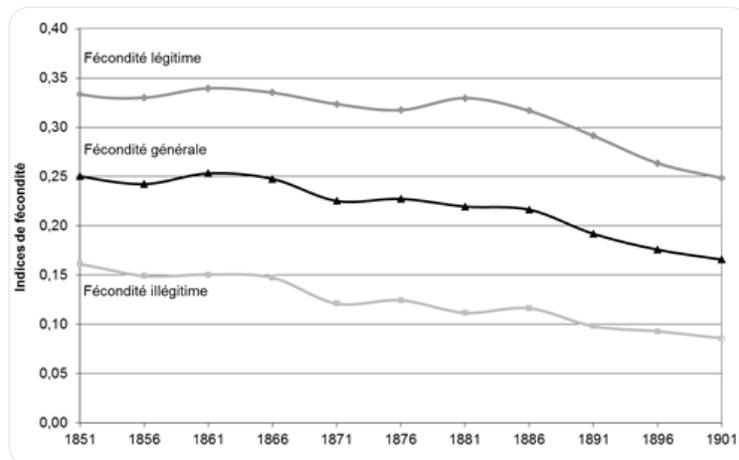
It is very difficult to quantify this phenomenon; however, the record of births in a midwife attached to the Port-Royal Hospital in 1876 (AP-HP archives, 4Q2 1) gives the length of stay of women.

It appears that, among unmarried women giving birth who do not reside in Paris, more than 39% have been in Paris for less than six months (5% for less than one month and 21% for less than six months), 40% for 1 to 4 years and 20 for 5 years or more.

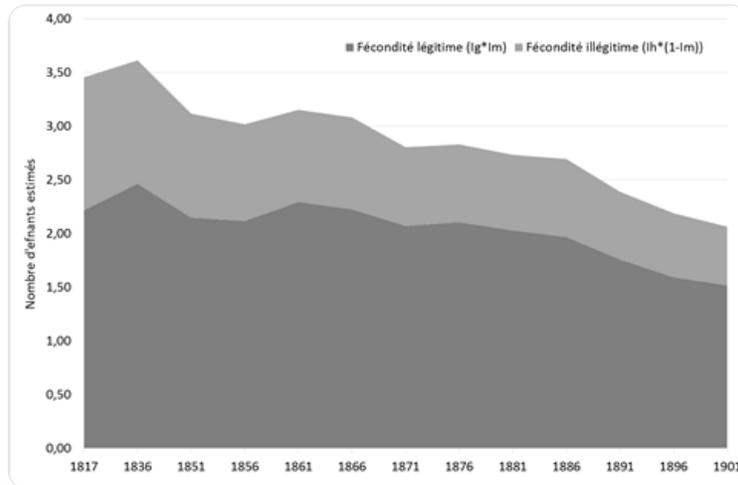
As for the suburbs, from the 1880s onwards - which is a surprise - they caught up with the illegitimate fertility levels of Paris and were at the same level throughout the century if we consider corrected births.



The concomitance of the decline in within and out of marriage fertility in France, as in most European countries, can be found in Paris. However, even if the decline seems to be parallel in the capital, the decline in the ill. fertility is stronger than that of the legal fertility

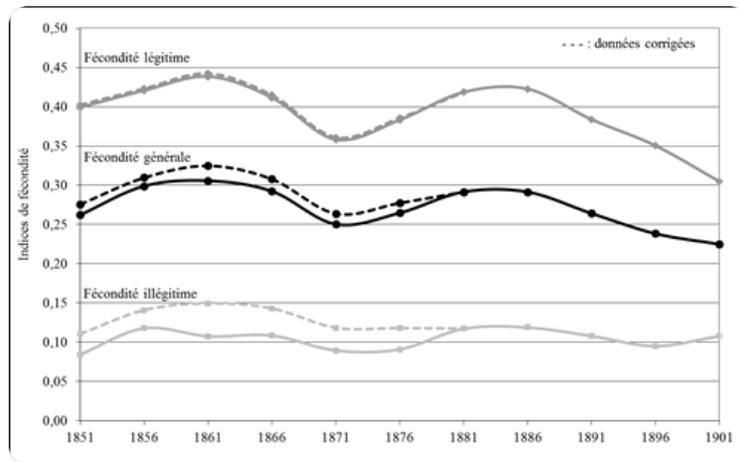


The decline in the proportion of births outside marriage can thus be explained by the greater decline in illegitimate fertility compared to that of legitimate fertility. The high number of births outside marriage gives them a very strong weight in natural reproduction.

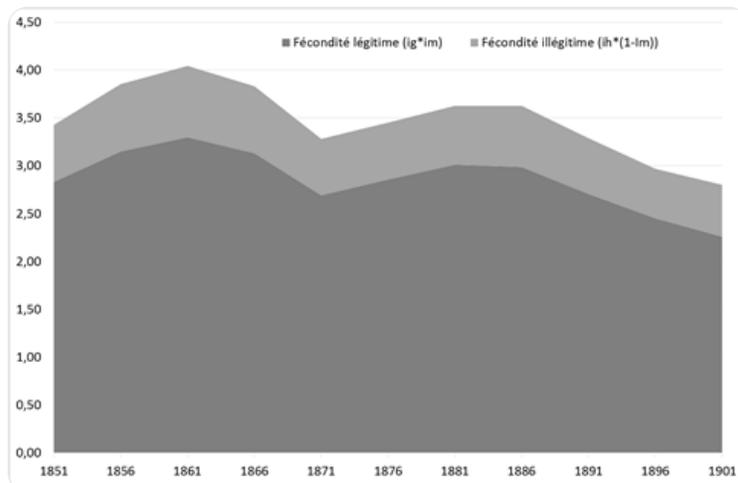


of the Parisian population, even if this weight is greater at birth than later (less favourable living conditions than those of legitimate children, higher mortality).

In the suburbs, in contrast to Paris, the movements of inside and outside marriage fertility were similar (and less pronounced than in Paris) only until the 1880s; then, legal fertility fell sharply while illegitimate fertility stagnated.



Estimated number of legitimate and illegitimate children (suburbs, 1851-1901).



I will continue tomorrow about the different "types" of births out of wedlock.

So: how can we distinguish the fertility of cohabiting couples from that of so-called "mother-daughters"? Thanks to the data on the recognition of children (at birth and later) and the legitimation available in Paris (but not the suburbs) in the publications

Children born outside marriage can be recognised or legitimised or remain 'unrecognised natural children' all their lives. These categories are not closed and a child may belong to more than one of them during his or her life.

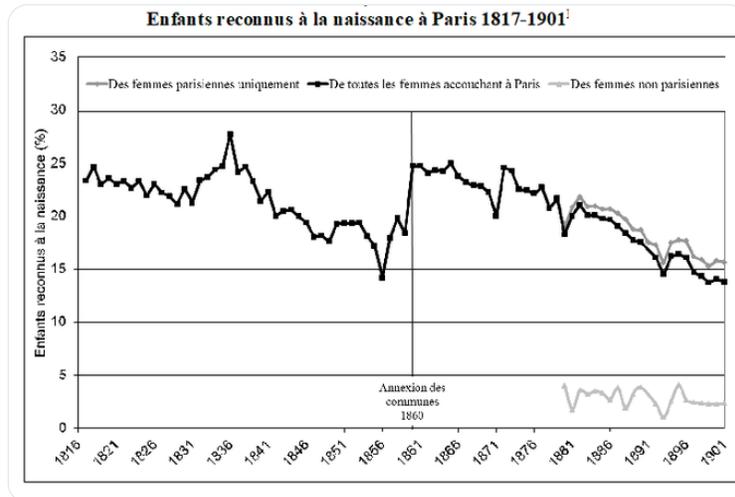
Enfants illégitimes	Reconnaissance		Légitimation (mariage des parents)
	Dans l'acte de naissance	Après la naissance	
Reconnus à la naissance	Par le père*	Par la mère	Possible**
Non reconnus à la naissance	---	Par le père, la mère ou les deux	Possible**

* Dans de très rares cas, la mère a reconnu son enfant avant sa naissance par un acte inscrit dans les registres d'état civil.

Among the children recognised at birth (in 99.99% of cases by the father since the mother is not present at the declaration), some will later be recognised by their mother and sometimes also legitimised by their parents' marriage (after having been recognised by them).

It is likely that in some cases it is not the biological father of the child who recognises him, but the mother's companion at the time of recognition or marriage, especially when these certificates are far removed from the child's birth.

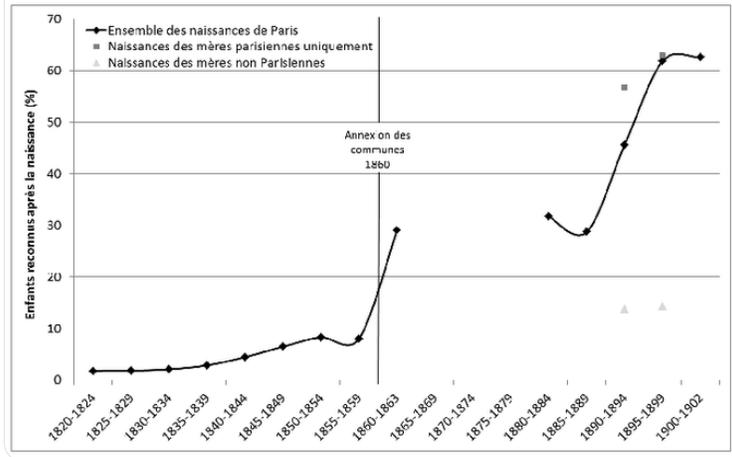
Among children born out of wedlock, only one in four is recognised at birth by his father at the beginning of the century and one in seven at the end.



The movement of recognitions at birth was therefore on the decline during the 19th century, the opposite of the French trend (30% in France around 1860 and 40% around 1885 (Nizard and Maksud, 1977)).

There has also been a very significant increase in the gross number of staff as well as in the proportion of late recognitions.

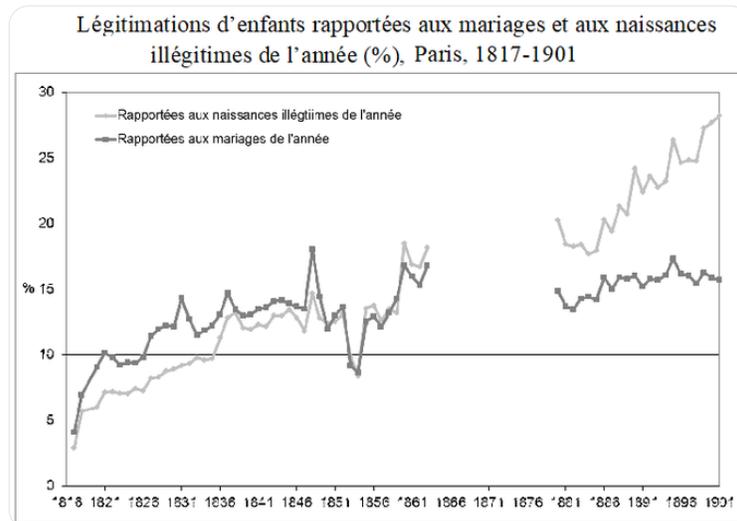
Enfants reconnus après la naissance rapportés aux naissances illégitimes de l'année.



These later recognitions are, in any case at the end of the century, mainly maternal recognitions even if the recognitions carried out by fathers and both parents together are increasing

	Période	le père	la mère	les deux
	Mères résidant à Paris	1880-1884	8,7	84,7
1885-1889		7,9	85,2	6,9
1890-1894		9,4	83,7	6,9
1895-1899		10,8	81,3	7,9
1900-1902		13,3	76,7	9,9
Mères ne résidant pas à Paris	1892-1895	21,9	64,3	13,8
	1896-1898	21,8	39,0	14,2

The number of legitimations also increases: In 1901, the number of legitimised children is sixteen times higher than in 1817, as is the share of legitimising marriages and the number of legitimised children.



Children are not always legitimised soon after birth. At the end of the century, almost all parents wait a year or more after the birth of their child to marry, and only 5% of children are legitimised within three months of birth.

Enfants légitimés selon leur âge à la légitimation (Paris, 1892-1901¹, France, 1898-1901)².

Paris	< 3 mois	3-5 mois	6-11 mois	Moins d'un an	1-4 ans	5 ans et plus	Total	Effectifs
1892-1895	4,6	2,7	6,5	13,9	52,2	33,9	100	14 889
1896-1898	5,8	2,6	8,6	17,0	48,9	34,1	100	11 273
1899-1901	5,7	2,6	9,7	18,0	46,8	35,2	100	12 365
France 1898-1901				25,0	27,0	48,0	100	

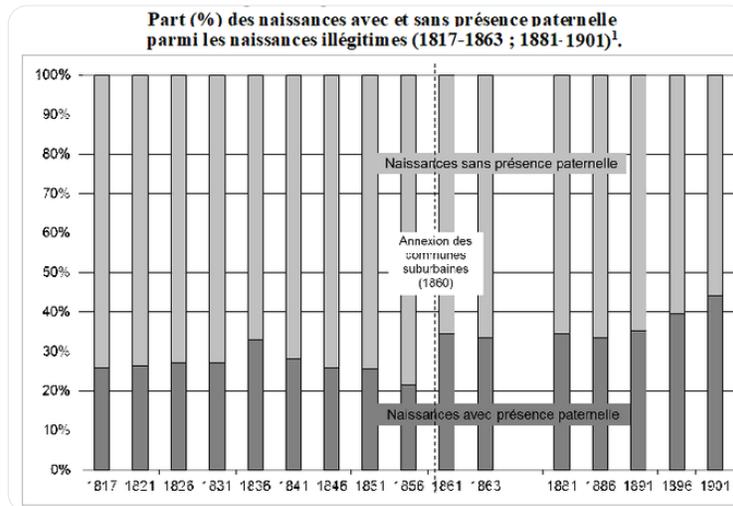
Enfants nés de mères parisiennes uniquement

It is possible, thanks to the data concerning the acknowledgements and legitimations of children born out of wedlock, to distinguish those for whom a paternal presence is visible from others.

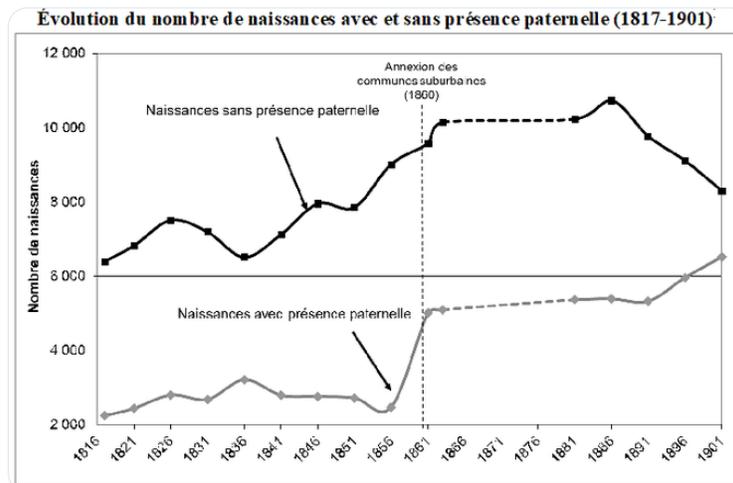
(As a reminder, the male presence is not necessarily paternal).

The method I consider most appropriate considers all children recognised at birth, children subsequently recognised by their father or both parents and legitimised children not previously recognised (so as not to count them twice).

According to these estimates, the proportion of births with a proven paternal presence varied around a third of illegitimate births in the first half of the century, reaching 45% in 1901.



Analysis of the raw data shows that throughout the first half of the century the presence of fathers was low, while births without paternal presence continued to increase; illegitimate fertility was then largely due to women alone.



The annexation of the suburban municipalities in 1860 led to a sharp increase in the presence of males, indicating that illegal children were more often recognised or legitimised in the newly annexed municipalities than in those forming the pre-1860 capital.

In the 1880s, the trends are the same as in 1863 (but it is not known what the trends were during this period when sources are non-existent). However, from 1886 onwards, the number of "fatherless" births fell sharply, while "fathered" births increased from 1891 onwards.

There is therefore indeed an increase in paternal presence in certificates relating to children born out of wedlock, which could indicate an increase in cohabitation, or at least in the number of unmarried couples with children.

For the Parisian suburbs, there are no publications providing compiled data as for Paris. As the sources are different (civil status registers) from those used for Paris, the method is also different.

In studying one by one the certificates of children born out of wedlock in order to define the 'type' of illegitimacy of each birth, I was confronted with many different situations. The two most frequent cases are those in which the mother is named alone while the father

is registered as 'unnamed' (48% of the certificates) and those in which both parents are named and registered as 'unmarried' (48%). Two other situations appear: certificates in which only the father is named (2%) and certificates in which neither parent is named (2%).

The children can then be recognised by one or both parents or legitimised, which leads to 17 different situations, according to which I determined whether the children were born to single women, cohabiting couples or in another situation.

According to these categories, illegitimate births in Seine-banlieue in 1891 were attributable to single women (one-third) and to cohabiting couples (63%). The percentage of births to cohabiting couples would therefore be more than twice as high in the suburbs as in Paris,

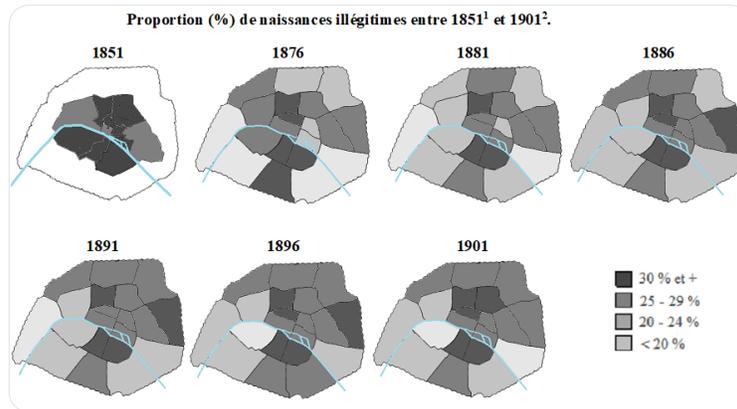
	Couples concubins	Femmes seules	Autres	Effectifs
Arrondissement de Saint-Denis	63,2 %	34,1 %	2,7 %	3 851
Arrondissement de Sceaux	62,0 %	34,2 %	3,8 %	2 015
Seine-banlieue	62,8 %	34,1 %	3,1 %	5 866

which may seem surprising. However, in 1891, the working class population was proportionally more numerous in the suburbs than in Paris on the one hand; and, on the other hand, it is likely that there were more single mothers in the anonymity of the big city than in its suburbs.

It is also possible that it is not the number of births to cohabiting couples in the suburbs that is overestimated, but rather the method used in Paris that led us to consider certain births to cohabiting couples as births to single women.

See you tomorrow to finish this long thread! I will talk about the spatial distribution of fertility outside marriage.

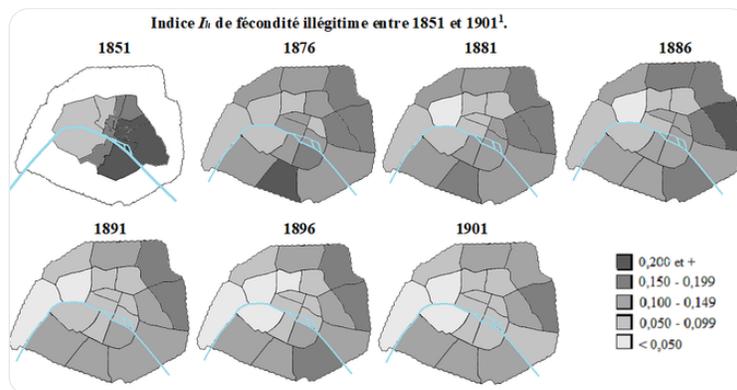
Today, therefore, the spatial distribution of illegitimacy. Between 1851 and 1901, illegitimate births accounted for more than a quarter of Parisian births, but they are very unevenly distributed in the city



In 1851, 31.5% of Parisian children were born out of wedlock and despite differences in levels, all arr. have 1/4 to 1/3 illegitimate children. It is in the richest arr. (1st, in the west) and in the poorest (8th, in the east) that illegitimacy is lowest.

At the end of the c., illegitimacy was particularly weak in the west (7th, 8th, 15th and 16th arr.) and south-east (12th and 13th arr.); whereas it was strong in the crown of arr. surrounding the centre (5th, 6th and 9th arr.) and the north-east (especially in the 20th arr.)

The analysis of illegitimate fertility provides clarification.



In 1851, the I_h indices were between 0.085 (1st) and 0.253 (8th), i.e. differences ranging from simple to triple. Illegitimate fertility is highest in the eastern districts ($I_h > 0.200$), particularly in the 7th and 8th districts where it is higher than 0.225.

The map representing the ill. fertility index I_h in 1851 is quite different from the illegitimacy map but is, on the other hand, very close to the legitimate fertility map. The impact of the behaviour of married couples on the proportion of ill.births is therefore very strong.

The % of ill. births is very high in the 1st and 8th districts, while their ill. fertility rates are 0.09 and 0.25 respectively. This difference is due to the very high level of legitimate fertility in the 8th district and the very low level of ill. fertility in the 1st district.

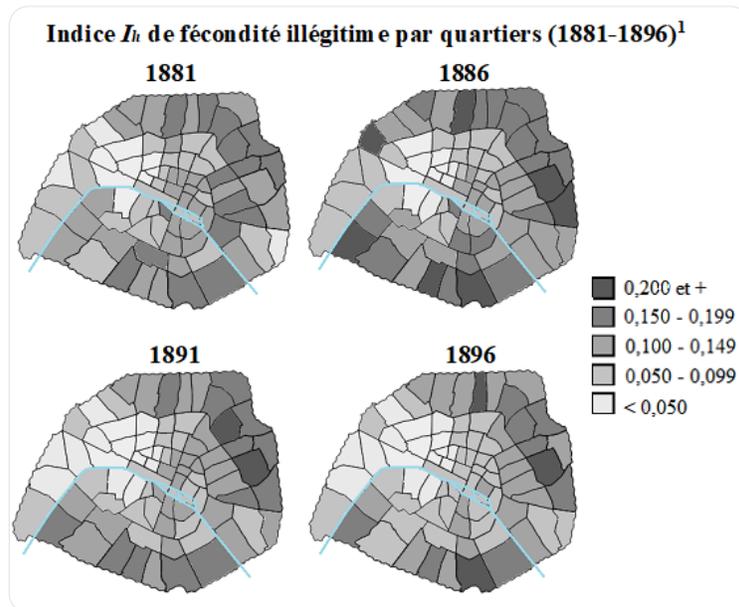
Also at the end of the century, the maps of illegitimate fertility were very similar to those of legitimate fertility, and in 1876 the level of illegitimate fertility in the west of the city was still the lowest, while in the east and north illegitimate fertility was high.

At the beginning of the period, it is also very strong in the 14th and 5th (as well as in the 13th for some dates) where the largest maternity wards are located, especially until the 1880s.

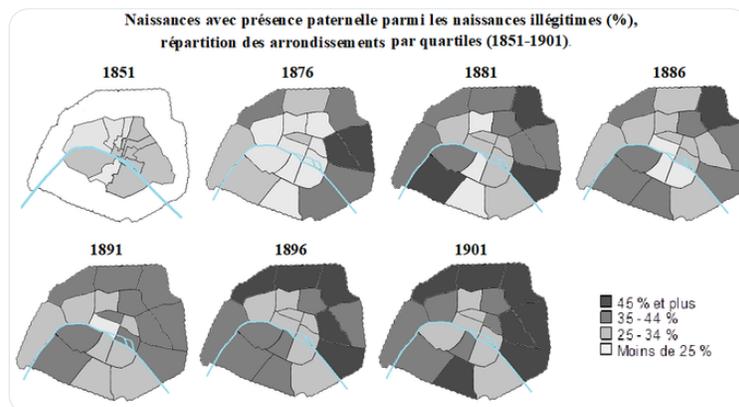
The spatial and temporal differentiation of behaviours is unclear at first glance but, in reality, the map of illegitimacy corresponds fairly well to the map of out-of-home births.

Despite the redistribution of births in the mother's home, it seems that women (especially single women) who came to live in Paris solely to give birth settled close to hospitals

From 1881 to 1896, the spatial analysis of the I_h index can also be done at the neighbourhood level. The analysis of ill. fertility by neighbourhood gives more details and sufficient statistical individuals to conduct analyses (see below).



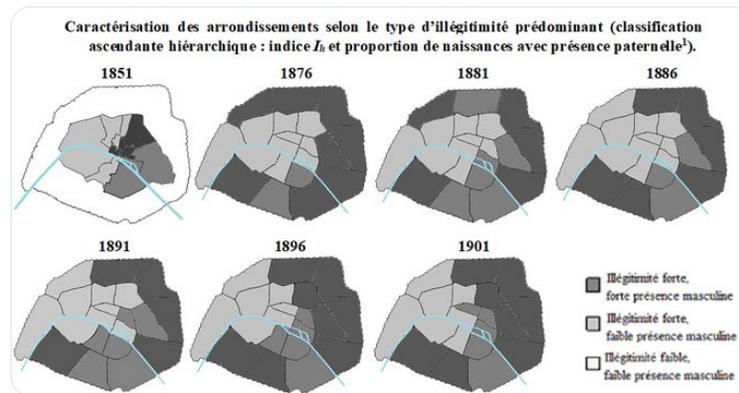
Distinguishing, as in the city, births with paternal presence from others. The estimate indicates that in 1851, fathers appeared more in the eastern boroughs than in the west.



From 1876 onwards, births with a paternal presence were very numerous in the eastern peripheral districts, but also in the whole of the south-western district. The maps of the % of births of single women among the illegitimate ones are the negatives of these maps.

These births are found more in the richest arr.s where there are many domestic servants, but also in the arr.s with the most maternity wards, which is undoubtedly explained by the fact that women come to Paris to give birth near the hospitals.

By taking into account the level of illegitimate fertility and the type of illegitimacy, we obtain maps showing three types of arr: strong illegitimacy with a strong paternal presence in the western peripheral arr, strong illegitimacy originating mainly from daughter-mothers



in the centre-east and south-east, in the districts closest to the large maternity services, and finally, weak illegitimacy originating mainly from 'daughter-mothers' in the centre-west and west.

Statistical analysis confirms that the spatial distribution of illegitimate fertility is largely explained by the % of workers and domestic servants in the neighbourhoods; and the weight of this variable increases during the period analysed.

Moreover, it appears that paternal presence is stronger in poor and working-class neighbourhoods than elsewhere, which is in line with the work which shows that cohabitation is more frequent in working-class areas.

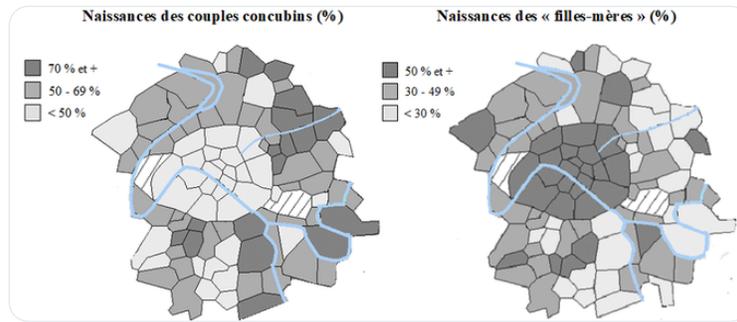
On the negative side of this reading are the births of single women, who are more likely to be found in wealthy neighbourhoods, which reflects the image of domestic "mother daughters".

The models also indicate that the more neighbourhoods become de-Christianised, the more illegitimate fertility increases. This could indicate that a relaxation of religious pressure has led to an increase in illegitimate fertility.

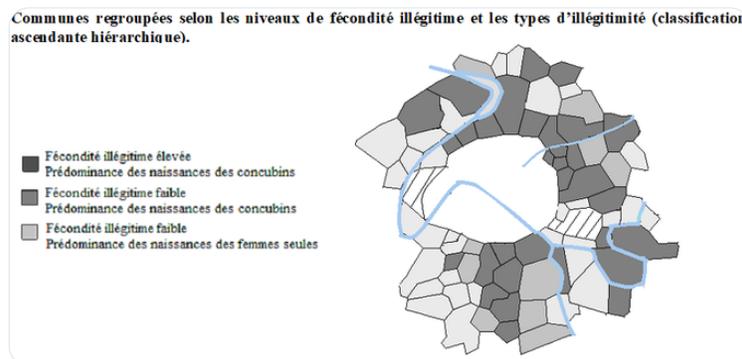
The variable 'cohabitants' was added to the models to determine whether variations in illegitimate fertility can be explained by a variation in births with paternal presence. The decline in illegitimate fertility is therefore associated with an increase in paternal presence.

In the suburbs, while illegitimacy or illegitimate fertility are rather distributed along a north-south axis, taking into account both types of illegitimacy cuts the suburbs in

half with a dividing line rather located between east and west.



The hierarchical classification taking into account the illegitimate fertility levels and illegitimate types shows three groups of municipalities. In the west and south-east, around the Bois de Vincennes and along the Seine in the east, illegitimate fertility is fairly low and is mainly due to



'mother-daughters', whereas in a large eastern half, illegitimacy is high and is mainly attributable to cohabiting couples. The 3rd group is made up of municipalities with the lowest levels of illegitimate fertility and whose illegitimate births are almost exclusively to cohabiting couples

In the suburbs, three main parameters seem to influence illegitimate fertility: the professional structure of the municipalities, the level of religious practice and the level of infant mortality.

Agricultural communes have the lowest levels of illegitimate fertility and children are least often recognised or legitimised. The better-off communes have levels of illegitimate fertility and paternal presence quite similar to those of agricultural communes,

although slightly higher. Finally, the working class communes have the highest illegitimate fertility levels and children are most often recognised or legitimised there.

Religious practice, in this case the rate of Pascalisants, also appears to be fairly correlated with illegitimate fertility, and it is in the municipalities where religious practice is lowest that illegitimate fertility is highest.

On the other hand, the municipalities with the lowest religion are also those with the highest paternal presence, but this link is not significant. Finally, the municipalities with the highest illegitimate fertility are also those with the highest infant mortality.

That's it, it's over! Don't hesitate to contact me if you want to know more about any of

the points mentioned!



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