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RESEARCH ARTICLE

The Effect of World War I on Naming Patterns: A Systematic Exploration

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Abstract

Databases of baby names are commonly available and have often been used to assess people's reactions to events such as wars or diplomatic crises. Changes in the frequency of several candidate names are usually investigated around the event of interest. This approach misses key information simply because not all information-carrying names have been thought about. More fundamentally, whether exogenous shocks can significantly alter population-level naming preferences remains elusive. We present here a method to systematically study variations in name popularity during an event of interest and quantify its "total" effect on naming patterns. Using a nationwide database of first name frequencies since 1900, we apply the method to France during the First World War. We find several dozen first names the popularity of which was modified by the War. While we find macro-level traces of individual-level phenomena, in particular increased naming for kin, specific first names also provide key insights into the civilian population's changing attitude – e.g., widespread pessimism in 1917. Using an individual-level database of ∼9.5 million individuals enables us to track such changes in morale month after month. The aggregate effect of the war on naming patterns was maximal and large early in the conflict, then gradually declined: the return of naming preferences to their prewar state illustrates and quantifies how the "banality of war" installed.

Keywords: World War I (WW1); baby names; public opinion; micro-macro discrepancies

Introduction

Investigating ordinary people's reactions to historical events is notoriously difficult, especially for periods that predate the relatively recent invention of opinion polls. In wartime, the task is made even more challenging by propaganda and censorship. The most commonly available elements are those consciously produced by contemporary observers. Though they provide fundamental insights, these data sources have obvious limitations. Some disproportionately come from selected

social groups (e.g., memoirs, the writing of which is strongly predicted by educational attainment). Others may not be as accurate as hoped, either because of imperfect primary knowledge of the situation or because of hidden motives (police reports on trade union members, or the working class in general, being a typical example). In any case, it is only by arduously assembling a large number of such documents that one may gain a population-level perspective on attitudes and beliefs.

In many contexts, the study of baby names can then be a worthy complement to these traditional sources. In Western Europe, the gradual disappearance of naming for kin (the transmission of names already present in the family) from the late eighteenth century onwards has made room for new determinants of name choices. Since the seminal work of Philippe Besnard (1979) and the early interest ethnologists and historical demographers showed for naming practices (Dupâquier et al. 1984; Formes de nomination en Europe 1980), first names have become a subject of interest in several other disciplines. This is notably due to the growing availability of large databases mentioning baby names and other information such as the exact date and place of birth. First names have been examined over the past decades by sociologists, demographers, and economists alike for research topics as diverse as the study of the determinants and diffusion of social tastes (Besnard and Grange 1993; Lieberson and Bell 1992), the effect of cultural assimilation on the economic success of immigrants' children (Goldstein and Stecklov 2016), historical changes in family-size preferences (Goldstein and Stecklov 2023), or nation-building mechanisms (Assouad 2020; Kersting and Wolf 2024).

Many of these studies have documented how important aspects of social structure and long-term social change can be tracked by studying naming patterns. For instance, Hacker (1999) showed not only that between 1850 and 1880 the popularity of biblical names decreased in the United States, but also that choosing biblical names was associated with higher fertility. Consistently, Connor (2021) showed that choosing Catholic or traditional names predicted higher fertility in late nineteenth-century Ireland. Cook et al. (2016) reported a linkage between having a distinctively black name and lower mortality in adulthood among African Americans using death certificate data. Finally, analyzing immigrants' choices for baby names, Abramitzky et al. (2020) found that the rate of assimilation was similar at the end of the nineteenth century and in the past decades.

It has also long been noted that short-term changes in naming patterns can reveal the social reception of political transformations. For instance, one of the salient cultural features of the French Revolution, and especially the frantic years 1793–94, was the use of philosophers' names (e.g., Rousseau), republican figures' names (e.g., Brutus), or even notions (e.g., Liberté, Egalité) as baby names (Bianchi 2000). The time and space distribution of these names has highlighted the unequal penetration of revolutionary ideology. In Germany, the fact that the popularity of Adolf was already fading in 1940–41 has brought some evidence that support for Nazism declined earlier than usually thought (Wolffsohn and Brechenmacher 2001). More recently, first names have been used to study the public reaction to major political events in the United States between 1880 and 1963 (Urbatsch 2015). All these studies required an a priori choice of first names, the frequency changes of which were examined around the event of interest. While thousands of choices are available to parents when naming a baby, researchers thus typically examine only a

few baby names or analyze aggregate data (e.g., grouping names according to their linguistic origin). More information on public opinion changes may be available in frequency changes of first names that have simply not been thought about. In short, there is a clear discrepancy between the wealth of the data and the paucity of the methods used to analyze them.

Another consequence of this situation where interest is strictly limited to specific first names is that we don't know the extent to which major, unpredictable, historical events may shape naming preferences. While a significant body of sociological work is focused on structural determinants and endogenous dynamics of naming patterns, we still don't know how important exogenous shocks may be. Are certain historical events capable of swiftly and massively altering parental preferences?

The present work describes a simple approach to investigate short-term changes in naming patterns, simultaneously examining thousands of first names. The method identifies names that were over- or under-expressed during the period of interest (in our case, the First World War), relying on a well-known characteristic of baby names: the evolution of their popularity over time is most often smooth over decades. Increasing popularity is followed by abandonment before a new phase of growth potentially begins. As a consequence, popularity during a period of interest may be predicted on the basis of the long-term trend. For each name, we therefore proceed in two steps: we first model its popularity without the data pertaining to the period of interest, then test for a difference between expected and observed frequencies during this period of interest. Having defined a counterfactual popularity (had the event of interest not happened) for all first names, we can then investigate the total effect of this event on naming behavior.

The approach is applied to France during World War I using a comprehensive nationwide database of first name frequencies since 1900 and is then complemented by the exploration of an individual-level database. In addition to our methodological concerns outlined above, our specific aim in choosing World War I as a case study is to assess what further insight first names may bring on the attitude of the civilian population during the Great War, on which a significant body of work already exists: to what extent can we confirm or amend previous conclusions, based on the meticulous examination of more traditional evidence? Before presenting the approach in depth, we give some brief elements of context on France during World War I.

France during World War I

World War I resulted from the culmination of tension among European powers on several fronts. The French territories Germany annexed in 1871 – almost all of the Alsace region and a fraction of Lorraine – remained a major source of dispute between the two countries. Colonial competition was another factor, whose growing importance was illustrated by the so-called Moroccan crises of 1905 and 1911 between France and Germany. Austria and Russia were competing for domination in the Balkans. Another sign of generalized tensions in Europe was the arms race, particularly between the German and British navies. A significant expansion of the German army was voted in June 1913. In the same year, the so-called Three Years Law was fiercely debated by the French Parliament and ultimately passed in August 1913. It extended active military service by one year, from two to three years. France,

with a population of about 41 million and slow demographic growth, wanted to balance the forces immediately available in the event of a conflict with Germany, which then had a rapidly growing population of about 67 million. Such elements, all very visible to the general public, suggested that hostility between major European countries was intensifying. It must, however, be stressed that this hostile climate had lasted for decades and that the notion that war could actually materialize in the near future was, at best, very vague for the vast majority of the population. Indeed, the sudden escalation leading to war, that started with the assassination of Archduke Franz Ferdinand of Austria in Sarajevo on June 28, 1914, went mostly unnoticed until the last week of July. In other words, the vast majority of the French population utterly failed to appreciate war was actually looming (Becker 1977).

At the time, the French army was organized on the principle of universal military service, not voluntary enlistment (Maurin and Jauffret 1997 [1992]). While men born between 1891 to 1893 were already at arms when the war broke out, millions of older men were mobilized in August 1914 and had to leave their families. Despite the government's fears about the reaction of the substantial pacifist movement, mobilization went smoothly. The vast majority of French people considered that France had to fight a defensive war against German aggression. In stark contrast to the already mentioned fierce debates on the Three Year Law of the previous year, political parties and trade unions swiftly accepted the so-called Sacred Union ("Union Sacrée") put forward by President Raymond Poincaré in an address read on August 4 to both the National Assembly and the Senate. In essence, Poincaré urged members of Parliament to put aside their disagreements for the duration of the conflict and unequivocally support the government's decisions, which members of Parliament immediately did. A few weeks later, for the first time since the creation of the SFIO socialist party in 1905, several of its members joined the government, signaling how exceptional the situation was.

Germany indeed immediately violated Belgian neutrality and invaded northeastern France, the population of which either fled or remained under the harsh conditions imposed by the German army. By late 1914 the front line had stabilized. The trench warfare that followed was marked by a series of deadly and vain offensives, such as the battles of Verdun and the Somme in 1916, or the Chemin des Dames in 1917, and continued until 1918. After a massive German offensive in the spring and successful counteroffensives in the summer of 1918, an armistice was signed in November 1918. Due to its duration and the use of modern weaponry, the conflict was extremely deadly, claiming the lives of about 1.3 million French soldiers (Dupâquier 1988).

The war also had major consequences for the civilians of unoccupied regions. For instance, the productive effort was suddenly heavily reliant on women in all spheres of economic activity (Thébaud 2013[1986]). Importantly, the separation of young couples also led to a drop in conceptions as early as August 1914, and consequently in births as early as May 1915. The birth rate remained at about half its 1913 level until 1919.

In short, World War I was a disruption of exceptional magnitude and duration for French society, affecting one way or another all aspects of social life. The most thorough examination of wartime public opinion certainly remains that of Jean-Jacques Becker, who relied on a wide range of sources, including press articles,

private correspondences as well as reports of all sorts, e.g., by the police, the *préfets* (the government's representatives in each *département*) or even schoolteachers (Becker 1980; English translation Becker 1986). As Becker himself acknowledges, we find some of the common difficulties mentioned above in the interpretation of these diverse sources: Are the police as discerning observers as we would hope? What number of private correspondences is needed to grasp population-level phenomena such as a slump in morale? In this vein, one may wonder what exactly the *préfet* meant when stating that the morale was "very good" in June 1915 but "fairly good" in September of the same year in the *département* of Yonne (Becker 1980: 182). One of our aims is to find better summary indicators tracking through time the morale of the civilian population. We also hope to provide complementary evidence on specific phenomena, e.g., on how, after the initial belief that the war would be short proved wrong, the "banality of war" set in, increasingly turning the attention of the civilian population away from the war itself to more everyday problems, such as inflation and supply issues.

Data and methods

The *Fichier des Prénoms*. The data here analyzed are that of the freely available *Fichier des Prénoms*, managed and curated by INSEE, the French National Institute for Statistics and Economic Studies.[1] The *Fichier* provides the number of occurrences for each first name, by sex and year of birth since 1900. The *Fichier* was first established in the 1980s based on a population register, the Répertoire national d'identification des personnes physiques (RNIPP). The RNIPP was set up in the 1940s based on post-1890 birth registers, then digitized in the 1970s (Morin 1986).

Two main limitations exist. First, the *Fichier* voluntarily censors some data in order to preserve anonymity. The individual yearly number of occurrences is only given for non-rare first names – here defined as those given to at least 20 individuals since 1900. A yearly number of occurrences is given for such rare first names as a group only. For instance, the *Fichier* indicates that in total, in 1905, 1,467 males and 1,823 females were given one of these rare first names. This condition is light, only preventing the study of first names which, precisely because they are so rare, are of little interest. For non-rare first names, the exact number of occurrences is not given for years in which the name was given only twice or less. For instance, the *Fichier* gives 4 male Quentin born in 1900, 6 in 1901, less than 3 in 1902, 4 in 1903, etc.

Second, not all people born in the period 1900–1945 are included in the *Fichier*. This is precisely because the *Fichier* is a by-product of the digitized RNIPP, and because INSEE took the decision that among individuals born before 1945, those who died before 1972 would not be included in the digitized RNIPP (Morin 1986). The digitized RNIPP, however, did include a significant number of such individuals (born before 1945 and died before 1972), simply because their death was not known

[1]Institut national de la statistique et des études économiques (INSEE) (2021b); we used the 2019 edition, distributed by ADISP (https://data.progedo.fr/studies/doi/10.13144/lil-1349). The documentation attached to the *Fichier* provides very limited information about its origin. What follows is our best attempt to reconstruct it.

to INSEE (Desplanques 2000). Simple calculations suggest this phenomenon is of large magnitude. For example, 865.6 thousand children were born in Metropolitan France in 1905 (Institut national de la statistique et des études économiques (INSEE), n.d.). Based on the life table for this cohort, (University of California, Berkeley (USA), and Max Planck Institute for Demographic Research (Germany), n.d.) we expect that about 434.8 thousand (50.2 per cent) were still alive in 1972. However, the *Fichier* includes 489.7 thousand individuals born in 1905.[2] This somewhat mitigates the fact that names that would be very specific to a sub-population experiencing high excess early life mortality would be missed by our analyses. In any case, we believe that these characteristics of the *Fichier*, while resulting in lower statistical power (reducing sample size), do not significantly alter our results, since we analyze all births. In what follows, we simply refer to the number of individuals found in the *Fichier* for year y as "births in year y" and denote it as N_y. As already mentioned, numbers below 3 are unknown; they are therefore not counted in N_y. Note this is completely marginal: for example, in 1905, the 2,004 first names given to fewer than 3 babies could at most contribute a modest 4,008 births to the total number of births.

Period of interest. Since the war was so completely unanticipated, August 1914 is the only reasonable start date for our period of interest, for which we aim to compute counterfactual name frequencies (had World War I not happened). By contrast, different endpoints may be considered. War-induced changes for several important first names likely extended beyond the Armistice in November 1918. The treaty of Versailles, the most important of the peace treaties officially ending the war, was signed only in June 1919. On the other hand, too broad a time period (e.g., 1914–22) would result in a lower ability to detect war effects on naming patterns, mixing exceptional years with normal ones. As a compromise, we analyzed the years 1914–19 but removed the years 1914–20 to estimate the long-term popularity trends (see below).

Counterfactual wartime popularity. For each name, we aim to obtain a counterfactual number of babies born 1914–19 had World War I not changed preferences. We rely on the historical (pre- and postwar) trend in name popularity. Specifically, for any first name j, the number of babies born in year y, $\boldsymbol{N_{j,y}}$, is modeled in a Poisson regression with the log of the total number of births in year y, N_y, as an offset:

$$\log\big(E\big(N_{j,y}\big)\big) = s_j\big(y\big) + \log\big(N_y\big)$$

Where s_j is a smooth function of calendar time modelled using B-splines: $s_j(y) = \sum_{k=1}^{K} \beta_{j,k} b_k(y)$ (with $K = 8$). The prior on parameter $\beta_{j,1}$ is set empirically.

[2]Our comparing the *Fichier*, which includes people born in Guadeloupe, Martinique, Guyane, and Réunion to the number of births for Metropolitan France alone, only explains a small fraction of the discrepancy we observe, since these four territories appear as small contributors to the (unpublished) total number of births we would ideally use in our calculations: a crude approach based on a version of the *Fichier* broken down by *département* suggests these four territories represented only 2.5 to 3.0 percent of the total number of births in 1900–1930. This is in line with the known fact that their population was about 1.5 percent of that of Metropolitan France, combined with higher birth rates.

A random-walk prior is assumed for $\beta_{j,2}, \ldots, \beta_{j,K}$. This acts as a smoothness hypothesis on s_j. Parameter σ_j that controls how far $\beta_{j,k+1}$ can be from $\beta_{j,k}$ $[\beta_{j,k+1}|\beta_{j,k} \sim \mathcal{N}\left(\beta_{j,k}, \sigma_j^2\right)]$ is given a truncated Gamma prior, that essentially lets the data inform how smooth s_j should be.[3]

As mentioned above, the model is estimated using the data $\mathcal{D}$ pertaining to the years 1900, . . . , 1913, 1921, . . . ,1930. This yields the posterior distribution $p(\boldsymbol{\beta_j}|\mathcal{D})$ on $\boldsymbol{\beta_j} = (\beta_{j,1}, \ldots, \beta_{j,K})$, which we then use to compute our counterfactual distribution for $C_j = \sum_{y=1914}^{1919} N_{j,y}$, the number of babies who would have been given name j in 1914-9 had World War I not happened: $p(C_j|\mathcal{D}) = \int p(C_j|\boldsymbol{\beta_j}) p(\boldsymbol{\beta_j}|\mathcal{D}) d\boldsymbol{\beta_j}$. This is, of course, done in practice using simulations, first sampling a value for $\boldsymbol{\beta_j}$ in $p(\boldsymbol{\beta_j}|\mathcal{D})$ then values in $p(N_{j,1914}, \ldots, N_{j,1919}|\boldsymbol{\beta_j})$.

Finally, in order to assess the effect of the war on the preference for name j, we need to compare the observed and counterfactual numbers of wartime babies given this name. This is naturally achieved by computing the ratio of the observed to the counterfactual number of babies named j. Since we have a distribution on C_j reflecting the uncertainty on this counterfactual number of babies, we also have a distribution on the ratio we wish to compute; we take its median as a summary quantity and refer to this median simply as "the fold-change" (FC).[4] Since we investigate both under-expressed (FC<1) and over-expressed (FC>1) first names, we compute a two-sided p-value: $p_j = 2\min\left(\Pr(O_j > C_j|\mathcal{D}), 1 - \Pr(O_j > C_j|\mathcal{D})\right)$.

The procedure is run for all 3,840 first names present in the database. Results for any first name can be interactively examined in an application available at https://analytics.huma-num.fr/WW1/. We strongly encourage readers to use this application to navigate through the data and results presented here. The application also allows for sensitivity analyses, where the effect of some our modeling assumptions can be tested. The model is written in Stan (Gabry and Češnovar 2022; Stan Development Team 2022). The application is written in R using the Shiny package (Chang et al. 2021; R Core Team 2022).

The *Fichier des personnes décédées*. The *Fichier des personnes décédées* is an open-access dataset managed and curated by INSEE (Institut national de la statistique et des études économiques (INSEE), 2021a). It provides basic demographic information, including sex, date, and place of birth as well as first and middle names, for all individuals who died after 1970 and whose death is known to a French municipality (either because this individual was born or died there). We selected individuals born in France between 1905 and 1925 in order to investigate daily, weekly and monthly popularity changes for specific first names. Interactive exploration of these data is also available at https://analytics.huma-num.fr/WW1/.

[3]As already mentioned, only exact numbers ≥ 3 are given by the *Fichier*. Simple imputation of values below 3 (e.g., uniform sampling in $\{0, 1, 2\}$) unfortunately leads to false positives simply because it fails to account for the extra uncertainty on $\boldsymbol{\beta_j}$ brought about by censoring. Instead, we write the model in Stan and manually update the log posterior of the model with the appropriate likelihood terms $-\log(P(N_{j,y} < 3 \mid \boldsymbol{\beta_j}))$ when $N_{j,y}$ is censored.

[4]When the median for C_j^{-1} is infinity and O_j is 0 (first name expected absent and effectively absent) we set the fold-change to 1.

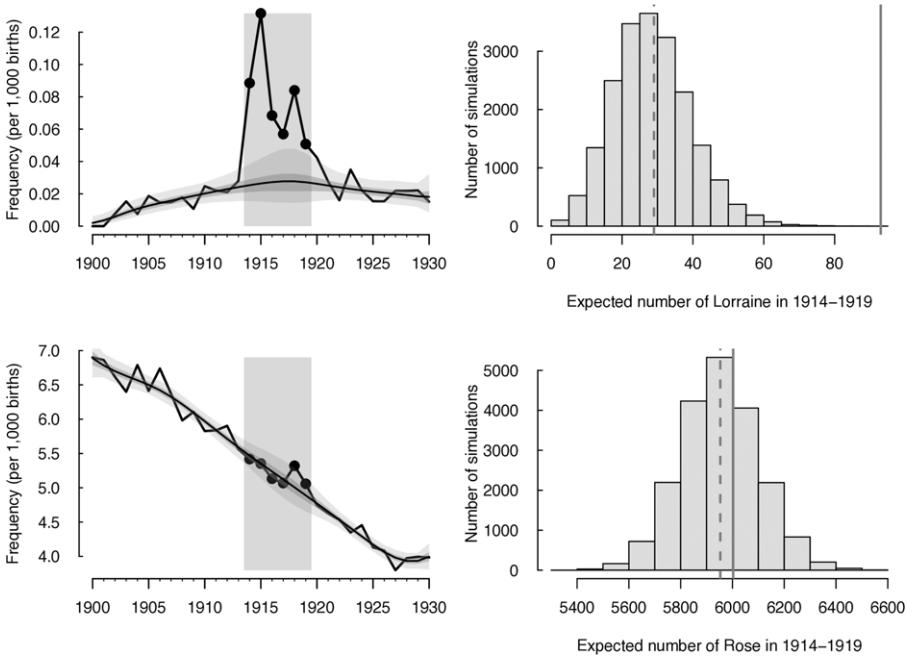

Figure 1. The contrasted evolution of two female first names during World War I. Top: Lorraine. Bottom: Rose. Left: observed yearly frequencies and mean posterior value of s_j, the historical trend estimated without war years, with 50% and 95% Uncertainty Intervals (UIs). Right: Counterfactual distribution for the number of babies named Lorraine and Rose and born 1914–19, had World War I not happened. Dashed line: mean of the counterfactual distribution. Continuous line: observed number.

There is evidently significant overlap between the information contained in the *Fichier des prénoms* and that of the *Fichier des personnes décédées*, the latter containing more detailed spatial and temporal information as well as data on middle names. We use the *Fichier des prénoms* systematically (and the *Fichier des personnes décédées* only for specific first names) because the *Fichier des prénoms* is directly based on birth registers; includes a fraction of individuals who died before 1970; is readily available to all users without any need for heavy data cleansing; and finally, because not all the birth cohorts we study are yet extinct.

Results

Illustrative first names. For the purpose of illustration, the results for two first names are given in Fig. 1. While 29 (95% Uncertainty Interval (UI): [10–52]) female babies named Lorraine were expected in 1914–9 (had the war not happened), the observed number was 93, a result showing a strong war effect on this name's popularity (Fold-change = 3.32; p-value = 0.0002): a fraction of the French population still considered the territories lost in 1871 valid reasons to go to war. By contrast, the wartime popularity of the baby name Rose was extremely close to the prediction produced by our counterfactual model (FC = 1.01; p-value = 0.734).

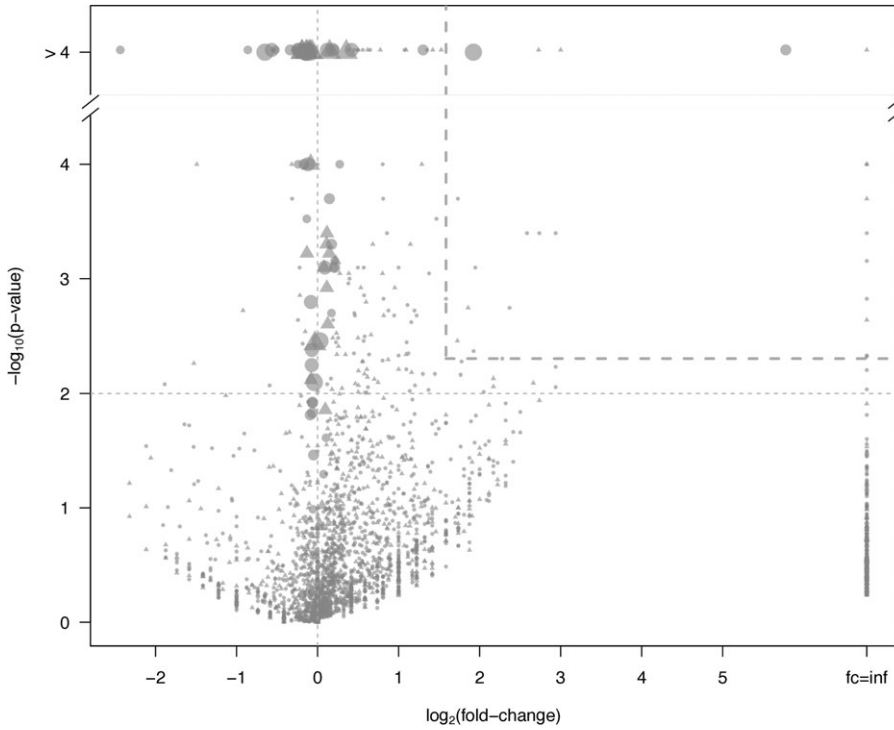

Figure 2. Volcano plot. Circles: female first names; Triangles: male first names. Point size is proportional to difference between observed and expected number of babies born during the war. First names in the upper right rectangle may be found in Table 1. An interactive version is available at: https://analytics.huma-num.fr/WW1/.

First name frequency landscape. Fig. 2 presents a summary graph of all results, with highly over-expressed first names in the top (low p-value) right (high fold-change) corner. We find 23 first names for which there is very strong evidence (**FC** > 3 and p-value < 0.005) of abnormally elevated frequency during the War (Fig. 2, upper right rectangle and Table 1). Among them, Joffre, Joffrette, and Joffrine did not exist before the war. All three paid tribute to General Joseph Joffre, the French commander-in-chief in 1914–6, who became immensely popular after his victory in the battle of the Marne (September 5–12, 1914).

Since a high fold change is most easily obtained in rare first names and almost impossible for very frequent first names, we also examined results based on the absolute difference between observed and expected popularities. Among statistically significant (p-value < 0.01) large *positive* deviation first names ("unexpectedly" given to at least 500 additional babies), we find some that clearly inform public opinion (Table 2). For instance, Albert, Albertine, and Elisabeth echo sympathy for the Belgian king and queen. So did Wilson for the US president, Woodrow Wilson (Table 1). Interestingly, only 2 babies given Wilson as a first or middle name and born before the US entry into World War I are found in the *Fichier des personnes décédées* (of which 1 after February 3, 1917, when President Wilson announced the

Table 1. First names with very strong evidence of positive war effect

Sex	Name	Observed	Expected	*p*-value
F	France	3,842	1,015	<1e-04
F	Joffrette	549	11	<1e-04
M	Joffre	300	2	<1e-04
F	Lorraine	93	29	0.0002
M	Siegfried	53	9	<1e-04
M	Vicente	43	14	0.0035
F	Saturnine	38	11	0.0043
F	Fidele	31	7	0.0018
M	Nazaire	29	9	0.0018
M	Wilson	28	1	0.0002
F	Henrietta	27	7	0.0008
M	Guerin	24	2	0.0001
M	Soubaya	24	3	<1e-04
F	Joachim	23	4	0.0004
F	Joffrine	20	1	0.0007
F	Mardaye	20	3	0.0004
F	Gilbert	18	3	0.0004
F	Noema	17	2	0.0004
F	Ritta	17	1	0.0015
M	Dimitri	16	2	0.0023
F	Parfait	15	2	0.0048
F	Josiane	14	1	0.0001
F	Opportune	14	2	0.0047

withdrawal of the US ambassador to Berlin) but 70 afterwards (graph available at https://analytics.huma-num.fr/WW1/).

Victoire's popularity changes from one year to the next are striking: the increase until 1916 was followed by a sudden slump in 1917, which was followed again by an increase in 1918–19 (Fig. 3). The detailed chronology derived from the *Fichier des personnes décédées* for this first name highlights two important points (Fig. 4): first, the decline in Victoire's popularity was visible early in 1917 and continuous throughout that year, to October; second, 1918 and 1919 rebounds were almost exclusively driven by two bursts, from October to December for 1918 and in May–June for 1919.

We also noticed that 14/20 large positive deviation first names were declining before the war (Table 2, "Trend" column). By contrast, this was the case of only 3/27 of those exhibiting a large negative deviation (Table 3). More generally, we find that

Table 2. Large positive deviation first names

Sex	Name	Observed	Expected	Difference	Trend[a]	*p*-value
M	Albert	26,006	20,342	5,663	0.00	<1e-04
M	Joseph	33,192	29,953	3,238	−0.02	<1e-04
F	Marie	155,271	152,188	3,082	−0.03	0.0035
F	France	3,842	1,015	2,826	0.05	<1e-04
F	Louise	22,175	20,856	1,318	−0.03	0.0008
F	Elisabeth	5,030	3,760	1,269	−0.01	<1e-04
F	Henriette	15,926	14,708	1,217	0.00	<1e-04
F	Therese	8,637	7,610	1,026	−0.00	<1e-04
M	Francois	18,220	17,224	995	−0.02	0.0008
M	Leon	12,729	11,747	981	−0.03	0.0004
F	Maria	9,747	8,813	933	−0.05	0.0002
F	Francoise	5,989	5,213	775	−0.02	<1e-04
F	Victoire	1,228	498	729	−0.04	<1e-04
M	Jules	8,579	7,865	713	−0.04	0.0025
F	Emilienne	6,210	5,511	698	0.01	0.0005
M	Antoine	8,419	7,789	629	−0.03	0.0005
M	Victor	6,333	5,726	606	−0.03	0.0006
M	Michel	7,903	7,302	600	0.03	0.0012
F	Albertine	4,079	3,528	550	−0.01	0.0008
F	Joffrette	549	10	538	0.15	<1e-04

[a]Growth rate before the war (See Supplementary material for details).

a relationship exists in the data: declining first names were temporarily revived, while the growth of new, increasingly fashionable names, was hindered by the war (see Supplementary material).

Total Aggregate Effect (TAE) of the war on first name choices. What was then the "total" effect of the war on first name choices in 1914–19? To answer this question, we would ideally compute the number of babies born during the war whose names changed because of the war, a quantity we cannot estimate due to the aggregate nature of our data.

We naturally turn to differences $O_j - C_j$ to define a meaningful global measure of the war's effect on first name frequencies during the war. Since it is clear that we expect that summing all predicted numbers, $\sum_j C_j$, will yield the total number of children born during the war, $\sum_j O_j$, the sum of all differences $\sum_j (O_j - C_j)$ is expected to be 0 and is not the quantity we look for. By contrast, it can be shown that

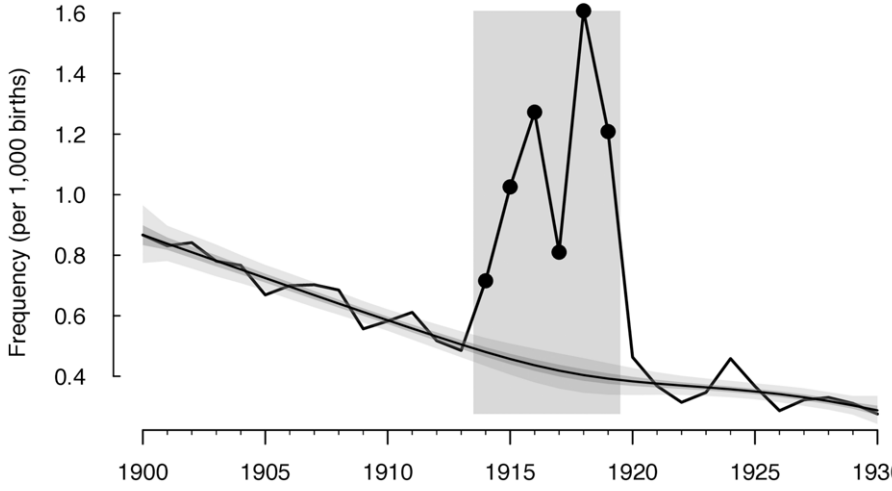

Figure 3. Popularity of first name Victoire in the *Fichier des Prénoms*.

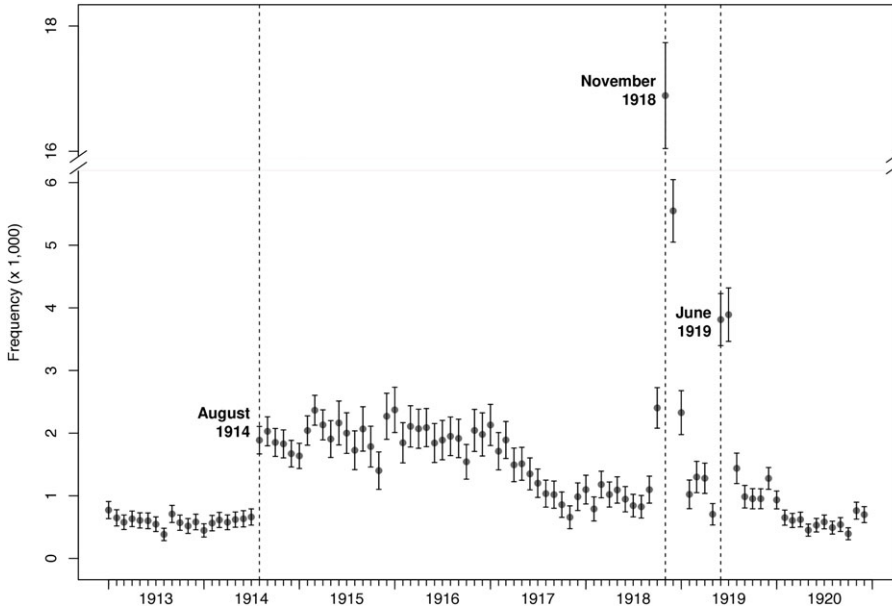

Figure 4. Monthly popularity of Victoire as a first or second name in the *Fichier des Personnes Décédées* (with standard error).

the sum of positive differences, $\sum_{j,O_j > C_j} O_j - C_j = \sum_j (O_j - C_j)^+$,[5] is a lower bound on the number of children whose first name changed because of the war. This lower

[5]Where $x^+ = \max(x, 0)$.

Table 3. Large negative deviation first names

Sex	Name	Observed	Expected	Difference	Trend	*p*-value
M	Andre	54,326	59,966	−5,640	0.04	<1e-04
M	Roger	32,669	37,362	−4,693	0.07	<1e-04
M	Robert	29,401	33,550	−4,149	0.05	<1e-04
M	Rene	42,810	46,848	−4,038	0.03	<1e-04
M	Marcel	45,837	49,301	−3,464	0.01	<1e-04
F	Yvonne	29,792	32,893	−3,101	0.02	<1e-04
M	Pierre	49,311	51,683	−2,372	0.01	<1e-04
F	Gisele	4,035	6,333	−2,298	0.16	<1e-04
F	Paulette	20,369	22,461	−2,092	0.20	<1e-04
M	Jean	91,033	93,125	−2,092	0.01	0.0037
M	Maurice	31,108	33,107	−1,999	0.02	<1e-04
F	Simone	18,684	20,600	−1,916	0.12	<1e-04
F	Suzanne	29,754	31,667	−1,913	0.02	<1e-04
F	Jeanne	59,763	61,488	−1,725	−0.01	0.0080
F	Simonne	15,975	17,381	−1,406	0.09	<1e-04
F	Yvette	7,089	8,385	−1,296	0.20	<1e-04
F	Jacqueline	7,563	8,853	−1,290	0.19	<1e-04
F	Andree	20,530	21,736	−1,206	0.07	0.0016
M	Lucien	19,750	20,955	−1,205	0.01	0.0001
F	Renee	22,837	23,976	−1,139	0.05	0.0042
F	Rolande	2,332	3,455	−1,123	0.12	<1e-04
F	Lucienne	20,442	21,504	−1,062	0.04	0.0057
F	Alice	12,232	13,282	−1,050	−0.00	0.0001
F	Lea	3,024	3,828	−804	−0.01	<1e-04
M	Fernand	12,949	13,701	−752	0.00	0.0076
F	Solange	5,884	6,608	−724	0.10	0.0001
M	Gilbert	5,856	6,418	−562	0.07	0.0006

bound is reached if and only if no compensation between first names exists (see Supplementary material for a detailed explanation). A trivial compensation situation is when a child who would have been named *a* was named *b* and conversely, a child who would have been named *b* was named *a* – a phenomenon that is invisible in any aggregated dataset.

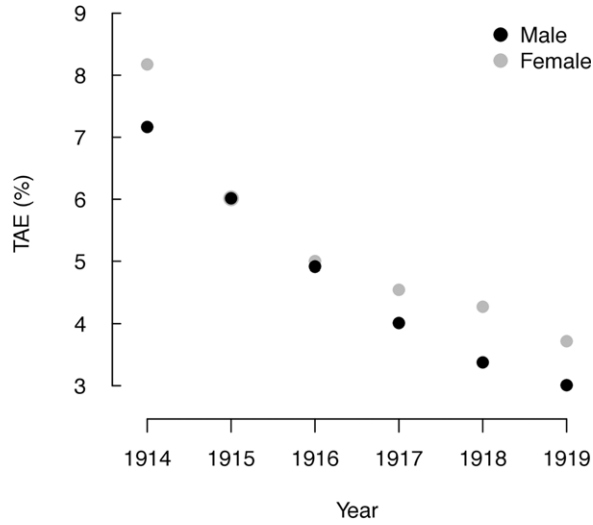

Figure 5. Total Aggregate Effect (TAE) of the war on first name frequencies, by year and sex.

We thus define the Total Aggregate Effect (TAE) of the war on first names in 1914–19 as the expected value of this number expressed as a fraction of all wartime births: $\mathrm{TAE} = \mathrm{E}\left(\sum_j (\mathrm{O}_j - \mathrm{C}_j)^+ / \sum_j \mathrm{O}_j\right)$.

We find that over the entire period (1914–19) the TAE in the database is equal to 3.8 percent. In other words, at least 3.8 percent of babies were given a different first name because of the war. Repeating the analysis by year, we find that the TAE linearly declined over time: the effect of the war was largest at the beginning of the conflict – with at least 7.7 percent of babies born from August to December 1914 who were given a different name because of the war – then gradually faded. A somewhat higher TAE in females was seen at the beginning and the end of the conflict (Fig. 5). This is consistent with both selected examples specific to our context – for instance, the number of Joffrette or Joffrine born during the war was almost twice that of Joffre – and the general observation that parents tend to experiment more with the names of female offspring (Coulmont 2022: 34).

Discussion

Because first names are so ubiquitous in historical sources, studying them is possible in many contexts. It is appealing for several reasons. Since parents choose baby names from a large number of options, first name frequencies durably record various changes in behavior and intentions. Consequently, the observed changes in frequency will almost necessarily be limited. One has no choice but to extrapolate from the results, e.g., from the few dozen parents who named their daughter Lorraine to the much larger number of those who thought recovering Lorraine justified war. Also, because the available names are so numerous, extracting information from naming frequencies involves either the selection of a few

"candidate" first names or the study of thousands. Focusing on this problem, our proposed method replaces informal examination with a rigorous procedure leading to a short list of first names of interest. The approach properly accounts for uncertainty in the historical trend for name popularity, as well as for the inherent randomness of observed frequencies due to the finite nature of the population, while making few assumptions. The fact that its data requirements are minimal provides an opportunity to replicate the study in different contexts. In an age where digitized forms of historical censuses are now common, the method could readily be applied to other countries during World War I for comparative purposes, or indeed to any other setting.

The method has some limitations. Since the *Fichier des prénoms* only started in 1900, we used both pre- and postwar data to define our counterfactual frequencies, assuming the war had no long-term effects on naming preferences. For a few first names, this "back-to-normal" hypothesis is clearly inadequate. This is, for instance, the case for Germain, which saw as early as 1915 a steady decline in popularity, that continued well after the end of the war. One may also wonder whether the abrupt stabilization we observe for Raymond is due to the war and Poincaré's role in it. Any such error in the computation of the counterfactual biases our estimation of the TAE. On the whole, visual inspection of individual frequency curves suggests durable war effects were few. In other words, the back-to-normal hypothesis generally appears acceptable. For a few first names, the method also improperly detects wartime under-expression because a sudden, unpredictable, popularity burst is observed immediately following the war. Finally, the method is irrelevant in contexts where child naming is governed by fixed principles, e.g., naming for kin.

Specifically applied to World War I France, the method highlights several interesting features of the population's attitude during the war. As pointed out by contemporary observers (Lévy 1922), sympathy for leaders of allied countries is clearly visible in several over-expressed names. The legal framework defined by the *Code civil* in theory limited innovation: an acceptable baby name was supposedly either to be found in calendars or the name of a famous ancient historical figure. The fact that Joffre and Joffrette were chosen *en masse* by parents and considered valid by civil registration services was deemed newsworthy. As early as October 1914, several articles insisted on the "patriotic enthusiasm of Negroes from Martinique,"[6] Spaniards from Algiers,[7] or upper-class Swiss citizens.[8] Beginning in January 1915, newspapers insisted on the "new fashion."[9] Widely circulated newspapers such as *Le Petit Parisien* or *Le Petit Journal* certainly contributed to the rapid diffusion of fashion for these first names.

The French equivalents for the names of the German and Austrian emperors, Guillaume (Wilhelm), François, and Joseph (Franz Joseph) do not appear under-

[6]"L'enthousiasme patriotique règne à la Martinique," *L'Écho d'Alger*, October 3, 1914; "Les nègres de la Martinique . . . ," *Le Matin*, October 2, 1914.

[7]"Sympathies espagnoles," *L'Echo d'Alger*, October 9, 1914.

[8]"Un nom inédit," *Excelsior*, November 9, 1914; "L'enfant de la guerre," *Paris-Midi*, November 30, 1914.

[9]See, for example: "Le prénom à la mode," *La Vie parisienne*, January 2, 1915; "Un nouveau prénom : «Joffrette»," *Le Petit Parisien*, January 7, 1915. Articles on Joffre and Joffrette are found in *Le Temps*, *Le Journal*, *La Croix*, *Le Bonnet rouge*, *La Lanterne*, *Les Nouvelles (Alger)*, *Le Journal du Midi* in January 1915 alone.

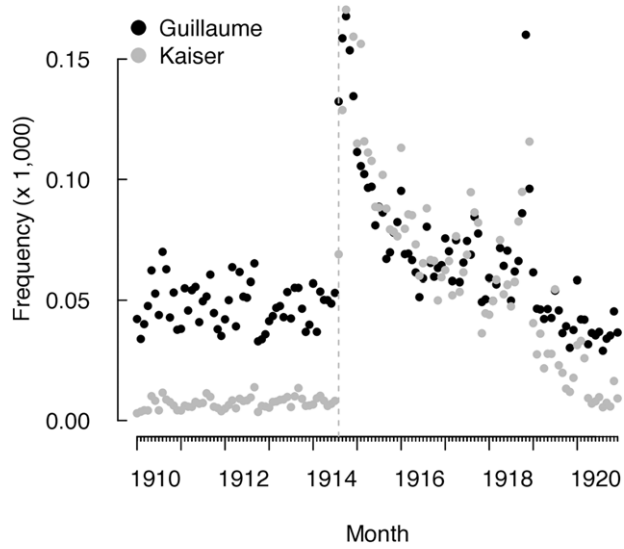

Figure 6. Monthly frequency of "Guillaume" and "Kayser" in the French press, 1910–1920. *Source:* Gallicagram. Dotted vertical line: August 1914.

expressed during the war. One explanation may be that these first names were too common to be specifically associated with the two emperors. Also, François mostly expressed "Frenchness," while Joseph was General Joffre's first name, both facts overwhelming the association of these names with Franz-Joseph. As for Guillaume, the newly introduced expression "le Kaiser" largely concentrated negative connotations and rapidly became as commonly used as Guillaume by the press (Fig. 6) (Azoulay and de Courson 2021).

We could not find an over-expression of names expressing pacifism. As already mentioned, choices were, in theory, limited by the law, so we cannot exclude the possibility that civil registration services refused to register names that unequivocally demonstrated pacifism. Interestingly, the baby name Jaurès – after Jean Jaurès, the major socialist politician assassinated by a nationalist on July 31, 1914 – remained extremely rare, showing only a modest increase in frequency that is mostly noticeable *after* the war (Fig. 7). Jaurès's funerals on August 4, attended by people ranging from Léon Jouhaux, head of the CGT trade union, to Maurice Barrès, head of the *Ligue des Patriotes*, was largely interpreted as the first expression of the *Union Sacrée* advocated by Poincaré (Kriegel and Becker 1964). But Jaurès had so frequently and violently been attacked by the nationalist press before the war because of his pacifism that one may still wonder whether, for this very reason, the socialists refrained from paying tribute to him by using his name.

The strong deviation we observe for Victoire is somewhat expected but adds further insights into public opinion changes during the war, especially for the most optimistic fringe of the population. Victoire's fading popularity in 1917 is yet another element illustrating how this year, marked by mutinies in the spring and strikes into the summer, was clearly the most difficult moment of the war for the civilian population. Monthly data drawn from the *Fichier des personnes décédées*

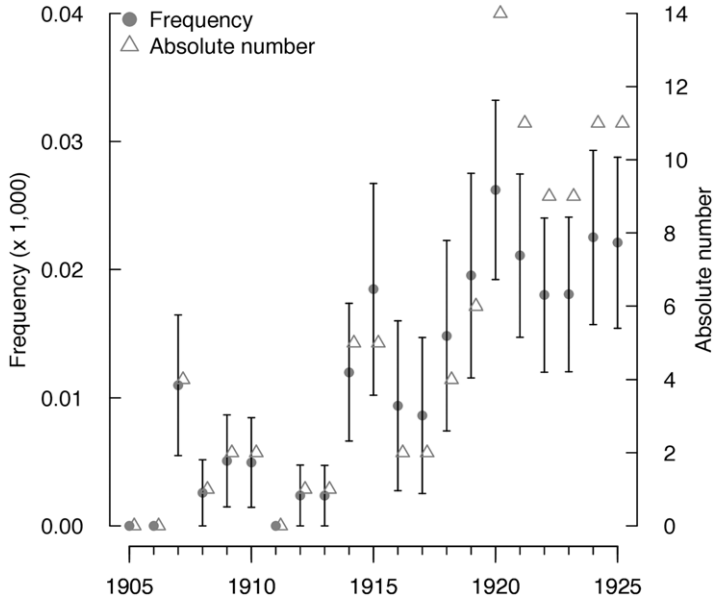

Figure 7. Yearly popularity of Jaurès as a first, second or third name in the *Fichier des Personnes Décédées* (with standard error).

yield a precise chronology of the slump in morale: the decline was continuous from January to October 1917. The situation then stabilized at a low, prewar level. Only in October 1918 was victory sufficiently certain for significantly more parents to choose the baby name Victoire. Incidentally, the comparison of monthly and yearly series in this specific example shows how difficult it may be to interpret coarse-grained data, where intense spikes and smooth changes cannot be distinguished.

One interesting result is that many names that exhibit unexpected frequency changes during World War I do not actually inform directly on public opinion changes *sensu stricto*, but rather relate to other processes triggered by the war. For instance, German-sounding names found over-expressed (e.g., Siegfried) are likely to be explained by the increasing pressure from German authorities to give Germanic names in Alsace and Lorraine (Lévy 2004 [1929]). More importantly, previous work using genealogical data has shown an increased transmission of paternal first names immediately after the war outbreak, both in males and, using feminized forms, in female babies (Todd and Coulmont 2021). By construct, these paternal first names were fashionable 30 years or so before the war, for the birth cohorts the fathers belong to. At the aggregate level, increased paternal name transmission due to the war, therefore, led to a temporary revival of male first names that were losing ground. Conversely, it interrupted the growth of fashionable first names, since those were less frequent in fathers. We found traces of this micro-phenomenon at the aggregate level providing yet another example where "politics froze fashion" (Obukhova et al. 2014). Note also that in females, paternal name transmission was usually achieved using feminized versions of the father's name. Such feminized versions of male names often ended in *ette* (e.g., Paulette, Georgette,

etc.). As it happens, such *ette*-ending first names were rapidly gaining popularity before the war. In cases where the male form was frequent among fathers – for example, Mauricette (derived from Maurice) or Pierrette (derived from Pierre) – politics therefore *exacerbated* fashion. The least we can say is that fashion and politics interacted in non-trivial ways during Word War.

Defining the TAE of the war, we also quantify the systematic consequences of World War I on naming frequencies, which we find were large at the outset of the war, then continuously declining. Examination of individual first names clearly chosen to publicly express specific attitudes towards the war accord well with this pattern: the yearly popularity of first names such as France, Joffrette, Elisabeth, Joffre, and Albert peaked in 1915 and subsequently declined rapidly[10] It appears that "the banality of war," as Becker puts it, when the French settled into a long war, found an echo in naming practices, that returned to some form of normality. Excess paternal name transmission also contributed to this pattern of a higher TAE early in the conflict.

The TAE only quantifies the net effect of the war on first name frequencies and likely misses a large fraction of babies whose name would have been different had the war not happened, notably because it fails to fully capture the effect of excess paternal name transmission at the individual level (see Supplementary material for a comprehensive analysis). Whatever the magnitude of this underestimation, we find a significant TAE at the beginning of the conflict, suggesting an event of exceptional magnitude such as World War I did temporarily modify the naming preferences of a large fraction of the population.[11] This specific example, where we could explore how exactly micro and macro patterns diverge, recalls that interpreting aggregate trends in terms of individual behaviors is usually far from trivial.

To conclude, we hope to have illustrated how modern statistical methods combined with simple data visualization tools and large administrative datasets can improve the historical study of public opinion. While the present work has primarily relied on aggregate data, more detailed data on baby names may offer in the future an opportunity to investigate precisely how ideology, and more generally beliefs and ideas, spread in society. In the specific case of patriotism during World War I, this study would involve understanding the determinants of "patriotic" name choices at the individual level. Who were the parents giving names such as Joffre, Joffrette, or Victoire? Were they young, mobilized, fathers, or on the contrary older men not sent to the front? Did those assigned to high-risk infantry regiments contribute to the heroization of Joffre? Answers to these questions lie in the many administrative documents that map social and military characteristics to first-name choices, and can hopefully shed new light on patriotism during the Great War.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/ssh.2025.27

[10]See https://analytics.huma-num.fr/WW1/ for such an examination, and, in particular, monthly frequencies found in the *Fichier des personnes décédées*.

[11]Previous work focused on paternal name transmission hints at this: the proportion of male babies who were given their father's first name moved from about 12 percent to about 18 percent immediately after the war broke out (see Todd and Coulmont 2021) – this single phenomenon thus yielding a proportion of boys whose name changed because of the war of at least 6 percent.

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