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*Research Article*

### **The growing number of given names as a clue to the beginning of the demographic transition in Europe**

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# **The growing number of given names as a clue to the beginning of the demographic transition in Europe**

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## **Abstract**

### **BACKGROUND**

Cultural factors are usually considered to have played a crucial role in the reduction in neonatal and infant mortality during the demographic transition; however, so far historical demographers have failed to produce precise measurements of their impact. This article introduces a new measure: the number of given names. We show the existence of a connection between the number of names given to a newborn and neonatal survival in 19<sup>th</sup>-century Europe.

### **METHODS**

The article makes use of information from the CHILD database, focusing on six urban parishes in northeastern Italy, 1816–1865. We carried out a continuous-time event history analysis looking at neonatal transition to death.

### **RESULTS**

We show that the habit of assigning to the newborn a growing number of names spreads over time. Among the children with a single name neonatal mortality remains high and constant throughout the fifty years analyzed, while it halves among the children with two names and it decreases three times among children with three or more names. The kind of information we use is available also for other world areas, and we provide some evidence for this trend in France.

### **CONTRIBUTION**

We interpret this as evidence of the spread of greater attention to children. We argue that it is possible to use the number of given names as an indicator of the spread of new practices and of the timing of their initial emergence, and as a measure of the ability of cultural factors to shape neonatal and infant mortality.

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## **1. Introduction**

Many scholars have tried to understand the underlying causes of high infant mortality in the past (e.g., Newman 1907; Royal Statistical Society 1912). In recent decades these studies have multiplied and become increasingly sophisticated, both from a statistical and an interpretative point of view (e.g., Bengtsson, Campbell, and Lee 2004; Bideau, Desjardins, and Brignol 1997; Caldwell et al. 1990; Corsini and Viazzo 1997; Minello, Dalla-Zuanna, and Alfani 2017; Pozzi and Barona 2012; Preston and Haines 1991; Rollet 2001). This development has mostly been possible thanks to the microanalytic approach, based on the construction of large individual-level datasets combining information on survival with the characteristics of the children, their families, and the context in which the children spent the first period of their lives. However, some aspects underlying the chances of survival of children during the Old Regime and in the first phase of the demographic transition remain somewhat mysterious. In a recent review, Pozzi and Ramiro Fariñas (2015) state that in the past the differences in infant mortality, the starting point, and the speed of its decline are due to the incidence of biodemographic, environmental, socioeconomic, and cultural factors and their interrelation. They also suggest that so far, while research activity has made significant progress in relation to some of these factors, for others the results remain modest.

The micro-analytic approach has encountered major difficulties in handling the set of variables [related to cultural factors], though they are of crucial relevance for infant and children survival, because of the lack of information particularly at the individual/family level as well as the complexity inherent in the ‘measure’ of these components. However, we cannot deny their relevance simply because we are not able to quantify their impact (Pozzi and Ramiro Fariñas 2015: 50).

Indeed, while there are numerous macrostudies and qualitative analyses that, building on the pioneering intuitions of Philippe Ariès (1960), have documented the growth of attention to childhood (e.g., Meckel 1990; Morel 1991; Reher, Pérez Moreda, and Bernabeu-Mestre 1997; Rollet 2001; for Italy, Barbagli 1984; Breschi and Pozzi 2004, 2013), research connecting directly the attention and care to the newborn and his/her chances of survival is much less satisfying. In particular, we lack studies able to provide a direct quantitative measure of the impact of cultural factors on neonatal and infant mortality. The relevance of the question can easily be understood in light of the long tradition of research about the cultural origins of the European demographic transition (Kirk 1996; Coale 1973). Cultural aspects and material conditions have been demonstrated to be “exerting interdependent and complementary influence on the behaviors that drive demographic change” (Bachrach 2014: 3).

In a previous paper, we demonstrate the strict connection between the decline of neonatal mortality and the spread of the practice of delayed baptism in the Veneto region in northeastern Italy (Minello, Dalla-Zuanna, and Alfani 2017). We suggest that the delay of baptism may be considered indicative of the increase in attention to children. However, the timing of baptism is not a purely cultural indicator, being affected by season, meteorological conditions, and other factors that are difficult or impossible to observe. Here we take a different approach, focusing on a new indicator that is culturally determined: the number of names given to children.

Practices regarding name-giving have already been used by social science literature to explore cultural dynamics. For example, names chosen by immigrants have been analyzed as a sign of either confirmation of the group identity or integration into the host country (Becker 2009; Gerhards and Hans 2009). More generally, names can be used to identify broad changes in society (Suzman 1994). They have been considered a sign of the perpetuation of social tradition (Paustian 1978), but they have also been used to detect the growing interest in uniqueness and the individualism that characterizes present-day societies (Twenge, Abebe, and Campbell 2010). Practices of name-giving convey information about the level of bargaining in the couple and about gender dynamics (Tebenhoff 1985; Edwards and Caballero 2008). Here we explore the connection between name-giving practices and mortality.

We use the database Collecting Habsburg Information about Life and Death (CHILD) on birth and death during the first months of life for the Veneto region of Italy, focusing on six urban parishes in the cities of Venice, Chioggia, Padua, and Treviso (33,955 births and 5,234 linked deaths before the first month of life during 1816–1865). We study the urban context because the social structure is more varied than in the countryside, the elites lived predominantly in the cities, and there is greater variation in the number of given names. Our data allow us to analyze the diffusion of the practice of assigning to the newborn an increasing number of names. The article develops as follows. First, we briefly illustrate how the social customs regulating the number of names given to children changed across time and space, and we provide some insight into the social and cultural meaning of these practices. Second, we recapitulate the historical context of Veneto, emphasizing the swings of neonatal mortality during 1650–1900 and the precarious social and health conditions during the 19<sup>th</sup> century. Third, we present our intuition and describe our research questions. The fourth and fifth parts are devoted to the description of the data and methods used and to statistical analyses. In the final section we discuss the meaning of our results, also regarding the possibility of extending them beyond the territories covered by this study. The evidence of a connection between name-giving practices and neonatal mortality led us to a possible interpretation: For past societies name-giving practices may be indicative of the level of parental investment in children.

## **2. The number of given names in early modern and modern Europe**

### **2.1 The number of given names in 19<sup>th</sup> century Veneto**

Practices of name-giving in the past have been the object of a significant amount of research, mostly done by social historians and historical anthropologists, sometimes joined by historical demographers. The topic seems to have recently received a new impetus (Quemener 2017; Doblanović Šuran and Krmac 2019; Graziani-Secchieri 2019; Skořepová 2019). Past and recent research has explored the factors leading to the selection of specific names – factors that, according to the area and period, can include the name of the saint of the day of birth or of baptism, the name of the baptismal godfather or godmother, that of an ancestor (often a grandparent), and so on (e.g., Klapisch-Zuber 1990; L’Homme 1980; Mitterauer 1993). Overall, these studies have also established an important fact: In European societies of the past, the selection of the name or names to give to a newborn was not a task to be taken lightly. Indeed, even in areas and periods when the selection of a name tended to reflect specific rules (which, however, were never universally followed), careful planning remained crucial. For example, in France during the *ancien régime*, it was customary to give to the firstborn male the name of the paternal grandfather, but at the same time the godfather expected to give his own name, leading to the practical necessity of selecting a suitable godfather who also carried the desired name (that of the paternal grandfather of the newborn; Zonabend 1980; Burguière 1984).

Generally speaking, research in the social practices followed in the past strongly supports the view that gifting a child with a specific name usually denoted an investment on the part of the parents because that name could not usually be replicated for the rest of the offspring (exception made for younger brothers of prematurely deceased children). All in all, the selection of a name was a procedure at least as strategic and carefully planned as that of the selection of baptismal godparents, which in recent years has been the object of much historical demographic research (Dupâquier 1981, and, for an overview, Alfani and Gourdon 2012). The importance of name-giving extends beyond Europe. For example, Smith (1985), in his study of Massachusetts during 1641–1880, states that assigning a name to a child was charged with central social meaning, as the name marked the entry of the infant into the family group and gave him/her a specific space with respect to past and future generations.

In the area and period we have studied, based on the baptismal records of the parish of the *Eremitani* in Padua during 1815–1870 we found evidence of the frequent selection of the names Antonio/Antonia, which account for 15% of all names given to males and 11% to females, and slightly more for firstborn children. Saint Antonio is the patron saint of the city, and his basilica and tomb in Padua was a traditional destination of pilgrimage due to the thaumaturgical powers attributed to the saint. Giving his name to a child was

also an attempt to solicit Saint Antonio's protection over the newborn. Another widely used name was Maria, which accounts for 12% of all names. If we restrict the analysis to females, the prevalence of Maria increases to 18%. This reflects the circumstance that males could get this name, which in Italy is typically reserved to females, only as a second or a third name (indeed, Maria accounts for 20% of all the third names given to males and 27% of the fifth names). Apparently, Veneto was participating in a broader European tendency for the spread of the name of Maria, which is closely connected to the timing of reported apparitions of the Virgin Mary as well as to theological developments (e.g., the introduction of the Catholic dogma of the Immaculate Conception of Mary, in 1854).<sup>4</sup> Often, children carried the same name as their father or mother. Unfortunately, our data do not allow us to check whether the selected names matched those of grandparents or godparents, but this is not an issue as our variable of interest is not the specific name given but the number of names. This variable was basically independent from the practices described above.<sup>5</sup>

The number of names given to each child has hardly ever been the object of specific research, unless as part of more general analyses devoted to studying the changes in time of the names most frequently given to newborns, and of the motivations and social strategies behind the choice of a certain name or group of names. In such literature, the number of names given to children has been discussed, first of all, as the cause of methodological problems, notably because in the presence of multiple names it is not always clear whether they should be considered singularly or as a complex, or whether the first name can be assumed to be more important than the others (Corsini 1982; Alfani 2007; Bardet and Brunet 2007; L'Homme 1980).

Since our study is not focused on the changes over time of the most recurrent or 'fashionable' names nor on the emergence of new names (on this, see Dupâquier, Pélissier, and Rébaudo 1987; Mitterauer 1993), the problem of how to treat multiple names is not a concern. Indeed, in order to avoid arbitrariness, we will follow the few earlier studies measuring the change over time in the number of given names without distinguishing between occasional or recurrent combinations of names (Alfani 2007; Dupâquier, Pélissier, and Rébaudo 1987: 28–32). With this method we have found, first of all, that in Veneto there was a tendency toward the growth in number of given names that matches quite closely what was already known for France (see comparison in Table

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<sup>4</sup> About the spread of the name Maria, compare with the case of Marie in France in Dupâquier (1981).

<sup>5</sup> The possible exception to this are the 'composite names' (i.e., pairs of names that often went together, for example, Giovanni Battista). On principle, these names might have had some impact on the number of names given to each child; however, based on the literature on name-giving in preindustrial Italy we have reason to believe that the prevalence of composite names was very low (Alfani 2007). Indeed, the few available quantitative studies of name-giving in both Italy and France have never distinguished 'combinations of names' in the analysis (see further discussion below). Also note that the possible disturbance caused by the existence of composite names can be treated as statistical rumor, as there is no reason to think that it might systematically distort our analyses.

1). The tendency is clear looking at the frequency of children with just one given name, which decreased significantly in both areas. In Veneto, the share of children given one name fell from 19.5% in the decade 1820–1829 to 12% by 1860–1869. In the same period, the share of children given two names also declined (from 46.5% to 32.5%), while there was a net increase in the share of those given three or more names, from 34% to 55.4%. In France 8.5% of children were given three or more names during 1800–1809, increasing to 11% in 1840–1849 and to 16.5% by 1870–1879. In France, however, there was considerable regional variation, and multiple names were more frequent in some departments, where their prevalence also tended to increase more markedly during the course of the century. In the department of Vandée, for example, 4.5% of baby boys and girls received three or more names in 1800–1809, increasing to 22% in 1840–1849, and reaching 66% by 1870–1879 (Dupâquier, Pélissier, and Rébaudo 1987: 29–30). To sum up, at the beginning of the century Veneto (or at least its urban component) was characterized by a prevalence of multiple names higher than France and continued to be the case toward the end of the period covered by this study. However, by the midcentury the prevalence of multiple names in Veneto was no longer far from that found in some parts of France.

**Table 1: Number of names given to newborn in the cities of Veneto and France by decade, 1800–1879 (row %)**

	Veneto			Vandée (France)			France		
	1	2	3+	1	2	3+	1	2	3+
1800–09				58	37.5	4.5	55.5	36	8.5
1810–19				52	44	4	51.5	39.5	9
1820–29	19.5	46.5	34	38.5	50	11.5	49.5	41	9.5
1830–39	19.5	43.5	37	19	65	16	47.5	43	9.5
1840–49	17.5	39	43.5	16	62	22	44	45	11
1850–59	15	35	50	12	63	24.5	38	48	14
1860–69	12	32.5	55.5	8.5	56.5	35	38.5	47.5	14
1870–79				2	32	66	36.5	47	16.5

Sources: Dupâquier, Pélissier, and Rébaudo (1987), 29–30 for France and the Vandée department; CHILD database for Veneto.

More relevant to our analyses than studies of the change of the number of names over time are the attempts made to measure the average number of names of children by socioeconomic status. The literature, however, does not show a clear pattern. In 19<sup>th</sup>-century France, children from the elites were given a few more names (Bardet and Brunet 2007); but in at least some cities of 16<sup>th</sup>-century Italy, the elites were in fact giving their children fewer names compared to lower strata of society (Alfani 2007), depending on the fashions and practices of each time and place. In our sample (Table 2), farmers and fishers used to give their children one or two names more frequently than all other groups, and, consequently, three or more names less frequently than all the others: 24% of cases



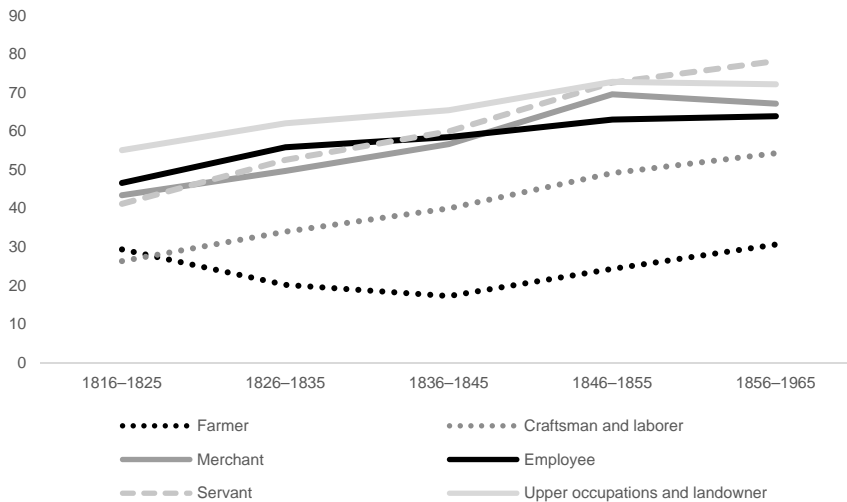
versus the 44% characterizing the entire sample. The children of skilled workers, well-to-do persons, and landowners were given one name in 8% of the cases, two names in 28% of the cases, and three names or more in 64% of the cases. The tendency for the average number of names to increase while moving up the social ladder is clear and statistically significant. This social divide tended to increase with time, at least when comparing the farmers to higher socioeconomic groups, as can be seen in Figure 1, which reports the changing prevalence over time of children with three or more names by occupation of the father.

**Table 2: Number of names by socioeconomic condition in the cities of Veneto 1816–1865 (column %)**

Number of given names	Farmer and fisher	Craftsman and laborer	Merchant	Employee or civil servant	Servant	Skilled worker, well-to-do, or landowner	Unknown	Total
1	29	13	9	10	9	8	19	14
2	47	46	35	34	32	28	40	42
3+	24	41	56	56	59	64	40	44
<i>Total (A.V)</i>	3,791	14,831	5,417	2,374	1,026	1,552	1,029	30,020

Source: CHILD database.

**Figure 1: Prevalence of newborn given three or more names by occupation of the father, 1816–1865**



For the purposes of our study, the finding that the average number of names could vary according to socioeconomic status requires us to apply the opportune statistical checks. We analyze the impact of being given an extra name for children belonging to a specific group and born in a given year or period. Indeed, this aspect seems to have been explored in some detail only with respect to a disadvantaged category: the abandoned children (*esposti* in Italian), who are usually found to have been given fewer names than the others. For example, in 18<sup>th</sup>-century Siena in Tuscany, 79.4% of male *esposti* and 54.5% of female *esposte* were given only one name, compared to 11.9% and 13.2%, respectively, for the other children (Corsini 1982: 571–572); similar instances occurred in the small city of Camerino in the Marches region from the 17<sup>th</sup> to 19<sup>th</sup> century (Bussini 1982: 203–205). Given the specificities of how abandoned children received their names (Bardet and Brunet 2007; Corsini 1982), previous evidences might be limited. Here, we intend to explore the connection between the number of names and early mortality on the whole population.

## 2.2 The swings of neonatal mortality in a struggling region

In Veneto, a populous region of about two million inhabitants in the mid-19<sup>th</sup> century, mortality during the first year of life was about 350‰ in the period 1780–1830. This was among the highest levels of infant mortality recorded for Europe at the time, surely much higher than Tuscany in central Italy (230‰) or England (170‰). Indeed, in this period infant mortality was higher than that observed in the century following 1630, the year when the last plague hit the region.

Dalla-Zuanna and Rosina (2011) show that this was due almost exclusively to the surplus of mortality in the first month (neonatal mortality). During 1816–1870, in the 46 parishes of the CHILD sample neonatal mortality was 217‰, versus the 89‰ reported for 18<sup>th</sup>-century England (Minello, Dalla-Zuanna, and Alfani 2017). Veneto was also the region with the highest neonatal mortality in all of the Habsburg dominion, the multinational empire to which this region had belonged since 1816 and until 1866, when it became part of the Kingdom of Italy (Dalla-Zuanna and Rossi 2010). This high level of neonatal mortality was mainly due to the low level of survival during the cold season. Specifically, during 1816–1865, in the pool of the 46 parishes of the CHILD sample, neonatal mortality was 407‰ for children born in winter and 171‰, 104‰, and 265‰, respectively, for those born in spring, summer, and autumn (Minello, Dalla-Zuanna, and Alfani 2017). Dalla-Zuanna and Rosina (2011) show a strong connection between the probability of death and external temperature. In some parishes – mainly in the southern part of the region – in the decades around 1800, winter neonatal mortality exceeded the terrifying level of 600‰.

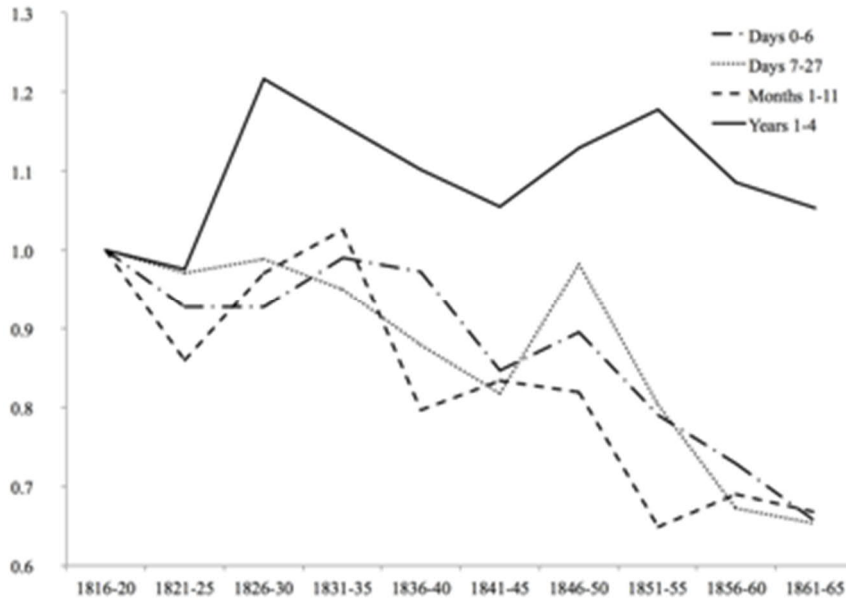
To explain the doubling in the rates of neonatal winter mortality during the 18<sup>th</sup> century, an increase that was maintained until the first part of the 19<sup>th</sup> century, Dalla-Zuanna and Rosina (2011) propose a Malthusian mechanism. During the decades following the 1630 plague (which might have killed up to 40% of the population of Veneto; Alfani and Percoco 2019), population growth progressed at a brisk pace thanks to two factors: the absence of new plagues or other severe epidemics, and the rapid spread of maize monoculture. According to Dalla-Zuanna and Rosina (2011), a serving of polenta (corn meal mush) of equal weight to a portion of bread has significantly less caloric power. In addition, maize does not have any vitamin PP (which stands for Pellagra Prevention), thus a diet based solely on polenta facilitates the spread of pellagra, a vitamin deficiency disease. Pellagra affects metabolism and was a leading cause of death in many areas of northern Italy, including a number of districts in Veneto. In 1881, the first year the causes of death were recorded on a national scale, pellagra was high on the list for northeast Italy (Livi-Bacci 1986). As late as 1881, Sormanni wrote: “Of weak parents . . . poorly nourished, are born wispy and sickly offspring. We have witnessed the predominance of this frailness in Lombardy and Veneto, home also to the greatest endemic infections: malaria, scrofula, and pellagra.”

This happened in the social context of the last years of the Republic of Venice (which included the whole of Veneto until 1797), characterized by persistent economic stagnation or decline. Malnutrition spread, and weak malnourished mothers gave birth to underweight children, unable to overcome – mainly during winter – the thermal shock of birth in a cold environment and unheated homes.

Starting from the second half of the 1830s, something began to change. Survival during the first week, the first month, and the first year of life began to increase, so that in 1866–1870 neonatal and child mortality was 30% lower than in 1830–1834 (Figure 2). The most immediate explanation of this decline would seem to be – again – of the Malthusian kind, but this does not fit the available information. In fact, the living conditions and the diet of the popular classes of Veneto did not improve until the last years of the 19<sup>th</sup> century, when per capita income began to increase and the intense emigration to the Americas took place (Dalla-Zuanna, Minello, and Piccione 2017).

Consequently, the powerful decline in neonatal mortality of Veneto, especially in winter, starting from the second half of 1830s cannot be linked to a generalized improvement in the mothers’ diet and, more generally, in the socioeconomic conditions of the region. The objective of this article is precisely to show how the progressive growth of attention toward children could have played a fundamental role.

**Figure 2: Historical trends of mortality during the first week of life, the first month (excluding the first week), the first year (excluding the first month), and the first five years (excluding the first year). 46 parishes of Veneto, 1816–1865**



Source: Dalla-Zuanna, Minello, and Piccione (2017), Figure 4.8.

Note: On the vertical axis, the ratio with respect to the first period under analysis (1816–1820).

### 3. Intuition and aims

In the fifty years 1815–1865, in the cities of Veneto we found that as the habit of giving to the newborn two or more names increased, the chances of survival beyond the first month of life also increased (Figure 3). While this positive correlation between number of names and survival is partly spurious – as it reflects the tendency for the growth in the number of given names that characterized all social strata in Italy, France, and elsewhere during the 19<sup>th</sup> century – it led to the intuition that induced us to explore this avenue of research.

In an earlier attempt to develop an indicator of cultural factors affecting neonatal mortality, we had focused on the distance between birth and baptism (Minello, Dalla-Zuanna, and Alfani 2017). Given that mortality reduced as such distance increased, and

that the change in the birth-to-baptism distance was driven by cultural factors, this seemed to reveal an increasing attention toward achieving the conditions most favorable to the children's survival.<sup>6</sup> The issue of reverse causality was, however, difficult to solve: Were children baptized later because they were healthier, or were they healthier because they had been baptized later? Even if we could isolate the reverse effect, our indicator was not strong enough to give us sufficient answers about the role played by the cultural change that was taking place in Veneto. The new variable we introduce in this article has considerable advantages over alternative indicators. In particular, it presents fewer challenges regarding reverse causality since (as seen in the previous sections) the choice of the newborn's name was considered as important by families in the past as it is nowadays, and we can assume that it was decided before the birth of the child and independently from his/her status of health. This view is based on the general literature on name-giving as well as on the selection of godparents, which has highlighted the long reflections and negotiations (within the couple, within the extended family, between parents and prospective godparents, etc.) that led to the decision of which names and which godparents to give to a future child (Zonabend 1980; Alfani 2009: 139–140; Alfani and Gourdon 2012: 20–21). Additionally, as it was common practice when a newborn died to repeat the same set of names for the next child, there was no reason whatsoever to avoid giving too many names or particularly desirable names to sickly children. Indeed, the extensive historical and anthropological literature that we perused does not provide any single example of worries of this kind. This being said, in our treatment of the data we make some strategic decisions to deal with the possibility of reverse causality (see Section 4 on data and methods). Within a given cohort (or, in other words, controlling for the secular trend in the average number of names given to children), the number of given names can then be used as an indicator of culturally based attitudes affecting the newborn.

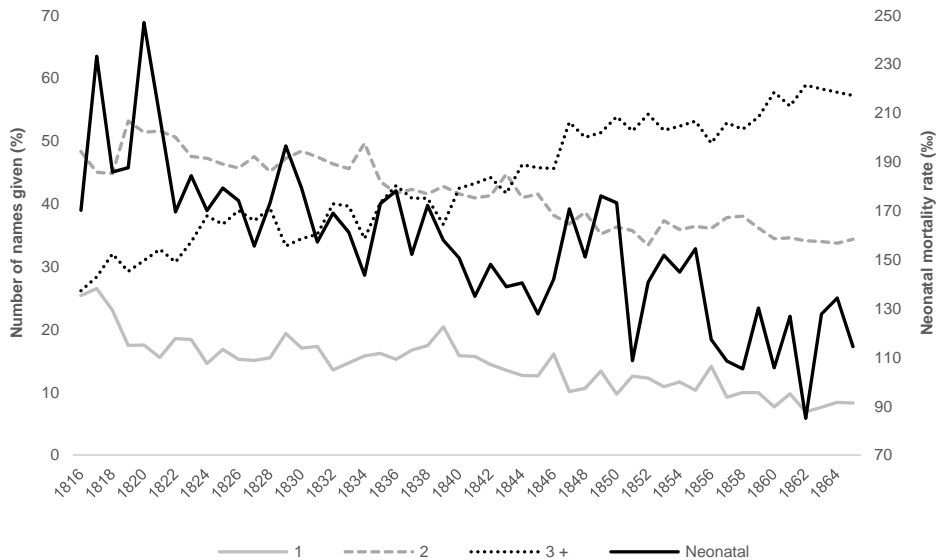
The use of this variable is extremely relevant for the historical period of our interest. In many respects, the 19<sup>th</sup> century is a turning point in the history of childhood. Kertzer (1987) observes that industrialization in central-northern Italy increased the chances that a child would grow to maturity in the parental household. Ipsen (2000) highlights the importance of foundling-care reform introduced toward the end of the 19<sup>th</sup> century: In the area of Rovigo (Veneto) in 1888 mothers were offered, for the first time in Italy, a monthly subsidy if they agreed to recognize their children and to nurse them instead of opting for their abandonment. This led to a drop in early mortality, which the contemporaries considered proof of the importance of maternal nursing (Minelli 1898).

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<sup>6</sup> Being brought to the baptismal font, especially during the cold winter season, was extremely dangerous for the newborn. We hypothesized that awareness of this might have been different over time and across families. Our results do confirm some change over time and some family patterns in the birth-baptism distance with an effect on neonatal mortality.

In the same period, attention toward childhood was expressed also through the publication of some books on the topic. An interesting example is a book by the first pediatrician in Venice, Cesare Musatti (1876). It contained some recommendations and instructions for mothers, such as the exhortation to wash the children frequently without using cold water, to warm up their rooms, to breastfeed them for at least six months, and to go to the doctor when needed. More in general, the 19<sup>th</sup> century is the period when the first kindergartens spread – first in France, then in Lombardy (Catarsi and Genovesi 1985) – and when great strides were made in the development of formula milk and the feeding bottle. Overall, attention toward nutrition during early childhood spread considerably (Stevens, Thelma, and Pickler 2009). The focus on medical advancements, mainly studied in the literature of history of medicine (Meckel 1990), is strictly connected: The decline in mortality is connected with the lower impact of infectious diseases linked to improved nutrition, better sanitary measures, and especially personal hygiene (Hogan and Kertzer 1986). The 19<sup>th</sup> century, moreover, was when the knowledge of obstetrics was consolidated, after the opening of the first courses for midwives created in Veneto the previous century (Pancino 1984).

**Figure 3: Percent (%) of given names by year of birth and neonatal mortality. Six urban parishes in four cities of Veneto, 1816–1865**



Source: CHILd database.

Our research goal is threefold. First, we aim to describe the relationship between the increase in the use of multiple given names and neonatal death in six cities of Veneto from 1816 to 1865. Second, we intend to contribute to the debate on how to identify the role played by cultural factors in the mortality transition, proposing a new indicator that could be applied to multiple settings. Third, we aim to demonstrate that this new indicator holds, net of other measures of other cultural factors.

#### **4. Data and methods**

We include in our analyses six urban parishes of the Veneto region. Three of them belong to the province of Venice: San Marco, San Pietro in Venice itself, and the Dome of Chioggia (Chioggia is an important harbor city placed on the southern border of the Venetian lagoon). Two parishes (San Lazzaro and Sant'Agnese) belong to the city of Treviso, and one parish (Eremitani) to the city of Padua. The data come from civil registers of births and deaths preserved in parish archives, covering the period from 1816 to 1865 (for details and information on quality of data see Minello, Dalla-Zuanna, and Alfani 2017). Thanks to accurate nominative linkage of different sources, we compute exact survival (in days) for each newborn.

The initial sample of children consists of 33,930 individuals. In order to exclude from the sample the victims of endogenous neonatal mortality – which could not be avoided even when quality childcare was available – we did not consider babies with no names and those explicitly recorded as stillbirths by the priest. The resulting sample amounts to 30,796 children.

We have linked birth certificates from civil registers to death certificates for children born in the same parish who (according to the priest notation) died at age 5 or younger, using as linkage keys name and family name of the child, name of the father, and name and family name of the mother. The linkage was facilitated by the availability of information on the children's age at death, as registered by priests. Exact age was, however, ultimately calculated by matching the age at birth and death using day century coding, or counting the number of days since January 1, 1800 (Willekens 2013). The 'no-linkage rate' is the proportion of 'not found' dead children over the total number of dead, once we exclude the children born in a different parish (for details see Minello, Dalla-Zuanna, and Alfani 2017). It may depend on several factors: the accuracy of the parish priests in recording the events and the writing of the pastors themselves, errors in data collection (such as the interpretation of the spelling), and the level of migration between parishes. In the CHILD sample 7.23% of all death acts were not linked to any birth act, and the share rises to 13% in our urban sample. However, many unlinked death acts concern children dying at a 'late' age (1 to 4 years). Presumably a small part of them

were not born in the parish at the time of death, but their parish of birth was not indicated in the register. Other unlinked death acts are due to discrepancies between name/surnames, errors of the priests, or in the data entry. The distribution of the no-linked records with respect to the age at death shows that, with respect to the overall sample, our urban sample is characterized by lower rates of no-linkage in our group of interest: children who did not survive the first month of life (Table 3). The share of no-linked records is in fact 12.1% for those who died at day 1 and 10.9% for those who died at days 1 through 7, compared to 17% and 14.2% of the overall sample.

**Table 3: Distribution of the no-linked records with respect to the age at death**

	1 <sup>st</sup> Day (%)	Days 1–27 (%)	Days 27+ (%)
TV – S.Agnese	9.1	18.3	72.6
TV – S.Lazzaro	34.5	20.7	44.8
VE – S.Pietro	1	0.8	98.2
VE – S.Marco	16.1	5.8	78.1
VE – Chioggia	5	6.4	88.6
PD – Eremitani	6.8	13.6	79.6
Total	12.1	10.9	77.0
Total CHILD	17	14.2	68.8

As we have a daily timeline of events, we carried out a continuous-time event history analysis looking at transition to death. The baseline hazard rate was the time elapsed from the age 0 to death. Children who did not experience the event were censored at the end of the first month (four weeks of life, day 27). The baseline hazard had a piecewise-constant specification, with day 0 and 1 separated from constant one-week intervals from the age of 2 to 27 days.

Data include the name(s) and surname of the child, both as recorded in the birth and in the death registers. We used the information contained in the birth registers to compute the number of given names, as these registers were the most accurate in recording names. The number of names goes from 1 to 18 (the maximum was found in one single case in the parish of San Marco<sup>7</sup>), and we compute a categorical variable having value 1 for those who have only one name (14.1%), 2 for those with two names (41.5%) and, finally, an additional category including children with three or more names (44.4%).

Overall we consider the following information: survival (yes/no) during the first month of life as our dependent variable; number of given names as our main covariate; socioeconomic condition of the family as an additional cultural variable; and sex, decade of birth, parish of birth, and season of birth as our control variables. We test the strength of our core variable (the number of given names) and the other cultural variable

<sup>7</sup> The girl with 18 names was Maria Laval Giovanna Livia Gioseffa Carolina Antonia Luigina Beatrice Leontina Albertina Alberta Artura Augusta Sigismonda Pierina Domenica Caterina Pallavicini, daughter of the Countess of Naval Giovanna Nugent and of the Earl Antonio Pallavicini, born on September 3, 1850, and survived after the age of 5.



(socioeconomic condition of the family) through adding step by step the other variables in the model. In Model 1 we only include the number of given names, in Model 2 we also add the socioeconomic status of the family, whereas in Model 3 the main effect of the other control variables (sex, season of birth, parish of birth, and decade of birth) are included. Finally, we include interactions between our main covariate and some of the control variables.

Before fitting the models, we show some general characteristics of our data and variables. We find 12.7% of the children died within one month from birth.<sup>8</sup> The time between birth and death has been computed with great precision thanks to the use of month century coding and the presence of date of birth and date of death in the registers. The distribution of children according to the socioeconomic condition, measured through the occupation of their fathers, changes in the six parishes (Table 4).

**Table 4: Children in the sample classified by socioeconomic condition and parish of birth (column %)**

	Eremitani	Chioggia	San Lazzaro	Sant' Agnese	San Marco	San Pietro	Total
Farmer/Fisher	16.2	37.6	82.9	3.8	0.4	5.5	12.6
Craftsman and laborer	29.2	48.4	5.2	41.9	25.2	66.0	49.4
Merchant	31.8	8.0	1.5	10.1	36.5	15.1	18.0
Employee	5.0	3.0	5.6	13.0	11.5	7.8	7.9
Servant	9.4	0.5	0.8	5.1	10.1	0.8	3.4
Skilled workers, well-to-do, or landowners	5.5	0.8	3.3	16.4	11.0	2.4	5.2
Other/Missing	2.9	1.6	0.8	9.6	5.3	2.4	3.4
Total (A.V.)	2,830	3,745	1,179	2,887	4,565	14,810	30,020

Source: CHILD database.

The occupation of the fathers is used as a proxy of socioeconomic conditions. With the inclusion of the socioeconomic status we intend to capture both the economic differences among families and the Weberian idea of status. This second concept is connected with different lifestyles, sociocultural resources, social contacts, networks, and forms of cultural participation (Chan 2010). The categories are farmers and fishers (12.7%), mainly peasants and tenant farmers concentrated in the peripheral parish of San Lazzaro in Treviso, and fishers concentrated in the parish of Chioggia; craftsmen and laborers (49.1%), which is the most common occupation; merchants (18.1%); employees or civil servants (7.9%); servants (3.5%); skilled workers, well-to-do, or landowners (5.2%); and other/missing (3.4%).

Males and females represent 51.8% and 48.2% of the sample, respectively, showing a natural sex ratio, which is not influenced by the exclusion of stillbirths and some

<sup>8</sup> This proportion of deaths within 27 days from birth is lower than neonatal mortality, as stillbirth and those without names were excluded from the analysis. In our population the 'traditional' indicator of neonatal mortality is 138‰.

precocious deaths. Parishes also differed in terms of population size (see last row of Table 3). The variable season of birth was defined by grouping the months according to the meteorological season: winter (December, January, February); spring (March, April, May); summer (June, July, August), and autumn (September, October, November). The distribution of births by season is 26% born during both spring and winter, 24.6% in summer, and 23.4% in autumn. Finally, the distribution of the newborns over time was almost constant: 19.1% in the first decade (1816–1825), 18.7% in the second (1826–1835), 19% in the third (1836–1845), 21.1% in the fourth (1846–1855), and 22.1% in the last decade (1856–1865).

Since we also aim to demonstrate that the effect of the number of names holds net of other measures of cultural factors, in a second phase of the analysis we consider the distance between birth and baptism as an additional covariate. Here we follow the method used by Minello, Dalla-Zuanna, and Alfani (2017). The basic idea is to start the observed period at the time of baptism. Following this approach, we exclude from our sample children who never received baptism and those who died the same day they were born. Nor do we consider children baptized more than two months after birth (a negligible proportion of the sample: 0.67%). Including those who were born and died the same day or those who never received baptism might have led to an overestimation of our phenomenon. We check the distribution of the number of names of this group (those who never received baptism and those who died the same day they were born). The share of children with one name in this group is even higher than in the rest of the sample as 47.8% of the children have one name, 44.11% have two names, and only 8.1% have three or more names. Consequently, including them might have exacerbated the challenges posed by reverse causality as children might have received fewer names if they were considered to be in danger already at the moment of birth.

The resulting sample amounts to 30,020 children. Our strategy consists in using a discrete time setting (we need to recognize the effect of changes over time) connected to the days the child survived after baptism, which is the moment when he/she was given his/her names(s) (for details see Minello, Dalla-Zuanna, and Alfani 2017). Each record was split into a number of rows equal to the number of days lived after the day of baptism. Each day lived corresponds to one distinct observation, and observations are clustered by child. Our analysis stops 27 days (one month) after baptism, or at death if it occurs earlier. We analyze the effect of the number of given names (time fixed variable) on the risk of dying during the first month after baptism, controlling for the effect of age. The age is in days and is a time-varying variable. So for example a child with one name baptized on day 5 who died on day 10 will be represented by 5 rows (i.e., one for each day of his/her life after the day of baptism). The age in days is time-varying (from 6 to 10), the number of given names is time fixed (in this case 1) as well as the gap between birth and baptism (in this case 5), and the value of the response variable is 0, until day 10. The birth-baptism

interval is a time constant variable defined as “Same day” when the day of birth is the same of that of baptism (7.9%), “Day after” if the child was baptized the day following birth (11.5%), “2–5” if the lapse is of two to five days (42%), “6–10” days if the lapse is of six to ten days (29.2%), and 11–28 if the lapse is of eleven to twenty-eight days (9.5%).

## **5. Results**

### **5.1 The practice of name-giving**

In the initial sample of children born in the cities of Veneto between 1816 and 1866, we find that only 2% had no names. These were mainly the stillbirths and/or the abandoned children. Of the rest, 17% had one name, 38% had two names, and 43% had three names or more. As proof that the name was decided before the birth in our sample, those that we have identified as stillbirths and therefore were excluded from our analysis had in many cases been given more than one name. Indeed, excluding the 20% of stillbirths who had no names, among the others 37% had three names or more, 30% had two names, and 33% had one name. For the parish of Eremitani, where the data registration has been updated with the family reconstruction, we can identify the siblings. We find that the number of names of the firstborn is often in line with the number of names of the second born. For the second born the number of names does not depend on whether the firstborn is dead or alive. We do not go further in analyzing the strategies pursued by parents as they relate to the number of names given to the newborn. Indeed, the findings presented above are sufficient to suggest that the name given to children was not the issue of random choice, and that the idea of a connection between the number of names and strategies for childcare deserves to be adequately tested.

### **5.2 Naming and mortality**

Table 5 details the results of our analyses. Models 1 and 2 show that all the categories of the number of names are statistically significant even when the other cultural variable (occupation of the father) is included in the model. It means that both these variables are statistically significant and autonomous with respect to the probability of surviving to neonatal mortality. Moreover, the odds ratios of the variable ‘number of given names’ are very similar in Models 2 and 3. This means that for all the categories of the other variables included in Model 3, the survival increases with the increasing number of given names. The socioeconomic status goes in another direction. Confirming the results of Minello, Dalla-Zuanna, and Alfani (2017), the early mortality risk is not higher for

children of peasants and fishers, and the differences are never significant ( $p < 0.01$ ), with the exception of craftsmen, laborers, the employees, and civil servants, which have a lower risk of dying.

**Table 5: Model results for the transition to death during the first month of life. Six urban parishes in four cities of Veneto, 1816–1865**

	Model 1			Model 2			Model 3		
	Coeff.	SE	P	Coeff.	SE	P	Coeff.	SE	P
Number of given names (Ref. 1)									
2	-0.65	0.039	0.000	-0.65	0.039	0.000	-0.62	0.040	0.000
3+	-1.17	0.042	0.000	-1.19	0.044	0.000	-1.20	0.047	0.000
Socioeconomic condition (ref. farmers/fishers)									
Craftsmen and laborers				-0.12	0.047	0.008	-0.11	0.057	0.043
Merchants				0.06	0.056	0.244	-0.06	0.064	0.369
Employees or civil servants				-0.08	0.073	0.265	-0.21	0.080	0.007
Servant				0.23	0.090	0.010	-0.04	0.097	0.708
Skilled workers, well-to-do, or landowners				0.13	0.081	0.107	-0.10	0.089	0.205
Unknown				0.03	0.090	0.748	-0.16	0.097	0.101
Sex (ref. Males)									
Females							0.07	0.032	0.018
Parish of birth (ref. Eremitani, PD)									
Sant'Agnese, TV							-0.29	0.072	0.000
San Lazzaro, TV							-0.70	0.089	0.000
San Marco, VE							-0.65	0.080	0.000
San Pietro, VE							-0.76	0.097	0.000
Chioggia, VE							-1.18	0.097	0.000
Decade of birth (ref. 1816–1825)									
1826–1835							-0.05	0.047	0.230
1836–1845							-0.24	0.050	0.000
1846–1855							-0.07	0.046	0.105
1856–1865							-0.51	0.058	0.000
Season of birth (ref. Winter)									
Spring							-0.70	0.040	0.000
Summer							-1.35	0.053	0.000
Autumn							-0.77	0.043	0.000
Log likelihood									
				-16,916.091			-16,896.767		
							-16,191.983		

Note: The models control for the time.

Let us consider the other covariates included in Model 3. The survival of females is lower than that of males. The differences between some parishes are statistically significant. In all the parishes of the province of Treviso and Venice the risk of dying is lower than for the Eremitani parish in Padua.

The decreasing trend of early mortality is not fully mirrored by the odds ratios of the variable decade and does not confirm what happens without controlling by the other covariates (compared with Figure 3). This important result is not confirmed if Model 3 is performed excluding the number of given names: 1816–1825 (reference), 1826–1835 (Coeff.: -0.11,  $p = 0.022$ ), 1836–1845 (Coeff.: -0.32,  $p = 0.000$ ), 1846–1855 (Coeff.: -

0.24,  $p = 0.000$ ), and 1856–1865 (Coeff.:  $-0.71$ ,  $p = 0.000$ ). These results show that, from a statistical viewpoint, the declining trend of neonatal mortality in Veneto after 1836 is at least partially ‘absorbed’ by the increasing number of given names.

Apart from the weakness of trend, the odds ratios of the variable decade in Model 3 show that early mortality decreases during 1836–1845, increases during the troubled period 1846–1855, and decreases again during the final decade of Habsburg dominion.<sup>9</sup> Finally, the odds ratios differ considerably according to season of birth: During all the 50 years 1816–1865 early mortality is definitively higher for children born in winter and lower for children born in summer.

In Table 6 we use our second strategy of analysis, starting the observation period at the day of baptism and extending it for 27 days after. It shows that all the categories of the number of names are statistically significant even when both the birth-baptism distance and the job position of the father are included in the model. The same happens for the birth-baptism distance. It means that both these variables are statistically significant and autonomous with respect to the probability of surviving in the days following the baptism. We additionally show what happens when instead of two variables (interval birth-baptism and number of given names), only one variable is included in the model: the interaction between the two (Table 7). At the same interval birth-baptism, the risk of death decreases for those with two or three or more names. The decrease occurs in all the categories, from those born and baptized the same day to those whose interval is 11 to 28 days.

To understand the role of the cultural variables in describing mortality, we measure the log-likelihood ratio of the models and look at how much it increased when adding such variables to the analysis (Table 8). Compared to the null model, where the risk of death is linked only to the days of life (a sort of life-table), the goodness-of-fit of the model containing the cultural variables (i.e., the number of given names, the birth-baptism distance, and the socioeconomic condition) leaps by 25% (22% if only the first two variables are included). Adding other covariates (sex, parish, and decade) does not improve the performance of the model in a comparable measure, reaching 36%. It is only the inclusion of the season of birth that leads to a large increase in goodness-of-fit, reaching 64%. Indeed, during the entire 50 years the risk of early death increased with the drop in temperature. Models that include interactions between the variables at our disposal do not show relevant increments of goodness-of-fit. This means that the model, where only the main effects are included, fits parsimoniously the relationship between early mortality and the observed variables.

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<sup>9</sup> In 1848–1849 Veneto revolted against the Habsburg domination, leading to the long siege of Venice and to some battles fought between the Piedmontese and Austrian armies during the First War of Italian Independence. Many Venetian patriots joined the Piedmontese in the conflict with the Austrian army. These revolts and wars were accompanied by cholera epidemics and food shortages (Ginsborg 1979).

**Table 6: Logit regressions modeling the risk of dying during the first month after baptism. Six urban parishes in four cities of Veneto, 1816–1865**

	OR	SE	P
Days of life	0.90	0.002	0.000
Number of given names (Ref. 1)			
2	0.76	0.036	0.000
3+	0.59	0.031	0.000
Birth-baptism interval (Ref. Same day)			
Day after	0.53	0.029	0.000
2–5	0.33	0.016	0.000
6–10	0.22	0.015	0.000
11–27	0.27	0.033	0.000
Socioeconomic condition (ref. farmers/fishers)			
Craftsmen and laborers	1.16	0.073	0.012
Merchants	1.18	0.085	0.024
Employees or civil servants	1.03	0.090	0.774
Servant	1.15	0.127	0.192
Skilled workers, well-to-do, or landowners	1.14	0.111	0.187
Unknown	0.89	0.097	0.263
Sex (ref. Males)			
Females	0.95	0.034	0.163
Parish of birth (ref. Eremitani, PD)			
Sant'Agnese, TV	0.69	0.049	0.000
San Lazzaro, TV	0.41	0.040	0.000
San Marco, VE	0.53	0.037	0.000
San Pietro, VE	0.60	0.035	0.000
Chioggia, VE	0.28	0.022	0.000
Decade of birth (ref. 1816–1825)			
1826–1835	1.04	0.053	0.401
1836–1845	0.85	0.047	0.000
1846–1855	1.11	0.059	0.043
1856–1865	0.83	0.051	0.000
Season of birth (ref. Winter)			
Spring	0.48	0.021	0.000
Summer	0.21	0.013	0.000
Autumn	0.46	0.022	0.000
Mc Fadden R <sup>2</sup>	13%		

**Table 7: Logit regressions modeling the risk of dying during the first month after baptism. Odds ratios of the interaction between interval birth-baptism and number of given names. Six urban parishes in four city of Veneto, 1816–1865**

Interval birth-baptism	Number of given names					
	1	P	2	P	3+	P
Same day	1.00 (Ref.)		0.66	0.000	0.36	0.000
Day after	0.38	0.000	0.35	0.000	0.29	0.000
2–5	0.25	0.000	0.21	0.000	0.17	0.000
6–10	0.17	0.000	0.13	0.000	0.12	0.000
11–27	0.34	0.000	0.18	0.001	0.11	0.002

Note: The model controls for sex, parish, season, decade of birth, and socioeconomic status.

**Table 8: Performances of the logistic models of the risk of dying during the first month after baptism. Six urban parishes in four cities of Veneto, 1816–1865**

# of explanatory variables	Variables included	-2LL	Improvement over null model	McFadden R <sup>2</sup>
1	Days of life (Null model)	3,346	—	8%
3	Add number of given names + birth-baptism interval (Model 1)	4,087	22%*	10%
4	Add job of the father	4,163	25%	10%
5	Add sex	4,170	25%	10%
6	Add parish	4,528	35%	10%
7	Add decade	4,564	36%	11%
8	Add season (Model 2)	5,479	64%	13%
8	Add interactions birth-baptism interval & season, number of given names & season	5,567	66%	13%

Note: \* For example,  $(4,087 - 3,346) / 3,346 \times 100 = 22\%$ .

### 5.3 Checks

Some additional checks provide further support to our results. The first regards the possible objection that with the number of given names we are measuring the socioeconomic status of the children. However, running the models separately for each socioeconomic status we find that the variable works for all the categories. It is interesting to notice that among the most vulnerable (the servants) the risk of death is reduced by the increasing number of names more than for the other categories (Table 9).

**Table 9: Seven models of the risk of dying during the first month of life by socioeconomic status. Selected variable: number of names. Six urban parishes in four cities of Veneto, 1816–1865**

Reference: One name	Farmers/ fishers	P	Craftsmen and laborers	P	Merchants	P	Employees or civil servants	P
2	-0.44	0.009	-0.59	0.010	-0.80	0.000	-0.59	0.000
3+	-0.94	0.000	-1.09	0.000	-1.58	0.000	-1.24	0.000
	Servant	P	Skilled workers, well- to-do, or landowners	P	Unknown	P		
2	-1.13	0.000	-0.96	0.000	-0.71	0.000		
3+	-1.68	0.000	-1.45	0.000	-1.35	0.000		

Notes: The models control also for sex, parish, season, and decade of birth. All the odds ratios are significantly different from the reference category ( $p < 0.01$ ).

The second check regards the rural areas of the region. We analyzed an additional sample of 23,542 cases from eight rural parishes from the province of Padua (Chiesanuova, San Giorgio, Urbana, Casalserugo, Faedo, Onara, Pernumia, and Pontelongo), the same rural parishes used in Minello, Dalla-Zuanna, and Alfani (2017).

In the rural areas the use of giving three names or more was less widespread than it was in the cities. Therefore, we replicated all the decisions taken for our main models, but regarding the variable ‘number of names’ we simply distinguished between one and two or more names. We found that the chance of surviving for children with two names or more was 12% higher than for the others, with statistical significance ( $p < 0.00$ ).<sup>10</sup>

The third check consists in an interaction between the number of given names and the season of birth. If the interaction between the number of given names and the season of birth is significant, the result reinforces the idea of a different degree of attention toward children of parents giving more than one name to the child. Table 10 shows that the chance of dying decreases in all the seasons when the given number of names is two or more than three. All the odds are statistically significant. The reduction in summer between two and more than three given names is even higher than in the other seasons. Season seems an effect modifier of names in the opposite direction, with a larger reduction of mortality in summer than in winter. However, the absolute variation in neonatal mortality is much higher in winter, with mortality levels being much higher during the cold season.

**Table 10: The risk of dying during the first month of life in six urban parishes of the Veneto region. Interaction between the number of given names and the season of birth. Odds ratio**

	Number of given names					
	1	P	2	P	3+	P
Winter	(Ref)		-0.45	0.000	-0.92	0.000
Spring	-0.43	0.000	-1.21	0.000	-1.79	0.000
Summer	-0.98	0.000	-1.72	0.000	-2.81	0.000
Autumn	-0.54	0.000	-1.24	0.000	-1.85	0.000

Note: The model controls for sex, parish, decade of birth, and socioeconomic status.

The fourth check helps us to underline the meaning of our core variable. We test if the effect holds longer than one month after birth. We run on our sample a model with the same variables used in our core one (Model 3 in Table 5) but for children who survived one month after birth, modeling the probability of death between the 2<sup>nd</sup> and 12<sup>th</sup> month of life. The results confirm our idea: Those with two and three or more names have more chances of surviving even during the postneonatal period. The odds of dying are 0.87 for those with two names (0.023 significant) and 0.83 (0.001 significant) for those with three or more names, when children with one name are the baseline.

The fifth check consists in replicating the analyses for a non-Italian context. We used a sample taken from the Henry project (Séguy 2001), a representative survey of the

<sup>10</sup> Complete models from the authors are available upon request.



French rural population between 1670 and 1830 based on parish and civil registrations. We restricted the analysis to the period 1800–1829, which is close to our period of interest. The data do not include information about the distance between birth and day of baptism and the socioeconomic position of the child, so it was not possible to replicate our model exactly. Instead, we modeled mortality with a semiparametric Cox regression where we calculated the risk of dying during the first month of life. We found some confirmation of our results for Veneto region since also in France the risk of dying is lower for children with two or three or more names (Table 11).

**Table 11: Cox regression modeling the risk of dying during the first month in France, 1800–1829**

	OR	SE	P
Number of given names (Ref. 1)			
2	0.77	0.059	0.000
3+	0.58	0.091	0.000
Season (ref. Winter)			
Spring	0.55	0.044	0.000
Summer	0.42	0.038	0.000
Autumn	0.56	0.045	0.000
Decade (ref. 1800–1809)			
1810–1819	1.06	0.073	0.000
1820–1829	1.04	0.088	0.000
Sex (ref. Male)			
Female	0.86	0.053	0.023

Source: Henry survey (Henry 1953–1955).

Note: The model controls for the parishes.

The sixth check introduces multilevel analysis. As highlighted in the previous sections, we cannot exclude the presence of spurious effect: There can be other variables, not measurable with our dataset, that can influence both the number of names and the survival, leading to a spurious statistical association. While we cannot isolate all these elements, by clustering the data by couple of parents for the parish of Eremitani – the only one where our data allow this by using the surnames and names of the parents and the date of their marriage – we can measure the naming practice of the couple and the mortality of their children. We analyzed families with two or more children. We observe that, net of all considered variables, couples who tend to increase the number of names for their children are those whose children have a greater chance of survival during the month after birth. We cannot exclude that there might be a reverse effect due to women who died after the birth of a child. However, the behavior of couples who decide to give more names to their children is important, identifying part of what we have called the spurious effect. Results from Table 12 show that both the median couple number of names and the individual gap from the couple median (measured as equal to, greater than, or less than 0) are strongly associated with the risk of dying. While the result of the

median has a clear importance in defining the impact of the family of origin, the individual gap from the couple median might be a sign of a reversal effect. This means that the parents who choose to give to children a higher (or lower) number of names tend to do it for all their children and that the link between number of names and early death is statistically strong at the couple level as well. This last result is a clue about the spurious effect, that is, the fact that there are latent variables that act at the level of the couple, influencing both the number of names and the increase in early survival for the newborn. An earlier study (Minello, Dalla-Zuanna, and Alfani 2017) highlights that the same mechanism was at work also for the birth-baptism distance, suggesting that it merited future research.

**Table 12: Multilevel logistic model, risk of dying during the first month of life**

	OR	SE	P
Median number of names (Ref. 2)			
1	3.170 (0.010)	0.678	0.010
3	0.707 (0.068)	0.134	0.068
4	0.183 (0.016)	0.183	0.016
5	0.438 (0.520)	0.438	0.520
Gap from median (Ref. 0)			
>0	2.422 (0.000)	0.406	0.000
<0	0.675 (0.082)	0.152	0.082
Level II variance			
Number of observations	2,001		
Number of groups	572		
LR test	17.12 (0.000)		

Note: The model controls for season of birth, sex, decade of birth, socioeconomic condition, and birth-baptism interval.

## 6. Conclusions

This article aimed to increase our knowledge about the onset of the transition in early mortality. Earlier attempts to identify individual cultural variables focused on the delay of baptism (Minello, Dalla-Zuanna, and Alfani 2017). However, this variable presents two problems. First, it does not allow for a completely satisfactory assessment of causality, as it is impossible to know whether the birth-baptism gap is due to the desire to baptize the child as soon as possible for religious reasons or due to an imminent danger of death. Second, this variable requires high-quality data to be produced, which limits the possibilities of making international comparisons and extending the analysis of the impact of cultural factors to broader areas. In this article we introduce a new variable, the number of given names, which considerably attenuates the problem of identifying the

direction of causality and could easily be applied to databases covering other parts of Europe (we provide an example by comparing northeast Italy to France).

As far as we know, despite having been already studied for its cultural value, the number of given names is a variable never used before for purposes similar to ours. The effectiveness of such a variable is confirmed despite all our attempts to test it. The first attempt is to control for the occupation of the father, which is a proxy of the socioeconomic status of the family. Occupations are commonly used as the main (and often the only) variable to capture cultural factors as well as the household economic conditions. However, we found that while the number of names is positively associated with the probability of surviving in the first month of life, the occupation of the father – for our specific sample – does not have a significant impact on survival, and the statistical link between neonatal survival and number of given names holds for each socioeconomic group. Moreover, it is interesting that we found a peak in the statistical effect of the number of names on neonatal mortality among the servants, who often lived in the houses of well-to-do families and maybe benefited from some information about the care of children.

The next test was to check the role of the decade of birth. Beginning in the 1830s neonatal mortality in Veneto decreased, apart from the setback caused by the political and economic turbulence of 1848–1849. Our analyses show that this decline is at least partially absorbed – from the statistical point of view – by the increase in the number of given names. This result suggests that growing attention to the health of children succeeded in increasing the chances of survival in the first weeks of life, even though – as argued by the historical literature – the quality of the diet and the domestic environment of the Venetian popular classes remained extremely precarious at least until the last decades of the 19<sup>th</sup> century. Also note that the number of given names does not overlap the other indicator (the interval birth-baptism), as more given names correspond to a lower risk of death for each distance birth-baptism. Hence the two indicators capture different dimensions of how culture might have affected survival.

Finally, our analyses show that our indicator has the same positive effect, in relative terms measured by odds ratios, on summer and winter early survival. Since before 1830 mortality in the first week and in the first month of life was much higher in winter, in absolute terms mortality decreased much more during the cold season. Moreover, our results are confirmed even when the time of observation is extended and the sample of analysis is not the CHILD database. Ultimately, we introduced the median number of names given by each couple to their children for a subsample, and we showed that there is an important impact of the behavior of the family of origin on the choice of the number of names.

Since names are chosen well before the birth, they might help to capture the investment that the parents intend to make in the child. Therefore, a possible

interpretation of our results is that the number of given-names captures a long-term investment. The number of given names can be considered as an indicator of the relative level of attention given to each child. Based on the available literature, it is entirely reasonable to assume that this indicator reflects the psychological investment of the parents in the child, as well as the level of care she or he would receive in early life. Parents who make a higher long-term investment in their children will give them more names than parents who give less importance to childcare. We posit that names can be used to detect differences in attention and care given to children, which could lead to greater or lower chances of surviving. Our results hold longer than one month after birth (until the age of one year), confirming this interpretation.

The statistical connection between the number of names and the probability of survival has withstood all the checks we have put in place thanks to the available data. Admittedly, however, we could not state that this is also an incontrovertible causal connection. In particular, it would be necessary to deepen the studies of onomastics to better understand the mechanisms that lead, in a given historical period, parents to increase the number of names given to their children. From this point of view, our results, in line with the descriptive aim of our work, open an interesting new path for research. We connect the impressive, albeit rare, studies of onomastic practices with those on the determinants of infant mortality. These analyses should also be combined with detailed insights into institutional changes in childcare, in particular those implemented by public institutions. For example, in Veneto – as elsewhere – from the end of the 18<sup>th</sup> century, recourse to licensed midwives and doctors paid for by the municipalities gradually spread. Starting from the cities and from the wealthiest and most privileged couples, the practice was later extended to all other social strata (Aries 1960; Derosas 2003; Pancino 1984; Filippini and Plebani 1999). Studies of this kind should be deepened by better observing the distribution across the territory and the different socioeconomic groups of the various measures of assistance to children and pregnant women. However, this transformation in the attitude and behavior of public institutions would go hand in hand with profound changes in mentality and attitudes toward childhood. The number of given names as well as the distance birth-baptism could be fruitfully used as additional clues of changes in mentality.

The new indicator of cultural factors that we introduce here – the number of given names – could be fairly easily applied elsewhere, although its meaning must always be carefully considered in the light of the onomastic habits of each society and historical period. Indeed, we know that during the 18<sup>th</sup> and 19<sup>th</sup> centuries neonatal and infant mortality began to decline in much of Europe as well as in some other areas in the world, and there are many indications that habits regarding baptism and the number of names given to the newborn also changed. It seems certain that at least in those areas characterized by practices of name-giving similar to those used in Italy or France, the

number of given names could capture some culturally determined attention and care for the newborn. By a more extensive use of this information, we could therefore reach a deeper understanding of how changes in the attitudes toward childhood contributed to trigger the vital revolution.

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