

# The demography of isolated populations

## A research note on a German-speaking community in a northern Italian valley between the 18th and 19th century

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### 1. Introduction

In the last decades, the demography of the Alps had attracted a growing interest, as scientific works about the mountain populations have intensified. In recent years, the interest in Alpine demographics has been maintained through different working groups and meetings – such as ‘The Alpine Population Conference’, held from 2011 to 2019 in La Thuile and ‘Demographic Change in the Alps’ organized in 2016 by the Italian Delegation of the Alpine Convention (see also Maurer, Wyrzens 2012). In 2000, the Società Italiana di Demografia Storica (Italian Society of Historical Demography, henceforth SIDES) conference dedicated a session to mountain demography (Fornasin, Zannini 2002a) and a number of studies on Alpine populations were published (e.g. Albera, 2011; Mathieu 2004; Viazzo 2000; Viazzo 2003).

The topic of the Alpine demographic regime has always attracted scientists’ interest. According to the dominant view (Viazzo 1989), the populations in the Alpine regions in Italy presented the same characteristics of a ‘low pressure demographic regime’ (Wrigley, Schofield 1981), with a less intense nuptiality level and a slower population growth. Nevertheless, in recent years, the coexistence of alternative demographic regimes in the same Alpine areas was hypothesised (Fornasin, Zannini 2002b). Following on this debate (Viazzo 2005), the present study aims to investigate further this relevant topic.

More specifically, this paper focuses on populations in the Alps as isolated by linguistic and geographical barriers (e.g. Breschi, Fornasin 2005; SIDES, 1990).

Then, the article presents a few descriptive results which are part of a larger research project that began some years ago about the historical-demographic and bio-demographic features of Italian- and German-speaking populations in the Valley of the Fersina River (Piva 1990).

*1.1. The study area.* The Valley of the Fersina River is located in Trentino, a region in North-eastern Italy; it is known as the Mòcheni Valley due to the Mòcheno dialect being spoken in part of the area. The Mòcheni Valley is about 15 kilometres long and extends along the upper part of the Fersina River,

including nine parishes; it is between 550 and 1360 meters high. Among the parishes, Canezza, Serso, Viarago, Mala and St. Ursula are located on the right side of the valley, and they are mainly inhabited by Italian-speaking villagers. On the left side are the parishes of Fierozzo, Frassilongo and Roveda, which are more secluded. At the top of the valley is Palù, the only place of confluence for communicating between the two sides of the river. These last four communities have been inhabited for long by Mòcheni people, speaking a German language.

The Mòcheno language derives from an ancient German one; it is mixed with some words from the Trentino dialect. This language was first introduced by German peasants who settled in the valley between 1200 and 1300. The economy was based on the farms (*masi*) and it was characterized mainly by agricultural, forest and pastoral jobs. In 1400, rich mines of copper, iron and silver were discovered in the valley, determining the immigration of other German workers between 1400 and 1500. These German miners remained for a long time in the valley, and although they did not integrate with the local communities, they contributed to the development of Mòcheno culture.

Over the centuries, the mines were exhausted, and the people returned to farming. These people were self-sufficient and independent, which greatly limited their contact with the outside world. The only support for their agricultural activities was the small seasonal trade, practiced only by men, from November to April, selling tissues and small items for farm life and visiting especially isolated houses in the Tyrolean countryside.

*1.2. An Isolated Population.* The demographic interest in these kinds of small local areas, such as the Mòcheni communities, is undoubtedly clear. High geographical and cultural isolation, which is difficult to find in real populations, is very interesting for historical-demographic researchers because it allows them to study the reproductive processes in a kind of ‘laboratory’, without the changes stemming from migratory interchange and the transmission of different cultural models. Although, in reality the hypothesis that certain groups have remained completely closed from the outside world has never been completely true, the populations of several alpine valleys can be regarded as ‘geographical recluses’, since the very character of these territories often created for long periods of time the objective situation of ‘apartness’ (Pettener, Gueresi and Martuzzi Veronesi 1994).

The Fersina Valley, moreover, has to be considered a ‘complex demographic aggregate’ (Schiaffino, Cammelli 1980). Within the geographical uniformity of the valley, there have existed two human groups which differ from each other on the ethnic-linguistic level, and between them, very little demographic interchange has occurred for ages. This last circumstance shows a double level of possible isolation, especially regarding the Mòcheno community. Previous research by Schiaffino and Cammelli (1980) and by Pettener, Gueresi and Martuzzi Veronesi (1994) verifies one of the initial

hypotheses in historical demographic and bio-demographic research about the Fersina Valley – the persistence throughout the years of a high degree of isolation between the Italian ethnic group and the German one.

Specifically, for the Mòcheni, the results of biodemographic studies on marriages registrations (Pettener, Gueresi, Martuzzi Veronesi 1994) have documented a greater tendency towards ethnic endogamy and non-random inbreeding (a sociocultural propensity to consanguineous marriages) than in the Italian group. In addition to a greater reproductive isolation, the Mòcheni population also has a greater degree of internal division into subgroups. Within each Mòcheno unit, there is a greater tendency to divide into sub-units that are isolated from one another in relation to the economic structure of the ‘maso chiuso’ (a closed farm), which is typical of the valley, and to the presence of preferential marriages between certain family groups.

*1.3. A low pressure demographic regime.* For centuries, in many Alpine areas, the marriage model played a fundamental role in balancing the natural demographic variables, denoting a typical low pressure demographic regime (Viazzo 1989). This expression - ‘low pressure demographic regime’ - is borrowed from the Anglo-Saxon literature (Wrigley, Schofield 1981). In this kind of demographic system, a less intense nuptial behaviour with fewer marriages at later ages limited the fertility potential preventing demographic growth and, thus, serious mortality crises due to an imbalance between the population pressure and the means of subsistence.

As a result, not only did Alpine mobility represent a useful method against overpopulation, it also functioned as an instrument to balance the family economy (Viazzo, Aime, Allovio 2005; Viazzo 2010). The populations of the Alpine valleys were generally characterized by seasonal mobility. Even when it did not affect the mechanisms of demographic reproduction, such interchanges made cultural isolation far less apparent. On the historical-demographic level, therefore, some of the most interesting goals of the present research is to verify if the valley adjusts itself to low demographic pressure as in other mountain areas and if differences in the demographic profiles between the two separate ethnic groups exist. This paper further investigates if the Mòcheno community's greater isolation – both from a socioeconomic and from a cultural point of view – brought forth different preventive check mechanisms and different ways to adjust to the environmental pressure and to the scanty means of subsistence. Such goal will be attainable only when a complete reconstruction of the Mòcheni's demographic profile, as well as that of the Italian communities, becomes available.

*1.4. Data source.* The only available data sources at our disposal consist of the parish registrations of baptisms, marriages and burials from the beginning of the eighteenth century to the end of the nineteenth century. The churches in the above-mentioned villages, including those in the deanery of Canezza, were

mere chapels; they were later transformed into curacies of the Pieve of Pergine Valsugana (Grandi 1989), bishopric of Feltre until 1786. Only during the twentieth century were these curacies promoted to parishes; however, long before that date, the respective curates had already been granted the permission to perform baptisms, to bury their deads, to celebrate marriages and to keep parish registers. Although civil registrations were introduced in Trentino only after this region was annexed to the Kingdom of Italy in 1919 (Sparapani 1989; Grandi 1989), the parsons had been acting as civic officers since 1815; therefore, their registrations should be, at least theoretically, quite thorough and reliable.

Even though the parish registrations are thorough, we still have to report a total lack of '*Stati delle Anime*' (lists of souls), that is to say of the amounts and structures of the population. These data should complement the registrations of baptisms, marriages and burials, which would allow us to study accurately – whenever they are available – not only the total population but also its structural characteristics, mainly by age and sex. Thus, to get at least a rough idea about the total population in the five studied municipalities, we have used a specific source – the '*Cataloghi del Clero*', a yearly publication edited by the Bishopric of Trento and kept at the bishopric archive in Trento from 1826 onwards. As we explain later, these data have poor reliability however, and they usually differ quite notably (often in excess) from the data on the same populations that are reported in the Austrian official censuses first and, later, in the Italian ones.

*1.5. Aim and outline.* Using the available sources, we planned to study the Mòcheni communities of the valley through both a macro-aggregate and a micro-nominative perspective. In this preliminary paper, we review the first results concerning the German ethnic group – Mòcheno community – in the valley under study and place them into the wider context of the regulatory mechanisms of population growth, which has historically characterized the mountain's areas with a limited availability of resources.

Then, the aim of this work is to outline the demographic regime in the German-speaking communities of Palù, Fierozzo S. Felice, Fierozzo S. Francesco, Frassilongo and Roveda, between the eighteenth and the nineteenth century.

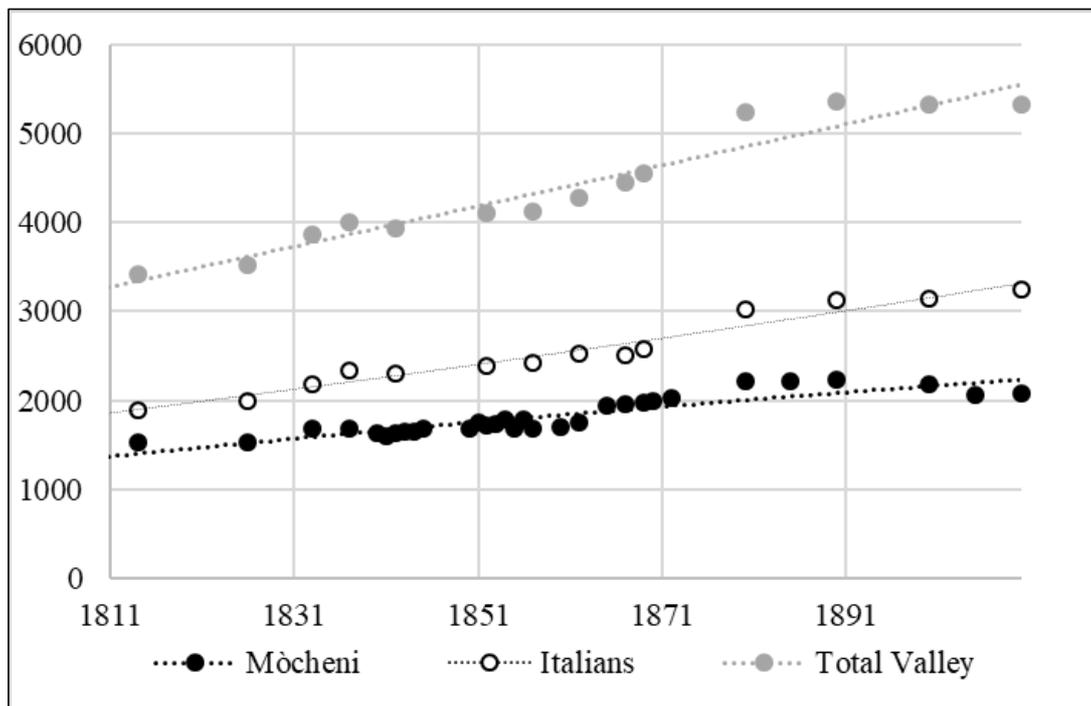
After first exploring the aggregate indicators, we applied the family reconstitution technique by Louis Henry (Del Panta, Rettaroli 1994; Fleury, Henry 1976; Blum, Henry 1988). Nevertheless, the present paper will only deal with the family reconstitution of Palù, since in the two curacies of Fierozzo S. Felice and Fierozzo S. Francesco, as well as in Frassilongo and Roveda, the reconstitution is still under way. As to these latter curacies, however, a non-nominative input of data has been already completed, which allows us to perform a series of computations referring to the whole Mòcheni population of the valley.

The following sections, therefore, explain in a concise form the main results we have achieved so far. These results allow us to highlight the main characteristics of the demographic regime in these populations through a macro-level analysis, whereas the last section is devoted to the nominative study of marital fertility in Palù.

## 2. The main characteristics of the demographic regime in the Mòcheno communities

*2.1. The general evolution of the population, the natural and the migratory components.* As pointed out in the previous section, the lack of information about the total population and the age structure of the communities prevent us from carrying out a complete analysis of population trends. For the eighteenth century, we do not have any figures about the population numbers. The only data at our disposal can be inferred from the clergy's catalogues (religious sources) starting from the nineteenth century. Figure 1 shows the overall trend of the Italian and German populations of the valley according to the clergy's catalogues. Although we find identical figures repeated in adjoining years, and in other years too, the large variations occurring even within very short periods seem to be too abrupt to reflect the real trend of the population, but the evolution in the medium-long run appears close to our expectations.

Fig. 1. *Mòcheno and Italian populations of the Fersina Valley, 1814-1921 (religious sources)*



We can observe a phase of growth, slightly more marked in the case of the Italian communities; then in the last decades of the century, a slowdown in the growth for the Italian communities takes place together with a reversal of the trend for the Mòcheni group (see the mean annual growth rates reported in table 1) in advance of the abrupt demographic downfall due to World War I.

These basic trends are confirmed by the numbers gathered from the civil sources (the *anagrafi* for the years 1810 and 1847, and later the censuses). Though generally reporting lower numbers than the ones to be found in the clergy's catalogues, these figures show that the growth was positive and slightly more lively for the Italian communities between 1810 and 1880 (see again table 1). In the last twenty years of the nineteenth century – with the beginning of the great out-migration – we already register negative growth rates.

Tab. 1. *Annual average increase rates of the population according to different data sources by ethnical communities*

Years	Religious sources		
	Mòcheni	Italians	Total Valley
1814-1826	0.1	4.2	2.4
1826-1837	8.8	14.0	11.8
1837-1852	1.4	1.9	1.7
1852-1862	2.1	5.0	3.8
1862-1869	16.9	3.8	9.3
1869-1880	10.6	14.3	12.7
1880-1890	0.8	3.2	2.2
1890-1900	-2.4	0.4	-0.7
1900-1910	-4.7	3.3	0.1
1814-1880	5.7	7.1	6.5
1880-1910	-2.1	2.3	0.5
Years	Civil sources		
	Mòcheni	Italians	Total Valley
1810-1847	4.8	7.8	6.4
1847-1880	3.0	4.4	3.8
1880-1900	-2.5	-1.4	-1.8

We can now consider which demographic mechanisms (in terms of natural and migratory components) underlie the trends we noticed in the overall evolution of the population. However, in this preliminary analysis, we only focus on the German-speaking communities (the Mòcheno group). In table 2, the birth, the death, the natural, the total increase and the net migration rates are presented. It appears that this population reflects the typical circumstances of mountain areas – not an exceedingly high birth rate but on average higher than the death rate. The natural increase is almost always higher than the actual

increase, which is a clear sign of an out-migration flow (sometimes of a permanent kind). Over the years, this fact has maintained the population growth within the limits of the community's power resources production. According to the data gathered from the religious sources, exceptions to this trend are the 1862-69 and 1869-80 periods, in which an abrupt increase in the population counted in the clergy's registrations led an actual increase that largely exceeded the natural one.

On the other hand, notwithstanding the uncertainty of the results mainly due to the limited quality of population data, it is important to point out that the values we got (see the bottom of table 2) by using the population derived from the civil sources confirm the picture we have just outlined. This evidence also confirms the existence of an out-migration trend (sometimes a definitive one, too) that seems to come well before the era of the large exodus towards North and South America, which characterized the mountain areas in Trentino as well as those in most parts of Italy from the mid-1880s onwards (Battisti, 1898; Grandi 1990).

Tab. 2. *Natural and total increases of population, net migration, birth and death rates (‰) in Mòcheno communities according to different data sources, 19th century*

Years	Religious sources				
	Birth rate	Death rate	Natural increase rate	Total increase rate	Net migration rate
1814-26	39.0	24.6	14.4	0.1	-14.3
1826-37	34.2	22.9	11.3	8.8	-2.5
1837-52	28.1	22.9	5.2	1.4	-3.8
1852-62	32.2	22.3	9.9	2.1	-7.8
1862-69	31.8	23.9	7.9	16.9	9.0
1869-80	26.7	19.1	7.5	10.6	3.1
1880-90	24.7	18.1	6.5	0.8	-5.7
1890-99	24.2	21.0	3.2	-2.4	-5.6
Years	Civil sources				
	Birth rate	Death rate	Natural increase rate	Total increase rate	Net migration rate
1810-47	35.1	24.6	10.5	4.8	-5.7
1847-80	31.2	23.0	8.2	3.0	-5.2
1880-99	29.7	23.4	6.3	-2.5	-8.8

2.2. *Mortality and survival.* Turning to the survival regime, mortality appears moderate when compared with the Italian mean levels of the time, which confirms the impression of a low-pressure demographic regime. This analysis reveals a clear downward trend in mortality levels during the period considered. In these terms, high survival levels seem to be the long-term structural characteristic of the population examined, notwithstanding some fluctuations – even significant over the time – which nevertheless look more like cycles or

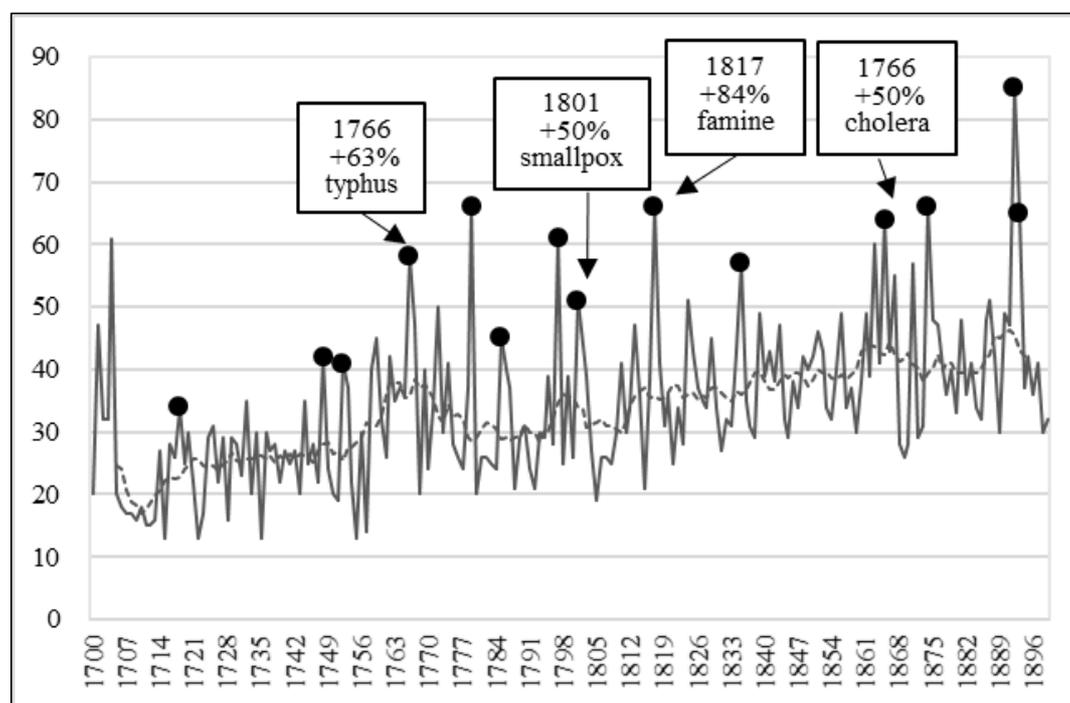
incidents, sometimes due to local situations and sometimes part of more general trends.

Considering the annual death series for the whole Mòcheni communities, we observe several mortality crises (Del Panta 1980) with a generally moderate intensity (see figure 2). Actually, a 50% rise in the absolute number of deaths compared to the average values of the time, and among a moderate-size population, should not be seen as an event that can cause deep and lasting consequences, although a fluctuation of such an extent is unlikely to be an accidental one.

However, it is interesting to notice that a series of well-known events on a national level seem to affect to a certain extent the population of the Mòcheni communities, including rises in mortality due to typhus (63%), smallpox (50%), famine (64%) and cholera (50%). Other crises, particularly the most virulent one in 1779, may be due to more localized episodes. On the whole, it is important to stress once again the fact that even if the crises seemed to occur frequently, their intensity was quite moderate.

This appears to confirm the idea (Viazzo 1989; Merzario 1989) that the mountain environment, despite the dearth of resources, was more propitious to survival because of the reduced risks of not only respiratory diseases (most importantly in very young children), but also digestive tract diseases, thanks, in part, to the greater purity of the water.

Fig. 2. *Total deaths and mortality crisis, XVIII-XIX centuries. Mòcheno communities.*



Note: the black circles indicate the years of crisis, e.g. those with deviations of the total deaths from the trend greater than 50%. The deviations are calculated with respect to a 11-years moving average after eliminating the highest and the lowest values.

Thus, it seems that the survival level in the Mòcheni communities was quite high, which can be confirmed by constructing survival tables by sex and for three separate periods. Because of the lack of data about the age-specific population structure, the tables were constructed using the generalized deaths method, which is explained by Del Panta and Rettaroli (1994, 205). The increase rate  $r$ , which is needed to adjust the distribution of the deaths, was calculated for the historical annual births series: the 1700-99 period for the first tables from 1750 to 1799; the 1750-1849 period for the tables from 1800 to 184; and the 1800-99 period for the tables between 1850 and 1899. Once we obtained the death probabilities for the different age groups, we used them to calculate the other parameters, except for the death probability at age zero; we calculated this specific probability, using the actual data about births and deaths for those under one year old. Figure 3 shows the male and the female survivorship curves ( $l_0=1000$ ) drawn from the respective life tables.

Fig. 3. Proportions of survivor from life tables for three different periods. Mòcheno communities, men and women

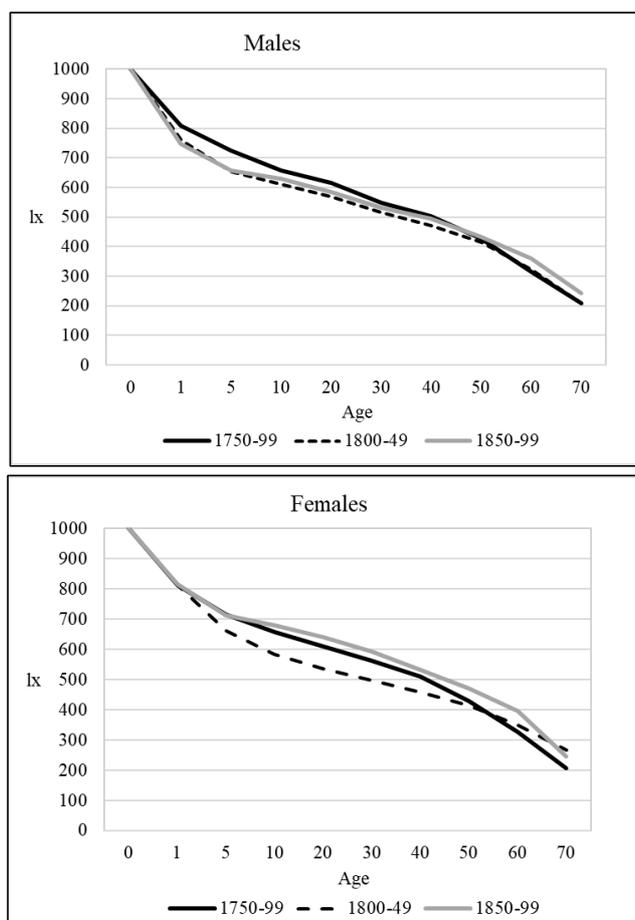


Table 3 shows some indicators drawn from the six tables (the life expectancy at birth, the death probability in the first year of life and the percentage of survivors at their twentieth birthday), which enable us to assess the mortality level and the mortality structure.

Tab. 3. *Life tables indicators by sex for three different periods. Mòcheno communities, men and women*

	1750 - 1799		1800 - 1849		1850 - 1899	
	Male	Female	Male	Female	Male	Female
$e_0$	37.1	37.3	35.2	39.4	36.8	39.9
$q_0$	0.192	0.188	0.240	0.185	0.253	0.185
$l_{20}$	0.614	0.609	0.570	0.644	0.585	0.641

First of all, our analysis detects a level of overall survival (summarized by life expectancy at birth), which is high when compared to the Italian standards, considering that life expectancy in Italy during the first decade after the national unity was around thirty-three years. These values are also higher than the life expectancy at birth in other norther Italian regions - such as Veneto and Lombardy - in the second half of the eighteenth century (Breschi, Pozzi, Rettaroli 1994). From the first half of the nineteenth century, there seems to emerge a rather marked differentiation between the two sexes, which can be traced back to a clear gap in infant mortality risks. An analysis of serial data, too, reveals strong differences of infant mortality between the two sexes. Nevertheless, the fact that such differences increase greatly during the two particular periods, since they go back to low levels in other periods, stirs some doubts as to the reliability of the data used to carry out the calculations. A possible explanation of these anomalies could be that sometimes (and more frequently in certain periods) children who died at a very early age (especially when they died under one year of age) were simply registered as ‘infants’, and it is not always possible to establish their sex beyond doubt. Those cases in which it was clear that the name was not entered because the child had not been baptized have been excluded from the calculation of infant mortality, but some of the dubious cases were probably registered as male deaths, whereas it is possible that part of them should be added to the female death numbers. We do not find a distinct downward trend in mortality when considering the data for the last fifty years (the second half of the nineteenth century). This result, too, seems to be consistent with a series of observations carried out on Alpine communities (Viazzo 1989), which suggest that the conditions more propitious to survival recorded in mountain areas up to the mid-nineteenth century are rapidly giving way to a reversal of the situation when compared to the conditions of the populations in the lowland areas. The cause of such reversal is thought to be the material deterioration of economic and sanitary conditions in the mountains as opposed to the more urbanized lowlands, where the

positive effects of economic and social development were undoubtedly felt earlier.

2.3. *The nuptial regime and the reproductive regime.* Examining the mortality data, we have a system of relatively low demographic pressure. Within such a system, growth regulatory mechanisms might operate through two ways. On the one hand, a nuptial regime could condition and limit the reproductive process (in other words, based on a high level of celibacy and on the practice of marrying at a mature age). On the other hand, before definitive out-migration became widespread and significant, a seasonal migration practice not only provided additional resources to complement those available *in situ*, but also played a role of indirect fertility control by separating the married couples for long periods. Unfortunately, the available data do not allow us to make any kind of estimate about the permanent celibacy level; therefore, we could only study the values of the mean age at marriage by marital status (Tab. 4), which for the nineteenth century can be drawn from the majority of the registers for the valley communities.

Tab. 4. *Age and marital status in Mòcheno communities*

	Age at marriage*	
	1800-1849	1850-1899
Bachelors	29.9 (0.239)	32.6 (0.268)
Widowers	42.2 (0.252)	47.5 (0.243)
Spinsters	25.3 (0.222)	26.7 (0.240)
Widows	34.9 (0.171)	41.6 (0.245)
	Marriages of:	
	1800-1849	1850-1899
Bachelors with spinsters	537	586
Bachelors with widows	12	17
Widowers with widows	64	48
Widowers with spinsters	11	9
Total	624	660
% of widowers marriages	12.0	8.6
% of widows marriages	3.7	3.9
	Average age gap in years between males and females	
	1800-1849	1850-1899
First marriages	5.0	6.3

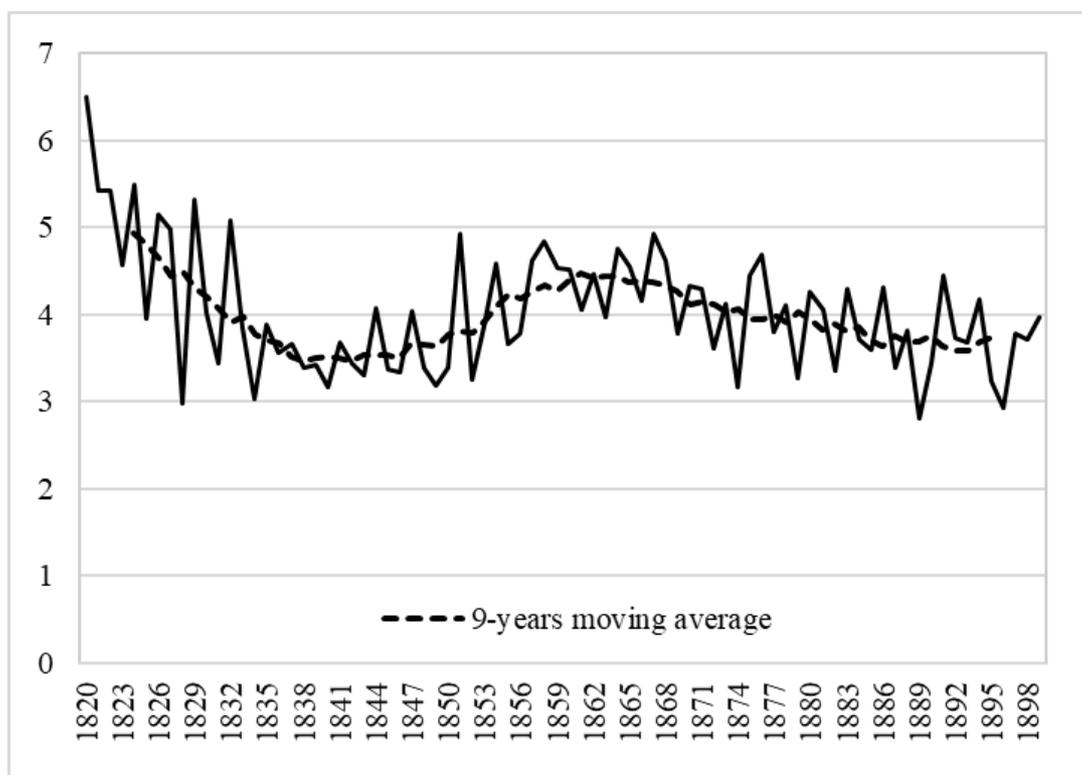
Note: \* variation coefficients in brackets.

In the Mòcheno communities, the female mean age at the first marriage is above twenty-five for the first half of the nineteenth century, and it even approaches twenty-seven in the second half of the century. The male mean age at the first marriage is high on average, and far higher values are recorded in the case of widowers and widows. The table also presents in brackets the values of

the variation coefficients, which express the relative variability of the different distributions compared to the average. Widowers account for a considerable share of the total of male spouses; this amount, however, decreases when we pass from the first fifty-year period to the second one. The percentage of widows, however, is lower, but is more constant over the years. As we found in several other cases examined, the percentage of widowers who marry single women is far higher than the percentage of widowers who marry single men. The high age of women at the time of their first marriage is consistent with the existence of a tangentially low pressure demographic regime, in which a delay in getting married could help to keep the overall number of children per woman at tolerable levels (e.g. Viazzo 1989; Viazzo 2005). More generally, a low propensity for marriage characterized (with few exceptions) most alpine areas up to at least the end of the nineteenth century (Livi Bacci 1980, 200).

We end the present section by briefly commenting on Figure 4, which illustrates the trend of values - actual and smoothed - for the Gini matrimonial fertility index (e.g. Del Panta, Rettaroli 1994; Rossi 2016) during the 1820-99 period.

Fig. 4. *Gini's Index of marriage fertility (average number of children per marriage)*



These values are obtained by calculating for each year the ratio between the total number of legitimate births and the weighted average of the marriages celebrated during a given number of previous years. The number of illegitimate

births – which has been subtracted from each year's total births – appears to be particularly low up to the 1860s; the percentages measured are a little higher than 2%, sometimes even lower than that. Only during the last three decades does it rise to more plausible values. A closer analysis of the data is needed before we can draw less provisional conclusions about this phenomenon. In this paper, we deal with an indicator of marital fertility affected by the consequences of mortality – which often broke marriages before the end of the woman's fertility age – and by the variations in nuptiality rhythm. In other words, we deal with what demographers call a net fertility index; therefore, the average number of children entered in the chart is lower than the one we would get if each one of the recorded marriages lasted until the woman reached the end of her childbearing timespan. However, the increase in marital fertility resulting from this calculation is of interest. Fertility appears to be very high during the years following the Napoleonic wars, whereas it seems to decrease quickly afterwards and then to rise again around the middle of the century. The following slight downturn, in our opinion, need not be regarded as the beginning of an irreversible decline (we would need data of a different sort to draw such a conclusion) because during the last years analysed, the index seems to have levelled off at 3.6–3.7 children per marriage.

### **3. The first results of the nominative reconstruction of the families**

*3.1. The technique employed.* The technique of nominative reconstruction of the families was developed by the French demographer Louis Henry in the early 1950s (Fleury, Henry 1976; Henry, Blum 1988).

This technique is based upon the sources of population movement, which as far as the involved timespan is concerned, are represented by the religious registration of baptisms, marriages and burials. Starting from the data contained in these registrations, we can reconstruct the individual biographical history. Using the data gathered about couples, we have then reconstructed the parent-child relationships by identifying the children born from each couple and by assembling the relevant civil registrations. By merging such files, we can calculate fertility, nuptiality and mortality measures.

The reconstruction work regarding Palù was facilitated by the presence, among the sources, of papers in which one parson had reconstructed the family trees containing the male descendants of the eight founding surnames of Palù who were already present there during the nineteenth century.

Since the date of marriages was always certain, the groups we considered are the families in which the woman spent all her reproductive life under observation (forty-nine years of age) or those ones for which we can identify the end of the marriage (the death of one of the spouses or migration). The completed families are regarded as the ones with a fixed abode in the area, and they, therefore, become the subject of most demographic research. To each

identified family unit, we attributed their respective children on the basis of the baptism registrations and of the biographies we have already reconstructed.

*3.2. Some of the first results.* These first results from the family reconstruction refer to the community of Palù. We analysed 3191 baptism registrations for the 1696-1899 period, 2234 burials registrations for the 1696-1930 period and 422 marriages registrations for the 1730-1899 period. The work concerning Fierozzo is still underway; it has involved the processing of 3514 baptism registrations and of 2405 burials for the 1738-1930 period in order to reconstitute the descendants of the 538 marriages celebrated during the 1760-1899 period.

As far as the community of Palù is concerned, we reconstructed the reproductive histories of 198 marriages out of the total 422 celebrated between 1730 and 1899. This value relates to the families who chose to reside in the village. Given the presence of a patrilineal marriage pattern, most of the family biographies regard women who married men living (and born) in Palu and continued to reside in the village. Table 5 shows that at least until the mid-1870s, the proportion of men from other communities who married Palù women varies from 50% at the end of '600 to 13% in the mid-1870s. In these last cases, their residence was probably elsewhere in the valley, and only the complete reconstitution of all Mòcheno communities will be able to enlarge our sample. Effectively, internal migration inside the valley was presumably a sizeable one.

Tab. 5. *Place of origin of the spouses for marriages celebrated in Palù*

Years	Brides of Palù Grooms from		Grooms of Palù Brides from	
	Palù	Other places	Palù	Other places
1584-1674	42.2	59.8	46.1	53.9
1675-1774	63.9	36.1	63.9	36.1
1775-1874	64.5	35.5	87.1	12.9
1875-1924	58.9	41.1	92.8	7.2

The closed character of the marriage market is also well documented by table 5, which shows the geographical origins of brides and bridegrooms who married Palù men and women in a timespan of several centuries. Despite the small size of the community (little more than four hundred inhabitants at the beginning of the nineteenth century) and the ensuing difficulty of finding a partner, the majority of the marriage choices are made within the community. Over the years, moreover, instead of opening up, the community further shut itself up. Almost all of the males marry a Palù woman, and a large part of the women show the same preference.

The restricted choice among a scant number of people and, very probably, a family policy of birth control linked to the socioeconomic structure of the area can be factors that explain the low nuptiality regime, especially among males.

In this context of marriage constraint, second marriages among widowed spouses – a phenomenon which concerns mainly the males in Palù and is almost negligible for the women – were unpopular.

The fertility patterns are illustrated by table 6. The computed indices refer to the closed families, of which we know both the date of the beginning of the marriage and the date of its ending (due to the death of one of the spouses or the fiftieth birthday of the woman that is assumed to be the end of her reproductive career).

Tab. 6. *Fertility indexes from reconstituted families. Women living in Palù, 1730-1899*

Marriage Cohorts	Average number of children	Mean age at marriage	Mean age at last child	N° of women	Fertility rates by age						TMFR <sub>25</sub>	
					15-19	20-24	25-29	30-34	35-39	40-44		45-49
1730-1849	4.1	24.6	40.6	72	233	296	330	272	196	124	20	4.7
1850-1899	3.0	26.4	35.3	77	299	394	317	233	127	60	15	3.8
1730-1899	3.6	25.4	37.5	149	262	333	324	253	159	87	17	4.2

To sum up, the results for nuptiality and fertility in Palù confirm what emerged from the aggregative analysis to a large extent.

As to the marriage model, the indexes confirm the presence of a tradition favouring marriages at a relatively high age both for men and for women. The values for the male sex are high, and on average they exceed thirty-three years of age. Women, too, get married on average at ages older than twenty-five years. From the eighteenth to the nineteenth century, the marriage market – the numerical supply of candidates for marriage of both sexes – seems to be even more constrained.

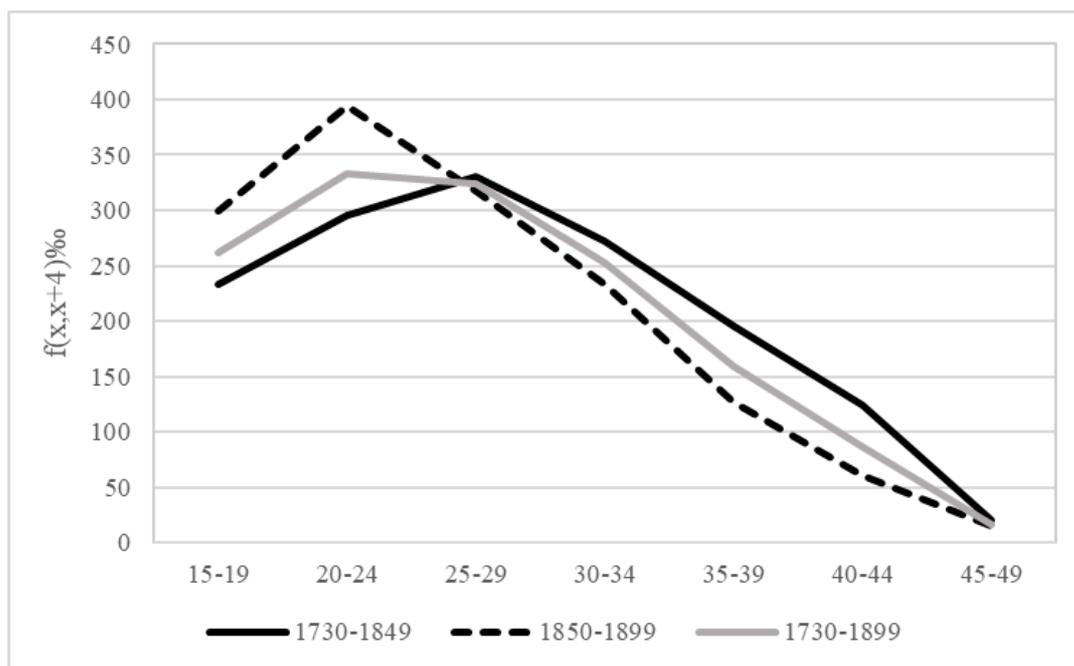
Figure 5 reveals the trend of age-specific fertility rates for the woman at childbirth. Going from one marriage cohort to the other, the curve clearly declines, with higher concentrations around the average age at marriage. In the most recent cohort, we detect a decrease of the fertility rates, which suggests that families start to control the number of children whom they give birth to.

The value for the TMFR<sub>25</sub> (Table 6) – which represents the hypothetical average number of children a cohort of women would give birth to, supposing they got married at exactly twenty-five years of age and they all lived to be fifty – drops from 4.7 children per woman in the 1730-1849 period to 3.8 children for the following time interval. Further evidence of the fertility decline is the

lower average age of the woman at her last childbirth, which decreases from 40.6 to 35.3 years.

The assumption that families start to control their reproductive behaviour is based on the fact that although the average age of marriage increases, the childbearing period in a woman's lifetime gets shorter, as showed by her mean age at last childbirth.

Fig. 5. *Fertility rates by marriage cohorts. Palù women, 1730-1899*



#### 4. Provisional conclusions

These first results fit well the low-pressure development pattern we outlined in the first part of our work, showing a demographic regime based on relatively low levels of nuptiality and fertility. Although an isolated population could be more easily reconstituted due to the less intense interference of migration, these findings need to be further corroborated, mainly by widening the area under study to the entire valley. At any rate, indeed, the number of cases on which we based our remarks is numerically small, and, therefore, partially affected by random variations.

As far as the family reconstitution is concerned, for example, ideally, the marital fertility measures should consider the entire female biographies from their marriage to the fiftieth birthday, excluding the ones that experienced the death of the spouse and prematurely ended their marital union. Instead, in this study and in order to avoid random variations due to a very small number of cases, the analysis also includes the women whose husband died before the end

of their reproductive carriers. In these terms, the total fertility level could be affected by the fact that we deal with some not completed biographies.

However, albeit some caution in the interpretation of the results, the outcomes from the nominative reconstitution are confirmed by the aggregative ones. Methodologically, an additional future effort will imply to test on the data event history analysis techniques whose results will constitute a robustness check for these first considerations.

Another aspect ought to be stressed: the need for the demographer – who analyses the available data – and the historian and the economists – who are better acquainted with the circumstances of the development and of the life in the valley as well as in the area where it is located – to work together.

Such interaction would be useful not only to solve specific problems of local toponymy – whose solution would increase the success of the reconstructions process – but also to explain the demographic results in a wider socioeconomic context in order to understand more thoroughly both the mechanisms which caused the evolution of the population of the valley and the differences found within it.

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### Riassunto

*La demografia delle popolazioni isolate. Una nota di ricerca su una comunità di lingua tedesca in una valle del nord Italia tra il XVIII e il XIX secolo*

Questo contributo si concentra sulla valle alpina del Fersina nell'Italia nord-orientale. Durante il periodo studiato, la valle era isolata da barriere linguistiche e geografiche, con la coabitazione di due gruppi linguistici separati - italiani e tedeschi. Dopo aver esplorato i principali indicatori demografici relativi all'intera valle, abbiamo considerato il regime nuziale e di fecondità della comunità di lingua tedesca, applicando la tecnica di ricostruzione delle famiglie. L'analisi ha mostrato come il livello di sopravvivenza complessivo della valle risultasse superiore al livello standard italiano nella stessa epoca. Inoltre, è stata dimostrata l'esistenza di un'età relativamente elevata al matrimonio e un basso livello di fecondità, confermando l'esistenza di un regime demografico a bassa pressione. Questi risultati preliminari possono essere inseriti nel più ampio quadro relativo ai meccanismi regolatori della crescita della popolazione, che storicamente caratterizzavano le aree montane con risorse limitate.

### Summary

*The demography of isolated populations. A research note on a German-speaking community in a northern Italian valley between the 18th and 19th century*

This contribution focuses on the Alpine Valley of the Fersina River in North-eastern Italy. During the period under study, the valley was isolated by linguistic and geographical barriers, while two separated linguistic groups – Italian and German – cohabited. After exploring the main demographic indicators related to the entire valley, we considered the marriage and the fertility pattern of the German-speaking community, applying the family reconstitution technique. The analysis showed that the level of overall survival of the valley was higher than the Italian standard. Furthermore, relatively high age at marriage and low fertility level were demonstrated, confirming the existence of a low pressure demographic regime. These preliminary results can be placed into the wider context of the regulatory mechanisms of population growth, which has historically characterized the mountain's areas with limited resources.

### *Parole chiave*

Mòcheni; popolazioni isolate; ricostruzione delle famiglie; regime demografico a bassa pressione.

### *Keywords*

Mòcheni; isolated populations; family reconstitution; low pressure demographic regime.