

THE WINTER OF LIFE. ELDERLY MORTALITY IN TANDIL (BUENOS AIRES), 1858-1914

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INTRODUCTION

In Argentina, elderly mortality in the past has not been analysed by population scholars, no doubt due to the little attention given to the topic by those that study the history of mortality as well as the history of old age. Whilst a significant number of mortality studies have been published, albeit less than those on fertility and migration, most of them focus either on the overall description of the phenomenon (Somoza, 1971; Carbonetti, Celton, 2007; Grushka, 2014), on partial aspects such as the mortality crises (Celton, 1998) or on the evolution and components of infant mortality during the nineteenth and twentieth centuries (Mazzeo, 1993).¹ More recently, the history of health and disease examines the process of medicalisation of society (institutions, experts and treatments) emphasising on the social history of medical knowledge and practices (for example, Di Liscia, 2002), but with little emphasis on demographical aspects. Recent studies focus on specific diseases, such as malaria, leprosy or tuberculosis, as well as their representations and socio-cultural responses. Although helpful, they are not accompanied by an assessment of their effects in terms of age groups, which is partly due to the limitations of the available sources. Moreover, in Latin American historiography

the history of old age is an embryonic object of study.²

This article is, thus, the first approach to the analysis of Argentine elderly mortality from a historical perspective. Among its objectives, this article aims at exploring the limits of the historical sources available for the period and region studied. Like all research of an exploratory nature, a secondary purpose of this paper is to propose working hypotheses that can be applied to similar contexts, particularly in Latin America.

Given the narrowness of the field of observation which characterises parish monographs, the problems of the primary sources, and the consequent need to integrate different but convergent aspects and sources in the central concern of understanding the morbidity and mortality of the elderly, the text adopts a three-part structure that analyses the situation of the elderly population in an Argentinian county (*partido*). The first objective is to characterise the case study as an area of new settlement during the expansion of the military and economic frontier. This was a very different context from the European *Ancien Régime* on which there is more evidence and analysis (Rau, 2007). This contextualisation is essential to ascertain if elderly mortality followed a specific pattern, from which a systematic and exhaustive comparison can in turn be

carried out between the mortality of this subpopulation and the general trend of the phenomenon. Furthermore, in addition to generating an in-depth comparison between the general population and the elderly, the study of hospitals allows an indirect approach to morbidity, a natural complement to the previous section. Finally, this paper discusses the relevance of the age of 60 as the threshold for the beginning of old age, an aspect on which there is a wide historiographical tradition for the European case (Bourdelaís, 1996; 1997) but not for Latin America.

From the methodological standpoint, this work is a case study based on the aggregative analysis of death certificates of the *partido* of Tandil.³ Given its exploratory nature, specific attention is placed on the comparative examination according to sex, age, time periods, migratory origin, location, and marital status, as well as on the difficulties and peculiarities of the sources of the period. It should be noted that the *partido* of Tandil is broadly representative of the areas of new settlement of the Province of Buenos Aires, the main district of the country. More generally, it is also representative of the so-called *Pampa Gringa*, which is the portion of the country that received European migrants.

The main sources used are parish and civil registers. The Catholic Church has had a presence in the region since the city of Tandil was founded in 1823. However, the history of its establishment is more complex and fortuitous. Until the creation of the first cemetery, probably in the 1840s, and in spite of the existence of temples dedicated to worship in private estates, burials were carried out in dispersed places in the countryside. The institutional history of

the Church began with the creation of the parish in 1854 that was dependent on the episcopate of the *partido* of Azul. It is for this reason that there is systematic demographic data leading up to this time period. From 1861 there were also Protestant registers, promoted by the dynamic community of Danish Lutherans.

In Argentina during the 1880s, after a severe conflict with the Church, the Civil Marriage Act (*Ley de Matrimonio Civil*, 1889) was sanctioned and the National Registry of Persons (*Registro Nacional de las Personas*, 1888) was created. This led to the secularisation of vital events records in the national territory. In the country's Capital the civil registry has been in existence since 1884. Although Catholic and Protestant churches continued to record baptisms, marriages, and deaths, the civil register office has since its creation been the most complete and universal source of records. The statistical sources of this paper include the death certificates (Catholic and Protestant) from the creation of such records until the appearance of the civil registry office and the civil records from 1889 to 1914. Given the reasons mentioned, and despite isolated references without statistical value, there are no death records prior to the 1850s. In a first instance, the certificates of the civil registry office were of less quality than the parish ones. This characteristic can be amended by the systematic comparison of both sources. However, the situation quickly changes. The movement from the religious to the civil registry did not imply significant changes in the content of the death certificates. In both cases, the information included referred to the name and last name of the deceased; the date of the certificate; the date of the death; age;

cause of death; marital status; place of residence; nationality; occupation (with much less coverage). There are also isolated information about if the burial was free; if there was a will; name, last name and nationality of the spouse and the parents; and observations. Vital records have been completed with data from the national (1869, 1895 and 1914) and provincial (1881) population censuses. The micro data from the 1869 and 1895 censuses allow specific analyses.⁴

The quality of vital registries improved substantively as of the mid-1870s although with significant differences depending on the variable considered. The date of death, sex and age are well recorded for the entire period. Nonetheless, issues arise with the latter variable due to age heaping,⁵ produced by the low level of literacy and the lesser importance of age as a criterion for differentiation of the population. Since the ratio between the three lower ages (57-59 years) and the top three ages (61-63 years) to the threshold of age 60 is equal to 1 it can be speculated that age heaping implies a variation in the share of elderly. Given that in pre-transitional populations the number of persons is reduced with age, people claiming 60 years of age would include more individuals from the younger age groups. This produces an overestimation of the share of the elderly.

Until the mid-1890s, long gaps (which, in very exceptional cases can reach up to three years) between the date of death and its registration are observed. Thus, it is reasonable to assume some level of under-reporting of deaths especially at the beginning of the period and particularly for rural areas and for newborn babies and toddlers.

According to the usual criteria and to enable comparison with other studies,

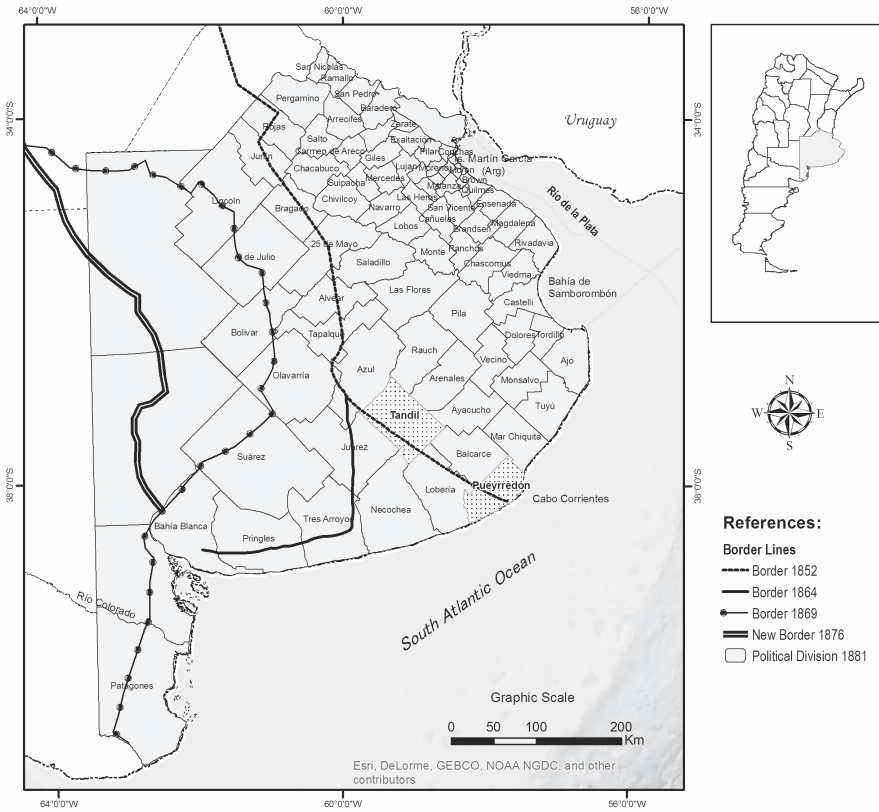
the age of 60 years is used as the threshold to establish the elderly population. The results obtained here in relation to death seasonality foster the review of this classic problem of elderly studies.⁶

TANDIL AND THE BUENOS AIRES BORDER

Tandil was founded in 1823 by Brigadier General Martín Rodríguez as a small frontier fort during the struggles against the Native Americans. This process marked the first decades of its existence since the *malones* or indigenous raids (the last of which dates back to the 1870s) led to the depopulation of the town in 1855. From the 1860s on, Tandil experienced sustained economic growth fostered by the development of agriculture and livestock, the economic valorisation of the land, the expansion towards the south of the military frontier (first gradually, then definitively after the so-called *Conquest of the Desert* of 1879) (see map 1), and the incorporation of the region to the national and international markets, especially after the arrival of the railway in 1883. Among other significant developments, such as the installation of street lighting in the 1870s or the creation of an urban police in 1887, Tandil reached city status in 1895, becoming one of the most important areas of the south-east of the Province of Buenos Aires.⁷

The city and the homonymous *partido* stood out due to significant population growth (table 1), with average annual rates of around 4%. This rate, which meant that population doubled every 17 years, was a consequence of high and stable natural growth, but also due to migratory growth, which was clearly superior than the former until the 1880s and slightly lower after that date.

Fig. 1 Province of Buenos Aires, 1881. Political division and frontier movements



Source: author's elaboration based on the provincial census of 1881.

According to the pre-transition characteristics of the demographic regime, mortality and birth rates were high at the beginning of the period, but began to show signs of decline from the 1870s and 1880s onward, respectively. Following the

national trend, the crude birth rate fell to below 30 births per thousand individuals during the 1930s—a sign that population voluntarily limited births. In the same way, the total fertility rate of 8.5 children per woman in 1869 fell to 5.6 by 1914.

Tab. 1 Population growth. Tandil, 1862-1914

Period	Annual growth rates by components		
	Natural	Migratory	Total
1862-1869	1,8	2,0	3,8
1869-1881	1,9	3,3	5,2
1881-1895	2,2	1,7	3,9
1895-1914	2,3	2,1	4,4

Source: Álvarez, Míguez and Velázquez (1990).

Note: In the tables, the word “Tandil” refers to the partido, i. e. the city and its rural surroundings.

The evolution of mortality in Tandil until 1895 is known due to the work of Álvarez and Míguez (1989), who distinguish four different stages. During the first stage (1863-1873), the crude death rate (CDR) was high, above 35 per thousand, and much higher during epidemic years such as the 1871 smallpox (66.1 per thousand). In the second phase (1873-1886), the rate tended to fall to then rise again from that date until 1891, the result of a new cycle of epidemic outbreaks (diphtheria and smallpox in 1886-1887, smallpox and typhus in 1890-1891). Analysing the period as a whole, extending until 1914, the CDR shifted from pre-transition values of the order of 35-45 per thousand to significantly lower values (20.3 and 14.5 per thousand in 1895 and 1914 respectively). It stabilised at around 10 per thousand in the mid-1950s.

The values observed in Tandil during the years of normal mortality were generally higher than those of the City of Buenos Aires, but somewhat lower than the national average. Epidemic outbreaks tended to fade from 1891. Notwithstanding their lethal consequences these outbreaks did not generate mortality crises following the Del Panta and Livi Bacci parameters (1977). Land availability (the agricultural frontier continued to extend until 1914) and the abundance and cheapness of food rule out the influence of dietary factors, such as in the Malthusian regimes. Thus, the causes of mortality must be sought in sociocultural factors, such as lack of hygiene, and especially in the absence of adequate sanitation infrastructure in a context of rapid population growth. Meanwhile, the infant mortality rate had a very similar trend to

the rest of the province and experienced a mild downward trend. Such trajectory was much less pronounced than that of overall mortality, reaching 122 per thousand in 1895 and 99.2 thousand in 1914 (Álvarez, Míguez, 1989, 53-54).

Migration to Tandil (both to the city and to rural areas) was higher than to the southeast of the Province of Buenos Aires. Those that migrated included both natives from other provinces and foreigners. The vast majority of the latter were Europeans. As in the centre-littoral regions of the country, overseas migration was crucial in various aspects (tables 2 and 3). First, Tandil became increasingly foreign (the proportion of individuals born abroad rose from 6.2% in 1854 to 33.7% in 1914). Second, its population pyramids had unique characteristics, related to abroad base and a marked gender imbalance among foreigners. For this reason, their masculinity ratio was higher than 200 for the entire period. Third, Tandil experienced high urbanisation. In effect, urban population (agglomerations of at least 2,000 inhabitants according to Argentine statistics) had values higher than 40% from 1869 on, though not exceeding the rural population. Lastly, there was a high share of single individuals among the male population (higher amid foreigners rather than Argentines) induced by the strong imbalances in the sex composition of the population. Relatively lower proportions of single women (especially foreign) are observed. It should be noted, however, that marital status data is difficult to interpret in the Latin American context due to *de facto* unions or cohabitation. Following well-known patterns of mortality differentials by sex, the proportion of widowed individuals was lower among

men than within women, without significant differences between Argentines and foreigners.

Given the demographic characteristics mentioned (high birth rates and high mortality rates with an important level of migration), and in spite of the over-registration of the elderly due to misreporting, the proportion of population

aged 60 and over was very low (table 4), experiencing virtually no variations between 1869 and 1895 (2.7% and 2.9% respectively).⁸ On both dates, the vast majority of the elderly population was between 60 and 74 years old. Thus, the share of people aged 75 and over in the total population was very low (0.5%). The arrival dates and sex

Tab. 2 *Population by sex, origin and place of residence. Tandil, 1854-1914*

	1854	1869	1881	1895	1914
Total					
Natives	2 720	4 103	6 389	9 967	21 331
Born abroad	179	767	2 373	5 015	12 730
Total	2 899	4 870	8 762	14 982	34 061
Males					
Natives	1 530	2 102	3 419	5 043	10 655
Born abroad	162	578	1 751	3 491	8 938
Total	1 692	2 680	5 170	8 534	19 593
Females					
Natives	1 190	2 001	2 970	4 924	10 676
Born abroad	17	189	622	1 524	3 792
Total	1 207	2 190	3 592	6 448	14 468
Location					
Urban population	800	2 181	3 561	7 088	15 784
Rural population	2 099	2 689	5 201	7 894	18 277
Percentage of					
Born abroad	6	16	27	34	37
Urban population	28	45	41	47	46
Rural population	72	55	59	53	54
Sex ratio					
Natives	129	105	115	102	100
Born abroad	953	306	282	229	236
Total	140	122	144	132	135

Sources: Argentine National Censuses (1869, 1895, 1914), census of the province of Buenos Aires (1881) and Registro Estadístico de la Provincia de Buenos Aires (1854).

Tab. 3 *Distribution of the population aged 14 years and over by sex, origin and marital status. Tandil, 1869-1895 (percentages of the total population)*

	Natives			Born abroad		
	Single	Married	Widowed	Single	Married	Widowed
Males						
1869	64	32	4	67	30	3
1881	65	30	5	57	39	4
1895	67	29	4	51	45	4
Females						
1869	40	46	14	18	73	10
1881	46	46	10	24	70	6
1895	46	43	12	14	75	11

Sources: see Table 2.

composition of the migratory waves to the region account for the largest proportion of elderly men in comparison to elderly women, especially for the first census. The high migratory component, both regarding Europeans and natives, also explains that the proportions of the elderly population of Tandil were smaller than those of Argentina as a whole (3.7 and 3.6% for 1869 and 1895, respectively). The most notable difference, however, is the comparison with Europe where the proportions of people aged 60 years and over were considerably higher reaching 7.4% in England and Wales and 12.3% in France during the 1880s (Laslett, 1995).

In addition to the low proportion of elderly individuals within the population as a whole, a feature of new settlement areas, it is relevant to examine whether the mortality of the group of the population aged 60 years and over had particular characteristics. To answer this question, a systematic comparison of elderly with general mortality is carried out in the following section.

ELDERLY MORTALITY. A SPECIFIC MODEL?

The deaths of those aged 60 years and over (1,782 cases) make 10.7% of the total of 16,636 deaths in the period 1858-1914. Most of them (1,186) are related to the age group 60-74 years. Death certificates address two important aspects for the study of the specificity of old age: the causes of death, especially due to their improved reporting and coverage by 1875, as well as their seasonality.

Causes of death

Between 1854 and 1895, the causes of death studied by Álvarez and Míguez (1989) refer to the typical profile of pre-transition populations, with high levels of mortality, a major role of infective diseases (particularly infectious, parasitic and respiratory) and the relatively low influence of degenerative illnesses (cardio and cerebrovascular diseases, tumours and cancer).⁹

Among infectious and parasitic diseases, the most relevant were epidemic diseases (like smallpox, diphtheria,

Tab. 4 *Population aged 60 years and over by sex and origin. Tandil, 1869-1895*

	Natives		Born abroad		Total		Total
	Male	Female	Male	Female	Male	Female	
1869							
Total population	2 429	2 087	644	691	3 073	2 778	5 851
60 to 74 years old	68	52	14	5	82	57	139
75 years and over	11	2	6	1	17	3	20
60 years and over	79	54	20	6	99	60	159
% of 60 to 74 years old	2,8	2,5	2,2	0,7	2,7	2,1	2,4
% of 75 years and over	0,5	0,1	0,9	0,1	0,6	0,1	0,3
% of 60 years and over	3,3	2,6	3,1	0,9	3,2	2,2	2,7
1895							
Total population	4 984	4 897	3 486	1 519	8 470	6 416	14 886
60 to 74 years old	102	82	135	55	237	137	374
75 years and over	25	15	18	10	43	25	68
60 years and over	127	97	153	65	280	162	442
% of 60 to 74 years old	2	1,7	3,9	3,6	2,8	2,1	2,5
% of 75 years and over	0,5	0,3	0,5	0,7	0,5	0,4	0,4
% of 60 years and over	2,5	2	4,3	4,3	3,3	2,5	2,9

Sources: see Table 2.

cholera and typhus), tuberculosis, and infectious childhood illnesses (scarlet fever, measles and whooping cough). The most deadly epidemics were the smallpox (1871, 1887 and 1890-1891), which affected mainly young people and, to a lesser extent, diphtheria (1886-1887 and 1891). They were followed by typhus and cholera. The latter's outbreaks took place during the summer months (December, January and February in Southern Hemisphere) of 1867-1868 and 1886-1887. Tuberculosis, meanwhile, was the leading cause of death in the period 1875-1895.

The second largest group was respiratory diseases, including non-contagious illnesses (laryngitis, bronchitis, pneumonia) and, to a lesser extent, colds and sore throat. The contribution to mortality of these causes was fairly stable, except for some peaks of bronchitis and pneumonia.

Degenerative diseases had a much lower impact. They experienced a small upward trend throughout the period, however. The most important include brain diseases (apoplexy, congestion, stroke), cardiovascular illnesses and, to a lesser extent, cancer. The latter was

probably underreported due to diagnostic problems.

In this context, there were significant variations in mortality by age groups (table 5). The most relevant is the increase in degenerative causes amongst the elderly. Indeed, cardio and cerebrovascular diseases and cancer increase progressively from 8.8% for those aged between 20 to 29 years to a significant 37.9% of the population aged 60 years and over. In all cases, the cardio and cerebrovascular illnesses weighted relatively more than tumours and cancer, although the relative distance between both types of diseases tended to decrease significantly.

Respiratory diseases increase with age, from 6.6% in the 20 to 29 age group to 12.8% amongst those individuals aged 60 years and more. One outstanding feature is that its relative importance as cause of death is similar between men and women, regardless of their age. As suggested by Reid *et al.* (2015), it is also likely that respiratory illnesses, like cancer and cardiovascular diseases, were under recorded due to the use of the category “old age” as cause of death.

Infectious and parasitic diseases decline from 47.2% in the 20 to 29 age group to 13.4% of the population aged 60 years or over. The more disaggregated analysis of elderly deaths shows the overwhelming weight of tuberculosis and similar diseases (80%) compared to the epidemic mortality, of lower impact in the latter age group. Indeed, the elderly seem to resist better than the youth to the epidemic outbreaks, no doubt as a result of selection processes that make them more immune. Women suffer from these diseases relatively more than men. However, this differential disappears with age, starting with the

age group of 50 to 59 years.¹⁰ Something similar happens with degenerative causes (brain and cardiovascular diseases, tumours and cancer). Their relative impact on men and women tends to be similar as age increases, especially for individuals aged 60 years and above.

Violent deaths (accidents, murders and suicides) have a greater proportional impact amongst the younger age groups (of around 15% until individuals are 39 years of age) down to 10.5% and 8.4% in the following two age intervals, whilst falling to a mere 2.3% within the elderly population. The reverse happened with alcoholism, whose negative effects on the body increase the probability of dying naturally as people get older. All types of violent deaths were overwhelmingly male.

The data are affected by the underreporting of some causes, obvious in the case of suicide. However, the share of violent deaths by age (table 6) suggests that violence itself (murder) affected, as expected, younger individuals (its value is higher in the age range 20 to 29 years), but it also reached high values both in the age group 50 to 59 years and in the following one. The violent characteristics of Tandil’s frontier location, at least during part of the period, the greater isolation of the rural areas, the lack of state control, among other factors, probably favoured different forms of aggression towards the elderly (for example, vandalism, stealing and eventually murder). Proof of the latter crimes appears in local newspapers.¹¹ The greatest risks for the older age groups are quite noticeably accidents, a clear indication that these individuals continued to work until later in their life (Otero, 2016) and suicide.

Tab. 5 Cause of death according to selected age groups. Tandil, 1854-1914

Cause of death	20 to 29 years of age			30 to 39 years of age			40 to 49 years of age			50 to 59 years of age			60 years old and over		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Infectious and parasitic diseases	37,7	60,1	47,2	29,9	39,3	33,2	23,9	35,2	27,4	18,5	23,4	19,9	14,6	11,3	13,4
Respiratory disease	6,8	6,3	6,6	6,9	8,7	7,5	8,0	10,5	8,7	9,7	10,6	10,0	13,2	12,2	12,8
Childbirth and abortion	0,0	8,6	3,7	0,0	13,1	4,6	0,0	4,3	1,3	0,0	1,0	0,3	0,0	0,3	0,1
Alcoholism	0,2	0,0	0,1	1,4	0,6	1,1	3,1	1,1	2,5	3,8	2,3	3,3	3,2	1,4	2,5
Accidents	9,4	1,3	6,0	7,4	2,0	5,5	6,1	0,8	4,5	4,3	1,0	3,3	1,8	0,3	1,2
Murders	15,7	1,3	9,6	13,5	1,4	9,3	6,9	2,4	5,5	6,2	1,0	4,7	1,3	0,3	1,0
Suicide	0,6	0,4	0,6	0,6	0,0	0,4	0,6	0,3	0,5	0,4	0,3	0,4	0,2	0,0	0,1
Cerebro and cardiovascular	9,3	6,1	7,9	13,5	10,7	12,5	21,6	13,4	19,1	21,2	24,4	22,1	25,3	27,6	26,2
Tumours and cancer	0,7	1,0	0,9	1,5	3,4	2,2	4,2	8,6	5,6	11,3	16,8	12,9	11,1	12,7	11,7
Old age	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,1	0,3	0,2	10,1	13,1	11,2
Ill-defined	5,0	3,2	4,2	8,9	4,8	7,5	8,6	6,2	7,8	6,2	4,6	5,7	4,4	7,1	5,4
All other	4,1	4,0	4,0	4,0	4,0	4,0	6,1	6,2	6,2	9,2	6,9	8,5	7,5	6,8	7,2
Without information	10,4	7,6	9,2	12,3	11,9	12,2	11,0	11,0	11,0	9,2	7,3	8,6	7,3	6,9	7,1
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Death Registers of Tandil.

Tab. 6 Deaths due to violence according to age groups. Tandil, 1895

Age groups	Proportions by 10.000 deaths (*)			
	Violence	Alcoholism	Accidents	Suicide
10 to 19 years	153,7	3,3	343,5	6,5
20 to 29 years	538,5	8,3	401,8	37,3
30 to 39 years	468,6	70,7	340,4	22,1
40 to 49 years	328,9	189,8	341,6	38,0
50 to 59 years	498,1	435,9	435,9	49,8
60 years and over	338,6	1015,8	496,6	45,1
Total	313,1	103,6	313,1	22,5

Source: Death Registers of Tandil.

(*) Estimated as the proportion of deaths between 1858 and 1914 to population of 1895.

This latter phenomenon was also underlined by the census takers of the time. In a Quetelet-inspired formulation, the then head of the *General Bureau of Statistics of Argentina*, Francisco Latzina (1916, 603), stated that the suicidal trend (the famous *penchant* of the Belgian author) which increased with age was an important “statistical law”.¹² Using his computations of suicides by age for the nation’s capital based on the 1887 and 1914 censuses, Latzina highlighted two vital periods of high risk, “the years of transition from adolescence to adulthood and from there to decrepitude”. Such transition, judging from Latzina’s statistical tables, occurred after the age of 60 years. In a romantic and impressionistic appreciation, but not without sociological sensibility, the head of the *General Bureau of Statistics* considered that the causes of suicide in old age related to “more or less absolute disbelief, the gradual disappearance of hopes, dreams, desires and ambitions, the unending series of disappointments, hard experience of life and ‘last not least’ (in English in the original) the physical suffering of an organism descending to its final dissolution”.

The Tandil case is not substantially influenced by ill-defined data or its

absence. These two phenomena account for around 20% to 25% of the cases for those aged at least 30 years, a lower proportion than that of other comparable Latin American cases.¹³ Male mortality seems to have been worse registered than female, probably because of the high spatial and occupational mobility of men and due to more cautious cultural assessments of female mortality.

Predictably, old age as a cause of death only has significant weight for those aged 60 years old or older (11.2%), being practically inexistent (0.2%) in the preceding age range.¹⁴ However, a more detailed analysis of the elderly population suggests that the use of old age as a cause of death (table 7) becomes more common after 75 years old (15.3% among those aged 75 to 79 years and 25% in the next group). Notably the term “old age” was never recorded in hospital records, as these registers used the more accurate term “senescence” applying it in almost all cases of death for people aged 80 years and over. As suggested by Reid *et al.* (2015, 11) for the Scottish case, doctors at the municipal hospital must have had much better training to make diagnoses than the

priests and administrative officials in charge of vital records. The trend experience by the variable deaths due to “old age” moves in the same direction. It fluctuated between 15% and 21% of the

population aged 60 years and over between 1871 and 1900 to decline sharply to 6% from 1900 onward. This can be considered an unequivocal sign of improved diagnostics.

Tab. 7 Deaths due to “old age”. Tandil, 1858-1914

Age groups	Deaths		%
	Total	Due to “old age”	
60 to 64 years	522	11	2,1
65 to 69 years	348	5	1,4
70 to 74 years	316	21	6,6
75 to 79 years	209	32	15,3
80 to 84 years	160	40	25,0
85 to 89 years	87	32	36,8
90 to 94 years	60	22	36,7
95 years and over	80	37	46,3
Total	1 782	200	11,2

Source: Death Registers of Tandil.

To sum up, elderly mortality was marked by the greater weight of degenerative causes compared with infective ones and, within the latter, by the growing weight of respiratory illnesses. Moreover, the progressive similarity of the main causes of death in men and women stands out. Thus, old age would appear to be, at least in this particular dimension, as equalising gender differentials.

Seasonality

The seasonality of deaths is another indicator of interest for at least two reasons. It enlightens the analysis regarding the characteristics of elderly death. It also helps define, indirectly but precisely, the moment of transition to old age, a well-addressed topic, but one that is almost always approached both qualitatively and imprecisely. However, “during recent decades, studies of seasonality in mortality have rarely focused on the influence of age —

despite its paramount influence on mortality in general”, as the recent and complete review by Roland Rau (2007, 33-34) highlights.

Despite the importance given to weather as an explanatory factor in mortality during the period (Otero, 2006, 389-394), seasonality, which is present in censuses and statistical yearbooks, refers to the population as a whole or at best, distinguishing the population of 0-1 years (*Anuario Demográfico* of 1914). The latter is yet another evidence of the relevance attached at the time to children relative to other age groups. It is precisely this absence of general statistical data that enhances the relevance of micro reconstructions like the one performed in this paper.¹⁵

One of the key aspects of the seasonality of demographic phenomena is to distinguish between the influence of climatic and social factors. This is very

clear regarding birth due to the influence of religious prescriptions, such as Lent and Advent, relative to those factors linked to the labour world, for example. Mortality is determined more directly by purely climatic factors. Death seasonality also fluctuates due to social aspects such as the type of residence, occupation, the rhythms of the labour world, the spatial possibilities of contagion, malnutrition, etc. Nevertheless, in contrast to birth the differentiation of both sets of factors is more complex for two reasons. On the one hand, mortality is due to many possible causes. These derive both from the ecological and environmental conditions at a particular moment in time (demographic approach) as well as from the biological process of aging (biological approach). On the other hand, social data associated with mortality is rarely available in the sources, especially regarding the crucial variable occupation.¹⁶

Tandil and its surrounding area are characterised by a mild and humid climate with discernible winters and abundant rainfall throughout the year. According to the data of the National Weather Service for the mid-twentieth century (there are no records for previous years) the months of May and September have average temperatures of 10 degrees Celsius. In June, July and August they are lower. The summer average is of around 20 degrees and the seasons are more extreme than in the City of Buenos Aires.

As the existing studies demonstrate (Álvarez, Míguez, 1989), the overall mortality of Tandil was characterised in the medium term by the passage of a traditional model with maximum mortality in the summer (January, February and March), with a slight rise in late

winter, to a more modern model where such maximum is in the winter (June, July and August). This is also seen in the data for the Province of Buenos Aires for the period 1944-1954 (table 8).¹⁷ The higher mortality in the summer was a result of the spread of infectious diseases in both adults and children, as shown by the worsening of childhood diarrhoea in December and January. The transition between stages, visible from the 1930s onward, is associated with the epidemiological transition and the progressive replacement of infective mortality by its degenerative counterpart, with the resulting reduction of the risk of death throughout the summer (Velázquez, 1997, 86). The conversion towards the winter model is not specific to the region studied, as has been pointed out for other countries.¹⁸

The seasonality of elderly deaths according to the causes of death relates to respiratory causes during the “long” austral winter (July, August, part of September and even October). Infectious and parasitic diseases, by contrast, are more frequent in the summer months (January, February and March) and much less so in the winter season, since they are concentrated in a single month (August). Tumours and cancer (and also alcoholism, affected by the low number of cases) are clustered randomly in the months of October, November and December (spring and the beginning of summer in the Southern Hemisphere). Violence, meanwhile, does not respond to a seasonal pattern. This was due —to a much greater extent than alcoholism— to the underreporting of this cause of death. Only 17 deaths from violence occurred during the period. The concentration of deaths due to “old age” in the winter months (June, July, August,

though particularly in the latter month) is an additional indicator in favour of the hypothesis of Reid *et al.* (2015). According to them the term “old age” would relate to respiratory diseases.

Thus, winter deaths, due to respiratory illnesses and probably under-recorded, must be differentiated from the cases in which the weather is not decisive but probably contributes to it given its critical effect on overall health. This is the case of the cardio and cerebrovascular diseases, which also have their peak in August. The seasonal pattern of elderly mortality remained stable throughout the period, with the exception of the peak of summer mortality (December-January) until 1890. From that year onward, as it was mentioned, epidemic diseases reduce its importance.

The analysis by sex suggests that the winter pattern (June, July and August) is more extensive and sharper among men than women. While the peak within male mortality is maintained over three consecutive months, it is mostly concentrated in August for women. However, these variations fail to define different models (Rau, 2007, 37). The key to this difference relates to dissimilar male occupations especially in rural areas. This is yet another clue that seasonality is never purely climate-related but is mediated by social factors. The lack of occupational data on death records does not allow going beyond that hypothesis.

Location (either rural or urban) is another variable of interest, which is frequently reported as only 6.1% of the elderly death certificates did not record any information on the address of the deceased. In cases with known address, 32.5% lived in the rural *cuarteles* (administrative divisions of each

partido) and 62.5% in urban areas. The remaining 5% refers to people from neighbouring *partidos*, passing through the city.¹⁹ This latter figure, together with the clear overrepresentation of urban deaths (only 53.5% of the elderly lived in an urban area by 1895), suggests that for a share of deaths the address accounted for the place where the event happened —or simply where it was registered— and not the actual residence of the deceased. This factor is enhanced by the urban location of healthcare facilities.

The differences between rural and urban areas are insignificant due to the small size and the little infrastructure that the city had at this time. However, the winter death index (July and August) for adults is slightly higher in rural areas, where climatic conditions are more adverse. This trait also appeared in French case studies (Bideau *et al.*, 1988). The same occurs with summer mortality (December and January). Whichever the case, the differences are of no great significance, and there does not seem to have been a clear “penalisation” of any of the areas.

European immigration was a decisive factor in the shaping of modern Argentina and its early demographic transition, which has led to hypotheses and debates about the role of immigrants in the dissemination of new standards regarding fertility and mortality.²⁰ The issue is particularly relevant regarding fertility rather than mortality. Within the latter, its importance is higher in relation to general and infant mortality rather than elderly mortality. The children of the immigrants born in the country are recorded in the sources as Argentines (*jus solis*). This is not particularly problematic for this case

Tab. 8 Seasonality of deaths by selected dimensions. Tandil, 1858-1914

Cases	Index												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
Province of Buenos Aires													
1944-1954	97	93	89	94	100	104	121	112	102	96	95	98	
Tandil. Total deaths by age group													
0 to 9 years	133	122	108	95	89	93	89	102	90	79	81	119	
10 to 19 years	111	119	104	106	104	83	83	97	109	89	98	96	
20 to 29 years	118	103	115	92	102	123	74	89	85	105	89	106	
30 to 39 years	130	103	98	98	103	106	97	90	101	95	82	97	
40 to 49 years	122	108	78	89	116	108	86	95	87	112	94	104	
50 to 54 years	71	108	98	110	92	97	84	96	108	96	112	127	
55 to 59 years	484	93	112	98	83	78	102	139	103	100	88	107	
60 to 74 years	1 182	104	87	81	85	105	112	131	118	98	92	122	
75 years and over	595	109	94	88	97	90	107	141	104	91	109		
Tandil. Population 60 years old and over													
Period													
1858-1870	144	115	90	98	110	66	127	98	147	110	90	51	98
1871-1880	183	135	106	58	100	71	66	84	161	160	71	93	96
1881-1890	205	127	44	81	101	75	101	121	110	72	115	143	110
1891-1900	390	100	103	54	97	88	94	124	157	103	79	106	97
1901-1914	854	94	89	80	66	101	106	109	122	118	105	91	119
Total	1 776	105	89	74	84	89	100	110	134	113	96	97	109

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Tab. 8 Seasonality of deaths by selected dimensions. Tandil, 1858-1914

Sex													
Male	1 116	99	86	73	78	97	94	119	128	120	93	100	112
Female	661	116	94	75	94	75	111	95	144	101	100	92	103
Place of residence													
Urban	1 044	97	84	67	83	94	112	103	130	120	90	106	114
Rural	543	111	84	76	72	87	81	117	135	110	120	92	115
Passing through or in transit	82	144	142	158	119	100	89	86	100	44	57	74	86
Origin													
Native	1 083	99	91	79	85	93	108	89	144	115	95	93	109
Europeans	628	113	83	68	80	85	92	145	119	103	94	103	113
Latin Americans	46	128	112	26	106	51	53	154	128	106	154	106	77
Marital status													
Single	394	90	98	66	62	108	136	129	132	111	72	93	105
Married	568	108	91	75	86	93	71	114	127	114	95	124	102
Widowed	671	106	83	74	94	72	96	100	144	114	118	89	109
Cause of death													
Infectious and parasitic diseases	237	139	131	69	92	60	82	104	114	103	89	97	119
Respiratory diseases	228	109	40	78	59	125	97	130	145	140	125	70	83
Cerebro and cardiovascular diseases	466	109	92	68	63	104	110	106	142	99	91	102	114
Tumours and cancer	200	89	58	100	104	100	92	83	100	92	118	110	154
Alcoholism	45	26	58	53	27	237	54	105	26	109	158	136	211
Violence	17	138	76	0	143	0	143	69	69	286	138	0	138
Old age	200	88	84	71	91	94	110	130	159	91	71	140	71

Tab. 8 Seasonality of deaths by selected dimensions. Tandil, 1858-1914

Hospitalisation (1897-1899)													
Total admittances	1 013	110	103	99	101	95	65	74	95	111	108	114	123
Total Releases	840	135	86	88	103	104	71	55	98	106	110	120	124
Total deaths	131	72	109	135	56	153	56	63	126	121	81	112	117
Releases (60 years and over)	71	67	37	50	120	83	69	133	83	86	116	206	150

Note: To facilitate the comprehension, the indices greater than 110 (those that show a considerable incidence of the month), are highlighted in grey

Sources: for the Province of Buenos Aires: *Informe Demográfico, 1944-1954 (1956, 621)*; for hospital data: *Pastor, Urquiza, 1986*) and hospital registers.

study as the proportion of the population aged 60 years and older was born mostly before the period of mass migration. Once again, the differences in seasonality between these subpopulations are hardly conclusive. This is due largely to the fact that the European migrants who died after turning 60 years of age lived in Argentina for decades and had adapted to the local weather.²¹ Despite this, the indices suggest a small lag. While Europeans experience a peak in mortality between July and August (winter in the Southern Hemisphere), among the natives it occurs in August-September. The most significant difference is that Europeans have a high summer index (December and January), which are absent altogether among the native population. Latin American migrants present a seasonal distribution closer to Europeans than the native population. However, the scarce numerical presence in the total number of deaths and the lack of information regarding their occupation, an essential variable in the comparison between natives and foreigners, does not allow further inference.

Seasonality of deaths by marital status, meanwhile, follows the same general pattern of marked winter predominance (July to September) with highest values in August. The influence of marital status is clearer in June and August, when the seasonal index, as expected, is higher in widowers and unmarried. The elderly who are more likely to live alone and do not have direct family care suffer more when the temperature declines. Although, in general, the indices are higher among single individuals relative to those who are married, the influence of *de facto* unions—a characteristic

trait of Latin American countries—suggests that these results must be interpreted with caution.²²

The variable most directly associated with the seasonal effect of mortality is age itself. As table 8 suggests, the transition from an exclusively summer model to a dual one, in which the impact of summer does not disappear but it is coupled with the weight of winter, occurs in the age interval of 55 to 59 years. For the deaths of those aged between 60 and 75 years, the influence of winter increases, extending to the months of July and September, to refocus in August toward the final stage of life in which the index reached its highest value. This confirms the 60 year mark as the lower threshold to determine “old age”. It also suggests that an even lower threshold (for example of 55 years of age as proposed by Reid *et al.*, 2015) could be valid for mortality conditions in this case study. The consistency of these results implies, in sum, that the seasonality of deaths by age can be an objective indicator of the passage to old age in historical populations. A more systematic comparison of this result with other places and periods should undoubtedly be part of the agenda for future research.

The results obtained regarding elderly mortality—variation in the profile of the causes of death and an increase in the influence of winter—require the analysis of the care of the elderly. Among other aspects, impossible to approach in this case study, two dimensions appear as crucial: the analysis of morbidity as a natural indicator of the most frequent diseases in the region, and the care of the sick population. In relation to the latter, the access to a partial data series of hospital use—a

source not fully used for Argentina—generates an initial answer to the question about the relative incidence of elderly care provided by households and by the health institutions.

HEALTHCARE AND HOSPITAL USE

Unlike mortality, for which there are problematic but frequent sources such as death certificates, the analysis of morbidity is more opaque due to the absence of statistical sources. Fortunately, the admissions records of the Municipal Hospital for the 1890s (1890 and 1897-1899), initially analysed by Pastor and Urquiza (1986) and reprocessed here specifically for the elderly subpopulation, constitute a useful tool of observation to understand the medical care of the time.

The creation of healthcare facilities was delayed in Tandil, dating back to the consolidation of the city during the last quarter of the nineteenth century. In 1880, a private initiative of a sector of the local elite, the Masonic Lodge Luz del Sud, created the San Juan Asylum, an institution that gave free assistance but had poor infrastructure and a low budget. The asylum was purchased in July 1888 by the Municipality and became the Municipal Hospital of Tandil, the main medical institution of the period.²³

Of a total of 1,013 individuals admitted in that institution during those years, 8.9% of people were aged 60 years and over. This figure is notably greater than the corresponding proportion of the local population aged 60 years and over (1.6%). More importantly, elderly patients in the hospital account for only 4.7% of the elders of the *partido* of Tandil.²⁴ This low share

of patients is consistent with the historical reconstructions available for Argentina for the period, both in the case of the population as a whole and the elderly in particular.

The reasons for this should be sought in the scarcity of doctors in the city and, even more so in rural areas, a widespread feature of Latin America during the nineteenth and for much of the following century (Rodríguez *et al.*, 2013; Estrada Orrego, 2015). As the historiography shows, there were three types of health approaches at that time: scientific medicine (numerically insufficient but with growing influence towards the end of the century), family medicine, and folk medicine. While the process of medicalisation of society (institution building, training doctors, dissemination of therapies and scientific remedies, persecution of faith healing, etc.) promoted by government agencies during the second half of the nineteenth century favoured the first approach in detriment of the other two, all three options were complementary during the period. The low hospital turnout in the Tandil case suggests that most people were treated at home through family and folk medicines. This was a broad and heterogeneous medical base that included everything from prescriptions and traditional therapies of proven effectiveness to simple faith healing.²⁵

Like other contemporary institutions, the Municipal Hospital cared for the pauper population free of charge. Thus, those that did not have sufficient resources to access justice or pay for their funeral had free healthcare. These admission criteria as well as the medical practices and the

scarcity of resources are similar to the European healthcare centres of the *Ancien Régime*.²⁶ The paupers were entitled to free medication and to receive home visits from the municipal doctor, an occupation created in 1886. The poverty of these individuals is also reflected in the fact that hospital records registered all these cases as labourers and illiterates. There is no data regarding the number of pauper individuals in Tandil, but judging by information from death certificates, which is not strictly comparable with hospital records, only 9.2% of the burials of the period were free.²⁷

There were no children admitted at the hospital, whilst there was an over-representation of men, both bachelors and widowers, and foreigners. These traits suggest that the absence of a family environment (attributes most likely associated with these conditions) was a decisive admission factor (Pastor *et al.*, 22-24; 27-28). Without ruling out this hypothesis, the absence of a family is largely an inherent feature of the poverty that defined this sub-population. The situation is somewhat different among the elderly since most of them are native to the *Río de la Plata* (54 cases over 71), being either Argentinian or Uruguayan. The latter were probably former slaves and sons of slaves, as they are the only ones that appear registered as “black” in the records.

As table 9 suggests, the odds of dying in the hospital increase with age. Little more than half of the older inpatients aged 60 years or older exit the institution alive. Again, the threshold of this imperfect statistic is located in groups 55 to 59 years of age and especially those between 60 and 64 years. The

table also shows that most of those admitted to hospital are men, both regarding total inpatients (83%) as well as within the elderly population (77.8%). This relates partly to the composition of the population (57% of it were men around 1895), but especially the poverty criterion governing the entrance to the institution. Given the low hospital admissions, it is not surprising that the proportion of dead people in such institution (17.2%) was low and that the vast majority of people died at home or in their workplace.²⁸

The importance of family as factor of safeguarding the elderly should not be underestimated. In sharp contrast with some images of the period —especially those of the *gauchesca* literature— and despite the very high migration component of the region, the isolated and family-less old man does not seem to have been a statistically significant reality. The census forms of the 1895 Tandil enquiry were not properly completed by local enumerators, who did not distinguish households despite having received explicit instructions on the matter. However, the forms from the municipality of General Pueyrredón (Mar del Plata) (see Map 1), a coastal town 170 kilometres away from Tandil (a small distance for the Buenos Aires area), show that a very low 5.5% of people aged 60 years and over, most of them widowers, lived in a one-person household.²⁹ This result, which can be generalised to the Tandil case study, does not mean that family was always a guarantee of protection. This is one of the assumptions of modernisation theory questioned by Manfredini *et al.* (2013), given the potential intergenerational conflicts that could take place

Tab. 9 Admissions and deaths at the hospital by age and sex. Tandil, 1890 and 1897-1899

Age groups	Admissions			Deaths			% of deaths		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
15 to 19 years	66	36	102	3	5	8	4,5	13,9	7,8
20 to 24 years	110	20	130	7	1	8	6,4	5,0	6,2
25 to 29 years	123	18	141	15	0	15	12,2	0,0	10,6
30 to 34 years	137	8	145	6	3	9	4,4	37,5	6,2
35 to 39 years	81	10	91	5	4	9	6,2	40,0	9,9
40 to 44 years	70	12	82	7	5	12	10,0	41,7	14,6
45 to 49 years	70	9	79	8	0	8	11,4	0,0	10,1
50 to 54 years	56	9	65	9	2	11	16,1	22,2	16,9
55 to 59 years	28	3	31	6	2	8	21,4	66,7	25,8
60 to 64 years	17	2	19	5	1	6	29,4	50,0	31,6
65 years and over	53	18	71	31	5	36	58,5	27,8	50,7
Total	811	145	956	102	28	130	12,6	19,3	13,6

Sources: Municipal Hospital of Tandil registers and Pastor, Urquiza, 1986, 27.

within households. This crucial issue requires further study.

Records of hospital admittances and releases also allow the estimate of the average length of stay for individuals aged 60 years and over in such institutions. The result (37 days, except one extreme case of 1,810 days) suggests that the length of stay was not too long, allowing to partially nuance the frequently-used hypothesis of hospitals as refuge, even for the poor and elderly. For example, Pastor and Urquiza (1986, 25) argue that the highest share of elderly individuals in the hospital relative to Tandil's total was probably due to the hospital's role as refuge and not just healing. Without ruling out this hypothesis, it should be noted that healthcare needs increase with age and, above all, that the refuge hypothesis would imply long periods of admission. Regarding the latter, however, the data does not confirm the hypothesis because nine out of ten elderly individuals were in hospital for less than two months.

Finally, analysing the data according to the seasonality of the hospital admittance of the elderly—a broad indicator of the beginning or accentuation of diseases—shows two peaks: the month of July (winter in the Southern Hemisphere) and the last three months of the year (spring). As the data shows, the increase in hospital admissions in July relates to the fact that August is the winter peak of elderly mortality. This lag fits within the average hospital stay of this subpopulation, which has also been highlighted for the Spanish case (Pérez Moreda, 1980, 217). The seasonality of hospital admittances and releases of the elderly defines a pattern that is partially similar to that of all patients regardless of age, which is basically spring (September to December in the studied area).

The analysis of the elderly hospital patients according to their marital status—a problematic variable due to the high number of *de facto* unions—shows that

women were basically widows and to a lesser extent single. There was no married woman over 60 years of age. This result is partly influenced by the structure of the population. In fact, although according to the 1895 census the majority of women aged 60 years and over were widows (63.4%), 28% were married women, again a proportion probably underrepresented due to *de facto* unions. By contrast, men from all categories of marital status—single, widowed and married, in descending order of importance—attend the hospital. Thus, older women visit the hospital when they have no spouses who can take care of them at home, while men attend regardless of their marital status.

CONCLUSION

This paper presents a case study of an Argentine region. First, in a pre-transitional epidemiological context, elderly mortality was characterised by the greater weight of degenerative diseases relative to the infective ones. Within the latter, it related to the increasing share of the respiratory illnesses, which, in turn, were probably underestimated due to use of the term elderly particularly for the ages 75 to 80. Moreover, the analysis shows similarities regarding the causes of death among men and women. Thus, old age would appear, at least in that dimension, as equalising sex differentials. Lastly, there was a relative high impact from violent deaths, like murder and suicide, amongst the elderly population, even though these causes are certainly underreported. In the same idea, deaths from accidents are a clear indication that people continued working until they were relatively old.

Second, regarding seasonality, the results are more varied. On the one hand, and despite the expected variations, gender, country of origin and location do not yield conclusive results. On the other hand, the causes of death and marital status define clear patterns of winter deaths (June, July and August in Southern Hemisphere) due to respiratory diseases as well as to old age, particularly for single and widowed men, who are less likely to benefit from family support. However, the most relevant result is the impact of age, since the transition of an exclusively summer pattern to a dual model—in which the impact of summer does not disappear but it is coupled with the weight of winter—occurs in the range of 55 to 59 years of age.³⁰ This confirms the importance of the age of 60 as a threshold of old age, though it also suggests that a lower age may be valid when regarding mortality conditions in this specific case. More important still, it is argued here that the seasonality of deaths by age might be an objective indicator of the passage to old age within historical populations, at least regarding health, a crucial factor for which it is very difficult to obtain reliable data.

Another important element is the validity of the 60-year threshold. This limit relates to the change in the seasonal pattern of mortality by age, the variations in the profile of causes of death, the frequency in the use of the word “old age” as cause of death, the increased probabilities of dying in the hospital, and the opinion of contemporaneous Argentine statisticians. Although this result is not new in the light of the existing literature (Bourdelaís, 1997), the Argentine case study

generates supplementary evidence for an extra-European region, clearly different from the Old World.

Third, the elderly attended for at the hospital, which are by definition poor and mostly men, have a higher share relative to the total local population. However, such share and the short length of their hospitalisation undermine the hypothesis of hospitals as refuge and, more generally, what Dubert (2008, 92) rightly defined as “analytical models of pathological characteristics, which are based on their considerations of the ‘natural’ relationship that in the past there would have been between old age, poverty, loneliness and assistance”. The low hospital attendance, both within the whole population and the elderly in particular, confirms the idea that most

people were cared for and died in their homes and workplaces. In contrast with some images of the period, particularly from the *gaucho* literature, and despite the very high migration component of the region, the image of the elderly individual isolated and without family does not seem to have been a statistically dominant reality between 1858 and 1914.

Finally, it is worth stressing the exploratory nature of this work as well as the need for micro studies that allow comparisons that define the specificities of the case study in relation with other Argentine regions, Latin America and Europe.

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NOTES

1. As this dossier shows, the study of elderly mortality is relatively recent within the specialised literature on historical demography. In addition to the works mentioned below, some papers use techniques of event history analysis, for example Bengtsson and Broström (2006) or Tsuya and Nystedt (2004).

2. For instance, Dubert (2008) and for Argentina Otero (2013a, 2013b).

3. *Partido* is the name of the administrative divisions of the Province of Buenos Aires. The *partido*, initially named Chapaleofú, was created in 1839 and it covered a broader area. In 1865 it reached its almost definitive geographical boundaries. The *partido* currently covers 4,935 km².

4. It should be mentioned that, unlike the censuses of 1869 and 1895, the main information (individual bulletins) of the third national population census of 1914 was lost. This research is based on a new analysis of death certificates collected by the *Equipo Población y Sociedad* of

the *Universidad Nacional del Centro de la Provincia de Buenos Aires*, Tandil, headed by Eduardo Míguez and Norberto Álvarez.

5. Data on age is available in 97.1% of the 9,182 non-infant death registries of the period. On the contrary, age heaping has a very significant incidence because the Whipple index (ages 0 and 5) for the Tandil census of 1895 is 174, which is far from 100, the value that suggests accurate age information. The phenomenon is likely to be greater in death certificates, given the little attention given to these records. Despite censuses being its common use, this is evidenced in the value of the index estimated for deaths of 192.

6. On the lower limit of old age see the work of Patrice Bourdelais (1997). The theme was the subject of intense debate in Argentine statistics in the nineteenth century, analysed in Otero (2013a, 2013b).

7. The bibliography on the population of Tandil is vast. See in particular Álvarez, Míguez,

Velázquez (1990), Otero (1996) and Velázquez (1997).

8. It is worth highlighting that the 1914 census data did not provide the age structure of the population at the *partido* level.

9. On the problems of diagnosing causes of death using historical sources, see Bernabeu-Mestre *et al.* (2003) and especially the suggestive analysis of Reid *et al.* (2015) for the specific case regarding the elderly population. In Tandil, the change in the epidemiological profile occurred during the years that follow this research. For 1914, the CDR due to infective causes was nearly 7 per thousand and accounted for almost half of all deaths. By 1985, however, it was less than 1 per thousand and represented less than one-tenth of total deaths (Velázquez, 1997, 79).

10. Despite the importance of syphilis and other sexually transmitted diseases, a topic that emerged very clearly in the discussions on the regulation of public prostitution in Tandil in 1876 (Carreño, 2005), deaths from syphilis were low and did not have a differential impact according to age: 1.9 deaths per thousand in the population aged between 20 and 59 and 1.7 amongst those 60 and over. However, it is a cause most likely underreported by misdiagnosis and its embarrassing nature.

11. The local newspaper describ for example, the robbery and murder of a rancher in the hands of a casual labourer because, as declared by the murderer, “that old man has lived too long and may well die so I can inherit something, if not by reason then by force” (*El Eco de Tandil*, July 26, 1883, cited in Pastor, Urquiza, 1986, 39-40). The literature of the time, which cannot be fully discussed here, is another source of interest to perceive ageism feelings of various kinds. Simone de Beauvoir (2012, 243-244) referred to similar phenomena for the French countryside during the second half of the nineteenth century.

12. The increase in suicide with age was also a finding of the famous work *Suicide*, published in 1897 by Émile Durkheim, to whom Latzina made no reference to at the time. On the contrary references to Adolphe Quételet are numerous. On the universality of Durkheim’s finding, see De Miguel (1973, 293-295).

13. The share of ill-defined causes was of 38% for Montevideo in 1860 (Pollero, 2013, 366) and of

16.2% for Argentina as a whole in 1913 (*Anuario Demográfico de 1913*, Departamento Nacional de Higiene, 1915, XII).

14. Old age as a cause of death was ratified by the Classification of Causes of Death, proposed by Jacques Bertillon and adopted by the International Statistical Institute in 1893. According to Bertillon, 60 years could be defined as the age at which the exploitation of the body could be an acceptable cause of death (Bourdelaís, 1997, 242-245).

15. The same issue is found on international year-books (for example Bunle, 1954) and on other national statistics, as in the Spanish case (De Miguel, 1973).

16. Only 15% of Tandil’s death certificates in this period include information on the deceased’s occupation.

17. Following the usual practice, the indices have been calculated by correcting for the differential number of days of the month (Henry, 1980, 45-46). The deviation of the indices with respect to the value 100 shows that the incidence of mortality in the month considered was higher (more than 100) or lower (less than 100) than it would be if every month had the same number of deaths. With the only aim of facilitating the comprehension, the indices greater than 110 on table 8, that is to say those that show a considerable incidence of the month, are highlighted in grey. To avoid the issue of small numbers, the analyses per variable are not disaggregated by periods.

18. Existing studies conclude that there is a clear negative correlation between mortality and temperature. Another constant variable is the progressive loss of the influence of summer as a consequence of the epidemiological transition and of the reduction of infectious diseases (Rau, 2007, 22-37). In southern Europe, for example, a traditional model with peaks in summer and autumn was replaced by one where winter predominated. The movement from one model to another is verifiable for Italy and Spain during the nineteenth century albeit with specific time frames for each country’s regions. On the Spanish case, see Sánchez Albornoz (1975), Pérez Moreda (1980, 203-217) and De Miguel (1973, 231).

19. The dead of those “passing through or in transit” have an atypical pattern, characterised by

higher index from January to April, probably related to the type of jobs of the rural world, although its low share does not allow drawing conclusions.

20. An example is the work of Álvarez and Míguez (1989, 63), who argue for the overall modernisation of the region rather than for the diffusion of specific guidelines. However, the latter also existed, especially in relation to hygiene, rendering lower infant mortality among the foreigners' children.

21. This is consistent with similar mortality rates for Argentines and foreigners in ages 50 years and over observed for the City of Buenos Aires in 1887 (Bernaldo González de Quirós, 2015, 367-368).

22. The elderly with unknown marital status represent 8.1% of the cases.

23. The Ladies of Charity Society (*Sociedad Damas de Caridad*) had a very modest hospital that closed in the 1890s. Mutual aid societies, for instance, the Mutual Aid Society of the Southern Railway (*Sociedad de Socorros Mutuos del Ferrocarril del Sur*), also provided medical care but some of them had age limits, as was the case with the Italian Society which did not admit people over 50 years of age.

24. This share is obtained by comparing the annual average of elderly patients admitted between 1897 and 1899 with the population aged 60 years and more from 1898, assuming that the share of elderly that year was equal to the 1895 census (3%). The annual population series was estimated by Velázquez (1997, 58).

25. Faith healing was persecuted with severe fines and denounced by the local press as the cause of poor care and even preventable deaths. In addition to the lack of doctors, the extent of this practice also derived from the tenuous boundaries separating it from other occupations authorised by law as the entitled (those who had some experience in the field of health), the phlebotomy technicians that did bloodletting, the barbers who could act as dentists,

and the pharmacists who were sometimes in charge of vaccinations (Pastor, Urquiza, 1986). This scenario was not different from that of the City of Buenos Aires between 1800 and 1830 (García Belsunce, 1977).

26. The literature on the use of hospitals is vast. See for example Garden (1982), Dinet-Lecomte (1985) and Gutton (1988) for the French case and Horden and Smith (1998) for a more general approach.

27. The share of free funerals was somewhat lower (6.8%) in the population aged 60 years and over, suggesting that their situation from this perspective was no worse than that of the general population.

28. Indeed, only 20 people die in the hospital between 1897 and 1899 while death certificates recorded a total of 116 deaths in that period. The share of deaths at the Tandil hospital (17.2%) was lower than that of the City of Buenos Aires (22.7% in 1887 according to González Bernaldo de Quirós, 2015, 363). This difference is explained by the higher poverty levels of the nation's capital. The causes of hospitalisation of the elderly population will not be discussed here as they are similar to those of the adult population.

29. Despite the huge contrasts between the two countries, this result was not too different from the Italian case. In Casalguidi (Pistoia, Tuscany), for example, the share of "one-person households was decidedly rare (less than 4%)" (Manfredini *et al.*, 2013, 1600). Data on General Pueyrredón, where the elderly accounted for 2.1% (109 cases) of the total population, come from the author's reworking of the 1895 census forms. I thank María Alejandra Irigoín for facilitating access to said source.

30. The results obtained here are coherent with the European evidence which, since Adolphe Quetelet's pioneer work of 1830, show that "excess mortality during winter is steadily increasing with age" (Rau, 2007, 33).

BIBLIOGRAPHIC REFERENCES

PRIMARY AND ARCHIVE SOURCES

Parish of the Santísimo Sacramento, Tandil, *Death Registers*, 1850-1890.

Lutheran Church, *Death Registers*, 1867-1892.

Civil Registry, Tandil, *Death Registers*, 1889-1914.

Civil Registry, Vela, *Death Registers*, 1911-1914.

ARGENTINA (1872), *Primer Censo de la República Argentina, verificado los días 15, 16 y 17 de setiembre de 1869*, Buenos Aires, Imprenta del Porvenir.

ARGENTINA (1898), *Segundo Censo de la República Argentina, mayo 10 de 1895*, Buenos Aires, Taller Tipográfico de la Penitenciaria Nacional.

ARGENTINA (1916), *Tercer Censo Nacional, levantado el 1° de junio de 1914*, Buenos Aires, Talleres Gráficos de L.J. Rosso y Cía.

ARGENTINA, BUENOS AIRES, PROVINCIA (1883), *Censo general de la provincia de Buenos Aires, demográfico, agrícola, industrial y comercial, verificado el 9 de octubre de 1881*, Buenos Aires, Imprenta El Diario.

ARGENTINA, DIRECCIÓN NACIONAL DE ESTADÍSTICAS Y CENSOS (1956), *Informe demográfico de la República Argentina 1944-1954*, Buenos Aires.

BIBLIOGRAPHIC REFERENCES

ÁLVAREZ, Norberto, MÍGUEZ, Eduardo (1989), "Morir en la frontera. Patrones de mortalidad en las tierras nuevas de la Provincia de Buenos Aires: Tandil 1860-1895", *Siglo XIX*, (Monterrey), 7, 9-69.

ÁLVAREZ, Norberto, MÍGUEZ, Eduardo, VELÁZQUEZ, G. (1990), "De Fortín a ciudad. El crecimiento demográfico de una región rural urbana de la Provincia de Buenos Aires, 1830-1895", 98-116, in *Historia e População. Estudos sobre América Latina. Congreso sobre a História da População da América Latina*, Sao Paulo, ABEP, IUSSP, CELADE.

BIDEAU, Alain, et alii (1988), «La mort quantifiée», 222-242, in Jacques Dupâquier (dir.), *Histoire de la population française*, t. 2, *De la Renaissance à 1789*, Paris, PUF.

BENGTSSON, Tommy, BROSTRÖM, Göran (2006), "Old-age mortality in a life-course perspective. Southern Sweden, 1829-1894", Paper presented at the *Annual Meeting of the Population Association of America*, Los Angeles, California, 30 March-1 April, 2006.

BERNABEU MESTRE, Josep, RAMIRO FARIÑAS, Diego, SANZ-GIMENO, Alberto, ROBLES GONZÁLEZ, Elena (2003), "El análisis histórico de la mortalidad por causas. Problemas y soluciones", *Revista de Demografía Histórica*, XXI (1), 167-193.

BOURDELAIS, Patrice (1996), «Un seuil évolutif d'âge de la vieillesse: approches comparées France-Suède», *Annales de Démographie Historique*, 85-97.

BOURDELAIS, Patrice (1997), *L'âge de la vieillesse. Histoire du vieillissement de la population*, Paris, Odile Jacob.

BUNLE, Henry (1954), *Le mouvement naturel de la population dans le monde de 1906 à 1936*, Paris, INED.

CARBONETTI, Adrián, CELTON, Dora (2007), "La transición epidemiológica", 369-398, in Susana Torrado (ed.), *Población y bienestar en la Argentina del primero al segundo Centenario. Una historia social del Siglo XX*, t.I, Buenos Aires, Edhasa.

CELTON, Dora (1998), "Enfermedad y crisis de mortalidad en Córdoba, Argentina entre los siglos XVI y XX", 277-299, in Dora Celton et alii, *Cambios demográficos en América Latina: la experiencia de cinco siglos*, Córdoba, IUSSP, CEA.

CARREÑO, Karina L. (2005), *Noches alegres, muchachas tristes. La prostitución legal en*

- Tandil (1870-1910)*, Tandil, Municipalidad de Tandil.
- BEAUVOIR, Simone de (2011) [1970], *La vejez*, Buenos Aires, Debolsillo.
- DE MIGUEL, Jesús M. (1973), *El ritmo de la vida social. Análisis sociológico de la dinámica de la población de España*, Madrid, Tecnos.
- DEL PANTA, Lorenzo, LIVI BACCI, Massimo (1977), «Chronologie, intensité et diffusion des crises de mortalité en Italie: 1600-1850», *Population*, 32, 401-446.
- DINET-LECOMTE, Marie-Claude (1985), «Vieillir et mourir à l'hôpital de Blois au XVIII^e siècle», *Annales de Démographie Historique*, 85-101.
- DI LISCIA, M. S. (2002), *Saberes, terapias y prácticas médicas en Argentina (1750-1910)*, Madrid, CSIC.
- DUBERT, Isidro (2008), «Vejez, familia y reproducción social en España, siglos XVIII-XX», *Revista de Demografía Histórica*, XXVII, II, 87-122.
- ESTRADA ORREGO, Victoria (2015), *La valeur des chiffres: la production et les usages des statistiques démographiques et de santé publique en Colombie 1886-1947*, Paris, Thèse de Doctorat de l'École des Hautes Études en Sciences Sociales.
- GARDEN, Maurice (1982), «Les hospices de vieillards, du Comité de mendicité à la loi d'Assistance obligatoire (1790-1905)», 103-108, in Arthur E. Imhof (dir.), *Le Vieillessement, implications et conséquences de l'allongement de la vie humaine depuis le XVIII^e siècle. Actes de la Table Ronde, Paris, EHESS 24-26 octobre 1979*, Lyon, PUL.
- GONZÁLEZ BERNALDO DE QUIRÓS, Pilar (2015), «¿Aires buenos o cuerpos sanos? Morbilidad y mortalidad de los extranjeros de la ciudad de Buenos Aires, 1887-1922», 351-373, in Elda González Martínez, Ricardo González Leandri (eds.), *Migraciones Transatlánticas: desplazamientos, etnicidad y políticas*, Madrid, Catarata.
- GARCÍA BELSUNCE, Cesar (dir.) (1977), *Buenos Aires 1800-1830. Salud y delito*, Buenos Aires, Banco Internacional y Banco Unido de Inversión.
- GRUSHKA, Carlos (2014), «Casi un siglo y medio de mortalidad en Argentina», *Revista Latinoamericana de Población*, ALAP, 15 (8), diciembre, 93-118.
- GUTTON, Jean-Pierre (1988), *Naissance du vieillard: essai sur l'histoire du rapport entre les vieillards et la société en France*, Paris, Aubier.
- HENRY, Louis (1980), *Techniques d'analyse en démographie historique*, Paris, INED.
- HORDEN, Peregrine, SMITH, Richard (eds) (1998), *The Locus of Care: Families, Communities, Institutions and the Provision of Welfare Since Antiquity*, London, Routledge.
- LASLETT, Peter (1995), «Necessary knowledge: age and aging in the societies of the past», 3-77, in David Kertzer, Peter Laslett (eds), *Aging in the Past: Demography, Society and Old Age*, Berkeley/Los Angeles, The University of California Press.
- LATZINA, Francisco (1916), «Demografía dinámica. Movimiento de la población en 1914, año del tercer censo nacional», 495-635, in *Tercer Censo Nacional*, levantado el 1^o de junio de 1914, t. IV, Buenos Aires, Talleres Gráficos de L. J. Rosso y Cía.
- MANFREDINI, Matteo, BRESCHI, Marco (2013), «Living arrangements and the elderly: an analysis of old-age mortality by household structure in Casalguidi, 1819-1859», *Demography*, 50, 1593-1613.
- MAZZEO, Victoria (1993), *Mortalidad infantil en la ciudad de Buenos Aires (1856-1986)*, Buenos Aires, CEAL.
- OTERO, Hernán (1996), «Fécondité des immigrants en Argentine. Les Français de Tandil, 1860-1914», *Annales de Démographie Historique*, 337-358.
- OTERO, Hernán (2006), *Estadística y nación. Una historia conceptual del pensamiento*

- censal de la Argentina moderna, 1869-1914*, Buenos Aires, Prometeo.
- OTERO, Hernán (2013a), "Representaciones estadísticas de la vejez. Argentina, 1869-1947", *Revista Latinoamericana de Población*, ALAP, 13, julio-diciembre, 5-28.
- OTERO, Hernán (2013b), "La vejez como problema histórico", *Anuario del Centro de Estudios Históricos "Prof. Carlos S. A. Segreti"*, Córdoba, 13, 93-108.
- OTERO, Hernán (2016), "Trabajo y vejez en el período prejubilariorio. Hipótesis y análisis de fuentes históricas sobre el caso argentino, 1850-1950", *Historia Crítica*, Universidad de Los Andes, Colombia, 62, 35-55.
- PASTOR, Nancy, URQUIZA, Fernando (1986), *Problemas de salud a fines del siglo XIX: el caso de Tandil*, UNCPBA, Tesis de Licenciatura en Historia.
- PÉREZ MOREDA, Vicente (1980), *Las crisis de mortalidad en la España interior, siglos XVI-XIX*, Madrid, Siglo XXI.
- POLLERO, Raquel (2013), *Historia demográfica de Montevideo y su campaña, 1757-1860*, Tesis de Doctorado, Universidad de la República de Uruguay.
- RAU, Roland (2007), *Seasonality in Human Mortality. A Demographic Approach*, Springer, Demographic Research Monographs.
- REID, Alice, GARRET, Eilidh, DIBBEN, Chris, WILLIAMSON, Lee (2015), "A confession of ignorance": deaths from old age and deciphering cause-of death statistics in Scotland, 1855-1949", *The History of the Family*, 20, 3, 320-344.
- RODRÍGUEZ, María L., CARBONETTI, Adrián, ANDREATTA, María M. (2013), "Prácticas empíricas y medicina académica en Argentina. Aproximaciones para un análisis cuanti-cualitativo del Primer Censo Nacional (1869)", *Historia Crítica*, Bogotá, Universidad de los Andes, enero-abril, 81-108.
- SÁNCHEZ ALBORNOZ, Nicolás (1975), "La modernización demográfica. La transformación del ciclo vital anual, 1863-1960", 47-80, in Nicolás Sánchez Albornoz, *Jalones de la modernización de España*, Barcelona, Ariel.
- SOMOZA, Jorge L. (1971), *La mortalidad en la Argentina entre 1869 y 1960*, Buenos Aires, CELADE, Instituto Di Tella.
- TSUYA, Noriko, NYSTEDT, Paul (2004), "Old age mortality", 399-430, in Tommy Bengtsson, Cameron Campbell, James Z. Lee (eds), *Life under Pressure. Mortality and Living Standards in Europe and Asia, 1700-1900*, Cambridge, Massachusetts Institute of Technology Press.
- VELÁZQUEZ, Guillermo (1997), *¿Por qué algunos viven más que otros? Desigualdades geo-sociales de la mortalidad. El caso del partido de Tandil (Bs.As.)*, Tandil, UNICEN.

SUMMARY

The paper discusses the mortality of the population aged 60 years and over, distinguishing the age groups that make up the notion of old age. The investigation is based on an aggregative analysis of death certificates of parish and civil registries of the *partido* of Tandil — a case study that can be considered as representative of the southern region of the Province of Buenos Aires— between 1858 and 1914,

period during which the mortality transition began in Argentina. The paper, which includes the traditional dimensions of age and sex, focuses on three aspects of elderly mortality: a) the seasonality of deaths, emphasising on the differential between rural and urban areas, migration origin and marital status; b) the causes of death and c) the use of hospitals.

RÉSUMÉ

Cet article étudie la mortalité des personnes âgées de 60 ans et plus, en insistant sur les variations à l'intérieur de ce groupe. L'analyse s'appuie sur l'étude des actes de décès présents dans les registres paroissiaux et d'état civil du *partido* de Tandil – un cas qui peut être considéré comme représentatif de la frontière sud de la province de Buenos Aires – entre 1858 et 1914, période pendant laquelle commence la

transition de la mortalité en Argentine. Le texte s'intéresse plus spécifiquement à trois aspects de la mortalité : le mouvement saisonnier des décès, notamment les différences entre espaces ruraux et urbains, selon l'origine migratoire et selon l'état matrimonial ; les causes de décès ; et, enfin, la prise en charge des personnes âgées dans les institutions hospitalières.