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## The Italian Army's Losses in the First World War

*Some ten million soldiers were killed in Europe during the First World War, not counting those who died from Spanish flu and other diseases, or from the injuries sustained during the conflict. The demographic consequences of the war were dramatic, since practically all those who died were young men aged between 19 and 40. Italy's population was not the most severely affected by the conflict in either absolute or relative terms but, as in the other belligerent countries, the actual number of deaths directly attributable to the war is still a topic of debate. Alessio FORNASIN reviews the various statistics that already exist in Italy and compares them with his own estimates constructed on the basis of the Albo d'oro register of military deaths. Comprising 28 volumes published over a period of 38 years (1926-1964), the register can be used to construct individual data samples. In this article, the author proposes a new estimate of Italian military deaths and gives a more detailed description of the country's war losses, providing scope for further research based on this original archive.*

Almost a century after the end of the First World War (WW1), many questions regarding this conflict remain unanswered. Even apparently consolidated statistics, such as the number of military victims, present several obscurities on closer inspection. This situation is all the more striking considering that the quantity and quality of information regarding WW1, especially in the case of Italy, is remarkably good. In the post-war years, and particularly during the early fascist period, substantial financial resources were allocated to gathering and organizing a large variety of data and information on the conflict. The regime's propaganda machine intended to exploit the victorious conflict to extol the strength of the Italian army and the heroism of its soldiers.

With the aid of under-exploited sources, this study aims to re-examine the death toll of Italian soldiers in WW1, describe their main demographic characteristics, establish the context in which they lost their life, and analyse the causes of death. Being able to determine the number of military deaths in

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any armed conflict, especially one as huge as WW1, and the demographic characteristics of those who died, is important for a number of reasons. Firstly, it allows us to measure its impact on the entire population, given that the conflict caused an extremely high number of military deaths, with secondary effects on the civil population. As its young male victims were also the country's most productive work force, this study lays the foundations for determining Italy's losses not only in terms of numbers of victims but also of human capital. It also allows us to more accurately determine the country's mortality statistics which, for different reasons related to the division of data collection between civil and military authorities, are especially incomplete in the war years.

The numbers of military and civilian deaths and the victims' main demographic characteristics were examined by various authors after the war. While Italian scholars led this field of research (Gini, 1926; Mortara, 1925), the subject also generated interest, albeit less intense, in other European countries (for Germany, we see Roesle, 1925; for France and Colonies, Huber, 1931; for the British Empire, War Office, 1922; for Russia, Kohn, 1973; in general Dumas and Vedel-Petersen, 1923; Hersch, 1927). This initial interest soon dwindled, however, and research on the subject all but halted, even though the demographic scars of the war remained visible in the structure of European populations until recently.

The interest of demographers and historians has more recently been reignited, driven by the desire to evaluate the war's long-term consequences and put forward more precise measures of mortality from a generational perspective. Studies have therefore focused increasingly on the war's impact on the general population, while military deaths obviously still assume a central role.

It was Jay M. Winter who paved the way for revisiting the Great War from a demographic perspective. In a 1976 article, he notes how the period 1914-1918 represents "the dark ages" of British historical demography. On the basis of the extant literature, using information of military and biographical origin, Winter first attempted the complex task of determining the number of British war victims and then investigated what he defined as the "mystery" of their age structure. This contribution was followed by another devoted to the consequences of the war on the health of the general population (Winter, 1977a), and yet another which estimates the "lost generation" of young men who fell in combat (Winter, 1977b). To the best of our knowledge, there are no equivalent previous studies on this subject for other countries, although it may be touched upon in works on more general issues (for Italy, for example, Pozzi, 2002; for France, Vallin, 1973; Prost, 2008; for Germany, Weldon Whalen, 1984; in general, Becker, 1999; Uralnis, 1971). Only now, with the centenary of the war, has renewed interest in this topic emerged (Rohrbasser, 2014).

Naturally, WW1 is just one of the examples for which historians and demographers have attempted to calculate both military and civilian deaths. The subject is extremely complex and the number of victims can only be determined approximately (Faron, 2002; Rochat, 1995). An indirect estimation method, well known by demographers, is to compare the censuses before and after the conflict, as was done for the soldiers who died in the American Civil War (Hacker, 2011). However, results based on this approach are only reliable if the census data are of good quality and the population is closed, or rather if migratory flows are inexistent or at least negligible in the intercensal period. Unfortunately, in the case of Italy, neither of these premises hold true. Not only was the Italian population affected both before and after the conflict by significant migration flows, but the censuses are unable to provide sufficient guarantees of precision. According to the National Institute for Statistics, in the census of 1921 in particular, the number of residents was artificially inflated in many municipalities, especially in the south (ISTAT 1935, p. 12).

With slight variation, the number of Italian military war deaths most often cited in both the specialized literature and textbooks is 650,000. By virtue of its almost universal use over time, this figure has assumed a value of absolute reliability. Even estimates of the number of deaths for certain categories of soldiers or from particular causes is frequently calculated taking the sum of 650,000 deaths as a reference, with the most recent demographic publications on the question being no exception (Glei et al., 2005; Jdanov et al., 2008). A number of studies have also identified and calculated new categories of victims excluded from the original counts, implicitly or explicitly taking the sum of 650,000 as the lower limit of the number of deaths (Ilari, 1990). The most recent study on the topic estimates a higher number of deaths – between 680,000 and 709,000 – but uses the high counts of all the previous estimates and includes other categories of deaths, such as the “Italian” soldiers who fought under the Habsburg banner (Scolè, 2014). Other recent studies criticize this “official” number, however. They provide evidence that points towards a decisively lower statistic, but without giving alternative figures (Del Negro, 2009).

Clearly, the numerous and detailed existing sources give ample space for further investigation and reinterpretation. But some evidence is still missing, and some sources are not accessible. Therefore, based on documentary evidence that is well known but rarely used for demographic purposes, this study aims to provide new estimates of the number of military deaths during the Great War, and the distribution of these losses by year and by cause of death.

As in other such reconstructions, the underlying limit here is the absence of real and reliable numbers. Some of the estimates used here are based on hypotheses that will inevitably prove to be weak or even unfounded. This article is an attempt to open the debate, not to provide definitive estimates.

## I. The problem of determining the number of Italian military deaths

Determining the number of military deaths during a war is a complex operation which gives different results, depending on the objectives pursued. This article defines military deaths as those of individuals who served in the armed forces, were resident in Italy when war was declared, and died as a result of the conflict. This therefore excludes civilians, military personnel who were born in Italy but who served in other armies because they lived abroad, soldiers who fought for the Italian armed forces but were lived outside the country, such as the Italians who had emigrated, and the “unredeemed”.<sup>(1)</sup> The decision to include only resident military personnel was made to facilitate comparison with the population that, in the literature, is always based on the census of 1911.

The issue of quantifying the victims of the conflict, a question that had already been investigated during the war (Savorgnan, 1918), was raised almost immediately after its end. The first figures were provided by the Army’s Supreme Command, both for informative purposes (appearing in the daily press), and then to determine war reparations. Official figures were initially inconsistent, partly because the definitions of death in combat or resulting from the war were liable to differ, and partly because varying time references were considered. Some sources included victims of war-related accidents or injury, and others even included “militarized” personnel such as the transport or construction workers employed in war zones. In addition, although it is well known that Italy entered the war on 24 May 1915 and that hostilities ceased on 4 November 1918, we should remember that some military personnel died prior to the declaration of war with the Austro-Hungarian Empire while volunteering in the war’s initial phases on the western front (Pieri, 1968), and that many died after the armistice from battle wounds or the effects of hardship endured in prison camps.

The first to estimate the number of losses based on the information supplied by the Army Supreme Command was Giorgio Mortara. In 1925, he published what remains one of the cornerstones of Italian demography on the First World War, *La salute pubblica in Italia durante e dopo la guerra* (Public health in Italy during and after the War). While the work focuses only partly on the number of military deaths, given its objective to reconstruct the general mortality of the war, Mortara provides the overall framework and the first solid basis for the reconstruction of military deaths during the conflict. The following year, *I morti dell’esercito italiano dal 24 maggio 1915 al 31 dicembre 1918* (Italian military deaths from 24 June 1915 to 31 December 1918) was published in the form of a “draft” by Corrado Gini, the future president of ISTAT and one of

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(1) The “unredeemed” were the people of Italian nationality but of Austrian citizenship who lived in the Habsburg territories.

Italy's most prominent demographers. Further demographic studies were also published in the same period, although they did not focus directly on the number of military deaths, but on related arguments (for example Gini and Livi, 1924).

Gini's work was included in a grandiose editorial project, published by the Ministry of War and supported by the fascist regime for propaganda purposes, called *Statistica dello sforzo militare italiano nella Guerra mondiale* (Statistics on the Italian war effort in the World War). Although this project was designed to serve the regime's ideologies, pioneering data collection and processing techniques were used, and the competence of the scholars involved is indisputable.

The aim of the project was to provide a detailed reconstruction of the course of military operations and the army's role during the war. This involved the publication of numerous studies on the army and military operations, some in "draft" form. In 1924, the first in a series of volumes on the individual army corps were published, retracing their involvement in the war from the official outbreak of hostilities on 24 May 1915, up to 4 November 1918, the date of the armistice with Austria-Hungary (*Le grandi unità nella guerra italo-austriaca 1915-18*; Large units in the war between Italy and Austria, 1915-18). This marked the start of the publication (completed in 1983) of the official Italian report on the conflict: *L'Esercito Italiano nella Grande Guerra (1915-18)* (The Italian Army in the Great War) and the same year saw the release of *La forza dell'esercito* (The strength of the Army), a work coordinated by the head of the Statistics office of the Ministry of War, Colonel Fulvio Zugaro.

By far the most concerted effort, however, was the institution of the *Albo d'oro dei caduti della guerra*; a roll of honour intended to record the names of all the Italian soldiers who died in combat or as a direct result of the war, with the first of a total of 28 volumes completed in 1926, and the last in 1964. In the initial plan, the information collected was to be used, after publication of the last volume, to integrate and rectify the texts already compiled in "draft" form, with the official publication of the entire work once all the data was harmonized. Despite the awareness that these early studies were not entirely reliable, there was nevertheless complete faith in the idea that the final results would be consistent with previous estimates and that adjustments would therefore be minimal (Zugaro, 1926; 1927, XIV).

The compilation of the *Albo d'oro* proceeded slowly, mostly due to the complexity of the operation itself, and an interruption during WW2. It was completed some 40 years after its start, obtaining a final figure of "only" 529,025 war deaths, notably lower than the canonical 650,000. Given that interest in the subject had declined considerably by the time of its publication, the results of the *Albo d'oro* were neglected in successive studies. This disregard was compounded by the fact that the total number of deaths had already been estimated with similar results by different authoritative scholars, and used as

sources by all the studies published from the 1920s. Both Gini's and Mortara's estimations were supported by the data from the War Pensions Office, that counted around 652,000 pensions attributed to relatives of individuals who "died as a direct and well-ascertained result of war" (Zugaro, 1926).

Using a strange inversion of logic, this figure has also been used to prove that the data of the *Albo d'oro* are unreliable. Precisely because of this belief, the discrepancy with the data of the *Albo d'oro* has always been dismissed as due to the unreliability of this latter source, without further investigation. This situation has two possible explanations, which are not necessarily mutually exclusive: either the *Albo d'oro* is incomplete or the figure obtained from the number of pensions is too high.

Regarding the first explanation, some 120,000 soldiers entitled to a pension are thought to have been excluded from the *Albo d'oro*, although such a high number of "absent" soldiers – almost a quarter of the names actually traced – is not credible, in my opinion, considering the vast deployment of resources used to compile this source. The figure is not even compatible with what Zugaro himself reported (1926) on the criteria by which the *Albo d'oro* was compiled, given that the documentation on pensions, on which the estimate of war deaths is traditionally based, was one of his principal sources. Clearly, if the information from the War Pensions Office gave such unequivocal results as was, and is, universally maintained, it is difficult to understand why many other sources were used in writing the *Albo d'oro*, which also invariably led to lower estimates.

To clarify the second explanation, a specific investigation on military pensions would be needed, but it is now impossible to accomplish this task. Gini indicates a possible and, in my opinion, credible solution to this problem, however. Soldiers who were married at the time of their death left the right to a double pension, one for their wife and one for their parents (Gini, 1926, p. 20). The War Pensions Office, however, conceded that the payment of both pensions, "on a wide scale, was delayed", which would explain why, when Gini's study and subsequently those of Mortara and Zugaro were published, it was still not clear "how much lower the number of dead would be than the number of pension applications made" (Gini, 1926, p. 20). It is this uncertainty which resulted in the overestimate. I hypothesize that the figure of 650,000 derived from the War Pensions Office data does not refer to the dead, but to the pension holders ascertained at that time. Gini himself suggests that around 40% of dead soldiers were married (Gini, 1926, p. 18). On the basis of this information and using the relevant life tables, it is possible, starting from the *Albo d'oro*, to estimate the number of soldiers whose wife and at least one parent survived or, in other words, those who had left the right to subdivide their pension into two parts (according to my calculations, around 204,000), and the number of unmarried orphans with no surviving parents (around 12,000) who had no heirs. The total number of entitlements would therefore amount to

721,000 (in round figures 529,000 + 204,000 – 12,000).<sup>(2)</sup> This figure is compatible with that of 750,000 Italian war dead estimated by the International Labour Organization in Geneva in 1924 on the basis of the pension applications that had been made up to that point (Gini, 1926, p. 19).

The concordance between the estimates of war victims given in the various studies is more apparent than real. Table 1 presents the most important ones published in the first ten years after the armistice, compared with the results of the *Albo d'oro*.

**Table 1. Number of war dead according to the different estimates**

Source	Year published	End period	Number of deaths
Supreme Command (Mortara, 1925, p. 27)	1918	11/11/1918	460,000
Supreme Command (Mortara, 1925, p. 29)	1921	31/12/1920	564,000
War Reparations Commission (Mortara, 1925, p. 29)	1921	30/04/1920	651,000
Mortara, 1925, p. 30	1925	31/12/1920	600,000
Gini, 1926, p. 18	1926	10/09/1925	652,000
Gini, 1926, p. 18	1926	04/11/1918	571,000
<i>Albo d'oro</i> , 1926-1964	1926-1964	31/12/1920	529,025

Apart from the relevant but insubstantial differences between them, the succession of figures prompts reflection on the configuration of those considered as “war dead”. The lowest count is that given in the 1918 report of the Army’s Supreme Command immediately after the end of the conflict using the statistics of the various corps, which obviously did not include deaths after the end of the war. This count also omitted the substantial amount of information on the deaths of Italian prisoners of war, and, as would later emerge, a considerable share of the data that the different army corps periodically conveyed to the Command. The second figure, dated 1921, again cited by the Supreme Command, integrates these missing data, thus increasing the first count by over 20%.

The third figure, the most commonly cited in the literature, was calculated by the Commissione per le riparazioni di guerra (War Reparations Commission), to determine the compensations owed to Italy by the defeated countries. This number was estimated on the basis of supposed subentries, founded solely on the declarations of the Commission itself, in particular those referring to the deaths after the end of the war (87,000 from 12 November 1918 to 30 April 1920; Mortara, 1925, p. 29); and those regarding prisoners of war (90-100,000; Mortara, 1925, p. 49).

Not by chance, Giorgio Mortara, whose publication reports most of the figures listed in the table, gives an estimate almost 10% lower than the “official”

(2) This is only a rough estimation. The figure of 721,000 pension entitlements was calculated by extrapolating the numbers obtained for the soldiers from the 1895 birth cohort (which had the greatest number of war dead).

figure, albeit with caution. Corrado Gini proposes even lower numbers in his study of military deaths. We can see that already by the end of the 1920s, progressive adjustments were leading to a much lower total number of war dead than that calculated by the War Reparations Commission. However, as shown in the table, with the exception of the first estimate, the lowest overall figure is from the *Albo d'oro*. These disparities raise doubts about the reliability of the *Albo d'oro*, and, as we shall see, the counts reported in this source represent an estimate by default of the number of war dead. The following section aims to estimate the “missing” dead.

## II. Italian military deaths according to the *Albo d'oro*

The *Albo d'oro* was intended to honour those who had died for their country by recording their name and certain details of their war experience. Its compilation criteria are detailed by Fulvio Zugaro, head of the army's statistics office and chief scientific advisor for the operation (Zugaro, 1926). The *Albo d'oro* was to include all individuals who died in a war-related context, i.e. who were killed or missing in action, disappeared in war camps or died from disease, accidental causes, suicide etc. Substantial resources were dedicated to the operation, using a multitude of channels that involved numerous central and peripheral public authorities, including the registry offices of the town councils (population registers and civil registers), the statistics office of the Supreme Command; the historical office of the Supreme Command; the Ministry of War; the head offices of the military health services; the Italian Red Cross; *Uffici notizie* (news offices); the Care and Honours Commission; and the General Pensions Office. It is important to stress that these sources not only include all those already used by the Supreme Command, but also others, with the aim of integrating potentially missing information.

The criteria behind the creation of this roll of honour tended both to limit and to magnify the number of casualties. In fact, the *Albo d'oro* intentionally excluded soldiers who did not possess the necessary requisites for inclusion in a roll of honour, such as those who: 1) were sentenced to death following conviction for capital offences; 2) died in prison serving sentences for defamatory crimes; 3) died as a result of self-harm (intended to result in invalidity rather than death); 4) deserted, with the exception of those who later died from battle injuries, or, even after desertion, were awarded a medal of military valour.

The following criteria were used to estimate the number of deaths for each of the above categories.

- 1) The studies which calculate numbers of soldiers sentenced to death by a war tribunal and the victims of summary shootings and decimations count around 1,050 individuals (Forcella and Monticone, 1998; Pluviano and Guerrini, 2004).

2) For this calculation I used the data of the amnesty of 2 September 1919, granted for a vast series of military crimes committed during the conflict. Giorgio Rochat (1967, p. 122) claims that there were around 60,000 imprisoned soldiers at that time, thus corresponding to the number of convicts who had survived. I hypothesize that the mortality selection was similar to that of soldiers captured by the enemy, which (based on the *Albo d'oro* data) was around 10%, very close to the annual mortality levels registered for the infantry during the war (Mortara, 1925, p. 38). On the basis of this percentage, an estimated 6,660 individuals were excluded from the *Albo d'oro* for reason 2.

3) I base my estimate of the number of deaths from self-harm on the 10,035 individuals convicted for this crime (Mortara, 1927). Although the intention behind this act was not suicide, but rather to obtain permanent or temporary invalidity status to avoid serving on the front, even those found guilty but still physically able to fight were sent back into battle from October 1916 (Melograni, 1977, pp. 239-242). However, individuals guilty of this crime who later died from injury or illness not attributable to self-harm were included in the *Albo d'oro*. Given that the intention of these self-harmers was not to kill themselves, I hypothesize that just 10% of those found guilty actually died as a result of these acts, making a total of 1,004 individuals.

4) Measuring the number of deserters excluded from the roll of honour is more complex, because only a small minority of those convicted received custodial sentences; the majority were sent back to the front. We know that 101,665 soldiers were found guilty of desertion, and that this figure corresponds to 62.5% of total convictions during the war (Bianchi, 2001; Mortara, 1927). From this count we have to subtract the 370 executed deserters (included in point 1) and those directly imprisoned, that is, the 15,096 *lifera* (included in point 2) and a further 9,588 men corresponding to a percentage fixed at 62.5% (equal to the proportion of deserters among the total number convicted) of the 15,332 deserters sent to "ordinary" prison (Mortara, 1927, p. 27). The remaining 76,611 deserters were sent back to the front. Of these, the men who later died in combat or received a medal were included in the *Albo d'oro*. Because the largest number of desertions was verified at the end of 1917, and these deserters were at risk of dying in this condition for around a year, a mortality coefficient of 10% was applied, corresponding to the annual percentage of deaths of infantry soldiers on the battlefield (Mortara, 1925).<sup>(3)</sup> This results in a figure of 7,661. Lastly, I hypothesize that 69.0% of these deaths, a proportion

(3) During the war, Mortara directed the statistics department of the Supreme Command, and had all the data for making these calculations at his disposal.

determined on the basis of an *Albo d'oro* data sample<sup>(4)</sup> and corresponding to the percentage of deaths in the last year of the conflict, did not occur in battle, meaning that 5,286 soldiers were not included in the *Albo d'oro*.

Table 2 gives a summary of the above estimates. It shows that a total of around 14,000 ( $\pm 1,000$ ) soldiers who died as a result of the war were excluded from the *Albo d'oro*. The first figure of the table (Executed) is an exact calculation, the other figures are estimations. Only if the estimation assumptions are changed does the margin of uncertainty of the latter vary substantially.

**Table 2. Military deaths excluded from the *Albo d'oro***

Category of the dead	N	Margin of error
Executed	1,000	
Convicted for defamatory crimes	7,000	$\pm 500$
Convicted for self-injury	1,000	$\pm 500$
Deserters	5,000	$\pm 500$
Total	14,000	$\pm 1,000$

*Note:* Figures rounded to the nearest thousand.  
*Source:* Author's calculations.

A number of soldiers who would have been eligible for inclusion in the *Albo d'oro* were omitted either by mistake or through lack of documentation, so we need to sum the soldiers who were both intentionally and unintentionally excluded from the roll. For the last three volumes of the *Albo d'oro* only, those regarding the Veneto region (north-eastern Italy), additional deaths omitted from the original list have been included (2,144 deaths in addition to the original 62,036, equal to 3.5%). The percentage of these Veneto figures was used to form an estimate for the whole country. In total, 18,283 soldiers are thus included in this category.<sup>(5)</sup> This figure may vary by  $\pm 3,000$ .

Lastly, a series of names is included in the *Albo d'oro* that, for the purposes of this study, should be excluded because they were either not soldiers or resident outside Italy. This category includes civil personnel, assimilated or not within the armed forces, in auxiliary roles (including about 20 women); Italian-born military personnel, resident abroad, who fought for the allied forces; a part of the military personnel born abroad but enrolled as volunteers in the Italian Army; and the “unredeemed” soldiers, who although enrolled in the Italian Army, were resident in Austria-Hungary when war was declared. In total, I estimate from the *Albo d'oro* sample that 2,936 people are included in these categories, of whom exactly 389 are “unredeemed”.

(4) In this study, where necessary, I used a sample consisting of all the dead included in selected pages of each of the 28 volumes of the opus, extracted according to the sequence 1, 51, 101, 151, etc. Each page contains 30 records. A total of 367 pages were extracted (an average of 61 pages for each year considered) concerning 11,010 individuals, which corresponds to roughly 2.1% of the total.

(5) This addition only concerns the Veneto region. The estimate was thus based on the hypothesis that the proportion of Veneto war dead not considered in the *Albo d'oro* is the same in other Italian regions. These three lists can be found at <http://www.cadutigrandeguerra.it/>.

Table 3 gives a summary of the different categories included in and excluded from the *Albo d'oro*, with the final estimate of Italian military deaths during the war.

**Table 3. Deaths included and excluded from the *Albo d'oro***

Type of military death	<i>N</i>	Margin of error
Included in the <i>Albo d'oro</i>	529,000	
Excluded intentionally	14,000	± 1,000
Omitted unintentionally	18,000	± 3,000
Included but not pertinent	- 3,000	± 500
Total military deaths	558,000	± 4,000

*Note:* Figures rounded to the nearest thousand.  
*Source:* Author's calculations.

The total estimated number of Italian military deaths in the First World War thus comes to around 558,000 (± 4,000), 14.1% fewer than the traditionally accepted figure of 650,000.

According to this estimate, 32,000 soldiers (6.0%) are absent from the *Albo d'oro* despite having the prerequisites described in Section I. A first confirmation of my reconstruction comes from a recent study by Riva and Trentini (2015, pp. 59-61) examining the number of military deaths in WWI among inhabitants of seven municipalities in the province of Brescia. These findings come from different authors and from sources that are independent of the *Albo d'oro*, such as municipal archives, commemorative plaques, monuments etc., and show a variation of between 4% and 11% in the number of dead from the same towns with respect to those reported in the *Albo d'oro*, which is in line with my estimate, and very different from that of the “classic” scenario.

### III. Analysis and discussion

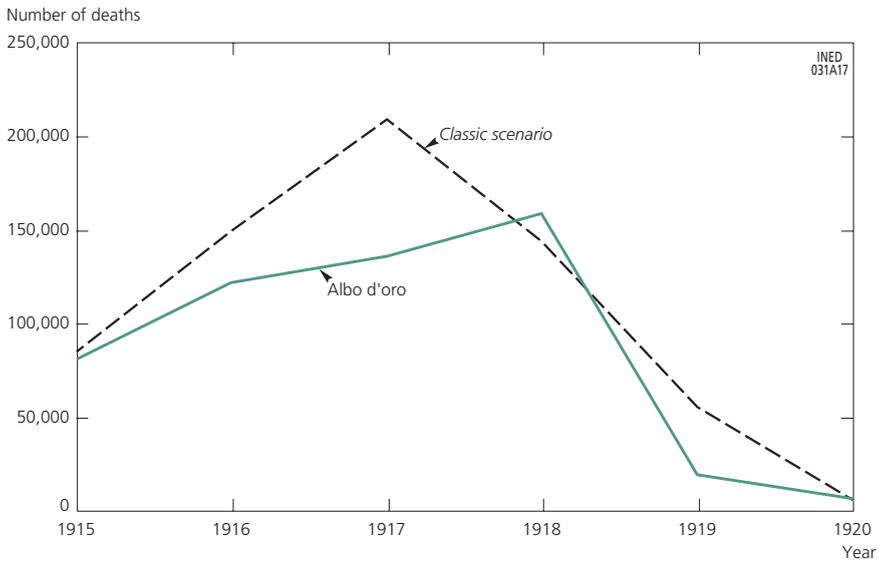
Based on this reconstruction, the data recorded in the *Albo d'oro* account for 94.8% of the total number of military deaths from WWI. Despite some problems of selection, this information comes close to representing the demographic characteristics of the total number of deaths, and is therefore used in the analysis below.

Figure 1 details the *Albo d'oro* data by year of death and compares these results with those of the “classic” scenario.

The figure also includes those who died in the first half of 1915, when many Italian volunteers fought on the western front.

It highlights three important points. First, the largest number of deaths was recorded in 1918, whereas in the “classic” scenario this occurred in 1917. This result is even more significant if we consider that the conflict covered just

Figure 1. Distribution of military deaths by year of death



Source: *Albo d'oro* 1926-1964; Gleii et al., 2005.

ten months of that year. Even if the Italian military effort was concentrated mainly – at least as in terms of the deployment of men and weaponry – on the three last battles of Isonzo (10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup>) and the Battle of the Piave River, the greatest death toll occurred in 1918, when the army had to contend not only with the Empire’s troops but also with the Spanish flu epidemic. Second, the most pronounced differences between the two series occurred in 1917 and 1919. Third, the *Albo d'oro* data remain below those of the estimates accepted so far, except in 1918.

Table 4 compares the reconstruction of losses according to Gleii et al. (2005) and that based on information found in the *Albo d'oro*. The last two columns show the numerical differences and the percentage differences. The total difference between the numbers of deaths given by the different sources is around 122,000. The discrepancies regard all the categories, but are not uniformly distributed amongst them. In particular, the numbers in the “classic” scenario are significantly higher for prisoners of war and deaths after the armistice, which are those derived from estimates by the authorities rather than from exact documented data. The differences between numbers who died in action are less marked, and are perhaps offset by the integrations estimated in Section II (Table 3).

This clarification of the data allows us to make some observations and put forward some corrections. In my opinion, the deaths in prison camps given in the “classic” scenario are too high, also given that many prisoners of war died after repatriation.

**Table 4. Comparison of numbers of military deaths given in the different sources**

	Glei et al. 2005	<i>Albo d'oro</i> sample	Numerical difference	Percentage difference
Active service*	378,010	329,860	48,150	+ 14,6
Prison*	90,000	46,464	43,536	+ 93,7
Illness*	95,646	97,156	- 1,510	- 1,6
Post armistice**	87,354	55,545	31,809	+ 57,3
Total	651,010	529,025	121,985	+ 23,1

**Note:** \* From 28 July 1914 to 4 November 1918; \*\* from 5 November 1918 to 31 December 1920.  
**Sources:** Author's calculations based on Glei et al., 2005; *Albo d'oro* sample.

The number of deaths in prison derived from the *Albo d'oro* roughly corresponds to the approximately 50,000 soldiers who died in war camps for whom documentation was provided by the foreign authorities (Mortara, 1925, p. 56). This number has been contested by the majority of scholars, who put forward 100,000 as a more reliable figure (Procacci, 1993). This total, however, is based on the 1920 estimate of the *Commissione d'inchiesta sulle violazioni del diritto delle genti commesse dal nemico* (Commission of inquiry on violations of international law committed by the enemy). The Commission's report also claimed that the Austrian and German documentation was very incomplete. In my opinion, the figure of 100,000 dead is also debatable.

Firstly, the Commission's work had clear political aims, in a context where it was useful to magnify the enemy's responsibility for the ill-treatment of prisoners of war and to inflate the number of fallen soldiers in order to demand higher reparations from the defeated countries (Procacci, 2007, p. 362). It is undoubtedly true that the prisoners of war were subjected to particularly harsh conditions, above all due to lack of food, but some studies have also brought to light that the Austrians and Germans did not employ punitive measures towards Italian prisoners (Isnenghi and Rochat, 2004, p. 348). Secondly, according to Mortara's estimates, prisoner mortality from disease (i.e. excluding mortality from injuries), calculated on 80-90,000 individuals, was 12% a year, well above the 10% death rate of infantry soldiers fighting on the front line (Mortara, 1925, 50). Given these considerations, it is unlikely that such a high percentage of physically fit young men, fed regularly, albeit in insufficient measure, would have died from the direct or indirect consequences of starvation (Livi Bacci, 1991). Thirdly, there is a problem of definition. Corrado Gini describes various possible sources of error. He divides deaths among prisoners of war into three categories: death from illness, from injury, in battle. The latter were soldiers who had died in combat but were then buried by the Austrians and therefore recorded by non-Italian authorities. Although these deaths appear in the lists compiled by the enemy, they are not classifiable as prisoners of war, and as Gini writes, "for the most part, they are counted in our statistics among

soldiers declared as dead in battle or missing in action and cannot be counted as prisoners without making a duplicate”.<sup>(6)</sup>

While these might also have been underestimated to a certain extent in the *Albo d'oro*, the uncounted deaths cannot account for the scale of difference between the two sources. Moreover, the compilation of the *Albo d'oro* started a number of years after the end of the war, when the fate of many prisoners initially reported as “disappeared” would have been known.

Considering that the largest discrepancy between the two sources occurred for 1917, the year of the largest battles when, for obvious reasons, it was most complicated to keep an exact count of the dead, injured or missing in action, it is possible that many soldiers initially considered dead had actually been captured by the enemy. Of the 600,000 Italian soldiers taken prisoner during the war, 400,000 are estimated to have been captured in 1917 alone, 300,000 of whom during the battle of Caporetto (Isnenghi and Rochat, 2004, p. 347; Monticone, 1999; Procacci, 1993, p. 204). In the months following the end of the conflict it is possible that the information collected during the operations was not updated to take account of those who were missing rather than dead. It is also possible that, even at a later date, the numbers of soldiers on the frontline were taken as accurate, and that these numbers included soldiers who were believed to have died in battle but who actually died in captivity. This would mean that, according to Gini, the differences in the number of dead are attributable to double counts. The collection of nominative records, that formed the basis of the Supreme Command count, could easily have led to the duplication of information on the same individual. This situation would have been worsened by the fact that the records could be sent to different *Uffici notizie* around the country. However, the criteria adopted for the compilation of the *Albo d'oro* would have made it possible to identify and eliminate these duplications.

Given all the above considerations, I believe that the number of deaths among prisoners of war in the *Albo d'oro* is fairly accurate, although some of these war dead were not included in the roll of honour because they were deserters (Zugaro, 1926). While it is true that many returning prisoners of war did not survive for long after their repatriation, even attributing a large share of the over 55,000 post-armistice deaths to ex-prisoners and adding the 46,000 from the *Albo d'oro*, still produces a number far below the current estimate. Lastly, the entries in the *Albo d'oro* consider not only the declarations used for compiling the primary files of those who died in prison, but also information from the municipalities that updated their registers for many years after the end of the war as news about their residents arrived from countries where prisoners had been deported. Although this means that significant gaps in the counts are likely, these are not sufficient to arrive at 100,000. There is no reason

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(6) For further explanations see Fornasin 2015.

to think that the detailed surveys conducted to collect names deliberately neglected the deaths of prisoners of war.

As well as overestimating the mortality of prisoners of war, the post-armistice deaths of the “classic” scenario are also entirely inaccurate. The usual accepted number, according to Mortara, is 87,000, while my estimate is about 56,000. These data should have included soldiers who were wounded in battle or contracted a disease as result of the war but died after the end of the conflict. In particular, they do not take account of the inevitable (and enormous) reduction in mortality levels brought about by the simple fact that combat had ceased. Suffice it to say that were we to accept the above estimate the number of deaths over the two year period 1919-1920 would end up being higher than those in battle in the last year of the conflict. In this regard, the figures derived from the *Albo d'oro* are much more consistent. We should also bear in mind that information on these deaths was collected under “normal” conditions, as part of the regular administrative procedures of the Municipal Offices. During the war, civil registration became disorganized because the deaths of soldiers in the war zone were registered at the numerous field hospitals near the front. This caused a considerable number of inaccuracies and omissions in the municipal death register transcripts that were not corrected or completed until after the war.

Table 5 shows the main causes of military death, using the summary statistics and same classification as the *Albo d'oro*.

**Table 5. Military deaths by cause**

Cause	N	%
Injury	247,353	46.8
Missing in action	70,758	13.4
Illness	187,923	35.5
Accidental, disappearance etc.	22,991	4.3
Total	529,025	100.0
<i>Source: Albo d'oro.</i>		

Battle injuries are the main cause of death, although this category should include missing in action, given that in the context of wars of position, when the majority of deaths in combat were caused by artillery fire, many corpses could not be identified or retrieved. These two combined causes account for 60.2% of the total. The second cause of death is illness, which should also include a portion of the deaths listed as “disappeared” when attributed to the many prisoners of war whose exact date of death is unknown, although the majority of these deaths concern men who perished at sea. The percentage of deaths due to illness, 35.5%, is even greater than the already high estimate put forward in previous studies, which estimate that deaths from illness represent

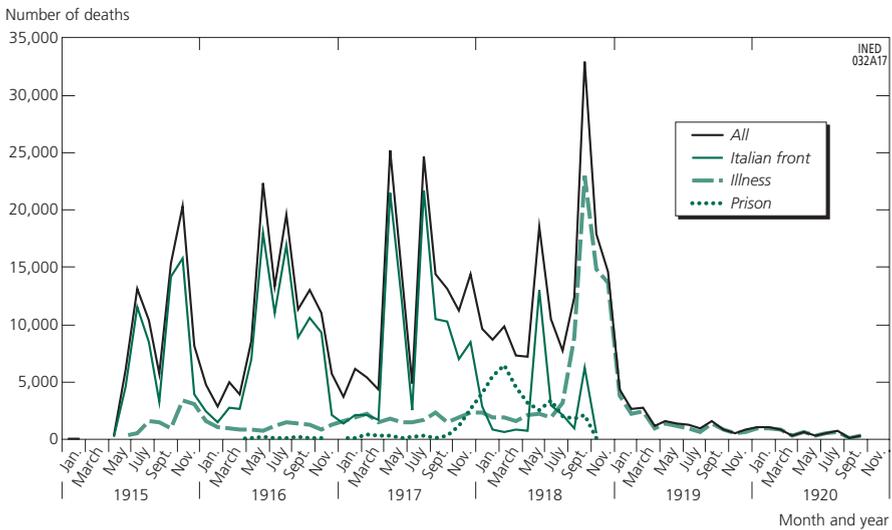
around 20% of the total (Isnenghi and Rochat, 2004, p. 269). This is exceptional among the belligerent armies, where this proportion was normally much lower, at around 13%, for example, in the French Army (Huber, 1931, p. 420). We should also add that the majority of the dead excluded from the *Albo d'oro* were soldiers who had died from disease. The many soldiers found guilty of desertion or other crimes were included in the roll of honour if they died in combat, but remained excluded if they died from other causes.

At this point, it is worth noting that the data on deaths from illness are consistent with the enumerations reported in other studies, while those for injury are much lower than all other estimates.

The numerical summaries at the end of each *Albo d'oro* volume mention additional aspects related to the deceased, such as military rank or regiment. They also make passing reference to other aspects that, while not of direct relevance from a demographic perspective, allow us to examine the quantification of military war victims from another viewpoint. To explore these aspects not highlighted in the summaries, the data sample of the *Albo d'oro* can be used. These data provide further insight into the pattern of deaths over the course of the conflict. Figure 2 illustrates the monthly distribution of all deaths, detailing those who died in combat, from illness (but not in enemy hands) and in prison (all causes, primarily illness). The margin of error is obviously higher when the sample is used to ascertain the cause and place of death, but not so high as to alter the general conclusions.

The monthly series taken from the *Albo d'oro* sample retraces the chronology of the conflict marked by the series of battles and also highlights the pattern

Figure 2. Monthly distribution of the war dead. Total and selected causes and contexts (May 1915 - October 1920)



Source: *Albo d'oro*.

of deaths off the battlefield. Most of these are deaths from illness that occurred both in enemy prisons and on home soil.

As Figure 2 shows, the number of deaths in enemy prisons remained relatively low until October 1917, when there was a rapid increase that peaked in March 1918. The number of events then fell equally sharply, without returning to the levels at the start of the conflict, and another, less dramatic peak occurred in October, one of the months most affected by the Spanish influenza epidemic. This major increase occurs just after the Battle of Caporetto, which led to the sudden influx of around 300,000 prisoners to enemy work camps, and is certainly attributable to the long and gruelling journey from the front to the detention camps and the terrible living conditions that awaited the captives. The *Albo d'oro* records the majority of deaths of these soldiers as due to illness, but most were attributable to food deprivation. Despite these terrible living conditions, scholars unanimously agree that the wave of epidemics, above all Spanish flu, that struck down Italian soldiers on the front, did not affect the prisoner-of-war camps (Mortara, 1925, p. 52).

The peak in deaths from illness at the end of 1918 is largely attributable to the Spanish flu epidemic (Tognotti, 2002), which had a particularly strong impact on Italy where it caused the biggest increase in deaths among the warring nations. That said, the troops at the front were much less affected than the civilian population. This is also borne out by the fact the death rate of females was higher than that of males.

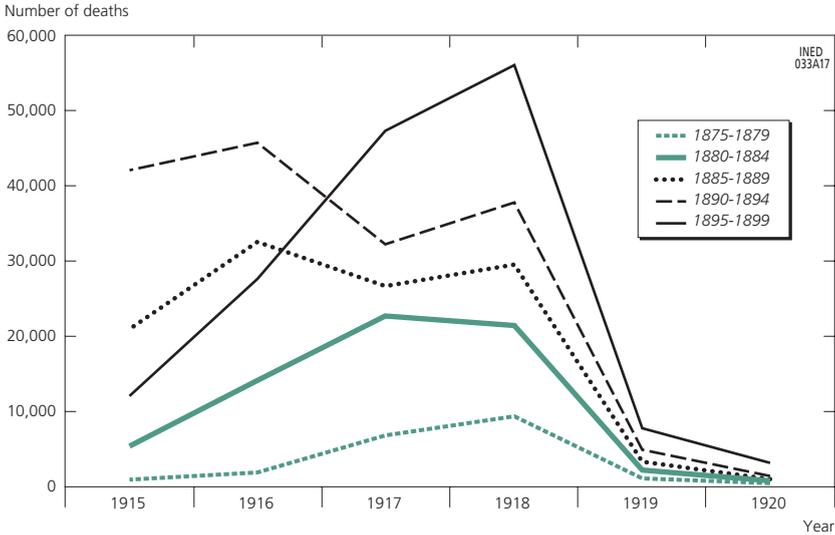
The high mortality levels of soldiers in late 1918 raises the question of how many of these deaths are effectively attributable to the war and how many would have occurred anyway. This could imply a further reduction in the number of war-related military deaths and a further reduction in my estimates.

Another important aspect that can be investigated with the *Albo d'oro* data is the age distribution of deaths. Here again, we hypothesize that the distribution of deaths in this source largely corresponds to that of all military deaths. Figure 3 illustrates the distribution of events by five-year birth cohorts and year of death.

These results offer new insight on the distribution of war deaths. In 1915 and 1916 the majority of those who died belonged to the birth cohorts 1885-1889 and 1890-1894, who had been called up right from the start of the conflict. In the third year, probably due to the heavy strain already placed upon these cohorts, the majority of deaths shifted to the cohort 1895-99, with a sharp increase in those from 1880-84. The already depleted central cohorts suffered an even higher number of deaths in the victory year than the year before, but the heaviest price was once again paid by the 1895-99 cohorts, the youngest of whom only entered the war in 1918. The peak of deaths in 1918, predominantly attributable to the Spanish flu epidemic, affected all the cohorts, without sparing those already hit hard in the first three years of war, marking the second maximum of the series. The distribution by year of the victims of the different

birth cohorts shows that it was the oldest and youngest who suffered the highest levels of mortality in the latter years of the war, when both birth cohorts were called to arms. It differs considerably from the “classic” scenario (Glei et al., 2005) where there are differences in numbers of deaths but not in the distributions by year.

Figure 3. Distribution of military deaths by birth cohort and year of death



Source : *Albo d'oro*, 1926-1964.

## Conclusion

The information from the *Albo d'oro* has shed light on numerous aspects of the mortality of Italian soldiers in the First World War. Notable differences emerge between the results from this source and previously consolidated notions regarding, first and foremost, the total number of military war-related deaths. The analyses carried out in this study demonstrate that the number of military deaths was undoubtedly much lower than the canonical figure of 650,000. The amended total put forward here, with reference to the period from 24 May 1915 to 31 December 1920, is 558,000.

The second result, that decidedly overturns the conclusions drawn from previous reconstructions, regards the distribution of deaths over the course of the conflict. In fact, according to the *Albo d'oro*, more deaths occurred in the last year of the war than in 1917, which, from the situation determined on the battlefields, has always been considered the worst year. However, this view does not take account of the much higher number of deaths due to the Spanish flu epidemic than previously believed.

The third new element is provided by the cohort distribution of deaths. This distribution is decisively influenced by the conscripts' duration of service in the armed forces and by the pattern of deaths due to the flu epidemic of 1918.

Further results concern the percentage of deaths due to illness which, at 35.5%, is even greater than the already high estimate put forward in previous studies. By contrast, the number of deaths among prisoners of war is, according to my reconstruction, much lower than that hypothesized by other academics in the last 20 years, and the same holds for those occurring after the armistice.

Some of these conclusions suggest a need to revise what has come to be seen as accepted knowledge. If the results presented here, and particularly the number of war dead, are not confirmed by further research, doubts about the coherence of the results in the "classic" reconstruction will continue, unless we are to regard the *Albo d'oro* as totally unreliable. However, we should bear in mind that this research is still in its preliminary stages. In fact, we cannot but agree with Fulvio Zugaro, who stated more than 80 years ago that an accurate estimate of the number of war victims will only be possible when all the data from the *Albo d'oro* become available.

The data sources used to create the *Albo d'oro* can be analysed to further improve our knowledge of it and to test its validity. However, some of these sources, such as war pensions, are currently not accessible. Others, such as the civil registers, would require an extensive research campaign such as that undertaken in the 1920s with the immense resources of the Italian Ministry of War. It is hard to imagine easier solutions, such as using census data, whose weaknesses currently seem impossible to overcome. However, a potentially decisive contribution may come from unexplored sources, such as the *Registri matricolari* (Matriculation registers), which can be used to retrace the histories of individual soldiers. This source consists of tens of millions of individual records, stored in a hundred different archives. However, with appropriate sampling techniques and through targeted surveys, it could provide authoritative answers to the questions surrounding the deaths of Italian soldiers during the Great War. This is the direction I intend to follow in future research.

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**Alessio FORNASIN • THE ITALIAN ARMY'S LOSSES IN THE FIRST WORLD WAR**

The figure most often used in the literature to quantify the Italian army's losses in the First World War is that of the War Reparations Commission of 1921 that counts 650,000 deaths. This article aims to challenge this estimate, propose a new one; and provide information about the age structure and age at death of the Italian soldiers who died in the Great War. The source used in this study is the *Albo d'oro* (Roll of Honour) of fallen soldiers. I use both the summary tables at the end of each volume, as well as a sample of 11,010 military deaths (equal to around 2.1% of the total) taken from the same source. The analysis is performed with the support of descriptive statistics. We find first that the estimates of 650,000 military deaths established immediately after the end of the war are too high; it is more reasonable to conclude that the actual number of military deaths is about 560,000. Second, the *Albo d'oro* data show that mortality peaked in the last year of the war, contrary to the previous assertions that the peak occurred in 1917. Last, it appears that death from disease, which was higher in the Italian army than in those of the other superpowers, had an even greater impact than previously believed.

**Alessio FORNASIN • LES PERTES DE L'ARMÉE ITALIENNE PENDANT LA PREMIÈRE GUERRE MONDIALE**

Le nombre le plus souvent avancé pour estimer les pertes de l'armée italienne durant la Première Guerre mondiale est celui de la commission des réparations de guerre de 1921 qui comptabilise 650 000 décès. Cet article a pour objectifs de critiquer cette estimation, d'en proposer une nouvelle, et de fournir des informations sur la structure par âge et l'âge au décès des soldats italiens tombés durant la guerre. Le tableau d'honneur des soldats morts au combat (*Albo d'oro*) est utilisé dans cette étude, avec d'une part les tableaux récapitulatifs publiés à la fin de chaque volume, et d'autre part un échantillon de 11 000 décès militaires (représentant environ 2,1 % du total) extrait de cette source. Nous concluons que l'estimation de 650 000 décès militaires formulée immédiatement après la fin de la guerre est trop élevée, et le chiffre de 560 000 décès semble plus proche de la réalité. Les données de l'*Albo d'oro* montrent que le taux de mortalité a culminé durant la dernière année du conflit, et non en 1917 comme cela avait été affirmé. Il semble enfin que les décès dus à des maladies, plus fréquents dans les rangs de l'armée italienne que dans ceux des autres superpuissances, aient eu un impact bien plus important qu'on ne le supposait auparavant.

**Alessio FORNASIN • LAS PERDIDAS DEL EJERCITO ITALIANO DURANTE LA PRIMERA GUERRA MUNDIAL**

El número más frecuentemente citado para estimar las pérdidas del ejército italiano durante la Primera Guerra mundial es el de la Comisión de las reparaciones de guerra de 1921, que contabiliza 650 000 muertos. Este artículo critica esta estimación, propone una nueva y ofrece informaciones sobre la estructura por edad así que sobre la edad a la que murieron los soldados italianos caídos durante la guerra. Utilizamos aquí el cuadro de honor de los soldados muertos en combate (*Albo d'oro*, tomando, por un lado, los cuadros recapitulativos publicados al final de cada volumen y, por otro lado, una muestra de 11 000 muertes militares (aproximadamente 2,1 % del total) extraída de esta fuente. Concluimos que la estimación de 650 000 muertos es demasiado elevada y que el número de 560 000 muertos está más cerca de la realidad. Los datos de *Albo d'oro* muestran que la tasa de mortalidad ha culminado durante el último año del conflicto, 1918, y no en 1917 como había sido afirmado; parece, en fin, que las muertes debidas a enfermedades, más frecuentes en el ejército italiano que en los de las otras superpotencias, hayan tenido un impacto mucho más importante que lo que se pensaba hasta ahora.

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**Keywords:** First World War, Italian Army, war losses, *Albo d'oro*, roll of honour.

