

KNOWLEDGE BRIEF ON COMPLETENESS OF DEATH REGISTRATION IN TUNISIA, 2002-2017

ASSESSING DEMOGRAPHIC DATA QUALITY AND
COMPLETENESS OF DEATH REGISTRATION IN TUNISIA

Con✓ERGE

Connecting Vital Events Registration and Gender Equality

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Acknowledgments

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Key Messages

- Estimated death registration completeness in Tunisia is above 95% with no measurable difference between males and females nor subnationally between Tunisia's 24 governorates.
- Census data on enumerated population and annual death counts derived from vital registration in Tunisia are of high quality, with no discernible irregularities, inconsistencies, signs of misreporting or under-coverage/under-registration.
- Death registration completeness across all governorates of Tunisia systematically improved between 2002-2017, and significantly (by more than 10%) for Jendouba and Kesserine governorates.
- The high quality and completeness of the available data permits usage of death registration data without adjustment, when producing vital statistics and estimating summary indicators on mortality.

TUNISIA



Population Profile of Tunisia

The Republic of Tunisia is located in Northern Africa. It is bordered by Algeria to the west and southwest, Libya to the southeast, and the Mediterranean Sea to the north and east.

Tunisia is divided into 24 provinces (governorates) for administrative purposes. Provinces are further divided into a total of 350 municipalities.

- Total population: 11,694,719 ¹
- Surface area (km²): 163 610 ²
- Capital city: Tunis
- Major languages: Arabic (official) and French.

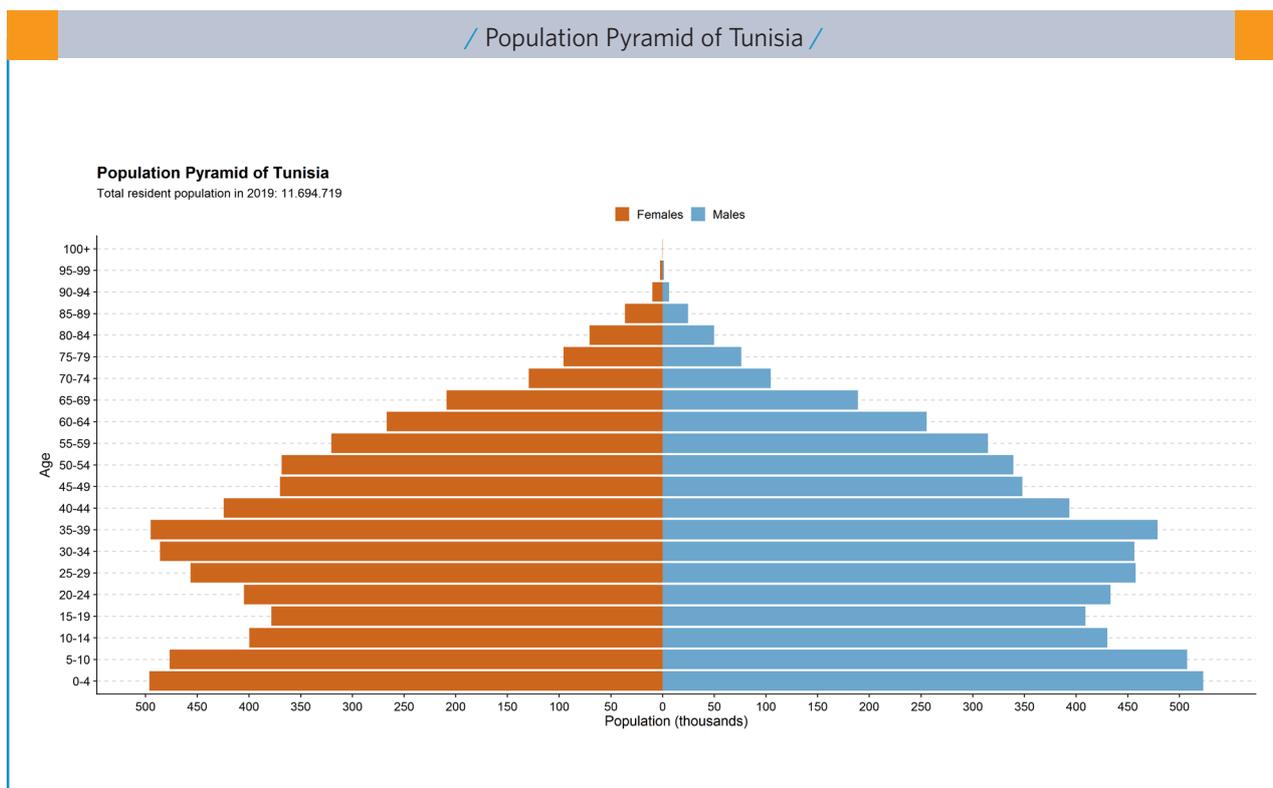
Key Figures

Population growth (annual percentage)	1.1 (2019) ³
Urban population (percentage of total population)	69 (2019) ⁴
Rural population (percentage of total population)	31 (2019) ⁵
Total fertility (live births per woman)	2.17 (2019) ³
Infant mortality per 1,000 live births	12 (2019) ³
Under-five mortality per 1,000 live births	13 (2019) ³
Maternal mortality ratio (modelled estimate, per 100,000 live births)	43 (2017) ⁶
Life expectancy at birth (years)	76.7 (2019) ³

The following population pyramid outlines the population structure for Tunisia in 2019. The relative symmetry of the population pyramid shows a balanced gender distribution of the population in Tunisia. However, there are slightly more females than males in the elderly

population (65 and over) indicating a higher life expectancy for women. The age distribution shows noticeably larger populations for age groups lower than 10 years compared to the adjacent age group (10 to 15 years). This change reflects recent increases in births since 2010.

/ Population Pyramid of Tunisia /



Overview of the CRVS System in Tunisia

Legislative framework

The decree of 28 December 1908 stated that birth and death registrations were mandatory for Tunisians. Nevertheless, there was no mention of any procedures related to marriage and divorce registrations.

In 1956, the Personal Status Code (Code du Statut Personnel) created a judicial procedure for both marriage and divorce. This code entry into force in 1957 represented the first step in the

institution of equality between women and men in Tunisia. In that same year, the law no. 57-3 established and regulated the civil registration system in Tunisia. It became compulsory to register all births and deaths that occur in the Tunisian territory for any person who is present in the country, regardless of nationality, religion or race. Several amendments occurred since then to improve the civil registration system.

Legal time period of registration of civil events

Certificate	Legal deadlines
Births certificate	10 days from the date of birth
Deaths certificate	3 days from the date of death
Marriages certificate	30 days from the date of the conclusion of the marriage contract
Divorces	10 days from the date of the divorce ruling

CRVS Management in Tunisia

The Ministry of Local Affairs¹ and Environment and the Ministry of Justice are responsible for the civil registration system in Tunisia. While birth and death registrations are under the authority of The Ministry of Local Affairs and Environment, the Ministry of Justice is in charge of marriage and divorce registrations.

The Institut National de la Statistique collects vital registration data to produce and publish

national vital statistics. In this regard, the Institut National de la Statistique collaborates with the Ministry of Public Health, the Ministry of Justice and the Ministry of Local Affairs and Environment.

The Institut National de la Santé also contributes to producing vital statistics by collecting and analyzing data related to causes of death.

Digitizing the CRVS system

The Institut National de la Statistique and the Centre National de l'Informatique signed an agreement to digitalize the collection and publishing of civil registration data in 2012.

Thus, the Centre National de l'Informatique developed a digital national civil status system, MADANIA, to manage all documents of civil

status. Madania provides a central database of civil status for all Tunisian nationals and for foreigners who have civil status in Tunisia.

However, the CRVS system in Tunisia is only partially digitized. In fact, the use of Madania system is limited due to the lack of data entry for marriage and divorce registration.

¹ The governmental decree n° 2016-365 established the Ministry of Local Affairs and fixed its attributions in 2016. Formerly, the civil registration system in Tunisia was managed by the Ministry of the Interior.

Introduction

Improving civil registration and vital statistics systems is a target included in the 2030 Agenda for Sustainable Development:

- **Target 16.9** : By 2030, provide legal identity for all, including birth registration;
- **Target 17.19** : By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries.

Death registration is specifically monitored using SDG indicator 17.19.2 (b): Proportion of countries that have achieved 100 percent birth registration and 80 per cent death registration. (United Nations, 2017)

The United Nations Population Fund contributes to the achievement of the Sustainable Development Goals through improving national population data systems by mapping and addressing inequalities (United Nations Population Fund, 2017). Within the broader context of enhancing civil registration and vital statistics at national and regional levels, the United Nations Population Fund in collaboration with the Institut National de la Statistique undertook an assessment of the completeness and quality of 2002-2017 death registration data in Tunisia.

Box 1: Completeness of death registration

Completeness of death registration or other vital events is defined as the number of registered events occurring in a given period of time divided by the number of total events (both registered and unregistered) occurring in the same period of time.

$$\text{Completeness of death registration (\%)} = \frac{\text{number of registered deaths}}{\text{actual number of deaths}} \times 100$$

Completeness estimates above 90% are usually considered as evidence of complete death registration.

In Tunisia there are more than 500 civil registration points covering all governorates. However, they are not equally accessible by all residents of Tunisia, hence the importance of assessing the completeness of the vital event registration system.

Previous studies on completeness of the Tunisian death registration have relied mostly household surveys that collect self-reported

information about the registration of births and deaths by the civil registration authority. Those survey estimates suggest that the registration of deaths is nearly 100% complete (Institut National de la Statistique, 2013) (Ministry of Health and Institut National de la Santé Publique, 2019). Similarly, the results from our evaluation independently confirm the high level of completeness of Tunisian death registration.

Box 2: Civil registration system performance

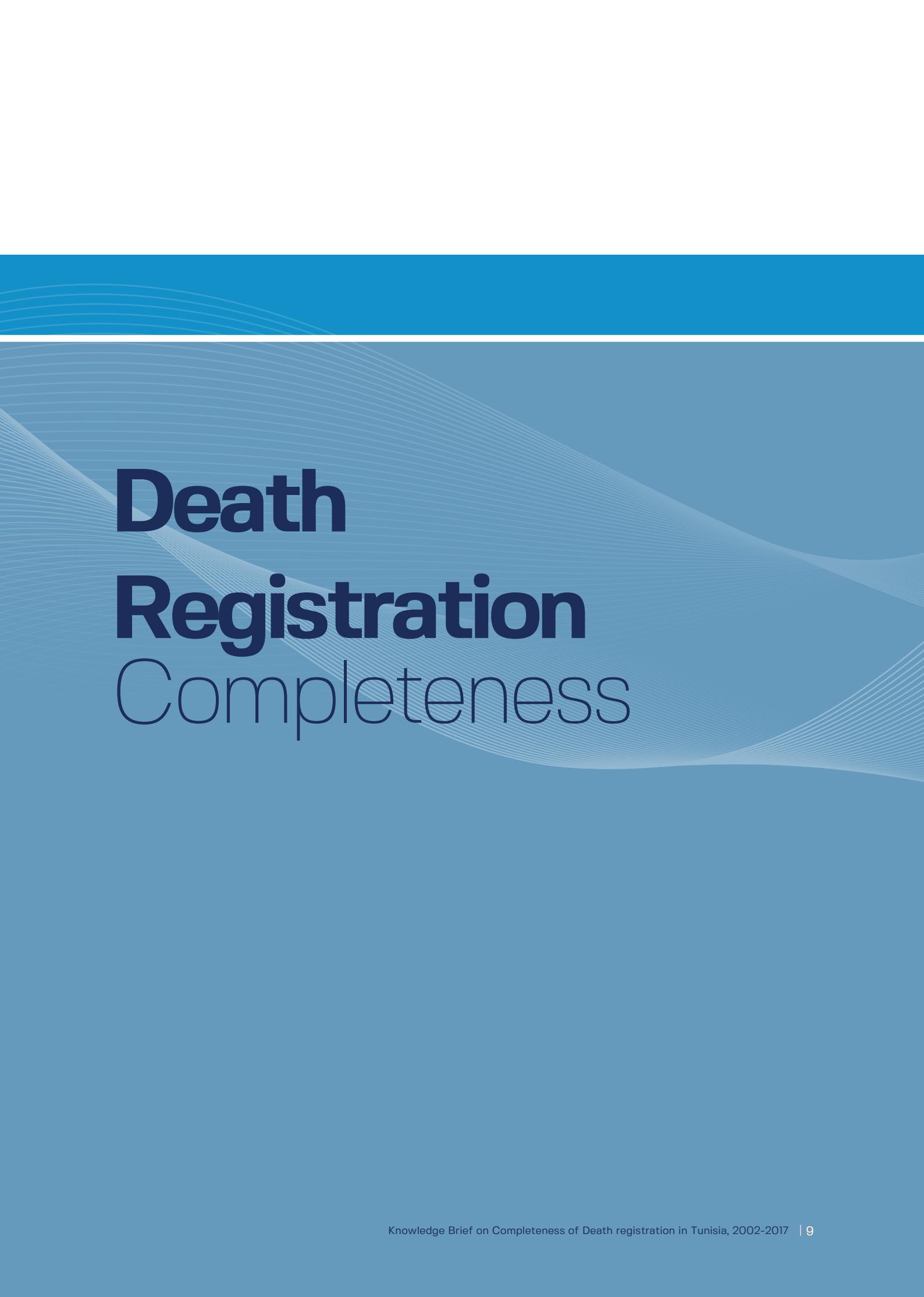
This technical report evaluates three dimensions of civil registration system performance:

- Completeness of death reporting
- Consistency of the data collected from the two recent censuses (2004 and 2014)
- Quality of age and sex reporting

The assessment of the completeness and the quality of death registration data covers the 2002-2017 period, using intercensal methods and complementary estimation methods based on the two most recent censuses conducted in 2004 and 2014 as well as registered deaths. The relatively high levels of death registration assessed are testament of the fact that death registration has been compulsory and required by law in Tunisia for more than 60 years.



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Death Registration Completeness

To assess the completeness of death registration we applied the commonly used death distribution methods (DDMs) and the novel Adair-Lopez empirical method.

These methods employ demographic and statistical techniques to indirectly estimate death registration completeness. They have two main advantages:

- No need for an explicit estimate of the actual number of deaths within the population.
- The data required as inputs are commonly available and regularly published by national statistical offices.

The death distribution methods (DDMs) are based on a comparison of the age distribution of registered deaths with the age distribution of the population in which the deaths occurred. The age distributions of the population were extracted from the two successive population censuses 2004 and 2014, while the age pattern of registered deaths during the intercensal period was obtained from civil registration data.

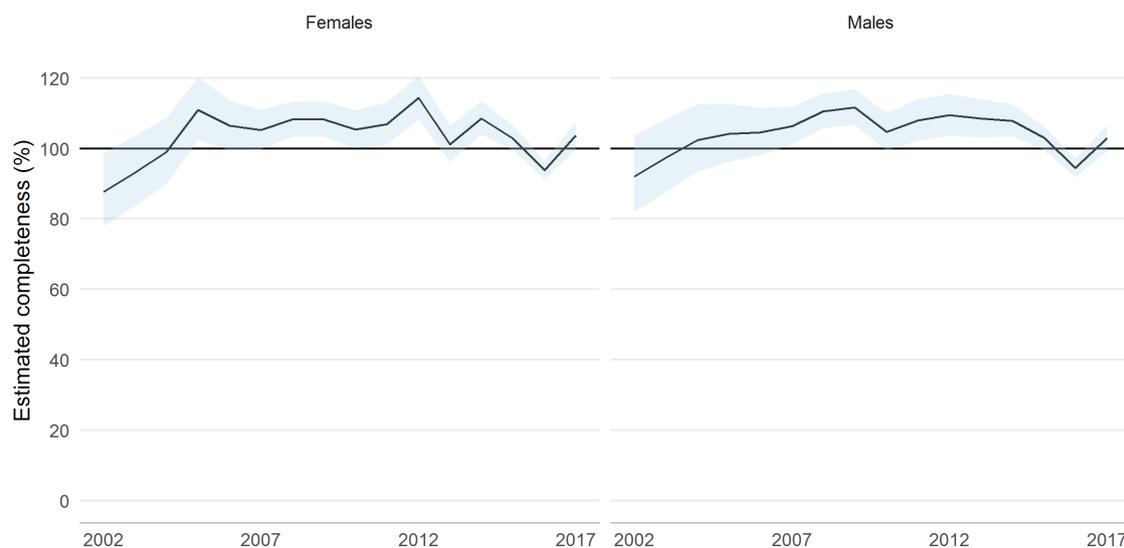
In the case of Tunisia, the majority of the DDMs estimates obtained are above 100% mark. This result is unlikely due to a double-count of deaths but could be attributed to some of the DDMs' assumptions not being met.

The summary measure of all three DDMs applied, here represented by their harmonic mean, is 100% for females and 103% for males. Such results suggest that death registration was complete in the 2004–2014 period.

Furthermore, we apply the Adair-Lopez empirical method to examine death registration completeness over the 2002-2017 period for both the national and subnational. The Adair-Lopez results align with the DDMs findings. They confirm the completeness of Tunisian civil registration data for both sexes and across all governorates of Tunisia with little geographical variance. The findings also show notable improvements in completeness since the early 2000s.

The death registration completeness estimation methods applied give completeness estimates for either the adult population or the entire population. Therefore, we examine child mortality separately by comparing infant mortality rates and under-five mortality rates derived from death registration data to those estimated from alternative sources. These sources include indirect estimations from the 2014 census, MICS4 and MICS6 in 2011–2012 and in 2018, the Family Health Survey conducted in 2001 by the Pan Arab Project for Family Health (PAPFAM) and the UN IGME model estimates.

Figure 1 : Under-five mortality rate completeness as the ratio of estimates based on vital registration to UN IGME estimates, by sex with confidence intervals, Tunisia, 2002-2017.



Estimates derived from vital registration have matched or exceeded other estimates from at least 2005 onwards. This suggests that the completeness of child mortality data used in deriving these estimates is high.



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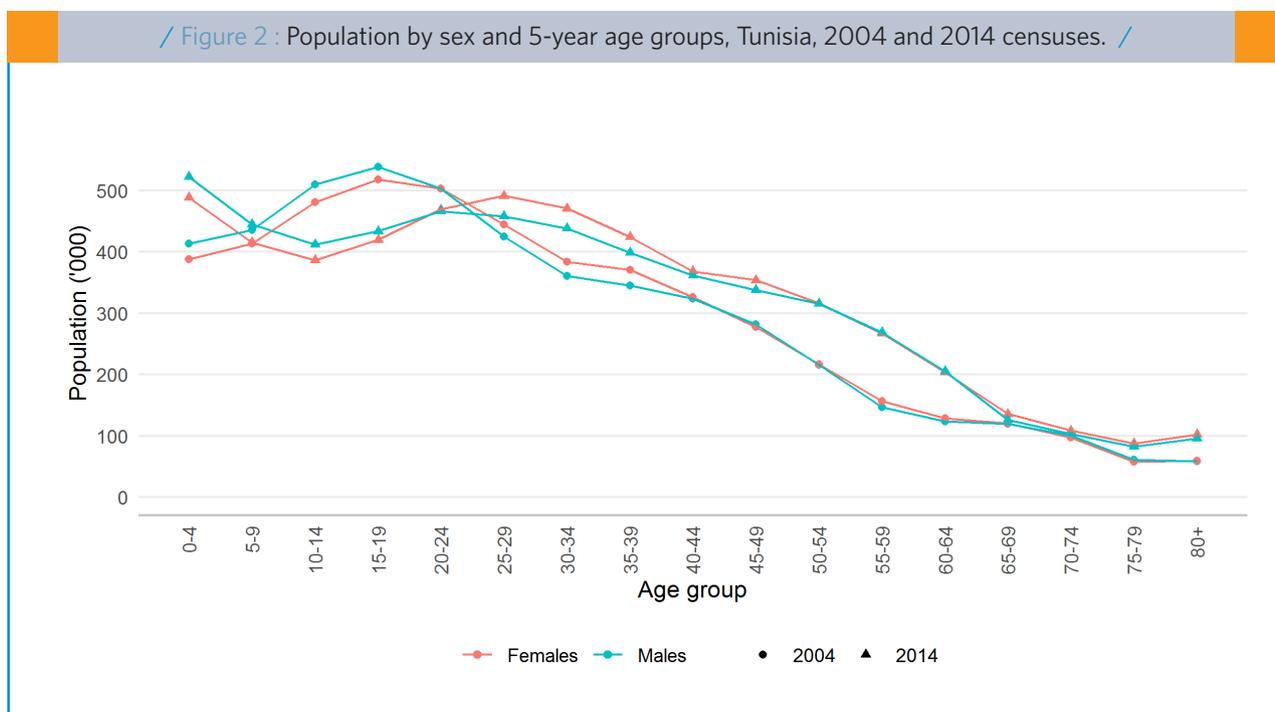
General assessment of data quality

Population and vital statistics, whether they are obtained by enumeration, registration, or other means, are subject to error. The task of evaluating and assessing data is an essential part of identifying the nature, direction, magnitude and likely significance of these errors. Such evaluation is important in clarifying the validity

and accuracy of population and demographic estimates.

We assessed census data and death registration data in Tunisia using standard diagnostic analyses of sex ratios, age ratios and age heaping indices.

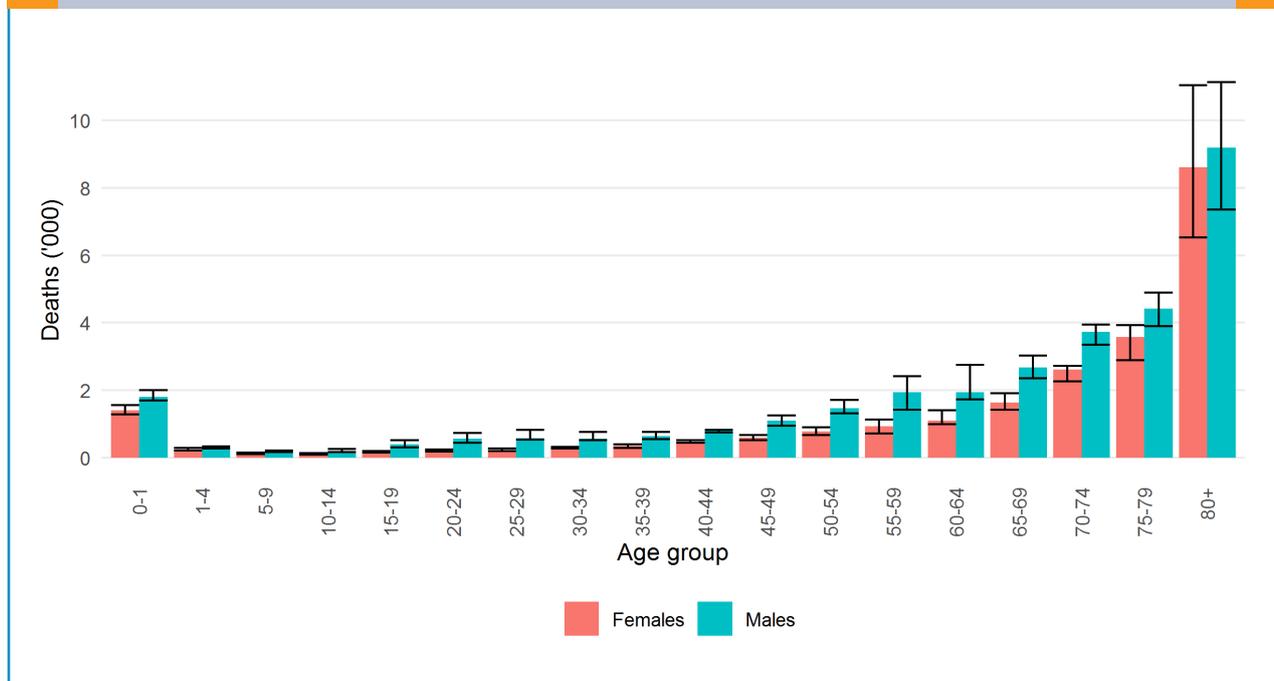
/ Figure 2 : Population by sex and 5-year age groups, Tunisia, 2004 and 2014 censuses. /



The distribution of registered deaths by age and sex for the intercensal period 2004-2014 are shown in Figure 3, by depicting the median of annual death counts for the time period, with error bars showing minimum and maximum annual death counts. The data appear to confirm the observation that male mortality is usually higher than female at all ages. More males die

at younger ages than females, with the reverse being true at the oldest ages - reflecting a female mortality advantage. Outside of the open age group 80+, the ranges of annual death counts (the difference between minimum and maximum counts) seem relatively small, signifying that death counts by age stay fairly constant from one year to the next.

/ Figure 3 : Median annual registered deaths by sex and age group over the intercensal period 2004-2014 with error bars indicating minimum and maximum values, Tunisia. /

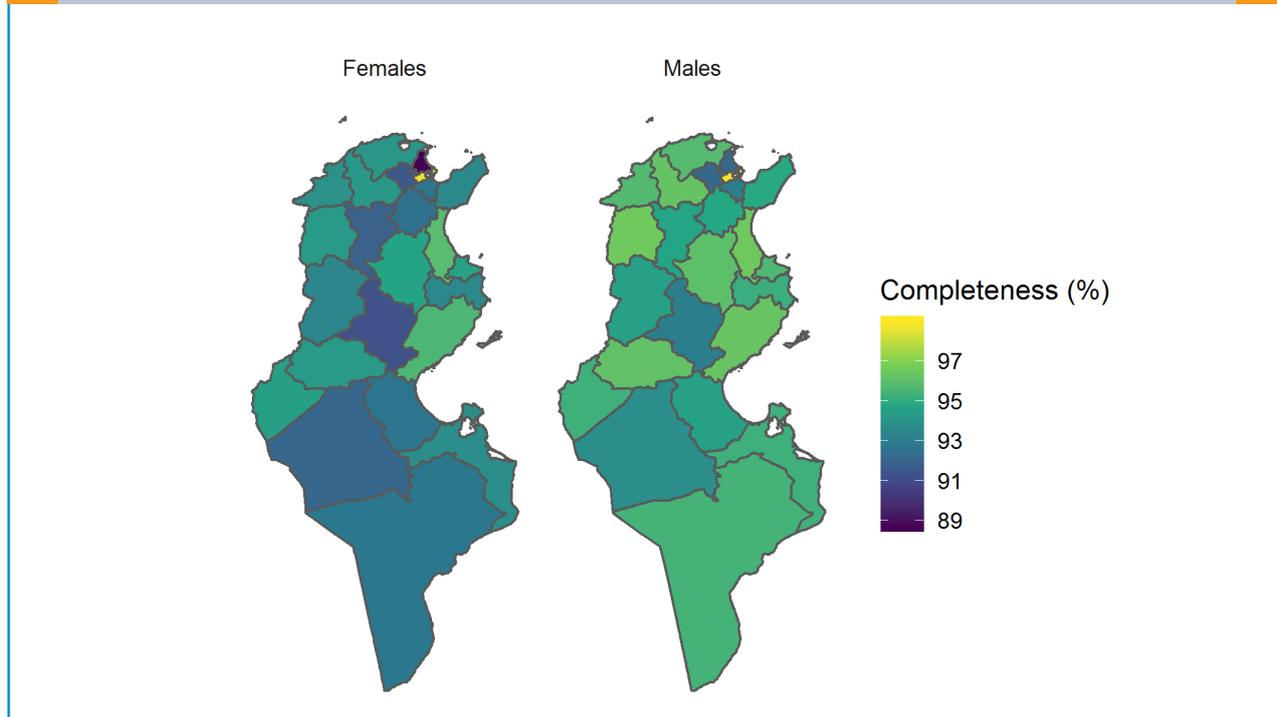


Our evaluation ascertains the consistency and orderliness by age and sex of the demographic data in Tunisia.

We also evaluated the completeness of death registration between 2002 and 2017 by governorate using the Adair-Lopez empirical method. Figure 4 shows that death registration completeness across governorates in Tunisia is above 89% for both males and females.

Further, between 2002-2017 we estimate that the death registration completeness increased uniformly across all governorates - with the most notable improvements being observed in Jendouba (from 84% to 96% completeness) and Keserine (from 84% to 95% completeness). The range of systemic improvements in death registration completeness between 2002 and 2017 are shown in Figure 5.

/ Figure 4 : Geographical representation of death registration completeness estimates by sex and governorate with Model 1 of the Adair-Lopez Empirical Method, Tunisia, 2017. /



/ Figure 5 : Estimated Change in Death Registration Completeness by governorate using Model I of the Adair-Lopez Empirical Method, 2002-2017. /



Conclusion

We have assessed the quality of demographic data and produced new estimates for death registration completeness in Tunisia. The results presented here confirm the high quality and completeness of Tunisian death registration data.

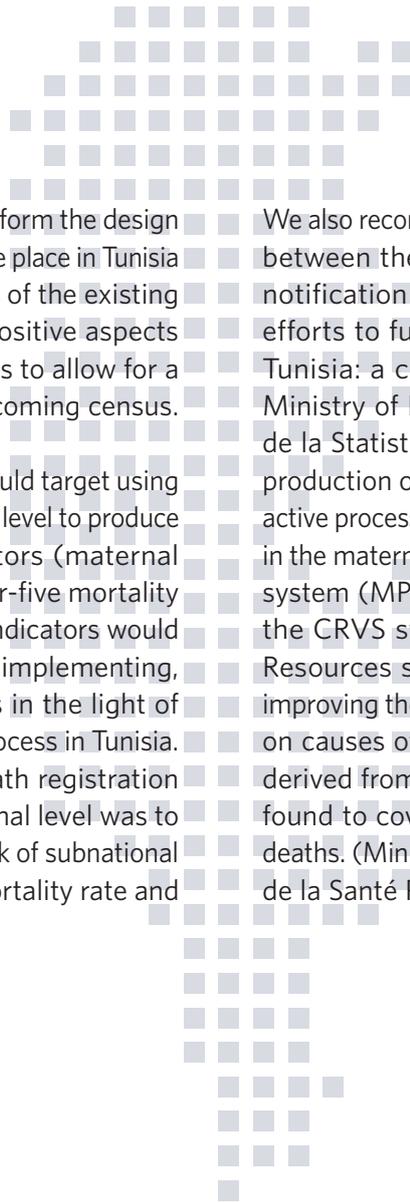
These findings should prove useful for national and regional authorities in targeting further efforts to develop civil registration and the production and use of vital statistics based on death registration data. Specifically, the results aid researchers and public health workers to re-evaluate the need for adjusting observed death registration data or any other mortality statistics given the high level of death registration completeness. Our findings also have immediate relevance with respect to the United Nations' Sustainable Development Goals, as timely and complete death registration data covering the whole population is fundamental for quantifying and monitoring progress on these indicators.



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A lasting commitment to improving data quality is needed to ensure that Tunisia's CRVS system continues to provide reliable and timely information on fertility and mortality patterns. In fact, quality data are fundamental for informing the development, implementation and assessment of public policies.

Future Directions



This analysis could be used to inform the design of the next census planned to take place in Tunisia in 2024. Assessing all aspects of the existing CRVS system highlights the positive aspects and sheds the light on the gaps to allow for a tailored preparation of the upcoming census.

Going forward, more efforts should target using vital statistics at the governorate level to produce key population health indicators (maternal deaths, perinatal deaths, under-five mortality rate, infant mortality...). Such indicators would be highly useful for planning, implementing, and evaluating health policies in the light of the ongoing decentralization process in Tunisia. In fact, our assessment of death registration completeness on the subnational level was to some extent hindered by the lack of subnational estimates of the under-five mortality rate and its completeness.

We also recommend to enhance the coordination between the main agencies involved in the notification and registration of vital events efforts to further develop CRVS systems in Tunisia: a closer cooperation between the Ministry of Health and The Institut National de la Statistique is necessary to improve the production of vital statistics. In that regard, an active process of cross-checking deaths captured in the maternal death surveillance and response system (MPDSR) against those registered in the CRVS system should be implemented. Resources should also be directed towards improving the quality and completeness of data on causes of death. In 2017, causes of death derived from medical death certificates were found to cover only 41 percent of registered deaths. (Ministry of Health and Institut National de la Santé Publique, 2020).

End Notes

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