KNOWLEDGE BRIEF ON COMPLETENESS OF BIRTH REGISTRATION IN TUNISIA, 2000-2018

ASSESSING DEMOGRAPHIC DATA QUALITY AND COMPLETENESS OF BIRTH REGISTRATION IN TUNISIA, 2000-2018

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This report was developed jointly by the Institut Nationale des Statistique (INS) and the United Nations Population Fund (UNFPA) and released in March, 2021. The technical work was undertaken through the ConVERGE (“Connecting Vital Events Registration and Gender Equality”) Initiative led by UNFPA and the IDRC Centre of Excellence on CRVS Systems, Canada. The analysis and write-up was developed by Anssi Heinonen, Romesh Silva, Soumaya Taibi (UNFPA) and Adnen Lassoued, Nadia Touihri, Arbia Ferchichi (INS). Program review and support was provided by Mouna Mayoufi, Rym Fayala, Chokri Benyahia, and Renee Sorchik (UNFPA). The ConVERGE Initiative is jointly funded by the International Development Research Centre and Global Affairs Canada.


Key Messages

- Birth registration in Tunisia is complete.
- Census data on birth registration data in Tunisia are high quality, with no systematic irregularities, inconsistencies, signs of misreporting or incompleteness.
- The high quality and completeness of the birth registration and census data allow their usage without adjustment when producing vital statistics and summary fertility indicators.
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
- Surface area (km²): 163,610
- Capital city: Tunis
- Major languages: Arabic (official) and French.

### Key Figures

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

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.
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.
The Ministry of Local Affairs 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 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.

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 since it does not include marriage and divorce registration data.

### Legal time period of registration of civil events

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Legal deadlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Births certificate</td>
<td>10 days from the date of birth</td>
</tr>
<tr>
<td>Deaths certificate</td>
<td>3 days from the date of death</td>
</tr>
<tr>
<td>Marriages certificate</td>
<td>30 days from the date of the conclusion of the marriage contract</td>
</tr>
<tr>
<td>Divorces</td>
<td>10 days from the date of the divorce ruling</td>
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### CRVS Management in Tunisia

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### Digitizing the CRVS system

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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.
Assessing demographic data quality and completeness of Birth registration in Tunisia, 2000-2018

Introduction
Improving civil registration and vital statistics systems is included in two targets of 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.

Birth registration is specifically monitored using two indicators included in the 2030 Agenda for Sustainable Development:

- **Indicator 16.9.1**: Proportion of children under 5 years of age whose births have been registered with a civil authority (United Nations, 2017);
- **Indicator 17.19.2 (b)**: Proportion of countries that have achieved 100 percent birth registration and 80 percent 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). 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 2000-2018 birth registration data in Tunisia.

**Box 1: Completeness of birth registration**

Completeness of birth registrations 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.

Completeness of birth registration (%) = \( \frac{\text{number of registered births}}{\text{actual number of births}} \times 100 \)
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 on 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 births is nearly 100% complete (Multiple Indicator Cluster Surveys 2018) (Multiple Indicator Cluster Surveys 2011-2012). Similarly, the results from our evaluation independently confirm the high level of completeness of Tunisian birth registration.

Our assessment of completeness and quality of birth registration data covers the period 2000–2014. We compare fertility measures derived from birth registration data to those estimated using other data from censuses and surveys. We estimate the actual number of births via “reverse-survival” techniques using the 2014 census data.
Birth Registration Completeness
A simple but powerful method to estimate the actual number of births consists of “reverse-surviving” the population enumerated in a recent census to obtain births represented by the census for years preceding the census.

Methods for estimating fertility within a population can also be used to assess birth registration completeness. They compare observed fertility measures derived from birth registration to those estimated by other means. These methods include:

- Modelling the relationship between period fertility rates and average parities and ascertaining whether the fertility rates derived from birth registration should be adjusted;
- Comparing observed period fertility rates to estimates derived directly from survey data containing birth histories.

All of the above-mentioned techniques are applied to validate the completeness of birth registration in Tunisia.

Births registered in the 14 years preceding the most recent census in 2014 are consistent with births derived implicitly from the enumerated population by reverse survival. Birth registration completeness implied by the reverse survival estimates is essentially 100% for both sexes on the national level.

Figure 1: Annual births by sex derived from birth registration and from reverse surviving the population aged 0–15 enumerated in the 2014 census, Tunisia, 2000–2014.
The results show a strong increasing trend in registered births for both sexes, which is similarly visible in the reverse survival estimates. Estimated female birth registration completeness was lower than that of males until 2009. Differences between sexes in estimated completeness are however small throughout the studied period, reaching at most around 2–3 percentage points. The numbers of registered births are for the most part above reverse survived births, which translates to birth registration completeness estimates above 100%. Implied levels of completeness above 100% are likely due to inaccuracies in the WPP2019 estimates of life table survivorship probabilities rather than over-counting or other misreporting issues in the birth registration data.

Completeness estimates derived by reverse surviving the population aged 0-4 for each governorate in Tunisia during the period 2000-2010 are displayed in figure 3. Estimates exceeding a 100% are likely explained by migration. Overtime, all estimates become centred around 100% suggesting a complete birth registration for all governorates. Our estimates confirm that there has been progressive improvement in birth registration completeness over time in Ariana, Ben Arous and Manouba governorates and that there is substantial urbanization of the population towards the governorate of Tunis.

Figure 2: Estimates of birth registration completeness by sex as the ratio of registered births to the numbers of births estimated by reverse surviving the population aged 0–15 enumerated in the 2014 census, Tunisia, 2000–2014.
We examined the concordance of various estimates for total fertility. Sources include birth registration, 4th and 6th round of MICS, UN WPP 2019 estimates, Human Fertility Collection, Family Health Survey conducted in 2001 by the Pan Arab Project for Family Health (PAPFAM) and estimates derived indirectly from the last two censuses by reverse surviving the enumerated populations. All these estimates appear to capture the evident slump in fertility in the early 2000s and the successive increase to around 2.4 children per woman. Total fertility rates derived from birth registration do not seem particularly low compared to other sources, suggesting birth registration is generally complete.
Figure 4: Estimates of total fertility rates from various sources, 1997–2017.
Assessing demographic data quality and completeness of Birth registration in Tunisia, 2000-2018

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 ensuring population and demographic estimates.

We assessed census data and death registration data in Tunisia using standard diagnostic analyses of sex ratios and age heaping indices. Analysis of sex ratios of registered births can provide insights into the quality of birth registration data. Figure 5 shows that, during the period 2000-2014, the sex ratio declined on the national level from a high 111 males per 100 females in 2000 to approximately 106 males per 100 females in 2014. The ratios are on the higher end of the scale given that the “natural” sex ratio at birth is often thought to be around 105 (Moultrie T, Dorrington R, Hill A, Hill K, Timæus I, Zaba B (eds)), and in northern Africa, it has been estimated to range from roughly 104 to 108 (Fengqing C, Gerland P, Cook AR and Alkema L, 2019).

The observed sex ratios do not, however, seem high enough to necessarily indicate parents having a preference for boys and/or under-registration of girls.

/ Figure 5: Sex ratio at birth, Tunisia, 2000-2014. /
To assess the uniformity of birth data quality across governorates in Tunisia we study sex ratios at birth during the period 2000-2014 as depicted in figure 6. There are a few outlier values observed in some governorates like Mannouba (141 males per 100 females in 2008 and 93 in 2013) and Tozeur (210 in 2009 and 98 in 2014) that might infer a weakness in the civil registration system. The subnational sex ratios derived from civil registration are overall higher than the expected normal range for human populations [of 102-107 males per 100 females] prior to 2010. However, from 2010 onwards these estimates become closer to the expected range and are overall concentrated between 100 and 115 males per females. This shows an improvement in the quality of birth data registration at the local level.

1 Birth data by sex is missing for Manouba in 2000 and sex ratio at birth for Tozeur in 2009 is 210.
Annual age-specific fertility rates are derived from birth registration as the ratio of births to women in each group to the estimated female population in the corresponding age group.

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\text{Annual age specific fertility rates} = \frac{\text{births to women in the age group}}{\text{female population in the age group}} \times 100
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Box 3: Annual age-specific fertility rates

Annual age-specific fertility rates are presented in Figure 6 for the period 2014-2017. Respective total fertility rates shown below reveal that fertility has been decreasing in recent years after having peaked in 2014, following a steady increase from the low levels observed in the early 2000s. The period fertility schedules in Figure 7 show that this decrease in fertility is almost exclusively due to decreasing fertility among women aged 25–39 years and especially in the age group from 25 to 29 years.

On the national level, the shapes or levels of the average parities and fertility schedules studied do not immediately raise any questions about their plausibility, consistency or completeness, nor do they appear to be inconsistent with each other.
To assess the quality and completeness of birth registration data on the regional level, we compare annual age-specific fertility rates derived from the civil registration system in 2015 and 2018 with the estimates from the MICS6 (Multiple Indicator Cluster Surveys 2018). The shapes of fertility patterns displayed in figure 8 differ across regions.

- For Nord Est, Centre Ouest and Sud Ouest regions, the patterns and values of the annual age-specific fertility rates derived from the civil registration system are overall in line with the MICS6 estimates.

- For Nord Ouest and District de Tunis regions, the MICS6 estimates are in line with the levels of fertility registered in 2018. However, annual age-specific fertility rates registered are substantially lower in 2015 compared to 2018. We cannot conclude if this increase is due to a change in average parities or in completeness of birth registration.

- For Centre Est and Sud Est regions, the shape of the annual age-specific fertility rates derived from the civil registration in 2018 is compatible with the MICS6 results. However, the estimates of the MICS6 are significantly higher for women aged 25-34 years.

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Multiple Indicator Cluster Survey (MICS6) contains data on birth histories and women of reproductive age. These data cover the survey reference period from May 2015 to May 2018.
In general, the annual age-specific fertility rates derived from 2018 birth registration data are consistent with the MICS6 estimates for all regions except Centre Est and Sud Est. We conclude that, as a whole, regional fertility rates derived from civil registration seem plausible.
Conclusion
This assessment confirms the high quality and completeness of Tunisian civil registration data. Birth registration completeness was assessed at the national and district level, estimates of actual birth counts, and fertility rates suggest that birth registration is essentially 100% complete as of 2018.

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

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 can 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, enhanced efforts should be made to use 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.

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, building a registry for detailed birth information (birthweight, childbirth method, birth complications...) at the local level can provide useful data for producing indicators for maternal and newborn health.
End Notes


2. UN data – Tunisia

3. United Nations, Department of Economic and Social Affairs, Population Division
   World Population Prospects 2019, Volume II: Demographic Profiles


   https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=TN


References


