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Report

Expert Group Meeting on Record Linkage Studies to Assess Completeness of Death Registration Beirut, 21-22 December 2017

Summary

The Expert Group Meeting on Record Linkage Studies to Assess Completeness of Death Registration was organized in support of a pilot study under preparation by the Statistics Division of the Economic and Social Commission for Western Asia (ESCWA). The pilot study attempts to estimate completeness of death registration in the State of Palestine based on record linkage between census and register data. The results of the meeting will feed into the ESCWA pilot study, enrich its analytical and technical foundation and assist the execution of similar record linkage studies to assess completeness of death registration in other ESCWA member States. The present report contains an overview of the meeting's discussions and concluding recommendations.

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Introduction

1. The Expert Group Meeting on Record Linkage Studies to Assess Completeness of Death Registration was organized by the Statistics Division of the Economic and Social Commission for Western Asia (ESCWA) at the United Nations House in Beirut, on 21 and 22 December 2017.
2. The meeting brought together international and regional experts, statisticians from national statistics offices and specialists from other related official institutions responsible for civil registration and vital statistics systems of some ESCWA member States to undertake the following:
 - (a) Discuss indirect and direct methods to assess completeness of death registration;
 - (b) Present and seek feedback on the preliminary findings from a pilot study on the completeness of death registration based on record linkage for the Governorate of Nablus in the State of Palestine;
 - (c) Present and review methods used in some ESCWA member States to assess completeness of death registration;
 - (d) Raise awareness of the use of population census data in record linkage studies to assess completeness of death registration.

I. CONCLUSIONS AND PROPOSALS

3. Experts presented papers and research projects assessing completeness of death registration. Ensuing discussions resulted in a set of recommendations, some providing feedback on the preliminary findings from the ESCWA pilot study and others providing technical proposals and programmatic options for strengthening civil registration and vital statistics systems in the Arab region.

A. RESEARCH RECOMMENDATIONS

4. Participants welcomed the ESCWA pilot study and provided the following recommendations:
 - (a) Expand the assessment from Nablus to the entire West Bank region to avoid missing records due to intercensal migration between governorates;
 - (b) Use probabilistic matching, in the absence of personal identification numbers, to link death registration records with data from the infant and household mortality modules of the 2007 Palestinian population census;
 - (c) Update the assessment of death registration completeness using most recent data from the 2017 Palestinian population census;
 - (d) Conduct similar studies linking death registration records and population census data in other ESCWA member States, such as Egypt, Jordan and Tunisia.

B. TECHNICAL AND PROGRAMMATIC RECOMMENDATIONS

5. To improve the functioning of civil registration systems and the production of vital statistics, it was recommended that ESCWA member States:
 - (a) Assign a personal identification number to all newborn and new immigrants and forcibly displaced persons and use to the extent possible, including for registration of vital events, health services, education, employment, and others;
 - (b) Ensure that civil registration and vital statistics cover all residents of the country, including immigrants and forcibly displaced persons, and that information about place of residence is continuously updated;

(c) Establish a clear legal framework to exchange registration data between governmental agencies when required.

6. To support member States in advancing their civil registration and vital statistics systems, it was recommended that the Statistics Division of ESCWA:

(a) Conduct missions in targeted member States to advise on civil registration and vital statistics systems in coordination with related international and regional organizations;

(b) Organize a regional workshop to review country experiences and share practical guidelines on the measurement of completeness and quality assessment of registration data.

II. TOPICS OF DISCUSSION

A. SESSION I: DEATH REGISTRATION AND RECORD LINKAGE STUDIES – EXPERIENCES FROM THE ARAB REGION AND EUROPE

7. Mr. Salah al-Mazaihi, Director of Research and Development Indicators at GCC-Stat, presented the findings from his assessment of death registration completeness in Oman using record linkage. He matched records from the mortality module of the 2010 Omani census with the national death registration database for the same year. During the matching process, he established criteria to deal with common errors in the two data sources, including missing values, misspelled names, small differences in the age and date of death, and some inconsistencies with the sex of neonatal deaths. He found that the overall rate of death registration completeness among the Omani national population was about 90 per cent. However, the rate of completeness for deaths below 15 years was lower, at about 70 per cent. Findings from the completeness assessment were used to adjust sex- and age-specific death rates and to derive adjusted life tables as well as summary mortality indicators.

8. Mr. Helge Brunborg, researcher at Statistics Norway, presented examples of record linkage studies from Norway and Bosnia. He explained that the Norwegian civil registration system involves a unique personal identification number (PIN), which is assigned to all newborn and new immigrants. The system is computerized and continuously updated through close cooperation between various Government agencies. Since registration completeness is 100 per cent and the unique PIN makes it simple to link data between different registers, the Norwegian system is widely used for administration, statistics and research. Mr. Brunborg also presented a record linkage study he conducted when working for the International Criminal Tribunal for the Former Yugoslavia (ICTY) to determine the minimum number of dead and missing persons related to the fall of Srebrenica in 1995. The main data source was a list of missing and dead compiled by the International Committee of the Red Cross. This list was merged with several other data sources, including a list of dead and missing from Physicians for Human Rights, the 1991 Population Census, the 1997 and 1998 voters register, refugees and internally displaced persons (IDPs), persons known to be dead, and exhumation records. The process was complicated because unique identifiers were not available in all data sources.

9. Mr. Michel Guillot, Professor of Demography and Sociology at the University of Pennsylvania, welcomed the record linkage studies from Oman, Norway and Bosnia and highlighted their value added compared to indirect methods to assess completeness of death registration, such as the Brass Growth Balance Method and the Coale-Preston Method. He reminded the assumptions behind record linkage studies, including the assumption of independence between data sources which is often violated. He discussed what constitutes a good match and the potential risk of false negatives and false positives when linking records from different data sources in the absence of PINs. Participants agreed on the importance of PINs to facilitate correct record linkage between different data sources. Participants also stressed the importance for civil registration and vital statistics to cover the total resident population, including labour migrants and refugees in line with the United Nations principles and recommendations.

B. SESSION II: ASSESSING COMPLETENESS OF DEATH REGISTRATION
IN SOME ARAB COUNTRIES – EGYPT AND JORDAN

10. Ms. Azza Badr, technical officer for Vital Statistics and Country Support from the Eastern Mediterranean Regional Office of the World Health Organization (WHO), stressed the importance of complete and accurate death registration data for the calculation of summary mortality indicators. She presented the methods used by WHO to rapidly assess death registration systems and introduced the Analysis of Causes of National Death for Action (ANACONDA). ANACONDA is an electronic tool developed by the University of Melbourne that assesses the accuracy and completeness of data on mortality and causes of death by checking for potential errors and inconsistencies. She explained that the tool provides a step-by-step approach that enables countries to quickly conduct a comprehensive review of their mortality levels and causes of death.

11. Mr. Gamal Abdelmawla Mostafa Salem, Head of the Birth and Death Statistics Department at the Central Agency for Public Mobilization and Statistics (CAPMAS), provided an overview of the status of death registration processes and evaluations in Egypt. He described the legal framework for the registration of vital events, including what data are gathered from death certificates, where deaths are registered, and reports filled by health offices. He noted that a high incidence of deaths registered with unspecified causes is largely attributable to medical personnel lacking the requisite training for classifying deaths according to the International Classification of Diseases (ICD) guidelines. He then described indirect methods that Egypt uses to evaluate the completeness of death registration data, particularly in the neonatal and under-5 age ranges. Lastly, Mr. Salem discussed the possibility of conducting a record linkage study, focusing on opportunities arising from the 2017 electronic census.

12. Mr. Mu'ath Adnan al-Majali, IT Department Manager and Data and Network Security Manager at the Ministry of Interior of Jordan, provided an overview of the status of death registration and mortality statistics in Jordan. In cooperation with the Department of Civil Status and Passports, the Department of Statistics collects and compiles data on vital events from population censuses and household surveys as well as from civil registration. He discussed the legal framework for civil registration and the issuance of national PINs, although he noted that PINs were not used in the most recent census in 2015. Mr. al-Majali concluded by restating the shortcomings of indirect methods to assess completeness of death registration and calling for a record linkage study to be conducted in Jordan.

13. Participants proceeded to discuss the state of civil registration systems in Egypt and Jordan, noting improvements and shortcomings. Ms. Hala Naufal, Professor of Population Studies at the Lebanese University, reemphasized two consistent issues in civil registration systems in the region. Firstly, as noted in Mr. Salem's presentation, Arab countries face problems in properly identifying causes of death. Secondly, there is an ambiguity concerning the definitions of residents and who to include in death counts; this issue is particularly relevant to the case of Jordan where migration flows are significant. Participants agreed that training medical personnel to adequately register causes of death is a necessity in the region. It was also acknowledged that special attention should be paid to improve access to civil registration and production of vital statistics for refugee populations.

C. SESSION III: DEATH REGISTRATION AND RECORD LINKAGE STUDIES –
A PILOT STUDY FROM THE STATE OF PALESTINE

14. Mr. Amjad Mahmoud Jawabra, Department Director of Central Registers at the Palestinian Central Bureau of Statistics (PCBS), described the legal framework for registering vital events in the State of Palestine and the processes for assessing their completeness. He explained that death registration data are processed electronically and distributed to the Ministry of Interior and Ministry of Health. To estimate completeness of registration, the national statistical office relies on an indirect method based on population projections from the 2007 census. Mr. Jawabra acknowledged continued improvements in coordination between ministries and was hopeful that census data from 2017 could be directly linked with civil registration data.

15. Mr. Chalapati Rao, Associate Professor of Population Health at the Australian National University, presented the preliminary findings from an ESCWA-commissioned pilot study to assess completeness of death registration in the State of Palestine based on record linkage. He provided an overview of available data sources for this study, including deaths registered in the period of 1997-2007 and census data for the population at the beginning and end of this period. The presentation focused on one Palestinian governorate, namely Nablus, in the West Bank region. Mr. Rao attempted to use the census data to identify deaths, starting with the hypothesis that the individuals who were recorded in the 1997 census but were not present in the 2007 census were potential deaths. However, the number of potential deaths was found to be implausibly high, at 52,500. He concluded that there were other unrecorded reasons, including internal and international migration, for persons being represented in one census and not in the next.

16. Mr. Helge Brunborg discussed data limitations and provided recommendations for including additional questions in censuses to facilitate future record linkage studies. He also noted that population registers should record any change in place of residence, especially in case of international migration. Participants welcomed the pilot study but recommended a number of improvements. It was suggested to expand the study to the whole West Bank in order to avoid the problem of internal migration. It was also pointed out that the 2007 Palestinian census contained infant and household mortality modules that can be used to carry out a probabilistic record linkage similar to the one conducted by Mr. Salah al-Mazaihi to assess completeness-of-death registration in Oman in the absence of unique personal identifiers. Participants also encouraged to use the 2017 census data in order to provide a more up-to-date assessment of death registration completeness.

D. SESSION IV: ASSESSING COMPLETENESS OF DEATH REGISTRATION IN SOME ARAB COUNTRIES – IRAQ AND TUNISIA

17. Mr. Sameer Khudhair Hadi, Director of Population and Labour Force Statistics at the Central Statistical Organization (CSO) of Iraq, provided a historical overview of the Iraqi civil registration system and discussed the current status of registration data, including total deaths by age and causes of death. He explained that, although the last population census in Iraq was conducted in 1997, several household surveys providing information on under-5 mortality had been conducted in recent years. He also described the legal framework for registering vital events, noting that birth and death certificates were being regularly updated. According to a rapid assessment conducted by the Eastern Mediterranean Regional Office (EMRO) of WHO in 2012 in conjunction with statistical agencies and different ministries, the rate of civil registration completeness in Iraq was 77 per cent.

18. Ms. Arbia Ferchichi, Deputy Director of Social Statistics and Services at the National Statistics Institute of Tunisia, presented the status of civil registration and vital statistics systems in Tunisia. She began by discussing the legal framework for registering vital events, which has been in place since the 1950s. Most births and deaths occur in health facilities and are thus registered in a timely manner. She noted that the National Health Institute works to classify deaths by international standards, and described how local municipalities cooperate with governmental agencies to process civil registration. Although there is a solid legal framework for registration of vital events, a seemingly high completeness, and population censuses to conduct record linkage studies, Ms. Ferchichi acknowledged shortcomings concerning the quality of death registrations and a lack of computerization.

19. Participants discussed the presentations made by Ms. Ferchichi and Mr. Hadi, with an overarching focus on data quality. Mr. Salah al-Mazaihi began the discussion by raising the issue of data quality in Iraq, noting that although the country has a good legal framework to record deaths, the indirect methods used to assess completeness of death registration may not be trustworthy. He also reemphasized the issues that arise from computerizing paper records in Tunisia. Ms. Ferchichi acknowledged that although the rates of completeness for birth and death registration are very high, the quality of computerized files in Tunisia is poor. Participants agreed that record linkage studies remain affected by the poor quality of data in the region, and that ESCWA and other United Nations agencies should continue working with national administrations in order to strengthen civil registration and vital statistics systems.

E. SESSION V: CURRENT AND FUTURE RELATED PROJECTS

20. Mr. Michel Guillot presented his current research project on global age patterns of under-5 mortality. The project aims at creating the largest database to date containing high-quality global mortality information by detailed age (by days, weeks, months, and years of age). This database will cover a wide array of historical and contemporary contexts in both more- and less-developed settings and serve as a basis for generating models summarizing regularities about how under-5 mortality is distributed by detailed age. He called for collaboration with national statistical offices in the region, noting that this global database, and models derived from it, will make it possible to address specific substantive questions about how and why age patterns of under-5 mortality vary by sex, time and place, and important programmatic implications.

21. Ms. Valeria Cetorelli, statistician at the Demographic and Social Statistics Section of ESCWA, presented the outline of a future project aimed at advancing civil registration and vital statistics in the service of Syrian refugees in Jordan and Lebanon. She explained that the first component of the project will involve a series of focus groups and in-depth interviews with Syrian refugees, humanitarian workers and Government officials about the importance, accessibility and performance of civil registration processes. The second component will involve a technical assessment of completeness and quality of registration data for Syrian refugees using both indirect methods and direct record linkage with other existing data sources, such as the 2015 Jordanian Population Census and registration records of the United Nations High Commissioner for Refugees (UNHCR). The third component will comprise consultation and disseminations of findings with key stakeholders via bilateral discussion and multilateral forums. Ms. Cetorelli concluded by noting that project activities and outputs will strengthen the ability of both host Governments and the international humanitarian community to support civil registration processes and the production of vital statistics for Syrian refugees.

III. ORGANIZATION OF WORK

A. DATE AND VENUE OF THE MEETING

22. The meeting was held at the United Nations House in Beirut, on 21 and 22 December 2017.

B. ATTENDANCE

23. The meeting brought together international and regional experts, statisticians from national statistics offices and specialists from other official institutions responsible for civil registration and vital statistics systems of some member countries. The list of participants is set out in the annex to the present report.

C. OPENING

24. Mr. Marwan Khawaja, Chief of the Demographic and Social Statistics Section of ESCWA, welcomed participants and opened the meeting by noting that most countries in the Arab region still lack complete and accurate civil registration and vital statistics systems. Although important progress has been made over the last two or three decades in birth registration, death registration is notably less complete. Evaluating the completeness of death registration traditionally relies on indirect methods, such as the Brass Growth Balance Method, the Coale-Preston Method and the Synthetic Extinct Generations Method. Recently, there has been an increased interest in using direct methods such as record linkage between two or more data sources, most commonly censuses and registers, to assess completeness of death registration. He explained that this meeting was organized in support of a pilot study attempting to estimate completeness of death registration in the State of Palestine based on record linkage between census and register data. The results of the meeting will feed into the study, enrich its analytical and technical foundation and assist the execution of similar record linkage studies to assess completeness of death registration in other ESCWA member States.

25. Ms. Valeria Cetorelli provided an overview of previous ESCWA activities on civil registration and vital statistics in the region. In 2014, ESCWA launched a regional strategy for the improvement of civil registration

and vital statistics systems in partnership with WHO-EMRO and the Arab States Regional Office (ASRO) of the United Nations Population Fund (UNFPA). Since then, ESCWA has organized several training workshops and expert group meetings addressing key issues such as demographic measurement of completeness and quality assessment of registration data, United Nations principles and recommendations for vital statistics in Arab-speaking countries, and civil registration in refugee settings. In 2017, ESCWA conducted advisory missions in the State of Palestine to initiate a work plan aimed at assessing and strengthening civil registration and vital statistics in line with United Nations principles and recommendations. In this context, ESCWA commissioned a pilot study on the completeness of death registration based on record linkage to be presented and discussed in this expert group meeting.

Annex*

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