Interview with **France Meslé**, senior researcher at INED, and **Jean-Marie Robine,** advisor on aging issues to INED's Office of the Director, senior researcher emeritus at INSERM*-CERMES3** (Paris)-MMDN*** "biology of aging" (Montpellier), and senior researcher at the École Pratique des Hautes Études.

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1) Ordinarily, which public organizations inform us on the number of deaths by cause in France and what procedures are used to determine those numbers? Also, at this time, how is the daily evolution in number of COVID-19-related deaths being established?

France Meslé: Ordinarily, death statistics in France come from two sources: INSEE (Institut National de la Statistique et des Études Économiques) and INSERM.[1] When someone dies, a physician fills out a medical death certificate that is then transmitted to the municipal authorities of the community that person died in. The certificate comprises an administrative section that includes civil register information on the deceased, and a medical section sealed by the physician who certified the death and on which s/he has noted all disorders implicated in the death. The municipal authorities send the administrative component of the death certificate to INSEE. The medical component, meanwhile, is sent to INSERM via the local health agency (Agence Régionale de Santé or ARS). The entire process takes between three weeks and four months. But when medical death certificates are transmitted electronically—which occurs in less than 20% of deaths, most of them in-hospital—the process takes much less time and the data can be analyzed by INSERM in live time.
On the basis of the information it receives, INSEE draws up annual data on mortality in France by sex, age, and place of death; these data are diffused approximately nine months after the end of the year in question. But exceptionally during the COVID-19 epidemic, INSEE has decided to diffuse every week the number of deaths recorded each day in each *département*.
INSERM, meanwhile, produces deaths-by-cause statistics that are derived from automatic coding of the disorders indicated on medical death certificates. Those data are generally not available until two or three years later.

In the current pandemic, Santé Publique France, which is in charge of public health surveillance and is in direct contact with the hospitals, has set up its own system of collecting in-hospital mortality: every day, French hospitals transmit the number of deaths due to COVID-19 by age and sex. But those data are incomplete because they do not include deaths at home or in nursing homes.

2) Why is it important to focus on the number of deaths rather than the number of confirmed COVID-19 cases?

Jean-Marie Robine: Tests that accurately detect cases of COVID-19 infection have only been developed very recently. The reliability of the results is not guaranteed for all testing techniques and not all countries have enough tests. This situation is further complicated by the fact that testing

[1] https://www.cepidc.inserm.fr/le-circuit-administratif-du-certificat-de-deces

strategies vary widely from country to country: some have chosen to test their entire populations; others are only concerned to detect suspect cases with few symptoms; still others only test their health professionals and individuals with severe symptoms. These differences in strategy explain, for example, why France has many fewer confirmed cases than Germany: relatively few people are tested for COVID-19 in France whereas in Germany the goal is to test everyone.

Without harmonized testing policies, it makes no sense to focus on confirmed cases as that information cannot help us accurately understand how the virus spreads. And focusing on confirmed cases could actually lead to errors in interpretation when comparing countries, especially when we are interested in how lethal the virus is; that is, its ability to cause death. Mortality rates are a less biased indicator. And when we observe and compare mortality rates for COVID-19, we find that the epidemic is following the same path or logic in Germany as in France, Italy, and Spain.

3) Are COVID-19 death statistics exhaustive, sufficiently detailed, and comparable?

J-M. R.: No, unfortunately. The mortality data are not exhaustive for several reasons. First, the way death bulletins are transmitted and the time frame involved are not the same from one country to another. Second, those data do not necessarily cover all deaths due to COVID-19; it depends on the country.

F. M.: Absolutely. In France, the only deaths currently counted are those that occur in hospitals. Deaths at home and in nursing homes are not included in the statistics. And according to INSEE's data for 2018, diffused last October,[2] 53% of recorded deaths occurred in hospitals or clinics, 24% at home, 13% in old-age care homes, and 1% in public places or thoroughfares (moreover, place of death is not specified in 9% of death bulletins). While it seems reasonable to assume, given how dangerous the virus is, that most severe cases that begin at home are ultimately taken care of in hospital (so that those deaths, if they occurred, were identified and counted), we know that cases that arise in nursing homes are dealt with in-house, without recourse to hospitalization. And the number of deaths that occur there is surely non-negligible.

4) How are you organizing your research work in this emergency context?

J-M. R.: Researchers are used to working at a distance. They regularly speak at conferences outside Paris and abroad; they go work several months in international research centers and they collaborate with other researchers around the world. Confinement is not an obstacle to our research activity. We're connected from home to all the major online databases and libraries. The only thing that has been suspended is fieldwork or on-site data collection.

The scientific community of demographers has moved quickly to acquire better knowledge of COVID-19 and its different impacts on populations and the ways they are organized, as well as improved knowledge of virus-linked mortality in France and across the world. Freed as we are now from certain administrative and teaching activities, this period could even be an opportunity to work on new research studies in connection with the coronavirus.

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[2] https://www.insee.fr/fr/statistiques/4204060?sommaire=4204068

5) And how will such studies be useful in the short and medium-term for our knowledge of epidemics and how to prevent them?

F. M.: One of demography's essential components is analysis of mortality dynamics. And demography has the tools required to rigorously assess the quality and comparability of all available data on COVID-19-related deaths. That kind of evaluation is an indispensable prerequisite for precise analysis of trends and for future projections.

This is why INED researchers and technicians have been working intensely in the last several days to set up an internet site that will centralize, harmonize, and analyze reliable mortality data specified by sex, age bracket, and place of death. For the moment, that site, already put on line by the Institute,[3] is presenting data on recorded deaths in France, Germany, Italy, and Spain, but we hope to be covering other countries soon. In this way, demographers' work will provide a clearer understanding of how the pandemic has developed and is developing and enable researchers to discover how COVID-19 trends may be related to the different public policy measures implemented by the countries studied.

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https://dc-covid.site.ined.fr/en/