DEMOGRAPHIC RESEARCH
A peer-reviewed, open-access journal of population sciences

DEMOGRAPHIC RESEARCH

VOLUME 54, ARTICLE 24, PAGES 763–778
PUBLISHED 16 APRIL 2026
https://www.demographic-research.org/Volumes/Vol54/24/
DOI: 10.4054/DemRes.2026.54.24

Interview

Bringing cause-of-death analysis into demography: An interview with France Meslé

France Meslé

Agnieszka Fihel

Heini Väisänen

Contents

Demographic Research: Volume 54, Article 24
Interview

Bringing cause-of-death analysis into demography: An interview with France Meslé

France Meslé[1]

Agnieszka Fihel[2]

Heini Väisänen[1]

Abstract

BACKGROUND
Cause-of-death analysis is an important part of demographic research nowadays, but this has not always been the case. These analyses were introduced to the discipline in the 1980s, which eventually led to the development of the health transition framework. One of the pioneers of this work was France Meslé.

OBJECTIVE
We interviewed France Meslé to better understand the history of cause-of-death analysis and how the health transition framework was developed, what methodological challenges there are, and where the field is going next.

CONTRIBUTION
We contribute to the documentation of the history of demographic theories, the analyses of cause-specific mortality trends, and the methodological rigor required for comparative studies. The interview addresses current challenges, such as multiple causes of death, data quality for very old ages, and the integration of AI in mortality research. By highlighting key methodological and theoretical insights that go beyond demography, the interview contributes to other disciplines, such as epidemiology and public health.

[1] Institut National d'Études Démographiques (INED), Aubervilliers, France.
[2] Corresponding author. University of Warsaw, Warsaw, Poland. Email: a.fihel@uw.edu.pl.

(Heini, France, and Agnieszka at INED, Aubervilliers, 13 January 2026)

1. Introduction

Over the past decades, declining mortality at young ages has shifted researchers' attention toward adult and old-age mortality, multimorbidity, and the role of chronic and neurodegenerative diseases. These processes have made cause-of-death data indispensable for explaining historical changes in life expectancy and the contemporary divergence in mortality between and within populations. At the same time, researchers face persistent challenges related to data quality, comparability over time and space, and the interpretation of increasingly complex mortality processes.

Few scholars have contributed as consistently and profoundly to this field as France Meslé, Research Director at the Institut national d'études démographiques (INED). Trained initially as a medical doctor, France Meslé entered demography through the study of mortality and causes of death, and pursued this line of research for more than four decades. Together with Jacques Vallin and other collaborators, she contributed to the development of the health transition framework, which broadened and reconceptualized the epidemiologic transition originally formulated by Omran (1971). Building on earlier work by Frenk and colleagues (1991), the health transition approach emphasizes the shifting role of causes of death, the importance of health systems and broader social contexts, and recurrent processes of divergence and convergence between populations.

This interview reflects on the development of cause-of-death analysis in demography. Conducted in 2026, the discussion covers the origins of France Meslé's work, the practical and methodological challenges she encountered, and the use of cause-of-death data for understanding the evolution of mortality in a longer perspective. It also addresses more recent topics, including the COVID-19 pandemic, multiple causes of death, mortality at very old ages, and the applications of AI. These reflections offer a comprehensive picture of how cause-of-death research has contributed to demographic analysis and how it can develop in the future.

2. Beginnings

HV: ***We would like to start by asking about the beginning of your career. Although your work is well known within the demographic community, few people are aware that you were originally trained as a medical doctor. What sparked your interest in demographic research?***

FM: It was really a matter of chance. At the beginning, I knew nothing about demography. At the end of my medical training, I was looking for a job and heard about a possible position at Institut national d'études démographiques (INED). At that time, I didn't think of it as a permanent position; I assumed that it would be very temporary work. INED was specifically looking for a medical doctor because a small team, Jacques Vallin and Alfred Nizard, had started to work on causes of death, but lacked medical knowledge. They wanted somebody with that background. I came with my medical knowledge, but with no knowledge of demography at all.

What made it very interesting was, first, that I realized I could build an entire career at INED if I wished. Second, after I was hired, they offered me formal training in demography. This was ideal for me, because I could learn demography in theory while already practicing it with the team. It was then that I discovered I wanted to do research. During my medical studies, I had been interested in biology or hematology and imagined working in a laboratory. I had already started training in genetics and statistics, so demography was not entirely different from what I had initially wanted. I sometimes say that I fell in love with demography, because it combined exactly what I was looking for: an interest in people themselves, together with a mathematical and statistical dimension.

That is how it happened. I have been at INED for more than forty years, and I am still there.

HV: ***Was it demography in general that interested you, or more specifically the study of causes of death?***

FM: No, it was primarily mortality. From the beginning, my work was closely connected to causes of death, because that was the main reason I was hired. I entered demography through causes of death, which is somewhat specific, because some people still think that working on causes of death is not fully demography, but rather epidemiology, medicine, or public health. Of course, as I went through general training in demography, I became interested in other topics as well. Later, when I taught groups of students, I was obliged to engage with other parts of the discipline, even if I never really worked outside mortality and, to some extent, health. I once wrote a paper on fertility in East Germany, but it was anecdotal in my career.

3. The importance of causes of death

HV: ***You have devoted a large part of your career to analyzing mortality by causes of death. Today, most studies on mortality, particularly for countries with complete death registration, incorporate analysis by causes of death. However, when you were starting in the 1980s, it was not common practice. From the perspective of your experience, can you summarize the benefits and uses of information on causes of death?***

FM: For me, it has always been natural to ask what the cause was when someone dies. However, for a long time, overall mortality trends were relatively easy to explain by just looking at the age at death. In the 19th century, and even the early 20th century, improvements in life expectancy could largely be explained by declining mortality among young children. At the same time, there was already some interest in causes of death, but most deaths were due to infectious or parasitic diseases. This is very clear if you look at the early versions of the International Classification of Diseases (ICD), which contained very detailed categories for infectious diseases, whereas circulatory or other chronic diseases were grouped into much broader categories. People were therefore not interested in distinguishing between these causes of death, medical knowledge of many of these causes was less developed, and precise diagnosis was difficult.

Cause-of-death analysis became more important especially towards the end of the 20th century, because the earlier, relatively simple explanation of mortality change was no longer sufficient. As life expectancy continued to increase and mortality continued to decline, we needed to look more closely at the specific causes driving these trends. It became increasingly necessary to examine the structure of deaths by causes across countries, particularly where statistics allowing for such analyses were available.

AF: ***This brings us directly to your major theoretical contribution, the health transition theory, which you developed together with Jacques Vallin using the cause-of-death analysis. Can you tell us more about that?***

FM: Many are familiar with the concept of the epidemiologic transition developed by Abdel Omran (1971). The concept emerged when, in some countries, life expectancy started to stagnate, or increase more slowly. Some scholars believed further progress might no longer be possible. Omran explained this through the idea of an epidemiologic transition, modeled on the demographic transition, and structured around three stages. In the first stage, infectious diseases were dominant, and infant mortality was very high. This was followed by a transitional phase characterized by declining infectious disease and infant mortality. Finally, in the third stage, chronic diseases came to dominate the mortality profile. In Omran's original formulation, this implied that beyond this point, there was little room left for further progress.

We now know that this was not the case. From the 1970s onwards, new progress occurred, mainly driven by the substantial decline in circulatory diseases in many countries, but not everywhere. This is why, in the 1980s, it became important to reconsider how the concept of epidemiologic transition could be extended or reconceptualized. Many attempted to do this, most often by adding new stages to the original model. However, this approach became unstable: new stages were added again and again, forcing empirical observations into the existing framework. At that moment, we felt it was necessary to develop a broader framework.

The initial idea of health transition was not ours. It was first developed by Julio Frenk and his coauthors (Frenk et al. 1991), who proposed broadening the explanatory framework beyond causes of death alone to include other contextual factors, such as health policies and the economic environment. At that time, people spoke less explicitly about environmental issues, but this was also the idea. The first aim was therefore to enlarge the concept and to treat the epidemiologic transition as only the first phase of a broader health transition, which could encompass additional phases. The second phase that we identified was the transition from high to lower cardiovascular mortality, which we called the cardiovascular revolution. We also showed that each of these phases was characterized initially by divergence (Vallin and Meslé 2004). The idea is that when new forms of progress emerge, whether medical or societal, they benefit some populations earlier than others, rather than all populations at the same time.

These populations can be national populations, but they can also be subnational groups within countries, for example, men and women, or groups with higher or lower socioeconomic status, or different levels of education. Some segments of the population are more able to benefit from progress and therefore advance more rapidly. Initially, this produces divergence between 'vanguard groups' and the rest of the population. In a second step, the populations that were lagging may eventually catch up. We showed this for epidemiological transition in Europe and other advanced countries during the 19th and early 20th centuries, and later for the cardiovascular revolution in the last decades of the 20th century. This theory helped us better understand the differences between Western and Eastern Europe. From the 1970s and 1980s onwards, life expectancy was increasing rapidly in Western Europe, but Eastern European countries experienced difficulties in making similar progress, and we could explain this using detailed cause-of-death data (Meslé 2004).

While this was relatively easy to document in Central European countries, it was more difficult in the countries of the former USSR, because at that time there were no official public data and we had to search for them in archives. Nevertheless, we were able to show a clear process of divergence in mortality trends between Eastern and Western Europe during the second step of the health transition, namely the cardiovascular revolution. Later, there was some convergence, particularly after the fall of the Berlin Wall when Central European countries, and then republics of the former USSR, began to catch up with Western Europe. At that point, we began to anticipate the possibility of a third stage. We observed that at increasingly older ages, mortality was declining less rapidly in some countries than in others. This was more evident at the beginning of the 21st century. In this new phase certain populations were better able to cope with diseases of aging, including neurodegenerative diseases, than others (Meslé and Vallin 2006). However, the picture has since become more complex, especially in recent years with the resurgence of infectious diseases. First, influenza became more lethal for older populations, and second, the COVID-19 pandemic has made these dynamics even more difficult to interpret. This represents a new challenge for researchers in this field: to disentangle what is happening. It does not mean that our theory is no longer valid, but rather that we must be careful, because several processes can occur at the same time, making the overall picture more difficult to read.

AF: ***The theory of health transition demonstrates that the impact of specific causes of death on mortality may change or be different depending on contextual factors. You gave the example of diverging trends in Europe, the changing old-age mortality and the COVID pandemic. Can you comment more on this divergence/convergence mechanism during the COVID pandemic?***

FM: I think the COVID-19 pandemic was a very specific event, and a lot has already been written about it. The challenge is that it was largely temporary. I have always been more interested in long-term trends in mortality, so my first reaction was excluding the COVID years because they disturb the overall trends. But was it only a temporary disturbance? We know, for instance, that there were significant inequalities in how different populations were able to cope with COVID. After three or four years, will everything be as it was before, or will it have an impact in the long term?

At this stage, it is not easy to integrate COVID into the general theory of the health transition. A similar situation occurred with HIV/AIDS in the 1980s. Many feared a return to a world dominated by infectious diseases, which would undermine the existing theory. However, societies wealthy enough to respond effectively identified the virus quickly and developed efficient treatments. The main issue was economic: countries without sufficient resources, particularly in sub-Saharan Africa, suffered the most. But this did not question the theory; it was simply a new disease that advanced societies learned to manage. I think COVID-19 is somewhat similar. It had a severe impact at one point, but now most societies are returning to normal life. Of course, we should expect new infectious diseases to appear in the future. If societies have the economic means to respond, these events should not fundamentally change the general course of the health transition.

Another complicating factor when trying to assess the impact and consequences of COVID is that it appeared at a moment when life expectancy was already slowing down in many advanced countries. There is a mechanical explanation for this slowdown, related to how life expectancy is computed: mortality at young ages is now very low, so continued gains in life expectancy require faster reductions in mortality at older ages. This alone makes further progress slower, even if the pace of mortality decrease remains the same at different ages. Beyond that, there is also a resistance to the progress for some specific cohorts. For example, in the United States, there has been much discussion of ‘deaths of despair’ at rather young ages. This phenomenon is not as widespread elsewhere, but it is somewhat similar to what occurred in Eastern Europe in the 1970s and 1980s, when declines in cardiovascular and man-made diseases slowed for certain populations. This phenomenon occurs in the United States, and such stagnation can, in principle, be addressed through effective health policies, which does not happen in the United States (Barbieri 2019).

There may also be a slowdown in progress at older ages in some countries. Cause-of-death analysis shows that in some places, increases in mortality from neurodegenerative diseases among the elderly contribute to this slowdown. Part of this trend may be artificial: as these diseases are better recognized and diagnosed, they appear more frequently on death certificates, even if the actual incidence has not changed. However, there could also be a real increase in these diseases. Neurodegenerative conditions usually do not cause death directly but lead to fatal complications. Depending on the way societies and their medical and social systems take care of people who suffer from these diseases, the impact on mortality will be different.

AF: ***My last question on the health transition theory concerns pioneers: what makes a population, whether a country or a subnational group, a pioneer? Why do some groups or countries benefit from progress earlier than others?***

FM: There is no single cause, and it differs depending on the disease being addressed and the tools available at the time. But the first and most important factor is the country's health system. For the cardiovascular revolution, for example, the system had to adapt from fighting acute infectious diseases to managing chronic conditions. One explanation for the divergence between Eastern and Western Europe was that a highly centralized system, like those in parts of Eastern Europe, could efficiently implement national top-down interventions, such as immunization campaigns or widespread delivery of antibiotics. However, with chronic diseases, it was more difficult: prevention is essential and people have to take some responsibility for their own health, while the system also needed to provide necessary services with higher costs. In centralized countries, encouraging individual self-decision may be difficult. This combination of structural and behavioral factors made progress easier in some countries than others.

Education is also critical: not only because it increases access to resources, but also because it increases awareness of disease and the ability to take preventive action. Similar dynamics apply to differences between men and women: in the second half of the 20th century, women were often better able to benefit from progress. They had more regular contact with the health system, for example through maternal and child health services or contraception, had regular visits to medical personnel, and were generally more engaged with healthcare services.

The pattern of improvement in causes of death is also important. Take Japan, which was among the best performers in life expectancy in the late 20th century. In Japan, there were high levels of cerebrovascular diseases and stomach cancers. These two causes of death declined rapidly everywhere, which had a stronger impact on life expectancy in Japan than elsewhere. By contrast, in some European countries, these causes were less important, so even with similar declines, the impact on overall life expectancy was smaller. Cultural habits shaped these disease patterns, meaning some populations were 'luckier' in terms of which diseases predominated when effective interventions became available.

4. Data challenges and how to overcome them

HV: ***You have mentioned a couple of times how we code things and how some countries have better data than others. In your work, you have paid a lot of attention to data quality, sometimes spending months or years preparing data. In your view, what are the main challenges when using causes-of-death data?***

FM: The main challenge is comparability in time and space. We worked more on the comparability in time than geographically, but we always keep comparing countries or populations in mind. In some countries, causes-of-death statistics have been available since the beginning of the 20th century, classified according to an international system. At the end of the 19th century, countries agreeing on an international classification, which in theory was comparable, was already a big progress. But of course, less was known about medicine back then than now, and the classification has been regularly revised to take into account this progress.

When studying causes of death, we want to follow a cause for a long period, using the most recent definition, which is theoretically the best one. The first ICD was adopted in 1893, and it has been revised 11 times, although countries are still using the 10th revision. This is why at INED, the research team, especially Jacques Vallin and I, tried to develop a method for comparing the contents of the different ICD classifications very precisely while also allowing for reclassification of deaths into the most recent nomenclature. In France, for instance, we reconstructed a series from 1925 until recently, that is, from ICD-3 to ICD-10. To do that, we compared medical contents of specific items of each classification and checked statistical continuity, which ensures we control for the most important changes. What we get is not the reality, but it is as close to reality as possible. This work is difficult and takes a long time. We cannot generalize from one country to another, as changes in the classification do not have the same impact in every context. We did this work for a lot of countries, always in collaboration with people from that country to have knowledge about the system used there and relevant medical habits.

HV: ***Can you explain in general terms how that methodology works? How do you ensure comparability across time?***

FM: Let's take the French case. We started with deaths which were classified according to ICD-3. We compared those to ICD-4, and reclassified all the deaths originally classified in ICD-3 into ICD-4. These deaths were then reclassified into ICD-5, ICD-6, etc., until ICD-10. For each step, we build so-called 'Elementary Associations of Items', gathering items that have exactly the same medical contents from one classification to another. In simple cases, there is only one item of the old classification corresponding to another one in the new classification.

Sometimes, this is not the case, as some items are related partly to one item of the previous classification and partly to another item. For these associations, we check the statistical continuity to ensure that there are no big drops or jumps in the total number of deaths for this group in the year the classification changes. When the trends are consistent, it is rather easy to define the transition coefficients. For example, it could be that 10% of deaths in an item of the previous classification are associated with one item of the new classification, and 90% with a second one. It is not easy to explain, but this is how we reclassify everything. The trends are checked for disruptions at the most detailed level including by age, because sometimes the changes differ by age (Meslé and Vallin 1996). It is important to use the most detailed level of the classification for computing transition coefficients, even if items are aggregated afterward for data analysis.

At the beginning, we did the checking manually, but now thanks to young colleagues who have joined the project, we have developed more automated tools (Pechholdova et al. 2017). There are so many items in ICD-9 and ICD-10 that the reclassification method must be automated.

5. Approaching cause-of-death from unconventional angles

AF: ***Let's now talk about unconventional research topics involving causes of death. Causes of death are now more and more digitalized, accessible, up-to-date, and more complex, which gives opportunities for research. You study multiple causes of death with your colleagues, taking into account all causes mentioned on the death certificate, not only the underlying cause. Can you explain the rationale and what new insights this approach offers?***

FM: Until recent years, analyses on causes of death were made only on one cause, which is called the initial cause of death. There are a lot of rules that have been developed by WHO, which oversees ICD, allowing us to identify as precisely as possible the initial cause of death, taken from a medical death certificate. Usually, the physician who certified the death describes the process leading to death. There is an international model of the death certificate, where the physician is supposed to write that the death was due to a cause, which was itself due to something else, which was due to something else, etc. The initial cause of death is the last condition mentioned on the death certificate, which was at the origin of the process. On the second part on the death certificate, the physician can add more information about additional conditions which were not directly responsible for the death, but aggravated the case or played a role in the process.

While it is important to provide tools to pick one cause for a simple analysis, a lot of information on death certificates is never used. With the health transition and the fact that people are living longer with more multimorbidity, it becomes increasingly difficult to select one cause. For instance, people who were suffering from multimorbidity were more at risk of dying of COVID-19. We now have the technical tools to deal with all this information, so it is interesting and important to use it. This is what we are trying to do. I am part of a research group combining researchers from INED [in France], Istat and La Sapienza University in Italy, and Pompeu Fabra University in Spain, who try to use this information.

There are a lot of methodological problems with the initial cause of death. There are even more with multiple causes of death. Filling in and coding information in death certificates varies from one country to another, which is a challenge when comparing between countries or across time. We are trying in this group to simplify the information. Recently an Italian colleague, Francesco Grippo, produced code distinguishing all information on the death certificate (Grippo et al. 2024). This includes what we call the ‘originating cause’, which is similar to the initial cause, but there can be several originating causes in the same death certificate. It also includes what we call the ‘precipitating causes’, which are the consequences of this cause, as well as ‘associated causes’, which mainly are the ones declared in the second part of the death certificate. It allows qualifying different causes and identifying multimorbid processes at death, meaning cases where there were at least one originating and at least one associated cause, or several originating causes. These are differentiated from a simple process with one originating cause and no associated causes. This helps to better understand what is occurring nowadays, especially at old ages.

AF: ***Great, because the next question is about extremely advanced ages, about centenarians and supercentenarians. What particular issues arise when dealing with very old age mortality? And how does the analysis of causes of death help to understand it, or not?***

FM: Here the analysis of causes of death does not help much, because, unfortunately, at older ages the precision of registration becomes worse. It may be that it is more difficult to identify a cause among very old people, but physicians may also think that it is normal to die at a very old age, and that it is not important to identify a cause. Nevertheless, I tried to analyze the causes of death at very old ages. I was rather surprised that even at these old ages there are, I think, one-third of cases, which were due to a simple process, which means that it may have been possible to cure these people. I will not defend the cause-of-death analysis at very old ages, but it doesn't prevent me from being interested in these trends.

The main question is to know the shape of the mortality curve at very old ages, that is over the age of 100 or even 105 years. Until recently, it was not statistically possible to analyze that, because very few people survived until these ages, and the data quality was not good. Often there are people claiming to be very old, but there is no way to check that. An international research group, initiated by Jim Vaupel and Jean-Marie Robine, decided to check all such cases. It started with what was called the Supercentenarians (people living longer than 110 years). In countries where civil registration was sufficiently developed in the 19th century, it was possible to check if the age on the death certificate was correct by going back to the birth certificate. Then the project was extended to ages 105 to 109 (Maier, Jeune, and Vaupel 2021). We are now trying to develop a database for some countries, but it's not easy. Yet, for about a dozen countries, we have all the individual cases. It is interesting to collect all these cases which are checked in order to eventually be able to produce estimates of mortality curve at very old ages. Is mortality going to increase exponentially, like the Gompertz curve? Or is the increase slowing down? Could there be a plateau at very old ages?

6. Future of cause-of-death research

HV: ***Okay, then we will move on to talking about the future. What do you think about the recent advances in computing, especially artificial intelligence, and how it is transforming the way that we are analyzing and collecting data? The causes-of-death data are increasingly more accurate, comprehensive, and available. How do you think that these technological advances may affect the quality and use of cause-of-death data in demographic research?***

FM: Ever since I started working on trends in causes of death and the method of reclassification [of ICD codes], I have always had a colleague, usually a specialist in statistics, arguing that it would be possible to do everything automatically. I have fought against that, explaining that there is a human factor in what we are doing, but it was before artificial intelligence. It is already changing a lot of things because, for instance, in France, the codification of the cause of death statistics is made, at least partly, through artificial intelligence. I think it probably increases data quality, but at the same time it is problematic because it creates a new disruption in the series, especially when looking at multiple causes of death. However, I think it helps to gain time, which allows us to produce statistics more rapidly, and probably eventually to produce them more precisely than could be done manually or even with our automatic system of coding.

However, artificial intelligence does not invent anything. It relies on what was done before manually or automatically. Eventually, we will have to enrich it again, because if we do not, it will learn from what it has done itself. I do not know how it can work, but I am sure people are thinking about that. I am a little doubtful whether artificial intelligence could, for instance, detect a new phenomenon. I am sure it will contribute, in the end, to a better quality of data, but at the same time, it always needs human control. There is a risk that, due to fewer resources, the method works alone, and eventually we lose data quality.

However, I am sure our method, for instance, probably could be improved by AI to make it less random. This is for my young colleagues. I hope that in this way we can continue to conduct the research we have been doing for decades now, and which is not finished. There is an 11th revision of the ICD, which was produced at least 10 years ago now, but countries are reluctant to use it because of its very different logic. When it is applied in many countries, we will have to deal with that, and I hope I can motivate people to do that.

HV: ***In your opinion, what are the greatest methodological innovations or data developments we need for cause-of-death analysis?***

FM: This is not a new methodological development, but I think there should be more contact, at least in the causes-of-death domain, between the medical and the statistical world. This is not new, but it is still a problem. We need to convince physicians that statistics are important, and care should be used when writing death certificates. When I talk to medical doctors, they are often surprised that I work with cause-of-death data, as they consider it to be of poor quality. Then I explain that, at an aggregate level, these data are useful and make sense. It is difficult to persuade doctors to provide good cause-of-death information, but this is essential.

Nowadays, confidentiality and data protection rules can make it difficult to see individual-level data, even if it is not nominative. Statistical offices cannot publish the number of deaths due to a cause if the frequency is too small, which decreases our understanding of causes of death.

In countries without complete death registration, political interest and resources are needed. Even if we apply the most recent technologies, if there is no political interest in obtaining good quality data, there can be no progress.

AF: ***Throughout your career, you have sparked the interest of young researchers in mortality research. Many of these scholars were from Central and Eastern Europe, where population studies had long lagged behind in terms of methodology. The research projects that you led gave these scholars the chance to undertake advanced, high-quality studies. From today's perspective, your willingness to cooperate across political divides may be seen as a contribution to a unified Europe. What message would you give to current and future generations of scholars in an increasingly divided Europe?***

FM: I believe in collaboration. Throughout my career, I have been fortunate enough to work with people from different countries and disciplines. It always went well and was very instructive and enriching; international networks are important and can contribute to European unity at the level of researchers.

I also think that public involvement is important. I am from the 'boomer' generation. My children often use that term, and it is not always a compliment! However, recently they said that, although I am a boomer, at least my generation was deeply interested in what was happening in the country. I think that researchers should do their job, but also engage with political and social issues.

7. Acknowledgements

Agnieszka Fihel was supported by the Excellence Initiative – Research University (2020–2026) of the University of Warsaw.

References

Barbieri, M. (2019). The decrease in life expectancy in the United States since 2014. *Population and Societies* 570: 1–4. doi:10.3917/popsoc.570.0001.

Frenk, J., Bobadilla, J.L., Stern, C., Frejka, T., and Lozano, R. (1991). Elements for a theory of the health transition. *Health Transition Review* 1(1): 21–38. http://www.jstor.org/stable/40608615.

Grippo, F., Frova, L., Pappagallo, M., Barbieri, M., Trias-Llimós, S., Egidi, V., Désesquelles, A. (2024). Beyond the underlying cause of death: An algorithm to study multi-morbidity at death. *Population Health Metrics* 22(36): 1-15. doi:10.1186/s12963-024-00356-8.

Maier, H., Jeune, B., and Vaupel, J.W. (2021). *Exceptional lifespans*. Demographic Research Monographs 17. Cham: Springer. doi:10.1007/978-3-030-49970-9.

Meslé, F. and Vallin, J. (1996). Reconstructing long-term series of causes of death. *Historical Methods* 29(2): 72–87. doi:10.1080/01615440.1996.10112731.

Meslé, F. and Vallin, J. (2006). Diverging trends in female old-age mortality: The United States and the Netherlands versus France and Japan. *Population and Development Review* 32(1): 123–145. doi:10.1111/j.1728-4457.2006.00108.x.

Meslé, F. (2004). Mortality in Central and Eastern Europe: Long-term trends and recent upturns. *Demographic Research* S2(3): 45–70. doi:10.4054/DemRes.2004.S2.3.

Omran, A. (1971). The epidemiological transition: A theory of the epidemiology of population change. *Milbank Memorial Fund Quarterly* 49(4): 509–538. doi:10.2307/3349375.

Pechholdova, M., Camarda, C.-G., Meslé, F., and Vallin, J. (2017). Reconstructing long-term coherent cause-of-death series, a necessary step for analyzing trends. *European Journal of Population* 33(5): 629–650. doi:10.1007/s10680-017-9453-1.

Vallin, J. and Meslé, F. (2004). Convergences and divergences in mortality: A new approach of health transition. *Demographic Research* S2(2): 11–44. doi:10.4054/DemRes.2004.S2.2.