

Mexico's path towards the Sustainable Development Goal for health: an assessment of the feasibility of reducing premature mortality by 40% by 2030



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Summary

Background The United Nations Sustainable Development Goal for health (SDG3) poses complex challenges for signatory countries that will require clear roadmaps to set priorities over the next 15 years. Building upon the work of the Commission on Investing in Health and published estimates of feasible global mortality SDG3 targets, we analysed Mexico's mortality to assess the feasibility of reducing premature (0–69 years) mortality and propose a path to meet SDG3.

Methods We developed a baseline scenario applying 2010 age-specific and cause-specific mortality rates from the Mexican National Institute of Statistics and Geography (INEGI) to the 2030 UN Population Division (UNPD) population projections. In a second scenario, INEGI age-specific and cause-specific trends in death rates from 2000 to 2014 were projected to 2030 and adjusted to match the UNPD 2030 mortality projections. A third scenario assumed a 40% reduction in premature deaths across all ages and causes. By comparing these scenarios we quantified shortfalls in mortality reductions by age group and cause, and forecasted life expectancy pathways for Mexico to converge to better performing countries.

Findings UNPD-projected death rates yield a 25.9% reduction of premature mortality for Mexico. Accelerated reductions in adult mortality are necessary to reach a 40% reduction by 2030. Mortality declines aggregated across all age groups mask uneven gains across health disorders. Injuries, particularly road traffic accidents and homicides, are the main health challenge for young adults (aged 20–49 years) whereas unabated diabetes mortality is the single most important health concern for older adults (aged 50–69 years).

Interpretation Urgent action is now required to control non-communicable diseases and reduce fatal injuries in Mexico, making a 40% reduction in premature mortality by 2030 feasible and putting Mexico back on a track of substantial life expectancy convergence with better performing countries. Our study provides a roadmap for setting national health priorities. Further analysis of the equity implications of following the suggested pathway remains a subject of future research.

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Introduction

The Sustainable Development Goal for health (SDG3), adopted in September 2015, poses enormous challenges for all countries. Underpinning the overall objective to ensure healthy lives and promote wellbeing for all at all ages is a list of nine proposed targets (appendix).¹ Previous analyses undertaken to inform the SDG3 targets provide evidence and proposals on target measurement and on what could be achievable at a global level based on observed country-specific mortality.^{2–4} These analyses show that country roadmaps to meet the SDG3 targets require a deeper analysis of specific mortality trends and a pragmatic approach to linking targets with cost-effective health interventions.^{3,5}

Norheim and colleagues³ proposed an overarching quantitative target to support SDG3, namely to avoid 40% of premature deaths by 2030 (premature deaths defined as those of individuals younger than 70 years),

which in turn would be the result of achieving a series of cause-specific mortality subtargets (appendix).³ This ambitious undertaking can be reached only by clearly understanding the main causes of death by age group and the effective interventions available to affect those causes and their respective modifiable risk factors. Countries have the opportunity to apply specific and unique policy strategies targeted to their national health priorities and health system capabilities. Therefore, there are different ways to achieve a so-called 40 by 30 (40×30) overall target.

The *Lancet* Commission on Investing in Health⁶ showed that a grand convergence in health (a reduction in avertable infectious, child, and maternal mortality down to universally low levels) could be achieved by 2035. Since publication of its report titled *Global Health 2035*, the Commission on Investing in Health working group has embarked on a series of consultations with

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See [Online](#) for appendix

Research in context

Evidence before this study

Our work builds on the *Lancet* Commission on Investing in Health and Norheim and colleagues' work. These sources provide a robust general framework for global convergence to explore how Mexico can reach Sustainable Development Goal 3 (SDG3). We build upon these analyses using United Nations Population Division age-specific mortality estimates and Mexican National Institute of Statistics and Geography age-specific and cause-specific mortality data, calibrating our results to the United Nations life expectancy projections for international comparability. We identified best-practice interventions based on the recommendations of international organisations and initiatives including WHO, the Organisation for Economic Co-operation and Development, and Disease Control Priorities, Third Edition.

Added value of this study

Our findings shed light on the underlying causes of mortality by age group that are limiting Mexico's potential to achieve SDG3

and thus, convergence in health status. Our study provides a country roadmap to identify and prioritise the health interventions that can support achievement of SDG3 and reduce the gap in life expectancy by 2030. Our approach can be used by other countries to operationalise SDG3.

Implications of this study

Our study can assist national authorities to prioritise areas of action with the greatest health impact and economic returns. Effective priority setting is important in the face of budgetary constraints, and in evidence-based dialogue with other governmental authorities, such as the Ministry of Finance, and with other non-health sectors whose actions have an effect on health (eg, transport, education, and violence prevention).

donor agencies and ministries of health and finance to explore the implications for investments in health. One of these engagements has been with Mexico's Ministry of Health on how to achieve SDG3 and get on track to converge to the better performing high-income countries (eg, among the Organization for Economic Cooperation and Development [OECD] countries of which Mexico is a member country).⁷ Mexico achieved major improvements in preventable maternal, newborn, and child health (MNCH), and substantial gains in life expectancy over the past 30 years. Despite this, Mexico is still behind most other OECD countries in several key areas ranging from comparatively high mortality from MNCH causes to the rising rates of non-communicable diseases (NCDs) and fatal injuries. As a result, life expectancy increase has slowed and is far from convergence with OECD countries (panel 1).⁸

In this study we project shortfalls, relative to a target of a 40% reduction of premature deaths, in age-specific and cause-specific mortality in Mexico by comparing three different mortality scenarios in 2030. Following the Commission on Investing in Health⁶ notion of grand convergence, we use these results to forecast life expectancy at birth and analyse Mexico's potential to meet SDG3 and reach substantial convergence to better performing high-income countries.

Methods

Annual population estimates for 1990–2014 and projections based on the medium fertility variant for 2015–30 were taken from the United Nations Population Division (UNPD) World Population Prospects 2015 revision. The UNPD 5-year periods for mortality estimates were averaged to obtain midpoint estimates; these in turn were averaged to obtain estimates for every

fifth year between 1990 and 2030. Intermediate years were then constructed assuming linear trends between these 5-year estimates. Population and deaths were grouped into five age groups: 0–4 years, 5–19 years, 20–49 years, 50–69, and 70 years or more.

We used cause-specific mortality estimates from the vital statistics reported by the National Institute of Statistics and Geography (INEGI). The INEGI cause-specific mortality data were combined with UNPD mortality and population estimates and projections to construct three mortality scenarios. INEGI annual reported deaths between 1990 and 2014 were grouped into 15 major categories representative of the most important disease clusters to obtain annual distributions of deaths by category across each of the five age groups (appendix). Deaths with an ill-defined or otherwise unspecified cause (International Classification of Diseases, 10th Revision [ICD-10] codes R00–R99; 2.3% for 1990 and 1.7% for 2014) or unspecified age (0.7% for 1990 and 0.5% for 2014) were redistributed using the observed cause and age distributions, respectively. The resulting cause-specific distributions for the five age groups were applied to the UNPD deaths and population figures to produce adjusted figures for deaths and death rates by age group and disease category from 1990 to 2014.

We constructed three scenarios with age-specific and cause-specific mortality estimates for 2030. The baseline scenario reflects changes in mortality exclusively associated with population growth and aging, and does not account for changes in mortality rates. Mortality rates were assumed to remain at the 2010 levels. Therefore, the 2010 age-specific and cause-specific mortality rates were applied to the 2030 UNPD population prospects. We used 2010 as reference year to ensure consistency with the SDG3 and the work of Norheim and colleagues.³

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