



Excess potential years of working life lost in six countries from Latin America and Europe in 2020 and 2021

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ABSTRACT

Objective This descriptive study aimed to measure the excess all-cause mortality potential years of working life lost (PYWLL) in the working-age population of six Ibero-American countries in 2020 and 2021.

Methods This study was based on all-cause deaths for the age group 15–69 years for men and women in six countries: Colombia, Costa Rica, México, Peru, Portugal and Spain. The expected PYWLL was the average value determined from the previous 5 years (2015–2019). To estimate the excess of PYWLL, the expected PYWLL was subtracted from the observed PYWLL values for 2020 and 2021, separately.

Results In the four Latin American countries, the excess PYWLL per death was approximately double (between 12 and 16 years) that of the two European countries (between 3 and 9 years).

Conclusions The loss of working-age individuals will probably have a profound social and economic recovery impact, affecting families and communities. The informal employment and labour market structures may be contributing to the adverse effects of the pandemic in the region. Investing in universal, comprehensive and sustainable health and social protection systems in the Latin American countries is crucial to build resilience against current and future crises.

INTRODUCTION

The COVID-19 pandemic has had a major negative impact on health, social and economic outcomes worldwide. Recovery from the effects of the pandemic is expected to take years or even decades, particularly in low-income and middle-income countries. According to the International Monetary Fund (IMF),¹ employment and economic activity in emerging markets and low-income developing countries are unlikely to recover in the medium term.

The pandemic has significantly impacted Latin American and Caribbean countries, resulting in health, social and economic crises that have worsened the population's living conditions and health. This situation has mainly affected vulnerable social groups, widening the gaps along the axes of the social inequality matrix. The Economic Commission for Latin America estimates that in 2021 about 13% of the population was living in extreme poverty similar percentage as in 1994.²

The actual impact of the pandemic on different dimensions of society is difficult to estimate. Excess

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ The loss of people of working age has a profound social impact, affecting families, communities and the labour force. This reduces the potential for future contributions to society. Recovery from the effects of the pandemic is expected to take years or even decades, particularly in low-income and middle-income countries.

WHAT THIS STUDY ADDS

⇒ There were more deaths among working-age population in Latin American countries than in European countries, and many of these deaths occurred among younger people (approximately 55 years old vs 65 years old). This fact raises significant social and economic concerns about the recovery capacity of this region.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Premature mortality, assessed in terms of potential years of working life lost, can assist in estimating the potential social and economic impact of the pandemic. Human capital is the key driver of poverty reduction and inclusive growth. It is crucial to build resilience against the current and future crises.

all-cause mortality is an indicator that has proven reliable in approximating the real impact of the pandemic.³ A global indicator that can be complemented by the age at which people die was also considered. Although the virus has primarily affected older individuals, the working-age populations have also experienced a significant mortality toll. The working-age population is a driving force of society, and a reduction in this demographic poses an additional burden on the sustainability of the welfare state.⁴ Premature mortality, assessed in terms of potential years of working life lost (PYWLL), can assist in estimating the potential social and economic impact of the pandemic.

The Ibero-American Observatory of safety and health at work (OISST, per Spanish acronym), based on Ibero-American Social Security Organization (OISS), a political alliance of Spanish and Portuguese-speaking countries from Latin America and Europe,⁵ allows us to compare two European and some Latin American countries (LAC). This study aimed to measure the



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excess all-cause mortality PYWLL in the working-age population of six Ibero-American countries in 2020 and 2021.

METHODS

This study was based on all-cause deaths for the age groups 15–69 years for men and women. These data were provided directly by the statistics offices or health administrations of each country on request from the OISST. Data on deaths were requested for the years 2015 and 2021. Six countries, including Colombia, Costa Rica, México, Peru, Portugal and Spain, provided us with data disaggregated by age and sex on a weekly or monthly basis throughout the entire period (except Mexico, which provided data up to September 2021). In a previous study,⁶ we estimated excess mortality in nine countries in 2020. In this study, the same estimation was performed for 2021. Excess mortality is calculated as the difference between reported deaths in 2020 and 2021 and the expected deaths, based on the average deaths from 2015 to 2019.³

The PYWLL was calculated by subtracting the age at which the person died from 70 years, which serves as the cut-off age. Subsequently, the resulting differences in years were summed to obtain the PYWLL per year for each country

$$\sum_{i=1}^n (70 - \text{age_at_death}_i) = \text{PYWLL}$$

n=last death of the year between 15 and 70 years old.

The expected PYWLL was the average value determined from the previous 5 years (2015–2019), while the observed values were based on 2020 and 2021 data, respectively. To estimate the excess PYWLL, the expected cases were subtracted separately from those observed in 2020 and 2021. Finally, the average PYWLL per excess death was calculated by dividing the excess PYWLL by the number of excess deaths in 2020 and 2021. All the estimates were stratified according to sex.

RESULTS

The number of excess deaths among the 15–69 age group in 2020 and 2021 was significantly higher for men (approximately 229 000)

than for women (approximately 112 000) (see [table 1](#)). However, the average PYWLL per excess death was similar for both sexes: approximately 14 years for women and 15 years for men. Moreover, the PYWLL per excess death increased slightly from 2020 to 2021 for both women (from 13.6 years to 14.1 years) and men (from 14.5 years to 15.6 years). Data disaggregated by 5-year period are shown in the online supplemental table.

However, the excess PYWLL per death was approximately double in the four Latin American countries (between 12 and 16 years) than that of the two European countries (between 3 and 9 years).

DISCUSSION

Our study indicates that the excess PYWLL per death in the four LAC was approximately twice that of Portugal and Spain. Therefore, there were more deaths in LAC than in European countries, and many of these deaths occurred in younger people (approximately 55 years old vs 65 years old). An IMF statement regarding this fact raises significant social and economic concerns about the recovery capacity of this region.¹ An exception is Costa Rica, where the male excess PYWLL per death in 2020 was the lowest among the countries assessed. However, in 2021, it increased, approaching the values of the countries in the region. This could be attributable to a delayed impact of the pandemic in the country or to a better registration of deaths in 2021. Further investigation of this phenomenon is recommended.

A study estimated the premature mortality costs associated with COVID-19-related excess mortality in nine European countries, including Spain and Portugal, during the initial months of the pandemic. The study found that premature mortality costs per death for employed individuals aged between 30 and 74 years, expressed in 2020 euros, were €46 633 for Spain and €56 013 for Portugal.⁶ This estimation will probably be higher at the end of the pandemic.

The high number of PYWLL in LAC could be mainly attributed to the interaction between high informal employment and low health-care coverage. More than half the workforce in LAC is engaged in an informal economy. Recent research on labour transitions in Latin

Table 1 Excess mortality in the population aged 15–69 years (absolute and rate × 100 000) potential years of working life lost (PYWLL) and PYWLL per excess death, for men and women in Ibero-American countries, 2020–2021

	2020				2021			
	Excess mortality (15–69)		PYWLL per excess death	PYWLL per excess death	Excess mortality (15–69)		PYWLL per excess death	
	n	Rate × 100 000			Excess of PYWLL	n		Rate × 100 000
Men								
Colombia	17 444	97.2	261 287	15.0	41 370	230.6	652 425	15.8
Costa Rica	809	43.8	3582	4.4	2560	138.7	35 970	14.1
Mexico*	160 111	369.8	2 454 432	15.3	117 505	271.4	1 889 225	16.1
Peru	41 204	360.2	566 344	13.7	46 033	402.4	701 056	15.2
Portugal	916	26.5	5774	6.3	794	23.0	2239	2.8
Spain	5664	34.2	43 858	7.7	4152	25.0	39 709	9.6
Total Men	220 483		3 291 419	14.9	208 262		3 280 915	15.8
Women								
Colombia	10 518	56.2	146 771	14.0	24 560	136.9	332 983	13.6
Costa Rica	575	31.2	7277	12.7	1541	83.6	20 800	13.5
Mexico*	78 865	171.1	1 090 964	13.8	68 335	148.2	987 314	14.4
Peru	18 367	159.1	253 438	13.8	26 353	159.1	373 379	14.2
Portugal	223	6.0	1108	5.0	360	10.4	3216	8.9
Spain	3869	23.5	26 408	6.8	2372	14.3	18 257	7.7
Total Women	112 417		1 525 966	13.6	123 521		1 735 949	14.1
*Mexico data until September 2021								

*Mexico data until September 2021.

America has found that partial recovery in employment since mid-2020 has been led by an increase in informal jobs.⁷ Informal workers are particularly vulnerable to severe outcomes of the pandemic. Preliminary study found that the pandemic had generated at least 68 million additional poverty years and 4.3 million years of life lost across 150 countries.⁸ During the lockdown, the income of informal workers in the LAC decreased more than that of any other worker. This income loss has increased the economic hardships of more than 150 million informal workers, especially young women and those living in urban areas.⁹ On the other hand, informal workers face greater health risks due to their exposure to the virus and lack of access to adequate health services; they may be less likely to seek medical care promptly, thereby increasing the risk of severe disease and death. Weaknesses in the population's health coverage may have generated greater mortality in Latin American populations aged <60 years. The influence of labour market structures seems to have contributed most to the observed differences. Future studies could further explore these labour market dynamics.

Conversely, in European countries, social protection and health-care systems provide support for workers, including those in precarious employment situations. Portugal and Spain have public expenses on healthcare coverage at 5.8% and 6.3% of GDP, and social protection at 17.1% and 16.8% of GDP, respectively, while Colombia has social protection and healthcare at 9% and 5.5%, Costa Rica at 7.3% and 5.5%, Mexico at 7.5% and 2.7% and Peru at 2.7% and 3.3%, respectively.¹⁰

This study has several limitations. First, this study is the restricted number of included countries, mainly because of the unavailability of the data disaggregated by age and sex. We should exercise caution when interpreting the obtained results, especially given the heterogeneous impact of the pandemic between countries. However, this is a valid estimate from a sample of countries that can be replicated in other countries. Second, not all persons who died between 15 and 69 years of age were employed; therefore, not all the potential years of life lost would have been work related. However, this was the best approximation currently available. Additionally, while the methodology used is consistent across countries, testing alternatives approaches as suggested by Nepomuceno *et al.*¹¹ could provide additional robustness to the findings. On the other hand, the study possesses the following strengths. Excess mortality and PYWLL not only provide insight into the health impact but also shed light on the social and economic impact of the pandemic, allowing a multi-faceted view of the excess mortality phenomenon. Additionally, this study has reliable data directly provided by the national statistical offices of each country, facilitating comparisons among countries with different geographical and economic scenarios.

CONCLUSIONS

The loss of working-age individuals has a profound social impact, affecting families, communities and the labour force. This disrupts households, creates caregiver burdens and diminishes the potential for future contributions to society. The informal employment and labour market structures may be contributing to the adverse effects of the COVID-19 pandemic in the region.¹² Consequently, it was concluded that there is a growing importance in advancing comprehensive and inclusive policies that foster labour formalisation through social dialogue, administrative simplification, effective control, education and training, entrepreneurship and innovation, and the application of digital technologies.

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