

UNVEILING THE FISCAL BURDEN OF MIGRAINE IN ARGENTINA

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Introduction

Migraine is a neurological disorder marked by recurrent headaches that are often unilateral and pulsating in nature. The intensity of the pain can range from moderate to severe and is frequently accompanied by symptoms such as nausea, vomiting, photophobia, and phonophobia. Episodes can last from several hours to multiple days, impairing daily functioning and quality of life^{1,2,3,4}.

Migraine is primarily classified into **episodic (EM)** and **chronic (CM)** migraine. Intermittent episodes occurring on less than 14 days per month are defined as EM. CM is defined by the occurrence of headaches on ≥ 15 days per month, with migraine occurring on at last 8 of these days⁴.

According to the Global Burden of Disease Study, migraine is the second cause of disability worldwide. It significantly impacts individuals’ quality of life and productivity, contributing to substantial economic burden⁵. Migraine disproportionately affects females across all age groups. In Argentina, prevalence is 14% in females, and 5% in males⁶, increasing with age up to 40 to 44 years and decreasing thereafter⁵.

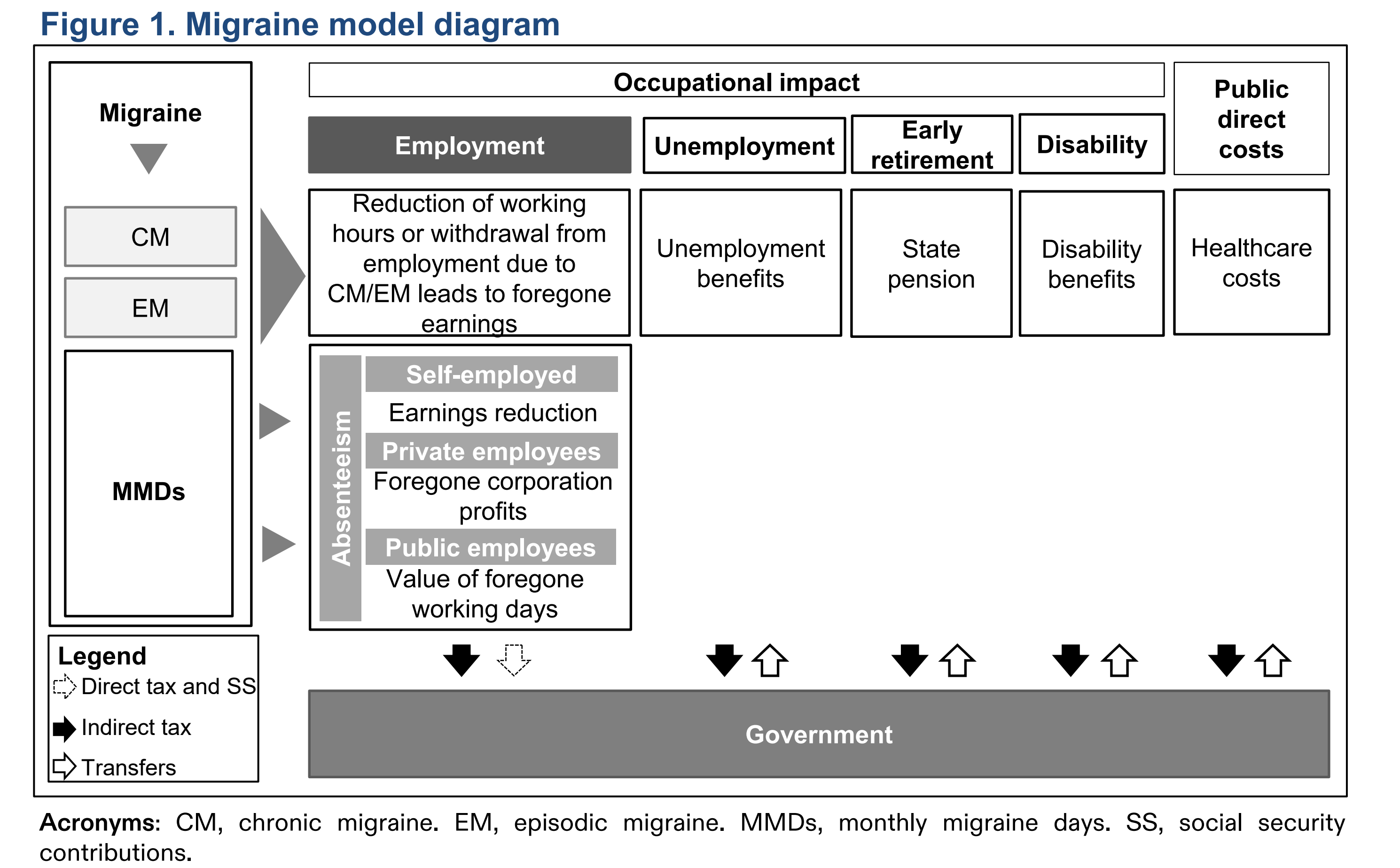
Argentina has a heterogeneous health system, with nearly 40% of the population relying exclusively on the public healthcare system⁷. Understanding the fiscal burden of migraine can promote sustainability and shape national healthcare policy.

Objectives

We aimed to estimate the fiscal-economic burden of migraine using the Argentinian government perspective.

Methods

A mechanistic model estimating the impact of migraine on productivity, need for government benefit transfers⁸, and public healthcare utilization (Figure 1) was adapted to the Argentinian context.



Those affected by migraine were compared to demographically identical individuals from the general population (GP). A **cross-sectional model**, using the Argentinian demographic distribution and published migraine prevalence rates, estimated the annual burden associated with the entire cohort with prevalent migraine living in Argentina. A **longitudinal model** consisting of a Markov lifetable process simulated the fiscal life of an individual from the age of 40, a commonly reported age of peak migraine prevalence⁹, over a 20-year work life expectancy. Results were reported as incremental fiscal consequences. Direct and indirect taxes resulting from employment earnings, and corporation taxes were considered sources of government revenue, thus shown as positive values. Public sector absenteeism and transfers in the form of healthcare costs and financial support to individuals (unemployment benefits, and disability or early retirement pensions) were represented as negative values. Longitudinal results were discounted annually at 3%. Local inputs were used, and costs were expressed in 2023 US Dollars (1 US\$ = 376 AR\$). Evidence of migraine’s impact on productivity was sourced from peer-reviewed publications identified as result of a targeted literature search conducted on PubMed and Google Scholar. Migraine’s impact on labor outcomes increased with disease severity⁹⁻¹². The extracted relative risks of employment¹⁰, disability¹³, and early retirement¹⁴ were applied to baseline rates of these events in the GP, as informed by national statistics⁷. The annual workdays missed due to EM and CM reported by a European study were used to estimate absenteeism¹⁵. Healthcare costs were estimated using monthly headache days (MHD)¹⁶, healthcare resource use¹⁷, and local unit costs¹⁸. Data on individual financial support was based on official sources¹⁹. Uncertainty was assessed in sensitivity analysis.

Conflicts of interest

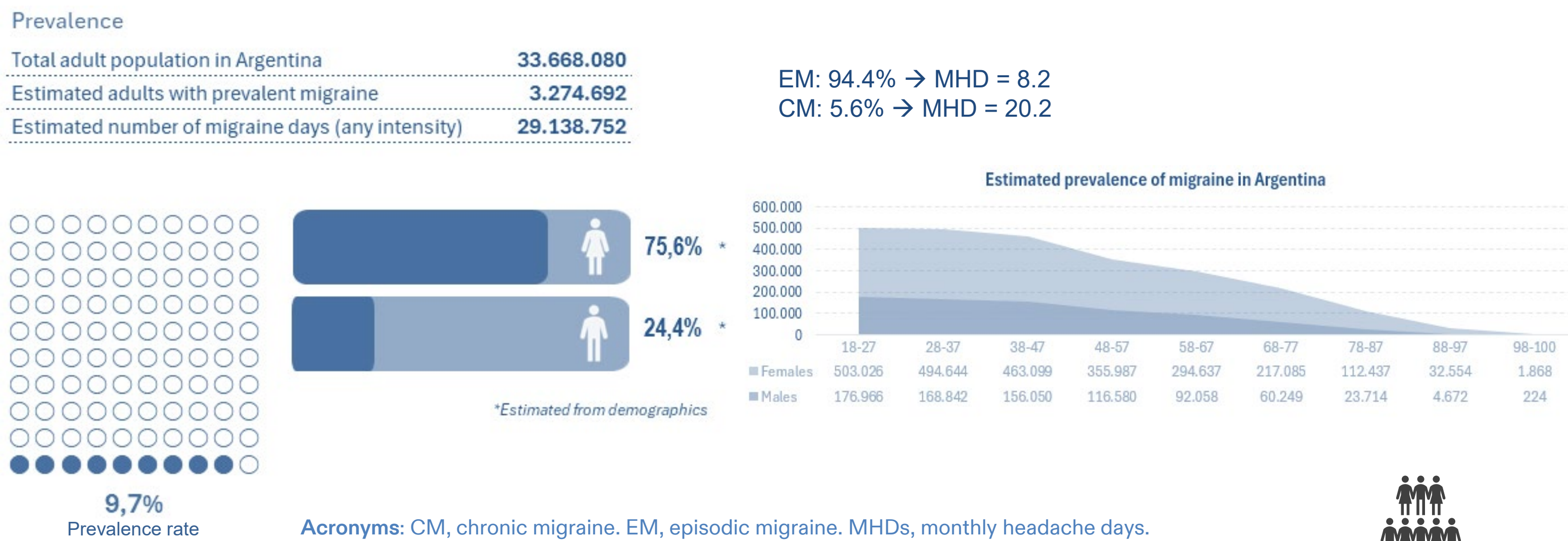
This study was sponsored by Pfizer. RM, ZO, and ATP were paid consultants to Pfizer. CV, LRA, SV, and JVR are employees of Pfizer and report no further conflicts.

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Results

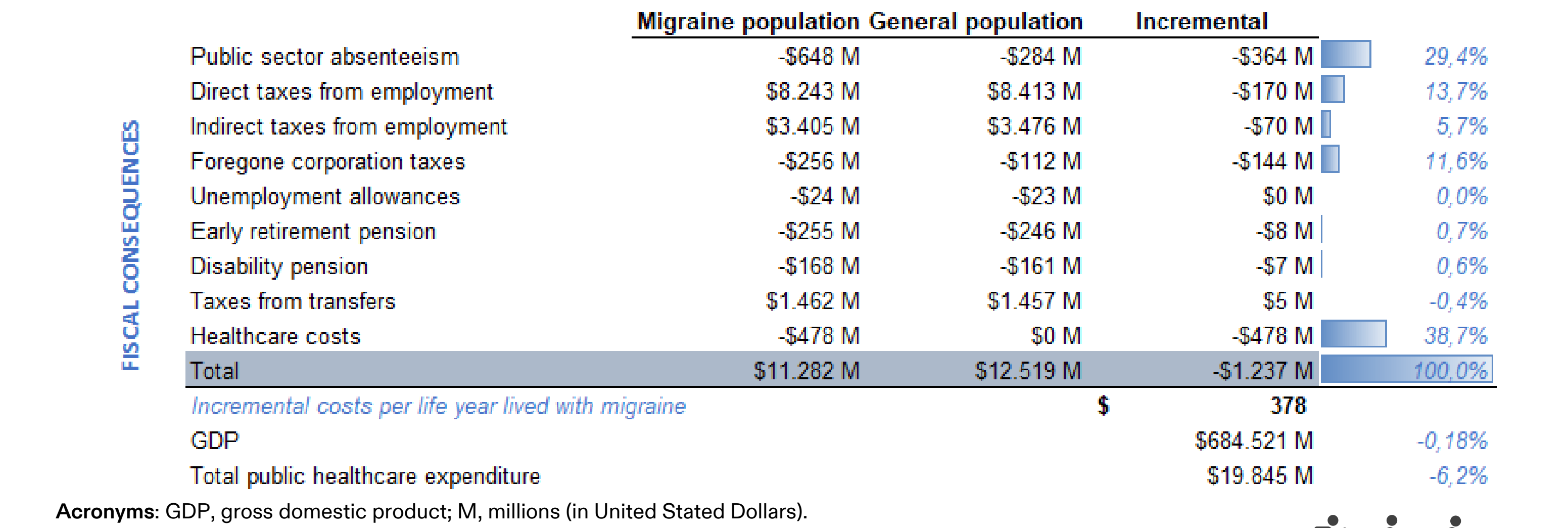
Migraine Epidemiological Estimates for Argentina



Cross-sectional model

The entire Argentinian population affected by migraine represents incremental fiscal consequences of US\$1,237 millions in 2023 alone, with an average of US\$378 per person and US\$1,220 for those with CM (Figure 2).

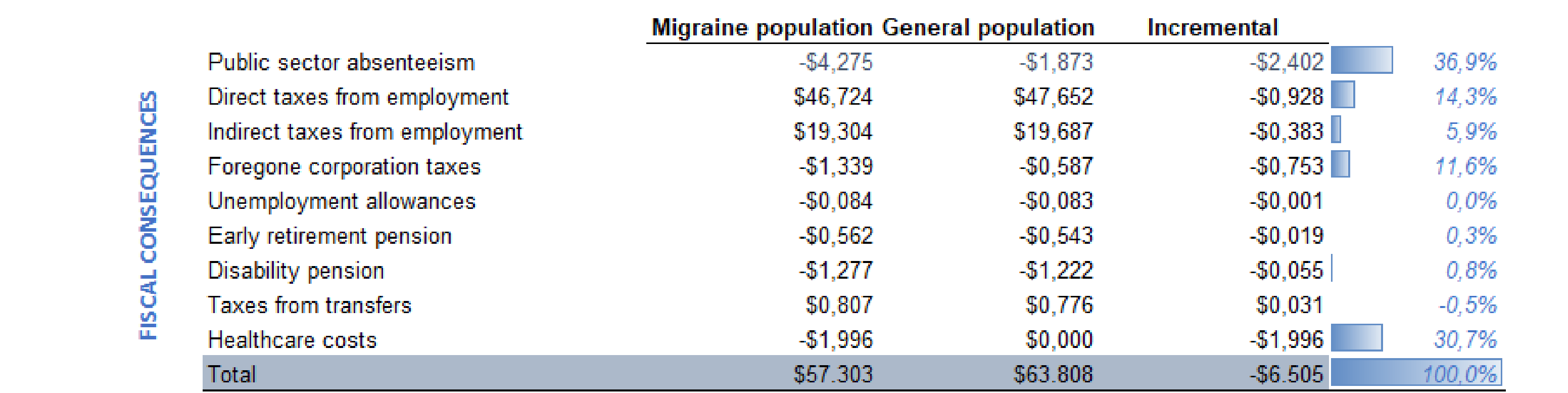
Figure 2. Fiscal consequences from the cross-sectional analysis



Longitudinal model

Over a 20-year period (Figure 3), cumulative fiscal consequences associated with an average patient added to US\$6,505, and to US\$21,670 if CM was present. Approximately 51% and 57% of these costs were related to the public economic consequences of absenteeism in a patient with average migraine severity and CM, respectively.

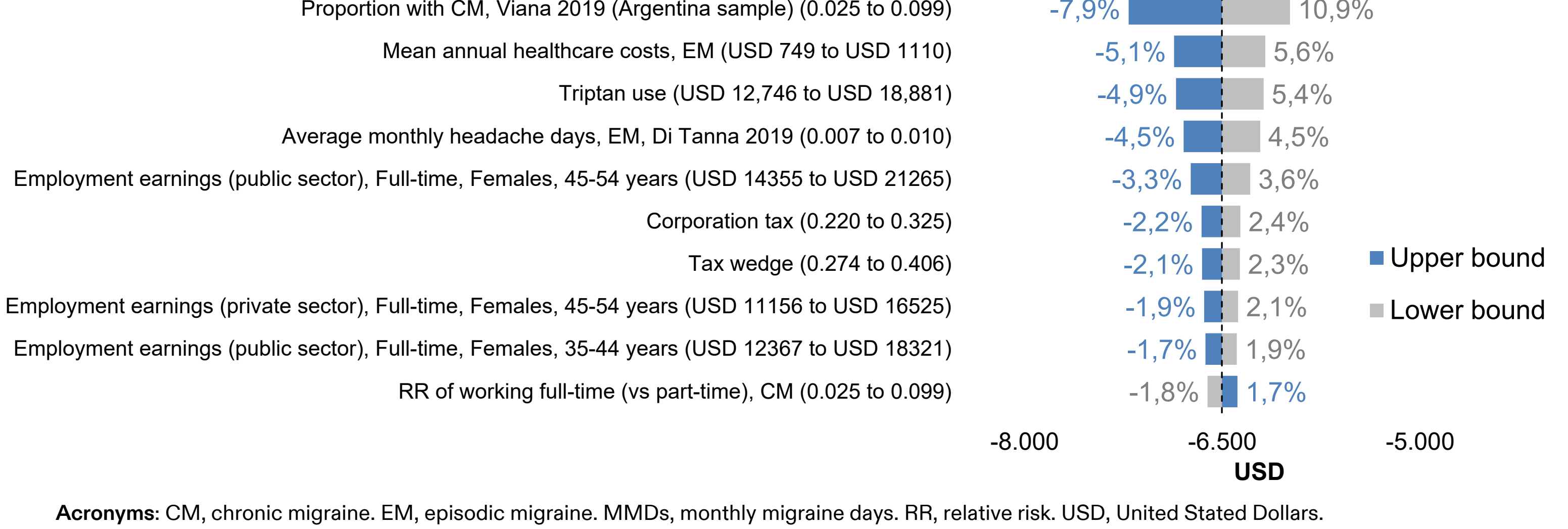
Figure 3. Fiscal consequences from the longitudinal analysis



Sensitivity Analysis

Figure 4 shows the sensitivity analysis of the longitudinal model results.

Figure 4. Tornado diagram



Discussion

Migraine was predicted to decrease employment and increase absenteeism rates, disability, and early retirement compared to the GP, strongly impacting the public economy. Costs to the entire migraine population were estimated to represent US\$1,237M, US\$378 per average person with migraine, US\$1,220 per person with CM. The societal burden of migraine is anticipated to surpass our estimates as they exclude consequences on the private and informal labor markets, and presenteeism-related productivity losses. This analysis integrates data from different Argentinian economic sectors and includes multiple sources of information that would likely not be captured by a single primary research study.

Conclusions

This analysis shows that migraine is a major public health problem with significant economic impact on Argentinian public expenditure. It highlights the hidden burden of migraine with the aim of improving recognition and management of this often-neglected condition.

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