

# Asia-Pacific CRVS Research Forum

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## Male-Female Disparities in Potential Years of Life Lost Due to Premature Mortality in the Philippines

Maria Midea M. Kabamalan<sup>1</sup>, Aurora T. Reolalas<sup>2</sup>, Marjorie B. Villaver<sup>3</sup>,  
Jane Alexandra A. Siwa<sup>4</sup>, Klarriness P. Tanalgo<sup>5</sup>, Claire Dennis S. Mapa<sup>6</sup>

<sup>1</sup> University of the Philippines Population Institute, Philippines, mmkabamalan@up.edu.ph

<sup>2</sup> Demographic Research and Development Foundation, Philippines, agtreolalas@gmail.com

<sup>3</sup> Philippine Statistics Authority, Philippines, m.villaver@psa.gov.ph

<sup>4</sup> University of the Philippines Population Institute, Philippines, jasiwa@up.edu.ph

<sup>5</sup> University of the Philippines Population Institute, Philippines, kptanalgo@up.edu.ph

<sup>6</sup> Philippine Statistics Authority, Philippines, d.mapa@psa.gov.ph

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## Abstract

Premature mortality or deaths occurring at any age lower than the life expectancy adversely impacts the social and economic performance of a country. In the Philippines, NCDs has been the leading causes of death since 1990s. In recent years, COVID-19 alongside external causes like intentional self-harm also contributed to the country's death rates.

Exposure to risk factors vary between male and female population brought about by lifestyle choices and behavioral factors often dictated by social gender norms. These can lead to gender disparities in premature causes of death. This study estimated sex-specific Potential Years of Life Lost (PYLL) due to leading causes of premature deaths namely NCDs, external causes (i.e., land transport accidents, assault, intentional self-harm), and communicable or infectious diseases (i.e., COVID-19, HIV, respiratory tuberculosis) on civil registration and vital statistics data. Estimates were calculated at the national level for the period 2010-2020 and at the regional level for 2020.

Results reveal that the relative ranking of causes of death included in the study is different for total number of deaths and for PYLL, indicating the importance of PYLL as an alternative indicator in studying mortality as it emphasizes the impact of preventable causes to premature deaths.

Using age 70 as the cut-off, results show that for all causes of death from 2010 to 2020, PYLL estimates for males exceed those for the females, except for malignant neoplasm, suggesting higher losses of potential years of life lost for the male than the female population. While there is a general decline in PYLL from 2010 to 2020, premature mortality due to a number of preventable causes such NCDs and diabetes did not necessarily improve.

Some regions with metropolitan cities—National Capital Region, Central Luzon, CALABARZON, Central Visayas and Davao—have high PYLL rates. The same regions exhibit the largest numerical differences in male and female PYLLs; however, the regions with biggest male-female gaps in PYLL by cause of death are more varied. The male-female disparities need further examination when focusing on the regional differences. It may be that differing services and programs in each of the regions play a role in the disparity between male and female premature mortality.

This study highlighted the impact of leading causes of death as major contributors to premature mortality for men and women. Further studies may examine the contribution of various types of cancers to PYLL, that might have varied incidence by sex. It may also be instructive to examine PYLL due to deaths that happen in the community compared with those that occur in facilities.

**Keywords:** *mortality, potential years of life lost, cause of death, Philippines, gender disparities, CVRS*

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## Introduction

Premature mortality or deaths occurring at any age lower than the life expectancy adversely impacts the social and economic performance of a country. The World Health Organization (WHO) reports that premature deaths due to non-communicable diseases such as cardiovascular diseases, malignant neoplasms or cancer, chronic respiratory diseases, and diabetes account for 80 percent of all deaths in the world (WHO, 2022c). In addition, external causes, particularly road traffic injuries and intentional self-harm, account for 1.3 million (WHO, 2022b) and 703 thousand deaths (WHO, 2022a) each year, respectively. With the global pandemic, COVID-19 ranked fifth among the leading causes of death worldwide, with over 7.3 million people dying of the disease (Troeger, 2023). In the Philippines, premature deaths due to NCDs have been the leading causes of death since 1990s (Department of Health, 2013). COVID-19 alongside intentional self-harm also greatly contributed to the country's death rates in recent years.

Gendered differentials in disease exposure and other risk factors contribute to disparities in these causes of death among male and female populations. These are brought about by social gender norms that affect behaviors like for example, smoking and drinking which are more prevalent among the male than female populations. In 2015, it was estimated that among the population ages 15 and older, 42% of the males and 6% of the females smoke tobacco (DOH et al., 2017). In 2021, 61% of the youth in ages 15-24 have tried drinking alcoholic beverages and almost 30% are current drinkers, the percentage of which is higher among males (43%) than females (17%) (University of the Philippines Population Institute, n.d.). Excessive alcohol consumption was found to be related to diseases of the liver (Parker, 2020; Zakhari & Li, 2007) and road traffic accidents (Papalimperi et al., 2019). The incidence of risky sexual behaviors is also observed to be higher among young men than young women (UPPI, n.d.).

In addition, periods of crisis and contextual factors such as lack of access to services, poverty, or underdevelopment have gender-differentiated impacts. The economic and social impacts of COVID-19, for instance, have disproportionately affected women (Baiocchi et al., 2020). For one, women health care workers were found to have higher risk of exposure to COVID-19 (Morgan et al., 2022). In less-developed areas of the Philippines, it is not unlikely that women more than men are affected by lack of access to health services or heightened economic insecurity due to the pandemic which can increase women's susceptibility to conditions that lead to premature mortality. Quarantines and lockdowns have disproportionately affected women's mobility and livelihood during the pandemic, which can in turn impact their access to much-needed health access (Wenham et al., 2020).

Life expectancy data generally indicate that men have shorter lives than women, but only a few studies have been made on the differences on mortality between males and females in the Philippines, and cause-specific mortality studies are scant. This study thus aims to produce estimates on sex-specific Potential Years of Life Lost (PYLL) due to premature deaths from NCDs, external causes such as land transport accidents and intentional self-harm, COVID-19 and other leading causes of deaths based on civil registration and vital statistics data. Specifically, this study aims to estimate and compare the PYLL due to each of the NCDs, external causes, COVID-19 disease, and other causes by sex at the national level for the period 2010–2020, and by region for year 2020. This study also provides important indicators of premature mortality which is

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one of the indicators used by the Philippine government in its development plan for the period 2023-2028 to boost health of its population.

## Why Potential Years of Life Lost?

PYLL is a measure of mortality that assesses the impact of major causes of deaths. Unlike other mortality measures, PYLL focuses on the social and economic consequences of mortality based on the relative impact of various diseases. It quantifies "the burden of social and economic loss from premature mortality within a given population" (Gardner & Sanborn, 1990, p. 327). In other words, it is a measure of the years of life not lived due to premature mortality or the number of years that the person would have lived had they reached a specified age. Thus, it provides insight on what causes of death can be prevented in order to maximize a person's or a population's contribution to society.

## Data and Methods

Data on deaths by age, sex, and causes from 2010 to 2020 is from the Vital Statistics Division of the Civil Registration Service of the Philippine Statistics Authority (PSA). Mid-year population for the same years will also come from PSA's census counts and official population projections (PSA, 2016, 2019). These are the inputs needed to compute the PYLL.

It is computed using the following formula (Organisation for Economic Co-operation and Development, 2022):

$$PYLL_{COD_{tg}} = \sum_{a=0}^{l-1} (l - a) \left( \frac{d_{at}}{p_{at}} \right) \left( \frac{P_a}{P_n} \right) * 100,000$$

where COD = cause of death  
t = time  
g = gender/sex  
a = age  
l = upper age limit based on life expectancy  
 $d_{at}$  = number of deaths at age  $a$   
 $p_{at}$  = number of persons aged  $a$  at time  $t$   
 $p_a$  = number of persons aged  $a$  in reference population  
 $p_n$  = number of persons aged  $a$  in reference population

In computing for the PYLL, we used the cut-off ages of 70 and 75 as these approximates the projected life expectancy at birth of the male and female population by year 2020. For the period 2010-2015, the life expectancy at birth in the Philippines is estimated to be 68 for males and 74 for females. For the next quinquennium, these are expected to be 70 and 76, respectively (PSA, 2016, p. 150).

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Table 1. Projected life expectancies by sex, national and by region: Philippines, 2010-2015 and 2015-2020 (Medium Assumption)

REGION	2010-2015		2015-2020	
	MALES	FEMALES	MALES	FEMALES
PHILIPPINES	67.8	74.0	69.6	75.9
NATIONAL CAPITAL REGION	69.9	76.1	71.5	77.7
CORDILLERA ADMINISTRATIVE REGION	67.2	72.9	69.0	74.7
REGION I - ILOCOS	67.6	73.7	69.4	75.5
REGION II - CAGAYAN VALLEY	67.5	73.4	69.3	75.2
REGION III - CENTRAL LUZON	68.2	74.2	70.0	76.1
REGION IVA - CALABARZON	67.6	73.8	69.5	75.6
REGION IVB - MIMAROPA	66.8	71.8	68.6	73.7
REGION V - BICOL	67.1	72.9	68.9	74.8
REGION VI - WESTERN VISAYAS	67.1	73.4	69.0	75.2
REGION VII - CENTRAL VISAYAS	67.4	73.1	69.2	75.0
REGION VIII - EASTERN VISAYAS	66.7	71.7	68.5	73.7
REGION IX - ZAMBOANGA PENINSULA	66.6	72.0	68.4	73.9
REGION X - NORTHERN MINDANAO	66.8	72.6	68.6	74.4
REGION XI - DAVAO	67.0	72.6	68.8	74.4
REGION XII - SOCCSKSARGEN	67.0	72.8	68.9	74.6
REGION XIII - CARAGA	66.1	71.3	67.9	73.4
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	61.7	66.9	64.1	69.4

Note: Adapted from *Updated population projections based on 2015 POPCEN* by PSA, 2019

By region, the National Capital Region (NCR) has the highest life expectancy at birth at 72 and 78, respectively for males and females, for the projected period 2015-2020. Central Luzon, CALABARZON, Ilocos, and Cagayan Valley, all regions from Luzon, follow next. At the other end of the spectrum, Bangsamoro Autonomous Region of Muslim Mindanao (BARMM) has the lowest life expectancy at birth, estimated to be 64 for males and 69 for females, levels that are about four years lower than the next lowest life expectancy of Caraga Region. The differences by male and female life expectancy are lowest in MIMAROPA, Eastern

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Visayas, and BARMM and are widest in Ilocos, Central Luzon, CALABARZON, Western Visayas, and the National Capital Region (NCR).

As mentioned above, this study investigates the contribution of selected causes of deaths (CODs) to the PYLL of male and female population. These CODs can be grouped into:

1. non-communicable diseases (cardiovascular diseases, cancer, diabetes, chronic respiratory diseases, and mental and behavioral disorders);
2. external causes (land transport accidents, intentional self-harm, and assault (which includes homicide, injuries inflicted by another person with intent to injure or kill, by any means but excludes injuries due to legal intervention and operations of war);
3. communicable or infectious diseases (respiratory tuberculosis, HIV, COVID-19 whether identified (confirmed by a laboratory test) or unidentified (suspected or probable cause or clinically-epidemiologically diagnosed cases where testing was not completed or are inconclusive);
4. diseases of the liver

CODs that do not fall within the above-mentioned groups are categorized as “Other causes”. The CODs used for this study are based on the International Statistical Classification of Diseases and Related Health problems, 10<sup>th</sup> Revision (ICD-10) Codes, version 2016 as applied to the Philippine Civil Registration and Vital Statistics (CRVS) System. However, codes in relation to COVID-19 were based on the 2019 version.

The PYLL estimates by region were standardized for each sex using the Philippines age structure. This was done to eliminate the effect of the differences in the age-sex structure among the regions.

## **Limitations and delimitation of the study**

The data used in the analysis include all deaths that occurred within the reference years and registered up to March of the following year. Data analyzed comes from the CRVS where information on date of demise, age, sex, and cause of death are found. In the last decade, CRVS data in the country has dramatically improved. It is considered better in terms of data quality (completeness and accuracy) compared to other countries with similar socio-economic standing and there is no reported sex or gender bias in the death registration. Using the empirical completeness model developed by the University of Melbourne (Adair & Lopez, 2018), completeness of death registration is estimated at 86.6% in 2010 to 88.0% in 2019 but dropped to 86.5% in 2020 at the national level, presumably due to quarantine measures imposed beginning in the first quarter of 2020. Although no 2021 data are included in this analysis, it was estimated that completeness of death registration has gone up to 95.3% for the year. Completeness of death registration, however, differ by region ranging from 11.5% (BARMM) to 94.6% (NCR) in 2010 and 15.2% (BARMM) to 96.9% (NCR) in 2020 (see Appendix A). The improving but still low death registration in BARMM (20% in 2021) may be affected by the cultural practice of Muslims wherein burial must take place as soon as possible after death, which is within 24 hours, thus, the death may or may not be reported to the Local Health Officer within 48 hours nor registered at the Local Civil Registry Offices after burial. Such low registration of deaths in BARMM results in unusually low PYLLs and thus lie as outliers. For this reason, while estimates for BARMM are included in the tables and charts, it is not included in the analysis by region. The estimates were not adjusted for under-registration.

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In addition, foreign nationals who died in the country and Filipinos who died outside the country are not included in the analysis. Persons who died with no information on age or sex are also excluded. Note that data by region are based on usual residence of the decedent.

## Results

We estimated the PYLLs using two cut-off ages of 70 and 75 as they approximate the life expectancy of males and females in the Philippines by year 2020. Table 2 shows the percentage distribution of PYLL by COD for both sexes, and male and female separately. As shown, the relative ranks of the causes of death are similar regardless of the cut-off age. Notably, COVID-19 virus identified as cause of death accounts for a higher percentage of premature deaths with the cut-off age of 70 than with the cut-off age of 75. The same is true for external causes, particularly for land transport accidents, assault, and other external causes. Conversely, the percentage of PYLL due to NCDs (namely age cardiovascular diseases, cancer, and diabetes) is lower for under 70 than for under 75. The pattern by COD for both sexes was mimicked in both the male and female estimates, with cardiovascular diseases accounting for the highest percentage of PYLL. We return to the male and female differences in the next section.

*Table 2. Potential years of life lost due to mortality before ages 70 and 75 by percentage of all causes, by sex: Philippines, 2020*

Causes	BOTH SEXES		MALES		FEMALES	
	under 70	under 75	under 70	under 75	under 70	under 75
ALL CAUSES	100.0	100.0	100.0	100.0	100.0	100.0
Cardiovascular disease	22.8	25.0	24.4	26.5	20.2	22.4
Cancer	9.4	9.9	6.4	6.8	14.5	15.2
Diabetes	4.1	4.7	3.8	4.2	4.7	5.5
Chronic respiratory disease	2.1	2.1	2.6	2.2	1.2	2.0
Mental and behavioral disorders	0.2	0.2	0.2	0.2	0.2	0.2
Land transport accidents	3.3	3.1	3.7	4.4	2.6	1.1
Assault	2.7	2.5	3.9	3.6	0.7	0.7
Intentional self-harm	1.9	1.9	1.9	2.3	1.9	1.1
Other external causes	4.5	4.2	5.7	5.2	2.6	2.4
COVID-19, virus identified	3.8	1.2	3.7	1.2	4.0	1.2
COVID-19, virus not identified	1.1	3.9	1.1	3.8	1.0	4.0
Respiratory tuberculosis	3.4	3.3	4.7	3.8	1.1	2.6
Human immunodeficiency virus (HIV)	0.4	0.4	0.6	0.6	0.1	0.1
Diseases of the liver	1.6	1.7	2.1	2.1	0.9	1.0
Other diseases of the digestive system	2.4	2.4	2.8	2.8	1.8	1.8
Other causes	36.1	33.4	32.4	30.2	42.4	39.0

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Since our goal is to examine premature deaths, we have chosen to present the results based on the cut-off age of 70 from hereon. Previous studies have also preferred the cut off age of 70 as deaths because deaths in older ages are driven by diseases related to aging or natural causes and it is also the time when productivity typically ceases (Gardner & Sanborn, 1990).

## **PYLL and Deaths in 2020**

We also juxtaposed the estimated PYLLs with the number of deaths by cause, by male and female as shown in Table 3. Based on the CVRS data, there were 372,276 deaths among population under age 70. The leading causes of death are NCDs, particularly cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases, accounting for most deaths at all ages (54%). COVID-19 (virus not identified) ranks next, accounting for 3.9% of total deaths in 2020. Deaths due to respiratory tuberculosis follows at 3.6%. Deaths due to land transport accidents and assault account for around two percent each, intentional self-harm, 1.2% and other external causes, 2.9% of deaths in the same year.

Meanwhile, the estimated PYLL for all causes of deaths is 7,615 per 100,000 population. Here, we note that while more than half of the deaths are due to NCDs, their PYLL results to only 38.3% of the PYLL. In contrast, while deaths due to external causes accounted for a total of 8.3% of the total deaths, their corresponding PYLL represents 12.7%. These patterns indicate the importance of using PYLL as an alternative indicator in studying mortality, particularly as it emphasizes the impact of deaths in the younger age groups.



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Table 3. PYLL and deaths under 70 by selected causes by sex: Philippines, 2020

Cause	BOTH SEXES				MALES				FEMALES			
	PYLL		Deaths		PYLL		Deaths		PYLL		Deaths	
	Years	%	Persons	%	Years	%	Persons	%	Years	%	Persons	%
ALL CAUSES	7,615.6	100.0	372,276	100.0	9,488.5	100.0	237,125	100.0	5,677.9	100.0	135,151	100.0
Cardiovascular disease	1,740.0	22.8	122,075	32.8	2,315.8	24.4	81,467	34.4	1,144.3	20.2	40,608	30.0
Cancer	714.0	9.4	44,331	11.9	605.7	6.4	19,728	8.3	826.1	14.5	24,603	18.2
Diabetes	313.7	4.1	25,908	7.0	357.5	3.8	14,520	6.1	268.3	4.7	11,388	8.4
Chronic respiratory disease	147.5	1.9	9,535	2.6	184.2	1.9	6,833	2.9	109.7	1.9	2,702	2.0
Mental and behavioral disorders	17.0	0.2	754	0.2	23.5	0.2	550	0.2	10.3	0.2	204	0.2
Land transport accidents	260.3	3.4	8,247	2.2	449.7	4.7	7,179	3.0	64.4	1.1	1,068	0.8
Assault	206.4	2.7	7,161	1.9	366.3	3.9	6,469	2.7	40.9	0.7	692	0.5
Intentional self-harm	156.6	2.1	4,651	1.2	242.5	2.6	3,749	1.6	67.7	1.2	902	0.7
Other external causes	345.1	4.5	10,885	2.9	536.6	5.7	8,794	3.7	147.0	2.6	2,091	1.5
COVID-19, virus identified	292.8	3.8	5,846	1.6	354.8	3.7	3,776	1.6	228.6	4.0	2,070	1.5
COVID-19, virus not identified	82.5	1.1	14,586	3.9	104.7	1.1	9,200	3.9	59.5	1.0	5,386	4.0
Respiratory tuberculosis	250.9	3.3	13,504	3.6	351.1	3.7	9,942	4.2	147.2	2.6	3,562	2.6
Human immunodeficiency virus (HIV)	33.4	0.4	950	0.3	61.1	0.6	877	0.4	4.7	0.1	73	0.1
Diseases of the liver	125.0	1.6	7,588	2.0	196.5	2.1	5,962	2.5	51.1	0.9	1,626	1.2
Other diseases of the digestive system	184.9	2.4	9,349	2.5	266.8	2.8	6,774	2.9	100.1	1.8	2,575	1.9
Other causes	2,745.5	36.1	86,906	23.3	3,071.7	32.4	51,305	21.6	2,408.0	42.4	35,601	26.3

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## Gender differences in national level PYLL in 2020

There are important differences in the PYLL estimates for the male and female population (Figure 1). In 2020, the PYLL for all causes of death is 9,488 for male population compared to only 5,677 for female population. This reflects the fact that males die younger than females, and this is highlighted even more in the PYLL using the age 70 as cut-off. Except for cancer, PYLL due to most causes of deaths is greater for male than for female population. Notably, the differences in PYLL due to intentional self-harm and land transport accidents are four times and seven times higher for male than for female population; for assault, the PYLL for males is about nine times higher than for the females. PYLL due to cardiovascular diseases for males is also more than double the PYLL for females. Although involving relatively fewer deaths, the PYLL due to HIV is 13 times higher for males than for the female population. Conversely, PYLL due to cancer is about 36% higher for females than for males.

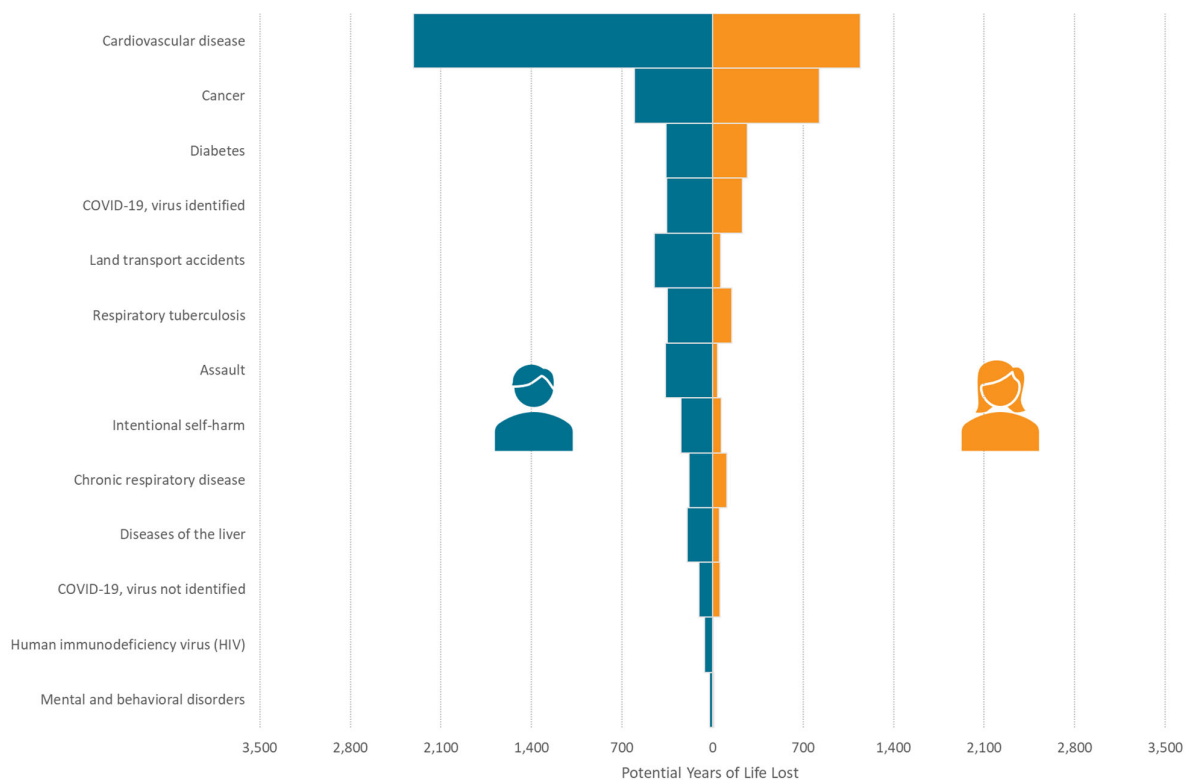


Figure 1. Distribution of PYLL due to mortality before age 70 by selected causes of death by sex: Philippines, 2020

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## **PYLL by cause of death from 2010 to 2020**

How do these estimates compare with the previous years in the last decade? The series of line graphs in Figure 2 show the PYLLs for years 2010 to 2020 for various causes of death at the national level. There are several points to highlight here. First, PYLLs dropped from almost 11 thousand to less than 9,500 per 100,000 male population from 2010 to 2020 and a similar trend was found for the female population, 6,520 down to 5,678 in the same period. Second, although there is a general decline for PYLL for all causes, PYLL for some causes of death did not necessarily improve for both males and females. For instance, PYLL for cardiovascular diseases for both males and females hardly declined over the last decade. PYLL due to diabetes, remarkably increased for males and females; the same is true for HIV and intentional self-harm particularly for males. Third, for each cause of death except for cancer, the PYLL is consistently higher for the male than the female population suggesting the higher losses of potential years of life among the former than the latter. Fourth, when comparing male and female PYLLs, the gaps either diverge or narrow for specific causes of death. For cancer, the PYLL has been diverging from 2013 with the female PYLL increasing and the male PYLL decreasing. For diabetes, both male and female PYLLs follow the same ups and downs except for the period 2019-2020 where the increase is higher for males than for females. The same can be said for chronic respiratory disease except for the years 2019 and 2020 where instead of a decline, the male PYLL increased from 2018 to 2019 before declining again in 2020. In contrast, the female PYLL continues to drop. Mental and behavioral disorders exhibit see-saw patterns for both the male and female populations but has generally been increasing from 2010 and peaked in 2017 before declining to 2019 and increased again in 2020.

With respect to external causes of deaths, land transport accidents for the female population under age 70 remained stable from 2010 to 2019 hovering at PYLL of 100 per 100,000 female population but dropping substantially in 2020. Among the male population, the PYLL was about the same for the period 2010 to 2015 and increasing thereafter, reaching a PYLL of over 650 per 100,000 male population, before dropping to just 450. Likewise, intentional self-harm which was also stable for the period 2010-2017, exhibited an increase in PYLLs for both the male and females although the increase is more dramatic for the former than the latter for the period from 2019 to 2020. The trend for assault is also declining, albeit not as noticeable for the females than for the males, the PYLLs for males being 794 per 100,000 male population and only 70 for the females in 2010. It should be noted, too, that the PYLL increased to 838 in 2016 before declining again reaching 366 in 2020.

PYLL due to HIV also need to be highlighted. As seen in Figure 2, there is a dramatic increase in PYLL for the male population. In 2010, the PYLL for males due to HIV was only 2 per 100,00 male population and for the females, it was negligible. By 2020, the corresponding values increased to 61 for males and 5 for females. Deaths due to COVID-19 are not shown in Figure 2 as we only have data for one year (2020). It should be noted that data on HIV, assault, and intentional self-harm may have reporting bias as there is stigma when these are reported as the underlying cause of death. Patient confidentiality, loss of benefits or insurance, cultural beliefs, and legal implications are some of the reasons for not correctly reporting these causes of death.

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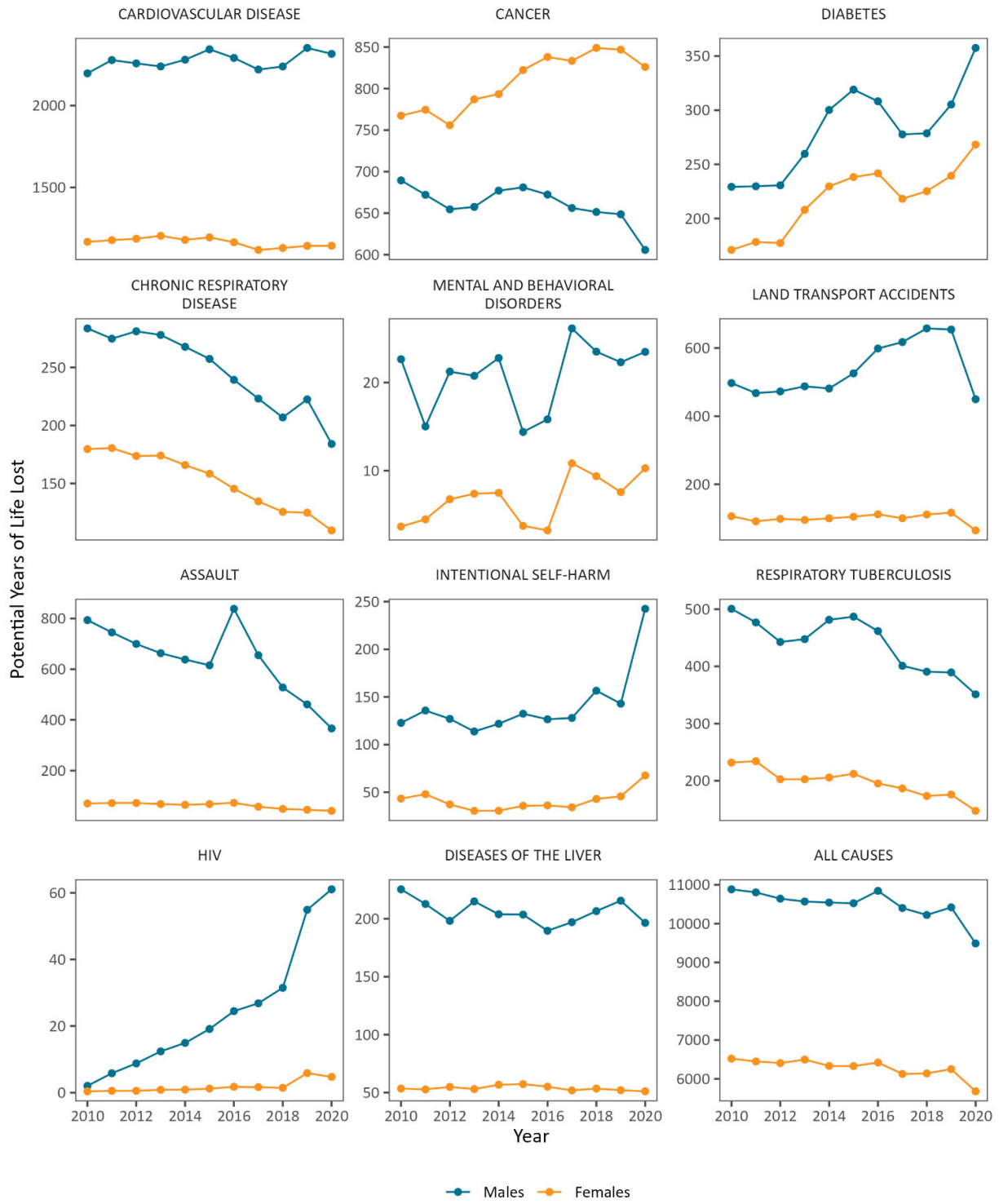


Figure 2. PYLL for selected causes due to mortality before age 70: Philippines, 2010-2020

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## **Deaths and PYLL estimates by region in 2020**

The Philippines is divided into 17 regions with different levels of socio-economic development which can also be reflected in the populations' type of livelihood, access to health services and exposure to certain causes of death. On the one hand, the NCR, CALABARZON, Central Luzon, Central Visayas and Davao Region consist of highly urbanised areas and relatively higher population. On the other hand, Eastern Visayas, Bicol, Zamboanga Peninsula, Caraga, and BARMM are the regions with the highest poverty incidence among the population ranging from 29% to 37% (PSA, 2022).

Bearing in mind the disparity between the regions, we show total number of deaths and compute age-adjusted PYLL by region to see if regional differences in terms of causes of death exist. Regardless of the cause and of sex, deaths are highest in CALABARZON, followed by the NCR and Central Luzon. Except for BARMM, deaths in the Cordillera Administrative Region (CAR) is the lowest (Figure 3). However, some regions rank high in terms of specific causes of death. For most causes of deaths, the counts are highest in CALABARZON except for COVID-19, HIV, and assault, which are highest in the NCR, and land transport accidents which is highest in Central Luzon. But when we look at death rates, cardiovascular diseases, COVID-19, and HIV are highest in NCR, cancer in Ilocos region, and diabetes in CALABARZON. Chronic respiratory disease, mental and behavioral disorders, respiratory tuberculosis, and diseases of the liver are highest in Western Visayas, land transport accidents in Cagayan Valley, assault in SOCCSKSARGEN, and intentional self-harm in Central Visayas.

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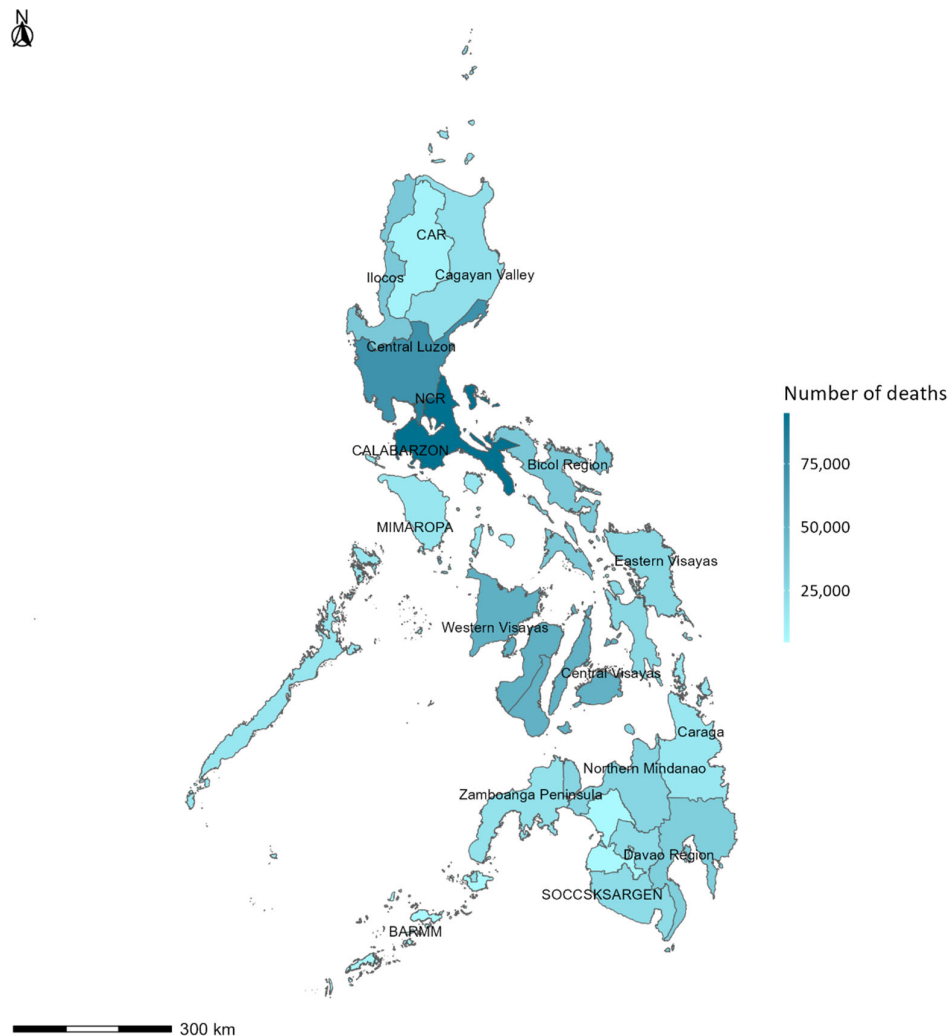


Figure 3. Number of deaths under 70 from all causes: Philippines, 2020

Figure 4 shows the standardized PYLL for all causes for each of the 17 regions by sex for 2020. The blue dots represent the male PYLL while the orange dots represent the female PYLLs. The purple triangle represents the PYLL for both sexes. The lines between the two dots indicate the gap in PYLL by sex. The National Capital Region (NCR) registered the highest PYLL for males at close to 11 thousand per 100,000 male population, followed by CALABARZON, Davao, and Western Visayas regions. In contrast, males from CAR and Eastern Visayas have the lowest PYLLs at below 8 thousand. Again, we note that we are not including BARMM in the regional analysis. The females from the NCR likewise have the highest PYLLs at 6,393 per 100,000 female population, followed by those from Central Visayas, CALABARZON, and Davao regions. Females from CAR also have the lowest PYLLs (4,047 per 100,000 female population), followed by those from SOCCSKSARGEN. The widest gaps between the male and female PYLLs are found among those from Western Visayas, NCR, Cagayan Valley, Bicol, CALABARZON, SOCCSKSARGEN, and Davao, with PYLL values exceeding 4,000. In contrast, the male-female gap in PYLL is smallest in Eastern Visayas at less than 2,700 PYLL.

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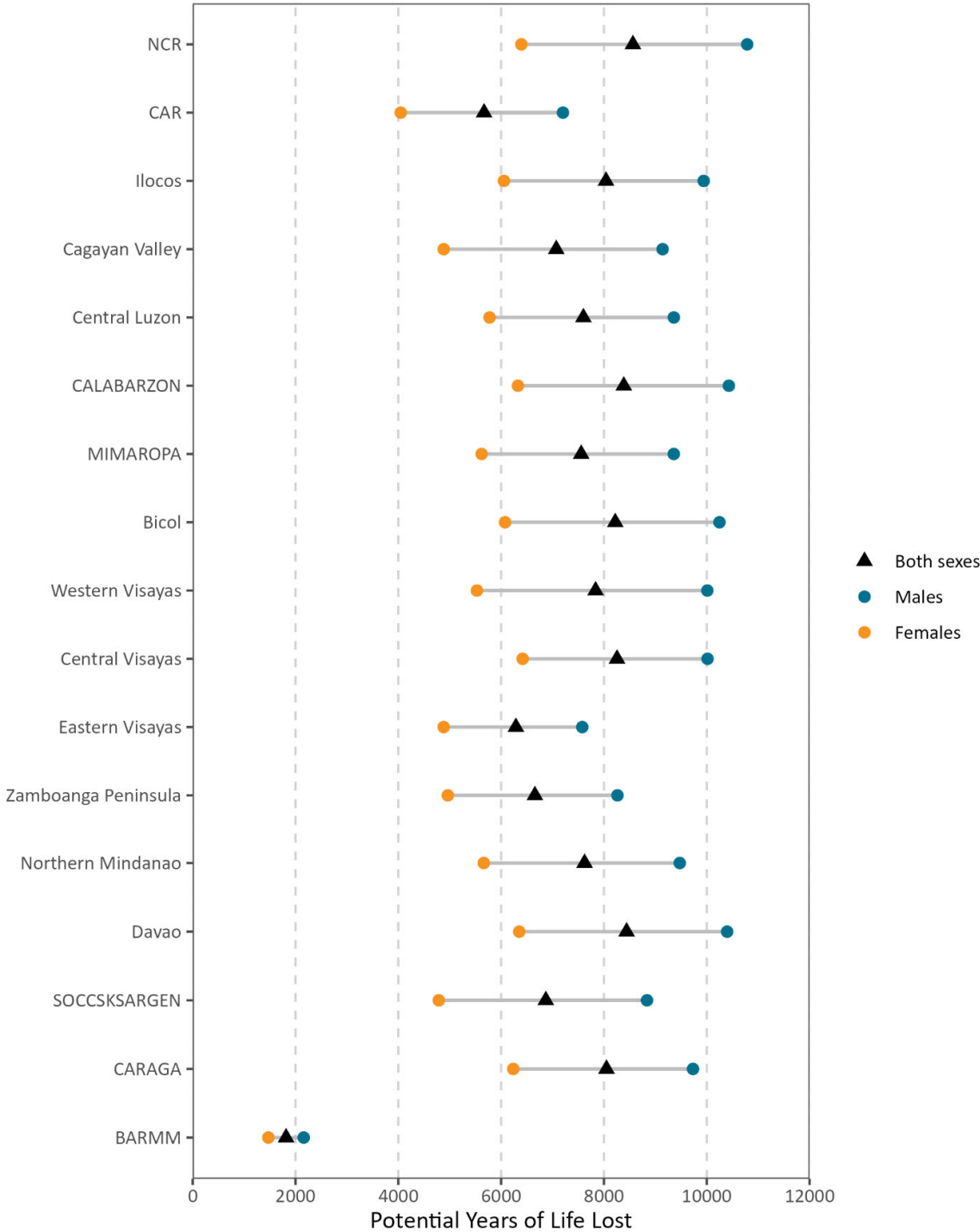


Figure 4. Age-adjusted PYLL for deaths before age 70 due to all causes, by sex and by region: Philippines, 2020

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## Sex differences in regional PYLL by cause of death in 2020

Figures 5–7 illustrate the PYLL by sex and by region for each of the 12 specific causes of death included in the study. There are notable male-female gaps for each cause of death. In 2020, the disparity between the male and female PYLLs for **cardiovascular diseases** is highest in NCR, with male PYLLs being 2.4 times higher than the female PYLL. The next highest gap is found in CALABARZON with a numerical PYLL difference of 1,500 per 100,000 population between males and females. The highest PYLL due to **diabetes** is in Caraga (at 419), but the widest difference by sex is in CALABARZON, followed by NCR and Central Visayas. For **chronic respiratory disease**, the PYLL estimate is 148 per 100,000 population, and is highest in Bicol at 209. The male-female disparity is highest in Western Visayas which is double the national numerical estimate of 74 for chronic respiratory disease. The disparity in Northern Mindanao follows next at 105 translating to a male-female ratio of 2.3.

With regard to PYLL estimates due to **cancer**, the only cause of death that is higher for females than males, the national PYLL estimate is 826 for females and 606 for males. By region, the highest PYLL estimate for females due to cancer is in Central Visayas at 1,028 per 100,000 female population, followed by Davao at 982. These two regions also registered the highest numerical male-female disparity with regard to cancer as a cause of death.

**Deaths due to external causes**, which include land transport accidents, assault, and intentional self-harm also indicate sex differences by region. The PYLL estimates due to these causes are 260, 206, and 157 per 100,000 population, respectively, and are higher for males than females. But while the numerical difference by male and female is higher for land transport accidents at 450 per 100,000, compared to only 206 for assault, the gap between male and female PYLL is wider for the latter. PYLL estimates due to assault is almost nine times higher for males than for females; for land transport accident, the ratio is only 7:1. By region, the PYLL estimates for **land transport accidents** in Cagayan Valley, Davao, and Caraga all exceed 400 per 100,000 population. The numerical differences in PYLL are highest in Cagayan Valley and Ilocos at 802 and 611, translating to male-female ratios of 11 and 10, respectively. For **assault**, the region of SOCCSKSARGEN exhibited the highest numerical male-female differences at 614 per 100,000 population. However, the male PYLL is 13 times higher than the female PYLL in Cagayan Valley. PYLL estimates due to **intentional self-harm** is highest in Central Visayas and Northern Mindanao, each at 208 but the widest disparity by male-female is in Ilocos where the male PYLL is 334 as against the female value of just 63.

With regard to **communicable diseases** such as COVID-19, HIV, and respiratory tuberculosis, the PYLLs for males is also higher than for the females. For **COVID-19**, regardless of whether it was identified or not as described earlier, the PYLL for males is higher by 60% compared to females. The biggest numerical difference by male and female is found in the NCR, followed by CALABARZON, and Central Visayas but the PYLL for Cagayan Valley males is more than twice higher than for females. For **respiratory tuberculosis**, the widest numerical disparity by sex is found in Western Visayas, Bicol, and MIMAROPA but males in CAR registered almost 3 times higher than the PYLL for its female population. For **HIV**, data from NCR, Davao, and Western Visayas show the highest numerical differences by male and female PYLLs but relative to the female population, the male PYLL is 39 times higher for males in CALABARZON.



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PYLLs due to **diseases of the digestive system**, particularly diseases of the liver, is highest in Western Visayas at 198 per 100,000. In terms of numerical male-female gap in PYLL estimates, this is largest also for Western Visayas, but male PYLL in Cagayan Valley is more than 8 times higher for the female PYLL, followed by Ilocos with male PYLL being 6.3 times higher than for females.

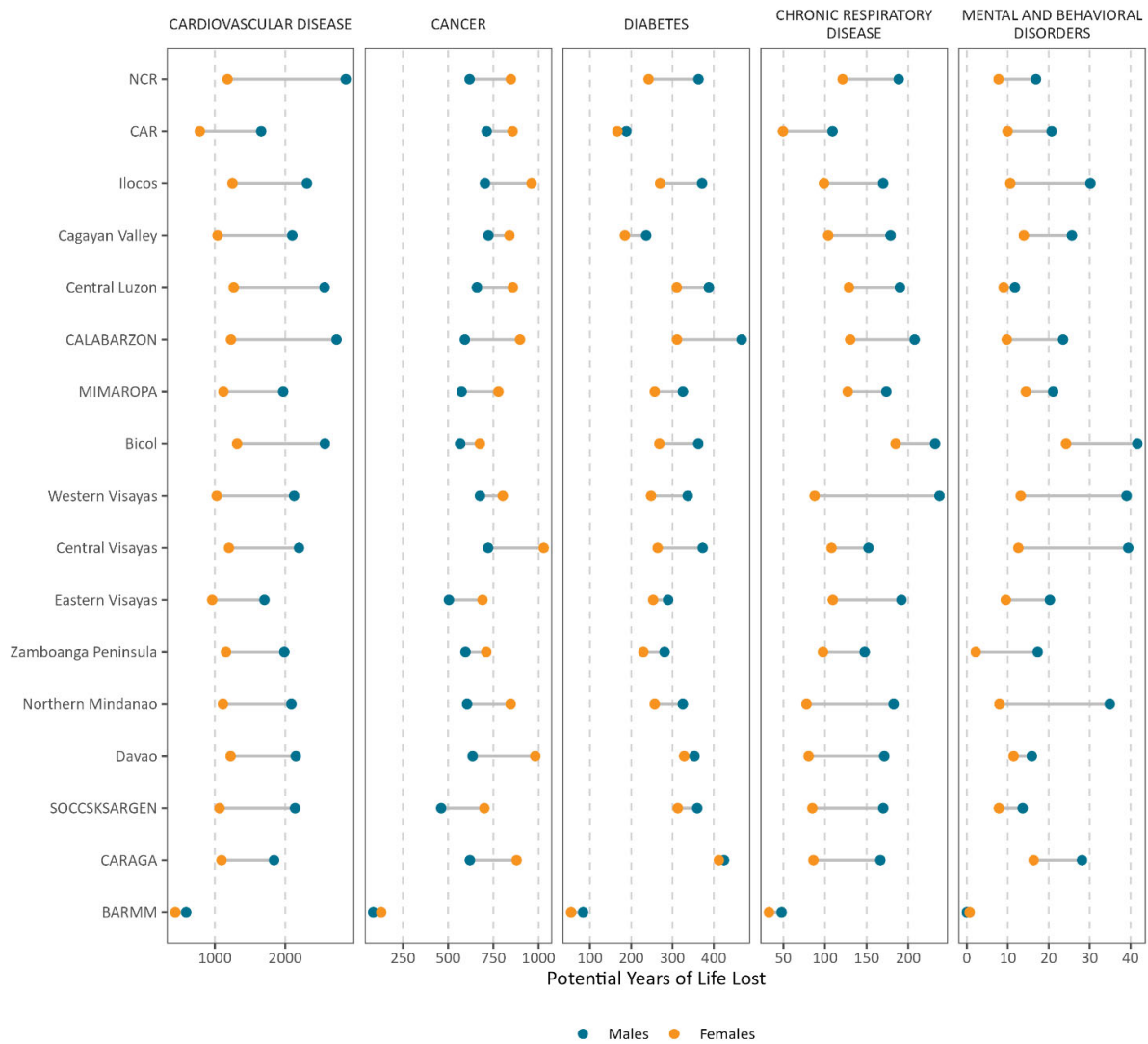


Figure 5. Age-adjusted PYLL for deaths before age 70 due to non-communicable diseases, by sex and by region: Philippines, 2020

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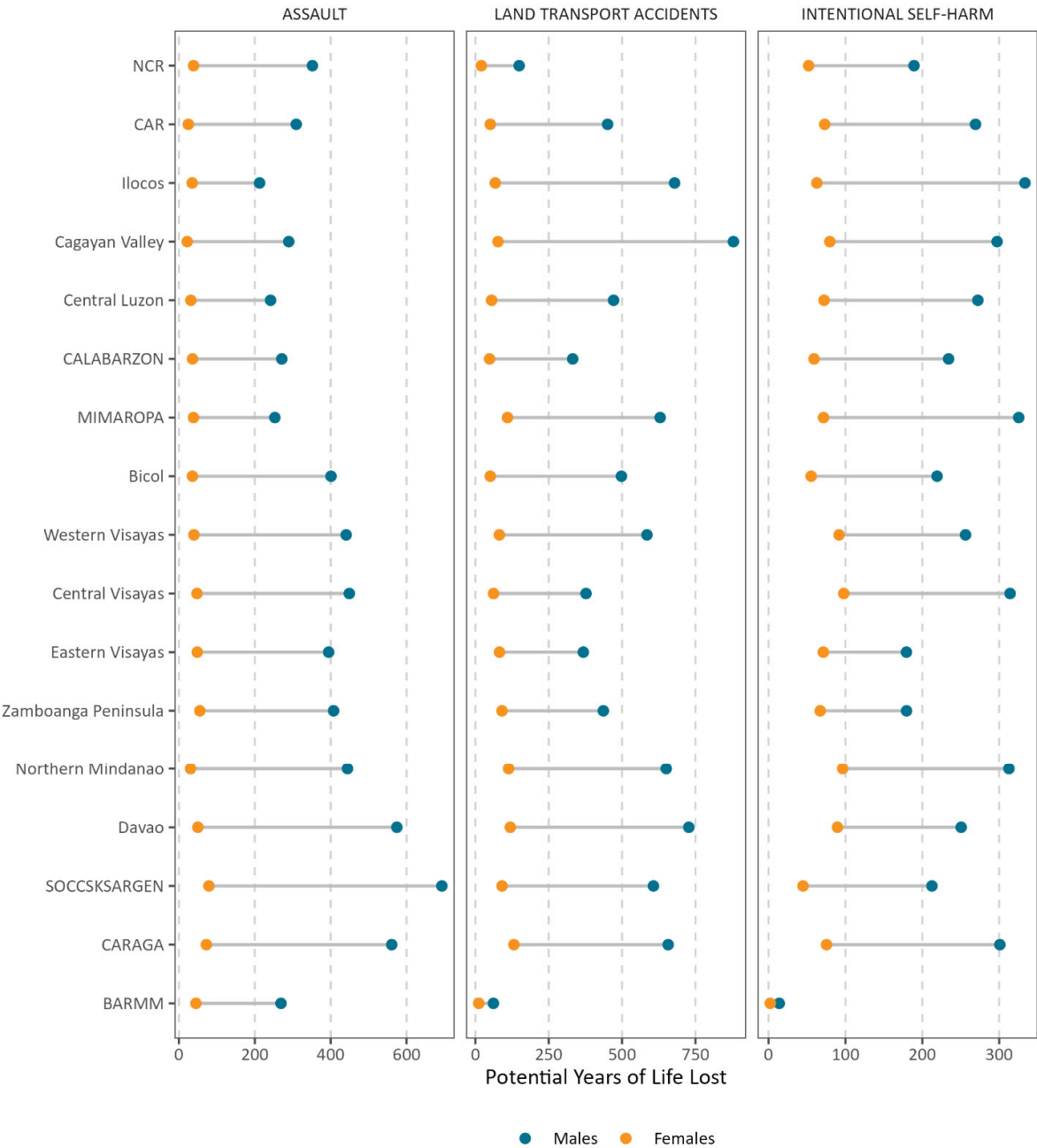


Figure 6. Age-adjusted PYLL for deaths before age 70 due to external causes, by sex and by region: Philippines, 2020

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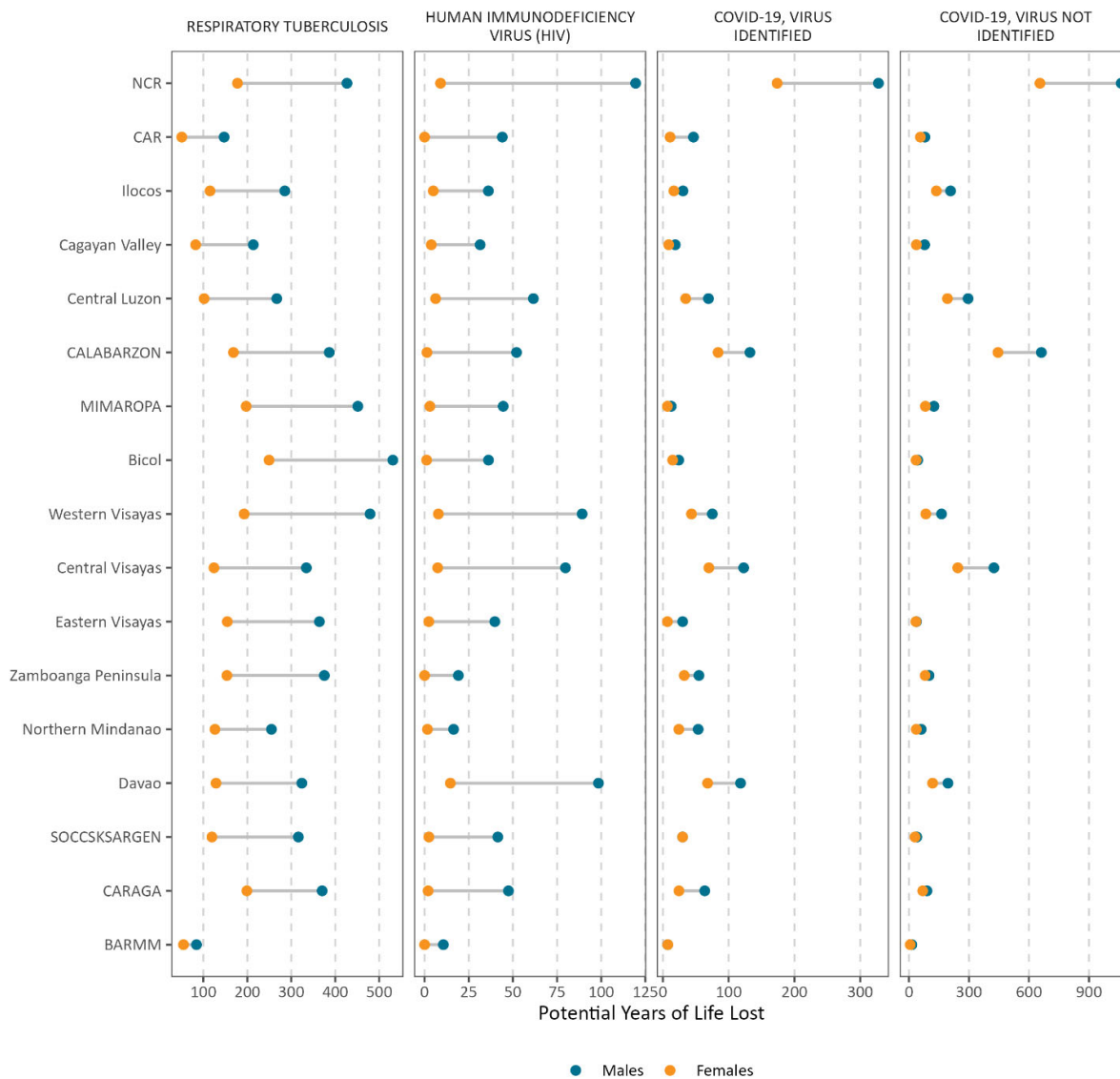


Figure 7. Age-adjusted PYLL for deaths before age 70 due to infectious diseases, by sex and by region: Philippines, 2020

## Discussion

At the national level, the ranking of the various causes of death differ from the ranking by PYLL highlighting the importance of using PYLL as a mortality measure. Certain CODs particularly noncommunicable diseases and those due to external causes cost lives of younger people and these deaths could have been prevented.

PYLL is generally higher for male than for female population, for all causes and for most causes of death except for cancer. Premature deaths cost an average of 9,489 years lost to men compared to 5,678 years lost to women. This finding reflects the fact that males die younger than females as also indicated by the persistent life expectancy gap from 2010 to 2020. Male-female gap in PYLL is also more pronounced when using age 70 as cut-off.

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A big portion of premature death can be attributed to **cardiovascular diseases** and the trend did not improve in the last decade. This is in line with the fact that cardiovascular disease remains as the number one cause of death in the country. The same is true for diabetes, which is also among the top causes of death in the country. Although, PYLL due to cardiovascular disease and diabetes tend to be lower for females than for males, it does not necessarily mean that women are less prone to having these diseases. In fact, there are only 289 less female deaths than male deaths due to diabetes in 2020. If any, the sex differences in PYLL shows that these diseases are more fatal to men than women of younger age groups. A study in 2005 found that men are more likely to be hospitalized or to die than women who suffer from the same chronic conditions such as cardiovascular diseases or respiratory cancer (Case & Paxson, 2005). This also implies that men generally experience more severe forms of these diseases which can be linked to risky behaviors such as smoking and drinking.

Cancer is the single cause of death that contributed to greater PYLL for women than for men. This contrasts with the general mortality pattern between males and females due to cancer. While this study did not examine types of cancers, previous studies have shown that globally, mortality rates of persons with cancer, except for reproductive cancer, is higher for men than in women (Cook et al., 2011; Vera et al., 2023). However, certain types of cancers have shown to be more fatal for younger women. A study in the US reveals that mortality rates for women with breast cancer aged 40 years old and younger have stopped declining from 2010 onwards (Hendrick et al., 2021) and that women of these age are 39% more likely to die of breast cancer and this can be partly explained by higher prevalence of late-stage cancer (Gnerlich et al., 2009).

Land transport accidents as a cause of death have been increasing dramatically for males but dropped substantially in 2020 due to the limited travels imposed in relation to the COVID-19 lockdowns. Over the years, the ownership and use of motorcycles has become ubiquitous. Coupled with the proliferation of transport network vehicle service using motorcycles, the increase in motorcycle use might be one factor in the upward trend of land transport accidents as a cause of death, particularly for men who most often are the drivers of motor vehicles. While the drop in deaths due to land transport accidents is also reflected in lower PYLLs in 2020, the PYLL for males in 2020 is still 7 times higher than for females compared to less than 5 in 2010. It has also been observed that those mostly using the motorcycles are young members of the population.

The pandemic brought to fore mental health concerns. We have seen that while the PYLLs due to mental and behavioral disorders exhibited a see-saw pattern for both the male and female populations from 2010, the estimate generally increased in 2020. The sharp increase in number of deaths due to intentional self-harm is likely due to the challenges faced during this period that negatively impacted mental well-being. In 2020, an increase in deaths due to intentional self-harm was seen, more so among the male than the female population. This is consistent with reports of increases in mental health problems during the pandemic (Gray et al., 2022). In addition, the **range of sex gap in PYLL due to intentional self-harm is wide across all regions in the country**, with more years lost to males than females. This validates trends in other countries and across the world that while women are more likely to attempt to suicide, men are more likely to die from intentional self-harm because they use more lethal means in committing suicide (Cai et al., 2022). It has also been previously observed in other countries that adherence to masculine ideals may prevent men from

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seeking psychological support (Möller-Leimkühler, 2003); however, this does not necessarily hold true in the Philippine context as both men and women “were equally reluctant to seek professional help for psychological difficulties” (Tuliao, 2014, p. 131).

The fact that there are more deaths among men than women due to HIV, and consequently the high disparity between the two sexes in the PYLL estimate reflect the higher infections among men than women. In 2020, it was reported that 90% of new infections were among young men having sex with men (DOH - Epidemiology Bureau, 2021).

The PYLL due to diseases of the liver remained relatively lower for females than males over the years which may be linked with the higher incidence of drinking among men than women. Based on a WHO (2018) report, among the population ages 15 and over in 2016, the total alcohol per capita consumption (in liters of pure alcohol) in the Philippines is 11 for males and 2 for females; and the prevalence of heavy episodic drinking is 21% of males and only 3% of females. Gender differences in drinking behavior has been found to be linked to both biological differences in response to alcohol consumption which is amplified even more by level of gender division in a particular context (Wilsnack et al., 2000). In societies where the division of gender roles is stark—i.e., where women are consigned to the homes, have limited economic and decision-making power-- the gap in alcohol drinking pattern is significantly wider (Wilsnack et al., 2000). Despite the narrowing gender gap in the Philippines, cultural reasons may still explain why men tend to drink more than women. Choe and Raymundo (2001) observed that alcohol drinking among the youth is passed through primary socialization from their family and parents are more likely to approve alcohol drinking of their male children but not their female children.

## **High PYLL in regions with a high percentage of urban areas**

Paradoxically, PYLL is highest in some regions with metropolitan cities. In 2020, the highest PYLL for all causes of death can be found in NCR, Davao, CALABARZON, and Central Visayas Region. It is also in NCR and CALABARZON where premature mortality due to cardiovascular diseases is highest and CALABARZON together with CARAGA accounted for the PYLL due to diabetes. A study by Yusuf et al. (2001) showed that in developing countries, the high burdens of cardiovascular diseases may be due to urbanization and comorbidities such as diabetes and hypertension, as well as due to the relatively young population structures. Similarly, Ramachandran et al. (2014) noted that the large increases in type-2 diabetes in Southeast Asia which is associated with lifestyle changes related to urbanization and industrialization.

## **Conclusion/Recommendations**

In this study, we estimated the potential years of life lost due to premature deaths from various causes such noncommunicable diseases, external causes like land transport accidents and intentional self-harm, COVID-19 and other leading causes of deaths using data from on civil registration and vital statistics at the national and regional levels, separately for the male and female population.

Results show that for all causes of death, for the years 2010 to 2020, and using age 70 as the cut-off, the PYLL estimates for males exceed those for the females, except for malignant neoplasm or cancer suggesting higher losses of potential years of life lost for the male than the female population. While there is a general

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decline in PYLL for all causes, the PYLL for some causes of death did not necessarily improve over the years for both males and females, such as those due to cardiovascular diseases, and for some, the PYLL has been increasing like that for diabetes. In other cases, the PYLL has been increasing or declining more for the male than the female population like that for HIV and for assault, respectively. For other causes, the trend was either muted or aggravated by the onset of the COVID-19 pandemic in 2020. If there is anything positive about the COVID-19-related lockdowns, it led to the decline of PYLLs due to land transport accidents. Conversely, it may be that increased PYLLs due to mental and behavioral disorders and intentional self-harm was due to the COVID-19 pandemic. PYLLs due to cancer, the only cause of death where female PYLLs exceed those of the males, has been continuously increasing for females but declining for males leading to a wider gap by sex over time.

By region, and in terms of numerical PYLLs, the regions of NCR, CALABARZON, Central Visayas, and Davao have the highest estimated values for all causes of death, the same regions that have high urban populations. But while the same regions exhibit the largest numerical differences in male and female PYLLs, the relative gaps are not necessarily found in the same regions by cause of death. The male-female disparities are largely attributed to lifestyle choices and behavioral patterns related to gender norms, but these need further examination when focusing on the regional differences. It may be that differing services and programs in each of the regions play a role in the disparity between male and female premature mortality.

Finally, while this study explored differences in PYLL by various causes of death, it may also be useful to examine various types of cancers for example, that might have varied incidence by sex. It may also be instructive to examine PYLL due to deaths that happen in the community compared with those that occur in facilities.

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## APPENDIX A

Completeness of death registration by region using the empirical completeness model: Philippines, 2010-2020

Region	Completeness of death registration										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PHILIPPINES	86.6	86.1	86.2	86.1	88.7	88.6	88.6	87.3	87.4	88.0	86.5
NATIONAL CAPITAL REGION	94.6	94.1	93.9	93.5	97.7	97.6	97.5	96.9	96.5	96.6	96.9
CORDILLERA ADMINISTRATIVE REGION	79.0	79.7	82.3	80.9	94.5	94.1	94.5	93.8	94.2	94.9	93.4
REGION I – ILOCOS	93.6	92.8	92.6	91.9	91.4	90.5	91.0	89.1	89.5	88.5	87.1
REGION II - CAGAYAN VALLEY	92.7	92.4	92.7	92.5	91.0	91.0	91.1	90.4	90.1	90.4	86.1
REGION III - CENTRAL LUZON	88.6	88.1	88.2	87.2	93.9	93.7	93.9	92.8	92.8	93.1	91.4
REGION IVA - CALABARZON	92.6	92.1	92.0	92.2	93.5	92.8	92.4	92.0	91.1	91.9	91.6
MIMAROPA	71.8	72.5	71.7	71.7	80.2	81.2	82.9	79.7	80.7	81.2	77.1
REGION V – BICOL	87.5	88.1	87.1	86.8	85.5	84.9	85.1	85.0	83.0	84.2	78.4
REGION VI - WESTERN VISAYAS	90.9	90.2	90.2	90.2	83.5	82.1	82.3	80.4	80.0	81.0	77.0
REGION VII - CENTRAL VISAYAS	88.1	86.6	86.2	86.9	90.3	90.5	90.1	88.8	87.8	88.7	87.8
REGION VIII - EASTERN VISAYAS	79.7	81.4	81.4	86.3	80.2	81.0	80.1	78.5	80.4	80.8	78.1
REGION IX - ZAMBOANGA PENINSULA	72.1	75.2	73.0	73.8	80.8	82.9	83.9	82.0	84.2	85.8	83.5
REGION X - NORTHERN MINDANAO	69.9	71.3	72.6	72.5	83.2	84.4	85.4	84.0	83.4	83.4	80.2
REGION XI - DAVAO	84.5	84.5	85.3	83.8	90.6	91.3	91.9	91.2	90.7	91.9	90.0
REGION XII - SOCCSKSARGEN	57.8	59.0	63.1	67.2	66.8	68.0	70.3	66.9	65.4	67.7	64.5
REGION XIII - CARAGA	71.5	74.4	74.2	75.2	86.2	87.5	87.9	86.9	87.0	88.3	86.2
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	11.5	11.3	12.8	12.0	12.3	14.9	14.9	13.7	14.6	12.1	15.2

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## APPENDIX B

Age-adjusted<sup>1</sup> potential years of life lost due to deaths before age 70, by selected causes of death, by sex, and by region: Philippines, 2020

Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
PHILIPPINES	7,615.6	9,488.5	5,677.9	3,810.6
NATIONAL CAPITAL REGION	8,563.8	10,786.8	6,393.3	4,393.5
CORDILLERA ADMINISTRATIVE REGION	5,668.7	7,202.6	4,046.6	3,156.0
REGION I – ILOCOS	8,040.0	9,940.4	6,055.1	3,885.2
REGION II - CAGAYAN VALLEY	7,072.3	9,141.3	4,883.3	4,258.0
REGION III - CENTRAL LUZON	7,600.5	9,360.0	5,774.4	3,585.6
REGION IVA - CALABARZON	8,386.1	10,430.1	6,326.5	4,103.6
MIMAROPA	7,557.9	9,358.6	5,620.7	3,737.8
REGION V – BICOL	8,219.9	10,247.5	6,076.0	4,171.5
REGION VI - WESTERN VISAYAS	7,837.3	10,011.2	5,529.1	4,482.1
REGION VII - CENTRAL VISAYAS	8,254.4	10,015.7	6,418.7	3,596.9
REGION VIII - EASTERN VISAYAS	6,287.7	7,578.2	4,882.6	2,695.6
REGION IX - ZAMBOANGA PENINSULA	6,657.1	8,262.7	4,962.9	3,299.8
REGION X - NORTHERN MINDANAO	7,623.4	9,474.9	5,662.4	3,812.5
REGION XI - DAVAO	8,440.7	10,396.5	6,352.3	4,044.3
REGION XII - SOCCSKSARGEN	6,869.4	8,837.3	4,787.2	4,050.1
REGION XIII - CARAGA	8,049.7	9,732.5	6,236.2	3,496.3
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	1,817.0	2,159.6	1,471.8	687.8
<b>CARDIOVASCULAR DISEASE</b>				
PHILIPPINES	1,740.0	2,315.8	1,144.3	1,171.5
NATIONAL CAPITAL REGION	2,003.9	2,860.6	1,179.8	1,680.8

<sup>1</sup> Age-standardization used Philippines as the reference population

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Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
CORDILLERA ADMINISTRATIVE REGION	1,236.2	1,658.1	786.5	871.7
REGION I – ILOCOS	1,790.7	2,308.0	1,250.0	1,058.0
REGION II - CAGAYAN VALLEY	1,585.6	2,099.3	1,039.0	1,060.3
REGION III - CENTRAL LUZON	1,924.9	2,558.5	1,268.5	1,290.1
REGION IVA - CALABARZON	1,980.2	2,729.0	1,229.2	1,499.8
MIMAROPA	1,567.8	1,970.9	1,121.4	849.5
REGION V – BICOL	1,956.9	2,564.1	1,315.8	1,248.3
REGION VI - WESTERN VISAYAS	1,592.6	2,125.8	1,026.5	1,099.2
REGION VII - CENTRAL VISAYAS	1,707.9	2,195.4	1,200.1	995.2
REGION VIII - EASTERN VISAYAS	1,350.1	1,704.8	962.0	742.8
REGION IX - ZAMBOANGA PENINSULA	1,585.6	1,986.8	1,158.0	828.8
REGION X - NORTHERN MINDANAO	1,614.9	2,087.0	1,114.7	972.3
REGION XI - DAVAO	1,706.6	2,150.4	1,224.1	926.2
REGION XII - SOCCSKSARGEN	1,620.8	2,139.2	1,066.3	1,072.9
REGION XIII - CARAGA	1,483.0	1,841.1	1,095.3	745.8
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	517.7	592.3	438.7	153.7
<b>CHRONIC RESPIRATORY DISEASE</b>				
PHILIPPINES	147.5	184.2	109.7	74.5
NATIONAL CAPITAL REGION	154.2	188.6	121.2	67.4
CORDILLERA ADMINISTRATIVE REGION	80.0	109.0	49.5	59.5
REGION I – ILOCOS	135.0	169.8	98.8	71.0
REGION II - CAGAYAN VALLEY	142.6	178.8	103.8	75.0
REGION III - CENTRAL LUZON	159.9	190.0	128.8	61.3
REGION IVA - CALABARZON	169.1	207.7	130.3	77.4
MIMAROPA	152.5	173.7	127.3	46.4

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Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
REGION V – BICOL	209.1	232.4	184.9	47.5
REGION VI - WESTERN VISAYAS	164.3	237.6	87.6	150.0
REGION VII - CENTRAL VISAYAS	130.5	152.3	107.8	44.4
REGION VIII - EASTERN VISAYAS	152.3	191.8	109.4	82.4
REGION IX - ZAMBOANGA PENINSULA	123.6	147.7	97.6	50.2
REGION X - NORTHERN MINDANAO	131.5	182.5	77.8	104.7
REGION XI - DAVAO	127.3	171.2	80.3	91.0
REGION XII - SOCCSKSARGEN	129.0	170.0	84.8	85.2
REGION XIII - CARAGA	128.0	166.5	86.1	80.5
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	40.2	47.8	32.7	15.1
<b>DIABETES</b>				
PHILIPPINES	313.7	357.5	268.3	89.2
NATIONAL CAPITAL REGION	301.1	363.2	242.1	121.0
CORDILLERA ADMINISTRATIVE REGION	177.7	188.3	166.4	21.9
REGION I – ILOCOS	322.1	371.8	270.2	101.6
REGION II - CAGAYAN VALLEY	211.5	236.3	184.7	51.6
REGION III - CENTRAL LUZON	349.9	388.2	310.4	77.8
REGION IVA - CALABARZON	389.3	467.5	311.0	156.5
MIMAROPA	293.2	325.2	257.1	68.2
REGION V – BICOL	316.8	362.7	268.4	94.3
REGION VI - WESTERN VISAYAS	293.9	336.9	248.1	88.8
REGION VII - CENTRAL VISAYAS	319.8	373.3	264.1	109.2
REGION VIII - EASTERN VISAYAS	272.3	289.3	253.2	36.0
REGION IX - ZAMBOANGA PENINSULA	256.0	280.9	229.4	51.5
REGION X - NORTHERN MINDANAO	292.0	325.1	257.0	68.1

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Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
REGION XI - DAVAO	341.6	353.3	328.4	24.9
REGION XII - SOCCSKSARGEN	337.6	360.0	312.9	47.1
REGION XIII - CARAGA	419.2	424.8	412.5	12.3
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	69.0	83.4	54.3	29.1
<b>CANCER</b>				
PHILIPPINES	714.0	605.7	826.1	220.4
NATIONAL CAPITAL REGION	734.7	618.6	846.6	228.0
CORDILLERA ADMINISTRATIVE REGION	782.5	712.9	856.1	143.2
REGION I – ILOCOS	829.4	703.6	961.2	257.6
REGION II - CAGAYAN VALLEY	778.4	722.6	838.9	116.3
REGION III - CENTRAL LUZON	756.9	659.4	857.5	198.1
REGION IVA - CALABARZON	744.6	592.4	897.4	305.0
MIMAROPA	671.4	574.4	777.9	203.5
REGION V – BICOL	619.4	566.7	675.7	109.0
REGION VI - WESTERN VISAYAS	736.0	676.0	802.0	126.0
REGION VII - CENTRAL VISAYAS	871.5	721.1	1,028.3	307.2
REGION VIII - EASTERN VISAYAS	593.0	504.4	690.1	185.7
REGION IX - ZAMBOANGA PENINSULA	651.6	596.0	710.7	114.7
REGION X - NORTHERN MINDANAO	721.7	604.7	845.3	240.6
REGION XI - DAVAO	801.6	635.5	981.8	346.2
REGION XII - SOCCSKSARGEN	577.1	461.8	700.1	238.3
REGION XIII - CARAGA	744.5	620.4	878.6	258.2
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	108.6	86.0	130.2	44.2
<b>RESPIRATORY TUBERCULOSIS</b>				
PHILIPPINES	250.9	351.1	147.2	203.9

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Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
NATIONAL CAPITAL REGION	300.3	426.7	177.7	249.0
CORDILLERA ADMINISTRATIVE REGION	100.7	147.2	51.0	96.2
REGION I – ILOCOS	202.0	285.3	115.2	170.2
REGION II - CAGAYAN VALLEY	150.1	213.6	82.5	131.1
REGION III - CENTRAL LUZON	185.9	267.0	101.8	165.2
REGION IVA - CALABARZON	277.6	386.4	168.4	218.0
MIMAROPA	330.0	451.4	197.4	254.0
REGION V – BICOL	394.3	531.0	249.5	281.5
REGION VI - WESTERN VISAYAS	340.6	479.3	192.8	286.5
REGION VII - CENTRAL VISAYAS	231.4	334.3	124.2	210.1
REGION VIII - EASTERN VISAYAS	264.1	364.0	154.5	209.5
REGION IX - ZAMBOANGA PENINSULA	267.7	375.2	153.6	221.6
REGION X - NORTHERN MINDANAO	192.6	254.9	126.4	128.5
REGION XI - DAVAO	230.1	324.0	128.9	195.1
REGION XII - SOCCSKSARGEN	221.0	316.1	119.5	196.6
REGION XIII - CARAGA	288.0	370.3	199.0	171.2
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	69.5	84.4	54.8	29.6
<b>DISEASES OF THE LIVER</b>				
PHILIPPINES	125.0	196.5	51.1	145.4
NATIONAL CAPITAL REGION	101.1	159.6	44.8	114.8
CORDILLERA ADMINISTRATIVE REGION	90.7	148.5	28.7	119.8
REGION I – ILOCOS	164.3	279.2	44.1	235.1
REGION II - CAGAYAN VALLEY	151.6	264.3	31.7	232.6
REGION III - CENTRAL LUZON	94.3	139.4	47.5	91.9
REGION IVA - CALABARZON	106.2	163.9	48.2	115.8

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Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
MIMAROPA	164.1	252.7	66.3	186.4
REGION V – BICOL	141.4	223.7	54.4	169.3
REGION VI - WESTERN VISAYAS	198.1	318.9	69.4	249.5
REGION VII - CENTRAL VISAYAS	144.8	234.1	51.7	182.4
REGION VIII - EASTERN VISAYAS	116.9	186.4	41.1	145.3
REGION IX - ZAMBOANGA PENINSULA	140.5	213.8	62.6	151.3
REGION X - NORTHERN MINDANAO	151.3	233.9	64.4	169.5
REGION XI - DAVAO	122.1	173.3	66.3	107.0
REGION XII - SOCCSKSARGEN	122.2	178.1	62.3	115.8
REGION XIII - CARAGA	171.3	246.1	90.3	155.9
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	26.1	37.9	14.2	23.8
<b>HUMAN IMMUNODEFICIENCY VIRUS (HIV)</b>				
PHILIPPINES	33.4	61.1	4.7	56.3
NATIONAL CAPITAL REGION	63.8	119.5	9.0	110.5
CORDILLERA ADMINISTRATIVE REGION	22.7	44.0	0.0	44.0
REGION I – ILOCOS	20.8	36.1	4.9	31.2
REGION II - CAGAYAN VALLEY	18.0	31.4	3.8	27.7
REGION III - CENTRAL LUZON	34.4	61.6	6.2	55.4
REGION IVA - CALABARZON	26.7	52.0	1.3	50.7
MIMAROPA	24.2	44.5	3.0	41.5
REGION V – BICOL	19.3	36.2	1.1	35.0
REGION VI - WESTERN VISAYAS	49.9	89.2	7.8	81.4
REGION VII - CENTRAL VISAYAS	44.4	79.8	7.4	72.3
REGION VIII - EASTERN VISAYAS	21.9	39.8	2.4	37.4
REGION IX - ZAMBOANGA PENINSULA	9.8	19.1	0.0	19.1



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Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
REGION X - NORTHERN MINDANAO	9.3	16.4	1.6	14.8
REGION XI - DAVAO	57.8	98.4	14.6	83.8
REGION XII - SOCCSKSARGEN	22.3	41.4	2.4	39.0
REGION XIII - CARAGA	25.9	47.5	2.0	45.5
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	5.1	10.6	0.0	10.6
<b>MENTAL AND BEHAVIORAL DISORDERS</b>				
PHILIPPINES	17.0	23.5	10.3	13.2
NATIONAL CAPITAL REGION	12.2	16.9	7.7	9.1
CORDILLERA ADMINISTRATIVE REGION	15.5	20.7	9.9	10.8
REGION I – ILOCOS	20.6	30.2	10.6	19.6
REGION II - CAGAYAN VALLEY	20.0	25.7	13.9	11.8
REGION III - CENTRAL LUZON	10.4	11.7	9.0	2.8
REGION IVA - CALABARZON	16.7	23.5	9.8	13.7
MIMAROPA	18.0	21.1	14.4	6.7
REGION V – BICOL	33.2	41.7	24.2	17.4
REGION VI - WESTERN VISAYAS	26.6	39.0	13.2	25.9
REGION VII - CENTRAL VISAYAS	26.3	39.4	12.6	26.9
REGION VIII - EASTERN VISAYAS	15.1	20.3	9.5	10.8
REGION IX - ZAMBOANGA PENINSULA	9.9	17.3	2.2	15.1
REGION X - NORTHERN MINDANAO	21.9	34.9	8.0	26.9
REGION XI - DAVAO	13.7	15.9	11.4	4.4
REGION XII - SOCCSKSARGEN	10.9	13.6	7.8	5.8
REGION XIII - CARAGA	22.5	28.1	16.3	11.8
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	0.3	0.0	0.7	0.7

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Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
<b>ASSAULT</b>				
PHILIPPINES	206.4	366.3	40.9	325.4
NATIONAL CAPITAL REGION	193.4	351.8	38.5	313.3
CORDILLERA ADMINISTRATIVE REGION	171.4	309.2	24.7	284.4
REGION I – ILOCOS	125.7	212.6	34.9	177.8
REGION II - CAGAYAN VALLEY	159.4	289.4	21.8	267.6
REGION III - CENTRAL LUZON	138.3	241.5	31.4	210.1
REGION IVA - CALABARZON	153.6	271.1	35.8	235.3
MIMAROPA	149.0	252.8	38.3	214.5
REGION V – BICOL	224.2	400.8	35.5	365.4
REGION VI - WESTERN VISAYAS	247.3	440.8	39.5	401.3
REGION VII - CENTRAL VISAYAS	252.8	449.1	47.5	401.6
REGION VIII - EASTERN VISAYAS	229.6	394.6	48.4	346.3
REGION IX - ZAMBOANGA PENINSULA	236.0	407.7	55.1	352.6
REGION X - NORTHERN MINDANAO	244.8	444.3	30.7	413.6
REGION XI - DAVAO	321.2	574.3	50.0	524.4
REGION XII - SOCCSKSARGEN	394.0	693.1	79.0	614.1
REGION XIII - CARAGA	326.8	560.8	72.3	488.5
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	154.3	269.0	44.8	224.2
<b>LAND TRANSPORT ACCIDENTS</b>				
PHILIPPINES	260.3	449.7	64.4	385.4
NATIONAL CAPITAL REGION	84.3	149.2	20.3	128.9
CORDILLERA ADMINISTRATIVE REGION	256.2	450.5	51.0	399.6
REGION I – ILOCOS	380.1	678.7	67.9	610.9
REGION II - CAGAYAN VALLEY	489.0	879.1	77.2	802.0

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Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
REGION III - CENTRAL LUZON	267.3	470.9	55.4	415.5
REGION IVA - CALABARZON	190.5	331.5	48.3	283.2
MIMAROPA	376.0	629.6	109.4	520.2
REGION V – BICOL	281.2	497.7	50.8	446.8
REGION VI - WESTERN VISAYAS	341.7	584.6	81.8	502.8
REGION VII - CENTRAL VISAYAS	222.9	376.9	62.0	315.0
REGION VIII - EASTERN VISAYAS	231.0	367.8	82.2	285.7
REGION IX - ZAMBOANGA PENINSULA	267.4	436.0	90.7	345.3
REGION X - NORTHERN MINDANAO	391.1	650.3	113.3	537.0
REGION XI - DAVAO	432.1	727.2	119.2	607.9
REGION XII - SOCCSKSARGEN	354.4	606.7	90.9	515.8
REGION XIII - CARAGA	404.6	656.8	131.5	525.3
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	36.1	61.4	11.6	49.8
<b>INTENTIONAL SELF-HARM</b>				
PHILIPPINES	156.6	242.5	67.7	174.8
NATIONAL CAPITAL REGION	120.1	189.3	52.2	137.1
CORDILLERA ADMINISTRATIVE REGION	173.9	269.2	73.1	196.2
REGION I – ILOCOS	201.3	333.6	62.9	270.7
REGION II - CAGAYAN VALLEY	191.5	297.3	79.7	217.6
REGION III - CENTRAL LUZON	174.3	272.3	72.2	200.1
REGION IVA - CALABARZON	147.1	234.2	59.2	175.1
MIMAROPA	201.4	325.4	71.5	253.9
REGION V – BICOL	139.9	219.2	55.4	163.8
REGION VI - WESTERN VISAYAS	176.8	256.2	91.7	164.5
REGION VII - CENTRAL VISAYAS	208.4	314.2	97.8	216.4

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Region	Person-years lost (per 100,000 persons)			
	Both Sexes	Males	Females	Difference
REGION VIII - EASTERN VISAYAS	127.8	179.4	71.2	108.1
REGION IX - ZAMBOANGA PENINSULA	124.7	179.5	67.2	112.3
REGION X - NORTHERN MINDANAO	208.3	312.7	96.4	216.3
REGION XI - DAVAO	172.7	250.6	89.6	161.0
REGION XII - SOCCSKSARGEN	130.4	212.5	44.8	167.7
REGION XIII - CARAGA	192.5	300.9	75.4	225.6
BANGSAMORO AUTONOMOUS REGION IN MUSLIM MINDANAO	8.0	13.9	2.3	11.6