



## 2nd Philippine Identity Summit and 3rd National Convention on Civil Registration and Vital Statistics



# Male-Female Disparities in Potential Years of Life Lost Due to Premature Mortality in the Philippines: 2010-2020

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# The Philippine context



## Ranking of Registered Deaths by Cause among the Population <70 years-old: Philippines 2010-2020

Causes of Death	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cardiovascular disease	1	1	1	1	1	1	1	1	1	1	1
Cancer	2	2	2	2	2	2	2	2	2	2	2
Diabetes	4	4	4	3	3	3	3	3	3	3	3
Chronic respiratory disease	6	6	5	5	5	5	6	6	6	6	6
Land transport accidents	7	7	7	7	7	7	7	7	5	5	7
Intentional self-harm	9	9	9	9	9	9	9	9	9	9	>10
Mental and Behavioral disorders	10	10	10	10	10	10	10	10	10	>10	>10
Respiratory tuberculosis	3	3	3	4	4	4	4	4	4	4	5
Human immunodeficiency virus (HIV)	>10	>10	>10	>10	>10	>10	>10	>10	>10	10	>10
Diseases of the liver	8	8	8	8	8	8	8	8	8	8	8
Assault	5	5	6	6	6	6	5	5	7	7	9
COVID-19, virus identified											10
COVID-19, virus not identified											4



## Ranking of Registered Deaths by Cause among the Population <70 years-old by sex: Philippines 2010-2020

### MALES

Causes of Death	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cardiovascular disease	1	1	1	1	1	1	1	1	1	1	1
Cancer	2	2	2	2	2	2	2	2	2	2	2
Diabetes	6	6	6	5	4	4	5	4	3	3	3
Chronic respiratory disease	5	5	5	6	6	6	7	7	7	6	7
Land transport accidents	7	7	7	7	7	7	6	6	5	5	6
Intentional self-harm	9	9	9	9	9	9	9	9	9	9	>10
Mental and Behavioral disorders	10	10	10	10	10	10	10	10	10	>10	>10
Respiratory tuberculosis	3	3	3	3	3	3	4	3	4	4	4
Human immunodeficiency virus (HIV)	>10	>10	>10	>10	>10	>10	>10	>10	>10	10	>10
Diseases of the liver	8	8	8	8	8	8	8	8	8	8	9
Assault	4	4	4	4	5	5	3	5	6	7	8
COVID-19, virus identified											10
COVID-19, virus not identified											5

### FEMALES

Causes of Death	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cardiovascular disease	1	1	1	1	1	1	1	1	1	1	1
Cancer	2	2	2	2	2	2	2	2	2	2	2
Diabetes	3	3	3	3	3	3	3	3	3	3	3
Chronic respiratory disease	5	5	5	5	5	5	5	5	5	5	6
Land transport accidents	6	7	7	7	7	7	6	6	6	6	9
Intentional self-harm	9	9	9	9	9	9	9	9	9	9	10
Mental and Behavioral disorders	10	10	10	10	10	10	10	10	10	10	>10
Respiratory tuberculosis	4	4	4	4	4	4	4	4	4	4	5
Human immunodeficiency virus (HIV)	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Diseases of the liver	7	6	6	6	6	6	7	7	7	7	8
Assault	8	8	8	8	8	8	8	8	8	8	>10
COVID-19, virus identified											7
COVID-19, virus not identified											4



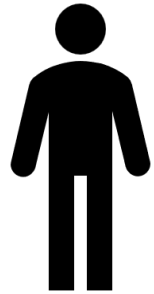
# POTENTIAL YEARS OF LIFE LOST



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

provides insight on **what causes of death can be prevented** in order to maximize a person's or a population's contribution to society





30 years old

$70 - 30 = 40$  years  
not lived



60 years old

$70 - 60 = 10$  years  
not lived

Number of  
deaths: 2

PYLL<sub>70</sub>: 50 potential  
years of life lost





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# Study objectives



### Objectives of the study

- produce estimates on sex-specific Potential Years of Life Lost (PYLL) due to premature deaths from NCDs, external causes, and other leading causes of deaths
- aims to estimate, by male and female, and compare the PYLL due to each of the said causes at the national level for the period 2010–2020, and at the regional level for 2020







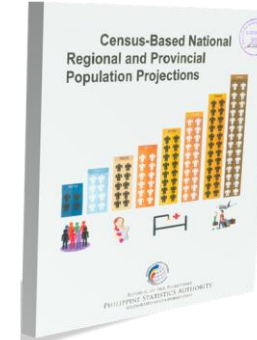
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# Data and methods



## Data used



**Deaths by age, sex, and causes**  
from Vital Statistics Division of the Civil Registration Service of the Philippine Statistics Authority (PSA)

**Mid-year population**  
from PSA's census counts and official population projections

Image Sources: [https://psa.gov.ph/sites/default/files/vital\\_stat\\_2019\\_02232023\\_rev\\_0.PNG](https://psa.gov.ph/sites/default/files/vital_stat_2019_02232023_rev_0.PNG); <https://psa.gov.ph/sites/default/files/2010%20Census%20of%20Pop%20Proj.png>



## Methodology: Formula for PYLL

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

- 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
  - $p_n$  = total number of persons in the reference population

### Notes:

- Used age 70 as the cut-off
- For the regional estimates, the PYLLs were standardized for each sex using the Philippines age structure



## Classification of selected CODs



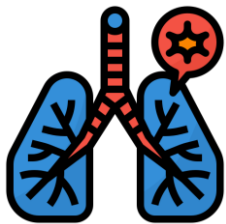
### Non-communicable Diseases

Cardiovascular diseases, cancer, diabetes, chronic respiratory diseases, and mental and behavioral disorders



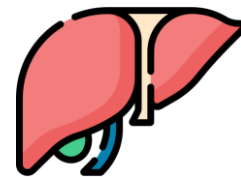
### External causes

Land transport accidents, intentional self-harm, and assault (homicide, injuries inflicted by another person with intent to injure or kill, by any means)



### Communicable or infectious diseases

Respiratory tuberculosis, HIV, COVID-19



### Diseases of the liver



### Limitations and delimitations of the study

- Not adjusted for under registration
- Estimates for BARMM are included in the tables and charts but not included in the analysis by region
- 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 in the analysis





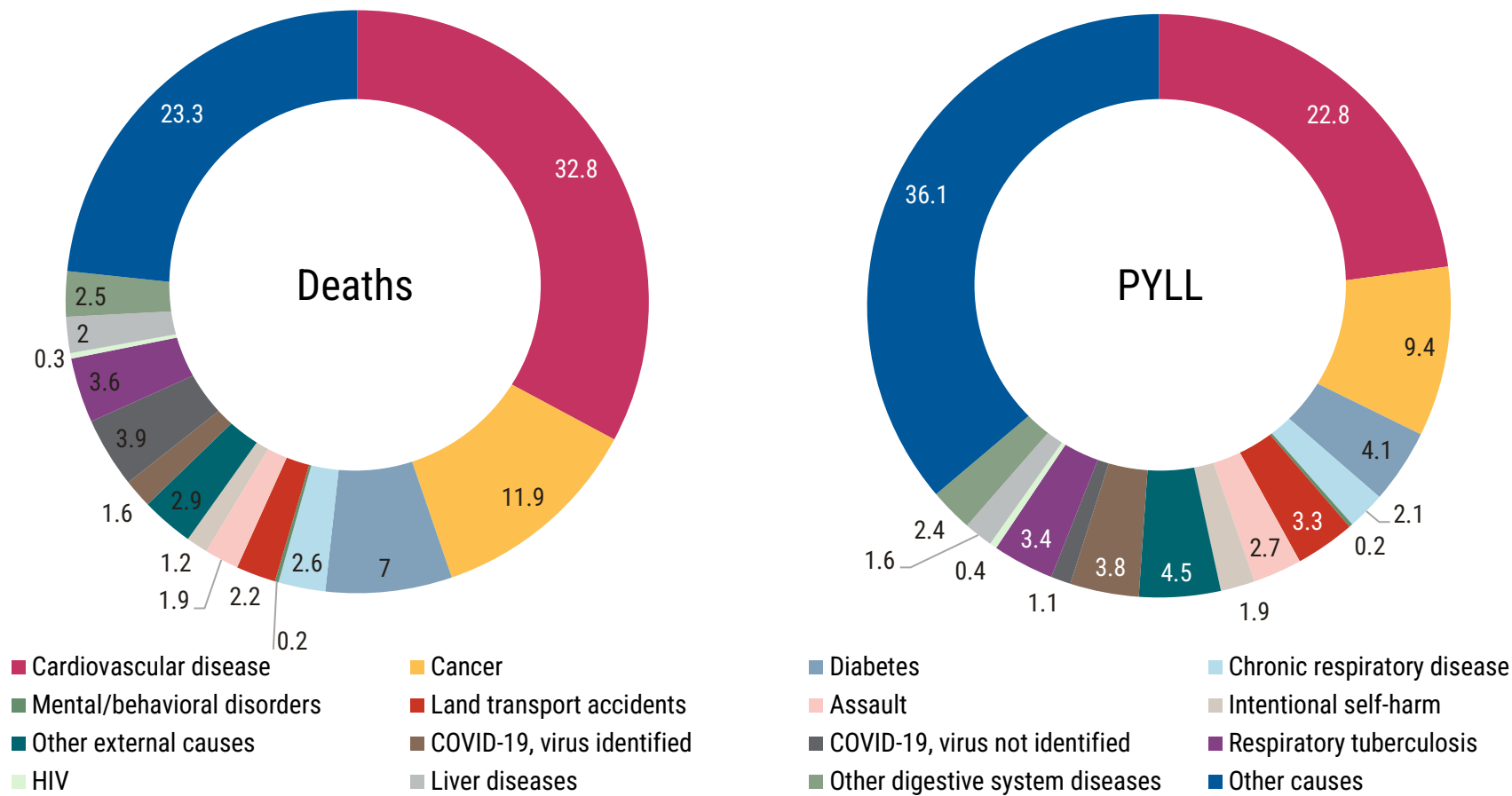
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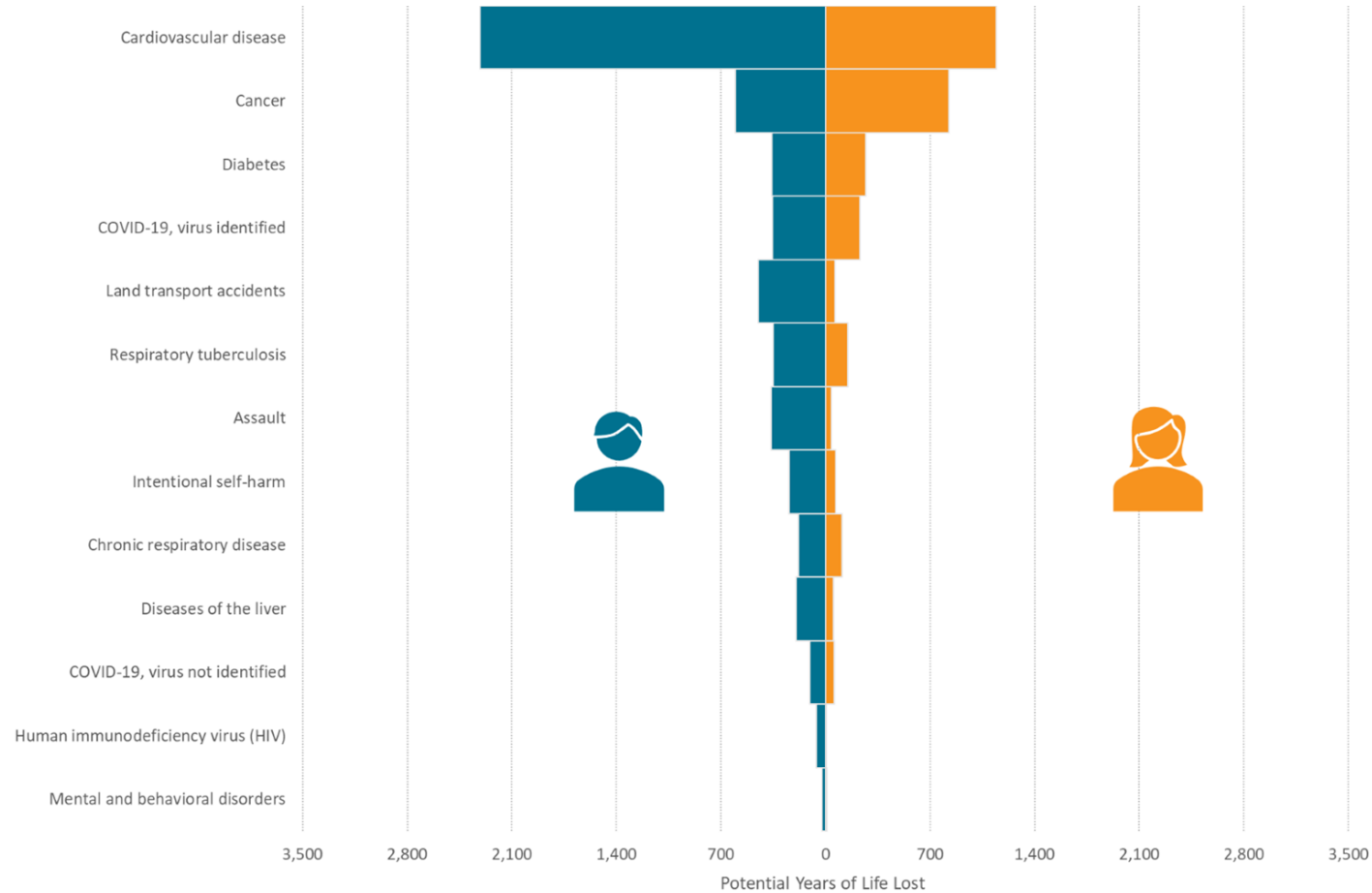
## Results



## Potential years of life lost and deaths under 70 by selected causes by sex: Philippines, 2020

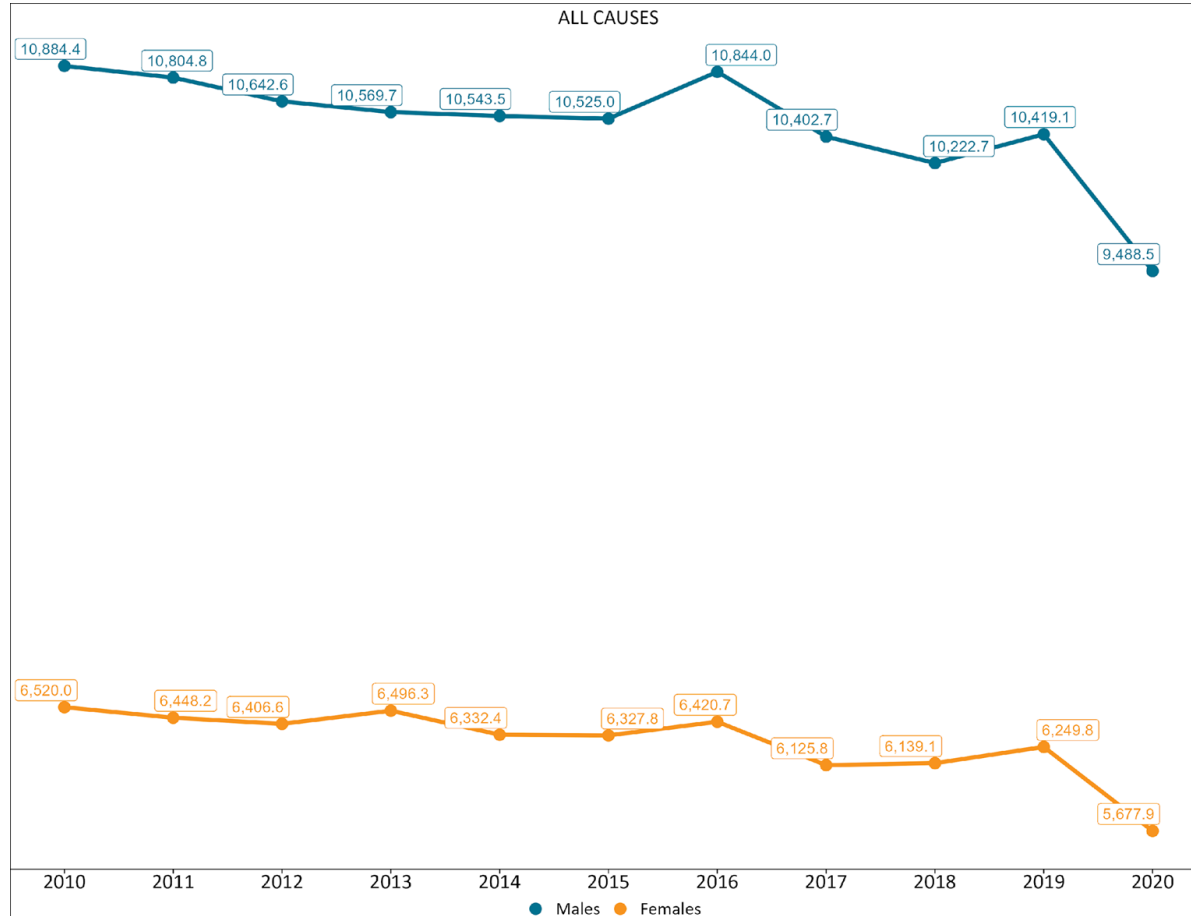


## Distribution of PYLL due to mortality before age 70 by selected causes of death **by sex**: Philippines, 2020





## PYLL by cause of death from 2010 to 2020

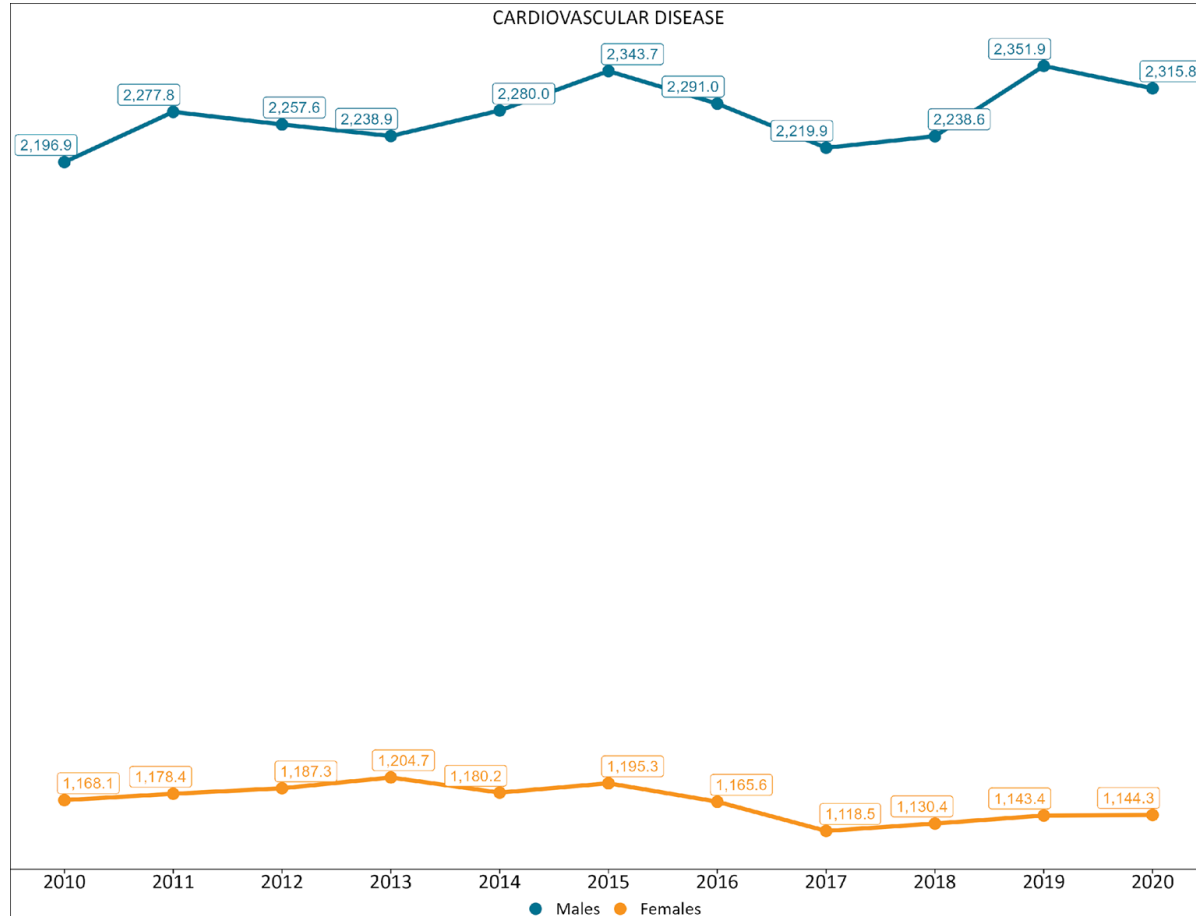


PYLLs dropped from 2010 to 2020:

- **Male** population: from 10,884 to 9,488 per 100,000
- **Female** population: from 6,520 down to 5,678 per 100,000



## PYLL by cause of death from 2010 to 2020

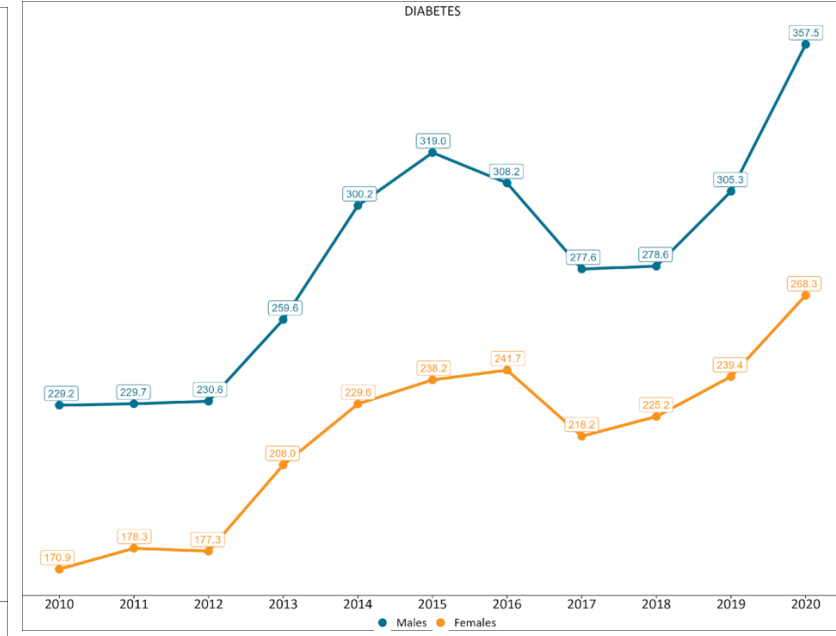
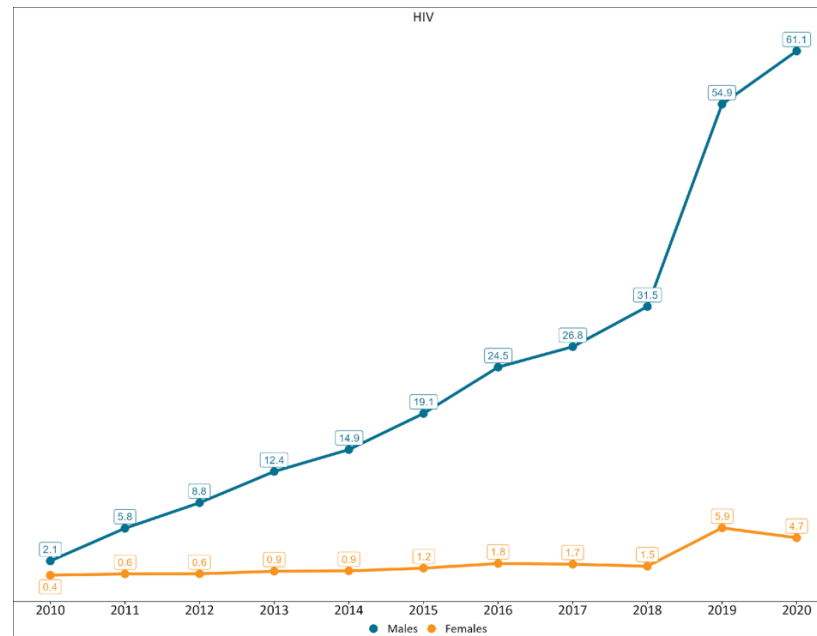
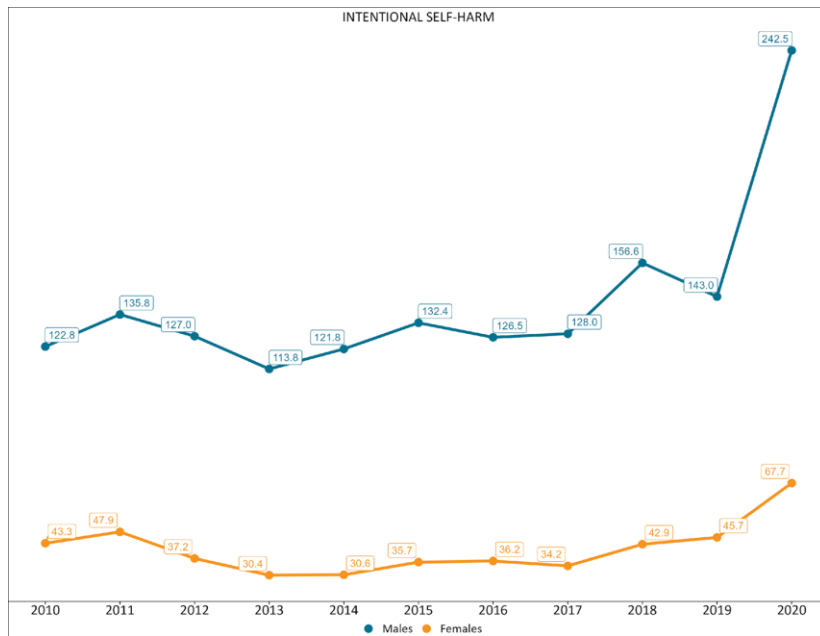


PYLL for some causes of death did not necessarily improve for both males and females

PYLL for **cardiovascular diseases** for both males and females **hardly declined** over the last decade



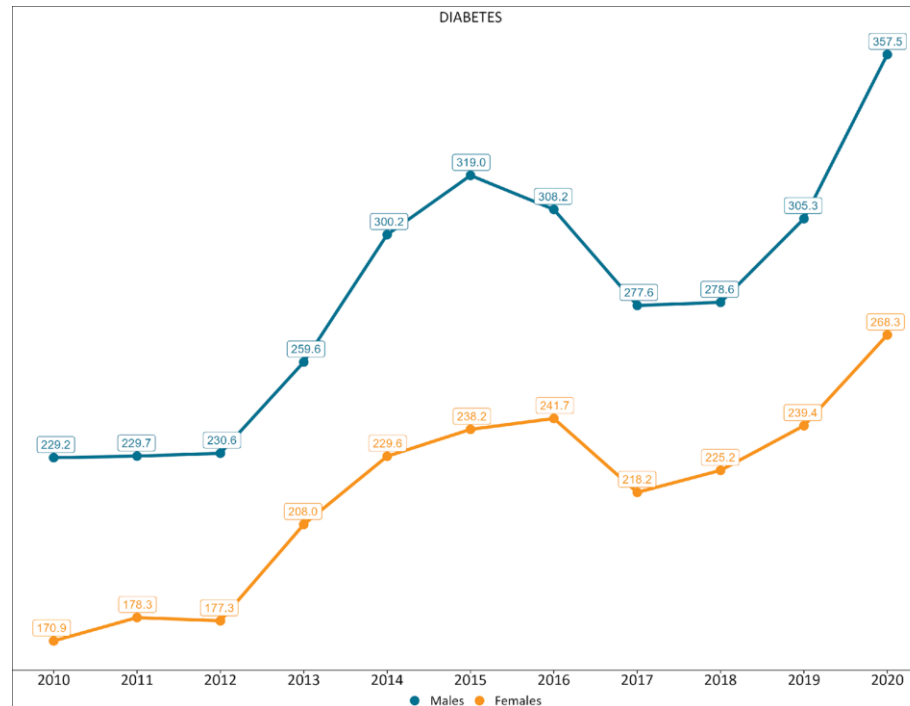
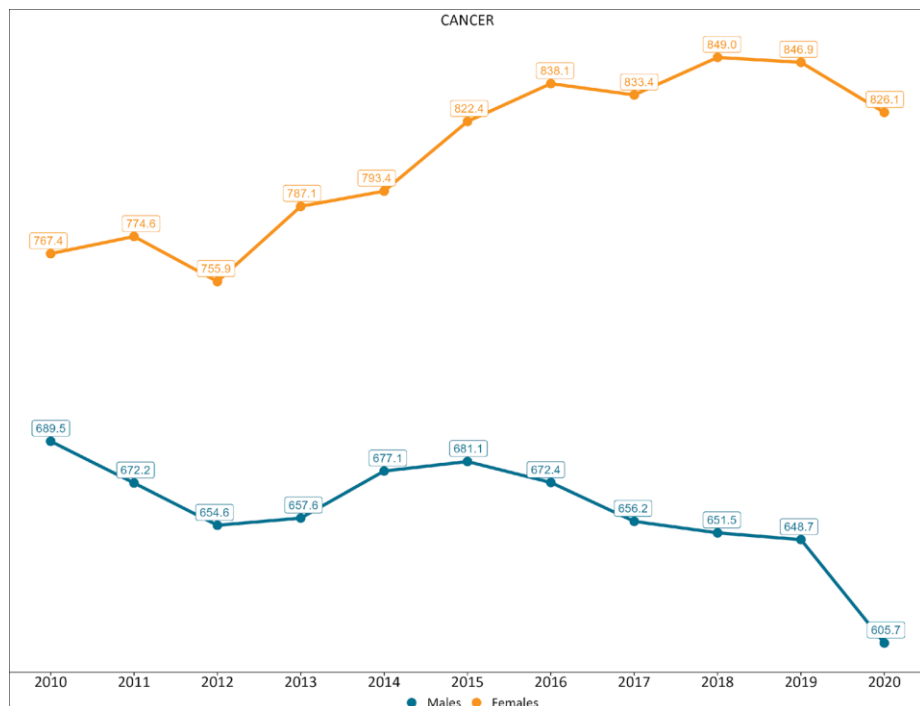
## PYLL by cause of death from 2010 to 2020



For some causes of death, PYLL remarkably **increased** for males



## PYLL by cause of death from 2010 to 2020



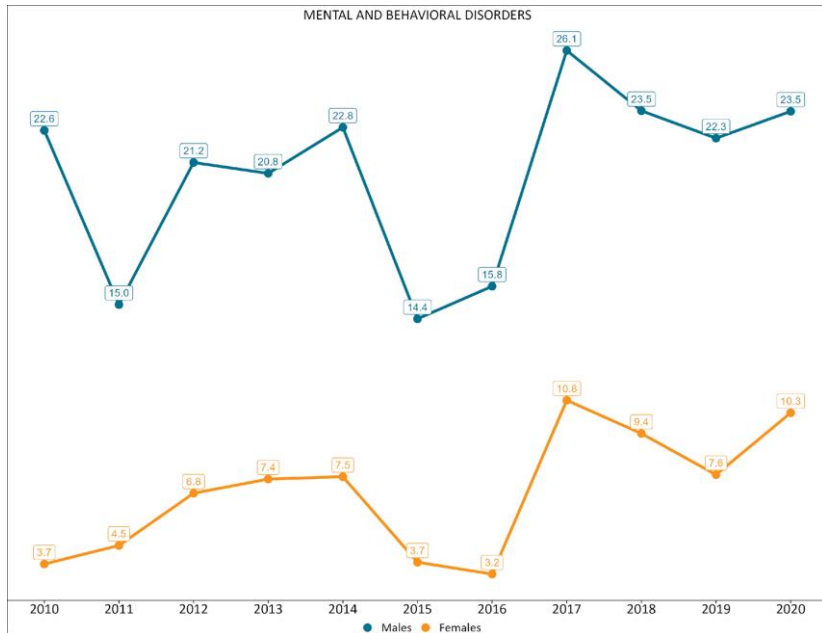
Gaps either diverge or narrow for specific causes of death

**diverging** from 2013;  
female PYLL increasing and male PYLL decreasing

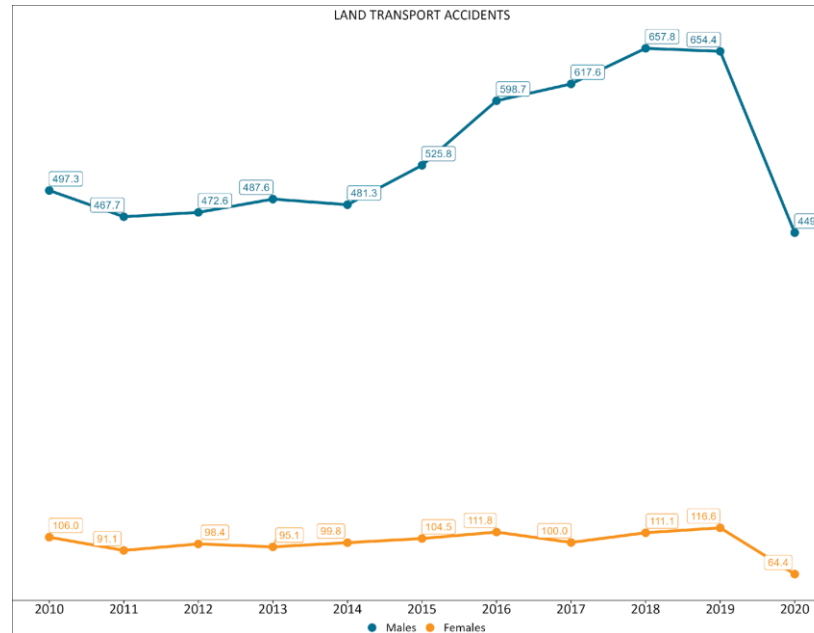
both **follow the same ups and downs** (except 2019-2020) where the increase is **higher for males**



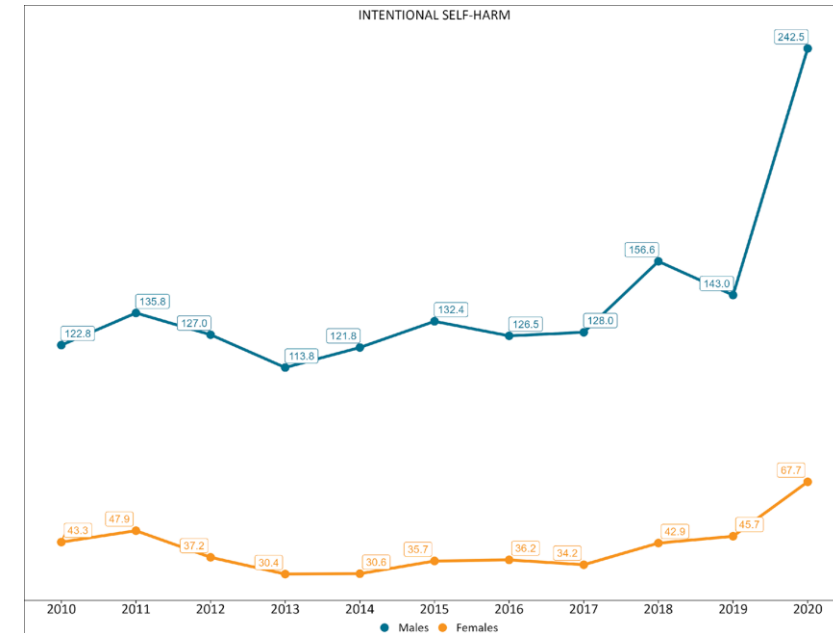
## PYLL by cause of death from 2010 to 2020



exhibits **see-saw patterns** for both sexes but has **generally been increasing** from 2010 and peaked in 2017 before declining to 2019 and increased again in 2020



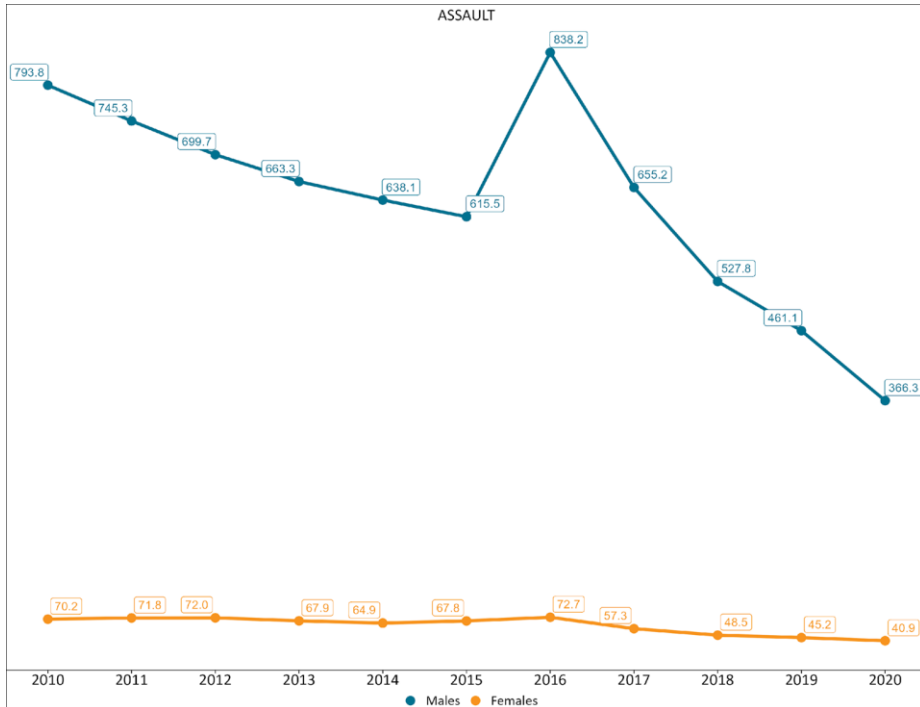
female PYLL **remained stable** from 2010-2019 but **dropping substantially** in 2020; male pop was about the same for 2010- 2015 increasing thereafter before **dropping**



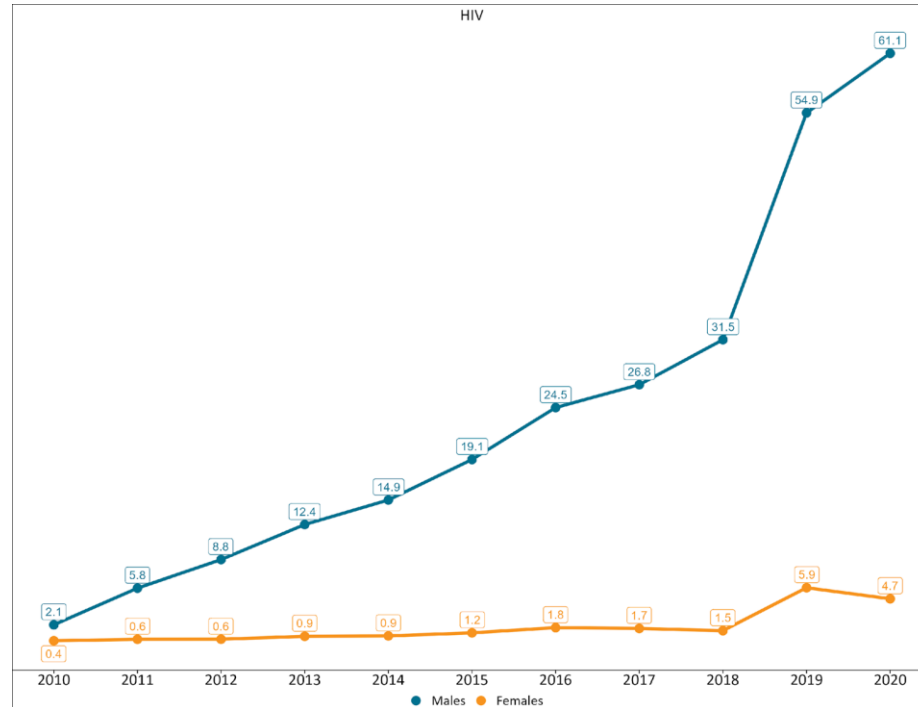
stable for the period 2010-2017, exhibited an increase in PYLLs for both sexes although the **increase is more dramatic for males**



## PYLL by cause of death from 2010 to 2020



the trend is also **declining**, albeit not as noticeable for the females than for the males; the **PYLL increased in 2016 before declining again in 2020**



**dramatic increase** in PYLL for the **male population**; the PYLL for both sexes in 2010 was negligible. By 2020, the corresponding values increased

Note: Data on HIV, assault, and intentional self-harm may have reporting bias





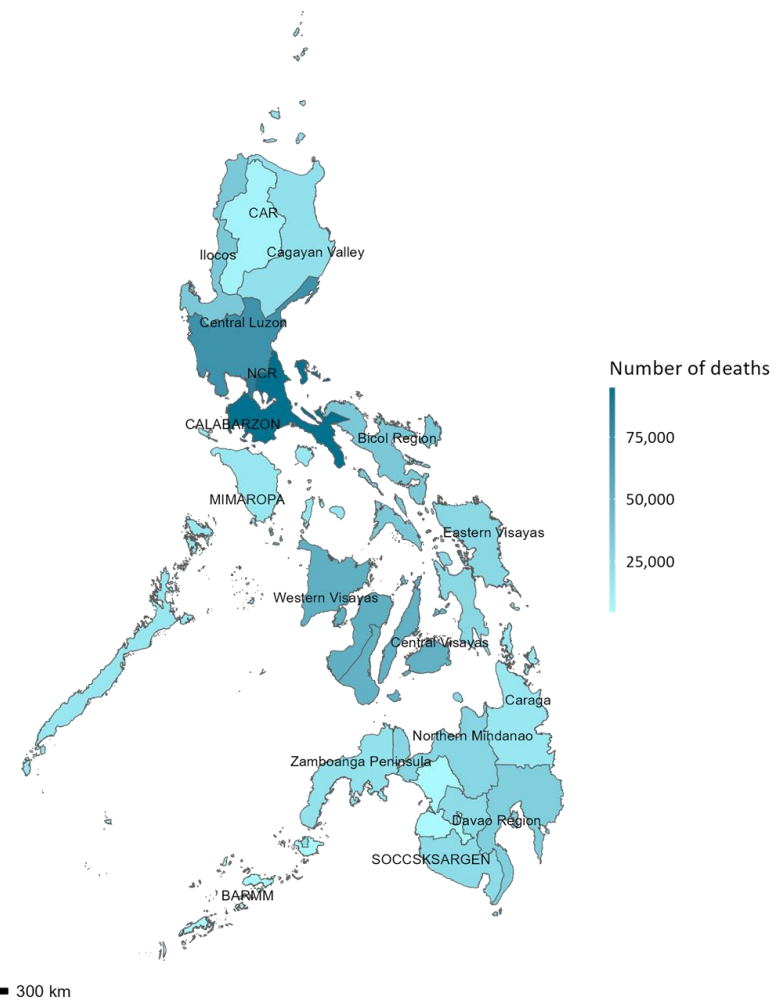
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# Deaths and PYLL by region, 2020



Regardless of the cause and of sex, deaths are **highest in CALABARZON**, followed by the NCR, Central Luzon, Central Visayas, and Western Visayas. Except for BARMM, deaths in the **Cordillera Administrative Region (CAR)** is the lowest



300 km





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

### PYLL for males

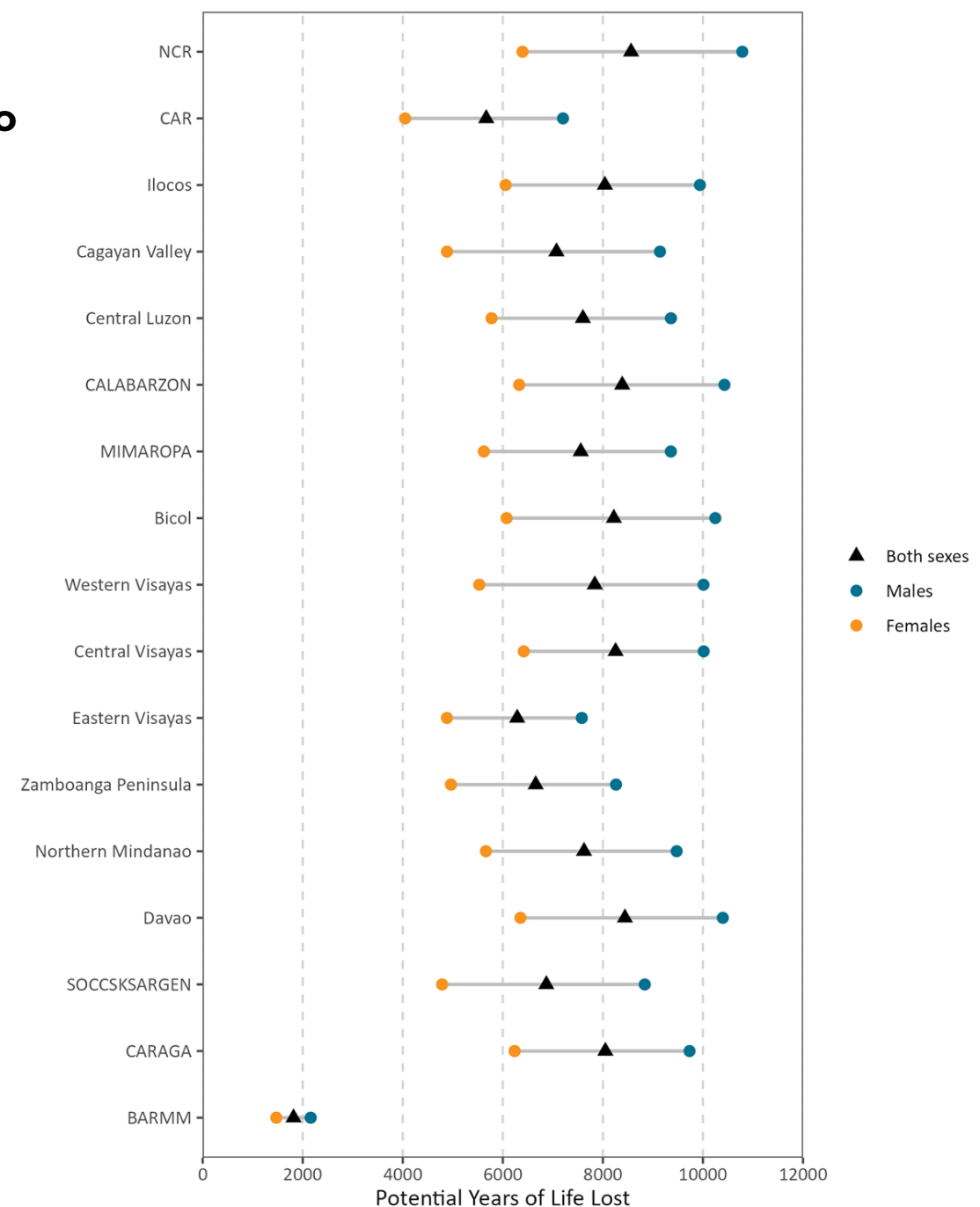
↑ Highest: NCR, CALABARZON, Davao, Bicol, Central Visayas

↓ Lowest: CAR, Eastern Visayas

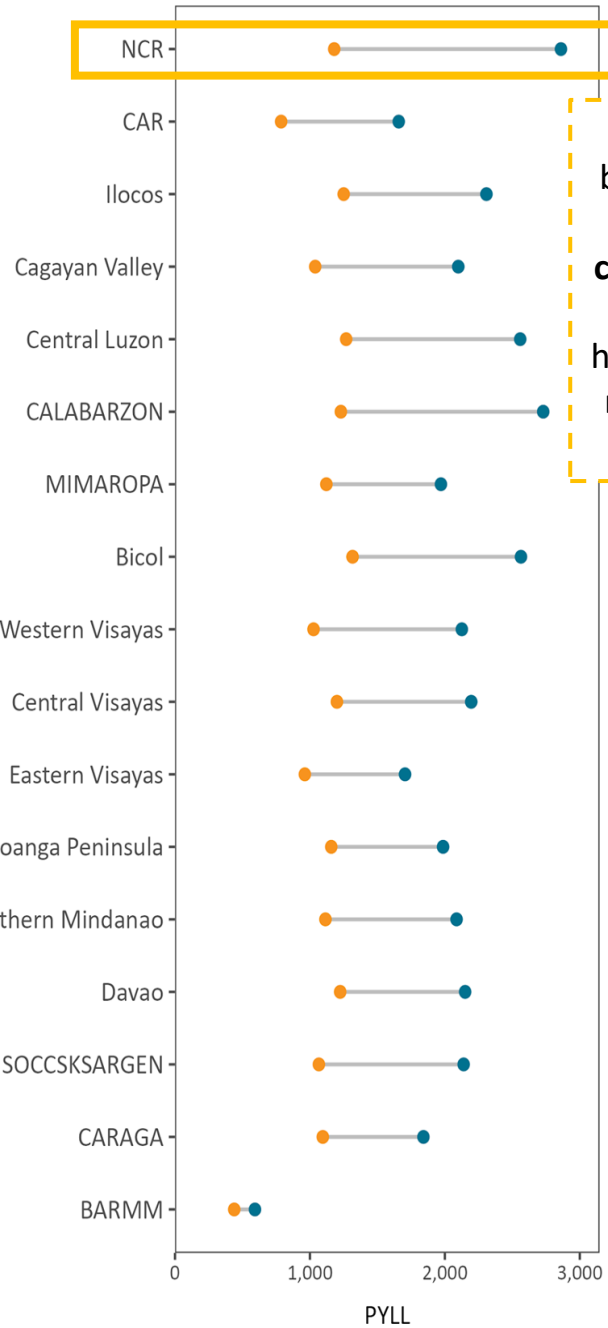
### PYLL for females

↑ Highest: Central Visayas, NCR, Davao, CALABARZON

↓ Lowest: CAR, SOCCSKSARGEN

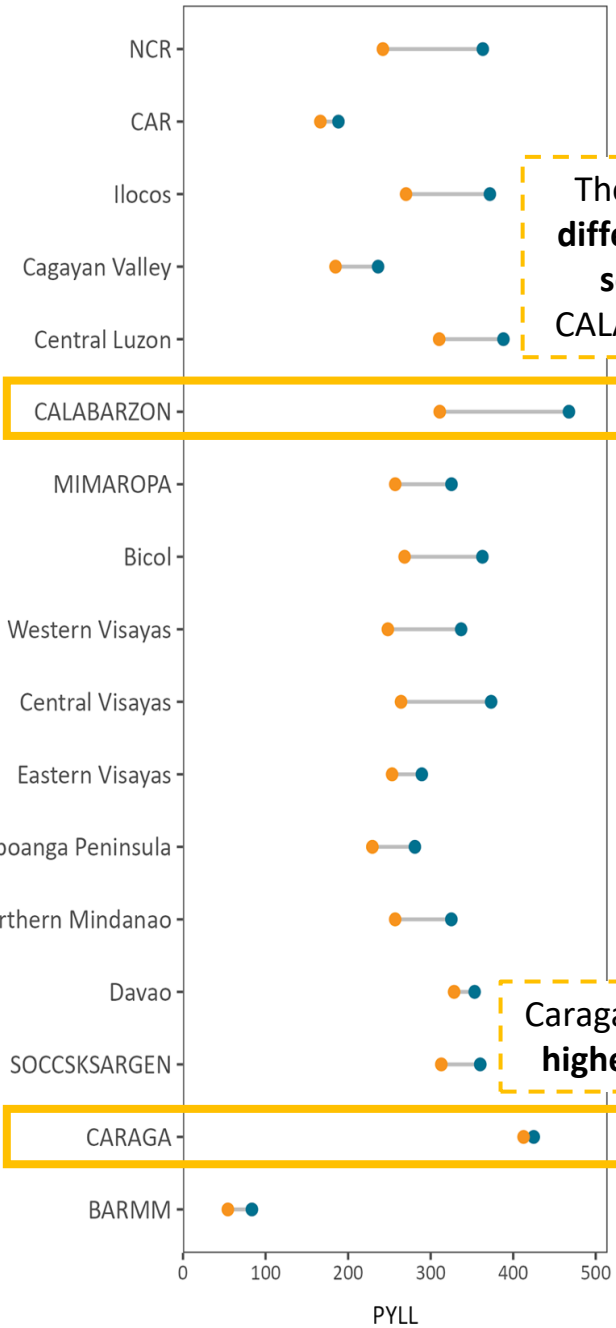


CARDIOVASCULAR DISEASE



The disparity between both sexes for cardiovascular diseases is highest in NCR; male PYLLs is 2.4x higher

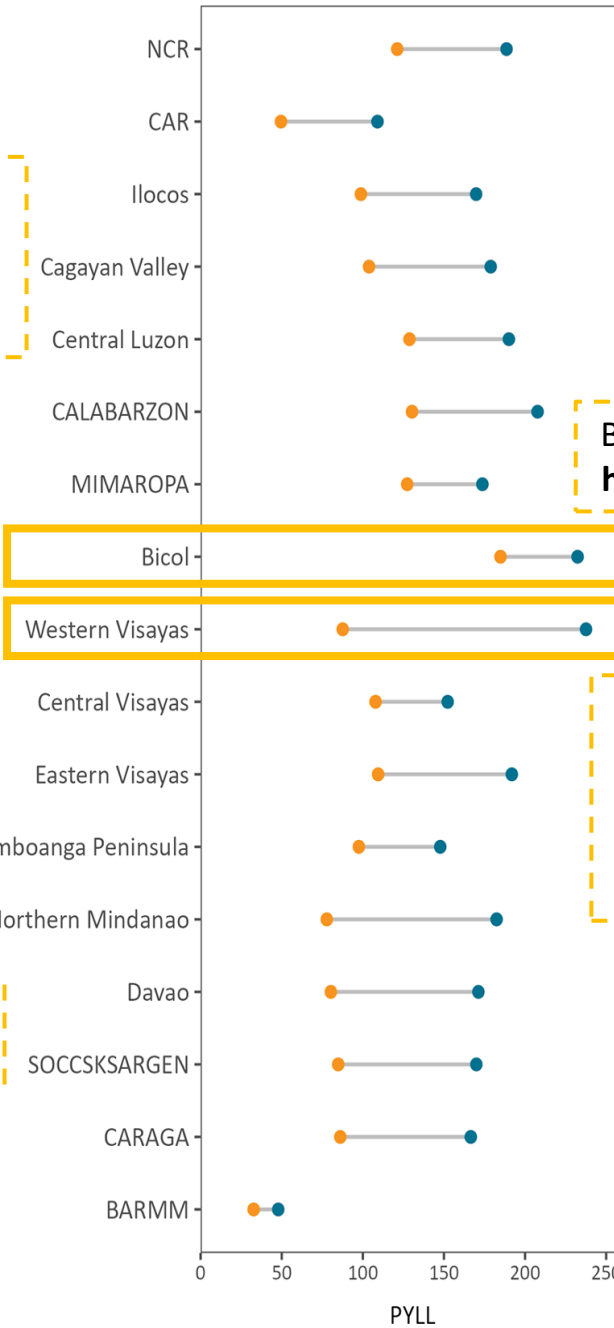
DIABETES



The widest difference by sex is in CALABARZON

Caraga has the highest PYLL

CHRONIC RESPIRATORY DISEASE



Bicol has the highest PYLL

Western Visayas has the widest difference by sex



### High PYLL in some regions with metropolitan cities

- NCR, Davao, CALABARZON, and Central Visayas Region have the highest PYLL for all causes of death
- **Cardiovascular diseases** is highest in NCR and CALABARZON
- **Diabetes** is highest in CARAGA but the widest difference by sex is in CALABARZON





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# Conclusion and Implications



### Conclusion

- Over the years, **premature death due to preventable causes, particularly for NCDs**, did not necessarily improve for both males and females, indicating the continuing burden of these diseases to society.
- Increasing **premature mortality due to HIVs and intentional self-harm** is a cause for concern.
- **Premature mortality** due to Covid-19 highlights the impact of the pandemic to society



### Conclusion

- For preventable CODs, premature mortality is consistently **higher for male than for female** except for cancer.
- The persistent male-female disparities in PYLL are largely attributed to **lifestyle choices** and behavioral patterns related to **gender norms**



### Conclusion

- Male-female disparities in PYLL **vary across regions for different CODs**.
- Although varying across regions, **PYLL male-female gap** is generally wider for cardiovascular diseases than for cancer and diabetes; and **widest for external causes** (assault, ISH and land transport accident). This gap also reflect the gendered nature of exposure to risk factors to these CODs.
- Notably, the **PYLL sex-gap is narrowest for COVID-19**, indicating that both men and women have nearly equal exposure and susceptibility to this disease.



## Implications of the results

- CODs with increased PYLL in 2020 vs 2010 could have been prevented with:

	MALES	FEMALES
Lifestyle changes (diet, exercise, smoking cessation)	Diabetes, cardiovascular disease	Diabetes
Mental health promotion and awareness	Intentional self-harm, Mental and behavioral disorders	
Comprehensive sex education programs	HIV	
Cancer screening	-	Cancer





## Implications of the results

- Policies and programs to sustain improvements in other CODs:

	MALES	FEMALES
Cancer screening, TB control	Cancer, respiratory tuberculosis	Respiratory tuberculosis
Mental health services and violence prevention programs	Assault	
Traffic safety laws and improvements in infrastructure	Land transport accidents	
Smoking cessation, air quality regulations	Chronic respiratory disease	
Alcohol and drug policies	Diseases of the liver	



### Implications of the results

- With earlier deaths --> loss of potential productive life
  - e.g., economic loss (direct cost, morbidity losses, mortality losses) due to cancer could be ₱ 110 B annually (Ulep, et al., 2023)



# Thank you!



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