TB Key Population Size Estimates in the Philippines

A Scoping Review
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Supported by Stop TB Partnership

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ACRONYMS & ABBREVIATIONS

ACF	Active case finding
ACHIEVE	Action for Health Initiatives, Inc.
ART	Antiretroviral therapy
BHW	Barangay Health Worker
BJMP	Bureau of Jail Management and Penology
BuCor	Bureau of Corrections
CPH	Census of Population and Housing
DOH	Department of Health
FHSIS	Field Health Services Information System
FIES	Family Income and Expenditure Survey
GATS	Global Adult Tobacco Survey
HIV	Human Immunodeficiency Virus
HRH	Human Resources for Health
IHBSS	Integrated HIV Behavioral and Serologic Surveillance
JPR	Joint Program Review
KVP	Key and vulnerable population
MSM	Men who have sex with men
NCR	National Capital Region
OHASIS	One HIV, AIDS and STI Information System
PDL	People deprived of liberty
PLHIV	People living with HIV
PSA	Philippine Statistics Authority
PWID	People who inject drugs
PWUD	People who use drugs
STP	Stop TB Partnership
TB	Tuberculosis
WHO	World Health Organization

INTRODUCTION

737,000 people were estimated to have TB in the Philippines in 2022, and incidence rate was estimated at 638 per 100,000 population[1].

The Philippines' incidence rate is more than double the Southeast Asia incidence (234 per 100,000) and over four times the global TB incidence (133 per 100,000)[1]. TB incidence increased by 16% and TB deaths by 46% in 2022 compared to 2015[1] and is predicted to increase by 130 percent 170 percent respectively by 2025[2]. The DOH-Epidemiology Bureau reported TB as the 8th leading cause of morbidity in the Philippines for 2021[3].

With such a grave TB burden, the Philippines need all the resources it can get to ease and eventually eliminate TB infection in the country. Among these resources are data or information that would be instrumental in guiding the response to the right direction, and in the sphere of strategic information in health, one of the most critical data points are *numbers of the populations at risk for and vulnerable to the disease*.

Given the high prevalence of TB in the Philippines, it is fair to think that nearly all Filipinos are at risk for TB. However, there's value in identifying and prioritizing key and vulnerable populations (KVP) who are at higher risk of being infected with TB, and possibly have more difficulty accessing services compared to the general population.

1 Global tuberculosis report - https://www.who.int/teams/global-tuberculosis-programme/data
2 PNA = DOH: 70 Filipinos die daily from tuberculosis - https://www.pna.gov.ph/articles/1198167#:~:text=The%20Philippines%20is%20also%20the,100%2C000%20from%20the%20year%20prior.%22
3 2022 Joint Program Review for the Philippines National TB and HIV Programs - https://ntp.doh.gov.ph/download/2022-jpr-report/

The Stop TB Partnership (STP), with support from the Global Fund, launched a Key and Vulnerable Population Size Estimation Tool[4] in order to help countries identify and measure the number of people belonging to TB KVPs. The tool described a 6-step process to measure TB KVP estimates anchored on 5 principles – human rights-based, national ownership, TB affected community-led, evidence-based and multisectoral.

Figure 1. Stop TB Partnership tool on Key and Vulnerable Populations Size Estimation 6-step process

This report covers the Philippines' initial adoption of the tool through the Action for Health Initiatives, Inc. (ACHIEVE). Piloting the tool from step 1 to 6 would have been ideal. However, given limited timeline and resources, the work focused on maximizing the information available from recently concluded joint program reviews and national strategic plans developed in the past year, as well as data generated for other disease programs. The process was streamlined, and the aim was shifted to scope and analyze secondary TB KVP estimates data using the KVP estimation tool as a guide. Resulting estimates was then presented to key stakeholders for discussion and exploration of next steps including application of the results in TB program and policy planning and/or enhancement/updating of KVP size estimates through additional methods.

4 STP TB KVP Size Estimation Tool - https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwizvuSgy-6DAxWyyDgGHeIFBnsQFnoECAYQAQ&url=https%3A%2F%2Fwww.stoptb.org%2Ffile%2F17202%2Fdownload&usg=AOvVaw1D7HykyxQtBJlWMmLlChzm&opi=89978449

METHODS AND DATA SOURCES

Given the timing of the project, implementation had to be completed in one month within the month of December. Following this limited and challenging timeline, methodology for the estimation process was streamlined (Figure 2), and focused on taking stock of available data on TB KVPs in the Philippines.

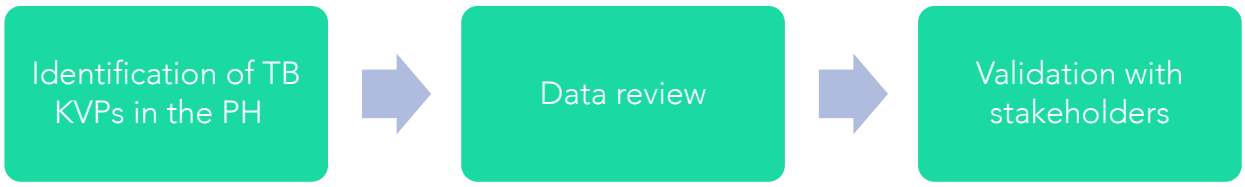

Figure 2. TB KVP Estimation Process applied in this project

Identification of TB KVPs

Eight KVPs identified in the DOH's 2019 Philippines TB Joint Program Review[5] were prioritized for the scoping review (Table 1). Other KVPs not identified in the JPR but whose data could be searched are included in the "Other Population Groups" section.

Table 1. TB KVPs and types of available estimates

Direct estimates	People living with HIV People deprived of liberty or prisoners Elderly people Healthcare workers People with diabetes Tobacco smokers	Computed estimates	The Urban Poor Recent contact of TB patients

Data Review

Given the diversity of TB KVPs, size estimation for each population were derived from different sources and methodologies. The data search prioritized published figures from government agencies, the UN, WHO and NGOs working with KVPs or on areas concerning them. Latest available data for each KVP category was used.

Direct estimates were adopted when available, otherwise estimates were computed by applying available prevalence data to the population count following the demographic of the surveyed population, if specified. Table 1 summarizes whether direct estimates were available or had to be computed.

Philippine Statistics Authority (PSA) population counts from the 2020 Census of Population and Housing (CPH)[6] or 2023 midyear projections were used for the base population. Data from the census served as the denominator on which prevalence or incidence rates from surveys and surveillance data were applied. The PSA conducts the Census of Population and Housing (CPH) every five years with the latest done in 2020. Estimates for future years, such as in 2023, were projected using the growth rate measured from 2015 to 2020.

Validation of data review results with stakeholders

Results from the data review were validated with stakeholders on January 23, 2024. In attendance were representatives from the Department of Health Epidemiology Bureau (EB) and Disease Prevention and Control Bureau (DPCB), TB patient support groups – TB Health Education And Livelihood Support (TB HEALS) and Montalban Laban Lungs - Philippines (MLLP), UNAIDS, PBSP-Global Fund, FHI360, USAID's TB IHSS, and Quezon City Health Department. Feedback on both the data review results and STP TB KVP Size Estimation tool were discussed during the meeting. Data revisions suggested by stakeholders during the validation meeting that could be quickly applied (within three days after the meeting) were adopted, while other comments that could not be as easily adopted and recirculated for feedback were left out but noted in the meeting's documentation annexed in this report for future reference.

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5 2019 Joint Program Review - https://ntp.doh.gov.ph/download/joint-program-review-2019-report/
6 2020 CPH - https://psa.gov.ph/content/2020-census-population-and-housing-2020-cph-population-counts-declared-official-president

TB KVP SIZE ESTIMATES

Researched and computed estimates are presented in this section. Table 2 summarizes the size estimates per KVP along with the reference along with the age coverage, reference year and data source. Each KVP will be discussed as a subsection presenting the estimates including disaggregation if available, calculation parameters, and a brief description of the data source and methodology employed.

Table 2. Key population size estimates Summary Table

Key and Vulnerable Population	Population size estimate, national	Coverage	Year	Data Source
People living with HIV (PLHIV)	189,000	All ages	2023	DOH-Epidemiology Bureau, NHSSS Unit
Prisoners and PDLs	180,826	-	2022	World Prison Brief
Elderly people	10,658,768	60yo+	2020	Population Census - Philippine Statistics Authority
Healthcare workers	479,735	-	2021, 2022	DOH HHRDB HRH Statistics DOH 2022 FHSIS Report
People with diabetes	159-837[c]-4,303,899[d]	20-79yo	2021/ 2022	[c] DOH 2022 FHSIS Report [d] International Diabetes Federation
Tobacco Smokers	14,400,000	15yo+	2021	Global Adult Tobacco Survey
Urban poor	10,607,531 - 21,804,370	All ages	2021	Philippine Statistics Authority – 2020 Census of Population and Housing & Family Income and Expenditure Survey
Recent contacts of TB patients	1,824,447	All ages	2022	Philippine Statistics Authority – 2020 Census of Population and Housing & WHO TB Country Profile

**Rows highlighted in blue are KVPs on which population size estimates were computed.*

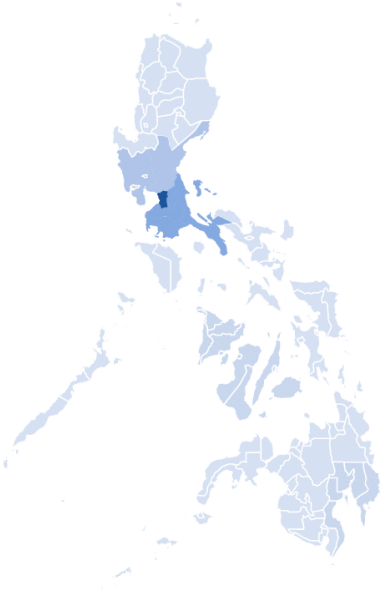
People living with HIV (189,000)

Globally, TB is the leading cause of death among people living with HIV (PLHIV)[7]. In 2022, TB-HIV incidence in the Philippines was at 12 per 100,000 or 14,000 people[1]. Program reports recorded that 2,201 PLHIV on ART have TB.

Direct estimates for PLHIV are released annually by the DOH-Epidemiology Bureau. In 2023, there were 189,000 people estimated to be living with HIV. Six regions comprise 81% of estimated PLHIV led by NCR with 55,800 people estimated to be living with HIV[8].

2023 Philippine HIV Estimates: Regional Estimated PLHIV

Region	Estimated PLHIV (2023)	%
NCR	55,800	30%
4A	33,300	18%
3	21,700	11%
7	16,200	9%
6	12,700	7%
11	11,300	6%
12	5,600	3%
1	5,500	3%
10	5,100	3%
5	4,300	2%
2	3,400	2%
8	3,200	2%
9	3,100	2%
4B	3,000	2%
CARAGA	2,400	1%
CAR	1,800	1%
BARMM	700	<1%



Note: Regional estimated PLHIV are based on permanent residence.
Source: AIDS Epidemic Model (AEM)-Spectrum, May 2023

The DOH-Epidemiology Bureau National HIV/AIDS and STI Surveillance and Strategic Information (DOH-EB NHSSS / HIV) Unit produces annual PLHIV estimates using global modelling tools AIDS Epidemic Model (AEM) and Spectrum. Data from its various surveillance systems (OHASIS & IHBSS) along with other program data are triangulated and used as inputs for modelling. Estimates are developed and validated with key stakeholders including national and subnational program implementers, development partners, community organizations, and representatives from key populations and PLHIV organizations.

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7 HIV and Tuberculosis, WHO - https://www.who.int/westernpacific/health-topics/hiv-aids/hiv-and-tuberculosis
8 2023 AIDS Epidemic Model (AEM)-Spectrum, May 2023 sourced from the HIV Epicenter Dashboard

Prisoners and PDLs (180, 826)

The World Prison Brief reports the total prison population in the Philippines as 180,826 as of September 2022[9]. 49,515 were in Bureau of Corrections (BuCor) prisons, and 131,311 were in Bureau of Jail Management and Penology (BJMP) jails[9]. This census is nearly four times the official capacity of the prison and jail system at 45,730, see Table 2.

Table 3. Prison and Jail Population Count and Occupancy Level[9]

	Population Count as of September 2022	Official Capacity as of May 31, 2021	Occupancy level reported as of May 31, 2021	Occupancy level computed from Sept 2022 pop count
BuCor prisons	49,515	1,981	403%	2499%
BJMP jails	131,111	33,750	348%	388%
Total	180,826	45,730	362%	395%

This severe overcrowding in prisons and jails predispose prisoners and PDLs to TB infection amongst other infectious diseases. A 2009 study on the prevalence of TB in prisons found that it was 4.5 times higher compared to the general population[10]. Since then, DOH has instituted TB screening and treatment in jails and prisons.[11] However, challenges prevail in implementing these interventions such as lack of access to x-ray machines, and lack of isolation areas for TB patients[10]. Findings from the 2022 JPR also include that contact investigation and TB preventive therapy (TPT) health-related costs required by inmates are paid purely out-of-pocket[3].

The World Prison Brief, maintained by the Institute for Criminal Policy Research at Birkbeck, University of London, a database that provides free access to information on prison systems worldwide, including prison population counts and occupancy levels. Country data is updated monthly using data mostly derived from government or other official sources

9 World Prison Brief, Philippines - https://www.prisonstudies.org/country/philippines
10 PH NTP Conducts TB Mass Screening among PDL - https://stoptb-strategicinitiative.org/index.php/2018/11/12/philippines-national-tb-control-program-conducts-tb-mass-screening-among-persons-deprived-of-liberty/
11 DOH Technical Guidelines for Implementing DOTS Strategy in Jails & Prisons - https://ntp.doh.gov.ph/download/ao2009-0003/

Elderly People (10.7 million)

Weakened immune systems, presence of comorbidities and decreased lung function increase risk for TB infection among elderly[12]. TB case notification among aged 65 years old and above were at 64% for females and 57% for males in 2020, higher compared to younger age groups[13].

Population estimates for elderly people (60 years old and above) midyear of 2023 was at 10,658,768, comprising 9% of the total projected population[14]. Regional estimates were also derived from midyear projections.

Table 4. 2023 Midyear Population Projection for 60 years old and above, PSA[14]

Region	Midyear population projection for 2023 among 60yo +
Philippines	10,658,768
NCR	1,432,876
CAR	162,503
I - Ilocos	603,215
II - Cagayan Valley	393,815
III - Central Luzon	1,306,981
IVA - CALABARZON	1,572,537
MIMAROPA	285,180
V - Bicol	561,778
VI - Western Visayas	886,403
VII - Central Visayas	821,629
VIII - Eastern Visayas	469,666
IX - Zamboanga Peninsula	331,121
X - Northern Mindanao	470,088
XI - Davao	499,754
XII - SOCCSKARGEN	396,500
XIII - CARAGA	250,190
BARMM	214,532

The PSA released midyear population projections from 2015-2025, calculated from the 2015 Population Census. Age group disaggregation were available per region, and were used to directly calculate the population estimates for elderly people.

DOH-EB representatives during the validation meeting shared that updated projections were available accounting for the impact of COVID-19 pandemic on the growth rate. However, this data is not publicly available, and given the limited timeline to complete a data request from DOH-EB or PSA, projections based on the 2015 POPCEN were retained.

12 Tuberculosis in the elderly - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8703289/
13 STP TB Situation in 2020 Philippines - https://www.stoptb.org/static_pages/PHL_Dashboard.html
14 Age and Sex Distribution in the Philippine Population (2020 Census of Population and Housing) – https://psa.gov.ph/content/age-and-sex-distribution-philippine-population-2020-census-population-and-housing

Healthcare workers (479,735)

The DOH reports around 479,735 healthcare workers nationwide – 188,219 were licensed and practicing human resources for health (HRH) reported by the Health Human Resource Development Bureau (HHRDB), and 291,516 were other healthcare workers working in primary care facilities in local government units such as barangay healthcare workers (BHWs), sanitary inspectors and sanitary engineers. These numbers are mostly among public health facilities, specifically 64% of the 188,219 HRH reported to the HHRDB, and all counts from FHSIS were from public facilities.

Table 5. HRH Count by Region, [15, 16]

	Licensed HRH from HHRDB Statistics[a]	Other HRH from FHSIS Reports[b]	Total HRH [a+b]
Philippines	188,219	291,516	479,735
NCR	39,661	4,959	44,620
CAR	5,540	7,598	13,138
Region 1	10,045	25,072	35,117
Region 2	8,578	12,184	20,762
Region 3	16,846	22,830	39,676
Region 4A	17,958	26,089	44,047
Region 4B	4,161	12,543	16,704
Region 5	10,110	35,492	45,602
Region 6	12,926	29,920	42,846
Region 7	13,751	25,564	39,315
Region 8	7,604	21,228	28,832
Region 9	6,855	6,933	13,788
Region 10	9,788	18,679	28,467
Region 11	7,436	14,538	21,974
Region 12	8,388	9,662	18,050
BARMM	3,800	4,672	8,472
CARAGA	4,772	13,553	18,325

a includes HRH registered and licensed with the Professional Regulation Commission (PRC) namely dentists, medical technologists, midwives, nurses, nutritionists/dieticians, occupational therapists, pharmacists, physical therapists, physicians, radiologic technologists, and x-ray technologists

b includes other HRH working in primary care facilities under the local government unit such as active BHWs, sanitary inspectors and sanitary engineers

**Total HRH are the summation of a & b*

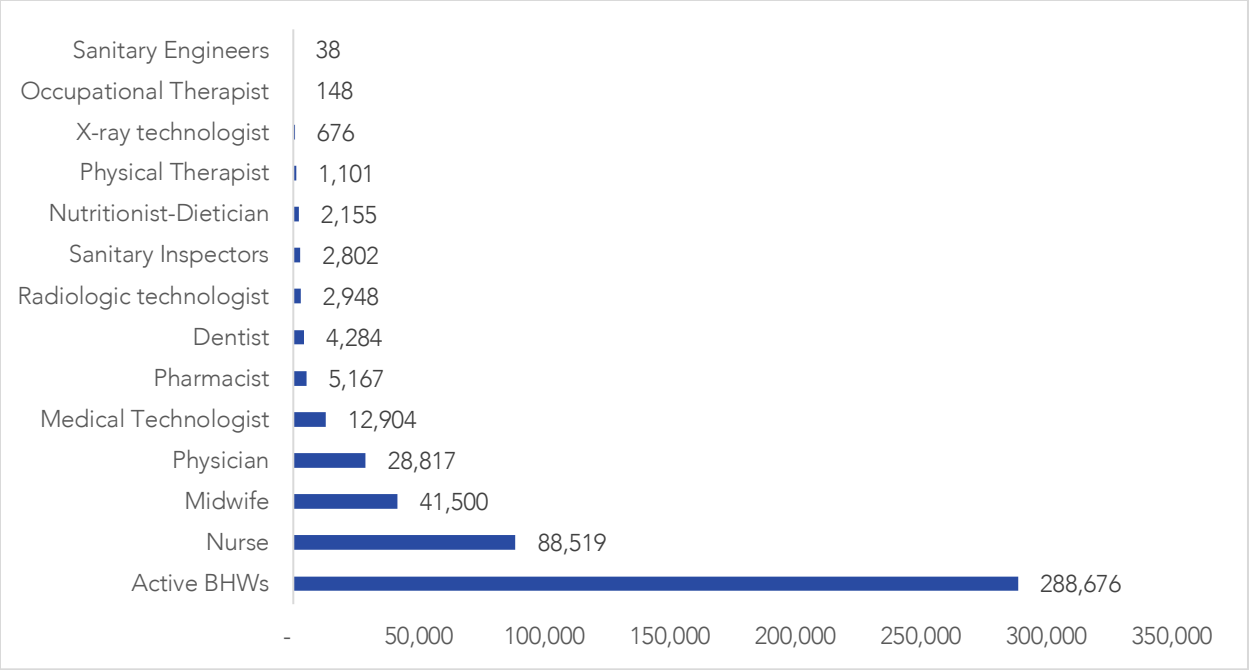


Figure 2. Distribution of HRH by profession from 2021 HHRDB HRH Statistics[15] and 2022 FHSIS Report[16]

BHWs comprise most of the HRH, followed by nurses, midwives, physicians, and medical technologists (Figure 2). BHWs are the frontliners of TB interventions, spending the most time with TB clients from screening to treatment and prevention. This predisposes them at high risk for transmission.

HHRDB data were sourced from the HRH Statistics Dashboard with data as of October 31, 2021. These data reflect the number of licensed practicing health professionals among facilities reporting in the following platforms: 1) National Database of Selected Human Resources for Health (NDHRHIS) which is a web-based infosystem were HRH data from hospitals and other health facilities are reported, 2) DOH HRH Deployment Program Database which contains the number of healthcare workers hired by the DOH deployed in public health facilities to augment HRH, and 3) FHSIS Annual Report.

The Field Health Services Information System (FHSIS) Annual Report contains statistics on the number of human resources for health working in primary care facilities such as physicians, dentists, public health nurses, midwives, nutritionists, medtechs, sanitary engineers, sanitary inspectors, and active BHWs. Since the licensed HRH were included in the HHRDB data, only numbers of sanitary engineers, sanitary inspectors, and active BHWs were included in the FHSIS counts to approximate the total number of HRH in the Philippines.

15 Human Resources for Health (HRH) Statistics - https://app.powerbi.com/view?r=eyJrIjoiMTE1NTY2NjYtNmM0Yi00ZjQyLWI4NzMtY2E4ZTBlMTJmNmYzIiwidCI6IjE5NWQzN2JlLTllMGEtNDIwNS1hZGY0LWEyNTk5ZTllMWNjYSIsImMiOjEwfQ%3D%3D

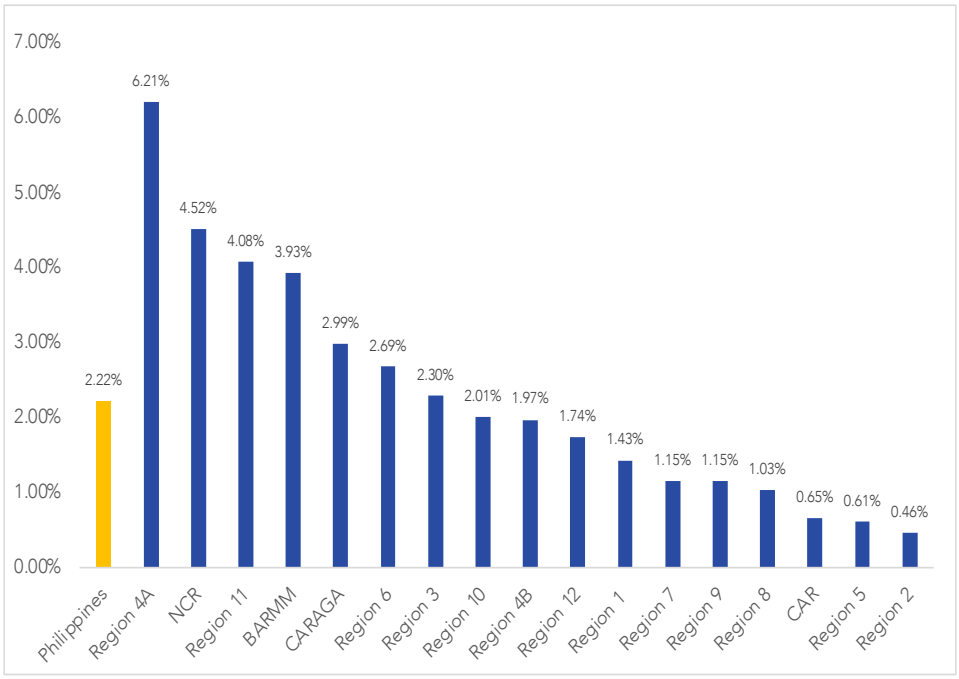
16 FHSIS 2022 Annual Report - https://doh.gov.ph/data-publications/fhsis-2022/

People with Diabetes (4.3 million)

Diabetes is The WHO states that people with diabetes are twice to three times at risk of having TB disease, twice at risk of death during TB treatment, and four times at risk of TB relapse after completing treatment, and twice at risk for multidrug-resistant TB (MDR-TB)[17].

Sourced from the International Diabetes Federation (IDF) Diabetes Atlas, diabetes prevalence in the Philippines among 20 to 79yo was at 7.1% in 2021. This estimates to 4,303,899 people with diabetes with 66.7% undiagnosed[18].

Figure 3. Identification rates of new Type 2 Diabetes Mellitus cases among 20 yo and above, 2022 FHSIS



Data from the FHSIS reports that 159,905 (2.22%) Filipino adults 20 years old and older were newly identified with Type 2 Diabetes Mellitus in 2022[16]. More females (89,908; 56%) were reported to have diabetes than males (69,997; 44%). Region 4A had the highest identification rate of new cases at 6.52% followed by NCR, Region 11 and BARMM (Figure 3).

The IDF Diabetes Atlas[17] is the authoritative resource on the global impact of diabetes, providing global, regional and national impact data on diabetes prevalence, mortality and expenditure. The Atlas is in its 10th edition with data as of 2021 and projections available up to 2045.

The FHSIS annual report includes statistics on newly identified cases with Type 2 Diabetes Mellitus among 20 years and above clients screened in primary care clinics for the year. In 2022, a total of 7,200,055 clients were assessed for health risks which included diabetes.

17 TB and Diabetes - https://www.who.int/publications/digital/global-tuberculosis-report-2021/featured-topics/tb-diabetes
18 IDF Diabetes Atlas, 10th Ed. 2021 - https://diabetesatlas.org/data/en/country/157/ph.html

Tobacco Smokers (14.4 million)

The 2021 Global Adult Tobacco Survey (GATS) reported around 18.5% or 14.4 million adults (15yo+) currently smoked tobacco, 33.3% of them were men and 3.7% women. Further, 12.9% or 2.5 million adults were exposed to second hand tobacco smoke in enclosed areas at their workplace, 21.8% (16.8 million adults) inside their homes, 12.2% (4.2 million) when using public transportation[19].

Alternatively, the 2022 FHSIS Report notes that over 1.6 million Filipino adults 20 years old and older were current smokers (Table 6), majority of whom were males (80%)[16]. However, this number cover only 10.57% (7.2 million out of 68.1 million) of the total estimated adult population aged 20 years old and above for 2022. Thus, GATS data would be more representative of the total numbers of smokers in the Philippines.

Table 6. Adults 20yo and above who are current smokers, 2022 Annual FHSIS Report[16]

	Male	Female	Total
Philippines	1,301,629	325,411	1,627,040
NCR	34,386	22,239	56,625
CAR	16,720	5,022	21,742
Region 1	52,891	17,592	70,483
Region 2	73,084	16,647	89,731
Region 3	110,597	50,447	161,044
Region 4A	59,476	18,313	77,789
Region 4B	91,932	10,708	102,640
Region 5	68,825	14,752	83,577
Region 6	97,433	20,285	117,718
Region 7	43,625	15,221	58,846
Region 8	66,835	15,668	82,503
Region 9	28,534	6,891	35,425
Region 10	115,891	17,295	133,186
Region 11	313,538	71,236	384,774
Region 12	59,970	9,493	69,463
BARMM	33,935	8,124	42,059
CARAGA	33,957	5,478	39,435

GATS is a household survey that measures tobacco use and related factors among 15 years old and older. Implemented by the PSA and DOH, GATS uses a global standardized methodology that employs a multi-stage, geographically clustered sample design to produce nationally representative data. The 2021 GATS sampled 20,971 households and had a response rate of 97% (18,466 interviews completed). Data were collected electronically using handheld devices.

19 Global Adult Tobacco Survey, Philippines Factsheet 2021 - https://cdn.who.int/media/docs/default-source/ncds/ncd-surveillance/data-reporting/philippines/gats/gats-philippines-national-2021-rev.pdf?sfvrsn=20850e05_4&download=true

Urban poor population (10.6 – 21.8 million)

Globally, urban areas have higher TB prevalence than rural areas[20]. Overcrowding, poverty, malnutrition, and suboptimal access to health care services are some of the factors that increases an individual's risk to exposure and vulnerability to TB[20].

An ADB report cited a direct estimate of the urban poor population in the Philippines in 2018 at around 5 million people or 9.3% of the urban population[21]. Direct estimates of the urban poor population found in the search were from 2018. To derive more updated estimates, two calculations were used:

Urban poor estimates =

1. *urban population count x poverty incidence*
2. *urban population count x % of urban population living in slums*

The 2020 CPH reports the country's overall level of urbanization at 54% with the total urban population at 58,930,729[22]. The poverty incidence used in the first calculation was sourced from the 2021 FIES. The national incidence was at 18% while regional incidence ranged from 5.2% in NCR to 39.4% in BARMM[23]. The proportion of the urban population living in slums for the second calculation was sourced from The World Bank databank[24]. The national figure of 37% in 2020 was applied across regions to yield the urban poor estimate. The two calculations yielded an urban poor estimate of (1) 10,607,531 to (2) 21,804,370. These computed estimates were much higher than the 2018 estimate in the ADB report at 5 million.

Family Income and Expenditure Survey (FIES), conducted every two years, provides data on poverty incidence in the country among other income and expenditure statistics of Filipino families. ***Poverty incidence*** is defined as the proportion of Filipinos whose per capita income cannot sufficiently meet the individual basic food and non-food needs[22]. The calculations used published figures from the 2021 FIES, since the 2023 round is still on-going.

The **World Bank** hosts data on **population living in slums** defined as the proportion of the urban population living in slum households. Slum household is defined as a group of individuals living under the same roof lacking one or more of the following conditions: access to improved water, access to improved sanitation, sufficient living area, housing durability, and security of tenure[23].

Limitations of the calculations include applying the overall national/regional poverty incidence to the urban population count instead of just an urban poverty incidence as the latter was not found. For the population living in slums, the national aggregate was applied to all regions since regional disaggregation was not available.

Regional estimates were also computed using regional disaggregation of the urban population count and poverty incidence for the first calculation and applying the 37% population living in slums to the regional urban population for the second calculation. Table 7 lists the computed urban poor estimates per region.

Table 7. Computed Urban Poor Estimates, Philippines and per region

Region	2020 Urban Population[21]	2021 Poverty Incidence[22]	Computed Urban Poor Estimates	
			Urban pop x poverty incidence	Urban pop x % living in slums
Philippines	58,930,729	18%	10,607,531	21,804,370
NCR	13,484,462	5.20%	701,192	4,989,251
CAR	598,688	12.10%	72,441	221,515
I - Ilocos	1,351,205	15.8%	213,490	499,946
II - Cagayan Valley	717,788	16.4%	117,717	265,582
III - Central Luzon	8,230,254	13.7%	1,127,545	3,045,194
IVA - CALABARZON	11,415,742	10.6%	1,210,069	4,223,825
MIMAROPA	1,138,021	19.3%	219,638	421,068
V - Bicol	1,447,370	26.1%	377,764	535,527
VI - Western Visayas	3,353,205	19.3%	647,169	1,240,686
VII - Central Visayas	4,196,639	26.8%	1,124,699	1,552,756
VIII - Eastern Visayas	666,473	28.9%	192,611	246,595
IX - Zamboanga Peninsula	1,489,443	30.9%	460,238	551,094
X - Northern Mindanao	2,528,239	26.2%	662,399	935,448
XI - Davao	3,504,533	14.0%	490,635	1,296,677
XII - SOCCSKARGEN	2,418,843	27.1%	655,506	894,972
XIII - CARAGA	1,027,223	31.0%	318,439	380,073
BARMM	1,362,601	39.4%	536,865	504,162

20 STP KP Brief Urban Populations - https://stoptb.org/assets/documents/resources/publications/acsm/kp_urban_spreads.pdf
21 Building Resilience of the Urban Poor in the Philippines, a 2022 TA Consultant Report from ADB - https://www.adb.org/sites/default/files/publication/835116/building-resilience-philippines-urban-poor.pdf
22 Urban Population of the Philippines (2020 Census of Population and Housing) - https://psa.gov.ph/content/urban-population-philippines-2020-census-population-and-housing
23 – Poverty Statistics - https://psa.gov.ph/statistics/poverty/node/167972#:~:text=Based%20on%20the%20Preliminary%20Results,was%20recorded%20at%2018.1%20percent.
24 Population living in slums - https://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS?locations=PH

Recent Contacts of TB Patients (2.1 million)

The 2019 JPR estimated that there were nearly 1.5 million people at risk of TB disease being recent contacts of people with TB[5]. Following the computation described in the 2019 JPR, recent contacts of TB patients were calculated using data on the average household size in the Philippines (4.1 people)[25] in the 2020 CPH multiplied to the total number of notified cases in 2022 based on the 2022 FHSIS Annual Report:

Recent contacts of TB patients = average household size x total number of notified cases

Based on this calculation, over 2 million people are estimated to be recent contacts of TB patients. Similar to the regional distribution of notified cases, regions NCR, CALABARZON and Central Luzon had the highest estimated number of recent contacts of TB patients (Table 8).

Table 8. Computed recent contacts of TB patients by region

Region	Total notified TB cases in all forms, 2022[16]	Average Household Size in 2020 CPH[24]	Computed recent contacts of TB patients
Philippines	503,764	4.1	2,065,432
NCR	99,466	3.8	377,971
CAR	4,122	4.1	16,900
I - Ilocos	18,440	4.1	75,604
II - Cagayan Valley	14,582	4.1	59,786
III - Central Luzon	59,532	4.1	244,081
IVA - CALABARZON	90,460	4.0	361,840
MIMAROPA	14,955	4.1	61,316
V - Bicol	31,289	4.4	137,672
VI - Western Visayas	39,761	4.1	163,020
VII - Central Visayas	28,999	4.1	118,896
VIII - Eastern Visayas	15,508	4.2	65,134
IX - Zamboanga Peninsula	12,980	4.3	55,814
X - Northern Mindanao	15,772	4.2	66,242
XI - Davao	18,172	3.9	70,871
XII - SOCCSKARGEN	18,675	4.1	76,568
XIII - CARAGA	11,719	4.2	49,220
BARMM	9,332	5.9	55,059

25 2020 CPH Average Household Size https://psa.gov.ph/content/household-population-number-households-and-average-household-size-philippines-2020-census

Other Population Groups

Population groups not yet identified as priority KVPs in the country's TB response but warrant specific attention because of their vulnerabilities to TB are listed in Table 9. Data is made available for decision makers and advocates to consider or use when discussing TB KVPs in the country. This list is referenced from the Stop TB Partnership TB KVP estimates tool. Other KVPs which might have been missed could be added in future versions of this report or updates on TB KVP estimates in the Philippines.

Table 9. Summary of other KVP estimates and data sources

Key Population	Direct or Computed	Population size estimate	Coverage	Year	Data Source
People who use drugs (PWUD)	Direct	1,675,122	10-69 yo	2019	2019 National Household Survey on the patterns and trends of drug abuse
Children and young people	Direct	53.3 million	0-24yo	2023	PSA Midyear population projections
People with disabilities	Direct/ Computed	8.5 million/ 9.6 million	5yo+	2020	PSA CPH
Indigenous people	Direct	9.84 million	All ages	2020	PSA CPH
Homeless	Direct	12,615[a] – 4.5 million[b]	All ages	2020[a]	[a] PSA CPH [b]Statistics from the Borgen Project[34] cited in DSWD issuance[35]

People who use drugs. The Stop TB Partnership Country Profile for the Philippines[26] highlighted how PWUD were a missed key population for TB in the Philippines. Co-infections of TB, HIV and viral hepatitis are common among PWUD[27]. HIV-positive people who inject drugs (PWID) are up to six times more likely to develop TB disease than other PLHIV who don't inject drugs[27]. Further, PWUD tend to have higher rates of TB infection regardless of HIV status. The 2019 National Household Survey on the Patterns and Trends of Drug abuse conducted by the Dangerous Drugs Board (DDB), Department of Social Welfare and Development (DSWD) and PSA reports that around 1.7 million Filipinos between 10 to 69 years old were current users of dangerous drugs and substances at the time of the survey. This estimate was derived from the measured current user prevalence of 2.05% applied to the 2019 population count among 10 to 69 years old[28].

Children and young people. Midyear projections populations from the PSA estimates that there were 53.3 million people between less than 25 years old in 2023, 22.3 million of whom were less

than 10 years old and 31.1 million between 10-24 years old. Young people in this age group comprise 47% of the country's total projected population for 2023 (112.9 million). Young people less than 25 years old comprise nearly a third of people with TB in the Philippines[29]. Staying in crowded places like schools, being exposed to family members with TB and having poor salience to health issues are just some of the factors that predispose young people to TB. Younger people aged 10 to 24 years old are also more likely to discontinue TB treatment than those older[29].

People with disabilities. The PSA reports from the 2020 CPH that 8.7 percent of Filipinos over the age of five have or 8.5 million people have functional difficulty in at least one of six names of seeing, hearing, walking or climbing steps, remembering or concentrating, performing self-care or communicating[30]. A National Disability Prevalence Survey ran by the PSA in 2016 found disability prevalence in the Philippines to be at 12 percent among 15 years old and above[31]. Applying this prevalence to the 2023 projected population among 15yo+ (79,740,748) yields an estimate of around 9.6 million people with disabilities. In a brief on TB KVP among people with disabilities, TB People Philippines highlighted how the prevalence of TB among people with disabilities are overlooked[32]. Limited information are available on service uptake numbers and contexts of people with disabilities. In the 2022 JPR, it could be noted that the interview guides had specific questions probing how special needs of patients are addressed such as those with disabilities, however, findings pertaining to this were not discussed in the results[3].

Indigenous people (IP). The 2020 CPH report that IPs comprise 9.1% or 9.84 million of the Philippine household population[33]. As with people with disabilities, limited information is available on TB burden and service uptake among IPs. Indigenous areas are among the recommended target areas for ACF in the 2022 JPR[3].

Homeless people. Around 4.5 million people are said to be homeless in the Philippines[34, 35]. In the 2020 CPH, the PSA reports that there were 12,615 enumerated who were considered homeless, and 57, 281 living in relocation areas. Over 60 percent of the homeless were found in NCR while a third of those living in relocation areas are found in BARMM[36].

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26 STP Philippine CRG Profile - https://www.stoptb.org/sites/default/files/country_profile_philippines_0623.pdf
27 Key Population Brief | PWUD - https://stoptb.org/assets/documents/resources/publications/acsm/kp_peopleusedrugs_spreads.pdf
28 2019 National Household Survey on the Patterns and Trends of Drug Abuse https://ddb.gov.ph/images/downloads/2019_Drug_Survey_Report.pdf
29 The social determinants of tuberculosis in the Philippines - https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(21)00516-7/fulltext
30 Functional difficulty in the Philippines - https://psa.gov.ph/content/functional-difficulty-philippines-household-population-five-years-old-and-over-2020-census
31 National Disability Survey - https://psa.gov.ph/statistics/national-disability-prevalence-survey
32 TB KVP Brief – Persons with disabilities - https://www.tbpeople.ph/wp-content/uploads/2023/10/TBpeoplePH-Policy-Brief-TB-and-Disability.pdf
33 Ethnicity in the Philippines - https://psa.gov.ph/content/ethnicity-philippines-2020-census-population-and-housing
34 State of homelessness in the Philippines - https://borgenproject.org/homelessness-in-the-philippines/
35 DWSD Issuance Guidelines on Pilot of Oplan Pag-abot https://www.dswd.gov.ph/issuances/MCs/MC_2023-010.pdf
36 PSA data outlines state of PHL homelessness https://businessmirror.com.ph/2023/05/12/psa-data-outlines-state-of-phl-homelessness/

INSIGHTS & RECOMMENDATIONS

On the TB KVP Size Estimation Tool and Process

Though the tool's 6-step process was not fully implemented, some insights were gained in the process undertaken by the Philippines to arrive at initial TB KVP size estimates. Specifically, the findings and recommendations listed were inputs from stakeholders who participated in the validation meeting. Recommendations are highlighted in blue boxes.

Pillar 1: Identify & Prioritize

Stakeholders found difficulty in prioritizing TB KVPs based on the given prioritization template. The process was found to be too subjective with several questions raised on how to analyze results from the prioritization such as how to weight scores across the 6 categories since some factors may have a more direct influence on TB transmission and vulnerability compared to others. Biases across stakeholders and among TB KVPs may also exist and might therefore affect the scoring – for example giving lower scores to KVPs who are harder to reach such as PWUD. Further, in instances when scores vary widely across multiple stakeholders, how would scores be treated? Would responses from government and/or technical experts weigh more than those from civil society or community members?

Moreover, prior even to prioritization, stakeholders raised concern on the proper and comprehensive identification of TB KVPs in the country. Rather than working off from a predetermined list on which other groups could just be added, stakeholders searched for a more comprehensive tool or process wherein TB risks and vulnerabilities of various population groups could be examined to ensure that no group is left behind.

Improve the tools to lessen subjectivity and bias

Improve the TB KVP prioritization tool to enable a more objective prioritization process that accounts for response biases and variance; also to suggest a more comprehensive methodology for identification TB KVPs.

Pillar 2: Learn & Understand

The tool served as a good guide to collate or compute TB KVP size estimates. However, stakeholders expected that the tool would include a computing sheet or software that would produce population size estimates given inputs on certain parameters. Most found the term "tool" a misnomer and suggested that "guide" could be a better label for the instrument.

TB KVP Size Estimation "Guide" instead of "Tool" maybe a more appropriate label to the document as it provides guidance on arriving at population size estimates, but not necessarily a tool that can calculate estimates based on given parameters.

Further, given the amount of data to be gathered and analyzed, especially if primary data collection were to be done, the process would need more time and resources. Population size estimation exercises in other programs such as in HIV took nearly two years from preparation to dissemination, and around Php15 million in budget.

Pillar 3: Act & Improve

Though a lot of insights were gained while undergoing the size estimation process, stakeholders found the results – size estimates of TB KVPs somewhat lacking for a context like the Philippines wherein policy and program are already targeting all Filipinos to be screened for TB given its prevalence in the country. Data would be more meaningful if estimated TB cases could be calculated based on the TB KVP estimates to help guide limited resource allocation.

Bridge TB KVP size estimates results to TB estimates and projections to help determine TB burden among TB KVPs similar to how this data is available in HIV estimates as this will provide more meaningful information for policy and programming.

On data availability and quality

Abundance and scarcity of data

Gathering data on KVP size estimates was relatively easy. An abundance of resources is published online from official sources, and most are updated at least within the past three years. However, data does get thin for some KVPs like people with disabilities, indigenous people and the homeless. Further, few KVPs has disaggregation available for their data. Only PLHIV, healthcare worker data and those sourced from the PSA had disaggregation available. For populations without direct estimates, though prevalence or incidence rates where available for computation, some are only limited to national level figures limiting precision when disaggregating to subnational numbers.

Lobby for a more granular data to improve the estimates and overall strategic information
Limited granular and disaggregated data could be found publicly on the TB KVPs and on TB in the Philippines as a whole. Institutions and organizations involved in TB research and data production such as the DOH-Epidemiology Bureau could review forms used in data collection to see if information needed to help understand the context-specific situations of different KVPs could be generated from or added into existing information systems.

On TB KVPs

TB KVPs magnitude and diversity

Researching the size estimates data highlighted how large and diverse TB KVPs are, with each population group characterized by distinct characteristics and situations that warrant approaches

tailor-fit to their specific needs and circumstances. Though interventions for case finding and treatment may be clinically the same across KVP groups, strategies to deliver services may be different.

Multimorbidity and Intersectionality

TB KVPs such as the elderly, PLHIV, people with diabetes and tobacco smokers among others may deal with multimorbidity underlining the complexity of health services and care these population need. Further, though diverse, TB KVPs might face intersecting issues and conditions affecting their access to services and overall health. An elderly person may be residing in the urban slums, living with disabilities, and have diabetes. Or a young person may be living with HIV, be a recent contact of TB patients and smokes tobacco daily. The iterations are limitless given the complexity of the human condition.

Utilize the data to advocate and plan for diverse solutions

The data and insights gained from this review clearly highlight how massive and diverse TB KVPs are. Estimates each KVP group ranged from more than a hundred thousand to tens of millions nationwide. Differentiated strategies and variety of service access points are needed to appropriately deliver services. Further, the multimorbidity and intersectionality experienced by TB KVPs necessitate collaborative approaches, not just within the health sector, but also beyond such as with DSWD, BuCor, BJMP, DDB, NGOs, community and more involved to deliver holistic services and ensure TB prevention amongs these populations.