The multi-faceted health impacts of COVID-19 pandemic

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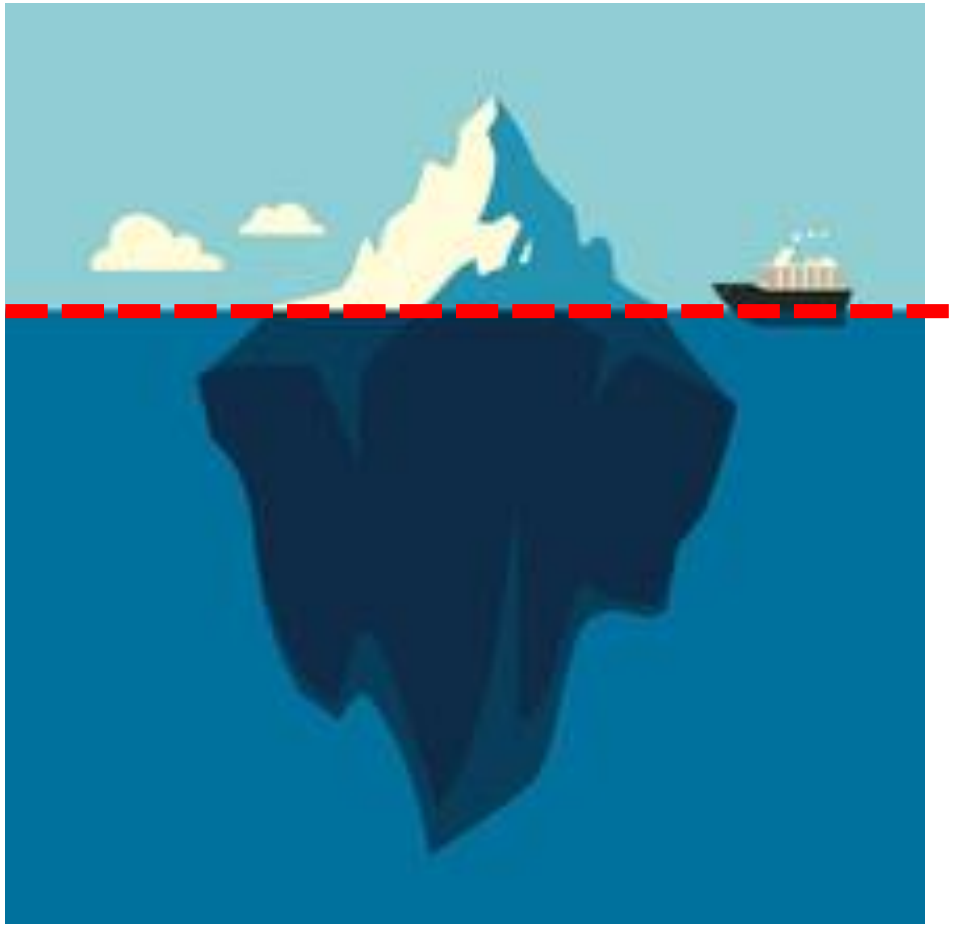
What gets measured gets managed…



Measured

Unmeasured

Previous studies of health team at PIDS..

The Impact of COVID-19 on Hospital Admissions for Twelve High-Burden Diseases and Five Common Procedures in the Philippines: A National Health Insurance Database Study 2019-2020

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Summary

Background The Philippines has the highest cumulative COVID-19 cases and deaths in the Western-Pacific. To explore the broader health impacts of the pandemic, we assessed the magnitude and duration of changes in hospital admissions for 12 high-burden diseases and the utilization of five common procedures by lockdown stringency, hospital level, and equity in patient access.

Methods Our analysis used Philippine social health insurance data filed by 1,295 hospitals in 2019 and 2020. We calculated three descriptive statistics of percent change comparing 2020 to the same periods in 2019: (1) year-on-year, (2) same-month-prior-year, and (3) lockdown periods.

Findings Disease admissions declined (-54%) while procedures increased (13%) in 2020 versus 2019. The increase in procedures was caused by hemodialysis surpassing its 2019 utilization levels in 2020 by 25%, overshadowing

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The Impact of the COVID-19 Pandemic on Social Health Insurance Claims for High-Burden Diseases in the Philippines

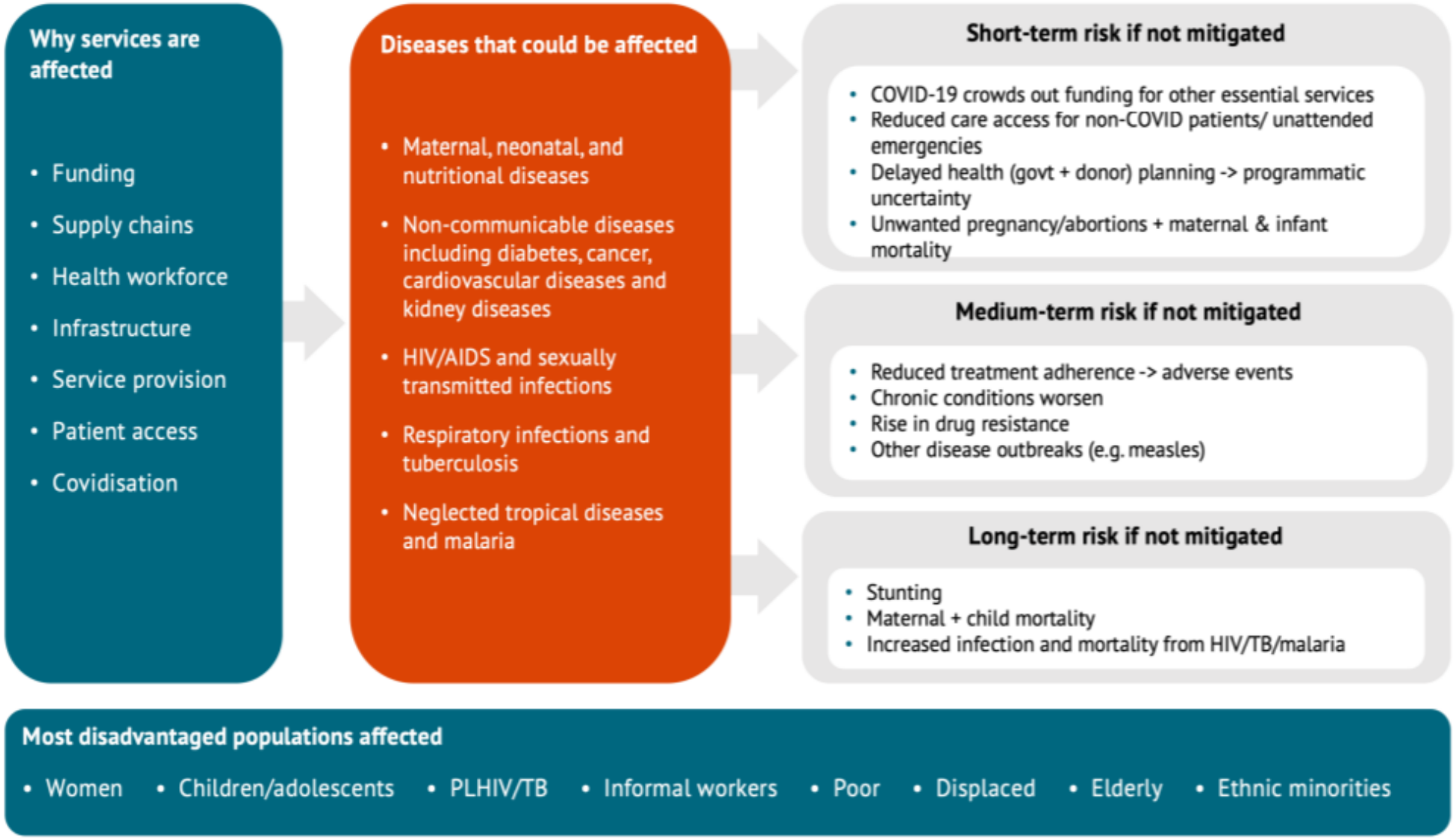
Valerie Gilbert Ulep, Anton Paterno, Jhanna Uy, Vanessa Siy Van, Lyle Casas, and Justin Tan

Abstract

In the Philippines, anecdotes on the dwindling use of essential healthcare services as an indirect consequence of the COVID-19 pandemic are mounting, but compelling evidence remains scarce. In this study, we examined the magnitude of decline in insurance claims of twelve (12) high-burden

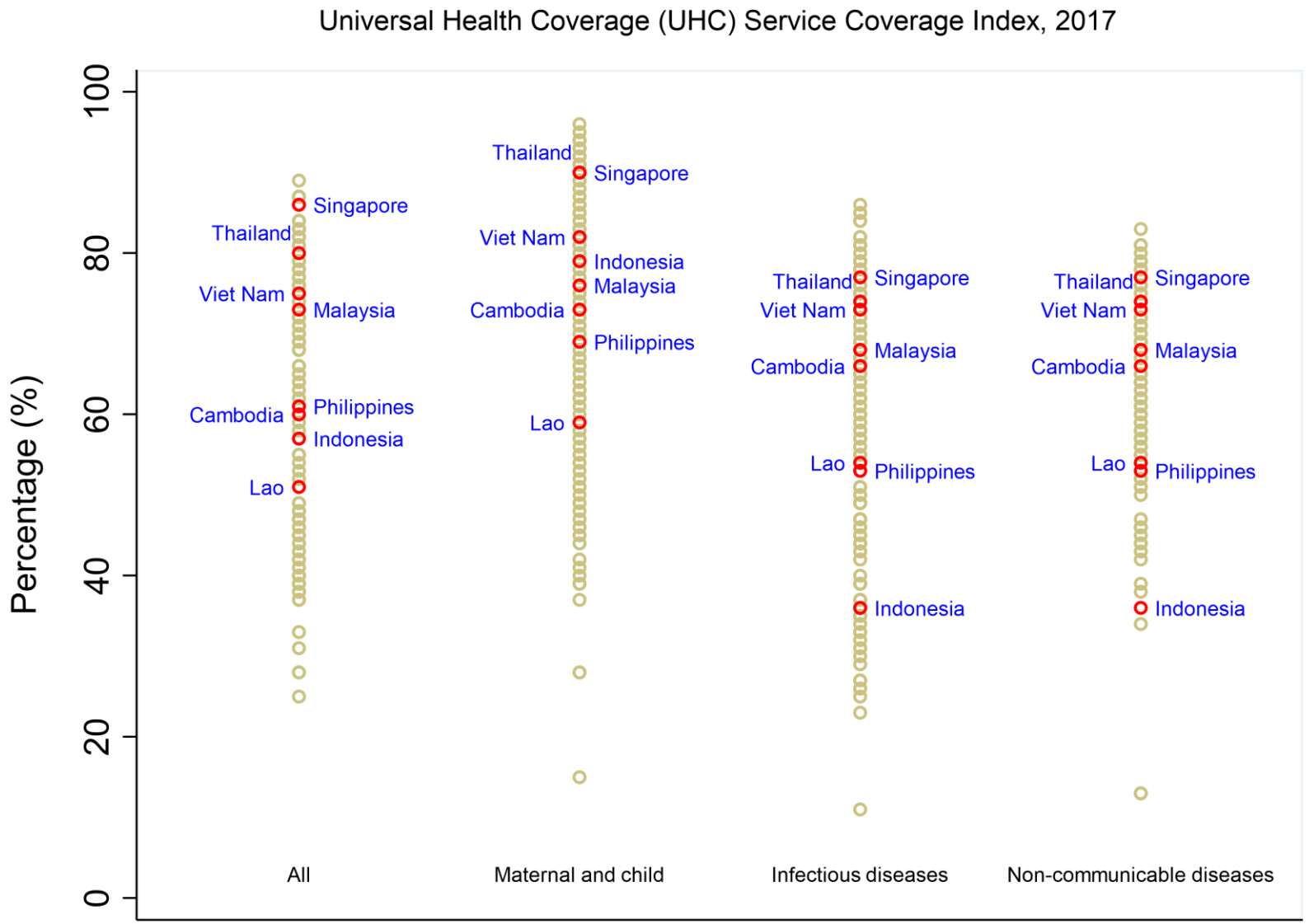
https://www.cgdev.org/sites/default/files/impact-covid-19-pandemic-social-health-insurance-claims-high-burden-diseases-philippines.pdf

How the pandemic disrupts the health system?



Source: Bayani et al, 2021

Why it matters especially for a country with frail health system?



Coverage of key indicators pre-pandemic was low, further decline will be catastrophic

Maternal and child (examples):

- At least four prenatal care: 50+%
- Visited health provider among children with pneumonia: 55%
- Child vaccination (DPT3): 77%

Infectious diseases (examples):

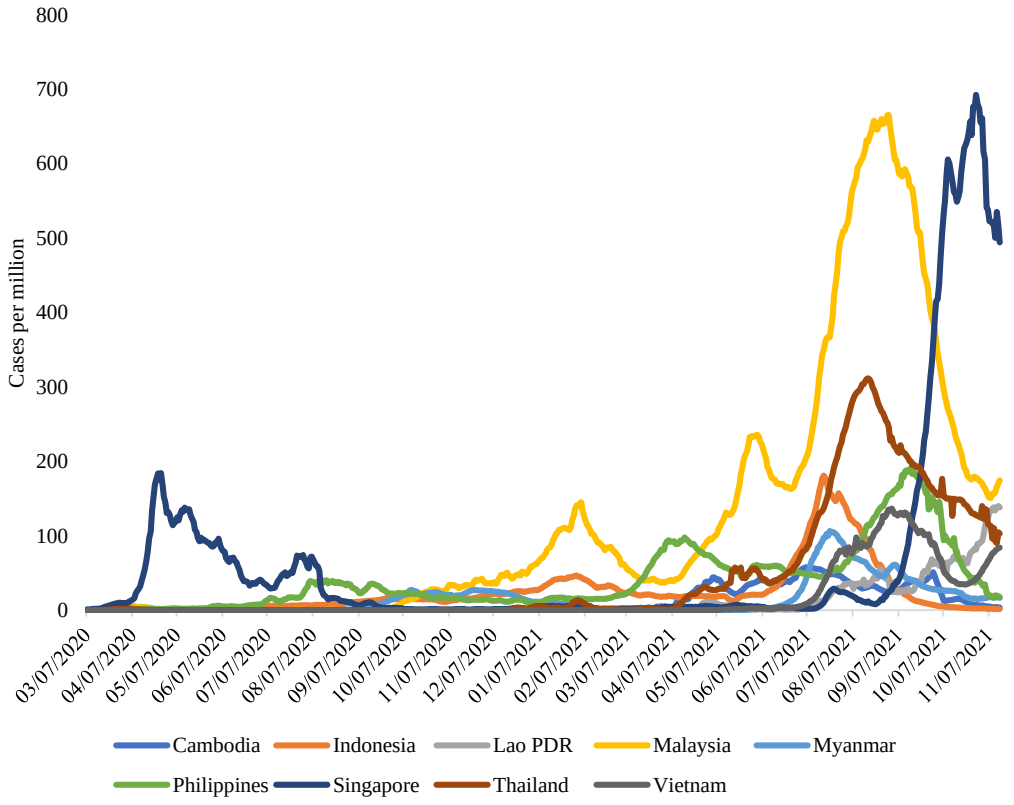
- TB treatment coverage: 68%

Objective of the study

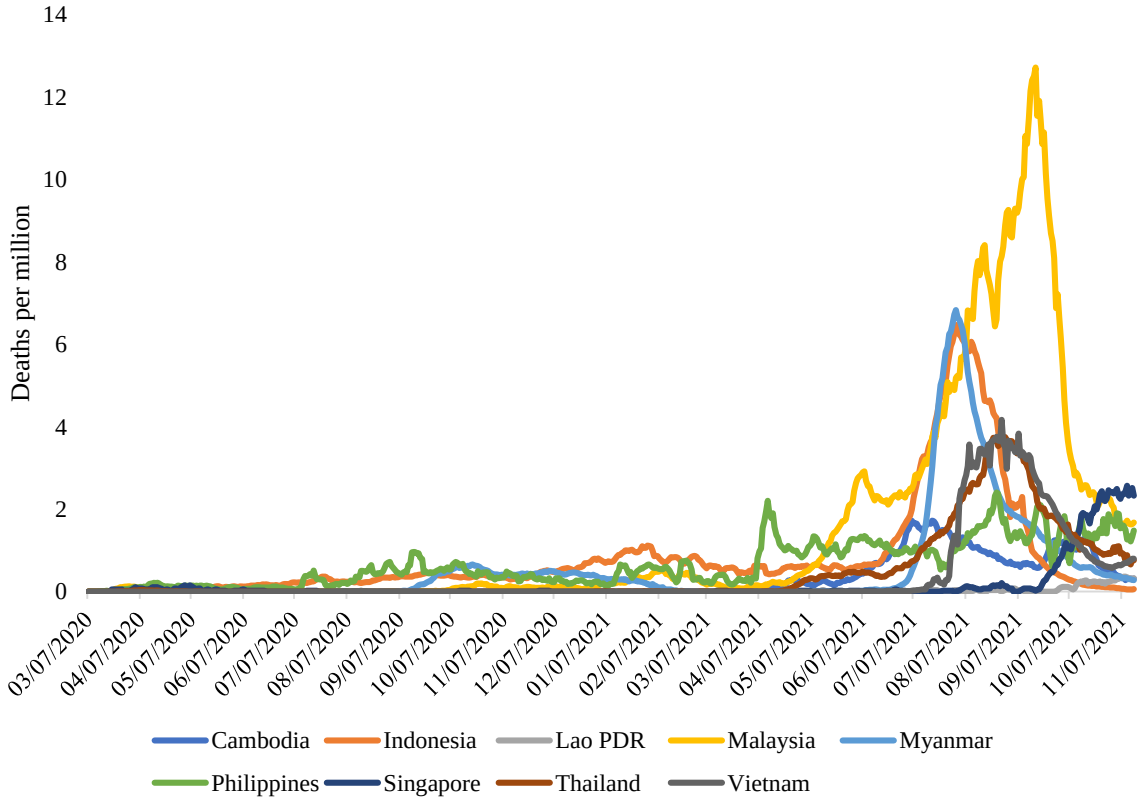
- Demonstrate the disruption of essential healthcare services in the Philippines
- Estimate the economic costs of both direct and indirect health impacts of the pandemic

The pandemic has caused significant health burden in many countries, including the Philippines

Confirmed COVID-19 cases, by ASEAN countries



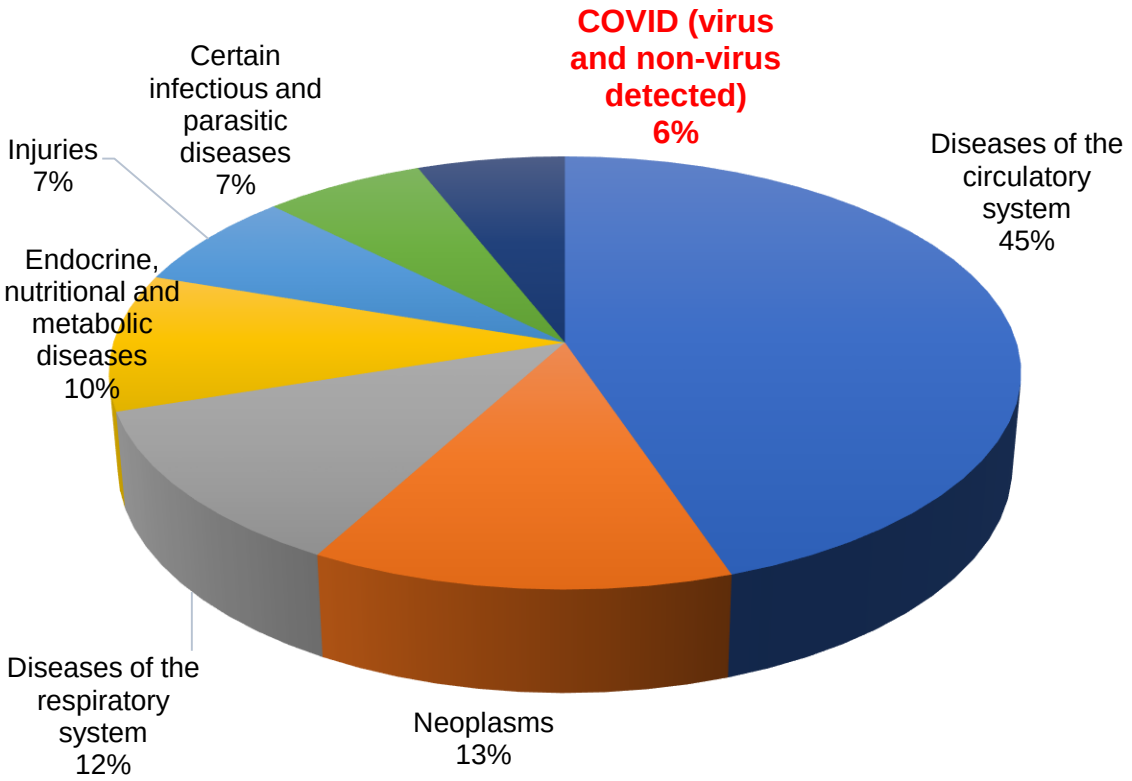
Confirmed COVID deaths, by ASEAN countries



As of November 14, 2021, the Philippines recorded 46,000 deaths and 2.8 confirmed cases

About 6% of deaths are accounted for COVID19. Higher death toll is expected in 2021

Causes of death, Philippines, 2020

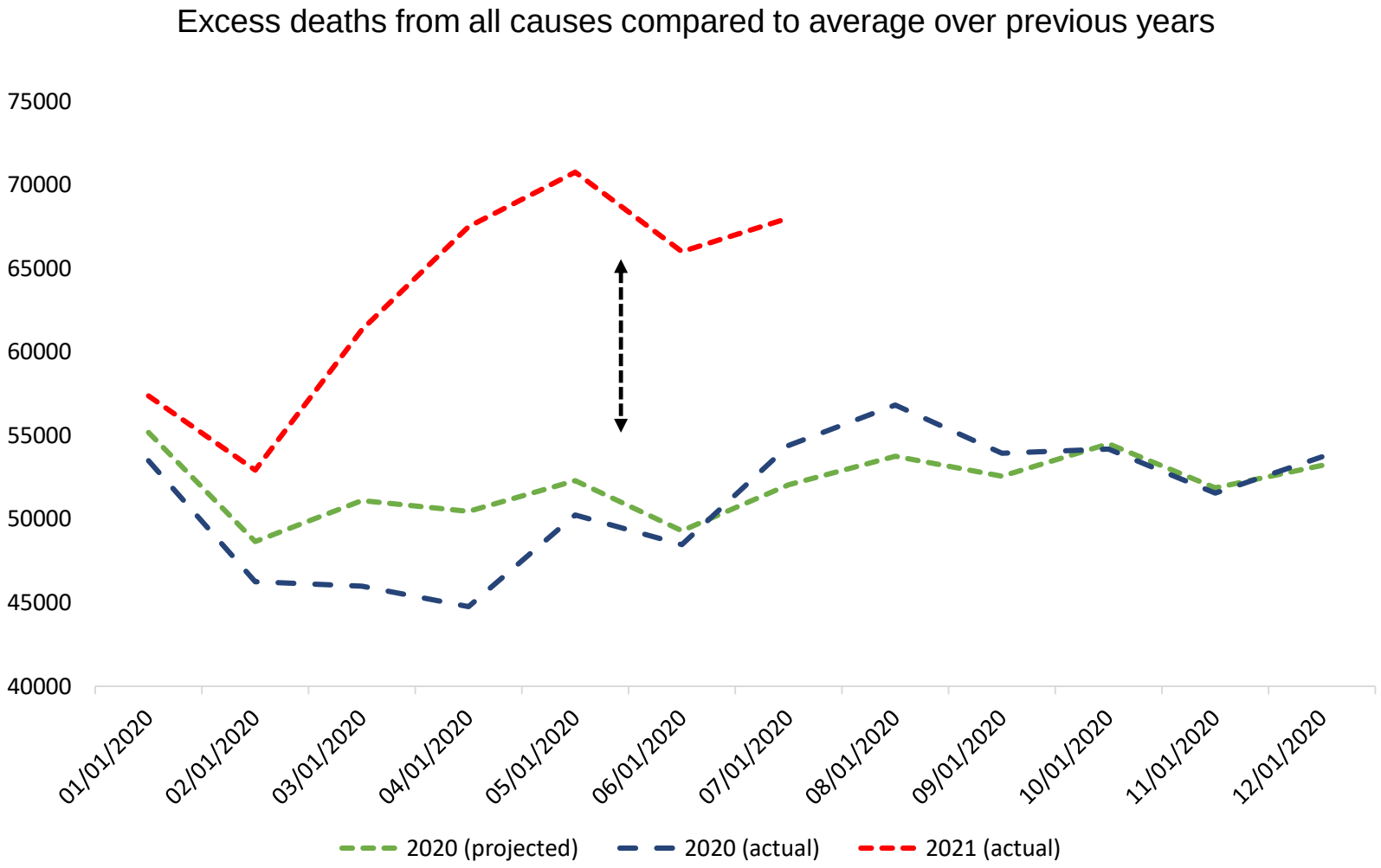


COVID deaths (2020 vs. 2021)

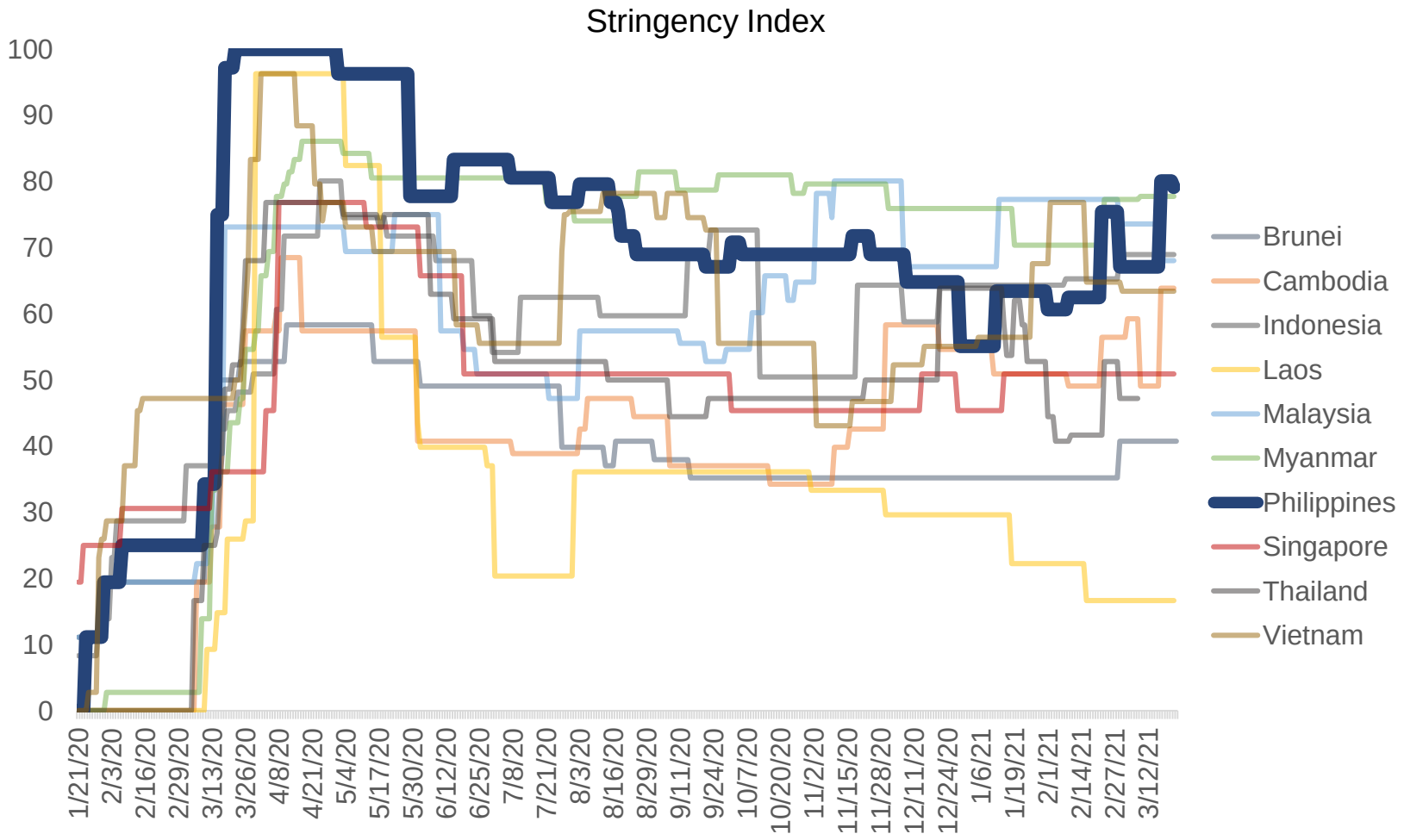
	Jan-July 2020	Jan-July 2021
COVID (virus detected)	1,225 (0.4%)	17,167(5.7%)
COVID (non-virus detected)	7,472 (2.6%)	9.594 (3.0%)

Source: Philippine Statistical Authority

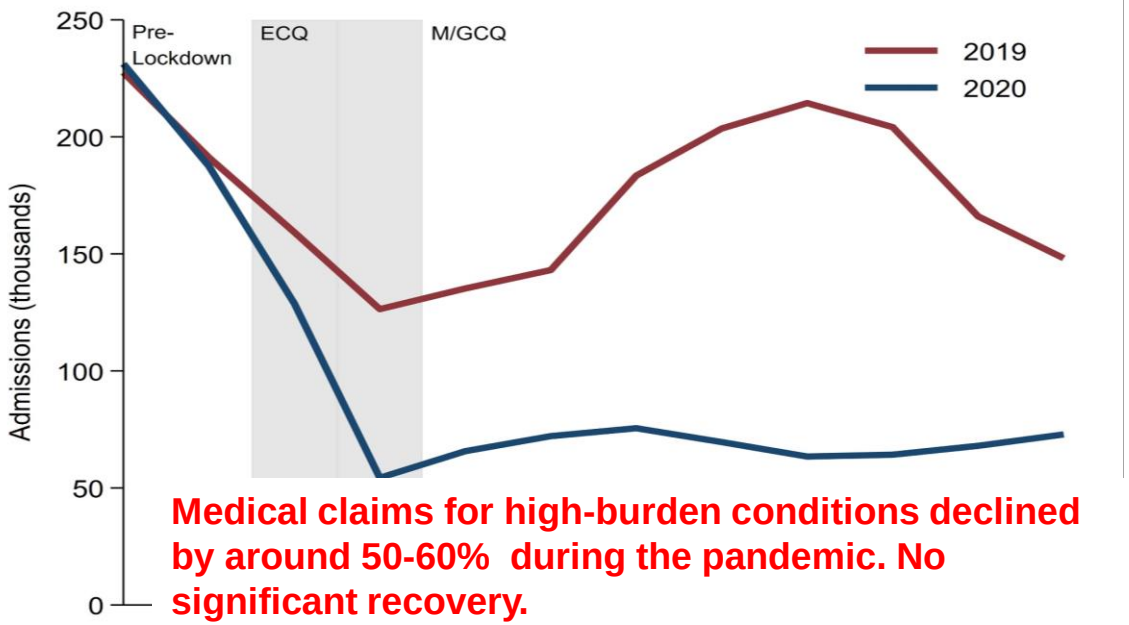
‘Excess’ deaths are expected to increase by 2021



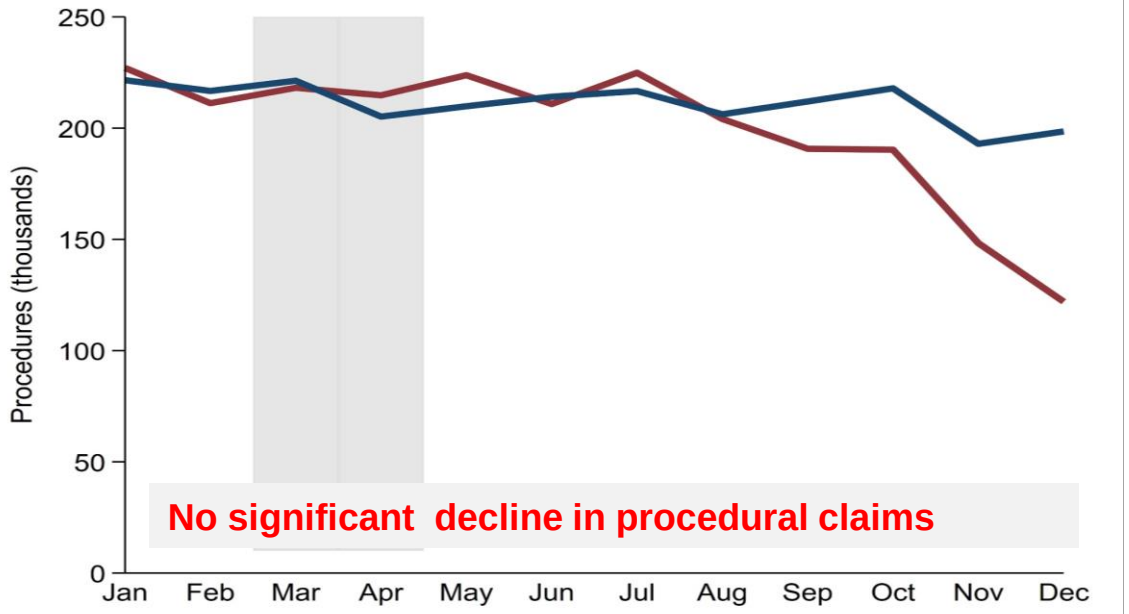
The Philippine has adopted stringent measures to reduce the spread of infection



Seasonally-adjusted medical and procedural PhilHealth claims, 2019 vs. 2020



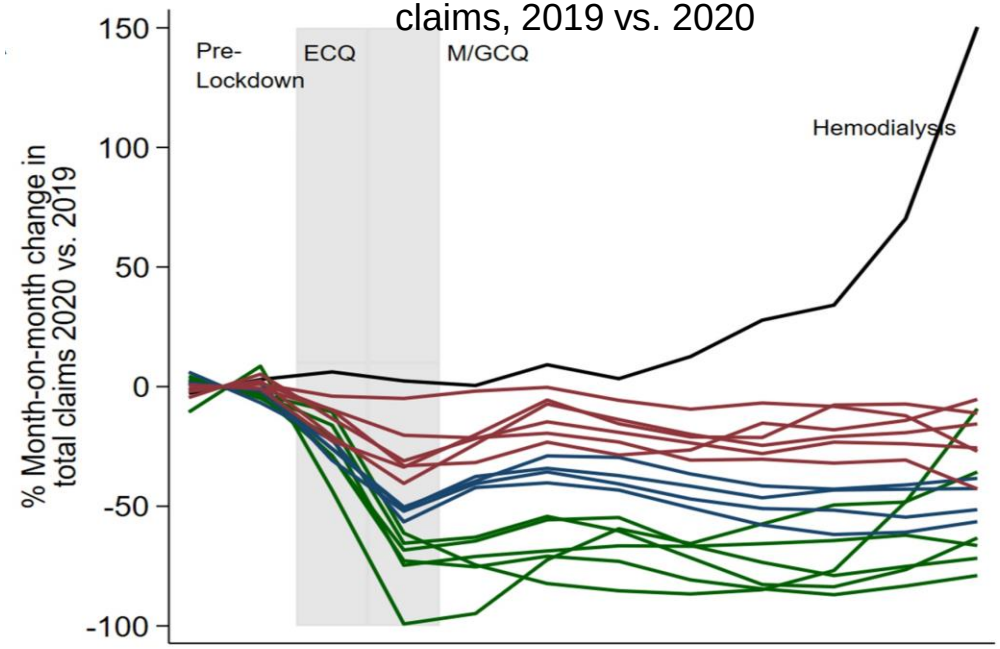
Medical claims for high-burden conditions declined by around 50-60% during the pandemic. No significant recovery.

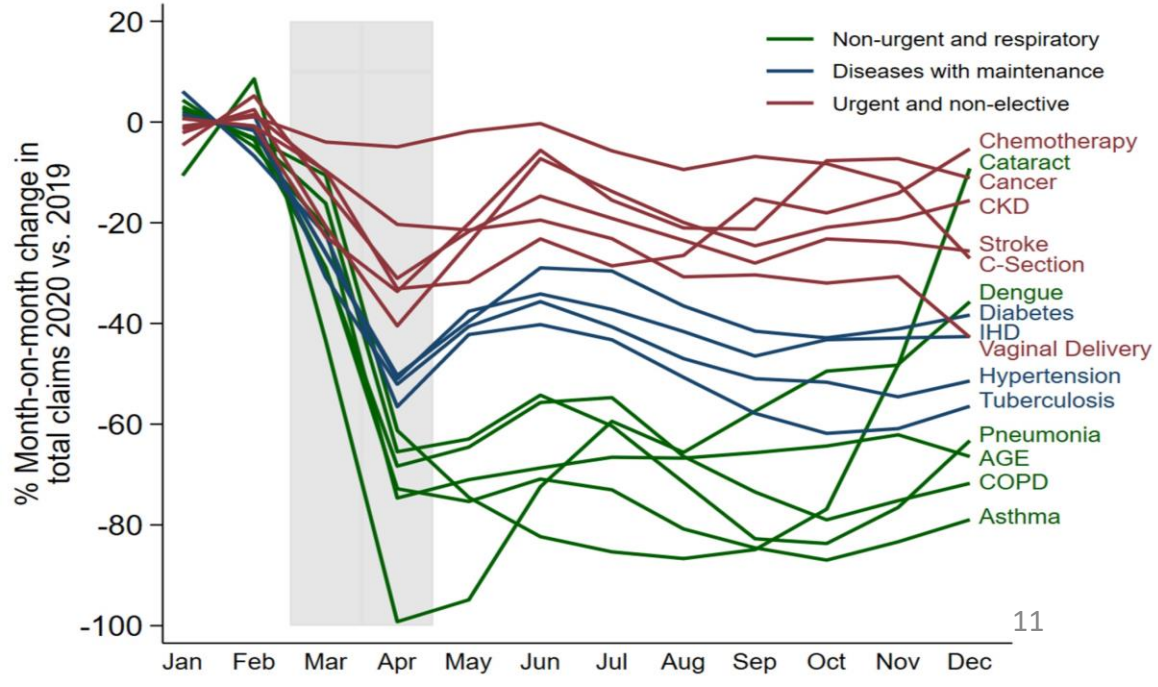


No significant decline in procedural claims

Source: Uy, Van, Ulep, Bayani, Walker (2021)

Seasonally-adjusted medical and procedural PhilHealth claims, 2019 vs. 2020





The pandemic has changed the dynamics of hospital admissions; are hospitals trying to be more efficient?

	All Hospitals		Public Hospitals				Private Hospitals			
		% Change								
	2019	2020	All	Level 1	Level 2	Level 3	All	Level 1	Level 2	Level 3
Disease Admissions										
Median		-42	-43	-41	-43	-49	-43	-39	-42	-52
Interquartile Range		32	29	36	30	22	32	40	32	24
AGE	252,789	-55	-54	-51	-60	-63	-55	-49	-57	-65
Asthma	104,174	-66	-62	-62	-61	-67	-69	-69	-67	-71
COPD	42,250	-58	-14	-13	-15	-14	-19	-12	-17	-31
Dengue	364,392	-69	-57	-56	-55	-64	-59	-56	-60	-67
Pneumonia	730,346	-65	-20	-1	-12	-25	-8	16	1	-25
Diabetes	60,947	-31	-31	-24	-34	-45	-31	-20	-36	-47
Hypertension	208,759	-38	-74	-72	-76	-80	-64	-62	-65	-65
IHD	76,243	-35	-38	-34	-42	-50	-38	-28	-40	-56
Tuberculosis	40,171	-46	-39	-27	-39	-48	-32	-24	-34	-44
CKD	53,167	-17	-62	-62	-64	-63	-68	-70	-68	-63
Cancer	41,593	-14	-26	-5	-19	-40	-7	9	-7	-25
Stroke	127,679	-17	-46	-48	-43	-42	-47	-49	-44	-46
Procedures										
Cataract Surgery	93,516	-57	-71	-70	-32	-74	-54	-52	-47	-65
Chemotherapy	145,917	3	-11	-47	0·4	-11	12	18	34	-0·1
C-Section	331,532	-5	-17	4	-16	-32	8	24	8	-21
Hemodialysis	1,654,116	25	13	51	46	-5	27	26	33	16
Vaginal Delivery	160,779	-18	-24	-6	-26	-42	-3	6	-4	-25
Legend:	Non-urgent and respiratory		Diseases with maintenance				Urgent and non-elective			

Source: Uy, Van, Ulep, Bayani, Walker (2021)

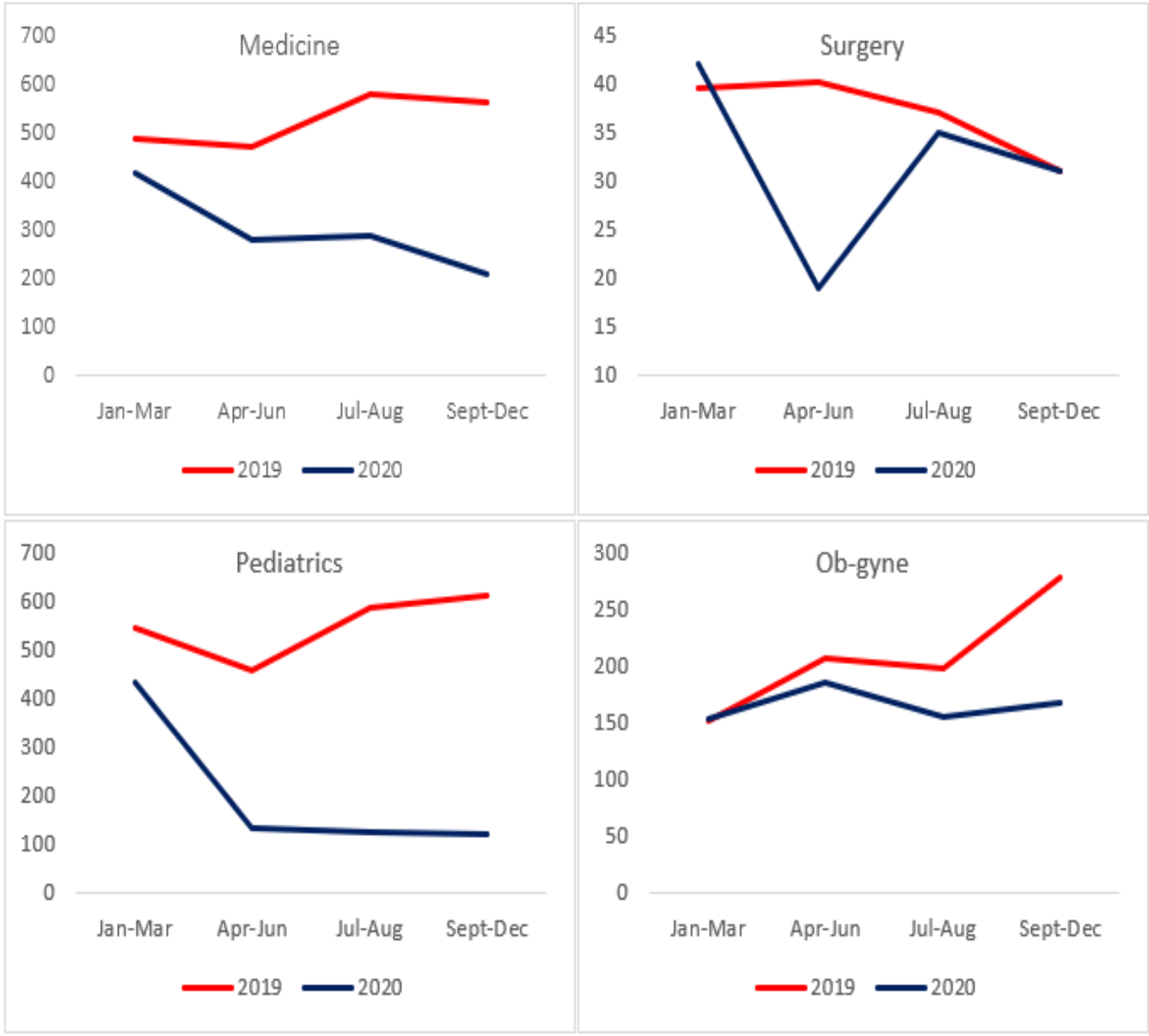
The indigents member suffered the largest decline in claims

	Strict Lockdown - "ECQ" (March-April)		Easing of Lockdown - "M/GCQ" (May-Dec)	
	2019	% Change 2020	2019	% Change 2020
Total Claims	718,493	-11	2,912,914	-19
Claim Type				
Medical Claims	285,648	-36	1,398,129	-61
Procedural Claims	432,845	-1	1,514,785	10
Hospital Location				
National Capital Region, Region III, Region IVa	322,077	-8	1,243,449	-10
Luzon	122,091	-8	502,420	-14
Visayas	127,943	-17	540,551	-31
Mindanao	146,382	-16	626,494	-32
PhilHealth Membership Type				
Direct Contributors	350,785	-7	1,389,567	-12
Indirect Contributors	367,708	-16	1,523,347	-26
Indigent or Poorest	177,299	-21	843,301	-39
Senior Citizen	190,409	-11	680,046	-10

Source: Uy, Van, Ulep, Bayani, Walker (2021)

Children are bearing the brunt of the pandemic.

Median admissions in government hospitals, by patient type



Source: The DOH and PIDS requested all government hospitals and RHUs to submit data as part of the national government's effort to monitor public health programs of local governments. The data from DOH contains aggregate quarterly admissions and consultations data from January 2019 to December 2020. Our analysis only includes those facilities that submitted and completed the monitoring questionnaire – 60 out of the 410 government hospitals (17%).

Source: Ulep et al (2021)

The coverage of critical public health programs also suffered – a major blow to the country's efforts in achieving health system targets.

Median consultations in Rural Health Units (RHUs), by patient type

Source: The DOH and PIDS requested all government hospitals and RHUs to submit data as part of the national government's effort to monitor public health programs of local governments. The data from DOH contains aggregate quarterly admissions and consultations data from January 2019 to December 2020. Our analysis only includes those facilities that submitted and completed the monitoring questionnaire –114 out of the 2,500 (5%) primary care facilities.

Source: Ulep et al (2021)

The coverage of critical public health programs also suffered – a major blow to the country's efforts in achieving health system targets.

	2018	2019	2020
Number Tested (Target - 2,450,000)	1,164,290	1,083,877	556,773 (-49%)
Number Diagnosed and Treated, New and Relapse (Target - 442,600)	371,668	409,167	256,541(-37%)
Number Diagnosed and Treated Drug Resistant TB (DR-TB) (Target - 8,500)	7,267	7,492	6,279 (-16%)
Treatment Success Rate, New and Relapse (Target - 90%)	91%	83%	74% (-11%)

	2019	2020
Number of HIV Tests	1,220,765	480,285 (-61%)
Number of newly diagnosed cases	12,778	8,058 (-37%)
Newly enrolled clients in Anti-Retroviral Therapy	11,654	8,429 (-28%)

Source: DOH (2021)

Drivers of declining healthcare services

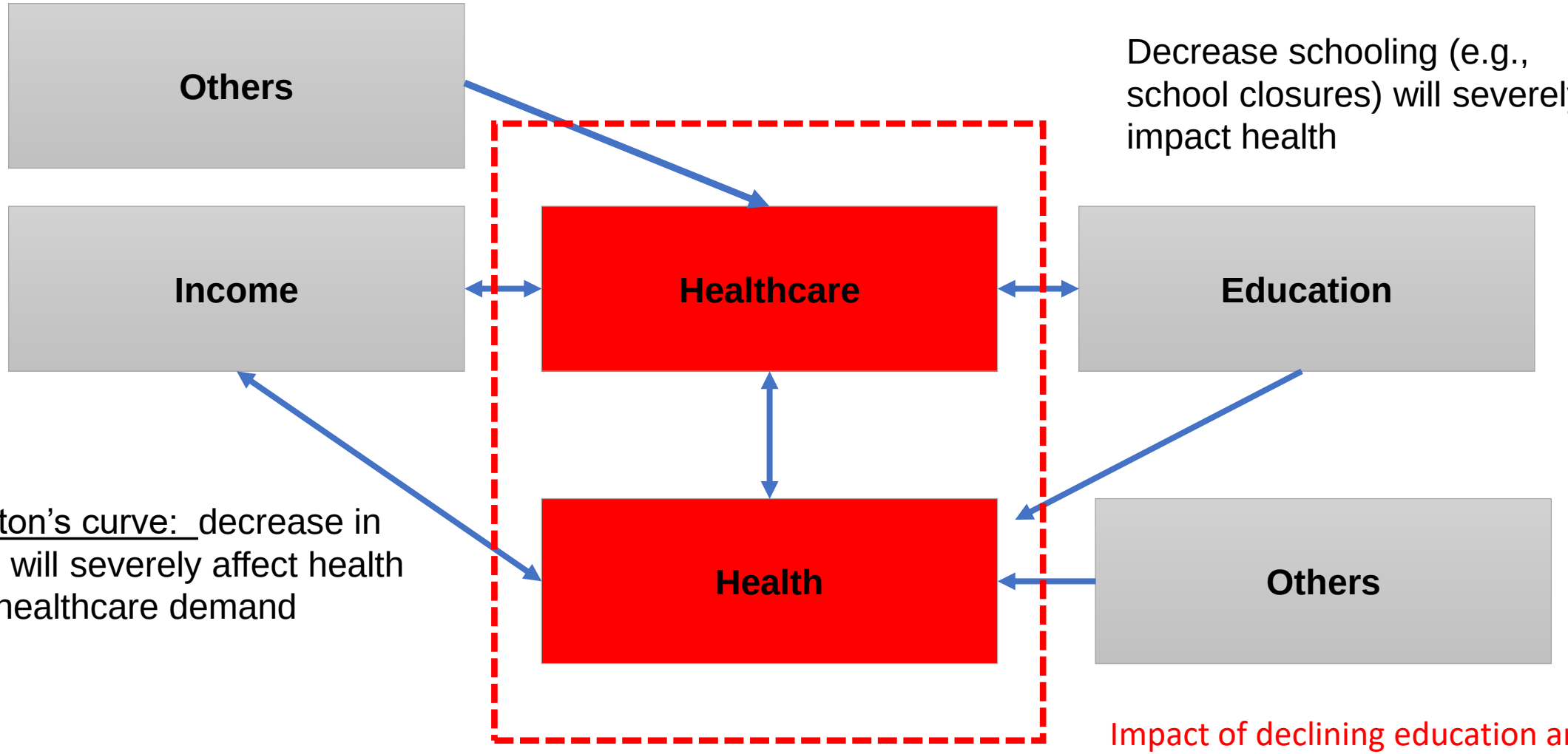
Demand

- ***Confidence/safety***
- ***Reduced income***
  - Income elasticity of healthcare demand (i.e., GDP declined by almost 10% in 2020)
  - High out-of-pocket spending (47% of total health spending)
  - Back of the envelope estimate: if income elasticity of healthcare demand (Acemoglu, 2013) is 0.7, 8% decline in household income (PSA, 2020) will reduce pre-pandemic hospitalization rate of 4% (NDHS, 2017) to 3.75%
- ***Mobility restrictions***

Supply

- ***Overrun health facilities***
- ***Re-allocation of resources***
  - For example, the reduction in uptake in TBDOTS services could be attributed to the dwindling of TB supplies because of re-allocation of human resources and diagnostic equipment to COVID response (e.g., Xpert machines used for TB diagnosis were re-purposed for COVID testing).

Framework in estimating productivity losses

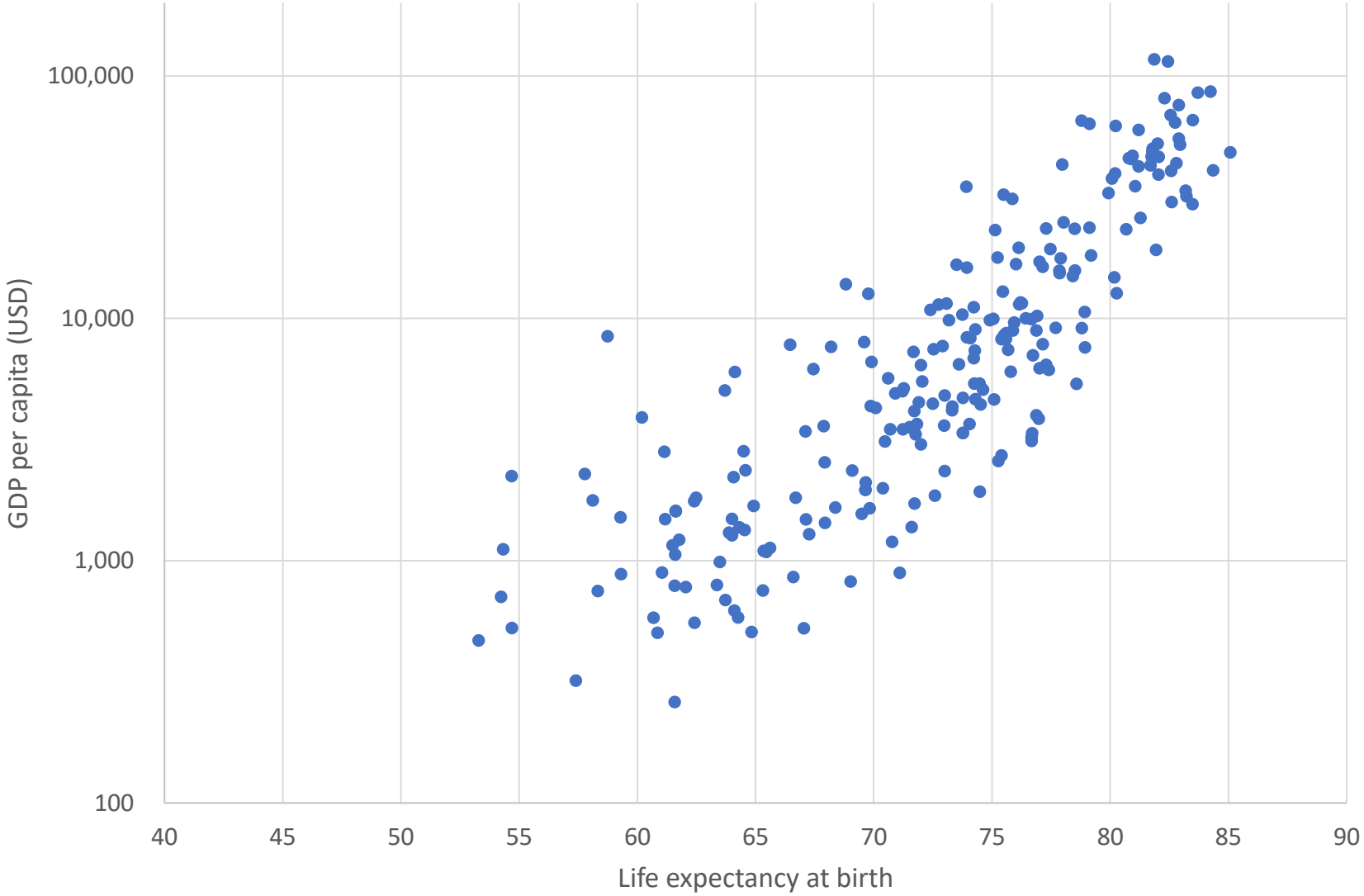


Decrease schooling (e.g., school closures) will severely impact health

Preston's curve: decrease in GDP will severely affect health and healthcare demand

Impact of declining education and income on health not included in the estimation of productivity losses

Preston's Curve



Estimation of productivity losses

COVID	Parameters
COVID Deaths or Years Life Lost (YLL)	$$YLL_i = \frac{N_i\,(1 - e^{-rL})}{r}$$ Where: YLL_i=Years Life Lost due to COVID-19 at age group i N_i = number of COVID-19 deaths at age group i r= discount rate (3%)
COVID Morbidities (Years of Life with Disability	$$YLD_{ij} = \frac{N_{ij}\,W_{ij}(1 - e^{-rL})}{r}$$ Where: YLD_{ij}=Years of Life with Disability due to COVID-19 at age group i and disease disposition group j (mild/asymptomatic, moderate, critical, severe, and long COVID) $N_{i\,j}$ = number of COVID-19 cases at age group i and disease disposition group j W_j = Disability weight at disease disposition group j r= discount rate (3%) L =expected life years

NON-COVID	Parameters
NON-COVID Years Life Lost (YLL) and NON-COVID Morbidities (YLL) - Decline in inpatient, outpatient - Increase in food insecurity and malnutrition - Decrease TB treatment and HIV ART - Mental Health - Decline prenatal care and immunization - NCD risk factors	$$PIF_i = \frac{(P_i - P_i^*)(RR - 1)}{RR}$$ Where: PIF_i=Population impact fraction at age group i P_i=Prevalence of inpatient/outpatient conditional to need at age group i before pandemic P_i^*= Prevalence of inpatient/outpatient conditional to need at age group i after pandemic RR_i= Relative Risk $ID_i = PIF_i\ x\ Mor_i$ Where: ID_i=indirect deaths due to decline in healthcare at age group i Mor_i=all-cause mortality at age group i The YLL due to indirect health effects then can be calculated using the formula: $$YLL_i = \frac{IDD_i\,(1 - e^{-rL})}{r}$$ The same process can be used to obtain the YLD due to indirect health effects. I just substituted all-cause mortality with total YLD from Institute for Health Metrics and Evaluation (IHME).

The long-run cost of the pandemic is Php 2.3T

	Lifetime years life lost (in billions)	Equivalent years of life lost
Forgone wages (pre-mature deaths)		
COVID premature deaths	94	284,863
Non-COVID deaths due to lack of healthcare	398	1,086,599
Forgone wages (morbidity)		
COVID morbidity (including long-COVID)	66	164,390
Non-COVID morbidities due to lack of healthcare (including new illnesses and risk due to COVID policy)	1,688	2,114,038
Total	**2,247**	**3,649,890**

Examples of increase DALYs because of deterioration of essential healthcare services?

	Equivalent years of life lost	Lifetime years life lost (in billions
Increase in food insecurity from 53% to 63% (leading to stunting); with Relative Risk (RR) of 1.5; estimated Pop. Attributable Fraction of 20%	622,359.74	633,844,009,925
TB DOTS treatment decline from 83% to 74% (leading to deaths and disability); with Relative Risk of 3.1%; estimated Pop. Attributable Fraction of 60%	78,941.37	28,943,300,645
ART for treatment decline from 46% to 33% (leading to deaths and disability)	34,388.13	16,810,888,538
Fully Immunized Children – from 69% to 48% (leading to deaths and disability)	318,744.43	278,250,983,779

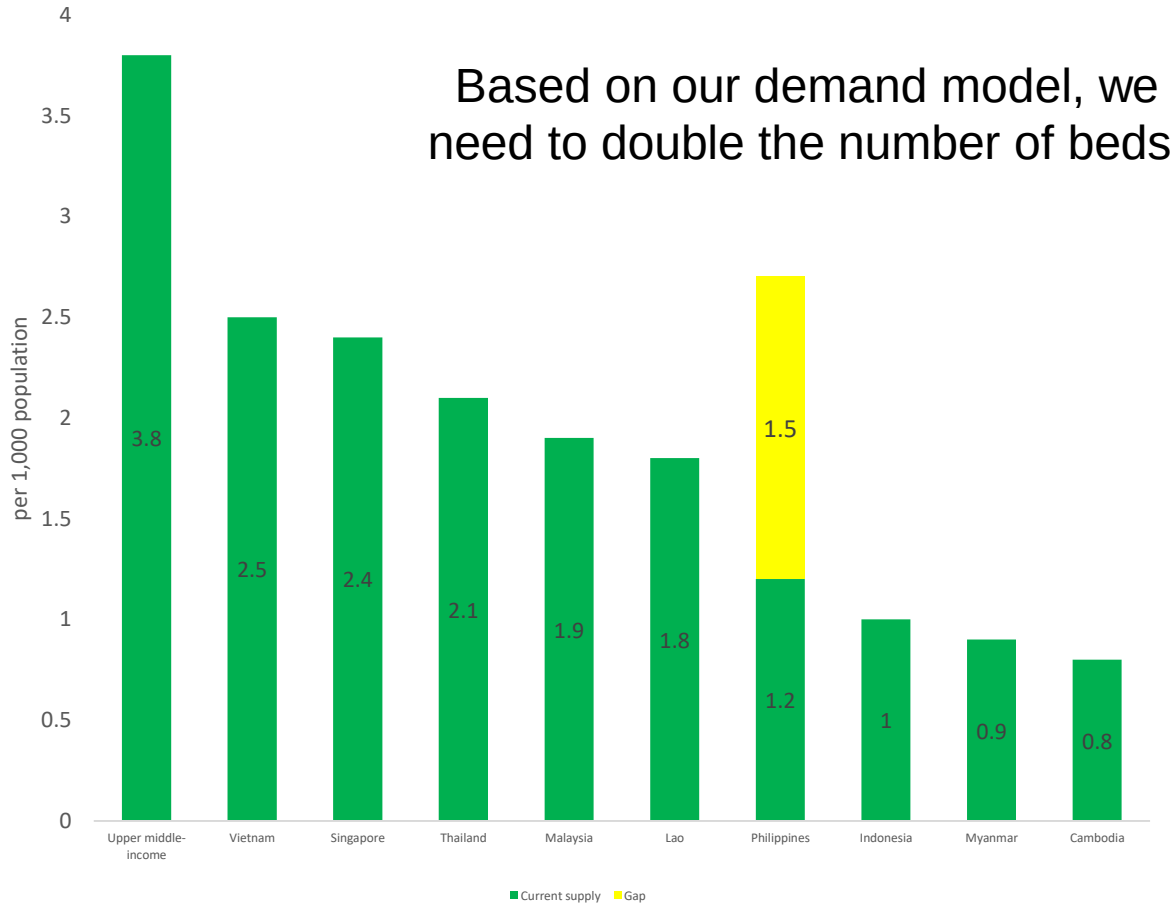
Summary

- In the Philippines, inpatient care for high-burden diseases sharply declined during the first year of the pandemic. The poorest population suffered the largest decline.
- Children are bearing the brunt of the pandemic.
- The number of consultations in RHUs significantly declined as well, particularly among vulnerable populations.
- The coverage of critical public health programs also suffered – a major blow to the country's efforts in achieving health system targets.
- The long-run productivity losses because of direct and indirect health impact of COVID-19 is Php2.3 trillion (in net present value).

Recommendation #1: Use opportunity to path-breaking health reforms (supply-side)

- Increase capital investment aligned with the Health Facility Development Plan (PHFDP).
- Primary care-oriented and integrated care reforms as envisioned in the UHC Act

Based on our demand model, we need to double the number of beds.



Recommendation #2: Investing in health information systems

- Implement standardized and non-fragmented Electronic Medical Records (EMRs) in all health facilities (i.e., primary care facilities) to allow quick surveillance and ability to monitor and evaluate health programs
  - Link compliance to financing reforms
  - Governance reforms within DOH (focus on standard-setting)
  - Provision of grants

- Incentivize the use of telemedicine
  - Innovative financing
  - Ensure quality standards

Recommendation #3:slowly transition COVID-19 to regular health/disease programming (governance)

- Control vs. elimination
- Establish COVID-19 control program within the DOH-DPCB similar to other disease burden like TB, HIV, NCDs
  - Planned holistically with other disease burden; integrated approach