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Ministry of Economy
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Regional Analysis on COVID-19 Preparedness and Response: focusing on excess mortality

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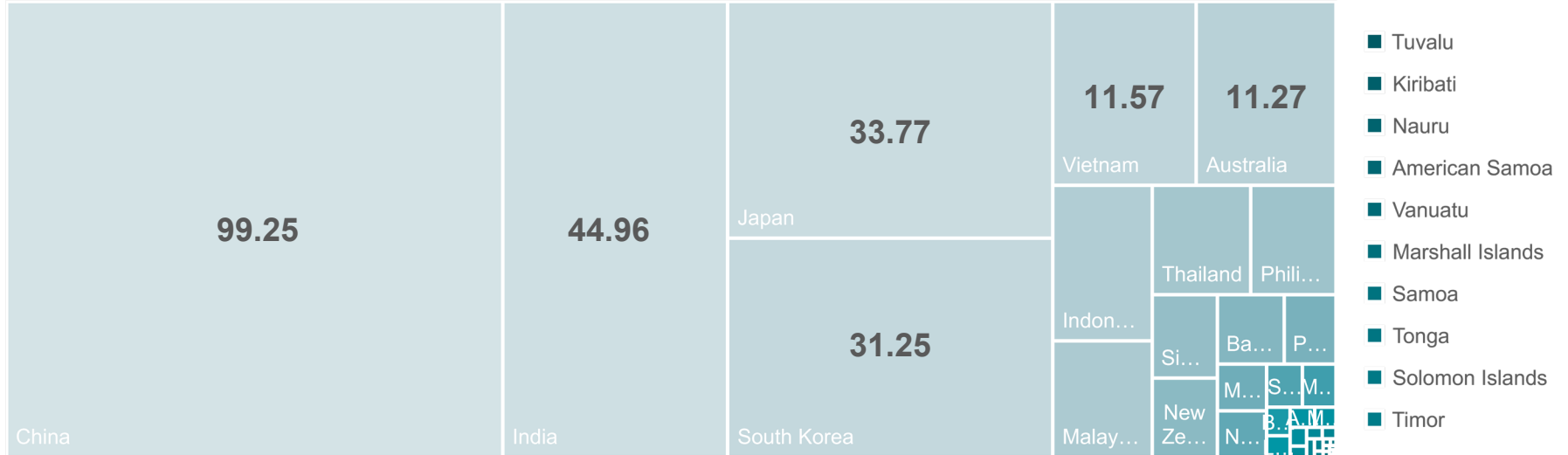
Socio-economic Impacts of COVID-19 Pandemic



COVID-19 pandemic in Asia-Pacific region

- **758.16 million** confirmed cases and **6.88 million deaths from COVID-19** were accumulated globally when the World Health Organization declared the end of the COVID-19 pandemic on May 5, 2023
- In Asia-Pacific region, the cumulative confirmed cases and reported deaths from COVID-19 were over **300.17 million** and **1.63 million**, respectively
- COVID-19 also had a significant impact on the economy, with the global average economic growth rate recording **-3.1%** in 2020

Cumulative cases (million) on May 5, 2023



Source: Our World in Data

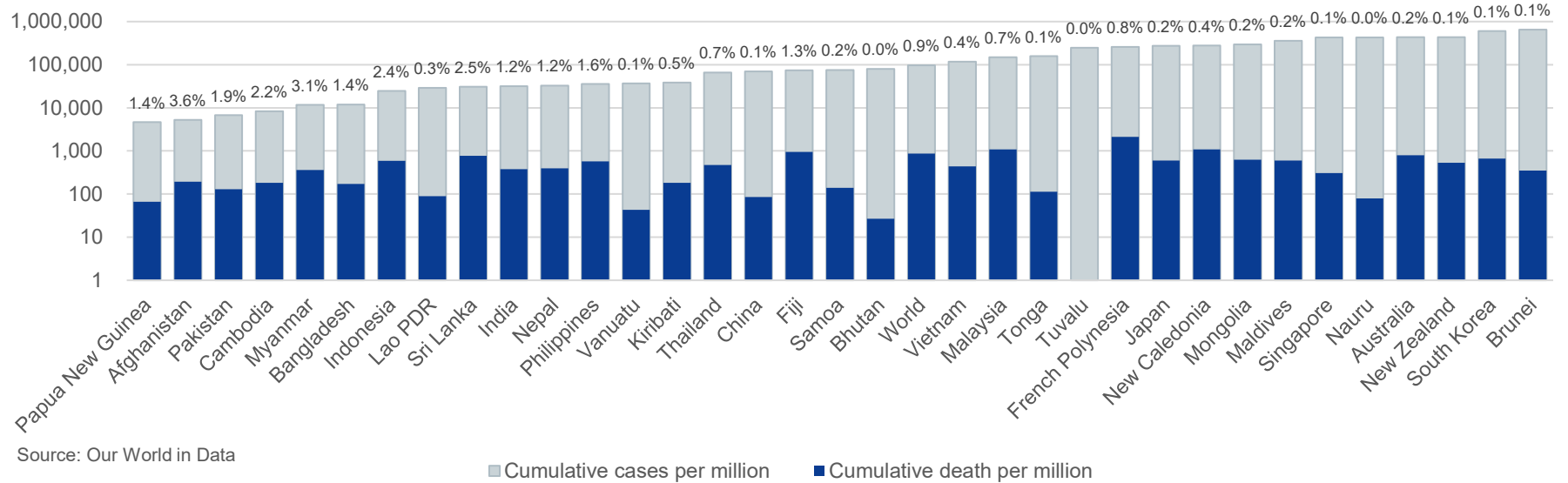
Cumulative deaths (thousand) on May 5, 2023



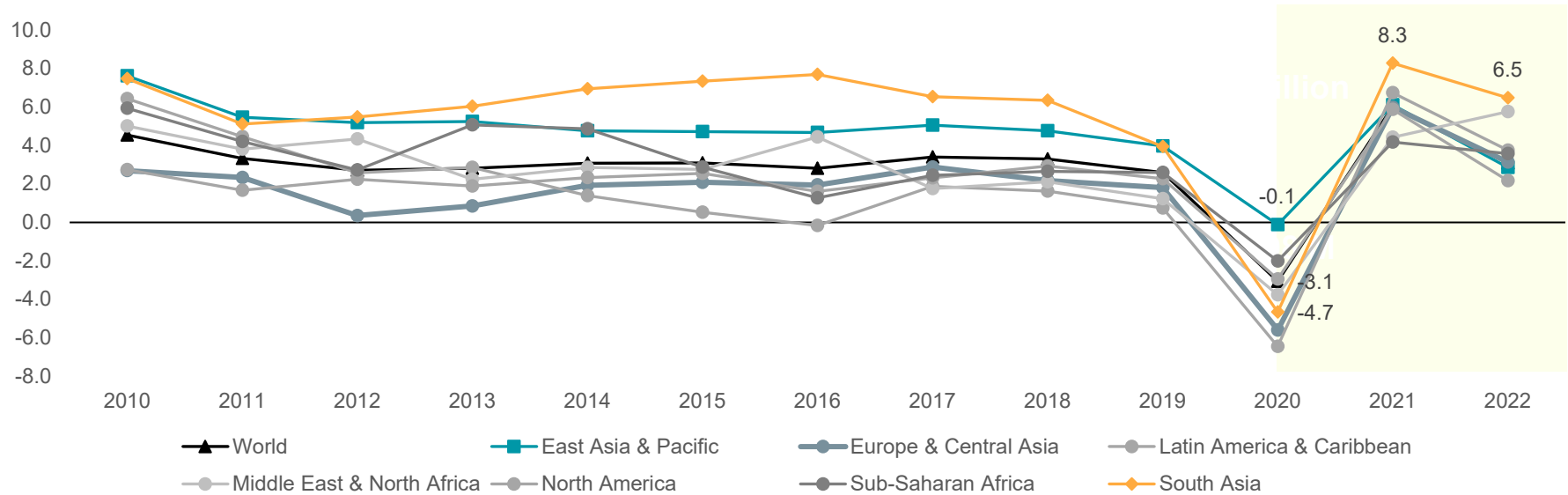
Source: Our World in Data



Cumulative cases and deaths (per million)



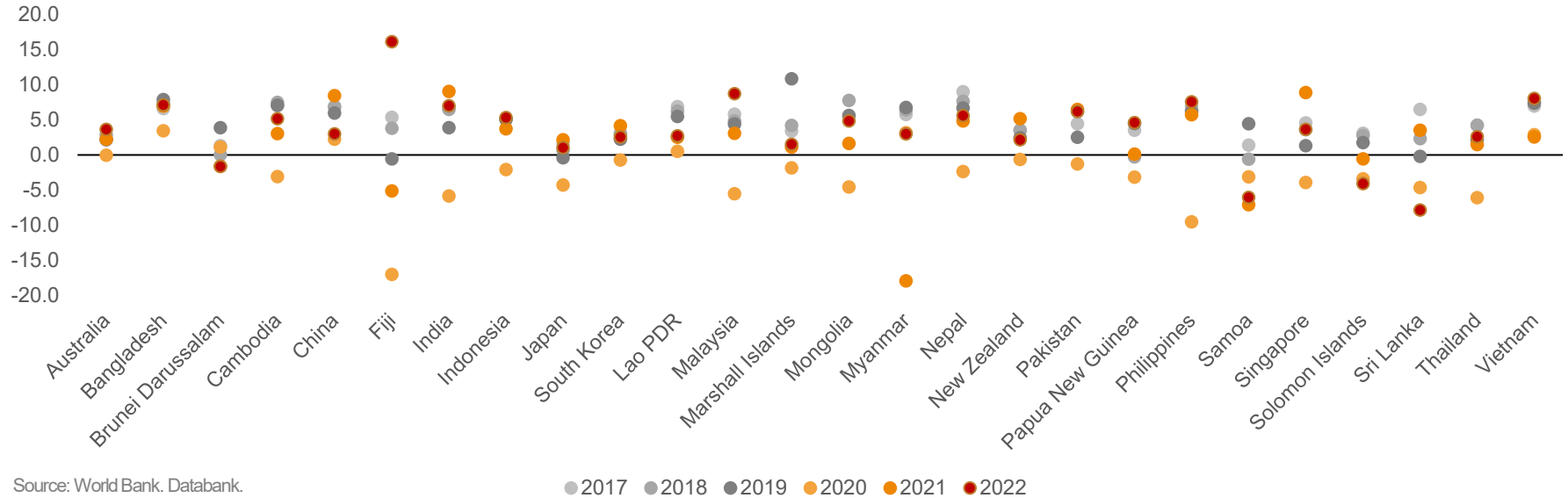
GDP growth by region, 2010-2022 (annual %)



Source: World Bank. Databank.



GDP growth by country, 2017-2022 (annual %)



Source: World Bank. Databank.



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Excess Mortality due to COVID-19 Pandemic





Excess mortality due to COVID-19 pandemic

- Difference between **the total number of deaths** that occurred during the pandemic and the number of deaths predicted based on past trends in all-cause mortality
- The total number of deaths **includes non-COVID-19 deaths in addition to deaths caused by SARS-CoV-2 infection**
- **Deaths due to accidents** might have decreased when movement restrictions were implemented
- Limited access to medical care might have increased **deaths among patients with acute and chronic diseases**
- There might have been an increase in **deaths due to mental health problems or lifestyle changes** that increased during the pandemic (Wang et al. 2022)

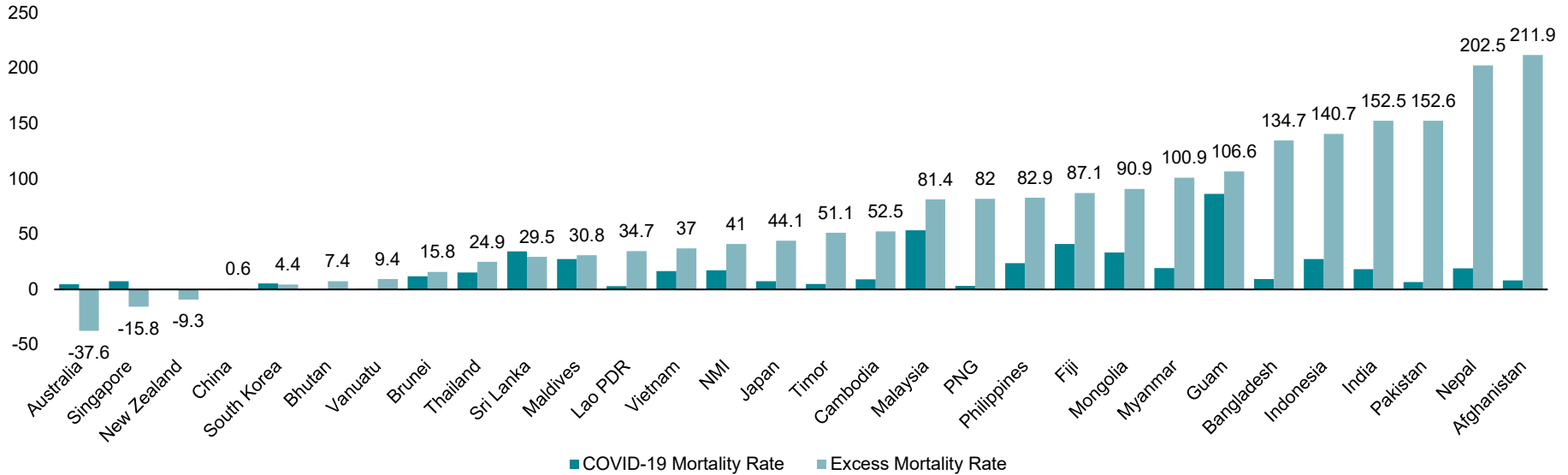
Excess mortality due to COVID-19 pandemic

- **Excess mortality**, deaths from all causes compared to the pre-COVID period, were estimated to be greater than deaths from COVID-19 due to differences in testing access, diagnostic criteria, and inconsistent certification of death for COVID-19
- Efforts to estimate excess mortality are being made in various fields, including the World Health Organization, journalism, and academia, showing variations in the value depending on methodology and data source
- **Approximately 15 million excess deaths** between 2020 and 2021 were estimated globally, with excess mortality concentrated in countries in South Asia (WHO, 2022)
- Similar to WHO, the scholars estimated **18.2 million excess deaths** and identified South Asia as one of the regions having highest number of excess deaths (Wang, et al., 2022)

Source: WHO Coronavirus (COVID-19) Dashboard; WHO. (2022). Global excess deaths associated with COVID-19; WANG, Haidong, et al. Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020–21. The Lancet, 2022, 399.10334: 1513-1536.



COVID-19 and excess mortality rate (per 100,000)



Source: WANG, Haidong, et al. Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020–21. The Lancet, 2022, 399.10334: 1513-1536..



Factors related to excess mortality due to COVID-19

- **Socioeconomic factors:** GDP per capita, the number of the elderly
- **Healthcare system factors:** the number of doctors/nursing staff, UHC, current health expenditure per capita
- **COVID-19 response:** NPIs including mask-wearing and social distancing, testing/tracing/isolation, vaccination
- **Healthcare system response:** securing COVID-19 beds, ensuring access to essential medical services, responding to increased need for mental health, etc.



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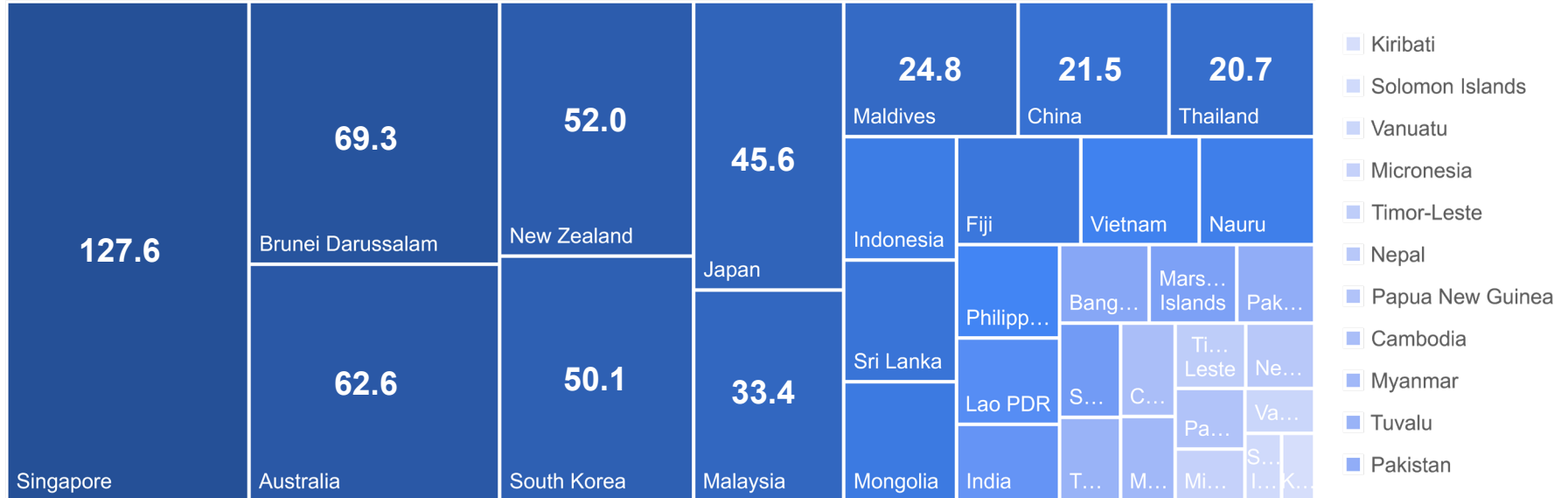
COVID-19 Preparedness



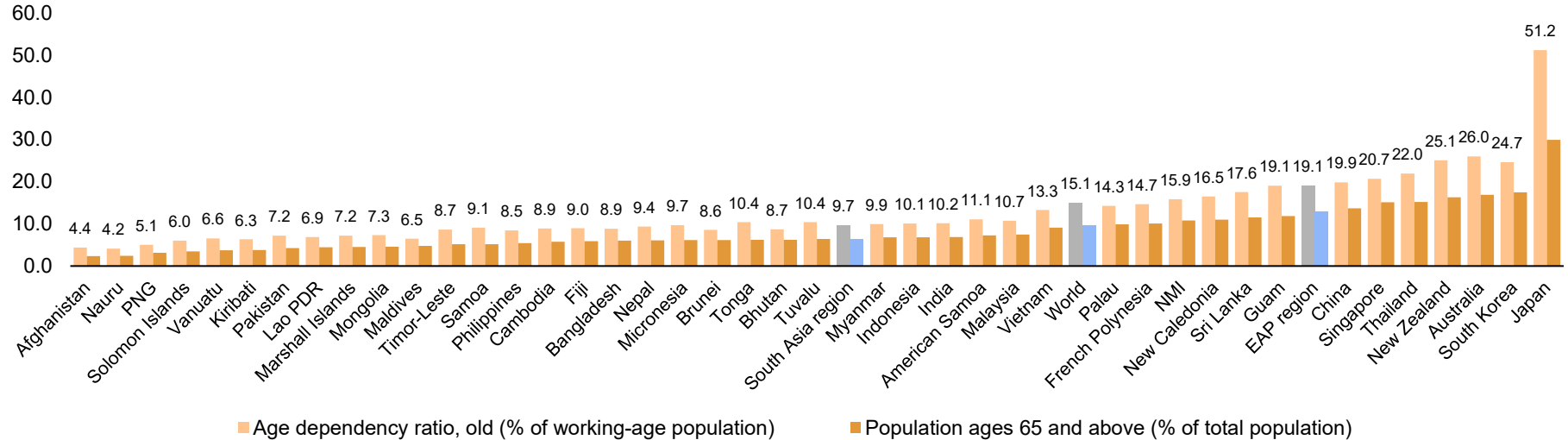


GDP per capita, 2022 (PPP, thousand \$)

Source: World Bank. Databank.



Population aging in Asia-Pacific region, 2022

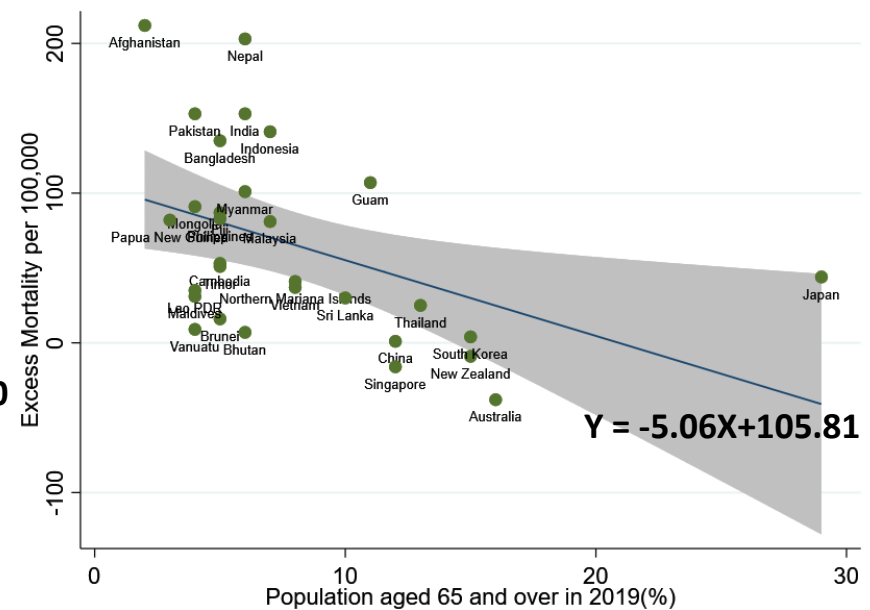
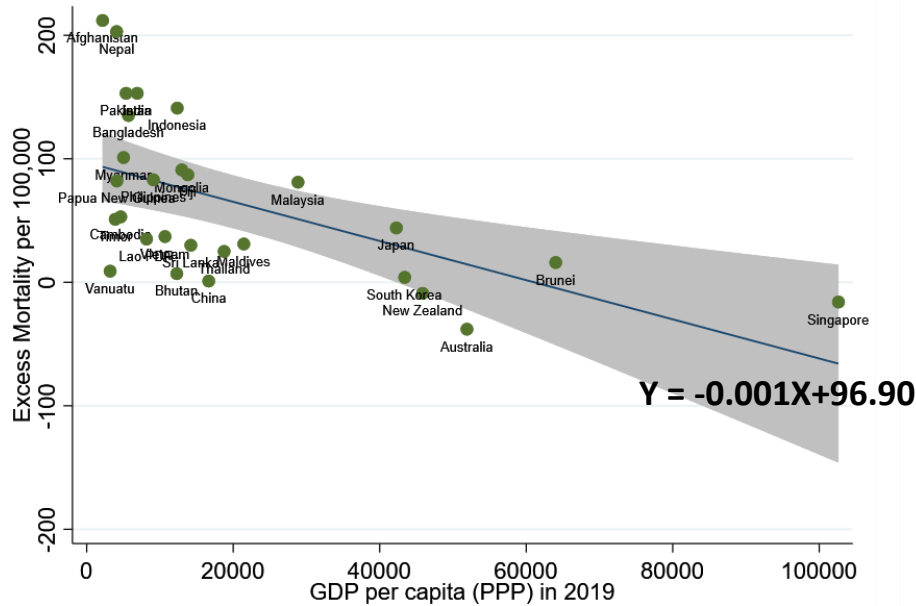


Source: World Bank. Databank.

* PNG: Papua New Guinea; NMI: Northern Mariana Islands

Excess mortality rate and related factors

Authors created using data from World Bank, Our-world-in-data, WANG, et al. (2022)



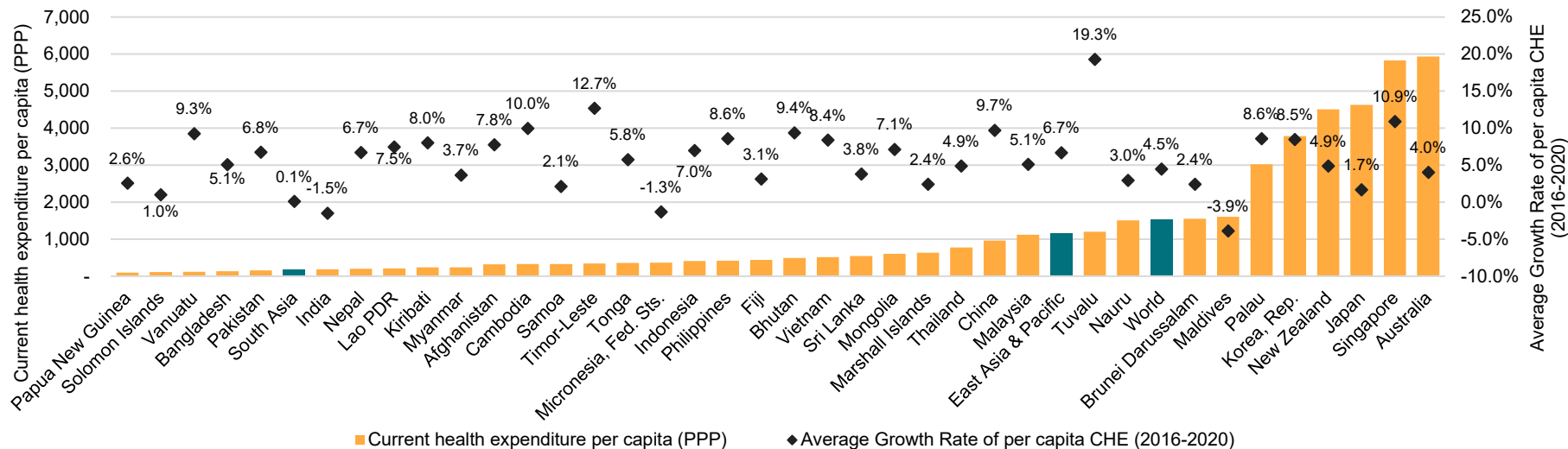


Preparedness in healthcare systems

- Challenges still exist in:
 - Fast growth in health expenditure per capita with underinvestment in public service provision (Bredenkamp, et al., 2015; Sengupta, et al., 2018)
 - Shortage of healthcare workforce including doctor, nurse, pharmacist, and dentists (Marc, et al., 2019)
 - Limited monitoring and evaluating capacity related to healthcare infrastructure and technological advances (e.g., hospital ownership and capacity, medical equipment, or pharmaceutical access)

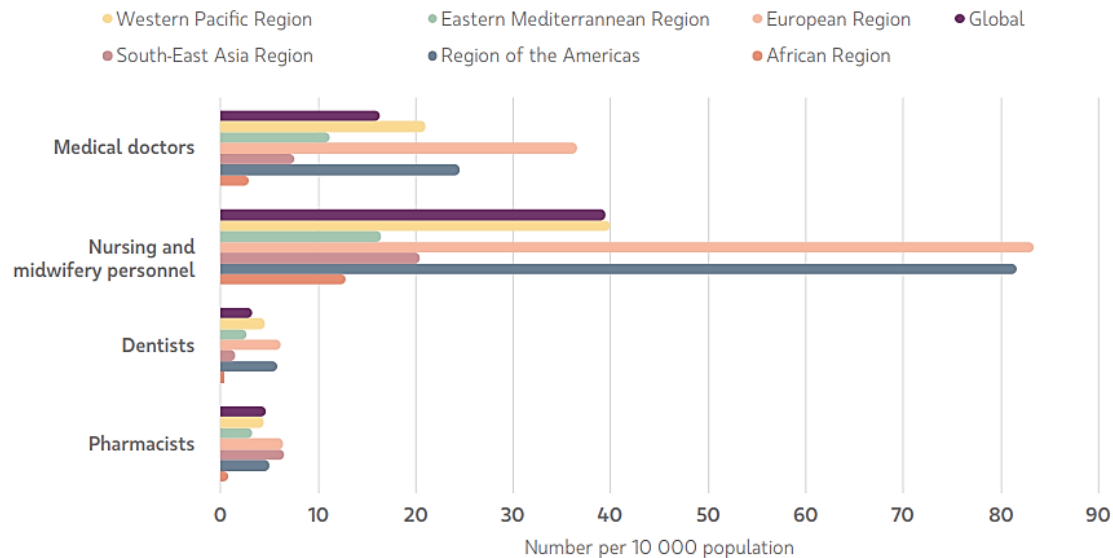
Source: BREDENKAMP, Caryn, et al. Emerging challenges in implementing universal health coverage in Asia. *Social science & medicine*, 2015, 145: 243-248.; SENGUPTA, Amit, et al. Tackling the primary care access challenge in South Asia. *bmj*, 2018, 363.; MARĆ, M., et al. A nursing shortage—a prospect of global and local policies. *International nursing review*, 2019, 66.1: 9-16.

Growth in current health expenditure per capita (2016-2020)



Source: World Health Organization.

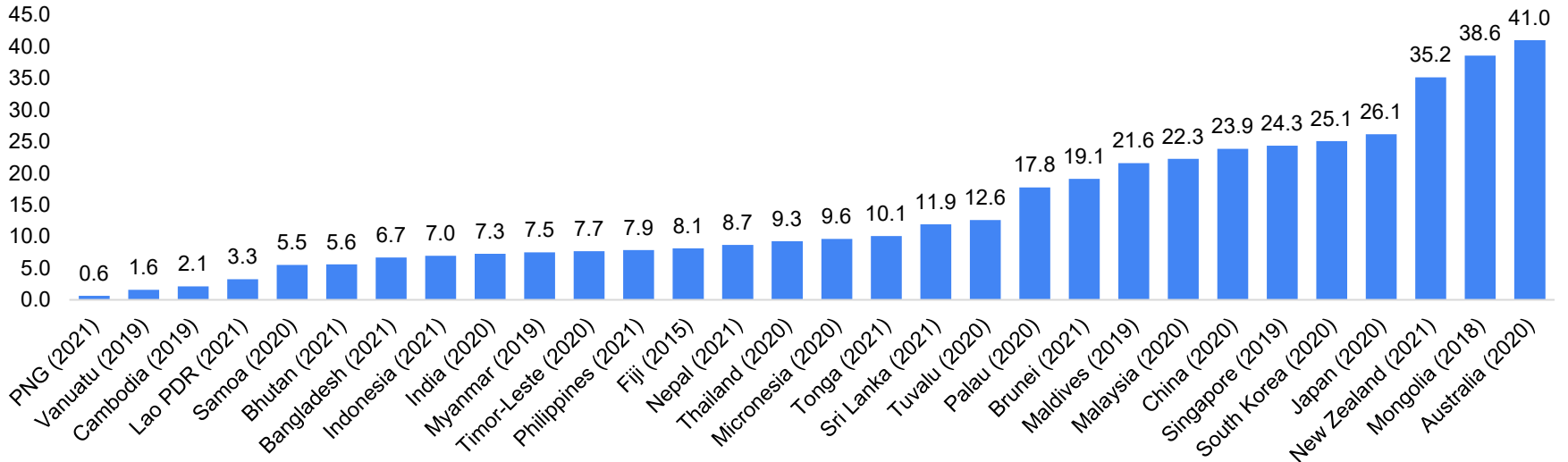
Density of healthcare workers per 10,000 population by WHO region (latest year)



Source: WHO. World Health Statistics 2022.



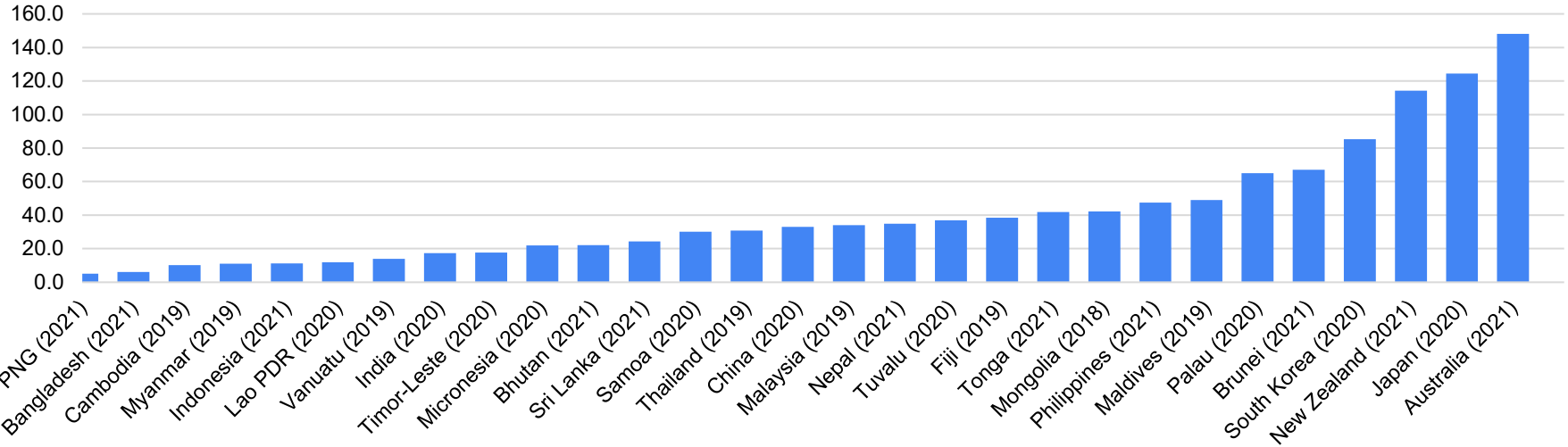
Medical doctors per 10,000 population (latest year)



Source: World Health Organization.



Nursing and midwifery personnel per 10,000 population (latest year)

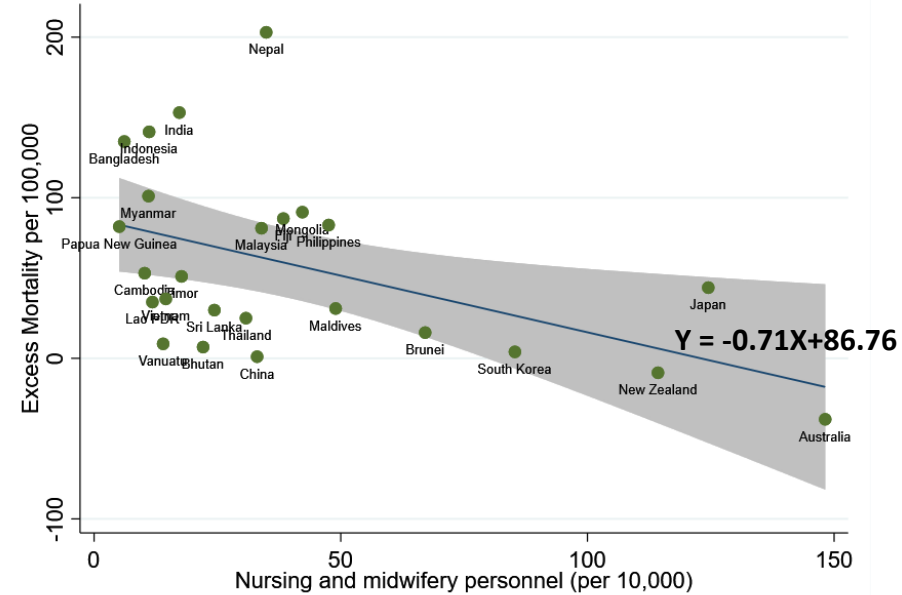
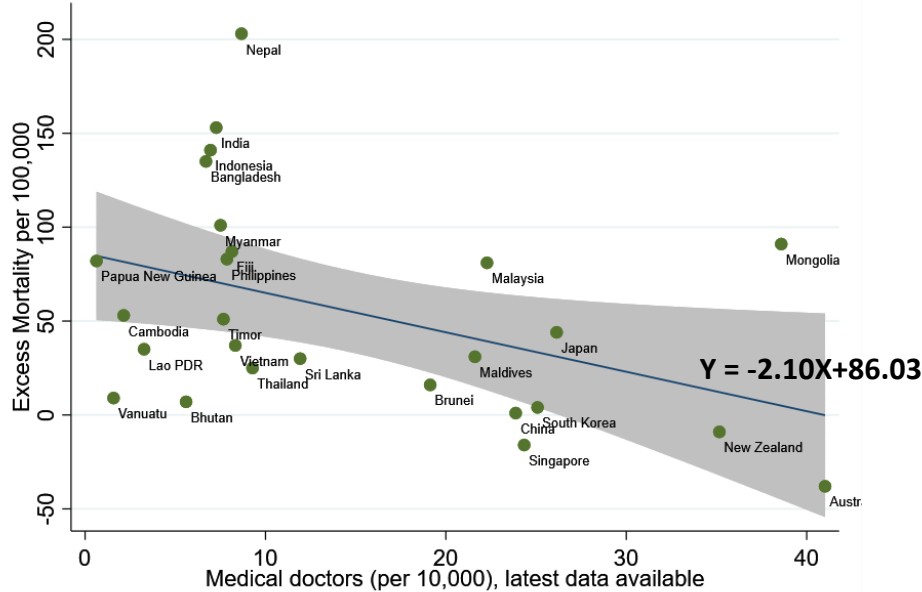


Source: World Health Organization.



Excess mortality rate and related factors

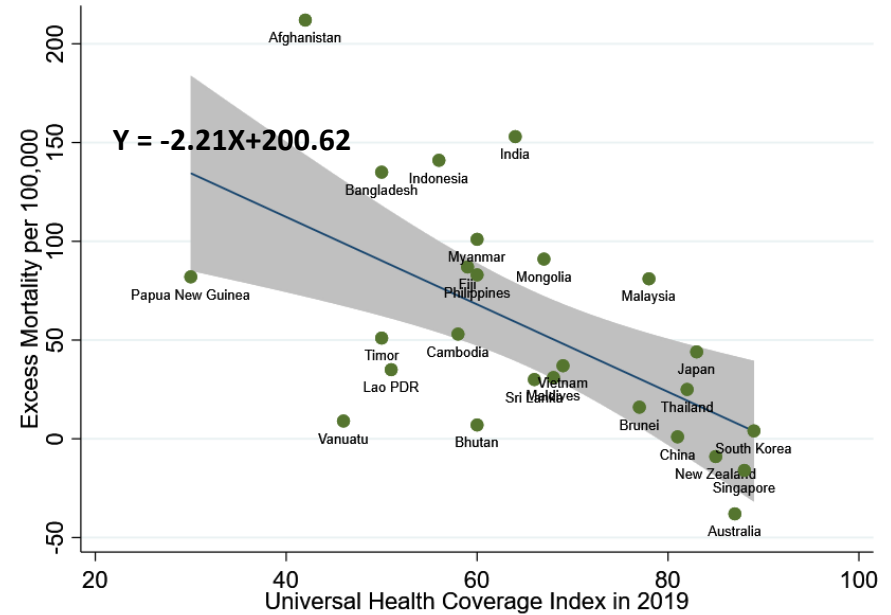
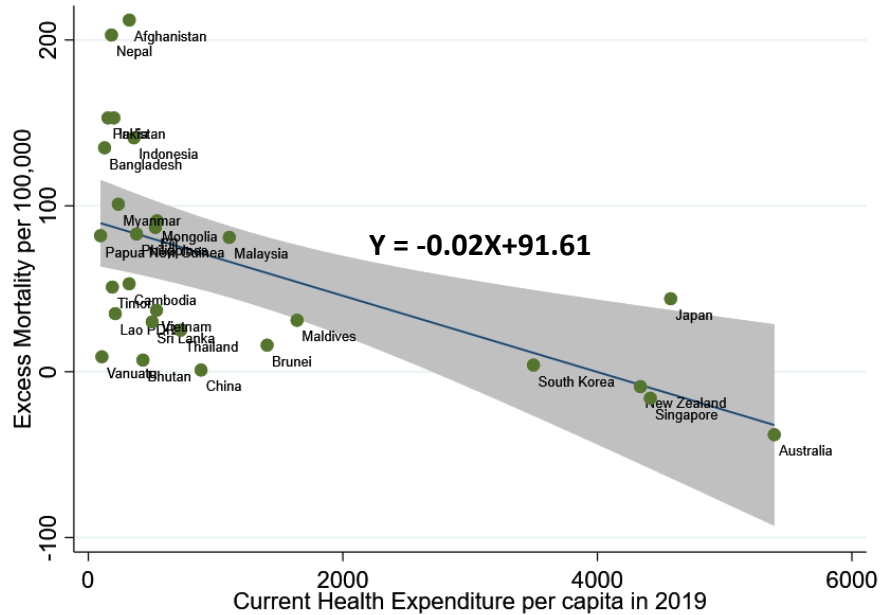
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Excess mortality rate and related factors

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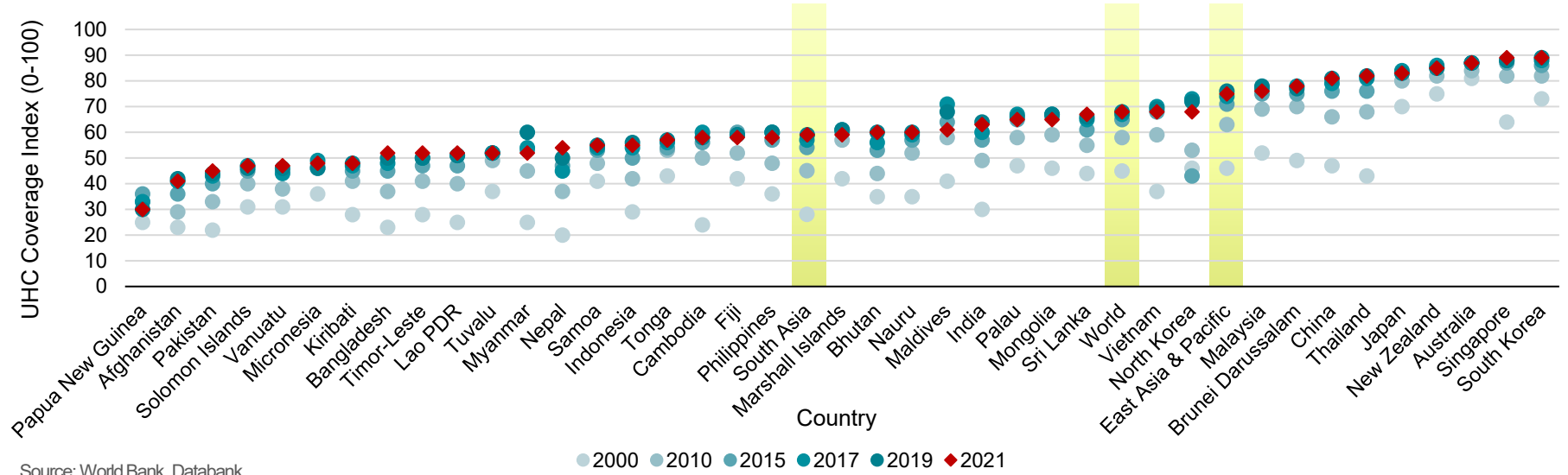


Preparedness in healthcare systems

- **Universal Health Coverage index** has been improved across the Asia-Pacific region:
 - By providing better service coverage and strengthening primary care
 - Its impacts on a proportion of households spending catastrophic health expenditure, which involves paying more than 10% of disposable income for medical expenses, vary within the region

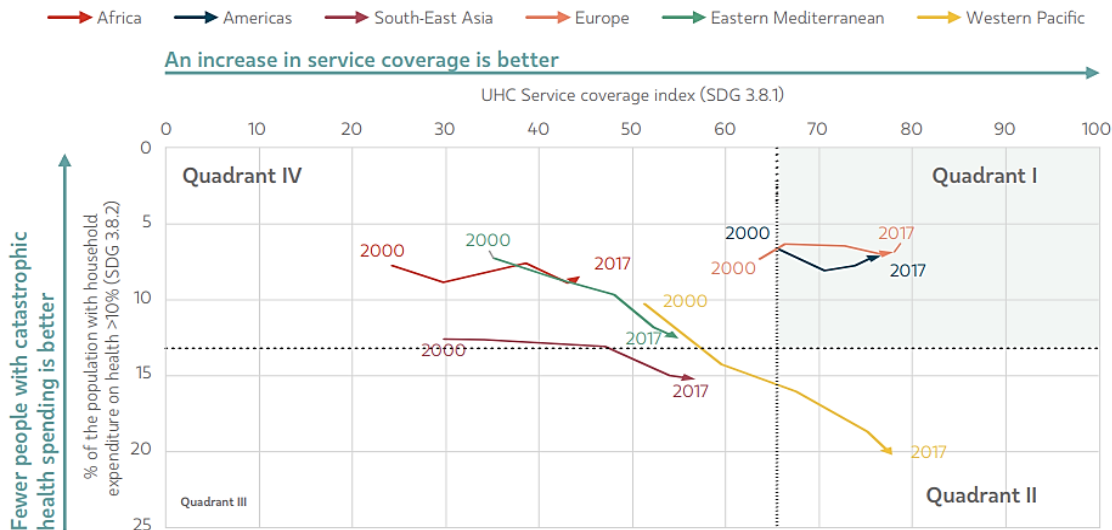


Universal Health Coverage Index



Source: World Bank, Databank.

Service coverage and catastrophic health spending (10% threshold), globally and by WHO region (2000–2017)



Note: The vertical dotted line corresponds to the 2017 global population-weighted proportion of the population with household out-of-pocket health expenditure exceeding 10% of their household budget (13.2% in 2017). The horizontal dotted line corresponds to the 2017 global population-weighted average UHC service coverage index (65) in 2017. Regional averages for both SDG indicators are population-weighted.

Source: SDG indicator 3.8.1: WHO global service coverage database, 2021 update; SDG indicator 3.8.2: WHO and World Bank global monitoring report on financial protection in health 2021 (2).



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COVID-19 Response



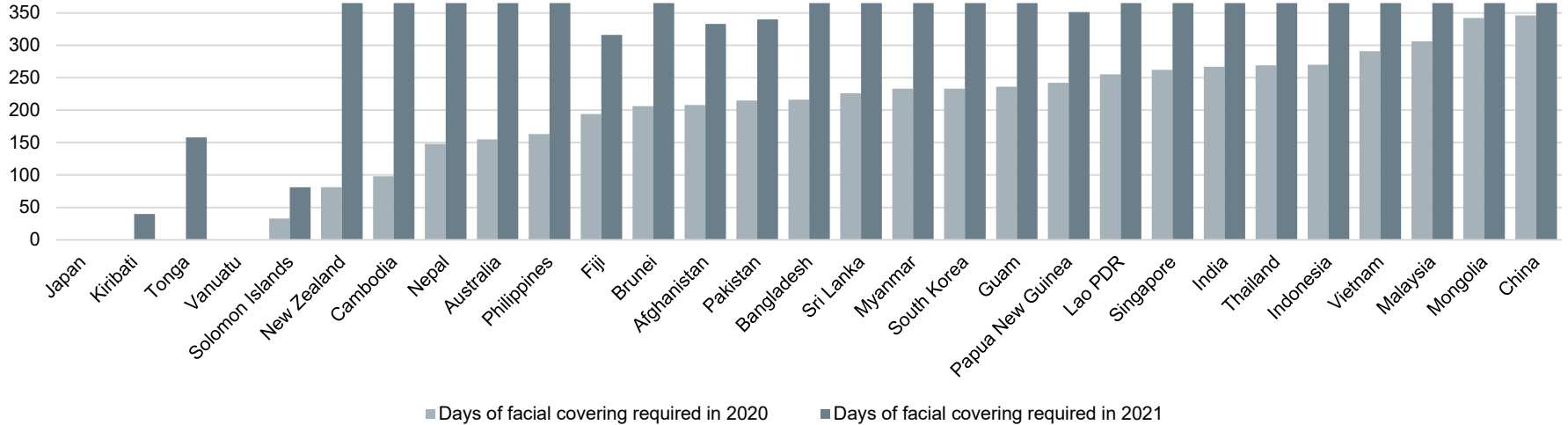
COVID-19 response and its impacts

- COVID-19 had disproportionate impacts on its prevalence and mortality as well as all-cause deaths by the country's **GDP per capita, elderly population, and relative income deviation**, other than policy responses (Chakrabarty, et al., 2023; Wang, et al., 2023)
- **Non-pharmaceutical interventions** (e.g. mask-wearing, school closure, travel bans, and public gathering restrictions) were primary policy responses while their impacts vary by country in the Asia-Pacific region (De Foo, et al., 2022; Sarkar, et al., 2020)

Source: DE FOO, Chuan, et al. COVID-19 public health and social measures: a comprehensive picture of six Asian countries. *BMJ global health*, 2022, 7.11: e009863.; SARKAR, Amitabha, et al. Public health preparedness and responses to the coronavirus disease 2019 (COVID-19) pandemic in South Asia: a situation and policy analysis. *Global Health Journal*, 2020, 4.4: 121-132.; CHAKRABARTY, Debajyoti, et al. Relative deprivation, inequality and the Covid-19 pandemic. *Social Science & Medicine*, 2023, 324: 115858.; WANG, Haidong, et al. Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020–21. *The Lancet*, 2022, 399.10334: 1513-1536.



Facial covering policy in 2020-2021



Source: Oxford COVID-19 Government Response Tracker

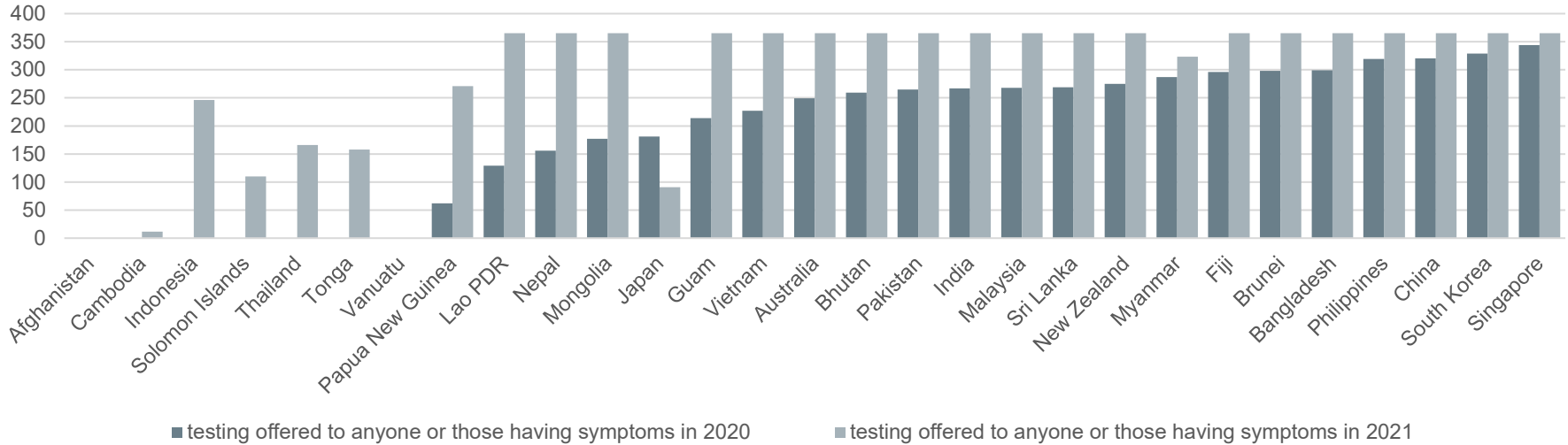
Healthcare system response

- Island countries and low-income countries in the Asia-Pacific region had difficulty with implementing **diagnostic tests** and **vaccine rollout** due to limited medical infrastructure and purchasing power (Lim, et al., 2020)
- Countries put efforts into **technological innovation and capacity-building such as telemedicine** to guarantee the continuity of essential service provision to minimize delayed care, cost burden, and excess deaths (Gudi, et al., 2021; Birtar, et al., 2021)

Source: LIM, Jue Tao, et al. Revealing regional disparities in the transmission potential of SARS-CoV-2 from interventions in Southeast Asia. Proceedings of the Royal Society B, 2020, 287.1933: 20201173.; GUDI, Nachiket, et al. Telemedicine supported strengthening of primary care in WHO South East Asia region: lessons from the COVID-19 pandemic experiences. BMJ Innovations, 2021, 7.3.; BITAR, Hind; ALISMAIL, Sarah. The role of eHealth, telehealth, and telemedicine for chronic disease patients during COVID-19 pandemic: A rapid systematic review. Digital health, 2021, 7: 20552076211009396.



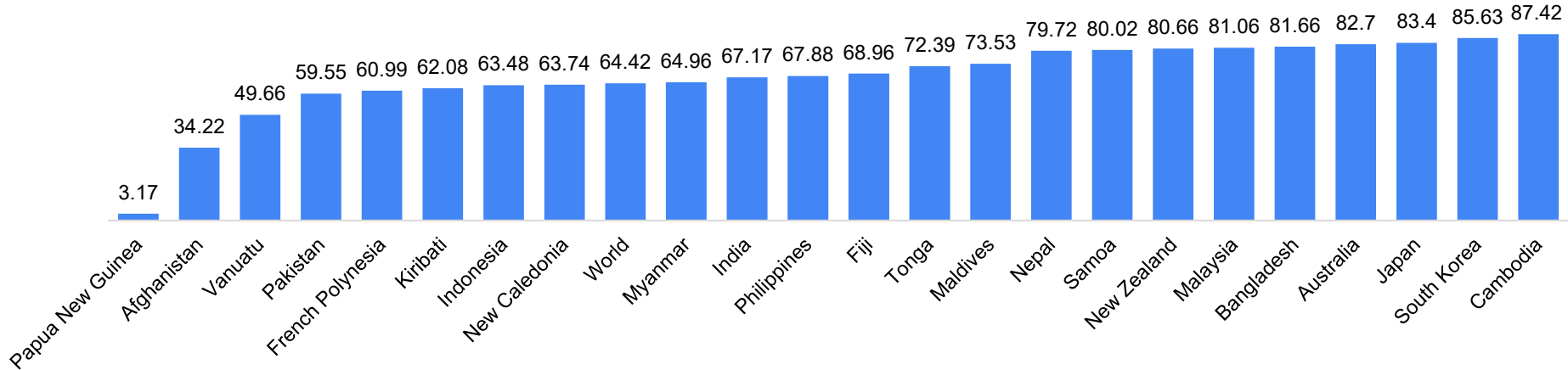
Testing policy in 2020-2021



Source: Oxford COVID-19 Government Response Tracker



Share of people with a complete vaccination (%)



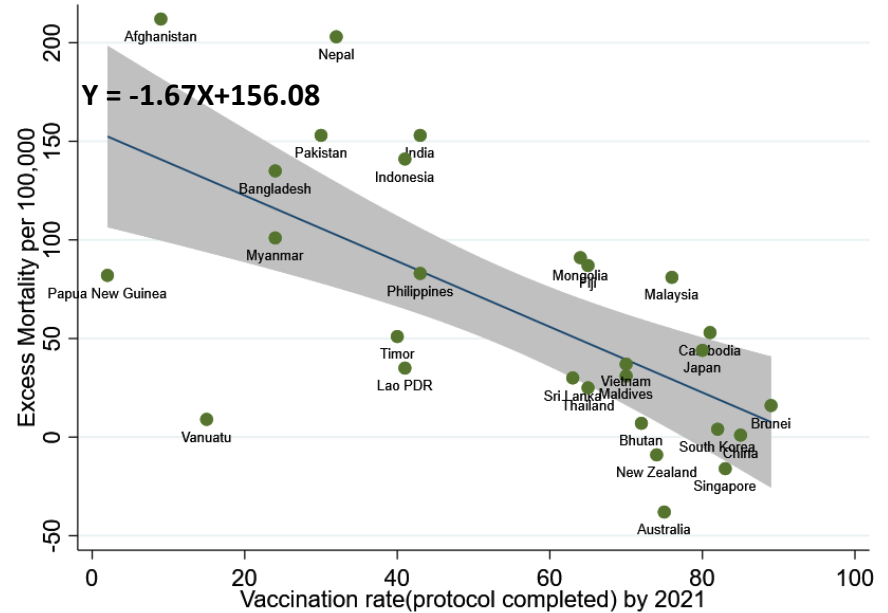
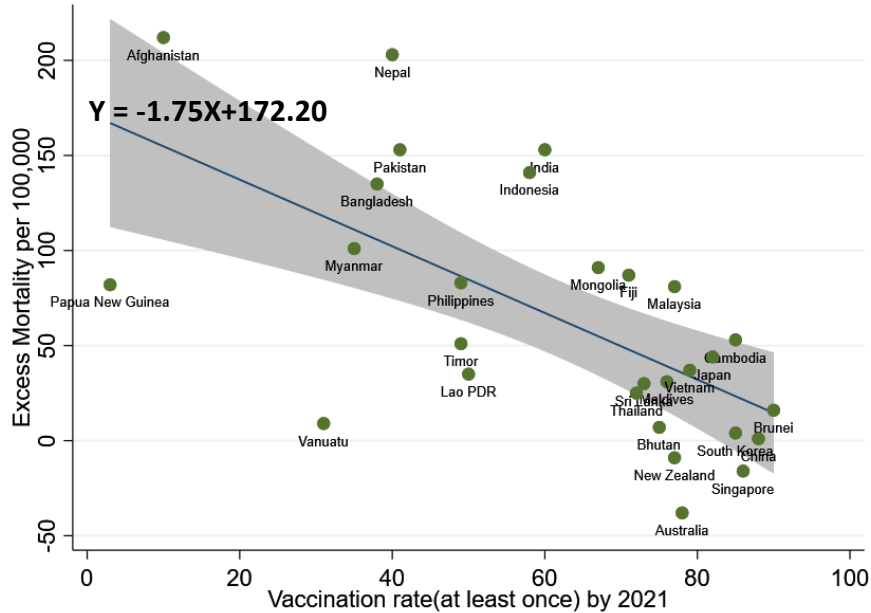
Note: Reported vaccination rates are presented as of the date closest to May 5, 2023.

Source: Our World in Data



Excess mortality rate and related factors

Authors created using data from World Bank, Our-world-in-data, WANG, et al. (2022)



Healthcare system response

- Securing hospital beds to treat critically ill COVID-19 patients, ensuring access to essential medical services, and responding appropriately to increased need for mental health
- A **Korean case** for ensuring essential services for non-COVID-19 patients (Lee et al., 2022)
 - “**National relief hospitals**” designated at the end of February 2020
 - One of the requirements was that the **hospital should have two separate outpatient treatment areas** so that those having respiratory symptoms might not come in contact with non-respiratory patients (MOHW, 2020)
 - **Additional fees for infection prevention and management** were set to compensate for the extra effort to maintain the separation

Source: Lee, T., Kim, H., Cho, S. I., You, M., Chung, W., and Moon, J. 2022. Country Case Study on COVID-19 Preparedness and Response: Republic of Korea, 2022, Washington, DC: World Bank Group.; MOHW. 2020b. “254 ‘National Relief Hospitals’ designated.” News Release, March 4, 2020 (accessed on July 7, 2021).



Lessons from pandemic preparedness and response

- Excess mortality rates vary by basic characteristics such as income level and population structure
- However, all-cause mortality during COVID-19 was significantly lower in countries with **stronger systematic capacity, willingness to pay, and strengthened policy response in health sectors** across countries having similar income levels
- Investments in medical technologies can also contribute to a global response, while national strategies for vaccine rollout and risk communication matter to prevent vaccine hesitancy and infodemics
- **Medical resources and health infrastructure for essential health services** must be secured to minimize financial and disease burdens

Thank you

