



# National disability weights in Japan: finding from the Japanese disability weight measurement study

## + case studies of the disease burden use in policy making in Japan

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## Working experience

- *Assistant Professor, The University of Tokyo*
- *Independent Expert Group, Global Nutrition Report*
- *Consultant, Bill & Melinda Gates Foundation Japan Office*
- *Advisor, World Health Organization Centre for Health Development*
- *Consultant, SEEK Development*
- *Senior Fellow, Tokyo Foundation for Policy Research*

## Research interests

- Global Burden of Disease (Japan focal point)
- Global Health Policy and Diplomacy
- Universal Health Coverage
- Nutrition Science and Policy
- Health Emergency and Disaster Risk Management/Health-EDRM
- Pandemic Prevention, Preparedness and Response

# Value of disease burden for decision making

- Decision-makers need a comprehensive and comparable picture of the diseases, injuries, and risk factors that impact health across time, sex, and ages.
- Many countries utilize the disease burden as an important benchmark of policy and research development.
- Utilization of the disease burden
  - Comparison of health status
  - Quantification of health inequality
  - Prioritization in research and development (R&D)

# Disability weight

Number on a scale from 0 to 1 reflecting the severity of health loss

**A new set of global disability weight (DWs) for the GBD  
2013 study included little data for countries in East Asia**

Nomura *et al.* *Population Health Metrics* (2021) 19:21  
<https://doi.org/10.1186/s12963-021-00253-4>

Population Health Metrics

RESEARCH

Open Access

## How do Japanese rate the severity of different diseases and injuries?—an assessment of disability weights for 231 health states by 37,318 Japanese respondents



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<https://doi.org/10.1186/s12963-021-00253-4>

# A disability weight study in Japan

- We conducted a web-based survey in 2019 to estimate DWs for the Japanese population.
  - The same questionnaire as the GBD 2010 and European DW study
  - 231 health states, including 5 new health states

# Lay description of health states

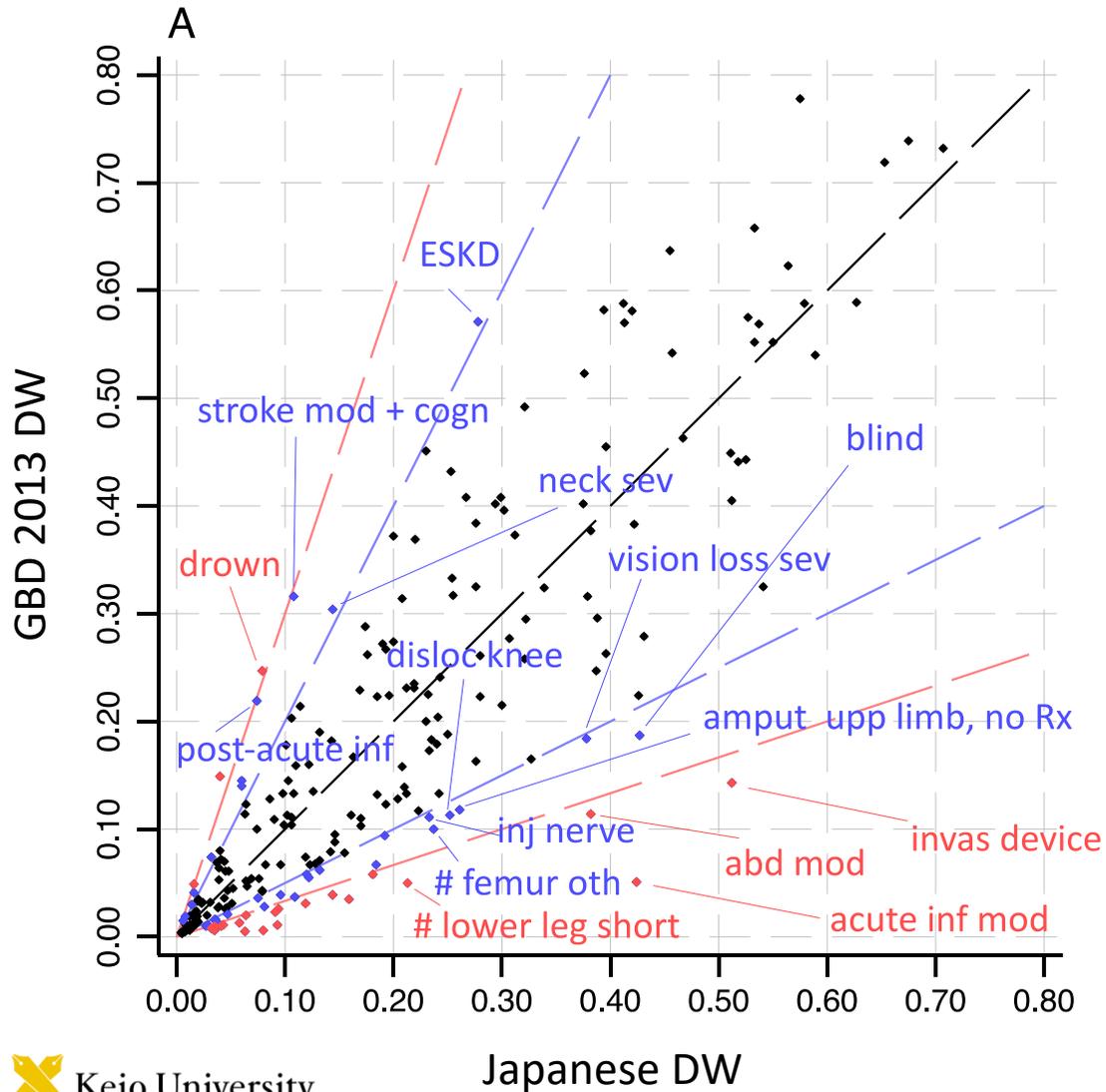
- DWs for a set of 231 health states were assessed.
  - 166 health states that were included in the GBD 2010 DW study and repeated in unaltered form in the European study (GBD 2010 original)
  - 33 health states for which the lay descriptions were revised for the European DW study (GBD 2010 modified)
  - 27 health states that were included only in the European DW study (European original)
  - 5 new health states (drug dependence, mild drug dependence; vaginal discharge; and cancer-post treatment and dermatitis)

# Study population –a web survey company' panel

- The panel included those aged from 18 to 70 years old.
- A quota sampling method based on age, gender, and prefecture population ratios obtained from the 2015 National Census – 37,318 participants.
- Participation was voluntary and first-come-first-served.
- The survey began on 25 January 2019, and the target was reached on 30 January 2019.

# Disability weights in Japan

## Comparison of Japanese DWs and GBD 2013 DWs: (A) all values



- Overall, a high correlation between Japanese DW and GBD 2013 DW was observed (0.88 for Spearman's correlation coefficient), although there was some disagreement.
- Out of 226 health states, 55 (24.3%) showed more than a **twofold difference**, of which 41 (74.6%) had a higher value in Japanese DW.
- More than a **factor-of-three difference** was found for 23 health states (13.0%), of which 20 (87.0%) were health states with higher DW in Japan.

The black line is a diagonal line, representing equivalence between Japanese and GBD 2013 DWs. The **blue** line represents a factor-of-two difference, and the **red** line represents a factor-of-three difference



# Disability weights in Japan

Regression analysis results for proportional differences between the Japanese DW and GBD 2013 DW for 226 comparable health states

Symptom (number of lay descriptions*)	Coefficient (95% CI) [%]	P-value
1. Mobility (47)	-31.4 (-74.6 to 11.8)	0.153
2. Pain (112)	51.0 (22.3 to 79.7)	<0.01
3. Mental symptom (54)	-85.4 (-123.7 to -47.0)	<0.001
4. Fatigue (40)	-23.8 (-57.9 to 10.2)	0.169
5. Disfigurement (23)	133.0 (-4.5 to 270.6)	0.058
6. Sensory symptom (18)	49.1 (8.5 to 89.7)	<0.05
7. Infection/diarrhoea (14)	-6.1 (-107.9 to 95.6)	0.906
8. Substance use (4)	-68.6 (-119.0 to -18.1)	<0.01
9. ADL (86)	-9.7 (-46.3 to 27.0)	0.603
10. Cognitive symptom (31)	-23.7 (-49.5 to 2.1)	0.072
11. Others (75)	-49.2 (-74.5 to -23.9)	<0.001

- The symptoms of **pain** and **sensory symptoms** were statistically significantly associated with a higher Japanese DW than the GBD 2013 DW.
- **Mental symptoms** and **substance use** were statistically significantly associated with a lower Japanese DW than the GBD 2013 DW.

# Summary

- This study has provided an empirical basis for DWs that are specific to Japan.
- Despite high correlation, some disagreement between Japanese DWs and GBD 2013 DWs were observed.
- Our findings suggest sizeable cultural differences in perceptions of the severity of key domains of ill health among the Japanese with greater severity assigned to **pain** and **sensory loss** but lower severity to **mental** and **substance use disorders**.
- Future DW studies cover the populations that are not represented in the GBD 2013 DWs.

# Guiding policy in Japan – case studies

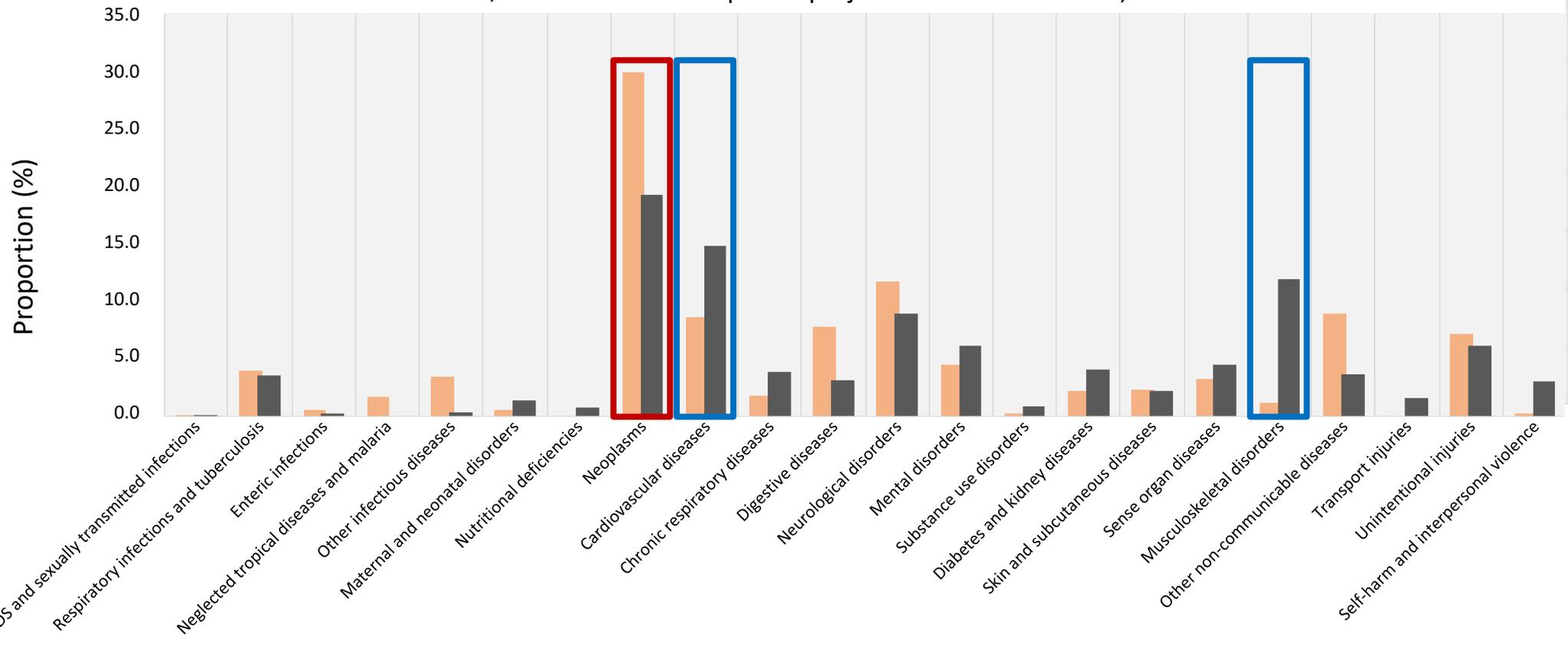
# #1 Prioritization – health R&D funding vs DALYs in Japan

## Limited alignment of disease-specific public R&D funding vs DALYs in Japan

\*Presented at the Science and Technology Subcommittee of the Science Council of the Ministry of Health, Labour and Welfare in 2019.

3.0 billion USD in 2015–2016; 49.5% for disease-specific projects

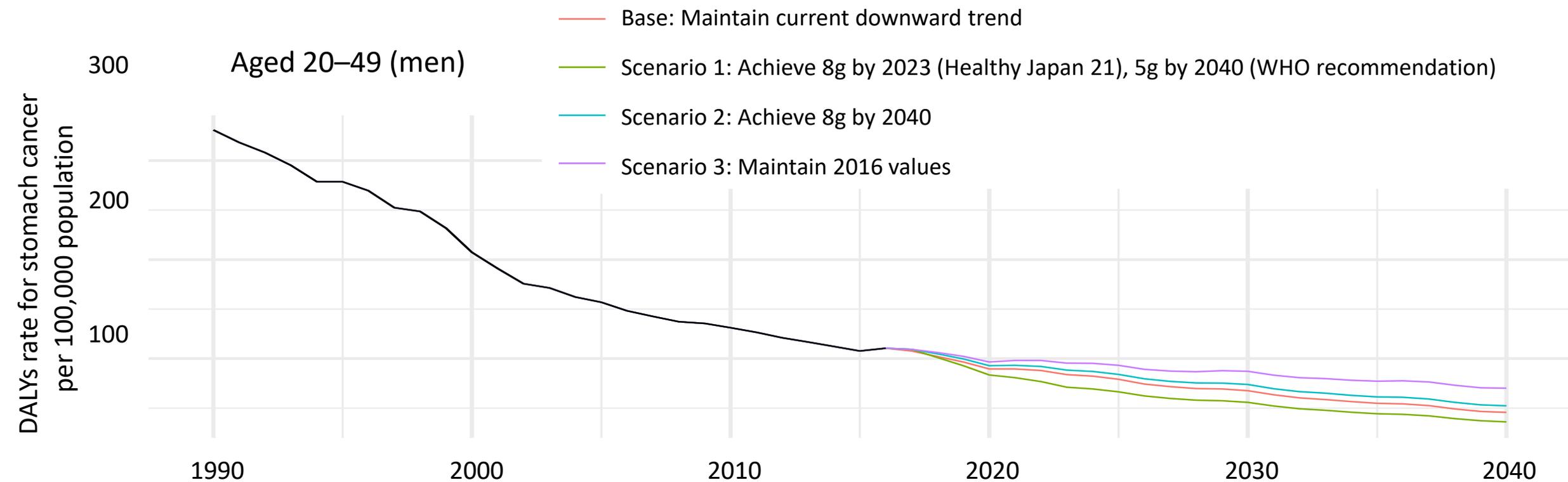
Funding (%)  
DALYs (%)



**Nomura S**, et al. Limited alignment of publicly competitive disease funding with disease burden in Japan. *PLoS One* 2020; **15**(2): e0228542.

# #2 Measuring policy impact – impact of low-sodium policies on health promotion

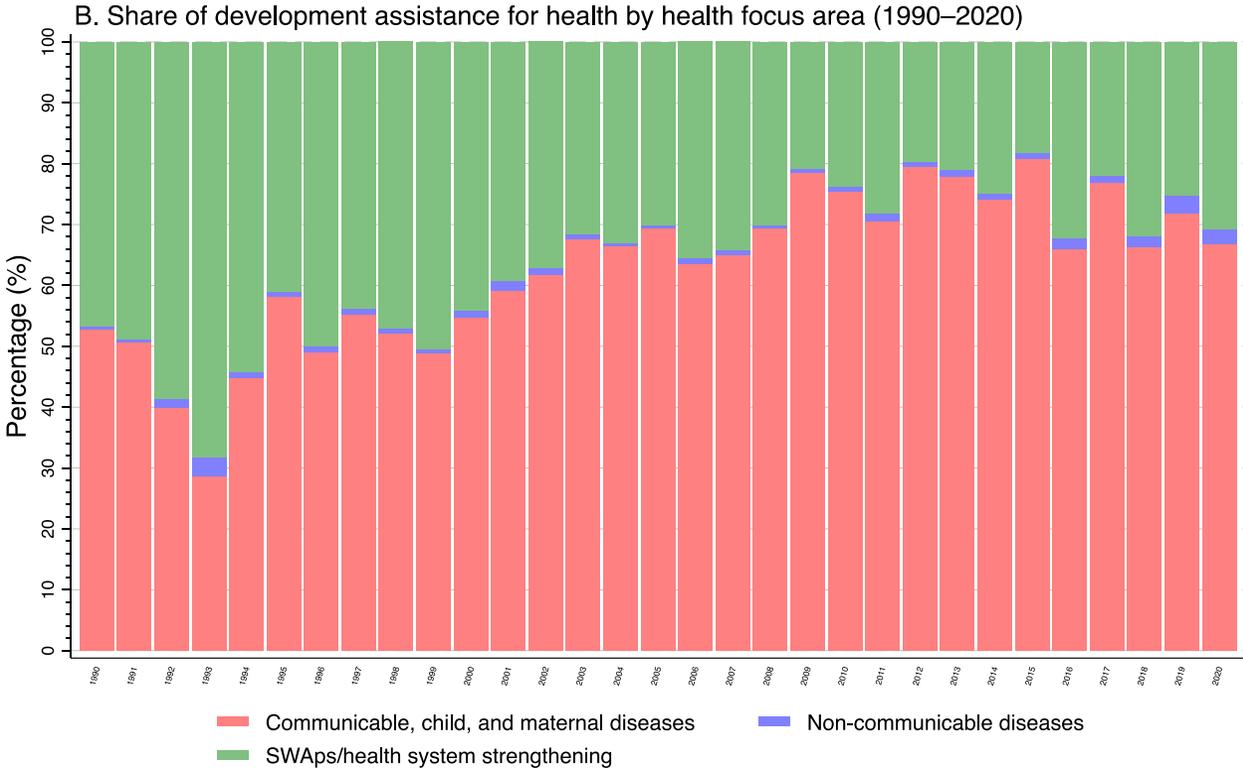
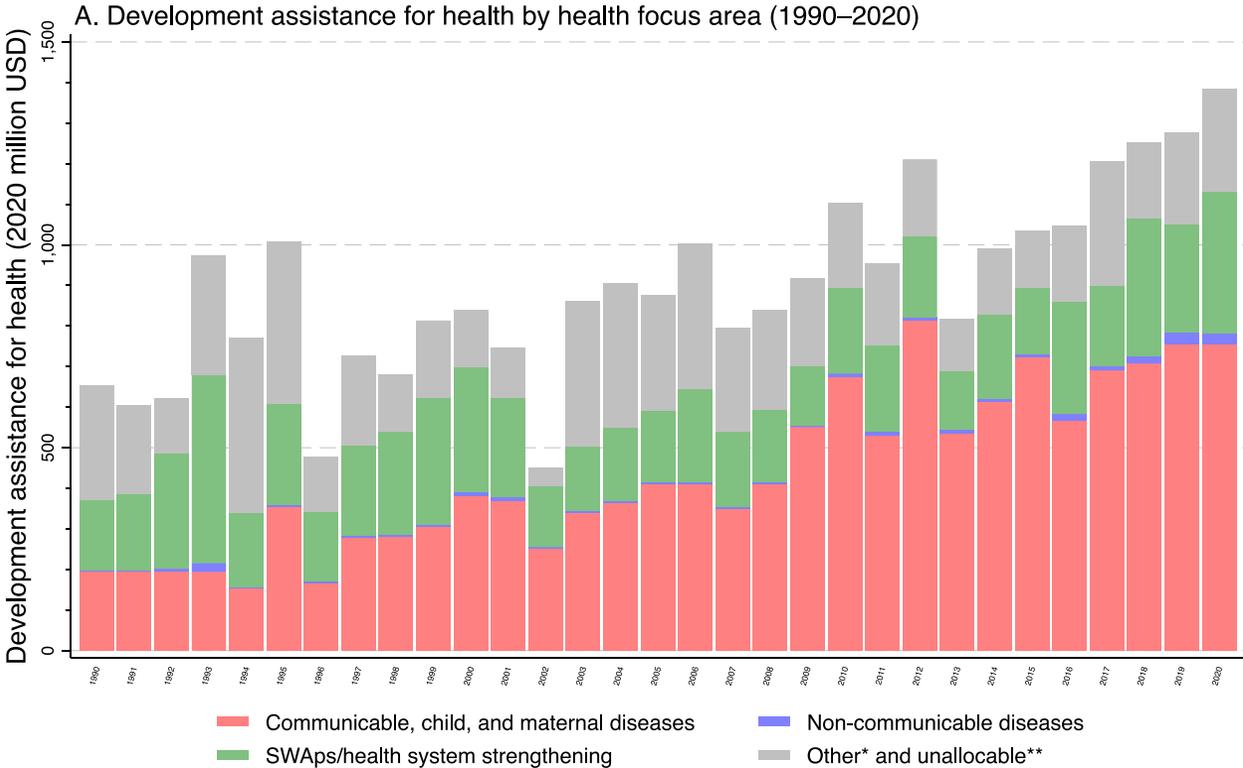
## Future projections of DALYs rates for stomach cancer by salt intake scenario



Nomura S, et al. Forecasting disability-adjusted life years for chronic diseases: reference and alternative scenarios of salt intake for 2017-2040 in Japan. *BMC Public Health* 2020; **20**(1): 1475.

# #3 Prioritization – where to focus development assistance for health (DAH) for equitable health gains

- About 70% of Japan’s DAH is for communicable, child, and maternal diseases.
- Non-communicable disease (NCDs) measures account for about 2% of DAH.



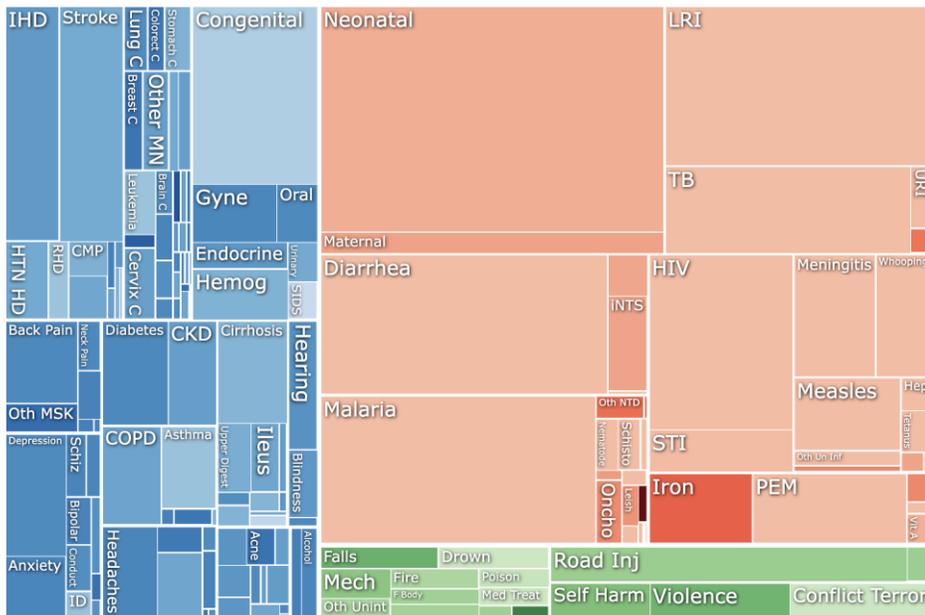
\* This study presents the DAH for 2020 excluding funds for COVID-19

Nomura S, et al. Japan's development assistance for health: Historical trends and prospects for a new era. Lancet Reg Health West Pac 2022; 22: 100403.

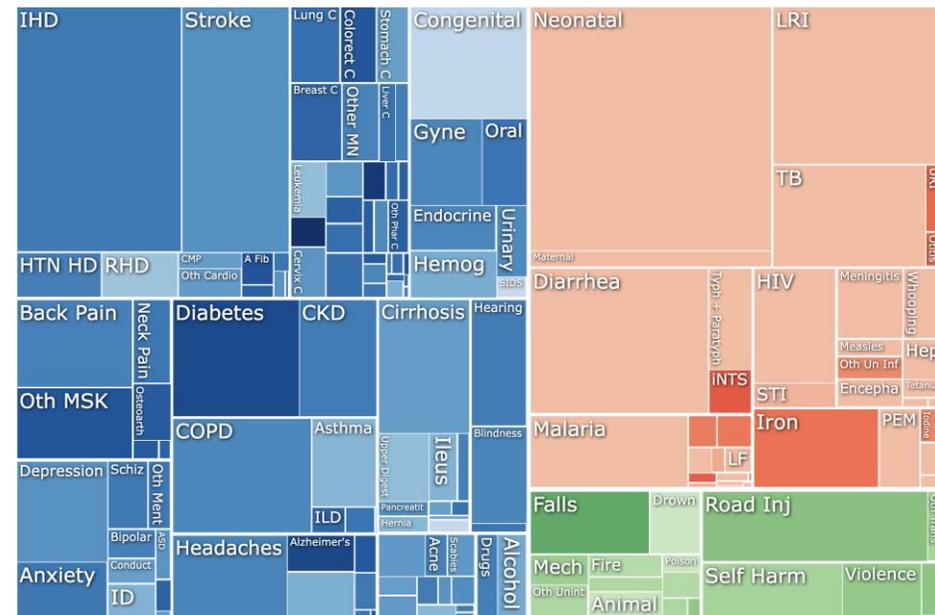
# #3 Prioritization — where to focus development assistance for health (DAH) for equitable health gains

- About 70% of Japan's DAH is for communicable, child, and maternal diseases.
- Non-communicable disease (NCDs) measures account for about 2% of DAH.
- NCDs accounted for 33.9% and 55.2% of the total DALYs in low and lower-middle income countries, respectively (2019); in 2010, they were 24.8% and 45.0%, respectively.

Low income countries, DALYs, 2019



Lower-middle income countries, DALYs, 2019



<https://vizhub.healthdata.org/gbd-compare/>



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“  
*Health, life, and safety research constitutes nothing more than desk theories, unless we properly grasp the situation occurring on the ground.*  
”

Watch the video

Interviewed By: Ruri Syailendrawati, IHME Engagement Officer. This interview has been condensed and edited for clarity.

## Eliciting national and subnational sets of disability weights in mainland China: Findings from the Chinese disability weight measurement study



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<https://doi.org/10.1016/j.lanwpc.2022.100520>

# Conclusion – value of disease burden for decision making

- Decision-makers need a comprehensive and comparable picture of health loss due to diseases, injuries, and risk factors across time, sex, ages, and geographies.
- They use this picture to best allocate resources, target interventions, and set targets.
- For resource allocation decision-making in Japan, the set of Japanese DWs may be more appropriate than the GBD DWs.
- However, for international comparisons of disease burden, it remains desirable to continue using a common set of DWs.