Can we adequately measure the financial protection component of Universal Health Coverage?

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What is Universal Health Coverage?

- All people should have access to quality health services when needed without being exposed to undue financial hardship.
- Seen as the primary desired outcome and unifying goal of health systems.
- Not a new idea but gained real traction when enshrined as part of the SDGs (SDG target 3.8).
UHC has two distinct components

- 3.8.1: Population coverage of essential health services.
- 3.8.2: Proportion of households protected financially against economic consequences of using health services.
**Why provide financial protection?**

- Illness is among the least predictable and most devastating shock that households can face - in particular in low and middle income countries (Gertler & Gruber, 2002).
- In 2010, based on data from 133 countries, approximately 808 million people experienced financial catastrophe globally due to out-of-pocket health spending (11.7% globally) and another 97 million people suffered impoverishment due to health spending (Wagstaff et al., 2017).
HOW TO MEASURE AND MONITOR FINANCIAL PROTECTION?

- Lesson from MDG, we need an internationally comparable indicator to monitor progress across countries.
- The Inter-Agency Expert Group on SDG recommends the proportion of the population with catastrophic health spending (SDG indicator 3.8.2).
- Other indicators exist and a lack of consensus in the literature in terms of what measure is best.
WHAT IS FINANCIAL PROTECTION AGAINST HEALTH EXPENDITURES?

- The WHO defines financial protection as a state when "direct payments made to obtain health services do not expose people to financial hardship and do not threaten living standards".
- Does not necessarily mean that health services must be free but must be affordable relative to capacity of households to pay for health services.
- Excludes indirect economic effects of ill health and non-financial costs of using health services.
How do we measure financial protection?

Catastrophic Health Expenditures – 10% of total income or consumption

\[
\% \text{CHE} = \frac{1}{N} \sum_{i} I \left( \frac{h_i}{x_i} \geq z \right)
\]

The percentage of households (i) in the population (N) OOPs (h_i) that exceed a z-percent of their total consumption or income (x_i). The operator \( I(\quad) \) is an indicator function that takes value one if household i has CHEs, and zero otherwise.
How do we measure financial protection?

Catastrophic Health Expenditures – 10% of total income or consumption

\[ \% \text{CHE} = \frac{1}{N} \sum_i I \left( \frac{h_i}{x_i} \geq z \right) \]

The percentage of households (i) in the population (N) OOPs (h_i) that exceed a z-percent of their total consumption or income (x_i) minus household expenditures on food (f_i).

Catastrophic Health Expenditures – 40% of non-food income or consumption

Catastrophic Health Expenditures – 40% of non-subsistence income or consumption

Where the \( CTP_i \) is defined for poor and non-poor households as:

\[ CTP_i = \begin{cases} x_i - s & \text{if } x_i - s \geq 0 \\ x_i - f_i & \text{if } x_i - s < 0 \end{cases} \]

and subsistence consumption of each household (s_i) is defined as:

\[ s_i = p \times \text{size} \]
How do we measure financial protection?

Catastrophic Health Expenditures – 40% of non-subsistence income or consumption

\[
\% \text{CHE} = \frac{1}{N} \sum_{i} I \left( \frac{h_i}{CTP_i} \geq z \right)
\]

Where the \( CTP_i \) is defined for poor and non-poor households as:

\[
CTP_i = \begin{cases} 
    x_i - se_i & \text{if } x_i - se_i \geq 0 \\
    x_i - f_i & \text{if } x_i - se_i < 0
\end{cases}
\]

and subsistence consumption of each household \((se_i)\) is defined as:

\[
se_i = pl * hhsize^\beta
\]
HOW DO WE MEASURE FINANCIAL PROTECTION?

Impoverishing Health Expenditures

\[ \% IHE = \frac{1}{N} \sum_{i} I(x_i - h_i < pl) \]

Households that fall below the poverty line when OOPs \((h_i)\) are subtracted from total income or consumption.
How do we measure financial protection?

Financial Protection Index

A. Immiserizing: households with a total consumption below the poverty line before paying for OOPs and who are pushed further into poverty after paying.
B. Impoverished: households with a total consumption above the poverty line before paying for OOPs, but who fall below the poverty line after paying for them.
C. Households with CHEs: households with a total consumption below (1+z)% the poverty line after paying for OOPs, where the z-multiplier reflects a percent over the poverty line, selected by the researcher. (Wagstaff et al. (2014) propose 20%).
D. Households with Non-CHEs: households with a total consumption above (1+z%) the poverty line after paying for OOPs.
E. Zero Spending: Households who did not report any OOPs during the survey period.
HOW DO WE MEASURE FINANCIAL PROTECTION?

FPI Score

\[ FPI = \frac{\%A + 2(\%B) + 3(\%C) + 4(\%D) + 5(\%E)}{15} \]
What makes a good indicator?

- Measurement is a process that link abstract concepts to quantitative indicators through theoretically and empirically derived steps.
- Commonly used criteria: validity and reliability.
- But not all high quality indicators are useful to policy.
WHAT MAKES A GOOD INDICATOR OF FINANCIAL PROTECTION?

Criteria:

1. It should make sense conceptually
2. It should identify households that are most vulnerable to out-of-pocket health spending
3. It should be useful to policy makers
Is it equitable?

Family A
- Earns $10 a month in income
- Spent $1 last month on health care
- Catastrophic spending > 10%
- Surplus $9 a month to spend on everything else

Family B
- Earns $100 a month in income
- Spent $10 last month on health care
- Catastrophic spending > 10%
- Surplus $90 a month to spend on everything else
Is it fair?

- Family A
  - Earns $10 a month in income
  - Spent $1 last month on health care
  - Catastrophic spending > 10%
  - Surplus $9 a month to spend on everything else

- Family B
  - Earns $10 a month in income
  - Spent $1 last month on health care
  - Catastrophic spending > 10%
  - Surplus $9 a month to spend on everything else
Does it measure access?

Family A

- Earns $10 a month in income
- Spent $10 last month on health care because they cannot afford it
- Catastrophic spending 0%!

Family B

- Earns $100 a month in income
- Spent $10 last month on health care
- Catastrophic spending > 10%
- Surplus $90 a month to spend on everything else
Burkina Faso Health Expenditure Project

- Enquete Multisectorielle Continue (EMC) conducted in 2014 by INSD and the government of Burkina Faso.
- Based on LSMS questionnaire: consumption, assets/durables, and other modules.
- Panel: visited households once per quarter for a full year.
OUT-OF-POCKET HEALTH EXPENDITURES

Figure 4: Decomposed Household OOPs

USD 2014

Round 1  Round 2  Round 3  Round 4

Modern Drugs  Medical Consultations  Traditional Medicine  Hospital Services  Other Health
EMPIRICAL EVALUATION OF FP INDICATORS IN BURKINA FASO

Assumptions:

▶ Poor households should have lower levels of financial protection than richer households
▶ Households that have experienced recent major health events and/or deaths also should have lower levels of financial protection
CATASTROPHIC HEALTH EXPENDITURES
NON-SUBSISTENCE CATASTROPHIC HEALTH EXPENDITURES
IMPOVERISHING HEALTH EXPENDITURES
HEALTH SHOCKS

The bar chart shows the proportion of households affected by different types of shocks. The highest proportion is observed for Health Shock, followed by Death in HH, Other Shock, Income Shock, Agriculture Shock, and No Shock.
Stability of Measures

Graph showing the proportion of households across different rounds. The x-axis represents the rounds (1 to 5), and the y-axis represents the proportion of households. The graph illustrates a descending trend from round 1 to round 5.
RACER CRITERIA FOR ASSESSING THE USEFULNESS OF AN INDICATOR

- Relevant: measures what it sets out to measure and intended objectives
- Acceptable: accepted by stakeholders
- Credible: unambiguous, transparent, and easy to interpret
- Easy: feasible to collect and analyze the necessary data
- Robust: sensitive, reliable, and complete, and sourced from high quality data
HOW RELEVANT IS THE CURRENT INDICATOR?

- Does not distinguish households that forego health services due to a lack of affordability.
- Ignores other economic effects of ill health (e.g. job loss, lost productivity, or changes in composition of consumption).
- Ignores impact of coping mechanisms employed by households to deal with OOPs (i.e. consumption smoothing).
HOW ACCEPTABLE IS THE CURRENT INDICATOR?

- Contested: great debate on which indicator should be used to monitor SDG 3.8.2 target.
- Compromise: trade-off between what should be measured vs. what data were readily available.
- Complicated: calculation of alternatives is more data intensive and requires disaggregated data.
How Credible is the Current Indicator?

- Ambiguous: changes in indicator could be driven by changes in either the numerator or the denominator.
- Interpretability: trends in indicator cannot be attributed directly to improvements in financial protection.
- Transparency: lack of standardized data collection tools to calculate data.
How easy is it to construct the current indicator?

- Data typically sourced from household budget and expenditure studies not health surveys.
- Multiple methodologies used to construct estimates of consumption.
- Construction of indicators can be done by trained analysts.
**How robust are underlying data?**

- SDG 3.8.2 indicator categorized as a tier II: indicators for which there are established international methodologies and standards but for which data are not regularly produced by all countries.
- Recent study was only able to identify data from 122 countries - only 93 had data from more than one time point (Wagstaff et al., 2017).
- Median year of surveys was 2005 - a more meaningful benchmark for the MDGs, not the SDGs.
LACK OF DATA IN LOW-INCOME COUNTRIES

Data for macroeconomic and health system indicators

We obtained GDP and THE from the World Bank's Open Databases and the Gini coefficient for income from Milanovic's All the Ginis (ALG) dataset.

We obtained proportions of THE channelled through social security schemes, other government agencies, private insurance, and non-profit institutions from WHO's Global Health Expenditure Database (GHED). We filled gaps in the ALG and GHED datasets by carrying forward the most recent datapoint and carrying backward the oldest datapoint; for countries with data missing completely for the share of THE channelled through social security, private insurance, and non-profit institutions, we assumed they did not use the financing agency with missing data.

Further details of data sources are in the appendix.

Role of the funding source
The funders had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all data in the study and had final responsibility for the decision to submit for publication.

Results
The incidence of catastrophic out-of-pocket payments in the most recent surveys varied strikingly across countries. At the 10% threshold, incidence ranged from 0·3% in Zambia in 2010 to 44·9% in Lebanon in 1999 (figure 2A). Mean incidence across countries was 9·2% (SD 7·6) and median was 7·1% (IQR 3·4–13·4). Incidence was inevitably lower at the 25% threshold (figure 2B), with mean and median incidences of 1·8% (SD 2·1) and 1·0% (IQR 0·34–2·5), respectively. The rank correlation between the two catastrophic payment measures was 0·877, so for the most part low incidence at the 10% threshold compared with other countries (which could be interpreted as good performance) was mirrored by low incidence at the 25% threshold compared with other countries, but exceptions were noted. Using non-food consumption in the denominator and setting the threshold at 40% gave a population-unweighted mean catastrophic incidence of 2·1% (SD 2·7) and resulted in catastrophic payments being more concentrated in the world's poorest regions—Africa and Asia (appendix).

This alternative measure correlates less strongly with the official SDG measures than they do with each other (rank correlations are 0·554 and 0·709).

Aggregating across countries, estimates showed that, in 2010, 808·4 million people incurred catastrophic spending at the 10% threshold, equivalent to 11·7% of the world's population (table 2). At the 25% threshold, these figures were 179·3 million people and 2·6% of the world's population, and using 40% of non-food consumption as the threshold, the figures were 208·2 million people and 3·0% of the world's population. Estimates for 2010 revealed variations across UN regions, with Latin America and the Caribbean having the highest incidence at the 10% threshold (14·8%), and Oceania having the lowest (3·9%).

Figure 3 shows the average annual change in the incidence of catastrophic out-of-pocket payments at the 10% and 25% thresholds across all available surveys, for 94 countries for which surveys were available for 2 years or more. At the 10% threshold, the average annual change ranged from –2·7% per year in Congo (Brazzaville [2005–11]) to 3·3% per year in Armenia (2010–13). In 48 of 94 countries, the incidence of catastrophic out-of-pocket spending increased over time. At the 25% threshold, catastrophic payment incidence rose in 54% of countries.
Recommendations and Conclusions

- All current indicators for measuring financial protection have limitations and no one indicator is better than all others in all cases.
- Current indicators will not be useful to measure and monitor progress towards UHC.
- Efforts should be made to at least adjust the official indicator to account for differences in available resources.
- Urgent need to develop new tools to better measure health expenditures.
- Better indicators of financial protection should also account for lack of affordability and other economic effects of ill health.