# The benefits and burden of health financing in Indonesia: analyses of nationally representative cross-sectional data

Augustine Asante, Qinglu Cheng, Dwidjo Susilo, Aryana Satrya, Manon Haemmerli, Rifqi Abdul Fattah, Soewarta Kosen, Danty Novitasari, Gemala Chairunnisa Puteri, Eviati Adawiyah, Andrew Hayen, Anne Mills, Viroj Tangcharoensathien, Stephen Jan, Hasbullah Thabrany*, Virginia Wiseman*

## Summary

**Background** Indonesia has committed to deliver universal health coverage by 2024. Reforming the country's health-financing system is key to achieving this commitment. We aimed to evaluate how the benefits and burden of health financing are distributed across income groups and the extent to which Indonesia has achieved equity in the funding and delivery of health care after financing reforms.

**Methods** We conducted benefit incidence analyses (BIA) and financing incidence analyses (FIA) using cross-sectional nationally representative data from several datasets. Two waves (Feb 1 to April 30, 2018, and Aug 1 to Oct 31, 2019) of the Equity and Health Care Financing in Indonesia (ENHANCE) study household survey involving 7500 households from ten of the 34 provinces in Indonesia were used to obtain health and socioeconomic status data for the BIA. Two waves (2018 and 2019) of the National Socioeconomic Survey (SUSENAS), the most recent wave (2014) of the Indonesian Family Life Survey, and the 2017 and 2018 National Health Accounts were used to obtain data for the FIA. In the BIA, we calculated a concentration index to assess the distribution of health-care benefits (−1·0 [pro-poor] to 1·0 [pro-rich]), considering potential differences in health-care need. In the FIA, we evaluated the equity of health-financing contributions by socioeconomic quintiles by calculating the Kakwani index to assess the relative progressivity of each financing source. Both the BIA and FIA compared results from early 2018 (baseline) with results from late 2019.

**Findings** There were 31864 participants in the ENHANCE survey in 2018 compared with 31215 in 2019. Women constituted 50·5% and men constituted 49·5% of the total participants for each year. SUSENAS had 1131825 participants in 2018 compared with 1204466 in 2019. Women constituted 49·9% of the participants for each year, whereas men constituted 51·1%. The distribution of health-care benefits in the public sector was marginally pro-poor; people with low income received a greater proportion of benefits from health services than people with high income between 2018 (concentration index −0·008, 95% CI −0·075 to 0·059) and 2019 (−0·060, −0·139 to 0·019). The benefit incidence in the private health sector was significantly pro-rich in 2018 (0·134, 0·065 to 0·203, p=0·0010) and 2019 (0·190, −0·192 to 0·572, p=0·0070). Health-financing incidence changed from being moderately progressive in 2018 (Kakwani index 0·034, 95% CI 0·030 to 0·038) to mildly regressive in 2019 (−0·030, −0·034 to −0·025).

**Interpretation** Although Indonesia has made substantial progress in expanding health-care coverage, a lot remains to be done to improve equity in financing and spending. Improving comprehensiveness of benefits will reduce out-of-pocket spending and allocating more funding to primary care would improve access to health-care services for people with low income.

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## Introduction

Despite several decades of efforts to improve health equity, an estimated half of the world's 7·3 billion people still do not have access to essential health services and more than half a billion people who seek health care are forced into poverty every year due to out-of-pocket payments.[1,2] The socioeconomic status of most people without access to health care is low. Emerging data show that COVID-19 continues to disproportionately affect people with low income and minority racial and ethnic groups, amplifying inequities in health and other socioeconomic conditions.[3]

Without system-wide health reforms, reducing current inequities in health will be difficult.[4] During the past decade, many low-income and middle-income countries have implemented health reforms to support mechanisms that benefit people with low income to accelerate progress in universal health coverage.[5] Reforming the financing system has brought particular attention to reducing reliance on direct patient payments.

An example of reform is the introduction of Indonesia's national health insurance scheme, the *Jaminan Kesehatan Nasional* (JKN), in 2014. The

## Research in context

**Evidence before this study**

We systematically searched PubMed and Google Scholar with the search terms "Indonesia" AND "equity OR inequity OR equitable OR inequitable OR pro-poor OR pro-rich OR progressiv* OR regressiv* OR proportio*" AND "financing incidence OR financing incidence analysis OR benefit incidence OR benefit incidence analysis OR bia" AND "health OR health care OR health system financ*". The search was done from Nov 2, 2022, to Jan 26, 2023, and sought to identify any studies that conducted financing incidence analysis (FIA) or benefit incidence analysis (BIA) in Indonesia. The only study that has assessed equity in health financing in Indonesia was published in 2008. This FIA study reported that overall financing in Indonesia was progressive in 2001, when social health insurance in Indonesia included only formal sector employees and more than half of the total health expenditure was sourced from out-of-pocket payments. No study has assessed the changing health-financing structure in Indonesia after the introduction of its national health insurance scheme, the *Jaminan Kesehatan Nasional* (JKN) in 2014. Two BIA studies assessing the changing structure were published before the JKN. One reported a pro-poor distribution of benefits at the primary-health-care level and a pro-rich distribution at the hospital level. The other reported that increased public health spending improves targeting of public funds to people with low income. Two other BIA studies found that benefits of health-care spending were distributed disproportionately among people with high income after the introduction of the JKN.

**Added value of this study**

This study updates FIA and BIA analyses in Indonesia with data collected in 2018 and 2019. The FIA is the first to investigate the equity of health financing in Indonesia after implementation of the JKN. In the FIA, we assessed six separate health-financing sources: direct taxes, indirect taxes, social health insurance, company health coverage, private health insurance, and out-of-pocket payments. Before this study, there was no evidence of the progressivity of company health coverage and private health insurance in Indonesia. In the BIA, we presented distributions of health-care subsidies by five different types of health facilities, including primary health care, whereas previous BIA in Indonesia focused on hospital care only. This study has increased understanding of the extent to which Indonesia has achieved equity in the funding and delivery of health care after the implementation of the JKN.

**Implications of all the available evidence**

Although Indonesia is expanding the JKN to achieve universal health coverage, people with low income have more burden from health financing but receive fewer health-care benefits. More reforms are necessary to deliver lasting benefits to people with low income and make health financing work for them—a necessary condition for universal health coverage. Further research is needed to establish whether people with low income have an unmet need for health care, assess the quality of health services, and assess the effects of quality on health-care utilisation.

scheme—managed by a single agency, the Social Security Agency for Health (BPJS-*Kesehatan*)—consolidates multiple fragmented health insurance programmes.[6–8] As of August, 2021, 225·9 million people living in Indonesia (about 83% of the population) were members of the JKN, making it the biggest single-payer health insurance system in the world.[9] As the JKN continues to expand, major challenges have emerged. Since 2018, evaluations of the JKN suggest members have inequitable access to high-quality health services, mainly due to geographical maldistribution of health infrastructure and human resources, including medical specialists.[7] The JKN appears to have stimulated growth in medical services but mainly in the private sector and urban centres, not in rural areas. The maldistribution of personnel and facilities is also affecting the quality of health services. For example, the small number of qualified midwives in the Papua Province has been linked to lower antenatal attendance of people who are pregnant than in Bali and Java, where there are more qualified midwives.[10] JKN members have incurred out-of-pocket costs for accessing health services.[6]

Several reforms were initiated in 2018 and 2019 to support the roll-out of the JKN. Supply-side reforms included the expansion of provider networks (especially in the private sector), restructuring the capitation and Indonesia Case-Based Groups provider payment schemes, piloting pay-for-performance schemes in primary health care, strengthening health technology assessment, and mandatory accreditation of all contracted health facilities. Demand-side reforms included public awareness campaigns of the benefits of the JKN.[11] Additional funding for health care has been collected from workers in the formal sector by recalculating social insurance contribution rates with region-specific salary and enrolment data.[12]

Little is known about the extent to which these reforms have resulted in a health financing and delivery system that benefits people in Indonesia with low income more than those with high income. We aimed to assess the extent to which Indonesia has achieved equity in the funding and delivery of health care after the implementation of these financing reforms. Panel 1 summarises the context of health financing and delivery in Indonesia.

## Methods

### Study design and participants

Using data from nationally representative cross-sectional studies, we conducted two main analyses to assess the

**Panel 1: Health financing and delivery context**

Health financing in Indonesia has changed considerably after universal health coverage reforms. Indonesia's health expenditure of 2·9% of gross domestic product (GDP) in 2018 was among the lowest in the world, and far below the mean for upper-middle-income countries (5·7% of GDP). Government health spending as a share of current health expenditure almost doubled from 25·7% in 2010 to 49·3% in 2018. However, this translates to about US$49 per person. Out-of-pocket spending has substantially reduced, from 59% of current health expenditure in 2010 to 34·8% in 2018.[13]

The *Jaminan Kesehatan Nasional* (JKN) is the main part of Indonesia's health financing and universal health coverage reforms; it accounts for approximately 19% of current health expenditure.[14] JKN members are categorised into two main groups: non-contributory beneficiaries (*Penerima Bantuan Iuran* [PBI]) and contributory members (non-PBI). PBI members constituted approximately 59% of total JKN membership in August, 2021, and mainly consist of people with low income identified in accordance with Government Regulation 101, 2013. Non-PBI members are categorised into three groups: people who are employed with payment and their families, people who are employed without payment and their families, and people who are not employed and their families. Premium contributions from non-PBI members account for approximately 23% of current health expenditure.[14] The premiums of PBI members are subsidised by both central and local government and constitute the largest source of funding for the JKN (approximately 42% of the total JKN budget). Non-PBI members pay different levels of premiums that enable access to different types of hospital wards. People who are employed with payment pay a payroll tax of 5% of their monthly salary, split between employers (4%) and employees (1%) and capped at a monthly payroll amount of 12 million Indonesian rupiah. People who are employed without payment who enrol into the JKN voluntarily pay varied premiums depending on their benefit package and copayment preference. Their contributions account for approximately 9% of the total JKN budget.[9] The central government allocates funds to hospitals managed by the Ministry of Health and to local governments to pay for the salaries of health workers and priority health programmes that are not funded via the JKN.

The JKN offers extensive benefits. Outpatient and inpatient services that are covered by the scheme include maternal and child health services, prescribed laboratory tests, dental health care, ambulance services for referrals, and advanced health services (eg, cancer therapies and haemodialysis).[7] The services are categorised into three classes (1, 2, and 3) depending on the premium. The classes are linked to the type of ward where members access services, rather than the benefits. Health facilities in Indonesia have different levels of room comfort, ranging from wards with ten or more beds (class 3) to private luxury rooms the size of small apartments (class 1). The JKN, in principle, provides access to the same medical care for all members regardless of membership type, except for the comfort of the hospital room.[9] A referral system ensures that only patients with an appropriate referral from a primary-health-care provider have access to specialist care.[7] Mild and moderate conditions are referred to lower-level hospitals (classes C and D) and severe and complex conditions are referred to upper-level hospitals (classes A and B). Hospitals are expected to refer patients back to primary health care, if appropriate.

Primary-health-care providers are largely paid via a capitation system for outpatient services that covers 155 diagnoses, such as type 1 diabetes, type 2 diabetes, typhoid fever, and pneumonia. Infectious diseases covered by programmes that are funded directly by the Central Ministry of Health are not covered by the JKN. Hospitals are paid via the Indonesia Case-Based Groups payment system, which is based on grouping diagnoses and procedures with similar clinical characteristics and resource consumption.[7] Private hospitals generally receive a 3% higher tariff than public hospitals for outpatient services and a 5% higher tariff for inpatient services. Currently, 64% of hospitals providing services under the JKN are private hospitals, both for-profit and not-for-profit.

equity of Indonesia's health financing system: benefit incidence analysis (BIA) and financing incidence analysis (FIA). BIA measures the extent to which different socioeconomic groups benefit from government health spending through their use of health services.[15] FIA (or progressivity analysis) evaluates the distribution of the burden of health-care financing across socioeconomic groups and the extent to which this burden is proportionate with income.[16] Both analyses compared results from early 2018 (baseline) with results from late 2019.

Ethics approval for the study was obtained from all institutions involved in the project: University of Indonesia (503/H2F10/PPM.00·02/2017), London School of Hygiene & Tropical Medicine, UK (13773), and the University of New South Wales, Australia (HC17709).

The BIA used panel data from the Equity and Health Care Financing in Indonesia (ENHANCE) study household survey, a nationally representative, cross-sectional household survey involving 7500 households from ten of the 34 provinces in Indonesia, containing approximately 74% of the total population. The provinces were stratified to obtain the cultural and socioeconomic dynamics of the population. Full details of the sampling procedure can be found in the study protocol published elsewhere.[6] The first wave of data collection was from Feb 1 to April 30, 2018; the second wave of data collection was from Aug 1 to Oct 31, 2019.

For the FIA, we used existing secondary datasets: the 2020 National Socioeconomic Survey (SUSENAS), the most recent Indonesian Family Life Survey (IFLS-5) 2014, and the 2020 National Health Accounts.[17–20] Information about personal income tax rates and government revenue from income tax, value-added tax (VAT), and other indirect taxes was obtained from the Indonesian Ministry of Finance.

For SUSENAS, households with missing data were removed. SUSENAS is a large nationally representative household survey that collects a range of socioeconomic and other data from 300 000 households across Indonesia. Informed consent was obtained from all study participants by the Indonesian Bureau of Statistics, which conducts the survey. This consent covered the use of the data in secondary analyses, such as this study.

The IFLS-5 includes 16 204 households; we used 12 308 households in this study. The 3896 households that were excluded did not have either income or expenditure data necessary for the calculation of the ratio of expenditure to income (appendix p 2). IFLS-5 was a collaborative effort of RAND and Survey Meter. We obtained the IFLS-5 dataset from RAND and one researcher (QC) manually removed households with missing income and expenditure data necessary to estimate the ratio of income to expenditure to be mapped to the SUSENAS dataset. Informed consent was obtained from all study participants and covered the use of data in secondary analyses, such as this study.

### Procedures

The ENHANCE survey included questions about self-assessed health status, which was assessed by asking survey respondents to rate the health of all members of their household. Four response categories were provided (ie, very good, good, fair, or poor) and household members were classified into two groups of need: good health (indicating no need for care) if they reported their health status to be very good or good and poor health (indicating need for care) if they reported their health status to be fair or poor. A standard recall period of 4 weeks was used for outpatient care and 12 months for inpatient and preventive services.

Using the ENHANCE survey, we calculated a standard, asset-based measure of socioeconomic status focusing on the ownership of a range of durable assets (eg, car, refrigerator, and television), housing characteristics (eg, material of floor, roof, and walls), and access to basic services (eg, electricity supply, drinking water, and sanitation facilities).[21]

As well as the household survey data, we used health-care-provider claims and capitation data from the BPJS-*Kesehatan* to calculate the unit costs of inpatient and outpatient services. Health-care benefits—in the form of public subsidies—were established by multiplying the unit cost per service for a provider (appendix p 1) by the quantity of that service used, deducting any out-of-pocket costs incurred.[22]

A household's ability to pay was measured with non-food consumption (eg, alcohol and tobacco) information in the 2018 and 2019 SUSENAS and IFLS-5 datasets. Monthly home rental cost was included in the non-food consumption data obtained from the 2018 and 2019 SUSENAS and IFLS-5. If no home rental cost was paid (eg, the household owned their home), the householder was asked to estimate the imputed rent they would have had to pay if they rented their home. Health-insurance ownership was assessed with the SUSENAS surveys. The distributions of households receiving JKN subsidies by consumption quintiles are included in the appendix (p 3).

Sex data were self-reported and two options were provided in each survey: "Male" or "Female".

### Statistical analysis

Sampling procedure and size have been described elsewhere.[6] All included households were grouped into wealth quintiles and the extent of benefit for each quintile was assessed based on their need for health care.

The BIA assessed whether the distribution of benefits from health spending for a type of provider was pro-poor (ie, groups with low income receive a larger share of benefits from use of health services than groups with higher income) or pro-rich (ie, the opposite of pro-poor), considering potential differences in health-care need.[5] A concentration index was generated to assess the distribution of health-care benefits between people with low income and people with high income.[6] The concentration index ranges from $-1\cdot0$ (pro-poor) to $1\cdot0$ (pro-rich) and shows the extent to which public subsidies are distributed fairly across the population.[23] The concentration index was statistically significant if the p value was less than $0\cdot05$. Principal component analysis was used to compute an asset index.[24] We used self-assessed health status by households as a proxy for health need.[25]

The FIA evaluated the equity of health-financing contributions by socioeconomic quintiles. All sources of health financing in Indonesia, including direct and indirect taxation, out-of-pocket payments, social health insurance, private health insurance, and company health insurance, were assessed. To estimate direct tax payments, household income was mapped from the IFLS-5 to the SUSENAS datasets. Details on household income estimation for assessing direct taxation are included (appendix p 2). Survey weights were used for the analysis of the SUSENAS and IFLS-5 datasets to account for oversampling or undersampling. The per-adult equivalent consumption expenditure of households was used as a substitute for income due to no reliable income data.[26]

We used the Kakwani index to assess the relative progressivity of each financing source (appendix p 9).[27] We further assessed the progressivity or regressivity of the

health-financing system by comparing the concentration curves of the various financing sources with the Lorenz curve of income distribution. Dominance tests were conducted to establish whether one curve dominated the other.[22] If the Lorenz curve dominates (ie, is above the concentration curve), the distribution is progressive (ie, households with low income contribute a smaller proportion of their income to health-care payments than households with high income). The distribution is regressive if the opposite is true. The distribution is proportional if everyone contributes the same percentage of income to health-care payments, regardless of income.[5] Dominance tests were done at the 5% significance level, applying the multiple comparison approach.[22]

The Gini index is derived from the Lorenz curve, which shows the distribution of income across households, ranked in ascending order. A higher Gini value indicates more inequality.[28] All analyses were done with Stata version 14.

### Role of the funding source

The funders of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report.

### Results

Baseline characteristics of households and individuals in the ENHANCE survey are presented in table 1. Indonesia's public health sector has made marginal progress, with a slight but non-significant improvement in the distribution of health-care benefits to people with low income between early 2018 (concentration index −0·008, −0·075 to 0·059) and late 2019 (−0·060, −0·139 to 0·019; figure 1). Much of this improvement was driven by the distribution of health centre benefits, which were significantly pro-poor at both timepoints (−0·141, −0·185 to 0·097, p<0·0001 in 2018; −0·188, −0·254 to −0·122, p<0·0001 in 2019). Public hospital outpatient care substantially changed, with benefits changing from being significantly pro-rich in 2018 (0·120, −0·004 to 0·244, p=0·05) to marginally pro-poor in 2019 (−0·090, −0·188 to 0·008, p=0·07). The distribution of public hospital inpatient care benefits non-significantly favoured people with low income in both years (figure 1).

The distribution of benefits (subsidies) in the private sector was highly concentrated among the quintile with the highest income, which accounted for approximately 29% of total public subsidies in both 2018 and 2019. The significant concentration indices of 0·134 (0·065 to 0·203, p=0·0010) in 2018 and 0·190 (−0·192 to 0·572, p=0·0070) in 2019 show this pro-rich distribution. Private hospitals and general practitioner (GP) clinics were moderately used by the quintile with the lowest income (appendix p 6), who accounted for approximately 15% of the benefits in each wave. However, these benefits were far less than the benefits received by the quintile with the highest income, making the overall distribution of

benefits for private hospitals and GP clinics significantly pro-rich (0·090, 0·034 to 0·146, p=0·0010 in 2018; 0·100, 0·019 to 0·181, p=0·0006 in 2019). Private hospital inpatient benefits were more unevenly distributed in favour of people with high income than benefits associated with any other type of facility. The quintile with the highest income accounted for approximately 30% of the benefits for the 2 years combined compared with the almost 15% accounted for by the quintile with the lowest income. The distribution of health-care benefits across the health system—public and private—did not significantly differ between quintiles.

This study found that the two quintiles with the lowest income received a non-significantly smaller share of benefits in 2018 and 2019 than what was required to meet their health needs (appendix p 7). This finding contrasted with the three quintiles with the highest income, whose share of benefits was higher than their share of need. However, the variations in self-assessed need across the quintiles were generally small.

Overall, health centres received the lowest and a decreasing share of the total public subsidy (Rp960 million [6·4%] of total subsidy in 2018; Rp670 million [5·9%] of total subsidy in 2019), whereas public hospital inpatient departments received the largest shares (Indonesian rupiah [Rp]6·9 billion [46·2%] in 2018; Rp4·9 billion [43·9%] in 2019; appendix p 8). 67·8% (Rp10·1 billion) of the total subsidy for 2018 was distributed through public facilities and 32·2% (Rp4·8 billion) was distributed through private facilities. However, in 2019, the private sector facilities accounted for a higher share of total

| | Wave 1 (2018) | Wave 2 (2019) |
|---|---|---|
| Number of household members | 4·2 (1·7) | 4·2 (1·7) |
| Household wealth quintile | | |
| 1 | 1434/7554 (18·98%) | 1419/7476 (18·98%) |
| 2 | 1585/7554 (20·98%) | 1569/7476 (20·99%) |
| 3 | 1434/7554 (18·98%) | 1419/7476 (18·98%) |
| 4 | 1509/7554 (19·98%) | 1494/7476 (19·98%) |
| 5 | 1585/7554 (20·98%) | 1569/7476 (20·99%) |
| School attainment of household head | | |
| No school | 296/7554 (3·92%) | 596/7476 (7·97%) |
| Did not complete primary school | 551/7554 (7·29%) | 411/7476 (5·50%) |
| Primary school | 2476/7554 (32·78%) | 2376/7476 (31·78%) |
| Junior secondary school | 1615/7554 (21·38%) | 1364/7476 (18·25%) |
| Senior secondary school or equivalent | 2165/7554 (28·66%) | 2332/7476 (31·19%) |
| Diploma, vocational education, or university | 445/7554 (5·89%) | 393/7476 (5·26%) |
| Sex of individuals | | |
| Male | 15773/31864 (49·50%) | 15451/31215 (49·50%) |
| Female | 16091/31864 (50·50%) | 15764/31215 (50·50%) |
| Age of individuals, years | 33·7 (55) | 34·6 (57) |

Data are n/N (%) or mean (SD). All data in the table were derived from households included in the analysis. Q1 indicates the quintile with the lowest income, and Q5 the quintile with the highest income. <1% of households had missing data and were excluded from the analysis.

*Table 1:* Characteristics of households and individuals in the ENHANCE survey

***Figure 1:*** **Distribution of public health-care subsidies in Indonesia**

(A) Wave 1 (2018). (B) Wave 2 (2019). Data on bars represent the amount of subsidy in billions of Indonesian rupiah (Rp) for that quintile and the proportion of total subsidy for that type of facility. Q1 indicates the quintile with the lowest income, and Q5 the quintile with the highest income. GP=general practitioner. Q=quintile.

| | Contribution to CHE in 2018, Indonesian rupiah | Contribution to CHE in 2019, Indonesian rupiah | Wave 1 (2018) | | | Wave 2 (2019) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Concentration index* | Kakwani index† | Dominance test‡ | Concentration index* | Kakwani index† | Dominance test‡ |
| Indirect taxes | 77·7 trillion (17%) | 71·9 trillion (17%) | 0·417 (0·413 to 0·421) | –0·060 (–0·062 to –0·057) | Regressive | 0·461 (0·456 to 0·465) | –0·049 (–0·052 to –0·045) | Non-dominance |
| VAT | .. | .. | 0·462 (0·458 to 0·466) | –0·015 (–0·017 to –0·013) | .. | 0·499 (0·495 to 0·503) | –0·010 (–0·013 to –0·007) | .. |
| Luxury goods tax | .. | .. | 0·861 (0·854 to 0·869) | 0·385 (0·378 to 0·391) | .. | 0·860 (0·852 to 0·869) | 0·351 (0·343 to 0·359) | .. |
| Excise tax§ | .. | .. | 0·164 (0·160 to 0·167) | –0·313 (–0·318 to –0·308) | .. | 0·268 (0·264 to 0·272) | –0·241 (–0·247 to –0·236) | .. |
| Import tax | .. | .. | 0·605 (0·597 to 0·614) | 0·129 (0·122 to 0·136) | .. | 0·623 (0·614 to 0·632) | 0·114 (0·106 to 0·121) | .. |
| Other tax | .. | .. | 0·551 (0·546 to 0·556) | 0·074 (0·070 to 0·079) | .. | 0·585 (0·578 to 0·591) | 0·075 (0·070 to 0·081) | .. |
| Direct taxes | 75·8 trillion (17%) | 71·8 trillion (17%) | 0·505 (0·501 to 0·509) | 0·028 (0·027 to 0·030) | Non-dominance | 0·557 (0·551 to 0·563) | 0·048 (0·046 to 0·049) | Non-dominance |
| Personal income tax | .. | .. | 0·506 (0·502 to 0·510) | 0·030 (0·028 to 0·031) | .. | 0·559 (0·553 to 0·565) | 0·049 (0·048 to 0·051) | .. |
| Corporate tax | .. | .. | 0·294 (0·287 to 0·300) | –0·183 (–0·189 to –0·177) | .. | 0·175 (0·167 to 0·184) | –0·334 (–0·343 to –0·325) | .. |
| Social health insurance | 82·0 trillion (19%) | 111·8 trillion (19%) | 0·482 (0·480 to 0·485) | 0·006 (0·003 to 0·008) | Non-dominance | 0·393 (0·389 to 0·397) | –0·116 (–0·119 to –0·113) | Regressive |
| Company health insurance | 49·9 trillion (11%) | 54·3 trillion (11%) | 0·635 (0·624 to 0·646) | 0·159 (0·148 to 0·169) | Progressive | 0·402 (0·380 to 0·423) | –0·107 (–0·129 to –0·086) | Regressive |
| Private voluntary health insurance | 14·1 trillion (4%) | 17·2 trillion (4%) | 0·393 (0·386 to 0·400) | –0·084 (–0·091 to –0·077) | Regressive | 0·443 (0·433 to 0·453) | –0·066 (–0·076 to –0·057) | Regressive |
| Out-of-pocket payments | 149·9 trillion (33%) | 157·5 trillion (33%) | 0·526 (0·516, 0·536) | 0·049 (0·039 to 0·059) | Progressive | 0·543 (0·534 to 0·552) | 0·034 (0·025 to 0·043) | Progressive |
| Overall | (100%) | (100%) | 0·510 (0·506 to 0·515) | 0·034 (0·030 to 0·038) | .. | 0·479 (0·474 to 0·485) | –0·030 (–0·034 to –0·025) | .. |
| p value | .. | .. | <0·0001 | <0·0001 | .. | <0·0001 | <0·0001 | .. |
| Gini¶ | .. | .. | 0·477 (0·474 to 0·480) | .. | .. | 0·509 (0·505 to 0·514) | .. | .. |

Data are mean (%), concentration index (95% CI), or Kakwani index (95% CI), unless otherwise specified. CHE=current health expenditure. VAT=value-added tax. *A positive concentration index value indicates that people with high income contribute more to health-care payments than people with low income. †A positive Kakwani index value indicates progressivity. A negative Kakwani index value indicates regressivity. ‡The distribution was deemed progressive (ie, households with low income contributed a smaller proportion of their income to health-care payments than households with high income) when the Lorenz curve dominated the concentration curve, and regressive when the concentration curve dominated the 45° line or Lorenz curve. §Included tobacco, alcohol, and fuel. ¶A higher Gini value indicates more inequality.

*Table 2:* Concentration and Kakwani indices by source of finance or payment type

subsidy (Rp4·2 billion [37·4%]). Public and private spending combined non-significantly favoured hospital inpatient services, accounting for more than 70% of total subsidy in both years (appendix p 8).

Incidence of health financing changed from a moderately progressive distribution in 2018 to a mildly regressive distribution in 2019 (table 2). In 2018, almost 54% of households in the quintile with the lowest income and 21% of households in the quintile with the highest income had at least one non-contributory beneficiary (*Penerima Bantuan Iuran* [PBI] member). The situation was substantially different in 2019, with 48% of households in the quintile with the lowest income and 40% of households in the quintile with the highest income having at least one PBI member. Indirect taxes, which included VAT, sales tax on luxury goods, excise tax, import duty, and other minor taxes, contributed approximately 17% to

current health expenditure in 2018 and 2019. The overall distribution of indirect taxes was regressive for both years, with the concentration curve well above the Lorenz ability-to-pay curves (figure 2). Excise taxes (ie, taxes on tobacco, alcohol, and fuel) were the main influences on the regressive indirect taxes, with high significantly negative Kakwani indices in 2018 and 2019. VAT contributed minimally to the regressive distribution of indirect taxes. Sales tax on luxury goods had a significantly progressive distribution.

Direct taxes were moderately progressive for both 2018 and 2019, with progressivity increasing slightly in 2019 (table 2). The concentration curves were outside the Lorenz curve, supporting the significance of the Kakwani indices in both years (figure 2). The three sources of health insurance contributions—social health insurance, company health insurance, and
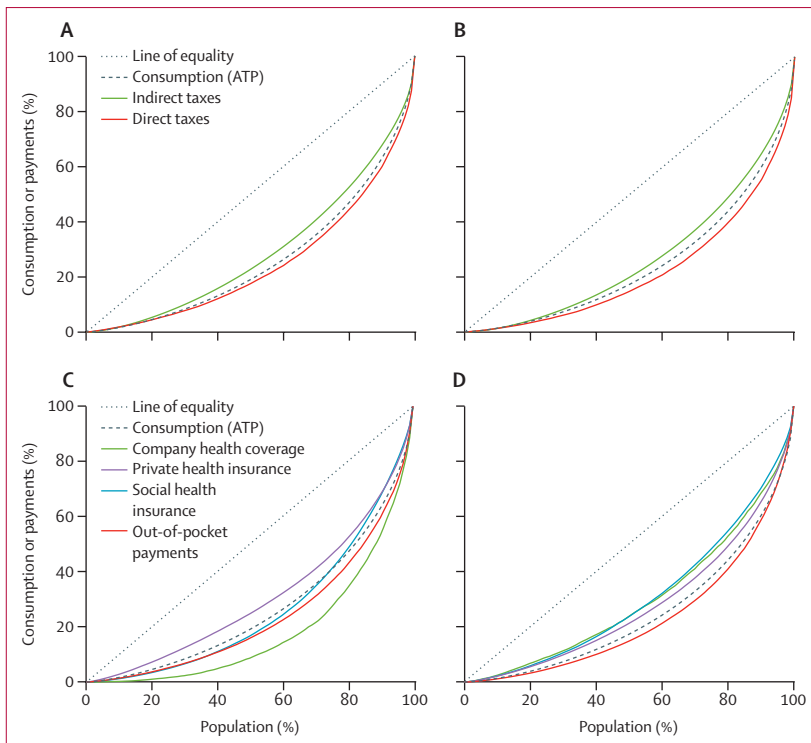
*Figure 2:* Lorenz and concentration curves for taxes, insurance, and out-of-pocket payments
(A) Direct and indirect taxes during wave 1 (2018). (B) Direct and indirect taxes during wave 2 (2019). (C) Insurance and out-of-pocket payments during wave 1 (2018). (D) Insurance and out-of-pocket payments during wave 2 (2019). ATP=ability to pay.

private health insurance—were all regressive in 2019. Social health insurance contributed approximately 19% to current health expenditure in both years and was nearly proportional in 2018 but became regressive in 2019. The concentration curves for social health insurance were well within the Lorenz curve and the line of equality, especially in 2019, indicating the regressivity of this financing source. Company health insurance contributed approximately 11% to current health expenditure and its incidence was more concentrated among people with low income in 2019, having been progressive in 2018. The domination of the Lorenz curve by the concentration curve of company health insurance in 2019, the opposite of 2018, indicates the change from a progressive to a regressive distribution. Out-of-pocket payments accounted for approximately 33% of current health expenditure in both years and their incidence was progressively distributed. However, the progressivity of out-of-pocket payments slightly declined (table 2).

## Discussion

Indonesia's initiative to improve health equity and access to health services through universal health coverage reforms, including the introduction of the JKN, has been widely praised by health equity advocates. However, the gains are yet to be fully seen.

The distribution of health-care benefits in public facilities was marginally pro-poor in 2018, with an improvement in 2019. This change was partly affected by improved access to health centres, an expansion in the supply of services, and a reduction in financial barriers, which is consistent with studies from other low-income and middle-income countries.[29–31] Although pro-poor distribution of health centre benefits is crucial for universal health coverage, in Indonesia, as in other low-income and middle-income countries, such primary-care facilities receive a small proportion of total health funding compared with hospitals.[14] Secondary care is more resource-intensive than primary care and, therefore, it is not surprising that such care receives more funding. The crucial issue, however, is whether resources allocated for secondary care come at the detriment of primary care. Although there is evidence that the JKN accreditation system has strengthened the performance of some health centres,[32] limited funding for primary-care facilities in Indonesia is an ongoing challenge.

The greatest improvement in health-care benefits for people with low income was the use of public hospital outpatient departments, in which the distribution changed from significantly pro-rich in 2018 to non-significantly pro-poor in 2019. This change was primarily affected by an increase in use of outpatient department services in the two quintiles with the lowest income in 2019 (appendix p 6). Improved community awareness about the JKN, and the substantial increase in membership from 48% of the total population in January, 2014, to 83% in August, 2021,[9] could explain the increase in use of public hospital outpatient department services.

The distribution of benefits in the private-health sector was significantly pro-rich, offsetting the pro-poor distribution in the public sector and making the overall distribution of health-care benefits pro-rich in both years. The pro-rich distribution in the private sector is consistent with findings from other low-income and middle-income countries, including Kenya and Cambodia,[29,33] and might be affected by the concentration of private facilities in highly populated urban centres. Although the number of private facilities in Indonesia has increased under the JKN, the majority of these (especially the private, for-profit facilities) are in urban areas and fulfil the needs of groups with high income. The JKN guarantees the payment of health-care costs for people with low income by the government, making health-care provision more attractive to private entities. The JKN was predicted to incentivise the expansion of private providers to rural areas as payment for services delivered is assured.[34] However, this expansion is yet to happen—the peri-urban areas of Java and Sumatra are still seen as more lucrative markets than rural areas for private, for-profit providers. High transport cost is likely to be an important issue for households with low income in remote areas accessing urban-based, private facilities.

**Panel 2: Policy recommendations**

- Develop improved mechanisms and processes for identifying groups with low income that should be subsidised by the government (eg, *Penerima Bantuan Iuran* [PBI] members); better identification will improve the progressivity of the social health insurance scheme
  - Currently, there are many PBI-member households that are not included in the bottom two wealth quintiles
- Remove the maximum payroll cap of 12 million Indonesian rupiah (Rp; approximately US$840) to make financing incidence more progressive; the current payroll cap means people with high income have an unfair advantage over people with low income as any amount they earn over Rp12 million is not part of the *Jaminan Kesehatan Nasional* payroll tax contribution; removing the salary cap will generate additional revenue and help make social health insurance contributions more equitable
- Prioritise investment and budget allocation for primary health care; between 2014 and 2016, almost 80% of the Social Security Agency for Health annual spending was on secondary and tertiary services

- The Ministry of Health needs to strengthen basic curative and preventive health services at the primary care level; underfunding can result in poor-quality care and patients bypassing primary health care to access hospital care
- Adequate financing of primary health care in Thailand has contributed to pro-poor benefit incidence
- Review the Indonesia Case-Based Groups tariffs to ensure they reflect the true cost of service delivery and incentivise more private participation in the delivery of quality health care, especially in rural areas; this review should be informed by a cost-comparison analysis to ensure that the cost of incentivising private providers does not exceed the cost of improving public services
- Verify whether progressive out-of-pocket payments are driven by an unmet need for health care in people with low income
  - Embedding a module of unmet health-care needs in the existing national household surveys, especially the National Socioeconomic Survey, would facilitate regular monitoring

The pro-rich distribution of private sector benefits might also reflect the aim of maximising profit of the private, for-profit sector. Contracted private providers are price-takers under the JKN, but they can maximise profit by increasing the number of JKN patients to cover fixed costs and generate profit by providing care to patients who are not part of the JKN. Some private hospitals also choose patients with less complex conditions and provide low-cost, high-volume services to increase profit.[35] Without proper regulation, private sector profit maximisation might compromise quality of health care.

Not only do people with low income in Indonesia benefit less from public health spending than people with high income, but the burden of health-care payment relative to ability to pay is focused much more on people with low income than people with high income. The overall health-financing incidence was regressive in both 2018 and 2019, albeit with slightly reduced regressivity in 2019. Indirect taxes were regressive, which is a common challenge in other low-income and middle-income countries.[5,21] However, the regressive nature of social health insurance contributions in 2019 was surprising, especially as social health insurance was created to protect people with low income and improve equity. Social health insurance is often progressive in low-income and middle-income countries. In a systematic review by Asante and colleagues,[5] 86% of FIA studies in sub-Saharan Africa and 90% of FIA studies in the Asia-Pacific region reported progressive social health insurance. However, a few studies have reported a regressive or proportional social health insurance, including Munge and Briggs in Kenya and Chen and colleagues in the Gansu Province of China.[36,37] The

reversal in progressivity of social health insurance between 2018 and 2019 in Indonesia was driven by a change in the distribution of subsidised households (ie, households with at least one PBI member). In 2018, almost 54% of households in the quintile with the lowest income and 21% of households in the quintile with the highest income had at least one PBI member. The situation was substantially different in 2019 with 48% of households in the quintile with the lowest income and 40% of households in the quintile with the highest income having at least one PBI member. The number of PBI-member households in the quintiles with the lowest or highest income affects the progressivity of the distribution. Another factor that might have contributed to the regressivity of social health insurance in Indonesia is the capping of monthly salaries for assessed contributions. The cap means that people who have a higher income will have part of their salaries not assessed for JKN contributions. The national health insurance system in the Philippines (Philhealth) has reported similar outcomes from capping income for assessed contributions.[38]

The progressive out-of-pocket payments, although consistent with findings of several studies in other low-income and middle-income countries,[39] should be interpreted with caution. Out-of-pocket payments are the most inequitable form of financing, and even a small amount of out-of-pocket payments could impoverish some households. The progressive distribution in Indonesia could mean that people with low income are not seeking care because of their inability to pay, implying unmet need. This study did not collect data on unmet need and is therefore unable to assess how it affects

the progressivity of out-of-pocket payments. Another possible explanation for progressive out-of-pocket payments is that people with high income pay more for non-essential services, such as a private hospital room.[9]

The analyses in this study had some limitations. For example, one limitation is the estimation of unit costs for various service types in the BIA. In the absence of detailed cost data, the mean cost of each type of service was derived from JKN-claims data without considering provincial differences in unit costs. Another limitation is the use of self-assessed health as a proxy for health need. Although there is robust evidence showing a correlation between self-assessed health measures and health outcomes, there are concerns about reporting bias and interpretation. For the FIA, a key limitation was that the SUSENAS datasets did not directly provide household income data. To estimate direct tax payments, household income was mapped from the IFLS-5 to the SUSENAS datasets. Although this study assessed the health-financing equity of Indonesia's universal health coverage reforms, a causal link between these reforms and health-financing equity cannot be shown. Moreover, the sustainability of any observed changes is difficult to judge due to the short time interval between the measurements of health-financing equity. Despite these limitations, we believe that our 2-year analysis provides new and comprehensive insights on equity in health financing in Indonesia.

Overall, the introduction of the JKN in Indonesia has been a major development in making health financing accessible for people with low income—a necessary condition for achieving universal health coverage. Substantial progress has been made in a short period of time, but health-care benefits favour people with high income and financing incidence is regressive. The JKN is globally recognised as one of the most ambitious universal health coverage reforms undertaken by a low-income or middle-income country in the past decade. Achieving full universal health coverage will require additional reforms that might be politically challenging but necessary to deliver lasting benefits to people with low income. Improving the quality of health services should be a top priority as low-quality care benefits no one, particularly not people with low income. The use of health-technology assessment to guide the inclusion of high-value interventions in the JKN might improve efficiency. We offer recommendations to address some of the challenges in panel 2.

### Contributors

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