## Chapter 13

# Public Health Insurance in Low- and Middle-Income Countries

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## 1 Unmet Need for Effective Health Insurance

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, considers "good health and well-being for all" as the third of 17 key goals. Universal Health Coverage (UHC), where all people can access quality health services without facing financial hardship, is widely considered to be a necessary step towards this goal. Historically, most low- and middle-income countries (LMICs) have sought to ensure healthcare access through tax-funded systems that directly provide free or heavily subsidized healthcare through public hospitals and primary health centers. However, care quality at such public facilities has been found to be low and a substantial share of households exit to the private sector at substantial personal cost. Besides efforts to improve quality and oversight at public facilities, a growing number of LMIC governments are setting up public health insurance schemes, with the dual objectives of insulating patients from the financial burden of advanced hospital care and improving health outcomes.

## 1.1 Insurance coverage

Based on its World Social Protection Database (WSPDB), the most comprehensive database on social protection policies, the ILO reports that 16.7% of the total population in low-income and 34.3% in lower-middle income countries is covered by a social health scheme, but this includes a wide variety of programs, from subsidized publicly provided care to vouchers and user fees, and relies on data that are more than a decade old for several countries.

Two recent reviews attempt to compile insurance coverage statistics from publicly available, nationally representative data. Using data from the Demographic and Health Surveys (DHS) and Multiple Index Cluster Surveys (MICS), supplemented with census data and WHO reports, Hooley et al. (2022) compile statistics on health insurance coverage for 100 of 137 low- and middle-income countries. Average coverage at the country level was 31% — 7.9% in low-income countries, 27.3% in lower middle-income countries, and 52.5% in upper middle-income countries — but with substantial variation across countries in the latter two groups. Das and Do (2023) combine similar DHS survey data with other sources for 98 LMICs. They find that the majority of LMICs have some kind of insurance in place and 50% of the population represented by their data (3.5 billion people, China is excluded) have insurance coverage, though they confirm the enormous cross-country variation reported in Hooley et al. (2022). Similar to the ILO statistics, a key limitation in both reviews is that they rely on data from as far back as 2010 for some countries. Another important caveat to these numbers is that, although reported coverage in population surveys is an important metric, it does not disentangle legal entitlement to coverage from awareness of coverage, which may be substantially lower. Nevertheless, Das and Do (2023) show that, in many countries, insurance expansion has been substantial and relatively recent: coverage in Rwanda increased from 40% in 2005 to over 80% in 2019 and, in Indonesia, from 41% in 2012 to 60% in 2017. In India, they report an increase from 6% in 2005 to 18% in 2015; the 2020 DHS reports, not included in their review, estimates it at around 40%, but this hides huge differences across states: coverage is 88% in Rajasthan and 25% in neighboring Punjab (IIPS/India and ICF, 2022).

## 1.2 Progress towards Universal Health Coverage

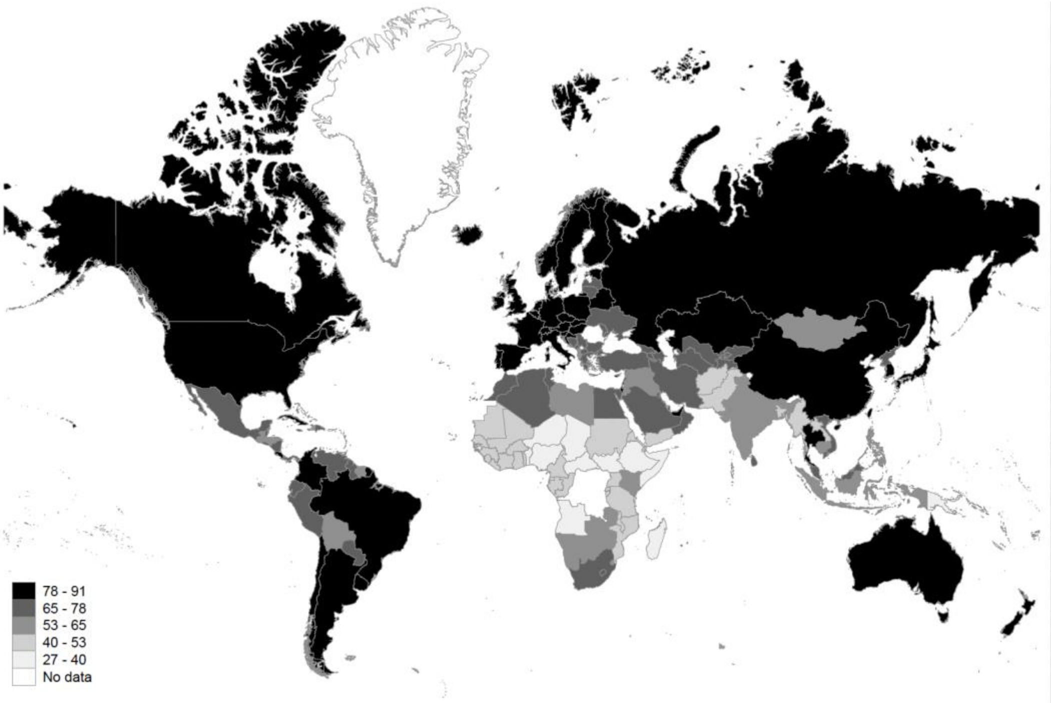
Given the expansion of insurance, where do LMICs stand on progress towards the goals of Universal Health Coverage? The primary objective of publicly provided health insurance is protection from health-related financial distress. Figure 1 shows, for each country, the estimated share of households with health expenditures deemed *catastrophic*—at least 25% of household budget. Low-income countries, particularly in sub-Saharan Africa, tend to have rates of catastrophic health expenditures as low as those observed in high-income countries (HICs), but the reasons are different: in HICs, patients get care they do not have to pay for, while in LMICs, patients forgo healthcare altogether if it is too expensive. Healthcare spending, then, must be understood in the context of service availability and usage.

**Figure 1:** Share of Households with Health Expenditure ≥ 25% of Household Budget

*Source:* World Health Statistics, WHO (2023).

The WHO also compiles a national Service Coverage Index (SCI) that draws on a combination of population surveys, facility surveys, and administrative data to compile a composite measure of access to essential health services. Because the index combines measures of receipt of key services (e.g., four or more antenatal visits during pregnancy) for a range of conditions as well as service capacity (e.g., health professional density in the population), it reflects a combination of the availability, affordability, and quality of basic health services.

**Figure 2:** Health Care Service Coverage Index



*Source:* World Health Statistics, WHO (2023). *Notes:* The map reports the World Health Organization's 2021 Service Coverage Index (SCI) for Sustainable Development Goal 3.8.1 for Universal Health Coverage. The index is reported on a unitless scale of 0 to 100, which is computed as the geometric mean of 14 tracer indicators of health service coverage that include reproductive, maternal, newborn and child health; infectious diseases; non-communicable diseases; and service capacity and access, among the general and the most disadvantaged population.

Figure 2 shows the data for 2021. The global patterns are stark: access to essential health services is substantially lower in LMICs, particularly in Africa and South and Southeast Asia.

Tracking progress over the last two decades, the WHO reports that, while service coverage in LMICs has expanded rapidly since 2000, progress has stalled since 2015, and the prevalence of catastrophic health spending over the same period has increased (WHO and World Bank, 2023).

## 1.3 Mixed evidence on impacts of health insurance access

Attempts to rigorously estimate the impact of efforts to expand access to health insurance on households have found mixed results. Table 1 summarizes results from ten studies we highlight to illustrate this variability and the challenges inherent in studying the impact of health insurance.[1]

First, access to health insurance has not systematically yielded the hoped-for drop in out-of-pocket expenditures (OOPE) for households. Of the seven studies that report effects on OOPE, one in Ghana finds a 30% decline and one in Mexico finds a statistically insignificant overall decline of 16%, but a significant 31% decline on low-assets households. However, interpreting null results on OOPE is complicated: if health

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[1] We refer the reader to Appendix 1 of Gruber et al. (2023) for an exhaustive list of articles studying the impact of large-scale health insurance expansions in LMICs, and to Das and Do (2023) and Erlangga et al. (2019) for reviews of the economics and global health literature.

insurance decreases the unit price and increases use of health care visits, households may spend the same amount but get more care. One of the six studies that find no significant effect on OOPE does find increased utilization (Gruber et al., 2023), but three do not, and two do not measure utilization but find no health effects. Interpretation is easier for reductions in catastrophic health expenditure since this is a key objective of all public health insurance programs: three of the selected studies document a decrease (of 2 to 4 percentage points) and two cannot reject the null but find noisy negative point estimates on *inpatient* catastrophic expenditure.

**Table 1:** Selected studies estimating impacts of health insurance on expenditures, utilization and/or health

| | Country | Insurance Provider | Time Period | Research Method | OOPE Impact | Risk of Catastrophic Expenditure | Healthcare Utilization | Health |
|---|---|---|---|---|---|---|---|---|
| Karan et al. (2017) | India | Gov | 2008-12 | DD | not sig. | not sig. | N/A | N/A |
| Fan et al. (2012) | India | State | 2007-08 | DD | not sig. | not sig. | N/A | N/A |
| Powell-Jackson et al. (2014) | Ghana | Community | 2004 | RCT | -30%*** | N/A | +0.3 visits** | not sig. |
| King et al. (2009) | Mexico | Gov | 2005-06 | RCT | -16% | -1.9pp** | not sig. | not sig. |
| Conti and Ginja (2023) | Mexico | Gov | 2005-10 | DD | N/A | N/A | hetero-genous | hetero-genous |
| Levine et al. (2016) | Cambodia | NGO | 2007-08 | RCT | N/A | -1.8pp** | not sig. | not sig. |
| Fink et al. (2013) | Burkina Faso | Community | 2004-06 | RCT | not sig. | -3.9pp** | not sig. | not sig. |
| Malani et al. (2024) | India | Gov | 2013-19 | RCT | N/A | N/A | not sig. | not sig. |
| Haushofer et al. (2020) | Kenya | Private | 2011-13 | RCT | not sig. | N/A | not sig. | not sig. |
| Gruber et al. (2023) | China | Public | 2004-10 | DD | not sig. | N/A | +8.4pp** | +2.7%** life exp. |

Notes: ** indicates 95% significance, *** indicates 99% significance.

Turning to health outcomes, Gruber et al. (2023) estimate a 2.7% increase in life expectancy by 2010 due to the rollout of China's New

Cooperative Medical Scheme, which launched in 2003 and gradually expanded insurance access to 800 million rural Chinese. In Mexico, Conti and Ginja (2023) find no overall impact of *Seguro Popular* (free health insurance to informal workers) on mortality, but subgroup analysis shows infant mortality declining in poor municipalities.[2] The effect of insurance on health depends on the quantity and quality of care induced. Several studies in Table 1 find no effect on total healthcare utilization. In Cambodia (Levine et al., 2016) and Ghana (Powell-Jackson et al., 2014), insurance did not increase utilization but enabled households to switch from informal providers to formal, higher quality providers, but this did not improve health. However, null effects may also be due to limited statistical power, as in Levine et al. (2016). Given drop-offs in take-up and utilization, and variability in care quality, studies of insurance access are often under-powered to study rare outcomes such as hospitalization and catastrophic spending.

One reason for the variability in insurance impacts may be the enormous variation in how programs are designed, including the populations, services, or providers they cover, how providers are paid, and the

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[2] This echoes the finding in Gruber et al. (2014) that Thailand's 30 Bhat program, which increased hospital funding and reduced copays for the poor, reduced infant mortality in poor areas.

administrative procedures for utilizing insurance benefits. In this article, we focus on design choices for public health insurance schemes in LMICs, and review, both theoretically and empirically, the role they play in shaping program effectiveness and costs.

## 2 Choices in insurance design

Governments seeking to expand publicly supported health insurance face a series of design choices around financing, population, service, provider coverage, and provider payments. We briefly describe the broad typologies and design options for each.

**Financing:** The primary sources of domestic funding for state-supported health insurance are general or payroll taxes, premiums, and co-pays or deductibles. Additionally, in contexts where insurance rules are difficult to enforce, informal out-of-pocket payments at the point of care are also a de facto form of financing. General taxes (e.g., income, VAT) typically provide the greatest risk pooling and are most progressive, though this depends on the tax structure. Payroll taxes or deductions, a common source of financing in HICs, are easier to enforce than mandated premiums, but have a limited base in LMICs with large populations outside the formal workforce and may disincentivize formalization and wage reporting if workers do not value insurance (see Bergolo and Cruces (2014) for evidence from Uruguay and Banerjee et al. (2022) for additional references). While premiums appear to be an attractive alternative to taxes, determining the right premium level is difficult in LMIC contexts, where insurance markets are not well-developed (price discovery is limited) and insurance may expand care-seeking substantially. More importantly, collecting premia either requires mandated, which are difficult to implement when a large share of the population is informally employed, or voluntary payments, which can dissuade participation and induce adverse selection (see sections 4.1.1 and 4.2). Because taxes and premiums are prepaid and not dependent on care utilization, they pool financing across individuals with varying health needs, unlike co-pays (the patient pays a share of care costs) and deductibles (the patient pays for care costs up to a ceiling), which are based on the treatment received. Such charges at the point of care are often considered necessary to limit the risk that households use "too much" healthcare (moral hazard), but there is growing evidence, including from HICs, that they can deter use of medically necessary and cost-effective preventive care, particularly among the poor (Buitrago et al., 2021; Chandra et al., 2021).

**Eligibility and enrollment:** Financing decisions are closely linked to decisions around who is eligible for and enrolled in insurance. Tax-financed insurance, given constrained budgets, is typically targeted at the poor, which requires correctly identifying and enrolling the poor. However, this leaves open the question of how to cover the often-substantial near-poor population. While mandated payroll contributions can supplement general taxes, this limits coverage to formal workers (several countries insure government employees through such programs). Expanding insurance eligibility to the informal sector requires either extending public subsidies to them, which increases the fiscal burden of insurance, or requiring them to pay premia (see above). In practice, these populations are often left uninsured because they are ineligible for public insurance and either unwilling or unable to voluntarily purchase insurance.

**Service coverage:** A key design choice for a health insurance scheme is which services to cover. If programs use a fee-for-service approach, these decisions are effectively left to providers, who are paid for whatever they do. However, this is generally thought to lead to overuse of services and rising program costs. Most programs define a package of services that insurance will cover (the “health benefits package” in the global health literature) that, in theory, prioritizes cost-effective and essential care, taking budget constraints into account. In a move towards this, countries like Thailand, Brazil, and India are institutionalizing “health technology assessment”, a process for defining service coverage rationally (Nemzoff et al, 2020). Yet, in practice, the basis for deciding what is and is not included in insurance benefits packages is unclear and programs often make somewhat arbitrary decisions about what to cover and where (for example, many Indian states “reserve” certain services to only be covered at public facilities), and change these over time, which can lead to confusion among beneficiaries about their entitlements and expose them to financial risk if they do not know what they need and whether it is covered before they reach the hospital. Additionally, service coverage is often far more expansive than budgets would cover if all people in medical need were treated, which means they rely on some implicit form of rationing to contain costs. Which services insurance chooses to cover is likely to affect the care people get and their outcomes (e.g., small studies suggest hysterectomies sky-rocketed when they were included in insurance), but there’s little research on this.

One aspect of coverage that is somewhat unique to LMIC contexts, is the use of annual caps on healthcare coverage, as in China’s NCMS and India’s PM-JAY. These are intended to reduce fraud and overuse and contain costs but are implicitly also a form of rationing that may undermine the goal of reducing catastrophic health expenditure.

**Provider coverage:** While public facilities are typically included in government insurance, schemes vary in the extent to which they involve private providers. Including private providers can expand access and quality but regulating them comes with its own challenges. They have incentives to cream-skim (only accept lower-cost patients), over-provide unnecessary but profitable services, and engage in fraud (e.g., over-billing).

Restricting care to the public or nonprofit sector may reduce these concerns, but the low quality of care in public facilities is well-documented and means a large share of patients prefer—and are willing to incur substantial financial hardship to use—the private sector. This fact, along with the political economy constraints that have made reform of the public health sector difficult (Banerjee et al., 2008; Dhaliwal and Hanna, 2017) is a key reason countries such as India chose to go the route of insurance for private care in the first place.

**Provider payment:** Finally, programs must determine how healthcare providers will be compensated for services provided. Historically, most LMICs have financed public provision of healthcare through line-item budgets for health facilities and fixed salaries for staff. Such input-based payment systems are easier to implement and allow the government to restrict spending, but create weak incentives for efficiency and quality. In programs that contract private providers, payments range from fee-for-service (FFS) systems that reimburse providers for each service delivered, to capitation systems, where providers are paid a lump-sum per patient enrolled for a specified period. Bundled, case-based, and diagnosis-related group (DRG) payments lie along the spectrum between these two, where the provider is reimbursed at a prospectively determined rate for all care for a particular diagnosis, treatment, or visit.

These payment systems vary in the extent to which they share financial risk of variable treatment costs with providers. Under FFS, payments are retrospectively determined, based on real costs, and any variation in patient care costs is borne by the payer. This creates incentives for providers to participate in insurance and attract all types of patients, since they are paid what they bill, but also to provide unnecessary care. Prospective payments, on the other hand, may be adjusted for illness severity or treatment complexity, but they do not vary based on the specific costs of a given patient, such as the specific tests they receive or the number of days they spend at the facility. As a result, providers are the residual claimant on any payment shortfalls or excesses, which creates incentives to seek efficiencies, but can also encourage increased admissions or skimping on care. Programs often mix and match elements of different payment systems to balance these trade-offs. The implications of these payment systems are discussed in section 3.

# 3 Challenges to effective public health insurance: Provider incentives

Given the information asymmetries in healthcare markets between consumers and providers and payers and providers, providers have substantial leeway to act in their own benefit and against that of the insured consumer or the public payer. We discuss some of the ways in which insurance design influences and interacts with provider incentives to shape program outcomes. However, we note that most of the economics literature on insurance in LMICs has focused on the demand side. Although there is a substantial body of global health research examining insurance design, implementation, and provider behavior, large-scale quantitative causal studies are limited.

## 3.1 Hospital behavior responds to the format, rate and speed of payment

### 3.1.1 Responses to form of payment

The type of provider payment system employed by insurance can fundamentally shape provider incentives and program outcomes. Although there is substantial variation in provider payment systems across LMIC insurance programs (and within programs over time), causal evidence on their impacts is severely limited. A recent review of the evidence on hospital payment reforms in LMICs identified no studies from LICs and very few studies from MICs of high quality (Ghazaryan et al., 2021).

Lu (2014) tests whether FFS encourages overtreatment within insurance in China. In an audit patient study, it cross-randomizes whether the patient presents with insurance and whether the provider gains financially from ordering more medicines. It finds that insurance alone does not change prescribing behavior, but provider financial incentives increase prescription costs for insured versus uninsured patients by 43%, and most of this is unnecessary care. The results show that, by relaxing patient budget constraints, insurance can exacerbate the provider incentives to overprovide that are present even outside insurance (Currie et al., 2014), and that such provider moral hazard under insurance can increase program spending.

Exploiting time variation in rollout to evaluate the impact of switching from FFS to capitation in Vietnam, Nguyen et al. (2017) show that hospitals cut costs for insured patients, in line with theory, but they cannot measure how this affected care quality or outcomes. Zhang et al. (2022) study a change in hospital reimbursements from FFS to capitation-based global budgets designed to incentivize rural hospitals to attract patients that would otherwise visit expensive urban ones within China's NCMS program. © reform shifted utilization to the target hospitals and increased total utilization within the same budget without worsening hospital readmission rates (a measure of quality). Though they have their limitations, these studies provide some of the only evidence on the substantial implications of different payment systems for government spending and insurance performance.

### 3.1.2 Responses to reimbursement rates

Under fixed payment systems, hospital reimbursement rates, or prices, are a key policy lever to shape private hospital incentives, with implications for service volumes, quality, patient selection, and health outcomes. Determining the right prices is theoretically and logistically complex even in high-income settings (see Gruber (2022) and McClellan (2011) for reviews). If prices are too high, they transfer public funds to private hospitals. If they are too low to cover costs, hospitals may not accept insurance or skimp on care. The *relative* prices of services may also skew treatment decisions towards over/under-provision of those that are more/less profitable against the patient's best interest. They may also encourage claims fraud, where hospitals file claims for a higher-priced service than the one they actually provide ("upcoding"). The heterogeneity in costs due to patient illness severity, care quality, and local input costs further complicates price-setting. An additional concern with prospectively determined prices in contexts of weak oversight, where hospital compliance with the pricing system is difficult to enforce, is that hospitals may respond to the insurer's attempt to share financial risk with them by simply transferring this risk on to patients in the form of unauthorized charges.

These perverse effects of payment rates have been documented in HICs. For example, the generosity of payments affects provider participation and service volumes in the U.S. Medicaid program (Cabral et al., 2021) and upcoding has been documented in the U.S. Medicare program, which employs DRGs (Geruso and Layton, 2020). Several challenges exacerbate these problems in LMICs. The granular data on local population health risk and hospital costs used to set prices in HICs are largely unavailable. Information asymmetries are larger because payers have severely limited information on hospital actions, population health needs, and outcomes, healthcare markets are fragmented, and data are scarce. Experience implementing insurance, contract and program enforcement ability, and resources for hospital oversight are also limited.

Jain (2021) examines several of these concerns in the context of a case-based public insurance program in India by exploiting a policy reform that changed service reimbursement rates by varying magnitudes. The paper finds large increases in claims filed for a service when its reimbursement increases and shows that this is partly due changes in upcoding and partly a real change in service volumes. The fact that treatment decisions are responsive to prices, indicates payment reforms are likely to have substantial welfare effects, though the data are insufficient to fully measure them. This a crucial area for further study. The paper also shows that hospitals decrease unauthorized out-of-pocket charges to patients, which are pervasive at baseline, by INR 55 for every INR 100 increase in the reimbursement rate. This implies that charges are partly balance-billing, where hospitals compensate for reimbursements that are too low to cover costs by charging patients the difference. This provides a key insight into how similarly designed payment systems may perform differently in LMICs and HICs: while fixed prices are designed to discipline hospital behavior and contain costs, in contexts with weak oversight hospitals may simply adjust for this by charging patients. However, the fact that pass-through of the reimbursement increase is only 55% indicates that a substantial share of insurance reimbursements is being captured by hospitals as profit.

In the same spirit, Chalkley et al. (2022) exploit changes in DRG price differentials over time in Indonesia’s national health insurance scheme and find that reductions in the reimbursement gap between the more severe and less severe cases were associated with a significant reduction in the number of patients coded as most severe, but effect sizes were small (a 30% change in price differential led to a 0.6% change in coding).

### 3.1.3 Speed of reimbursement

Most insurance programs require that the provider *advances* the funds. In Ghana, facilities reported having to wait 6 months for reimbursement (Dalinjong and Laar, 2012) and, in India, private hospitals frequently threaten exit insurance due to delayed payments. Such delays may cause providers to favor cash-paying uninsured patients over insured patients, or to send patients to buy tests and medicines outside the facility, undermining the objective of limiting OOPE for insured patients. In their study of community-based insurance in Burkina Faso, Fink et al. (2013) note that the structure of the capitation payments required facilities to pre-finance treatment over the entire year, which may have reduced health worker satisfaction and lowered care quality.

## 3.2 Provider accountability and oversight

As LMICs expand insurance, reducing fraud, ensuring hospital compliance with program rules, and ensuring high care quality become more pressing concerns. A recent audit of India's PMJAY revealed considerable overspending due to fictitious patients, over-billing, and other fraudulent activities (Comptroller and Auditor General of India, 2024). Surveys show that informal charges by public and private hospitals for insured care that should be free, which could affect insurance demand, financial protection, and trust, are widespread (Jain, 2021; Dupas and Jain, 2023; Akweongo et al., 2021). In India, Malani et al. (2024) show that providers refused to serve 55% of households who tried to use their insurance card (this raises to 69% after three years). Finally, studies document enormous variation in the quality of care provided by hospitals, which may reduce the impacts of health insurance on outcomes.

Evidence showing bottom-up accountability can improve service delivery comes largely from publicly provided primary care (Björkman Nyqvist et al., 2017; Mohanan et al., 2020). Less is known about its effectiveness in the context of insurance for hospital services, where patients may depend on providers for critical care, alternatives may be limited, and switching providers may have high health costs. Dupas and Jain (2023) find that providing simple information on insurance entitlements by phone in India increases insurance awareness by 0.17 SD. This reduces OOPE by 35% ($12) among patients visiting public hospitals, where charges are driven by frontline workers, but has no effect on payments among those visiting private hospitals, where charges are more likely to reflect hospital pricing behavior less amenable to patient pressure. The results suggest that top-down monitoring also is likely to be required in the context of insurance.

Most insurance programs officially have some form of top-down monitoring systems in place. For example, programs in India require supporting documentation to be filed electronically and scrutinized for every claim prior to approval and reimbursement. Given that thousands of claims are filed daily, such a system requires enormous manpower and its (cost-) effectiveness is unclear. Paper-based systems require even more resources and the likelihood of identifying misbehavior is lower (Nsiah-Boateng et al., 2017). There are also ex-post fraud management processes, where hospitals with aberrant claims patterns are targeted for audits and dis-empaneled if evidence of fraud is discovered.

As for quality, hospitals must typically meet basic criteria (largely staff and infrastructure availability) to be empaneled in insurance. Boone et al. (2023) study the effects of an intervention designed to help private clinics in Kenya enroll in public health insurance and improve their care quality through certification and business support. The interventions substantially increased private provider empanelment and patient loads under insurance—indicating supply-side frictions that have not been studied—but did not improve care quality. They also find that quality of care received is lower for patients experimentally induced to indicate a tighter budget constraint, irrespective of insurance coverage. Bedoya et al. (2023) show (outside the context of insurance) that introducing quality standards, inspections, and sanctions can improve quality, suggesting that meaningfully tying insurance empanelment and reimbursements to standards could offer a way to use the structure of insurance (which gives the government more control over private facilities) to improve care quality. However, such oversight requires substantial resources and political will.

Overall, although the returns to effective hospital monitoring could be substantial (Shi, 2024), there is almost no evidence on the optimal design of such systems in LMICs. How hospitals should be targeted, the frequency and structure of audits, and the tradeoff between increased oversight and its administrative costs on insurers and hospitals, given the limited resources and weak institutional oversight in these settings, are key open questions. Another important consideration is the link between insurance design and enforcement. If, for example, hospitals are levying unauthorized charges on patients because reimbursement rates are too low to cover costs (Jain, 2021), cracking down to reduce OOPE may backfire and push them to stop participating in insurance or lower quality. Similarly, without concurrent monitoring, hospitals could respond to crackdowns on claims fraud by turning away insured patients or increasing unauthorized charges. The potential for such unintended consequences of increased oversight and the need to understand how to manage them makes research on this topic even more pressing.

# 4 Challenges to effective public health insurance: Demand side

A stated objective of state-sponsored health insurance programs is to reduce inequities in access to health. Inequality in *de facto* access to health insurance—low coverage or low utilization among the poor and vulnerable—is a major obstacle to achieving this objective. Programs that are funded primarily through taxation run the risk of being *regressive* if the incidence of insurance benefits fall disproportionately on the non-poor. Likewise, expansion of health insurance could *widen* the gender gap in access to healthcare if households do not make use of the insurance scheme for female members of the household (Dupas and Jain, 2024).

This section discusses barriers to take-up of health insurance and barriers to utilization of insured services.

## 4.1 Barriers to Take-up and Utilization

There are two margins of take-up from the household perspective: (a) enrollment into insurance if it is not mandatory; and (b) utilization of insured care. There is evidence that take-up on one or both margins can be limited due to factors that increase costs and/or reduce the (real or perceived) returns to insurance, such as premia, distance to facilities, out-of-pocket charges, and administrative hurdles.

#### 4.1.1 Premia

We expect households to adopt health insurance if they expect the benefits of enrolling to outweigh the costs, a main driver of which is the premium. In a recent review (J-PAL Policy Insight, 2021) all five studies in which the premium was experimentally reduced by 30% or more find large impacts. In Pakistan (Fischer et al., 2023) and Ghana (Asuming et al., 2021), the enrollment rate increased from about a quarter to two thirds when the premium was reduced by a third; and in Ghana, it increased to 81% when the premium was completely removed. In Indonesia (Banerjee et al., 2021) and Nicaragua (Thornton et al., 2010), where baseline enrollment without a subsidy was considerably lower ( 8% and 3%), full subsidies increased enrollment to 36% and 26%. In India, take-up among households just above the poverty line was 60% at the actuarially fair premium level, and rose to 78% with free insurance (Malani et al., 2024). While these results demonstrate the importance of subsidies in encouraging enrollment, the fact that many fail to achieve mass coverage even when insurance is free suggests additional barriers, such as low trust, administrative hurdles, or unauthorized charges (discussed above), may matter.

### 4.1.2 Travel costs

Distance to health care facilities influences how much care households seek (Karra et al., 2016). This means that the density of health facilities offering insured care matters for utilization. Distance costs may vary across localities due to differences in proximity to facilities, but they may also vary across households within a locality (due to differences in means of transport), as well as across individuals within households (due to, e.g., women's restricted mobility). In India, Dupas and Jain (2024) show that utilization of insured care decreases with distance, but considerably so for females than males. To ensure equitable access, programs need to either ensure sufficient facility density even in poor, remote areas, or subsidize transport in addition to care.

### 4.1.3 Administrative hurdles

Even if insurance is free, take-up may be low due to the complexity of the enrollment process. In Indonesia, where households must provide numerous documents proving family size and composition to enroll in insurance, (Banerjee et al., 2021) find that registration assistance induces a large increase in *attempted* enrollment, but less than a fifth of induced households were successful in completing the registration process. If administrative barriers are more difficult to overcome for those with the least resources, they may skew insurance coverage towards the non-poor. They may also contribute to adverse selection if only those most in need of health care overcome the hurdles, which can put the financial health of the scheme in jeopardy if it relies at least partially on premiums for financing.

Administrative hurdles can also deter utilization of health insurance. Having to prove insurance coverage through a physical card (rather than by providing one's unique social security number, for example) can limit household's ability to use insurance if they do not know they need to bring the card, have only one card for the entire household, or do not know where to bring the card (Malani et al., 2024).

### 4.1.4 Trust

Not surprisingly given the evidence just mentioned, low trust in the insurance scheme itself (willingness of providers to accept the card or of the insurer to accept the claim), or in the quality of the services insured, can also lower take-up. In India, Banerjee et al. (2018) were initially surprised to observe that, when microfinance clients were required to purchase health insurance from a private provider partnered with the MFI to maintain loan eligibility, they often chose to *forego* microfinance altogether. They later realized borrowers had been wise to distrust the health insurance policy: those who enrolled were rarely able to submit a claim or receive reimbursement.

If households believe there is a risk that the insurer does not reimburse, then buying insurance is risky: one may end up having to pay for care *in addition to* having paid the premium. This eventuality can be dire for those close to subsistence. Dercon et al. (2019) makes this argument theoretically and provide experimental evidence that, indeed, in an environment with limited trust—they look at tea farmers in Kenya offered the opportunity to buy health insurance from a private company—there is a negative relationship between risk aversion and demand for insurance. What's more, those who are more risk averse are more responsive to premium subsidies. They show that this is not driven by financial illiteracy, as a cross-randomized financial training does not change these findings.

### 4.1.5 Awareness

While access to information is a necessary first step for households to enroll, it is rarely sufficient, given the other barriers mentioned above. In Indonesia, Banerjee et al. (2021) found that basic information on what the insurance covered, the premiums, and the procedure for registration had no impact on take-up of the national health insurance scheme. Thornton et al. (2010) observed the same in Nicaragua, and also found that spreading information through social networks had no impact. In China, Giles et al. (2021) found informing rural-urban migrants without employment contracts only increased take-up by 3.2 percentage points (23 percent).

One way to palliate both information and trust issues is to offer households the opportunity to try a health insurance product at a subsidized rate for a limited period of time. This provides an opportunity to learn about the quality of covered health care and the ease of accessing insurance benefits. Indeed, two randomized evaluations in Indonesia (Banerjee et al., 2021) and Ghana (Asuming et al., 2021) found that short-run health insurance subsidies had a persistent effect on coverage. Two studies from Nicaragua (Thornton et al., 2010) and Kenya (Haushofer et al., 2020) found the opposite: enrollment declined after subsidies expired, due to households having learned the insurance product is of low quality—e.g., unreliable processes for claiming benefits, low-quality care, limited coverage.

When schemes are free and with automatic enrollment, such as many state-run programs in India, households may be enrolled but unaware of what the scheme entitles them to. In Rajasthan, Dupas and Jain (2023) show limited awareness of the features of the BSBY scheme, even among households who sought and had obtained insured care, which suggests that low awareness may dampen utilization of the scheme. Awareness may also be unequal among household members. In Rajasthan, utilization is especially low among women (Dupas and Jain, 2024), who appear less aware than men.

Awareness and trust can increase (decrease) through second-hand experience, not only first-hand experience. In Andhra Pradesh, India, Debnath and Jain (2020) use administrative data on a publicly financed health insurance program to provide evidence consistent with learning spillovers: first-time claims are more common when total claims by local peers (own-caste members) are higher. The authors provide complementary evidence that this is driven by sharing of information about the insurance scheme. (Malani et al., 2024) also find sizeable spillovers on insurance utilization.

## 4.2 Adverse Selection and Moral Hazard

Theory suggests adverse selection and moral hazard are two key threats to insurance.

Adverse selection refers to the phenomenon where, as insurance premiums rise, healthier individuals opt out, reducing risk pooling. Under tax-financed universal health insurance, everyone is covered and adverse selection is eliminated, but this may be fiscally challenging. To limit costs, a government may want to impose premia for the non-poor, but this opens the door for adverse selection, as documented in Indonesia (Banerjee et al., 2021), Ghana (Asuming et al., 2021) and India (Malani et al., 2024). Fischer et al. (2023) find that bundling enrollment at the household or credit group level removed opportunities for adverse selection in Pakistan. The theoretical solution to adverse selection is to impose a mandate, but mandates can be difficult to enforce, as documented by Banerjee et al. (2021) in Indonesia.

Turning to moral hazard among beneficiaries, the theoretical concerns are that individuals covered by insurance could (a) become more reckless in their behavior in a way that increases their risk of needing care (ex-ante moral hazard), and (b) start consuming care they do not value at its marginal cost (ex-post moral hazard). In low-income contexts, the potential for (a) is limited by the fact that individuals who get sick tend to suffer an *income loss*. For example, Shrinivas et al (2023) estimate that wage loss accounts for 50-80% of the economic burden of illness in India. This means a reduction in the cost of care alone is unlikely to generate incentives to reduce preventative behavior. Scope for (b) may be limited where the supply of care is seriously limited and patients experience substantial travel and wait time costs. Furthermore, if the household decision-maker under-values the health of some members (e.g. women), and insurance increases care-seeking among those members *more* than an equivalent sum of cash to the household would, this may well be socially efficient.

Possibly because it is not a first order concern in contexts where the primary objective of public health insurance is to increase healthcare utilization among the poor and vulnerable, there are very few empirical studies of moral hazard in health insurance in LMICs. Using an instrumental variable strategy to study the impact of access to health insurance in China, Wagstaff and Lindelow (2008) document how health insurance led to *increased* out-of-pocket spending and total care costs. They show that this is driven by people being more likely to seek care when they fall sick—an intended impact of expanding access to health insurance among the poor and vulnerable—rather than by insurance making people more likely to fall sick.

## 5 Concluding Remarks and a Call for Future Research

Design choices are crucial determinants of whether social health insurance programs achieve their objectives of improving health and reducing health-related financial hardship at a manageable cost. Yet, largescale quantitative evidence on the impacts of these choices in LMIC contexts remains severely limited. Governments frequently change aspects of insurance design—benefits package, reimbursement rates, monitoring, premiums, co-pays, and eligibility—creating opportunities to study their implications. There is an urgent need for more research in partnership with governments to evaluate the impact of different design choices on the effectiveness, equity, and efficiency of publicly funded insurance programs.

The evidence on *demand side* challenges is large and generates clear insights. Many issues echo those observed in the demand for other types of insurance. Further work on the causes of and potential responses to non-financial barriers are necessary to ensure that public health insurance programs are progressive. These include awareness of entitlements, trust, administrative hurdles, and inequality in coverage and utilization.

Much more remains to be understood on the *supply side*—we echo Das and Do (2023) in calling for more research on health providers. Health providers' strategic responses to program design choices, particularly to payments—including whether to enter the market, which patients to accept, what quality to provide, what claim to file, and what to charge the patient—are fundamental drivers of the success or failure (and costs) of a program. More research is needed to understand how to limit opportunities for providers to game the system while maintaining incentives for them to participate and provide high quality care.

None of these are straightforward endeavors—the needed research requires careful thinking about data protection issues, and serious political economy constraints can come in the way of the types of experimental variation that would make causal inference feasible—but they are of crucial importance given the persistent challenge of poor health and health-induced financial hardship in many low- income settings.

**A full set of references for all Handbook chapters, including this one, can be found at this link: https://www.dropbox.com/scl/fi/9lqs2mdrawkjdrv4m648e/References-Social-Protection-Handbook.pdf?rlkey=jt0f8kute31mhdke77aoiw99d&st=kd7l8ff1&dl=0**