

Dodd, Amy; Manuel, Marcus; Christensen, Zach

Research Report

Failing to reach the poorest: Subnational financing inequalities and health and education outcomes

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September 2019



Failing to reach the poorest

Subnational financing inequalities and health and education outcomes



Amy Dodd
Marcus Manuel
Zach Christensen



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Acronyms

DI	Development Initiatives
LDCs	Least Developed Countries
LICs	low-income countries
MICs	middle-income countries
MPI	Multidimensional Poverty Index
ODA	official development assistance
ODI	Overseas Development Institute
OECD	Organisation for Economic Co-operation and Development
SDGs	Sustainable Development Goals
SSA	sub-Saharan Africa

Executive summary

Investments in health and education play a vital role in improving lives, reducing inequalities of opportunity and outcome, and developing a country's human capital, which contributes to broader economic benefits. But, as the latest UN report on the 2030 Sustainable Development Goals (SDGs) notes, access to quality healthcare and education is not equally distributed across the world (UN, 2019). And, as research from Development Initiatives (DI) and the Overseas Development Institute (ODI) shows, sufficient financing is not being mobilised to address these global inequalities (Dodd et al., 2019; Manuel et al., 2019a). Other research reaches similar conclusions.¹

There is also growing recognition that, in addition to global and national financing inequalities, subnational financing matters. Previous ODI and DI research finds that subnational financing is not well targeted on the poorest regions (Manuel et al., 2019b). In some countries, the number of teachers and health workers in the very poorest areas is as much as ten times less than the national average. This paper builds on this research to assess how well subnational financing of health and education in all 82 low- and middle-income countries including all Least Developed Countries (LDCs) targets the worst health and education outcomes. Many countries do not publish sufficient recent and comprehensive data to make an assessment possible. But in the 16 countries where analysis is possible, this paper shows that:

- There is little evidence of a progressive allocation of health and education resources by governments to the regions with the worst health and education outcomes. Instead, in most countries, the trend is for slightly less financing to be provided to areas with the worst outcomes – typically 12% below national average for health and 7% below for education. The consistency of the findings across different indicators – whether under-five or under-18 mortality, years of schooling or secondary completion rates – suggests that poor and/or inconsistent targeting is a broader problem.
- There is strong evidence that donors do target aid for health to regions with the worst under-five mortality rates – typically 29% higher. Results are more mixed in terms of under-18 mortality rates.
- There is no consistent trend in donor targeting of aid for education. There is strong positive targeting in some countries, and the reverse in others.

The evidence that governments that do publish data do not target the neediest is all the more concerning as those countries that do not publish subnational expenditure data are likely to be even less concerned about targeting spending at the neediest regions.

1 For example: IMF (<https://blogs.imf.org/2018/09/24/give-todays-children-a-chance/>); WHO (<https://www.who.int/news-room/detail/17-07-2017-who-estimates-cost-of-reaching-global-health-targets-by-2030>); Prof Sachs (<https://movehumanity.org/article/closing-the-sdg-budget-gap/>); Brookings Institute (<https://www.brookings.edu/blog/future-development/2019/07/29/how-much-does-the-world-spend-on-the-sustainable-development-goals/>); and Center for Global Development (<https://www.cgdev.org/blog/financing-options-low-income-countries>).

Recommendations

If we are to ensure that we leave no one behind and build human capital for all, we will need to ensure that the worst-performing regions receive consistently more, not less, resourcing. The evidence from this paper suggests that there is a clear case for:

- governments and education donors to learn from why donor aid for health seems to be so much better targeted
- government and education donors to commit to improve the targeting of their financial resources
- at a minimum, ensuring at least equal allocation of government spending between regions and above-national-average spend for education aid in worst-performing regions.

Better targeting on its own will not eliminate inequality. But it is a necessary and enabling precondition for much faster progress.



Chemistry experiment in Herat City, Afghanistan. Photo: Ghulam Abbas Farzami/World Bank, 2014.

1 Introduction

Globally, public financing is not increasing significantly (Development Initiatives, 2019) and certainly not at the rate needed to achieve the Sustainable Development Goals (SDGs) for all. There are also issues around effective targeting (Dodd et al., 2019). Global ODA has largely flat-lined, with falls in 2017 and 2018 after a period of growth. As the chair of the OECD Development Assistance Committee, Susanna Moorehead, noted this year “less Official Development Assistance (ODA) is going to least-developed and African countries, where it is most needed” (OECD, 2019).

At the same time, it is increasingly clear that the current trajectory of progress is not sufficient. Even ODI’s comparatively optimistic estimates indicate that 430 million people are likely to be living in extreme poverty in 2030 (Manuel et al., 2019a).

There is also much left to do to improve both access to and the quality of education and healthcare for the poorest people in order to meet SDGs 3 and 4. Globally and in all regions, under-five and neonatal mortality rates are declining and progress has been fastest where mortality was highest. However, for some 50 countries, mostly in sub-Saharan Africa (SSA), progress will need to accelerate to meet the SDG target by 2030 (UN, 2019). Nearly one-fifth of the global population of school-age children were still out of school in 2017. And for those attending school, attainment remained a challenge, with 88% of

children of primary and secondary school age in SSA not proficient in reading. Girls are the most likely to be disadvantaged and out of school (121 girls for every 100 boys) (UN, 2019).

Subnational finance is a critical element in addressing these inequities. Health and education services tend to be delivered by local governments.² One way in which governments have tried to redress inequities is by ensuring a more equitable distribution to local governments so that they can benefit from similar levels of finance to purchase inputs to deliver services (or in some cases providing additional inputs where need is greater).

1.1 Methodology

The next two sections review subnational financial allocations in the 16 countries for which good quality data on at least one element of government and donor financing is publicly available. For countries to be included in the analysis their data had to be recent (no more than three years old) and to cover at least two thirds of government spending on health and education (one third for donor spending). In Annex A we set out the methodology in more detail (and full details of each country are included in the previous analysis (Manuel et al., 2019b)).

Sections 2 and 3 assess spending relative to childhood mortality (households where a child under five has died in the five-year period preceding the survey) and school attendance (households where any school-age child, up to class 8, is not going to school). These two indicators draw on MPI data³ and are closely linked to health and education SDGs.

In the annexes to this report, we also explore the sensitivity of these results to different health and education outcome measures:

- For health, under-18 childhood mortality. The Multidimensional Poverty Index (MPI) defines a household as being deprived in child mortality if a child under 18 has died in the family in the five years preceding the survey.
- For education, school completion rates (the share of adults over 21 in the region who have completed secondary school) and years of schooling (the share of households where no one aged 10 years or more has completed six years of schooling).

We also compare our results with a broad measure of deprivation – overall MPI. This sensitivity analysis (Annex B) shows a similar pattern of financing relative to need, whatever precise outcome/deprivation measure is used. Where the results are significantly different, we flag this in the text of the main report.

1.2 Other research

Relatively little research has been done on subnational financing and even less on the relationship between subnational allocations compared with needs. Despite this limited pool, it is possible to draw out some broad findings that further support the evidence presented in this paper.

2 For further discussion, see for example Glassman and Sakuma (2014).

3 For full details, see <https://ophi.org.uk/multidimensional-poverty-index/>

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- Broadly speaking, allocation of financing does not always (or even usually) follow need (Glassman and Sakuma, 2014) and is more likely to go those places where greater infrastructure already exists (Marty et al., 2017). This is a problem for many countries regardless of income level, for example in China with inequity of subnational allocations for health,⁴ but the problem is particularly acute for the poorest countries. World Bank research also supports the finding that there is little evidence of targeting of aid to worse-off areas and that “large efficiency gains may be possible in the distribution of aid from the World Bank and other donors” (World Bank, 2019).
 - Hardly surprisingly, there is evidence of a correlation between levels of funding and outcomes. For example in Malawi, higher levels of domestic or external financing for health correlate with lower levels of post-neonatal mortality (Borghi et al., 2018). Similarly, in Uganda, aid for health seems to be achieving significant reductions in both disease burden and severity (Odokonyero et al., 2015).
 - External financing remains essential. Government spending is clearly critical but external funding is vital, particularly for some of the poorest countries (Borghi et al., 2018) less able to finance their own development (Manuel et al., 2018).

Clearly financing alone is not enough; the quality of spending is also critical. Research by the World Bank on education financing in Indonesia shows that just increasing resources is not always sufficient to improve outcomes or address access and equity (World Bank, 2013). But the allocation of resources at subnational level does play an important role. There are many influencing factors here, from the political to the technical (Briggs, 2019). While these are beyond the scope of this report, they are obviously critical to understanding how resources are allocated and what outcomes are achieved.⁵

4 See Brixi et al. (2013) on how subnational or subregional governments in China are working, the importance of aligning objectives at multiple levels, and the need for governance reform.

5 Boateng (2014) on education in South Africa shows that capacity is also an issue; record-keeping, ‘leakage’ and other inefficiencies impact on both delivery of service and outcome.



A child receiving an immunisation in Burkina Faso. Photo: World Health Organization, 2010.

2 Childhood mortality and subnational financing

This section explores the extent to which subnational financing allocations of ODA and government spending are correlated with under-five child mortality. Child mortality is not a perfect measure of health outcomes more broadly but it is clearly very strongly related to child health. Failing to invest in improving child health would result in 100 million child deaths in the SDG era (Roser, 2019). This is particularly concerning for some regions – four out of five child deaths occur in SSA and Southern Asia.⁶ Preventing this is a moral imperative – but also a practical one. Access to quality, affordable or free health services is vital to ensuring that people live healthy lives but also drives healthy economies (Georgieva, 2019). And yet the evidence suggests that the financing needed to help deliver this is not being targeted effectively at those regions, nor is it targeting the areas of greatest deprivation and poorest health outcomes within countries in those regions.

⁶ See: UN Sustainable Development Goal 4: Quality Education (www.un.org/sustainabledevelopment/education/).

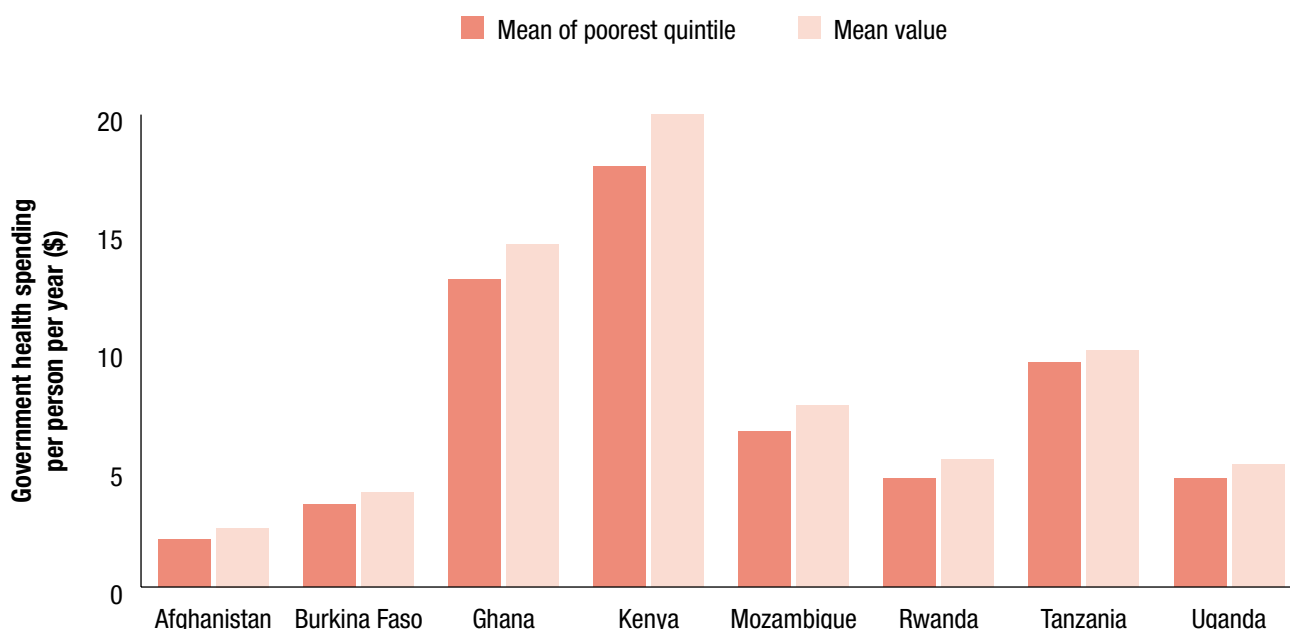
There are similar challenges for other health-related indicators – despite significant progress in maternal health, nearly 300,000 women in 2017 died from complications relating to pregnancy and childbirth. Over 90% of these lived in low- and middle-income countries (UN, 2019a). Stunting also shows similar trends – despite significant declines globally, to 22.9% in 2016 from 32.7% in 2000. Southern Asia and SSA accounted for three-quarters of stunting in children under five in 2016.⁷ This continued and growing concentration in some regions is a concerning trend and supports the need to improve the targeting of finance.

2.1 Higher levels of childhood mortality are not progressively targeted by government spending

Evidence from the eight countries that have adequate subnational health expenditure data shows that, **in all these countries, government health spend per person in the regions with the worst child mortality rates is less than the national average. On average (median value), poorer regions receive 12% less than the national average.** There is a wider spread when looking at under-18 mortality and two countries spend more than the national average in regions with the worst health outcomes: Afghanistan and Kenya. But the average (median value) underspend for all countries is still 12%.

The detailed analysis of spending in each region/district suggests a tendency in most countries for spending to fall as child mortality rates rise (that is, there is a downward slope, as shown in Figure 2). In a few, there is no discernible trend. And in all countries the statistical correlation is weak (at most 16%), suggesting that deprivation is not driving allocation decisions.

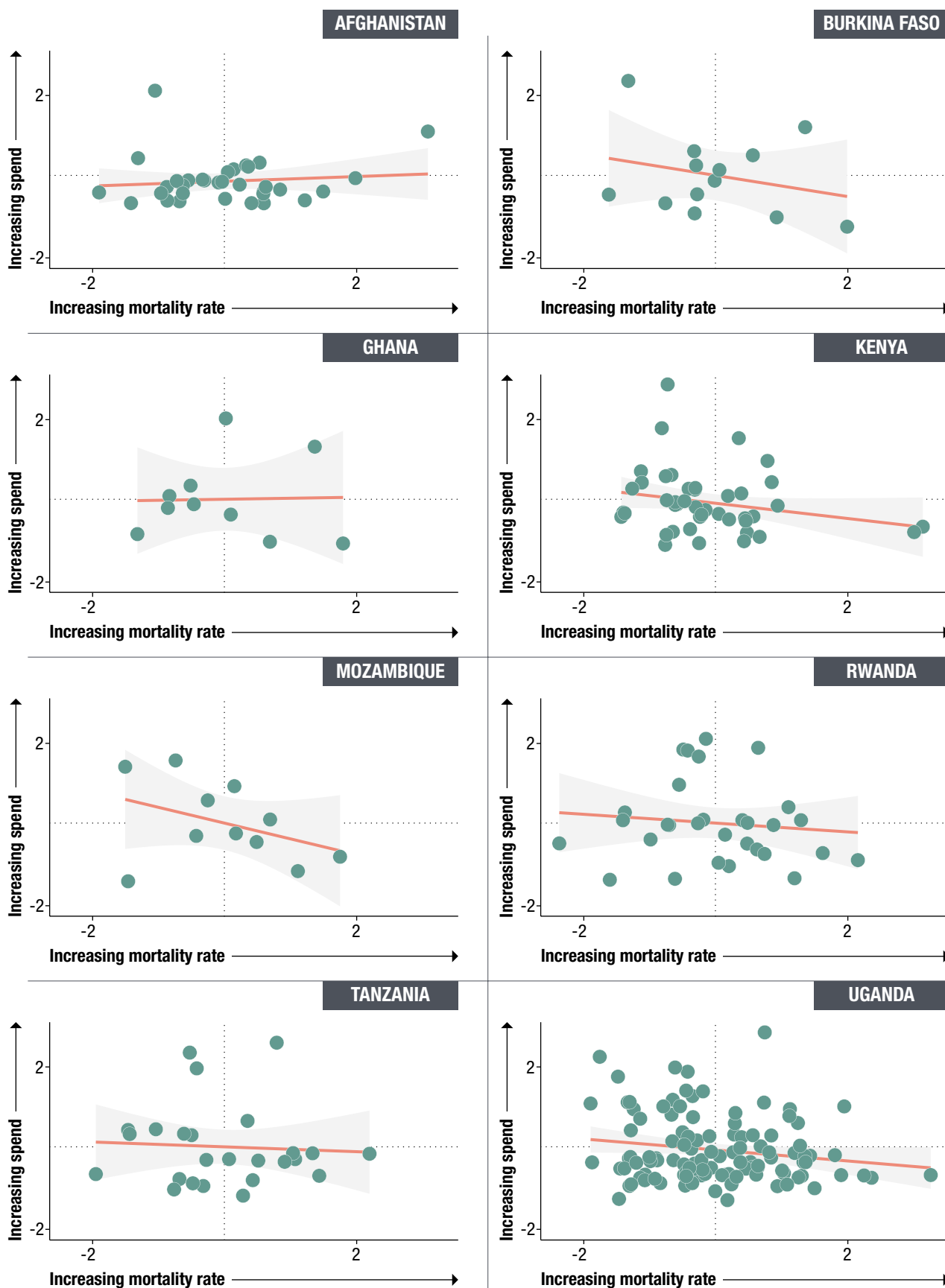
Figure 1 In all countries, government health spending is lower in those regions with the highest under-five mortality rates



Source: authors' own calculations.

⁷ See: UN Sustainable Development Goal 2: Zero Hunger (<https://unstats.un.org/sdgs/report/2017/goal-02/>).

Figure 2 Government health spending tends to fall as under-five mortality rates increase



Note: dotted lines indicate national average and scale is determined by standard deviation. Observations greater or less than three standard deviations from the mean have been dropped. All values shown are for z-scores.
Source: authors' own calculations.

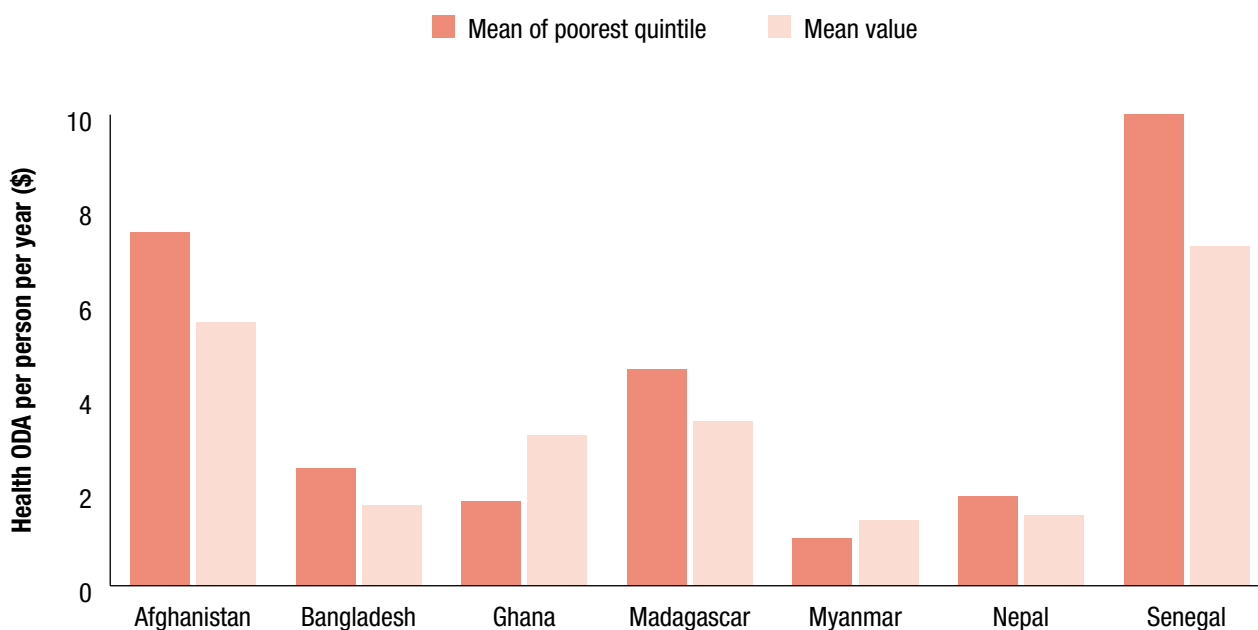
2.2 In most countries, donors *do* target regions with the highest levels of childhood mortality

Evidence from the countries that have adequate subnational ODA health data shows that in five of the seven countries, donor spend in the regions with the worst child mortality rates is **higher** than the national average. On average (median value), poorer regions received 29% more than the national average. The degree of targeting is particularly clear in Senegal. In only two countries do donors spend less: Ghana and, to a much lesser extent, Myanmar. It would be interesting to draw on learning about what drives the more progressive allocations in general and why this does not happen in all countries.

The picture is less clear when looking at under-18 mortality, which shows much greater variation in spending patterns. In some countries, donors spend much more in regions with high mortality rates but in four out of seven countries donors spend less. The average (median) spend is 6% less in the poorer regions.

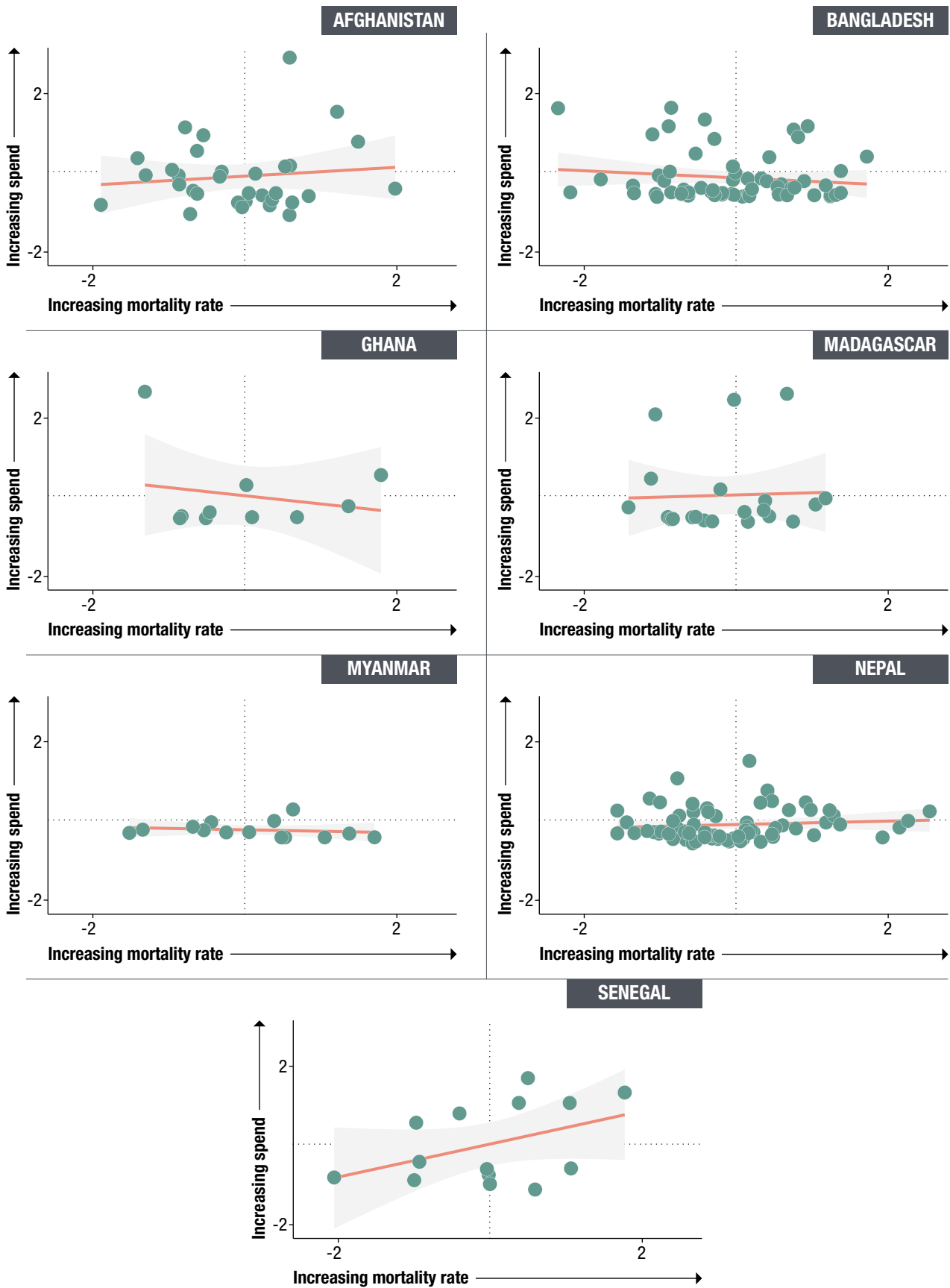
The more detailed analysis of spending in each region/district confirms this pattern. In Senegal, aid tends to increase as mortality rates rise. In Ghana, aid tends to fall as mortality rates rise. However, in most cases the statistical correlation is weak suggesting that deprivation is not driving allocation decisions. Correlation in countries varies between 1% and 18%.

Figure 3 In most countries, donor health spending is higher in those regions with the highest under-five mortality rates



Source: authors' own calculations.

Figure 4 In most countries, there is no clear pattern that persists across all regions in how donor health spending varies in relation to under-five mortality



Note: dotted lines indicate national average and scale is determined by standard deviation. Observations greater or less than three standard deviations from the mean have been dropped. All values shown are for z-scores.
Source: authors' own calculations.



Registers from Mkunazini primary school in Zanzibar. Photo: Global Partnership for Education/Chantal Rigaud, 2017.

3 Children not in school and subnational financing

This section explores the extent to which subnational financing allocations of government and donor spending are correlated with children not in school, as a proxy for educational outcomes, noting any significant differences from when the analysis is based on educational attainment or years of schooling.

There are clearly challenges to be addressed in improving access to education for the poorest. More than half of school-age children not enrolled live in sub-Saharan Africa and half of those out of school live in conflict-affected areas. Of the 265 million children out of school, 22% are of primary-school age – so they are not receiving even basic levels of education.⁸ Educational attainment is also a challenge and again more of a challenge for some people – global youth non-literacy rates have declined, with 91% literate compared to 83% two decades ago but women make up 59% of

⁸ See: UN Sustainable Development Goal 4: Quality Education (www.un.org/sustainabledevelopment/education/).

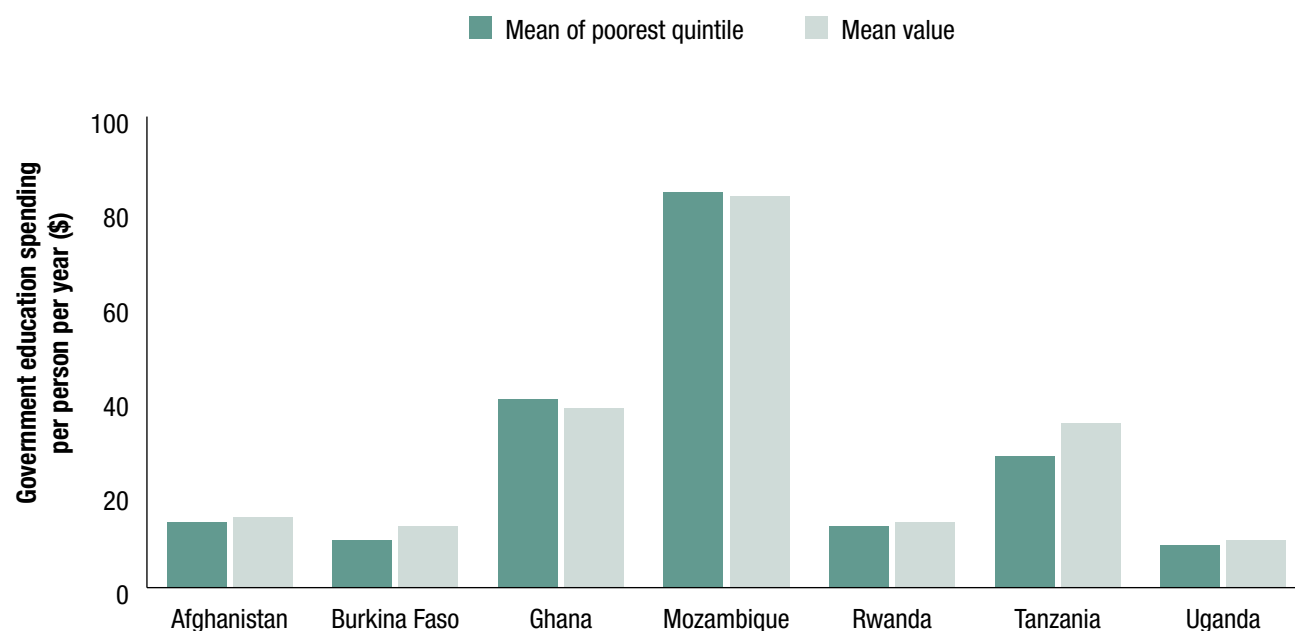
the non-literate young people.⁹ Equally, looking at attainment, in 72 countries with recent data, approximately 7 in 10 children aged three and four were developmentally on track in at least three of the following domains: literacy-numeracy, physical development, social-emotional development and learning.¹⁰ While this is to be welcomed, clearly greater effort is required to reach the 3 in 10 who are off track and being left behind.

3.1 Higher levels of children out of school are not progressively targeted by government spending

Evidence from the seven countries that have adequate subnational education expenditure data shows that in most countries, government education spend per person in the regions with the worst child school attendance is slightly less than the national average. Only one country (Ghana) spends more in the neediest regions, but the 6% extra is much less than the 20–30% that UNESCO assesses is needed to reach children most at risk of being left behind. Burkina Faso and Tanzania have the lowest levels of spend in the neediest regions: 22% and 19% respectively below the national average. Overall, the neediest regions receive, on average, 7% less than the national average. This poor targeting is even worse when measured in terms of years of schooling (8%) or secondary completion (14%).

A similar pattern is also apparent from the detailed analysis of spending in each region/district with a tendency for spending to fall slightly as the number of households with a child not attending school rises. In a few countries, there is no discernible trend. However, in most cases, the statistical correlation is weak, suggesting that deprivation is not driving allocation decisions. Correlations in countries are less than 20%, with the exception of Tanzania (37%).

Figure 5 In most countries, government education spending is slightly lower in those regions with the highest rates of children out of school

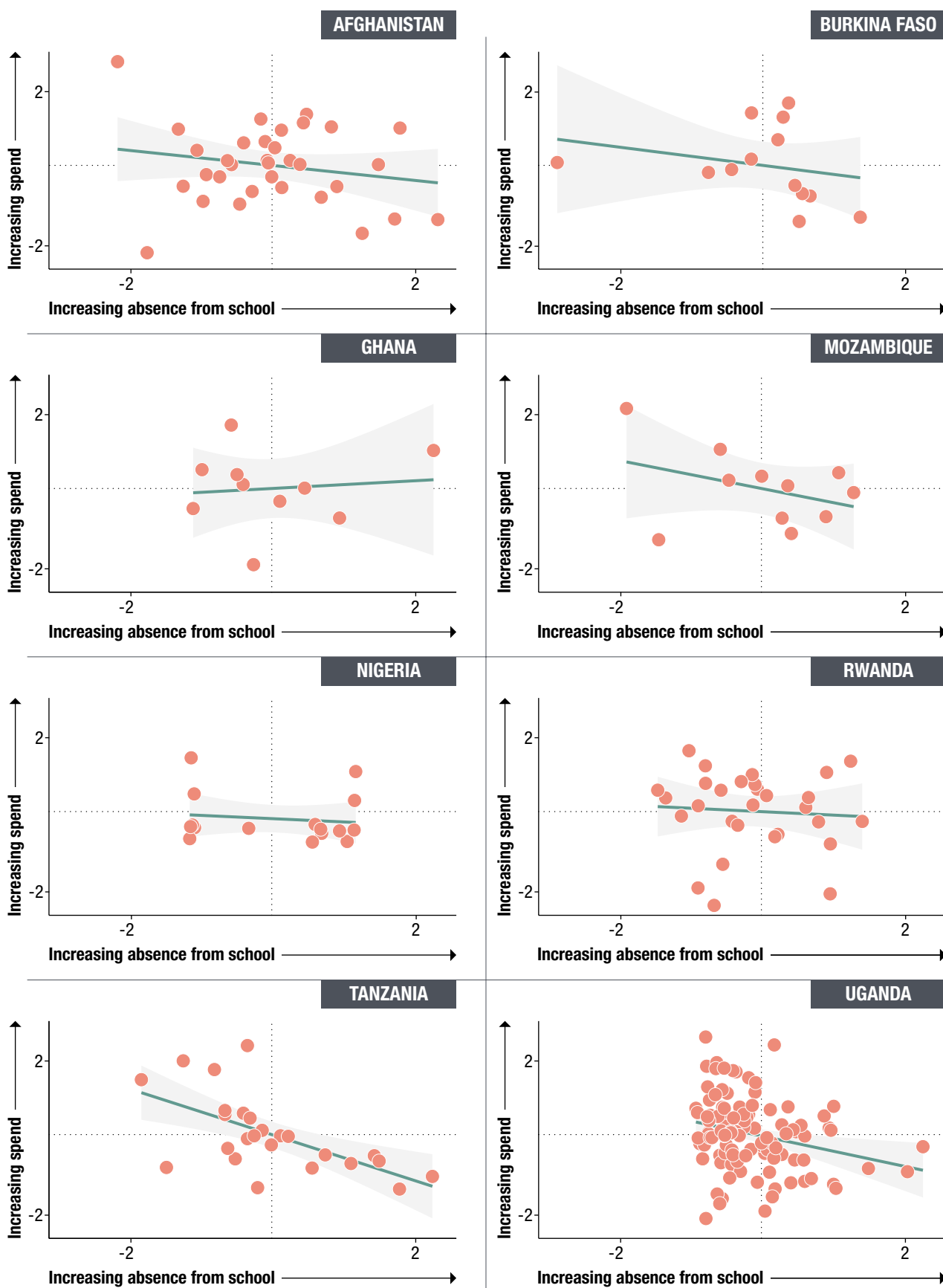


Source: authors' own calculations.

⁹ See: UN Sustainable Development Goal 4: Quality Education (www.un.org/sustainabledevelopment/education/).

¹⁰ See: UN Sustainable Development Goal 4: Quality Education (www.un.org/sustainabledevelopment/education/).

Figure 6 Government education spending in most countries tends to fall slightly as number of children not attending school rises



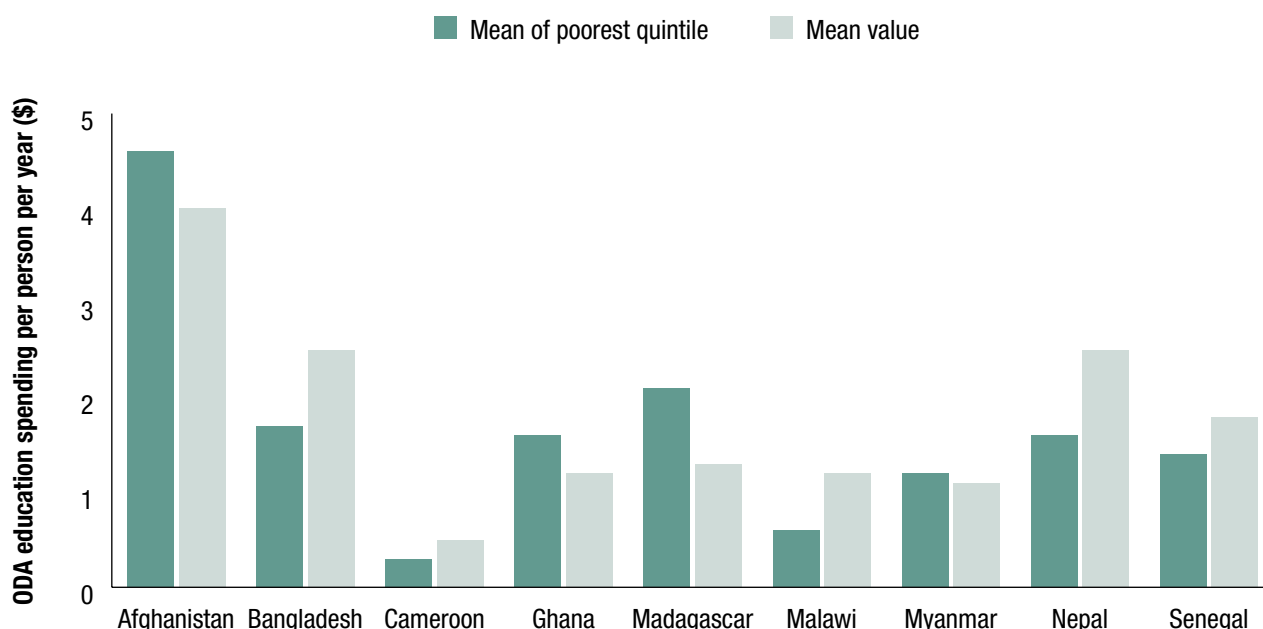
Note: dotted lines indicate national average and scale is determined by standard deviation. Observations greater or less than three standard deviations from the mean have been dropped. All values shown are for z-scores.
Source: authors' own calculations.

3.2 Education ODA varies enormously in its targeting of need

Evidence from the nine countries that have adequate subnational education donor expenditure data shows that donor education spend per person in the regions varies significantly in relation to child school attendance, with higher spending in four countries and lower in five countries, ranging from 150% to 50% of the national average. In view of this range, it would be interesting to explore what drives the differences – why Madagascar and Ghana show such positive targeting according to need (spending more than 30% above national average) while spending in Malawi appears to be poorly targeted (50% below national average). The range of targeting is similar when measured in terms of years of schooling or completion of secondary education.

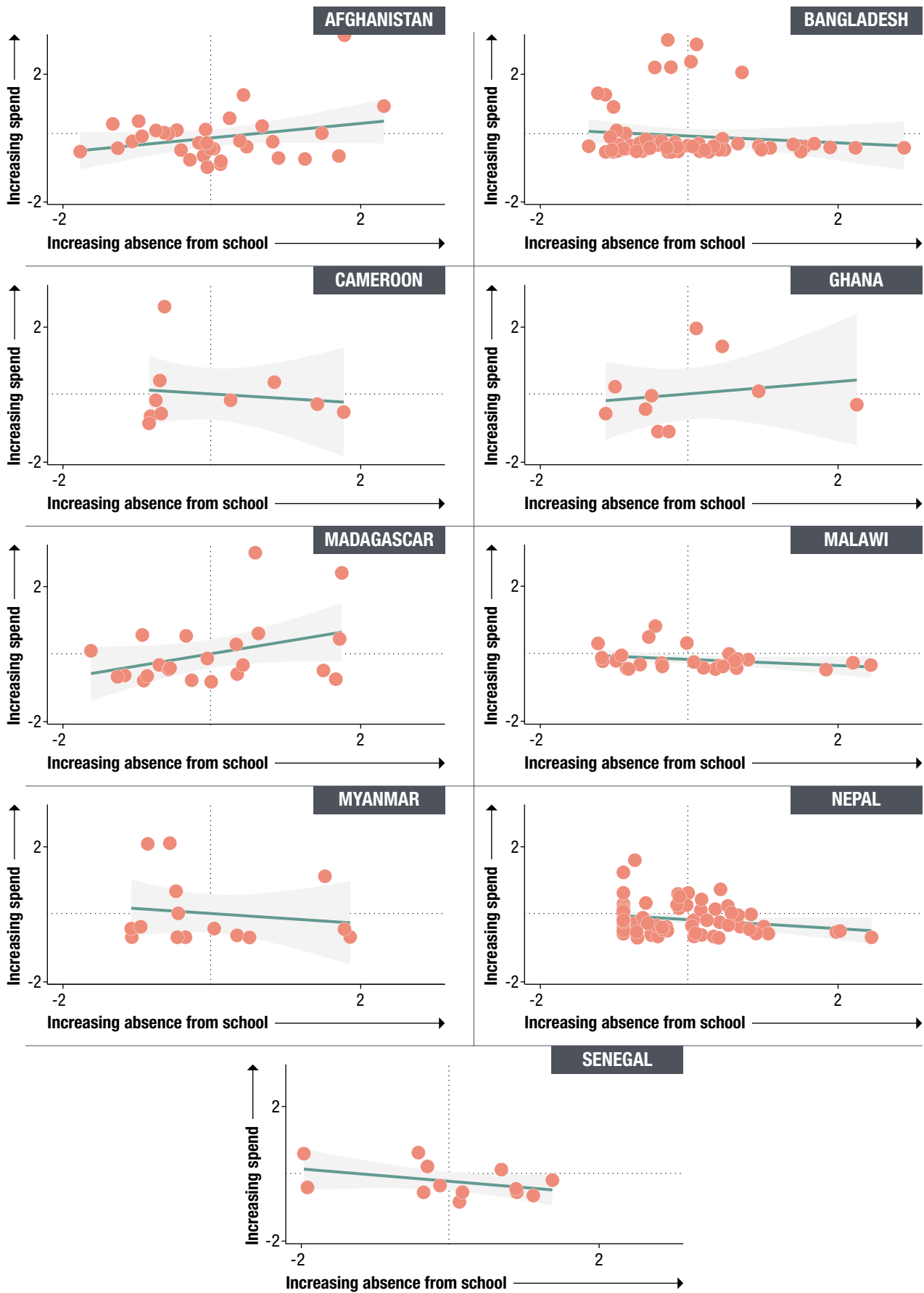
A similar range is also apparent from the detailed analysis of spending in each region/district. The statistical correlation is weak in most cases, suggesting that deprivation is not driving allocation decisions. Correlation in countries is less than 15%, with the exception of Ghana (23%).

Figure 7 Donors show wide variation in targeting of education need



Source: authors' own calculations.

Figure 8 In most countries, there is little discernible pattern in donor targeting of education



Note: dotted lines indicate national average and scale is determined by standard deviation. Observations greater or less than three standard deviations from the mean have been dropped. All values shown are for z-scores.
 Source: authors' own calculations.



A nurse at the health centre in Manhica Village, Mozambique. Photo: Dominic Chavez/The Global Financing Facility, 2017.

4 Conclusions and recommendations

4.1 Conclusions

Analysis of the 16 of the 82 low- and middle-income countries for which data is available reveal that:

- There is little evidence of a progressive allocation of health and education resources by governments to the worst-off regions. Instead, in most countries, the trend is for slightly less financing to be provided to areas with the worst health and education outcomes.
- There is strong evidence that donors do target aid for health to regions with the highest rates of under-five mortality (but more mixed results in terms of under-18 mortality rates).
- There is no consistent trend in donor targeting of aid for education – with strong positive targeting in some countries and the reverse in others.

As the countries that do not publish subnational expenditure data are likely to be less concerned about targeting spending at the neediest regions, the evidence that governments that do publish data do not target the neediest is all the more concerning. The consistency across different indicators – whether under-five or under-18 mortality, years of schooling or secondary completion – suggests that poor and/or inconsistent targeting is a broader problem. The regions within countries facing the greatest challenges are likely to be getting relatively less funding and are unlikely to be getting the additional funding needed to reach those furthest behind.

It is encouraging that donors do seem to be targeting their health support on regions with the worst health outcomes. This reinforces the earlier report (Manuel et al, 2019b) which also showed that only donor health spend was positively targeted at regions of greatest general deprivation. It is also encouraging that, in at least some countries, donors appear to target their education support.

Overall, this research suggests that there is considerable potential for lessons to be learnt between individual governments and donors. Some governments and some donors have been more effective in positively targeting resources – lesson-learning and effective coherence between these key actors could see much more efficient targeting of the poorest people and areas of worse outcomes with the resources needed. As governments in general allocate less funding to the neediest regions, donors may want to consider whether they should target their spending even more intensively to the neediest regions. The case for better donor targeting is all the more urgent as it is becoming clearer that meeting the SDGs for all will require significant additional investment to reach those who are furthest behind. Investing in human capital, including health and education, will require much more, better and efficient use of financial resources at all levels, and especially at subnational level where these services are delivered.

4.2 Recommendations

If we are to ensure we leave no one behind and build human capital for all, we will need to consistently ensure the worst-performing regions receive more, not less, resourcing. Yet this evidence shows weak links between government spend and need, and inconsistent evidence of targeting of education aid to need. There is therefore a clear case for:

- governments and education donors to learn lessons from why donor health aid seems to be so much better targeted
- government and education donors to commit to improve the targeting of their financial resources
- as a minimum, ensuring at least equal allocation of government spending between regions and above-national-average spend for education aid in worst-performing regions.

Better targeting on its own will not eliminate inequality. But it is a necessary and enabling precondition for much faster progress.

References

- Boateng, N.A. (2014) 'Technical efficiency and primary education in South Africa: evidence from sub-national level analyses' *South African Journal of Education* 34(2) (www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0256-01002014000200004)
- Briggs, R.C. (2019) *Why does aid not target the poorest?* Working Paper 85. AidData, July (http://docs.aiddata.org/ad4/pdfs/WPS85_Why_does_aid_not_target_the_poor.pdf)
- Brixi, H., Mu, Y., Targa, B. and Hipgrave, D. (2013) 'Engaging sub-national governments in addressing health equities: challenges and opportunities in China's health system reform' *Health Policy and Planning* 28(8): 809–824 (<https://doi.org/10.1093/heapol/czs120>)
- Borghi, J., Munthali, S., Million, L.B. and Martinez-Alvarez, M. (2018) 'Health financing at district level in Malawi: an analysis of the distribution of funds at two points in time' *Health Policy and Planning* 33(1): 59–69 (www.ncbi.nlm.nih.gov/pmc/articles/PMC5886161/)
- Development Initiatives (2019) 'Preliminary ODA data 2018 – total falls for second consecutive year'. DI Factsheet. Bristol, UK: Development Initiatives (<http://devinit.org/post/final-oda-data-2018-message/>)
- Dodd, A., Coppard, D. and Tew, R. (2019) 'Six ways to refocus ODA to end poverty and meet the SDGs'. DI Factsheet. Bristol, UK: Development Initiatives (<http://devinit.org/wp-content/uploads/2019/02/Six-ways-to-refocus-ODA-to-end-poverty-and-meet-the-SDGs.pdf>)
- Georgieva, K. (2019) 'Healthy people drive strong economies'. Article. LinkedIn, 28 June (www.linkedin.com/pulse/healthy-people-drive-strong-economies-kristalina-georgieva/?trk=portfolio_article-card_title)
- Glassman, A. and Sakuma, Y. (2014) 'Most money for health is subnational, but what will donors do about it?' Blog. Center for Global Development, 12 November (www.cgdev.org/blog/most-money-health-subnational-what-will-donors-do-about-it)
- Manuel, M., Desai, H., Samman, E. and Evans, M. (2018) *Financing the end of extreme poverty*. London: Overseas Development Institute (<https://www.odi.org/publications/11187-financing-end-extreme-poverty>)
- Manuel, M., Manea, S., Samman, E. and Evans, M. (2019a) *Financing the end of extreme poverty – 2019 update*. London: Overseas Development Institute (forthcoming) (<https://www.odi.org/publications/11433-financing-end-extreme-poverty-2019-update>)
- Manuel, M., Coppard, D., Dodd, A., Desai, H., Watts, R., Christensen, Z. and Manea, S. (2019b) *Subnational investment in human capital*. London and Bristol, UK: ODI and Development Initiatives (<http://devinit.org/post/refocus-oda-end-poverty-meet-sdgs/>)
- Marty, R., Dolan, C.B., Leu, M. and Runfola, D. (2017) 'Taking the health aid debate to the subnational level: the impact and allocation of foreign health aid in Malawi' *BMJ Global Health* 2(1): e000129 (<https://gh.bmj.com/content/2/1/e000129>)
- Odokonyero, T., Ijjo, A., Marty, R., Muhumuza, T. and Moses, G.O. (2015) 'Sub-national perspectives on aid effectiveness: impact of aid on health outcomes in Uganda'. Working Paper 18. AidData, December (http://docs.aiddata.org/ad4/pdfs/wps18_sub-national_perspectives_on_aid_effectiveness.pdf)
- OECD – Organisation for Economic Co-operation and Development (2019) 'Development aid drops in 2018, especially to neediest countries'. Article, 10 April (www.oecd.org/development/development-aid-drops-in-2018-especially-to-neediest-countries.htm)
- Roser, M. (2019) 'Child mortality: achieving the global goal for 2030 would be a huge achievement – but we are currently far away'. Blog. Our World in Data, 23 April (<https://ourworldindata.org/child-mortality-global-goal>)

-
- UN – United Nations_(2019) *The Sustainable Development Goals report*. New York: United Nations Department of Economic and Social Affairs (<https://unstats.un.org/sdgs/report/2019/The-Sustainable-Development-Goals-Report-2019.pdf>)
- World Bank (2013) 'Indonesia – spending more or spending better: improving education financing in Indonesia'. Jakarta: World Bank (<https://openknowledge.worldbank.org/handle/10986/13210>)
- World Bank (2019) 'The economic efficiency of aid targeting'. Event, World Bank, 23 April (www.worldbank.org/en/events/2019/04/23/economic-efficiency-of-aid-targeting)

Annex A Methodology

Education and health spending data were taken from countries where data are publicly available within the last three years, where at least one half of a country's total aid was available at a subnational level (as a share of total aid reported by the OECD Development Assistance Committee), and at least two-thirds of government spending and 30% of aid for health and education are allocated to the subnational level.

Capital cities were excluded from the analysis due to concerns about accurate information about the allocation of funding and concerns about population figures for capitals in some countries. Nevertheless, analysis with capital included did not show substantive differences in results.

Indicators of need have been taken from the 2019 update of the Multidimensional Poverty Index (MPI). For most countries, modifications of subnational regions compared to those used in MPI were required to align better with subnational boundaries for spending. MPI indicators used were the percentage of people classified as multidimensionally poor as well as three subcomponents of the MPI: percentage of households experiencing the death of a person under 18 in the last five years, the percentage of households where no one over the age of 10 has completed at least six years of school, and the percentage of households where any person is not attending school who is under the age where they would complete class 8.

Drawing on the same microdata used to calculate the MPI, the most recent demographic and health survey for each country, we have calculated additional indicators for the share of people over the age of 21 who have completed secondary school, and under-five mortality. These additional variables were made to explore the relationships between need and resources.

For monetary values, currencies were converted to US dollars in the year for which they were calculated. They are reported in per capita terms and then standardised into z-scores for better comparison between countries. Outcome indicators are reported in terms of z-scores. For all outcome indicators, positive values indicate greater levels of need than the mean.

Bar charts are created by rank-ordering subnational regions by need for a given indicator and then comparing the funding levels for the bottom regions which cover 20% of the population compared to the average.

There are many limitations in this analysis. Many countries do not have adequate or timely data for spending or for outcomes. Furthermore, the data that are present may be incomplete or may be subject to collection errors. The outcome data are taken from household surveys which frequently exclude key populations such as persons living outside households. The countries for which data are available may systematically differ from other low-income countries that do not provide data. However, many of these caveats would, if anything, bias our results towards providing a more positive relationship between need and resource allocation. It seems plausible that countries with more pro-poor budgets would be more likely to report their data.

Another limitation is that we are restricting our analysis to a few indicators for just two sectors. Data availability has been a key challenge in this analysis and with more data it may be possible to explore

other sectors. It is also possible that output indicators (such as classroom construction or hospital beds per capita) would be a better tool for assessing relationships with funding. In a previous paper (Manuel et al., 2019b), some related indicators in Uganda and Kenya were explored but further indicators could be explored in future work.

Annex B Sensitivity analysis

The main paper explored how financing relates to two specific indicators on health and educational outcomes: childhood mortality (households where a child under five has died in the five-year period preceding the survey) and school attendance (households where any school-age child, up to class 8, is not going to school). We also explored the sensitivity of our results to different health and education outcome measures:

- For health, under-18 childhood mortality. The MPI defines a household as being deprived in child mortality if a child under 18 has died in the family in the five years preceding the survey.
- For education, secondary completion (the share of adults over 21 in the region who have completed secondary school) and years of schooling (the share of households where no one aged 10 years or more has completed six years of schooling).

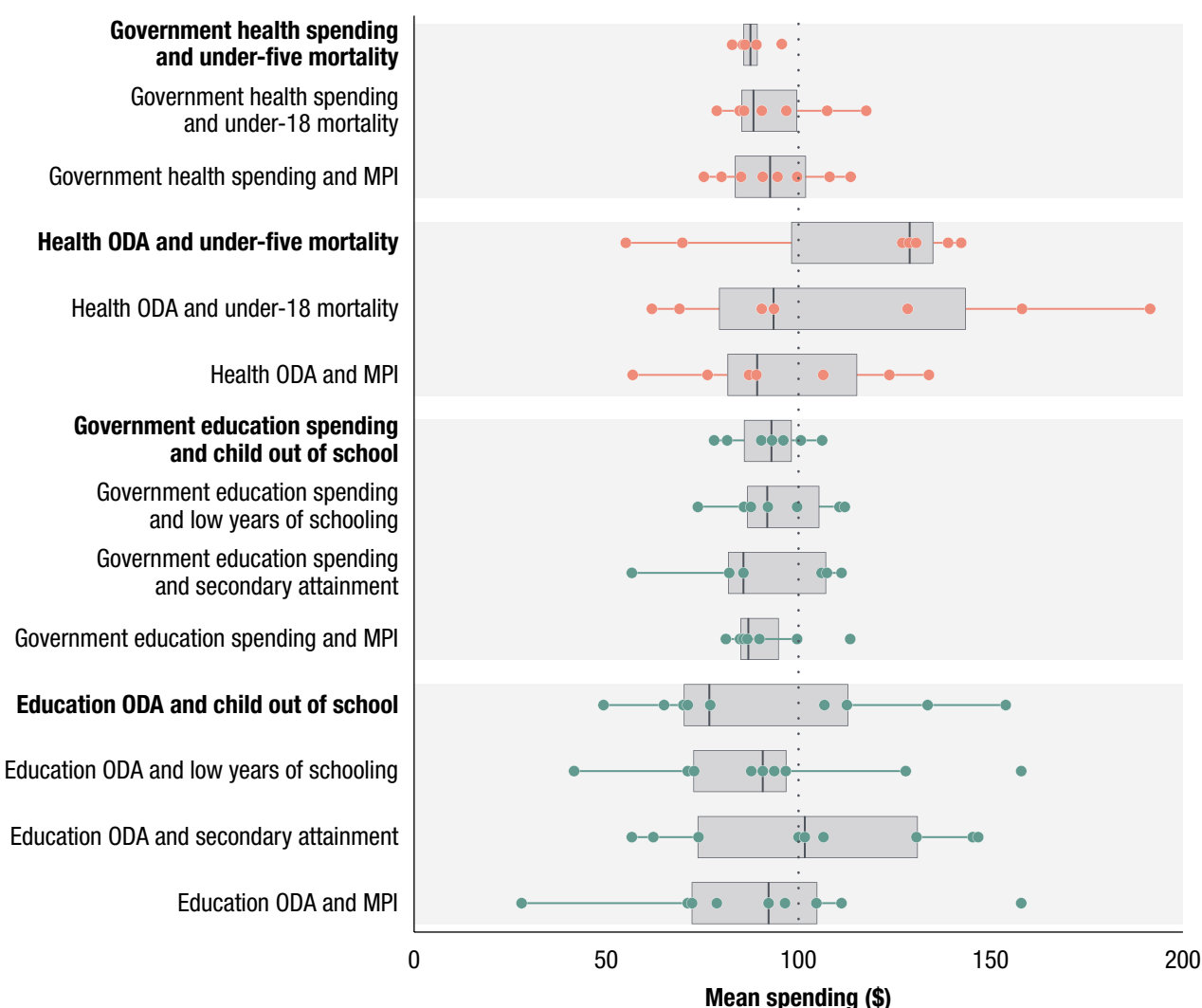
We also compare our results with a broad measure of deprivation – the overall MPI. This combines two indicators on health (nutrition and under-18 mortality), two indicators on education (years of schooling and school attendance) with six indicators of living standards – cooking fuel, sanitation, drinking water, electricity, housing and ownership of key assets.¹¹

Figure B1 uses all these measures and shows the ratios of mean spending in the worst-performing regions (that account for 20% of the population) to the national-average level of spending. In each spending group, the first plot shows the results for the indicator used in the main report and the last plot shows the results when using the broadest measure of deprivation – the overall MPI. Each plot shows the results for each country as well as the interquartile range (the box) and the median value (the vertical line).

This analysis shows that, in general, a similar pattern of financing relative to need emerges whatever precise outcome/deprivation measure is used. We note the main differences in Table B1.

¹¹ For full details, see <https://ophi.org.uk/multidimensional-poverty-index/>

Figure B1 Spend in regions with worst outcome relative to national average (%)



Source: authors' own calculations.

Table B1 Main differences in findings using alternative indicators

Financing source and purpose	Main differences compared to indicator used in main paper
Government health	U18 mortality shows wider range but has precisely the same median (88%) MPI shows wider range and slightly higher ratio (93%)
Donor health	U18 mortality shows few countries with very high ratios but median value is much lower (94% compared to 129%) MPI shows similarly wide range but more countries with lower ratios and median is even lower (89%)
Government education	All median ratios very similar but slightly lower (range of 86–92% compared to 93%) Secondary completion has one country with much lower ratio (Afghanistan 57%)
Donor education	Years of schooling shows similarly wide range but higher median ratio (91% compared to 77%) Secondary completion has similarly wide range and even higher median ratio (102%) MPI has similarly wide range with higher median (92%) and one country with very low ratio (Myanmar 28%)



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ODI

203 Blackfriars Road
London SE1 8NJ

+44 (0)20 7922 0300
info@odi.org

odi.org
odi.org/facebook
odi.org/twitter

Development Initiatives

North Quay House, Quay Side
Temple Back, Bristol BS1 6FL

+44 (0)11 7927 2505
info@devinit.org

devinit.org

@devinitorg