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COVID-19: Missing More Than a Classroom

The impact of school closures on children's nutrition

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COVID-19: MISSING MORE THAN A CLASSROOM. THE IMPACT OF SCHOOL CLOSURES ON CHILDREN'S NUTRITION

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CONTENTS

KEY FINDINGS AND RELATED RECOMMENDATIONS

1. **Identify and reach out to vulnerable children in the first 8,000 days who are at greatest risk of deteriorating nutrition outcomes due to suspension of school feeding programmes.** In 2019, there were 144 million stunted children under 5 globally, with the COVID-19 pandemic projected to add another 3.4 million children under 5. While similar trends may exist for older children, the paucity of data on nutrition in children over 5 means that few estimates exist, (e.g., 74 million girls and 117 million boys aged 5–19 suffering from thinness). As a result of this data scarcity, identifying those who are vulnerable to nutrition shocks and to school dropout through ongoing household assessment and data collection (e.g., VAM,[1] DHS[2]) at the household level is a necessary first step to minimizing these effects through interventions with school-aged children.

2. **Prioritize reopening schools and take all possible measures to reopen safely. When schools are closed, adapt traditional school feeding programmes as take-home rations or cash transfers, so that the children who need it most continue to receive this vital source of support and food.** Globally, in 2020, an estimated 39 billion in-school meals have been missed during school closures by the 370 million children who were benefiting from school feeding programmes pre-crisis. Adapting existing programmes to use take-home rations, top-up cash transfers or food vouchers creates an important safety net. However, these are not long-term solutions. Priority should be given to reopening schools safely as school-based targeting and delivery of nutrition are more cost effective and have been shown to yield substantial benefits in education and health outcomes.

3. **Leverage the power of school feeding programmes to encourage children, especially girls and the vulnerable, to return to school post-crisis.** Without increased efforts to bring children to school, the pre-crisis level of out-of-school children is likely to worsen as a result of the current COVID-19 crisis. Evidence shows that school feeding programmes can increase enrolment and attendance, especially for girls and disadvantaged children, and they can play a key role in getting children back to school and keeping them enrolled post-crisis, if implemented safely. Countries can also take the opportunity to improve existing provision, post crisis, by paying attention to programme design and formerly neglected issues, such as the quality of diets and food-fortification options.

1 Vulnerability analysis and mapping surveys

2 Demographic health survey

1. CONTEXT

In 2019, 690 million people, equivalent to 8.9 per cent of the global population, were already undernourished, 135 million in 55 countries were in food crises[3] or worse, and 2 billion people did not have regular access to safe, nutritious and sufficient food (FAO, IFAD, *et al.*, 2020b, 2020a). The COVID-19 crisis exacerbates these hardships and may result in an additional 121 million people facing acute food insecurity by the end of 2020 (WFP, 2020d). There is a clear need to support vulnerable households during the COVID-19 crisis, where incomes and levels of food security are falling even further (Hebbar and Phelps, 2020; Sumner, Ortiz-Juarez and Hoy, 2020; Wieser *et al.*, 2020).

Schools play an important role in the direct provision of health and nutrition services in the first 8,000 days of a child's life that are critical for their development (Mason-Jones *et al.*, 2012; Skar, Kirstein and Kapur, 2015; Xu *et al.*, 2020). Since the beginning of the pandemic, UNESCO estimated that 1.6 billion learners in 199 countries worldwide were affected by school closures[4], with nearly 370 million children not receiving a school meal in 150 countries (UNESCO, 2020a; WFP, 2020b). In 2020, globally, an estimated 39 billion in-school meals have been missed during school closures. Children globally are estimated to have missed an average of 4 out of 10 in-school meals they would have regularly received, with children in some countries missing 9 out of 10 in-school meals.

While, there is an emerging body of work on the impact of the crisis on education outcomes (See Azevedo *et al.*, 2020; Brossard *et al.*, 2020; Dreesen *et al.*, 2020) there has been less focus on nutrition outcomes. Children that relied on nutrition services provided by schools may suffer from worsening health and nutritional status in the short and medium term. Nutrition shocks, especially for the youngest children, in the first 1,000 days, have strong long-term impacts on test scores, educational attainment, income, absenteeism and health (Almond and Currie, 2011; Sudfeld *et al.*, 2015; Andrabi, Daniels and Das, 2020). Furthermore, lost schooling and learning in the next 7,000 days – particularly for girls, who are already at higher risk of not being in school or of being taken out of school early – may also lead to poor nutrition and health for themselves and their children in the long term (World Bank, 2007, 2016; Sperandio and Priore, 2015). However, well-designed school feeding programmes have been shown to enable catch-up from early growth failure, making school-based nutrition programmes important coping and mitigation solutions to the nutritional loss children may face during the crisis (Bundy *et al.*, 2018).

3 Refers to IPC/CH Phase 3 or above, defined as households that have either: "food consumption gaps that are reflected by high or above-usual acute malnutrition; or are marginally able to meet minimum food needs but only by depleting essential livelihood assets or through crisis-coping strategies" (FAO, IFAD, *et al.*, 2020b, p. 14).

4 See Annex 1 for the methodology on this estimate.

2. FOOD INSECURITY AND CRISES

Nutrition deficits and all forms of malnutrition are tragically common in children under 5, with 144 million stunted,[5] 47 million wasted,[6] 38 million overweight,[7] and 340 million suffering from micronutrient deficiencies in 2019 (FAO, IFAD, *et al.*, 2020b, 2020a; United Nations, 2020). Less is known on children in the 5–19 years age group due to the paucity of data (Galloway, 2018). However, there is evidence suggesting various forms of malnutrition in children aged 5–19 (Best *et al.*, 2010; Akseer *et al.*, 2017). This evidence suggests that many countries having a triple burden of malnutrition with high levels of undernutrition, hidden hunger (e.g., micronutrient deficiencies), and obesity (Delisle, 2008; Gulland, 2016; UNICEF, 2019; Huizar, Arena and Laddu, 2020). In this triple burden, stunting highlights past deprivation and predicts future poverty, hidden hunger (such as iron deficiency) reduces children's ability to learn, and overweight children experience reduced learning and suffer from type 2 diabetes, stigmatization and adult obesity (UNICEF, 2019).

In 2016, there were 74 million girls (4 per cent) and 117 million boys (12.3 per cent) aged 5–19 years suffering from thinness, while 124 million children were struggling with obesity (Abarca-Gómez *et al.*, 2017). In low-income settings, monotonous plant-based diets comprised of cereals, roots, and tubers with limited animal-source foods remain common, especially in rural areas. This places children and adolescents at risk of poor growth and micronutrient deficiencies (Ochola and Masibo, 2014). At the same time, moves to energy-dense but nutrient-poor diets (e.g., highly processed foods, edible oils, sugar sweetened beverages) and decreased physical activity, especially in upper-middle-income countries, have led to sharp increases in the number of children in this age group overweight, obese or suffering from diet-related, non-communicable diseases (Popkin, Adair and Ng, 2012; Abarca-Gómez *et al.*, 2017; Cediel *et al.*, 2018; Marrón-Ponce *et al.*, 2018).

However, there are large variations between (and within) countries and regions. For example, household survey data from 17 countries shows that the prevalence of underweight adolescents aged 15–19 varies from 0.3 per cent to 66 per cent depending on country and gender (Galloway, 2018) and estimates of anaemia in girls aged 15–19 ranged between 16 per cent in Middle East and North Africa and 54 per cent in South Asia (Benedict, Schmale and Namaste, 2018). Data from the Global School Based Student Health Survey (GSHS) in 68 countries were analysed and showed that, before the crisis, 50 per cent (ranging from 23 per cent in Uruguay to 84 per cent in the Solomon Islands) of 13–17-year-old children had felt hungry in the previous 30 days. Of those who said they had felt hungry, 7 per cent (up to 29 per cent in Samoa) did so most of the time and 5 per cent (up to 18 per cent in Benin) felt this way "always"[8] (US Centers for Disease Control and Prevention, 2020a) (*see Figure 1*).

Food insecurity rises dramatically in crises when poor households, who already spend as much as 78 per cent of their expenditure on food (Banerjee and Duflo, 2006) are faced with falling incomes, increasing prices and decreasing stability of food supply (FAO, IFAD, *et al.*, 2020a; United Nations, 2020). The impact of crises on food insecurity may take multiple pathways. For instance, the Boko

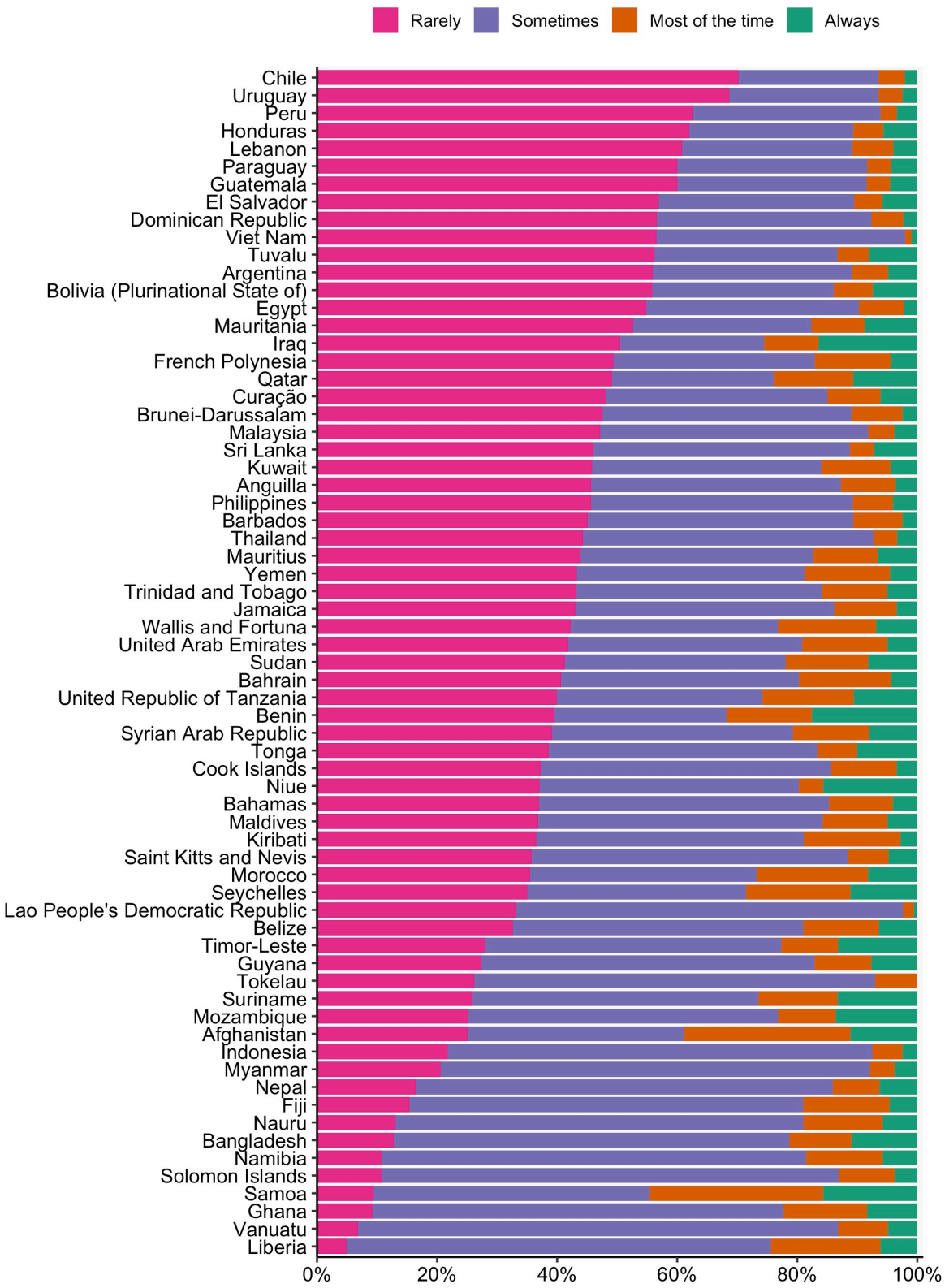
5 Stunting is defined as: "height/length (cm) for age (months) < -2 Standard Deviation of the WHO Child Growth Standards median." (FAO, IFAD, *et al.*, 2020a, p. 196)

6 Wasting is defined as: "weight (kg) for height/length (cm) < -2 Standard Deviation of the WHO Child Growth Standards median. Low weight-for-height is an indicator of acute weight loss or a failure to gain weight and can be a consequence of insufficient food intake and/or an incidence of infectious diseases, especially diarrhoea." (FAO, IFAD, *et al.*, 2020a, p. 196)

7 Overweight is defined as:" weight (kg) for height/length (cm) > +2 Standard Deviation of the WHO Child Growth Standards median." (FAO, IFAD, *et al.*, 2020a, p. 196)

8 Average gender differences are small, with 52 per cent of boys and 48 per cent of girls going hungry. The percentage of girls experiencing hunger was higher in only 25 of 68 countries (US Centers for Disease Control and Prevention, 2020a).

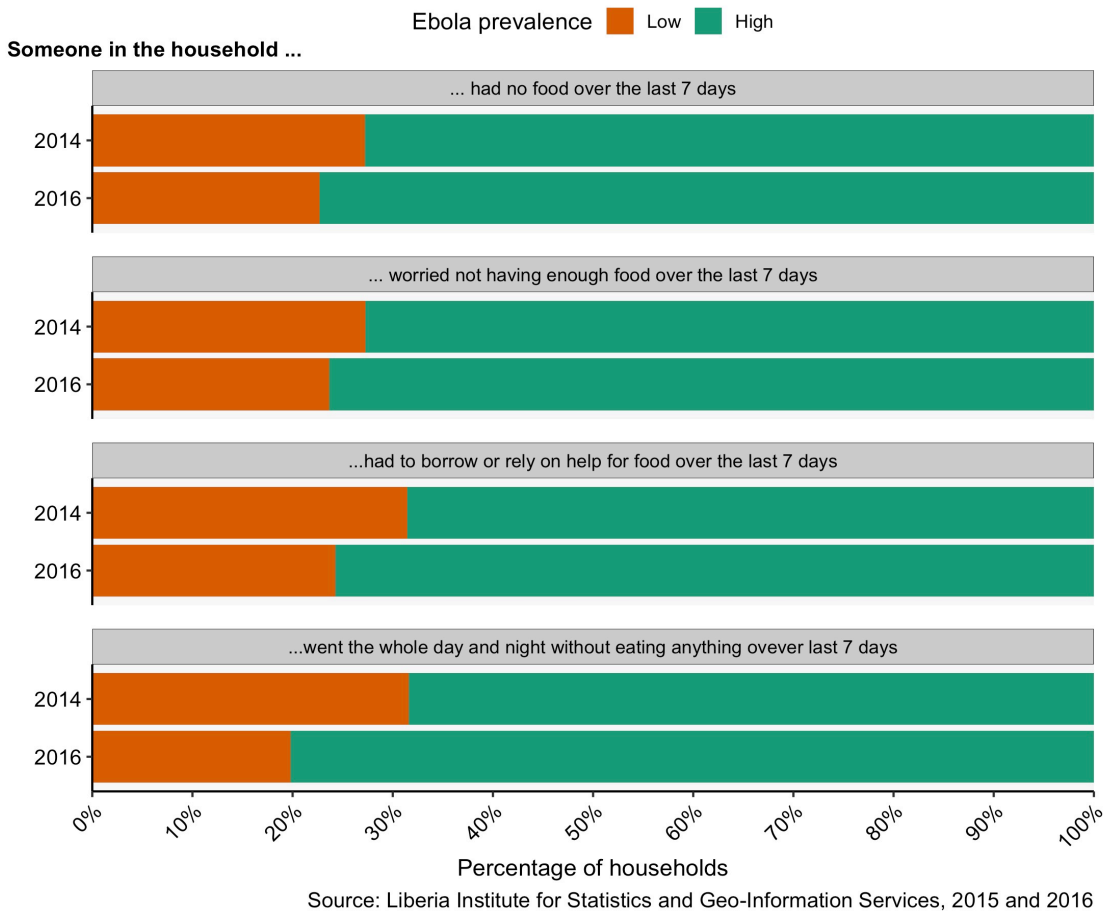
Figure 1: Percentage of children feeling hungry by frequency



Source: US Centers for Disease Control and Prevention, 2020

Haram insurgency in Nigeria led to increasing food insecurity due to people fleeing their plots in fear of being attacked (Amalu, 2016). In Brazil, between 2013 and 2017, the percentage of the poorest households who were food secure reduced from 44 per cent to 26 per cent as a result of austerity measures and inflation (Sousa *et al.*, 2019). In health crises, as in conflict situations, the extent of the effect may be amplified by the prevalence of the disease or violence. For instance, in West Africa, the Ebola crisis increased food insecurity more in the regions with high pre-existing levels (ACAPS, 2014; WFP Regional Bureau of Southern Africa, 2020). Analysis of data from the Liberian Household Income and Expenditure Surveys from 2014 and 2016 shows that households with children aged 5-18 in counties with a high Ebola prevalence were more vulnerable in 2014 at the beginning of the crisis, accounting for most of the food insecurity in the country, and that this situation worsened post-crisis. By 2016, the counties with high Ebola prevalence accounted for an even larger percentage of the total households experiencing food insecurity in the country, even though overall, levels of food insecurity dropped in the same time frame (*see Figure 2*). This suggests that the extent of the impact depends on how affected by a crisis an area is, but also on its pre-existing conditions (Liberia Institute for Statistics and Geo-Information Services, 2015, 2016).

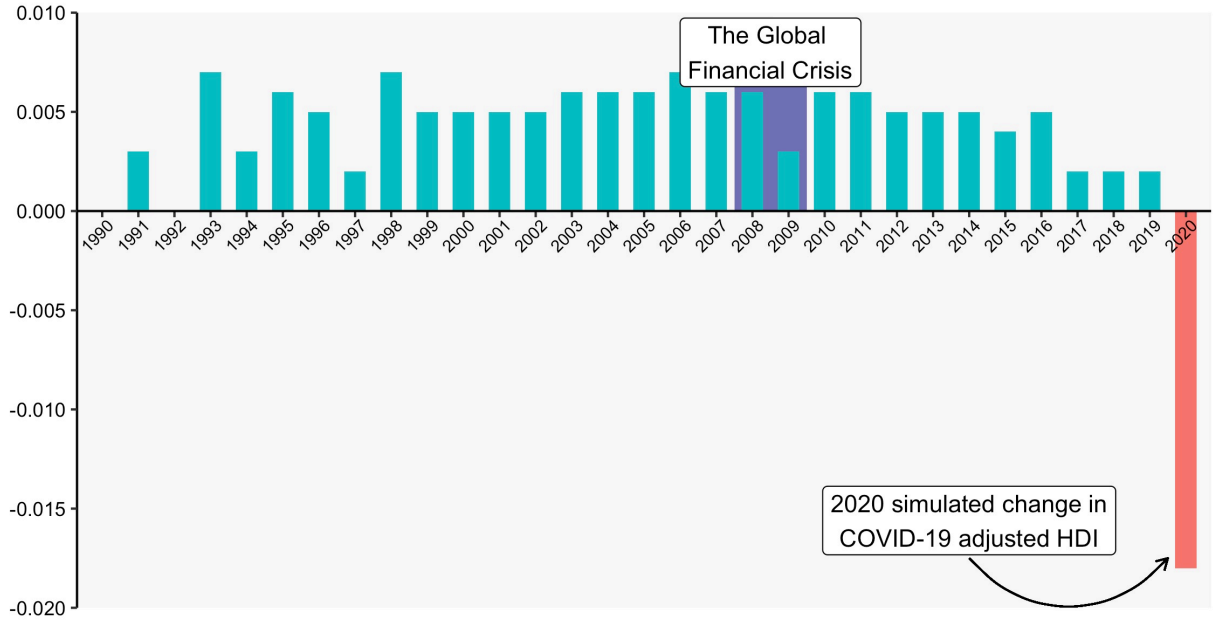
Figure 2: Distribution by region (low Ebola prevalence versus high Ebola prevalence) of households with school-aged children experiencing food insecurity, 2014 and 2016



Source: Liberia Institute for Statistics and Geo-Information Services, 2015 and 2016

As a global pandemic, the effects of the COVID-19 crisis will be wider than previous crises. The crisis is projected to create the first ever drop in the global Human Development Index (*see Figure 3*) (UNDP, 2020), and estimates suggest that an additional 100-420 million people may fall below the US$1.90-per-day poverty line (Mahler *et al.*, 2020; Sumner, Ortiz-Juarez and Hoy, 2020). COVID-19 is also expected to be a key driver of food insecurity (FAO, IFAD, *et al.*, 2020b) and double the number of food-insecure people globally from 135 million to 265 million – including 74 million children – due to lost income and remittances (WFP, 2020a; World Bank, 2020d). Low-Income Food-Deficit Countries (LIFDCs) (FAO, 2019) and those that face multiple crises, such as extreme weather or pests (e.g., locust plagues) are likely to be the hardest hit (World Bank, 2020d).

Figure 3: Change in Human Development Index, annual



Source: UNDP, 2020

In LIFDCs, the COVID-19 crisis is affecting the most heavily vulnerable populations, including children, women, the elderly, people with disabilities and chronic conditions and the poorest households (European Commission, 2020). A household survey done in April/May 2020 in Ethiopia found that 23 per cent of households had run out of food in the previous 30 days, with large disparities across socio-economic status: 30 per cent of the households from the poorest quintile, compared to 15 per cent of the households from the wealthiest quintile (Wieser *et al.*, 2020). Similar increases in food insecurity were found in Bangladesh, with 14 per cent of individuals reporting having no food in their homes (BRAC, 2020), and in Senegal, along with declining incomes and increasing food prices (Nestour and Moscoviz, 2020). In Nepal, 23 per cent of individuals had poor (less than 1,500 kcal) to borderline (1,500–1,800kcal) diets.[9] This rate is much higher for households headed by a person with low or no literacy (34 per cent) than for those households headed by a person with secondary education or higher education (13 per cent) (WFP, 2020f).[10] A WFP survey in five Algerian refugee camps, showed a

9 The daily recommended amount is 2,000kcal for women and 2,500kcal for men.

10 All above-mentioned surveys were phone-based.

17.5 percentage-point increase in individuals with poor food-consumption scores (from 8.5 per cent in December 2019 to 26.5 per cent in April 2020), many of whom had acceptable scores in December 2019.

Food insecurity can have dire consequences for children. It is estimated that globally, the development and growth of 75 million children in 2019 was impaired due to food insecurity (European Commission, 2020). Further, it is projected there will be an additional 3.43 million stunted children as a direct result of the COVID-19 crisis (a 2.4 per cent increase from 2019)[11] (IMF, 2020; United Nations, 2020). Malnutrition also leads to weakened immune systems, making children who are malnourished particularly susceptible to many illnesses, including viruses. Gundersen and Ziliak (2015) found that "food-insecure children are at least twice as likely to report being in fair or poor health and at least 1.4 times more likely to have asthma, compared to food-secure children". Further, wasted children have a higher risk of death from diarrhoea, pneumonia, malaria and measles and this will likely apply to COVID-related pneumonia as well (UNICEF and Global Nutrition Cluster, 2020). The concern is greatest in sub-Saharan Africa and South Asia, where the prevalence of wasting (6.4 per cent and 14.3 per cent, respectively) is high (FAO, IFAD, *et al.*, 2020a; WHO Africa, 2020)[12]. On the other side, reduced physical activity during the crisis may lead to changes in nutritional status and increase the risk of children becoming overweight (Guan *et al.*, 2020; US Centers for Disease Control and Prevention, 2020b).

11 During the COVID-19 crisis, the UN estimates that "each percentage point drop in global Gross Domestic Product (GDP) is expected to result in an additional 0.7 million stunted children" (United Nations, 2020, p. 3). Given the International Monetary Fund's (IMF's) projections that global GDP will fall by 4.9 per cent in 2020, this leads to the 3.43 million child estimate.

12 Both mortality and morbidity data on children over 5 are a concern, but both are poorly documented and could in fact be much higher (D. A. P. Bundy *et al.*, 2018).

3. IMPACTS OF SCHOOL CLOSURES ON NUTRITION AND HEALTH

Immediate impacts of school closures

The global scale of school closures during COVID-19 is unprecedented. During this crisis, there has been a 30 per cent reduction in the coverage of essential nutrition services (e.g., school meal programmes, iron and folic acid supplementation, deworming, and nutrition education through hands-on skills) in low- and middle-income countries (up to 100 per cent where lockdown has been imposed) (Fore *et al.*, 2020).

School closures due to COVID-19 have disrupted the normal distribution channels through which school meal programmes operate and many children may be without this vital source of food. School meals are a critical source of nutrition for millions of vulnerable children around the world (Alderman and Bundy, 2012). School feeding programmes cover about 370 million children globally, with the largest number of beneficiaries (in million) in India (~100), Brazil (48), China (44), South Africa (9) and Nigeria (9) (WFP, 2019). Data from Uganda indicates that school meal programmes reduced anaemia in primary-school-aged girls and adult women (Adelman *et al.*, 2019). Evidence from Ghana suggests that school meal programmes resulted in benefits accruing to girls and children living in households below the poverty line (Gelli *et al.*, 2019). Additionally, school feeding has been shown to increase learning and cognitive abilities (Kristjansson *et al.*, 2006; UNESCO and Pôle de Dakar, 2013; Paul Glewwe and Muralidharan, 2015).

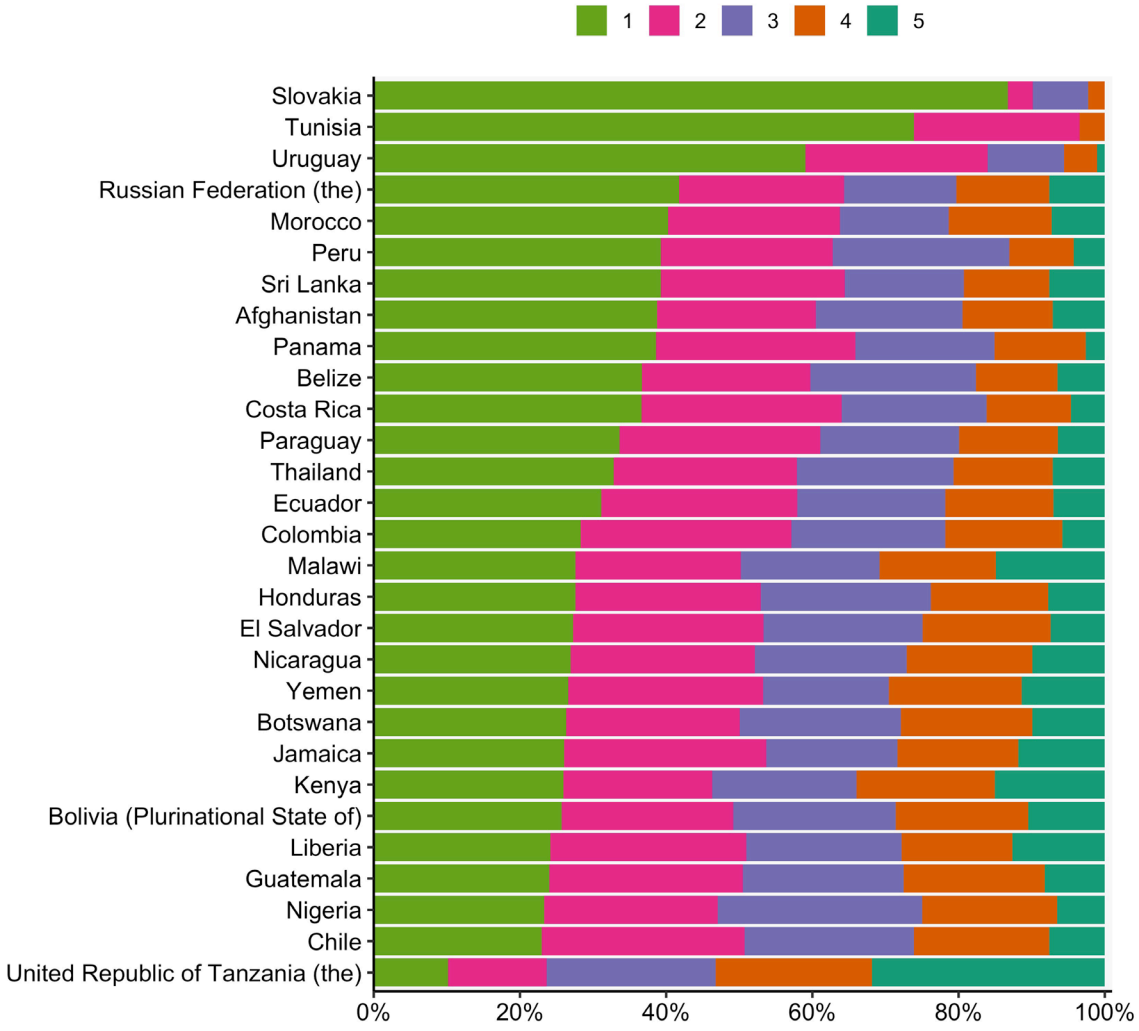
School feeding programmes have significant benefits for families and may represent up to 15 per cent of daily family income (Bundy *et al.*, 2018). School feeding programmes in the countries included in the Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) database benefit the poorest groups the most. All but one of 29 countries achieved a beneficiary incidence[13] of over 20 per cent for the poorest quintile, and all but four achieved over 50 per cent of benefits for the bottom two quintiles.[14] These programmes also reduce the income shortfall of those living under US$1.90 per day by 10.1 per cent on average[15] (World Bank, 2020a).

13 Defined as: "Percentage of programme beneficiaries in a quintile relative to the total number of beneficiaries in the population" (World Bank, 2020c).

14 In the most recent year available.

15 This refers to the reduction in the poverty gap, "which is the average percentage shortfall in income of poor people, from the poverty line and it is measured assuming the absence of the programmes (pre-transfer welfare distribution). Specifically, poverty gap reduction is computed as (poverty gap pre transfer- poverty gap post transfer) / poverty gap pre transfer" (World Bank, 2020a).

Figure 4: School feeding: Beneficiary incidence by quintile



Source: The World Bank, 2020a

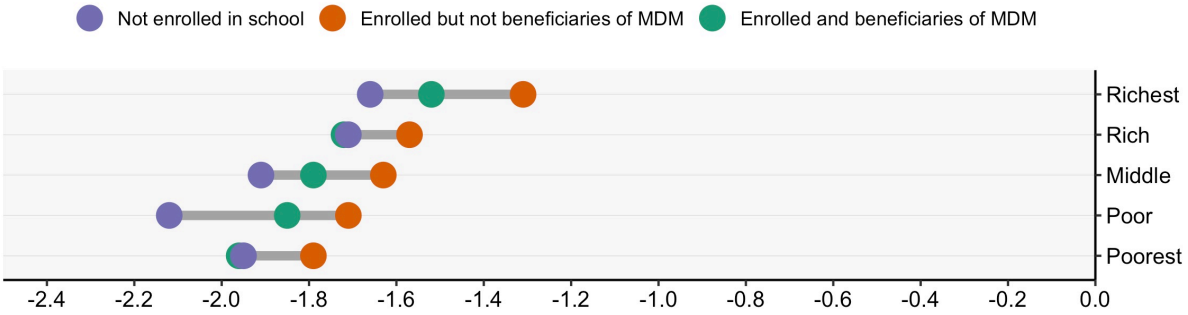
In India, the Midday Meals Scheme (MDMS) has been shown to decrease calorie deficits in children by 30 per cent. Data from the Indian Human Development Survey (IHDS) in 2005 and 2012[16] show that MDMS is well targeted to children that need it the most, with MDMS beneficiaries having worse (lower) height-for-age Z-scores[17] than those who are not enrolled in MDMS (*see Figure 5*) (Desai, Vanneman and National Council of Applied Economic Research, 2010, 2015).

16 The IHDS was used to compare the anthropometric indicators of the children enrolled in school (stratified by access to the MDM and out-of-school children.

17 According to the World Health Organization: "The Z-score system expresses the anthropometric value as a number of standard deviations, or Z-scores, below or above the reference mean or median value. A fixed Z-score interval implies a fixed height or weight difference for children of a given age." For further information, visit: https://www.who.int/nutgrowthdb/about/introduction/en/index4.html

Fixed-effects regressions[18] (at the level of the district or village) confirm this and show that there is a negative and highly significant correlation between access to the programme and lower height-for-age scores. Encouragingly, the Supreme Court of India issued a notice to all states, asking them to continue providing Mid-Day Meals during school closures (India Today, 2020), highlighting MDMS's importance.

Figure 5: Height-for-Age Z-score by quintile, schooling status and MDM access in India, 2012



Source: Desai, Vanneman and National Council of Applied Economic Research, 2015

Evidence from previous school closures points to a potential concern regarding the capacity of countries to adapt school feeding to crisis situations. The ASPIRE data shows that during the Ebola crisis in Liberia, the adequacy[19] of school-feeding benefits for the poorest quintile decreased from 19.5 per cent in 2014 to 6.5 per cent in 2016 (the largest drop for any quintile), meaning that the poorest households were getting less in 2016 than in 2014. Over the same period, poverty reduction attributable to the programme dropped from 2 per cent to 0.8 per cent, confirming the importance of continuing or adapting school feeding programmes during crisis situations.

Long-term impacts of school closures

School closures of any sort, even routine ones, often result in increased dropout rates and lead to losses in lifetime educational attainment. Azevedo *et al.* (2020) estimated that the COVID-19 crisis could result in a loss of between 0.3 and 0.9 years of quality adjusted schooling, leading to a reduction of US$10 trillion dollars (at present value in 2017 PPP) in lifecycle earnings for the affected cohort of learners.

This loss of education caused by school closures can impact the health and nutrition of children in the long term. Mutisya *et al.* (2016) reported that, in Kenya, the probability of household food insecurity decreases with each year of household educational attainment (even after controlling for wealth).

18 Using the panel data of individuals in the IHDS, fixed-effects regression at the level of the district or village, with robust standard errors, were conducted. The Z-score of the height for age was the dependent variable. Independent variables included the student's level characteristics (age, gender, and access to the MDMS), as well as the student's household characteristics (education of the father, education of the mother, household size, household urban/rural location and a measure of socioeconomic classification). The model had three different specifications depending on the household's socioeconomic classification variable used (wealth quintile, assets quintile and income quintile). As the purpose of the regression was not to establish causality, the main goal was to find the significance and the relevance (represented by the point estimate of the coefficient) of the relationship between the access to the Midday Meal programme and the Z-score while controlling for the other variables. The Pseudo-R-squared of the regressions were low, which is expected and normal when using fixed effects.

19 Defined as: "The total transfer amount received by all beneficiaries in a quintile as a share of the total welfare of beneficiaries in that quintile" (World Bank, 2020c).

A study of rural households in 48 countries also found that hunger and education deprivation were highly correlated (De Muro and Burchi, 2007). Household survey data for Nigeria in 2019 shows that households headed by a person who is more educated are less likely to worry about not having enough food (only 4 per cent of those with higher education vs 28 per cent of those with no education during harvest season), and less likely to experience other indicators of food insecurity in both the planting and harvest seasons (Nigeria National Bureau of Statistics, 2019).

There is also a strong association between maternal education and health/nutrition outcomes of children (Whaley *et al.*, 2003). In Chad, mothers' years of education were found to be positively and significantly associated with the uptake of maternal health services such as vitamin A intake, medical monitoring during pregnancy, as well as on the birth weight and height of the child (World Bank, 2007). Similar trends were found in Liberia for Vitamin A use, antenatal consultation and iron use (World Bank, 2016). In Kenya, lower levels of maternal education were a strong predictor of children being stunted (Abuya, Ciera and Kimani-Murage, 2012), while in India, the risk of malnutrition was higher for children with mothers that had not completed primary education or were illiterate (Mittal, Singh and Ahluwalia, 2007; Srivastava *et al.*, 2012). In higher-income countries such as Brazil, an analysis of the Bolsa Família Programme found food insecurity was also associated with low maternal education (Sperandio and Priore, 2015). The same held for Mexican migrant families in the United States (Kaiser *et al.*, 2002).

There is also a strong link between malnutrition and the cognitive development of children. For example, nutrition in the early years of a child's life can affect brain development at various levels (e.g., macrostructure, microstructure, and level and operation of neurotransmitters) (Bryan *et al.*, 2004). For school-aged children, a recent review highlights the importance of "iodine, iron, and folate and the contribution of zinc, vitamin B12, and omega-3 polyunsaturated fatty acids to long-term cognitive development" (Frisvold, 2015, p. 92). Further, there is evidence that both over and under nutrition can lead to worse cognitive development and academic performance in later childhood (Watanabe *et al.*, 2005; Nyaradi *et al.*, 2013). Evidence from India (Aurino, Fledderjohann and Vellakkal, 2019) and Ghana (Aurino, Wolf and Tsinigo, 2020) show that food insecurity during childhood reduced reading, numeracy and English scores as well as short-term memory and self-regulation. Thus, nutrition in the first 8,000 days of a child's life is critical to child development and the educational and nutritional disruption caused by school closures will have long-term consequences if not handled appropriately.

4. PROMISING PRACTICES

School feeding programmes have been found to be effective in a number of contexts, including emergency situations. For instance, they can increase food expenditure in households located in the vicinity of conflict and in villages where armed groups are present (Tranchant *et al.*, 2019). Evidence from a persistent drought in India shows that "drought exerts a substantial negative effect on nutrition but that this negative effect is entirely compensated for by the MDMS" (Singh, Park and Dercon, 2012, p. 2). While school feeding programmes are a promising solution in times of crisis, they require some modifications so that they can be applied during times of school closures.

School feeding programmes generally come in two forms: school meals and take-home rations (THR). In the first, a hot meal is usually served at school daily, either as breakfast, a snack or lunch. In the second, food staples (e.g., rice, beans, flour, oil) are provided for the child to take home and are more targeted at the whole household (Adelman, Gilligan and Lehrer, 2007; Bundy *et al.*, 2009). The evidence supporting the effectiveness of school meals in improving nutrition outcomes is stronger and more complete than that for take-home rations (THRs) (Afridi, 2010; Drake *et al.*, 2018).

However, during the COVID-19 crisis, due to school closures, school meals have not been possible. Consequently, many countries and international organizations have adapted their school feeding programmes. UNICEF Education response data indicates that 39 per cent of 110 responding countries have included alternatives to school feeding programmes in their responses. World Food Programme data points to THRs as, thus far, the most common response (50 countries) alongside unconditional cash transfers (UCTs) (11 countries) and multimodal approach (11 countries). Nine countries reported putting programmes on hold, while data is not available for 134 countries (WFP, 2020b).

Take-home rations

Prior to COVID-19, THRs had been shown to be effective in improving the nutritional outcomes of children, including reducing anaemia prevalence (Kazianga, de Walque and Alderman, 2012; Drake *et al.*, 2018). Further, THRs have benefits that go beyond the child receiving the ration (Kazianga, de Walque and Alderman, 2012). Research in Burkina Faso indicated that younger siblings of children receiving take-home rations showed significantly higher weight for age than a control group (WFP, 2019). However, their effectiveness depends on the quality, size and timeliness of food (Nielsen *et al.*, 2010). During the current crisis THRs have been implemented in various countries. For example, in Liberia, nearly 100,000 children are benefiting from THRs intended for the whole family (based on a five-person household) (UNICEF and WFP, 2020). The programme started in March 2020 as the first cases of COVID-19 were confirmed in the country (WFP, 2020g).

Cash transfers

UCT programmes in Ghana, Kenya, Lesotho and Zambia have been found to increase food consumption and per-capita expenditure on food and encourage households to switch to more nutritious foods. However, programme design matters, with more generous, predictable and reliable programmes showing greater impacts on food security and nutrition (Tiwari *et al.*, 2016). Positive results have also been found in Zimbabwe (Bhalla *et al.*, 2018), where beneficiary households had greater diet diversity, and in Malawi (Brugh *et al.*, 2018) where the UCT offered protection during the lean season, with households consuming more frequent meals, having higher daily caloric intake, and reduced hunger depth. Conditional cash transfers (CCTs) in Latin America have also been found to be effective, especially for the poorest terciles (Hoddinott and Wiesmann, 2008). Supplementing

these transfer programmes with appropriate education strategies to ensure that households have the knowledge and are empowered to purchase healthier options is also important (Black *et al.*, 2017). Using cash as a substitute for school feeding programmes during COVID-19 school closures has been a common approach. For example, in Uruguay, while beneficiaries of an existing targeted cash transfer programme received a top-up amount for school meals, non-beneficiaries received food vouchers (Hebbar and Phelps, 2020). Further, in Bihar state in India, a state-wide cash transfer was set-up where households would receive cash in lieu of school feeding (worth Rs 114.21 for classes 1–5 and Rs 171.17 for classes 6–8) via bank account transfers (Bihar Policy Centre, 2020).[20]

Multimodal approaches

Some countries have had multiple responses at decentralized levels. For example, Brazil, where an estimated 40 million children receive school meals (WFP, 2020b), responded at both the federal and the state level. At the federal level, Law 13,987/2020 allows money originally designated to provide school meals under PNAE to be used "to buy basic food baskets for disadvantaged families" (World Bank, 2020b, p. 113). This food basket is designed by nutrition specialists considering the age of the student, the number of meals they would have had at the school (during normal operation) and the number of days that the food kit is expected to last (Fundo Nacional de Desenvolvimento da Educação, 2020). At the state level, at least three states (Sao Paolo, Para and Bahia) adopted cash transfer programmes using rechargeable debit cards, which range between R$55 to R$101 each month per student, depending on the state and level of education (Luna, 2011; Araújo, 2020; Governo do Estado Bahia, 2020). In India, in response to the Supreme Court order and the absence of a federal response, states have taken very different approaches using home delivery of meals (five states), THRs (five states) or cash transfers (two states)[21] (*see Table 1*).

Table 1: State-level school feeding alternative responses in India during COVID-19

Home delivery	Kerala, Karnataka (food grains for 21 days), Haryana (teachers to deliver mid-day meal rations and cooking costs to eligible students in 17 districts) (Bihar Policy Centre, 2020), Assam (Medak, 2020; The Guwahati Times, 2020), Uttar Pradesh (Katiyar, 2020)
THRs	Chhattisargh (Mishra, 2020), Jammu and Kashmir (India Education Diary, 2020), Andhra Pradesh (The Hindu, 2020), Odisha (Swain, 2020)
Cash Transfers	Bihar, Uttarkhand (Bihar Policy Centre, 2020; Ghose, 2020; The Pioneer, 2020)

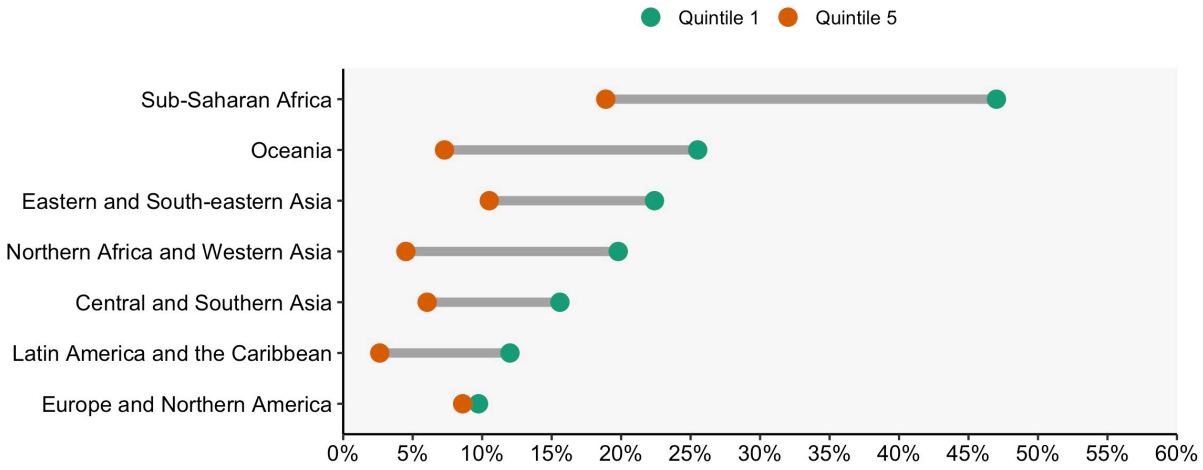
20 Nevertheless, there is some anecdotal evidence that many children are not receiving this critical support and others argue that the funds are insufficient and may not be used for food for children (Ghose, 2020).

21 No information on the responses of the remaining 17 States and seven union territories has been found.

5. PREPARING FOR SCHOOL REOPENING

Once schools reopen, without the proper responses, the pre-crisis level of out-of-school children is likely to worsen as a result of the current COVID-19 crisis (World Bank, 2020e). This is particularly true for low-income countries, where the out-of-school rate for children, adolescents and youth of primary and secondary school age is already a staggering 32.4 per cent (compared to the 3.5 per cent in high-income countries) in 2018 (UIS-UNESCO, 2020). While safe school reopening poses its own challenges (UNESCO *et al.*, 2020), there are significant risks that keeping schools closed may exacerbate existing health and educational inequalities, especially for the more vulnerable households (UNESCO, 2020b; Viner, Bonell, *et al.*, 2020; Viner, Russell, *et al.*, 2020) (*see Figure 6*).

Figure 6: Percentage of primary-aged out-of-school children by quintile and region



Source: World Inequality Database on Education (WIDE), 2020

School feeding programmes may be a critical part of encouraging children back to school and keeping them enrolled after the crisis. The evidence suggests that school feeding can increase enrolment and attendance rates, in particular for girls and the most disadvantaged children (Jomaa, McDonnell and Probart, 2011; Nikiema, 2019; FAO, GPE, *et al.*, 2020). Additionally, there is evidence that school feeding programmes decrease child labour (especially for girls and those receiving take-home-rations) (Kazianga, de Walque and Alderman, 2012; Aurino *et al.*, 2019). This is especially important now when rising poverty may increase pressures on child labour, which may keep children out of school in the long run (UNICEF and ILO, 2020). Besides their role in keeping children in school and being a direct nutrition and health intervention, school feeding programmes are an entry point for introducing other safety nets to address chronic vulnerabilities in underserved or at-risk populations (WFP, 2020e).

While reopening schools is a priority, governments should take all possible measures to reopen and restart school feeding programs safely.[22] For school feeding, the WFP proposes that governments improve hygiene of the whole process (from food preparation to food delivery), develop standard operation procedures, enforce physical distancing in the classroom, engage in capacity building and training of all the actors involved, and ensure alternative distribution mechanisms (WFP, 2020c). Finally,

22 UNESCO, UNICEF, World Bank, and the World Food Programme (2020) released a guidance on how to reopen schools safely.

reopening schools can also be viewed as an opportunity for improvement (World Bank, 2020e). This opportunity also applies to school feeding as programme design and formerly neglected issues, such as micronutrient content of meals and food-fortification options, can be addressed when reopening schools. This is the time to invest in solutions that will help not only the current generation of school children, but also those that follow (Bundy *et al.*, 2018).

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ANNEX 1: DATA SOURCES AND METHODOLOGY – ESTIMATE OF NUMBER OF IN-SCHOOL MEALS MISSED

The estimate of the 39 billion in-school meals missed presented in this working paper is based on three data sources:

1. UNESCO database of school closures[1] that compiles information on full and partial COVID-19-related school closures in 210 countries from 16 February 2020 to 31 December 2020.
2. WFP school feeding map[2] covering 126 countries which contains information on the number of children regularly receiving in-school meals by country.
3. UNESCO UIS[3] estimates of primary and secondary school aged population in each country.

In each of the 126 countries with data available in both the UNESCO database of school closures and WFP school feeding map[4], the number of days that a country experienced full school closures (from UNESCO) was multiplied by the number of children in the country that would have been receiving in-school meals (from WFP). Summing the 126 country level estimates results in the following total estimate of in-school meals missed: 39,286,328,586.

To account for the countries with no data from the WFP school feeding map (countries representing 5 per cent of the global school-age population), estimates of the number of children that were likely beneficiaries of in-school meals in an additional 76 countries were made. These country estimates were calculated using three steps:

1. The ratio of children benefiting from in-school meals (from WFP) in a country to their total primary and secondary school age population (from UNESCO UIS) was made for each of the 126 countries with available WFP data.
2. Averages of this ratio of children benefiting from in-school meals were calculated across World Bank country income classification groups (low income, lower-middle income, upper-middle income, high income).
3. In each of the 76 countries without WFP school feeding data, estimates of in-school meals missed were made by multiplying the average ratio of children benefiting from in-school meals in a country's income group by their total primary and secondary school-aged population.

By adding the estimates of these 76 countries to those of the 126 countries with existing WFP data, the global estimate of in-school meals missed is 39,323,059,586, changing only marginally the total calculated on the 126 countries. Table A1 shows the share of estimated school meals missed by country income group.

1 www.en.unesco.org/covid19/educationresponse

2 https://cdn.wfp.org/2020/school-feeding-map/

3 http://data.uis.unesco.org/

4 These 126 countries account for 95% of the global school-age population.

Table A1. Share of estimated in-school meals missed by country income group.

Income Group	Number of estimated in-school meals missed by income group	% of total estimated in-school meals missed by income group
Low income	3,204,158,421	8.1%
Lower-middle income	17,471,760,523	44.4%
Upper-middle income	16,109,921,712	41.0%
High income	2,526,447,501	6.4%
No income level classification	10,771,429	0.0%
Total	**39,323,059,586**	**100.0%**

These estimates of in-school meals missed have two limitations:

1. Partial school closures were not included in the estimates due to challenges in estimating the scale of these closures and the number of children affected.
2. Mitigation and coping mechanisms, such as those described in this working paper (e.g. take-home rations, cash transfers) are not accounted for in this global estimate of in-school meals missed.

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