



Food insecurity and early childhood development: Longitudinal evidence from Ghana

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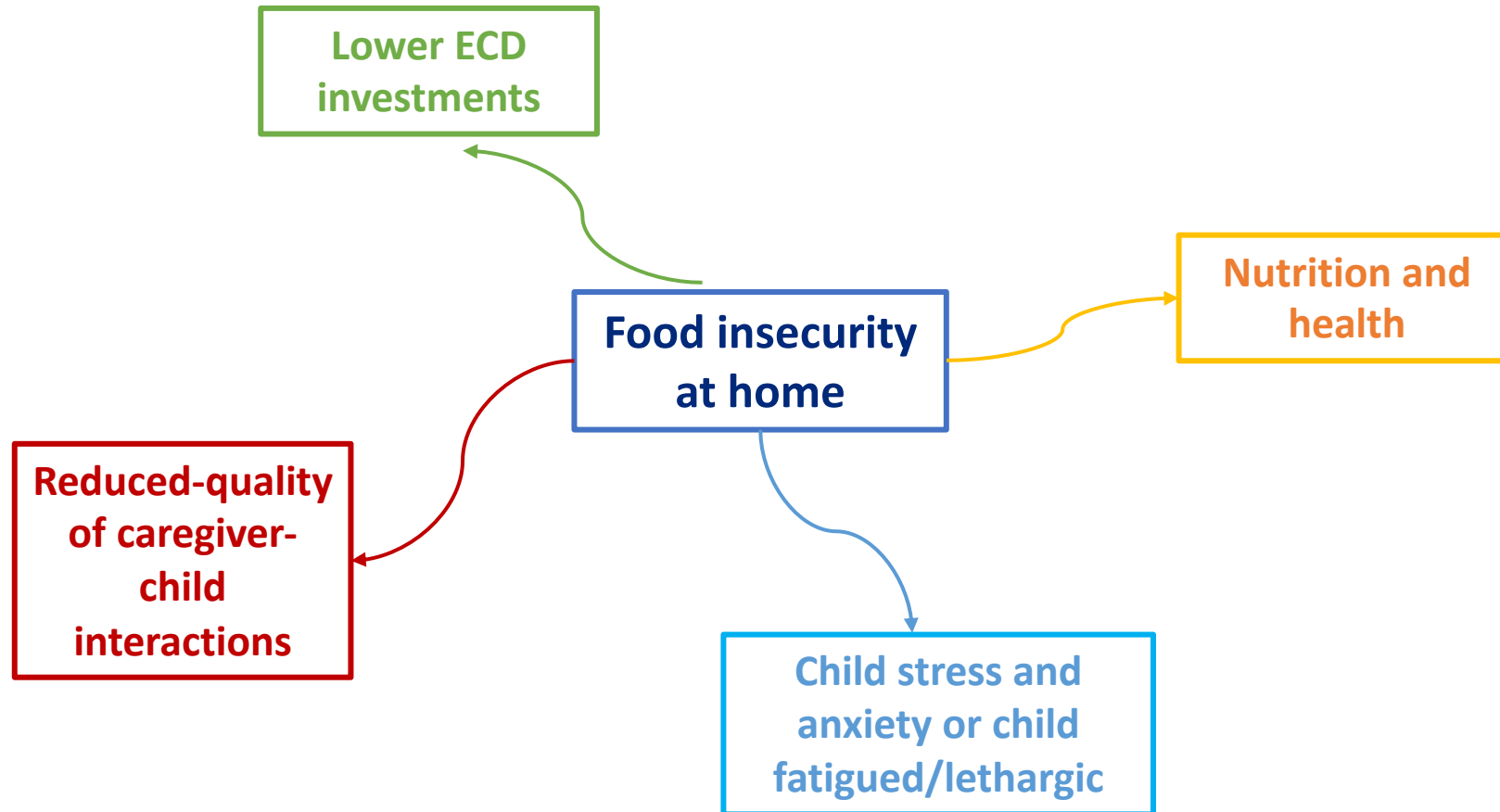
Edward Tsinigo (Innovations for Poverty Action Ghana)

Food security defined



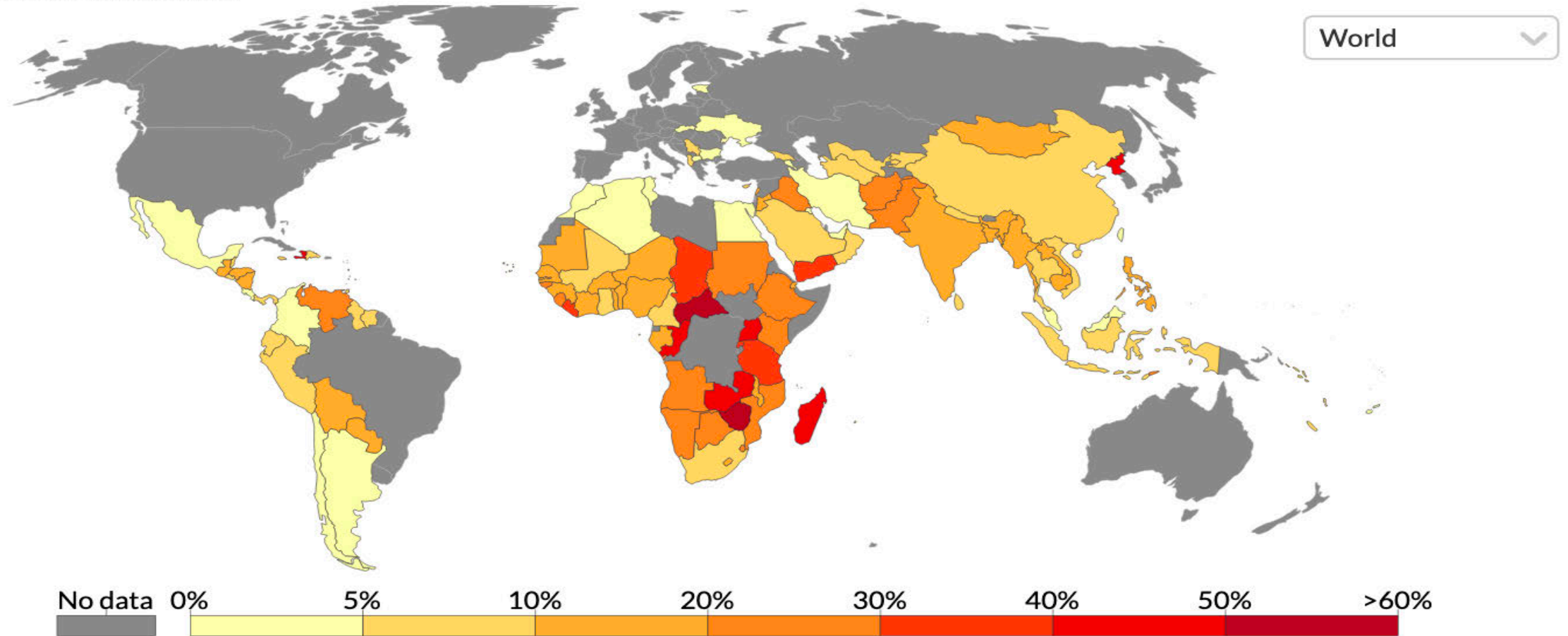
A situation in which “...all people, at all times, have physical, social and economic **access to sufficient, safe and nutritious food** which meets their dietary needs and food preferences for an active and healthy life” (FAO, 2014)

Food insecurity and Early Childhood Development: Theoretical pathways



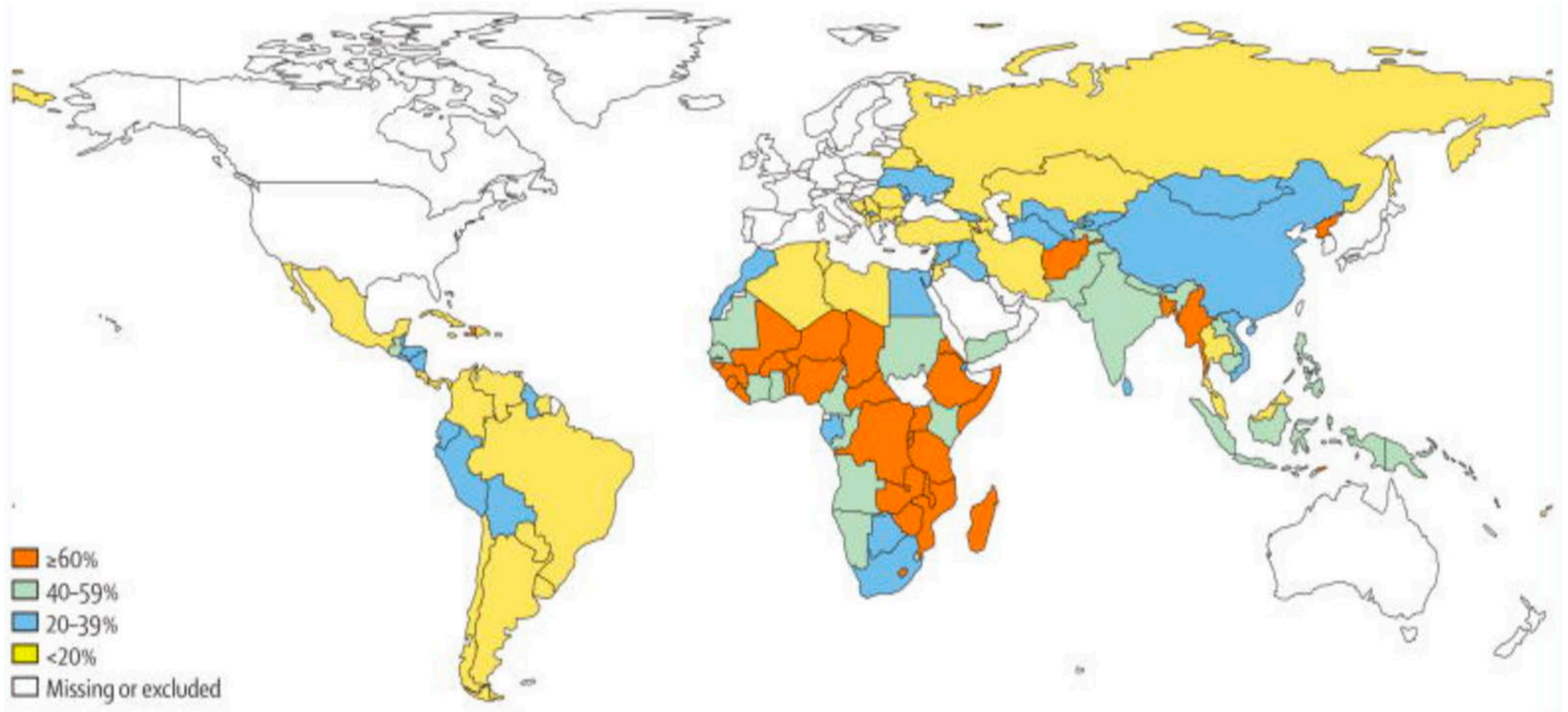
Share of people who are undernourished, 2017

Undernourishment measures the share of the population that has a caloric intake which is insufficient to meet the minimum energy requirements necessary for a given individual. Countries with undernourishment rates below 2.5% are not shown.



Source: UN Food and Agriculture Organization (FAO)
Note: Figures are given as the 3-year moving average.

Country-level percentage of under-5 children at risk of poor development



Poor development measured as failure to meet key cognitive and psycho-social health milestones

Source: Lu et al 2016, *Lancet Global Health*

Yet, the evidence from SSA is extremely scarce!

- Most evidence from **US samples**
 - Positive links between household food insecurity and ECD behavioural problems (King 2018; Slack et al., 2005; Whitacker et al., 2006), and decreased academic outcomes and psycho-social health in the early years (Jyoti et al., 2005)
- In the context of **LMICs**, available evidence focuses on:
 - Household food insecurity and ECD diets/nutrition > *other dimensions missing*
 - Existing studies on schooling/learning/psycho-social health focus on *adolescents*
- **Surprisingly little is known** about how exposure to household food insecurity during the early school years shapes children's developmental trajectories!
 - No evidence from SSA with regards to the ECD period

What we do in this paper

We contribute to filling this evidence gap by using a ***unique dataset*** tracking a sample of over 1300 Ghanaian children and their parents over three years to investigate ***longitudinal associations between household food insecurity trajectories and multiple domains of early childhood development*** in the lower primary school years



Source: UNICEF/ UN04481/Acquah

The Ghanaian context



- 1.2m people classified as food insecure and additional 2m (out of 29m population) vulnerable to extreme food insecurity
- 19% child stunting, but up to 33% in more-deprived North
- 33% of three- and four-year-olds in Ghana do not meet basic developmental milestones
- Poor stimulation at home
- Among highest rates of enrolment in ECD and almost universal primary, plus free school meals policy

Sample and methods

- Sample from Quality Preschool for Ghana study (Wolf et al., 2018)
 - Greater Accra region
- Children and caregivers first interviewed in 2005, when children aged 4-5y
 - Longitudinal follow-up for three waves in total (N=1,333) > children aged 7-8y
- Outcomes (mean =0, SD=1):
 - Academic (maths and literacy)
 - Cognitive (short-term memory)
 - Socio-emotional (self-regulation, socio-emotional development)

Measurement of household food insecurity

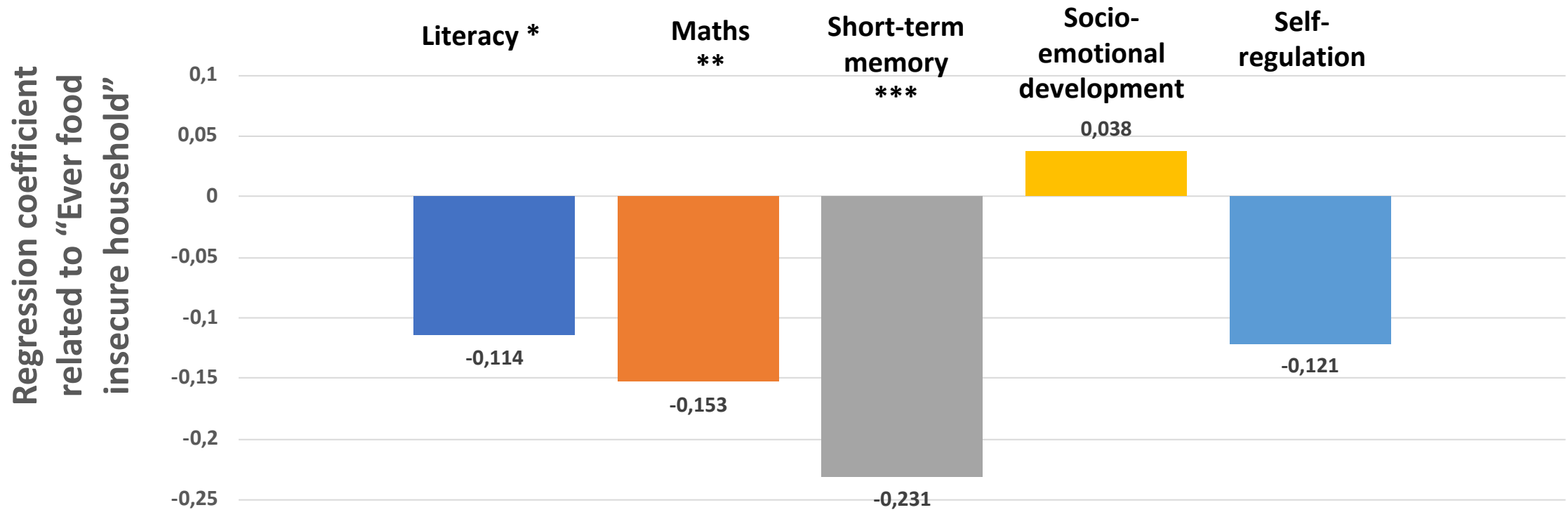
- Household food security in the previous 30 days measured through **Household Hunger Scale**, administered at each round to the caregiver
 - Cross-validated scale for measuring acute situations of food insecurity (Ballard et al., 2011)
 - Households classified as **food insecure** if HHS highlighted situations of **moderate or severe food insecurity**
- Foci on **occurrence** and **persistence** of food insecurity:
 - **Occurrence**: household ever food insecure (vs never food insecure) **(16% of the sample)**
 - **Persistence**: household with transitory food insecurity (13%); household with persistent food insecurity **(3%)**; household never food insecure **(84%)**



Source: USAID

Key finding #1

Children that experienced food insecurity at any point had lower academic and cognitive outcomes

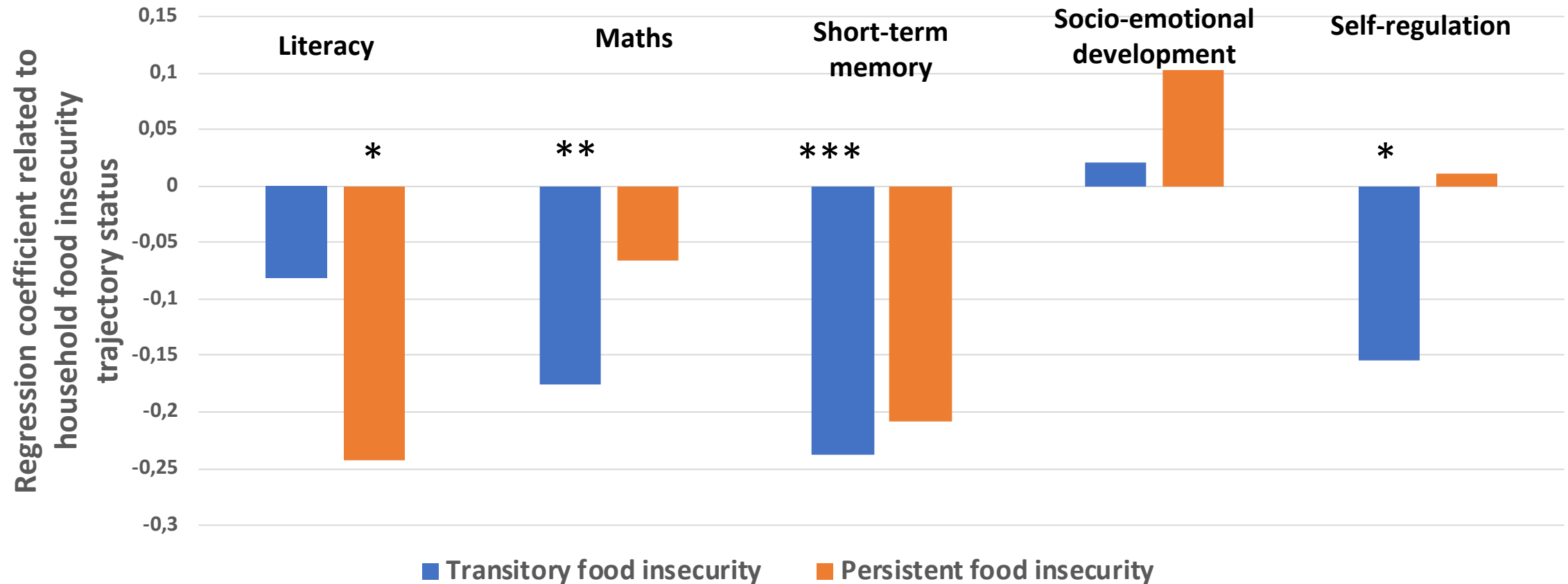


*** $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$**

The figure above plot regression coefficients from separate OLS models that control for: wave 1 scores of each outcome; child gender and age in years; caregiver's gender, age and education level; original treatment arm; household size; language of test administration. Robust confidence intervals in parentheses based on standard errors clustered at baseline school-level. Outcomes are standardised to have mean =0 and SD=1

Key finding #2

Even transitory spells of food insecurity predict decreased ECD outcomes



*** $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$**

The figure above plot regression coefficients from separate OLS models that control for: wave 1 scores of each outcome; child gender and age in years; caregiver's gender, age and education level; original treatment arm; household size; language of test administration. Robust confidence intervals in parentheses based on standard errors clustered at baseline school-level. Outcomes are standardised to have mean =0 and SD=1

Discussion

- First study examining this relation in SSA for ECD
- Heterogeneity by skill and degree of persistence of household food insecurity, both of which are understudied topics
 - Cognitive skills including academic and memory development were most sensitive to food insecurity
- For literacy, results were driven by persistent food insecurity, while for math and memory even transitory spells mattered
 - Consistent with study on Indian adolescents (Aurino et al., 2019) and studies that focus on the effects of school feeding on memory (Adolphus et al 2016)
- Also in this sample general low prevalence of food insecurity
 - Accra region (though sample from poorest areas)
 - Measure of food insecurity used captures *extreme hunger*
 - School meals may have mitigated role of food insecurity on child learning and nutrition (Aurino et al., 2018; Gelli et al., 2019)
- Relevant for current COVID crisis!
 - No school meals
 - Increase in food insecurity (especially in urban areas)
 - Key to target children with child-specific social protection

Thank you for listening!

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RESEARCH ARTICLE

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