



## Last Mile Health's under-five lives saved model: Our approach to measuring impact

Last Mile Health developed a comprehensive model to estimate the number of children under five years of age whose lives may have been saved through our community health systems strengthening work in Ethiopia, Liberia, Malawi, and Sierra Leone. This document describes core assumptions underlying the model.

### How the model works

Our model calculates estimated lives saved by community health workers across three major pillars of our work, as represented in our organizational [theory of change](#):

- **DELIVER:** Direct delivery of essential health services through community health workers, including treatments for malaria, pneumonia, and diarrhea; preventive measures (e.g., vaccination, health education); and emergency referrals and transportation for pregnant women and newborns.
- **UPSKILL:** Training programs that improve community health workers' performance in preventing, diagnosing, referring, and treating neonatal and childhood illnesses.
- **STRENGTHEN:** Systems support that enables community health workers to deliver quality care, including digital health tools, supervision systems, supply chain management, and payment infrastructure.

The model combines program data (e.g., treatments delivered, community health workers trained, populations served) with evidence-based parameters (e.g., treatment efficacy rates, disease incidence, case fatality rates) to estimate childhood deaths averted across our program countries: Ethiopia, Liberia, Malawi, and Sierra Leone.

### Understanding our counterfactuals

The model is based on specific assumptions about what would happen in the communities we serve without our interventions. Establishing a counterfactual in each context for a wide range of intervention types and alternative approaches is not practically feasible. For the purposes of this model, we can only compare our results to what would likely happen if each of our specific interventions (government support, direct treatments, community health worker training, etc.) were not implemented by us or anyone else. More specifically, we are comparing our results to the following scenarios:

	<b>Counterfactual</b>	<b>Assumes</b>	<b>What this means</b>
<b>Deliver</b>	Children would not have access to care or health messaging from qualified providers	Children would not have received care in the absence of our programming	We are comparing child survival rate with no care vs. survival rate with care provided by community health workers
<b>Upskill</b>	Community health workers would not receive training interventions of comparable quality	Our trainings improve the quality of care provided to children	We are comparing child survival rate with poorer quality community health worker care vs. survival rate with improved care
<b>Strengthen</b>	Community health workers would remain at baseline levels of supplies, supervision, and payment systems	Improvements in supplies, supervision, and payment are due to our support	We are comparing child survival rate with existing system gaps vs. survival rate with system support

We recognize these counterfactuals represent simplifications of complex realities and may be conservative in some contexts while potentially overstating our contribution in others where other comparable services exist.

### **Core modeling decisions and limitations**

Our model also relies on several important assumptions about the work that help define the scope and boundaries of our estimates:

- All children receiving treatments were sick and diagnosed correctly
- Community health workers engage with all under-five children in their caseload (for calculations where actual service numbers are unavailable)
- Effects of different interventions are additive rather than synergistic
- Where untreated case fatality rates are unavailable, we adjust treated rates based on treatment coverage and efficacy
- The same child may be counted multiple times across years or illnesses

These assumptions allow us to estimate impact while recognizing we may undercount broader systems-level effects and community-wide benefits that are harder to quantify. Given the inherent limitations in measuring lives saved, our results warrant careful interpretation; however, we believe the approach taken represents an appropriate balance of methodological rigor and practical constraints.

Building this impact measurement framework required making tough trade-offs: between methodological precision and data availability, between capturing our full impact and

maintaining conservative assumptions, and between complexity and usability. We acknowledge that our estimates likely undercount important dimensions of our work, particularly systems-strengthening and capacity-building efforts, the impacts of which are diffuse and long-term. At the same time, some of our modeling assumptions may overestimate impact by not fully accounting for what would have happened without our interventions. We have aimed to be transparent about these trade-offs rather than claim false precision. These estimates should be understood as one indicator among many, not as a complete picture of our contribution to health and well-being in the communities we serve. We recognize these counterfactuals represent simplifications of complex realities and may be conservative in some contexts while potentially overstating our contribution in others where other comparable services exist.

## What this model represents—and what it doesn't

Our model also relies on several important assumptions about the work that help define the scope and boundaries of our estimates:

Modelling impact or lives saved requires making explicit choices about what to include, what to exclude, and how to handle uncertainty. This section outlines the scope and boundaries of our estimates, acknowledging both what we can quantify with reasonable confidence and what remains difficult to capture. Understanding these limitations is essential for interpreting our results appropriately and avoiding overclaiming our impact. We view these estimates as our best approximation given current data and methodology, with important limitations:

### What's clearly included:

- Direct mortality reduction from treatments and preventive services for under-five children, calculated by disease (malaria, pneumonia, diarrhea, vaccine-preventable diseases, neonatal sepsis, and others).

### What's included, but harder to quantify:

- **Systems-level impacts:** When we strengthen data systems, improve supervision structures, or build government capacity for decision-making, the benefits extend beyond individual community health worker performance to influence how entire health systems function. For example, improved data quality may lead to better resource allocation decisions at the district level, or stronger supervision systems may create lasting improvements in service quality. Although they are real and valuable, it is difficult to attribute lives saved directly to these systems-level changes through our model.
- **Community-level behavior change:** Health education and community engagement provided by community health workers can shift health-seeking behaviors, improve hygiene practices, and increase demand for preventive services in ways that reduce disease incidence across entire communities—not just among children who receive direct treatment. When community health workers conduct home visits or are better trained, they may prevent illnesses that never occur and therefore never appear in our treatment data. Similarly, improved community trust in the health system may lead families to seek care earlier, reducing severity of illness in ways our model doesn't capture.
- **Quality of life improvements:** Surviving childhood illness is critical, but children who receive timely treatment may also experience better developmental outcomes, reduced disability, and improved long-term health compared to children who would have survived without treatment but with complications. Our model focuses solely on mortality reduction and does not quantify these important quality of life benefits.

- **Work beyond under-five mortality:** Our community health worker programs serve entire communities, providing essential care for older children, adolescents, adults, and elderly populations. We support maternal health, family planning, management of chronic diseases, and emergency referrals for all age groups. While these services save lives and improve health across the lifespan, they fall outside the scope of our under-five mortality model and therefore aren't reflected in these estimates.

### **Our commitment to transparent impact measurement**

We present these estimates as one tool among many for understanding our impact, alongside rigorous impact evaluations, coverage assessments, and process indicators. The model undergoes periodic review to incorporate better data sources and evolving evidence.

We believe in honest, evidence-based communication about our work. These estimates represent our best understanding of mortality reduction while acknowledging substantial uncertainty. This transparency reflects our commitment to learning, accountability, and continuous improvement in how we measure what matters most: healthier communities and children who survive and thrive.

*This model was developed in September 2025 and is regularly updated as our programs evolve and new evidence emerges.*