Mapping the Last Mile: How Data Is Helping Reach Unvaccinated Children

Google NotebookLM/WorldPop, 6 January 2026

Transcript

Speaker 1: Welcome to the Deep Dive where we take complex research and give you the essential insights in minutes.

Speaker 2: And just a quick reminder for you. We are AI derived from source material uploaded by WorldPop.

Speaker 1: That's right. And all the audio has been checked and validated by their experts.

Speaker 2: Our mission today is to get into a really critical piece of research. It's a new preprint led by WorldPop researcher Dr. Natalia Tejedor Garavito.

Speaker 1: And it explores geographic access to care for unvaccinated children across 99 low- and middle-income countries.

Speaker 2: Right. Or LMICs.

Speaker 1: So, the global challenge is still achieving routine immunisation, and the numbers here are pretty staggering. We're focusing on children who missed their first dose of the diphtheria, tetanus, pertussis vaccine. DTP1.

Speaker 2: And in 2021 alone, that was 18.1 million children globally, who missed out. That's a huge gap.

Speaker 1: It really is. So how does this research help tackle that? Because national averages don't seem to be working.

Speaker 2: Exactly this research bypasses that they use, you know, advanced geospatial modelling at a 1 kilometre resolution. It lets them map exactly where these zero dose children live, and just how far they are from a health facility.

Speaker 1: 1 kilometre. So, we're not talking about countries, we're talking about individual neighbourhoods.

Speaker 2: Talking about villages, yeah. To get that level of detail, they looked at two key scenarios, one for walking and one for taking motorised transport.

Speaker 1: And I'm guessing this relies heavily on WorldPop's open data.

Speaker 2: It does. It uses their high resolution population maps and that comparison is really the key to the whole thing.

Speaker 1: OK, so let's get into the findings. What did this mapping reveal about the scale of the challenge?

Speaker 2: Well, the study estimates there were about 15.7 million zero dose children across those 99 LMICs. And if you look at the worst case scenario - just walking - the geographic barrier is pretty shocking. A staggering 39% of those unvaccinated children live more than one hour away from a facility. The problem is immense in countries like Afghanistan, where it's 84% of unvaccinated kids or Papua New Guinea at 83%. Sudan at 81%.

Speaker 1: That paints a very clear picture of geographic hardship.

Speaker 2: It does, and for the most remote districts they studied, the average travel time to walk, to get routine care was 221 minutes.

Speaker 1: That's nearly 4 hours. But then the data flips when you factor in motorised transport. You find that 83% of those same unvaccinated children actually lived within 30 minutes of a facility, right? So, wait, 83% are close. Doesn't that just mean we need better roads?

Speaker 2: Not at all. This contradiction is what the researchers call 'the proximity paradox'.

Speaker 1: The proximity paradox. OK, So what does that tell us?

Speaker 2: It means geography is only half the story. If children are that close to a facility and still unvaccinated, the root cause has to be non-geographic.

Speaker 1: So, the real obstacles are invisible ones.

Speaker 2: Exactly. Things like conflict and insecurity, high financial costs, maybe cultural resistance or just a weak health system. The building might be nearby, but the services aren't available, or the quality is poor.

Speaker 1: And that's why this subnational data is so incredibly valuable.

Speaker 2: The research shows these stark inequalities within the same country. You have nations like Nigeria, the Democratic Republic of the Congo, and Somalia that contain districts with excellent coverage.

Speaker 1: Right next to districts with huge percentages of zero dose children.

Speaker 2: You have to target the specific subnational contexts; you just have to.

Speaker 1: So, this allows policymakers to create two really targeted types of action. Right? What are they?

Speaker 2: The first are the remote districts. That's long travel times and low coverage. These places need structural fixes, new facilities, maybe mobile clinics, community based delivery, things that close that physical distance.

Speaker 1: OK. And the second?

Speaker 2: The second are the accessible districts short travel times, but still low coverage. They don't need a new building; they need the system strengthened. You need to address security or funding or service quality.

Speaker 1: So, it's about knowing whether the barrier is a mountain or if the problem is the quality of care on the other side of the street.

Speaker 2: Using this fine resolution data ensures that limited resources get deployed effectively.

Speaker 1: This research really changes how you think about tackling the global immunization gap. It shows that being well informed at the local level is the only way to spend our money where it actually counts.

Speaker 2: To read the full free print, follow the link below.