WorldPop

Global 2 Release Statement - audio summary

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Transcript

Speaker 1: Hi everyone and welcome to the Deep Dive. Just a quick note before we start. We aren't real people.

Speaker 2: That's right, we're AI voices derived from source material that was uploaded by the team at WorldPop.

Speaker 1: And importantly, this audio has been edited, checked and fully validated by the human experts at WorldPop.

Speaker 2: OK, so let's get into it.

Speaker 1: Yeah. OK, let's unpack this today. We're diving into a really crucial area. How cutting edge data science can solve, you know, real world public health challenges. Our source material for this deep dive is a new study. It's led by senior research fellow Dr Gianluca Boo, and it introduces a powerful new Bayesian model. The goal is estimating population distribution in Kasaï-Oriental Province, in the Democratic Republic of the Congo.

Speaker 2: And what's really fascinating here, I think, is the sheer scale of the problem. This study addresses, you know, many low- and middle-income countries face these significant public health hurdles, and they're often made worse, much worse by a profound lack of reliable sort of granular demographic data.

Speaker 1: It's not just a small thing, is it?

Speaker 2: No, it's actually a major barrier to effective planning. Think about everything from disease surveillance to critical vaccination campaigns.

Speaker 1: And the Democratic Republic of the Congo, while it's a prime example, as the study points out, they haven't had a national census since 1980 four, 1984.

Speaker 2: It's hard to even imagine.

Speaker 1: Right. It means public health programmes are struggling, they just don't know where people are or how many. Imagine trying to allocate mosquito bed nets for malaria control. Or tracking tuberculosis outbreaks in these really dense urban slums. Without knowing the actual population.

Speaker 2: You just can't do it effectively.

Speaker 1: And the study highlights this, too. Even the COVID-19 response was severely hampered by this lack of data.

Speaker 2: A very real, very recent example.

Speaker 1: So, here's where it gets really interesting. They developed this, this clever Bayesian model. It simultaneously estimates both building counts and population counts.

Speaker 2: Right, which is a neat trick in itself. How does it manage that?

Speaker 1: Well, it does it by combining different types of data. It uses geolocated survey data, specifically info from 213 micro census clusters that were surveyed back in 2021.

Speaker 2: OK, so detailed ground level stuff.

Speaker 1: Exactly. And it combines that with nearly 300 different gridded geospatial data sets. You know, things like satellite data showing land use or nighttime light intensity, and even existing building footprints.

Speaker 2: Ah, OK. And that raises an important point. One of the models key innovations, really, it explicitly accounts for the uncertainty that.

Speaker 1: Which is?

Speaker 2: It explicitly accounts for the uncertainty that comes with that building footprint data itself.

Speaker 1: Because those footprints aren't always perfectly accurate.

Speaker 2: Precisely, it was a previously unaddressed source of error in a lot of similar models. Tackling that uncertainty allows for these incredibly high resolution population estimates. We're talking down to about one hectare.

Speaker 1: That gives a much, much clearer picture of how people are distributed on the ground.

Speaker 2: It really does.

Speaker 1: So, what did the model find for Kasaï-Oriental?

Speaker 2: Well, the model estimates the provinces population for 2024 to be around 4.1. Million, but crucially, it gives a credible range from about 3.4 million up to 4.8 million. That range is important.

Speaker 1: Right. It shows the uncertainty. And I bet it showed big differences across the area.

Speaker 2: Huge variations. You see generally low population counts in most grid cells in the rural areas as you'd expect, but then you get significantly higher numbers reaching up to 488 people per grid cell per hectare. Remember, in urban areas like the provincial capital, Mbuji-Mayi.

Speaker 1: 488 people in a space roughly the size of a football field. That's dense.

Speaker 2: Very dense, and if we connect this back to the bigger picture - these aren't just numbers. They're what we call probabilistic insights.

Speaker 1: Meaning they come with that uncertainty level attached.

Speaker 2: Exactly. The model provides uncertainty levels, which, yes, can be quite substantial, sometimes exceeding 148% in certain health areas.

Speaker 1: Which sounds like a problem, but you're saying it isn't?

Speaker 2: It's actually a strength. It's honest about what we know and what we don't know, precise. Really, this empowers the public health community. They can make much better, more informed decisions. For instance, planning those vaccine campaigns we mentioned. You could decide to allocate vaccines based on the upper bound of these 95% credible intervals.

Speaker 1: So, you plan for the higher end of the likely population range?

Speaker 2: Right. To ensure you have enough resources for optimal coverage to reach everyone who needs it, even if the exact number is a bit fuzzy in some places.

Speaker 1: That makes sense. And this flexibility, being able to aggregate the data across different health boundaries must be incredibly useful.

Speaker 2: Invaluable, really.

Speaker 1: So, wrapping this up, what does this all mean?

Speaker 2: It moves us towards more precise, more effective interventions.

Speaker 1: And the path forward?

Speaker 2: Well, it involves a few things. Building the necessary skills, obviously to understand and actually implement these quite sophisticated Bayesian models and integrating them with other health data like population pyramids, maybe, to identify critical subgroups like children under 5, women of childbearing age.

Speaker 1: Right. Getting even more specific?

Speaker 2: And ultimately creating user-friendly tools. Tools that make these powerful probabilistic approaches seamlessly applicable for health system planning, right where they're needed most.

Speaker 1: Makes perfect sense. So, a final thought to leave with you, our listeners. If every low-resource setting could generate and crucially, continually update these kinds of high resolution, probabilistic population maps, how might that fundamentally transform global health equity and disaster preparedness too? What innovative uses might you find for such granular, detailed data? Something to think about.