How WorldPop Use Google Open Building Data

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Transcript

SFX: City traffic

Chris Vallance: The familiar sound of the urban environment, but sometimes where we live can rapidly become unfamiliar. Have you ever visited a city or a town that you once lived in and marvelled at how it's changed? Well, in many parts of the world, cities have grown rapidly. But tracking this quick development can be a real challenge. Which is why a recent expansion of Google's Open Buildings project could be really useful. It's a repository of high resolution building footprints and heights in Africa and across the global south. The data is gathered using artificial intelligence and satellite imagery. Organisations can use this information to work out how towns and cities develop and where populations are moving to, so they can be provided with essential services like electricity and running water.

Google is working with population experts WorldPop at the University of Southampton in the UK. Professor Andrew Tatem is WorldPop's director.

Professor Andrew Tatem: So, we are a research group at the University of Southampton, and we focus on trying to bring together different data sets from satellites, from surveys, from cell phones to try and get a better idea of how many people there are in different locations. Where they are, and something about their characteristics. Particularly in places where those data are hard to get or are outdated.

Chris: And one of the data sets that you're interested in understanding is how the built environment has changed, and at its most basic level, the level of buildings. Why is it important to map buildings to know where they are and how they're changing?

Andy: It's pretty vital for any kind of government decision making where you're trying to allocate resources. So, you may be trying to reach all the children in the country to distribute vaccines. You may be able to try to work out where to position polling stations or health facilities. If we don't know where buildings are, and as a next step where people are, we're going to be allocating those in the wrong place. We're going to be wasting money; we're going to be not reaching those who are most in need.

Chris: Now you're working with Google and their open buildings data, can you explain what that is and what you're doing with it?

Andy: The open buildings data, an early version, we started working with was very clever in terms of taking very detailed satellite images from across the world and using AI techniques to train that AI, to recognise what a building looked like. And then it could map from those satellite images, those buildings all across the world. It's a fantastic data set that we have then used as part of our work to try and estimate where populations are. So, buildings don't necessarily mean that there are people there, but it's a vital component.

And so, these new data have then taken things to a really exciting step where we're looking at the change over time as well as building heights. So, two things that can really help us capture

those rapid changes that we've talked about, as well as better estimate the population numbers when we're looking at how tall the buildings are as well.

Chris: You've mentioned targeting vaccination and knowing where to deploy medical resources. I mean, what are the other kind of questions that this data will help you answer?

Andy: It will help us to look at things like the placement of schools. It will help us look at understanding as I just mentioned, the populations affected by crisis, disasters. But it also helps support data collection itself. So, to be able to do collection on the ground, of surveys, of a proper full census, we need to have accurate and reliable data so that we know where to go and count. So, it's the kind of circularity of improving the data that we can use to collect data from the ground that then improves our ability to map when we don't have a census.

Chris: That's so funny. It's so obvious, isn't it? But I didn't really think about it. Of course, you can't send your census takers to every square kilometre in a country. You have to know where the people are first before you do the census.

Andy: Yeah, yeah. And the solution for many countries prior to data sets like this was to have a bunch of teams of people sit in a room and look at aerial photographs or satellite images for months on end and hand delineate those buildings. This really saves time. It saves money. And it enables those resources to be put towards doing a more accurate census. It's never going to be perfect. There's always a limit to what we can see, and guess, and train computer algorithms to recognise from space or from the sky, but it's pushing us further and further towards more accurate mapping of buildings and people.

Chris: And what does the future hold in terms of this kind of tech? I mean, if I asked you to sort of reveal a top item on your wish list, what would you like next?

Andy: The next thing. Well, I would love for the next stage of this kind of work with Google to be not just annual mapping but to be able to map at finer temporal scales. So, to be able to maybe look at seasonal changes. To be able to try and identify the types of buildings, as we just talked about. Anything that really helps us build up a better picture of the situation on the ground where we cannot go and send people to enumerate, or we don't have the resources to go and count people. Anything extra like that helps us estimate those population numbers more accurately. And to do it more regularly and in rapid ways when there is a crisis, and we need to know those population numbers quickly.