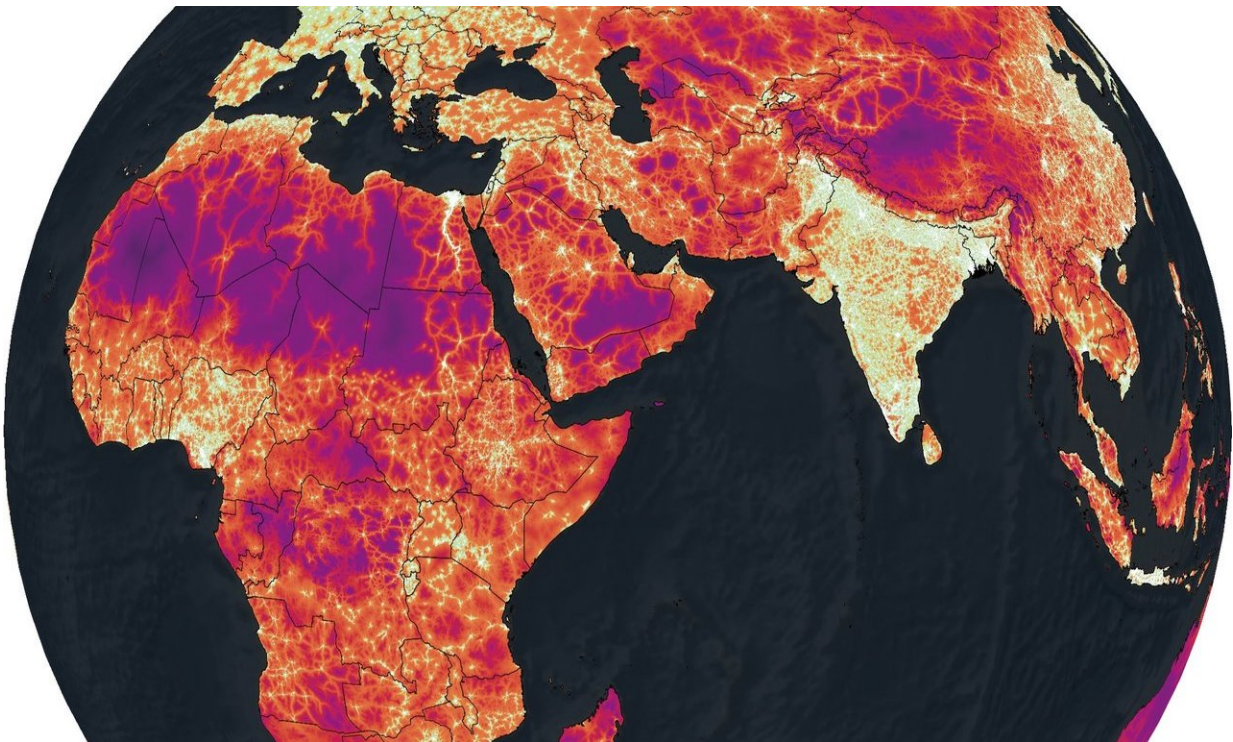


Maps that show travel times to cities all across the globe

January 11 2018, by Bob Yirka



Global map of travel time to cities illustrating spatial disparities in accessibility to urban areas and the services they provide. The map ranges from minutes (bright yellow) to nearly a week (dark purple). Credit: The Malaria Atlas Project, University of Oxford

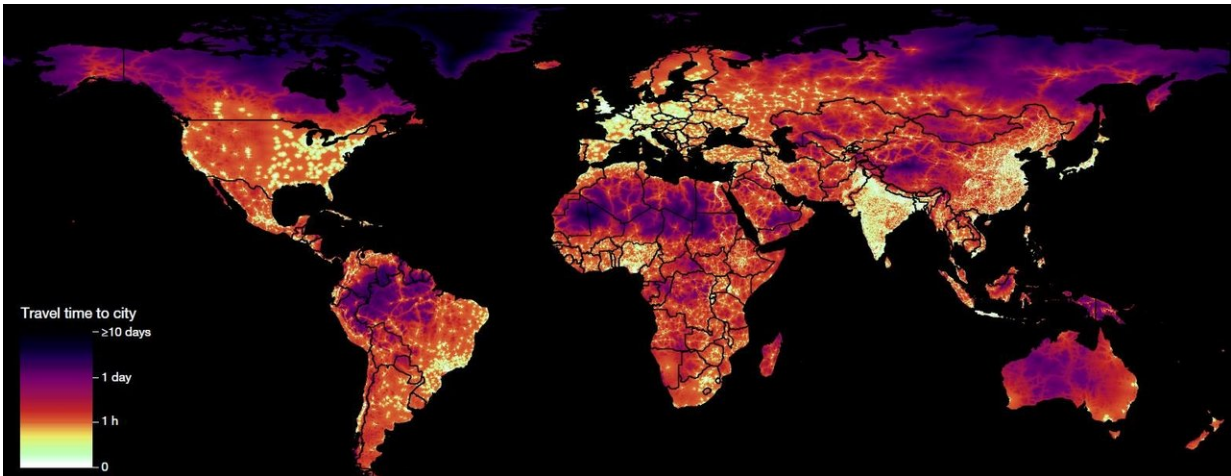
An international team of researchers, including a representative from Google, has created a color-coded map of the planet that shows travel

times to cities from other places. In their paper published in the journal *Nature*, the group describes how they gathered their data and used it to plot their maps, and also discuss some things they found interesting in the maps they created.

Back in 2000, a group of researchers attempted to create the first map of the world that would reveal the distances people would have to travel to get to a city—but according to the team working on this new effort note, that was before the advent of modern infrastructure computer networks. Building such maps is important because it shows how well countries are doing in meeting the needs of their people. Cities offer services that simply cannot be matched in the wilderness, in a big jungle or in villages located on sparse desert landscapes.

To create their maps, the researchers, led by the Big Data Institute at the University of Oxford, used data from Open Street Maps and Google itself. They were able to capture representations of transportation networks across the globe, which they fed into engines that created maps with color coding that showed how far people in any given area would have to travel to reach a city of at least 50,000 people. It also produced statistics, showing, for example, that over 80 percent of the people alive in the world today live within one hour of a city.

As the researchers note, looking at the map offers proof of what most already know: that it takes a long time to drive or walk from desert outposts to distant cities in poor countries. But it also offers some surprises—for instance, in the United States, despite vast rural areas, there are very few people who live distant from a [city](#). The maps also highlight what might be problems with initiatives such as the United Nations' Sustainable Development Goals. In looking at the new maps, it would be easy to assume, for example, that people living in the icy northern parts of Scandinavia are living in third world conditions, which clearly is not the case.



Credit: 2018 OpenStreetMap contributors, creative commons attribution 4.0

Still, it is clear that modern geographical networking tools are helping nations to better understand the challenges that they face, and perhaps aiding in creating initiatives to solve problems that such maps highlight.

More information: D. J. Weiss et al. A global map of travel time to cities to assess inequalities in accessibility in 2015, *Nature* (2018). [DOI: 10.1038/nature25181](https://doi.org/10.1038/nature25181)

Abstract

The economic and man-made resources that sustain human wellbeing are not distributed evenly across the world, but are instead heavily concentrated in cities. Poor access to opportunities and services offered by urban centres (a function of distance, transport infrastructure, and the spatial distribution of cities) is a major barrier to improved livelihoods and overall development. Advancing accessibility worldwide underpins the equity agenda of 'leaving no one behind' established by the Sustainable Development Goals of the United Nations¹. This has

renewed international efforts to accurately measure accessibility and generate a metric that can inform the design and implementation of development policies. The only previous attempt to reliably map accessibility worldwide, which was published nearly a decade ago², predated the baseline for the Sustainable Development Goals and excluded the recent expansion in infrastructure networks, particularly in lower-resource settings. In parallel, new data sources provided by Open Street Map and Google now capture transportation networks with unprecedented detail and precision. Here we develop and validate a map that quantifies travel time to cities for 2015 at a spatial resolution of approximately one by one kilometre by integrating ten global-scale surfaces that characterize factors affecting human movement rates and 13,840 high-density urban centres within an established geospatial-modelling framework. Our results highlight disparities in accessibility relative to wealth as 50.9% of individuals living in low-income settings (concentrated in sub-Saharan Africa) reside within an hour of a city compared to 90.7% of individuals in high-income settings. By further triangulating this map against socioeconomic datasets, we demonstrate how access to urban centres stratifies the economic, educational, and health status of humanity.

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