Using Satellite Data to Guide Urban Poverty Reduction

Thomas Pave Sohnesen, Peter Fisker and David Malmgren-Hansen

Abstract

Poverty reduction is increasingly an urban challenge, and a challenge that continues to be hampered by lack of data. One such example is the urban social safety net program implemented by the Government of Mozambique, that is spatial in nature, but works without any data on the within-city spatial distribution of poverty. The lack of detailed data on poverty is common in many developing as well as middle-income countries. This study applies Convolutional Neural Networks on high-resolution satellite images of cities in Mozambique, and combines their outputs with household level geo-referenced survey data. The results show that readily available data sources can generate detailed neighborhood-level poverty maps, providing key operational guidance for implementation of the urban social safety net. Importantly, the approach is highly automatic, applicable at scale, and cost-effective. It is thus a key step forward in the application of remote sensing image recognition for urban poverty reduction.

Keywords: Poverty, Social protection, Remote sensing, Convolutional neural networks, image recognition.