City-Region Explorer: Visualizing urban connections

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1 The framework behind the City-Region Explorer

nature cities

Article

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Worldwide delineation of multi-tier city–regions

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Check for updates

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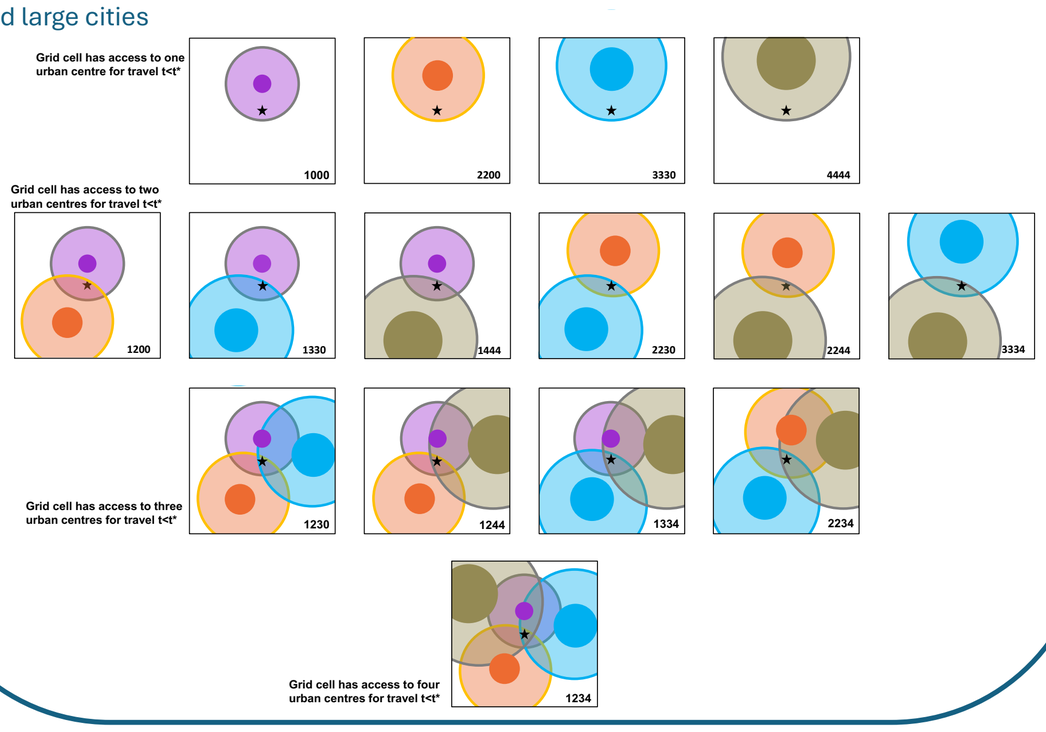
Urban centers are pivotal in shaping societies, yet a systematic global analysis of how countries are organized around multiple urban centers is lacking. We enhance understanding by delineating city–regions worldwide, classifying over 30,000 urban centers into four tiers—town, small, intermediate and large city—based on population size and mapping their catchment areas based on travel time, differentiating between primary and secondary city–regions.

Each location may access more than one urban centre size for a set travel time. There are 16 possible options when distinguishing between towns, small, intermediate, and large cities



2 The underlying global database

Based on the 16 options above it is possible to construct catchment areas for access to cities of different sizes and 'patches' that have the same urban centers as references

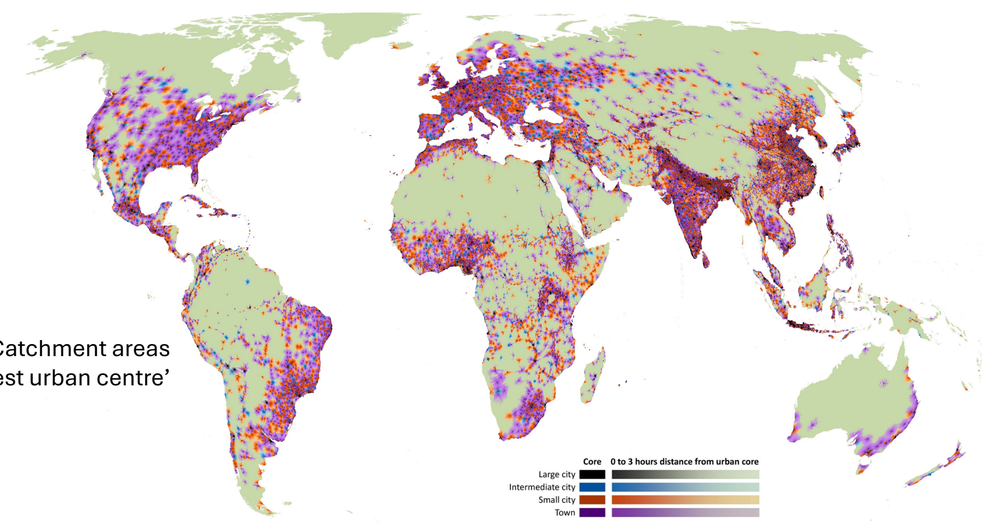
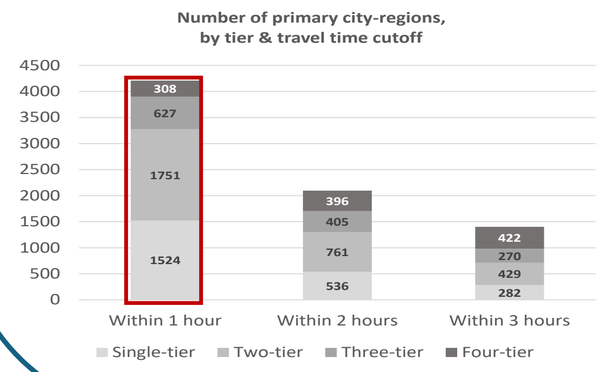


Figure. Catchment areas by 'closest urban centre'

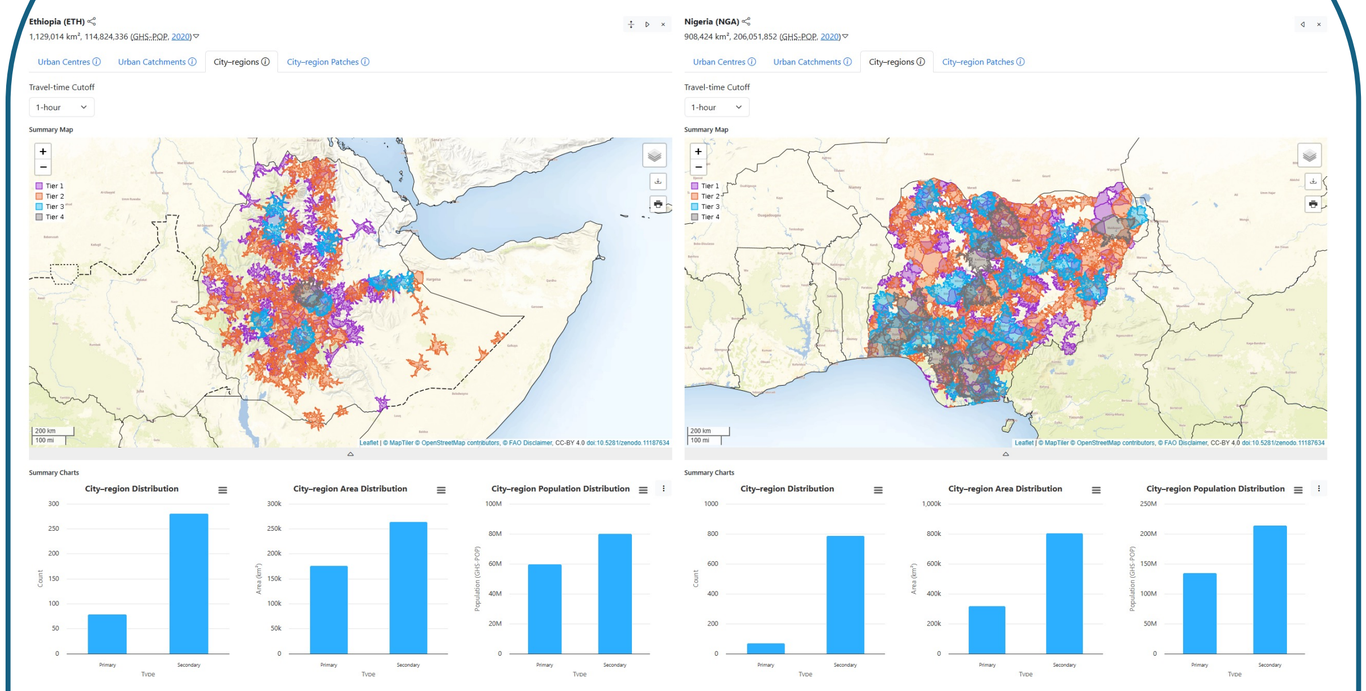
By aggregating patches one can delineate multi-tier city-regions. Distinguish between primary and secondary city-regions. Dataset is complex but it allows visualization and analysis of city-regions



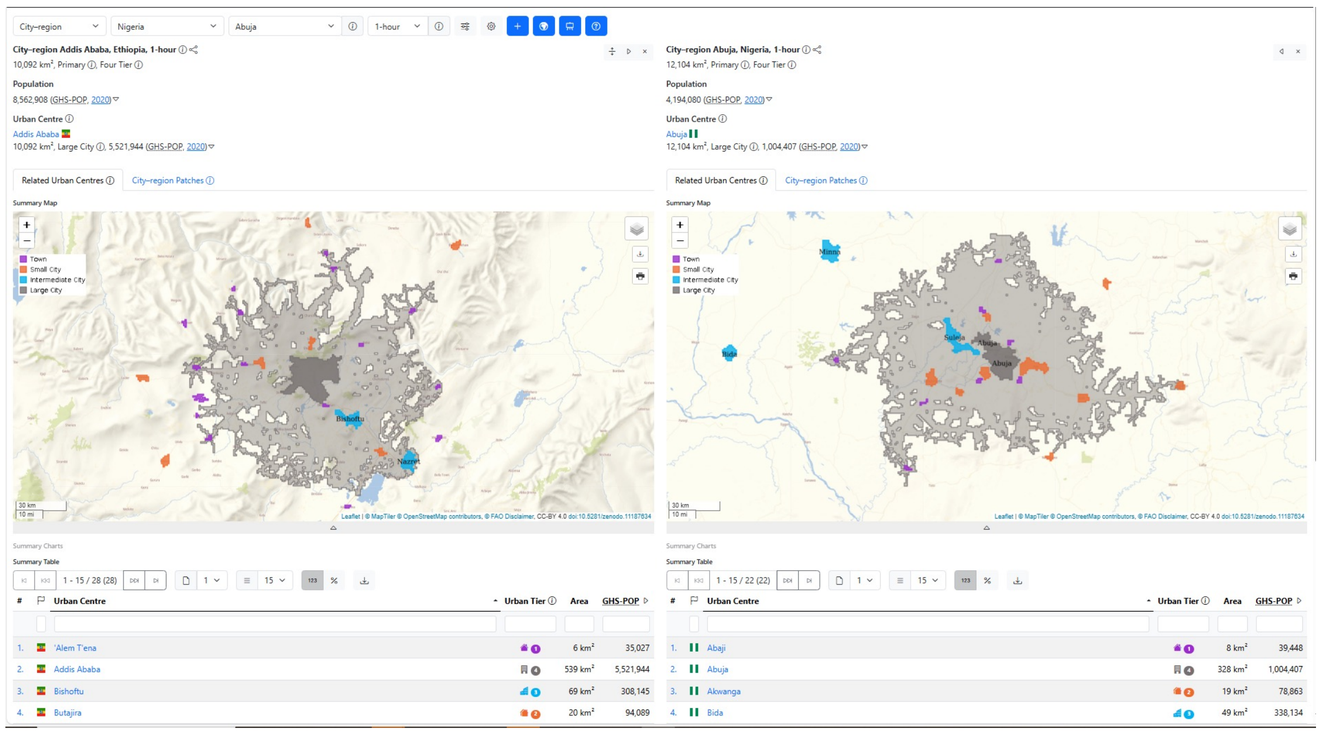
- 4,210 primary city–regions with an urban centre within a 1-hour travel time for all locations within their catchment area, many are multi-tier – relevant for commuting.
- Expanding the travel time to 3 hours reduces fragmentation of catchment areas → fewer primary city-regions.

3 Functionalities of the City-Region Explorer

Visualize primary and secondary city-region distribution, as well as population: Ethiopia vs. Nigeria



Zoom in and see a specific city-region as well as the urban centers related to it: Addis Ababa vs. Abuja



Several statistics are available at national level. For example, how population is distributed across different types of city-regions

#	Country / Territory	Population	Rural Population Beyond Cutoff	Towns	Small Cities	Intermediate Cities	Large Cities
	Ethiopia | Nigeria						
63.	Ethiopia	114,824,336	23,589,311	21.09% 4.47% 0.05% 12.93% 0.44% 3.38% 0.20% 0.32%	5.14% 21.44% 0.16% 0.28%	3.55% 0.92%	5.09%
139.	Nigeria	206,051,852	7,496,889	9.72% 5.57% 1.98% 3.55% 4.66% 4.13% 1.85% 1.94%	7.70% 11.46% 3.88% 5.68%	7.57% 6.00%	20.67%

4 Applications of the City-Region Explorer

Webinar with demos on June 3rd at 15:00 CEST
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Examples of information that can be extracted using the Explorer

- Population that lacks access to an urban centre by travel time cutoff.
- Population with only access to towns by travel time cutoff.
- Population that has access to more than one urban tier based on travel time.
- Primary and secondary city-regions and how they are interconnected.

Tool is open access and can be combined with other data sources, such as those in FAO's Hand-in-Hand Geospatial Platform

- **Can provide spatial analysis for regional planning in low and middle-income countries** (e.g. plan schools, hospitals and other services, by overlaying appropriate socio-economic data)
- **Economic analysis of how poverty and food insecurity are affected by access to cities of different sizes**. By overlaying with geo-localized household data.
- **Urbanization patterns, land use, and real estate and housing markets:** Analyse the effect of accessibility to urban centres on land use, urbanization, and real estate prices.
- **How the structure of city-region systems affect development** (e.g. the degree of economic integration between primary and secondary urban centers may impact regional development).

Hand-in-Hand Initiative

Go to Hand-in-Hand Geospatial Platform to try the City-Region Explorer - https://data.apps.fao.org/cityregions

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