

Global Mapping of Diversity: Subnational Age & Sex Data

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Background

The inclusion of age and sex information in gridded population data extends their usefulness for social, humanitarian, and other applications and has long been a demand of research communities. There are several reasons for this, including:

- demographic processes, e.g. mortality, fertility and migration, differ by age and sex;
- the numerical balance between sexes affects social and economic relationships, such as marriage and family formation;
- age composition and distribution are important for understanding the weight of demographic factors in economic and social policies;
- the degree of vulnerability to hazards and risks such as climate change, earthquakes, and infectious diseases is strongly influenced by the spatial distribution of a population's age and sex structure (de Sherbinin and Adamo 2015; Doxsey-Whitfield et al. 2015a);
- monitoring the implementation of the Sustainable Development Goals (SDGs) requires global data that are disaggregated by characteristics including gender, age, and geographic location.

SEDAC's *Gridded Population of the World (GPW)*, now in its 4th version, displays the global distribution (counts and densities) of the human population on a continuous surface, and has been expanded to include the basic demographic variables: age, as five-year age groups, and sex. The outcome is a consistent global gridded population data set with detailed estimates of age and sex distribution within each country, based on the 2010 round of censuses (CIESIN 2016; Doxsey-Whitfield et al. 2015b).

This poster presents a use case of the GPWv4 age and sex data to highlight inter- and intra- country heterogeneities in the spatial distribution of age and sex structures by examining the common demographic concepts of total dependency ratio, and young and aging populations. The full release of the GPWv4 age and sex structure grids is expected for late summer 2017.

(A) Total Dependency Ratio

One measure which can be derived from the new GPWv4 age and sex grids is the total dependency ratio (TDR). TDR measures the total number of dependents relative to economically productive people. Dependents are generally those persons aged less than 15 and those aged 65 and over, while working age people (15-64) are "economically productive". The TDR is a rough indicator of the socio-economic burden the working population must carry.

(B) Ethiopia and Spain

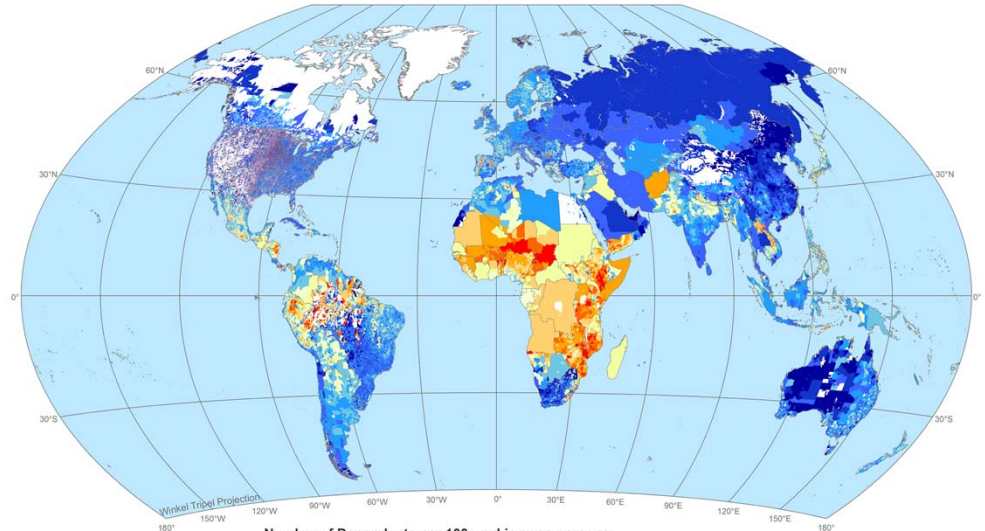
Ethiopia and Spain provide examples of the varying influence of young and old populations on subnational TDR.

High TDR values in south and southwestern Ethiopia reflect the high proportion (>41%) of children ages 0-14 in those areas.

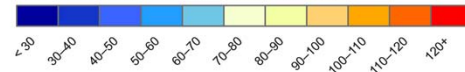
While the picture in Spain is more complex, high TDR values in central and northern Spain generally reflect the high proportions (>25%) of elderly people in those areas.

(A)

$$\text{Total Dependency Ratio} = \frac{\text{Non-working Population (ages 0-14 and 65+)}}{\text{Working Population (ages 15-64)}}$$



Number of Dependents per 100 working age persons

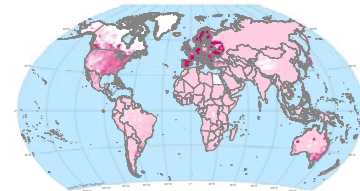


High TDR values reflect the influence of 'young' or 'old' populations.

A 'young' population has 30-35% or more of its population under the age of 15.



Children (ages 0-14) as a percent of the total population



The elderly (ages 65+) as a percent of the total population

An 'old' or 'aging' population has 10-15% or more of its population over the age of 65.

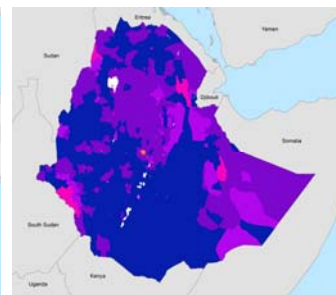
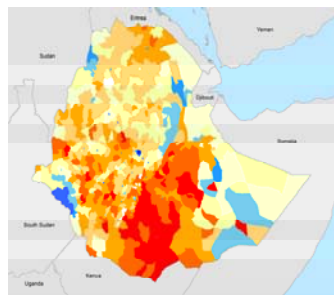
(B)

Total Dependency Ratio

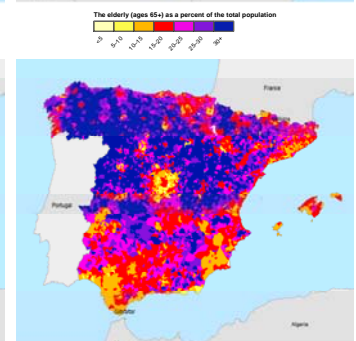
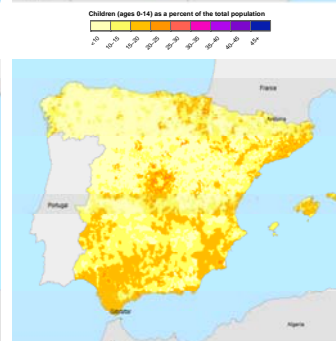
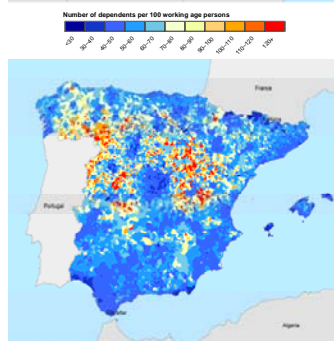
Children, Ages 0-14

The Elderly, Ages 65+

ETHIOPIA



SPAIN



<http://sedac.ciesin.columbia.edu/data/collection/gpw-v4>

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