



Tracing long-term demographic changes: The issue of spatial scales [↗](#)

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ABSTRACT

The protocol concerns estimations of the population density in prehistory at different spatial scales. The following issues are addressed: chronological resolution of demographic changes, estimation of the weight of values for population density in order to transform the initial values included in the sample into the values that may be compared with each other at the regional scale, calibration of the transformed values into real population densities, and the estimation of the weight of values for population density at the scales of macro-regions and for the density of metapopulations.

EXTERNAL LINK

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PROTOCOL STATUS

Working

GUIDELINES

The procedure of this research method considers several issues of data analysis. These can be summarized as follows:

- chronological resolution of changes;
- estimation of the weight of values for population density in order to transform the initial values included in the sample into the values that may be compared with each other at the regional scale;
- calibration of the transformed values into real population densities;
- estimation of the weight of values for population density at the scales of macro-regions and for the density of metapopulations.

BEFORE STARTING

All macro-regions and metapopulations considered include both hunter-gatherers and agriculturalists, groups which are characterized by significantly different densities. Hence, the impact of the related values on macro-regional densities should be separated in the analysis. Since the set of regional values included in the sample represents the density of agricultural populations of different size and the size of their regions of occupation varies, the latter variable is weighted by the coefficient ' p ' which represents the proportion of the total area of the macro-region contained in that region. Multiplication of the regional population densities by this coefficient produces the 'transformed' values that, on the one hand, allow comparison of population densities obtained for different areas, and, on the other hand, are used in estimation of the averages for macro-regions. The average obtained for a sample of the regions that make up a macro-region at a given period of time is projected to that macro-region.

- ¹ The coefficient representing the 'weight' of regions was estimated one time for each of regions, while the number of times a region was considered in different chronological periods is not taken into account. The relative sizes of the regions, as parts of the constant territory, are obtained as the result of the division of their real area by the total area of the macro-region. These contributions are then summed. Therefore, the related product of multiplication at this stage of the research does not represent the actual regional population density, but its 'contribution' to the macro-regional population density.

- 2 Consideration of the most precise estimations possible in terms of original archaeological records, temporal resolution, etc.
- 3 An estimation of the population density for a macro-region must consider the regional densities calculated for both agriculturalists and hunter-gatherers. This linearization follows the logic of estimating the macro-regional population density from several differently sized regions as discussed above. This is made possible by an introduction of the coefficient 'k' that weights the size of areas that are inhabited by populations with these subsistence strategies.
- 4 Densities of metapopulations are estimated according to the same logic. However, instead of densities estimated for agriculturalists and hunter-gatherers, the weighting of population densities for macro-regions is considered.

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