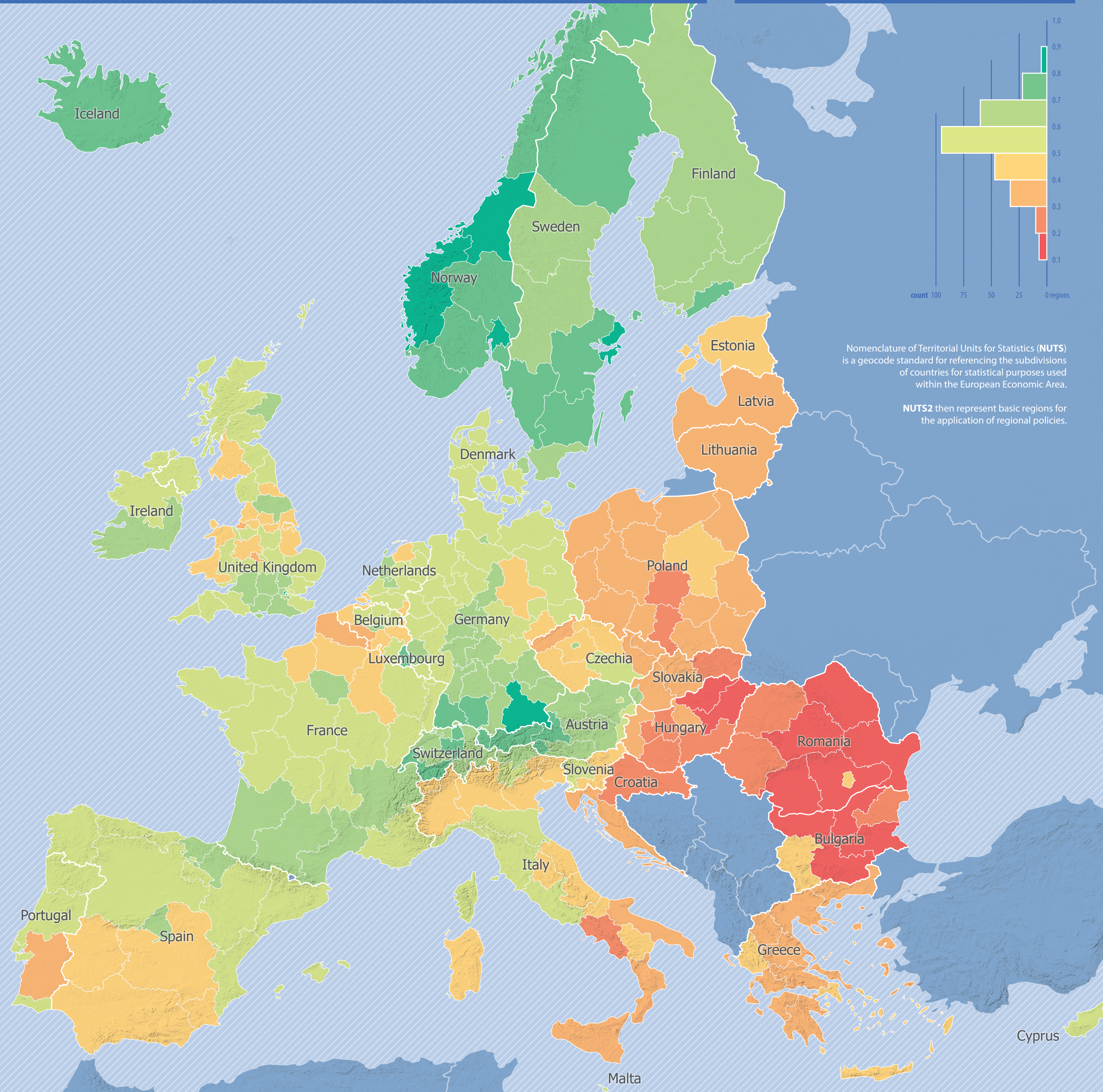
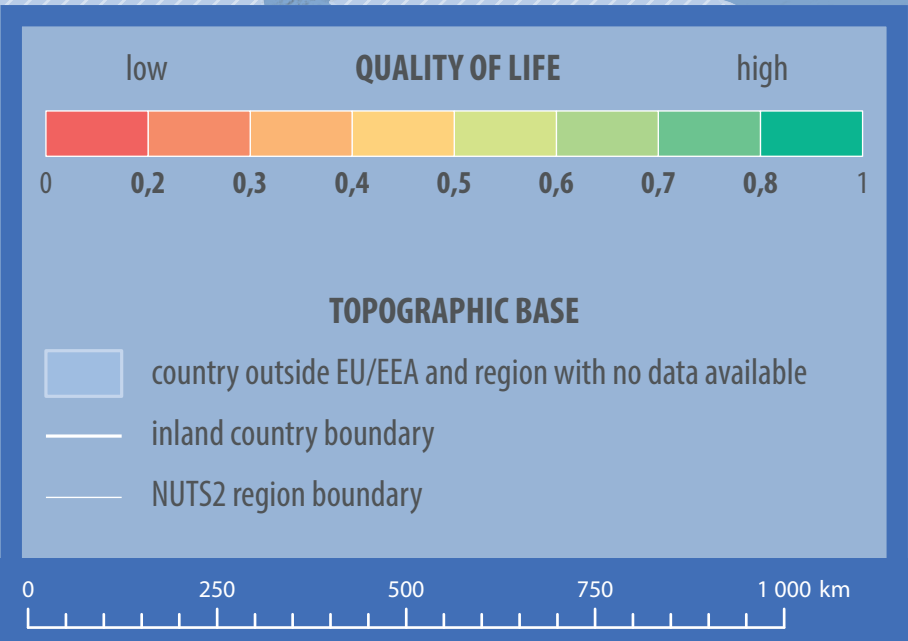


QUALITY OF LIFE INDICES

HOW ROBUST ARE THE RESULTS CONSIDERING DIFFERENT AGGREGATION TECHNIQUES?

NUTS2 REGIONS OF EUROPEAN COUNTRIES IN 2015

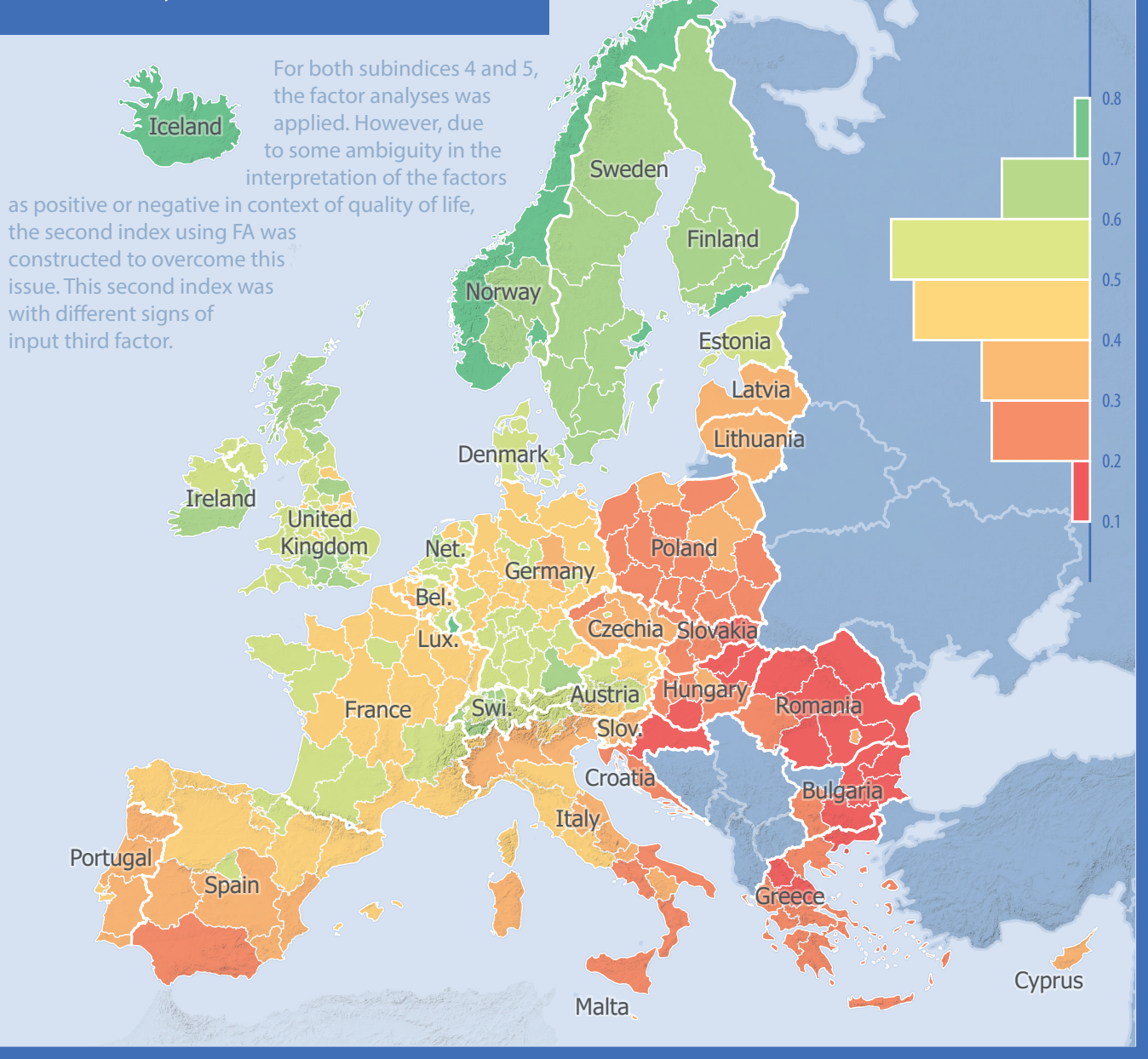


To live a happy and good life is probably the goal of all people. How do the conditions for a good life vary, from a spatial perspective? Are we influenced by the place we live? Or is the quality of life not spatially conditioned? Monitoring the quality of life is currently an attractive topic for researchers, politicians and international organisations. Measuring the quality of life has several benefits, such as comparing the state and development of society, identifying long-term trends, understanding the distribution of quality of life across society and space, and monitoring the effectiveness of government policies. As the quality of life is currently understood to be a complex and multi-dimensional topic, there is no simple and universally applicable quality of life index. There is a number of mathematical methods how to aggregate input indicators into an index. The diversity of design in quality of life indices, the complexity and multidimensionality of the topic and the spatial aspect of quality of life are the three main drivers underlying the aims of this article: to compile quality of life indices using a range of aggregation procedures and to verify the robustness of individual methods using the same input data. Based on the literature review, the following methods were selected for aggregation into the index: a summarisation of standardised values, an index based on multidimensional statistics (Principal Component Analysis and Factor Analysis), a distance-based index, and an index using Data Envelope Analysis.

Seven sub-indices using five different aggregation methods have been created. With this approach, the study offers a comprehensive view of the multidisciplinary topic of quality of life, and captures the current state of the European environment. With emphasis placed on the maximum possible spatial detail, the spatial variability of the quality of life and the complexity of the topic are captured in a suitable data set of indicators compiled the NUTS 2 classification. Eventually, partial sub-indices were processed in a two-level synthesis: construction of the final quality of life index (left) and a proposal for typology of the monitored NUTS 2 in the context of sub-indices (right).

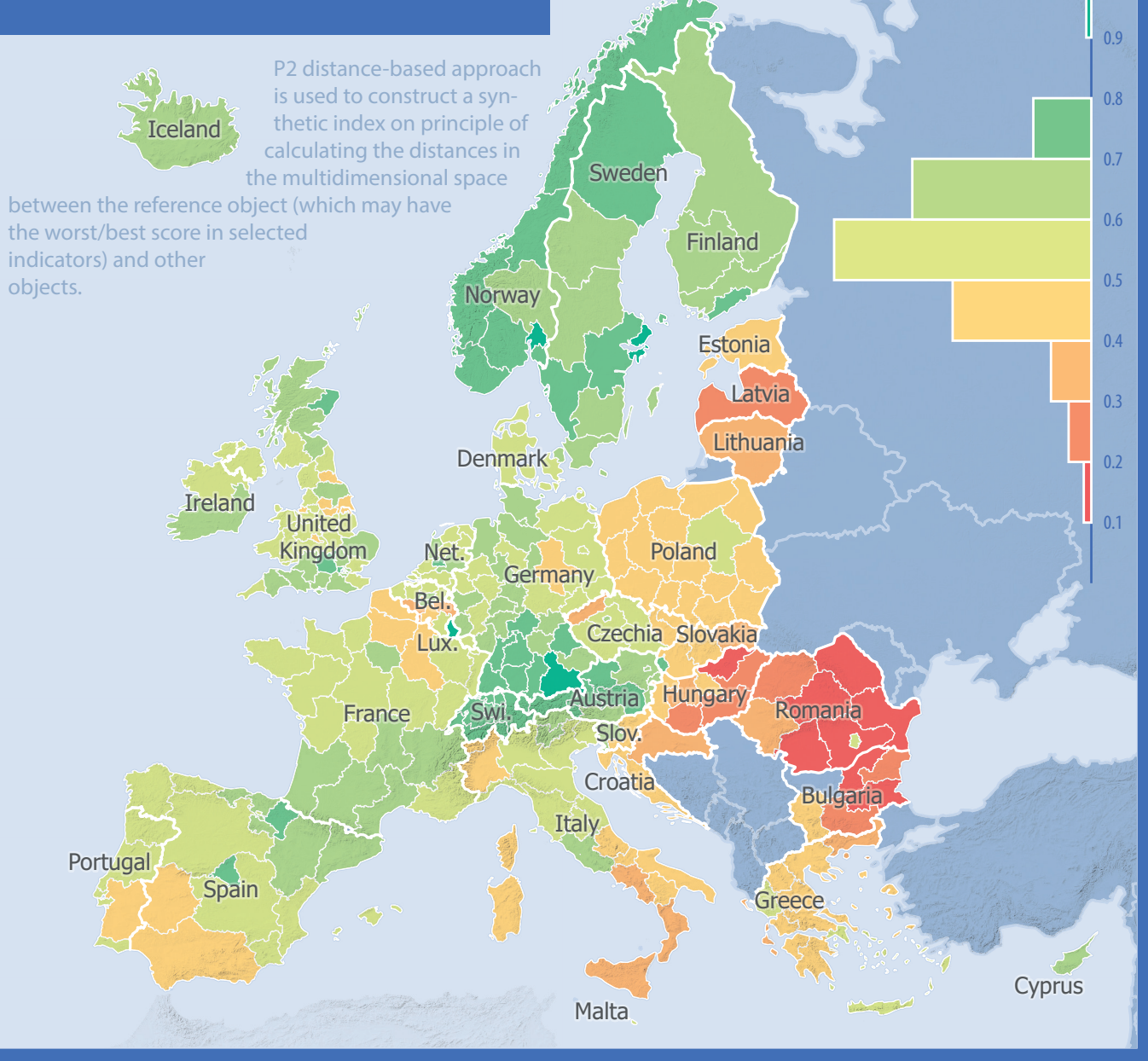
SUB-INDEX 5

Factor Analysis (the second variant)



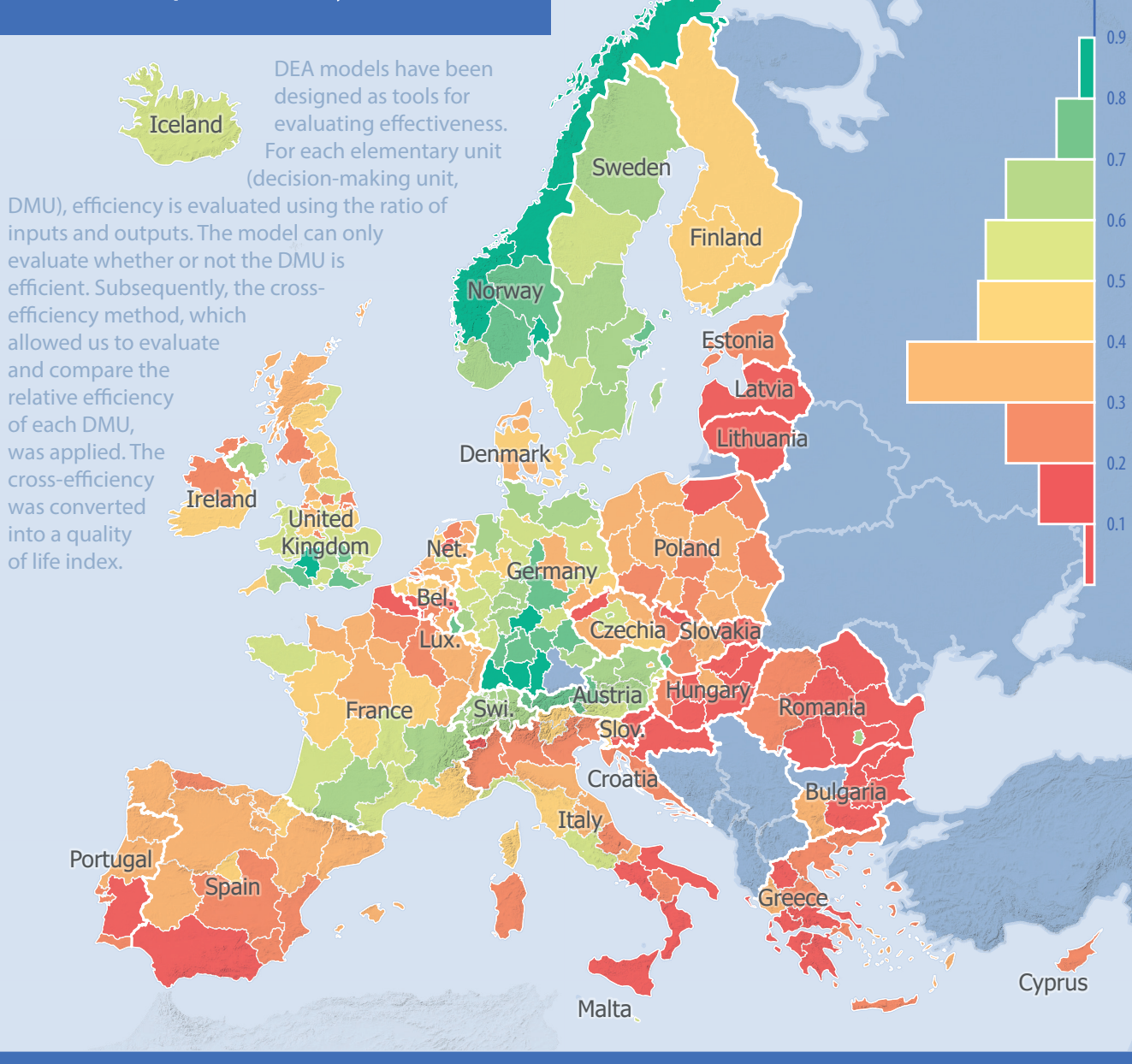
SUB-INDEX 6

P2 Distance



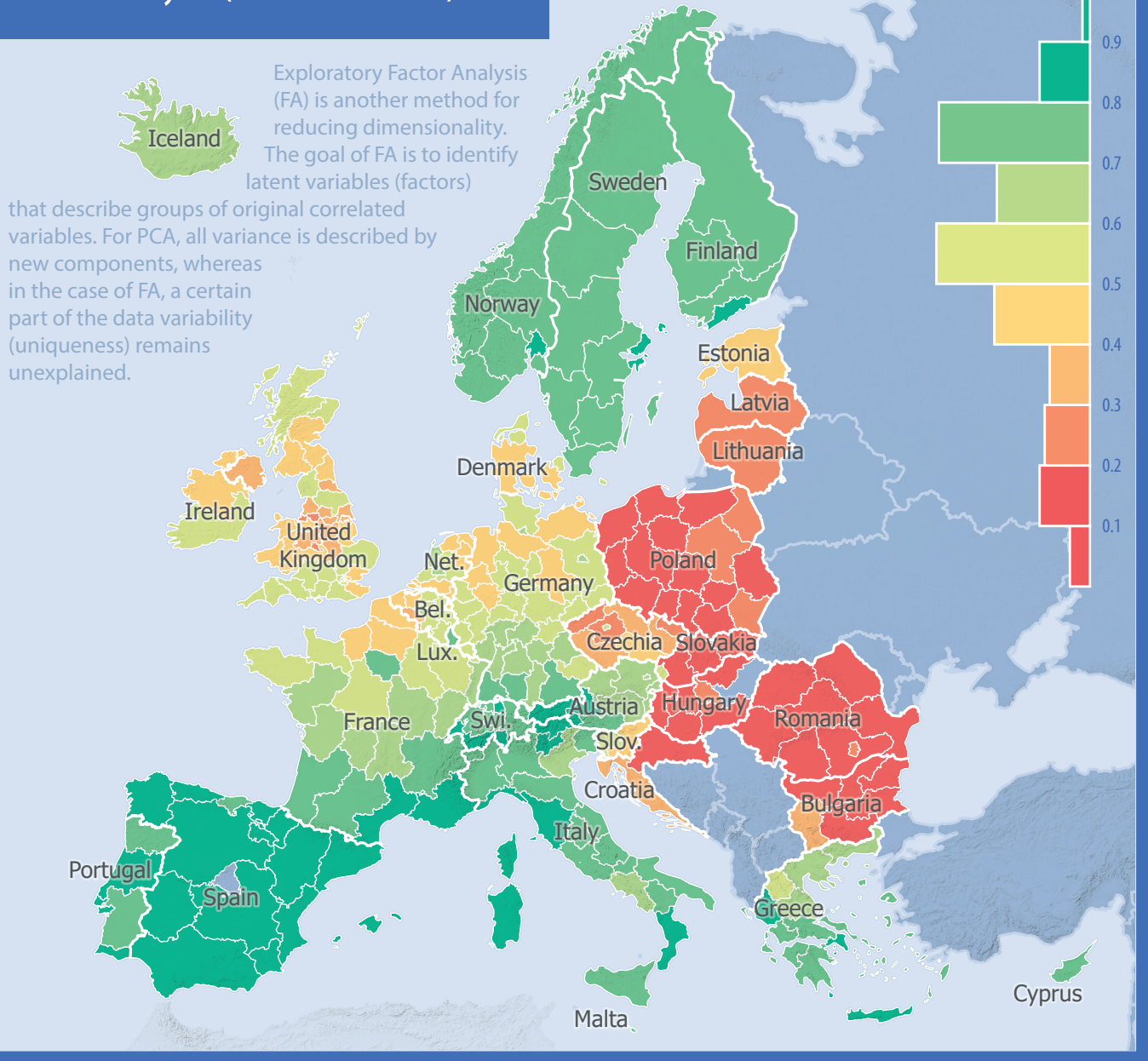
SUB-INDEX 7

Data Envelopment Analysis



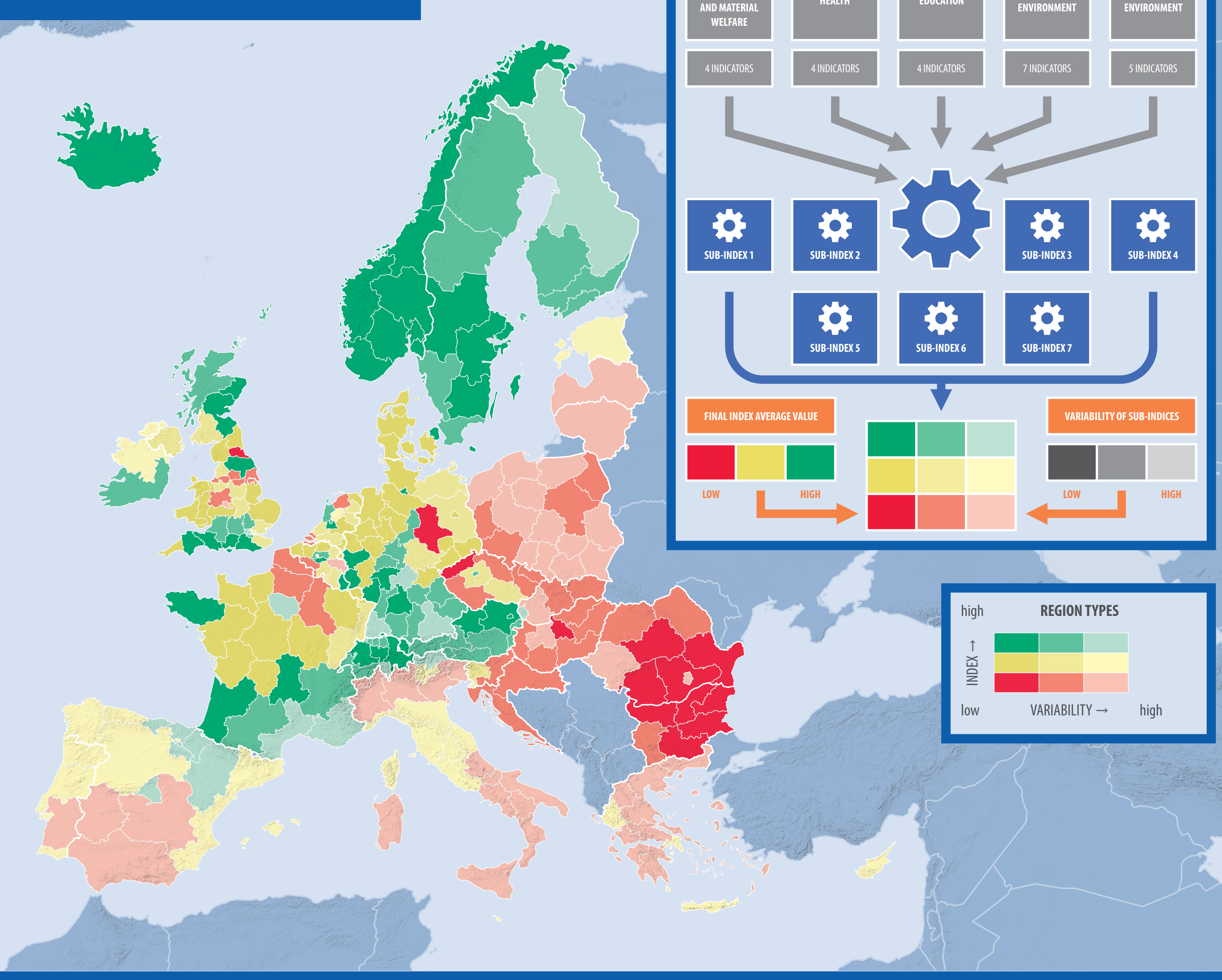
SUB-INDEX 4

Factor Analysis (the first variant)



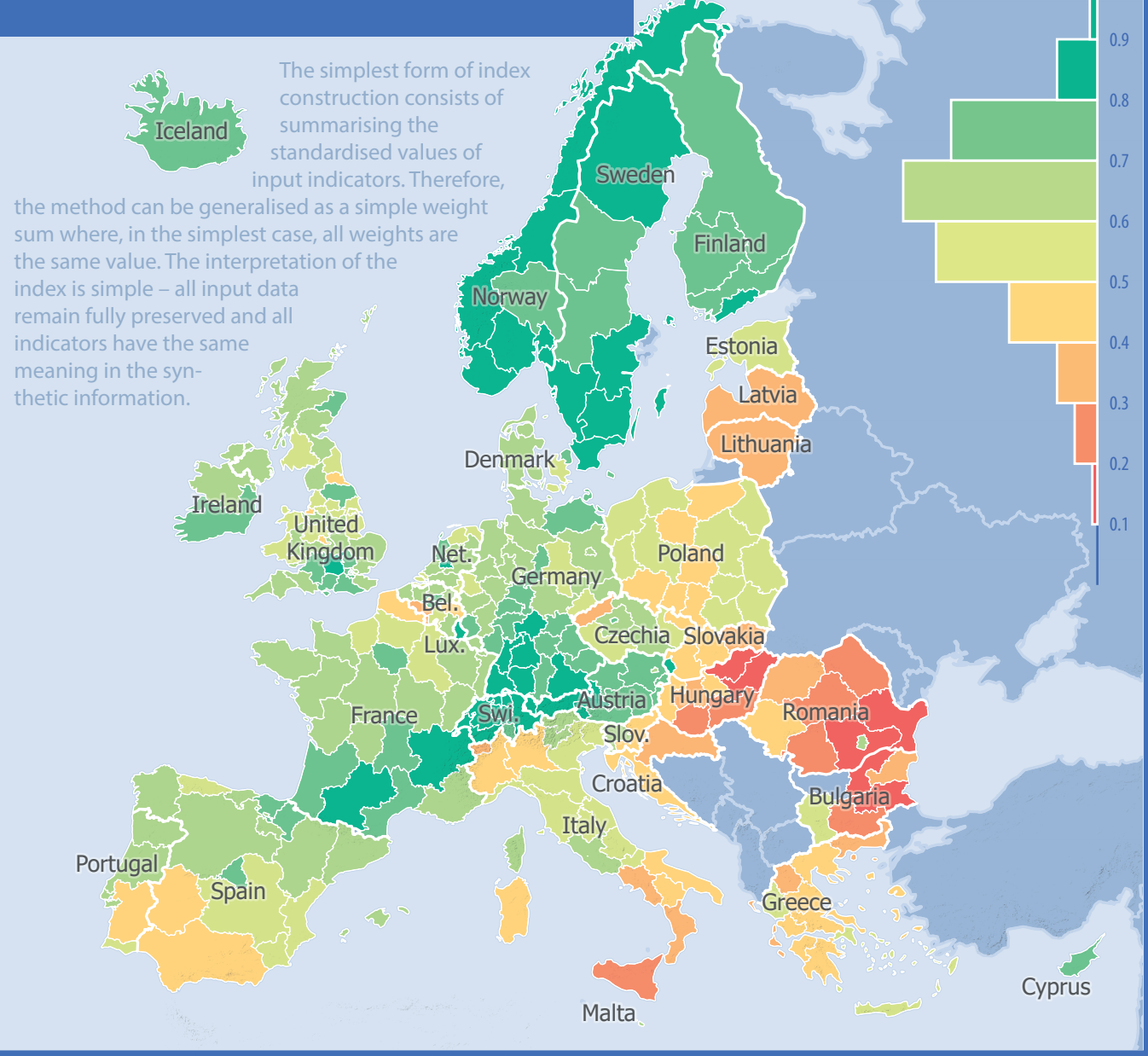
EUROPEAN REGION TYPES

QUALITY OF LIFE INDEX VALUE AND VARIABILITY



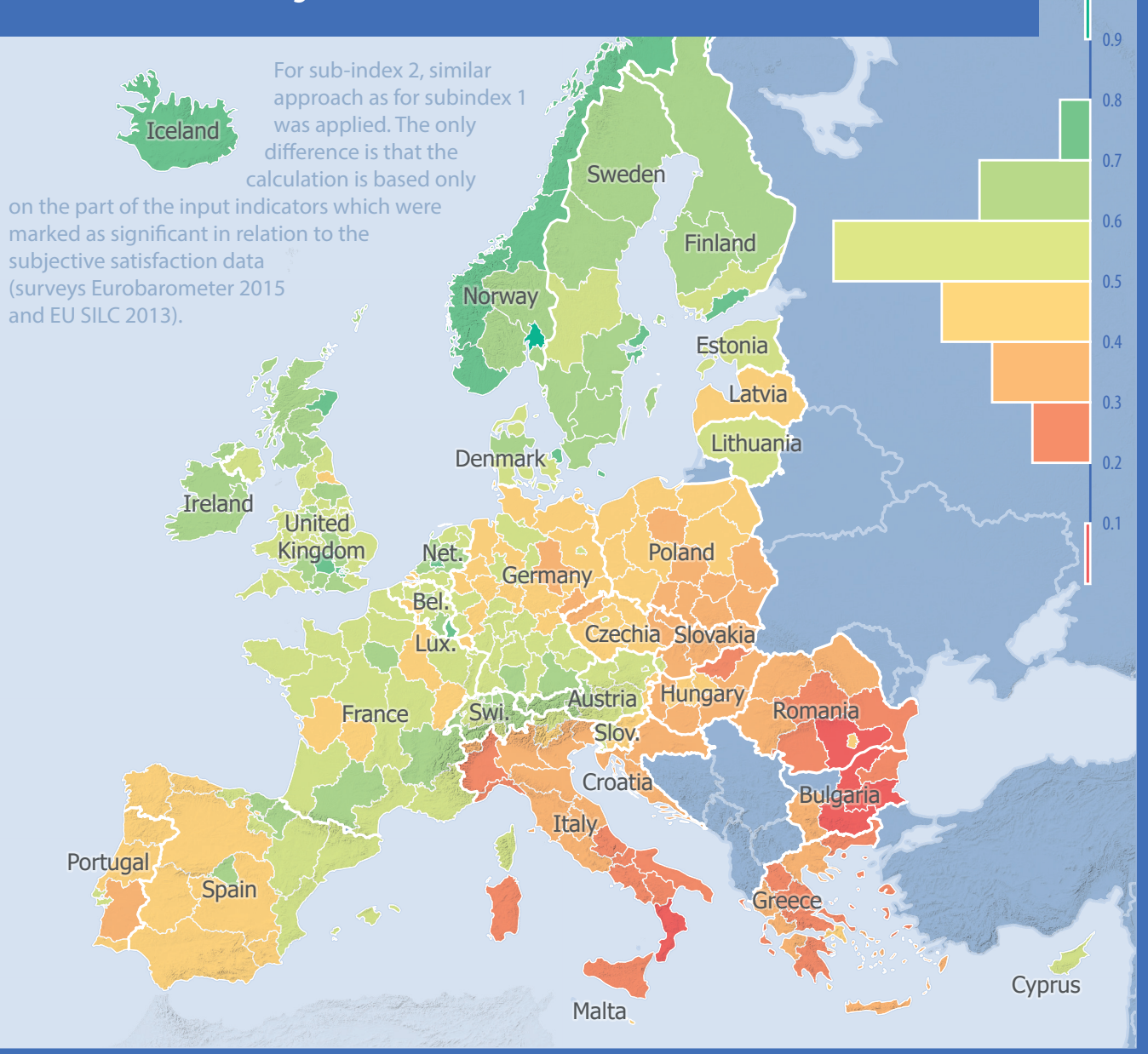
SUB-INDEX 1

Summarization of standardised indicators



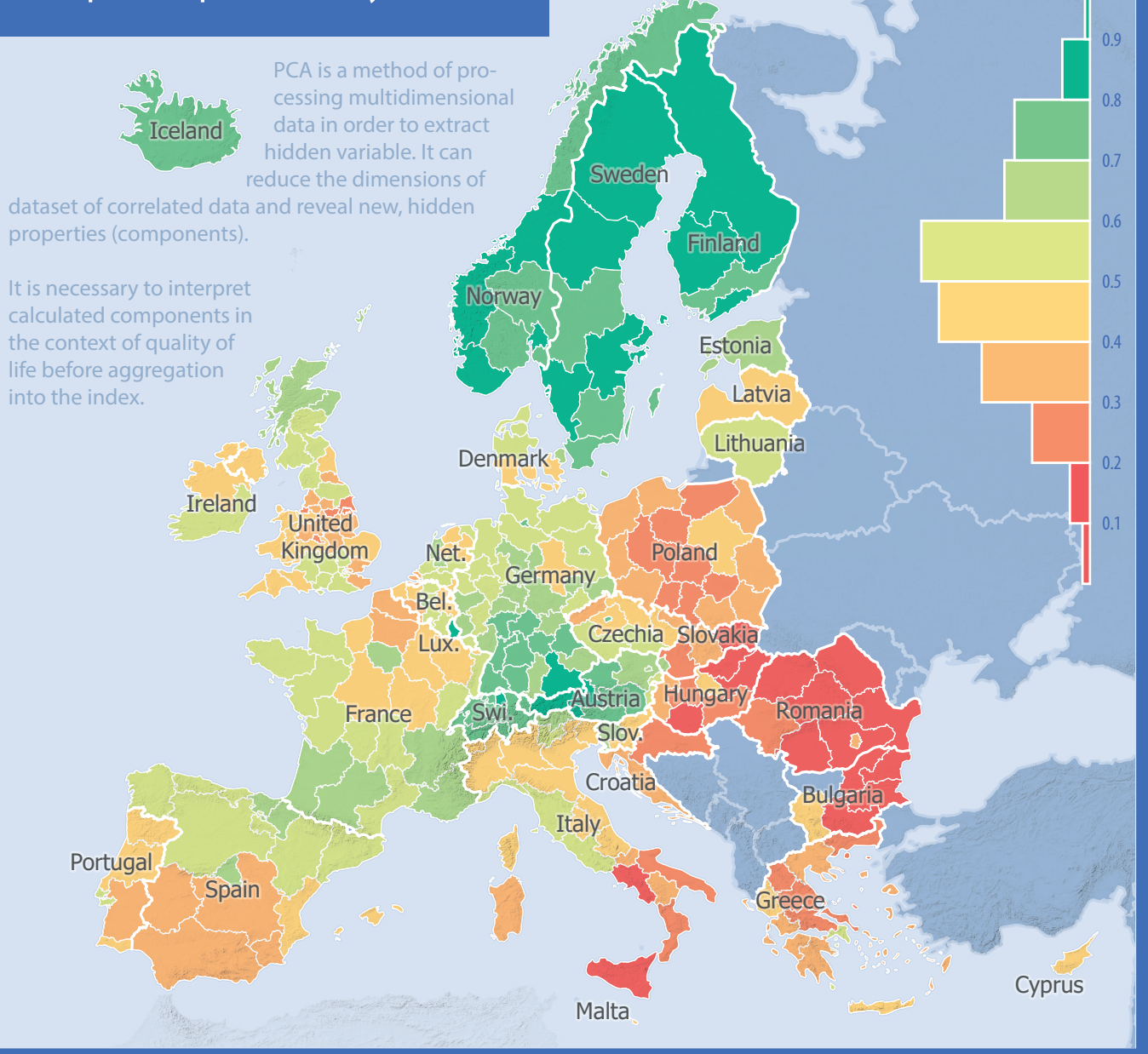
SUB-INDEX 2

Summarization of regression-based selection of standardised indicators



SUB-INDEX 3

Principal Component Analysis



DATA SOURCES

geographical data: GISCO (Geographic Information System of the Commission)
Copernicus Land Monitoring Service
Eurostat
Deutscher Wetterdienst
USGS GTOPO30

statistical data: Eurostat Database
OECD Regional Database
Environment Agency

QUALITY OF LIFE INDICES: HOW ROBUST ARE THE RESULTS CONSIDERING DIFFERENT AGGREGATION TECHNIQUES?

authors: Mgr. Karel MACKŮ, Ph.D., Mgr. Radek BARVÍŘ, Ph.D.

cartographic projection: ETRS 1989 LAEA_1

map scales: 1:10 000 000 (aggregated index map), 1:15 000 000 (typisation map), 1:25 000 000 (analytical maps)

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