QoLIv2: A Data-Driven Model for Comprehensive Quality of Life Assessment

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Landscape of Existing Metrics

Established Benchmarks and Their Limitations

GDP

Measures a community's capacity to produce goods and services, not the **lived experience** of its citizens.

HDI (UNDP, 1990 / rev. 2010)

Integrates health, education, and standard of living via geometric mean. Captures only **three core dimensions**, offering a partial view of multidimensional well-being.

WHOQOL (WHO)

100-question instrument across six dimensions. Relies entirely on **self-reported survey data**, introducing response bias and limiting cross-national comparability.

BLI (OECD, 2011)

Covers 24 atomic indicators across material and social conditions. **No public calculation formula**; values cover only 38 OECD member states, excluding three EU members.

Introducing QoLIv2

QoLIv2 is a substantial revision of the Quality of Life Index (QoLI) originally proposed in 2019. It addresses prior limitations through three principal advances:

Expanded Indicators

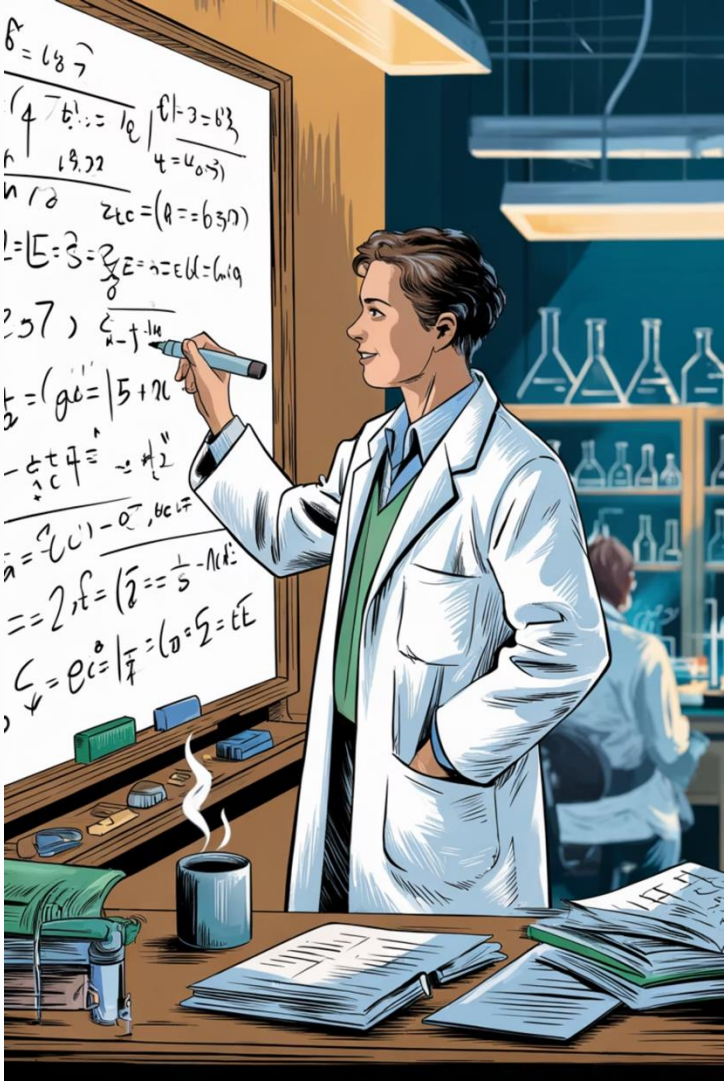
76 atomic indicators (up from 32) drawn from Eurostat's QoL database

Revised Aggregation

Logarithmic function replaces the geometric mean for more interpretable, asymmetry-robust results

Corrected Methodology

Errors and omissions from the original version resolved; negative-connotation indicators properly transformed



Structure

The Nine Dimensions of QoLIv2

Methodology

What Changed in the Aggregation Formula

Calculation Approach

QoLIv2 applies a **logarithmic function** to the product of its 8+1 constituent dimension values. Each dimension is itself computed by applying the same procedure to the transformed values of its specific atomic indicators.

Three pre-processing cases govern indicator transformation:

- **Composite indicators** — aggregated via geometric mean of their sub-indicators (e.g., Voter Turnout across three election types)
- **Negatively connotated indicators** — reversed via rev(x) to reflect the share of the population *not* experiencing an adverse condition
- **Standard indicators** — used directly without preprocessing

Why Logarithmic Rather Than Geometric Mean?

The geometric mean prevents a low value in one dimension from being fully offset by a high value in another — a desirable property retained in QoLIv2. However, the **logarithmic function** better accommodates the asymmetric distribution of the aggregated parameters and produces results that are more directly interpretable.

This change was motivated by the statistical literature on transformations for skewed data (Bland & Altman, 1996), ensuring that the index behaves consistently across countries at very different stages of development.

Key Enhancements

Notable Updates Across Dimensions

Material & Living Conditions

New **GDP per Capita Power** indicator expresses GDP in Purchasing Power Standards (PPS), enabling balanced cross-country comparisons.

Health

New **Depression Rate** indicator added. Consumption proxies replaced by 'non' rates (Non-Alcoholic, Non-Fruits & Vegetables) to better identify at-risk populations.

Education

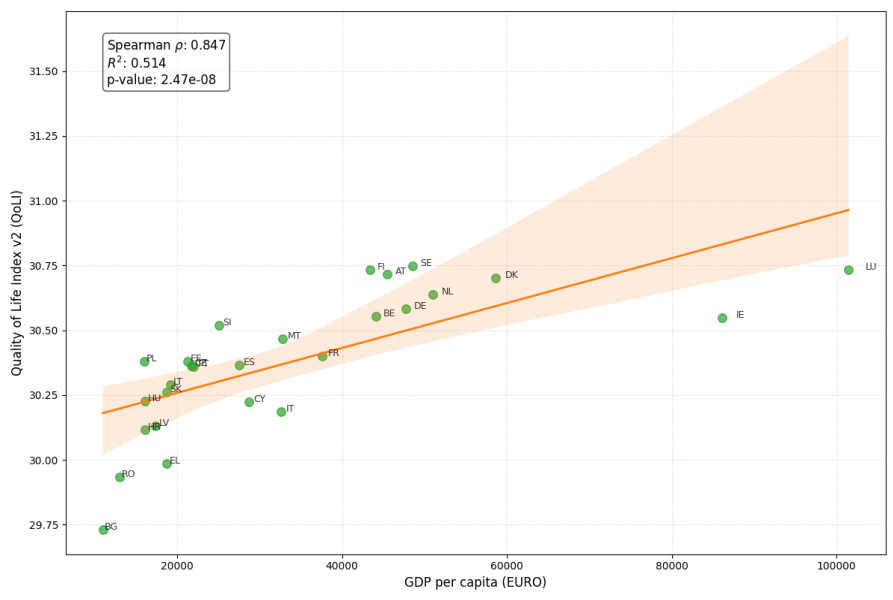
Inactive Young People Ratio extended to ages **15–29**. Pupils-to-Teachers Ratio corrected with the reversed formula. Twelve-month training participation added.

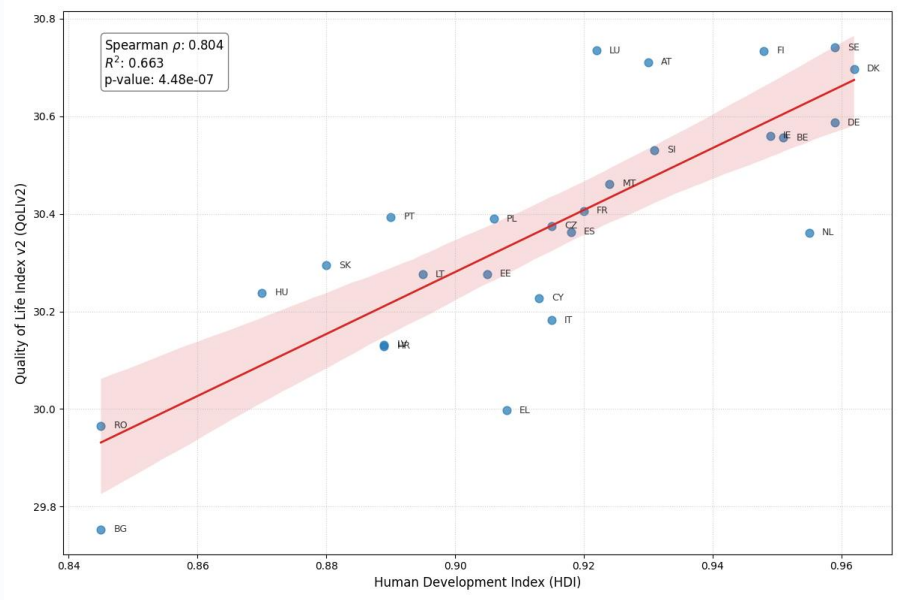
Governance & Basic Rights

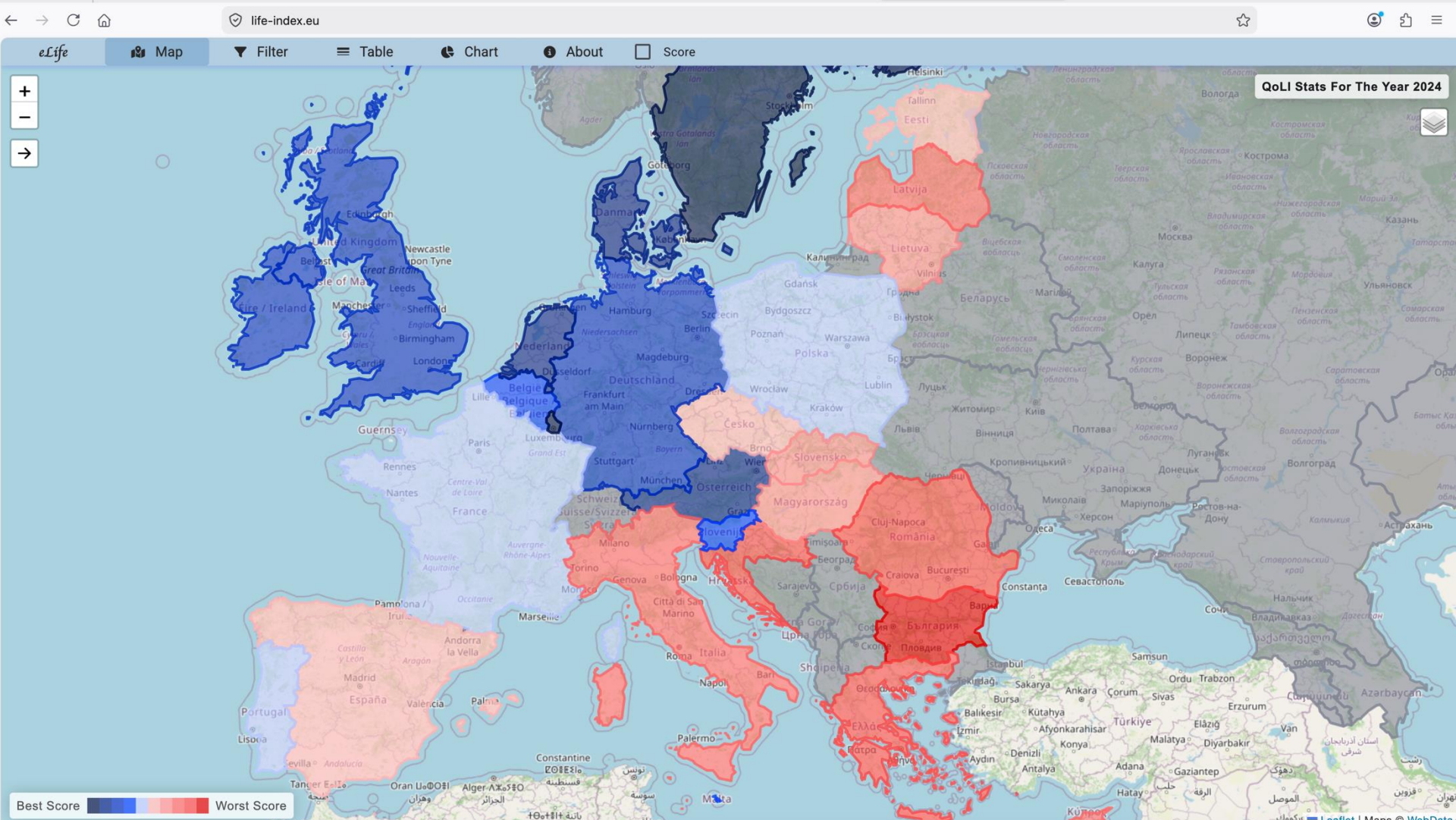
Voter Turnout now incorporates **European Parliament and presidential elections**. Gender gap formulas adjusted to prevent negative aggregated values.

Validation

Spearman Correlation Against GDP per Capita and HDI



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