

## **Challenges and Innovations in Creating a 100-metre, 2021 Population Grid for Europe**

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### **Abstract**

In June 2024, the newly “Census grid 2021” was released. This is a 1 km resolution population grid, consistent with the latest census round figures, and assembled by Eurostat from individual country grids produced and transmitted by National Statistical Institutes. For the majority of the countries, the grid cell values are based on the aggregation of address/point-based population counts to the reference European 1 km grid system, making it the best available approximation to ground-truth population distribution.

Although an invaluable product already, certain applications require additional spatial granularity, as is the case of environmental and technological risk assessments requiring high resolution human exposure and spatial planning (e.g., urban, infrastructure). For this reason, in collaboration with DG REGIO and Eurostat, the Joint Research Centre has produced a European 100-metre population grid for 2021. This grid was generated using the standard ‘dasymetric’ approach, a mapping technique used to downscale numerical records from a coarse set of spatial zones to a finer one using ancillary, or co-variate data available at the desired finer spatial resolution. Although this technique has become standard, the novelty of our approach relates to employment of a new residential built-up volume layer at 100 metre resolution. We produced this layer by integrating building footprints from multiple sources with building height and land use data. In addition, we make the grid available in two versions: one that is fully consistent with the Census grid 2021 at 1 km resolution and one that is rescaled to match LAU and NUTS3 totals from the ARDECO database, for higher consistency with demographic series.

The oral presentation will describe the data and methods employed and discuss limitations of the final product, including inconsistencies and issues inherited from both the original Census grid and from the ancillary data.