

Delineating urban areas with building density

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We develop a new dartboard methodology to delineate urban areas using detailed information about building location. We implement it for France. In essence, we compare a smoothed map of actual buildings to maps of smoothed counterfactual random redistributions of the same buildings. We define as urban in any area with statistically significant excess building density. Extensions, to our approach also allows us to characterise the internal geography of French urban areas and to measure their centers and subcentres. We also develop novel one- and two-sided tests to provide a statistical basis to compare maps with different delineations.