1118-52-121 **Christopher Bishop***, Dept of Mathematics, Stony Brook University, Stony Brook, NY 11794-3651, and **Dennis Sullivan** and **Michael Wigler**. *Planar maps with at most six sides on average.*

Given a decomposition of the plane into infinitely many cells or countries, how many neighbors can a country have, on average? Suppose that the diameters of the countries are bounded above, that the areas are bounded away from zero, and that we compute averages over the sub-maps defined by containment in an expanding region $tR + x$ (R is a fixed region, $t > 0$ is a dilation factor, and $x \in \mathbb{R}^2$ is a translation factor). Then for any $\epsilon > 0$, we prove the limsup of the average number of sides is bounded by 6 as $t \to \infty$. The area and diameter conditions are both sharp in the sense that dropping either one allows counterexamples. A weaker conclusion still holds if we don't bound the cell sizes, but control their shapes instead (e.g., convex with bounded aspect ratio). In this case, there is some sequence of expanding sub-maps along which the average number of sides tends to a limit ≤ 6. (Received January 27, 2016)