On a quantitative isoperimetric inequality involving the barycentric asymmetry

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In 1993, B. Fuglede showed a sharp quantitative isoperimetric inequality, namely, that for convex sets in R^N the isoperimetric deficit controls the square of the barycentric asymmetry. The convexity assumption is used because the result is clearly false for general sets. Estimates of this form have then then studied in the following years, for instance by Cicalese-Leonardi, and by Bianchini-Croce-Henrot, who also consider the connectedness assumption in the plane. We will discuss the general question, reviewing the main ideas, and we will present a very recent result in this direction.