

WEIGHTED EUCLIDEAN CENTERS AND INTERVAL RECIPROCAL MATRICES

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ABSTRACT

This paper addresses the derivation of a Euclidean center and its application to interval reciprocal matrices. An Euclidean center is defined as the point in decision space from which one can inscribe the largest sphere contained by the constraints. We extend this concept by introducing its weighted version, which we term the *weighted Euclidean center*. We show that by assigning weights to the different decision variables we can traverse the entire decision space. In addition, we show that the concept of a *weighted Euclidean center* and that of the *achievement scalarizing function* introduced by Wierzbicki are intimately related.

Keywords: Interval judgments, reciprocal matrices, weighted Euclidean center.