

Axiomatizations of inconsistency indices for triads

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*If you cannot prove your theorem, keep shifting parts
of the conclusion to the assumptions, until you can.*

(Ennio de Giorgi)

Abstract

Pairwise comparison matrices often exhibit inconsistency, therefore, a number of indices has been introduced to measure their deviation from a consistent matrix. Since inconsistency first emerges in the case of three alternatives, several inconsistency indices are based on triads. Recently, a set of axioms has been proposed, and is required to be satisfied by any reasonable inconsistency index. We illustrate by an example that this set seems to be not exhaustive, hence expand it by adding two new properties. We consider all axioms on the set of triads, and choose the logically independent ones. Finally, it is proved that they characterize the inconsistency ranking induced by the Koczkodaj inconsistency index on this domain.

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