FAIR DIVISION OF INDIVISIBLE ITEMS[1]

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This paper analyzes criteria of fair division of a set of indivisible items among people whose revealed preferences are limited to rankings of the items and for whom no side payments are allowed. The criteria include refinements of Pareto optimality and envy-freeness as well as dominance-freeness, evenness of shares, and two criteria based on equally-spaced surrogate utilities, referred to as maxsum and equimax. Maxsum maximizes a measure of aggregate utility or welfare, whereas equimax lexicographically maximizes persons' utilities from smallest to largest. The paper analyzes conflicts among the criteria along with possibilities and pitfalls of achieving fair division in a variety of circumstances.

Keywords: Fair division, allocation of indivisible items, Pareto optimality, envy-freeness, lexicographic maximin.

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