

Reducing Manipulability

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CRITERIA FOR VOTING SYSTEMS

Veto...

Borda...

Set of voting systems

Informed majority coalition criterion (InfMC) A majority may choose the outcome when they know the other votes.

Range voting, Approval, Coombs...

Plurality, Two-round, IRV, Bucklin...

Baldwin, Dodgson, Kemeny, Maximin, Nanson, Schulze, Tideman...

Ignorant majority coalition criterion (IgnMC) A majority may choose the outcome.

Majority favorite criterion (MF) Elects a candidate when she is preferred by a majority.

Condorcet criterion (Cond) Elects the Condorcet winner when there is one.

GOAL: MINIMIZE THE MANIPULABILITY RATE

$\rho(f) = \mathbb{P}(\text{voting system } f \text{ is manipulable})$

TRANSFORMATIONS

Initial voting system *f*

Condorcification of *f*

• Elects Condorcet winner when she exists. • Otherwise, same outcome as *f*.

Best slice of f^c • Depends only on orders of preference. • Meets the Condorcet criterion.

CONDORCIFICATION THM.

If *f* meets InfMC:

 $\rho(f^c) \leq \rho(f).$

SLICING THEOREM

If voters are independent:

 $\rho(f^{cs}) \leq \rho(f^{c}).$

CONSEQUENCES

fCS

To minimize manipulability while keeping InfMC, one may restrict to voting systems that:

• Depend only on orders of preference,

• And meet the Condorcet criterion.