

Party Selection Rules

Select Parties that are Above the Threshold

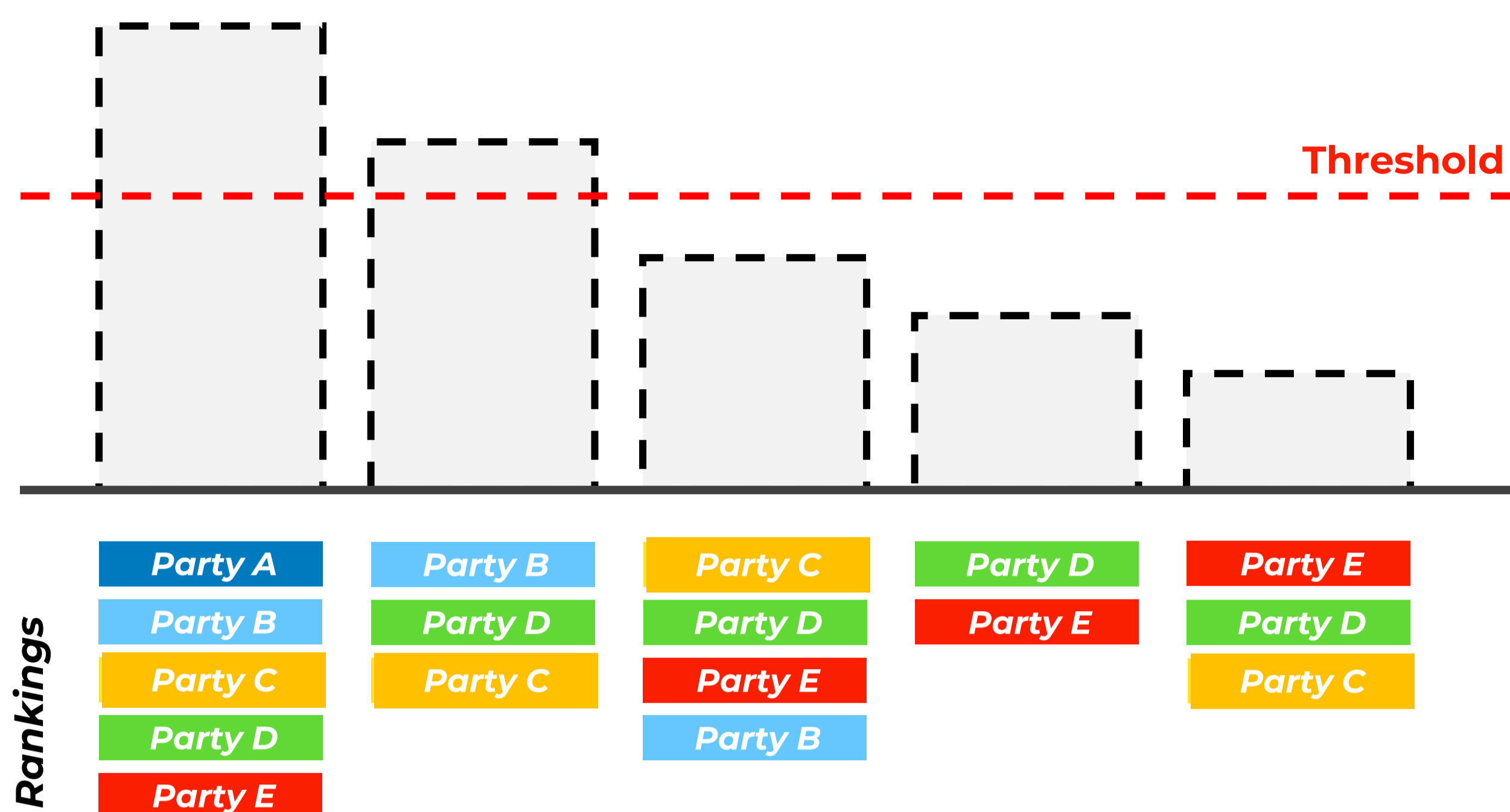
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Context: parliament elections using proportional representation.

Problem: votes for parties that are below the threshold are not used.

Examples:

		Threshold	Unused votes
France	2019	5%	20%
Germany	2025	5%	14%
Turkey	2002	10%	46%

Solution: use (truncated) rankings.

Which parties to select, based on (truncated) rankings?

Voters are always assigned to their highest-ranked selected party, and each party must meet the threshold.

Direct Winners Only (DO)

Select all parties that get more top-votes that required by the threshold.

Single Transferable Vote (STV)

Parties are eliminated one by one based on top-votes and votes are transferred.

Greedy Plurality (GP)

Parties are added to the outcome in decreasing top-votes order, if possible.

Axiomatic Analysis

~~DO~~ ~~STV~~ GP Set-Maximality

No party can be added to the outcome without breaking the threshold constraint.

~~DO~~ STV ~~GP~~ Independence of Clones

Adding/removing a clone does not change* the outcome of the election.

~~DO~~ STV ~~GP~~ Repr. of Solid Coalitions

If a group of parties is ranked first by more voters than the threshold, one of them is selected.

DO ~~STV~~ GP Strategy-Proofness*

Putting the first party that ends up being selected at the top of your ranking is not a possible manipulation.

DO STV ~~GP~~ Threshold Monotonicity

If a party is selected for some threshold τ , it is also selected for a lower threshold.

DO ~~STV~~ ~~GP~~ Monotonicity

Improving the rank of a selected party in one vote should not make this party unselected.

Characterizations

STV Indep. of Definitely Losing Parties

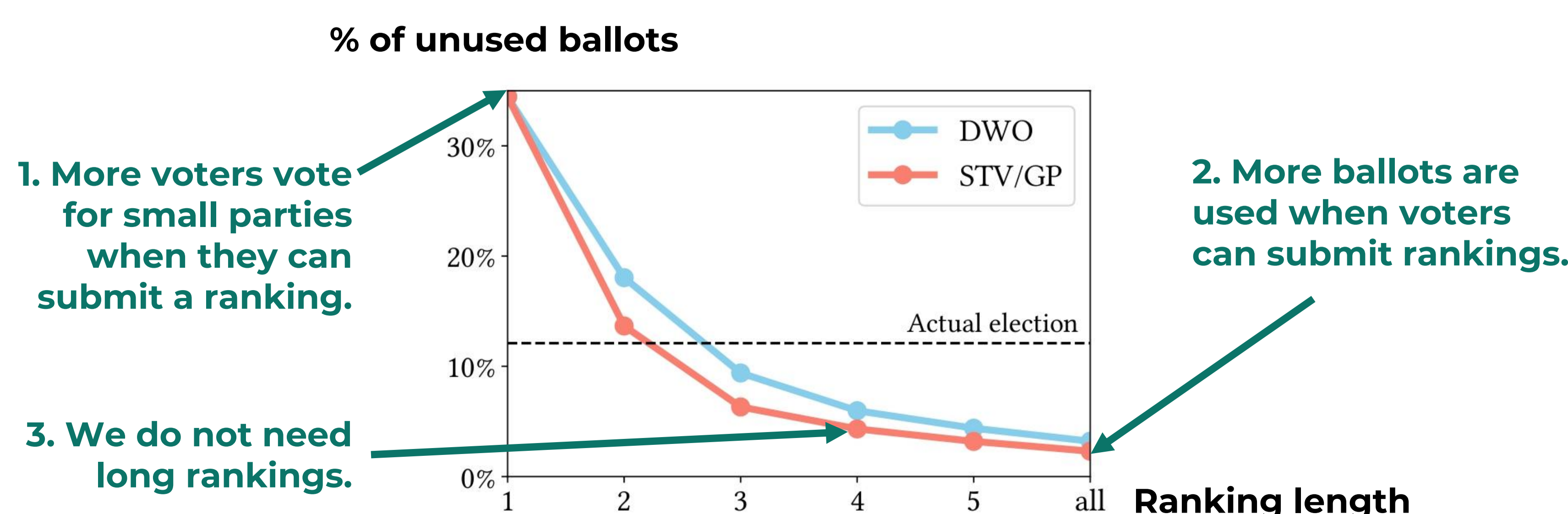
Removing the parties that are losing for a lower threshold does not change the outcome.

DO Reinforcement for Winning Parties

If a party is selected in a profile with threshold τ and another profile with threshold τ' , it is also selected in the combination of those with $\tau + \tau'$.

Experiment: 2024 European Election

Data collected online during the 2024 European election in France in which **12.1% of the votes ended up unused**. We asked participants to submit a truncated ranking ballot. Votes are weighted to reduce representation bias.



To go further:

- Link to group activity selection.
- Optimization-based rules.
- Other strategy-proofness notions.
- More experimental results.

Read the full paper !

