

Principles of STV

The Single Transferable Vote is a logical system of election designed to attain its objectives with economy, efficiency and certainty. It ensures that as far as possible every vote has a positive part in helping to elect some candidate, that no voting power is wasted and that no voter has a greater influence on the result than any other.

Instead of the voter placing crosses next to their favourite candidates, for instance next to up to five candidates where there are five to be elected, the voter is encouraged to rank as many candidates as they like in order of preference. The number “1” must therefore go next to the name of their first choice candidate, for that ballot paper to be valid. Thereafter, they have the choice of voting “2”, “3” etc next to the names of other candidates. They do not need to stop at their fifth preference, where there are five to elect, however, they should continue to rank the candidates until they can express no further preferences.

This does NOT mean that the voter has as many votes to cast as there are candidates. The voter has ONE vote for the whole election – a transferable vote in the event of their first choice candidate having more votes than that person needs to get elected, or not enough votes to get elected. Thus the voter is saying: “I really want candidate A to get elected. In the event of candidate A having more votes than they need according to the quota for election (see below), or similarly, not enough others also supporting A’s candidacy, I want my vote transferred to my next favourite candidate, B.”

It is important to remember that under no circumstance can a later preference count against an earlier preference and that failure to record preferences can limit the elector’s influence on the result.

Quota

The quota is calculated by dividing the total number of valid votes by one more than the number to be elected. The quota is set at the point that the first person is elected. At each stage prior to the first person being elected the quota is recalculated with the non-transferable papers removed from the count of the valid votes.

The Count

At the first stage the voting papers are counted to determine the total valid vote and then calculate the quota for election. Any candidates who have at least a quota of first preference votes are deemed elected at this stage.

The decision at every stage thereafter is whether to exclude a candidate who cannot be elected or take away the surplus of a candidate who has been elected.

The decision is based on the gap between the candidate with the lowest number of votes (there can be more than one) and the next highest candidate. If that gap exceeds the **total** of remaining surpluses to be redistributed, then an exclusion can be made.

Exclusions

More than one exclusion can take place **at the same time**. All papers transfer at exactly the same value as they were at the start of the stage, e.g. if a candidate has four papers – two at a value of one and two at a value of 0.4, the papers transfer to the next preference with the same value. The papers should be transferred in the order of highest value first (e.g. 1's first 0.4's second).

Surplus

Only one surplus can be transferred per stage. Only the last bundle of papers that produced a surplus are ever looked at again. Papers that transfer may change value; e.g. a candidate has a score of 12 and the quota is 10, there is therefore a surplus of 2. If four papers transfer, each paper is worth $2/4$: 0.5. The total worth of all transferring papers is therefore 2 (the surplus).

Surpluses and exclusions continue until the correct number are elected.

Alternative Vote

The Alternative Vote is a simplified version of STV for the election of one person, and can only involve exclusions (as the first candidate with a surplus is elected).

Constraints

Constraints are applied by either excluding a candidate who cannot be elected due to the constraints, or protecting a candidate who has to be elected. Thus we look at the results at each stage and make a judgement as to who should stay in or be excluded according to both the votes they have amassed and the constraints laid down in the election rules.

If there are **minimum constraints** to meet and as the count progresses we are only left with that number of 'eligible' candidates, then we 'guard' those candidates – they cannot be excluded. Votes continue to be added to the candidates' tally until they have met the quota.

If there are **maximum constraints** to meet and as the count progresses the election of candidates and the meeting of constraints subsequently precludes other remaining candidates from being elected, then these other remaining

candidates must be excluded at the next stage of the count: they cannot be elected and so it is pointless keeping them in, and this is the fairest thing to do to allow those voters' preferences to play a part elsewhere in the count. If there is more than one such candidate, exclude all at the same time.

When conducting the count, each constraint rule must be checked carefully at each stage to see if any have been met. It also needs to be checked that there is still space left in the count to meet those constraints. If you reach a stage in the count where it seems that all constraints can no longer be met, then you have made a mistake at an earlier stage (failed to guard some candidate from exclusion, or eliminate candidates from a group which has reached its maximum).