

An Example of Fair Voting Method Impossibility

Given the following rankings, who should win the election below?

	1	1	1
A	1	2	2
C	2	1	1

It seems fair to choose C . Now suppose a third candidate B enters the election, and voters adjust their preferences (but without switching their *relative ranking* of A and C):

	1	1	1
(*) A	1	3	2
B	2	1	3
C	3	2	1

By the property of Independence of Irrelevant Alternatives, we would not expect the addition of the third candidate to now cause A to be declared the overall winner of the election, winning over C . So A should NOT be the winner of (*).

Given the following rankings, who should win the election below?

	1	1	1
A	1	2	1
B	2	1	2

It seems fair to choose A . Now suppose a third candidate C enters the election, and voters adjust their preferences (but without switching their *relative ranking* of A and B):

	1	1	1
(*) A	1	3	2
B	2	1	3
C	3	2	1

By the property of Independence of Irrelevant Alternatives, we would not expect the addition of the third candidate to now cause B to be declared the overall winner of the election, winning over A . So B should NOT be the winner of (*).

Finally, given the following rankings, who should win the election below?

	1	1	1
B	1	1	2
C	2	2	1

It seems fair to choose B . Now suppose a third candidate A enters the election, and voters adjust their preferences (but without switching their *relative ranking* of B and C):

	1	1	1
(*) A	1	3	2
B	2	1	3
C	3	2	1

By the property of Independence of Irrelevant Alternatives, we would not expect the addition of the third candidate to now cause C to be declared the overall winner of the election, winning over B . So C should NOT be the winner of (*).

But now we have arrived at a contradiction, because according to the above analysis, none of A , B , or C should be the winner of election (*).