

Plurality Voting Needs To Be Replaced

With MRCV, Not IRV (Instant Runoff Voting)

(03/20/19 – Roy Minet)

The Primary Objective of an Election

We employ the mechanism of voting to decide who will represent us and wield awesome and dangerous government force. It certainly could be argued that there are much better ways to make good decisions. Nevertheless, we utilize voting when it is important to diffuse decision-making power among large numbers of people in order to prevent its concentration within a small faction or an individual. Clearly, *the primary objective of an election must be to make the best possible decision* as it affects all those who vote. We have no choice but to assume (regardless of veracity) that those voting are at least somewhat interested, informed and rational; therefore able to contribute toward making a good decision. The best possible decision must then be defined as *the outcome which results in the highest voter satisfaction summed over all those who voted*.

If voters could step into the voting booth and *sincerely* indicate exactly how much they like (or dislike) each option on some absolute scale, it would be possible to easily pick the correct winner every time. Unfortunately, there is (currently) no known way to gather such information in a way that it is both comparable among all voters and guaranteed to be sincere (as opposed to insincere or strategic). Without such complete and sincere cardinal information, it is impossible for any voting method to determine the correct winner with certainty all of the time. The challenge is to design and employ the voting method which can be expected to render the correct result most often and under the widest range of circumstances.

What's Wrong With Plurality

Plurality collects only one piece of information from each voter – the voter's first choice. Therefore, the *only* case for which the correct winner can be determined for sure is when one option has received a majority of the first choices. When no option has received a majority, it is totally a crap shoot and plurality is completely incapable of rendering an intelligent result. Also, Plurality works well *only* when there are just two options for another reason. When there are more than two options, amazingly powerful "vote-for-the-lesser-of-two-evils" pressure frequently motivates voters to vote strategically, therefore insincerely. Plurality's problems are widely recognized and it is regarded as the worst possible voting method. Simplicity is its only advantage. That and inertia account for its continued widespread use. A growing number of

experts think use of plurality is a significant cause contributing to political polarization. Here is the concise statement of plurality's procedure:

1. **Determine Winner** – Total the first choices. The option receiving the largest number of first choices is the winner.

What's Wrong With IRV (Instant Runoff Voting)

In order to render the correct result more often and under a wider range of circumstances, it is absolutely necessary to gather more information from voters and to utilize it in the best way. This means that better methods will necessarily be somewhat more complicated than Plurality. IRV does gather more information. Voters are allowed to indicate their first choice, their second choice and sometimes also their third choice. IRV is just one of many ranked-choice voting (RCV) methods. Here is the concise statement of IRV's iterative procedure:

1. **Determine Winner** – Total the first choices. If any option has a majority of the first choices, it is the winner. If only one option remains, it is the winner. If there is no winner, proceed to step 2.
2. **Eliminate "Weakest" Option** – Eliminate the option which has the smallest number of first choices.
3. **Promote Choices** – If a ballot's first choice has been eliminated, promote the second choice (if any) to first. For any ballot where the second choice has been promoted or eliminated, promote the third choice (if any) to second. Any eliminated or promoted choice that has no lower choices will cease to exist. Return to step 1.

The good thing about IRV is that, if a voter's first choice is eliminated, then the second choice is promoted and counts as if it had been the first choice. This should remove the powerful pressure on voters to vote insincerely for the "lesser of two evils." Unfortunately, this is the *only* improvement. If no option has initially received a majority of first choices, picking the correct winner depends crucially on choosing the weakest option to be eliminated. IRV bases this critical decision only on the number of first choices each option has, completely ignoring the valuable additional information it has collected! Thus, just like Plurality, IRV is incapable of rendering an intelligent result for these important cases. In fact, the option that should be the winner can easily be eliminated.

Many are attracted to IRV because they believe IRV will make it easier for "new options" to win elections. But unfortunately, this is not really true. One should expect that such new options might be likely to receive more first choice votes because the "vote-for-the-lesser-of-two-evils" pressure has been relieved. Granted, that is an important first step, but it does not necessarily make it easier to win. In general, such new options will not be able to escape being eliminated (by IRV's faulty elimination criterion) unless and until they can nail down second place, i.e.,

achieve the second highest number of initial first choices (likely more than 34%). See the example below for greater clarity on this.

Why MRCV Is the Best Possible Method

For any voting method, there are only two major steps. First, gather information from voters. And second, process that data in some way to render the result. When restricted to ordinal data (ranked choices), MRCV collects the best possible data from voters and processes it in the best possible way to yield the result. Therefore, MRCV will make the fewest mistakes and will render the correct result most often and under the widest range of circumstances. For those more academically inclined, the justification for those claims can be found in “A Comprehensive, Conclusive Analysis of Ordinal Voting Methods” at this link:

<http://royminet.org/voting-elections/>

MRCV encourages voters to provide their first, second and third choices as they may be inclined and motivated to do (but they are not forced to do so). Here is the concise statement of MRCV’s iterative procedure:

1. **Determine Winner** – Total the first choices. If any option has a majority of the first choices, it is the winner. If only one option remains, it is the winner. If there is no winner, proceed to step 2.
2. **Eliminate Weakest Option** – Assign weighting points to the choices on each ballot. A first choice receives 4 points, a second choice receives 2 points and a third choice receives 1 point. Total the points for each option across all ballots. Eliminate the option having the lowest point total.
3. **Promote Choices** – If a ballot’s first choice has been eliminated, promote the second choice (if any) to first. For any ballot where the second choice has been promoted or eliminated, promote the third choice (if any) to second. Any eliminated or promoted choice that has no lower choices will cease to exist. Return to step 1.

Note that the MRCV procedure is largely identical to IRV. However, there is a crucial difference in the second step which makes a huge improvement. When making the absolutely critical decision as to which is the weakest option to be eliminated, MRCV considers *all* the information that voters have provided. It does so by considering second choices to be half as important as first choices and third choices to be half as important as second choices. This enables MRCV to much more accurately identify the weakest option and certainly to avoid horrible blunders such as eliminating the option which should win!

MRCV eliminates the “vote-for-the-lesser-of-two-evils” pressure, just like IRV. However, MRCV also makes it possible for “newer options” to actually *win* elections without having to garner the second highest number of initial first choices. In fact, under the most ideal case, such a

newer option could actually win with as little as 14.3% of the first choices. See the example below for greater clarity on this. It should be emphasized that MRCV certainly is *not* in any way designed to “help underdogs.” It is designed solely with the objective of rendering the decision which maximizes voter satisfaction and that is exactly what it does in the best possible way.

Illustrative Example

Imagine the following hypothetical, but entirely possible and not terribly far-fetched election. Reince, Debbie and Larry are running for some office. A total of 100 votes are cast. Let’s say the votes were 35 for Reince, 33 for Debbie and 32 for Larry.

Using plurality, Reince is declared the winner on the basis of two votes more than a third of the votes. Nearly two thirds of the voters did not want Reince to win! Oh well. There is no way to tell whether Reince or Debbie would garner the majority of the votes if Larry were eliminated. There is no way to tell whether Reince or Larry would garner the majority of the votes if Debbie were eliminated. With only about a third of voters supporting Reince, it is even possible that he should be eliminated. Plurality fails utterly when no option receives more than 50% of the votes. It does not even have the information necessary to make an intelligent choice in that situation.

Now let’s ask the voters to rank the options first, second and third. Suppose that the 35 voters that voted for Reince provide their ranking as $R > L > D$. The 33 who voted for Debbie rank the options as $D > L > R$. The 32 who voted for Larry rank their choices as $L > D > R$. IRV first looks at just the first choices and concludes, as did plurality, that no option has a majority. IRV then eliminates the option that received the fewest first choice votes; that would be L with 32 first choices. L is then removed from the rankings and choices below L in the rankings (if any) are promoted to fill the “hole” created by L’s removal. The rankings will now appear:

35 $R > D$
33 $D > R$
32 $D > R$

IRV again examines the first choice votes which now are 35 for Reince and $33 + 32 = 65$ for Debbie. Debbie now has a solid majority of the first choices and is declared the winner.

At first glance, this seems fairly reasonable. But is it the best decision? Let’s look at the original ranking of the voters more carefully.

35 $R > L > D$
33 $D > L > R$
32 $L > D > R$

Note that 35 people liked Reince best, but no one ranked him second and 65 ranked him third. Similarly, 33 liked Debbie best, 32 ranked her second and 35 ranked her last. With Larry, 32 ranked him best, 68 ranked him second and no one ranked him third.

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>
R	35	0	65
D	33	32	35
L	32	68	0

Most reasonable people would say that Reince, with 35 first choices, zero second choices and 65 voters ranking him last, is the weakest option and should be the first to be eliminated. If Reince were eliminated, the rankings would then appear:

35 L > D
 33 D > L
 32 L > D

Now, Larry would be the winner with a solid majority of 67. It could be convincingly argued that the 100 voters would be happier overall with Larry as the winner instead of Debbie (and certainly happier than with Reince winning). Yet IRV eliminates Larry, who pretty clearly is the strongest candidate and should be the winner!

Revisiting the above hypothetical election using MRCV, the rankings were:

35 R > L > D
 33 D > L > R
 32 L > D > R

MRCV "points" for R are: $35 \times 4 + 33 \times 1 + 32 \times 1 = 205$.

MRCV "points" for D are: $35 \times 1 + 33 \times 4 + 32 \times 2 = 231$.

MRCV "points" for L are: $35 \times 2 + 33 \times 2 + 32 \times 4 = 264$.

By giving the correct consideration to voters' second and third choices (instead of ignoring this valuable data), Reince is clearly revealed to be the weakest option and is eliminated first. Larry is then the winner with 67 of the first choices. Note that Plurality, IRV and MRCV rendered three different results for this simple case. Only MRCV easily and decisively identified the correct winner.

Just one example has been explored herein. Since only one elimination was required, it does not illustrate an important feature of the MRCV method. The points are reassigned immediately prior to performing each elimination, so that promoted choices always receive the full benefit of their new rank. The reader is encouraged to try this best possible method in any kind of election, real or contrived. It always renders reasonable choices and does not produce an awful result under any circumstances. A small amount of complexity is necessarily added, but the Jones Rule (understandable by a bright high school student) is still satisfied.