

MDP Directive on Proportional Voting Violates MDP Rules

Slate Voting Walk Through and Real-World Examples

Slate Voting Purpose and Intent

Slate voting is designed to elect candidates to legislatures, committees, boards, and similar multiple-seat decision making bodies. It is not used for electing candidates to single-seat offices, like mayor or chairperson. Slate voting is a proportional voting system, meaning it is designed to ensure each group of aligned voters can win representation in legislatures, committees, etc., in proportion to their percentage of all voters. For example, in an election for a committee under slate voting, a slate winning 20% of the vote will win 20% of the seats on the committee.

Setting Up For Slate Voting

Take MDP State Central Committee (SCC) elections as our example. Prior to the election, the MDP allocates to each Congressional District (CD) a certain number of delegates based on a formula provided in the MDP DPV. For example, in the most recent election, CD14 was allocated 19 delegates. Each CD also receives a number of alternates equal to its number of delegates, so CD14 was also allocated 19 alternates.

By MDP Rules, the delegates and the alternates must be divided as evenly as possible between males and females. When the number of delegates, and therefore alternates, is even, this is easy - just divide by two and each position is allocated the same number of seats. For example CD7 was allocated 10 delegates and therefore 10 alternates, so five male and five female delegates and the same numbers of male and female alternates. When the number of delegates, and therefore alternates, is odd, one gender of delegates is allocated one more seat than the other, and this extra seat is assigned to the other gender for the alternate positions. For example, in the most recent election, the MDP allocated seats to CD14 like this,

<i>Position</i>	<i>Seats</i>
SCC Delegate - Male	10
SCC Delegate - Female	9
SCC Alternate - Male	9
SCC Alternate - Female	10

Source: 2017 MDP Official Call to Convention, Section IV

Positions vs. Seats

To conduct a slate voting election properly, it is critical to be clear about the distinction between *position* and *seat* established in the table above. The DPV fails to be clear about this distinction, which has led to serious errors of procedure in the past. Below where I quote the DPV, I have replaced “position” with “[seat]” where the DPV has the wrong usage.

For example, in both the CD5 and CD12 elections this past February, those in charge of the elections ran them by calling votes for each *seat*, not each *position*. The purpose of slate voting is to allow all groups to win representation on the SCC in proportion to their support among the voters. Slate voting realizes this intent by assigning to each slate a percentage of seats proportional to the number of votes the slate received. By voting for each *seat* one at a time, both CD5 and CD12 turned a purportedly slate voting election into a plurality winner first past the post election. Plurality winner first past the post (PWFPP) is not a proportional voting system. PWFPP systems allow the largest plurality to win *every* vote. MDP Rules 2.A.8, Article 11 (paragraph 3), and the DPV all require proportional voting. This is why it is important to be very clear about the distinction between *position* and *seat* in a slate voting election.

Prior to the election, voters organize themselves into groups and select people to put forward as candidates for each *positions* to be filled at the election. Each group organizes its candidates into slates, creating *one slate* of candidates *for each position*.

Rules to Form a Slate

Number of Candidates

Slates can have as few as one candidate, and as many as there are seats allocated to that position. For example, in the case of CD14, slates for the position “SCC Delegate - Female” can have as few as one, but no more than 9 names.

Slate Name

Each slate must have a unique name and a notation specifying which position it is for. For example, the Blue Group’s slate for SCC Delegate - Female might be titled “Blue Slate: SCC Delegate - Female”. This ensures all voters can easily identify their preferred slate for each position. Example,

Blue Slate SCC Delegate - Female	
1	Sue
2	Sarah
3	Becky
4	Linda
5	Jan
6	Amanda
7	Laura
8	
9	

Candidate Ranking

The group creating the slate chooses the order in which the candidates are listed on the slate. The order is important. If a slate wins fewer seats in a position than candidates on the slate, the candidates are elected in the order they appear on the list; this means the higher on the list a candidate appears, the more likely it is for that candidate to be elected. If the example Blue Slate above wins 4 seats, the first four candidates are elected -- Sue, Sarah, Becky, and Linda. The last three candidates -- Jan, Amanda, and Laura -- are not elected.

A slate that has as many names as seats to be filled by the election is called a “full slate”. The above slate is not full, only having 7 names, while there are 9 seats to be filled. This is perfectly fine.

Slate Voting Procedure

The chairperson running the CD Caucus where the election is taking place requests all groups with slates place their slates in nomination. Practically, this means each group provides their uniquely named slates to the chairperson. The chairperson organizes the slates by position. For example, all the slates for the *position* “SCC Delegate - Female” from all groups are placed in the same stack. All the slates for the *position* “SCC Delegate - Male” from all groups are placed together in a different stack, and so on.

Each position must be voted on separately, so that voters have the opportunity to split their votes between different groups if they so choose. For example, a voter may judge that the Blue slate for SCC Delegate - Female is good, but not the Blue slate for SCC Delegate - Male. Denying the voters the opportunity to vote accordingly if such is their judgment violates MDR Rule 2.B.8, which reads in full,

No rule shall be adopted by any unit of the Democratic Party that would require any person to cast a vote or be recorded as voting contrary to that person’s judgment.

The chairperson then announces which position will be voted on first, and displays all the slates for that position so all voters have an opportunity to review them. For example, the chairperson might decide the first vote will be for the position “SCC Delegate - Female”.

The voters are divided according to their county of residence. The voters from each county vote, and the votes for each slate in each county are counted and recorded separately. For example, this past February in the CD14 election, the votes for each slate in each county were,

Slate	Raw Votes	
	Oakland County	Wayne County
Slate B	114	217
Slate R	33	116
Slate M	18	11

Source: Data provided by CD14 members.

Calculating the County Proportional Vote

There are two different kinds of proportionality required under MDP Rules. Proportionality by county is calculated first. Those results are input to the slate voting procedure to determine which slates win how many seats on the SCC.

Every two years, the MDP allocates a number of votes to each county, or each part of a county, within each Congressional District. Per the DPV Section I, each voter at the caucus receives a number of votes equal to the total votes allocated to their county in their CD, divided by the total number of voters from their county attending the caucus. Fractional votes are allowed.

CD14 Election Raw Data 2017

County	MDP Allocated Votes		Voters Attending		Value of each Voter’s Vote
Oakland	237	÷	172	=	1.3779
Wayne	269	÷	359	=	0.7493

Source: 2017 MDP Official Call to Convention, Section XI.B; DPV Section I; CD14 members.

Calculating the Total County Proportional Vote (CPV) for each slate

Slate	Raw Vote		County Proportional Vote (CPV)		
	Oakland	Wayne	Oakland	Wayne	Total CPV
Slate B	114	217	$114 \times 1.3379 = 157.0814$	$217 \times 0.7493 = 162.5989$	319.6803
Slate R	33	116	$33 \times 1.3379 = 45.47093$	$116 \times 0.7493 = 86.91922$	132.3902
Slate M	18	11	$18 \times 1.3379 = 24.80233$	$11 \times 0.7493 = 8.24234$	33.0447

Source: Data provided by CD14 members.

Total CPV for a slate is equal to the sum of that slate's CPV from all counties. In the CD14 example, each slate's total CPV is equal to its CPV for Oakland plus its CPV for Wayne.

Calculating the Slate Voting Results

We now know exactly how many votes each slate received in the election. We can therefore calculate the percentage of the total vote each slate received.

Slate	County Proportional Votes	% of Total Votes
Slate B	319.6803	65.896%
Slate R	132.3902	27.290%
Slate M	33.0447	6.8117%
TOTAL	485.1152	

This was the vote for the position "SCC Delegate - Female". Per the MDP Call to Convention, there are 9 seats of that position allocated to CD14 for this election. To be exactly proportional, each slate would win a percentage *of the 9 seats* equal to the percentage *of the votes* the slate received.

Slate	% of Total Votes		Seats
Slate B	65.896%	x 9 Seats =	5.9306 Seats
Slate R	27.290%		2.4561 Seats
Slate M	6.8117%		0.6131 Seats

This is *exactly proportional*. It assigns each slate a percentage of the seats in the position *exactly equal* to the percentage of the votes the slate received. However, this presents a problem. We cannot award a slate a fractional number of seats. We must award each slate a whole number of seats. There are several ways to resolve this. The easiest method also happens to be the one that preserves proportionality as closely as possible. The procedure is,

1. Look at the whole number part of the seats awarded by the above method.
 - a. Award each slate that number of seats.
 - b. Record the Remainder (the decimal) left over after using the whole number.
2. If there are any seats still unfilled after Step 1 is complete,
 - a. Compare the Remainder (the decimal) of each slate's number.
 - b. Award the next unfilled seat to the slate with the Largest Remainder.
 - c. If there are still unfilled seats, repeat Step 2 until all seats are filled.

Following this procedure for the 2017 election in CD14 produces the following results.

Step 1

Slate	Exactly Proportional Seats	Whole Number	Seats Awarded	Remainder
Slate B	5.9306	5	5	0.9306
Slate R	2.4561	2	2	0.4561
Slate M	0.6131	0	0	0.6131

Step 2

Comparing the Remainders,

	Slate B	Slate M	Slate R
	0.9306	> 0.6131	> 0.4561
Seats Awarded	1	1	All seats filled.

Slate B has the Largest Remainder, so it is awarded the next seat, bringing Slate B up to six seats. That brings the total seats awarded so far up to 8. There's one more seat to assign. Since $0.6131 > 0.4561$, Slate M has the Largest Remainder, and receives the final seat. Here's a summary:

Slate	Exactly Proportional Seats	Seats From Whole Number	Seats from Remainder	Total Seats
Slate B	5.9306	5	1	6
Slate R	2.4561	2	0	2
Slate M	0.6131	0	1	1
TOTALS		7	2	9

The above is the easiest way to calculate the results of a slate voting election. It is an example of what is called a Largest Remainder (LR) method. There are several methods for calculating the results of a slate voting election, but they can be divided into two broad categories. Largest Remainder (LR) methods and Highest Averages (HA) methods. Multiplying the percent of the vote each slate received by the number of seats in the position is called the Direct-LR method for calculating the results.

Contradiction and Ambiguity in the DPV

What method does the DPV require?

We know the DPV requires a Largest Remainder method of some kind, because Section II.B reads, in relevant part,

If there are any unfilled [seats], the largest unused percentage shall receive the first unfilled [seat], the second highest unused percentage shall receive the second [seat], and so on.

This is clearly describing an LR method; “largest unused percentage” is just another way of saying “largest remainder”.

But which particular LR method?

Historically, the first LR method developed is called LR-Hare, and worked like this.

1. By considering the number of seats to be filled in a position, find the percent of the vote required to elect one person. For example, if there are 9 seats to be filled, $100\%/9 = 11.111\%$, so to elect one person, a slate needs 11.111% of the total vote. The calculated quantity is called the “quota” for that position in that election.
2. Divide the percentage of the vote each slate received by the quota.
 - a. Look at the whole number of the result.
 - b. Award each slate a number of seats equal to the whole number of the result.
 - c. Record the Remainder (the decimal) left over after using the whole number.
3. If there are any seats unfilled after Step 2,
 - a. Compare the Remainder (the decimal) of each slate’s number.
 - b. Award the next unfilled seat to the slate with the Largest Remainder.
 - c. If there are still unfilled seats, repeat Step 2 until all seats are filled.

Applying this method to the same example we get,

Slate	% of Total Votes		Seats
Slate B	65.896%	$\div 11.111\% =$	5.9306 Seats
Slate R	27.290%		2.4561 Seats
Slate M	6.8117%		0.6131 Seats

We can generalize the formula “ $100\%/9$ ”. 9 is the number of seats to be filled, so we can write this formula as “ $100\%/s$ ”, where “s” is the number of seats to be filled. Converting from percents to decimals yields the formula “ $1/s$ ” (e.g. $1/9 = 0.11111$, or in percentages, 11.111%). The formula “ $1/s$ ” is known as the Hare Quota. It was popularized by Thomas Hare in the early/mid 1800s for use in slate voting.

When you use the Hare Quota to calculate the quota for a slate voting election, the results are mathematically identical to the Direct-LR method, because multiplying by the number of seats is the same as dividing by the reciprocal of the number of seats. When using the Hare Quota, the method is called LR-Hare. If the percent of the vote each slate receives in an election happens to be evenly divisible by the quota (returns all whole numbers with no decimals/reminders), the LR-Hare and the Direct method are *exactly proportional* -- they award each slate a percentage

of seats exactly equal to the percentage of the vote each slate received. When the percentage of the vote each slate receives is not evenly divisible by the quota, Direct-LR and LR-Hare come as close to exactly proportional as mathematically possible with a Largest Remainder method.

There are other quotas that are used in LR systems. Every other quota used in LR systems has the effect of advantaging larger groups at the expense of smaller groups. Using the CD14 data, I've provided a real-world example below.

To run an election under a slate voting system using an LR method, you must either use the Direct-LR method, or you must specify the formula for calculating "the number of votes needed to elect one person", or equivalently, "the percentage of the total vote required to elect one person". This is called the quota. For LR-Hare, the formula for the quota is $1/s$.

The DPV Section II.B reads, in relevant part,

The number of those elected from each slate is based on the formula $N > 1/(x+1)$, when N equals the vote required to elect one person and x equals the number of [seats].

There is no explanation here of what "based on" might mean. It's entirely ambiguous. There is no procedure given to calculate the quota from the given mathematical expression. On the other hand, N is specifically defined to be the quota, "the vote required to elect one person", and the inequality is explicit: N *is greater than* $1/(x+1)$. Since N is the quota, and $N > 1/(x+1)$, the DPV says explicitly that $1/(x+1)$ *is not the quota*. If $1/(x+1)$ was the formula for the quota, the DPV would say $N = 1/(x+1)$. It doesn't. Section II.B does not tell us the formula for the quota.

The DPV Section V Step 5 reads in full,

The percentage required to elect one person is determined.

Percentage to elect one person $> 1/(\# \text{ of [seats] } + 1)$

The first sentence just says to "determine" the quota. The second sentence says the quota is greater than $1/(\# \text{ of [seats] } + 1)$, which is just another way of saying $N > 1/(x+1)$. There is no new information here. The DPV clearly asserts -- twice! -- that the quota is greater than $1/(x+1)$, where x is the number of seats to be filled by the election. The DPV never says what the quota is. Only what it's greater than.

The example at the end of the DPV reads, in relevant part,

% to elect one [seat] $> 1/(5+1) = 0.1666$ (emphasis added)

The left-hand side is again the definition of the quota. For the third time the DPV explicitly asserts the quota *is greater than* $1/(x+1)$. In the DPV's example the number of seats is five, and

the DPV calculates that the quota is *greater than* ($>$) 0.1666. Therefore, the quota *cannot be equal to* 0.1666. Despite this obvious error, the DPV continues the example using 0.1666 as if it were the quota. The example worked out in the DPV calculates the quota from a formula the DPV itself says -- now for the third time! -- *is not the quota*.

The DPV Violates MDP Rules

The formula $1/(x+1)$ is well known in the literature on voting systems. It is known as the Droop Quota, introduced by Henry Droop in the mid 1800s. There are several notable facts about the Droop Quota as compared to the Hare Quota. First, the Droop Quota systematically advantages larger groups at the expense of smaller groups. Consider the example from this year's CD14 election, comparing LR-Droop vs. LR-Hare.

LR-Hare

CD14: SCC Delegate - Female Seats = 9 Quota = $100\%/9 = 11.111\%$

Slate	% of Total Votes		Seats
Slate B	65.896%	$\div 11.111\% =$	5.9306 Seats
Slate R	27.290%		2.4561 Seats
Slate M	6.8117%		0.6131 Seats

LR-Hare Election Results

Slate	Exactly Proportional Seats	Seats From Whole Number	Seats from Remainder	Total Seats
Slate B	5.9306	5	1	6
Slate R	2.4561	2	0	2
Slate M	0.6131	0	1	1
TOTALS		7	2	9

LR-Droop

CD14: SCC Delegate - Female

Seats = 9

Quota = $100\% / (9+1) = 100\% / 10 = 10\%$

Slate	% of Total Votes		Seats
Slate B	65.896%	$\div 10\% =$	6.5896 Seats
Slate R	27.290%		2.7290 Seats
Slate M	6.8117%		0.6812 Seats

LR-Droop Election Results

Slate	Seats	Seats From Whole Number	Seats from Remainder	Total Seats
Slate B	6.5896	6	0	6
Slate R	2.7290	2	1	3
Slate M	0.6812	0	0	0
TOTALS		8	1	9

Under LR-Droop, Slate B was awarded an extra seat from whole numbers, and Slate R received an extra seat from the Remainder, while Slate M lost the seat it won under LR-Hare.

Comparing LR-Hare to LR-Droop

Slate	Seats		Raw Change Hare → Droop	% Advantage over <i>Smallest</i> Group
	LR-Hare	LR-Droop		
Slate B	5.9306	6.5896	+0.6590	868%
Slate R	2.4561	2.7290	+0.2729	301%
Slate M	0.6131	0.6812	+0.0681	--

When you change from the Hare Quota to the Droop Quota, every slate's numbers go up. However, ***the larger the group, the larger the increase***. When we changed from LR-Hare to LR-Droop, Slate R increased its number by 301% *more* than Slate M, the smallest group, increases. Slate B increased its number by 868% *more* than Slate M, and 141% *more* than Slate R. The larger the group, the bigger an advantage LR-Droop provides over smaller groups. *The bigger the size difference between any two groups, the more LR-Droop favors the larger group over the smaller.* It is a mathematical fact that LR-Droop advantages larger groups at the expense of smaller groups. [Gallagher](#) (page 495) provides a formal mathematical proof.

Note that in regard to the MDP State Central Committee, this is a *cumulative effect*. If the Droop Quota is used in every CD, it will over represent larger voting blocks and under represent smaller voting blocks on the SCC. Even if the Droop Quota only over represented larger groups by 1 seat in each CD, over 14 CDs that's 14 seats, or 4.06% of the SCC.

However, using the Droop Quota will never over represent a large group by *just* one seat.

In CD14, we've seen that the Droop Quota caused Slate M to lose one seat of the position "SCC Delegate - Female" to a larger slate. The math for "SCC Alternate - Male" will be exactly the same, because the number of seats to be filled is the same. So that's two seats filled by the Droop Quota, not the people. So now we're up to 8.12% of the SCC "elected" by the Droop Quota, not the people.

What about for the other two positions in CD14 - "SCC Delegate - Male" and "SCC Alternate - Female"? Here's the math.

LR-Hare

CD14 SCC Delegate - Male

Seats = 10

Quota = 100%/10 = 10%

Slate	% of Total Votes		Seats
Slate B	65.896%	$\div 10\% =$	6.5896 Seats
Slate R	27.290%		2.7290 Seats
Slate M	6.8117%		0.6812 Seats

LR-Hare Election Results

Slate	Exactly Proportional Seats	Seats From Whole Number	Seats from Remainder	Total Seats
Slate B	6.5896	6	0	6
Slate R	2.7290	2	1	3
Slate M	0.6812	0	1	1
TOTALS		8	2	10

Slate M wins one seat.

LR-Droop

CD14 SCC Delegate - Male

Seats = 10

Quota = 100%/(10+1) = 9.0909%

Slate	% of Total Votes		Seats
Slate B	65.896%	$\div 9.0909\% =$	7.2486 Seats
Slate R	27.290%		3.0019 Seats
Slate M	6.8117%		0.7493 Seats

LR-Droop Election Results

Slate	Seats	Seats From Whole Number	Seats from Remainder	Total Seats
Slate B	7.2486	7	0	7
Slate R	3.0019	3	0	3
Slate M	0.7493	0	0	0
TOTALS		10	0	10

Once again, under LR-Hare the smallest group wins a seat, but under LR-Droop, that seat goes to a larger group.

In the 2017 elections in CD14 under LR-Droop, *four seats on the SCC* -- one seat of each position -- are assigned *not by the will of the people, but by the mathematics of LR-Droop*.

The same is true in CD7, I can provide the math if anyone is interested.

If these two CDs are typical, that means in each CD, four seats on the SCC are being assigned by the LR-Droop formula, not by the will of the people. Over 14 Congressional Districts, that's 56 people, or 16.3% of those elected by CDs to the SCC.

Summary

The purpose of requiring proportional voting is to ensure groups in the minority are represented on the SCC and on Congressional District committees in proportion to their support among the voters. Using LR-Droop undermines that purpose, and specifically gives disproportionately greater representation to larger groups. Worse, the *larger the group, the greater the disproportionate representation* LR-Droop provides. LR-Droop is effectively a bully's quota, always beating down the smallest group harder than others, while always helping the largest groups the most.

MDP Rules forbid LR-Droop and Require LR-Hare. Proof:

1. The DPV never specifies the quota to be used for slate voting.
2. The DPV specifically and repeatedly asserts the Droop Quota, $1/(s+1)$, is less than the quota. Therefore, whatever the quota required may be, it *cannot* be the Droop Quota. The DPV itself explicitly forbids the Droop Quota.
3. The Droop Quota is also forbidden by MDP Rules Rules 2.A.8, Article 11 (paragraph 3), and the DPV (first paragraph of Section II) -- all of which require proportional voting.

- a. The purpose of proportional voting is to ensure smaller groups can win seats in proportion to their numbers among the voters.
- b. The Droop Quota is *less proportional* than the Hare Quota. This has been demonstrated by statistical analysis and extensive research, encompassing many thousands of real-world examples; e.g. [Benoit](#) (page 384).
- c. The Droop Quota is not randomly less proportional. The disproportionality *always* advantages large groups over smaller groups, and the *larger the group, the greater the disproportionality*. This has been demonstrated by example above, and by mathematical proof; e.g. [Gallagher](#) (page 495).
- d. This disproportional favoring of large groups over smaller groups is cumulative, creating *greater disproportionality on the SCC* than in any of the individual CDs.

Conclusion: we know of two different quotas. The Hare Quota is as close to exactly proportional as mathematically possible with an LR system. The Droop Quota

- Is the *least* proportional of the two.
- *Systematically* advantages larger groups over smaller groups.
- *Cumulatively* over represents large groups on the SCC.
- Is specifically *forbidden* by the Directive on Proportional Voting itself.

The Droop Quota violates MDP Rules on proportional voting, in both letter and intent.

4. MDP Rules *require* the Hare Quota, not the Droop Quota. Proof:
 - a. The MDP Directive on Proportional Voting clearly requires a Largest Remainder systems (DPV Section II.B). Largest Remainder systems require a quota.
 - b. The MDP Directive on Proportional Voting specifically and repeatedly asserts that the quota is greater than the Droop Quota, $1/(s+1)$.
 - c. The Hare Quota, $1/s$, is greater than the Droop Quota in every relevant situation. $1/s > 1/(s+1)$ for every $s > 1$. Slate voting is only used when there is more than 1 seat to fill in a position. Therefore, in every instance of slate voting, $s > 1$. Therefore, in every instance of slate voting, $1/s > 1/(s+1)$.
 - d. There is no known quota for an LR system more proportional than the Hare Quota.

Conclusion: the Hare Quota is the only quota that meets the requirements of all MDP Rules.

Slate C gets 60% of the seats, a supermajority of the available seats. However, Slate C only had a plurality of votes in the election. Not even a *simple* majority. If we choose a system for assigning the fifth seat that assigns it to Slate C, we are transforming Slate C's plurality into a supermajority. If the election were for a committee of only five seats, Slate C would have all the power and the two minorities would have none of the power on the committee. That's about as disproportionate as you can get. Note that LR-Droop would not even produce a tie in this example, it would just outright give Slate C a supermajority of seats.

Now suppose we use a method that assigns the last seat to Slate B. In that case, we have

Slate	% of Votes	Seats
Slate A	20% -- Plurality	1 Seat -- Plurality
Slate B	30% -- Plurality	2 Seat -- Plurality
Slate C	50% -- Plurality	2 Seats -- Plurality

Now all the slates that had a plurality of votes also have a plurality of seats. This is inherently more proportional than any system that grants Slate C a supermajority of seats from a mere plurality of votes.

Also, consider the dynamics required to build a majority under the two different scenarios. When the final seat is assigned to Slate B, the seats of any two slates can join together to form a majority. In contrast, when the final seat is assigned to Slate C, Slate C obtains a supermajority by itself. The other two slates - and the 50% of voters who supported them - lose their voices on the committee entirely.

When proportionality is the goal, the rule for when two or more slates are tied in the remainder is to assign the seat to the slate that would otherwise have the fewest seats. If there is a tie in both the remainders and the fewest seats, award the seat to the slate with the next highest Remainder. If there are no more slates, hold a runoff election between all slates tied for the lowest number of seats already won. This system complies with the MDP Rules, including MDP 2.A.8, Article 11, and the DPV, and is easier to understand and run elections under. I've provided step-by-step procedure [here](#).