

ENSURING REPRESENTATION IN LEGISLATIVE BODIES

What is a proportional voting method?

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Problems with...

Single Winner Voting Methods

- When are single-winner methods appropriate?
 - Executive offices
- What happens when you use single-winner methods for legislative bodies?
 - Gerrymandering
 - Why Is gerrymandering bad?
 - What about Independent Commissions?
 - Didn't vote for the winner? You get nothing!
 - Geographic representation, but at what cost?
- Examples: Plurality, Runoffs, RCV/ IRV, Approval, Range, Borda, Condorcet, Bucklin, Combs, Majority Judgement ...

What are...

Multi-Winner Voting Methods (Bloc/Nonproportional)

- Definition: A multi-winner method that doesn't apply proportional components
- Pros: Simple
- Cons: Not PR, homogeneous results, majority blocs can control all seats
- Examples:
 - Bloc plurality (choose as many candidates as there are winners)
 - Bloc (anything else)

What is...

Bloc Plurality Voting (Bloc/ Nonproportional)

Note: Example should
have five being elected.

Sample from Behind the
Ballot Box - Douglas Amy

Official Ballot Municipal Elections	
Instructions to Voters	City Council Candidates
<ol style="list-style-type: none">1. To Vote: Mark on "X" in the box next to the candidate's name.2. Vote for no more than FIVE candidates.3. To vote for a person whose name is not printed on the ballot, write the candidate's name on one of the extra lines provided and put an "X" in the box next to the name.	Joan Cocks (Democrat)
	Steve Ellenburg (Democrat)
	Vincent Ferraro (Republican)
	Stephen Jones (Democrat)
	Penny Gill (Republican)
	Jean Grossholtz (Republican)
	Kavita Khory (Republican)
	Christopher Pyle (Democrat)
	Preston Smith (Democrat)
	Walter Stewart (Republican)
Write In	
Write In	
Write In	

What are...

Multi-Winner Voting Methods (Semi-proportional)

- **Definition:** Somewhat proportional methods, tends to rely on vote splitting
- **Pros:** Rather simple
- **Cons:** Relies on coordination from candidates/parties for PR, sloppy algorithms
- **Examples:**
 - Single Non-transferrable Vote (vote for one)
 - Limited Vote (vote for a number fewer than winners)
 - Cumulative Voting (you have as many pips/votes as there are winners and you can stack pips on candidates)

What is...

Limited Voting (Semi-proportional)

Note: Example should have three being elected.

Sample from Behind the Ballot Box - Douglas Amy

Official Ballot Municipal Elections	
DIRECTIONS TO VOTERS	City Council Candidates
<ol style="list-style-type: none">1. To Vote: Mark on "X" in the box next to the candidate's name.2. Cast no more than TWO votes.3. To vote for a person whose name is not printed on the ballot, write the candidate's name on one of the extra lines provided and put an "X" in the box next to the name.	Joan Cocks (Democrat) <input type="checkbox"/>
	Stephen Ellenburg (Democrat) <input type="checkbox"/>
	Vincent Ferraro (Republican) <input type="checkbox"/>
	Kavita Khory (Republican) <input type="checkbox"/>
	Christopher Pyle (Republican) <input type="checkbox"/>
	Preston Smith (Democrat) <input type="checkbox"/>
	Write In <input type="checkbox"/>
Write In <input type="checkbox"/>	

What is...

Single Non-transferable Vote (Semi-proportional)

Note: Example should
have three being elected.

Sample adapted from
Behind the Ballot Box -
Douglas Amy

Official Ballot Municipal Elections	
DIRECTIONS TO VOTERS	City Council Candidates
<ol style="list-style-type: none">1. To Vote: Mark on "X" in the box next to the candidate's name.2. Cast no more than ONE vote.3. To vote for a person whose name is not printed on the ballot, write the candidate's name on one of the extra lines provided and put an "X" in the box next to the name.	Joan Cocks (Democrat)
	Stephen Ellenburg (Democrat)
	Vincent Ferraro (Republican)
	Kavita Khory (Republican)
	Christopher Pyle (Republican)
	Preston Smith (Democrat)
	Write In
Write In	

What is...

Cumulative Voting (Semi-proportional)

Sample from Behind the
Ballot Box - Douglas Amy

Official Ballot Municipal Elections		
INSTRUCTIONS TO VOTERS	Candidates for City Council District One (Three to be elected.)	You may cast no more than three (3) votes.
<p>You may cast up to three (3) votes. You may distribute your three votes in any way among the candidates: all three for one candidate, two for one and one for another, or one for each of three candidates.</p> <p>Cast votes for candidates by filling in the numbered boxes next to their name. For example, to cast three votes for a candidate, fill in boxes 1, 2 and 3.</p>	Enid Lakeman Democrat	1 2 3
	Thomas Gilpin Republican	1 2 3
	J.F.H. Wright Democrat	1 2 3
	Clarence Hoag Democrat	1 2 3
	John Humphreys Republican	1 2 3
	Write In	1 2 3
	Write In	1 2 3
Write In	1 2 3	

What are...

Multi-Winner Voting Methods (Proportional)

- Definition: Methods that produce a proportional result to voter support
- Pros: Great PR
- Cons: Tends to be more complicated on the calculation end
- Examples:
 - Partly List - Open/Closed (Pick a party and apply a reweighting scheme)
 - Mixed Member - (Mix & match party list with single-winner and a reserve)
 - Single Transferable Vote (Rank candidates and apply quota/round/transfer scheme)
 - Proportional approval variations (approve candidates and apply various reweighting applications)

What is...

Party List (Open/Closed) (Proportional)

Sample from
Sightline -
Kristin Eberhard

Official Ballot					
Election for the United States House of Representatives					
District One					
Voting Instructions					
1. You only have ONE vote.					
2. Place an X in the box next to the candidate for whom you wish to vote.					
3. Your vote counts both for your candidate and your party.					
Democratic	Republican	Reform	Green	Independent Candidate	
Benjamin Pike	Fran Deutsch	Steven Wong	Tom Wartenberg	Robert Moll	
Sam Rosen-Amy	Steve Grolnic	Deborah Gorlin	Juan Hernandez		
Megan Gentzler	Wendy Berg	Brad Crenshaw	Beata Panagopoulos		
Ben Foster	Gerald Epstein	Daniel Czitrom	Alice Morey		
Colin Volz	Sarah McClurg	Meryl Fingrutd	Sarah Pringle		

What is...

Party List (Open/Closed) Calculation (Proportional)

1. Did a party get a seat? If yes, multiply those ballots by the first coefficient. If no, keep normal weight.
2. Did they get another seat? If yes, multiply those ballots by the next coefficient. If no, keep normal weight.

Coefficient examples:

$\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, ... OR $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{7}$, $\frac{1}{9}$, ... OR others...

What is...

Mixed Member (Proportional)

Sample from
Sightline -
Kristin Eberhard

Vote for one Candidate AND Vote for one Party.

The candidate with the most votes will win the local seat. The parties will win regional seats based on how many votes they receive.

Maria Moderate	<input checked="" type="radio"/>	Democrat	<input type="radio"/>
Leroy Left	<input type="radio"/>	Republican	<input type="radio"/>
Henry Hawk	<input type="radio"/>	Independent	<input checked="" type="radio"/>
Rex Rural	<input type="radio"/>	Progressive	<input type="radio"/>
Sal Safety Net	<input type="radio"/>	Libertarian	<input type="radio"/>


What is...

Single Transferable Vote (Proportional)

Sample Cambridge, MA ballot

CANDIDATES FOR CITY COUNCIL

for Term of Two Years
Instructions to Voters

Mark your choices by completely filling in the numbered ovals like this  using a black pen.

- Fill in the number one (1) oval next to your first choice.
- Fill in the number two (2) oval next to your second choice.
- Fill in the number three (3) oval next to your third choice, and so on.
- You may fill in as many choices as you please.
- Fill in no more than one oval per candidate.

• Fill in no more than one oval per column.

To vote for a write-in candidate:

- Fill in a numbered oval next to the name you have written, showing your choice as a number for a candidate.
- Record write-ins from the top line down.

If you spoil this ballot, return it for cancellation to the election officer in charge of the ballots and get another from such officer.

Only one vote per candidate. Only one vote per column.

DO NOT USE RED TO MARK BALLOT

RONALD BENJAMIN, 112 Cushing Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
JOSH M. BURGIN, 812 Marston Drive	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
DENNIS J. CARLONE, 3 Walgrave Avenue	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
OLIVIA D'AMBROSIO, 64 Winton Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
JAN DEVEREUX, 255 Lakewood Avenue	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
SAMUEL GEBRU, 812 Marston Drive	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
RICHARD HARDING, JR., 169 Windsor Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
CRAIG A. KELLEY, 6581 G Street Terrace	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
DAN LENKE, 148 Richdale Avenue	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
ILAN LEVY, 148 Spring Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
ALANNA M. MALLON, 3 Maple Avenue	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
MARC C. McGOVERN, 15 Pleasant Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
GREGG J. MOREE, 25 Fairfield Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
ADRIANE B. MURGRAVE, 5 Newport Road	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
NADYA T. OKAMOTO, 220 Banks Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
HARI L. PILLAI, 165 Cambridge Park Dr	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
JEFF SANTOS, 350 3rd Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
SUMBUL SIDDIQUI, 530 Windsor Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
E. DENISE SIMMONS, 1st Harvard Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
VATSADY SIVONGKAY, 59 Willard Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
BRYAN SUTTON, 134 Cambridge Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
SEAN TIERNEY, 12 Pine Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
PAUL F. TONER, 14 Newland Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
TIMOTHY J. TOOMEY, JR., 11th Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
GWEN THOMAS VOLMAR, 15 Ware Street	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
QUINTON Y. ZONDERMAN, 225 Central Middlesex Ave.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
WRITE-IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
WRITE-IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
WRITE-IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
WRITE-IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
WRITE-IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
WRITE-IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
WRITE-IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
WRITE-IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
WRITE-IN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

By law, candidates' names are rotated on ballots at polls, and may appear in a different order than on this Specimen ballot.

What is...

Single Transferable Vote Calculation (Proportional)

1. Does a candidate meet the threshold?
 - a. If yes, elect that candidate and distribute the surplus votes to the next-preferred active candidate (use random, weighted, or other approach for distribution).
 - b. If no, eliminate the candidate with the fewest first-choice votes and transfer those votes over to the next-preferred active candidate.
2. Repeat step 1 until all seats are filled.

What is...

Sequential Proportional Approval Voting (Proportional)

Sample Ballot

-The Center for Election Science

City Council		
Choose ALL the candidates you approve of by marking an "X" by the name(s). Ballots that elect candidates are progressively reweighted to ensure all voters have a proportionate effect on the outcome. Candidates will be elected until all nine seats are filled.		
1	John Hill (Green)	
2	Stuart Mill (Libertarian)	
3	Katherine Schmidt (Libertarian)	
4	Julie Cartwright (Democrat)	
5	Sara Kulinsky (Republican)	
6	Joana Melianavich (Reform)	
7	Jasmine Tramley (Democrat)	
8	Doug Farrell (Republican)	
9	Alanis Hofsteen (Democrat)	
10	Joan Pillersman (Green)	
11	Wendy Szpiro (Democrat)	
12	Donna Quynn (Libertarian)	
13	Arnold Erling (Green)	
14	Janice Davies (Reform)	
15	Terry Clark (Republican)	
16	Allisa Manskey (Republican)	
17	Melissa Dorian (Democrat)	
18	John Carmichael (Libertarian)	
19	Joanah Lineman (Democrat)	
20	Michael Farmide (Independent)	
21	Katherine Hatermine (Green)	
22	Barbara Tool (Independent)	
23	Jill Zimmerman (Libertarian)	
24	Mindy Feinman (Democrat)	
25	Lisa Tallies (Independent)	
27	Phillip Norris (Republican)	
28	Marsh Hopsteader (Reform)	
29	Katie Ramp (Green)	
30	Paul Timmer (Independent)	
31	Mark Coleman (Democrat)	
32	_____ (Write-In)	
33	_____ (Write-In)	
34	_____ (Write-In)	

What is...

Sequential Proportional Approval Voting

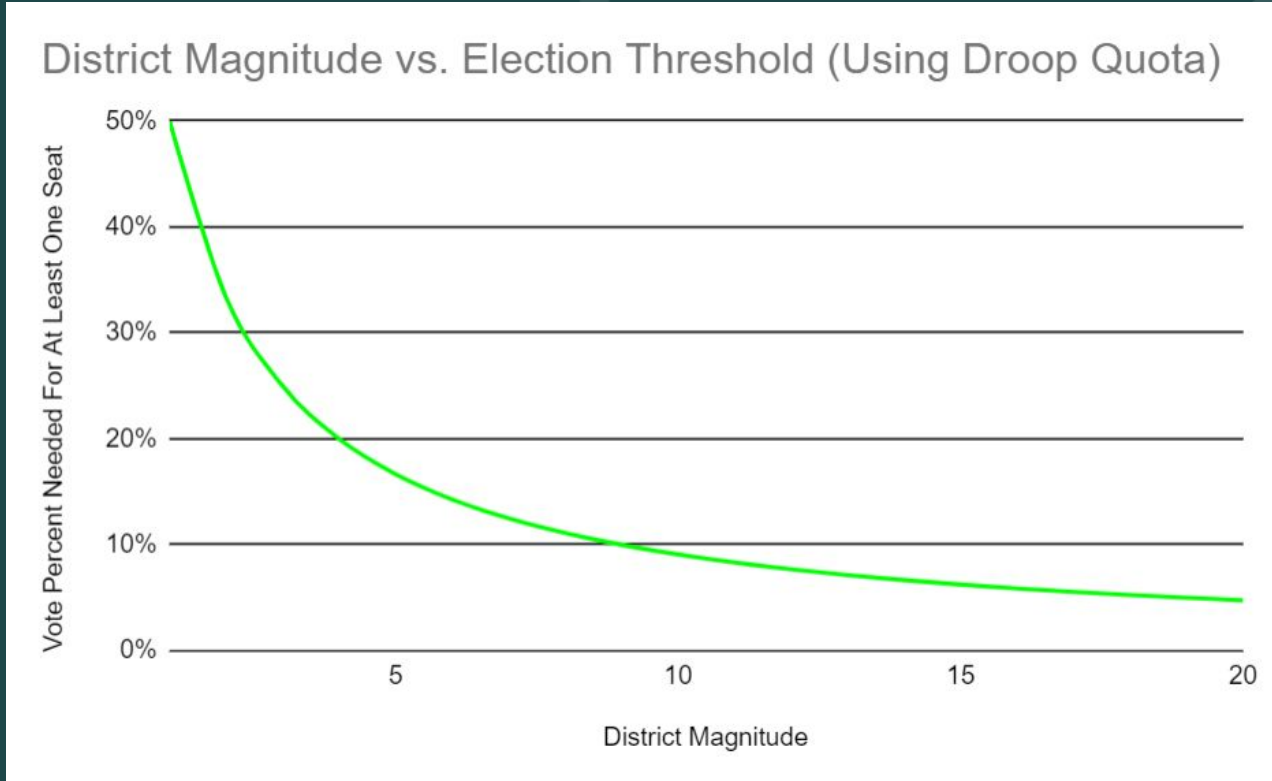
Calculation

(Proportional)

1. Elect the candidate with the most votes
2. Reweight each ballot according to how many candidates each voter elected.
 - a. If 1 elected on a ballot -> reweight by $\frac{1}{2}$
 - b. If 2 elected on a ballot -> reweight by $\frac{1}{3}$
 - c. If 3 elected on a ballot -> reweight by $\frac{1}{4}$
 - d. ...
3. Repeat steps 1 and 2 until all seats are filled.

Details...

Thresholds In Proportional Voting Methods



Takeaways

What should we walk away with?

- Winner-take-all systems are inherently disproportional
- District magnitude is important for proportionality
- Semi-proportional methods, while better, have technical issues
- Proportional methods have inherently more complexity
- Party-list systems compromise geographic representation while attaining high PR, but you can have a balance with mixed systems
- STV can create a burden for voters with long-ballot lists
- SPAV has a simpler ballot, though doesn't sidestep other complexity

Take Action

How can you improve your elections?

- Write letters to the editor
- Contact your local council members about introducing a bill
- Start your own ballot initiative campaign

Contact our Director of Campaigns & Advocacy
for guidance: chris@electionscience.org

Take Action

Want to help us improve elections?

- Sign up to volunteer
- Invest in our campaigns
- Start your own local chapter
- Share our social media content

We can't do this without you!
contact@electionscience.org



Questions?

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