Single Member District Proportional Representation (SMDPR)

Summary

Single Member District Proportional Representation (SMDPR) distinguishes itself by providing the highest level of proportional representation without altering the current experience of voters—ballots, ridings, and the nature of MPs remain unchanged, as does the running and financing of elections and central party management.

Under SMDPR, each party is allotted a proportion of seats equal to their proportion of the vote, and the allotted seats are filled by the candidates of each party with the most votes, as determined by the electorate using the current ballot. Each current riding is represented by an MP who ran in the riding.

SMDPR is based on three core features, but it has multiple variable features that allow it to be a subtle and innovative neutral ground that can develop aspects of First Past The Post (FPP), ranked balloting, single transferable vote (STV) and/or mixed member proportional representation (MMPR). It is a made in Canada system that preserves the voter's experience, including with their MP, as the country adjusts to proportional representation (PR).

Under SMDPR and within each group of ridings—be it a Province/Territory or a subset or district of a larger Province—each voter will have
1. As fair a chance as possible of having their vote transfer power to a candidate of the party they favour, thus making each vote count,
2. Will have a representative who ran in their riding, and
3. Will have a fair and proportional probability that their MP is of the party they favoured.

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Assumptions

In a democracy, elections are about the transfer of power from the people, who alone possess power, to their representatives, who enact the laws under which the people must live. There is no higher form of equality before the law, or surer protection for minorities—no better assurance of democracy—than that every vote cast should fairly transfer power to those who enact the laws.

Democratic elections should therefore be about the fair and equal transfer of power to elected representatives.

Chief Justice of the Supreme Court of Canada, Beverly McLachlin, added significant weight to this idea by ruling that

> *"Each citizen is entitled to be represented in government.*
> *Representation comprehends the idea of having a voice in the*
> *deliberations of government"[1]*

It is assumed that others will
1. Make the case that FPP failed in fostering a system of two political parties with the majority party ruling. It also lacks the democratic principles of 'Majority rule' and 'One person, one vote', thereby compromising the democratic principles of 'Rule of law', 'Equality before the law' and 'Protection of minorities' at a fundamental level.
2. Stress that PR is a principle of many systems—not a system in itself.
3. Make the case that consensus governance promoted by PR is correlated with better government performance than is our current system on almost every applicable measure[2].
4. Address the work[3,4,5] that logically establishes that there are no strategy-proof electoral systems for Canada. In short, there are no perfect electoral systems—they all have things about them that someone won't like.

There are only four categories of things that can be changed in electoral reform—the ballot, the ridings, the nature of MPs, and the way the vote is counted.

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[1] Reference re Prov. Electoral Boundaries (Sask.), [1991] 2 S.C.R. 158

[2] e.g. Lijphart, Arend. *"Patterns of Democracy Government Forms and Performance in Thirty-Six Countries, 2ed"*. Yale University Press, (2012).

[3] Arrow, Kenneth. *"Social Choice and Individual Values"*, Yale University Press, (2012)

[4] Gibbard, Allan. "*Manipulation of Voting Schemes: A General Result*". Econometrica 41 (4): 587–601 (1963)

[5] Satterthwaite, Mark. "*Strategy-Proofness and Arrow's Conditions: Existence and Correspondence Theorems for Voting Procedures and Social Welfare Functions*". Journal of Economic Theory 10, 187-217 (1975)
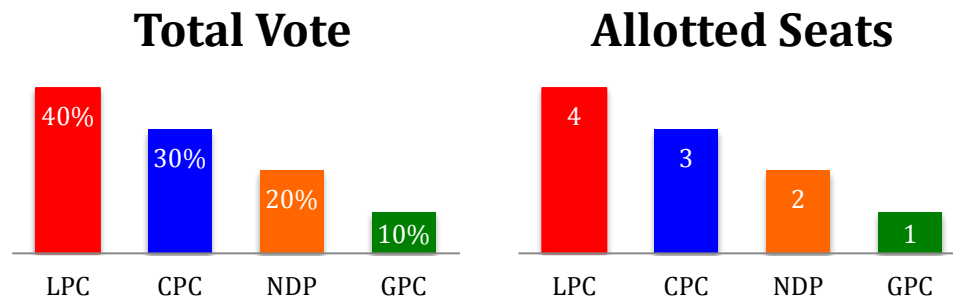
Core Features and Basic Mechanics of
Single Member District Proportional Representation – SMDPR

There are three core features to SMDPR, and several variable features.

Core Feature #1—Allotment of Seats

Under SMDPR, seats are allotted to parties in proportion equal to their proportion of the vote in each Province, Territory or district of a large Province.

Consider a group of ten ridings, which might be a small Province or a subset of a larger Province. If the total vote were as shown on the left below then the seats allotted out of 10 would be as shown on the right.

Total Vote   # Allotted Seats

Total Vote					Allotted Seats			
40%	30%	20%	10%		4	3	2	1
LPC	CPC	NDP	GPC		LPC	CPC	NDP	GPC

The handling of fractional results and ties, and the population to which allotment is applied are variable features.

Core Feature #2—Ranking of Candidates and Matching of Seats

Candidates are ranked within their party, based on how many votes they received in their riding. Then, as in any list system, the top performing candidates are matched to win their party's allotted seats, representing their own riding.

The matching of allotted seats might be, for the LPC, as follows

Party's Candidates Ranked

Top 4 LPC candidates are matched to the 4 seats allotted to LPC
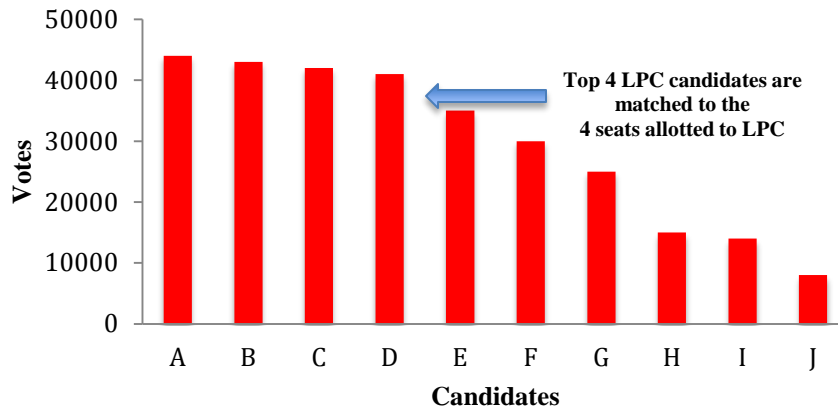
Similar matches would be done for each party.

The formal identification of parties, groups and independents and the measure of performance are variable features.

Core Feature #3—One Riding, One MP

Each MP represents the one riding in which they ran.

A so-called clash occurs when two or more parties have candidates matched to the same riding. In clashes, the candidate with the better electoral performance wins.

For example, suppose the LPC and CPC both deserve a seat, and the best electoral performers in each party ran in the same riding, with results as shown below.

Clash
Candidates Matched to Same Riding
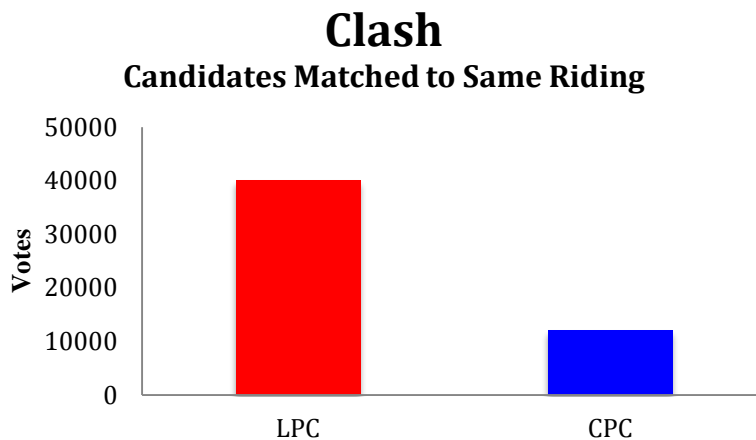
Using raw votes as the determinant of electoral performance, the LPC candidate wins. The CPC candidate then drops out of the election, is replaced by the next CPC candidate on their slate, and re-matching is carried out.

Matching may create clashes between deserving candidates, which is not uncommon, or leave ridings un-matched, which is very uncommon. Resolution of clashes and handling unfilled seats is a variable feature.

Winning and Accountability

To win under SMDPR, a candidate must

1. Belong to a party that has proportionally won seats in the Province/Territory,
2. Wins enough votes to rank high enough within their party to deserve one of those seats, and
3. Receive more votes than any other such candidate in their riding from another party.

Accountability of MPs is thereby increased, because not getting a plurality/majority will likely mean a poor ranking and hence a loss.

Variable Features

#1—Allotment Formula

In allotting seats, proportions are almost never whole numbers—there's almost always a decimal part, e.g. 40 percent of the eleven seats in Nova Scotia would be 4.4 seats—four seats and a 0.4 fraction of a seat. Since seats cannot be divided up into parts, this leads to some few seats having to be allotted on the basis of the decimal or fractional part—the 0.4 bit in our example. These are referred to as fractional results.

Fractional results can be dealt with in at least the following ways
1. Largest remainder[6],
2. Highest averages (D'Hondt, Sainte-Laguë, Imperiali, Huntington-Hill, Danish, Quota systems etc.[7]), or
3. Proportional probability[8]

Proportional probability is probably mathematically the fairest, highest-averages allows a thumb to be placed on the scales favouring larger/smaller parties, and largest remainders is the simplest.

Generally, this issue affects a maximum of the same number of seats as there are major federal parties running, i.e. four seats.

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[6] The highest fractional residuals win.
[7] https://en.wikipedia.org/wiki/Highest_averages_method
[8] Proportional probability—one winner, but the more votes, the higher the chance of winning—like a raffle

#2—Ranking of Electoral Performance

A Candidate's electoral performance within their own party can be ranked on raw vote totals or on percentage of vote totals. The former uses only one number, and is theoretically harder to game, but the latter gives a better measure of electoral achievement in ridings that differ in size.

Both methods would benefit from application of ranked balloting.

#3—Resolving Clashes

For clashes, raw vote total and percentage of vote are equivalent, since both candidates had access to the same vote total.

However, here again ranked balloting would be fairer.

#4—Unmatched Seats

Seats are unmatched when a seat is allotted but no candidate was able to meet the other criteria for winning their seat. This happens to independents and small parties that run few candidates.

If for instance, a party running only two candidates gets enough votes to deserve a seat, but each of the candidates loses a clash in their riding, then neither of the party's two candidates can be matched, and the party's allotment of seats would be re-distributed.

This situation may be partially avoided by making special allowances for independents, and would be fairer to the voter's transfer of power with ranked ballots.

#5—Independents

Though minor in numbers, independents constitute an identifiable class and cannot be discriminated against with constitutional impunity. It can be argued that the reason there are so few independents elected in Canada is because FPP does such a poor job of allowing them to win. Whether independents should be promoted is a matter of opinion.

Testing on the Australian House election of 2013 under alternative voting rules showed SMDPR would have done significantly better at representing independents and small parties than either AV did or FPP would have done.

On balance, allowing independents a forum for associating into groups of like-minded individuals under SMDPR probably has the best Charter profile, and provides the fairest, freest and most constructive results.

#6—Ranked Ballot

Although not essential, using ranked ballots in several of the variable features mentioned above would probably be more respectful of voter's wishes to transfer power.

For instance, resolving clashes would probably be fairer if all of the voter's preferences were considered. Instead of the candidate with the most votes winning—or the candidate with the highest percentage of votes—votes for the candidates with the lowest numbers could be re-assigned to the voter's less preferred candidate. The same thing could also be done to determine ranking of candidates on party's lists.

#7—Districts

Party regionalization—concentration of parties in urban or rural ridings—may be a concern, especially in larger Provinces.

To some degree, this is a problem to be addressed by party platforms.

The significant structural point is that SMDPR seat allocation can be based on a subset of ridings in a Province, chosen on policy-driven, fair mathematics concerning population densities. This speaks to the flexibility of SMDPR.

However,
1. The absence of traditional strategic voting under SMDPR would tend to eliminate current 'swing' and 'safe' ridings, rendering comparisons of SMDPR to FPP on this point moot.
2. The elimination of false majorities would reduce the lure to exploit regionally divisive issues, also lessening the problem, and finally,
3. The PR-principle would prevent parties from sweeping small Provinces, so there should always be a representative of each major party in each Province.

Advantages of SMDPR

The advantages of SMDPR, compared to other forms of PR, include the following.

1. The process of voting does not need to be altered at all from the present system.
2. There is little incentive to vote strategically under SMDPR—if you don't like a party then don't vote for their candidate, but whatever else you do doesn't affect the parties you didn't vote for.
3. Voters transfer power to an elected representative fairly and effectively.
4. Voters have an MP who ran in their riding.
5. Voters are proportionally likely to have access within their Province/Territory to a candidate of the party they support.
6. Candidates have a proportional probability[9] of winning their own riding.
7. The accountability of MPs is increased, because not getting a plurality/majority will likely mean a poor ranking and hence a loss.
8. SMDPR is highly proportional, more so than the STV and MMPR models typically proposed for Canada, and promises to achieve all the known benefits of consensus majority Government.
9. There is a slightly centripetal effect on power in that parties that run a lot of candidates do better than those who run few, who in turn do better than independents.
10. Parties are treated as fairly as is mathematically possible.
11. Results do not depend on how votes are counted—i.e. the system is well-defined, and recounts will not change the result unfairly.
12. There is no need for an artificial threshold based on what 'fringe' is thought to mean, although adding a threshold is an option.
13. Rural/urban has no particular effect on results, but regionalization of parties can be addressed.

SMDPR requires no changes in ridings or how we conduct elections, so it is inexpensive to install. Testing shows the results can be available in real time.

SMDPR can also be easily adapted to ranked balloting, and would be fairer, but the ballot would have to change slightly.

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[9] See footnote 8

Comparison of MMPR, STV, and SMDPR

A summary of the differences between STV, MMPR and SMDPR is as follows.

MMPR	STV	SMDPR
Can be PR	Can be PR	Highly PR
Complicated ballot	Complicated ballot	Same ballot
Enlarged ridings	Ridings in Districts	Same ridings
Two types of MP	Multiple MPs per district	Same type of MPs
Strategic voting	Strategic voting ++	± no strategic voting
Less accountability	Less accountability	More accountability
Expensive	Expensive & slow	Cheap & fast
Changed count	Changed count	Changed count

Plurality/Majority Losses

The possibility of the plurality/majority candidate losing with SMDPR is demonstrated by consideration of the following mini-election, in which Party A wins 50 percent plus one vote in each of six ridings, and Party B wins 50 percent less one vote in each.
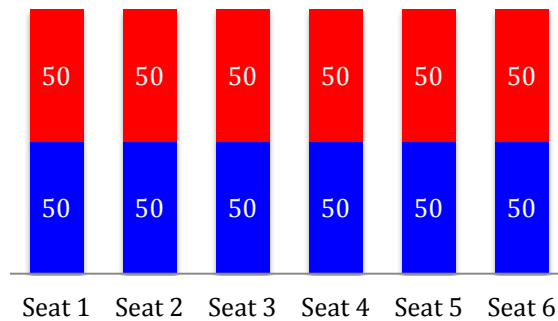
Under FPP this is a 6/0 split. But in a democratic transfer of power this should be a 3/3 split, and three of the majority winners should lose. In other words, our perceptions of fair local politics must occasionally accommodate a fair transfer of power in a larger context.

The only guarantee of winning should be getting all the votes; getting half the votes should guarantee winning half the time. Such fairness in the transfer of power can only be achieved in a multiple-riding/multiple-candidate setting.

Under FPP, MPs always received the most votes in their constituencies, but Government is often formed with fewer votes than Opposition, even majority Governments[10]. Under SMDPR, Government is always supported by more votes than Opposition, but candidates can be elected with fewer votes than their opponents in a variable minority of constituencies.

The exact number of plurality/majority losses cannot be determined accurately, because strategic voting in past elections has skewed the results—people would vote differently if they weren't voting against some party. Ignoring that fact, there would have been 21.01 percent plurality losses in 2015, including 4.14 percent majority losses.

In considering this point, it is important to remember it is often impossible to hold MPs accountable under FPP plurality rules. By definition, more than half the voters don't want someone who wins a plurality. An MP is not really accountable if more than half the voters cannot rid themselves of that MP.

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[10] Ten of the last twenty-four Canadian Governments have been minority Governments. Ten out of the last fourteen majority Governments have had only a plurality of the vote. In1896 Sir Wilfred Laurier formed a majority Government on the basis of a minority of the votes; this happened also in New Brunswick (2006), British Columbia (1996), and Quebec (1998). Majority Governments with minority support are a reason New Zealand got rid of FPP.

It should also be mentioned that the ridings that have minority winners under SMDPR are typically those with poor turnout and/or close splits between candidates—in other words, apathetic and/or evenly divided ridings. Ridings with solid pluralities or majorities, reflecting engagement and agreed politics, will win—unless a party sweeps a Province without getting almost all the votes, as the Liberals did in Nova Scotia in 2015.

Ridings don't enact laws, Parliament does. Therefore, Parliament should be a fair representation of the political will of the country. What people want for the country should not be held hostage to local referenda on what's best for a riding; unpredictable collateral damage to the country can be huge.

Testing of SMDPR

Results of the application of the SMDPR core, without ranked ballots, have been calculated for the 2015 federal elections in Canada. The summary results from this test are as follows.

Comparison of FPTP and SMDPR
Using 2015 Canadian Federal Election Results

	Votes	Vote Share	FPP Seats	FPP Seat Share	SMDPR Seats	SMDPR Seat Share
Liberal Party of Canada	6,942,937	39.47%	184	54.44%	137	40.53%
Conservative Party of Canada	5,613,633	31.91%	99	29.29%	107	31.66%
New Democratic Party	3,469,368	19.72%	44	13.02%	67	19.82%
Bloc Québécois	821,144	4.67%	10	2.96%	15	4.44%
Green Party of Canada	602,933	3.43%	1	0.30%	11	3.25%
Independent	40,609	0.23%		0.00%		0.00%
Libertarian Party of Canada	36,775	0.21%		0.00%	1	0.30%
Christian Heritage Party of Canada	15,232	0.09%		0.00%		0.00%
No Affiliation	9,007	0.05%		0.00%		0.00%
Marxist-Leninist Party of Canada	8,838	0.05%		0.00%		0.00%
Forces et Démocratie	8,274	0.05%		0.00%		0.00%
Rhinoceros Party	7,263	0.04%		0.00%		0.00%
Progressive Canadian Party	4,476	0.03%		0.00%		0.00%
Communist Party of Canada	4,393	0.02%		0.00%		0.00%
Animal Alliance Environment Voters Party of Canada	1,699	0.01%		0.00%		0.00%
Marijuana Party	1,557	0.01%		0.00%		0.00%
Democratic Advancement Party of Canada	1,187	0.01%		0.00%		0.00%
Pirate Party of Canada	908	0.01%		0.00%		0.00%
Canadian Action Party	401	0.00%		0.00%		0.00%
Canada Party	271	0.00%		0.00%		0.00%
Seniors Party of Canada	157	0.00%		0.00%		0.00%
Alliance of the North	136	0.00%		0.00%		0.00%
The Bridge Party of Canada	122	0.00%		0.00%		0.00%
Party for Accountability, Competency and Transparency	91	0.00%		0.00%		0.00%
United Party of Canada	57	0.00%		0.00%		0.00%
Totals	17,591,468	100.00%	338	100.00%	338	100.00%

	Votes		FPP Seats	FPP Seat Share	SMDPR Seats	SMDPR Seat Share
Total of Independents & Small Parties	141,453	0.80%	0	0.00%	1	0.30%

	FPP		SMDPR	
Wasted Votes	9,106,936	51.77%	219,989	1.25%
Surplus Votes	3,223,622	18.32%	0	0.00%
Votes Usefully	5,260,910	29.91%	17,371,479	98.75%

Note that Plurality means 'most votes' here, and so includes majority

Winning Majorities	118	34.91%
Winning Pluralities	267	78.99%
Winning Minorities	71	21.01%
Losing Pluralities	71	21.01%
Losing Majorities	14	4.14%

Total Electorate	25,939,742
Average Electorate per Riding	76,745
Average Vote per Riding	52,046

Recommendations and Mandate

The single recommendation is to adopt SMDPR with ranked ballots, and use the ranking wherever possible.

1) Effectiveness and Legitimacy: As demonstrated in the test for the 2015 federal elections included above,
    a. Proportionality of party representation is as exact as possible, while
    b. Wasted votes drop from 51.77 percent to 1.24 percent,
    c. Surplus votes are eliminated, and
    d. Useful transfer of power rises from 29.91 percent to 98.75 percent.
2) Engagement: SMDPR promotes stable consensus Government by eliminating false-majorities, balanced on a knife-edge by undecided voters and special interests. The lure of a false majority also fosters exploitation of wedge issues and regionally divisive issues, use of attack ads, and uncivil discourse. There need be no artificial thresholds, to define which party deserves votes under SMDPR: proportionally, people get what they want.
3) Accessibility and Inclusiveness: Under SMDPR, the voting process remains unchanged. On-line voting with SMDPR would be the same as with FPP.
4) Integrity: Again, casting a ballot is unaltered. The core processes of SMDPR are objective and un-ambiguous. Any variable aspects can be decided upon a pre-set random number for each riding, revealed by Elections Canada on election night as appropriate.
5) Local Representation: Accountability of MPs is increased under SMDPR, as three criteria must be met to succeed: if a majority doesn't want an MP, he/she will most likely fail to place well within his/her own party and so lose. Each MP represents an existing riding, in which he/she ran. Within each Province/Territory, there will be a proportional probability that some MP will share a voter's political views—sweeps are unlikely. Regionalization of parties can be flexibly addressed.