

**A Simulation of Proportional Representation
and Instant Runoff Voting in the
1993, 1997, and 2000 Canadian General Elections**

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INTRODUCTION

Canada is one of only four democracies in the world using plurality election in single-member districts, or SMP. (The others are the United States, the United Kingdom, and New Zealand.) While the other countries have two-party systems, which minimize the effect of SMP elections, at least in actual elections (although the system discourages the formation of minor parties), in Canada the multi-party system reveals the degree to which SMP distorts the proportion of the vote. The primary complaint of those who would see Canada revise its electoral system is that SMP produces what Amy calls "manufactured majorities."¹ The Liberals won 60 percent of the seats in 1993 with 41 percent of the vote, 51 percent in 1997 with 38 percent of the vote, and 57 percent in 2000 with 41 percent. Another party benefiting from the system is the Bloc Québécois. In 1993, it won 14 percent of the vote and 18 percent of seats. (It became the Official Opposition even though two other opposition parties had more votes.) In 1997 and 2000, it won 11 percent of the vote and 15 and 13 percent of seats, respectively. The big loser in these three elections was the Progressive Conservative Party, which took 16 percent of the vote in 1993 but got only one percent of the seats. The party took 19 percent of the vote in 1997 but only seven percent of seats, and 12 percent in 2000 but only four percent of seats. The New Democratic Party (NDP) also came up short under the current electoral system, although less dramatically than the Tories. The NDP took seven percent of the popular vote in 1993 but only three percent of seats; eleven percent of the vote in 1997 and seven percent of seats; and nine percent of the vote in 2000 and four percent of seats. The Reform Party (which changed its name to the Canadian Alliance

¹ Amy, p. 33.

before the 2000 election) was minimally disadvantaged in 1993 and 1997, when it polled 19 percent and took 18 and 20 percent of seats, respectively, but in 2000 it took 25 percent of the vote and won only 22 percent of seats.

PART I – PROPORTIONAL REPRESENTATION

The most frequent remedy proposed for manufactured majorities is to institute some form of proportional representation. Proportional representation (PR) is any electoral system designed to give political parties (or other groups) a number of seats proportional to the votes cast for them.² There are three essential characteristics of proportional representation:

1. Multi-member districts
2. No need for a majority or even a plurality to win
3. Proportionality in allocating seats to parties.³

While this paper is intended to demonstrate the implications for imposition of PR in Canada rather than argue for or against its imposition, a brief discussion of the merits of the electoral system change is in order. Amy outlines eight problems of SMP that proportional representation is often believed to solve.⁴ One, low voter turnout. Countries with proportional representation tend to have higher turnout. There is need for caution here. Switzerland has PR and turnout is as low or lower than the United States. In

² Lakeman 1982, p. ix.

³ Amy, p. 14.

⁴ Amy, pp. 5-6.

Canada, turnout has traditionally been as high as some PR countries.⁵ Two, the tendency of SMP to produce a two-party duopoly. This is also not currently a problem in Canada! Three, the high degree of sameness between the two major party candidates. This is closely tied to the two-party duopoly and incorporates Downsian ideas about where the two parties should fall ideologically. This too is more of a problem in the United States than in Canada, where the five-party system has produced a set of regional competitions that most would see as downright odd, such as the socialist NDP competing principally with the right-wing Canadian Alliance in parts of the West rather than with the Liberals and Progressive Conservatives, both closer to the NDP on a Downsian spectrum than the Alliance.⁶

Four, the wasting of votes that happens because many ridings are not competitive; in a few provinces, nearly all ridings are overwhelmingly won by one party. Amy rejects Edmund Burke's notion that voters whose party loses locally are represented virtually by others from other ridings who win. This is an especially hollow idea in contemporary Canada considering that the Tories have won almost as many votes as the Alliance in recent elections but have come up with many fewer seats. Five, the bland and largely issueless campaigns that frequently result under SMP.

Six, the underrepresentation of women that tends to happen under SMP. There is some evidence that PR systems produce more women in office,⁷ but caution needs to be exercised insofar as PR is not necessarily the magic pill that produces the result.

Women's electoral success has been most pronounced in left-of-center Scandinavian

⁵ Martha Angle, "Low Voter Turnout Prompts Concern on Hill," *Congressional Quarterly Weekly Report* 46: 863, April 2, 1988.

⁶ Hill, p. 10.

⁷ Amy, p. 103.

countries. Women have been much less successful in more conservative countries that use PR, like Italy, Israel, and Ireland.⁸ In a sense, this is tied to the Downsian model. Women in both the Democratic and the Republican parties of the U.S. are to the left of the men in those parties ideologically. This puts Republican women much closer to the median voter than Democratic women and is one possible explanation why Republican women have an easier time getting elected, especially to executive and other state-level positions, than Democratic women.

Seven, the lack of minority representation under SMP. This has changed somewhat in the U.S. with the creation of minority-majority districts, but the paradigm racially often is that whites vote for whites and blacks for blacks. Of course, the obvious mechanism for this under PR is the creation of racial and ethnic parties, which is not necessarily something everyone would find desirable. The lack of minority representation in Canada is often a non-issue, since many of the black MPs come from districts with hardly any blacks (e.g., Ovid L. Jackson who represents a rural Ontario riding; Marlene Jennings who represents Notre Dame-de-Grace—Lachine riding in Montreal; this paradigm holds for other minorities as well: Inky Mark, a Chinese native, represents a rural Manitoba riding whose visible minority population is negligible; there are few Arabs in Mac Harb's Ottawa riding.)

Eight, the lessening of gerrymandering. While districts often exist under PR, they are larger than single-member districts. As discussed below, PR as implemented in Canada could have entire provinces constitute electoral units (in which case redistricting and the resulting gerrymandering would be completely eliminated), or there could be smaller electoral units constituted. These electoral unit boundaries, while more likely to

⁸ Ibid.

be based on normal boundaries (city limits, natural regions, etc.) than are ridings, would still be subject to periodic readjustment, and this would involve the possibility of some gerrymandering. Still, gerrymandering is both less common and less extreme in Canada than the U.S. or even the U.K., so this is less of an issue in selling PR to the Canadian electorate.

One possible outcome under SMP is an electoral inversion. An electoral inversion is when one party wins more of the popular vote but another wins enough seats to form the government.⁹ This is a form of minority rule that currently governs the United States. (Al Gore won the popular vote in the 2000 presidential election, but George W. Bush supposedly won the electoral vote.) Two Canadian provinces had inversions in their 1999 provincial elections. The Saskatchewan Party won the popular vote in that province, but the NDP won more seats. The Liberals won the popular vote in Quebec, but the Parti Québécois formed the government. This is because the Liberals did very well in a small number of seats, but the PQ won more of the close contests. This is a prime example of the wasting of votes that Amy laments.

Just as surely, there are arguments against PR. Amy summarizes them as follows:¹⁰ First, PR is much more complex than SMP voting. Rae calls the ballot most SMP systems use *categoric* – the voter chooses a category. He calls the ballots used in many PR systems *ordinal* – the voter indicates choices by ranking. (This type of ballot also has uses in the single-member system, as will be discussed below.) Some PR systems require voting on more than one ballot. Second, some alternative forms of voting, especially Single Transferable Vote and Instant Runoff Voting, take much longer

⁹ Hill, p. xii.

¹⁰ Amy, p. 154.

to count than categorical ballots. Third, PR tends to produce weak, unstable minority governments and coalitions instead of majority governments. Fourth, having more parties and ideologies present in Parliament inherently produces more conflicts. Fifth, small political parties often hold the balance of power in the coalition and minority governments likely to be produced under PR. Sixth, PR encourages the proliferation of fringe parties (e.g., Communists, white supremacists) who would be marginalized under SMP. Seventh, there is less focus on constituent representation in large, multi-member electoral units than there is in SMP, especially in Canada where ridings are only about 100,000 population. Eighth, most PR systems have people vote for parties and not for individual candidates, and this is counter to what most people want.

Proportional Representation is frequently proposed as a solution to the problem of manufactured majorities. The simplistic solution for many is to simply award seats to parties on the basis of the popular vote. Of course, the solution is never that simple, but in practice, mechanisms are instituted along with PR that greatly affect how it works. Two of these mechanisms are the electoral unit and the viability threshold.

In Canada, the electoral unit is the riding, and each riding elects one member on the basis of plurality. Under a PR scheme, the electoral unit needs to elect more than two members in order for proportionality to have any meaning. Canadian provinces will be analyzed as electoral units here, although smaller ones would probably be used in practice. For example, although here we consider Alberta being a single electoral unit with 26 seats, Calgary could be an electoral unit with seven seats, Edmonton an electoral unit with six seats, and the rest of the province an electoral unit with 13 seats. (Or the rest of the province could be two electoral units, Southern Alberta with seven seats and

Northern Alberta with six seats. There are other possibilities.) Electoral unit boundaries need to be fixed at the time PR is instituted and like riding boundaries, they can be subject to periodic adjustment.

The viability threshold is the share of the vote within an electoral unit that a party needs to accrue to be eligible for seats. In some cases, the viability threshold applies on the national level. In some countries, the viability threshold is set by law. In others, a particular threshold results mathematically from the district magnitude. For example, if there are five members to be chosen in a particular district, the threshold becomes effectively 16 percent. If there are 20 members to be chosen, the threshold is effectively five percent.¹¹ In some countries, the legal threshold is so low as to be meaningless. In the Netherlands, a party only needs to capture 0.67 percent of the national popular vote to be eligible for seats. In Israel, it is one percent. In West Germany, it was five percent.¹² In France it is five percent, but that figure effectively applies only in Paris because no other electoral unit has 20 members. In Argentina, the legal threshold is eight percent.¹³ In Greece it is 17 percent for parties and 30 percent for electoral alliances.¹⁴ If no viability threshold is specified, then the viability threshold is effectively the minimum percentage needed to elect one member. In such an instance, the threshold is closely tied to the number of seats in the electoral unit. For example, if Ontario were a single electoral unit with 108 seats (which it will have when the redistribution currently in process is implemented), then any party winning even 0.926 percent of the vote would be entitled to a seat in the House of Commons. Most political scientists and other observers

¹¹ Taagepera & Shugart, p. 113.

¹² Taagepera & Shugart, p. 37.

¹³ Taagepera & Shugart, p. 133.

¹⁴ Taagepera & Shugart, p. 37.

would believe this to be too low, as such a low threshold would encourage the formation of many wild political parties with no hope of forming a government. (Israel's one percent viability threshold is too low to be meaningful, since the entire country is a single electoral unit. Effectively, any party receiving even 1.5 percent of the vote is eligible for a seat there.) On the other hand, if Prince Edward Island were to be an electoral unit with the four seats it currently has, then the de facto threshold there would be almost 25 percent, and it would not matter if a lower legal one were instituted. (The alternative to this high threshold would be to combine PEI as an electoral unit with another province to gain a lower threshold, but this would have the drawback of not guaranteeing any Members from PEI.)

Sometimes the threshold is set high for a political purpose. In Liechtenstein in 1939, for example, it was set at 18 percent expressly to keep Nazis out. In Sweden, the national threshold of four percent is overridden if a party receives 12 percent in a single district.¹⁵

This model evaluates viability thresholds of 5, 10, 15, 20, and 25 percent, using provinces as electoral units. The results are presented in Table 1. The three territories are excluded from this analysis. It is assumed that even if Canada adopted PR, they would continue to use SMP because they have only one seat each. The model evaluates the actual votes cast in the 1993, 1997, and 2000 general elections, although there obviously would be movement of votes under a PR system. More people would vote for minor parties nationally, and for the less viable major parties in various provinces were PR in place. (For example, under SMP there is little reason to vote for the NDP in Quebec since the party has never won a seat in a general election there. But certainly

¹⁵ Taagepera & Shugart, p. 134.

more than 1.8 percent of the electorate – the share the party received in 2000 – would vote NDP in Quebec if only five percent would guarantee them a seat.) So the figures presented here are apt to overstate the win for the Liberals and understate the seat share of other parties.

Consider first the 1993 election. Using a 5 percent viability threshold, the Liberals and Tories are viable in all provinces. The NDP falls below even five percent in Newfoundland and Labrador, Prince Edward Island, New Brunswick, Quebec, and Alberta. They won no seats in those places in 1993 under SMP. The Reform Party falls below five percent in Newfoundland and Labrador and Prince Edward Island. (They ran no candidates in Quebec.) The "other" vote meets viability only in Prince Edward Island and British Columbia. (For purposes of this simulation, "other" is treated as a single category, although in a real election each individual party would be treated as its own category and need to meet the viability threshold.) Although technically viable, the "other" party vote in PEI nets no seats, because it falls below the 22 percent needed for effective viability in a unit with only four seats. So the Liberals take 127 seats (instead of 175 plus two territorial seats), the Tories take 50 (more than the Liberals won in the real 1984 election), which is much better than two, and the NDP takes eighteen (their real take was eight plus their leader's Yukon seat), the Reform Party becomes the Official Opposition with 57 (up from 52), and the Bloc takes 38, considerably less than the 54 they won in that election.

With the threshold raised to 10 percent, the Liberals and Tories are still viable everywhere. The NDP is viable only in Manitoba, Saskatchewan, and British Columbia. Reform falls from viability in New Brunswick, and the "other" category is no longer

viable. The Liberals take 133 seats, the Tories 52, the NDP 11, Reform forms the Official Opposition with 58, and the Bloc still has 38. (There was no change in the viability of parties in Quebec from five to ten percent so the seats remain stable there.)

At 15 percent – a level sometimes proposed by political scientists as an ideal viability threshold – the Liberals are the only party viable everywhere. The Tories fall from viability in Quebec and the four western provinces. The NDP is viable only in Manitoba, Saskatchewan, and British Columbia. Reform is no longer viable in Nova Scotia. The Liberals take 142 seats. Considering two from the territories, they are just short of the 148 needed for a majority. The Tories drop dramatically to 28 seats (they had 11 in Quebec and 13 in the western provinces at 10 percent viability), the Reform Party is the Official Opposition with 64 seats, and the Bloc is at 45. (The Bloc benefited more than the Liberals from the elimination of the Tories in Quebec.)

At 20 percent, the Tories are no longer viable in Ontario. The NDP is viable only in Saskatchewan. The other parties remain viable in the same provinces they had at 15 percent. The loss of Tory seats in Ontario benefits the Liberals more than Reform. The Liberals pick up 14 and the Reform Party five. The Liberals now have a majority with 161 seats (plus two), while the Tories and NDP lose official party status with nine and four (plus one), respectively. The Reform Party takes 73 seats and the Bloc stays at 45.

Using a 25 percent viability threshold, the Liberals are still viable in every province. The Tories lose viability in Nova Scotia, giving the Liberals a sweep there. The Tories fall to six seats while the NDP holds at four (plus Yukon). The Reform Party is only viable in Alberta and British Columbia, giving the Liberals a sweep in Ontario

and Manitoba. Reform falls to 41 seats, making the Bloc the Official Opposition with 45. The Liberals now have a stunning majority of 196 seats (plus two territorial seats).

Next, consider the 1997 election. At five percent viability, the Liberals and Tories are viable everywhere. The NDP and Reform are unviable in Quebec even at five percent. No "other" parties make viability this time. (An independent was elected in Ontario.) The Liberals take 117 seats (plus two from the NWT), far fewer than the 153 they took under the current system (plus two from the NWT.) The Tories take 59, far more than the 20 they actually won. The NDP wins 34 plus Yukon, up from 20 plus Yukon under the current system. The Reform Party captures 59 seats, one fewer than they won in the real election. The Bloc takes 29, far fewer than 44.

At 10 percent, the Tories become unviable in Saskatchewan and British Columbia. The NDP loses Alberta (where it has never won a seat in a general election). Reform is no longer viable in three of the Atlantic provinces: Newfoundland and Labrador, Prince Edward Island, and Nova Scotia. These drops don't make much difference in the seat count: Liberal, 119, Tory, 56, NDP, 34, Reform, 60, and Bloc, 29.

At 15 percent, the Tories lose viability in Alberta. The NDP falls below viability in Ontario. Reform loses the last of the Atlantic provinces, New Brunswick. Buoyed mostly by seats that would have gone to the NDP in Ontario at 10 percent, the Liberals take 127 seats, the Tories 54, the NDP 23, Reform 65, and the Bloc 29.

Using a 20 percent viability threshold, neither the Tories nor the Reform Party are viable in Ontario, and the Liberals sweep the province's 103 seats. The NDP falls from viability in Prince Edward Island, New Brunswick, and British Columbia. The Liberals

ascend dramatically to a solid majority of 177 seats, the Tories drop to 31, the NDP drops to 14, Reform maintains Official Opposition status with 47, and the Bloc holds its 29.

At 25 percent viability, the Liberals fall below the threshold in Saskatchewan and Alberta, resulting in a Reform sweep of the latter province. The Tories lose viability in Quebec, and more of its seats go to the Bloc than the Liberals. The NDP and Reform Party both fall below viability in Manitoba, giving the Liberals a sweep there. The NDP also loses Newfoundland and Labrador. The Liberals take 182 seats, the Tories 14, the NDP falls just below official status with 10 seats from the simulation plus the one it won in the Yukon, Reform takes 54 and the Bloc 38.

Finally, consider the 2000 election. Even at five percent, the Liberals are the only party viable everywhere. The Tories miss viability in Saskatchewan (they didn't have candidates in three ridings, and this adversely affects their total vote, which is used in this simulation.) The NDP as usual fails to be viable in Quebec even at five percent (although the Canadian Alliance is viable there this time.) The Alliance is unviable in Prince Edward Island. Although the NDP is viable there, they do not get any seats because the de facto requirement is higher. The same thing keeps the Alliance from getting any seats in Newfoundland and Labrador even though they are technically viable there. The Liberals take 126 seats (versus 169 plus all three territories in the real election), the Tories 39 (as opposed to 12), the NDP 26 (twice as many as the 13 they won), the Canadian Alliance 76 (up from 66), and the Bloc 31 (fewer than the 38 they got in the election.) Unfathomable as it seems, the Alliance takes five seats in Quebec.

At 10 percent viability, the Tories lose viability in Quebec and British Columbia. The NDP becomes unviable in Prince Edward Island, Ontario, and Alberta. The Alliance

loses Atlantic Canada except for New Brunswick, and also Quebec. These developments boost the Liberals to 136 seats. The Tories drop to 35, the NDP takes 16, the Alliance is down one to 75, and the Bloc goes up to 36 seats.

At 15 percent, the Liberals are still viable everywhere. The Tories lose Ontario, Manitoba, and Alberta, making them viable only in the four Atlantic provinces. The NDP falls from viability in Newfoundland and Labrador, New Brunswick, and British Columbia. The Liberals rise to 152 seats, which would give them a majority without even counting the three territories. The Tories make official party status at 12, which the NDP just misses at 11. The Canadian Alliance is at 87, including 32 seats in Ontario, and the Bloc holds at 36.

At 20 percent, the only difference from 15 percent is that the Alliance is no longer viable in New Brunswick. The Tories and Liberals each pick up one of the Alliance's two New Brunswick seats.

At 25 percent, the Liberals fall from viability in Saskatchewan and Alberta. The Alliance sweeps Alberta's 26 seats. The NDP loses viability in Nova Scotia and Manitoba. Most significantly, the Alliance is no longer viable in Ontario, and the Liberals take all 103 seats. The Liberals have 179 (plus three), a few more than the 169 (plus three) they took under the current system. The Tories take 14, one more than their share under SMP. The NDP, which was viable only in Saskatchewan, winds up with a mere five seats. The Canadian Alliance takes 64, two fewer than the real election. The Bloc also took two fewer than the election results, 36.

The obvious conclusion is that PR with a high viability threshold would do a good job of replicating the current system, or of manufacturing majorities even more than the

current system does. This is especially true using the provinces as electoral units. For example, many of those parties eliminated on the basis of the total provincial vote in provinces where they are successful under the current system (e.g., the NDP in Manitoba, the Liberals in Alberta) would not be eliminated were a smaller electoral unit used. (The NDP would assuredly win seats if Winnipeg were an electoral unit; the Liberals would win seats in Edmonton and perhaps Calgary if those cities were electoral units.) Thus, it would be to PR advocates' extreme disadvantage to agree to a PR system using provinces as electoral units with a high viability threshold. It is easy to see how these mechanisms could be imposed politically should a Constitution Act amendment ever make it to Parliament. Taagepera & Shugart call electoral systems "the most easily manipulable feature of a political system."¹⁶

The Liberals also benefit from being the only party with a truly national base in the period studied. Although the Tories are also national, rather than regional, in focus, in the elections studied here, their vote was quite low in certain parts of the country. Were the Tories able to reclaim some of their former glory in the West, they would do better under PR than this simulation indicates. In a sense, the problem for all of the opposition parties is not each other but the Liberals.

Why do the Liberals and Bloc do so much better under the current system than under PR with a low viability threshold? It is because they win so many seats under SMP with unimpressive shares of the vote. Taking 35 percent in each of three ridings in the current system might get them three seats, but under PR they would likely get only one. SMP rewards parties who have their strength in specific places and penalizes parties who come in a close second in many ridings.

¹⁶ Taagepera & Shugart, p. 4.

In conclusion, a PR scheme with a 5 percent viability threshold would do the best job of replicating the national popular vote, although this does not take into consideration the likely effect of vote splintering by minor parties should PR be implemented with the threshold that low. This is why a threshold of 10 percent or 15 percent is so often regarded as ideal by political scientists; it is high enough to prevent the proliferation of fringe parties but still does a reasonably good job of translating the popular vote into seats.

There is more to proportional representation than mere mathematics, however. There are substantive issues with the concept that ought to be given more consideration than the political outcomes of certain vote patterns. First and foremost, rather than being a drawback as Amy suggests, it might be a useful function of SMP that it ordinarily produces a majority government even though parties rarely receive a majority of the popular vote. An analogue would be the U.S. electoral college, which has only failed to produce a majority three times, most recently in 1888, even though many more than three presidents have been elected without a majority of the popular vote (more so recently.) A majority government is inherently more stable than a minority government. Secondly, in a pure PR system, ridings are lost. Even those who complain most loudly about a party winning 60 percent of the seats with 41 percent of the popular vote is apt to be disaffected by the removal of one's local representative and his or her replacement by a constituent-service bureaucracy operated on the provincial level. Thirdly, the role of party leaders in selecting candidates for PR elections is apt to be greater than it is now, where local voters on the riding level usually choose candidates.

PART II – INSTANT RUNOFF VOTING

Instant Runoff Voting (IRV) is a form of preferential voting. It is essentially the PR method known as Single Transferable Vote applied in single-member districts. It is also called alternative vote or majority preferential vote. It is used to elect the lower house in the Australian Parliament. Voters use an ordinal ballot. After voting closes, the first choices are tallied. If no candidate receives a majority, the candidate who received the fewest votes is eliminated, and the ballots on which he or she was the first choice are redistributed among the other candidates according to the voters' second choice. The redistributed ballots are then counted, and these counts added to the vote totals for the remaining candidates. If no candidate has a majority, then the remaining candidate with the smallest vote total is eliminated, and the ballots on which he or she was the first choice and the ballots from the first round of redistribution on which he or she was the second choice are redistributed. In case of ballots for whom the second choice is one of the candidates who has already been eliminated, then the ballot is redistributed to the highest viable choice. The process continues candidate by candidate until someone has a majority or there is only one candidate remaining. When a ballot has had all of its choices redistributed to non-viable candidates, the ballot is said to be stranded.

For the purposes of this exercise, the process of redistribution had to be simplified somewhat. Instead of having up to five choices on every ballot, each party's ballots were given percentages for reassignment to the other parties based roughly on what would be expected if voters in those regions were asked their second choice. For example, in the eastern provinces, the second choice of Tory voters would be the Liberals, and in the

western provinces, it would be the Reform/Alliance Party. These reassignment percentages are listed in Table 2. These are, of course, merely informed speculation, but they give us a starting point to decide how IRV would work in practice. Also, rather than track each set of ballots through the process, the simulation treats redistributed ballots as if they had originally been cast for the party to which they are redistributed for purposes of subsequent redistributions. For example, 65 percent of NDP ballots are redistributed to the Liberals in British Columbia. Should these now-Liberal ballots need to be redistributed again, they would go 20 percent to the Tories and 10 percent to the Reform/Alliance Party, the same as Liberal ballots in that province. (The remaining 70 percent would be stranded, because they should have gone to the NDP, which in this example has already been eliminated.) The question of what would have been the NDP voters' third choice is disregarded in order to simplify the simulation.

The paper also assumes that 100 percent of voters will state a second choice. This is well out of line with what would happen in a real election, but this assumption allows us to discuss what would happen should every voter participate in IRV. The actual effect of IRV in a real election where fewer than 100 percent use it would be even less than this model projects.

Finally, the vote for candidates other than the five major parties are not redistributed for this simulation. They immediately become stranded votes.

The results of the IRV simulation are given in Table 3. In the 1993 general election, candidates won with a majority in 164 (of 295) ridings. This means the IRV simulation is performed for 131 ridings. The first redistribution produced majorities in 19 ridings. The second redistribution produced majorities in 60 ridings. There were 52

ridings with no majority. The candidate leading at the end of the second redistribution is considered the winner.

In the 1997 general election, candidates won with a majority in 104 (of 301) ridings. (Reapportionment took place between the 1993 and 1997 elections resulting in the increase in number of ridings.) The IRV simulation is performed for 197 ridings. The first redistribution produced majorities in 47 ridings. The second redistribution produced majorities in 102 ridings. There were 41 ridings with only two candidates left and no majority. The candidate leading is considered the winner in these ridings. A third redistribution was necessary in seven Quebec ridings. This is because, unlike in 1993, the Reform Party ran in Quebec in 1997, meaning there were five major party candidates on the ballot in many ridings, and three redistributions are necessary in some places to narrow the candidates to two. The third redistribution produced majorities in six ridings, and there was one riding with no majority, where the leader is considered the winner.

In the 2000 general election, candidates won with a majority in 155 (of 301) ridings. The IRV simulation is performed for 146 ridings. The first redistribution produced majorities in 35 ridings. The second redistribution produced majorities in 62 ridings. There were 22 ridings with only two candidates left and no majority, wherein the leader is considered the winner. A third redistribution was necessary in 27 Quebec ridings. It produced majorities in 16 ridings, and there were 11 ridings with no majority where the leading candidate is considered the winner.

The tendency of the IRV simulation is to give the Liberals an even bigger landslide in seats than they have under the current system. For most of the opposition parties, the simulation makes only a small difference in the number of seats. The

magnitude is small, and in some cases, the direction is wrong (i.e., the IRV simulation makes the proportion of seats even farther from the popular vote than the proportion of seats under the current system).

In the case of the 1993 election, the Liberals won only a net gain of three seats more through the simulation than they did in the actual election. Under the model, they take five Quebec seats from the Bloc and six seats from Reform (one in Ontario, two in Saskatchewan, and three in British Columbia). They lose two seats in Ontario and one seat each in Nova Scotia and New Brunswick to the Tories, two Alberta and one B.C. seat to the Reform Party, and one B.C. seat to the NDP. The Tories took eight seats (the four Liberal seats mentioned, and one seat in Quebec from each of the Bloc and an independent), which while still an embarrassing number, is better than the two they did get that year. The NDP takes eleven under the model instead of nine. They gain one seat from each of the Reform Party and the Liberals in British Columbia. Both figures keep them from official party status, which is twelve. The losers are the Bloc Québécois and the Reform Party, which tie at 48 seats instead of the 54 and 52 seats, respectively, they won in the real election. (This would have been an interesting scenario since they would have had to draw lots to determine who would become the Official Opposition.)

Altogether 22 seats move under this simulation.

In the case of the 1997 election, 38 seats move. In part this is because so many seats in Quebec were won with less than a majority due to the strength of the Tories there under Jean Charest. Although the Tories won only six seats, the redistribution of their vote benefits the Liberals more than the Bloc. Under the simulation, the Liberals move from the narrow majority (155 of 301) that they took in the real election to a landslide of

173 seats. Almost all of the net gain is accounted for in the 17 seats they gain from the Bloc under the simulation. They also take four seats in Atlantic Canada from the NDP (two in Nova Scotia, where the Liberals were wiped out in 1997, and two in New Brunswick). They take three seats on the prairies (one in each province) from Reform, and the one independent seat, John Nunziata's win in Toronto. They lose six seats to the Tories: two in New Brunswick, and four in Ontario. The Tories are also big winners under the IRV simulation, taking 31 seats instead of 20. (This is slightly more than 10 percent of seats, still far fewer than the 19 percent of the vote they got.) In addition to the six from the Liberals, they also take three seats from the Bloc and two Nova Scotia seats from the NDP. They experience no losses. Besides losing seats to both the Liberals and Progressive Conservatives, the NDP gains a seat in Saskatchewan and two in British Columbia from the Reform Party. Reform loses six seats, but they still qualify as the Official Opposition, mostly because the Bloc is so greatly reduced at the hands of the traditional parties.

In the 2000 election, the movement under the IRV simulation is more subtle, in part because so many more seats were won with majorities. With fewer seats included in the redistribution scenario, there is less room for change. Only 17 seats change hands under the IRV simulation. The Liberals take six seats from the Bloc and one of its two Ontario seats from the Alliance. They take two Nova Scotia seats and its only Ontario seat from the NDP. This does not mean the Liberals sweep Ontario, however, because they lose two Ontario seats to the Tories, and also a seat in Nova Scotia and three in New Brunswick, giving both the Liberals and Tories a net gain of five seats under the simulation. The NDP has a net loss of one, because in addition to their loss to the

Liberals, they take two seats in Saskatchewan from the Alliance. The Alliance's net loss is three, and the Bloc's is six.

Here is a brief description of where these ridings are. For the most part, they are rural ridings. In 2000, the Bloc loses two suburban Quebec City ridings and one suburban Montreal riding. They lose three rural ridings, one in the Outaouais, one in the St. Lawrence Valley, and one on the Gaspé Peninsula. The Alliance loses a suburban fringe riding in Ottawa to the Liberals and two urban/rural fringe ridings in Saskatchewan to the NDP. The NDP loses two ridings in greater Halifax and one in Windsor to the Liberals. The Tories pick up two rural ridings in Atlantic Canada from the Liberals and also Fredericton. They also gain one rural riding and one small-city riding (Oxford) in Ontario.

In 1997, the NDP revival in Nova Scotia and New Brunswick would not have happened. The NDP would have won only one of four ridings in Halifax and one of the two Cape Breton ridings and neither of the New Brunswick ridings. The Tories and not the Liberals would have won in Fredericton and Moncton. The Tories also would have deprived the Liberals of four rural and small-city Ontario ridings. The Tories would have defeated the Bloc in three rural ridings between Montreal and Quebec City. The 16 ridings the Bloc would have lost to the Liberals include five of the six ridings in greater Quebec City, the two Laval ridings the Liberals didn't already win, two ridings exurban to Montreal, three rural ridings between Montreal and Quebec City, Trois-Rivières riding, and three rural ridings east of Quebec City. The Liberals would take from Reform one rural/urban fringe riding in each of Manitoba and Saskatchewan and one riding in Calgary (the only inner city riding that moves, besides those in Quebec City and the

riding that was won by an independent in Toronto). The NDP would take from Reform a rural/urban fringe riding in Saskatchewan, a riding in greater Vancouver, and a rural riding in British Columbia.

It is reasonable to believe that the IRV process would have made little or no difference in 1993 and 2000 given the share of people who would make use of it is apt to be much less than the 100 percent assumed in the model. Since the model augmented the winning Liberal seat count in all three of the simulations -- and made it dramatically higher in the close 1997 election -- it is worth believing that instituting instant runoff voting would either be useless or counterproductive in taming the tendency of the Canadian electoral system to produce landslide majorities in the House of Commons on the basis of mere plurality wins in the popular vote.

Why is this so? Part of it is explained in the redistribution percentages, part is explained in the places the IRV simulation was done, and part is explained in the order the vote was redistributed. First, not only are the Liberals the first choice of more Canadian voters than any other party, they are the second choice of more voters than any other party too. This is true for Tory voters in the eastern half of the country and NDP voters nationwide. In the rare instances when the Bloc takes third, it is in ridings where voters favor Liberals more than Conservatives.

Second, the Alliance and the Bloc tend to win ridings with large majorities. The IRV process is not used in ridings where one party wins a majority in the voting. So for those two parties, the process can't help them win huge numbers of seats. The IRV process is much more salient in areas where the traditional parties are more competitive. This includes most of the ridings in New Brunswick, Nova Scotia, Manitoba, and

Saskatchewan. While the Reform/Alliance Party is prosperous in the last two provinces, they have less of a grip there than in Alberta and even British Columbia.

Third, the order in which the parties are redistributed tends to benefit the Liberals. In most of Ontario, the NDP takes fourth place. The model assumes that the Liberals are the second choice of 70 percent of Ontario NDP voters. So these redistributed NDP votes can put the Liberals over the top in a riding before the so-called "right of center" vote can be combined to the benefit of either the Tories or Alliance.

In application, there is also the practical problem of holding the election results in each riding until the first choices have been tallied and reported to the chief returning officer for the riding, who would then determine if a majority had been achieved. If not, the chief returning officer would then instruct the local returning officers (election judges) to redistribute the last place candidate, and the process would repeat until there was a majority. Many would have trouble justifying even the expense of this when the impact on the outcome is apt to be small.

In summary, while IRV would produce a majority winner in more ridings than happens under the current system, it is unlikely there would be much change in outcome from the current system, and if there were, it would not quell the problem of manufactured majorities.

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1993 Canadian General Election

	Actual seats							Actual seats					
	L	PC	NDP	R	BQ	OTHER	TOTAL	L	PC	NDP	R	BQ	OTH
NF	155237	61488	8080	2392		3393	230590	7					
PE	43412	23126	123	744		4817	72222	4					
NS	235684	106411	30907	60377		20015	453394	11					
NB	215769	107583	18694	32628		10425	385099	9	1				
QC	1235868	506683	57339		1846024	98287	3744201	19	1			54	1
ON	2583065	859596	291658	982691		163206	4880216	98			1		
MB	243214	64515	90091	120934		22302	541056	12		1	1		
SK	156216	55197	129649	132587		13223	486872	5		5	4		
AB	301774	175556	49097	629402		48000	1203829	4			22		
BC	458802	219838	252257	593599		107498	1631994	6		2	24		
TERR	18911	6429	8072	3891		895	38198	2		1			
	5647952	2186422	935967	2559245	1846024	492061	13667671	177	2	9	52	54	1
	41%	16%	7%	19%	14%	4%		60%	1%	3%	18%	18%	0%

Votes by province and party above 5% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	155237	61488	OUT	OUT	OUT	OUT
PE	43412	23126	OUT	OUT	OUT	4817
NS	235684	106411	30907	60377	OUT	OUT
NB	215769	107583	OUT	32628	OUT	OUT
QC	1235868	506683	OUT	OUT	1846024	OUT
ON	2583065	859596	291658	982691	OUT	OUT
MB	243214	64515	90091	120934	OUT	OUT
SK	156216	55197	129649	132587	OUT	OUT
AB	301774	175556	OUT	629402	OUT	OUT
BC	458802	219838	252257	593599	OUT	107498

Proportional seats from viable votes, 5%

SEATS	L	PC	NDP	R	BQ	OTH
7	5	2				
4	3	1				0
11	6	3	1	1		
10	6	3		1		
75	26	11			38	
99	54	18	6	21		
14	7	2	2	3		
14	4	2	4	4		
26	7	4		15		
32	9	4	5	12		2
292	127	50	18	57	38	2
	43%	17%	6%	19%	13%	

Table 1

Votes by province and party above 10% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	155237	61488	OUT	OUT	OUT	OUT
PE	43412	23126	OUT	OUT	OUT	OUT
NS	235684	106411	OUT	60377	OUT	OUT
NB	215769	107583	OUT	OUT	OUT	OUT
QC	1235868	506683	OUT	OUT	1846024	OUT
ON	2583065	859596	OUT	982691	OUT	OUT
MB	243214	64515	90091	120934	OUT	OUT
SK	156216	55197	129649	132587	OUT	OUT
AB	301774	175556	OUT	629402	OUT	OUT
BC	458802	219838	252257	593599	OUT	OUT

Proportional seats from viable votes, 10%

SEATS	L	PC	NDP	R	BQ	OTH
7	5	2				
4	3	1				
11	6	3		2		
10	7	3				
75	26	11				38
99	58	19		22		
14	7	2	2	3		
14	4	2	4	4		
26	7	4		15		
32	10	5	5	12		
292	133	52	11	58	38	0
	45%	18%	4%	20%	13%	

Votes by province and party above 15% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	155237	61488	OUT	OUT	OUT	OUT
PE	43412	23126	OUT	OUT	OUT	OUT
NS	235684	106411	OUT	OUT	OUT	OUT
NB	215769	107583	OUT	OUT	OUT	OUT
QC	1235868	OUT	OUT	OUT	1846024	OUT
ON	2583065	859596	OUT	982691	OUT	OUT
MB	243214	OUT	90091	120934	OUT	OUT
SK	156216	OUT	129649	132587	OUT	OUT
AB	301774	OUT	OUT	629402	OUT	OUT
BC	458802	OUT	252257	593599	OUT	OUT

Proportional seats from viable votes, 15%

SEATS	L	PC	NDP	R	BQ	OTH
7	5	2				
4	3	1				
11	8	3				
10	7	3				
75	30					45
99	58	19		22		
14	7		3	4		
14	5		4	5		
26	8			18		
32	11		6	15		
292	142	28	13	64	45	0
	49%	10%	5%	21%	15%	

Votes by province and party above 20% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	155237	61488	OUT	OUT	OUT	OUT
PE	43412	23126	OUT	OUT	OUT	OUT
NS	235684	106411	OUT	OUT	OUT	OUT
NB	215769	107583	OUT	OUT	OUT	OUT
QC	1235868	OUT	OUT	OUT	1846024	OUT
ON	2583065	OUT	OUT	982691	OUT	OUT
MB	243214	OUT	OUT	120934	OUT	OUT
SK	156216	OUT	129649	132587	OUT	OUT
AB	301774	OUT	OUT	629402	OUT	OUT
BC	458802	OUT	OUT	593599	OUT	OUT

Proportional seats from viable votes, 20%

SEATS	L	PC	NDP	R	BQ	OTH
7	5	2				
4	3	1				
11	8	3				
10	7	3				
75	30					45
99	72			27		
14	9			5		
14	5		4	5		
26	8			18		
32	14			18		
292	161	9	4	73	45	0
	55%	3%	1%	25%	15%	

Votes by province and party above 25% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	155237	61488	OUT	OUT	OUT	OUT
PE	43412	23126	OUT	OUT	OUT	OUT
NS	235684	OUT	OUT	OUT	OUT	OUT
NB	215769	107583	OUT	OUT	OUT	OUT
QC	1235868	OUT	OUT	OUT	1846024	OUT
ON	2583065	OUT	OUT	OUT	OUT	OUT
MB	243214	OUT	OUT	OUT	OUT	OUT
SK	156216	OUT	129649	132587	OUT	OUT
AB	301774	OUT	OUT	629402	OUT	OUT
BC	458802	OUT	OUT	593599	OUT	OUT

Proportional seats from viable votes, 25%

SEATS	L	PC	NDP	R	BQ	OTH
7	5	2				
4	3	1				
11	11					
10	7	3				
75	30					45
99	99					
14	14					
14	5		4	5		
26	8			18		
32	14			18		
292	196	6	4	41	45	0
	67%	2%	1%	14%	15%	

Table 1

1997 Canadian General Election

	Actual seats						TOTAL	Actual seats							
	L	PC	NDP	R	BQ	OTHER		L	PC	NDP	R	BQ	OTH		
NF	84657	82214	49125	5632		1952	223580	5	2						
PE	31595	26998	10675	1056		219	70543	4							
NS	132539	143854	142081	45207		3689	467370		5	6					
NB	131246	139431	73249	52270		2519	398715	3	5	2					
QC	1342667	811410	71558	10767	1385821	37772	3659995	25	6				44		
ON	2294593	871616	495155	886787		85549	4633700	101	1						1
MB	163226	84511	110181	112863		5162	475943	6	1	4	3				
SK	109200	34460	136555	159332		2739	442286	1		5	8				
AB	253983	152309	60633	577551		12444	1056920	2			24				
BC	438769	94550	277006	655699		56500	1522524	6		3	25				
TERR	11902	5352	8291	5906		2937	34388	2		1					
	4994377	2446705	1434509	2513070	1385821	211482	12985964	155	20	21	60	44	44	1	
	38%	19%	11%	19%	11%	2%		51%	7%	7%	20%	15%	15%	0%	

Votes by province and party above 5% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	84657	82214	49125	OUT	OUT	OUT
PE	31595	26998	10675	OUT	OUT	OUT
NS	132539	143854	142081	45207	OUT	OUT
NB	131246	139431	73249	52270	OUT	OUT
QC	1342667	811410	OUT	OUT	1385821	OUT
ON	2294593	871616	495155	886787	OUT	OUT
MB	163226	84511	110181	112863	OUT	OUT
SK	109200	34460	136555	159332	OUT	OUT
AB	253983	152309	60633	577551	OUT	OUT
BC	438769	94550	277006	655699	OUT	OUT

Proportional seats from viable votes, 5%

SEATS	L	PC	NDP	R	BQ	OTH
7	3	3	1			
4	2	1	1			
11	3	4	3	1		
10	3	4	2	1		
75	29	17			29	
103	52	20	11	20		
14	5	3	3	3		
14	4	1	4	5		
26	6	4	2	14		
34	10	2	7	15		
298	117	59	34	59	29	0
	39%	19%	11%	20%	10%	

Table 1

Votes by province and party above 10% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	84657	82214	49125	OUT	OUT	OUT
PE	31595	26998	10675	OUT	OUT	OUT
NS	132539	143854	142081	OUT	OUT	OUT
NB	131246	139431	73249	52270	OUT	OUT
QC	1342667	811410	OUT	OUT	1385821	OUT
ON	2294593	871616	495155	886787	OUT	OUT
MB	163226	84511	110181	112863	OUT	OUT
SK	109200	OUT	136555	159332	OUT	OUT
AB	253983	152309	OUT	577551	OUT	OUT
BC	438769	OUT	277006	655699	OUT	OUT

Proportional seats from viable votes, 10%

SEATS	L	PC	NDP	R	BQ	OTH
7	3	3	1			
4	2	1	1			
11	3	4	4			
10	3	4	2	1		
75	29	17			29	
103	52	20	11	20		
14	5	3	3	3		
14	4		5	5		
26	7	4		15		
34	11		7	16		
298	119	56	34	60	29	0
	40%	18%	11%	21%	10%	

Votes by province and party above 15% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	84657	82214	49125	OUT	OUT	OUT
PE	31595	26998	10675	OUT	OUT	OUT
NS	132539	143854	142081	OUT	OUT	OUT
NB	131246	139431	73249	OUT	OUT	OUT
QC	1342667	811410	OUT	OUT	1385821	OUT
ON	2294593	871616	OUT	886787	OUT	OUT
MB	163226	84511	110181	112863	OUT	OUT
SK	109200	OUT	136555	159332	OUT	OUT
AB	253983	OUT	OUT	577551	OUT	OUT
BC	438769	OUT	277006	655699	OUT	OUT

Proportional seats from viable votes, 15%

SEATS	L	PC	NDP	R	BQ	OTH
7	3	3	1			
4	2	1	1			
11	3	4	4			
10	4	4	2			
75	29	17			29	
103	58	22		23		
14	5	3	3	3		
14	4		5	5		
26	8			18		
34	11		7	16		
298	127	54	23	65	29	0
	42%	18%	8%	22%	10%	

Votes by province and party above 20% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	84657	82214	49125	OUT	OUT	OUT
PE	31595	26998	OUT	OUT	OUT	OUT
NS	132539	143854	142081	OUT	OUT	OUT
NB	131246	139431	OUT	OUT	OUT	OUT
QC	1342667	811410	OUT	OUT	1385821	OUT
ON	2294593	OUT	OUT	OUT	OUT	OUT
MB	163226	OUT	110181	112863	OUT	OUT
SK	109200	OUT	136555	159332	OUT	OUT
AB	253983	OUT	OUT	577551	OUT	OUT
BC	438769	OUT	OUT	655699	OUT	OUT

Proportional seats from viable votes, 20%

SEATS	L	PC	NDP	R	BQ	OTH
7	3	3	1			
4	2	2				
11	3	4	4			
10	5	5				
75	29	17				29
103	103					
14	6		4	4		
14	4		5	5		
26	8			18		
34	14			20		
298	177	31	14	47	29	0
	59%	10%	5%	16%	10%	

Votes by province and party above 25% viability threshold

	L	PC	NDP	R	BQ	OTHER
NF	84657	82214	OUT	OUT	OUT	OUT
PE	31595	26998	OUT	OUT	OUT	OUT
NS	132539	143854	142081	OUT	OUT	OUT
NB	131246	139431	OUT	OUT	OUT	OUT
QC	1342667	OUT	OUT	OUT	1385821	OUT
ON	2294593	OUT	OUT	OUT	OUT	OUT
MB	163226	OUT	OUT	OUT	OUT	OUT
SK	OUT	OUT	136555	159332	OUT	OUT
AB	OUT	OUT	OUT	577551	OUT	OUT
BC	438769	OUT	OUT	655699	OUT	OUT

Proportional seats from viable votes, 25%

SEATS	L	PC	NDP	R	BQ	OTH
7	4	3				
4	2	2				
11	3	4	4			
10	5	5				
75	37					38
103	103					
14	14					
14			6	8		
26				26		
34	14			20		
298	182	14	10	54	38	0
	61%	5%	3%	18%	13%	

Table 1

2000 Canadian General Election

								Actual seats					
	L	PC	NDP	CA	BQ	OTHER	TOTAL	L	PC	NDP	CA	BQ	OTH
NF	103103	79157	29993	8837		8408	229498	5	2				
PE	35021	28610	6714	3719		400	74464	4					
NS	158870	126557	104277	41752		3813	435269	5	3	3			
NB	159803	116980	44778	60277		1174	383012	5	4	1			
QC	1529642	192153	63611	212874	1377727	80891	3456898	36	1				38
ON	2292075	642438	368709	1051209		98174	4452605	100		1	2		
MB	158713	70635	101741	148293		8450	487832	5	1	4	4		
SK	89697	20855	113626	207004		2515	433697	2		2	10		
AB	263008	169093	68363	739514		16021	1255999	2	1		23		
BC	446624	117614	182993	797518		69973	1614722	5		2	27		
TERR	15475	2906	9063	5932		402	33778	3					
	5252031	1566998	1093868	3276929	1377727	290221	12857774	172	12	13	66	38	
	41%	12%	9%	25%	11%	2%		57%	4%	4%	22%	13%	0%

Votes by province and party above 5% viability threshold

	L	PC	NDP	CA	BQ	OTHER
NF	103103	79157	29993	8837		OUT
PE	35021	28610	6714	OUT		OUT
NS	158870	126557	104277	41752		OUT
NB	159803	116980	44778	60277		OUT
QC	1529642	192153	OUT	212874	1377727	OUT
ON	2292075	642438	368709	1051209		OUT
MB	158713	70635	101741	148293		OUT
SK	89697	OUT	113626	207004		OUT
AB	263008	169093	68363	739514		OUT
BC	446624	117614	182993	797518		OUT

Proportional seats from viable votes, 5%

SEATS	L	PC	NDP	CA	BQ	OTH
7	3	3	1	0		
4	2	2	0			
11	4	3	3	1		
10	4	3	1	2		
75	35	4		5	31	
103	54	15	9	25		
14	5	2	3	4		
14	3		4	7		
26	6	4	1	15		
34	10	3	4	17		
298	126	39	26	76	31	0
	42%	13%	9%	26%	10%	

Votes by province and party above 10% viability threshold

	L	PC	NDP	CA	BQ	OTHER
NF	103103	79157	29993	OUT		OUT
PE	35021	28610	OUT	OUT		OUT
NS	158870	126557	104277	OUT		OUT
NB	159803	116980	44778	60277		OUT
QC	1529642	OUT	OUT	OUT	1377727	OUT
ON	2292075	642438	OUT	1051209		OUT
MB	158713	70635	101741	148293		OUT
SK	89697	OUT	113626	207004		OUT
AB	263008	169093	OUT	739514		OUT
BC	446624	OUT	182993	797518		OUT

Proportional seats from viable votes, 10%

SEATS	L	PC	NDP	CA	BQ	OTH
7	3	3	1			
4	2	2				
11	4	4	3			
10	4	3	1	2		
75	39				36	
103	59	17		27		
14	5	2	3	4		
14	3		4	7		
26	6	4		16		
34	11		4	19		
298	136	35	16	75	36	0
	46%	11%	5%	25%	12%	

Votes by province and party above 15% viability threshold

	L	PC	NDP	CA	BQ	OTHER
NF	103103	79157	OUT	OUT		OUT
PE	35021	28610	OUT	OUT		OUT
NS	158870	126557	104277	OUT		OUT
NB	159803	116980	OUT	60277		OUT
QC	1529642	OUT	OUT	OUT	1377727	OUT
ON	2292075	OUT	OUT	1051209		OUT
MB	158713	OUT	101741	148293		OUT
SK	89697	OUT	113626	207004		OUT
AB	263008	OUT	OUT	739514		OUT
BC	446624	OUT	OUT	797518		OUT

Proportional seats from viable votes, 15%

SEATS	L	PC	NDP	CA	BQ	OTH
7	4	3				
4	2	2				
11	4	4	3			
10	5	3		2		
75	39				36	
103	71			32		
14	5		4	5		
14	3		4	7		
26	7			19		
34	12			22		
298	152	12	11	87	36	0
	51%	4%	3%	29%	12%	

Votes by province and party above 20% viability threshold

	L	PC	NDP	CA	BQ	OTHER
NF	103103	79157	OUT	OUT		OUT
PE	35021	28610	OUT	OUT		OUT
NS	158870	126557	104277	OUT		OUT
NB	159803	116980	OUT	OUT		OUT
QC	1529642	OUT	OUT	OUT	1377727	OUT
ON	2292075	OUT	OUT	1051209		OUT
MB	158713	OUT	101741	148293		OUT
SK	89697	OUT	113626	207004		OUT
AB	263008	OUT	OUT	739514		OUT
BC	446624	OUT	OUT	797518		OUT

Proportional seats from viable votes, 20%

SEATS	L	PC	NDP	CA	BQ	OTH
7	4	3				
4	2	2				
11	4	4	3			
10	6	4				
75	39					36
103	71			32		
14	5		4	5		
14	3		4	7		
26	7			19		
34	12			22		
298	153	13	11	85	36	0
	52%	4%	3%	29%	12%	

Votes by province and party above 25% viability threshold

	L	PC	NDP	CA	BQ	OTHER
NF	103103	79157	OUT	OUT		OUT
PE	35021	28610	OUT	OUT		OUT
NS	158870	126557	OUT	OUT		OUT
NB	159803	116980	OUT	OUT		OUT
QC	1529642	OUT	OUT	OUT	1377727	OUT
ON	2292075	OUT	OUT	OUT		OUT
MB	158713	OUT	OUT	148293		OUT
SK	OUT	OUT	113626	207004		OUT
AB	OUT	OUT	OUT	739514		OUT
BC	446624	OUT	OUT	797518		OUT

Proportional seats from viable votes, 25%

SEATS	L	PC	NDP	CA	BQ	OTH
7	4	3				
4	2	2				
11	6	5				
10	6	4				
75	39					36
103	103					
14	7			7		
14			5	9		
26				26		
34	12			22		
298	179	14	5	64	36	0
	60%	5%	2%	21%	12%	

Table 2

Party	Region		LIB	PC	NDP	REF	BQ
Lib	Atlantic			40%	45%	15%	
	Quebec	1993		80%	5%		15%
		1997		80%	5%	5%	10%
	Man-Sask			40%	40%	20%	
	Alberta			30%	60%	10%	
	Brit. Columbia			20%	75%	10%	
	Territories			30%	55%	15%	
PC	Atlantic		50%		20%	30%	
	Quebec	1993	70%		10%		20%
		1997	70%		5%	5%	15%
		2000	60%		5%	5%	30%
	Ontario		50%		10%	40%	
	Man-Sask		40%		20%	40%	
	Alberta		25%		5%	70%	
	Brit. Columbia		20%		15%	65%	
	Territories		45%		35%	20%	
NDP	Atlantic		65%	30%		5%	
	Quebec	1993	60%	30%			10%
		1997	60%	30%		5%	5%
		2000	70%	20%		5%	5%
	Ontario		70%	25%		5%	
	Man-Sask		70%	15%		15%	
	Alberta		70%	5%		25%	
	Brit. Columbia		65%	25%		10%	
Territories		70%	15%		15%		
Ref/CA	Atlantic		15%	80%	5%		
	Quebec	1997	20%	60%	5%		15%
		2000	40%	40%	5%		15%
	Ontario		10%	80%	10%		
	Man-Sask		5%	80%	15%		
	Brit. Columbia		5%	55%	40%		
	Territories	1993, 1997	15%	65%	20%		
		2000	25%	65%	20%		
BQ	Quebec	1997	45%	45%	5%	5%	
		2000	50%	40%	5%	5%	

Table 3

POPULAR VOTE

ACTUAL SEATS

SEATS UNDER IRV MODEL

1993

	L	PC	NDP	R	BQ	OTHER
NF	155237	61488	8080	2392		3393
PE	43412	23126	123	744		4817
NS	235684	106411	30907	60377		20015
NB	215769	107583	18694	32628		10425
QC	1235868	506683	57339		1846024	98287
ON	2583065	859596	291658	982691		163206
MB	243214	64515	90091	120934		22302
SK	156216	55197	129649	132587		13223
AB	301774	175556	49097	629402		48000
BC	458802	219838	252257	593599		107498
TERR	18911	6429	8072	3891		895
	5647952	2186422	935967	2559245	1846024	492061
	41%	16%	7%	19%	14%	4%

	L	PC	NDP	R	BQ	OTH
7						
4						
11						
9	1					
19	1				54	1
98				1		
12			1	1		
5			5	4		
4				22		
6			2	24		
2			1			
177	2	9	52	54	1	
60%	1%	3%	18%	18%	0%	

	L	PC	NDP	R	BQ	OTH
7						
4						
10	1					
8	2					
24	3				48	0
97	2			0		
12			1	1		
7			5	2		
2				24		
7			4	21		
2			1			
180	8	11	48	48	48	0
61%	3%	4%	16%	16%	16%	0%
	W	R	R	W	R	

1997

	L	PC	NDP	R	BQ	OTHER
NF	84657	82214	49125	5632		1952
PE	31595	26998	10675	1056		219
NS	132539	143854	142081	45207		3689
NB	131246	139431	73249	52270		2519
QC	1342667	811410	71558	10767	1385821	37772
ON	2294593	871616	495155	886787		85549
MB	163226	84511	110181	112863		5162
SK	109200	34460	136555	159332		2739
AB	253983	152309	60633	577551		12444
BC	438769	94550	277006	655699		56500
TERR	11902	5352	8291	5906		2937
	4994377	2446705	1434509	2513070	1385821	211482
	38%	19%	11%	19%	11%	2%

	L	PC	NDP	R	BQ	OTH
5	2					
4						
		5	6			
3		5	2			
25		6			44	
101		1				1
6		1	4	3		
1			5	8		
2				24		
6			3	25		
2			1			
155	20	21	60	44	1	
51%	7%	7%	20%	15%	0%	

	L	PC	NDP	R	BQ	OTH
5	2					
4						
2	7	2				
3	7	0				
41	9				25	
98	5					0
7	1	4	2			
2		6	6			
3			23			
6		5	23			
2		1				
173	31	18	54	25	25	0
57%	10%	6%	18%	8%	8%	0%
	W	R	W	R	R	

Table 3

2000

	L	PC	NDP	CA	BQ	OTHER
NF	103103	79157	29993	8837		8408
PE	35021	28610	6714	3719		400
NS	158870	126557	104277	41752		3813
NB	159803	116980	44778	60277		1174
QC	1529642	192153	63611	212874	1377727	80891
ON	2292075	642438	368709	1051209		98174
MB	158713	70635	101741	148293		8450
SK	89697	20855	113626	207004		2515
AB	263008	169093	68363	739514		16021
BC	446624	117614	182993	797518		69973
TERR	15475	2906	9063	5932		402
	5252031	1566998	1093868	3276929	1377727	290221
	41%	12%	9%	25%	11%	2%

L	PC	NDP	CA	BQ	OTH
5	2				
4					
5	3	3			
5	4	1			
36	1			38	
100		1	2		
5	1	4	4		
2		2	10		
2	1		23		
5		2	27		
3					
172	12	13	66	38	0
57%	4%	4%	22%	13%	0%

L	PC	NDP	CA	BQ	OTH
5	2				
4					
6	4	1			
3	6	1			
42	1				32
100	2	0	1		
5	1	4	4		
2		4	8		
2	1		23		
5		2	27		
3					
177	17	12	63	32	0
59%	6%	4%	21%	11%	0%
W	R	W	W	R	

W/R = Direction of change under simulation: Right or Wrong