Voting Methods for Municipal Elections: Propaganda, Field Experiments and what USA voters want from an Election Algorithm

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Electing 1 winner among 3 or more candidates.

- **Many election algorithms, no consensus on which is best. Classic voting theory: Plurality is worst. But classic assumptions don't fit municipal elections reality.**

- **In the public sphere, Plurality's faults are well understood. Civic leaders focus on political and social factors affecting elections, but they disregard quantitative issues.**

- **U.S. cities and counties have been experimenting with Instant Runoff Voting (IRV) for municipal elections.** People want to replace Plurality Voting. The national FairVote organization successfully promotes IRV.

The algorithm can determine the winner

Number of Voters	Candidate Ranking
10	A>C>B
12	B>C>A
4	C>A>B

- Plurality voting : B wins!

- Borda count:
  A has 2(10)+1(4)+0(12) = 24
  B has 2(12)+1(0)+0(14) = 24
  C has 2(4)+1(22)+0(0) = 30 C wins!

- Instant run-off (IRV):
  In the first round C is eliminated.
  In round 2 A wins!

	Round 1	Round 2
A	10	14
B	12	12
C	4	--

Classic criteria – Public perception

A typical introduction to voting algorithms includes classic criteria and Arrow's Impossibility Theorem. Helpful for engaging public?

- **Independence of Irrelevant Alternatives (IIA)**: It is impossible for Candidate B to switch from losing to winning unless at least one voter reverses his or her preference ordering of Candidate B and the election winner A. For municipal elections, the number of voters is not fixed
- **Pareto condition:** If every voter prefers Candidate A to Candidate B, then Candidate B is not among the winners of the election. Of course.
- **Condorcet winner criterion (CWC):** If A beats all other candidates in pairwise comparisons, then A wins the election. That makes sense.
- **Monotonicity:** Receiving more first place votes or a higher ranking cannot cause an otherwise winning candidate to lose an election. Similarly, receiving fewer first place votes or a lesser ranking can not cause an otherwise losing candidate to win. I stopped listening when you said "Monotonicity".

Opinion letters that fall flat

… It is unfortunate that the discussion of voting methods [Plurality vs. IRV] doesn't make use of the extensive mathematical research on voting. … Mathematicians have proven that …

… While instant run-off is some improvement on plurality voting, the Borda count is better still. … If we reform our voting system, we should choose the mathematically best system, the Borda count. …

… Those wanting to learn more about voting systems can consult *Decisions and Elections: Explaining the Unexpected* by Don Saari. …

Assumptions about Voters and Candidates

- Gymnastics competitions .vs. Municipal elections
- Fixed number of expert voters; Clear criteria for judging candidates. Partially informed, variable number of voters; Candidate qualifications cloaked.
- Issue: insincere voters; insincere candidates and political consultants.

Plurality's negatives are widely known.

- Winners elected with minority support. In 1998, Jesse Ventura (Reform Party) unexpectedly won a three-way gubernatorial race with 37% of the vote.
- Duluth mayoral primary with 8 candidates: Two candidates with the same popular platform split the votes of their shared supporters, so that neither persisted to the run-off election.
- At least five U S presidential elections were decided by spoilers. In 2000, a consumer & environmental advocate (Ralph Nader) elected the favored candidate of corporate America. (George Bush)" [W. Poundstone, 2008, ***Gaming the Vote***]

Claims about IRV – What voters want.

Rank Choice Voting (Instant Run-off Voting) www.fairvote.org

- Upholds the principle of majority rule
- Solves the "spoiler" problem and gives voters more choice
- Increases voter participation
- Opens the political process to new voices
- Promotes more diverse representation
- Reduces negative campaigning and promotes civil, issue oriented campaigns
- Mitigates political polarization
- Combines two elections [primary and runoff] in one so that voters only have to make one trip to the polls and tax payers have to pay for only one election (This is the only true claim on this page.)
- Reduces the cost of campaigning

Citizen perceptions about IRV

- Lots of support + no organized opposition

  $\Longrightarrow$ It must be good. Even if claims are partially true, IRV will be better than Plurality.
- People infer that all ballot information is used to determine the winner. It must because IRV solves the spoiler problem.
- People assume that in the final round, all voters preferences between the remaining to candidates are taken into account. Majority winner.
- People assume IRV is monotonic. How could it not be?

Examples counter claims

- **Majority candidate C loses.**
  B is a spoiler.

In municipal elections voters only rank candidates they approve of.

% voters	Rankings
40	A A wins
31	B > C
29	C

- **2011 San Francisco mayoral election: 16 candidates, negative campaigning, voters ranked 3 candidates, winner had 43%. Average voter turnout for IRV (2004 – 2011) was not increased from pre-IRV (1960 – 2004).**

- **Aspen Colorado: "Plurality winner was IRV winner every time, making the extra month of campaigning seem like a money-sucking, brain damage-inducing waste of time."**
  http://www.aspendailynews.com/section/home/143505

Repeal of IRV

- Burlington, Vermont (IRV mayoral elections in 2006 and 2009)

  http://scorevoting.net/Burlington.html Repealed in 2010.

- Cary, North Carolina (Used in 2007)

  "Ballots were mis-sorted, simple calculator mistakes were made and a non-public recount turned up missing votes. The winner did not receive the 50 percent plus one vote majority advocates claimed IRV would ensure in a single election."

  http://votingmatters.wordpress.com/2009/05/17/cary-nc-tries-irv-then-says-no-more/

- Pierce County, Washington (IRV in 2008, 63% voted to repeal it in 2009)

  "Opponents say ranked-choice voting is confusing and costly. By the end of this year Pierce County will have spent $2.3 million on the voting system. The county has budgeted another $500,000 for next year."
  http://www.thenewstribune.com/2009/11/04/940959/voters-changing-their-minds-on.html#ixzz1EuKcFyO9

  Aspen, Colorado . In 2007, 70% voted for IRV. One IRV election in 2009. In 2010, 65% voted it out.

  http://www.aspendailynews.com/section/home/143505

Burlington, Vermont 2009 Mayoral Election

Number of Voters	Relative top candidate rankings
1332	M>K>W
767	M>W>K
455	M
2043	K>M>W
371	K>W>M
568	K
1513	W>M>K
495	W>K>M
1289	W

CANDIDATE	Round 1	Round 2	Round 3
Kiss	2585 (29%)	2981 (33%)	4313 (48%)
Wright	2951 (33%)	3294 (37%)	4061 (45%)
Montroll	2063 (23%)	2554 (28%)	
Smith	1306		
Simpson	35		
Write-ins	36		
Exhausted	0	147	602
Total	8976	8976	8976

http://www.burlingtonvotes.org/20090303/

IRV winner: Kiss with 48%

Most 1st place rankings: Wright; Who had the most approval? Montroll, not Kiss.

Head-to-head winner: Montroll

Anthony Gierzynski (UVM) wrote that Montroll would have won the Plurality election.

2012 San Francisco Repeal Quagmire

- San Francisco blues: too many candidates, voter fatigue, expensive elections, negative campaigning.
- Enough voters wanted to repeal IRV, but leaders couldn't agree on ballot initiative– return to Plurality with run-off; Plurality & no primary; IRV primary then run-off
- IRV supporters hope problems will be resolved over time.

Ties and near-ties lead to recounts

- 2008 Franken .vs. Coleman senate election tie dispute left Minnesota short a U S senator for over 6 months!
- Possibility of a Tie at each round of IRV elimination

CANDIDATE	Round 1	Round 2	Round 3
A	2585	2585	4075
B	2951	2980	4074
C	1307	2584	
D	1306		
Total	8149	8149	8149

- A few late absentee or disputed ballots can cause the elimination of a different candidate in some round, which can change who wins.

Non-monotonicity and lawsuits (envisioned)

Percent of Voters	Candidate Ranking
44%	A (liberals)
27%	B>A (social conservatives)
26%	C>B (economic conservatives)
3%	C>A (intellectuals)

Candidate	Round 1	Round 2
A (Democrat)	44%	71%
B (Republican)	27%	-
C (Independent)	29%	29%

Two weeks before the election C stumbles, causing C>A voters to switch to A.

Number of Voters	Candidate Ranking
47%	A
27%	B>A
26%	C>B

Candidate	Round 1	Round 2
A	8	8 (47%)
B	5	9 (53%)
C	4	-

B wins and A sues for a recount!

Perhaps a few more C>B ballots are found or a few B>A ballots are disqualified.

Desirable objectives for municipal election methods in comparison to standard Plurality methods

- Ballot allows every voter to express an opinion on every candidate.
- Election algorithm is simple, predictable and treats all ballots the same.
- The candidate with the most ballot-expressed support wins.
- Election outcomes are relatively insensitive to manipulation by candidates and political consultants.
- Algorithm computations are relatively robust against computer viruses and hackers.
- Computational requirements and access to ballot and election data do not inhibit independent verification of election results.
- Election reporting is simple and transparent.
- Effort, education and decision-making required from voters comparable to Plurality.
- Not more costly than Plurality: standard voting machines, simple voter education, and moderate software and ballot design costs.

Approval Voting modification to Plurality

- **Vote 1 point for the best candidate or candidates and 0 points for all others.**
- **+ The candidate with the most votes wins.**
- **+ Standard ballot, standard voting machine. Relatively robust against spoilers, hackers and viruses. Election results easily reported, understood and verified. Monotonic.**
- **- Convincing public that one-voter one-vote principal is satisfied.**

http://www.electology.org/approval-voting

Simple Score Voting modification to Plurality

- **Each voter assigns a weight of 4 (most preferred), 3, 2, 1 or 0 (not preferred) to each candidate.**

Candidates	 4	 3	 2	 1	0
Andy	X	O	O	O	O
Jordan	O	O	O	O	X
Kelly	X	O	O	O	O

+/- Simple Score Voting (SSV)

# voters	A	B	C
6	0	4	1
5	4	0	2
4	4	0	4
Total scores: A wins!	36	24	32

- + SSV has positives of Approval Voting and allows voters to express relative intensity of preferences.

- - SSV ballot is not as simple as Approval or Plurality ballots.
  - More voter education is required.

Ways to raise public awareness

- Talk to receptive individuals and groups about election algorithms. Support a method, even though it isn't perfect.
- Give public presentations. Publish articles.
- Develop and post simulations tools.
  Geoffrey Pritchard and Mark Wilson, University of Auckland, simulation tool computing seat allocations of parties under 5 voting systems
  http://www.stat.auckland.ac.nz/%7Egeoff/voting/

  Ka-Ping Yee' voting simulation visualization
  http://zesty.ca/voting/sim/