

Section 14.1 – Voting Methods

Preference Ranking or Preference Table – Ranking used to place choices in an order of preference.

Example: A city is looking to build a post office on one of three locations: Erie Road (E), Lehigh Road (L), or Ontario Road (O).

Number of Voters	5	2	4
First	L	E	O
Second	E	O	E
Third	O	L	L

Plurality Method – Voting method where each voter selects one candidate or choice on the ballot, and the winner is the choice with the most votes (-i.e., most First place votes.) (If there are more than 2 choices, the winner does not have to have a majority.)

Problems with Plurality Method:

- As more candidates are added choice that won with 2 choices can lose votes to new entries and actually lose.
- Results can be changed by Strategic Voting.

Strategic Voting – voting in a way that does not reflect ones preferences in an attempt to achieve a more favorable outcome.

Plurality with Elimination Method (Runoff) - Voting Method where the winner needs to have 50% of the votes. Otherwise a designated number of the top choices are used in another election (Runoff). This is repeated until a majority is received by one choice.

Example:

Number of Voters	5	2	4
First	L	E	O
Second	E	O	E
Third	O	L	L

Example: Wizards Computer Club would like to order new computers. They have a choice between 4 brands: C=Compaq, D=Dell, G=Gateway, M=Mac

Number of Votes	43	30	29	26	14
First	G	M	C	D	D
Second	M	D	D	C	C
Third	C	C	M	G	M
Fourth	D	G	G	M	G

Borda Count Method – Voting method where each voter ranks the entire list of candidates or choices on the ballot in order of preference. For each ballot, the lowest ranked gets 1 point, next lowest gets 2 points, continuing to the top ranked who gets points equal to the number of candidates. Then each candidate’s points are added to get the **Borda Count**. The winner has the highest Borda Count. (Examples: Sports polls)

Example:

Number of Voters	5	2	4
First	L	E	O
Second	E	O	E
Third	O	L	L

Example: Wizards Computer Club would like to order new computers. They have a choice between 4 brands: C=Compaq, D=Dell, G=Gateway, M=Mac

Number of Votes	43	30	29	26	14
First	G	M	C	D	D
Second	M	D	D	C	C
Third	C	C	M	G	M
Fourth	D	G	G	M	G

Pairwise Comparison Method – Voting Method in which each candidate is compared with the other candidates in head to head matchups. A candidate is awarded 1 point for a win and ½ point for a tie. The winner is the candidate with the most points.

If there are n candidates then the number of comparisons is $C = \frac{n(n-1)}{2}$

Example:

Number of Voters	5	2	4
First	L	E	O
Second	E	O	E
Third	O	L	L

Example:

<u>Number of Votes</u>	<u>43</u>	<u>30</u>	<u>29</u>	<u>26</u>	<u>14</u>
First	G	M	C	D	D
Second	M	D	D	C	C
Third	C	C	M	G	M
Fourth	D	G	G	M	G