

ch 1  
1/8

Methods

Plurality

\* CH 1 HW (DUE TH)

1, 3, 5, 9, 13, 17, 19, 25, 27, 33

Borda count

35, 41, 47

Plurality w/ elimination

\* Group Quiz Th.

Pairwise comparison.

If X has the majority of votes, then X should win.

Criterion

Majority Criterion

If X is favored in all head-to-heads, then X should win.

Candorac Criterion

If X is a winner & in reelection, all changes favor X, then X should remain winner.

Monotonicity Criterion

Independence of Irrelevant Alternatives Criterion

If X is a winner & in recount one of the new winners is removed from the ballot, then X should remain winner.

Insincere voting.

Arrow's Impossibility Thm.

# 3/12

	10	6	5	4	2
1	A	B	B	C	D
2	C	D	C	A	C
3	B	C	A	D	B
4	D	A	D	B	A

27 votes

2/1  
2/5

Plurality - B w/11 (in violation of the Condorcet criterion)

Borda - C w/79

A:  $40 + 6 + 10 + 12 + 2 = 70$

B:  $20 + 24 + 20 + 4 + 4 = 72$

C:  $30 + 12 + 15 + 16 + 6 = 79$

D:  $4 + 18 + 5 + 8 + 8 = 43$

Plurality w/elim - A w/14.

	A	B	C	D
R1	10	11	4	2
R2	10	11	6	
R3	14	13		

IF D drops out

	A	B	C
R1	10	11	6
R2			

Pairwise comparison - C w/3

- (A) v B      B v (C)      (C) v D
- A v (C)      (B) v D
- (A) v D

(C is Condorcet candidate)

ch 1
3/5

#20

	4	1	9	8	5
1	A	B	C	A	C
2	B	A	D	D	D
3	D	D	A	B	B
4	C	C	B	C	A

27 total

a) Borda count - D w/ 76

$$A - 16 + 3 + 18 + 32 + 5 = 74$$

$$B - 12 + 4 + 9 + 16 + 10 = 51$$

$$C - 4 + 1 + 36 + 8 + 20 = 69$$

$$D - 8 + 2 + 27 + 24 + 15 = 76$$

b) C has a majority w/ 14.

c) obvious that C is a Condorcet candidate?

ch 1  
4/5

#34

	4	5	6	2
1	A	B	C	A C
2	D	C	A	C A
3	B	A	D	D A
4	C	D	B	B

17 votes

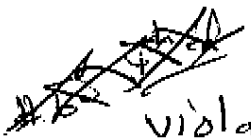
plurality w/elim.

	A	B	C	D
R1	6	5	6	0
R2	6	5	6	
R3	6		11	

	A	B	C	D
R1	4	5	8	0
R2	4	5	8	0
R3			9	8

re election.



violates the monotonicity criterion.

#60

4ch ed

	10	6	5	4	2
1	A	B	C	D	D
2	C	D	B	C	A
3	D	C	D	B	B
4	B	A	A	A	C

plurality w/elim.

	A	B	C	D
R1	10	6	5	6
R2	10	11		6
R3	12		15	

D drops out

	A	B	C
R1	12	6	9
R2	12		15

violates the IIA criterion.

ex 1.12

$\frac{4}{5/6}$

	2	6	4	1	1	4	4
1	A	B	B	C	C	D	E
2	D	A	A	B	D	A	C
3	C	C	D	A	A	E	D
4	B	D	E	D	B	C	B
5	E	E	C	E	E	B	A

Pairwise comparison - A wins

- A v B
- B v C
- C v D
- D v E
- A v C
- B v D
- C v E
- A v D
- B v E
- A v E

C drops out - B wins

	2	6	4	1	1	4	4
1	A	B	B	B	D	D	E
2	D	A	A	A	A	A	D
3	B	<del>D</del>	D	D	B	E	B
4	<del>B</del>	E	E	E	E	B	A

- A v B
- B v D
- D v E
- A v D
- B v E
- A v E

violates the IIA criterion.

ex 1.13 Pairwise comparison - A de.

chl  
6/61

	4	2	6	3
1	A	B	C	B
2	B	C	A	A
3	C	A	B	C

Ⓐ ∪ B      Ⓑ ∪ C

A ∪ Ⓞ

Tie breaker w/

- a) plurality
- b) Borda
- c) plurality w/ elim