

# A Replication of ‘Condorcet Efficiency and the Behavioral Model of the Vote’

*Miles Williams*

Adams (1997) proposed a model of a given voter  $i$ ’s policy losses with respect to a given candidate  $K$  via the following quadratic loss function

$$P_i(K) = \sum_{j \in m} b_{ij}(x_{ij} - k_j)^2, \quad (1)$$

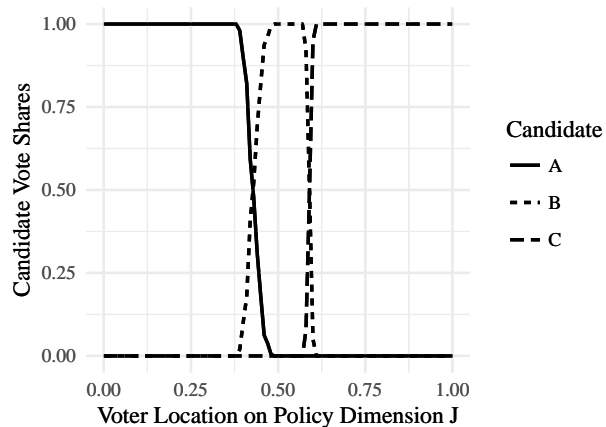
where a voter’s utility is then given as

$$U_i(K) = - \sum_{j \in m} b_{ij}(x_{ij} - k_j)^2 + \mu_{iK}. \quad (2)$$

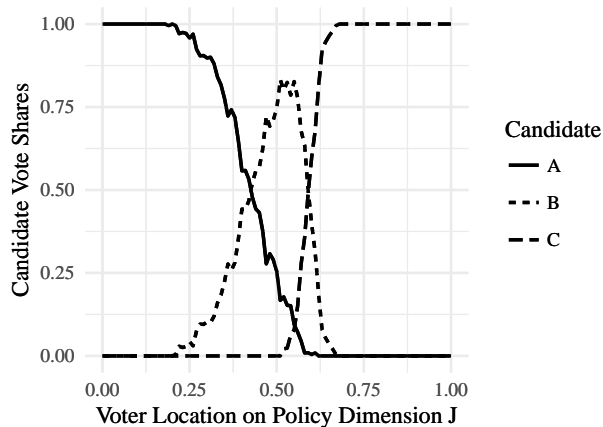
The policy position of voter  $i$  along policy issue  $j$  lies at some point in the interval  $[0, 1]$ . A candidate  $k$  holds some policy position within this same interval for policy  $j$ . The above equations imply that a voter’s policy losses will be minimized, and utility maximized, by selecting the candidate whose policy position is nearest to her own. The coefficients  $b_{ij}$  denote the salience of policy  $j$  to voter  $i$ . If  $b_{ij} = 0$  a voter is completely indifferent about candidate  $k$ ’s position on policy  $j$ . However, as  $b_{ij} \rightarrow \infty$ , policy  $j$  increasingly becomes the most relevant factor determining the utility voter  $i$  receives with respect to candidate  $k$ . The term  $\mu_{iK}$  is a random variable that denotes non-policy related reasons voter  $i$  may prefer to vote for a given candidate. This random variable is generated from a type I extreme value distribution (also known as a Gumbel distribution). The less salient a given policy is to a given voter, the more a voter’s utility is determined by the idiosyncratic motivations captured by  $\mu_{iK}$ .

Figure 1 shows results from a replication of the simulation used by Adams (1997) to demonstrate how the above model of voter behavior works. Following Adams (1997), I generated 25,001 random policy positions for 25,001 voters along a single policy dimension  $J$ , pulling values from a uniform distribution. Adams (1997) further randomly generated policy positions for three candidates (A, B, and C) whose policy positions were .39, .47, and .71, respectively. I use these same candidate positions in my replication. I run 4 simulations, where the same voter and candidate preferences are used across simulations but where  $b_J$  is varied. For each simulation I assume that policy  $J$ ’s salience is constant across voters. In the first simulation  $b_J = 100$ , for the second 20, for the third 3, and for the last 1.

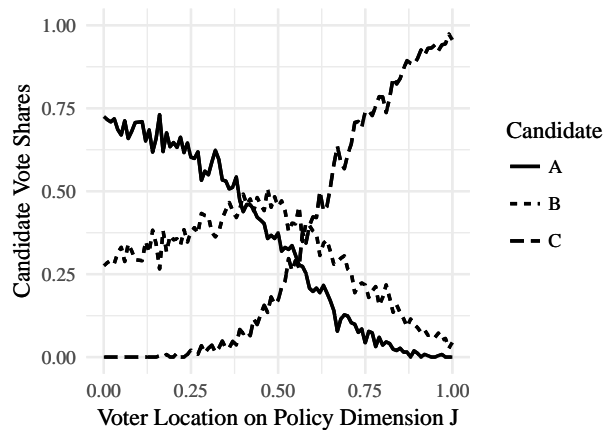
(Panel A)  
 Simulated Election with 25,001 Voters,  $b = 100$   
 Vote Shares: A = 42.8%; B = 15.8%; C = 41.4%



(Panel B)  
 Simulated Election with 25,001 Voters,  $b = 20$   
 Vote Shares: A = 42.6%; B = 16.3%; C = 41.1%



(Panel C)  
 Simulated Election with 25,001 Voters,  $b = 3$   
 Vote Shares: A = 34.9%; B = 30.4%; C = 34.7%



(Panel D)  
 Simulated Election with 25,001 Voters,  $b = 1$   
 Vote Shares: A = 34.1%; B = 35.1%; C = 30.8%

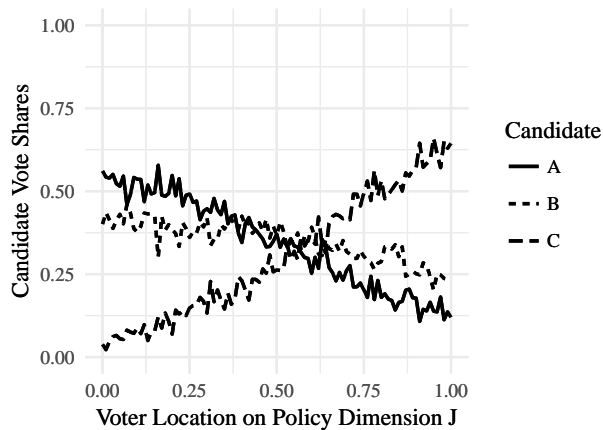


Figure 1: Results from Monte Carlo Simulation of Candidate Vote Shares per Voters' Locations along Policy  $J$ .