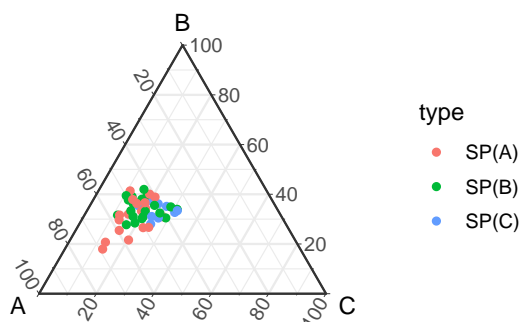# Checking Theory Predictions

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Figure 1: Distribution of first preferences of all single-peaked cases

For each of the different classes, I will present two plots: one is the distribution of pivotal probabilities (by event) within that class, and the other one is the distribution of strategic votes (by permutation) within that class.[1] In the latter, the colours refer to Table 3 in Andy's Theory memo:

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[1]Note that I decided against plotting second-round pivotal probabilities here because they are much larger in relative terms and would render comparisons between first-round ones unreadable.

orange means that this is a confident prediction (black text); **light grey** denotes those with moderately likely second-round events (grey text); and **dark grey** denotes those that are crossed out.

Note that this exercise does not involve any analysis of preference intensity – β's are just taken as given from the data.

1   Single-Peaked

1.1   A is the attractor
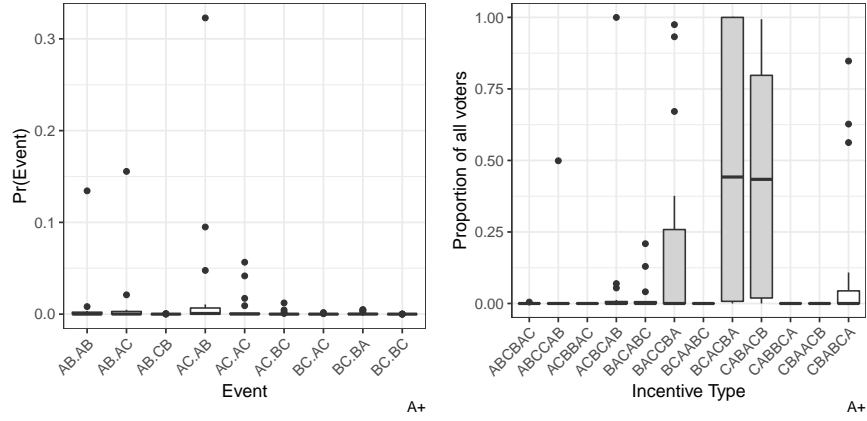
Figure 2: Distribution of pivotal probabilities and proportions of strategic vote incentives for all $A+$ cases.

The theoretical prediction is that $AC.AB$ is the dominant pivotal event; this holds true in the empirical data. However, there are a few outliers with high probabilities for $AC.AC$ in particular, and a few for $AC.BC$. (Need to check whether $AB.XX$ events are non-trivial here).

Consequently, the $CAB \to ACB$ strategic incentive is high. The $BCA \to CBA$ strategic incentive would only be attenuated by a high likelihood of BC events in the second round; however, this does not seem to be the case and thus the $BCA \to CBA$ incentive is also very strong. Finally, the $BAC \to CBA$ incentive is attenuated by both BC *and* AC and occurs much rarer. Note that the mean levels of strategic incentive proportions for $CAB \to ACB$ and $BCA \to CBA$ are much lower than for the $B+$ and $C+$ cases – this is because, in relative terms, the $AC.AB$ event is much less likely than the $BC.XX$ ones.

1.2   B is the attractor

This is the old case of B having neutral preferences and A, C voters both choosing B in second preferences.
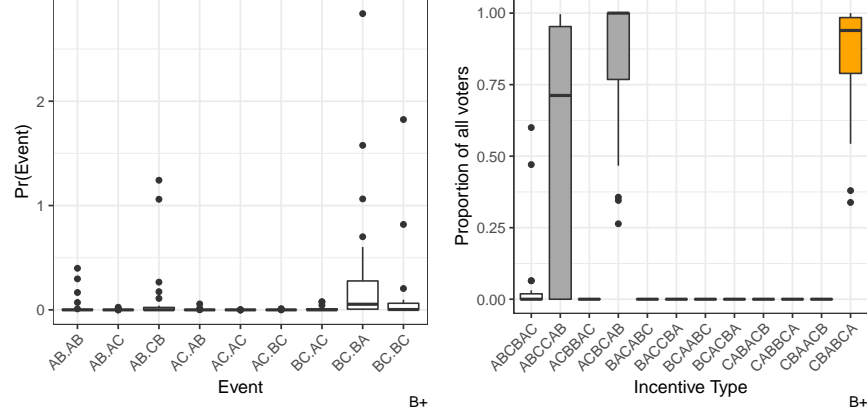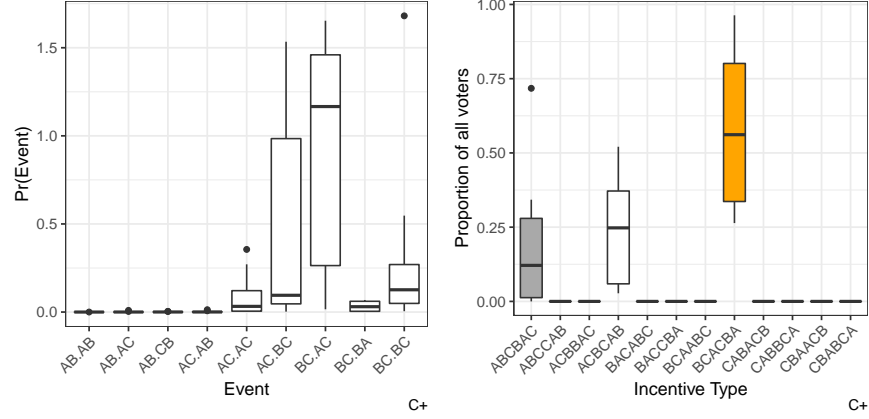

Figure 3: Distribution of pivotal probabilities and proportions of strategic vote incentives for all $B+$ cases.

As predicted by the theory, the $BC.BA$ pivotal event clearly dominates here, with $BC.BC$ coming second.

Unsurprisingly, this means that the incentive to vote $CBA \rightarrow BCA$ is very high – in only two cases have less than half of all CBA voters an incentive to follow this insincere vote. However, the proportion of $ACB \rightarrow CAB$ incentives is also very high (in fact, the mean is even higher!). This is because the likelihood of a conflicting AC event in the second round is extremely small (given our labelling of the parties). Graphically, it seems that the majority of our $B+$ cases also have B's second preferences slightly tilt to the right, which (I think) decreases the probability of this vote type "backfiring". Finally, the $ABC \rightarrow CAB$ incentive is, again, somewhat lower, and experiences a lot more variance than the others, because of the additional consideration of the (more likely) BC second-round event.

Here, the prediction for the crossed out elements does not appear to hold, because in the empirics, the second-round pivotal events appear to be much less likely.

Figure 4: Distribution of pivotal probabilities and proportions of strategic vote incentives for all $C+$ cases.

1.3   C is the attractor

Here, the $BC.AC$ event is clearly the dominant one, however, we see a few others ($AC.AC$, $AC.BC$, $BC.BC$) that are also relevant. Consequently, because of the high $BC.AC$ probability, the predicted $BCA \rightarrow CBA$ incentive is also the most prevalent one. There is also some incidence of the $ABC \rightarrow BAC$ incentive, which would only be mitigated by the AB second-round pivotal event (which is quite likely, no?). Surprisingly, ACB voters appear to have some incentive to vote $\rightarrow CAB$. This is probably because of the high probablity of $AC.BC$: here, a sincere vote would help elect the least preferred candidate (no-show). Thus, if C is the attractor, the predictions don't hold as well.

2   Divided Majority
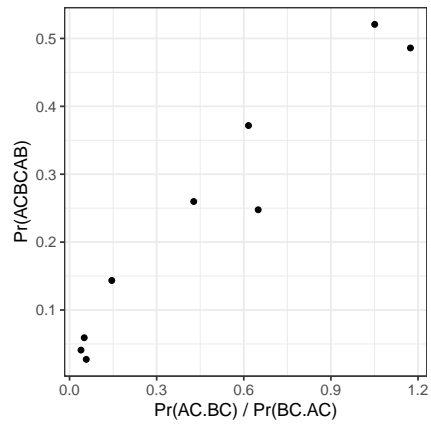
Figure 5: Proportion of ACB voters with incentive to vote CAB by the probability of the $AC.BC$ pivotal event relative to $BC.AC$.