

## ***In Play: A Commentary on Strategies in the 2004 U.S. Presidential Election***<sup>†</sup>

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*“A lot of military battle plans going back to the Civil War say ‘whoever controls the Mississippi controls America.’ And Bush is marching straight up the Mississippi,” the Democratic strategist said. “We’ve just retreated from Louisiana, Arkansas and Missouri. They already control Mississippi, Tennessee and Kentucky. Bush is now moving in on Iowa and Wisconsin. And except for Illinois, which isn’t in play, there’s only one state left: Minnesota, the mouth of the river. And it’s dead even [i.e., a tie] there.”* From CNN.com, *ALLPOLITICS*, September 23, 2004: Mercurio, John and Molly Levinson. *“CNN Survey: Bush widens lead in Electoral College.”* CNN Political Unit. 27 Sept. 2004 <<http://www.cnn.com/2004/ALLPOLITICS/09/23/electoral.map>>

*“All total, 21 states are in play. Some will bounce between “lean [toward a candidate]” to “tossup” throughout the campaign.”* *USA Today*, July 25, 2004: “AP: Bush leads Kerry in electoral votes.” A.P. 25 July 2004, <[http://www.usatoday.com/news/Politics/elections/nation/President/2004-07-25-bush-kerry-electoral-votes\\_x.htm](http://www.usatoday.com/news/Politics/elections/nation/President/2004-07-25-bush-kerry-electoral-votes_x.htm)>

### **1. Introduction**

One of the most striking features of the 2004 presidential election was the widespread use of the phrase, “in play.” For many, “in play” was simply a cliché mouthed incessantly by pundits, politicians, and even citizens. But it also has an interesting analytic meaning, one that we will explore in this

<sup>†</sup>Previous work on earlier presidential elections that greatly informed this work benefited from presentation at the annual meetings of the Midwest Political Science Association, 2003, and at a seminar at Duke University’s MIRC. Special thanks to Brendan Nyhan for his superb research assistance and advice. The authors also acknowledge the helpful comments of John Aldrich, Jorge Bravo, Alexandra Cooper, Scott de Marchi, Seth Jolly, and Tom Nechyba. We also thank Charles Rowley, editor of *Public Choice*, for suggesting the paper. All errors, however, are our responsibility.

commentary. In brief, a state is “in play” if it is one of the set of states for which there is no clear equilibrium strategy for either candidate. By strategy, we refer to things such as choosing which states to visit, where to air political ads, or where to hold grassroots meetings. A state “in play” admits of no clear *ex ante* winner; the outcome depends on the actual strategies candidates choose.

This lack of equilibria across “battlegrounds” is also characteristic of the Colonel Blotto game. We argue that “Blotto” describes the allocation problem facing candidates in U.S. presidential races quite well. The strategic problem is the allocation of resources across multiple battlefields in order to win a majority of the battles. The difficult part of the problem is that the game has no pure strategy equilibrium with both sides having approximately equal resource strengths. This difficulty has led scholars who recognized the similarity between Blotto and the Electoral College to use other modeling techniques. But it is clear that in presidential elections, candidates need to decide how to allocate limited resources, such as campaign visits, across states.

In this paper, we ask whether the allocation of visits by the candidates and their subsequent impact on the 2004 election look like the outcomes of a “Blotto” process of competition in separate battlegrounds. If a state is “in play,” is there a rearrangement of resources such that the other candidate could have won? Do campaigns matter? Do strategies win or lose elections? Or was the outcome in 2004 effectively determined early on?

Answers to these questions are important to furthering our understanding of the role and effect of strategy in presidential elections. It is now almost accepted as fact that campaigns exert minimal or null effects on the outcomes of presidential elections (for a review see Iyengar and Simon, 2000). An important contribution of our study is that we provide answers to why we witness these empirical results, even though candidates are campaigning as hard as ever. Furthermore, we advance the study of resource allocation by updating models from the 1970s and presenting an alternative model.

The paper is organized as follows. Section 2 presents an overview of the Electoral College, and describes the strategic setting. Section 3 describes very briefly the nature of the “Blotto” game for electoral politics. Section 4 presents the data and definitions of the specific variables we use from the 2004 U.S. presidential election. Section 5 presents the results of our analysis. Section 6 presents some conclusions and suggestions for extensions.

## 2. The Electoral College

The system for choosing presidents and vice presidents in the United States creates a highly structured, strategic situation. That was not true in the first two centuries of its existence, but today the Electoral College (EC) reflects a series of compromises. It was created as a means of allowing a chief executive to be

chosen from among 13 geographically distinct states of varying sizes. There were no communication or transportation systems for anything resembling modern political campaigns. Further, campaigning was considered unseemly; political parties were out of the question in the minds of many of the framers. The EC was a way for states to organize their own selection processes for the presidency, protecting the rights and individuality of states while giving citizens participation in the decision.

On this foundation, strong parties (in electoral terms, dating from about the 1840s; Aldrich, 1995), and in the 1970s a system of public financing have been grafted. The result is an electoral system that has evolved, rather than the product of conscious design. In 2004, the U.S. saw increased attention to the EC because of the complications surrounding the election outcome in 2000. The extremely close race in Florida (which proved decisive) was the immediate focus of most analysts, of course. But the split between Gore's popular vote victory and Bush's EC victory put the Electoral College system, and its cobbled together properties, squarely in the spotlight.

For all its complexity, the EC has just three essential features. These features are (a) indirectness, (b) the unit rule (winner-take-all elector allocations), only two states, Maine and Nebraska, do not use the unit-rule, and (c) a weighted voting scheme biased toward smaller states. The indirectness of the election, the choice of "electors" rather than direct voting for candidates, is outside of the scope of this paper. But it is useful to understand how small state overrepresentation and winner take all outcomes affect election strategies.

Overrepresentation of small states is one important reason why the candidate who gets the most popular votes may fail to be chosen President. The discussion in Feld and Grofman (2005, in this volume) makes clear the nature of the overrepresentation.<sup>1</sup> For our purposes, the overrepresentation of small states simply increases the expected value of devoting resources to such states, if they are in play. Thus, at the margin, overrepresentation focuses more attention from parties and candidates on smaller states (though see Hinich, Ordeshook, & Michelson, 1975; Holcomb, 2003; Rabinowitz & MacDonald, 1986).

The winner-take-all aspect of the EC is central to the notion of a state being in play. Winner take-all interacts with small state overrepresentation, since if a candidate devotes a few visits to a small state, he can win the full complement of EC votes from that state. This is true even for large states, of course: the reason that Florida was so important in 2000 was that all 25 of the state's electoral votes hinged on a few hundred chads. If Florida used proportional rather than winner-take-all EC allocations, the split would have been 12 for Bush, 12 for Gore, and one vote to be decided. But no one would have cared, since Gore would have had at least 278 electoral votes overall, and Bush would have had either 258 or 259 votes, which would have been insufficient for victory in either case.

To summarize: The institution of the Electoral College creates a structured strategic environment, one that is substantially different from other electoral arrangements. The strategic setting can be depicted as a game:

- Candidates compete in 51 simultaneous, separate contests (50 states and the District of Columbia).
- The candidate who wins a state receives all of the Electoral College votes (i.e. points) from that state.
- States have varying Electoral College votes (equal to the number of representatives plus the number of senators).
- Candidates do not receive any direct utility from winning an individual state; they only receive utility from winning the election as a whole, a majority of Electoral College votes (in practice, this has meant a simple majority, 270, of the total votes cast, 538). It does not matter which states or what combination of states are won in order to reach a majority.
- The game may be asymmetric. In each presidential campaign, for each state, there are particular “positional advantages,” where one candidate is initially favored. For example, in California the Democrats may have a significant lead in the polls based on the background preferences or attitudes of voters.

### 3. Colonel Blotto

The EC resembles the “Blotto” game, a toy model of strategy. The hallmark of Blotto is the existence of equilibria only in mixed strategies, for the special case where there are two players.<sup>2</sup> The game need not be perfectly symmetric, but the asymmetries must be limited if the election matches the Blotto framework (see Merolla et al., 2003). When a presidential candidate gains an overwhelming advantage, the election is characterized by dominant strategies for the frontrunner. There may still be strategic questions of vote maximization, but the overall outcome is settled. Here is a simple example of the Blotto game.

Tomorrow morning, you battle Blotto. Each of you has 100 soldiers to be allocated across 3 battlefields. Whoever wins the most battles wins the war, and that is your objective. A “strategy” in this campaign is pretty simple: an ordered 3-tuple, adding up to 100, which might look like this: (50, 50, 0). That is, tonight you must write orders sending 50 troops tomorrow to battlefield #1, 50 to #2, and 0 troops to #3. If Blotto spreads his troops out nearly evenly over all the battlefields (33, 33, 34), then you will win on fields #1 and #2. That means you won 2 battles, and you win the war, or in the analogy to the EC, the election, in which each battle is a state, and all the states are the same size.

Of course, Blotto might choose (51, 0, 49). If he picks this strategy, but you stick with your original allocations, you lose and Blotto wins. In our

very simple Blotto game, all of the battlefields are “in play,” because they are all identical at the start. This is unlikely in EC contests because states differ markedly in positional advantages: some are considered likely to be *red*, or Republican strongholds, and others are *blue*, or Democratic strongholds, and still others are too close to call. Still, the basic logic of play should be very similar. If candidates actually must choose in this sort of strategic setting the outcomes may appear to be coin flips, but here randomness comes specifically from the unpredictable resolution of strategic uncertainties once actual allocations are selected.

The point is that, for every strategy, there exists at least one opponent strategy that strictly beats it, which is implied by the nonexistence of a pure strategy equilibrium. In other words, there exists no pure strategy such that one candidate can defeat every feasible strategy available to the other candidate. Therefore, in equilibrium, players use mixed strategies. With respect to the EC, a strategy is a vector of allocations to each state. An optimal mixed strategy is a probability distribution over the set of feasible pure strategies. The safest states never receive an allocation in any feasible strategy. Of the states that receive an allocation in some set of the feasible strategies, some will nearly always be won by the same candidate and are not sensitive in outcome to the particular size of an allocation. These are states that are safe, but not costless for the candidate to win. The states that are in play are those states whose outcome is completely dependent on the specific strategies that are implemented; in these states the realized size of the allocations will vary a great deal across strategies due to the mixing. We would expect that the optimal mixing distributions are correlated with competitiveness and electoral votes, but we cannot observe the mixing distributions, only their realizations.

We will still observe allocation of resources to those states that are not “in play,” but these visits will more likely reflect ornamental factors such as influencing down-ballot races or pleasing the state party organization (Bartels, 1985).

In the last week of the 2004 election, fewer than a dozen states were considered to be “in play.” For example, seven states were listed on [www.electoral-vote.com](http://www.electoral-vote.com) as being too close to call (the candidates were within 2.5 percentage points of each other), and they represented 126 electoral votes (Hawaii, Colorado, New Hampshire, New Mexico, Florida, Ohio, and Pennsylvania). The small number of competitive states reflects the positional advantage each candidate had from “safe” states (in other words, states not in play are safe). Thus, Bush’s positional advantage required him to win 52 of the 126 electoral votes up for grabs, while Kerry needed 76 (the polls at this point mis-predicted Iowa for Kerry, warning that “safe” may not be safe after all).

In the literature, there has long been debate on the factors that influence allocations of resources (visits, spending, mail or phone campaigns) across states. Using a game theoretic model, Brams and Davis (1974, 1975) found

that rational candidates should allocate their resources to states in proportion to the size of the electoral blocs raised to the  $3/2$  power, disproportionately focusing on larger states. Colantoni, Levesque and Ordeshook (1975a,b) argued that candidates look not only at the number of EC votes, but also at the positional advantage they have across states. Using a decision-making-under-risk model, they showed that candidates allocate proportionately more resources to competitive states, rather than use the  $3/2$ nd rule. The important limitation to both models is that they both avoid the Blotto problem, in the first case by assuming that candidates match each other's allocations and in the second case by using a decision theoretic model.

In more recent research, Rabinowitz and MacDonald (1986) make a similar claim to Colantoni et al., but use a constrained Shapley value to determine which states will have more power, where the constraint lies in the political predispositions of the states, which they determine empirically. In an empirical analysis of resource allocation in presidential elections from 1988–1996, Shaw (1999) also finds that the allocation of campaign resources is related to an interactive effect between the number of electoral votes and the competitiveness of the state. Furthermore, he finds that allocation by the opponent has an effect on candidate resource allocation. However, Shaw's work has recently been questioned for its methodological implementation and data accuracy (see Reeves, Chen & Nagano, 2004).

The intensity of debate is most likely the result of exploring an area which is both difficult to study and vital with respect to its implications for American democracy. Since politicians and the media often ascribe great meaning to relatively knife-edge election returns, it is not uncontroversial for a scholar to suggest that presidential elections often involve the resolution of strategic uncertainty and not aggregate preferences.

Rather than assume away Blotto, we claim that the EC as an institution, mapped onto the preferences of voters in each state, often resembles a Colonel Blotto game with positional advantage and asymmetric resources (Merolla, Munger, & Tofias, 2003). In nearly any election some states are "in play;" this was perhaps most striking in the 2000 election, where tiny changes in vote totals could have changed the outcome in several ways. The asymmetries in positional advantage and resources need to be quite large in order for the game to degenerate into the case where the advantaged candidate has a pure strategy in equilibrium play (we have argued that the 1996 election resembles this scenario). The absence of pure strategies implies that behavior (resource allocations across states) and outcomes in presidential elections will be difficult to predict and ex post empirical analyses will be equally troubling.

In the remainder of the paper, we analyze the 2004 election, structuring the analysis using a Blotto metaphor. Our "positional advantage" variables are early poll results, while resource decisions are captured by the allocation of candidate visits across states. We first explore a simple model of the outcome of

each state's election as a function of positional advantage and the candidates' net differential in visits. It turns out that net advantage or difference in number of visits has no clear relation to victory in that state. This does not imply that visit allocation is random, however. It is perfectly consistent with what we might find if candidates are playing Blotto.

We then turn to three different models of the determinants of resource allocation across states, first the models suggested by Brams and Davis (1974) and Colantoni et al. (1975a,b), and then a more natural count model. In our allocation model, we find that the candidates' allocation decisions are related to both the positional advantage and the value of each state's electoral vote prize without any realized amount of large state bias. Furthermore, we find a poor fit to all three models, which is also consistent with what we might find in a Blotto type game.

#### 4. Data and Variables

First we seek to explain the outcome of the election in each state. For this model, we need measures of the electoral outcome, positional advantage, and strategic allocations. We create a simply dummy variable for outcome in which (arbitrarily) a 1 indicates that Kerry carried the state and a 0 is a victory for Bush. To measure positional advantage and the safeness of a state we use early poll data gathered from [www.electoral-vote.com](http://www.electoral-vote.com) and calculate Kerry's percentage of the two-party vote in the averaged polls. The early poll average was taken by averaging the poll data posted on the website August 22, September 1 and September 11.<sup>3</sup> For states that had not yet been polled, the earliest poll available is used here (these states are all non-competitive).<sup>4</sup>

We measure resource allocation with data on campaign trips made to each state, using data from ABC News's "The Note" website. This source did not contain information about weekends early in the campaign and was therefore supplemented by examining Kerry's campaign website calendar, [www.whitehouse.gov](http://www.whitehouse.gov), and Lexis-Nexis. Since we might not expect presidential and vice-presidential candidate visits to carry the same weight, we calculated weighted visit scores in a manner similar to the one used by Bartels (1985). To create the weighted visit score, we multiply presidential candidate visits by seven and vice-presidential candidate visits by five (we also examine all specifications with non-candidate visits, such as wives, children, and other political figures, but these additions made little substantive difference). In our count model, we use the unweighted summation of the presidential and vice presidential visits.

In the allocation models, candidate visits become the dependent variables we seek to explain. We transform the poll information into a measure of safeness.<sup>5</sup> The safeness measure takes the absolute value of Kerry's two party poll share minus .5, thus higher values indicate a safe state, or one in which

Table 1. Summary statistics of variables

Variable	Mean	Std. Dev.	# obs = 51	
			Min	Max
Kerry won this state	.392	.493	0	1
Electoral College votes of state	10.549	9.582	3	55
Kerry's share of the two-party early poll	47.992	10.588	24.72	87.64
Safeness: abs [(Kerry 2-party poll share) $-.5$ ]	.0778	.0738	0	0.376
Number of Kerry visits to state	1.784	3.817	0	19
Number of Bush visits to state	1.765	3.044	0	12
Number of Edwards visits to state	1.529	2.872	0	15
Number of Cheney visits to state	1.529	2.602	0	10
Kerry Visit Score*	20.137	40.269	0	208
Bush Visit Score*	20	33.457	0	134
Net Visit Score**	.137	14.507	-34	74

*Note:* Visits only include campaign events held on or after September 1st.

\*Bartels (1985) weighted visit score; 7 times Kerry/Bush visits + 5 times Edwards/Cheney visits.

\*\*The net of the two visit scores: Kerry Visit Score – Bush Visit Score.

the candidate is leading or trailing by a large margin. Finally, we include the number of Electoral College votes in each state. Table 1 (below) presents the summary statistics for the key variables.

Before turning to multivariate regression analysis, simple descriptive statistics shed light on the Blotto-like nature of the 2004 presidential election. Figure 1 (below) plots Kerry's two-party early poll share on the  $x$ -axis, and the net visit score (Kerry visit score minus Bush visit score) on the  $y$ -axis.

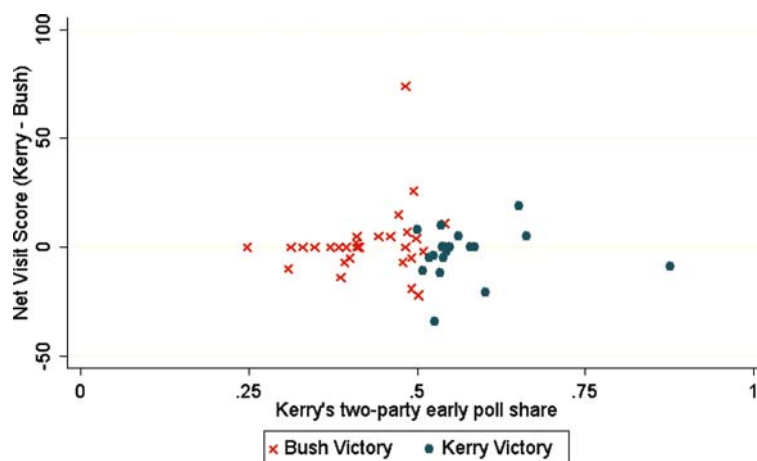


Figure 1. 2004 Presidential Election: Kerry's two-party poll share and the campaign visit score.



Table 2. States that the early polls got wrong

State name	Kerry	Kerry # of visits	Bush # of visits	Edwards # of visits	Cheney # of visits	Other Dem visits	Other GOP visits
	2party share						
New Mexico	54.1	6	3	2	4	11	2
Iowa	50.9	7	8	9	8	14	8
Colorado	50.2	2	3	0	3	5	1
Wisconsin	50	12	8	5	9	4	9

The simple scatter plot reveals an interesting pattern. We can see that most of the activity is clustered around the competitive states, i.e., where Kerry's share of the two-party early poll is around 50%. This clustering pattern of strategic behavior is quite similar to the pattern we found in previous work on the 2000 and 1996 elections (Merolla et al., 2005). Furthermore, there is a wide range in the net visits score at the 50% mark. This is a diagnostic for Blotto: there is no equilibrium in pure strategies. Since candidates are using mixed strategies in competitive states, we see a wide range on the net visits measure. Thus, the assumption by Brams and Davis (1974) that candidates match strategies in each close state does not appear to hold in the 2004 election.

One complication with analyzing strategy in the 2004 election is that the positional advantage variable rarely makes an inaccurate prediction. In and of itself, this is not inconsistent with strategic effects because in equilibrium, even in a mixed strategy game, candidates' efforts may often cancel each other out. There were only a few states whose outcomes were not predicted by the early polls (see Table 2), and in each case the advantage was "slim." Still, the *ex post* predictive power of the poll variable makes it very difficult to tease out the effects of strategy in the 2004 election. However, the table clearly illustrates the strategic behavior of the candidates in these states, and shows that allocations are not equal across states, even in close ones.

## 5. Results

With suggestive support for the 2004 election representing Blotto, we now turn to multivariate analysis. As in prior work, we fit a basic outcome model of whether Kerry carried a state as a function of his positional advantage and the net visit score. Table 3 presents the results from this basic model. While the poll variable is significant and positive, as expected, the strategic visits measure is insignificant and in the wrong direction. We also tried to fit a

Table 3. The outcome of the 2004 presidential election in each state

Logit Regression Model with Dependent Variable: Kerry Won		
Variable	Coefficient	Standard error
Constant	-52.932	18.590
Kerry's Share of two-party early poll	103.170	36.15
Kerry Visit Score - Bush Visit Score	-0.0427	0.058
Log likelihood = -7.966072	Pseudo $R^2$ = 0.7668	# obs = 51

Note: Kerry and Bush Visit Scores are calculated in the manner of Bartels (1985).

model with an interaction of the two measures but the substantive impact of net strategy remained negative and insignificant.

The null findings for strategy are likely a result of the small  $n$  in our study. If we had a large sample of 2004 elections it should be the case that we are able to observe strategic effects using a net resources variable. Of course we only have a single instance of interaction between Bush and Kerry for each state. In a repeated sampling context we would still expect Kerry and Bush to "misallocate," but we would also expect that when one candidate allocated more resources to a state than the other he would be more likely to win that state, at least *ex post*, holding positional advantage constant.

In our previous work we did find a positive and significant effect for strategy in the 2000 election, using data on the allocation of political advertisements. One reason for the difference in the results could be the different measures of strategy employed.<sup>6</sup> While Bartels (1985) argues that TV and radio ads were allocated in a similar and instrumental manner by the Carter campaign in 1976, it may no longer be the case today; visits and ads may be allocated differently.

Even in light of the limitations, finding that the strategic variable is insignificant is not inconsistent with a Blotto game. If candidates are in fact mixing over strategies, then the allocation of visits across states might appear random, and the effect of the net visit variable could very well be insignificant.

In addition to outcomes, we can also examine the 2004 campaigns' resource allocations to see if the allocations are consistent with a Blotto game. Here, we also extend the empirical models of Brams and Davis and Colantoni et al. by introducing them to the 2004 data, as well as introduce a third model which employs a more appropriate statistical estimator.

The contention between the Brams and Davis model and the Colantoni et al. model centers around arguments over the appropriate way to directly explain resource allocation in presidential elections. Brams and Davis argue that candidates should allocate according to a  $3/2$  rule where larger states get a larger share of the campaigns' attention. They derive the  $3/2$  rule from a game

theoretic model that critically relies on an assumption of symmetrical behavior on the part of each candidate. As we stated previously, this assumption is absurd on face value, and clearly brittle, but deemed necessary by the authors to characterize equilibrium play. Stating the difficulty of modeling a Blotto type game, Colantoni et al. argue against employing game theory because of the difficulty of predicting and analyzing what are most likely some sort of mixed strategies, and instead use a decision theoretic formal model to guide their data analysis. It is slightly awkward to recognize that the world is characterized by strategic interaction and then decide against modeling it. Oddly, the empirical model they develop is inherently more strategic than the Brams and Davis model, which employs game theory.

Brams and Davis derive a functional form for resource allocation based solely on the Electoral College votes of a state and a point prediction for the bias in allocation decisions. Their assumptions imply that every state is equally in play. Bartels (1985) characterizes the model as:

$$R_i = \alpha EV_i^\beta u_i \quad (1)$$

where  $R_i$ : visits,  $EV_i$ : electoral votes,  $u_i$ : errors; and  $\alpha$  and  $\beta$  are parameters to be estimated. Brams and Davis hypothesize that big state bias in allocation decisions takes the form of  $\beta = \frac{3}{2}$ , thus the so-called 3/2 rule. Colantoni et al. claim that this theoretical expectation of bias is invalid and that a proportional rule with no bias, i.e.,  $\beta = 1$ , is more appropriate. Furthermore, they rightfully claim that the competitiveness of a state needs to be taken into account in allocation decisions, implicitly recognizing that not every state is in play. They offer a model that incorporates competitiveness by measuring the absolute value of the plurality that the candidate receives in the election,  $P_i$  (keeping notation as consistent as possible):

$$R_i = \alpha EV_i^\beta |P_i|^{-\gamma} u_i \quad (2)$$

The problems with the Colantoni et al. specification is that it remains extremely rigid with respect to functional form, ignores the consequences of strategic interaction, and as Brams and Davis (1975) point out, suffers endogeneity problems by using electoral results to measure competitiveness. We can alleviate the last problem by using early poll results. Early poll results are a good measure of the positional advantage or disadvantage a candidate faces in a given state. Here we estimate the resource allocation models using the visits made to each state by the candidates (a visit score combining the presidential and VP candidate trips as in Bartels, 1985), as the dependent variables. Both models include a measure of the number of

Table 4. Campaign trip allocation models September through November 2004

Dependent variable	Kerry visit score		Bush visit score	
	[1]	[2]	[1]	[2]
$\alpha$	.366 (.356)	.068 (.070)	.345 (.368)	.062 (.066)
$\beta$	.925 (.447)	.473 (.392)	.967 (.491)	.450 (.432)
$\gamma$	—	.814 (.184)	—	.857 (.194)
$R^2$	0.084	0.356	0.076	0.351

Note: The candidates' home states were omitted in their respective regressions, s.t. the number of observations in each model is 49. The visit score is calculated in the manner of Bartels (1985). Standard Errors in parentheses.

Electoral College votes in each state, where a positive coefficient is expected. For the Colantoni et al. model, we measure competitiveness with *safeness*, the absolute value of Kerry's share of the two-party early poll results minus 1/2 (s.t. a score of zero indicates a perfectly competitive state; this maintains the direction of the plurality measure used in Colantoni et al.). Higher values should make candidates less likely to allocate to a given state. Table 4 presents the results of each model for Kerry's Visit Score and Bush's Visit Score.

While the signs for the estimated coefficients are all in the right direction, neither the 3/2 rule nor the proportional rule receives much empirical support. Turning first to Brams and Davis (model 1), beta does not equal 3/2. Furthermore, the parameter is only significant at the .05 level for the Kerry visits. While beta is closer to 1, suggesting some support for the proportional rule, the 95% confidence interval is too large to support such precise claims. In the Colantoni et al. specification (model 2) the parameter on safeness,  $\gamma$ , is quite significant and the electoral vote parameter is not significant. These results may be caused by some combination of the idiosyncratic 2004 correlations between competitive states and the Electoral College and the practice of avoiding resource allocation in safe states, regardless of their size. In recent presidential elections, the states have become quite polarized, giving each party a large allotment of electoral votes before the campaign even starts, which may lead to fairly intense fighting over every remaining Electoral College vote.

Another way to model the number of visits to a state in a decision theoretic way would be to analyze the count data using a negative binomial regression model, or NBRM. The NBRM is the most appropriate model to test for the determinants of the visits accrued across states, since the dependent variable

Table 5. Negative binomial regression of candidate trips across states, September–November 2004

Dependent variable	Kerry + Edwards Visits		Bush + Cheney Visits	
	Coefficient	Std Error	Coefficient	Std Error
Electoral Votes	0.149	0.063	0.163	0.059
Electoral Votes sqrd	−0.003	0.0016	−0.003	0.001
Safeness	−46.265	8.201	−44.687	7.639
Safeness sqrd	114.812	23.140	114.400	21.678
Constant	1.385	0.577	1.1589	0.523
Alpha	0.918	0.334	0.87	0.350
Pseudo $R^2$	0.194	—	0.183	—

*Note:* The candidates' home states were omitted in their respective regressions, s.t. the number of observations in each model is 49. DV is a strict count, not the weighted score.

is an over-dispersed count. Also, we do not have to enforce the rigorous functional form that was suggested by the misguided Brams and Davis model in order to look for bias with respect to state size. Employing the count model also alleviates the problem of dealing with states that had zero allocations. In previous models, scholars had to handle the problem of taking the natural log of zero (see Colantoni et al., 1975a, for a discussion). In addition to the number of Electoral College votes measure and the safeness measure, we include the square of both variables, to capture possible curvilinear effects as the values increase. Table 5 presents the results from the NBRM.

We can see from the model that the coefficients are all in the expected direction and are significant. Since it is difficult to directly interpret the coefficients for the NBRM, we calculated the expected number of Kerry campaign visits by the number of Electoral College votes, at different levels of the safeness variable (since the NBRM is similar for Bush we only present Kerry's substantive effects). Figures 2 and 3 illustrate these effects.

In Figure 2, we can clearly see that the expected number of visits increases as the number of Electoral College votes increases, as expected. The effects are also fairly substantial, ranging from 5 expected visits for a state with 5 electoral votes (with safeness at .01), to 15 predicted visits when a state has 20 electoral votes. However, we also see that this relationship depends on the degree of safeness. When a state is fairly safe (safeness at .10, the 75th percentile), we expect about 0 visits by Kerry, regardless of the number of electoral votes. However, we see an increase in the expected number of visits for Kerry as safeness decreases (safeness at .05 is the median level).

Figure 3 provides the predicted visits for Kerry, given the number of Electoral College votes in each state (with states labeled). The number of Electoral

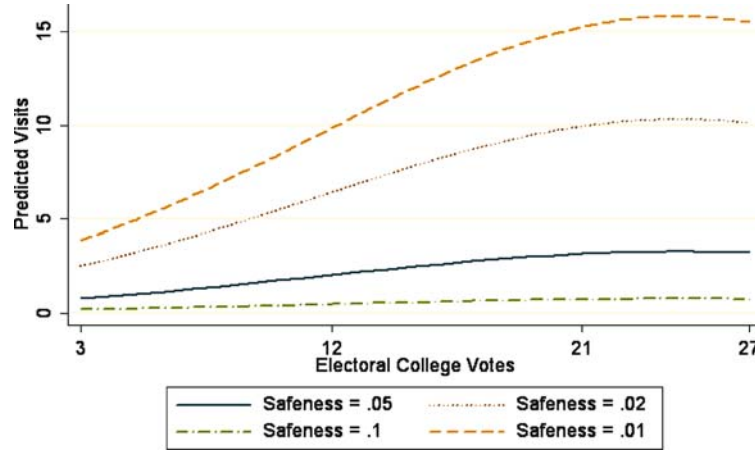


Figure 2. Kerry's Predicted Resource Allocations: Predicted visit count from the NBRM.

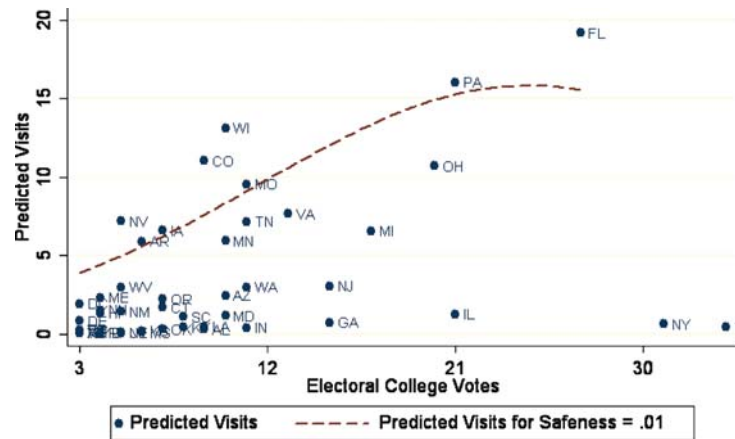


Figure 3. Kerry's Predicted Resource Allocations: Predicted visit count from the NBRM.

College votes is not a perfect indicator of the expected number of visits. Consider a safeness level of .01 (eight states had a safeness level less than .01). States at this level are clearly in play and the model recovers the intuitive increase in visits to these states (see, for example, Pennsylvania, Missouri, Iowa). Furthermore, we find support for Colantoni et al.'s critique of the Brams and Davis model. The large state bias identified by Brams and Davis was likely due to the configuration of competitiveness and the number of electoral votes. In the 2004 election, we see hardly any allocations to the extremely large and safe states (Illinois, New York, Texas, not pictured, California). These two-dimensional outliers most likely account for the non-linearity in the predicted visits that we recover. These results suggest that there is limited, to no,

bias present in the allocation of trips with respect to state size and Electoral College value.

While the effects are in the expected direction and are fairly substantial, one feature of the results is that the model fit is fairly poor. Poor fit is consistent with a model of strategic interaction. The game theoretic Blotto model demands that player-candidates not use any predictable rule while allocating resources, the definition of mixing. Using a proportional or  $3/2$  rule in this context would be wholly inappropriate, because the rival player-candidate would optimize against such an allocation rule and win the election. Instead, game theory implies that candidates will employ some sort of strategic randomness with a mixed strategy. While we cannot derive the optimal mixes, we can deduce that they should be based on some *purposely noisy* combination of value and competitiveness, here electoral votes and safeness. The poor fits of both models are thus the result of the strategic randomness of mixing.

## 6. Conclusion

The results indicate that the 2004 election exhibits characteristics that we would expect to see if the candidates are playing a Blotto type game. First, the descriptive statistics revealed that most of the range of strategic behavior took place in those states that were “in play.” However, there was a great deal of variation in the net visits across these states, which is characteristic of a Blotto type setting. Second, though positional advantage had a significant effect on electoral outcomes, the strategy variable was insignificant. The insignificance of the strategy variable can be consistent with players using mixed strategies, which might appear random. Finally, neither the Brams and Davis, nor the Colantoni et al. model performed well in explaining resource allocations. While the negative binomial model had significant effects in the predicted direction, the overall model fit was poor, which is also consistent with Blotto. Furthermore, the NBRM analysis did not suggest a large state bias in campaign visits.

There are several limitations to the analysis of the 2004 election using this approach, and it is worth pointing them out. First, we are unable to estimate the mixed strategy probability distributions of the two campaigns in the 2004 election. The reason is that we did not recover a positive coefficient on the strategic interaction variable in the outcome model. For the 2000 election, it was *clearly* possible (Merolla et al., 2005) to construct counter-factuals of successful, feasible reallocations *ex post*. More simply, in the 2000 election it was clearly true that there existed reallocations of resources that would have allowed Gore to win the election, at least based on our analysis. It is not clear that this was true in 2004. Within the limits of the resolution of strategic uncertainty we are able to uncover, there is little evidence that Kerry could have won, even though the election was close.

Second, it may be a mistake to treat each campaign visit as comparable. While one goal of a visit is to generate support or enthusiasm among those who attend the event, another goal is to generate news coverage. Visits are often aimed at garnering positive coverage in the local media (Jamieson, 1996). Large events might also attract coverage from elite newspapers. Thus, we should not expect the amount of coverage to be the same for each visit. In an article on candidate visits, Althaus et al. (2002) make this point quite nicely:

Moreover, even the elite newspapers are prone to emphasize stops in certain locales. For example, the LA Times may be much more interested in a Los Angeles speech than in a brief stop in Las Vegas on the way back to the Midwest battleground states. Furthermore, even with a full and complete listing (of candidate visits) in hand, one may not want to weight all appearances equally. A full day's worth of campaigning in a critical media market would logically rate more than a single, half-hour whistle stop.<sup>7</sup>

In future work, it would be useful to account for expected differences in media markets on the allocation and effect of visits.

As an illustration for 2004, we looked at two events by John Kerry and the amount of coverage that was generated in major papers covered in Lexis-Nexis. The first event took place on Labor Day in Racine, West Virginia, on September 6th, while the second event took place in Madison, Wisconsin, on October 28th. Four major newspapers covered the visit to West Virginia, while 13 covered the event in Wisconsin (and the event was the headline in most of these papers). What could possibly account for this difference in coverage? The rally in Madison was accompanied by a concert by the one and only Boss (Bruce Springsteen). Over 80,000 people attended the rally (concert) in Madison.

A Bush event in Saginaw, Michigan on the same day only drew a crowd of 10,000 and was only covered in two major papers. Campaign events may not be comparable for either the attendees or the media effects they generate. A visit that is covered in a paragraph of an article might not have as much of an impact on voters as a visit that is a full article on the front page of that same paper. In future work, we hope to use an improved measure of visits that weights the visits by the amount of coverage in a media market.

Another possible issue with the 2004 election may be that candidate and party polarization caused voters to make up their minds earlier in the campaign; thus, we need an earlier measure of positional advantage. It is possible that the polls in late August/September were already influenced by the strategic behavior of the candidates and that the effects of campaigns in the final weeks were low.

While Bartels (1985) claimed that ad and visit allocation decisions are motivated by the same factors, it could be that the nature of elections has



changed. It may be that the allocation of ads is still instrumental, while visits have become more ornamental or perhaps designed for a national audience due to the increased and national 24-hour TV news coverage. This might explain why Kerry spent a lot of time in places that he lost, such as Ohio and Florida, while Bush frequented Pennsylvania and Oregon, likely Democratic states. TV and radio advertisements are much more localized and do not seep easily across media markets.

Finally, there is one other important benchmark to be considered. Fair's model (Fair, 2004, derived from Fair, 1978) ignores strategic behavior and simply predicts outcomes based on a few aggregate variables. In 2004, the model predicted a Bush win with 57.7% of the popular vote. It is entirely possible that Kerry actually did better than any Fair expectation, and that Kerry played his best allocational strategy. He hoped to take advantage of a Bush misplay, and in fact Bush did make some mistakes, falling well short of 57.7%, winning only 51%. Nonetheless, Bush did well enough to win those states he needed to win, Ohio and Florida, and spent some time in other states (such as Pennsylvania) simply as a way to make Kerry spend time there, too.

As for our core question, whether the states that were "in play" mattered for the outcome of the election: the answer we have found is mixed. It appears that Bush had more of an advantage, in many states, than one might have guessed from reading the mainstream media. One could argue from our analysis that Kerry did about the best that could be expected. At a more perceptual level, however, one cannot help wondering what would have happened if there had been a few more visits to Ohio. In an election this close, in terms of the Electoral College outcome, it is easy to think about what might have been.

## Notes

1. On the other hand, as Rabinowitz and MacDonald (1986) argue, the winner-take-all aspect of the Electoral College swamps the overrepresentation aspect, and gives a few large states disproportionate power.
2. See, for background, Borel and Ville (1938), and Gross and Wagner (1950). For a review and update of theoretical results, see Myerson (1993; see in particular Theorem 2, p. 859).
3. The web site recorded the poll results provided for each of these dates. This measure is imperfect in that not all states had polls on August 22nd. If a state did not release a poll for this date, the web site used the closest available poll. Though imperfect, averaging across the three dates gives us some indicator of early poll advantage which is better than alternative measures, such as the results from the previous election.
4. It seems plausible to ask if in fact the polls are useful, or at least are used, in the way we suggest. One interesting recent research effort that would appear to support the claim is Soumbatiants et al. (2003).
5. Crain, Messenheimer, and Tollison (1993) demonstrate an interesting and perhaps surprising implication of a "portfolio" approach: electoral risk can be conceived as divided into

systematic and nonsystematic components. This has no implication for expected values in any state, but it does reflect (potential) nonzero covariances in outcomes. Presumably, this is true also for strategic risk in the game theoretic context we outline here. But this conclusion could be a problem for our state-by-state analysis, if there are strategic scenarios that involve multiple states winning, or losing, because of some systematic component of uncertainty about polls, or some exogenous event.

6. The data on the allocation of political advertisements across media markets is not yet publicly available.
7. Althaus, Scott L., Peter F. Nardulli, and Daron R. Shaw, 2002. "Candidate appearances in presidential elections, 1972–2000." *Political Communication* 19(1): page 52.

## References

- Aldrich, J. H. (1995). *Why parties? The origin and transformation of political parties in America*. Chicago: University of Chicago Press.
- Althaus, S. L., Nardulli, P. F., & Shaw, D. R. (2002). Candidate appearances in presidential elections, 1972–2000. *Political Communication*, 19, 49–72.
- Bartels, L. M. (1985). Resource allocation in a presidential campaign. *The Journal of Politics*, 47, 928–936.
- Borel, E., & Ville, J. (1938). Application de la théorie des probabilités aux jeux de hasard, original edition by Gauthier-Villars, Paris, 1938; reprinted at the end of *Théorie mathématique du bridgée la portée de tous*, by E. Borel & A. Chéron, Editions Jacques Gabay, Paris, 1991.
- Brams, S. J., & Davis, M. D. (1974). The 3/2's rule in presidential campaigning. *American Political Science Review*, 68, 155–156.
- Brams, S. J., & Davis, M. D. (1975). Comment on campaign resource allocations under the Electoral College. *American Political Science Review*, 69, 155–156.
- Colantoni, C. S., Levesque, T. J., & Ordeshook, P. C. (1975a). Campaign resource allocations under the Electoral College. *American Political Science Review*, 69, 141–154.
- Colantoni, C. S., Levesque, T. J., & Ordeshook, P. C. (1975b). Rejoinder to 'Comment' by S. J. Brams and M. D. Davis. *American Political Science Review*, 69, 157–161.
- Crain, W., Messenheimer, H., & Tollison, R. (1993). The probability of being president. *The Review of Economics and Statistics*, 75, 683–689.
- Fair, R. C. (1978). The effect of economic events on votes for president. *The Review of Economics and Statistics*, 60, 159–173.
- Fair, R. C. (2004). A vote equation and the 2004 election. Website: <http://fairmodel.econ.yale.edu/>
- Grofman, B., & Scott, F., (2005). The Electoral College and the 2004 election. *Public Choice* (forthcoming).
- Gross, O., & Wagner, R. (1950). A continuous Colonel Blotto game. RM-408, Rand Corporation, Santa Monica.
- Hinich, M., Ordeshook, P., & Michelson, R. (1975). The Electoral College vs. a direct vote: policy bias, indeterminate outcomes and reversals. *Journal of Mathematical Sociology*, 4, 3–35.
- Holcomb, R. L. (2003). Electoral college, in C. K. Rowley & F. Schneider (eds.), *Encyclopedia of Public Choice*. Boston: Kluwer.
- Iyengar, S., & Simon, A. F. (2000). New perspectives and evidence on political communication and campaign effects. *Annual Review of Psychology*, 51, 149–169.
- Jamieson, K. H. (1996). *Packaging the Presidency: A History and Criticism of Presidential Campaign Advertising*. 3rd Edition. New York, NY: Oxford University Press.

- Merolla, J., Munger, M. C., & Tofias, M. (2003). Lotto, Blotto or Frontrunner: An analysis of spending patterns by the national party committees in the 2000 presidential election. Paper presented at the 2003 Annual Meeting of the Midwest Political Science Association, Chicago, Illinois, April 3–6th, 2003.
- Merolla, J., Munger, M. C., & Tofias, M. (2005). Lotto, Blotto or Frontrunner: U.S. presidential elections and the nature of ‘Mistakes’. Prepared for delivery at the 2005 Annual Public Choice Society Meeting. An earlier version of this paper was presented at the Micro Incentive Research Center’s Conference on the Micro-Foundations of Federal Institutional Stability, Duke University, May 1st, 2004.
- Myerson, R. (1993). Incentives to cultivate favored minorities under alternative electoral systems. *American Political Science Review*, 87, 856–869.
- Rabinowitz, G., & MacDonald, S. E. (1986). The power of the states in U.S. presidential elections. *American Political Science Review*, 80, 65–87.
- Reeves, A., Chen, L., & Nagano, T. (2004). A reassessment of ‘The methods behind the madness: Presidential electoral strategies, 1988–1996.’ *Journal of Politics*, 66, 616–620.
- Shaw, D. R. (1999). The methods behind the madness: Presidential Electoral College strategies, 1988–1996. *Journal of Politics*, 61: 893–913.
- Soumbatiants, S., Chappell, H., & Johnson, E. (2003). Using state polls to forecast U.S. presidential election outcomes. Manuscript, Lincoln Memorial University.