PRESIDENTIAL RESOURCE ALLOCATION WITHIN THE FRAMEWORK OF THE ELECTORAL COLLEGE: AN ANALYSIS OF PRE-CONVENTION AND POST-CONVENTION STRATEGIES

by

HEATHER NICOLE FROST

(Under the Direction of Paul-Henri Gurian)

ABSTRACT

How do presidential candidates allocate campaign resources within the framework of the Electoral College? Despite the abundance of research on presidential resource allocation strategies, we still do not have a complete answer to this question. This paper argues that the availability of information that campaigns have at their disposal are a key component in understanding candidate allocations throughout the course of an election. If we operate with the belief that competitiveness influences presidential campaign strategies, then we must also consider how these strategies are subject to change based upon competitiveness levels. As the election progresses, the information that candidates have regarding states' competitiveness will become more available. Specifically, candidates will have access to more state polls. I argue that candidates are more likely to formulate allocation strategies in response to polling data during the post-convention period of the election while candidates should be more likely to allocate resources based upon the previous election during the pre-convention period. Once candidates acquire more information, I argue that they should then expend more resources in competitive states (since they

will be operating with more certainty). I find evidence supporting my hypotheses, with the exception of the 2008 election. Additionally, since a higher level of information allows candidates to identify which states are the most crucial to their chances of winning, I expect for presidential candidates to allocate to fewer states during the post-convention period. However, the findings do not clearly support this expectation.

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HEATHER NICOLE FROST

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HEATHER NICOLE FROST

Major Professor:	Paul-Henri Gurian
Committee:	Scott Ainsworth Jamie Monogan

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
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DEDICATION

"All that I am or ever hope to be, I owe to my angel Mother."

-ABRAHAM LINCOLN

(1809 - 1865)

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CHAPTER 1: INTRODUCTION

How do presidential candidates determine where to allocate resources during an election? The political science literature has not yet reached consensus on how presidential candidates formulate campaign strategies within the framework of the Electoral College. While it is evident that a state's number of electoral votes (Brams and Davis 1974), competitiveness (Rabinowitz and Macdonald 1986), and the cost of advertising (Shaw 1999, 2006) all contribute to the strategy formulation process of candidates, political scientists tend to disagree on the level of impact that each of these factors has. This research question is important in that acquiring a better understanding can lead to predicting where candidates will allocate their campaign resources. While a normative approach is not the intent of this paper, the answers to this question may have major consequences for the ongoing debate regarding the merit of the Electoral College.

When analyzing candidate allocation strategies within the framework of the Electoral College, political scientists have examined the different characteristics of states that candidates consider when formulating campaign strategies, finding them to be predictable and systematic effects of campaign strategy (Shaw 1999). This can be better understood if we evaluate how these characteristics are shaped by the season of the election. This missing piece of the puzzle impedes the development of the larger research question, which is: How do presidential candidates allocate resources within the framework of the Electoral College? In order to answer this question, we also need to understand how candidates alter their strategies as the election progresses. While we know that the number of appearances tends to increase throughout the

course of a presidential election (Althaus, Nardulli, and Shaw 2002), it is not clear how actual strategies change.

We know that presidential campaigns are dynamic (Campbell 2008). If campaigns are dynamic, then allocations will also be dynamic (Gurian 1993). If candidates allocate based upon the predictors listed above, then their expenditures will be affected by a change in one of these factors. While most of the factors listed above are static throughout the course of the election, competitiveness is not. A candidate's expected share of the vote in a state can fluctuate. Since candidates are rational individuals acting within the winner-take-all structure of the Electoral College, they should react.

We know that candidates tend to allocate a significant amount of resources to competitive states. Competitive states witness, on average, as many as four times the number of appearances that electorally secure states receive (Althaus, Nardulli, and Shaw 2002). I assume that candidates are motivated to allocate resources to competitive states due to the marginal impact of the dollar. Given the winner-take-all feature of the Electoral College, a candidate can allocate just a small amount of resources to a competitive state and win it. Even if the candidate only wins the state with 51 percent of the vote, she will receive all of the state's electoral votes. Since candidates have finite resources, they will be motivated to transfer campaign resources to a competitive state since such little cost can result in a prosperous reward.

Therefore, the impact that a state's level of competitiveness (which can be captured by both previous presidential elections as well as polling data) will have on

allocation strategies should be predicated upon the stage of the election, having a significant impact on the way in which presidential candidates allocate campaign resources within the framework of the Electoral College. If candidates are goal-oriented, rational actors, it is reasonable to expect for changes in the circumstances to change their resource allocation strategies. They will amend their actions in correspondence with current political circumstances (which are often reflected by the polls), considering all of their decisions within the framework of the Electoral College. Thus, they are likely to respond to state polls.

While the explanatory power of polls is not the main focus of this project (though their importance is relevant), the role of polling data in this puzzle cannot be ignored. The availability of polling data normally increase as the election progresses. As a result, candidates will closely monitor polls, especially as the election draws to an end. The purpose of this paper is to investigate how allocation strategies differ from one stage of the election to another. If candidates behave differently due to the dynamism of the presidential election, then their allocation strategies will not remain constant throughout the entire election.

I hypothesize that the way in which a state voted in the previous election will have more explanatory power during the early stages of an election while state-level polling data will serve as a better predictor of candidate behavior once the election has progressed. Again, more polling data is available during this time making the polling results more reliable. Furthermore, candidates will be more likely to respond to polling data as election day draws closer because most of the major campaign events (e.g., debates, the conventions, etc.) have already occurred by this point.

Thus, it is likely that the polls conducted and made available to the campaigns by this point truly reflect which states are the most competitive and are worthy of the candidates' attention. Candidates will not have this luxury during the earlier stages of the election since state polls are not conducted very often during this time period. Also, it is not clear which states are the most competitive and critical to winning the election by this point. Most of the major events in an election have not occurred prior to the month of September, possibly creating doubt for candidates. Candidates will not be willing to expend mass resources prematurely. Therefore, candidates will rely on voting history simply because it is the most recent information that they will have regarding a state's competitiveness level. They will be willing to allocate their resources in part according to this indicator simply because they have no better alternative.

If this theory proves to have validity, then what are the implications for this on the candidates' strategies? It is likely that candidates will allocate their resources in a more dispersed manner during the early stages of the election. While they will be strategic in doing so, they will not allocate a large sum of resources into the key states until they have been revealed. Since the availability of information is key, as the competitive states have been revealed it is rational for candidates to allocate more of their resources to these states. Therefore, we should expect to find that candidates allocate more resources to competitive states beginning in the month of September. This may also possibly lead to candidates focusing on a narrower group of states, potentially explaining why presidential candidates focus their resources on such a few number of states during an election.

CHAPTER 2: LITERATURE REVIEW

This study incorporates dynamic features of a presidential campaign into resource allocation strategies. I argue that presidential candidates' allocations are subject to change in response to fluctuation throughout the campaign. This is a significant gap in the literature since previous researchers have not fully considered this. Essentially, previous studies have implied or assumed that candidates allocate in a static manner. Given what we know about the structure of a presidential campaign, this approach is not consistent. It makes sense that candidates react to changes during the campaign by adjusting their resource allocations accordingly.

Political scientists have long sought how presidential candidates formulate campaign strategies within the framework of the Electoral College. Why does Electoral College strategy matter? There is a large collection of literature that examines how campaigning can affect the final election outcome. Although there are permanent forces in place in the beginning of the campaign which often dictate the outcome (Gelman and King 1993), political scientists recognize that campaigns do matter (Holbrook 1994, 1996; Campbell 2008). Campaigns can contribute to the variation in the undecided vote share during an election. Although this fluctuation may be small, it can determine which candidate wins the election (especially in a close race). Candidates are aware of this and operate with the belief that the campaign decisions that they made matter. If campaigns matter, then Electoral College strategy should matter since it undoubtedly plays a role in which candidate is elected. Acquiring a better understanding of candidate strategy will also allow for a better understanding of why certain states receive the most attention throughout the course of the

campaign.

Campaigning as a presidential candidate is unique in that it is unlike running for any other type of office in the United States. The Twelfth Amendment calls for the indirect election of the President. The Electoral College is the body of individuals who elect the President. Currently, the Electoral College is comprised of 538 electors. A candidate must amass 270 electoral votes to win the election. Since the majority of the states employ a winner-take-all rule (with the exceptions being Maine and Nebraska), the candidate who wins the plurality of the vote wins all of the electoral votes for that state. The goal is not to win the highest percentage of the popular vote, but to build a winning coalition of states (even though the two often go hand-in-hand). Presidential candidates must contrive a strategy to accomplish this because no candidate has an unlimited number of resources. The restriction associated with finite resources thus motivates a candidate to allocate strategically, given the structure of the Electoral College.

The consequences of the Electoral College are visible in the real world. A state's outcome can determine the final outcome. For example, John Kerry would have won the 2004 Presidential Election if he had not lost the state of Ohio to George Bush. More specifically, rational behavior research informs us that the Electoral College encourages strategic behavior among presidential candidates in that they will develop their plans with the goal of amassing 270 votes (Downs 1957; Enelow and Hinich 1984; Popkin 1991). Therefore, it is critical that candidates allocate their campaign resources in an efficient manner in order to increase their probability of winning. What types of campaign strategies do candidates utilize in order to

accomplish this? How does this impact the ways in which they allocate resources?

Scholars have attempted to understand the strategic behavior that the Electoral College can catalyze for almost forty years now. There are a number of questions that have been asked by researchers over this period of time. Which states do presidential candidates allocate the majority of their resources to? Empirically, researchers find that the more electoral votes a state has, the more resources it will receive (Brams and Davis 1974; Rabinowitz and Macdonald 1986; Shaw 1999; Shaw 2006). What other characteristics of the states do presidential candidates take into account when deciding where to campaign? A number of political scientists have also evaluated the role that competitiveness has. Despite these endeavors, though, there remains no clear consensus on how candidates make campaign decisions within the framework of the Electoral College.

Brams and Davis (1974) are the first researchers who really attempt to acquire a better understanding of candidate allocation strategy within the framework of the Electoral College. Brams and Davis argue that the winner-take-all feature of the Electoral College induces candidates to allocate resources roughly in proportion to the 3/2's (or 1.5) power of electoral votes of each state (Brams and Davis 1974, 113). For example, if one state has four electoral votes, and another state has 16 electoral votes, even though they differ in size only by a factor of four, the candidates should allocate eight times as much in resources to the larger state (Brams and Davis 1974, 121). In other words, the candidates will allocate more than proportionately to large states with more electoral votes than to small ones. They conclude that "voters in California are 2.92 times as attractive campaign targets as voters in Washington,

DC" (Brams and Davis 1974, 134).

There are a few shortcomings with this argument, though. First, Brams and Davis reach this conclusion without accounting for competitiveness. However, they are not at fault for this because of the absence of reliable state-by-state data on the financial expenditures of presidential candidates during this time period.

Secondly, Brams and Davis also fail to account for the fact that presidential candidates often allocate no resources to particular states, either because doing so would result in unnecessary costs since they believe that they will win the state regardless, or because they feel that they have absolutely no chance of winning the state. Candidates take numerous factors into account when deciding where to campaign, meaning that size cannot be the only relevant variable. One question that every campaign asks itself is, "Is it worth it to spend my time and money here?" Presidential candidates do not have infinite resources, so they will not allocate many resources to the states that they have almost no probability of carrying, regardless of the number of electoral votes. Undoubtedly, the expected utility of winning a state will play a role in the level of expenditures that a candidate will invest in that state.

Colantoni, Levesque, and Ordershook (1975) do not dispute the fact that resource allocations under the Electoral College typically favor larger states, but the theoretical basis for this bias differs markedly from Brams and Davis's argument. Unlike Brams and Davis, they do not assume that presidential candidates will match each other's resource expenditures in each state. Instead, allocations will vary from state-to-state. Colantoni, Levesque, and Ordeshook incorporate the dynamic aspect of a presidential campaign with the inclusion of this assumption. Since presidential

campaigns are not static, candidates will reevaluate their allocation strategies as the campaign continues. The assigned probability of winning a state is subject to change partly based on the varying levels of competitiveness. Therefore, the consequences of the Electoral College cannot be described by a single formula that is applicable to all campaigns (Colantoni, Levesque, and Ordershook 1975, 153).

Colantoni, Levesque, and Ordeshook attempt to account for finite resources in their model. Again, candidates have to be strategic in how they allocate resources since their spending is restricted. It is unlikely that a candidate will allocate resources to a state that he or she has no chance of winning. Relying on an exponential model, they conclude that along with the number of electoral votes, candidates will also factor in competitiveness in order to calculate the expected utility associated with a state. The expected utility that is assigned to a state will determine the amount of resources dedicated to that state. Therefore, candidate allocations will not be distributed symmetrically across the states. However, by failing to recognize that a candidate's probability of carrying a state is partially related to how he or she allocates resources to other states, it seems that they really do not properly account for finite resources. If a candidate decides to take spend a certain amount of money in a particular state, then that dollar amount is no longer available to spend in other states. By neglecting this dilemma, the authors do not fully recognize the role that finite resources play in candidate allocation strategy. Furthermore, the authors do not provide any empirical evidence that confirm any of their findings.

Rabinowitz and Macdonald (1986) measure a state's value contingent on both competitiveness and number of electoral votes. Rabinowitz and Macdonald develop

a model of state power which takes the advantage of the pivotal player notion critical in game theory analyses of power, but which at the same time recognizes that states differ in terms of competitiveness (Rabinowitz and Macdonald 1986, 80). They rely on the Shapley value to determine a state's power, which is based on the number of rearrangements of the states within the games in which each state can be pivotal by casting the deciding vote.

Rabinowitz and Macdonald rely on past elections as an explanation for candidate strategy. By using past elections, they account for a state's voting history. This serves as an effective measure because recent elections are often a good guide when predicting how candidates will allocate their resources. However, it excludes certain types of information that the candidates have at their disposal when forming their campaign strategies. The context of each election is different, meaning that even if a state is not historically competitive, it can still play a significant role in an election. With the inclusion of voting history, the authors do not capture the actual competitiveness of an individual state in a specific election since competitive states are the states that are up for grabs in a particular election. For example, North Carolina was a competitive state in the 2008 election even though it is normally a Republican stronghold. If a researcher only examines past elections when attempting to explain the 2008 election, then North Carolina will be excluded from that analysis. The competitive measure can be improved given the evolution of the campaign. Researchers now have access to the same state polling data that presidential candidates take cues from. These are the same polls that candidates seek information from during the span of the election and utilize when formulating strategies.

In "The Methods behind the Madness: Presidential Electoral College Strategies, 1988-1996," Daron Shaw examines actual Electoral College strategies from the 1988, 1992, and 1996 presidential elections and judges them against state-by-state allocations of television advertising purchases and candidate appearances using two-stage least squares (2SLS). This provides an opportunity to judge the behavior of presidential candidates against their own standards for rationality. The data show that candidates devised and acted upon Electoral College strategies, which were largely symmetrical across elections and party lines. The data also show that strategies were neither perfectly symmetrical nor static, raising the possibility that presidential campaigning is less predictable than previously assumed (Shaw 1999, 893). Shaw contends that while many of the previous studies offer excellent analyses, we are still left with only a scattered set of predictions and precious little empirical data on the strategic behavior of presidential candidates (Shaw 1999, 895).

Shaw concludes that state's place in a presidential candidate's electoral strategy is a function of five variables: (1) electoral votes, (2) television advertising costs, (3) competitiveness, (4) the interaction between competitiveness and electoral votes, and (5) the interaction between competitiveness and the cost of television advertising (Shaw 1999, 904). However, since the strategies are formulated by the campaigns prior to the time periods when Shaw's candidate appearance and televisions advertisement data are collected (the nine weeks between September first and Election Day), we still do not really know how candidates reached these initial decisions nor do we know whether the candidates were actually acting in correspondence with the antecedent strategies. Since campaigns are dynamic, it is possible that candi-

dates altered their strategies as the campaign progressed, meaning that their initial strategies may not capture their thought process at a later date in the campaign. Strategies often change in response to short-term forces, such as a shift in the polls.

Shaw only relies upon past presidential elections as a measure of a state's competitiveness. Again, this measure can be problematic because Shaw determines the level of competitiveness after the election occurs. The election results represent the attitude of each state at the conclusion of the campaign, and thus after the resources have been allocated by the candidates (Virgil 2008). Also, if a candidate wins a competitive state by a large margin after allocating numerous resources to it, then it is considered to be an uncompetitive state because of the election results (Virgil 2008). Even if the state is considered to be competitive in the beginning of the election, it will still be categorized as uncompetitive. Therefore, our understanding of resource allocation is limited. Since a state's voting history is a flawed measurement of competitiveness, candidates should only use it to estimate a state's level of competitiveness when there are no alternative options available.

Andrew Reeves, Lanhee Chen, and Tiffany Nagano argue that Shaw's results are flawed because they are based upon ordinary least squares regression, even though they are presented as if they are ordinal probit and two-stage least squares regression (2SLS). Furthermore, after performing ordinal probit and 2SLS analyses, all substantive findings in Shaw (1999) vanish (Reeves, Chen, and Nagano 2004, 616). Shaw addresses this error, explaining that the tables containing multivariate analyses erroneously report preliminary and methodologically inappropriate estimations that were conducted for an earlier version of the paper (Shaw 2004, 611). He presents

the corrected results, which demonstrate that the presidential campaigns did devise Electoral College plans and that these plans were influenced by a predictable array of factors, including competitiveness and the cost of TV advertising (Shaw 2004, 613-614). In short, the Reeves, Chen, and Nagano article does not have any significant consequences for Shaw's substantive findings.

In *The Race to 270* (2006), Shaw takes a similar approach in analyzing the 2000 and 2004 elections. Using a pooled time series model, he models the number of presidential visits to each state as well as the number of gross rating points (GRP) purchased in each state for the 2000 and 2004 elections. However, once again, a state's competitiveness is measured according to the way it voted previous elections. As noted earlier, campaigns take more into account when calculating a state's value. Although campaigns may rely on this information in the early stages of the general election, state polls (which usually multiply in number as the election continues) serve as a more useful tool in determining a candidate's standing within a state. Polls reflect the current political climate of a state.

While Shaw lays out the specific priorities that formed the weighting algorithm in which he and the campaign followed (past statewide voting history, contemporaneous polling numbers, organizational development and endorsements, existence of hot races or solid top-of-the-ticket candidates, issue environments, and native-son effects), he simply refers to competitive states as being part of an aggregate-level phenomenon." This is defined as the difference between the maximum and the minimum party vote for a particular office over a defined set of elections (Shaw 2006, 170). This does not offer much insight into candidate strategy since candidates view

states in a more convoluted light. A candidate's vote share in a particular state is subject to change throughout the course of an election. Shaw considers contemporaneous polling numbers to be part of a campaign's calculus, but does not analyze how this information affects allocations. If candidates allocate partly based on polls, then as these polls change, so should allocations.

Scott Virgil (2008) gives a detailed elaboration on the advantages of polling data. Virgil criticizes the use of state voting history as a measure of competitiveness, arguing that it is more sensible to capture as accurately as possible the information that candidates actually utilize in their estimations (Virgil 2008, 19). Furthermore, state voting history data cannot account for the endogeneity created by the four-year lag associated with it. Although Virgil's Bayesian results reveal that state polls are not more explanatory than past election results, state polls still serve as an effective measure of competitiveness in the model. These findings support the use of state level polls in future research.

Taofang Huang and Daron Shaw (2009) further evaluate candidate strategy by examining the 2008 presidential election. Again, resource allocation is quantified via candidate appearances and television advertisements. Huang and Shaw find that candidates are willing to allocate a large sum of resources to competitive states (which Huang and Shaw refer to as battleground states). Huang and Shaw also find that John McCain was more aggressive in Democratic leaning states than Republican leaning states while Barack Obama allocated more campaign resources to the states that leaned Democrat compared to those which leaned Republican (Huang and Shaw 2009, 285-288). While Huang and Shaw provide interesting insights into the 2008

election, the results should not be accepted without skepticism because they only examine one election. Without an additional election to compare the 2008 election to, it is difficult to determine whether the findings are applicable to other presidential elections or not.

However, in line with my expectations, Huang and Shaw do find evidence of allocation dynamism since both candidates made strategic adjustments as the campaign progressed (Huang and Shaw 2009, 279). For instance, John McCain increased his spending levels the week after the Republican Party Convention. Yet they do not consider whether these adjustments were made in response to state polls. In order to gain a deeper insight into candidate strategy, we need to understand why and how these strategic adjustments were made. Furthermore, we do not know how the latter strategies differed from the former strategies. Were candidates better able to detect crucial states that they then responded to by reallocating their campaign resources?

In sum, the collection of literature fails to incorporate the dynamism of elections into their models. Presidential candidates allocate resources based on short-term factors, not just permanent forces. While larger, more permanent forces usually have the most explanatory power in presidential elections, short-term forces often account for the small margin of fluctuation (Campbell 2008).

The literature recognizes how numerous factors impact candidates' resource allocation calculations. We know that electoral votes will systematically play a role in these calculations in every presidential election. This is not surprising since candidates need to amass 270 votes to win the election. We also know that competitiveness is relevant. However, unlike electoral votes, which remain consistent throughout the

course of the election (e.g., if a state has nine electoral votes at the beginning an election, this number will not change during the election), competitiveness is subject to change. Since we know that a state's level of competitiveness is a component of allocation strategies, when a state's level of competitiveness changes, so should a candidate's strategy. Yet researchers in this field of study have not considered this potential factor. The most important determinant of whether a candidate will win an election or not are the states themselves. Since state polls reflect the standings of the candidates in each specific state, candidates will certainly respond to them. As polling numbers change, so should allocations. Since more polls become available as the campaign progresses, strategies employed in the early stages of a presidential election should differ from those in the later stages.

CHAPTER 3: THEORY

I assume the following:

1. Due to the structure of the Electoral College, candidates are motivated to allocate resources to competitive states.

2. Therefore, when available, state polls are a major component of presidential candidates' allocation strategies. Since polls are dynamic, presidential candidates' allocations will also be dynamic.

3. As the campaign progresses, more state polls will be conducted. As a result, candidates will have more information about which states are the most critical in determining whether or not they win the election.

3.1 Game Theoretical Model: Competitiveness Matters

I assume that candidates are rational actors, meaning that they are goal-oriented (Aldrich 1980) and have both ordered preferences and beliefs about which actions will help them achieve their optimal outcome. Presidential candidates have only one goal: to win the election. Although previous work suggests that presidential candidates may engage in campaign activities that do not directly benefit their electoral fortune (Bartels 1985), candidates are seekers of election and will select actions that give them the highest chance of winning the election (Mayhew 1974). Therefore, presidential candidates will not sacrifice their time and resources for another cause.

The marginal impact of the dollar motivates candidates to allocate their resources to competitive states. In other words, since candidates have finite resources and

have to decide where their campaign money will be best spent, they will want to allocate to the places where they can get the "biggest bang for their buck." This is why competitive states receive so much attention from presidential candidates. In a competitive state, the candidates are equally advantaged. Therefore, a candidate will be motivated to transfer money to that particular state. Even if the reallocation of resources only results in a small increase in a candidate's standing, that small amount may result in winning that particular state. For example, if Candidate A holds 51 percent of the vote and Candidate B holds 49 percent, an increase of just two percentage points in Candidate B's standing will allow Candidate B to take the lead.

The marginal impact of the dollar can be demonstrated by a game theoretical model. One way to think of this is to consider if candidates are able to buy votes in states. While there are an infinite number of strategies because the dollar can be divided in an infinite number of ways, the major problem that candidates face is how to divide finite resources. They will want to allocate to the states where is the most likely that their allocations will have an impact.

One way to display this is to utilize a deterministic game. In this model, the players have both certainty and complete information about how their actions will affect the final outcome, meaning that they are informed about how much their vote share will increase with each additional dollar spent. A game with complete information is appropriate because the players, like presidential candidates, will be motivated to expend resources in states when the current standings in the vote shares are clear. The game is essential to the overall theory because it establishes

competitiveness.

Formally, the game is played by two actors: The Republican (R) and the Democrat (D).

$$N=\{D,R\}$$

For the sake of simplicity, the nation consists of three states: A Left State, a Competitive/Neutral State, and a Right State. Two states are categorized as having partisan leanings while one state can be categorized as competitive. The players are able to adjust their allocation strategies at any point during the election,. As a result, a player can always counter the other player's allocations with a new strategy in order to avoid losing the election, meaning that there is no dominating strategy (Merolla, Munger and Tofias 2005). The following equation represents the available allocation strategies for each player.

$$\{A_i \in [0,1] : a_L + a_C + a_R = 1\}$$

Both candidates have the same amount of money on hand and have an infinite number of strategies they can adopt, as long as their allocations sum to one dollar. This means that R can allocate his or her share across the states in any way such that $r_L + r_C + r_R = 1$ (with r denoting R's allocation) and D can allocate his or her share across the states in any way such that $d_L + d_C + d_R = 1$ (with d denoting D's allocation).

Suppose that the vote in the Left State is comprised of 40% Democratic voters, 20% Republicans, and 40% of the vote is up for grabs, while 20% of the Right state

are Democrats, 40% are Republican, and 40% of the vote is undecided. 48% of the vote in the Competitive State, on the other hand, consists of Republican voters, 48% Democrats, and 4% of the vote is undecided. The partisan portion of the vote is predetermined and is not subject to change with spending. The undecided percentage, however, is up for grabs.

For the Left State:

40% are Democratic voters,

20% are Republican,

and

40% are Undecided.

For the Competitive State:

30% are Democratic voters,

30% are Republican,

and

40% are Undecided.

For the Right State,

20% are Democratic voters,

40% are Republican,

and

40% are Undecided.

The players have equal capabilities of acquiring the undecided votes in each state. Again, the undecided percentage is up for grabs. Therefore, the players have the ability to purchase undecided votes, increasing their overall vote share in each state. We can examine which strategies can be utilized by the players, given their standings. In order to demonstrate this, the game begins with R's coalition consisting of two states and D's coalition consisting of one. Imagine the following (hypothetical) scenario:

For the Left State,

If D allocates 15 cents to the state (d_L), and if R allocates 5 cents to the state (r_L),

D will receive 75% of the undecided vote and 70% of the total vote in the state

and

R will receive 25% of the undecided vote and 30% of the total vote.

$*$ Since D receives 75% of the undecided vote (which constitutes 40% of the state's total vote), D is able to increase D's total share of the state by 30 percentage points, which sums to 70 % of the total vote. Since R receives 25% of the undecided vote, R is able to increase R's total vote share by 10 percentage points, which sums 30% of the total vote. Note that D spending 75% of total spent in the Left State leads to an increase of 30 percentage points to D's total vote share in the state. R spending 25% of the total spent in the Left State leads to an increase of 10 percentage points to R's total vote share in the state.

For the Competitive State,

If D allocates 5 cents to the state (d_C), and if R allocates 15 cents to the state (r_C), D will receive 25% of the undecided vote and 40% of the total vote

and

R will receive 75% of the undecided vote and 60% of the total vote.

For the Right State,

If D allocates 80 cents to the state (d_R), and if If R allocates 80 cents to the state (r_R), D will receive 50% of the undecided vote and 40% of the total vote

and

R will receive 50% of the undecided vote and 60% of the total vote.

Can D defeat this? It is rational for D to allocate money to the competitive state due to the marginal impact of the dollar.

For the Left State,

If D allocates 15 cents to the state (d_L), and if R allocates 5 cents to the state (r_L), D will receive 75% of the undecided vote and 70% of the total vote

and

R will receive 25% of the undecided vote and 30% of the total vote.

For the Competitive State,

If D allocates 16 cents to the state (d_C), and if R allocates 15 cents to the state (r_C), D will receive 51.6% of the undecided vote and 50.64% of the total vote

and

R will receive 48.4% of the undecided vote and 49.36% of the total vote.

For the Right State,

If D allocates 69 cents to the state (d_R), and if If R allocates 80 cents to the state (r_R), D will receive 46.3% of the undecided vote and 38.52% of the total vote

and

R will receive 53.7% of the undecided vote and 61.48% of the total vote.

Player D is able to win the election by just allocating 11 cents to the competitive state. Of course, since there is no dominating strategy, R can counter this by adopting a new strategy.

3.2 Strategies will be Dynamic

If candidates consider competitive states to be attractive, then as the competitiveness is better known (revealing which states are in play and which ones are out of play), candidates will respond. Again, presidential elections are not static. Any theory that attempts to understand allocation strategies should incorporate the dynamic features of the presidential campaign into its design.

Polling data provides candidates with information about the competitiveness of the state. Polls are the best predictors of the fortune of elections because they reflect the current political context of the state (Virgil 2008). State polls are now extremely reliable and often reflect which candidate would win the state if the election were to take place on that particular day (Traugott 2005; Hillygus 2011). Thus, candidates will utilize polling data in their calculations.

If we know that candidates allocate resources in response to competitiveness, then their allocations should change as the information flow increases and becomes more credible. This will be visible in their allocation strategies. Once candidates have more information about a state's competitiveness level, their resource allocations will be subject to change.

3.3 Candidates will Adopt More Concentrated Strategies

As a presidential election progresses, more information is available to the candidates. In the modern era, the number of state polls conducted almost doubles after the conventions.[1] The level of information is key in explaining candidate behavior. Again, since presidential elections are dynamic (Campbell 2008), allocation strategies should also be dynamic.

Again, I assume that candidates are seekers of election (Mayhew 1974). They will be rational in achieving their goal, selecting actions that they believe will lead to their goal (Aldrich 1980). While the ultimate goal is to accrue 270 votes, the strategic, short-term goals of a presidential candidate will vary as circumstances vary. The initial goal, as a step forward towards the ultimate goal, will be to mobilize and excite the party base as well as to gain widespread recognition among the public. Since presidential elections have been candidate-centered in recent decades (Wattenberg 1991; Holbrook 1994), the latter has become increasingly important. Candidates will focus their energies on these goals immediately after the primaries because they will be operating with limited and incomplete information. Candidates are not informed

[1]This is evident when examining state polls on uselectionatlas.org

about which states will be the most crucial to their victory at this point. They are also aware of the lack of information that they are being exposed to during these early stages. Therefore, they will be reluctant to allocate a large sum of resources at this time. As more information becomes procurable, however, the short-term goal will be subject to change.

A candidate's short-term goal will change once more polling information becomes available. The short-term goal by this time point in the election will no longer concern the party base. By this period, the two presidential candidates are well-known to the public, so candidates will not be as concerned about earning recognition among the voters. Candidates have no strategic need to concern their campaigns with these short-term goals after the conventions (by September) because the key competitive states are fairly visible by this time. Accessibility to more complete information is important in explaining this change. Candidates will have more information pertaining to the competitiveness levels of each state (reflected by state polling data). Since candidates are rational actors who want to reach their ideal outcome, they will then focus a large portion of their resources to the most crucial states. Therefore, the number of states which candidates focus on will decrease as the campaign progresses. The addition of these crucial states to a candidate's coalition is imperative since candidates are then able to secure all of the electoral votes offered by the state under the winner-take-all feature of the Electoral College.

Timing and information are both key components in a candidate's calculus. The more information that candidates have at their disposal, the more their strategies will differ from the strategies that were followed in the early stages of the election.

In the beginning of the election, few (if any) state polls are conducted. As a result, candidates will *have* to rely on a state's voting history in determining its level of competitiveness. On the other hand, once candidates acquire more information about the states, they will dedicate more of their resources to winning these states.

CHAPTER 4: RESEARCH DESIGN

4.1 Data

The first goal is to measure the relationship between competitiveness and the number of appearances by presidential candidates in two different time points in the election. In order to do this, I examine how both voting history and state polls affect resource allocation. I expect the former to have more predictive power in the early stages of the election while I expect the latter to do so in the later stages.

I predict that the way in which a state voted in a previous election will have a direct effect on a candidate's resource allocations, *ceterus peribus*. Even if the previous election was a landslide, the relative advantage of each party is similar. A number of political scientists have shown that past presidential elections play a role in the way presidential candidates allocate their resources (Rabinowitz and Macdonald 1986; Shaw 1999, 2006). When making decisions about which states to allocate resources to, candidates should always rely on the most updated information that exists about the state's potential level of competitiveness. Candidates will want to rely on the information that is the most recent because it is the most relevant to their strategies.

However, the caveat here is that voting history should not hold as much predictive power in the later stages of the election. As candidates are exposed to more valuable information about the current political climate of each state, they will be more inclined to utilize this information in their calculations.

As noted earlier, polling data captures as accurately as possible the information

that candidates actually utilize in their estimations (Virgil 2008, 19). I expect for state polls to impact how presidential candidates allocate their campaign resources. Additionally, polls should serve as more efficient estimators of allocations after the conventions (beginning in the month of September). The number of polls conducted increases a great deal by this point in the election, giving their numerical values more usefulness and credibility. Candidates will want to formulate their strategies based on state polling data when possible since the information reflects the most current political climate for each state, predicting how the state would vote if the election were to take place on that particular date. By this point, a powerful positive relationship should exist between polling competitiveness and appearances made by the candidates. As a state's level of polling competitiveness increases, the number of visits made to the state should also increase. In order to test my hypotheses, I perform state-by-state analyses.

Hypotheses:

Hypothesis One: While voting history and state polling both impact allocation strategy, I expect for state polling data to have more explanatory power in the post-convention model than in the pre-convention model.

Hypothesis Two: I also expect for voting history to have more explanatory power in the pre-convention model than in the post-convention model.

Hypothesis Three: I expect for there to be more appearances made by candidates to competitive states in the post-convention model than in the pre-convention model.

Hypothesis Four: I expect for candidates to allocate to a more concentrated number of states in the post-convention model when compared to the pre-convention

model.

I utilize the following equation:

$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \upsilon_i$$

Y_i =number of candidate appearances in each state, X_{2i} =state polls, X_{3i} =competitiveness margin from previous election, X_{4i} =number of electoral votes

In the following section, I explain how I operationalized the variables.

1. Candidate Appearances: The dependent variable measures the resource allocations, operationalized by the number of campaign appearances made by each candidate per state during the general election (which includes the time span after the party convention through election day). The number of appearances captures the resource that is most valuable to presidential candidates: their time. Presidential campaigns see personal appearances as one of the most important ways for candidates to shape public agendas and popular opinion (Althaus, Nardulli, and Shaw 2002). I choose to exclude campaign advertising because of the potential problems that it can create. Advertising data is not reliable because it is based upon media markets, which may cross state boundaries and cause issues when analyzing the advertising levels for each state. It is also troublesome because the data do not take outside groups into account. Interest groups, for example, often pay for political advertisements, which support the candidate of their choice. These groups also often run negative advertisements against their candidate who does not best represent their interests. From the perspective of the campaign, it is not rational to allocate finite resources towards this campaign activity if another group is willing to expend money to the cause themselves (Virgil 2008). Obviously, if a group affiliated with a

candidate is willing to allocate resources to a particular state, then there is a high probability that the state is in fact competitive.

Candidate appearances data are obtainable from the candidates' websites. For both the 2004 and 2008 elections, www.livingroomcandidate.org provides these websites for both candidates. These websites include an archive that tracks which states both the presidential and vice presidential candidates traveled. Additionally, www.cnn.com tracked candidate appearances throughout the 2008 election. While my original intent was to include appearances by the candidates beginning in April of the election year, these data were not available for every candidate. The earliest data that are available for all candidates are not recorded until July 10th.

I separated the data into two groups: pre-convention and post-convention. The pre-convention data includes visits from July 10th to August 31st. The post-convention data spans from September first to Election Day. I separated the appearance data into two groups in an effort to detect how the different determinants of allocation strategy differ in these two different time periods of the election. Again, I predict that candidates will allocate differently depending on the time point in the election. Since polling data are more abundant during the later time points in the election, I expect polling data to have a more powerful effect on allocations in the post-convention period.

I treat presidential visits and vice-presidential visits equally. Although this approach is subject to criticism, visits made by both presidential and vice-presidential candidates represent the campaign's time. Where the candidates choose to spend their time reflects the states most valued by the campaigns. The number of appear-

ances per state reflects the number of separate campaign events that the candidates attended in each state.

Candidates often travel to states for fundraising purposes even when there is an absence of competitiveness. While candidate websites document the events attended, the websites do not always fully disclose fundraising information. In an attempt to account for this, specified fundraising events were not included in the analysis. While this is not a perfect technique by any means, it is an attempt to account for the impact that fundraising events have on candidate appearances.

2. Polling Data: I decide to utilize state polling data as a measure of competitiveness. A potential issue with this approach, however, is that polling data prior to 2004 is not available through an open source. I obtained the 2004 and 2008 polling data using uselectionatlas.org. My model only includes the 2004 and 2008 elections due to this limitation. Regardless, it is an appropriate measure of competitiveness because it captures the political climate of the state during the course of the election. I rely on Virgil's measure for competitiveness, which takes the absolute value of the difference between the candidates based upon polling data, which is then subtracted from 100 (Virgil 2008, 32). Zero represents the lowest level of competitiveness while 100 represents the highest. There are more state polls in the post-convention data than in the pre-convention data.

3. Voting History: I include competitiveness measures which are reflected from both polling data and voting history in my model because I expect both to influence the number of appearances made by candidates in both the pre-convention and post-convention periods. The way in which a state voted in previous presidential

elections is often used to determine a state's level of competitiveness (Rabinowitz and Macdonald 1986; Shaw 1999, 2006). For my analysis, I only use the most recent presidential election. Although most researchers rely on the past three presidential elections, I choose not to. I contend that candidates utilize the most recent available information when formulating campaign strategies. Therefore, candidates should use the most recent election as a guide when allocating resources.

Again, this variable reflects the political climate of the state after the campaign takes place. Thus, the competitiveness of the state is reflected after campaign expenditures. I expect this to serve as a better predictor of resource allocation in the pre-convention model. Presidential candidates should be more reliant on these data in the early stages of the campaign, because there is no better alternative. At this point, this is the most updated information that the candidates have regarding the political climate in each state. Once more information (such as polling data) becomes available as the campaign progresses, candidates will then be less likely to rely on previous election information. I utilize the same measure used for the polling data, taking the absolute value of the difference between the candidates in each state's previous election result, which is then subtracted by 100. Zero represents the lowest level of competitiveness while 100 represents the highest.[2]

4. Electoral Votes: These data are obtainable through a variety of sources, including the Electoral College homepage. This variable reflects the number of Electoral College votes per state. While a number of previous researchers treat competitiveness

[2]Multicollinearity between the the previous vote and state polling data was a concern for me. In order to test whether two or more of the predictor variables were highly correlated, I calculated the variance inflation factor (VIF) scores. All of the VIF scores were less than 4, alleviating the concern of multicollinearity.

and electoral votes as an interaction (Shaw 1999; Virgil 2008), I choose not to. The number of electoral votes should not have a conditioning effect on competitiveness since a state does not have to offer a large number of electoral votes to be competitive in an election (Wright 2009).[3] Candidates are not necessarily concerned with amassing as many electoral votes as possible because they do not have an infinite number of resources. Instead, they are more concerned about forming a coalition of states that provides them with at least 270 electoral votes.

Other: A candidate may feel more inclined to allocate resources to his or her home state (Holbrook 1991). Even though the home states of presidential candidates are normally not up for grabs, candidates will often attend campaign events in their home states since they usually have a campaign headquarters in that location. Therefore, I drop the home states of both presidential and vice-presidential candidates. Similarly, presidential candidates will be more likely to visit Washington, D.C., not because the state is undecided, but because it is convenient. Incumbent presidents running for reelection are required to spend time in D.C., so they will not lose much time when attending a D.C. campaign event. Thus it is not an adequate representation of the campaign's time. In order to avoid this issue, I do not include any appearances made in the District of Columbia.

While evidence has indicated that candidates formulate strategies based upon

[3]However, winning a small, competitive state does not offer as much of a reward for the candidates. I ran an analysis treating both the previous election competitiveness and polling competitiveness as interactive variables in an attempt to examine whether the variables had a conditioning effect on the dependent variable. Surprisingly, I received negative coefficients for the interactive variables. Even though the coefficients are significant, they are negative and appear to be small compared to the other variables. This suggests that the variables are independent, not interactive. The basic results of the analysis are effectively the same even if the interactive variables are included in the model.

the determinants of allocations listed above, I do not argue that there are no other components of candidate strategy. For example, candidates have on-the-ground informants, providing them with internal polls. A candidate may decide not to campaign in a particular state if a consultant advises against it. However, this information is not quantifiable so it cannot be accounted for in the empirical analysis. This does not mean, though, that we should ignore the relevance of this activity in candidate strategy.

CHAPTER 5: Model

The goal is to explain the frequency of state appearances throughout the general election. Using states as the unit of analysis, I choose to employ a Poisson regression model in order to analyze whether the variables have an effect on the number of appearances a state receives or not. A Poisson model is appropriate since the dependent variable is a count variable taking on relatively small values. An assumption of the Poisson regression model, though, is that the variance is equal to the mean (Gujarati and Porter 2008, 577). However, the residual difference is larger than the degrees of freedom for my data set. Additionally, an overdispersion test reveals evidence of overdispersion. Therefore, I decided to perform a Quasi-Poisson regression analysis (making it more difficult for the coefficients to obtain statistical significance).[4]

The analysis includes the 2004 and 2008 elections. Although these are only two election years (raising the possible criticism of whether the results can be generalized to all presidential elections or not) the elections include a variety of circumstances including: the War in Iraq, incumbency, fundraising advantages, the economy, and changes in congressional partisanship. Also, it is important to first test whether or not my hypotheses are true for this time period before testing antecedent elections. Candidates now more narrowly focus on smaller segments of the population than

[4]I do not present a Negative Binomial test because the variance of the mean is a quadratic function of the mean while the variance of a Quasi-Poisson is a linear function of the mean. This means that more weight is given to the states which did not receive visits in the Quasi-Poisson model while more weight is given to the the states which received the most visits in the Negative Binomial. I believe that the Quasi-Poisson model is more relevant to how presidential candidates view states. The states are targeted according to the groups in which candidates place states. The states which receive no resources are the states that candidates do not respond to. However, both models produce similar results and the substantive results do not change.

ever before (Althaus, Nardulli, and Shaw 2002). If I do not find support for my hypotheses for this time period, then it is unlikely that I will for former election years. It is also highly unlikely that my hypotheses will apply to elections prior to 2004 if I do not find evidence for my arguments in my data sets because state polls were not conducted as much. The abundance of polling data (information) is a key component of my hypothesis. Thus, the theory is most likely to be visible in the elections contained in my data set.

The data are split into two groups: the pre-convention model and the post-convention model. This is done in an effort to determine whether the two groups differ or not. I expect for voting history to have a stronger effect on the dependent variable in the pre-convention model than in the post-convention model. Additionally, I expect for state polls to have a stronger effect on appearances in the post-convention model. Again, the two models should differ in this way because more information is available to the candidates as the campaign develops.

First, I analyze the states for both elections. Secondly, I also run separate analyses for each election. This is done in an attempt to determine whether the theory is more applicable to one election over the other. Table 1 displays the summary statistics for both the pre-convention data and the post-convention data.

5.1 Results

Table 2 illustrates the Quasi-Poisson regression results for both the pre-convention model and the post-convention model.[5] This is not a linear model, so stating how

[5]This was also estimated as negative binomial regressions, and the results were similar.

Table 1: Summary Statistics for the 2004 and 2008 Elections

Pre-Convention	Observations	Mean	Std Dev	Minimum	Maximum
Appearances	192.00	1.63	2.26	0.00	11.00
State Polls	192.00	87.41	9.47	55.00	99.00
Previous Election	192.00	84.73	10.73	54.00	100.00
Electoral Votes	192.00	10.62	9.51	3.00	55.00
Post-Convention	**Observations**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Appearances	192.00	4.26	7.43	0.00	46.00
State Polls	192.00	86.91	9.70	58.00	100.00
Previous Election	192.00	84.68	10.31	54.00	100.00
Electoral Votes	192.00	10.62	9.51	3.00	55.00

a one unit increase of each variable affects the dependent variable is not as useful. However, each variable is statistically significant in both models, with the exception of the previous election variable in the post-convention model. It is clear that state polls, the previous election, and number of electoral votes all partially influence how presidential candidates formulate their appearance strategies. We also witness the expected relationship between the coefficients, with the past election having a larger value in the pre-convention model and the polls having a larger value in the post-convention model. Although the previous election does not receive a larger value than state polls in the pre-convention model, the goal is to determine whether candidates are more reliant upon polls during the post-convention period than is the case during the pre-convention period. The other relationship of interest is whether candidates are more reliant upon the previous election during the pre-convention period than is the case during the post-convention period.

Additionally, I calculated the standardized coefficients for the intercept and the independent variables. This was done in an attempt to transform all of the vari-

Table 2: Quasi-Poisson Regression Model for the 2004 and 2008 Elections

Pre-Convention	Estimate	Std Error	t value	p score	Std. Coefficients
Intercept	-12.8311	1.6512	-7.77	0.0000	-0.1828
State Polls	0.1057	0.0251	4.20	0.0000	1.0001
Previous Election	0.0356	0.0165	2.16	0.0322	0.3689
Electoral Votes	0.0377	0.0062	6.06	0.0000	0.3583
					Dispersion parameter: 1.81
Post-Convention	**Estimate**	**Std Error**	**t value**	**p score**	**Std. Coefficients**
Intercept	-13.1563	1.6077	-8.18	0.0000	0.5665
State Polls	0.1331	0.0331	4.02	0.0001	1.2903
Previous Election	0.0200	0.0285	0.70	0.4824	0.2065
Electoral Votes	0.0433	0.0069	6.25	0.0000	0.4122
					Dispersion parameter: 1.66

ables into the same units in order to compare them within each model. In the pre-convention model, we do not see a larger standardized coefficient for the previous election than for state polls. In the post-convention model, we see a larger standardized coefficient for state polls than for the previous election. This suggests that candidates' allocations are more dependent upon state polls following the convention. However, the previous election does not receive a larger value than state polls in the pre-convention model. The goal is to determine whether candidates are more reliant upon polls during the post-convention period than is the case during the pre-convention period. The other relationship of interest is whether candidates are more reliant upon the previous election during the pre-convention period than is the case during the post-convention period. However, since these are standardized coefficients, we cannot compare them across models, making it difficult to test the first and second hypotheses using these values.

Table 3: Quasi-Poisson Regression Model for the 2004 Election

Pre-Convention	Estimate	Std. Error	t value	p score	Std. Coefficients
Intercept	-14.4901	2.6985	-5.37	0.0000	-0.5541
State Polls	0.0352	0.0440	0.80	0.4255	0.3743
Previous Election	0.1244	0.0335	3.71	0.0004	1.3619
Electoral Votes	0.0237	0.0102	2.33	0.0221	0.2232
					Dispersion parameter: 1.91
Post-Convention	**Estimate**	**Std. Error**	**t value**	**p score**	**Std. Coefficients**
Intercept	-24.2897	3.9308	-6.18	0.0000	0.5267
State Polls	0.2330	0.0640	3.64	0.0004	2.3869
Previous Election	0.0354	0.0540	0.66	0.5132	0.3838
Electoral Votes	0.0410	0.0117	3.52	0.0007	0.3863
					Dispersion parameter: 2.34

Table 3 shows the results for the 2004 election. The unstandardized coefficients provide the same substantive results as the previous model. The past election receives a larger unstandardized coefficient in the pre-convention model than is the case in the post-convention model. State polls receives a larger unstandardized coefficient in the pre-convention model than we see in the pre-convention model. In the pre-convention model, we see a larger standardized coefficient for the previous election than for state polls. In the post-convention model, we see a larger standardized coefficient for state polls than for the previous election. This suggests that candidates' allocations were more dependent upon the previous election prior to the convention during the 2004 election and that their allocations are more dependent upon state polls following the convention.

In the pre-convention period of 2004, the influence of the previous election was greater than that of the state polls. In contrast, beginning on September 1st, the

Table 4: Quasi-Poisson Regression Model for the 2008 Election

Pre-Convention	Estimate	Std. Error	t value	p score	Std. Coefficients
Intercept	-12.3449	2.2078	-5.59	0.0000	-0.0045
State Polls	0.1276	0.0345	3.70	0.0004	1.0374
Previous Election	0.0068	0.0219	0.31	0.7568	0.0666
Electoral Votes	0.0487	0.0087	5.62	0.0000	0.4699
					Dispersion parameter: 1.85
Post-Convention	Estimate	Std. Error	t value	p score	Std. Coefficients
Intercept	-8.8652	1.5129	-5.86	0.0000	0.8931
State Polls	0.0945	0.0360	2.63	0.0100	0.8655
Previous Election	0.0115	0.0323	0.36	0.7228	0.1122
Electoral Votes	0.0561	0.0096	5.86	0.0000	0.5411
					Dispersion parameter: 1.44

influence of polls is greater than that of the previous election in 2004. These results support the hypothesis that early on candidates rely more on the previous election, but later on, they rely on the polls. Table 4 displays the results for the 2008 elections. The results for the 2008 election indicate that both before and after September, candidates relied more on state polls than on the previous election.

There are undeniable differences between the 2004 and 2008 elections. While polls and previous voting history serve as strong predictors in both election years, the evidence supports my hypothesis in 2004. In 2008, the evidence neither supports nor contradicts the hypothesis. Surprisingly, polling data serve as a strong predictor of candidate behavior during the early stages of the 2008 election.

Perhaps this is a result of the increase in polling data, providing candidates with more polling data during the early stages of the election. On the other hand, it is also possible that I do not find support for my hypothesis in the 2008 election because

Barack Obama and John McCain both adopted unique and aggressive campaign strategies (Huang and Shaw 2009, 285-288). One plausible explanation for this is the fact that there was an imbalance in the advantages enjoyed by the candidates. Barack Obama enjoyed a significant fundraising advantage over John McCain, leading him to employ a more dispersed campaigning strategy. The problems associated with finite resources was not as severe for Obama, meaning that targeting states was not as imperative for him. John McCain, the "underdog," likely adopted a more risk acceptant strategy, focusing on states that he did not have a high chance of winning since he was trailing behind his opponent.

5.2 How will this Impact Allocation Strategies?

The results in the previous section lend the following question: If the impact of certain variables are subject to change depending on the time period in the campaign, then how can this affect candidates' strategies? Which states received the most attention from candidates in 2004 and 2008? Did their pre-convention and post-convention strategies differ?

Figure 1 displays candidate appearances during the pre-convention periods of the 2004 and 2008 elections. It is evident that presidential candidates engage in strategic planning during the pre-convention period of the election. Candidates focused the plurality of their appearances on Missouri, Ohio, and Pennsylvania. Candidates also allocated a large sum of appearances to Florida, New Mexico, Colorado, Nevada, Virginia, Iowa, Minnesota, Wisconsin, and Michigan. This is not surprising since these states offer a large number of electoral votes and were competitive in the

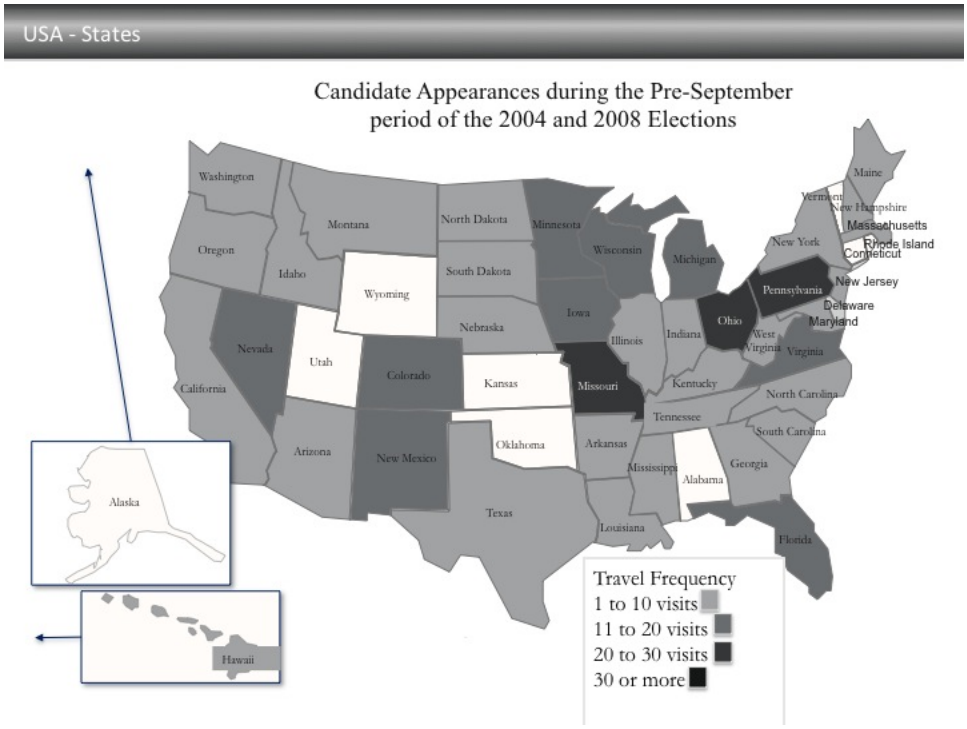

Figure 1: Candidate Appearances During the Pre-Convention Period of the 2004 and 2008 Elections

previous elections.

Figure 2 displays candidates appearances during the Post-September periods of the 2004 and 2008 elections. The states which received the most attention during this period include New Mexico, Colorado, Missouri, Iowa, Florida, North Carolina, Virginia, North Carolina, Ohio, Minnesota, Wisconsin, Michigan, New York, Pennsylvania, and New Hampshire.

These figures demonstrate how candidates adjusted their strategies by the post-convention period. Candidates allocated more of their resources to particular states after the conventions. Once the candidates acquired more information about the

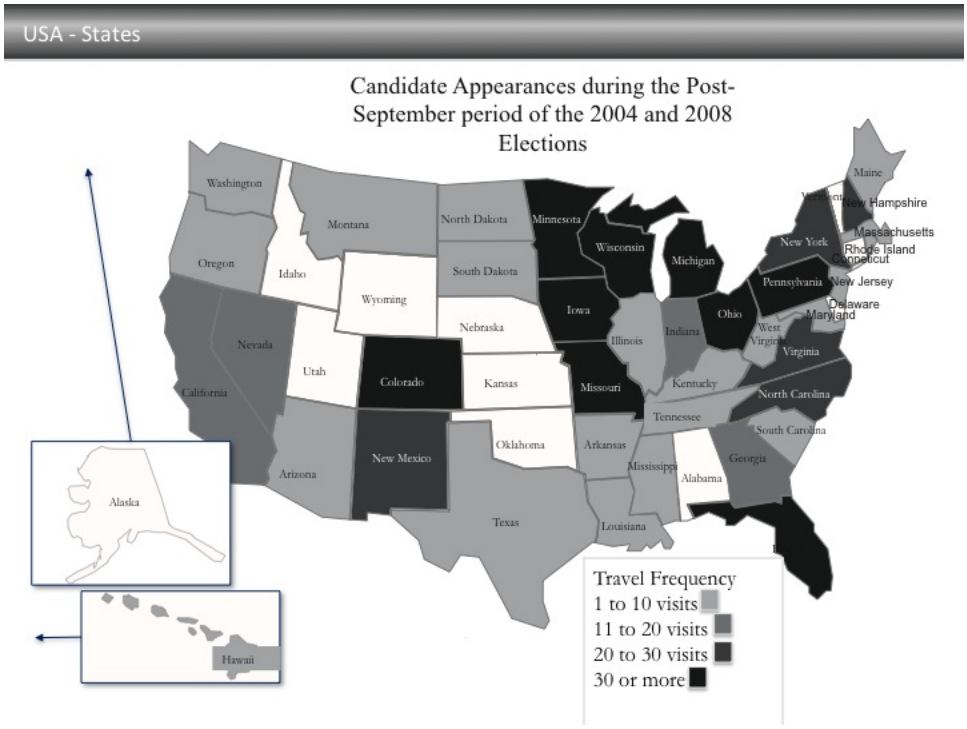

Figure 2: Candidate Appearances During the Post-Convention Period of the 2004 and 2008 Elections

states, they were willing to allocate a significant amount of resources to certain states. While this seems to support my third hypothesis (that candidates will increase their number of visits to competitive states during the later stages of the election), the figures do not provide much support for the fourth hypothesis (that candidates will allocate to fewer states during the later stages of the election). It appears that candidates were more likely to augment more resources within each competitive state during the post-convention period. It also appears that candidates were willing to allocate more resources to additional states during this period (likely after it became clear that they were competitive/critical states).

Although the structure of the Electoral College motivates candidates to expend resources in competitive states, candidates will not be willing to expend the majority of their resources on states until they are confident enough to do so. Candidates do not have infinite resources, thus they will not waste any allocations.

It is possible that candidates are more risk averse in the earlier stages of the presidential election? While it is clear that they expend a large portion of their resources in states that are likely to be competitive, they will not allocate an immense amount of resources until it is clear that these states will be critical on Election Day. This information is provided to the candidates by state polls. As previously discussed, the number of polls multiply in number as the election progresses. As a result, Information regarding states' competitiveness (polling data) will not be as reliable during the earlier stages in the election.

Furthermore, candidates will be less likely to to categorize a state as critical during the early stages of the election because there are still many months until the arrival of Election Day. Campaign events can affect a candidate's vote share (Holbrook 1996). Vote shares fluctuate after conventions, debates, and so on. Therefore, candidates will be reluctant to target a competitive state prematurely.

The maps support the notion that candidates will expend more resources in competitive states during the post-convention period. The provides evidence that the time-period approach is useful when studying how presidential candidates allocate their campaign resources. Clearly, strategies are partially based upon the election time period.

CHAPTER 6: DISCUSSION AND FUTURE RESEARCH

This study incorporates dynamic features of a presidential campaign into resource allocation strategies. This is a significant gap in the literature since previous researchers have not fully considered this. Essentially, previous studies have implied or assumed that candidates allocate in a static manner. This is not consistent with what campaign strategists report. It makes sense that candidates react to changes during the campaign by adjusting their resource allocations accordingly.

My findings support the notion of analyzing allocation strategies in accordance with time. I find evidence for my first three hypotheses when analyzing the pre-convention and post-convention models across both elections. The findings of the 2004 election also support these. Although the 2008 election does not support nor contradict my theory, this should not discredit a time-period approach. In order to better understand how presidential candidates allocate resources within the framework of the Electoral College, we also need to understand how candidates alter their strategies as the election progresses.

Future research should recognize that candidates are motivated to allocate resources to a competitive state, regardless of its number of electoral votes, due to the marginal impact of the dollar. While there is an ongoing debate in the political science literature over whether previous elections or polls serve as better predictors of allocation behavior among presidential candidates (Virgil 2008), this can be dependent on the time period.

Given the dynamism of presidential campaigns (Campbell 2008), future research should strive to replace the two time-period approach with a model that takes time into account. Therefore, cross-sectional time series analysis is a plausible solution. Presidential candidates often alter their campaign strategies when the context of an election changes. Additionally, as a campaign progresses, a candidate often changes her strategies in response to contextual factors, causing the opponent to react. An interesting research design would analyze how candidates react to polling data on a day-to-day basis.

Lastly, future research should consider competitive presidential races versus non-competitive presidential races. While I assume that all candidates are trying to win the Electoral College majority, candidates often have other priorities. For example, in non-competitive races, the underdog often strives for a graceful loss once it becomes clear that he or she does not have a chance of winning. The leader, on the other hand, will also adopt a different strategy than would be the case in a competitive race. This aspect will undoubtedly play a role in candidates' resource allocation strategies.

Why does this matter? If candidates are capable of winning the highest office in the United States by utilizing certain types of strategies, we should attempt to better understand how candidates formulate these strategies. Also, if campaigns matter, then Electoral College strategy matters since it undoubtedly plays a role in the decisions that candidates make. Acquiring a better understand of candidate strategy will also allow for a better understanding of which states will receive the most attention from candidates throughout the course of the campaign.

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APPENDIX A: ELECTORAL VOTES RAISED TO THE 1.7 POWER

Brams and Davis find that the winner-take-all feature of the Electoral College induces candidates to allocate resources roughly in proportion to the 3/2's (or 1.5) power of electoral votes of each state (Brams and Davis 1974, 113). Using empirical data, Larry Bartels (1985) obtains an exponential value of 1.7. The utilization of empirical data is chosen in order to better explain the actual behavior of presidential candidates rather than what candidates ought to do. In order to test whether this affects my results, I re-ran the analysis using this rule. I choose to use Bartels' exponent since his results contain real-world data. Table 5 shows that the substantive results do not change when electoral votes are raised to the 1.7 power.

Table 5: Bartels' Theory: Quasi-Poisson Regression Model for the 2004 and 2008 Elections

Pre-Convention	Estimate	Std. Error	t value	p score
Intercept	-12.7782	1.7090	-7.48	0.0000
State Polls	0.1024	0.0256	3.99	0.0001
Previous Election	0.0415	0.0167	2.48	0.0141
Electoral Votes$^{1.7}$	0.0020	0.0004	5.25	0.0000
Post-Convention	**Estimate**	**Std. Error**	**t value**	**p score**
Intercept	-13.2703	1.8545	-7.16	0.0000
State Polls	0.1346	0.0371	3.63	0.0004
Previous Election	0.0237	0.0309	0.76	0.4454
Electoral Votes$^{1.7}$	0.0022	0.0005	4.50	0.0000