A Statistical Analysis of the House of Representatives Vote on Base Closures

Col Stephen Schwalbe, USAF

> Base Closure, while more dramatic than many government-reduction processes, deserves as examination because it is a classic example of government reduction, to be studied for lessons about both politics and the hazards of government contraction.[1]
>
> Professor Dave Sorenson, Air War College

Even before the end of the Cold War in 1991, the United States had begun to draw down its military forces. However, the infrastructure supporting the reduced military was not cut back correspondingly. Between 1977 and 1988, no military bases were closed primarily due to the restrictions placed on the executive branch by Congress. Because of the economic impact and political sensitivities of closing a military base at the local level, Congress was understandably upset with the Department of Defense (DoD) decisions to close bases without prior consultation. One of the remedies available to resolve problems that erupt between branches of government is to establish an independent commission. In this case, Congress established four base realign-ment and closure (BRAC) commissions between 1988 and 1995 resulting in the closing of over 130 bases.[2]

Despite efforts by Congress to eliminate politics from the military base closure process by establishing independent commissions, politics still influences the process once the decision reaches Congress itself. This paper will examine the impact of political influence regarding the base closure process using statistical research methods on three floor votes of the House of Representatives on base closure recommendations.

The 1988 and 1990 Defense Authorization Acts established four base realignment and closure independent commissions, and directed that <u>both chambers of Congress</u> vote to disapprove any military installation closure recommendations by a BRAC commission to prevent its recommendation list from being implemented. Hence, a vote by either chamber to approve a recommendation list or neither chamber doing anything essentially meant congressional approval. As most representatives voted to establish the BRAC process to minimize political influence in the base closure process in the first place, then most of them might be inclined to continue supporting the process by supporting the subsequent BRAC commission recommendations, unless local politics and not the best interests of national security became an over-riding factor.[3] As well, if representatives voted against a BRAC commission's recommendations, then it was likely their motivation was political, probably seeking constituent or possibly party approval.

I will be analyzing the political motivations influencing a representative's vote to include:

1) a major military base on the BRAC list located in the representative's district;

2) political party support for the President;

3) political support for a key House committee; and,

4) Democratic Party disapproval at perceived partisan base-closure bias against the party.

As such, the **Dependent Variable** to be analyzed is how a **Member of the House of Representative voted** regarding base closure recommendations by congressionally-established independent commissions. Of the four BRAC commissions, the House conducted three floor votes in 1989, 1991, and 1995, while the Senate conducted one in 1993. Therefore, I will use the House of Representatives BRAC votes as my sample for this analysis. This means I should have around 1300 votes in my total sample, given that some of the 435 Representatives did not vote.

Hypotheses to be Tested:

1) In comparing political support for the BRAC process, representatives are less likely to support the independent commission's recommendations if a military base cited for closure is in their congressional district.

Despite numerous studies and reports indicating that local communities normally do better economically following the closure of a military base, representatives tend to be in favor of keeping the ones in their districts open as they generally want to be perceived by their constituents as supporting the community. These studies have found that major base closures have actually improved the economic environment of local communities. Despite transition costs, to include improving base facilities and removing contamination, nearly three-quarters of the 62 communities that underwent major base closures had unemployment rates that were below the national average in 2001.[4] Business Executives for National Security researcher Erik Pages found that roughly 120,000 jobs were directly impacted by the four rounds of base closures ending in 1995. He compared that to the announced layoffs of America's Fortune 500 companies of more than 250,000 workers in just the first six months of 1996![5] Mark Hooker and Michael Knetter, writing for the National Bureau of Economic Research, and using a new dataset to analyze county-level employment and personal income effects from 1971-1994, discovered that, on average, those military base closures had not caused economic damage to local communities. They determined that what the communities had generally overlooked was the opportunity cost of resources the bases occupy, principally land, and the fact that military personnel leaving the area generally had incomes lower than the county average.[6]

Despite the significant evidence that closing military bases is not necessarily harmful to local communities, members of Congress continue to fight hard to keep their military installations open because that is what their constituents want. Yet, when local bases do get closed by the BRAC process, it appears that no affected representative has subsequently lost his/her bid for reelection, regardless on how they voted on the BRAC list. According to Dave Sorenson of the Air War College, "there is no evidence that base closure was responsible for even a single congressional or senatorial defeat in the election years following each round."[7] This is probably due in part to the representatives' extensive public efforts to keep their military installations

open, demonstrating support for their communities and their constituents. David Hadwiger, in his 1993 doctoral dissertation at the University of California at Berkeley on military base closures, discovered that the base closures in 1989 affected Democrats and Republicans about equally. Further, the political challengers to the representatives that had bases closed due to the BRAC process found that the issue was not salient with their electorates. And, it appears most bases designated for closure were located in districts in which the percentage of registered voters was disproportionately in favor of the incumbent, hence, there was not a significant vulnerability.[8]

1) In comparing political support for the BRAC process, representatives are more likely to support the independent commission's closure recommendations if they are of the same political party as the president.

Members of Congress generally follow the president's position when they are of the same political party, which in all cases was to support the BRAC commission's recommendations. According to Lawrence Dodd and Bruce Oppenheimer in their book, Congress Reconsidered: "after the New Deal, the president became both the preeminent person in his party and the person the public looked to for leadership in the public interest both domestically and internationally."[9] Barbara Sinclair, in her book, Unorthodox Lawmaking, wrote about how the president worked closely with leaders of Congress to get key legislation passed.[10] William Lammers and Michael Genovese, in their book, The Presidency and Domestic Policy, noted that presidential popularity "can make a difference as well in dealing with Congress." However, they noted that presidents made their impact at the margins with members of Congress. Finally, Walter Oleszek, in his book, Congressional Procedures and the Policy Process, wrote that, "The president and the executive branch are among the most important sources of external pressure exerted on Congress…. As leader of the Democratic or Republican Party, the president is his party's chief election campaigner."[11] History has shown that the biggest direct influence either president had on the BRAC process was when President Clinton decided to keep both Kelly AFB and the Sacramento Air Logistics Center open, despite the 1995 BRAC commission's recommendation to close both.

1) In comparing political support for the BRAC process, representatives are more likely to support an independent commission's base closure recommendations if they are members of the House Armed Services Committee (HASC).

House representatives serving on the HASC, or its referenced name in 1995 - the House National Security Committee (HNSC), generally voted in accordance with the recommendation of the committee, which in all three cases was to support the independent commission's base closure recommendations.[12] For every BRAC commission recommendation list, at least one key congressional committee voted on the list of bases designated for closure before its respective chamber voted. Marcia Whicker and Nicholas Giannatasio (Rutgers University) conducted a statistical research study to determine whether politics influenced the base closure process in both 1991 and 1993. They found that, "An examination of the variables measuring power and ideology of the state's congressional delegation reveals a dramatic finding. The ONLY congressional delegation variables significant are the ones measuring the number of members in the state's House delegation on the Armed Services, Appropriations, and Budget committees,

and those measures are highly significant."[13] I selected the HASC for analysis as it was involved in each of the House BRAC votes. The HASC voted on 14 March 1989 to recommend that the House reject House Joint Resolution (HJR) 165 to block the BRAC commission's recommendations. On 24 July 1991, the HASC again voted to recommend that the House reject HJR 308 to block the BRAC commission's recommendations. And, on 26 July 1995, the House National Security Committee (HNSC), voted to recommend that the House reject HJR 102 to overturn the BRAC commission's recommendations.

1) In comparing political support for the BRAC process in the 1990s, Democratic representatives with no major military bases in their districts on the BRAC list are more likely to vote against the BRAC recommendations list than Republican representatives with no major military bases on the BRAC list in their districts.

If political influence were truly removed from the base closure process, then there should not be any clear indicators of bias towards one party or the other regarding the location of recommended bases for closure. When Democratic representatives perceive that the majority of military bases being recommended for closure are in Democratic districts, then they tend to become partisan and vote against the BRAC list based on fairness. During the 1991 congressional hearings on the independent commission's base closure recommendations, Democratic Representative from Colorado, Patricia Schroeder, noted that, "[O]f the 21 major bases slated to be closed, 19 were in districts represented by Democrats, and that 99 percent of the civilian job losses from those closures were in Democratic districts."[14] Clearly, this observation indicated a perceived political bias by Democratic representatives among the BRAC committee members or by DoD leadership beginning in 1991. In 1991, the BRAC commission recommended military installations be closed in 17 Democratic districts as compared to just seven recommended closures in Republican districts. In 1995, the distribution was much more even with recommended closures in 12 Democratic districts as compared to 10 in Republican districts.

The BRAC process of the 1990s began with the Secretary of Defense developing a proposed list of recommended base closures and realignments based on inputs from the Service Secretaries using eight published criteria. According to Dave Sorenson, the Service Secretaries felt in 1990 that each Service should be reduced at similar rates over the three BRACs, starting with the Air Force. The Air Force had the most bases with 405, followed by Navy with 253, and finally Army with 210. Although the Air Force lost the fewest bases to all three BRACs overall, it lost the most bases in 1991 (14), while the Navy lost the most in 1993 (17), followed by the Army in 1995 (10) – all as prearranged.[15] As such, Dave Sorenson puts some of the political bias of the BRAC process in the 1990s squarely on the military Service Secretaries. It is possible that because the military has generally been identified as conservative (hence, more likely to support the Republican Party), that the Service Secretaries took this factor into consideration when formulating their base closure recommendations for the three BRAC commissions of the 1990s to vet.

Sample Codebook – Standard Variables

To code the data, I began with listing the House of Representative's last name (the first 8 characters). For the vacancies, I coded "Vacant" in this field. The next field to the right is the STATE the representative was from, coded numerically and alphabetically by the state acronym [e.g., 1 for Alaska (AK) and 50 for Wyoming (WY)]. As congressional districts can change as a result of a decennial census, I referenced Congressional Quarterly's "Politics in America – 1990: The 101st Congress," "Politics in America – 1992: The 102nd Congress," and "Politics in America – 1996: The 104th Congress" for the DISTRICT number for each Representative, which I coded from 01 to as many as 45 (for California).[16]

The next field to the right is for the YEAR of the vote, coded "1" for 1989, "2" for 1991, and "3" for 1995. The next field to the right is for the political PARTY of the representative, coded "1" for Democrats, "2" for Republicans, "3" for Independents, and "9" for vacancies. The party affiliation was gleaned from the same CQ sources as the congressional districts.

To acquire the data on whether or not a major military installation was present in the representative's congressional district, I referenced Professor Scott Adler's (University of Colorado) "Congressional District Dataset" for the respective sessions of Congress (101st, 102nd, and 104th).[17] The next field, then, is for indicating whether or not a major military BASE is resident in this particular congressional district, coded "1" for yes and "0" for no. I coded "1" whether there was one or more than one major base located in the congressional district, as Adler's database does not list any military bases by name. A major military installation was defined in Adler's codebook as "those named 'Fort,' 'Base,' 'Camp,' 'Air Force Base,' 'Naval Base,' or 'Submarine Base.'" Adler used State/District Atlas of Major Military Installations and Office of the Secretary of Defense District Maps to determine which congressional districts the major military installations were resident in. His methodology seems reasonable; however, there is a disparity with the congressional definition of a "major" base. Congress cares primarily about the number of civilian people employed at a military installation. Hence, any base employing more than just 250 civilians is defined by Congress to be a major military base. This definition seems counter-intuitive as most major bases, as perceived by the military, employ thousands of people.

The next field to the right is for whether or not the representative was a member of the HASC (or HNSC in 1995) prior to the floor vote, coded "1" for yes and "0" for no. This information was acquired from the HASC website and the House National Security Committee web page.[18] Only the HASC members of the 101st and 102nd Congress, and the HNSC members of the 104th Congress will be coded as a "1."

Sample Codebook – Hypothesis Variables

To analyze the **Dependent Variable**, I used the House floor vote on the BRAC commission recommendation list for 1989, 1991, and 1995 (as mentioned previously, the House did not conduct a vote for the 1993 BRAC list as the Senate voted to approve it first). Hence, the first field for the hypothesis is for the actual vote itself, coded "0" for a **nay** (no) vote, meaning **support** for the BRAC recommendation, "1" for an **aye** (yes) vote, meaning **rejection** of the BRAC recommendations, and "9" for no vote. I acquired the three House votes using the on-line database, Lexis-Nexis.[19] The floor vote on April 18, 1989, was on House Joint Resolution (HJR)

165, "Resolution Disapproving Base Closure Recommendations." The floor vote on July 30, 1991, was on HJR 308, while the floor vote on September 8, 1995, was on HJR 102 (same titles).

Hypothesis 1: Representatives are less likely to support the independent commission's closure recommendations if a military base cited for closure is in their district.

The key variable for this hypothesis is whether or not a major military base was actually recommended by a BRAC commission for closure. Hence, the **BRACBASE** variable is coded "0" for no base recommended for closure, and "1" for yes there is a base recommended for closure in a representative's district.

As a result of the aforementioned differing definitions between Professor Adler and Congress of what a "major" military installation is, I did not code all the military installations Congress classified as major. In 1988, Congress approved the closure of 16 major bases, of which I coded all of them. In 1991, Congress approved the closure of 26 major bases, of which I coded all but the Hunters Point Annex and the Naval Electronic Systems Engineering Center (both in California). Finally, in 1995, Congress approved the closure of 27 major bases, of which I coded all but five, to include the ship repair facility in Guam (not a state), the Naval Warfare Center's Aircraft Division in Pennsylvania, the Ontario Air Guard Station in California, the Roslyn Air Guard Station in New York, and the Seneca Army Depot, also in New York.

Professor Adler's database was not helpful when checking for a particular military base by name. Hence, identifying which congressional district a major military installation was located in proved challenging, especially as there was a significant change in district boundaries as a result of the national census in 1990. Each military installation's district location was double-checked using the Internet's Google search engine (a total of 62).

Hypothesis 2: Representatives are more likely to support the independent commission's closure recommendations if they are of the same political party as the president.

The key variable for this hypothesis is whether or not the representative belongs to the same political party as the president. President Bush, a Republican, was president from 1989 until early 1993, hence, was the president during the 1989 and 1991 BRAC commissions. President Clinton, a Democrat, was president from 1993 until early 2001, hence, was the president during the 1993 and 1995 BRAC commissions. Hence, the **SAMEPRTY** variable is coded "1" for different party, where the representative and the president are not of the same political party; "2" for the same party when they are of the same political party; and, "9" for vacancy (i.e., no representative).

Hypothesis 3: Representatives are more likely to support an independent commission's base closure recommendations if they are members of the **HASC** or the **HNSC** (essentially the same committee as the HASC, but using a different name in 1995).

The key variable for this hypothesis is whether or not the representative was a member of either the HASC or HNSC during a House floor vote on a BRAC recommendation list. Hence, the

HASC variable is coded "0" when a representative was not a member of the HASC or HNSC, and "1" when the representative was a member or either.

Hypothesis 4: Democrats are more likely than Republicans with no major military bases in their districts on the BRAC list to vote against the recommendations during the 1990s.

The key variable for this hypothesis is the political party of those representatives with no major military base in their district. Hence, the **REPNOBAS** variable is coded "1" for Democrats with no military bases on the BRAC list; "2" for Republicans with no military bases on the BRAC list; "8" for representatives with a major military base on the BRAC list; and, "9" for vacancy (i.e., no representative).

Data Verification

With around 1300 data records, each with 11 data fields (over 14,000 total data entries), it was very important to check the data to ensure all the entries were entered correctly. I conducted various cross checks to do this. First, I checked to ensure the number of Democratic and Republican representatives in each House matched the CQ published numbers. Then, I confirmed that the vote distribution (overall total, number of Democrats and Republicans) in my database also matched the vote distribution published by CQ for each of the three votes. I was also able to double-check several variables using SPSS's Frequencies report, to include the number of military bases closed, the number of Democratic and Republican Representatives, and the number of members in the HASC/HNSC. Finally, with my wife's assistance, I double-checked every single one of the 435 records in each of the three House votes.

BRAC Reelection Analysis

For members of the House of Representatives, the impact on their reelection prospects as a result of losing a military base to the BRAC process is a function of many variables, to include the representative's length of congressional service, strength of previous electoral victories, homogeneity of the congressional district, and personal issues. However, another important variable in their re-electability may have been how they managed the identification of a military base in their district for closure, also known as problem definition. As House representatives are elected for only two-year terms, and as every BRAC vote in the House has occurred during an odd-numbered year (1989, 1991, and 1995), the electorate's memory of the loss of a major part of the local community way of life is not likely to be forgotten within a year or two.

The analysis resulted in counter-intuitive conclusions. To begin, representatives having a base closed in their districts, regardless of how they voted on a BRAC recommendation list, were reelected four times as often as those who were not reelected (41-10) in subsequent congressional elections. In fact, those representatives who voted in favor of the BRAC list were reelected almost twice as often as those who voted against it (39-22). Finally, those representatives who were not reelected voted equally for and against the BRAC recommendation list (10-10).

Let's look a little deeper into what happened to the ten representatives who had a military base in their district identified by a BRAC commission for closure after each had campaigned to keep it open. In 1989, Representative Ed Madigan (Illinois 15th District) resigned from the House to become the Secretary of Agriculture on 12 March 1991, hence, was not eligible for reelection in 1992 following the announced closure of Chanute AFB in 1989. Representative John Rhodes (Arizona 1st District) did not run for reelection and retired following the 1991 BRAC vote to close Williams AFB. Representative Bill Alexander (Arkansas 1st District) ran for reelection following the 1991 BRAC vote to close Eaker AFB, but was defeated (contrary to Sorenson's declaration, but as would be expected). Representative James Jontz (Indiana 5th District) also ran for reelection following the 1991 BRAC vote to close Grissom AFB, but was defeated as well. Representative Chester Atkins (Massachusetts 5th District) also ran for reelection following the 1991 BRAC vote to close Fort Devens, but was defeated. Representative Leon Panetta (California 16th District) resigned from the House in 1993 to work in the White House following the 1991 BRAC vote to close Moffett Naval Air Station. Representative Olympia Snowe (Maine 2nd District) resigned from the House and was elected to the Senate in 1994 following the 1991 BRAC vote to close Loring AFB. Representative Robert Tallon (South Carolina 6th District) decided not to run for reelection following the 1991 BRAC vote to close Myrtle Beach AFB. Finally, Representatives John Browder (Alabama 3rd District) and Patricia Schroeder (Colorado 1st District) both decided not to run for reelection following the 1995 BRAC vote to close Fort McClellan and Fitzsimmons Army Medical Center, respectively. (Browder subsequently ran for the Senate, but was defeated.)[20]

In summary, three of the ten representatives who voted against the closure of a military base in their districts ran for reelection and were defeated. Only Snowe, following a base closure in her district, was able to win a subsequent election, but not to the House of Representatives. To put this in perspective, a total of 319 representatives were not reelected for whatever reason following the three BRAC votes (54 in 1990; 186 in 1992; and, 79 in 1996). Of the 319 representatives, only three ran for reelection to the House of Representatives and were defeated (less than one percent), following a losing effort to keep a military base from being closed in their congressional district (all three lost following the 1991 BRAC vote). Hence, it seems that Hadwiger was right when he reported that, in general, base closings are not a salient issue with the voters. It appears that voters tended not to lay blame on their congressional representatives, but rather on the process that put their local military base on the BRAC recommendation list in the first place.

Multivariate Techniques Used – Logistical Regression (Logit)

When dealing with nominal, dichotomous variables instead of interval variables when running linear regressions, researchers should use logistical regression (logit). Linear regression results using dichotomous variables make no sense. Over thirty years ago, Christopher Achen (University of California at Berkeley) claimed that, "In the regression case, linearity is ordinarily assumed as a functional form for the measured causal factors…. All too commonly, only one regression equation is estimated…. Statistical calculations are carried out on the assumption that the model in use is the one true specification. Work of this kind curls the lip of a theoretical statistician, and understandably so. It looks foolish."[21]

The primary problems with regression using dichotomous dependent variables (DDVs) is that the data points cluster around two horizontal, parallel regression lines (i.e., slopes of zero) at Y=0 and Y=1 (the two options with dichotomous variables). As Achen observed, it looks foolish, and tells the analyst nothing. Fred Pampel described the problem succinctly noting that, "Linear regression faces a problem in dealing with a dependent variable with a ceiling and a floor…. We need to eliminate the floor and ceiling inherent in probabilities."[22] The solution is to transform the dependent variables to odds, then take the natural logarithm of the odds.[23] Using the logarithm of the odds is commonly referred to as "logged odds," and it results in a **curvilinear** graph with no floor or ceiling – hence, the problem of running regression using a DDV is solved.

Alfred DeMaris (Bowling Green State University) noted in his introduction to logit modeling, that over the past 30 years or so a special form of the general log linear model, the logit model, has become increasingly important as a unifying framework for analysis of DDVs. Logit is used to transform dichotomous variables into interval measures so that regression techniques can be applied. According to Pampel,

> The logit begins by transforming probabilities into odds. Probabilities vary between 0 and 1, and express the likelihood of an event as a proportion of both occurrences and nonoccurrences. Odds express the likelihood of an occurrence relative to the likelihood of a nonoccurrence. Both probabilities and odds have a lower limit of zero, and both express the increasing likelihood of an event with increasing large positive numbers. Unlike a probability, odds have no upper bound or ceiling.[24]

Taking the natural log of the odds, then, eliminates the floor of 0 just as transforming probabilities into odds eliminates the ceiling of 1. Hence, the natural logarithm of odds orients around 1 (below one produces negative numbers, while above 1 produces positive numbers). So, logit has no upper or lower boundary as the odds eliminate the upper boundary of probabilities, while the logged odds eliminate the lower boundary of probabilities. Pampel noted that taking the logarithm has the side benefit of pulling in extreme values of a skewed distribution. Taking the log of extreme values provides a more normal distribution, and shrinks the gap between a few outliers and the rest of the distribution.[25] Achen pointed out that logit requires larger samples than the standard linear regression model for approximations to be adequate.[26] In the case of BRAC, the database is sufficiently large enough with over 400 entries for each House floor vote.

Furthermore, any odds can be compared to any other odds. It is useful to compare two different odds as a ratio of odds when comparing groups, or in this case, dependent and independent variables. The odds ratio is key to logistic regressions. It does not require variables be normally distributed, or that relationships between variables be homoscedastic (the same along the entire length of a relationship).[27] Tim Liao (University of Illinois) observed that, "The logit model usually takes two forms. It may be expressed in terms of logit; it may be expressed in terms of event probability. When expressed in logit form, the model is specified as: $n = \log[u/(1-u)]$."[28] (Liao defines "n" as the linear predictor of Y, and "u" as the expected value of Y.) The logit statistic, then, begins with coefficient estimates and their tests of significance. The sign of

the coefficient estimate will determine whether the likelihood of the event increases with the level of X (positive), or decreases (negative).[29] The logistic regression coefficients themselves show the change in predicted logged odds of experiencing an event or having a characteristic for a one-unit change in the independent variable. A positive logit means the independent variable has the effect of increasing the odds that the dependent variable equals a given value, while a negative logit means the independent variable has the effect of decreasing the odds that the dependent variable equals a given value.

Instead of using the ordinary least squares (OLS) approach to determine the strength of the correlation in linear regressions, logistic regressions rely on maximum likelihood estimation (MLE) iterative procedures to obtain coefficient estimates. According to Pampel, "Maximum likelihood estimation finds estimates of model parameters that are most likely to give rise to the pattern of observations in the sample data."[30] In other words, MLE aims to calculate those logit coefficients that have the greatest likelihood of producing observed data.

Statistical Analysis of BRAC votes

To begin the statistical analysis of the data runs for each of the three BRAC votes, let's explore the bivariate relationships between the dependent variable, the House Representative vote, and each of the independent variables; representatives with a BRAC base, representative in the same party as the president, representative as a member of the HASC, and, representatives with no BRAC base. Although bivariate relationships cannot confirm or refute hypotheses, they can provide an indication whether the researcher is on the right track. Hence, according to Robert Bernstein and James Dyer (Auburn University), "knowing the bivariate relationships is helpful in disclosing the effects of controlling for third variables."[31] To examine the four bivariate relationships for each vote, I ran 2x2 cross tables, and analyzed the resulting percentages, Somers' d value for correlation strength (and its corresponding test of significance), the Spearman correlation value (and its corresponding test of significance), and finally the chi-square test of significance.

The correlation coefficients indicate the extent to which two variables are related, and range from zero, indicating weaker relationships, to one, indicating stronger relationships. The sign of the coefficient indicates the direction of the association, with positive meaning the direction of association as hypothesized, and negative when it is opposite.

Tests of significance, according to Bernstein and Dyer, "tell us how likely it is that an association as strongly supportive in the sample would be found when no supportive association exists in the population."[32] They note that the level of statistical significance is reported as "a proportion indicating the maximum probability of incorrectly finding that an association exists."[33] The minimum level of statistical significance accepted by the political science community is .05, meaning that one's hypothesis would have occurred by chance only 5 times out of 100 or less. The most commonly used test for 2x2 cross tables is chi-square. Other things being equal, the greater the chi-square value, the stronger the association between the dependent and independent variables. To determine the level of statistical significance, I referenced the chi-square table in Appendix 3 of Bernstein and Dye's book.[34]

Cross tabs for 1989 BRAC Vote

Rep's Vote on 1989 BRAC Recommendation List.* Major Military Base on BRAC List.

	No Base on BRAC List	Base on BRAC List
For BRAC	90.9%	62.5%
Against BRAC	9.1%	37.5%
	100.0%	100.0%

The results of the 1989 cross tab for hypothesis 1 are promising. To begin, though representatives tended to support the BRAC commission's recommended base closures by 9:1, those representatives with bases on the BRAC list were less anxious to support the commission's BRAC list by 3:2! It appeared that whether representatives had a military base on the BRAC list made a difference on how they voted on the list. The Somer's d coefficient of .162 is statistically significant at .02, but surprisingly indicates a generally weak association. The Pearson's r value of .179 is also statistically significant, but also indicates a generally weak association. The chi-square value and its corresponding degree of freedom applied to Appendix 3 indicate a statistical significance of .005, meaning that this hypothesis would have occurred by chance at this level of association only 5 times out of 1000 or less.

Rep's Vote on 1989 BRAC Recommendation List.* Rep Same Party as President.

	Different Party	Same Party
For BRAC	89.9%	89.9%
Against BRAC	10.2%	10.1%
	100.0%	100.0%

When the representative was of the same political party as the president, as indicated in hypothesis 2, they voted almost the same regarding BRAC as when they were not of the same party, around 9:1. The Somer's d coefficient and Pearson's r value of -.002 indicates almost no association between these variables. The chi-square value was too low to merit any degree of statistical significance. Hence, the bivariate relationship between president's party and BRAC vote appears to be non-existent.

Rep's Vote on 1989 BRAC Recommendation List.* Member of the HASC.

	Not in HASC	Member of HASC
For BRAC	89.6%	92.0%
Against BRAC	10.4%	8.0%
	100.0%	100.0%

Whether or not representatives were members of the HASC, referencing hypothesis 3, also did not appear to affect the BRAC vote, as around 90% voted for the commission's BRAC list regardless of HASC membership. The Somer's d and Pearson's r values were both -.026 indicating almost little association between these variables. The chi-square value was again too low to merit any degree of statistical significance. Hence, the bivariate relationship between HASC membership and BRAC vote also appears to be non-existent.

Cross tabs for 1991 BRAC Vote

Rep's Vote on 1991 BRAC Recommendation List.* Major Military Base on BRAC List.

	No Base on BRAC List	Military Base on BRAC List
For BRAC	87.5%	58.3%
Against BRAC	12.5%	41.7%
	100.0%	100.0%

The results of the 1991 cross tab for hypothesis 1 were even more promising than in 1989. When representatives had no military base in their districts, they voted 87.5%-12.5% in support of the commission's BRAC recommendations, as expected. However, when there was a military base in a representative's district on the BRAC list, they still supported the commission's recommendations, but only by 58%-42% (which is closer than the 3:2 in 1989). The Somer's d coefficient of .178 was statistically significant at .01, but still indicated a generally weak association. The Pearson's r value of .193 was also statistically significant, but also indicated a weak moderate association. The chi-square value and its corresponding degree of freedom applied to Appendix 3 indicated a statistical significance of .005, which is well within scientific minimums.

Rep's Vote on 1991 BRAC Recommendation List.* Rep Same Party as President.

	Diff Party than Pres	Same Party as Pres
For BRAC	82.3%	91.4%
Against BRAC	17.7%	8.6%
	100.0%	100.0%

When the representative was of the same political party as the president, as indicated in hypothesis 2, the vote was more in line with the hypothesis with almost 10% more representatives of the same party as the president voting in support of the commission's BRAC list and almost 10% less against the BRAC list (in contrast to 1989 when it did not seem to matter one way or the other). The Somer's d coefficient and Pearson's r values of -.120 and -.127, respectively, indicated a weak relationship that members of the president's party are more likely to support the BRAC recommendations. The chi-square value and degree of freedom

resulted in a statistical significance of .005, again well within the scientific minimums. Hence, the relationship between president's party and BRAC vote appears to be relatively weak.

Rep's Vote on 1991 BRAC Recommendation List.* Member of the HASC.

	Not in HASC	Member of HSAC
For BRAC	85.7%	86.5%
Against BRAC	14.3%	13.5%
	100.0%	100.0%

Whether or not representatives were members of the HASC, referencing hypothesis 3, also did not appear to affect the BRAC vote, as close to 86% voted for the commission's BRAC list regardless of HASC membership. The Somer's d and Pearson's r values were both -.008, indicating essentially no association between these variables. The chi-square value was again too low to merit any degree of statistical significance. Hence, the relationship between HASC membership and BRAC vote appears to be non-existent, as in 1989.

Rep's Vote on 1991 BRAC Recommendation List.* Rep With No Base in District.

	Dem w/No Base in District	Repub w/No Base in District
For BRAC	84.2%	92.4%
Against BRAC	15.8%	7.6%
	100.0%	100.0%

Finally, it appears that around 8% fewer Democratic representatives voted in favor of the BRAC list than Republican representatives with no military base in their districts, with 50% fewer Republicans voting against the BRAC list. The Somer's d did not pass the test of significance, however, the Pearson's r of .152 did test significant, indicating a weak association. The chi-square value at 2 degrees of freedom again resulted in a statistical significance of .005. Hence, in 1991, Democrats may have considered how many bases were being closed in Democratic districts when deciding how to vote on the commission's BRAC recommendations.

Cross tabs for 1995 BRAC Vote

Rep's Vote on 1991 BRAC Recommendation List.* Major Military Base on BRAC List.

	No Base on BRAC List	Military Base on BRAC List
For BRAC	83.1%	61.9%
Against BRAC	16.9%	38.1%
	100.0%	100.0%

The results of the 1995 cross tab for hypothesis 1 were similar to 1989. When representatives had no military base in their districts, they voted 83%-17% in support of the commission's BRAC recommendations, as expected. However, when there was a military base in the representative's district on the BRAC list, they still supported the commission's recommendations, but only by 62%-38% (which is almost identical with1989 at 62.5%-37.5%). The Somer's d coefficient of .104 was statistically significant at .03, but again indicated a very weak association. The Pearson's r value of .121 was also statistically significant, but also indicated a weak association. The chi-square value and its corresponding degree of freedom indicated a statistical significance of .01, which is well within scientific minimums.

Rep's Vote on 1991 BRAC Recommendation List.* Rep Same Party as President.

	Diff Party than Pres	Same Party as Pres
For BRAC	72.0%	90.4%
Against BRAC	28.0%	9.6%
	100.0%	100.0%

When the representative was of the same political party as the president, as indicated in hypothesis 2, the vote was pretty much the same as it was in 1989 (90%) and 1991 (91%) in support of the BRAC recommendations. However, Republicans opposing the BRAC recommendations increased significantly from around 10 percent in 1989 to 28 percent in 1995 – almost triple! The Somer's d coefficient and Pearson's r values of -.231 and -.239, respectively, indicated the strongest association of the three votes, though still on the weak side. Apparently, there was a weak moderate relationship indicating that members of the president's party are more likely to support the BRAC recommendations. The chi-square value at one degree of freedom resulted in a statistical significance of .005, again well within the scientific minimums. Hence, there could have been a relationship, albeit weak, between president's party and the BRAC vote in 1995.

Rep's Vote on 1991 BRAC Recommendation List.* Member of the HNSC.

	Not in HNSC	Member of HNSC
For BRAC	81.7%	84.6%
Against BRAC	18.3%	15.4%
	100.0%	100.0%

Whether or not representatives were members of the HNSC, referencing hypothesis 3, also did not appear to affect the BRAC vote, as around 83% voted for the commission's BRAC list regardless of HNSC membership. The Somer's d and Pearson's r values were both -.025, indicating little association between these variables. The chi-square value was again too low to merit any degree of statistical significance. Hence, the relationship between HNSC membership and BRAC vote appears to be non-existent across all three House votes on BRAC.

Rep's Vote on 1991 BRAC Recommendation List.* Rep with No Military Base in District.

	Dem w/No Base in District	Rep w/No Base in District
For BRAC	73.0%	91.3%
Against BRAC	27.0%	8.7%
	100.0%	100.0%

Finally, it appears that around 18% fewer Democratic representatives voted in favor of the BRAC list than Republican representatives with no military base in their districts, while three times as many Democrats voted against the BRAC list. The Somer's d of -.147 (and statistically significant) indicated a weak association, but the Pearson's r of .033 did not test significant. The chi-square value at 3 degrees of freedom again resulted in a statistical significance of .005, well within scientific minimums. Hence, in 1995, the correlation results are mixed, even though the raw percentages indicated support for the hypothesis.

Binomial Regression Run Methodology

To run a curvilinear regression on the three House BRAC votes, I used SPSS version 10.0's **binomial logistic regression** function. I entered the dichotomous dependent variable (DDV) and four dichotomous independent variables (DIVs), and indicated a categorical covariate for the first three DIVs as "first," and set the fourth DIV, REPNOBAS, to "last" to eliminate consideration of the representatives with bases (coded as "8"). Then, I set the method of regression as "Forward: Conditional," to tell the program to consider each DIV sequentially, eliminating those independent variables that did not pass the test of significance (which I set as between .01 [.005 one-tail] and .2 [.1 one-tail]).

To calculate a probability, I used the logit scores from the "Variables in the Equation" table that passed the test of significance. Then, I set out to solve the equation,
Logit (vote) = Constant + Log Score(B) + K [K representing other variables]

To acquire K, I retrieved the voting percentage against BRAC from each database. Then, I acquired the Logit (vote) calculation using the Simple Interactive Statistical Analysis (SISA) web page located at http://home.clara.net/sisa/logithlp.htm. I entered the vote percentage and clicked on the 'log' button to change the percentage to log-odds. Since all the IVs are dichotomous, I multiplied the percentage of the respective variable coded as "1," then multiplied that by the log score. With that, I was able to calculate K. Once I had K, I went back to the original equation and solved it for the Logit (vote). With the Logit (vote), I returned to the SISA calculator to determine the odds.

1989 BRAC Vote Analysis

Regarding the 1989 BRAC vote, only the BRACBASE variable passed all tests of significance. As such, the program dropped the other three DIVs and ran only the BRACBASE in the equation, as was expected by the cross tab results. As a result, the probability that

representatives voted against a BRAC commission's recommendations based on if there was a military base on the BRAC list in their district was an astonishing **98 percent**.

1991 BRAC Vote Analysis

Regarding the 1991 BRAC vote, both the REPNOBAS and BRACBASE variables passed all tests of significance, as was expected by the cross tab results. However, the program reported only the REPNOBAS in the "Variables in the Equation" table. As a result, the probability that representatives voted against a BRAC commission's recommendations based on the perception that military bases were being closed in a partisan manner was **15.8 percent**, while the probability for Republicans was **7.65 percent**. This result tends to support hypothesis four, indicating some partisan bias by House representatives when deciding how to vote regarding the BRAC recommendation list.

As for the BRACBASE variable, the regression run indicated a high score, and it was well within test of significance minimums (less than .001). Yet, this variable was not one of the one cited in the "Variables Not in the Equation" table, meaning **it was used** – just not reported in the "Variables In the Equation" table. The probable reason for this is because the BRACBASE variable largely duplicates the REPBOBAS variable, and the SPSS program probably determined that the REPNOBAS variable was a better overall predictor than BRACBASE.

1995 BRAC Vote Analysis

Regarding the 1995 BRAC vote, both the REPNOBAS and BRACBASE variables passed all tests of significance, as was expected by the cross tab results. However, the program again reported only the REPNOBAS in the "Variables in the Equation" table probably due to similar SPSS program processing as noted before. As a result, the probability that representatives voted against a BRAC commission's recommendations based on the perception that military bases were being closed in a partisan manner was **27 percent**, while the probability for Republicans was **8.5 percent**. These results are even stronger than the results of 1991 further supporting the contention that partisan politics plays a role in the House of Representatives when voting on BRAC recommendations.

Conclusion

Overall, two of the four hypotheses seemed to be validated, while the two others were not. Neither hypothesis 2, representatives voting along with the president when of the same party, nor hypothesis 3, representatives voting along with the HASC/HNSC when they were members, indicated any significant correlation at all or had a test of significance even close to any minimally acceptable standard. Hence, these two hypotheses were not proven by this statistical analysis.

However, House representatives appeared to take into consideration the location of a recommended military base for closure if it was located in their own districts in the three votes analyzed, which only makes sense. The binomial logistic regression runs validated the cross tab indications regarding the BRACBASE variable. In 1989, hypothesis 1 clearly indicated some

validity with weak-to-moderate positive correlation coefficients, very low tests of significance (i.e., well under the minimum standards), and a logit probability of 98 percent. All indications were that having a military base cited for closure in representatives' districts significantly influenced how they voted regarding the BRAC list.

As well, the binomial logistic regression runs validated the cross tab indications regarding the REPNOBAS variable, used to test hypothesis 4 in 1991 and 1995. For the first iteration of the BRAC process in 1988, the partisanship issue regarding a perception that military bases were being recommended for closure in predominately democratic districts had not come to light, hence, the REPNOBAS variable showed no correlation or even passed a test of significance. However, Public Law 101-510, known as the Defense Base Closure and Realignment Act of 1990, modified the BRAC process significantly as a result of many lessons learned from the first effort. As a result, the REPNOBAS variable now became viable, particularly with 17 of the 24 military bases recommended for closure located in democratic districts in 1991.

The results of the logit runs indicated that twice as many Democrats than Republicans considered the number of bases recommended for closure in Democratic relative to Republican districts in 1991, while three times as many did in 1995. This was not anticipated by the mixed results demonstrated in the 1991 and 1995 cross tab reports. Yet, beginning in 1991, Democratic representatives were taking into consideration the location of the military bases when deciding how to vote on the BRAC list based on BRAC congressional testimonies. In 1995, other issues such as presidential involvement may have also been at play causing representatives to vote more along party lines than for national security interests. The bottom line is that this statistical research clearly indicates that politics continues to influence the BRAC process in at least two aspects once the responsibility for approving the military's BRAC recommendations shifted from the independent commission to Congress.

Notes

[1] David Sorenson, Shutting Down the Cold War (New York, St. Martin's Press, 1998), p.1.
[2] Ibid., pg. 232.
[3] The House voted 370-31 in favor of the Defense Authorization Act of 1988 (PL 100-526), and 256-155 in favor of the Defense Authorization Act of 1990 (PL 101-510).
[4] Jason Peckenpaugh, "Most Local Communities Recovering From Base Closures," Government Executive Magazine - Daily Brief, (April 11, 2002), p. 1.
[5] Erik Pages, "The Case for Military Base Closures," Business Executives for National Security, (27 May 97), p. 2.
[6] Mark Hooker and Michael Knetter, "Measuring the Economic Effects of Military Base Closures," National Bureau of Economic Research, Working paper No. 6941, (February 1999), pp. 3, 20.
[7] Sorenson, Shutting Down the Cold War, p. 213.
[8] David Hadwiger, Military Base Closures: How Congress Balances Geographic and General Interests (Berkeley: UC Berkeley Press, 1993), pp. 189, 224, 226, and 236.
[9] Lawrence Dodd and Bruce Oppenheimer, Congress Reconsidered (Washington DC: CQ Press, 2001), p. 352.

[10] Barbara Sinclair, Unorthodox Lawmaking (Washington DC: CQ Press).
[11] Walter Oleszek, Congressional Procedures and the Policy Process (Washington DC: CQ Press, 2001), p. 30.
[12]There are usually just over 50 members in the HASC for every session of Congress.
[13] Marcia Whicker and Nicholas Giannatasio, "The Politics of Military Base Closings," at Internet address www.hbg.psu.edu/faculty/jxr1 1/whicker1.html, p. 12.
[14] Sorenson, Shutting Down the Cold War, p. 46.
[15] Sorenson, pp. 35, 206, 208.
[16] Duncan, Philip, Editor, Politics in America (Washington, DC: CQ Press, 1990, 1992, 1996).
[17] Internet site http://sobek.colorado.edu/~esadler/districtdatawebsite/CongressionalDistrictDatasetwebpage.htm
[18] HASC Internet website is at www.house.gov/hasc.html, while the HNSC web page is at http://armedservices.house.gov/reports/104.html
[19] Located at Internet web page http://web.lexis-nexis.com/congcomp/document.htm.
[20] The biographical information on House members was acquired from the Internet at www.advantage-dc.com.
[21] Christopher Achen, Interpreting and Using Regression (Beverly Hills: SAGE Publications, 1982), p. 11.
[22] Fred Pampel, Logistic Regression: A Primer (Thousand Oaks: SAGE Publications, 2000), p. 10.
[23] Logarithms offer an effective means of measuring relative change in a variable by using multiples of a base number instead of addition. The common logarithm uses 10 as its base, hence, as X increases by multiples of 10, the log of X increases by 1. However, counter-intuitively, natural logarithms are used much more than common logarithms because its mathematical properties make it useful in a variety of circumstances relating to solving for derivatives and integrals in calculus. Natural logarithms use the base of e, or approximately 2.718 instead of 10. Pampel, pp. 74-9.
[24] Pampel, p. 11.
[25] Pampel, p. 76
[26] Achen, p. 80.
[27] David Garson, Log-Linear, Logit, and Probit Models located at Internet web page www2.chass.ncsu.edu/garson/pa765/logit.htm, p. 6.
[28] Tim Liao, p. 11.
[29] Ibid., p.7.
[30] Pampel, pp. 19, 40.
[31] Robert Bernstein and James Dyer, An Introduction to Political Science Methods, 3rd edition (Upper Saddle River: Prentice Hall, 1992), p. 149.
[32] Bernstein and Dye, pg. 179.
[33] Ibid., pg. 181.
[34] Ibid., Appendix 3 is on pg. 305.

Contributor

Colonel Stephen R. Schwalbe became Director of the Air War College's Regional Studies Program in August 2002. He is also a professor of Global Security and NSDM in the International Security Studies Department. He has recently served two tours of duty in the Defense Attache System as Air Attache to Korea (95-97) and to Jordan (00-02). Prior to that he served as an inspection director for the DoD Inspector General. Colonel Schwalbe graduated with distinction from the Naval War College in 1998, and with distinction from the Naval Postgraduate School in 1984. He was the Most Outstanding MPA Student at Golden Gate University in 1981. He is a 1977 graduate of the U.S. Air Force Academy at Colorado Springs, Colorado. He is currently a PhD candidate at Auburn University in Public Policy.