

# THE ECONOMIC IMPACT OF MILITARY BASE CLOSURES ON THE SURROUNDING METROPOLITAN AREA

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## ABSTRACT

*Amidst the decline in defense spending following the end of the Cold War, military base closures have prompted some of the most vocal public concerns. Public expectations of the impact often are very bleak, and economic forecasts of the local effects seem to bolster such fears. When a military base is slated to close, the surrounding community immediately goes into panic mode and thinks it is the start of an economic domino effect that will trickle down to every part of the community. However, economic devastation is not always the case as my research has found that an economic decline is not the probable outcome. The closing of a military base is not as devastating as most predict it would be.*

*The Base Realignment and Closure Commission (BRAC) was created to provide an objective, thorough, accurate, and non-partisan review and analysis, through a process determined by law, to create a list of bases and military installations which the Department of Defense recommends to be closed and/or realigned. This study focuses on factors that indicate the economic health of a community and expands the scope to metropolitan areas. A “pre” and “post” closure approach is taken to compare the differences in the economy of the surrounding metropolitan area. The economic factors included in this study are unemployment rate, median home value, population, median household income, real estate taxes paid and K-12<sup>th</sup> school enrollment. Of those factors, unemployment rate and population were impacted positively, while median home value was the only factor negatively impacted. The bases closed in the year 2011 as part of the 2005 BRAC round of closure is the focus as this was the last round of closures and provides the latest information on this topic.*

*Depending on the extent to which a military base supports the surrounding community, it could have far-reaching financial implications for that community; however, this research suggests most communities are not impacted as much as the negative predictions seem to be.*

## INTRODUCTION

Catastrophic, apocalyptic, and disastrous are words used to describe the impact of military base closures on the surrounding communities. Hooker & Knetter (2001) shows that a closure has a dire initial impact that gets better over time and eventually the community will spring back to some type of normalcy as time progresses. Other studies (Bayly, 2014), (Dardia, et al., 1996), (Nijhawan & Jackson, 2011), (Sorensen & Stenberg, 2015) have viewed the impacts as long lasting at times and the community can never totally recover from the base closure. Both studies have legitimacy, depending on the extent of economic and financial influence the base exerted in that community. The size and location of the base also play a major role in the impact it has on

that community. The effects can be socioeconomic, political, direct, and indirect, along with other significances that come with a major change.

The closing and/or realignment of U. S. Military bases nationally and internationally have presented challenges for the Department of Defense (DoD) and the surrounding communities. Past research has brought about varied results, as different variables can influence the outcome of those results (Dardia, et al, 1996). This study will focus on the metropolitan areas of the bases closed in the year 2011 as part of the 2005 BRAC round of closures, with emphasis on six key economic indicators. Those economic indicators include the unemployment rate, median home value, population, median household income, property taxes paid, and K-12<sup>th</sup> school enrollment.

## **BACKGROUND**

With the passage of the Base Realignment and Closure Act (BRAC Act. 1998), Congress instituted a new process with which to determine how military bases would be closed and/or realigned (Beaulier, Hall, & Lynch, 2011). The BRAC process can be considered as a two-stage process. Initially, a list of sites is gathered for BRAC scrutiny; then, each site is carefully considered for closure or realignment. There are four possible outcomes of the base closure and realignment process: closure, realignment resulting in a loss of employees and budget share, realignment resulting in an increase in employees and budget share, or no meaningful change (Beaulier, Hall, & Lynch, 2011).

Minimum oversight was given to Congress in the closing of military bases by the Department of Defense. Per the Department of Defense (2005), however, in 1977, Congress passed legislation requiring DoD to notify Congress if an installation became a closure or realignment candidate. These and other procedural requirements effectively halted base closures until the last several rounds between 1988 and 2005. By 1988, the Defense budget had declined for three straight years and was predicted to decline further. The Department of Defense has estimated that the four previous BRAC rounds eliminated approximately 21 percent of DoD's 1988 installation capacity. These changes required an up-front investment of \$22 billion, and through fiscal year 2001, produced net savings of approximately \$17.7 billion, including the cost of environmental cleanup. Recurring savings and cost avoidances beyond 2001 are approximately \$7.3 billion annually (Defense, 2005).

## **LITERATURE REVIEW**

The BRAC Commission was created to provide an objective, thorough, accurate, and non-partisan review and analysis, through a process determined by law, to create a list of bases and military installations which the Department of Defense recommends to be closed and/or realigned (Defense Base Closure and Realignment Commission, 2005). The Commission is required to assess each recommendation to ensure it meets the eight selection criteria set forth by Congress in P.L. 108-375 (Defense Base Closure and Realignment Commission, 2005). Recommendations by DoD that substantially deviate from these selection criteria can be modified or rejected by the Commission by a simple majority vote of the Commissioners. The Commission can also add installations to the closure or realignment list recommended to the President, but only through a

process in which seven of nine Commissioners vote to do so, the Secretary of Defense is properly notified in writing 15 days prior to the proposed change, and only after at least two Commissioners physically visit the military installation in question (Defense, 2005).

The Commission's assessment of the selection criteria and Force Structure Plan took place in the context of a balance between the goals of realizing savings and rationalizing our military infrastructure to meet the needs of future missions. Table 1 shows United States National defense consumption between the years 2005 – 2016. U. S. national defense spending increased each year from 2005 to 2011, then decreased starting in 2012 which coincides with the year after the closing of the bases in this study.

Table 1  
*United States National Defense Consumption*

United States National Defense Consumption											
\$ = billions											
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
\$608.30	\$642.40	\$678.70	\$754.10	\$788.30	\$832.80	\$836.90	\$817.80	\$767.00	\$746.00	\$732.00	\$732.20

The Base Realignment and Closure process has been one of the Defense Department's most effective tools to trim excess infrastructure and better align the remaining base structure to the U.S. force structure; and over the years, these effects have provided significant savings that have been redirected to readiness (Sands, 2011).

Base closure impacts are registered in job loss, income terms, and may be disaggregated as well into direct, indirect, and induced components (Poppert & Herzog, 2003). Personal income represents the income that households receive from all sources including wages and salaries, fringe benefits such as employer contributions to private pension plans, proprietors' income, and income from rent, dividends and interest and transfer payments such as Social Security and unemployment compensation (econoday.com, 2016). According to Bradshaw (1999), the time lag from closure to reuse of a base typically means that workers cannot wait for new opportunities on the base and will seek employment elsewhere in the area or move to another region. In addition, when bases are reused, the new industries are usually quite different and need workers with different skills and sometimes specialized training; and when laid-off workers do find other work, their income is well below what they received working on the base (Bradshaw T. K., 1999). Many examples of workers affected by base closures reinforce the widespread belief that people taking new jobs often must settle for lower pay (Bradshaw T. K., 1999). One systematic study by Mackinnon (1978) showed that workers in the early waves of a base closure took jobs that on average were lower paying. According to the United States Bureau of Labor Statistics (2016), the unemployment rate is a key indicator of the local economic conditions. Because a base closure creates changes in the population and income, it also impacts the housing market which in turn affects real estate tax

paid. Community vulnerability is also sensitive to the presence of a school on the base and the age distribution of the dependent populations; the greater the fraction of the local school population accounted for by military dependents, the greater the loss in government funding after those children leave the district (Dardia, et al, 1996).

## **RESEARCH DESIGN**

A causal-comparison design is adopted for this study to show the difference between the year prior to closure to the year after. Per Fraenkel and Wallen (2006) causal-comparative research, like correlational research, seeks to identify associations among factors. A causal-comparative research attempts to determine the cause or consequences of differences that already exist between or among groups of individuals (Fraenkel & Wallen, 2006). A Wilcoxon signed-ranks test is utilized to calculate the difference between the year before and the year after the base closure to determine if there is an impact using different factors. Past research has mixed results as to the level of impact to the surrounding communities when a military base is closed if any at all. The six factors used in this study includes median home value, real estate taxes, population, median household income, unemployment rate and K-12<sup>th</sup> school enrollment; which will serve as the independent variables. The Wilcoxon signed-ranks test used to analyze the impact of base closure is suitable since the sample size is small and does not meet the stringent assumptions of normality required in a similarly paired t-test (Pett, 2016). It is a non-parametric statistical hypothesis test used when comparing two related samples, matched samples, or repeated measurements on a single sample to assess whether their population means ranks differ (Laerd Statistics, 2017). In the 2005 BRAC round of closures there were six bases closed in the year 2011; and although other bases were realigned, this study only focuses on the ones that were closed during that year. It focuses only on those bases that were closed the same year which keeps other factors that could have affected the economy in that year the same, and not cause the data to be slanted by some type of anomaly. The independent variables chosen for this study provide a framework for the economic health of a community. Combining each factor will provide a collective view of the impact that was felt by each metropolitan area. The data for each variable was gathered from the United States Census Bureau and the United States Bureau of Labor Statistics.

## **DATA COLLECTION**

The data for each variable was gathered from the United States Census Bureau and the United States Bureau of Labor Statistics. The United States Census Bureau is a principal agency of the U.S. Federal Statistical System, responsible for producing data about the American people and economy. The Census Bureau is part of the U.S. Department of Commerce. The U.S. Census Bureau is overseen by the Economics and Statistics Administration (ESA) within the Department of Commerce. The Economics and Statistics Administration provides high-quality economic analysis and fosters the missions of the U.S. Census Bureau and the Bureau of Economic Analysis. The Bureau of Labor Statistics is a unit of the United States Department of Labor. It is the principal fact-finding agency for the U.S. government in the broad field of labor economics and statistics.

## STATISTICAL ANALYSIS

Growth is viewed as essential for a stable and good economy. A strong economy bolsters a strong middle class along with increasing purchasing power for all walks of life. It also allows the government to spend more money on research and spur innovation. This research used that doctrine as a guide to determine the economic variables used in this research. The data was compiled and organized by the years being compared - prior to closing (2010) and after closing (2012) by each variable. It was then loaded into SPSS and analyzed to reveal results for each variable by year. A 0.05 confidence level was used during the testing. The effect size is calculated by dividing the z-score by the square root of the total number of occurrences. In this case, it will be six data points in the year 2010 and in the year 2012, which will be a total of twelve occurrences.

## FACTORS ANALYZED

Impacts of base closure have been assessed by comparing measures of local wellbeing of pre-and post-BRAC statuses. The factors for this study were chosen because they are all key economic indicators of the health of a community. Unemployment rates express the number of people who are out of work and looking for jobs. Household income represents the earnings that households receive from all sources and is a major determinant of spending. Population is one of the most direct indicator a community's vulnerability. Home values are also a great indicator of economic health because it takes other factors like unemployment and income in consideration. In connection to home values, property taxes paid is also a factor that help express the health of a local economy. Lastly, K-12<sup>th</sup> school enrollment was included as military-connected schools are also impacted by military base closures.

## DISCUSSION OF RESULTS

The impact of the base closures was not as devastating as most would think. Although there is some economic downturn to the community, the catastrophic predictions did not come to fruition in this research. The mean change in the unemployment rate is 1%. With a p-value of 0.01, the test revealed a statistically significant difference in the unemployment rate, with an effect size of 0.70. The unemployment rate decreased, which means more people in the metropolitan area were working after the base closure. The mean change in median home value is \$9,567. With a p-value of 0.05, the test revealed a statistically significant difference in median home value, with an effect size of 0.58. The median home value decreased from the year prior to closing to the year after. The mean change in population is 76,988. With a p-value of 0.03, the test revealed a statistically significant difference in population, with an effect size of 0.64. The population increased in the metropolitan areas surrounding the base after closure. The mean change in median household income is \$141. With a p-value of 0.96, the test revealed there was not a statistically significant difference in median household income, with an effect size of 0.03. This indicates that there was no economic impact to the surrounding metropolitan area after the base closure on median household income. The mean change in real estate taxes paid is \$13,348. With a p-value of 0.07, the test revealed there was not a statistically significant difference in real estate taxes paid, with an

effect size of 0.52. This is an indication that there is basically no economic impact on real estate taxes paid for the surrounding metropolitan area after a base closure. The mean change in school enrollment is 1,172. With a p-value of 0.75, the test revealed that there was not a statistically significant difference in school enrollment, with an effect size of 0.09. This is an indication that there is no economic impact in the surrounding metropolitan area on school enrollment after a base closure.

## UTILIZATION OF VACANT BASE FACILITIES

The Department of Defense clearly states that base closures are conducted to improve military readiness and streamline the spending of defense funds (Defense, 2005), but environmental considerations also feature in the process of evaluating and converting sites (Havlick, 2014). When closing a military base, the government looks at the preservation options of the land. According to Havlick (2014), closed military bases are converted to a variety of new uses, ranging from playgrounds or recreational facilities to housing developments, business parks, and university campuses. However, many military lands face limited options for future use due to chemicals hazards, munitions, buildings, or aging infrastructure that remain on site. Due in part to these reasons, more than 15% of the major U.S. bases closed since 1988 have been re-designated as national wildlife refuges managed by the U.S. Fish and Wildlife Service (Havlick, 2014).

Although sometimes the reuse of these lands can be made in reaction to the panic of closing the bases, instead of a methodical plan to reuse the land to the best of its ability. When communities find out that one of the major resources in their area is shutting down, they rally together to either stop the process or take the opportunity to create something better. Successful base reuse planning begins before closure; communities with strong leadership and organizational capacity minimize the panic sometimes associated with base closure and also position it for a stronger response (Mayo, 1988). Base closure generally places extraordinary demands on local governments, community organizations and economic development programs; however, it also stimulates and strengthens a community's organizational capacity and its ability to work collaboratively and in innovative ways (Bradshaw, 1999).

## CONCLUSION

This study aimed to determine the economic impact of the bases closed in 2011 as part of the 2005 round of BRAC closures as it pertains to six economic factors. Using the Wilcoxon signed-ranks test, it revealed that of the six factors in the study, only three of them proved to be significant. Employment, population and median home value were all significant factors in the economic impact of the base closures. The impact on employment and population proved to be positive for the local community and the impact on median home value proved to be negative.

The mean unemployment rate decreased one full percentage point prior to closing to after closure, which suggests of the people who remained, more of them were working after the base closure. Using a Wilcoxon signed-ranks test to compare the difference between pre and post base closure, all metropolitan areas in the study expressed a negative rank for the unemployment rate showing that 2012 was less than that in 2010. Additionally, the population increased for the

surrounding metropolitan areas of these bases. The mean change in population between the year prior to the year after increased over 75,000, which suggests most people stayed and more people came to those metropolitan areas after the bases was closed. The test revealed that the population ranks for all metropolitan areas in the study were positive showing that the population in 2012 was greater than that in 2010 after the base closures. However, this research shows that the housing value in these metropolitan areas declines because of the base closure, with an approximate mean change of a \$10,000 price drop in median home values. The test revealed that five of the metropolitan areas in the study expressed a negative rank, while one revealed a positive rank showing that median home value in 2012 decreased from 2010. The median home value was the only factor that proved to be significant and negative, which suggests that base closures are not the “end of the world” predictions that most proposed.

The other three factors used in this study, median household income, real estate taxes paid and school enrollment K-12<sup>th</sup> did not show a significant difference from the year prior to closing to the year after. Although they didn't prove to be significant, they are still important factors to consider when deciding which bases to close. United States defense consumption has fluctuated over time and as part of that fluctuation, military bases were closed and realigned to downsize its force structure and overhead expenses (Kuhn & Akers, 1997) however; with new concerns that threaten our everyday freedoms on a regular basis, these actions must be carefully considered. Bases must be scrutinized to reflect the impact of the military structure along with the impacts to the homeland.

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