AN EVALUATION OF KEY FACTORS OF THE ECONOMIC IMPACT OF MILITARY BASE CLOSURES ON THE SURROUNDING METROPOLITAN AREA

A Dissertation

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ABSTRACT

AN EVALUATION OF KEY FACTORS OF THE ECONOMIC IMPACT OF MILITARY BASE CLOSURES ON THE SURROUNDING METROPOLITAN AREA

(July 2017)

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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-12th 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.

DEDICATION

This work is dedicated to the best mother in the world, Maxine Amos. You have been my rock for my entire life. The example you have shown me of being a strong person despite all of the struggles you have endured, has encouraged me to never give up and continue to smile and keep my head held high. I love you!

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- For with God nothing shall be impossible.

Luke 1:37 King James Version

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CHAPTER 1
INTRODUCTION

Catastrophic, apocalyptic, and disastrous are words used to describe the impact of military base closures on the surrounding communities. Imagine a life that is financially stable, with a four-bedroom house in a good neighborhood that is in a good school district for your children; and then all of sudden it is announced that your job is being eliminated or relocated. That's how the families felt when they found out that the based they worked on was part of the Base Realignment and Closure (BRAC) process. When a 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 may not always be the outcome as research has found mixed results of the economic impact of a base closure on the surrounding community (Dardia, McCarthy, Malkin, & Vernez, 1996). The results of this study have found that an economic downfall isn't the case in most aspects. In fact, some economic factors increased for the betterment of 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), (Soresnson & 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. In the early 1960's, at the President's direction, the Secretary of Defense developed and implemented a base closure program within the Office of the Secretary of Defense, with minimal consultation with the military departments or Congress (Department of Defense, 2005). To better confront the military demands of the post-Cold War era, as well as to reduce costs of maintaining excess military infrastructure, Congress authorizes the Department of Defense to realign or close military bases (Tadlock, 2012). Amid the decline in defense spending following the end of the Cold War, military base closures have prompted some of the most vocal public concerns (Dardia, et al, 1996). Public expectations of the impact often are very bleak, and economic forecasts of the local effects seem to bolster such fears (Dardia, et al, 1996). However, 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-12th 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).

BRAC Function and Process

The function of the Base Realignment and Closure Commission is to provide a fair and equal assessment of the recommendations of United States military bases and installations to close or realign provided by the Department of Defense. Using the guidance of the criteria set by law and policy, the commission was created to provide a non-partisan list of bases they agree to close to the President of the United States. The President, who consults with the top congressional members as to who the members of the commission would be, can reject the list and cancel the commission. The 2005 commission was composed of nine members; three from the House of Representative, three from the Senate and three chosen by the President at his discretion. Past commissions have been composed of retired military leaders, US Ambassadors, members of Congress and business leaders.

Impact of Base Closure and Realignment

Before the closure of a base in the 2005 round of BRAC, the Commission gathered the concerns of the surrounding communities. Most of them asserted that the government was only concerned with financial savings that would come by closing a base, without truly given credence to the impact it would have on the surrounding area. The community surrounding Fort Gillem and Fort McPherson located in the Atlanta area proposed they would suffer from high unemployment rates and a decrease in per-capita income. Fort Monroe community suggested that the base had become historic and the cost to remove, replace, or relocate the historical nature of the base would cost more than

the government estimate. Other communities surrounding the bases alleged it would be detrimental to the local area on many different levels.

According to Sands (2011), the BRAC 2005 round is precedent-setting because of its role as a transformation engine for the Department of Defense. In addition to exceeding the number of recommendations and complexity of all prior rounds combined, BRAC 2005 enabled the Department to analyze and implement infrastructure requirements holistically and reshape installations to meet the challenges of an evening security environment (Sands, 2011). To better confront the military demands of the post-Cold War era, as well as to reduce costs of maintaining excess military infrastructure, Congress authorizes the Department of Defense (DOD) to realign or close military bases (Tadlock, 2012). Amid the decline in defense spending following the end of the Cold War, military base closures have prompted some of the most vocal public concerns (Dardia, McCarthy, Malkin, & Vernez, 1996). Public expectations of the impact often are very bleak, and economic forecasts of the local effects seem to bolster such fears (Dardia, McCarthy, Malkin, & Vernez, 1996).

The early BRAC rounds took place in the context of military doctrine and force structures shaped by the Cold War and were designed primarily to achieve capacity reduction as stated by Sands (2011). In contrast, BRAC 2005 recommendations were developed during a period of significant transformation in both doctrine and force structure, which was precipitated by the emergence of a new security environment in the post-9/11 world (Sands, 2011). A comprehensive BRAC analysis is challenging in its own right; the challenge was even more daunting in the 2005 round, given the need to

support ongoing operations in Iraq and Afghanistan while synchronizing with the Department's transformation efforts (Sands, 2011).

Need for Research on Impact

Per the Fiscal Times (2016), the Pentagon's 2017 fiscal budget request marks the fifth year in a row defense officials have requested a Base Realignment and Closure (BRAC) round. The BRAC through DoD selects the base for closure and/or alignment while the local government of the surrounding communities must handle the economic downturn that follows such actions. The identification of bases for closure or realignment is the responsibility of the Base Realignment and Closure committee. The BRAC process carefully analyzes the bases listed for closure or realignment and proposes the procedure for implementing the actions. The economic impact that follows must be handled by the community legislatures and local or state governments. This research is needed to examine factors that could have a major impact on the community after a base closure so that those communities can brace themselves for the possible negative change and take steps to minimize the effects. This research is also needed to help guide the decision makers when determining which bases to close and to possibly bring more of a human element to the process.

Some bases contribute largely towards the economy of the community in which it is located. On the other end, when some bases are realigned to absorb other bases' resources; the added presence of military personnel and staff results in greater demands for housing, food, entertainment, transportation and other utilities and services. These

economic impacts are difficult to address due to insufficient research in this field of study. Some research has found the socioeconomic impact of base closures was not as disturbing as many communities forecasted earlier but had greater impacts on rural areas where the economic recovery was slower (Cowan. 2012; Dardia, et al, 1995). Due to far-reaching differences in economic circumstances of the affected local communities, a single one-fit-all solution is not applicable.

The purpose of this research is to examine the economic impact on the communities surrounding Fort Gillem, For McPherson, Fort Monroe, Naval Air Station Brunswick, Naval Air Station Willow Grove, and Brooks City Base located in Georgia, Virginia, Maine, Pennsylvania, and Texas. These bases were selected because they were part of the latest BRAC closure process in 2005 and were all closed in the year 2011 and provides the most updated data to analyze in this debate. The impact of these base closures is examined with respect to employment, income, home value, real estate taxes, population and K-12th school enrollment in relation to the surrounding metropolitan area for the year prior to closing compared to the year after closure.

A causal-comparative methodology was applied in this research study. A Wilcoxon signed-ranks test was utilized to compute the differences between before closure and after closure for each of these factors. If the differences were found to be statistically significant, the bases were expected to have a higher economic impact on the surrounding communities. This research would have across-the-board effects on the Department of Defense and particularly the BRAC, each arm of the U.S. military service, federal, state, county and local governments. The research results from this study highlight the impact of each factor, significant or not, on the economic plane and offer

that the effects may differ in areas where the base influence was more or less, so no one-fit solution can be applied to all.

For example, the community surrounding George Air Force Base outside of Los Angeles was thriving before the base closed, continued to thrive during the closing process and is still thriving despite the doomed forecast according to Dardia et al (1996). However, in that same study, Castle Air Force Base and Fort Ord didn't fare as well. The community surrounding Castle Air Force base located in central California's Merced County failed to perform as well as the standard while the areas surrounding Fort Ord located in northern California's Central Coast fared even worse according to most benchmarks (Dardia, et al, 1996). This suggests that effects of base closures are mostly localized. Fort Bragg in North Carolina is the largest army site in the United States located 50 miles south of Raleigh and 10 miles northwest of Fayetteville covering approximately 160, 700 acres and stretches into four counties and its influence extends far beyond the seven additional counties that are in close proximity will have a major impact on income in that area (Nijhawan & Jackson, 2011). Due to the size and influence the base has in such an extended area, it will have major impacts on all levels and transform the economy of that region.

It will be beneficial if the federal and local governments plan appropriate strategies for accommodating the socioeconomic impact due to a base closure and/or realignment. It will also benefit local businesses including restaurants, malls, grocery stores, hospitals, movie theaters, toy shops, car dealers along with many other types of business in the affected area. The mixed results found in prior research concerning base closures on the affected local economies has left some uncertainty about what might be

reasonably expected from future base closure (Soresnson & Stenberg, 2015). This study will outline some distinct factors to consider when deciding which bases to close or realign.

The legislatures of local governments must play a leadership role in advance planning to deal with the factors that have significant socioeconomic impacts on base realignment and closing. The community Legislature must set plans in place to adjust to the changes in the affected areas because of the closure or realignment. These changes are difficult to quantify but necessary as it will impact the survival of the local community, and hopefully minimize the impact as much as possible. The state and city government must also take part in adjusting to the remaining effects that will take place in the closure or realignment. All parties must review the best possible outcomes and choose the route greatest suited for the affected surrounding areas.

Organization of Chapters

In order to achieve the objectives in this dissertation, further organization of chapters is as follows. Chapter 2 will review past studies that examine economic factors that affect the surrounding communities after a military base closure along with the process the Department of Defense undertake when deciding which bases to close. This chapter will also examine national defense consumption in the United States by reviewing past spending habits and fluctuations over the years. The final part of this chapter describes the benefits different agencies will gain from the analysis, which will

demonstrate how this research will contribute to existing literature and help shape how the government performs analysis when deciding which bases to realign or close.

Chapter 3 will outline the methodology used to conduct this research and explain in detail the data collection techniques. The definition of the problem will also be outlined along with research design. The variables include the unemployment rate, population, median income, median home values, real estate tax collections and school enrollment. These variables were selected because they closely represent the factors that determine if a community thrives or fail. Chapter 4 will summarize the outcome of the analysis by using the results to predict the conceivable effects on the surrounding communities after a military base is closed. The outcome will be evaluated and discussed in detail to determine the viability of the research. Chapter 5 will provide conclusive factors which will help determine the economic impact and help give guidance to the selection of which military bases to close that will cause the least amount of economic stress on the surrounding communities. This chapter will also explain the research limitations doing the construction of this research.

CHAPTER 2
LITERATURE REVIEW

Introduction

The effects of a base closure on the community in the surrounding area have proven to be diverse by past research. Financial ruin and economic turmoil seem to be the thought of people whom lives will be affected; however, that is not always the case. Despite concerns about the impact of a base closure, policymakers have little information to guide their assessment of which communities might need special assistance and the type of assistant to provide (Dardia, McCarthy, Malkin, & Vernez, 1996). There are two types of information available on the effects of base closure on local communities: (1) studies of the long-term impact of earlier rounds of closure and (2) projections of the effects of the prior round of closures; with each trend to produce a somewhat different picture of base closure effects (Dardia et al; 1996).

This chapter reviews past studies on economic factors that impact the surrounding communities after a military base closure. It also explains the background of the Base Realignment and Closure Commission, along with the process it goes through when closing bases and the selection criteria used when deciding which bases to close. Also, this chapter will review military spending in the United States by reviewing historical spending habits along with current spending trends. The final part of this chapter describes how this research will contribute to existing literature when examining economic factors that directly affect the health of a community after a major part of that community is lost. The focus of this research are bases closed in 2011 in the 2005 round

of closures which will provide the most up-to-date information that will closely relate to the economy of today.

An Announcement of a military base closure can cause panic among the local community. When Castle Air Force Base near Merced, California, received notice that it was on the list of military bases to be closed, the public braced for a major catastrophe (Bradshaw T. K., 1999). The concerns of doom were headline news announced in newspapers. Near the base, shopkeepers, bar owners, fast food restaurant managers, and local government officials tearfully anticipated that their community would become economic backwater or a ghost town (Bradshaw T. K., 1999). The Task force estimated the projected tragedy for the County – retail sales would fall $105 million, 3,700 jobs would be lost, county population would decline by 18,000 persons, the unemployment rate would increase by seven points and the community would spiral down ever further (Bradshaw T. K., 1999). The closure of Chaunte Air Force Base in Rantaul, Illinois was claimed by the mayor to pose the threat of a local economic loss of $340 million (Bradshaw T. K., 1999). Another study reported that March Air Force Base's closure would result in a regional loss of $580 million, based on a 3.7 multiplier of the military budget of $157 million (Bradshaw T. K., 1999). According to Bradshaw (1999), a California government report on the closure of Fort Ord projected a private sector job loss of a quarter of Monterey County's nonagricultural workforce, along with 17, 2000 base employees and nearly a billion- dollar indirect economic loss.

National Defense Consumption

In previous rounds of BRAC, the explicit goal was to save money and downsize the military to reap a "peace dividend." It was clear from the Commission's examination of the DoD 2005 BRAC list that the historical goal of achieving savings through eliminating excess capacity was not always the primary consideration for many recommendations. In fact, several DoD witnesses at Commission hearings made it clear that the purpose of many 2005 BRAC recommendations was to advance the goals of transformation, improve capabilities, and enhance military value. In some cases, accomplishing these new goals meant proposing BRAC scenarios that either never paid off (i.e., resulted in a net increased cost) or had very long payback periods. 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). Four initial BRAC rounds yielded an estimated aggregate of $7 billion in annual recurring savings (Sands, 2011). The scale of military expenditures in the United States has fluctuated considerably over time (Wilkerson & Williams, 2008). Since 1990, the U.S. military establishment has downsized its force structure and overhead expenses through domestic and overseas base closings, reductions in the number of active-duty army and marine divisions and air force tactical wings, and decommissioning of aircraft carriers and long-range bombers (Kuhn & Akers, 1997). In years prior to 2001, military spending in the United States had been reduced dramatically (Hooker & Knetter, 2001). Since 2001, U.S. defense spending has risen at about twice the rate of overall national economic activity and by much wider margins in the earlier part of this period (Wilkerson & Williams, 2008).

In 2007 the United States spent more than $650 billion on national defense; even after adjusting for inflation, this was the largest annual amounts since 1945 (Wilkerson & Williams, 2008). A good deal of economic research has been conducted on the effects of defense spending on national economic growth, however the results of these studies have been somewhat mixed since the first empirical analyst were conducted in the early 1970s (Wilkerson & Williams, 2008). Per Knight, Loayza, and Villanueva (1996), it is a widely-held view that political tensions and associated high levels of military spending are likely to detract from a country's long-run economic growth performance. Debates

about what sort of military the world's only remaining superpower should maintain and to what levels it should be funded are quietly (and sometimes not so quietly) occurring both within the Pentagon and outside the military (Kuhn & Akers, 1997).

Base Closure Process

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). For the 2005 committee, there were nine commissioners who were appointed to serve on the BRAC Commission by President Bush. The DoD list of recommendations was formally presented to the BRAC Commission on May 13th, 2005 (Defense, 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).

For the 2005 commission, to avoid any appearance of a lack of impartiality and to enhance the public's confidence in the integrity of the BRAC process, four commissioners recused themselves from participation in matters relating to installations in their home states. The BRAC Commission will seek extensive public input through a series of regional hearings, installation site visits by Commissioners and staff, and individual meetings. The Commissioners are deeply mindful of the human impact of the DoD installation recommendations and have pledged to ensure that a full review of the facts and consideration of community and related interests will be made prior to making their final recommendations (Defense Base Closure and Realignment Commission, 2005).

The 2005 Defense Base Closure and Realignment Commission, or the first “BRAC” round since 1995, was authorized by Public Law 107-107 (the National Defense Authorization Act for Fiscal Year 2002, signed on December 22, 2001) (Defense, 2005). That statute and several later laws (especially P.L. 107-314 and P.L. 108-375) amended P.L. 101-510 (the Defense Base Closure and Realignment Act of 1990, P.L. 101-510), the authorization for the 1991, 1993, and 1995 BRAC rounds (Defense, 2005). The result combines provisions that expired at the end of 1995 and new provisions directly authorizing and governing the 2005 BRAC process (Defense, 2005).

Both law and policy directed the 2005 Base Closure and Realignment Commission to conduct an open and transparent process. The Commission’s records, meetings, and hearings were (and are) open to the public, except for classified information. Testimony before the Commission is provided under oath (Defense, 2005). Notice of hearings was published in advance in the Federal Register. The statute also directed the Government

Accountability Office (GAO) to analyze DoD's recommendations and publish a report on their findings (Defense, 2005).

According to the DoD report (2005), the statute directs Commissioners to vote on whether each DoD recommendation deviated substantially from the force structure plan and the final selection criteria. The Commission can change or reject entirely, those recommendations it finds deviated substantially from the submitted force structure plan and selection criteria (Defense, 2005). However, any proposed change that would (a) add an installation for closure or realignment, or (b) increase the extent of the realignment beyond what was originally proposed by the Secretary, is considered an "add" and will require the votes of seven of nine Commissioners (Defense, 2005). The Commission cannot change recommendations that do not deviate substantially from the force structure plan; and the final selection criteria and reports its findings and recommendations to the President and American people. By law, the 2005 BRAC Commission was terminated on April 15, 2006 (Defense, 2005).

Base Realignment and Closure Selection Criteria

Based on the 2005 Base Realignment and Closure Selection Criteria Report (Defense, 2005); in selecting military installations for closure or realignment, the Department of Defense, giving priority consideration to military value (the first four criteria below), will consider:

Military Value

1. The current and future mission capabilities and the impact on operational readiness of the total force of the Department of Defense, including the impact on joint warfighting, training, and readiness.
2. The availability and condition of land, facilities, and associated airspace (including training areas suitable for maneuver by ground, naval, or air forces throughout a diversity of climate and terrain areas staging areas for the use of the Armed Forces in homeland defense missions) at existing and potential receiving locations.
3. The ability to accommodate contingency, mobilization, surge, and future total force requirement at both existing and potential receiving locations to support operations and training.
4. The cost of operations and the manpower implications.

Return on Investment

5. The extent and timing of potential costs and savings, including the number of years, beginning with the date of completion of the closure or realignment, for the savings to exceed the costs.

Impact

6. The economic impact on existing communities in the vicinity of military installations.
7. The ability of the infrastructure of both the existing and potential receiving communities to support forces, missions, and personnel.

8. The environmental impact, including the impact of costs related to potential environmental restoration, waste management, and environmental compliance.

Impact of Factors on Base Closures

On April 12, 1991, thousands of Defense Department employees, families, and communities huddled around televisions tuned to CNN as they watched Secretary of Defense Cheney announce his recommendations to the 1991 Base Realignment and Closure Commission (Simmons & Kayn, 1992). These loyal employees now faced an overwhelming threat to their jobs, which would severely affect their families, their lifestyles, their hopes and dreams (Simmons & Kayn, 1992). In the preceding months, these dedicated employees had contributed much--unselfishly, with pride and honor--to the success of the most competent and powerful armed force the world has ever known (Simmons & Kayn, 1992). The feelings of joy, satisfaction, and pride that emerged from helping to quickly bring Saddam Hussein to his knees were suddenly displaced by feelings of horror, emptiness, and betrayal (Simmons & Kayn, 1992).

According to the United States Bureau of Labor Statistics (2016), the unemployment rate is a key indicator of the local economic conditions. Job loss can be devastating for those who find themselves suddenly unemployed. Routines, income, and relationships can change overnight. The impact is not limited to those directly affected; the community connections we share spread the consequences and touch the lives of all. At the height of the 2007-2009 recession, unemployment peaked at 10 percent, and that did not include people working below their skill level.

Base closure impacts are also registered in 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.

The most direct indicator of a community's vulnerability to a base closure may be the share of total employment of population accounted for by the base (Dardia et al; 1996). Bases in areas with increased population in the immediate area are less likely to be closed; however, per Sorenson and Stenberg (2015), the failure to recapture the lost employment and population does seem large enough in the cases they studied to warrant serious attention and justify community concern about base closings. One would expect the net loss of economic vitality in a base closure community, combined with the

disruption of many community services and functions, to lead to a loss of population (Bradshaw T. K., 1999).

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. According to the National Association of Realtors (2016), several factors are considered including local job market, foreclosure rates, housing inventory and debt-to-income ratios when creating the market report for the housing industry, which is a key indicator for local economic conditions. Property taxes are based on the value of a home. Those taxes pay for the local services in the area including public and emergency services. The more occupied homes in the area provide more revenue so that better or additional services can be provided. Regardless, property tax remains a vital source of local government revenues and there is a continuous need to improve the administration of the tax including an accurate, fair, and modern assessment process. When a major change like a military base closure happens to a metropolitan area, the number of homeowners could decrease as the number of people leave the area, which in turn affects the amount of property taxes 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). Children enrolled in school during their K-12 years are impacted by military base closures if one or both of their parents are a part of the base. There are more than 1.2 million children with one or both parents employed as active duty service members of the United States military (Garner, Arnold, & Nunnery, 2014). According to (Garner, et al., 2014),

approximately 85 percent of these children are enrolled in public elementary or middle schools. Even if a school is not located on a base, but is close and is composed mostly of children of active duty parents, that school would be considered a military-connected school. Those schools receive aid from the federal government, based on the number of students of military parents attending. When a military base closes and families must move away, school enrollment decreases, which could affect the school population which in turn decreases the aid that is provided to the school by the Federal government. These changes could have layered effects to the surrounding area.

The Multiplier Effect

Some studies on this topic use the multiplier to arrive at the total effects of the base closure. Per Bradshaw (1999) a pervasive fear in base closure communities is that the loss of base employment and purchases will be multiplied many times over and that loss of revenues from base spending will cascade through the economy, causing employment and business to spiral downward out of control. The fear is based on high economic multipliers that amplify whatever loss there is (Bradshaw T. K., 1999). Another great fear is that the loss of the base will leave the community hopelessly disorganized and unable to respond adequately to these problems (Bradshaw T. K., 1999). Prior to base closure, the projections of catastrophe were based on the belief that the impact on local employment and income would be multiplied two or three times by the cumulative effects on one business after another (Bradshaw T. K., 1999).

Employment multipliers measure how job creation or destruction in a particular industry translates into wider employment changes throughout the economy (Bivens, 2003). For example, the closing of an auto factory that employs 1,000 people has a greater impact on the overall economy than the closing of a retail shopping mall that employs 1,000 people (Bivens, 2003). The direct impacts (1,000 jobs lost) are the same; employment multipliers can show what the total indirect effects will be (Bivens, 2003). Hooker and Knetter (2001) assessed that the DoD uses job loss multipliers that are based on input-output models of the regional economy in projecting the economic impacts of base closures. While these models are useful in describing the linkages between sectors at a point in time, they may fail to capture the ability of the economy to adjust to shocks (Hooker & Knetter, 2001).

Thus, such multipliers may overstate the true economic impacts likely to result from a base closure (Hooker & Knetter, 2001). The "all else equal" assumption implicit in their predictions may be systematically violated by the natural response of market forces or by government policies (Hooker & Knetter, 2001). Per Bradshaw (1999), multipliers are one of the most commonly misunderstood tools of economic analysis and pundits who wish to show that a base closure will be a local catastrophe misuse and overestimate multipliers to make their point. In fact, multipliers in a small county with a specialized economy are quickly dissipated because of so few things are purchased and supplied from within the County. This study utilizes the Wilcoxon signed-ranks test as the tool to analyze the data.

Bradshaw (1999) attest that one typical misunderstanding about multipliers is how low they are when considered within a small region. Considering the sum of direct,

indirect, and consumption-induced effects, multipliers are rarely 3.5 or more for a locality, state or even a region; typical multiplier for an industry in a small county is with the range of 1.3 to 2.0, whereas in a large county multiplier of 1.5 to 2.5 are typical (Bradshaw T. K., 1999). Because of the isolated nature of military bases supply systems, base multipliers (which are not usually available) are likely to be no more than 1.3 or 1.4, meaning that for every dollar the base spends, only 30 or 40 cents of additional economic activity is generated in the county (Bradshaw T. K., 1999). At a state level these multipliers go up somewhat, as they do in large metropolitan areas because more of the things purchased by the base and its employees are produced within a larger area (Bradshaw T. K., 1999).

Summary

As the research in the area is limited, most studies focused their efforts mainly on employment and income, using counties as their dependent variable to determine economic impact. Although this is a good start, my research expands on that premise by focusing on more key economic indicators and expanding the surrounding community by looking at metropolitan areas. This research will not only look at employment just by the number of military and civilians who have lost their jobs by the base closure. However, use the unemployment rate as this gives the percentage of the total labor force in that area that is unemployed, but actively seeking employment and willing to work. As part of my research, I am including key economic indicators; population, housing values, real estate taxes, and school enrollment. This will provide a more holistic way of assessing the economic impact. This also can provide the framework of a model that can be used to

determine which areas would be affected more and guide the next Base Realignment and Closure Commission in their decision-making to determine which bases to close.

CHAPTER 3
RESEARCH DESIGN AND ANALYSIS

Introduction

This research explores the economic impacts of the bases closed in 2011 in the surrounding metropolitan area. Key economic indicators were used to arrive at the impact by testing their difference and significance on the surrounding community. A pre- and post-closure design is utilized to reveal the difference between the key economic indicators during the year before closure and the year after. The key economic indicators include unemployment rate, population, median household income, real estate taxes collected, median home value, and school enrollment. Traditionally, economic impacts of base closures have been projected, rather than estimated, using input-output methods to extrapolate indirect job loss from a given reduction in military and civilian jobs on base (Hooker & Knetter, 2001). The descriptive data used for this study was captured from the United States Census Bureau and the United States Department of Labor. This chapter explains in detail the methodology used to compare the differences between the six factors in the year before the base closure to the year following the base closure. Unlike other studies who used counties or towns as their study area, this study expands to metropolitan areas which encompass a broader area and captures more of the total impact.

According to the United States Census Bureau (2016), Metropolitan statistical areas are geographic entities delineated by the Office of Management and Budget (OMB) for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics. The term "Core Based Statistical Area" (CBSA) is a collective term for both

metro and micro areas. A metro area contains a core urban area of 50,000 or more in population. Each metro area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core (Census Bureau, 2016). Additionally, a metropolitan area, sometimes referred to as a metro area or just metro, is a region consisting of a densely populated urban core and its less-populated surrounding territories, sharing industry, infrastructure, and housing.

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-12th 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). A non-parametric test is a hypothesis test that does not require the population's distribution to be characterized by certain parameters. However, nonparametric tests are not completely free of assumptions about the data. Nonparametric tests are also called distribution-free tests because they don't assume that the data follow a specific distribution.

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. Table 2 shows the official closed date for each base, along with the metropolitan area that surrounds that base and the actual location of the base itself.

Table 2

Base Closure Date, Metropolitan Area and Locality

Base	Official Closed Date	Metropolitan Area	Locality
Naval Air Station Brunswick	May 31, 2011	Portland-South Portland - Biddeford (ME)	Brunswick, ME
Fort Gillem	June 3, 2011	Atlanta - Sandy Springs - Marietta - Roswell (GA)	Forest Park, GA
Fort McPherson	September 15, 2011	Atlanta - Sandy Springs - Marietta - Roswell (GA)	Atlanta, GA
Fort Monroe	September 15, 2011	Virginia Beach - Newport News - Norfolk (VA)	Hampton, VA
Naval Air Station Willow Grove	September 15, 2011	Philadelphia - Camden – Wilmington (PA - NJ – DE)	Horsham, PA
Brooks City Base	September 30, 2011	San Antonio (TX)	San Antonio, TX

Most studies on military base closures focused mainly on job loss. Hooker and Knetter (2001), assert that basically there is typically a substantial impact on employment associated with a base closure, but not much impact on per capita income. However, they use multipliers as a central focus since they play an important role in the public policy process surrounding base closures (Hooker & Knetter, 2001). This study is designed to include other factors as a way to assess the total economic impact in a more robust method. The hypothesis is derived from assessing past studies that assert that the local surrounding communities will suffer drastically after a military base is closed in different areas. One would expect the net loss of economic vitality in a base closure community, combined with the disruption of many community services and functions, to lead to a loss

of population (Bradshaw T. K., 1999). However, according to Bradshaw (1999), closure of a military base is not catastrophic to its local community because even fully operating bases have weak links to the community and the economy in which they are located, and because several compensating factors work to mitigate some of the losses which do occur.

Research Problem and Scope

The problem addressed by this study is the limited design and scarcity of research on base closures and the effect it has on the surrounding communities. Also, because most studies express different outcomes solely based on one or two factors by county, which means the research needs to expand to include other key economic indicators and a broader range of area. This research focuses on metropolitan areas as those relate more closely to the community (immediate and surrounding area) that is directly affected by a major change. Metropolitan areas also encompass more than one county. Counties can be small and only focus on specific areas and not capture the total impact of the base closure.

The scope of this research is to test the comparative impact of different economic factors "pre" and "post" of a metropolitan area to show the effect of a base closure on the surrounding community. Using key economic indicators including employment, population, home value, median income, real estate taxes and school enrollment; this study will give a blueprint to guide key decision makers on how to move forward when deciding when/if bases will be closed or realigned. This study focuses on the 2005 Base

Realignment and Closure round of closures with specific emphasis on the six bases that closed in the year 2011.

Past research suggests that surrounding communities suffer different uncertainties after a military base is closed, depending on the size of the base and the extent to which the community relies on it. Sorenson and Stenberg (2015) agrees that prior research has found mixed results concerning the results of base closures on the local economies, leaving some uncertainty about what might be reasonably expected from future base closure. Hooker and Knetter (2001) proposes given uncertainty about the likely economic consequences of base closures, and the substantial resources that have been expended to prevent them, it would seem important to evaluate the economic costs of past closures.

However, a growing body of research literature shows that base closures are not catastrophic in the short run and that over time the base and its abandoned facilities can be an unprecedented opportunity for economic rejuvenation and public benefit (Bradshaw T. K., 1999). As to short-term impacts, the evidence is mounting to show that closures can initially leave nearby communities unfazed according to Bradshaw (1999). Based on data collected through 1994, the RAND study concluded that "while some of the communities did indeed suffer, the effects were not catastrophic, and not nearly as severe as forecasted" (Bradshaw T. K., 1999).

Research Questions

This study attempts to answer the following research questions:

1. Does the closure of a military base impact employment for the surrounding metropolitan communities?
2. Does the closure of a military base impact population for the surrounding metropolitan communities?
3. Does the closure of a military base impact median household income for the surrounding metropolitan communities?
4. Does the closure of a military base impact median home value for the surrounding metropolitan communities?
5. Does the closure of a military base impact real estate taxes for the surrounding metropolitan communities?
6. Does the closure of a military base impact K-12th school enrollment for the surrounding metropolitan communities?

Hypothesis

Regarding the economic impact pre and post base closure, the following hypotheses were tested:

$H_0$1: The mean unemployment rate in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will not change in 2012 compared to 2010.

H_a1: The mean unemployment rate in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will change in 2012 compared to 2010.

$H_0$2: The mean median home value in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will not change in 2012 compared to 2010.

H_a2: The mean median home value in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will change in 2012 compared to 2010.

$H_0$3: The mean population in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will not change in 2012 compared to 2010.

H_a3: The mean population in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will change in 2012 compared to 2010.

$H_0$4: The mean median household income in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will not change in 2012 compared to 2010.

H_a4: The mean median household income in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will change in 2012 compared to 2010.

$H_0$5: The mean real estate taxes paid in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will not change in 2012 compared to 2010.

H_a5: The mean real estate taxes paid in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will change in 2012 compared to 2010.

$H_0$6: The mean K-12th school enrollment in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will not change in 2012 compared to 2010.

H_a6: The mean K-12th school enrollment in the communities surrounding bases closed in 2011 as part of the 2005 round of BRAC closures will change in 2012 compared to 2010.

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.

Descriptive Statistics

Table 3 below details the descriptive statistics for the bases closed in 2011. These bases were part of the 2005 BRAC round of closures. Unlike previous studies, the

statistics describe the pre- and post- closure results of key economic indicators of the surrounding metropolitan areas of the closed bases.

Table 3

Descriptive Statistics for Independent Variables

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
Mhome2010	6	201916.00	47629.50	131700.00	246300.00	164850.00	205700.00	246225.00
Mhome2012	6	192350.00	46254.63	132100.00	235100.00	153625.00	196400.00	233750.00
PropTaxes2010	6	840914.00	567248.38	151267.00	1523951.00	333967.75	862789.50	131852.00
PropTaxes2012	6	827666.50	558500.60	148952.00	1503234.00	321833.75	853091.50	1296485.25
Pop2010	6	3487810.33	2309099.81	513807.00	5971276.00	1388534.24	3728731.00	5470974.25
Pop2012	6	3564708.33	2354380.61	518219.00	6020925.00	1403348.00	3847121.50	5597585.25
Unemp2010	6	8.50	1.38	7.00	10.00	7.00	8.50	10.00
Unemp2012	6	7.50	1.38	6.00	9.00	6.00	7.50	9.00
Medincome2010	6	55165.83	2410.72	52689.00	58095.00	53059.50	54856.50	57510.00
Medincome2012	6	55024.00	2853.63	51486.00	60104.00	53147.25	54628.00	56723.75
SchoolEn2010	6	711086.00	476049.80	89006.00	1142986.00	259905.50	795893.00	1130146.00
SchoolEn2012	6	712258.00	481363.55	87993.00	1149991.00	254679.00	787666.00	1149991.00

Hypothesis Testing

A Wilcoxon signed-ranks test was performed using SPSS. It is used to test the difference between the year prior to closing to the year after. The Wilcoxon signed-ranks test is a non-parametric statistical hypothesis test used when comparing two related samples. The test gave statistical information to show if the factors in the study are significant to the metropolitan area of a base closure and to what extent. The test revealed that the mean for all factors analyzed had changed from the year 2012 compared to the year 2010, thus rejecting the null hypotheses. Even though most factors decreased

overall, a decrease in the unemployment rate is an improvement and helps the community to grow economically.

When using a Wilcoxon signed-ranks test, three assumptions should be met. The first assumption is that the dependent variable should be measured at the ordinal or continuous level (Laerd Statistics, 2017). Examples of ordinal level include scales of how much something is liked or rated, i.e. "strongly agree, agree, strongly disagree", while examples of continuous level include time, weight, performance, etc. This study used the continuous level in the form of years using 2010 and 2012 as the basis of comparison. The second assumption is that the independent variable should consist of two categorical related groups or matched pairs, which indicates the same subjects were present in both groups (Laerd Statistics, 2017). The independent variables used in this study are unemployment rate, median home value, population, median household income, real estate taxes paid, and K-12th school enrollment, which are present in both years tested in this study. The data for those variables was analyzed to determine if there was a change and if so, how much change occurred. The third assumption is that the distribution of the differences between the two related groups with the independent variable needs to be symmetrical (Laerd Statistics, 2017). In this study, the same group of independent variables for the year 2010 and 2012 (two related groups) were tested on the same metropolitan areas for both years. Data was gathered for each metropolitan area per each variable for the year prior to closing and the year after closure. If the data being used does not adhere to this assumption, it can be transformed to achieve a symmetrical distribution of differences, however, that is not a preferred method. A paired t-test was conducted on the same data to determine if it was possible to use with such a small sample and it

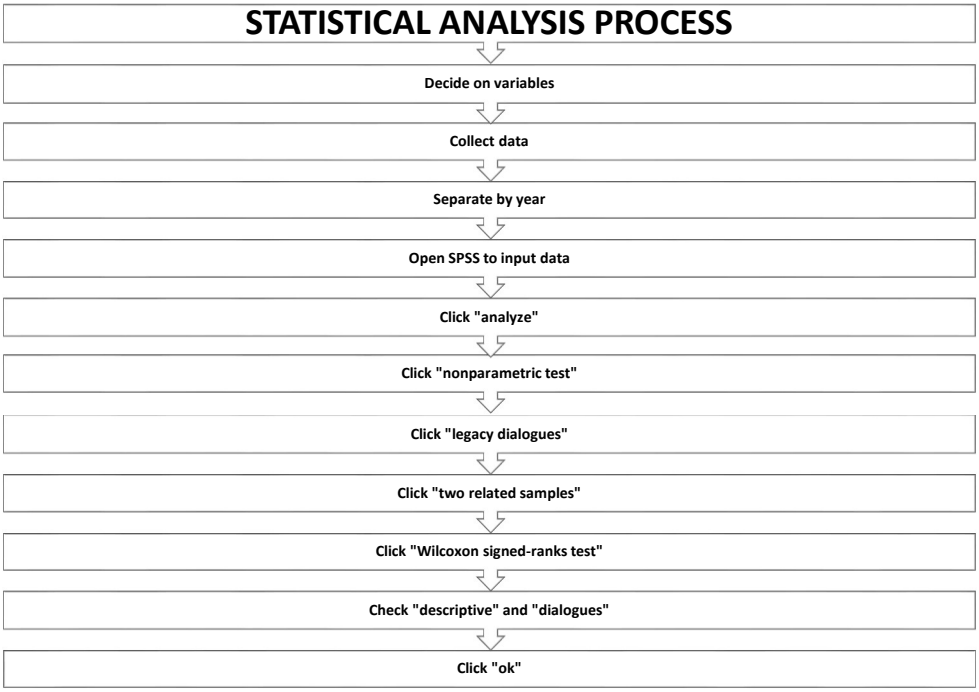
revealed similar results, however many parametric assumptions were violated due to applying a parametric test to such a small sample which substantiates that the Wilcoxon signed-ranks test is the best test for this study.

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. Table 4 below outlines the steps taken when completing the statistical analysis process.

Table 4

Statistical Analysis Process



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-12th school enrollment was included as military-connected schools are also impacted by military base closures. Below is a bulleted list of the factors analyzed:

Economic Factors Analyzed

- Unemployment Rate
- Median Home Value
- Population
- Median Household Income
- Real Estate Taxes Paid
- School Enrollment (K-12th)

The "Ranks" table provides some thought-provoking data on the comparison of the factors before (pre) and after (post) base closure. The table describes the factors as negative ranks, positive ranks or a tie. Negative ranks mean that the factor decreased from the initial point of comparison to the point of conclusion. Positive ranks mean that the factor increased from the initial point of comparison to the point of conclusion. A tie means that the factor did not change between the two points of comparison.

As illustrated in Table 5 below, median home value in five metropolitan areas decreased after the base closure, but increased in one metropolitan area; which concludes that median home value decreased overall after the closure of the bases. Property taxes

paid in five metropolitan areas decreased after the base closure, while property taxes paid increased in one metropolitan area; which concludes that property taxes paid as a whole decreased after the closure of the bases. The unemployment rate decreased for all six metropolitan areas after the base closure. When the unemployment rate decreases, it suggests that the economy is growing, which concludes that there was a positive impact on the surrounding community with more people working after the closure of the bases. The population for all six metropolitan areas increased after the base closure, which suggests a positive impact and concludes that more people migrated to those areas after the closure of the bases. School enrollment for grades K-12th decreased in four of the metropolitan areas and increased in two of the metropolitan areas after the base closure, which concludes that overall the school enrollment for grades K-12th decreased after the closure of the bases. Median household income decreased in three of the metropolitan areas, however, it increased in three of the metropolitan areas as well after the base closure, which concludes that the mean median household income was essentially the same before and after the closure of the bases.

Table 5

Wilcoxon "Ranks" Table

Ranks

		N	Mean Rank	Sum of Ranks
Mhome2012 - Mhome2010	Negative Ranks	5[a]	4.00	20.00
	Positive Ranks	1[b]	1.00	1.00
	Ties	0[c]		
	Total	6		
PropTaxes2012 - PropTaxes2010	Negative Ranks	5[d]	3.80	19.00
	Positive Ranks	1[e]	2.00	2.00
	Ties	0[f]		
	Total	6		
Unemp2012 - Unemp2010	Negative Ranks	6[g]	3.50	21.00
	Positive Ranks	0[h]	.00	.00
	Ties	0[i]		
	Total	6		
Pop2012 - Pop2010	Negative Ranks	0[j]	.00	.00
	Positive Ranks	6[k]	3.50	21.00
	Ties	0[l]		
	Total	6		
SchoolEn2012 - SchoolEn2010	Negative Ranks	4[m]	3.00	12.00
	Positive Ranks	2[n]	4.50	9.00
	Ties	0[o]		
	Total	6		
MedIncome_2012 - MedIncome_2010	Negative Ranks	3[p]	3.67	11.00
	Positive Ranks	3[q]	3.33	10.00
	Ties	0[r]		
	Total	6		

a. Mhome2012 < Mhome2010
b. Mhome2012 > Mhome2010
c. Mhome2012 = Mhome2010
d. PropTaxes2012 < PropTaxes2010
e. PropTaxes2012 > PropTaxes2010
f. PropTaxes2012 = PropTaxes2010
g. unemp2012 < unemp2010
h. unemp2012 > unemp2010
i. unemp2012 = unemp2010
j. Pop2012 < Pop2010
k. Pop2012 > Pop2010
l. Pop2012 = Pop2010
m. SchoolEn2012 < SchoolEn2010
n. SchoolEn2012 > SchoolEn2010
o. SchoolEn2012 = SchoolEn2010
p. MedIncome_2012 < MedIncome_2010
q. MedIncome_2012 > MedIncome_2010
r. MedIncome_2012 = MedIncome_2010

The test statistic table reveals weather the factors are statistically significant. As illustrated in table 6 below, three of the six factors proved to be significant using a 95% confidence level. Unemployment rate, median home value and population all had an "Asymp. Sig. (P-value)" score of .05 or below, which indicates significance. This means that those three factors increased or decreased in such large amounts that the impact would be felt meaningfully throughout the community. Conversely; median household income, property taxes paid and school enrollment did not have a major change between pre and post base closure which concludes that those factors are not significant.

Table 6

Wilcoxon Test Statistics

	Mhome2012 - Mhome2010	PropTaxes2012 - PropTaxes2010	JobLoss2012 - JobLoss2010	Pop2012 - Pop2010	SchoolEn2012 - SchoolEn2010	MedIncome_2012 - MedIncome_2010
Z	-1.997[a]	-1.787[a]	-2.449[a]	-2.207[b]	-.315[a]	-.105[a]
Asymp. Sig. (2-tailed)	0.046	0.074	0.014	0.027	0.752	0.916

a. Based on positive ranks.

b. Based on negative ranks.

c. Wilcoxon Signed Ranks Test

Summary

Any major change can cause stress and anxiety. A major change like the possibility of losing your employment and thinking about the loss of your lifestyle can cause high concern and downright panic. The thought of relocating and having to learn a different city can also cause emotional turmoil. The test revealed that the metropolitan areas surrounding the bases closed in 2011 were impacted, but not to the point of devastation. Of the six factors analyzed, only three of them were significant which included unemployment rate, median home value and population. Of the three that were

significant, the unemployment rate and population proved to have a positive impact and median home value was the only one impacted negatively.

CHAPTER 4
DISCUSSION OF RESULTS

Introduction

This research analyzes the economic impact of the surrounding metropolitan area using a pre- and post- closure assessment. Using the Statistical Package for the Social Sciences (SPSS), a Wilcoxon signed-ranks test was used to test the data for the bases closed in the year 2011. This chapter focuses on the outcome of the test using unemployment rate, population, median home value, real estate taxes paid, median income and school enrollment as factors that will serve as the independent variables. The bases (metro area) closed in 2011 included Fort Gillem (Atlanta-Sandy Springs-Marietta-Roswell, GA), Fort McPherson (Atlanta-Sandy Springs-Marietta- Roswell, GA), Fort Monroe (Virginia Beach-Norfolk-Newport News, VA), Naval Air Station Brunswick (Portland- Biddeford, ME), Naval Air Station Willow Grove (Philadelphia-Camden-Wilmington, PA-NJ-DE) and Brooks City Base (San Antonio, TX). This section of the study examines more of the output of the statistical test performed.

Closure Impact

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. Half of the economic indicators expressed no significant impact to the surrounding metropolitan area, while the other half was mostly positive. According to this research, the impact of a base closure to the

surrounding metropolitan area does not demonstrate that it would cause an economic disaster. The surrounding community can take a sigh of relief by knowing it does not mean the end for a community once a base is closed.

Impact on Unemployment Rate

A Wilcoxon signed-ranks test was utilized to calculate the mean difference between the year prior and the year after the base closure to determine if there was an impact using the unemployment rate for each metropolitan area. The independent variable is the unemployment rate and the dependent variable is the metropolitan area. Table 7 details the mean of 8.5% in the year before closure and a mean of 7.5% in the year after closure for unemployment rate. 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. Unlike previous studies, this is an indication that economic impact was positive for the unemployment rate. Additionally, the ranks table in Chapter 3 revealed that all metropolitan areas in the study expressed a negative rank showing that the unemployment rate in 2012 was less than that in 2010.

Table 7

Descriptive Statistics for Unemployment Rate

Year	N	Mean	P-value	Effect Size	Sig. (2-tail)
2010	6	8.5	0.01	0.7	0.014
2012	6	7.5			
Change in Score	6	1.00			

Figure 1 shows the rate of unemployment for each base metropolitan area for 2010, the year before closure and 2012, the year after closure. According to the United States Bureau of Labor Statistics (2016), the unemployment rate is a measure of the sum of the employed and the unemployed and is a key indicator of the local economic conditions.

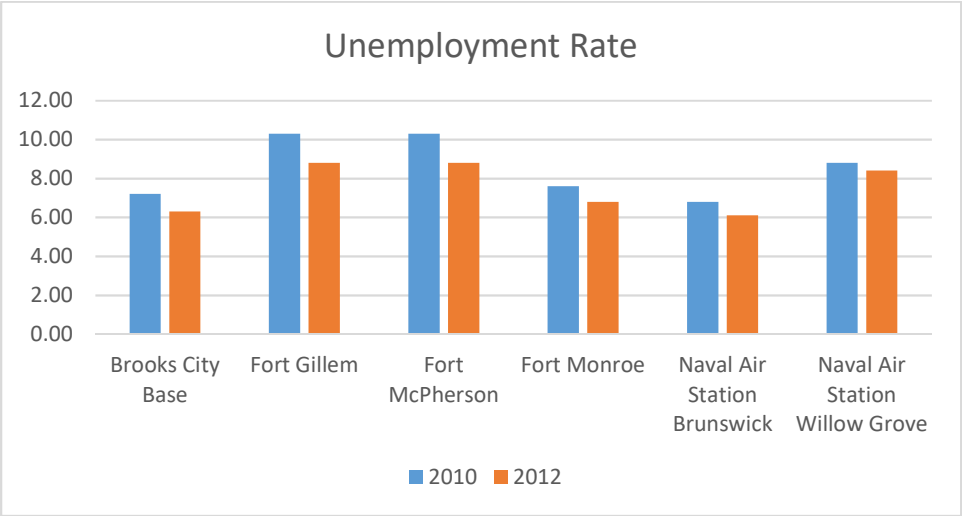


Figure 1. 2010 & 2012 Unemployment Rate.

Impact on Median Home Value

A Wilcoxon signed-ranks test was utilized to calculate the mean difference between the year prior and the year after the base closure to determine if there was an impact using median home value for each metropolitan area. The independent variable is median home value and the dependent variable is the metropolitan area. Table 8 details the mean of $205,700 in the year before closure and a mean of $196,400 after closure for median home value. 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. This is an indication that the economic impact on median home value was negative. Additionally, the ranks table in Chapter 3 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.

Table 8

Descriptive Statistics for Median Home Value

Year	N	Mean	P-value	Effect Size	Sig. (2-tail)
2010	6	$205,700	0.05	0.58	0.046
2012	6	$196,400			
Change in Score	6	$9,567			

Figure 2 shows the median home value for each base metropolitan area for 2010, the year before closure and 2012, the year after closure. According to the National Association of Realtors (2016), a number of factors are taken into account including local job market, foreclosure rates, housing inventory and debt-to-income ratios when creating the market report for the housing industry, which is a key indicator for local economic conditions.

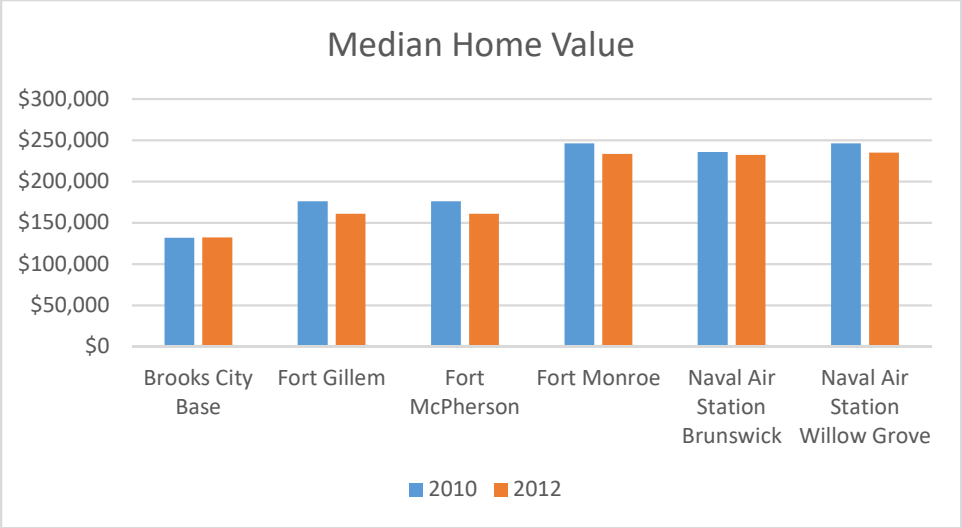


Figure 2. 2010 & 2012 Median Home Value.

Impact on Population

A Wilcoxon signed-ranks test was utilized to calculate the mean difference between the year prior and the year after the base closure to determine if there was an impact using the population for each metropolitan area. The independent variable is population and the dependent variable is the metropolitan area. Table 9 details the mean of 3,487,810 in the year before closure and a mean of 3,564,798 after closure for the population. 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. Unlike previous studies, this is an indication that the economic impact on those metropolitan areas was positive after the base closure. Additionally, the ranks table in Chapter 3 revealed that all metropolitan areas in the study expressed a positive rank showing that the population in 2012 was greater than that in 2010.

Table 9

Descriptive Statistics for Population

Year	N	Mean	P-value	Effect Size	Sig. (2-tail)
2010	6	3,487,810	0.03	0.64	0.027
2012	6	3,564,798			
Change in Score	6	76,988			

Figure 3 shows the population for each base metropolitan area for 2010, the year before closure and 2012, the year after closure. Previous studies show mixed results of the population effect to communities when a military base is closed, however; in this study with the bases that were closed, it shows that there is a significant impact within the metropolitan area on population because of a base closure.

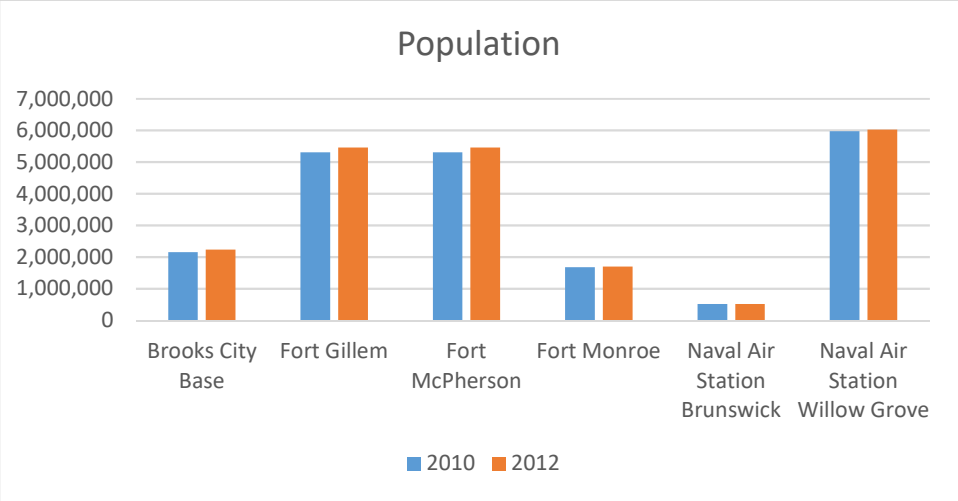


Figure 3. 2010 & 2012 Population.

Impact on Median Household Income

A Wilcoxon signed-ranks test was utilized to calculate the mean difference between the year prior and the year after the base closure to determine if there was an impact using the median household income for each metropolitan area. The independent variable is the median household income and the dependent variable is the metropolitan area. Table 10 details the mean of $55,165 in the year before closure and a mean of $55,024 after closure for median household income. 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. Previous research suggests that income would decrease, however, this research does not validate that claim. Additionally, the ranks table in Chapter 3 revealed that three of the metropolitan areas in the study expressed a negative rank, while three revealed a positive rank showing that median household income didn't have a major change between 2012 and 2010.

Table 10

Descriptive Statistics for Median Household Income

Year	N	Mean	P-value	Effect Size	Sig. (2-tail)
2010	6	$55,165	0.96	0.03	0.916
2012	6	$55,024			
Change in Score	6	141			

Figure 4 shows the median household income for each base metropolitan area for 2010, the year before closure and 2012, the year after closure. The median income for a household in the metropolitan areas was not drastically affected the closure of the bases.

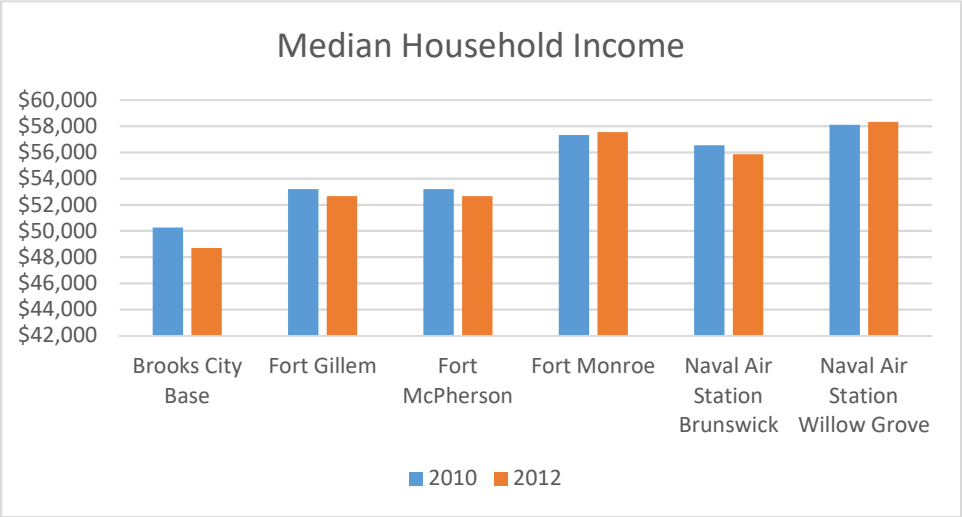


Figure 4. 2010 & 2012 Median Household Income.

Impact on Real Estate Taxes Paid

A Wilcoxon signed-ranks test was utilized to calculate the mean difference between the year prior and the year after the base closure to determine if there was an impact using the real estate taxes paid for each metropolitan area. The independent variable is real estate taxes paid and the dependent variable is the metropolitan statistical area. Table 11 details the mean of $840,914 in the year before closure and a mean of $827,566 after closure for real estate taxes paid. 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. Additionally, the ranks table in Chapter 3 revealed that five of the metropolitan areas in the study expressed a negative rank, while one revealed a positive rank expressing that real estate taxes paid decreased in 2012 from 2010 after the base closures.

Table 11

Descriptive Statistics for Real Estate Taxes Paid

Year	N	Mean	P-value	Effect Size	Sig. (2-tail)
2010	6	$840,914	0.07	0.52	0.074
2012	6	$827,566			
Change in Score	6	$13,348			

Figure 5 shows the real estate taxes paid for each base metropolitan area for 2010, the year before closure and 2012, the year after closure. Even though there was a significant impact to median home values when the bases were closed, real estate taxes paid were not affected as much.

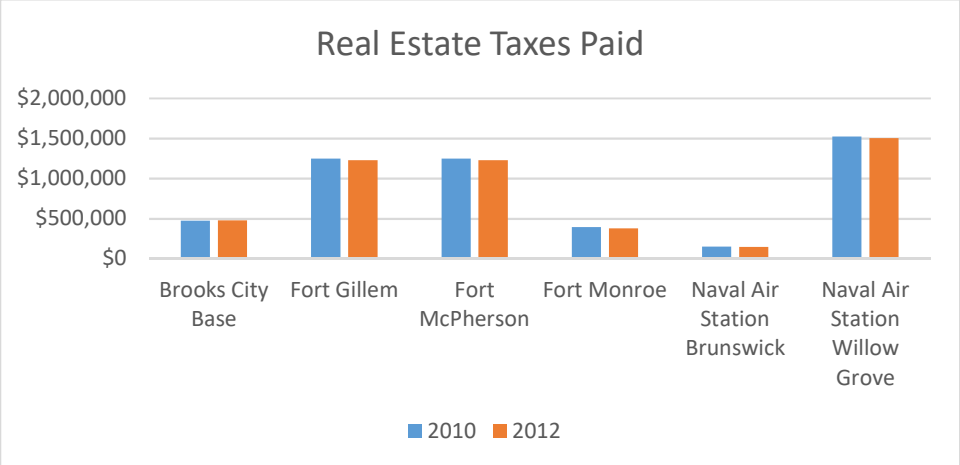


Figure 5. 2010 & 2012 Real Estate Taxes Paid.

Impact on School Enrollment

A Wilcoxon signed-ranks test was utilized to calculate the mean difference between the year prior and the year after the base closure to determine if there was an impact using the school enrollment for each metropolitan area. The independent variable is school enrollment and the dependent variable is the metropolitan statistical area. Table 12 details the mean of 711,086 in the year before closure and a mean of 712,258 after closure for school enrollment. 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. Additionally, the ranks table in Chapter 3 revealed that four of the metropolitan areas in the study expressed a negative rank, while two revealed a positive rank expressing that school enrollment decreased in 2012 from 2010 after the base closures.

Table 12

Descriptive Statistics for School Enrollment

Year	N	Mean	P-value	Effect Size	Sig. (2-tail)
2010	6	711,086	0.75	0.09	0.752
2012	6	712,258			
Change in Score	6	1,172			

Figure 6 shows school enrollment for each base metropolitan area for 2010, the year before closure and 2012, the year after closure. The data for school enrollment includes students who are enrolled in classes from kindergarten through 12th grade. Students of military families constantly move when bases are closed or reassigned.

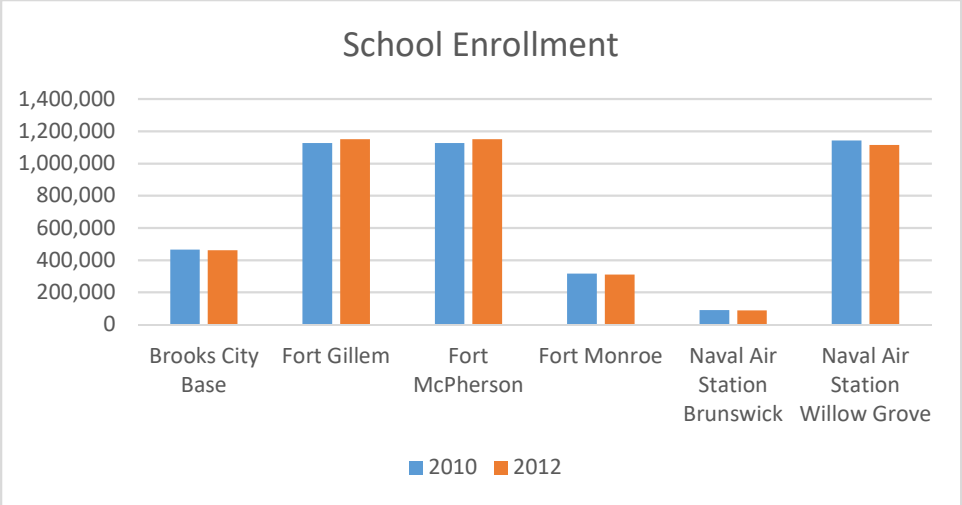


Figure 6. 2010 & 2012 School Enrollment.

Positive Benefits from Closure

Some critics would say there are very few to no benefits of closing a military base. Under the law, the BRAC commission is required to look at conservations options for the land after closure. The reuse plan varies depending on the area and community. Previous land use of closed bases differs from airports to playgrounds, which benefits the surrounding community. Another benefit is that the community rallies together to fight the closure or get the best use of the land, which might not happen otherwise. Reducing military cost is another benefit, along with making the United States force structure stronger. With the regular threat of terrorism in today's time, a strong military is needed to exhibit to the world that the U.S. defense structure is still as powerful as ever. Table 13 outlines the significance of each factor and the impact of a base closure in the metropolitan area by each factor. Along with the other social options for base reuse, the table shows there are some positive economic outcomes from a military base closure.

Table 13

Summary of Impact

SUMMARY OF IMPACT		
Factor	**Significant**	**Impact**
Unemployment Rate	Yes	Positive
Median Home Value	Yes	Negative
Population	Yes	Positive
Median Household Income	No	N/A
Real Estate Taxes Paid	No	N/A
School Enrollment	No	N/A

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).

Summary

Although past research presented mixed results of base closures, most agreed that the effects were negative. Like others, the hypothesis in this study suggested the negative side of things. However, when reading through the literature, most studies concentrated their efforts on one to two variables and on counties or cities. The intention of this study is to expand that knowledge by adding more factors that help decide the health of the community and expand the area in which the base could impact. By concentrating on metropolitan areas and including more factors, this researched revealed that base closures have some negative impacts, but does not totally destroy the economy of the surrounding communities as most suggest.

CHAPTER 5
CONCLUSION

Introduction

The 2005 BRAC Commission was created to provide an objective, thorough, accurate, and non-partisan review and analysis of bases to close or realign. The process was determined by law and a list of bases was selected to be closed or realigned according to criteria set by the Department of Defense (Defense Base Closure and Realignment Commission, 2005). After careful scrutiny by the government, a final decision is made as which bases would be affected. This research concludes on the impact of the bases closed in 2011 to the surrounding metropolitan areas using factors that are key indicators of the economic health of a community. As other studies have found there are mixed results of a base closure, utilizing a Wilcoxon signed-ranks test for the bases closed in 2011 as part of the 2005 BRAC round closures, this study found that certain factors common to other studies agree that the impact is significant while other factors were not impacted at all by the closure. Additionally, some of the factors that were significant did not prove to affect the surrounding community negatively.

Research Findings

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. The factors include unemployment rate, population, median home value, median household

income, real estate taxes paid and K-12th school enrollment. 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-12th 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.

Areas of Further Research

While there is confidence that the surrounding community of a closed military base is impacted in different ways, the amount to which that community depends on a base makes a tremendous difference. Although some bases suffered economically after a closure, the results of this research revealed that economic catastrophe is not always the outcome. The size and location of the base play a role in the impact on the surrounding area. Further research can be done concentrating on bases of a certain size or geographical location. Other areas of research can be done on specific industries in the surrounding areas that are impacted by a base closure. Those industries can include retail, agriculture, and medical along with others. Additional research can also be done on the redevelopment of the actual land that the base is located. One study suggests that a

common transition for these bases is to designate these lands as national wildlife refuges (Havlick, 2014). Lastly, a study can be conducted analyzing the impact of realigning the bases. When bases are realigned, some bases increase in population while others decrease, which could cause a strain on the community in both sense.

Recommendations and Limitations

The thought of a major change to a community like a base closure can cause panic throughout the surrounding community. The announcement of a base closure should be accompanied with a phase resolution of how the process will move forward, a timeframe of the process, and possible recommendations for reuse of the land. This could help reduce the initial panic of doom. The Federal government should work closely with local government to minimize negative impacts. This research was limited to one year after closure. Additionally, political and technological factors were not considered.

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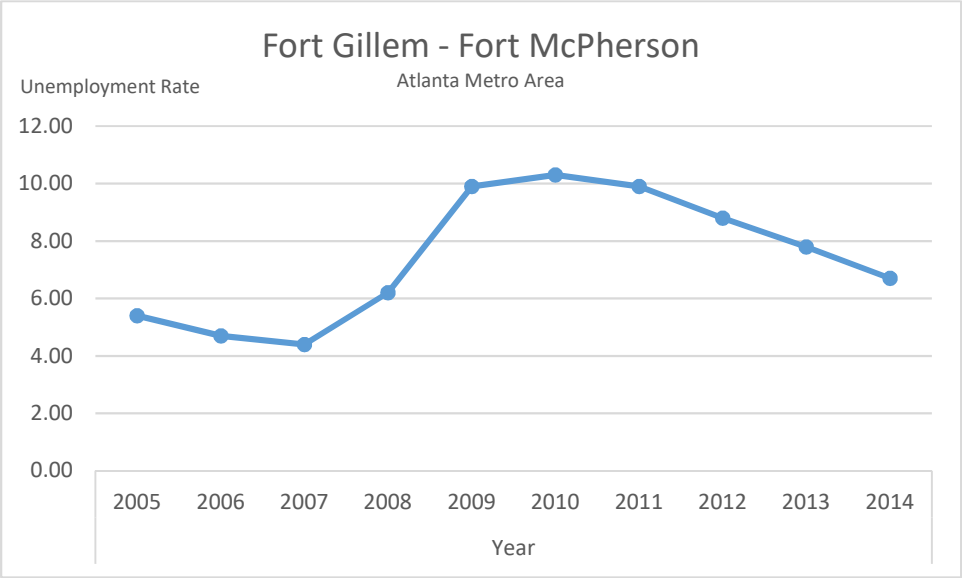
APPENDICES

APPENDIX A

UNEMPLOYMENT RATE TREND CHARTS

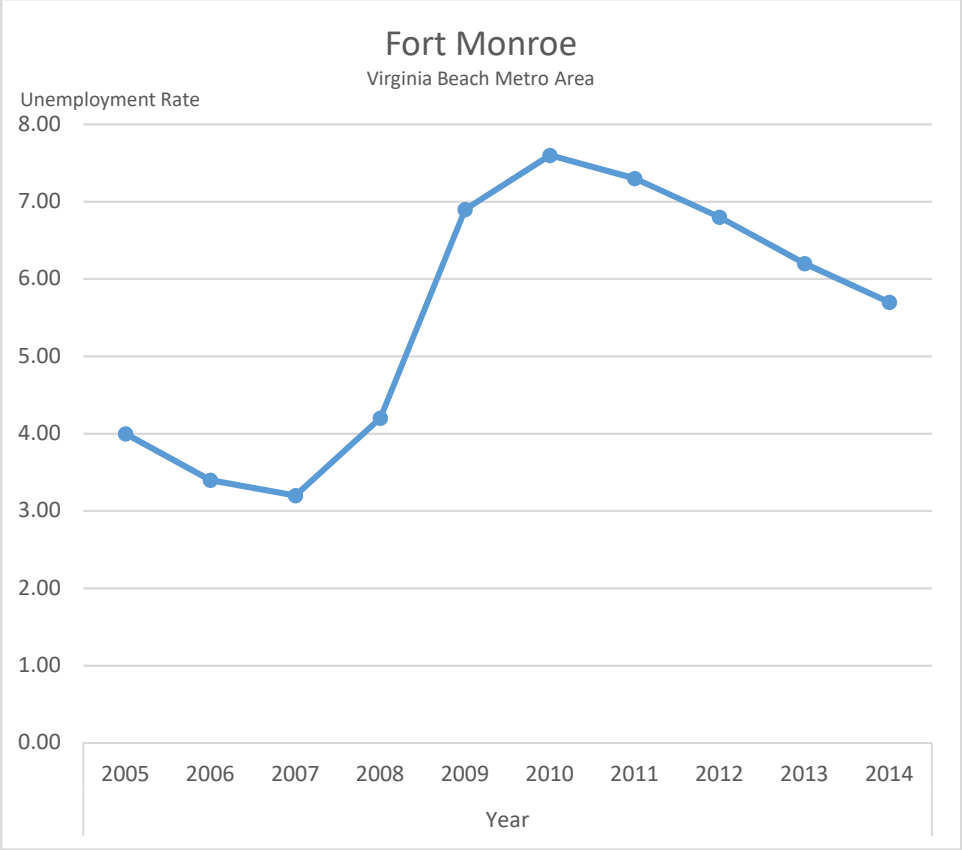


10-Year Unemployment Rate Trend for Fort Gillem – Fort McPherson

The chart shows a 10-year trend of the unemployment rate for Fort Gillem and Fort McPherson. As these two bases are a part of the same metropolitan area, the information was the same and they are shown together on the chart. The metropolitan area for these bases includes the Atlanta – Sandy Springs – Marietta – Roswell area located in the state of Georgia. The trend shows starting in 2005 when the announcement was made that the bases were closing, the unemployment rate for this metropolitan area was 5.4% which was .3% higher than the national average unemployment rate. As most areas in this country, the unemployment rate increased during the great recession from 2007 to 2009. The unemployment rate in 2010, the year before the base closed was 10.3% and in 2012, the year after the base closed was 8.8%. This shows that the unemployment rate decreased from the year prior to closing to the year after, which is a sign of economic growth in the area.

APPENDIX A (continued)

UNEMPLOYMENT RATE TREND CHARTS

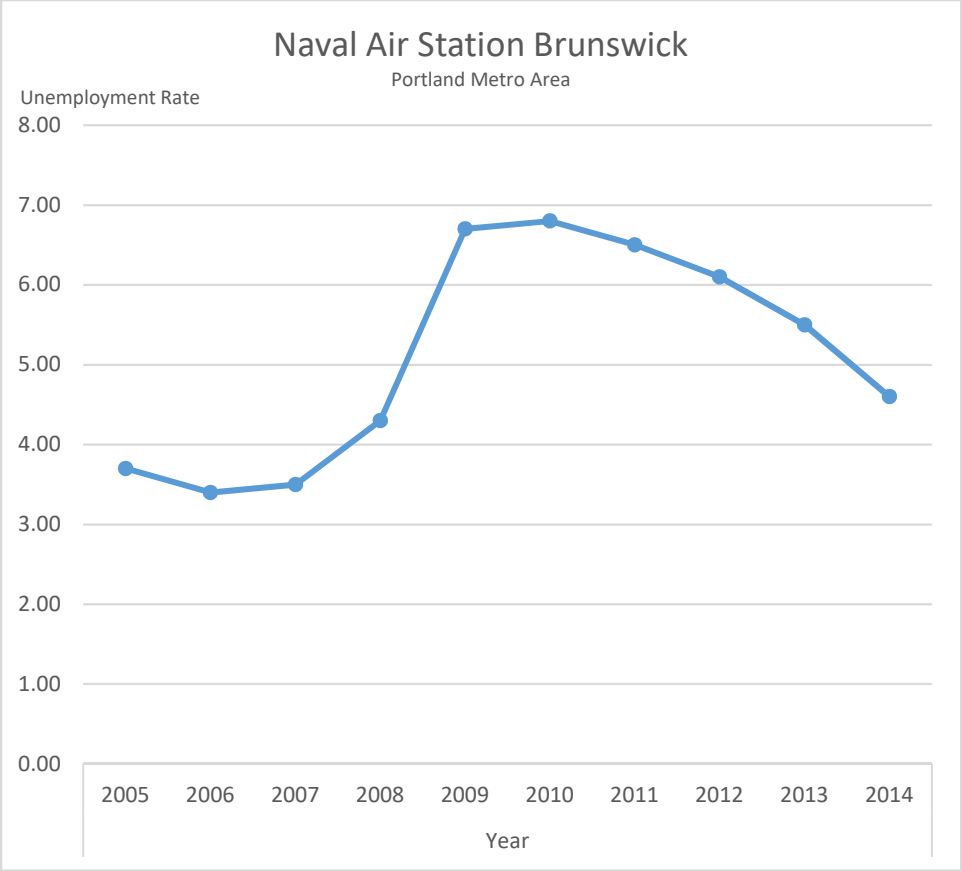


10-Year Unemployment Rate Trend for Fort Monroe

The chart shows a 10-year trend of the unemployment rate for Fort Monroe. The metropolitan area for this base includes Virginia Beach, Norfolk, and Newport News located in the state of Virginia. The trend shows starting in 2005 the unemployment rate for this metropolitan area was 4% which was 1.1% lower than the national average unemployment rate. The unemployment rate in 2010, the year before the base closed was 7.6% and in 2012, the year after the base closed was 6.8%. This shows that the unemployment rate decreased from the year prior to closing to the year after, which is a sign of economic growth in the area.

APPENDIX A (continued)

UNEMPLOYMENT RATE TREND CHARTS

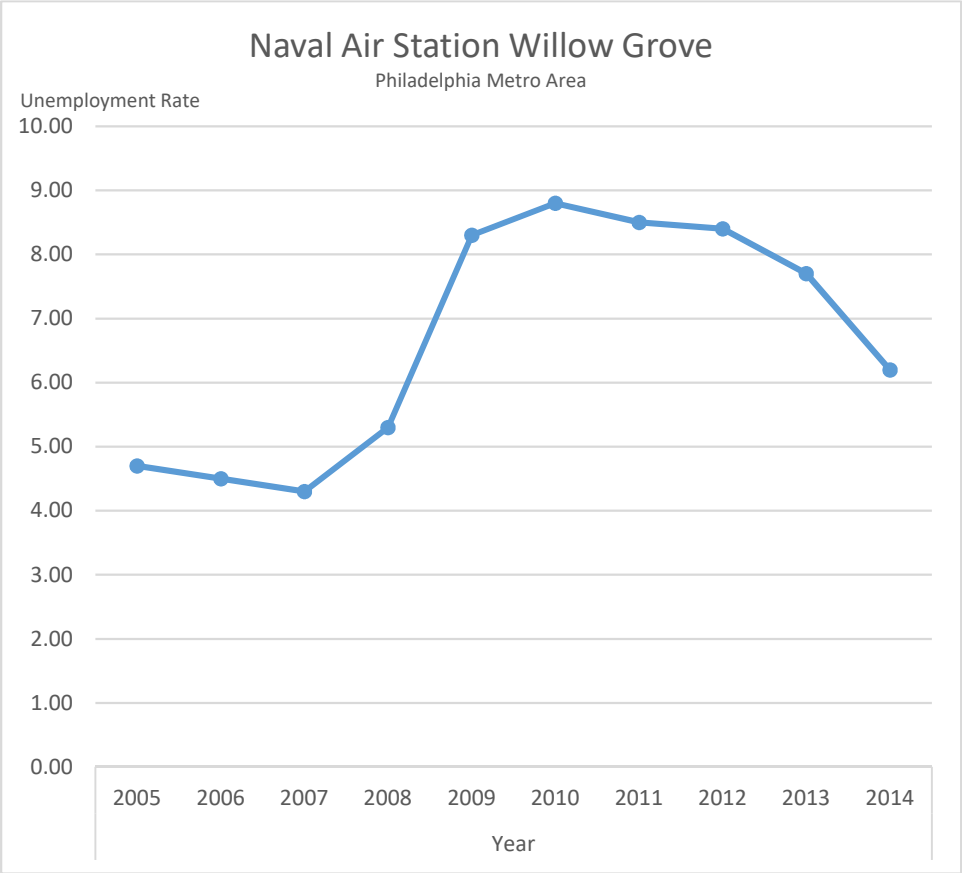


10-Year Unemployment Rate Trend for Naval Air Station Brunswick

The chart shows a 10-year trend of the unemployment rate for Naval Air Station Brunswick. The metropolitan area for this base includes Portland and Biddeford located in the state of Maine. The trend shows starting in 2005 when it was announced that the base was closing, the unemployment rate for this metropolitan area was 3.7% which was 1.4% lower than the national average unemployment rate. The unemployment rate in 2010, the year before the base closed was 6.8% and in 2012, the year after the base closed was 6.1%. This shows that the unemployment rate decreased from the year prior to closing to the year after, which is a sign of economic growth in the area.

APPENDIX A (continued)

UNEMPLOYMENT RATE TREND CHARTS

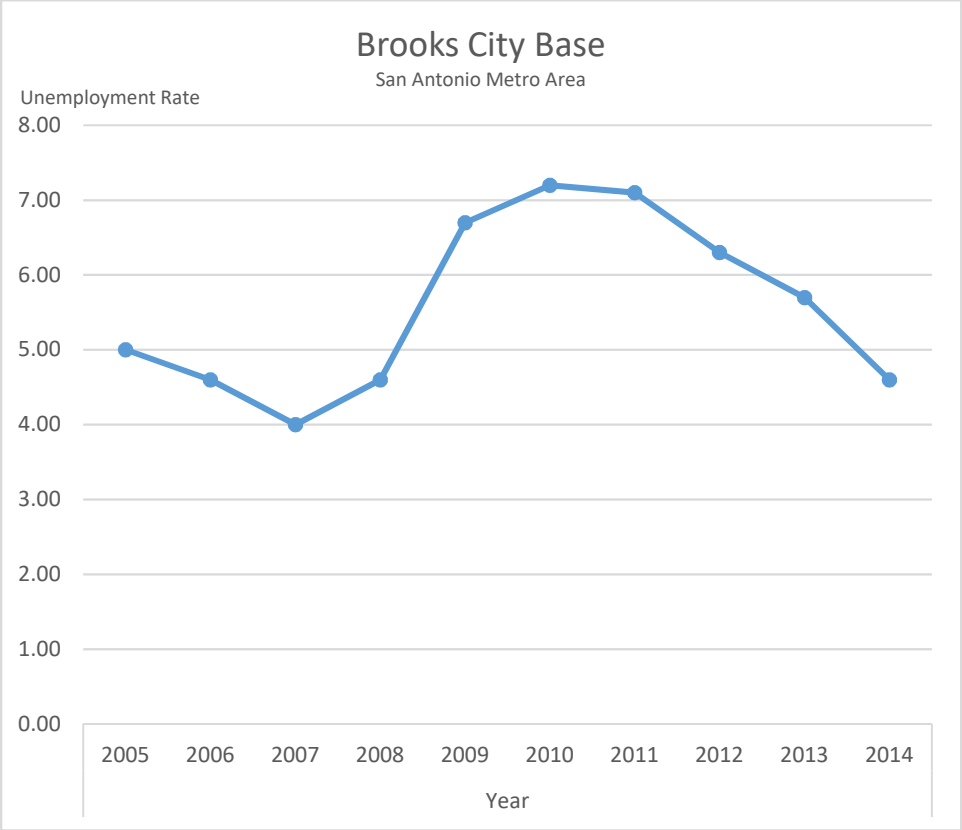


10-Year Unemployment Rate Trend for Naval Air Station Willow Grove

The chart shows a 10-year trend of the unemployment rate for Naval Air Station Willow Grove. The metropolitan area for this base includes Philadelphia, Camden, and Wilmington located in the states of Pennsylvania, New Jersey and Delaware. The trend shows starting in 2005 when it was announced that the base was closing, the unemployment rate for this metropolitan area was 4.7% which was .4% lower than the national average unemployment rate. The unemployment rate in 2010, the year before the base closed was 8.8% and in 2012, the year after the base closed was 8.4%. This shows that the unemployment rate decreased from the year prior to closing to the year after, which is a sign of economic growth in the area.

APPENDIX A (continued)

UNEMPLOYMENT RATE TREND CHARTS

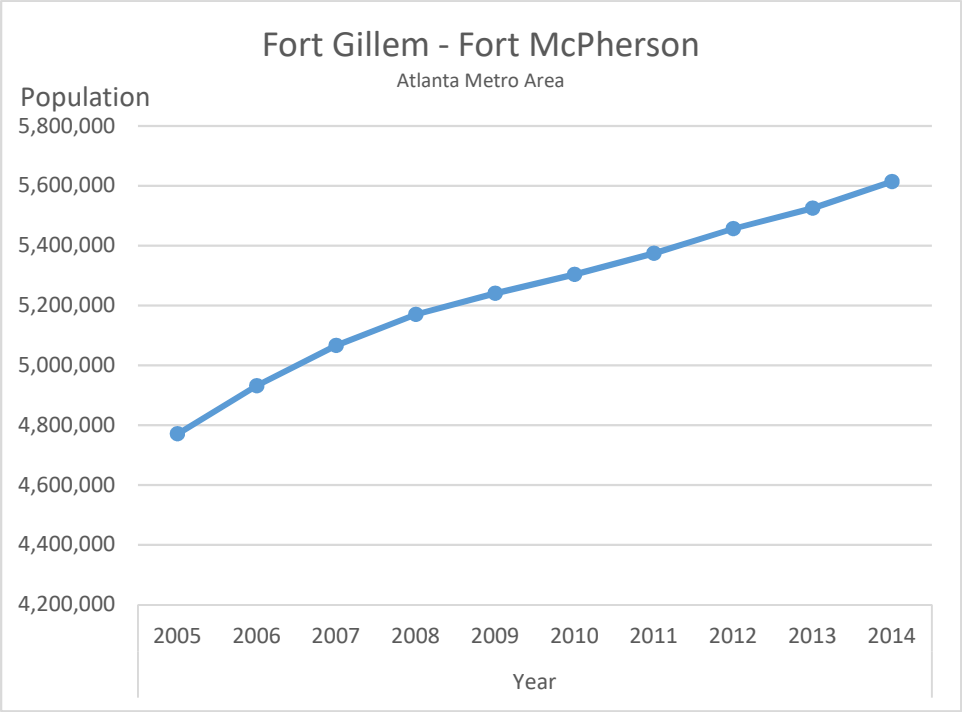


10-Year Unemployment Rate Trend for Brooks City Base

The chart shows a 10-year trend of the unemployment rate for Brooks City Base located in the metropolitan area of San Antonio, Texas. The trend shows starting in 2005 when it was announced that the base was closing, the unemployment rate for this metropolitan area was 5% which was approximately the same as the national average unemployment rate. The unemployment rate in 2010, the year before the base closed was 7.2% and in 2012, the year after the base closed was 6.3%. This shows that the unemployment rate decreased from the year prior to closing to the year after, which is a sign of economic growth in the area.

APPENDIX B

POPULATION TREND CHARTS

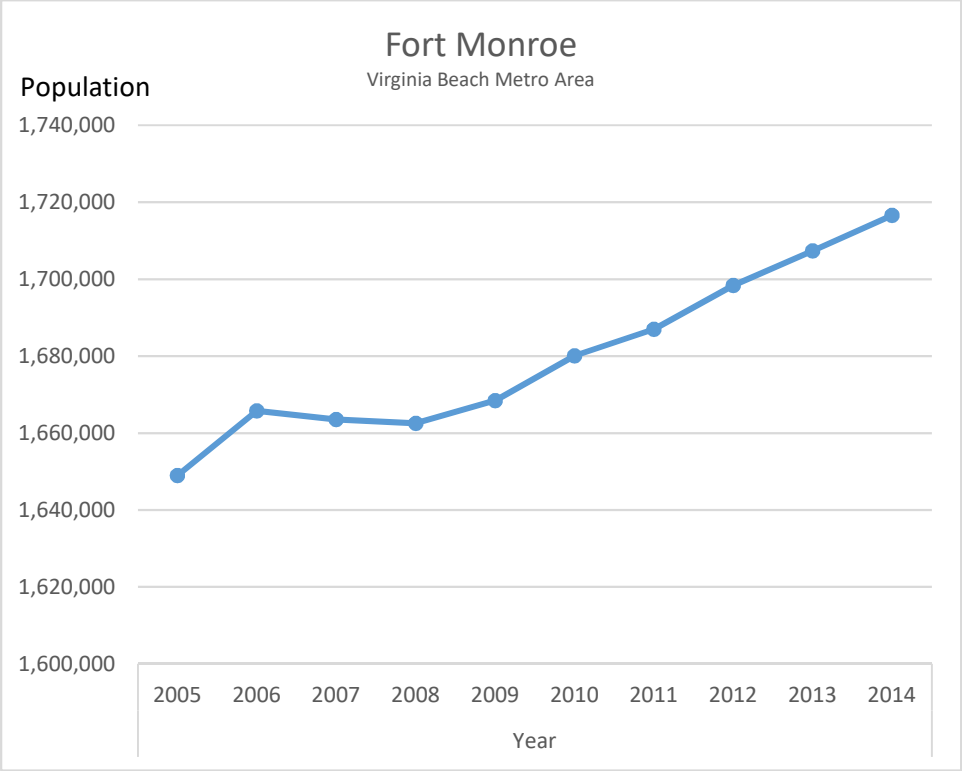


10-Year Population Trend for Fort Gillem – Fort McPherson

The chart shows a 10-year population trend for Fort Gillem and Fort McPherson metro area. As these two bases are a part of the same metropolitan area, the information was the same and they are shown together on the chart. The metropolitan area for these bases includes the Atlanta – Sandy Springs – Marietta – Roswell area located in the state of Georgia. The trend shows starting in 2005 when the announcement was made that the bases were closing, the population for this metropolitan area was 4,770,870. The population in 2010, the year before the base closed was 5,304,207 and in 2012, the year after the base closed was 5,374,825. This shows that the population in this metro area increased from the year prior to closing to the year after, which suggest economic growth.

APPENDIX B (continued)

POPULATION TREND CHARTS

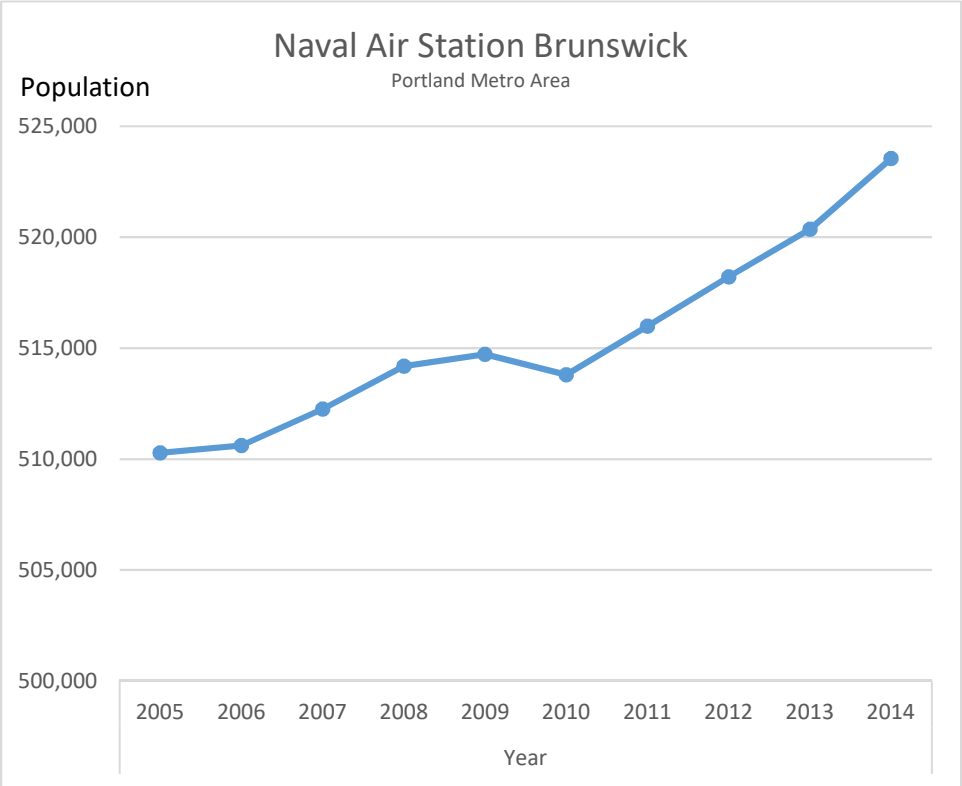


10-Year Population Trend for Fort Monroe

The chart shows a 10-year population trend for Fort Monroe metro area. The metropolitan area for this base includes the Virginia Beach – Norfolk – Newport News area located in the state of Virginia. The trend shows starting in 2005 when the announcement was made that the base was closing, the population for this metropolitan area was 1,649,013. The population in 2010, the year before the base closed was 1,680,110 and in 2012, the year after the base closed was 1,698,391. This shows that the population in this metro area increased from the year prior to closing to the year after, which suggest economic growth.

APPENDIX B (continued)

POPULATION TREND CHARTS

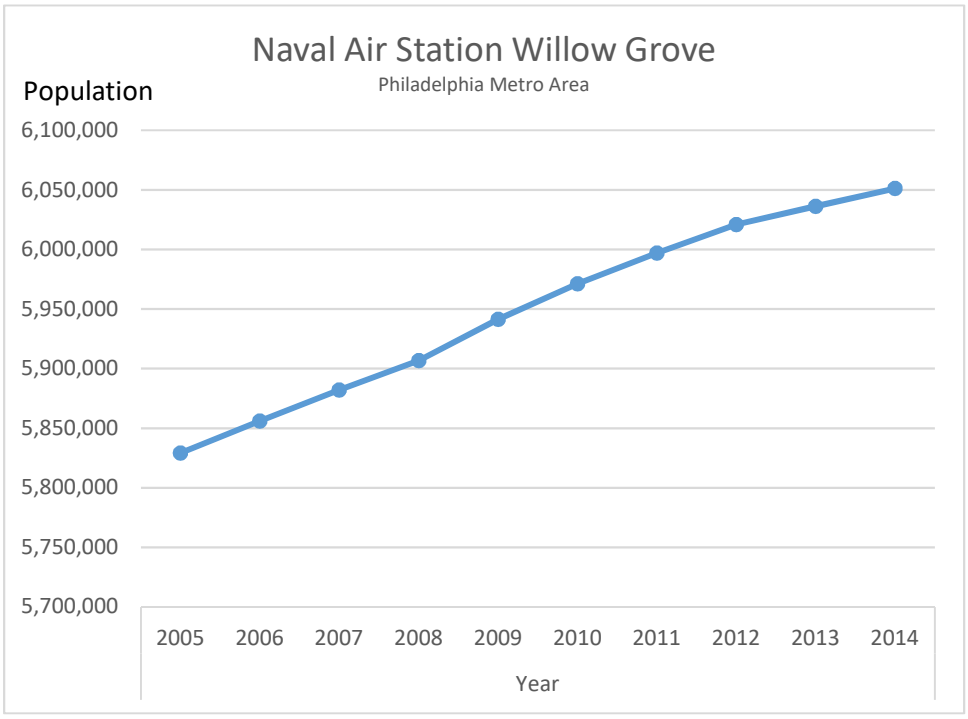


10-Year Population Trend for Naval Air Station Brunswick

The chart shows a 10-year population trend for Naval Air Station Brunswick metro area. The metropolitan area for this base includes the Portland - Biddeford area located in the state of Maine. The trend shows starting in 2005 when the announcement was made that the base was closing, the population for this metropolitan area was 510, 287. The population in 2010, the year before the base closed was 513, 807 and in 2012, the year after the base closed was 518,219. This shows that the population in this metro area increased from the year prior to closing to the year after, which suggest economic growth.

APPENDIX B (continued)

POPULATION TREND CHARTS

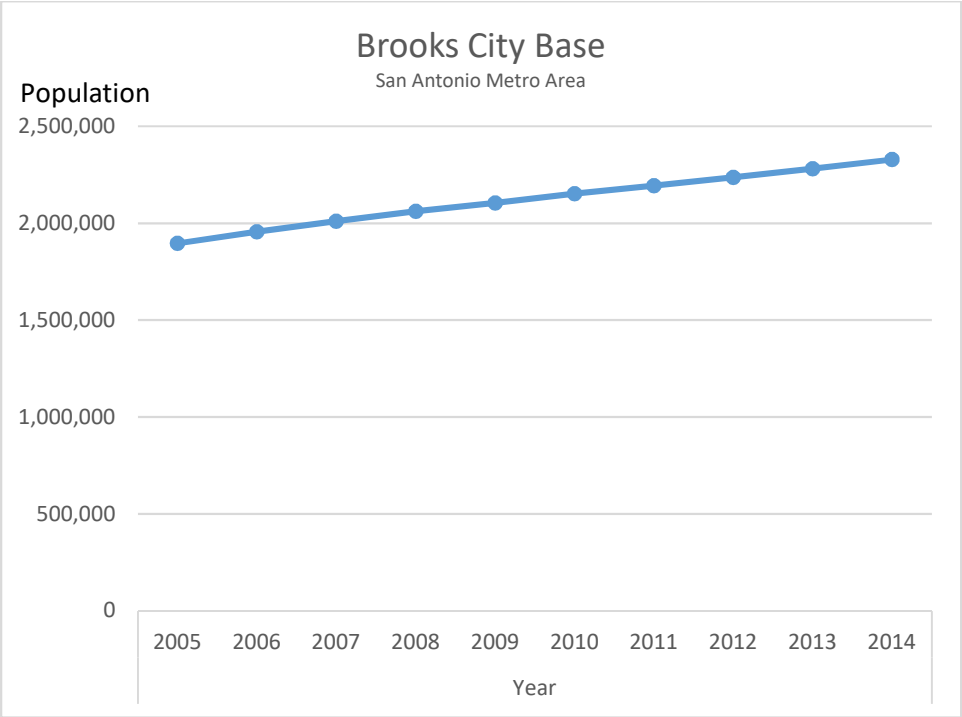


10-Year Population Trend for Naval Air Willow Grove

The chart shows a 10-year population trend for Naval Air Willow Grove metro area. The metropolitan area for this base includes the Philadelphia – Camden - Wilmington area located in the states of Pennsylvania – New Jersey - Delaware. The trend shows starting in 2005 when the announcement was made that the base was closing, the population for this metropolitan area was 5,829,139. The population in 2010, the year before the base closed was 5,971,276 and in 2012, the year after the base closed was 6,020,925. This shows that the population in this metro area increased from the year prior to closing to the year after, which suggest economic growth.

APPENDIX B (continued)

POPULATION TREND CHARTS

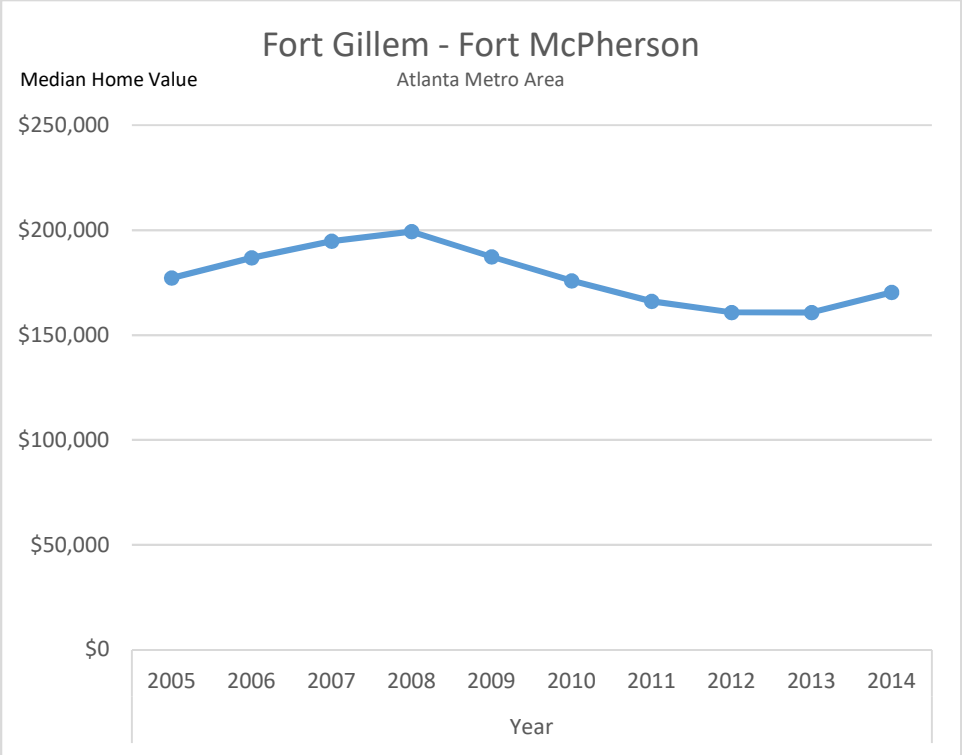


10-Year Population Trend for Brooks City Base

The chart shows a 10-year population trend for Brooks City Base metro area. The metropolitan area for this base includes the San Antonio area located in the state Texas. The trend shows starting in 2005 when the announcement was made that the base was closing, the population for this metropolitan area was 1, 896,328. The population in 2010, the year before the base closed was 2,153,255 and in 2012, the year after the base closed was 2,237,771. This shows that the population in this metro area increased from the year prior to closing to the year after, which suggest economic growth.

APPENDIX C

MEDIAN HOME VALUE TREND CHARTS

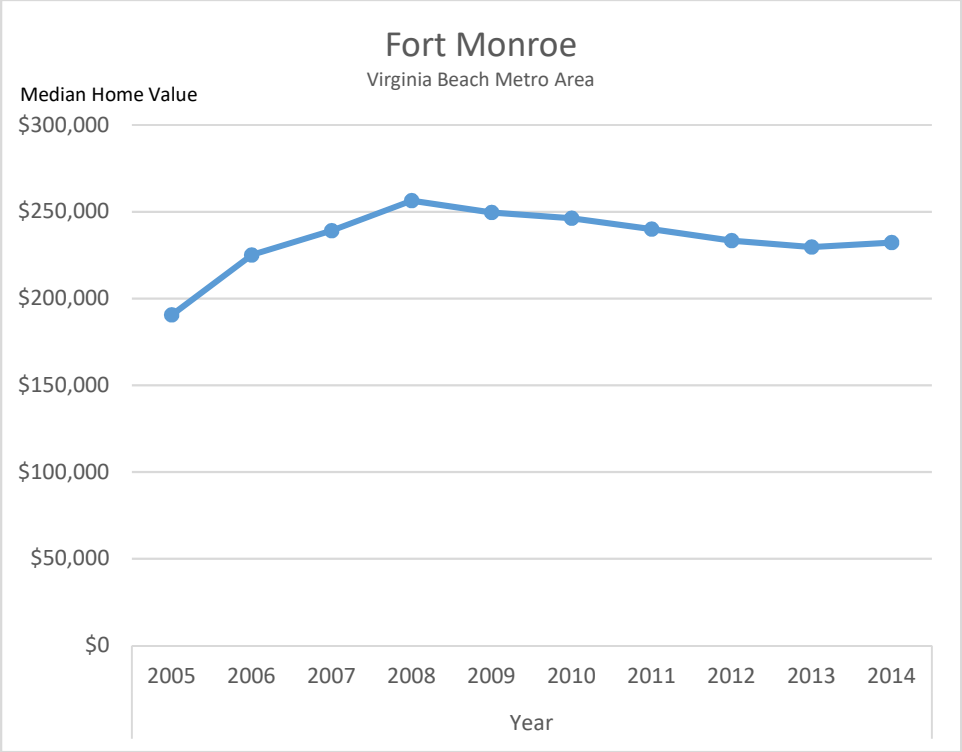


10-Year Median Home Value Trend for Fort Gillem – Fort McPherson

The chart shows a 10-year median home value trend for Fort Gillem and Fort McPherson metro area. As these two bases are a part of the same metropolitan area, the information was the same and they are shown together on the chart. The metropolitan area for these bases includes the Atlanta – Sandy Springs – Marietta – Roswell area located in the state of Georgia. The trend shows starting in 2005 when the announcement was made that the bases were closing, the median home value for this metropolitan area was $177,200. The median home value in 2010, the year before the bases closed was $175,900 million and in 2012, the year after the bases closed was $160,800. This shows that the median home value in this metropolitan area decreased, which suggests an economic downturn.

APPENDIX C (continued)

MEDIAN HOME VALUE TREND CHARTS

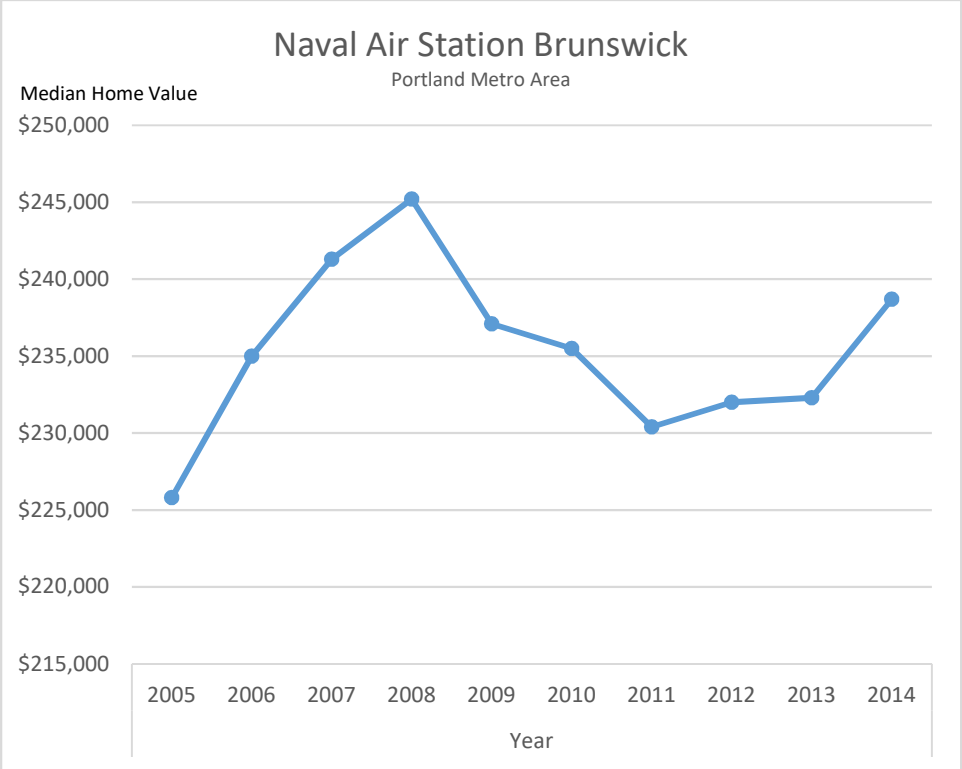


10-Year Median Home Value Trend for Fort Monroe

The chart shows a 10-year median home value trend for Fort Monroe metro area. The metropolitan area for this base includes the Virginia Beach – Norfolk – Newport News area located in the state of Virginia. The trend shows starting in 2005 when the announcement was made that the base was closing, the median home value for this metropolitan area was $190,600. The median home value in 2010, the year before the base closed was $246, 200 and in 2012, the year after the base closed was $233,300. This shows that the median home value in this metropolitan area decreased, which suggests an economic downturn.

APPENDIX C (continued)

MEDIAN HOME VALUE TREND CHARTS

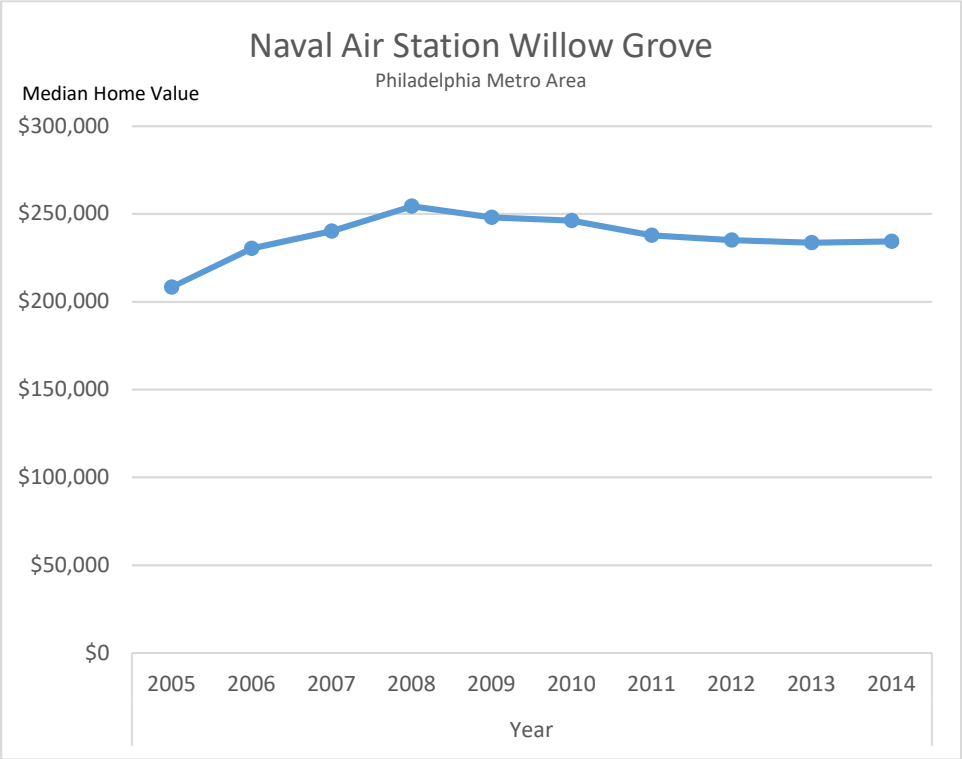


10-Year Median Home Value Trend for Naval Air Station Brunswick

The chart shows a 10-year median home value trend for Naval Air Station Brunswick metro area. The metropolitan area for this base includes the Portland - Biddeford area located in the state of Maine. The trend shows starting in 2005 when the announcement was made that the base was closing, the median home value for this metropolitan area was $225,800. The median home value in 2010, the year before the base closed was $235,500 and in 2012, the year after the base closed was $232,000. This shows that the median home value in this metropolitan area decreased, which suggests an economic downturn.

APPENDIX C (continued)

MEDIAN HOME VALUE TREND CHARTS

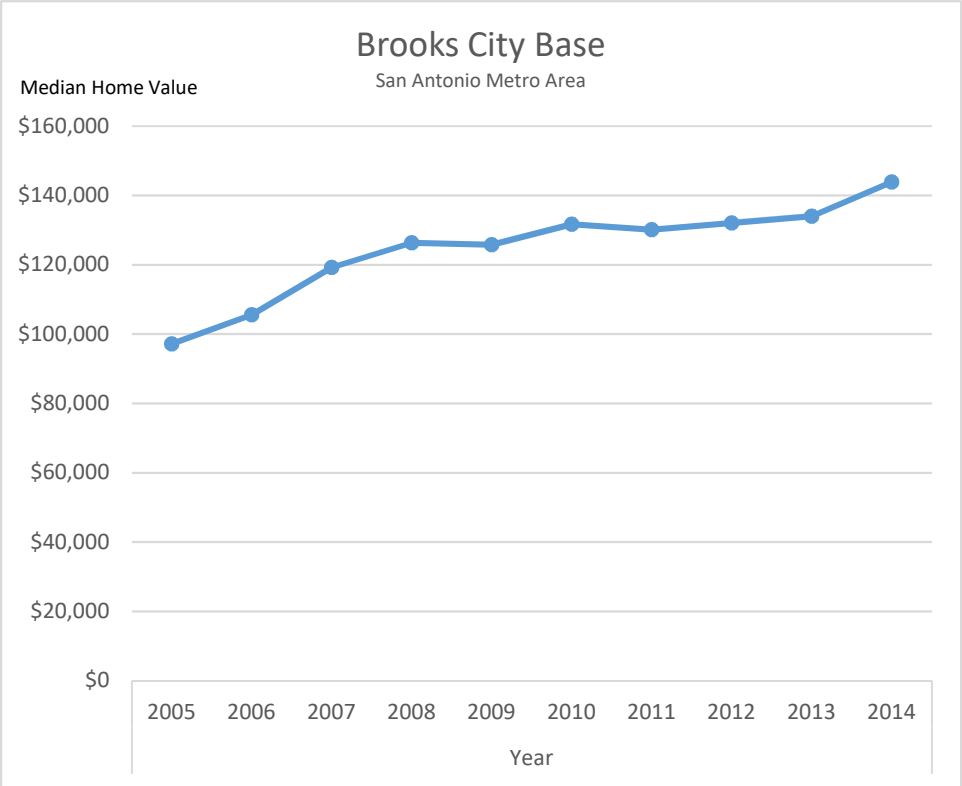


10-Year Median Home Value Trend for Naval Air Station Willow Grove

The chart shows a 10-year median home value trend for Naval Air Station Willow Grove metro area. The metropolitan area for this base includes the Philadelphia – Camden - Wilmington area located in the states of Pennsylvania – New Jersey - Delaware. The trend shows starting in 2005 when the announcement was made that the base was closing, the median home value for this metropolitan area was $208,400. The median home value in 2010, the year before the base closed was $246,300 and in 2012, the year after the base closed was $235,100. This shows that the median home value in this metropolitan area decreased, which suggests an economic downturn.

APPENDIX C (continued)

MEDIAN HOME VALUE TREND CHARTS

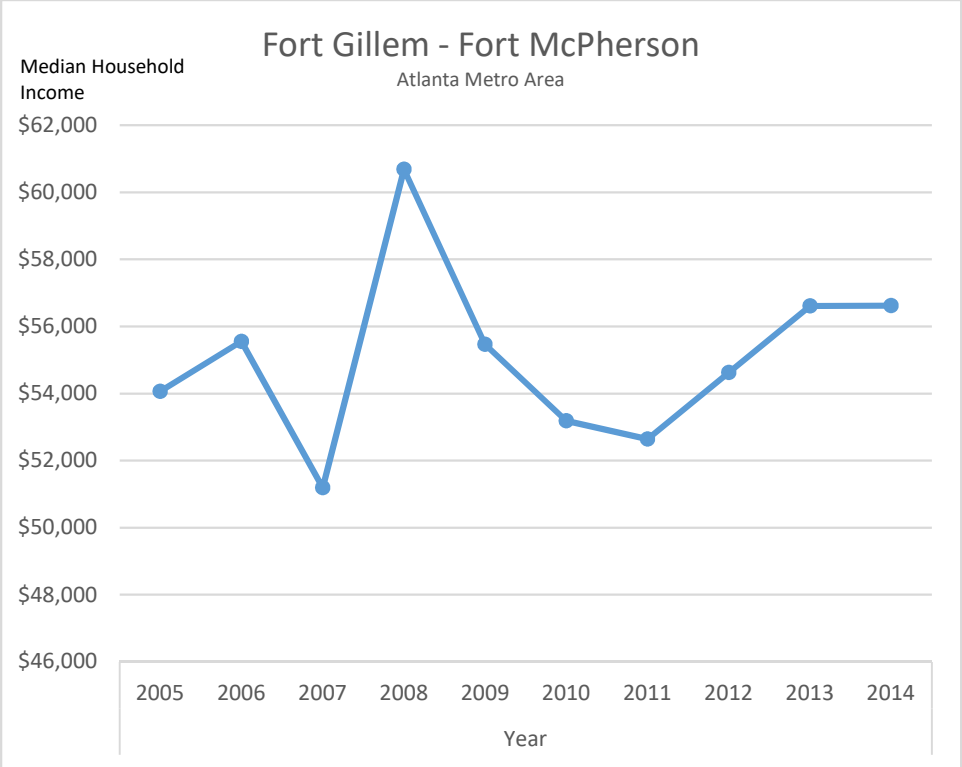


10-Year Median Home Value Trend for Brooks City Base

The chart shows a 10-year median home value trend for Brooks City Base metro area. The metropolitan area for this base includes the San Antonio area located in the state Texas. The trend shows starting in 2005 when the announcement was made that the base was closing, the median home value for this metropolitan area was $97,200. The median home value in 2010, the year before the base closed was $131,700 and in 2012, the year after the base closed was $132,100. This shows that the median home value in this metropolitan area increased, which was the only base in the study with an increased in the median home value from the prior year to the year after the base closing.

APPENDIX D

MEDIAN HOUSEHOLD INCOME TREND CHARTS

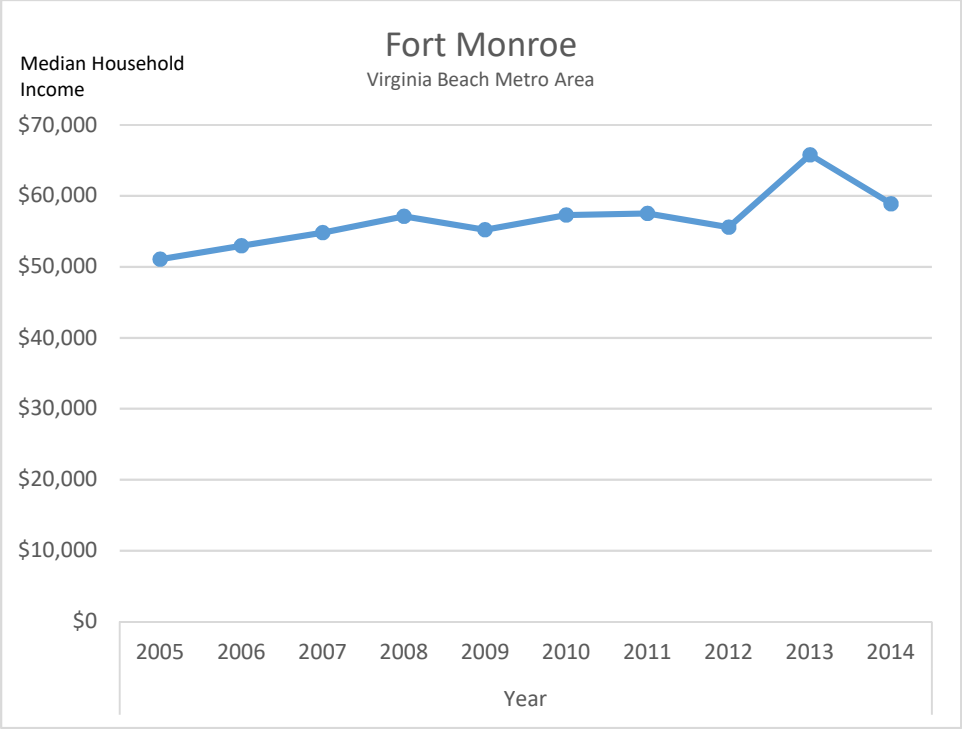


10-Year Median Household Income Trend for Fort Gillem – Fort McPherson

The chart shows a 10-year median household income trend for Fort Gillem and Fort McPherson metro area. As these two bases are a part of the same metropolitan area, the information was the same and they are shown together on the chart. The metropolitan area for these bases includes the Atlanta – Sandy Springs – Marietta – Roswell area located in the state of Georgia. The trend shows starting in 2005 when the announcement was made that the bases were closing, the median household income for this metropolitan area was $54,066. The median household income in 2010, the year before the bases closed was $53,183 and in 2012, the year after the bases closed was $54,628. Even though this variable did not prove to be significant, there was a slight increase in median household income from the year prior to closing to the year after.

APPENDIX D (continued)

MEDIAN HOUSEHOLD INCOME TREND CHARTS

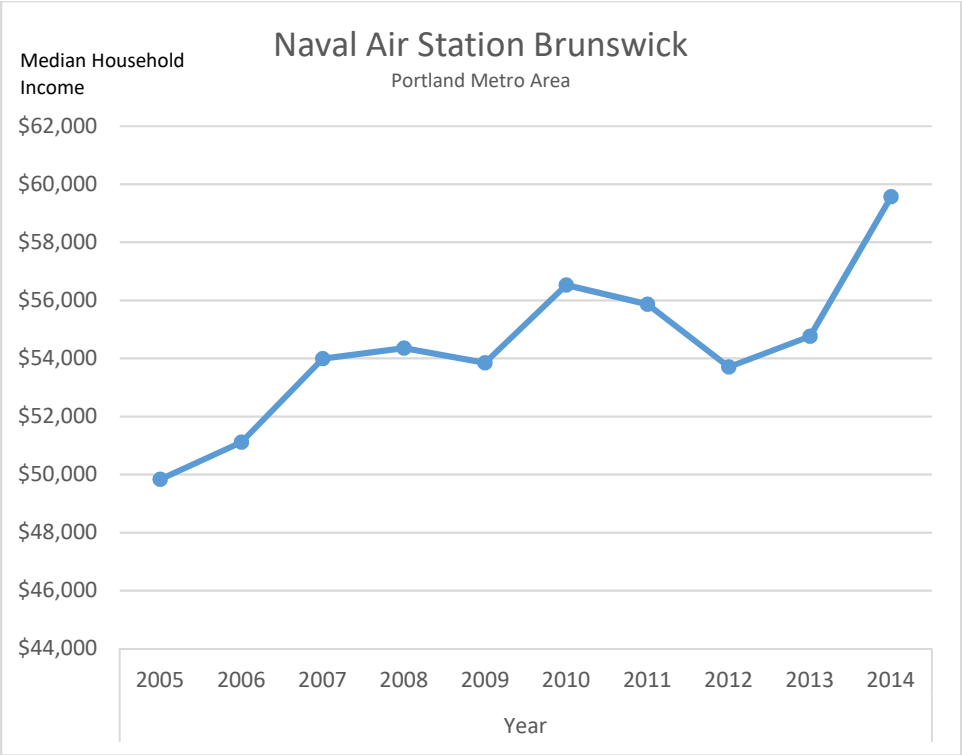


10-Year Median Household Income Trend for Fort Monroe

The chart shows a 10-year median household income trend for Fort Monroe metro area. The metropolitan area for this base includes the Virginia Beach – Norfolk – Newport News area located in the state of Virginia. The trend shows starting in 2005 when the announcement was made that the base was closing, the median household income for this metropolitan area was $51,077. The median household income in 2010, the year before the base closed was $57,315 and in 2012, the year after the base closed was $55,597. Even though this variable did not prove to be significant, there was a decrease in median household income from the year prior to closing to the year after.

APPENDIX D (continued)

MEDIAN HOUSEHOLD INCOME TREND CHARTS

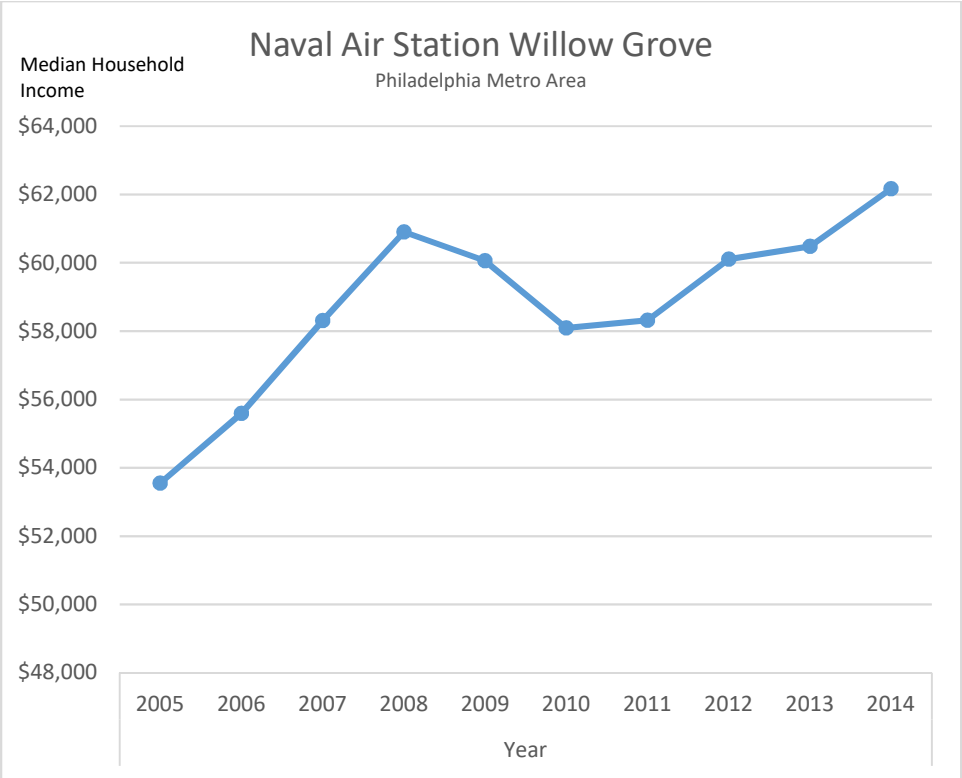


10-Year Median Household Income Trend for Naval Air Station Brunswick

The chart shows a 10-year median household income trend for Naval Air Station Brunswick metro area. The metropolitan area for this base includes the Portland - Biddeford area located in the state of Maine. The trend shows starting in 2005 when the announcement was made that the base was closing, the median home value for this metropolitan area was $49,833. The median household income in 2010, the year before the base closed was $56,530 and in 2012, the year after the base closed was $53,701. Even though this variable did not prove to be significant, there was a decrease in median household income from the year prior to closing to the year after.

APPENDIX D (continued)

MEDIAN HOUSEHOLD INCOME TREND CHARTS

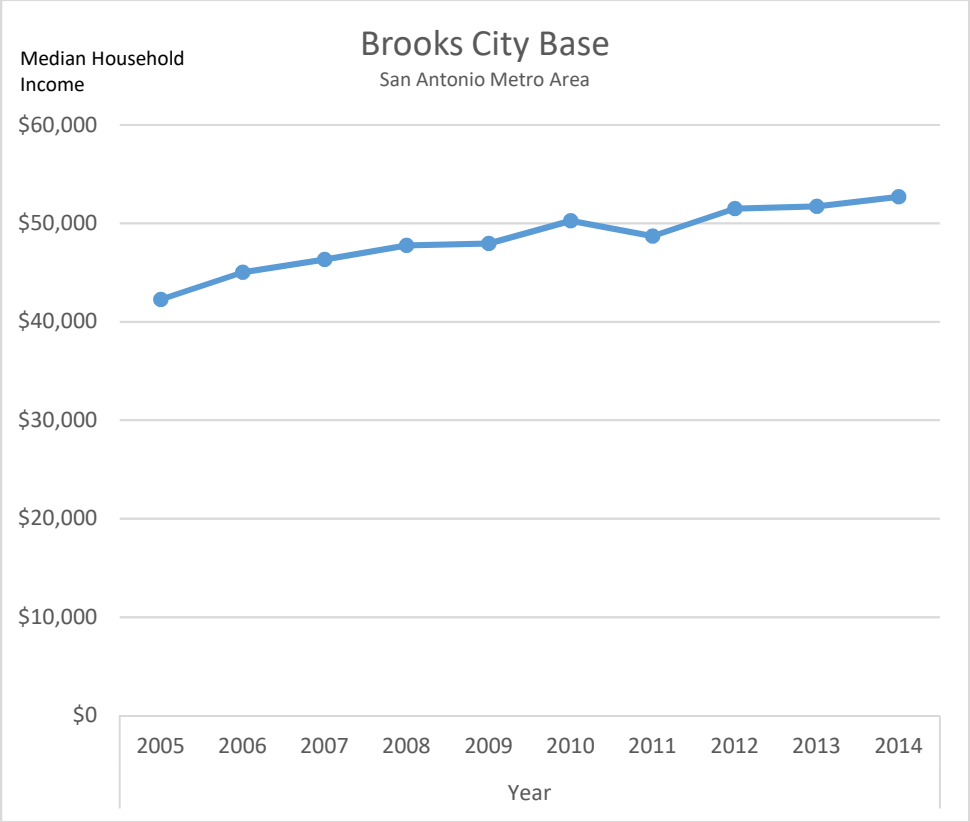


10-Year Median Household Income Trend for Naval Air Station Willow Grove

The chart shows a 10-year median home value trend for Naval Air Station Willow Grove metro area. The metropolitan area for this base includes the Philadelphia - Camden - Wilmington area located in the states of Pennsylvania – New Jersey - Delaware. The trend shows starting in 2005 when the announcement was made that the base was closing, the median household income for this metropolitan area was $53,555. The median household income in 2010, the year before the base closed was $58,095 and in 2012, the year after the base closed was $60,104. Even though this variable did not prove to be significant, there was an increase in median household income from the year prior to closing to the year after.

APPENDIX D (continued)

MEDIAN HOUSEHOLD INCOME TREND CHARTS

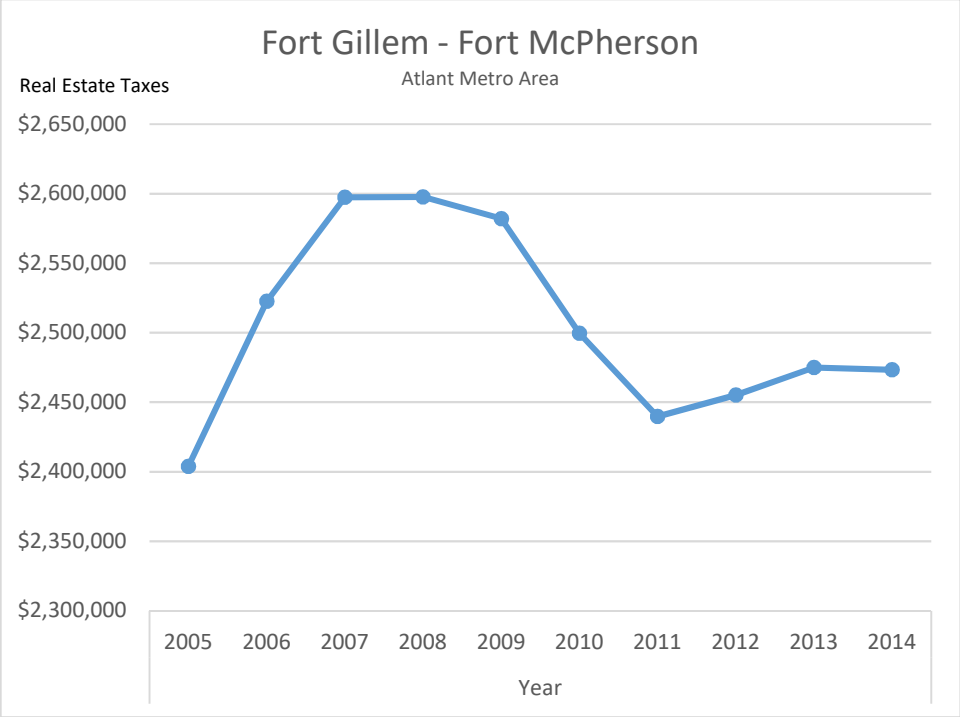


10-Year Median Household Income Trend for Brooks City Base

The chart shows a 10-year median home value trend for Brooks City Base metro area. The metropolitan area for this base includes the San Antonio area located in the state Texas. The trend shows starting in 2005 when the announcement was made that the base was closing, the median household income for this metropolitan area was $42,263. The median household income in 2010, the year before the base closed was $50,255 and in 2012, the year after the base closed was $51,486. Even though this variable did not prove to be significant, there was a decrease in median household income from the year prior to closing to the year after.

APPENDIX E

REAL ESTATE TAXES PAID TREND CHARTS

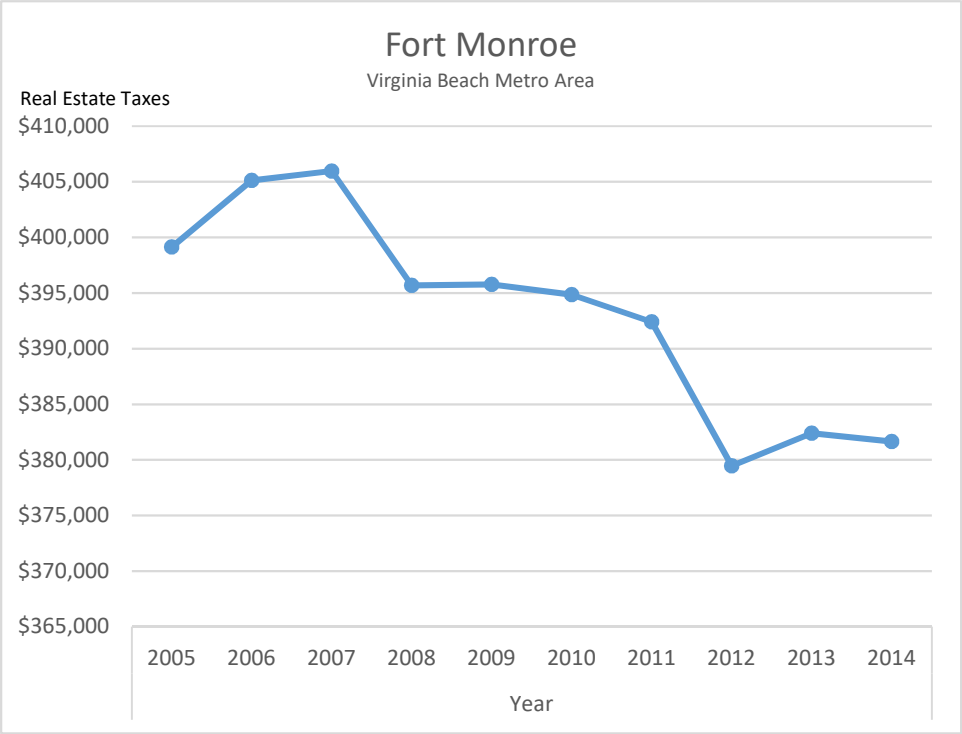


10-Year Real Estate Taxes Paid Trend for Fort Gillem – Fort McPherson

The chart shows a 10-year real estate taxes paid trend for Fort Gillem and Fort McPherson metro area. As these two bases are a part of the same metropolitan area, the information was the same and they are shown together on the chart. The metropolitan area for these bases includes the Atlanta – Sandy Springs – Marietta – Roswell area located in the state of Georgia. The trend shows starting in 2005 when the announcement was made that the bases were closing, the real estate taxes paid for this metropolitan area was $2,403,956. The real estate taxes paid in 2010, the year before the bases closed was $2,499,638 and in 2012, the year after the bases closed was $2,455,138. Even though this variable did not prove to be significant, there was a decrease in real estate taxes paid from the year prior to closing to the year after.

APPENDIX E (continued)

REAL ESTATE TAXES PAID TREND CHARTS

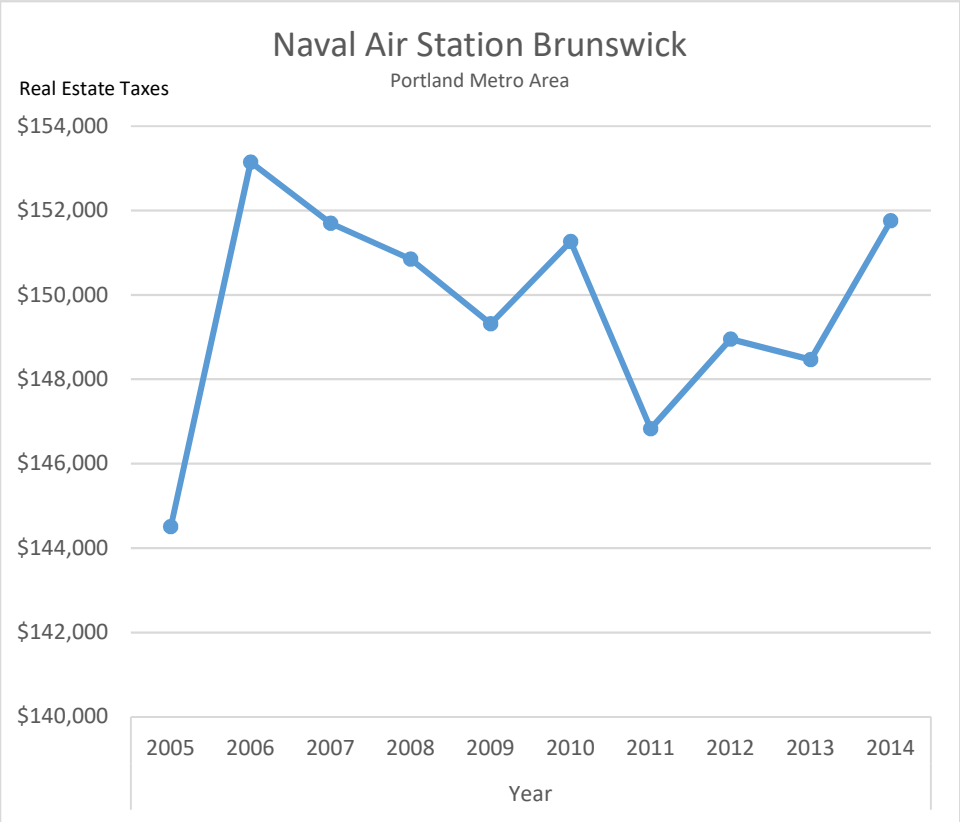


10-Year Real Estate Taxes Paid Trend for Fort Monroe

The chart shows a 10-year real estate taxes paid trend for Fort Monroe metro area. The metropolitan area for this base includes the Virginia Beach – Norfolk – Newport News area located in the state of Virginia. The trend shows starting in 2005 when the announcement was made that the base was closing, the real estate taxes paid for this metropolitan area was $399,133. The real estate taxes paid in 2010, the year before the base closed was $394, 868 and in 2012, the year after the base closed was $379,461. Even though this variable did not prove to be significant, there was a decrease in real estate taxes paid from the year prior to closing to the year after.

APPENDIX E (continued)

REAL ESTATE TAXES PAID TREND CHARTS

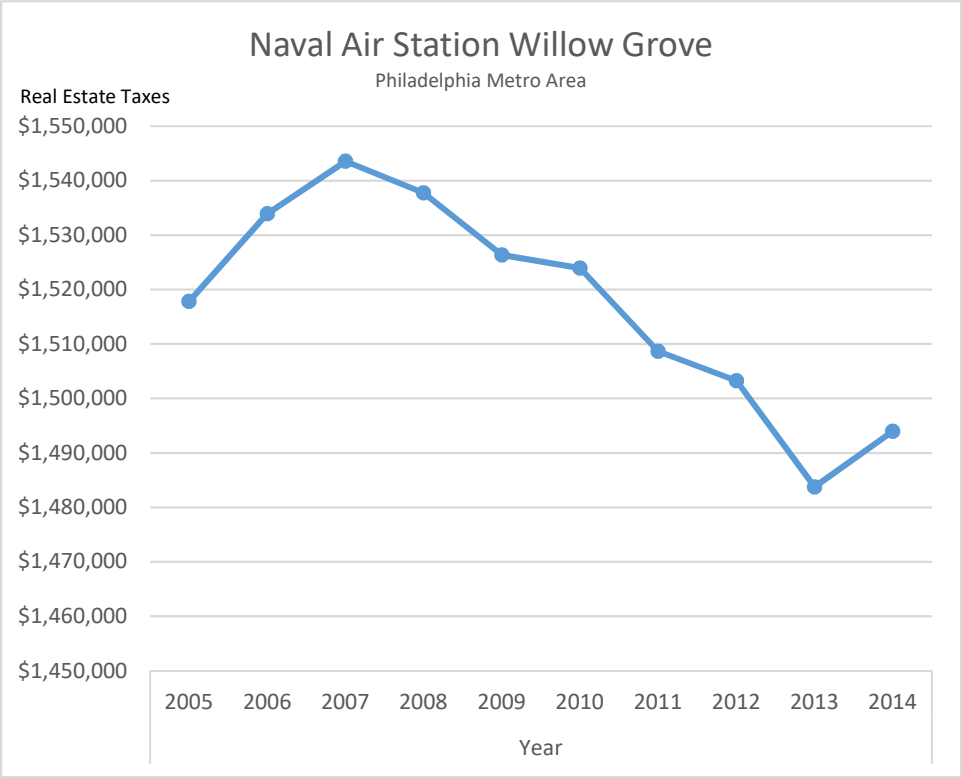


10-Year Real Estates Taxes Paid Trend for Naval Air Station Brunswick

The chart shows a 10-year Real Estate Taxes Paid trend for Naval Air Station Brunswick metro area. The metropolitan area for this base includes the Portland - Biddeford area located in the state of Maine. The trend shows starting in 2005 when the announcement was made that the base was closing, the real estate taxes paid for this metropolitan area was $144,510. The real estate taxes paid in 2010, the year before the base closed was $151,267 and in 2012, the year after the base closed was $148, 952. Even though this variable did not prove to be significant, there was a decrease in real estate taxes paid from the year prior to closing to the year after.

APPENDIX E (continued)

REAL ESTATE TAXES PAID TREND CHARTS

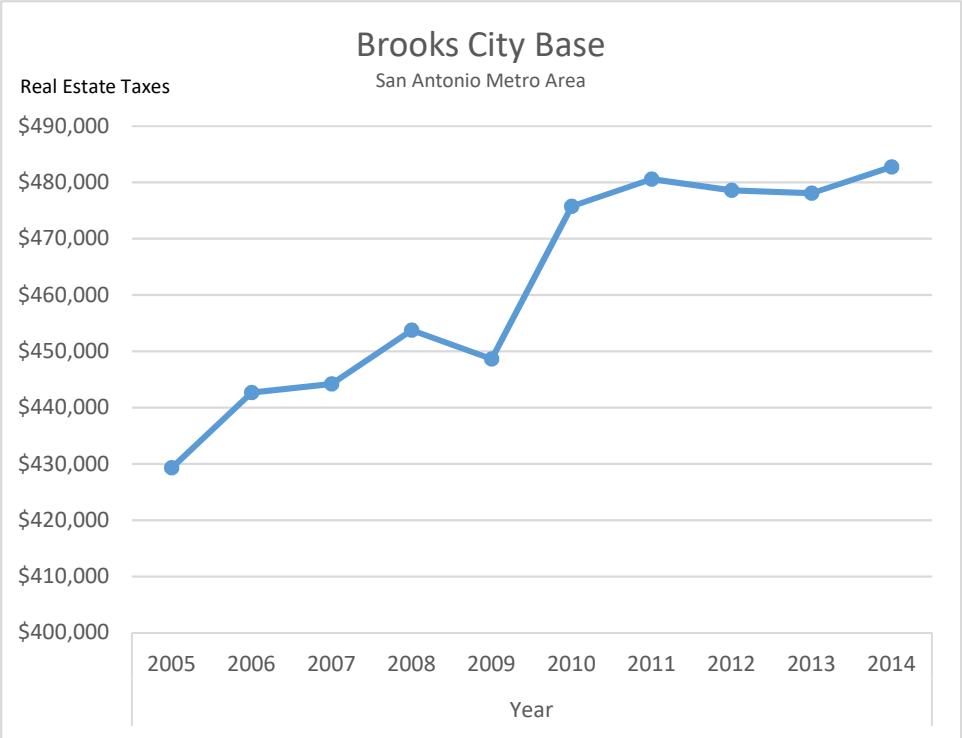


10-Year Real Estate Taxes Paid Trend for Naval Air Station Willow Grove

The chart shows a 10-year real estate taxes paid trend for Naval Air Station Willow Grove metro area. The metropolitan area for this base includes the Philadelphia – Camden - Wilmington area located in the states of Pennsylvania – New Jersey - Delaware. The trend shows starting in 2005 when the announcement was made that the base was closing, the real estate taxes paid for this metropolitan area was $1,517,821. The real estate taxes paid in 2010, the year before the base closed was $1,523,951 and in 2012, the year after the base closed was $1,503,234. Even though this variable did not prove to be significant, there was a decrease in real estate taxes paid from the year prior to closing to the year after.

APPENDIX E (continued)

REAL ESTATE TAXES PAID TREND CHARTS

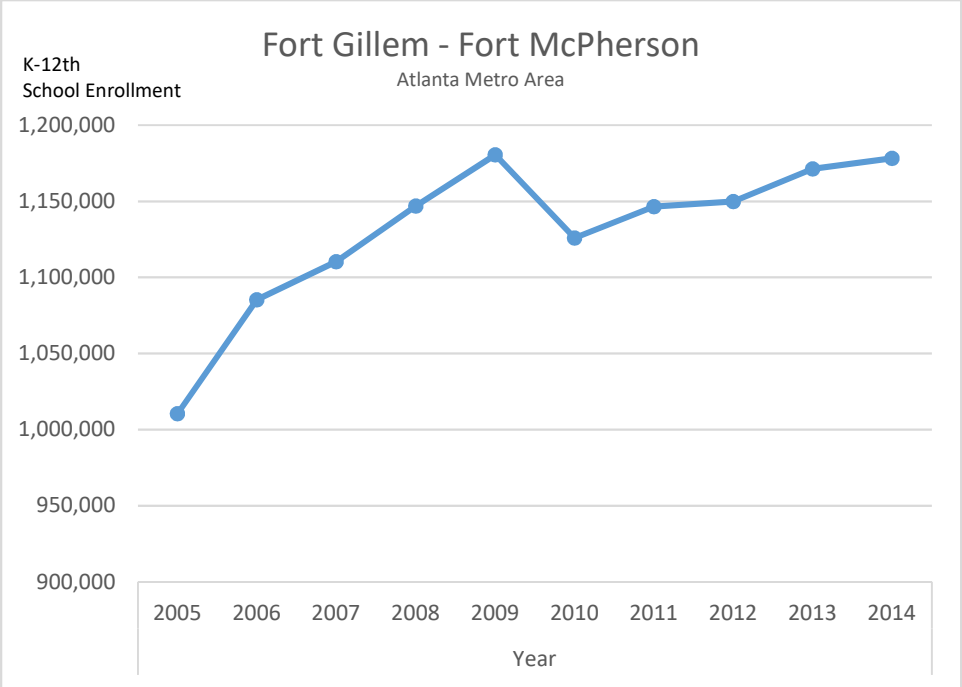


10-Year Real Estate Taxes Paid Trend for Brooks City Base

The chart shows a 10-year real estate taxes paid trend for Brooks City Base metro area. The metropolitan area for this base includes the San Antonio area located in the state Texas. The trend shows starting in 2005 when the announcement was made that the base was closing, the real estate taxes paid for this metropolitan area was $429,292. The real estate taxes paid in 2010, the year before the base closed was $475,760 and in 2012, the year after the base closed was $478,614. Even though this variable did not prove to be significant, there was an increase in real estate taxes paid from the year prior to closing to the year after.

APPENDIX F

SCHOOL ENROLLMENT TREND CHARTS

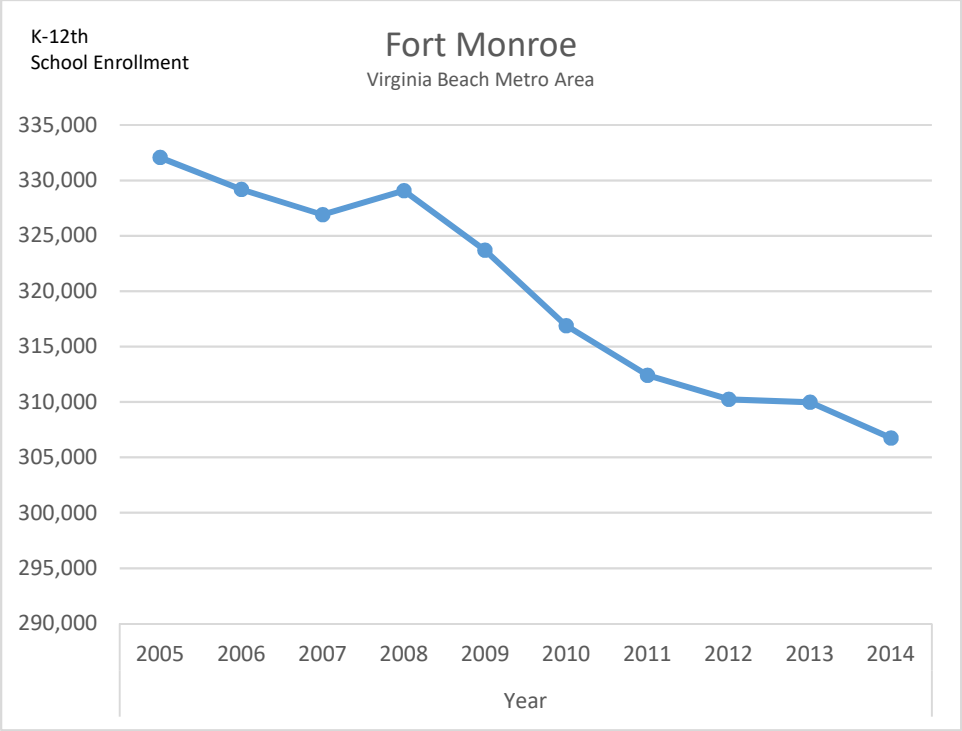


10-Year K-12th School Enrollment Trend for Fort Gillem – Fort McPherson

The chart shows a 10-year K-12th school enrollment trend for Fort Gillem and Fort McPherson metro area. As these two bases are a part of the same metropolitan area, the information was the same and they are shown together on the chart. The metropolitan area for these bases includes the Atlanta – Sandy Springs – Marietta – Roswell area located in the state of Georgia. The trend shows starting in 2005 when the announcement was made that the bases were closing, the K-12th grade school enrollment for this metropolitan area was 1,010,433. The K-12th school enrollment in 2010, the year before the bases closed was 1,125, 866 and in 2012, the year after the bases closed was 1,149,991. Although this variable did not prove to be significant, there was an increase in K-12th school enrollment from the year prior to closing to the year after.

APPENDIX F (continued)

SCHOOL ENROLLMENT TREND CHARTS

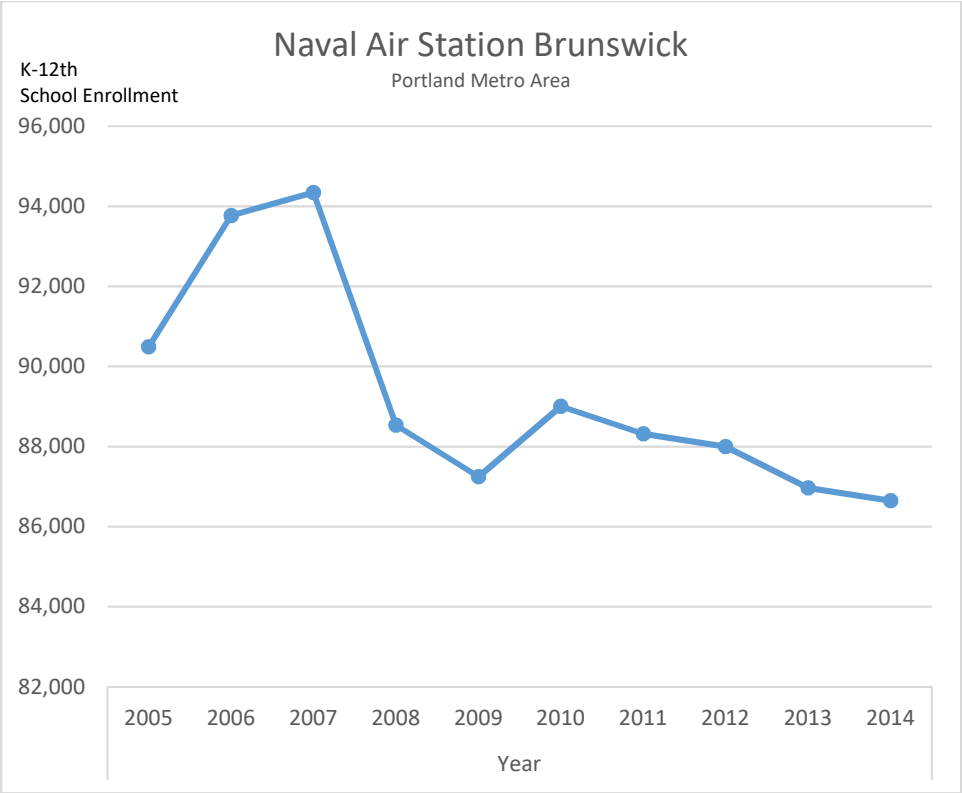


10-Year K-12th School Enrollment Trend for Fort Monroe

The chart shows a 10-year K-121th school enrollment for Fort Monroe metro area. The metropolitan area for this bases include the Virginia Beach – Norfolk – Newport News area located in the state of Virginia. The trend shows starting in 2005 when the announcement was made that the base was closing, the real estate taxes paid for this metropolitan area was 332,056. The real estate taxes paid in 2010, the year before the base closed was 316,872 and in 2012, the year after the base closed was 310,241. Although this variable did not prove to be significant, there was a decrease in K-12th school enrollment from the year prior to closing to the year after.

APPENDIX F (continued)

SCHOOL ENROLLMENT TREND CHARTS

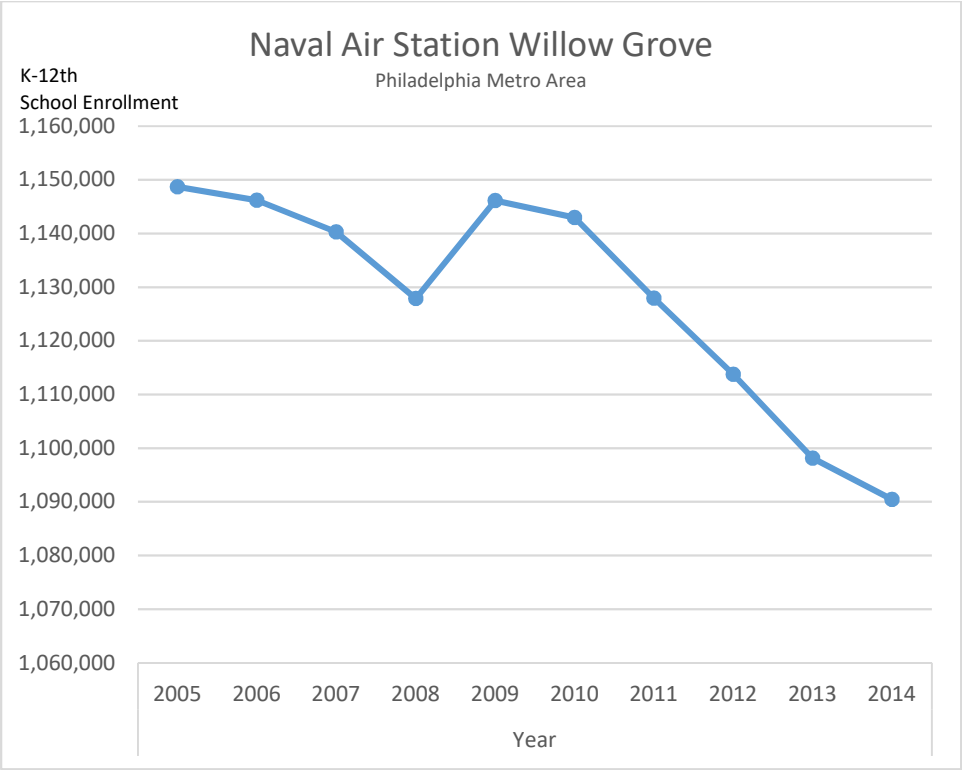


10-Year K-12th School Enrollment Trend for Naval Air Station Brunswick

The chart shows a 10-year K-12th school enrollment trend for Naval Air Station Brunswick metro area. The metropolitan area for this base includes the Portland - Biddeford area located in the state of Maine. The trend shows starting in 2005 when the announcement was made that the bases was closing, the K-12th school enrollment for this metropolitan area was 90,490. The K-12th school enrollment in 2010, the year before the base closed was 89,006 and in 2012, the year after the base closed was 87,993. Although this variable did not prove to be significant, there was a decrease in K-12th school enrollment from the year prior to closing to the year after.

APPENDIX F (continued)

SCHOOL ENROLLMENT TREND CHARTS

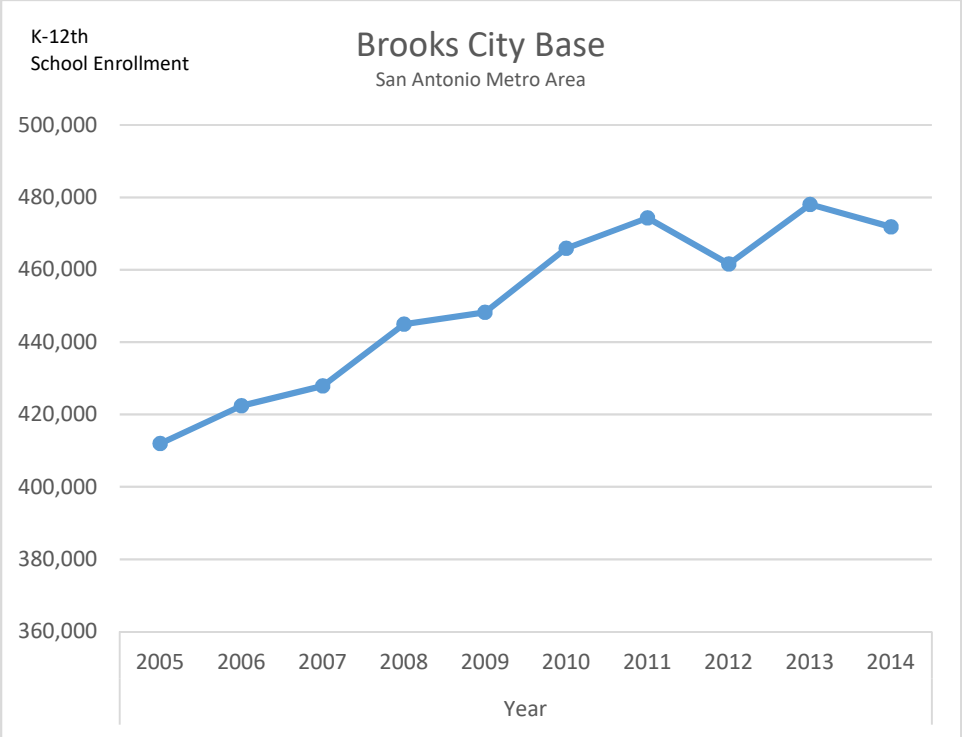


10-Year K-12th School Enrollment Trend for Naval Air Station Willow Grove

The chart shows a 10-year K-12th school enrollment trend for Naval Air Station Willow Grove metro area. The metropolitan area for this base includes the Philadelphia – Camden - Wilmington area located in the states of Pennsylvania – New Jersey - Delaware. The trend shows starting in 2005 when the announcement was made that the base was closing, K-12th school enrollment for this metropolitan area was 1,148,689. The K-12th school enrollment in 2010, the year before the base closed was 1,142,986 and in 2012, the year after the base closed was 1,113,731. Although this variable did not prove to be significant, there was a decrease in K-12th school enrollment from the year prior to closing to the year after.

APPENDIX F (continued)

SCHOOL ENROLLMENT TREND CHARTS



10-Year K-12th School Enrollment Trend for Brooks City Base

The chart shows a 10-year K-12th school enrollment trend for Brooks City Base metro area. The metropolitan area for this base includes the San Antonio area located in the state Texas. The trend shows starting in 2005 when the announcement was made that the base was closing, the K-12th school enrollment for this metropolitan area was 411,946. The K-12th school enrollment in 2010, the year before the base closed was 465,920 and in 2012, the year after the base closed was 461,601. Although this variable did not prove to be significant, there was a decrease in K-12th school enrollment from the year prior to closing to the year after.

CURRICULUM VITAE

Jamie Amos

jamieamos1977@gmail.com

EDUCATION

Ph.D. (Business Administration with specialization in Finance/Accounting) – *2017*

Hampton University Ph.D. in Business Administration – Hampton, VA

Concentration: Finance/Accounting

Masters of Business Administration

Kennesaw State University – Kennesaw, GA 2003

Concentration: Marketing

Bachelor of Business Administration

Jackson State University – Jackson, MS 2000

Concentration: Finance

RESEARCH EXPERIENCE

Dissertation Research – Hampton University, Business Department, Hampton, VA 2017

Focus: The Economic Impact of Military Base Closures on the Surrounding Metropolitan Areas

- Analyzed past research focusing on economic impact of surrounding communities after a military base closure.
- Examined economic factors that impact metropolitan areas after a military base closure.
- Proposed new model for projecting economic impact of base closure on surrounding area.
- Analyzed United States defense spending

Research Assistant – Kennesaw State University, Coles School of Business Kennesaw, Georgia 2004

- Analyzed research data about strategic management and how it relates to small businesses competing with big business resources.
- Researched niche markets for small business management.

Research Analyst – IBM Corporation, Atlanta, Georgia 2004-2005

- Analyzed vital assets and what criteria would define the determination of vital assets as they relate to an organization's existence and survival.
- Researched options for vital assets protection in case of man-made or natural disasters.

Research Analyst – Nth Degree, Events Management Corporation, Stone Mountain, Georgia 2006

- Researched different financial tools to manage entire fiscal projects for events division of the company.
- Evaluated company's procedures and processes to incorporate money saving processes.

Research Analyst – City of Atlanta Mayor's Office, Atlanta, Georgia 2007-2009

- Analyzed parking conditions as it relates to need and use, while comparing to other cities of similar size and population.
- Researched price determination taking into account average salaries of population.

Research Lead – Bauder College, Business Department, Atlanta, Georgia 2009-2011

- Examined business curriculum to determine class needs, coding, sequence, assessment, and opportunity for new programs.
- Proposed new guidelines for business program and areas of growth that would benefit student body as a whole.
- Analyzed student population to determine best practice for registration and class attendance.

Research Analyst – Research Article, Hampton, Virginia 2014

Title: The Effect of Pell Grant Changes on the Graduation Rate and College Finances
Published: The Journal of Business and Educational Leadership

- Analyzed government changes to the pell grant program and how that would affect students in the community colleges in rural Virginia.
- Examined and compared the graduation rate before and after pell grant changes at community colleges in rural Virginia.

ONLINE TEACHING EXPERIENCE

Atlanta Metropolitan College – Atlanta, Georgia

Instructor, Business Administration *2012-2014*

TEACHING EXPERIENCE

Kaplan Higher Education – Bauder College Atlanta, Georgia

Lecturer/Instructor Business Administration *2009-2012*

Co-Chair of the Business Administration Department *2010-2011*

Student Advisor of Business Administration Department *2010-2012*

AREAS OF RESEARCH AND TEACHING INTEREST

Accounting, Introduction to Business, Business Math, Advertising, Marketing, Organizational Behavior, International Business, Entrepreneurship, Quantitative Methods and Research, Salesmanship, Small Business Governance, Intermediate Computer Applications, Small Business Global Operations, Organizational Change, Business Communication, Public Relations, Labor Relations, Principles of Management, Leadership, Small Business Management, Multicultural Management, Marketing Simulation, Business Law, Finance, Operations Management, Macroeconomics, Microeconomics, and College Success.

PAPERS AND PRESENTATIONS

"Economic Impact of Military Base Closures" Hampton University, Hampton, VA April 2017.

"Effect of Pell Grant Changes on the Graduation Rate" Hampton University, Hampton, VA September 2014.

"Professionalism, what makes you stand out", Bauder College, Atlanta, GA April 2011.

"Public Relations, can you put a spin on it", Bauder College, Atlanta, GA March 2011.

"Ask Mr. Blue Advice Column", Bauder College, Atlanta, GA March 2011.

"Advertising in the 21st Century", Bauder College, Atlanta, GA March 2010.

"Supply and Demand; Milk and Mad Cow Disease", Bauder College, Atlanta, GA March 2009.

"Leadership Lab for Women" Kennesaw State University, Kennesaw, GA April 2004

CONFERENCES ATTENDED

Institute of Internal Auditors TAC Conference, Atlanta, GA September 2015

Association of Local Government Auditors (ALGA), San Diego, CA May 2015

Journal of Business and Educational Leadership, San Antonio TX October 2014

Association of Local Government Auditors (ALGA), Nashville, TN May 2014

SIFE Conference, Atlanta, GA, April 2011

PhD Residency Colloquium, Hampton, VA July 2011

National Black MBA Association Conference, Atlanta, GA October 2011

HONORS/AWARDS

Valedictorian, Quitman County High School Class of 1996

Graduate of Honors (B.B.A.) Jackson State University, 2000

Graduate Professor Assistantship, Kennesaw State University, 2004

Employee of the Month, IBM, 2002, 2004

Employee of the Month, Nth Degree, 2007

Appreciation Award for Panel Evaluator, Bauder College 2010-2011

COMPUTER SKILLS

MS Word, Excel, PowerPoint, Visio and Access, CampusVue, Blackboard, WebCT, Oracle

MEMBERSHIPS & AFFILIATIONS

Institute of Internal Auditors

Association of Local Government Auditors

American Marketing Association

Financial Management Association

Atlanta Future Leaders in Higher Education

National Association of Blacks Accountants

National Black MBA Association

Student in Free Enterprise (SIFE)

LANGUAGE(S)	**Reading**	**Writing**	**Speaking**
English (Native)	excellent	excellent	excellent
Spanish	beginner	beginner	beginner

VOLUNTEER WORK

Hosea Feed the Hungry, Atlanta Georgia

Hands on Atlanta, Atlanta, Georgia

Habitat for Humanity, Atlanta, Georgia

ArualCat Theater Productions, Stone Mountain, Georgia

Boys and Girls Club of America, Atlanta, Georgia

Bauder Liberal Arts Club, Atlanta, Georgia

Bauder Speaks Communications Club, Atlanta, Georgia

Susan G. Komen Breast Cancer Walk, Atlanta, Georgia

AIDS Walk, Atlanta, Georgia

St. Jude Research Hospital, Memphis, Tennessee

OTHER PROFESSIONAL EXPERIENCE

Focal Point Data Risk, LLC

Atlanta, Georgia

2015- Current

Senior Financial Compliance Consultant

City of Atlanta

Atlanta, Georgia

2012 – 2015

Senior Performance Auditor

Bauder College

Atlanta, Georgia

2011 – 2012

Professor/Academic Advisor/ Success Coordinator

Bauder College

Atlanta, Georgia

2010 – 2011

Co-Chair of Business Department

City of Atlanta

Atlanta, Georgia

2007 – 2009

Project Manager

Nth Degree

Stone Mountain, GA

2005 – 2007

Finance Manager

IBM

Atlanta, Georgia

2000 – 2005

Business Analyst

Financial Analyst

Budget Analyst