

AIR WAR COLLEGE

AIR UNIVERSITY

**BRAC-MANDATED MILITARY AIRFIELD CLOSURES:  
SHORT AND LONG-TERM ECONOMIC IMPACTS  
ON SMALL AND MEDIUM-SIZED COMMUNITIES**

by

Bret D. Anderson, Lt Col, USAF

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## **Biography**

Lieutenant Colonel Bret D. Anderson is a U.S. Air Force fighter pilot attending the Air War College, Air University, Maxwell AFB, Alabama. He holds a Bachelor of Mechanical Engineering from Georgia Tech and a Master of Science in Systems Engineering from the Air Force Institute of Technology. He is a command pilot with over 2,400 hours in the T-37, T-38, F-15, and F-22, including 250 combat hours. He has served as an operational fighter pilot, USAF liaison officer to the U.S. Army, F-15C Aerial Demonstration pilot, MAJCOM staff officer, and has commanded an Operations Support Squadron.



## Abstract

The Base Realignment and Closure (BRAC) endeavor has long caused significant angst in communities hosting a military base. These communities, of course, fear economic doom if their base were to be closed. Are these fears well founded? How have communities actually fared following a base closure?

This paper examines the short- and long-term economic fortunes of communities that experienced a BRAC-mandated military base closure during the 1990s. It adds to the body of research on the subject by examining a large number of communities, establishing a valid control group, and examining economic fortunes over nearly 20 years following base closure.

It finds despite the often-virulent protests and doomsday forecasts, most communities coped with the closure and have fared well in the long-term. Local unemployment was usually slightly higher than 'normal' for several years after a closure, but did recover. Long term job growth and pay growth in a community were, in general, not adversely affected by a base closure. A correlation was found, however, between community size and economic fortune: small communities, on average, had a tougher go. However, a wide variation in economic performance existed across the communities studied, with some small communities faring quite well and some larger communities faring relatively poorly.

Finally, this paper examines the unique nature of military base closure and proposes some reasons as to why a base closure is rarely the economic death knell it's purported to be.

## Introduction

If community officials were offered the opportunity to obtain desirable local real estate for development, would they be interested? What if it was offered for free (or below market value) and already possessed capital improvements such as roads, warehouses, office buildings, residential housing, swimming pools, golf courses, and even railheads and airports? What if that real estate came with a share of \$1.2 billion dollars in federal development assistance<sup>1</sup> and indemnity against future discovery of environmental hazards? Finally, what if this program has usually given participating communities an unemployment rate *below* the national average 5-10 years later? Such a federal program existed 20 years ago. Communities fought tooth and nail to be excluded from it. That program was the military Base Realignment and Closure endeavor, commonly called BRAC.

This paper will examine short- and long-term economic fortunes of small- and medium-sized communities that experienced a BRAC-mandated military base closure between 1991 and 1997, specifically bases which had an airfield.

The paper will first objectively determine the length of the economic *Recovery* period in communities following a base closure. Next, it will evaluate the long-term economic fortunes of these communities, which will be called *Trajectory*. After determining *Recovery* and *Trajectory*, it will look for correlation between economic fortune and community size, geographic region, and whether the community retained a DoD employer after the closure. Finally, it will explore reasons why a military base closure is rarely the economic death knell it's purported to be.

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<sup>1</sup> Tadlock Cowan and Baird Webel, *Military Base Closure: Socioeconomic Impacts* (Washington DC: Congressional Research Service, 2005), 5.

## BRAC Background and Politization

BRAC had its genesis during the Reagan administration and was formalized by the Defense Base Closure and Realignment Act of 1990. The first four rounds of BRAC, in 1988, 1991, 1993, and 1995, recommended 97 major bases for closure across the services.<sup>2</sup> (An additional BRAC round was conducted in 2005, but its impacts are not evaluated here.) Most communities fought hard to save their base, a cause almost always trumpeted by their Congressional delegation. Many members of Congress found the most important issue in their reelection campaign was their effort to save a local military facility from BRAC.<sup>3</sup> Many communities also hired lobbyists to help save their base. The goal of the BRAC legislation, of course, was to shield the base closure process from political influence.<sup>4</sup> However, reforms designed to insulate policymaking from politics usually lag behind successful lobbying efforts, and the BRAC process evolved into a sophisticated and highly successful lobbying specialty.<sup>5</sup> Politics most decidedly remained part of the base closure process.

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<sup>2</sup> Barry W. Holman, *Military Base Closures: Overview of Economic Recovery, Property Transfer, and Environmental Cleanup*, Statement to the Subcommittee of Government Efficiency, Financial Management, and Intergovernmental Relations, Committee of Government Reform, House of Representatives. GAO-01-1054T, 2001, 3.

<sup>3</sup> Gerald F. Warburg, "Lobbyists: U.S. National Security and Special Interests" in *The National Security Enterprise: Navigating the Labyrinth*, ed. Roger Z. George et al. (Washington DC: Georgetown University Press 2011), 280.

<sup>4</sup> Michael Dardia et al., *The Effects of Military Base Closures on Local Communities: A Short-Term Perspective*. Santa Monica, CA: RAND, 1996, 1.

<sup>5</sup> Warburg, "Lobbyists," 280.

## BRAC's Relevance Today

A fresh examination of BRAC economic impacts is appropriate for two reasons. First, another BRAC round in the near future is a distinct possibility. Downward pressure on the U.S. defense budget is expected to continue. Hence, senior government officials have publicly floated the idea of another BRAC. For example, in a 4 November 2011 interview with the *New York Times*, Secretary of Defense Leon Panetta said one consequence of the Pentagon budget-trimming is a possible new round of base closures.<sup>6</sup> Second, the bases which closed in the first four rounds of BRAC have now been closed 15-20 years, allowing for evaluation of their community's long-term fortunes. For these reasons, if another round of BRAC takes places, this paper could prove useful for government officials at all levels and for communities facing a closure.

### Previous Research

Multiple researchers have examined BRAC economic effects, but few have done so empirically.<sup>7</sup> Additionally, researchers have noted that small-area economic impact analysis can be difficult.<sup>8</sup> In 1993, Stenberg and Rowley studied communities who lost bases between 1961 and 1988 (pre-BRAC). They found that in two-thirds of the cases, communities regained as many civilian jobs as were lost, but smaller communities fared worse, on average, than larger

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<sup>6</sup> Thom Shanker and Elisabeth Buhmiller, "Weighing Pentagon Cuts, Panetta Faces Deep Pressures," *New York Times*, 6 November 2011, [http://www.nytimes.com/2011/11/07/world/panetta-weighs-military-cuts-once-thought-out-of-bounds.html?pagewanted=1&\\_r=1](http://www.nytimes.com/2011/11/07/world/panetta-weighs-military-cuts-once-thought-out-of-bounds.html?pagewanted=1&_r=1)

<sup>7</sup> Mark A. Hooker and Michael M. Knetter, "Measuring the Economic Effects of Military Base Closures," *Economic Inquiry*, October 2001, 584.

<sup>8</sup> Cowan and Webel, *Military Base Closure*, 2.

communities.<sup>9</sup> In 1996, RAND studied the short term impacts from three recently-closed California bases, finding the economic impacts less severe than had been forecasted.<sup>10</sup> In 2001, the GAO found that in 62 communities which experienced major base closures, 69% had unemployment rates equal to or below than the national average 5-10 years later.<sup>11</sup> Perhaps the most comprehensive study was done by Hooker and Knetter in 2001. They found off-base employment and per capita income grew faster, on average, in BRAC communities than they would have had the bases not closed.<sup>12</sup> Most studies, however, suffer from one or more of three common shortcomings: they evaluate only a small set of communities, fail to establish a valid control group, and/or evaluate only short-term results. This study will attempt to add to the body of knowledge on the subject by evaluating a large number of communities, establishing a valid control, and evaluating both short- and long-term fortunes.

## Definitions

**Major Base Closure:** This study evaluated communities in which a ‘major’ military base (with an airfield) ‘closed’ as a result of the first four rounds (1988-1995) of BRAC. A ‘major’ base was defined as a base with an operating airfield<sup>13</sup> and permanent active duty unit(s). Many bases without airfields also closed during this period – for example, Newark AFB, Ohio. Bases

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<sup>9</sup> Peter Stenberg and Thomas D. Rowley, “A Comparison of Military Base Closures in Metro and Nonmetro Counties,” *Government Finance Review*, October 1993, 1.

<sup>10</sup> Dardia et al., *Effects of Military Base Closures*, 45.

<sup>11</sup> Holman, *Military Base Closures*, 1.

<sup>12</sup> Hooker and Knetter, “Measuring the Economic Effects,” 584.

<sup>13</sup> In this study, ‘airfield’ is defined as an aerodrome with runway(s) to accommodate fixed wing aircraft, not merely a heliport.



without airfields generally offer less infrastructure for redevelopment and are not evaluated.<sup>14</sup> A ‘closed’ base is defined as one where at least 400 *civilian* jobs were eliminated and all active duty units departed. Some of the bases selected for ‘closure’ remained in existence, but with only an Air Force Reserve or Air National Guard presence – for example, Grissom AFB, Indiana. These bases *were* evaluated; though they remained ‘open’ in a sense, their re-designation resulted in significant (i.e. >400) local civilian job losses. Several Army airfields also closed during this period, for example Hamilton Army Airfield, California. On an Army base, the airfield is often just a small portion of the overall base complex, therefore, Army airfield closures were not evaluated. Thirty-four bases met the initial criteria for evaluation. See Appendix A for a list of these bases.

**Local Community:** The local community is defined as the *county* that contained the military base and where a preponderance of the base workforce resided.<sup>15</sup> In most cases, with a quick glance at a map, the host county was not disputable. However, in three cases the base (and its workforce) straddled two counties: Richards-Gebaur AFB, Missouri, Rickenbacker AFB, Ohio, and NAS South Weymouth, Massachusetts. In these cases, the combined data for both affected counties was used. This study divided local communities into three categories based on

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<sup>14</sup> Some bases without airfields *do* offer significant infrastructure for redevelopment (Naval Shipyards, for example). However, only bases with airfields are evaluated in this study.

<sup>15</sup> The designation of the county as the ‘local community’ in this study is not meant to imply that county officials bear primary responsibility for redevelopment following a base closure. Certainly city governments, the state government, and others share that responsibility with the county government.

population in the 1990 U.S. Census.<sup>16</sup> ‘Small’ communities were those with less than 100,000 residents, ‘Medium’ communities had 100,000 to 300,000 residents, and ‘Large’ communities had more than 300,000 residents. Appendix A shows the bases/communities ordered by population; seven are defined as Small and seven as Medium, and twenty as Large.

Large communities were not evaluated in this study. The direct job loss from a military base closure was not found to be large enough to appreciably affect a large community’s economic indicators. For example, the GAO estimates 1,012 civilian jobs were directly lost then Mather AFB, California closed in 1993.<sup>17</sup> However, those 1,012 jobs accounted for only 0.2% of the 471,578 jobs in Sacramento County that year<sup>18</sup>. For this reason, only small and medium-sized communities were evaluated.

**Control:** To evaluate the economic performance of these communities, a control was established. The control was used to mute external influences on a community’s economic fortunes, such as national and regional economic trends during the period of evaluation. The control for each community was its state’s performance over the same period of time. For example, when evaluating the economic performance of Iosco County, Michigan (former home of Wurtsmith AFB), the control was the performance of the entire state of Michigan for the identical time period.

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<sup>16</sup> 1990 census data was obtained from the U.S. Census Bureau website at <http://www.census.gov/main/www/cen1990.html>

<sup>17</sup> U.S. Government Accountability Office, *Military Base Closures: Updated Status of Prior Base Realignment and Closures, Report to Congressional Committees*. Washington DC: 2005, GAO-05-138, 36.

<sup>18</sup> County and state job figures in this study come from the U.S. Bureau of Labor Statistics, <http://www.bls.gov>

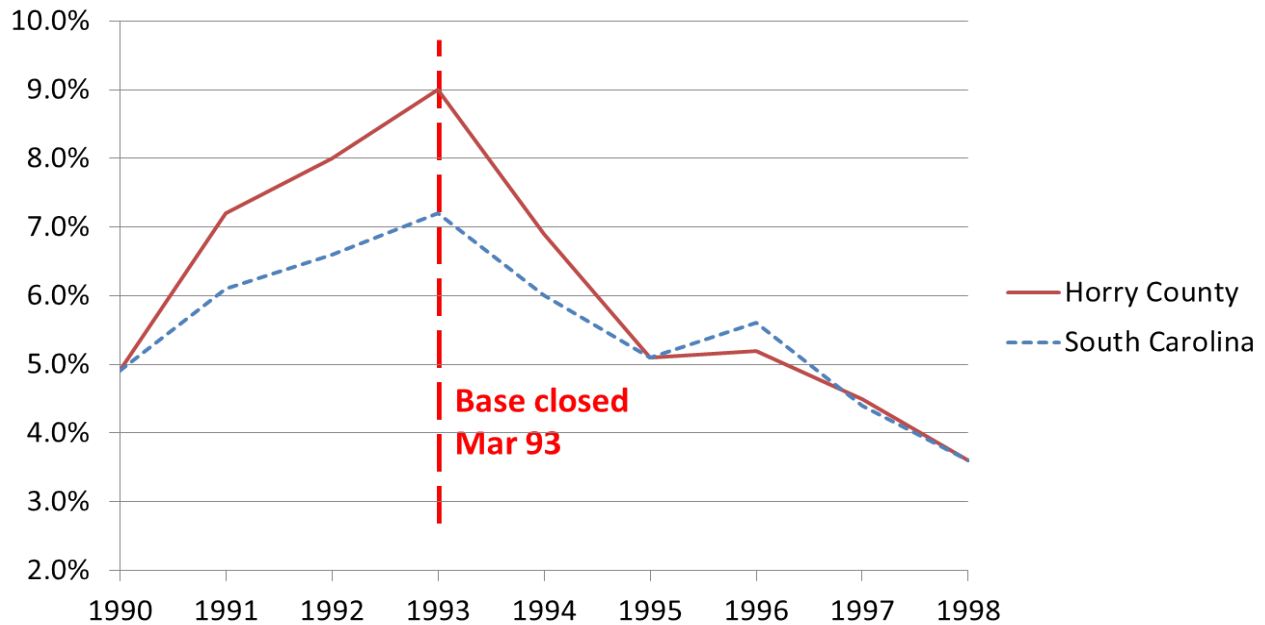
## Short-Term Economic Fortune: Recovery

A community's short-term economic fortune is termed *Recovery*. The basic question: *How long after base closure until local economic conditions return to normal?* This question was answered in three steps. First, an economic indicator was chosen which clearly registered the economic disruption caused by the base closure. Second, that indicator was used to establish a pre-closure 'normal' for the community relative to its control. Finally, the same economic indicator was used to determine when the community returned to 'normal' (again relative to its control), thus determining the *Recovery Period*.

Unemployment rate was an excellent indicator to register economic disruption caused by base closure. In most cases, the community's unemployment rate *grew* relative to the control during the closure year. The experience of Horry County, South Carolina, former home of Myrtle Beach AFB, is typical. The base closed in 1993. Figure 1 shows annual unemployment for the local community (Horry County) and for the control (South Carolina).<sup>19</sup> During the closure year, a clear jump in unemployment occurs relative to the control.

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<sup>19</sup> All unemployment statistics in this study come from the U.S. Bureau of Labor Statistics, <http://www.bls.gov>



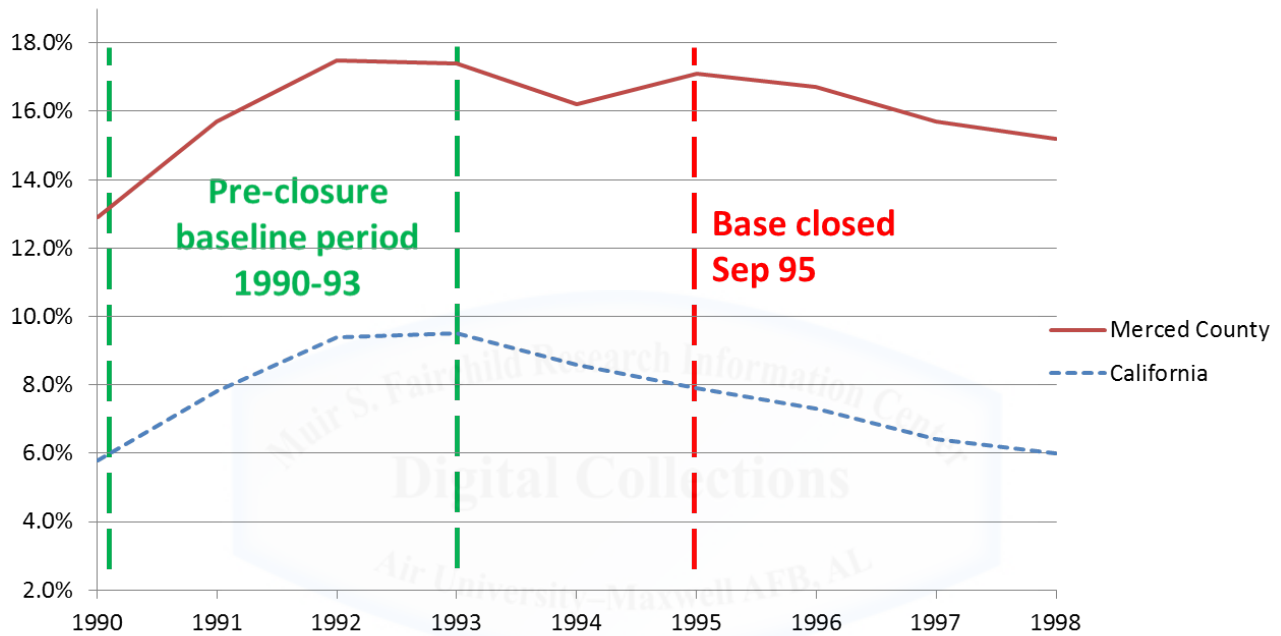
**Figure 1. Unemployment Rate in Horry County, SC**

A similar disruption was clearly visible in 6 of the 7 small communities, and 5 of the 7 medium-sized communities.

The next step was to determine what constituted pre-closure ‘normal’ unemployment for each community. Pre-closure ‘normal’ was established by the community’s unemployment rate relative to its control during a pre-closure baseline period. The baseline period for this study begins in 1990 and ends two years prior to official base closure.<sup>20</sup> Merced County, California (former home of Castle AFB) will be used as an example. Castle AFB closed in 1995. Therefore, its baseline period is 1990-1993. For this period, Merced County averaged 15.9% unemployment while the state of California averaged 8.1% unemployment. Thus, Merced County’s pre-closure ‘normal’ is a relative unemployment rate 7.8% *above* California’s rate

<sup>20</sup> When a base closes, the drawdown period often begins more than one year ahead of the final closure date.

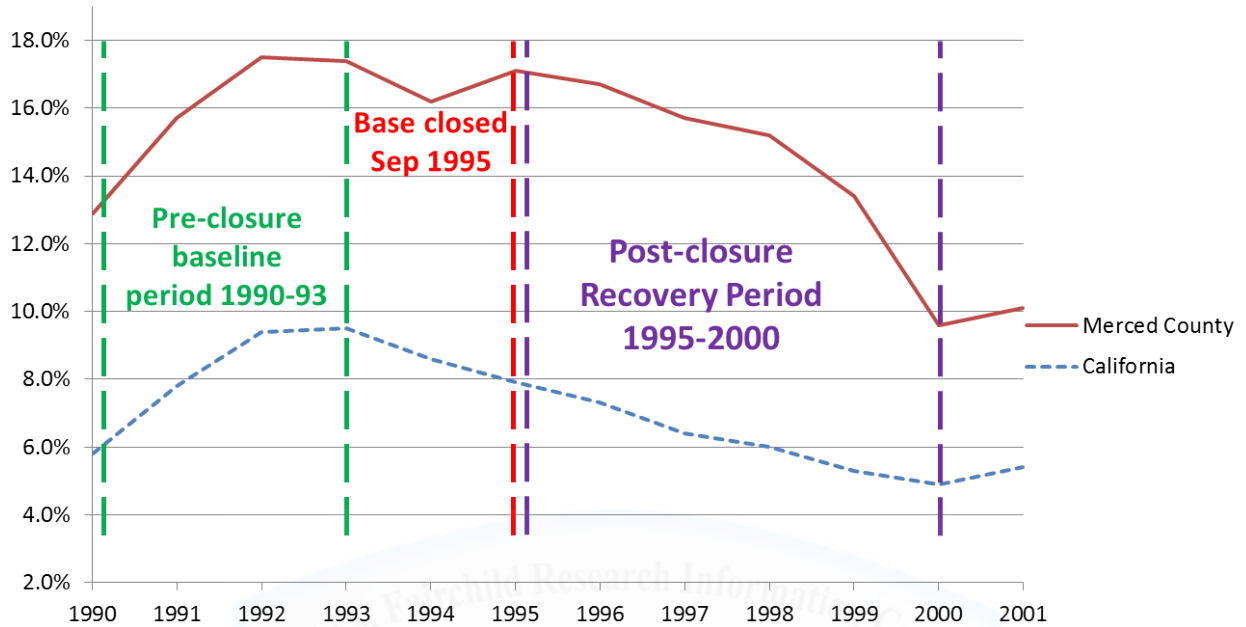
(15.9% - 8.1% = 7.8%). (Of course, some communities had pre-closure ‘normal’ unemployment rates *below* their state’s rate.) The concept of pre-closure normal relative unemployment rate is shown graphically in Figure 2. The pre-closure ‘normal’ relative unemployment rate for each community is shown in Appendix B.



**Figure 2. Pre-Closure Baseline Period**

The *Recovery Period* is complete when the community’s post-closure relative unemployment rate declines to its pre-closure level. Merced County, California, is again used as an example. Its pre-closure relative unemployment rate is +7.8%. During the closure year of 1995, Merced’s relative unemployment rate jumped to +9.2%. It did not decrease below +7.8% until the year 2000, when it fell to +4.7%. Therefore, Merced County’s Recovery Period was 5

years (1995 to 2000). Figure 3 shows Merced County and California’s unemployment rate, with the Recovery Period shown graphically.



**Figure 3. Post-Closure Recovery Period**

The Recovery Period was calculated for each community. In several cases, a community had a relative unemployment rate *below* its pre-closure baseline rate during the closure year. In these cases, as long as the community maintained that relative rate for at least one year after closure, the Recovery Period was characterized as 0 years.

### Recovery Period – Results

Recovery Period results are shown in Table 1, listed in ascending order of community size.

<b>Base</b>	<b>County</b>	<b>Recovery Period</b>
Chase Field NAS, TX	Bee	4 yrs
Wurtsmith AFB, MI	Iosco	has not recovered
Grissom AFB, IN	Miami	3 yrs
Eaker AFB, AR	Mississippi	14 yrs
KI Sawyer AFB, MI	Marquette	8 yrs
Plattsburgh AFB, NY	Clinton	2 yrs
Loring AFB, ME	Aroostook	5 yrs
<b>Small Community Avg</b>		<b>7.7 years<sup>21</sup></b>
England AFB, LA	Rapides Parish	0 yrs
Myrtle Beach AFB, SC	Horry	2 yrs
Chanute AFB, IL	Champaign	0 yrs
Castle AFB, CA	Merced	5 yrs
Reese AFB, TX	Lubbock	2 yrs
Pease AFB, NH	Rockingham	4 yrs
Griffiss AFB, NY	Oneida	0 yrs
<b>Medium Community Avg</b>		<b>1.9 years</b>
<b>Overall Average</b>		<b>4.8 years</b>

*Table 1. Recovery Period Findings*

Recovery Period averaged 4.8 years. Small community Recovery Period averaged 7.7 years, while medium-sized communities averaged 1.9 years.

### **Long-Term Economic Fortune: Trajectory**

A community's long-term economic fortune is termed *Trajectory*. Trajectory attempts to characterize a community's economic fortune relative to its control over a long period following its base's closure. Trajectory was determined using two economic indicators: *Job Growth* and

<sup>21</sup> Iosco County, Mich. had not recovered as of 2010. It was assigned a Recovery Period of 18 years (a notional recovery year of 2011) for the purposes of calculating the small community average.

*Pay Growth*<sup>22</sup> in an affected community. The control, again, is the state’s performance during the same time period. The Trajectory period begins one year after base closure and continues to 2010, the last year from which annual data was available at the time of this study.

### **Trajectory Component #1: Job Growth**

Job Growth was calculated as follows:

- Net Job Growth = (Total Jobs)<sub>end of Trajectory period</sub> – (Total Jobs)<sub>start of Trajectory period</sub>

Rapides Parish, Louisiana (former home of England AFB) closed its base in 1992. Thus, its Trajectory period is 17 years: 1993 to 2010. Rapides Parish is used to demonstrate a Job Growth calculation.

- (Total jobs)<sub>start of Trajectory period (1993)</sub>: 48,228
- (Total jobs)<sub>end of Trajectory period (2010)</sub>: 58,759
- Net Job Growth = 58,759 – 48,228 = 10,531
- Net Job Growth % =  $\frac{58,759}{48,228} - 1 = 21.8\%$

The same calculations were done for the state of Louisiana as the control. Table 2 compares Rapides Parish to the state of Louisiana. Thus, for the Job Growth component of Trajectory, Rapides Parish outperformed its control by a solid margin.

Base	County	Trajectory Period	County Net Job Growth %	State Net Job Growth %
England AFB, LA	Rapides	1993–2010	21.8%	13.5%

***Table 2. Net Job Growth %***

<sup>22</sup> All job quantity and pay data in this study come from the U.S. Bureau of Labor Statistics, <http://www.bls.gov>



Since the length of Trajectory period varied based on when a base closed, Job Growth values were converted to annualized values, allowing comparisons among the communities. (For a demonstration of Job Growth % conversion to an annualized value, see Appendix C). Table 3 compares Rapides Parish to its control using annualized figures.

<b>Base</b>	<b>County</b>	<b>Trajectory Period</b>	<b>County Annual Job Growth %</b>	<b>State Annual Job Growth %</b>	<b>Relative Annual Job Growth %</b>
England AFB, LA	Rapides	1993–2010	1.17%	0.75%	0.42%

*Table 3. Job Growth % – Annualized*

While 0.42% Relative Annual Job Growth might seem small, when compounded over the 17 year Trajectory period, it equates to a Relative Net Job Growth of 8.3%, which is significant.

### **Job Growth – Results**

Table 4 shows Relative Annual Job Growth for each community, listed in ascending order of community size.

<b>Base</b>	<b>County</b>	<b>Trajectory Period</b>	<b>County Annual Job Growth %</b>	<b>State Annual Job Growth %</b>	<b>Relative Annual Job Growth %</b>
Chase Field NAS, TX	Bee	1994-2010	0.84%	1.83%	-0.98%
Wurtsmith AFB, MI	Iosco	1994-2010	-0.97%	-0.47%	-0.50%
Grissom AFB, IN	Miami	1995-2010	-0.52%	-0.01%	-0.51%
Eaker AFB, AR	Mississippi	1993-2010	-0.65%	0.94%	-1.59%
KI Sawyer AFB, MI	Marquette	1996-2010	0.62%	-0.90%	1.52%
Plattsburgh AFB, NY	Clinton	1996-2010	0.22%	0.49%	-0.27%
Loring AFB, ME	Aroostook	1995-2010	0.00%	0.60%	-0.60%
<b>Small Comm. Avg</b>			<b>-0.07%</b>	<b>0.35%</b>	<b>-0.42%</b>
England AFB, LA	Rapides	1993-2010	1.17%	0.75%	0.42%
Myrtle Bch AFB, SC	Horry	1994-2010	2.31%	0.71%	1.60%
Chanute AFB, IL	Champaign	1994-2010	0.61%	0.17%	0.44%
Castle AFB, CA	Merced	1996-2010	0.94%	0.66%	0.28%
Reese AFB, TX	Lubbock	1998-2010	0.80%	1.22%	-0.42%
Pease AFB, NH	Rockingham	1992-2010	2.17%	1.32%	0.85%
Griffiss AFB, NY	Oneida	1996-2010	0.32%	0.49%	-0.17%
<b>Med. Comm. Avg</b>			<b>1.19%</b>	<b>0.76%</b>	<b>0.43%</b>
<b>Overall Average</b>			<b>0.56%</b>	<b>0.56%</b>	<b>0.00%</b>

**Table 4. Relative Annual Job Growth %**

Average Relative Annual Job Growth for the communities studied was *identical*, on average, to the controls. Small communities averaged a Relative Annual Job Growth of -0.42%, while medium communities averaged +0.43%.

### **Trajectory Component #2: Pay Growth**

The second component of Trajectory was Pay Growth. Using formulae identical to those shown earlier for Job Growth, Net Pay Growth % was calculated. Rapides Parish and Louisiana are again used to illustrate. Table 5 compares Rapides Parish to the state of Louisiana. In Pay Growth, Rapides Parish underperformed its control.

<b>Base</b>	<b>County</b>	<b>Trajectory Period</b>	<b>County Net Pay Growth %</b>	<b>State Net Pay Growth %</b>
England AFB, LA	Rapides Parish	1993–2010	76.2%	83.1%

*Table 5. Net Pay Growth %*

Similar to Job Growth, Net Pay Growth values were converted to annualized values to allow comparison among the communities. Table 6 compares Rapides Parish to its control using annualized values:

<b>Base</b>	<b>County</b>	<b>Trajectory Period</b>	<b>County Annual Pay Growth %</b>	<b>State Annual Pay Growth %</b>	<b>Relative Annual Pay Growth %</b>
England AFB, LA	Rapides	1993–2010	3.39%	3.62%	-0.23%

*Table 6. Pay Growth % – Annualized*

While -0.23% Relative Annual Pay Growth might seem small, when compounded over the 17 year Trajectory period, it equates to a Relative Net Pay Growth of -6.9%, which is significant.

### **Pay Growth – Results**

Table 7 shows Relative Annual Pay Growth for each community, listed in ascending order of community size.

<b>Base</b>	<b>County</b>	<b>Trajectory Period</b>	<b>County Annual Pay Growth %</b>	<b>State Annual Pay Growth %</b>	<b>Relative Annual Pay Growth %</b>
Chase Field NAS, TX	Bee	1994-2010	3.24%	3.77%	-0.53%
Wurtsmith AFB, MI	Iosco	1994-2010	2.62%	2.58%	0.04%
Grissom AFB, IN	Miami	1995-2010	2.78%	2.88%	-0.11%
Eaker AFB, AR	Mississippi	1993-2010	3.70%	3.44%	0.27%
KI Sawyer AFB, MI	Marquette	1996-2010	2.84%	2.48%	0.36%
Plattsburgh AFB, NY	Clinton	1996-2010	3.47%	3.60%	-0.14%
Loring AFB, ME	Aroostook	1995-2010	3.20%	3.24%	-0.05%
<b>Small Comm. Avg</b>			<b>3.12%</b>	<b>3.14%</b>	<b>-0.02%</b>
England AFB, LA	Rapides	1993-2010	3.39%	3.62%	-0.23%
Myrtle Bch AFB, SC	Horry	1994-2010	3.09%	3.25%	-0.16%
Chanute AFB, IL	Champaign	1994-2010	3.41%	3.37%	0.05%
Castle AFB, CA	Merced	1996-2010	3.74%	3.76%	-0.02%
Reese AFB, TX	Lubbock	1998-2010	3.06%	3.36%	-0.31%
Pease AFB, NH	Rockingham	1992-2010	3.43%	3.48%	-0.05%
Griffiss AFB, NY	Oneida	1996-2010	3.16%	3.60%	-0.45%
<b>Med. Comm. Avg</b>			<b>3.32%</b>	<b>3.49%</b>	<b>-0.17%</b>
<b>Overall Average</b>			<b>3.22%</b>	<b>3.32%</b>	<b>-0.09%</b>

*Table 7. Relative Annual Pay Growth %*

Average Relative Annual Pay Growth for the communities studied was, on average, *very slightly below* that of the controls at -0.09%. Small communities, on average, fared nearly identically to their controls with a Relative Annual Pay Growth of -0.02%. Medium-sized communities fared slightly worse than their controls with an average of -0.17%.

## Results Summary

Table 8 summarizes the results for Recovery and Trajectory.

	<b>Trajectory</b>		
	<b>Recovery Period Length</b>	<b>Relative Annual Job Growth</b>	<b>Relative Annual Pay Growth</b>
<b>Small Community Average</b>	7.7 years	-0.42%	-0.02%
<b>Medium Community Average</b>	1.9 years	+0.43%	-0.17%
<b>Overall Average</b>	4.8 years	Even	-0.09%

*Table 8. Results Summary*

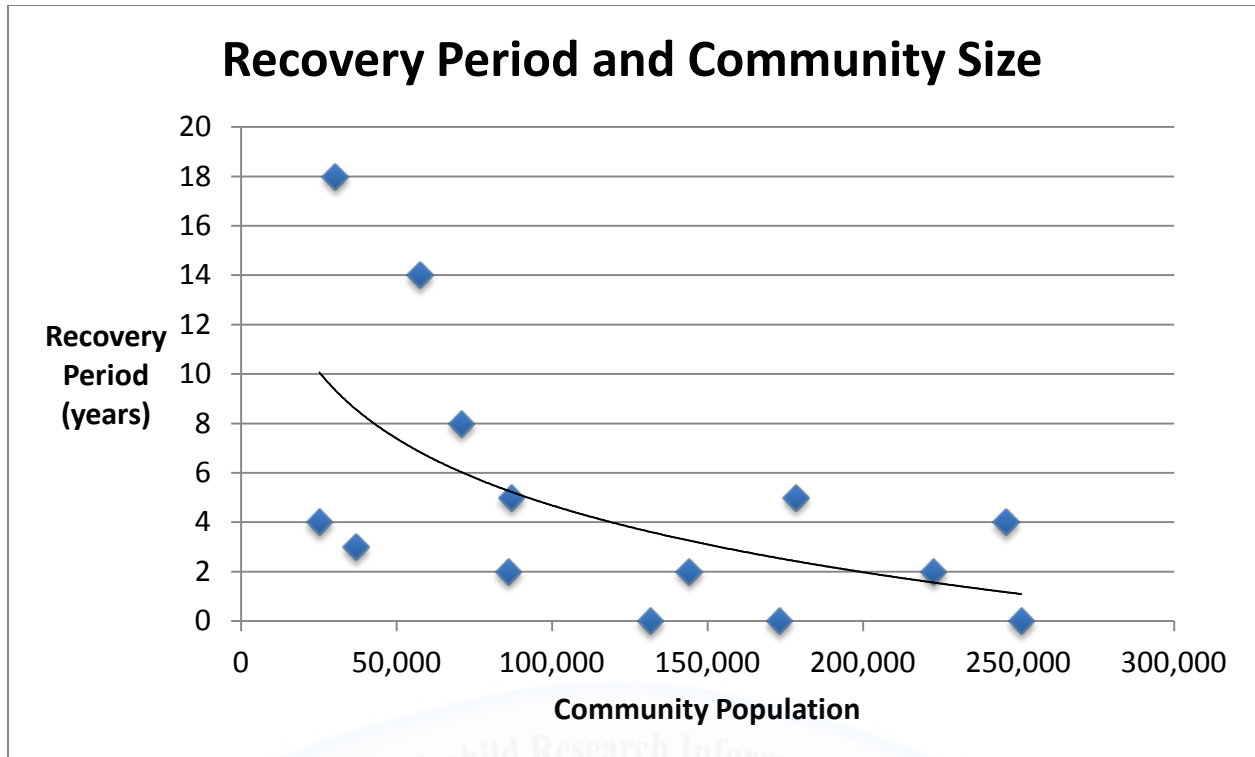
### **Economic Fortunes - Correlations**

This study checked for correlations between a community's short- and long-term economic fortune and three factors:

1. Community Size
2. Geographic Region
3. Retention of a DoD Employer in the Community

### **Correlation to Community Size**

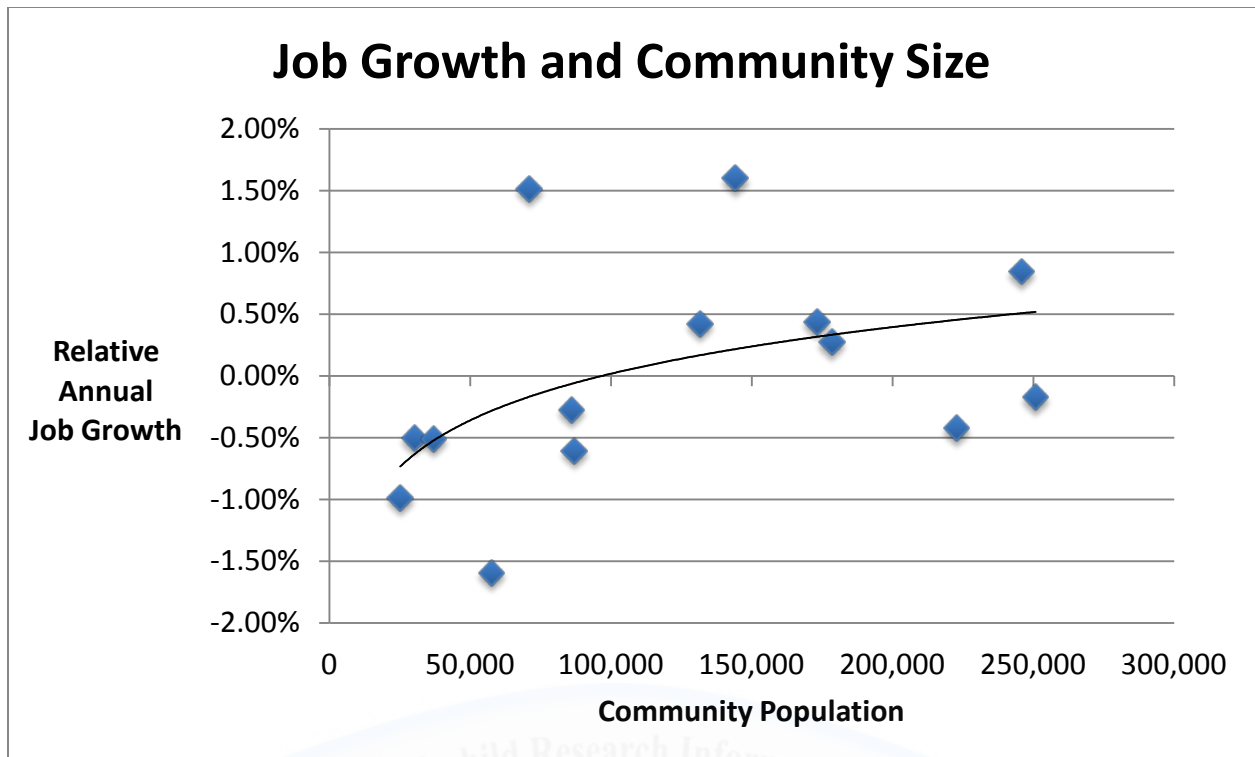
As noted in earlier in Table 1, small community Recovery Period averaged 7.7 years and Recovery Period for medium-sized communities averaged 1.9 years. A correlation between Recovery Period and community size is also evident when scatter-plotted (Figure 4).



*Figure 4. Scatter Plot of Recover Period and Community Size*

This study assessed a clear correlation between Recovery Period and community size. Medium-sized communities, on average, *recovered significantly faster* than small communities following a base closure.

Next, Job Growth was checked for correlation with community size. As noted in Table 4, small communities, on average, fared significantly worse than their control, while medium-sized communities, on average, fared significantly better than their control. A correlation is also evident on a scatter plot of Job Growth and Community size, as seen in Figure 5.

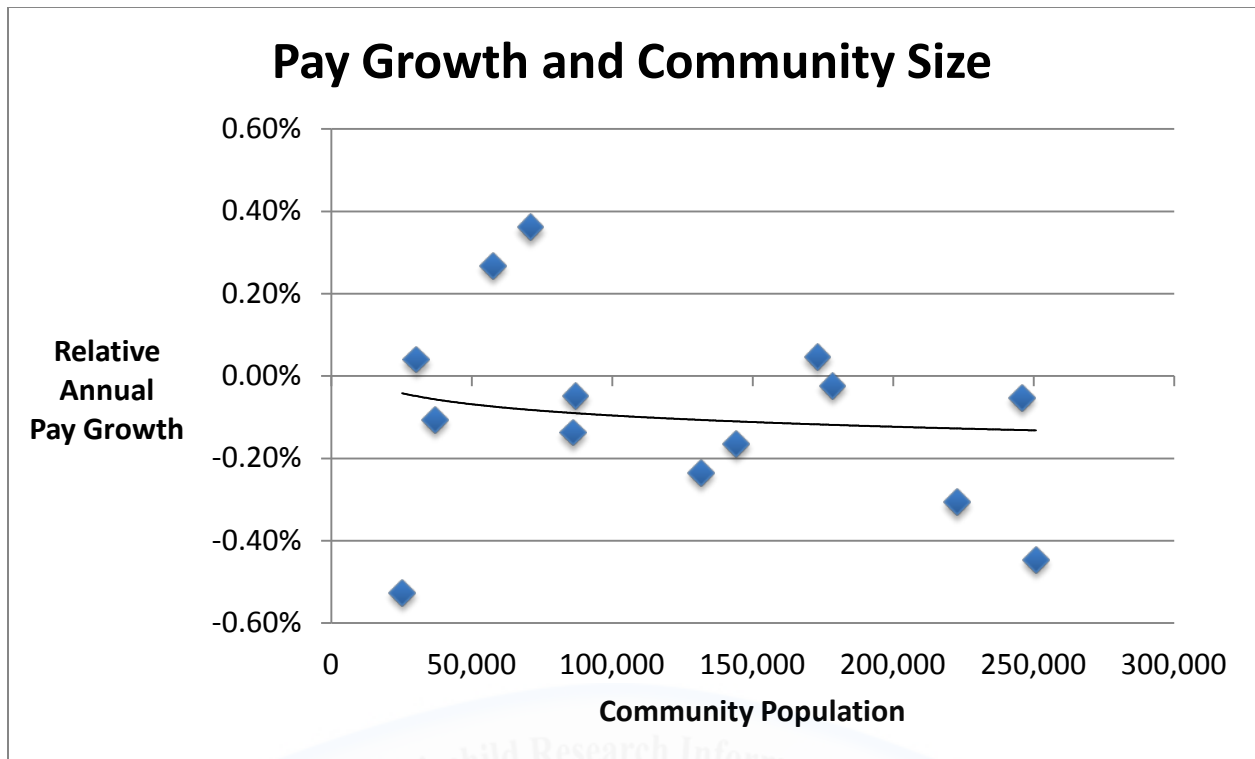


*Figure 5. Scatter Plot of Job Growth and Community Size*

This study assessed a clear correlation between Job Growth and Community Size.

Medium-sized communities, on average, experienced *significantly better* Job Growth than small communities did following a base closure.

Finally, Pay Growth (the second component of Trajectory) was checked for correlation with community size. As noted earlier, Relative Annual Pay Growth was  $-0.02\%$  for small communities and  $-0.17\%$  for medium-sized communities. A correlation is not evident on a scatter plot of Pay Growth and Community size (Figure 6).



*Figure 6. Scatter Plot of Pay Growth and Community Size*

This study assessed no correlation between Pay Growth and community size. A summary of correlation findings is shown later in Table 13.

### **Correlation to Geographic Region**

This study also checked for correlation between economic fortune and geographic region. The communities were sorted into four regions: Northeast, Midwest, South, and West. Table 9 shows each community and its region. Since only one community was located in the West, that region wasn't compared to the others.



<b>Base</b>	<b>Region</b>
Plattsburgh AFB, NY Loring AFB, ME Pease AFB, NH Griffiss AFB, NY	Northeast ↓
Wurtsmith AFB, MI Grissom AFB, IN KI Sawyer AFB, MI Chanute AFB, IL	Midwest ↓
Chase Field NAS, TX Eaker AFB, AR England AFB, LA Myrtle Bch AFB, SC Reese AFB, TX	South ↓
Castle AFB, CA	West

***Table 9. Geographic Regions***

Correlation was checked for each region against the three economic performance measures. Results are shown in Table 10.

Base	Region	Recovery Period Length (yrs)	Trajectory	
			Relative Annual Job Growth	Relative Annual Pay Growth
Plattsburgh AFB, NY	Northeast	2	-0.27%	-0.14%
Loring AFB, ME	↓	5	-0.60%	-0.05%
Pease AFB, NH		4	0.85%	-0.05%
Griffiss AFB, NY		0	-0.17%	-0.45%
<b>Northeast Avg</b>		<b>2.75</b>	<b>-0.05%</b>	<b>-0.17%</b>
Wurtsmith AFB, MI		Midwest	has not recovered	-0.50%
Grissom AFB, IN	↓	3	-0.51%	-0.11%
KI Sawyer AFB, MI		8	1.52%	0.36%
Chanute AFB, IL		0	0.44%	0.05%
<b>Midwest Avg</b>		<b>7.25<sup>23</sup></b>	<b>0.24%</b>	<b>0.09%</b>
Chase Field NAS, TX		South	4	-0.98%
Eaker AFB, AR	↓	14	-1.59%	0.27%
England AFB, LA		0	0.42%	-0.23%
Myrtle Bch AFB, SC		2	1.60%	-0.16%
Reese AFB, TX		2	-0.42%	-0.31%
<b>South Avg</b>		<b>4.4</b>	<b>-0.19%</b>	<b>-0.19%</b>
Castle AFB, CA	West	5	0.28%	-0.02%

*Table 10. Economic Performance by Geographic Region*

Recovery Period was fastest in the Northeast and slowest in the Midwest. However, there was significant variation in each of the three regions and each region had at least one community that recovered quite quickly. Correlation is assessed as *weak* between Recovery Period and geographic region.


Interestingly, Relative Job Growth was fastest in the Midwest and slowest in the South, but with significant variation within each region. This study found no correlation between Relative Job Growth and geographic region.

<sup>23</sup> Iosco County, MI had not recovered as of 2010. It was assigned a Recovery Period of 18 years (a notional recovery year of 2011) for the purposes of calculating the averages.

Like Relative Job Growth, Relative Pay Growth was fastest in the Midwest and slowest in the South, again with significant variation within each region. This study found no correlation between Relative Pay Growth and geographic region. Correlation findings are summarized in Table 13.

### **Correlation to Retention of a DoD Employer**

This study also checked for correlation between economic fortune and whether the community retained a DoD employer following the base closure. Four communities retained a DoD employer, while 10 did not. Table 11 lists these communities.

<b>Base</b>	<b>DoD Employer Retained?</b>
Grissom AFB, IN	Yes – AF Reserve Flying Wing
Loring AFB, ME	Yes – DFAS site <sup>24</sup>
Pease AFB, NH	Yes – Air National Guard Flying Wing
Griffiss AFB, NY	Yes –DFAS site and NEADS <sup>25</sup>
Chase Field NAS, TX	No 
Wurtsmith AFB, MI	
Eaker AFB, AR	
KI Sawyer AFB, MI	
Plattsburgh AFB, NY	
England AFB, LA	
Myrtle Bch AFB, SC	
Chanute AFB, IL	
Castle AFB, CA	
Reese AFB, TX	

***Table 11. Communities Retaining a DoD Employer***

<sup>24</sup> In BRAC 1995, a number of Defense Finance Accounting Service (DFAS) sites were allocated to communities which had lost military facilities. BRAC 2005 consolidated the DFAS work at a smaller number of sites, including Aroostook County, ME and Oneida County, NY. These two communities gained DFAS jobs as a result of the consolidation.

<sup>25</sup> The Northeast Air Defense Sector (NEADS) was a unit of North American Aerospace Defense Command (NORAD) responsible for peacetime air sovereignty in the continental United States. In 2005, NEADS and SEADS were consolidated at the NEADS site and redesignated the Eastern Air Defense Sector (EADS).

Correlation was checked for each region against the three economic performance measures. Results are shown in Table 12.

Base	DoD Employer Retained?	Recovery Period Length (yrs)	Trajectory	
			Relative Annual Job Growth	Relative Annual Pay Growth
Grissom AFB, IN	Yes	3	-0.51%	-0.11%
Loring AFB, ME	Yes	5	-0.60%	-0.05%
Pease AFB, NH	Yes	4	0.85%	-0.05%
Griffiss AFB, NY	Yes	0	-0.17%	-0.45%
<b>Average</b>		<b>3.0</b>	<b>-0.11%</b>	<b>-0.16%</b>
Chase Field NAS, TX	No ↓	4	-0.98%	-0.53%
Wurtsmith AFB, MI		has not recovered	-0.50%	0.04%
Eaker AFB, AR		14	-1.59%	0.27%
KI Sawyer AFB, MI		8	1.52%	0.36%
Plattsburgh AFB, NY		2	-0.27%	-0.14%
England AFB, LA		0	0.42%	-0.23%
Myrtle Bch AFB, SC		2	1.60%	-0.16%
Chanute AFB, IL		0	0.44%	0.05%
Castle AFB, CA		5	0.28%	-0.02%
Reese AFB, TX		2	-0.42%	-0.31%
<b>Average</b>			<b>5.5<sup>26</sup></b>	<b>0.05%</b>

*Table 12. Economic Performance with and without a DoD Employer*

Recovery Period was shorter in communities that retained a DoD employer. However, losing all DoD presence in a community did not preclude a short Recovery Period; several communities in this situation recovered quite quickly. Correlation is assessed as *weak* between Recovery Period and retention of a DoD employer.

<sup>26</sup> Iosco County, Mich. had not recovered as of 2010. It was assigned a Recovery Period of 18 years (a notional recovery year of 2011) for the purposes of calculating the averages.

In both Relative Job Growth and Relative Pay Growth, communities that did not retain a DoD employer *fared nearly identically* to communities that did. This study found no correlation between either Relative Job Growth or Relative Pay Growth and whether or not the community retained a DoD employer following the base closure.

### **Correlation Summary**

Recovery Period correlated to all three factors examined (community size, geographic region, and retention of a DoD employer). Job Growth correlated only to community size. Pay Growth did not correlate to any of the factors. Correlation results are shown in Table 13

<b>Correlation</b>	<b>Recovery Period</b>	<b>Job Growth</b>	<b>Pay Growth</b>
<b>Community Size</b>	<b>Yes:</b> The smaller the community, the longer the Recovery Period	<b>Yes:</b> The smaller the community, the slower the Job Growth	<b>No</b>
<b>Geographic Region</b>	<b>Yes:</b> Northeast region recovered fastest; Midwest slowest	<b>No</b>	<b>No</b>
<b>Retention of a DoD Employer</b>	<b>Yes:</b> Retention of a DoD employer shortens Recovery Period	<b>No</b>	<b>No</b>

*Table 13. Correlation Results*

### **Base Closure – Findings and Mitigating Economic Factors**

This study’s findings can be summed up with three generalizations: 1) military base closure is rarely an economic death knell for a community, 2) small communities, on average, fare worse than medium-sized communities, and 3) there is wide variation in the short and long-

term economic performance across these communities. These findings are similar to those found in previous studies. Since the economic impacts are usually *milder* than feared, this paper will now examine the possible reasons. These reasons are grouped into four categories:

- 1) Impact on Local Employment
- 2) Impact on Local Businesses
- 3) Impact on Local Housing Market
- 4) Federal Redevelopment Assistance Programs

**Impact on Local Employment:** A military base closure differs from a factory closure in many ways, blunting the adverse economic impact felt by the host community. The core of these differences is that when a military base closes, a large percentage of its workforce immediately leaves the community. All military members are transferred to other duty locations, and some civilian employees may be as well. Contrast this to a factory closing, where a large percentage of the workforce remains local and becomes suddenly unemployed. Additionally, when a military member is transferred out, his family is transferred out with him. So, if that military member had a spouse who worked in the local community, the spouse being transferred out opens up a job *vacancy* in the community.<sup>27</sup>

**Impact on Local Businesses:** The unique nature of a military base closure also blunts the negative impact on local businesses. Military members obtain many of their retail and service needs on base. For example, they shop at the base exchange and commissary, rather than the local Wal-Mart and grocery store. They obtain some medical care and child care on base. They

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<sup>27</sup> Dardia et al., *Effects of Military Base Closures*, 8.

do some of their recreation spending on base at the golf course, bowling alley, pool, and fitness center. They dine at on-base restaurants and clubs. Military bases also attract military retirees to the area. Retirees have the same base privileges as military members, and thus spend a portion of their incomes on base. Retirees who remain in the area after the base closes will thus spend *more* money in the local economy *after* the base closes. Additionally, many on-base employees are military retirees. If they lose their job on base, they still have an income (albeit limited) from their military retirement, cushioning the financial blow. Additionally, Hooker, et al, postulated that military members, particularly junior members, have incomes below the community average,<sup>28</sup> and thus spend less in the local community. Finally, military bases purchase a large portion of their operating materiel from outside the local community, rather than from local vendors.<sup>29</sup>

**Impact on Local Housing Market:** The impact of a base closure on the local housing market and property values is one of a community's most serious concerns. The unique nature of a military base closure also blunts its impact on housing. Some military members reside on base, in dormitories or base housing developments. Their departure does not impact the local housing market. For those who do reside off base, the transient nature of military life means a lower percentage owned the home they lived in and chose simply to rent. Many military members are married to other military members; these military couples vacate two jobs, but only a single home when the base closes. Finally, in some cases the federal government has purchased homes

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<sup>28</sup> Hooker and Knetter, "Measuring the Economic Effects," 584.

<sup>29</sup> Dardia et al., *Effects of Military Base Closures*, 9.

from military members who transferred out, to prevent those homeowners from taking a substantial loss or abandoning the house.<sup>30</sup>

**Federal Redevelopment Assistance Programs:** The government has historically helped communities redevelop the base for civilian use. The real estate itself is often offered free or at a greatly reduced price. Capital improvements already exist and the property comes with federal indemnity against future environment damage discoveries.<sup>31</sup> Federal grants and loans totaled \$1.2 billion dollars<sup>32</sup> for the first four BRAC rounds. Communities have developed their closed bases into manufacturing centers, airports, research labs, colleges, and many other entities. Glenview, Illinois, for example, estimates the follow-on industries that replaced the Glenview Naval Air Station are bringing in three or four times the \$160 million dollar economic benefit the base itself had been generating.<sup>33</sup>

## Conclusion

This paper examined the short- and long-term economic fortunes of small- and medium-sized communities that experienced a BRAC-mandated military base closure during the 1990s. Despite often-virulent protests and doomsday forecasts from politicians and community leaders, most communities coped with the closure and have fared well in the long-term. A correlation

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<sup>30</sup> Neiswanger, Barbara, "The Socioeconomic Impact of Force Reduction and Military Installation Closure." (Stocks Essay, Youngstown State University, 2011), 3.

<sup>31</sup> Cowan and Webel, *Military Base Closure*, 5.

<sup>32</sup> *Ibid.*, 5.

<sup>33</sup> Richard R. Burgess, "Surviving BRAC: Communities Point the Way to Successful Transformation" *Seapower* June 2005, 55.



was found between community size and economic fortune with small communities, on average, having a tougher go. However, a wide variation in economic performance existed across the communities studied, with some doing quite well and others poorly. Little or no correlation was found between economic performance and geographic region or whether the community retained a DoD employer. Finally, this paper proposed some mitigating factors as to why a military base closure is rarely an economic death knell.

If there is a future BRAC round, we should still expect stringent political opposition, but those communities selected should know that it is not a death sentence, it represents an opportunity for new growth, and if confronted with optimism and determination represents a golden opportunity for a community to remake itself.



## Appendix A

Base	County	Population
<b>Small Communities</b>		
Chase Field NAS, TX	Bee	25,135
Wurtsmith AFB, MI	Iosco	30,209
Grissom AFB, IN	Miami	36,897
Eaker AFB, AR	Mississippi	57,525
KI Sawyer AFB, MI	Marquette	70,877
Plattsburgh AFB, NY	Clinton	85,969
Loring AFB, ME	Aroostook	86,936
<b>Medium Communities</b>		
England AFB, LA	Rapides Parish	131,556
Myrtle Beach AFB, SC	Horry	144,053
Chanute AFB, IL	Champaign	173,025
Castle AFB, CA	Merced	178,403
Reese AFB, TX	Lubbock	222,636
Pease AFB, NH	Rockingham	245,845
Griffiss AFB, NY	Oneida	250,836
<b>Large Communities</b>		
Lowry AFB, CO	Denver	467,610
Bergstrom ARB, TX	Travis	576,407
Cecil Field NAS, FL	Duval	672,971
Richards-Gebaur AFB, MO	Jackson / Cass	697,040
Barbers Point NAS, HI	Honolulu	836,231
Rickenbacker AFB, OH	Franklin / Pickaway	1,009,692
Mather AFB, CA	Sacramento	1,041,219
McClellan AFB, CA	Sacramento	1,041,219
S. Weymouth NAS, MA	Norfolk / Plymouth	1,051,363
Carswell AFB, TX	Tarrant	1,170,103
Alameda NAS, CA	Alameda	1,279,182
George AFB, CA	San Bernardino	1,418,380
Norton AFB, CA	San Bernardino	1,418,380
Moffett Field NAS, CA	Santa Clara	1,497,577
Dallas NAS, TX	Dallas	1,852,810
Homestead AFB, FL	Dade	1,937,094
Williams AFB, AZ	Maricopa	2,122,101
Tustin MCAS, CA	Orange	2,410,556
El Toro MCAS, CA	Orange	2,410,556
Glenview NAS, IL	Cook	5,105,067

*Appendix A. Base Closures and Associated Community Size*

## Appendix B

<b>Base</b>	<b>County</b>	<b>County Rate</b>	<b>State Rate</b>	<b>Pre-closure 'Normal' Relative Unemployment Rate</b>
Chanute AFB, IL	Champaign	3.2%	6.8%	-3.6%
Reese AFB, TX	Lubbock	4.9%	6.8%	-1.9%
Griffiss AFB, NY	Oneida	6.1%	7.3%	-1.2%
KI Sawyer AFB, MI	Marquette	8.0%	8.4%	-0.4%
England AFB, LA	Rapides Parish	6.0%	6.4%	-0.4%
Plattsburgh AFB, NY	Clinton	7.7%	7.3%	0.4%
Myrtle Beach AFB, SC	Horry	6.1%	5.5%	0.6%
Pease AFB, NH	Rockingham	6.2%	5.6%	0.6%
Chase Field NAS, TX	Bee	7.4%	6.7%	0.7%
Wurtsmith AFB, MI	Iosco	9.2%	8.5%	0.7%
Grissom AFB, IN	Miami	7.1%	5.6%	1.6%
Loring AFB, ME	Aroostook	8.8%	6.7%	2.1%
Eaker AFB, AR	Mississippi	9.6%	7.0%	2.6%
Castle AFB, CA	Merced	15.9%	8.1%	7.8%

*Appendix B. Community Pre-Closure 'Normal' Relative Unemployment Rates*

## Appendix C

Annual Job Growth % is the average annualized job growth % across the entire Trajectory Period:

- Annual Job Growth % =  $\left[ \sqrt[\text{length of Trajectory period}]{(\text{Total Jobs})_{\text{end}} / (\text{Total Jobs})_{\text{start}}} \right] - 1$

For Rapides Parish and Louisiana then,

- $(\text{Annual Job Growth \%})_{\text{county}} = \left[ \sqrt[17 \text{ years}]{58,759 / 48,228} \right] - 1 = 1.17\%$
- $(\text{Annual Job Growth \%})_{\text{state}} = \left[ \sqrt[17 \text{ years}]{1,832,357 / 1,615,012} \right] - 1 = 0.75\%$

Relative Annual Job Growth % compares a county's performance to its control (i.e. the state):

- Relative Annual Job Growth % =  $(\text{Annual Job Growth \%})_{\text{county}} - (\text{Annual Job Growth \%})_{\text{state}}$

For Rapides Parish and Louisiana then,

- Relative Annual Job Growth % =  $1.17\% - 0.75\% = 0.42\%$

Thus, in an average year during the Trajectory Period, Rapides Parish experienced Job Growth 0.42% *higher* than did the state of Louisiana as a whole.

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