# Economic Impact of Kirtland AFB on New Mexico's Middle Rio Grande Region

## PROVIDED IN SUPPORT OF THE KAFB JOINT LAND USE STUDY

## 1.0 BACKGROUND

Kirtland Air Force Base (KAFB) is a sprawling 52,678-acre military complex in Bernalillo County. The base hosts more than 100 Federal commands, administrative offices, research laboratories, test and evaluation facilities, maintenance, air rescue, special operations and training centers. Employment associated with KAFB is estimated to represent one of every 14 jobs in the State of New Mexico.[1] Government contracting opportunities with KAFB are plentiful with some $100 million in local purchases and $135 million in local service contracts awarded in fiscal year 2008.[2]

In 1995 the U.S. Air Force announced that KAFB had been placed on its list of bases to be closed under the congressionally mandated Base Realignment and Closure (BRAC) process. Alert to the threat, the Albuquerque community created an ad-hoc committee to challenge the decision. The community highlighted the significance of the base as a national resource for research, testing and evaluation, and, with the assistance of New Mexico's Congressional delegation, succeeded in reversing the Air Force decision. KAFB was removed from the closure list prior to the BRAC Commission's vote on the closure recommendation.

More recently, KAFB found itself vulnerable once again. Surrounded to the north and west by urban development, the base was impacted when local zoning was approved for a residential and commercial development south of the base's boundaries. The decision, while necessary to accommodate Albuquerque's growing population, limited KAFB's capacity to conduct certain testing, evaluation and training missions. Lessons learned from this experience served as a "wake up" call to the community and the Air Force that KAFB's future could be jeopardized, not only from a future BRAC-type process, but from locally-approved land use changes.

[1] "Impacts of New Mexico's Military Installations on Jobs and Income," Military Base Planning Commission, State of New Mexico. February 2004.
[2] "Kirtland Economic Impact (FY08)," KAFB Office of Public Affairs. March 2009.

## 1.1 Role of the Mid-Region Council of Governments

The Mid-Region Council of Governments of New Mexico (MRCOG) is an association of local governments representing the city of Albuquerque and government entities in a four-county surrounding region. MRCOG was created in 1969 under the authority of the State of New Mexico to coordinate and conduct regional planning and provide public services. Its board of director is composed of representatives of its member governments. Membership today comprises:

**Cities**

- Albuquerque
- Belen
- Moriarty

**Towns**

- Bernalillo
- Edgewood
- Estancia
- Mountainair
- Rio Ranch

**Villages**

- Bosque Farms
- Corrales
- Cuba
- Encino
- Jemez Springs
- Los Lunas
- Los Ranchos
- San Ysidro
- Tijeras
- Willard

**Counties**

- Bernalillo County
- Sandoval County
- Torrance County
- Valencia County

**Government Units**

- Indian Tribes and Pueblos
- School Districts

MRCOG's mission is to strengthen its member communities by identifying and initiating regional planning strategies. Over time, MRCOG has assumed the important role of providing a forum for local governments to discuss and resolve issues that extend and/or overlap with other jurisdictions.

## 1.2 KAFB Joint Land Use Study

On Oct. 29, 2008, the U.S. Department of Defense's Office of Economic Adjustment awarded a grant to MRCOG to conduct a Joint Land Use Study (JLUS) for KAFB and Albuquerque's adjacent airport, the International Sunport. The study is to examine land use at the air base and in the surrounding areas with the objective of providing a common vision for future population and commercial growth. The study is intended to protect the assets of KAFB to support current and potential future missions, as well as the ability of the Sunport to continue its important role as part of the southwest transportation system. As the result of JLUS efforts elsewhere, local governments have agreed to adopt land use recommendations as part of their overall planning processes.

This report addresses the economic impact tasks of the JLUS and responds to a request from the MRCOG board to understand the full impact of employment and spending associated with KAFB and the Sunport. Included in the report are tables showing:

- Impacts on employment (jobs) in the four-county MRCOG region,
- Impacts on income in the four-county region,

- Impacts on total industrial output, a popular measure of economic strength that captures the value of materials, services, labor and inter-industry dependencies, on the four-county region, and
- Impacts on jobs and income in each of MRCOG's member counties.

## 1.3 Objectives of This Report

This report addresses two objectives. The first is to provide MRCOG and its member agencies estimated impacts on jobs, income, and regional industrial output associated with KAFB and Albuquerque's Sunport. The second objective is to suggest a consistent method for MRCOG and local planning agencies to track trends in employment and income over time as the result of changes in employment and spending associated with KAFB. This second objective responds to requests made to MRCOG during community meetings that were part of the JLUS outreach effort.

# 2.0 REGIONAL OVERVIEW

The MRCOG region occupies 9,289 square miles of high-desert mesa and river bosque. The region includes the Sandia-Manzano mountain range, a 57-mile ridge of granite and feldspar rising 10,678 feet above sea level at its highest and some 4,098 feet above the desert floor. A notable feature is the Rio Grande, the legendary river of the U.S. West, which flows north to south, providing the region with its only source of renewable water.

The region defined by MRCOG comprises the cities of Albuquerque, Belen, Moriarty, and the counties of Bernalillo, Sandoval, Torrance and Valencia. Edgewood, a small town in the southwestern corner of Santa Fe County, has been added to the MRCOG, technically expanding the Council's coverage by 8.7 square miles. Eleven of the State's 22 Native American pueblos are located within the region, as well as portions of the Jicarilla Apache and Navajo reservations. Other incorporated areas include the towns of Bernalillo, Estancia, Mountainair and Rio Rancho, and the villages of Bosque Farms, Corrales, Cuba, Encino, Jemez Springs, Los Lunas, Los Ranchos, San Ysidro, Tijeras and Willard.

## 2.1 Regional Population

Estimates provided by the U.S. Census Bureau place the MRCOG region's population at 845,913, with an additional 2,742 estimated for Edgewood. A competing estimate provided by the University of New Mexico's Bureau of Business and Economic Research (BBER) puts MRCOG's 2008 population at a much larger 875,008.

Exhibit 1 provides population trends for 1970-2000 and 2000-2008 estimated by the Census Bureau. Exhibit 2 highlights an estimated slowdown in the region's growth, a trend that mirrors State and U.S. estimates, shown in Exhibit 3.

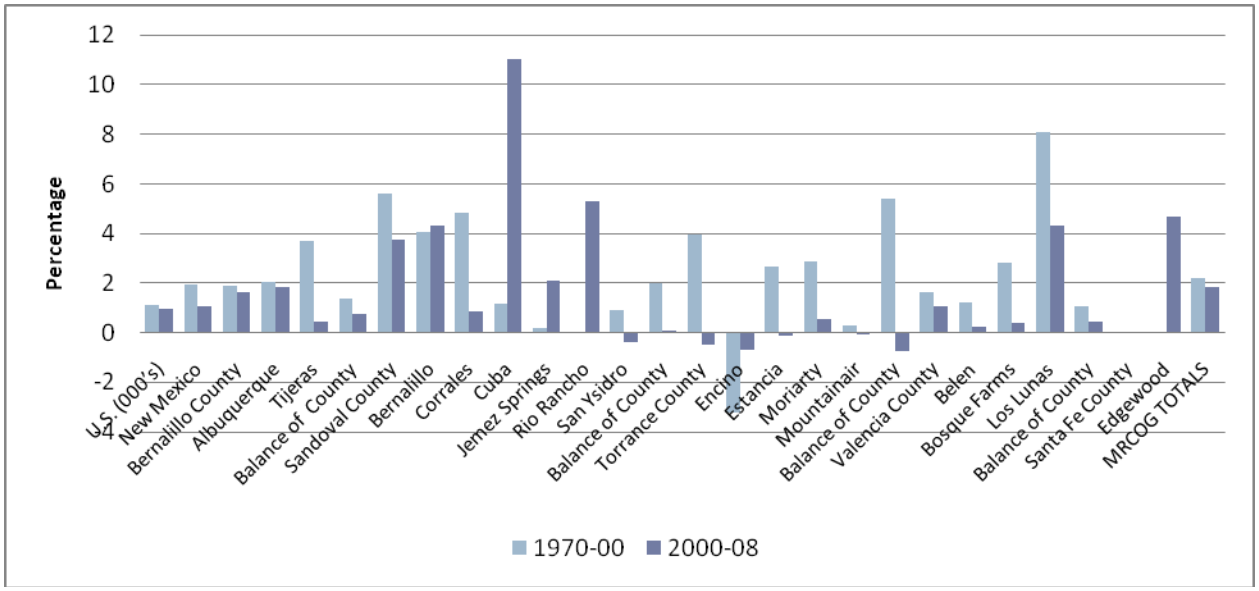
## Exhibit 1. Population Trends in Incorporated and Unincorporated Areas in the MRCOG Region

| Community | 1970 | 1980 | 1990 | 2000 | 2008 [r] | % Change (1970-2008) |
|---|---|---|---|---|---|---|
| **U.S. (000's)** | **203,302** | **226,542** | **248,718** | **281,422** | **304,060** | **49.6** |
| **New Mexico** | **1,017,055** | **1,303,303** | **1,515,069** | **1,819,046** | **1,984,356** | **95.1** |
| **Bernalillo County** | **315,774** | **420,262** | **480,577** | **556,678** | **635,139** | **101.1** |
| Albuquerque | 244,501 | 332,336 | 386,988 | 448,607 | 521,999 | 109.8 |
| Tijeras | 160 | 311 | 478 | 474 | 520 | 225.0 |
| Balance of County | 71,113 | 87,615 | 93,111 | 107,597 | 112,620 | 58.4 |
| **Sandoval County** | **17,492** | **34,400** | **63,319** | **89,908** | **122,298** | **599.2** |
| Bernalillo | 2,016 | 2,988 | 5,732 | 6,611 | 9,237 | 358.2 |
| Corrales | 1,776 | 2,791 | 5,503 | 7,334 | 7,787 | 338.5 |
| Cuba | 415 | 609 | 750 | 590 | 1,358 | 227.2 |
| Jemez Springs | 356 | 316 | 359 | 375 | 439 | 233.1 |
| Rio Rancho | n/a | 9,985 | 32,551 | 51,765 | 79,651 | n/a |
| San Ysidro | 182 | 199 | 345 | 238 | 229 | 25.8 |
| Balance of County | 12,747 | 17,512 | 18,079 | 22,995 | 23,597 | 85.1 |
| **Torrance County** | **5,290** | **7,491** | **10,285** | **16,911** | **16,269** | **207.5** |
| Encino | 250 | 155 | 131 | 94 | 89 | -64.4 |
| Estancia | 721 | 830 | 800 | 1,584 | 1,572 | 118.0 |
| Moriarty | 758 | 1,276 | 1,420 | 1,765 | 1,952 | 157.5 |
| Mountainair | 1,022 | 1,170 | 926 | 1,116 | 1,113 | 8.9 |
| Balance of County | 2,539 | 4,060 | 7,008 | 12,352 | 11,543 | 354.6 |
| **Valencia County** | **40,576** | **30,769** | **45,235** | **66,152** | **72,207** | **78.0** |
| Belen | 4,823 | 5,617 | 6,555 | 6,901 | 7,325 | 51.9 |
| Bosque Farms | 1,699 | 3,353 | 3,824 | 3,931 | 4,060 | 139.0 |
| Los Lunas | 973 | 3,525 | 6,135 | 10,034 | 14,153 | 1354.6 |
| Balance of County | 33,081 | 18,274 | 28,721 | 45,286 | 46,669 | 41.1 |
| **Santa Fe County** | Not a member of the MRCOG | | | | | |
| Edgewood | n/a | n/a | n/a | 1,893 | 2,742 | n/a |
| **MRCOG TOTALS** | **379,132** | **492,922** | **599,416** | **731,542** | **848,655** | **123.8** |

[r] Revised

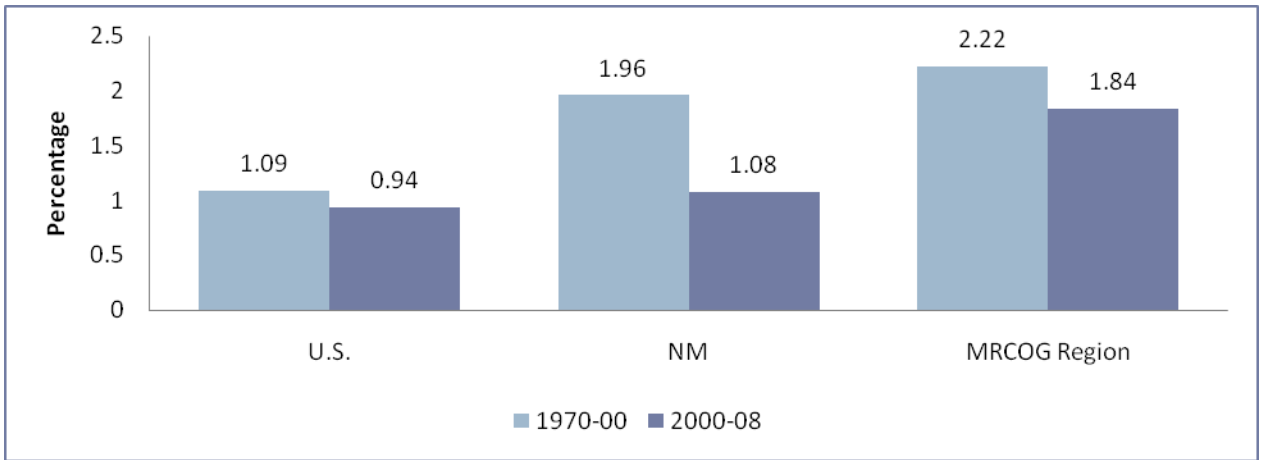
Source: 1970-2000 Population Counts by Decennial Census, U.S. Census Bureau. Found at www.census.gov/population/cencounts/nm190090.txt
2008 U.S. figures from Population Estimate Program, U.S. Census Bureau. Found at www.census.gov/
2000 and 2008 Sub-County Population Estimates, Bureau of Business and Economic Research, University of New Mexico. Found at www.unm.edu/~bber/
Author's calculations

**Exhibit 2. Average Annual Population Growth for Incorporated and Unincorporated Areas in the MRCOG Region, 1970-2000 and 2000-2008**




Source: 1970-2000 Population Counts by Decennial Census, U.S. Census Bureau. Found at www.census.gov/population/cencounts/nm190090.txt
2008 U.S. figures from Population Estimate Program, U.S. Census Bureau. Found at www.census.gov/.
2000 and 2008 Sub-County Population Estimates, Bureau of Business and Economic Research, University of New Mexico. Found at www.unm.edu/~bber/
Author's calculations

**Exhibit 3. Average Annual Population Growth Rates for the U.S., New Mexico and the MRCOG Four-County Region, 1970-2000 and 2000-2008**




Source: 1970-2000 Population Counts by Decennial Census, U.S. Census Bureau. Found at www.census.gov/population/cencounts/nm190090.txt
2007 U.S. figures from Population Estimate Program, U.S. Census Bureau. Found at www.census.gov/.
2000 and 2008 Sub-County Population Estimates, Bureau of Business and Economic Research, University of New Mexico. Found at www.unm.edu/~bber/
Author's calculations

## 2.2 Regional Economic Benchmarks

Exhibit 4 shows economic benchmark data for the U.S., New Mexico and MRCOG's four-county region. The data reveal the region has outpaced the State and U.S. in average annual growth in population, jobs (employment) and personal income. Median age in the MRCOG region is calculated at 35.8 years, identical to the statewide median age, but one year younger than the U.S. median.

Per capita income, a traditional measure of economic performance, is calculated at $33,294, averaged across the four-county region. This income level represents 108.4% of the statewide average of $30,706 but 86.2% of the nation's $38,615 average, as estimated for 2007.

A notable feature of the regional data is the high level of educational achievement on average across the four counties. Individuals with college bachelor's degrees (or greater) account for 28.0% of the region's population. This statistic compares to 23.5% college-educated for the State and 24.4% for the nation. High education levels typically are associated with strong personal earnings and greater-than-average regional per capita income. While personal earnings and per capita income in the MRCOG region do not exceed the national average, an educated population nevertheless serves as a positive economic indicator and fuels the potential for economic improvement.

In regard to regional poverty, a benchmark indicator known as the "rich-to-poor ratio" is calculated. The measure is based on the number of households with incomes less than $35,000 as a ratio to the number of households earning more than $100,000. For this indicator, the MRCOG region ranks above the State and below the U.S. averages with 1.42 MRCOG households reporting incomes of less than $35,000 for every household earning $100,000.

**Exhibit 4. Benchmark Economic Data for MRCOG Four-County Region**

| Performance Measure | Four-County Region | | | | Regional Avg | NM | U.S. |
|---|---|---|---|---|---|---|---|
| | Bernalillo | Sandoval | Torrance | Valencia | | | |
| Population Growth (Annualized rate, 1970-2008) | 1.86% | 5.25% | 1.77% | 1.53% | 2.14% | 1.77% | 1.06% |
| Employment Growth (Annualized rate, 1970-2007) | 3.19% | 6.94% | 2.82% | 2.60% | 8.55% | 2.82% | 1.86% |
| Personal Income Growth (Adjusted for Inflation, Annualized rate, 1970-2007) | 3.63% | 8.09% | 3.57% | 3.66% | 6.63% | 3.57% | 2.75% |
| Non-labor Income Share of Total Income, 2007 | 32.1% | 28.4% | 34.2% | 33.0% | 31.7% | 34.2% | 32.3% |
| Median Age (2008) | 35.9 | 34.9 | 35.8 | 35.7 | 35.8 | 35.8 | 36.8 |
| Per Capita Income (2007) | $ 34,983 | $ 29,476 | $ 30,706 | $ 26,715 | $ 33,294 | $ 30,706 | $ 38,615 |
| Average Earnings Per Job (2007) | $ 39,499 | $ 39,847 | $ 37,006 | $ 28,761 | $ 38,442 | $ 37,006 | $ 44,605 |
| Education Rate (% of population 25 and over who have a college degree)* | 30.5% | 24.8% | 23.5% | 14.8% | 28.0% | 23.5% | 24.4% |

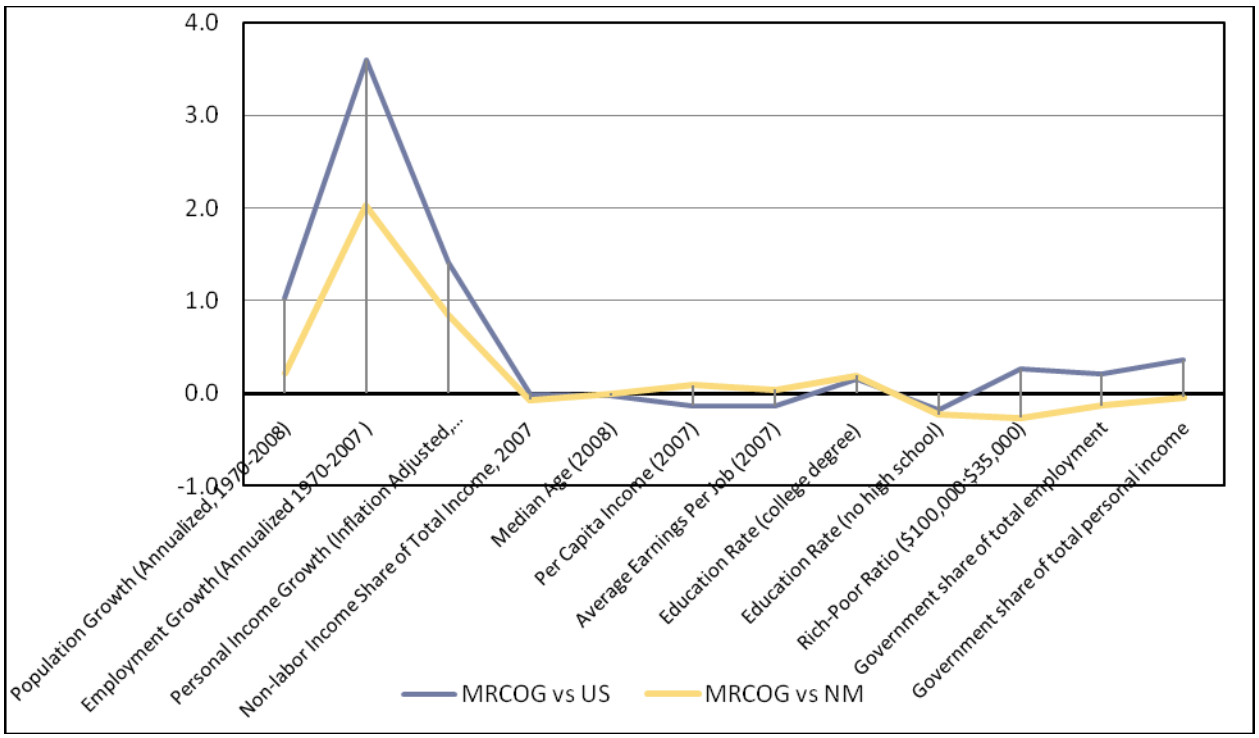
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Education Rate (% of population 25 and over who have less than a high school diploma)* | 15.6% | 14.0% | 21.1% | 23.9% | 16.2% | 21.1% | 19.6% |
| Rich-Poor Ratio (for each household that made over $100K, how many households made less than $35K)* | 1.45 | 1.05 | 1.93 | 2.05 | 1.42 | 1.93 | 1.12 |
| Government share of total employment | 15.9% | 18.3% | 18.8% | 19.3% | 16.2% | 18.8% | 13.4% |
| Government share of total personal income | 20.3% | 9.3% | 19.1% | 10.6% | 18.3% | 19.1% | 13.4% |

NOTE: No comparable data for Torrance County rich-poor ratio. Total personal income includes net earnings by place of residence; dividends, interest, and rent; and personal current transfer receipts.

Source: All data derived from Regional Economic Accounts, Bureau of Economic Analysis, U.S. Department of Commerce. Found at www.bea.gov with the exception of data marked *, which comes from the 2006-2008 American Community Survey 3-Year Estimates, Bureau of the Census, U.S. Department of Commerce. Found at factfinder.census.gov
Author's calculations

Exhibit 5 charts the MRCOG region economic benchmarks as indexed to the New Mexico and U.S norms. The data reveal strong economic performance in employment and personal income growth compared to the State and nation. On the downside, the data identify an overreliance on government employment in the region and State, a factor that is likely driving positive employment and income levels overall.

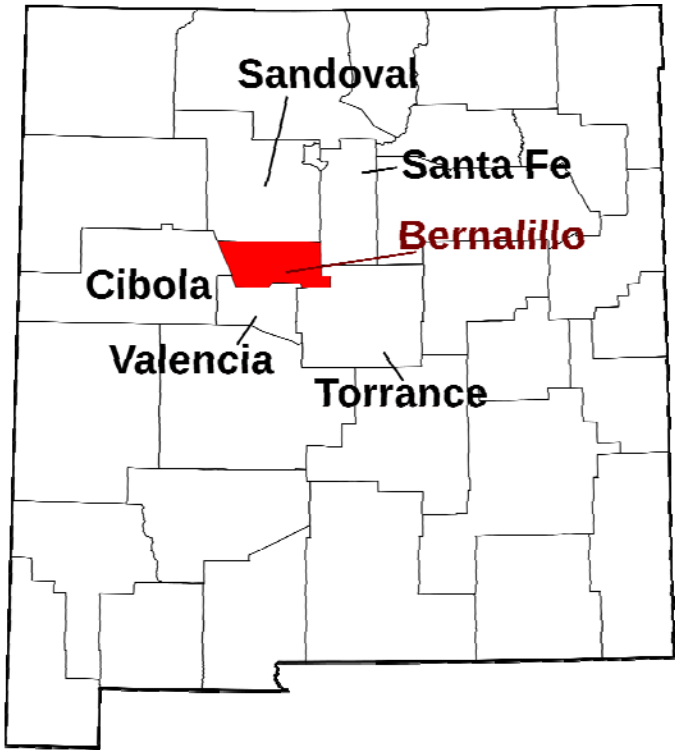
**Exhibit 5. MRCOG Region (Four-County) Benchmark Data Indexed to NM and the U.S.**




Source: Derived from Benchmark Economic Data in Exhibit 2 and the author's calculations.

### 2.2.1 Bernalillo County

Bernalillo County, the largest in population and industrial output in the MRCOG region, covers 1,166 square miles of desert mesa in central New Mexico. The County includes stretches of the Rio Grande and much of Sandia Mountain range, looming large over the city of Albuquerque. Bernalillo County is home to an estimated 635,139 people, the largest county in the State by population, representing nearly one out of every three New Mexicans.[3] From 1970 to 2008, the County's population grew by 319,365, a 101% increase, accounting for an average annual growth of 1.83%, exceeding both the State (1.77%) and national averages (1.06%).[4]




Bernalillo County shown in reference to its surrounding counties.

Employment and income data for Bernalillo County show healthy growth in both jobs and income. From 1970 through 2007, the County recorded an annualized growth in jobs of 3.19%, higher than the State's rate of 2.82% and the 1.86% rate for the U.S.

Per capita income, a traditional indicator of economic health, is estimated at $34,983 for 2007, representing 113.9% of the State average ($30,706) and 90.6% of the national average ($38,615).

The percentage of the adult population in Bernalillo County with a college degree is very high at 30.5% and ranks as the highest among counties in the MRCOG region.

Some 16,898 private, nonfarm establishments are located in Bernalillo County representing employment of 265,900, or 41.4% of the State's total private, nonfarm job base. Government jobs represent 15.9% of total employment in Bernalillo County, compared to 13.4% for the nation, and account for a larger 20.3% of the County's total personal income.

Commuting data from 1981 through 2005 suggest that Bernalillo County is an "employment hub" as income derived from people commuting into the County to work exceeds the income from people

[3] State and County QuickFacts, Census Bureau, U.S. Department of Commerce. Found at http://quickfacts.census.gov/qfd/states/35/35001.html/ Revised Nov. 17, 2009.
[4] *Ibid.* and author's calculations.

commuting out of the County.[5] Regarding employment, over time the County has seen steady growth in the number of professional, scientific and technical service jobs. A decline was noted in manufacturing jobs.[6] The largest employment sectors today are government (15.9% of total jobs), retail (11.4%), health care and social assistance (11.4%).

### Employment Diversity

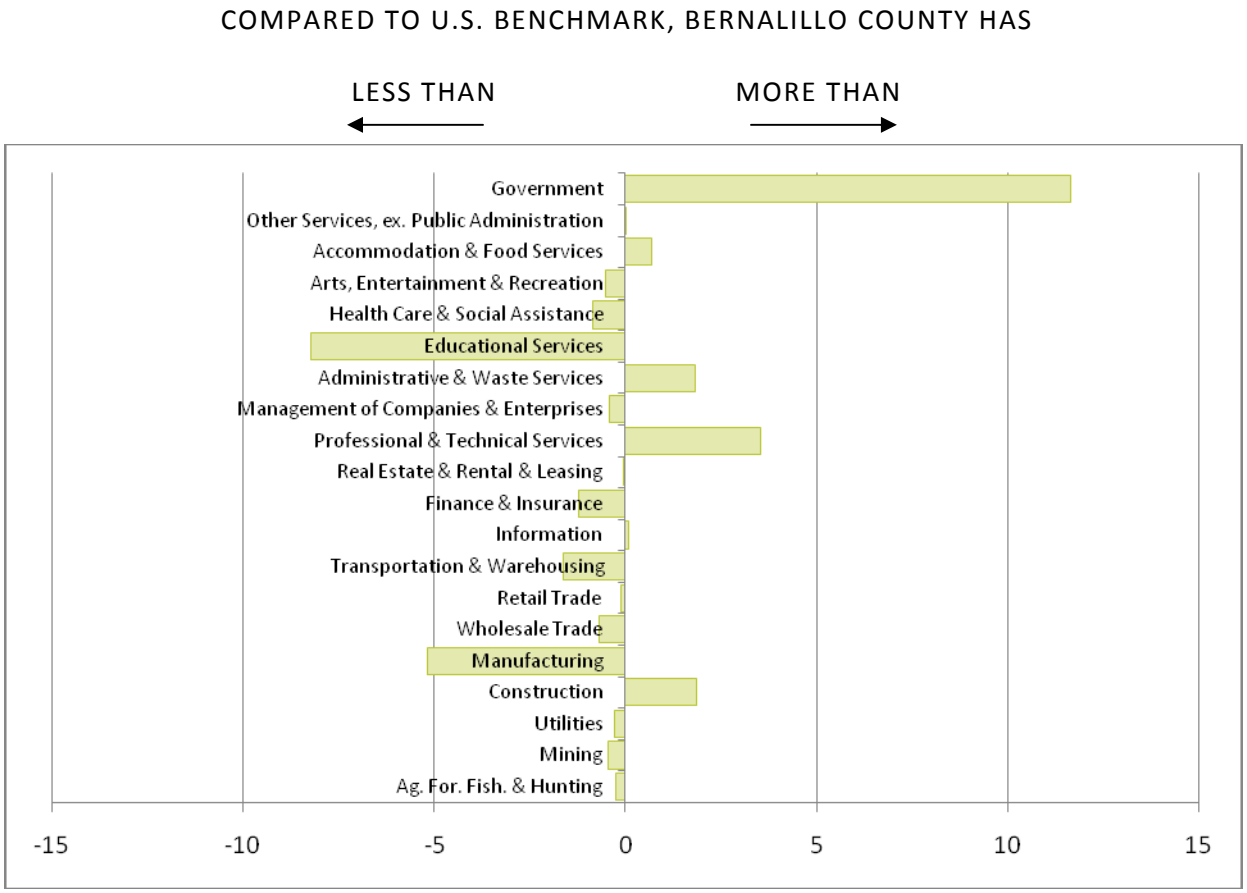
One method for evaluating the strength of a region's economy is to calculate the percentage of employment from earned income (wage and salary jobs) by industry sector and compare this to the U.S. norm. Applying this method, we find Bernalillo County with a healthy employment base, diverse in many respects, but somewhat dependent on a large number of high-paying government jobs. Employment sectors (wage and salary jobs only) that diverge most from the U.S. norm:

- Over reliance on government (18.9% compared to 7.2% in the U.S.);
- Under reliance on private sector educational services (1.1% compared to 9.4% in the U.S.);
- Over reliance on professional, scientific, and technical services (9.3% compared to 5.7% in the U.S.); and
- Under reliance on manufacturing (4.9% compared to 10.1% in the U.S.).

[5] Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce, 2007. Found at www.bea.gov

[6] Derived from *Quarterly Census of Employment and Wages*, New Mexico Department of Workforce Solutions, 2001 and 2007. Found at www.dws.state.nm.us/

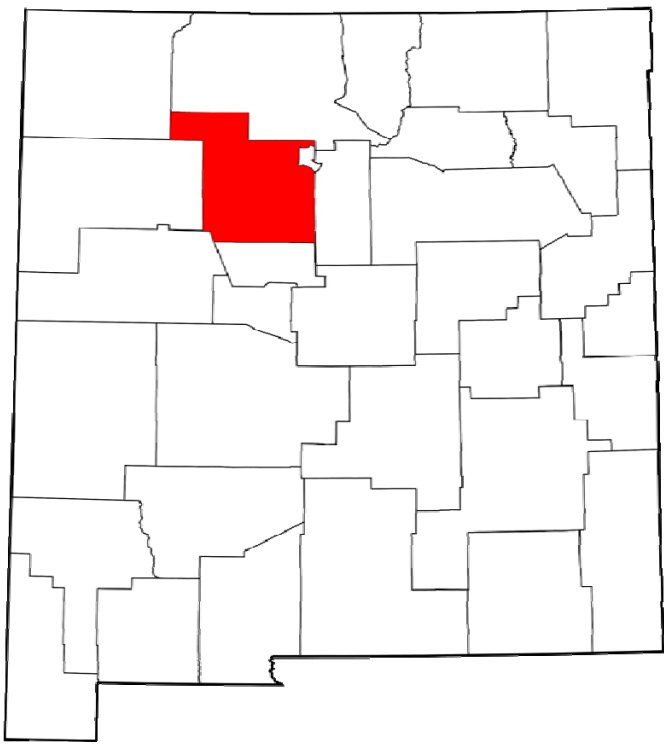
**Exhibit 6. Bernalillo County Wage and Salary Employment by Industry Sector Indexed to U.S. Norm, 2008**




Source: Quarterly Census of Employment and Wages, Bureau of Labor Statistics, U.S. Department of Labor. Found at http://www.bls.gov/
Occupational Employment & Wage Estimates, Bureau of Labor Statistics, U.S. Department of Labor. Found at http://www.bls.gov/oes/oes_dl.htm

### 2.2.2 SANDOVAL COUNTY

Sandoval County covers 3,174 square miles of high-desert mesa and includes stretches of the Rio Grande and portions of the Sandia Mountain range. The summit of the County's Redondo Peak marks the highest point of elevation in the County, rising 11,258 feet above sea level, and is located within the Valles Caldera National Preserve. The Census Bureau estimates the County's 2008 population at 122,298, the second largest of the MRCOG counties. From 1970 to 2008, the County's population grew by an extraordinary 599.2% with 104,806 additional individuals estimated living in the County in 2008, compared to 17,492 people counted in the 1970 Census. For the same 38-year period, average annual growth is calculated at 5.25%, a remarkable rate by any standard.



Sandoval County is part of the Albuquerque Metropolitan Statistical Area (MSA).

Employment and income data for Sandoval County show strong growth in jobs and income. From 1970 through 2007, the County recorded an annualized growth in jobs of 6.94%, higher than the State's rate of 2.82% and 1.86% rate for the U.S. Per capita income, a traditional indicator of economic health, was estimated at $29,476 for 2007, representing 96% of the State's average ($30,706) and 76% of the national average ($38,615).

The percentage of the adult population in Sandoval County with a college degree is 24.8, higher than the statewide rate (23.5%) and comparable to the nation's average (24.4%).

Some 1,699 private, nonfarm firms are established in the County representing employment of 29,687.[7] The largest employment sectors are government, manufacturing, retail, and food and accommodation services. Government jobs represent 18.3% of total employment in the County, but account for merely 9.3% of total personal income. This compares to 13.4% government employment for the nation and the same 13.4% for government's share of the nation's total personal income. Commuting data from 1981 through 2005 suggest that Sandoval County is home

[7] Quickfacts, Census Bureau, U.S. Department of Commerce. 2007. Found at http://quickfacts.census.gov/qfd/states/35/35043.html

to commuters who travel out of the County to work. Income derived from people commuting out of the County exceeds income from people commuting into the County to work.[8]

Overall, Sandoval County hosts a new, fast-growing economy with high economic impacts from construction. The County benefits from easy access by interstate highway to the city of Albuquerque, the MRCOG region's top commercial center.

A note here about fast-paced growth: There is a tendency for local U.S. economies to trend over time toward the U.S. norm. This is likely to occur in Sandoval County. With time, industry sectors in the County are likely to shift, allowing for greater diversity in employment and income.

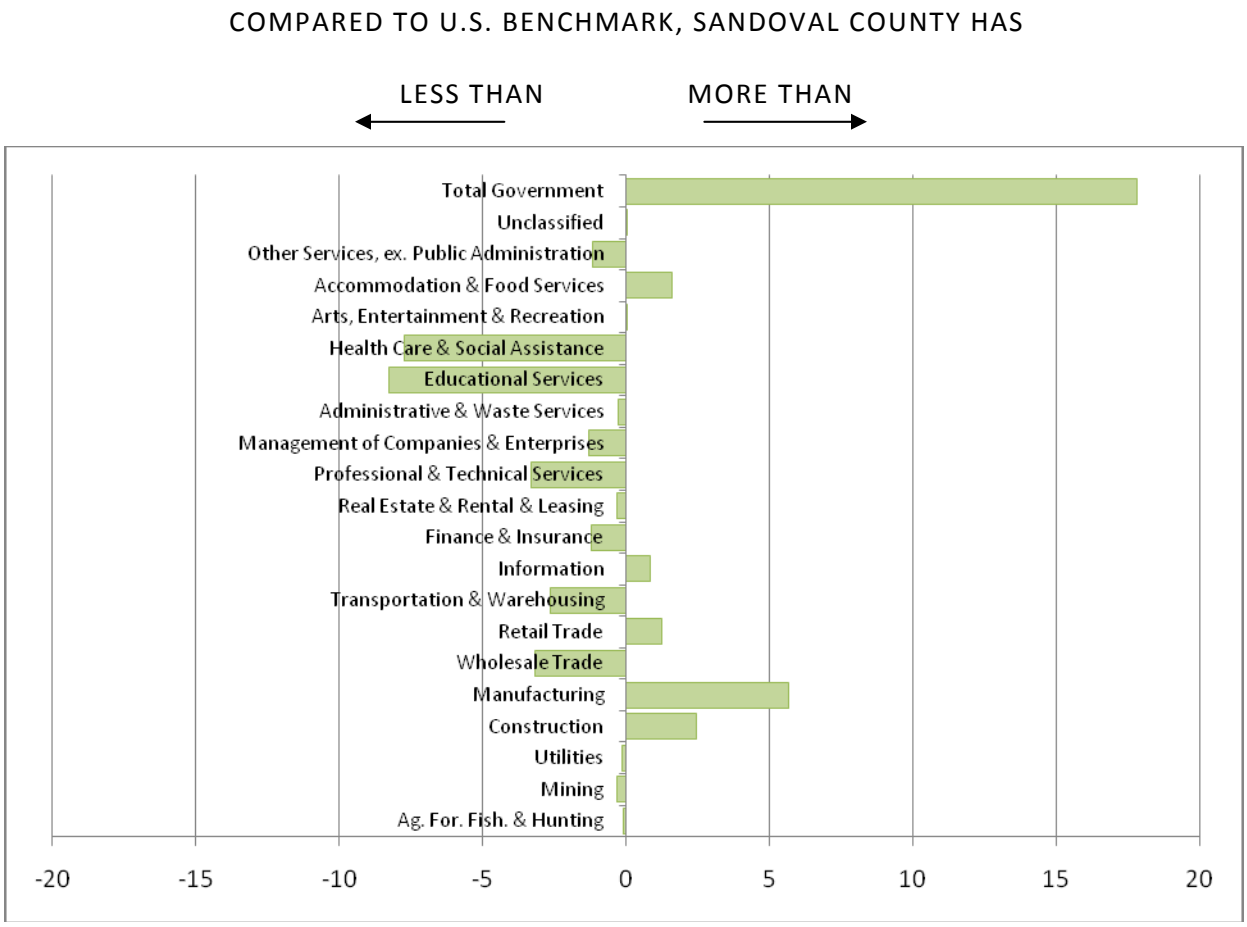
### Employment Diversity

One method for evaluating the strength of a region's economy is to compare the percentage of employment from earned income (wage and salary jobs) by industry sector, comparing this to the U.S. norm. Using this method for Sandoval County, a comparison can be made between the County's employment base and that of the nation as a whole. Sandoval County employment sectors (wage and salary jobs only) that diverge most from the U.S. norm are:

- Over reliance on government (25.0% compared to 7.2% in the U.S.);
- Under reliance on private educational services (1.1% compared to 9.4% in the U.S.);
- Under reliance on healthcare and social assistance (4.5% compared to 12.2% in the U.S.)
- Over reliance on manufacturing (15.8% compared to 10.1% in the U.S.)

[8] Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce, 2007. Found at www.bea.gov

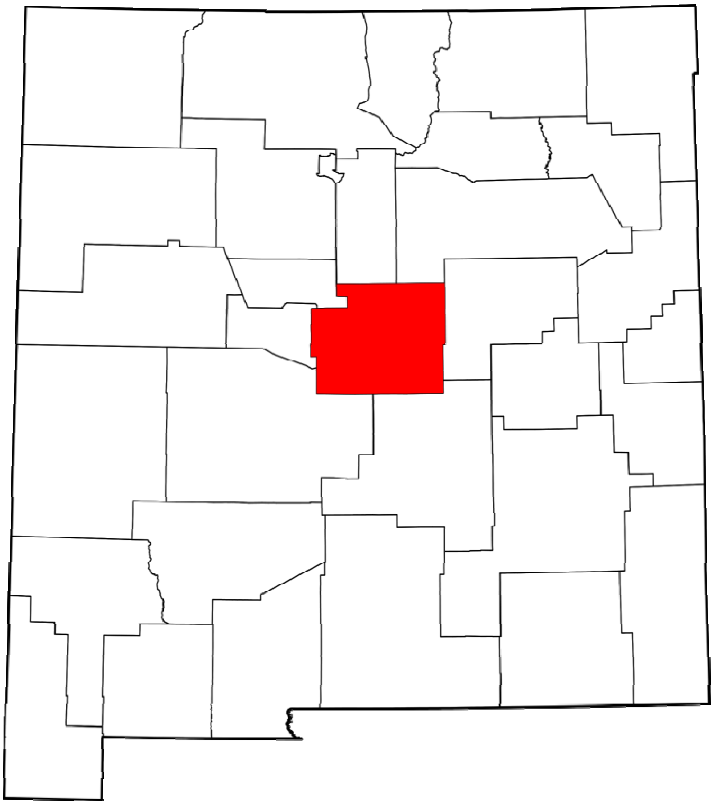
**Exhibit 7. Sandoval County Wage and Salary Employment by Industry Sector Indexed to U.S. Norm, 2008**




Source: Quarterly Census of Employment and Wages, Bureau of Labor Statistics, U.S. Department of Labor. Found at http://www.bls.gov/
Occupational Employment & Wage Estimates, Bureau of Labor Statistics, U.S. Department of Labor. Found at http://www.bls.gov/oes/oes_dl.htm

### 2.2.3 TORRANCE COUNTY

Torrance County, covering 3,345 square miles, is home to scenic, gently rolling grasslands at elevations of 6,000 to 6,200 feet. The Manzano Mountains on the County's eastern edge provide the strongest geographic relief. The Census Bureau estimates the County's 2008 population at 16,269, the smallest of the MRCOG's four counties. From 1970 to 2008, Torrance County's population grew by 11,648, a 202% increase, accounting for average annual growth of 3.95%, exceeding both the State (1.77%) and national averages (1.06%). To date, the Census Bureau estimates the County has experienced a recent swing in population with 669 fewer individuals living in the County in 2008 than in 2000. This accounts for negative growth (-0.50%) since 2000. The 2010 Census is likely to clarify which direction the County's population has taken in the past 10 years.



Torrance County occupies the largest land area among counties in MRCOG's four-county region.

Employment and income data for Torrance County show healthy growth in jobs and income. From 1970 through 2007, the County recorded average annual growth in jobs of 3.12%, higher than rates for the State (2.82%) and the nation (1.86%). Per capita income, a traditional indicator of economic health, is estimated at $25,184 for 2007, lowest among the MRCOG counties, and well below both the State ($30,706) and U.S. ($38,615) averages.

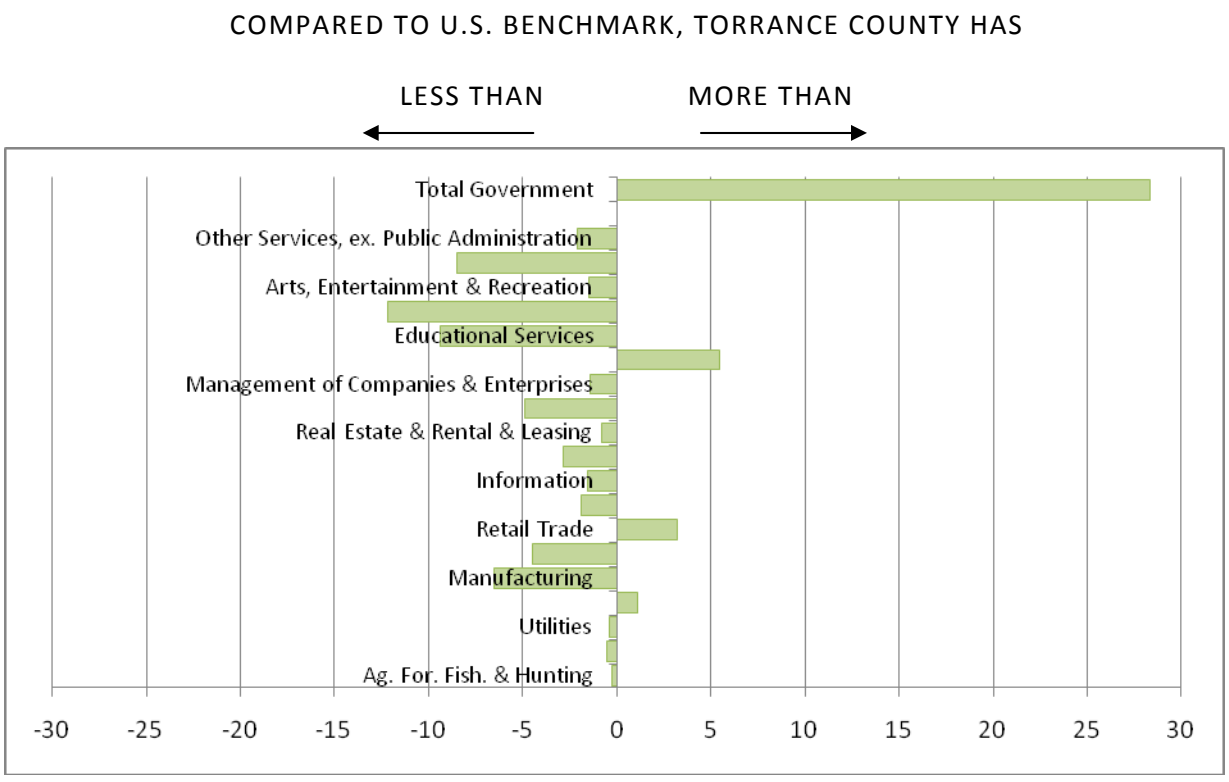
The percentage of the adult population in Torrance County with a college degree is low at 14.4%; this compares to 23.5% college-educated for the State and 24.4% for the nation. Some 245 private, nonfarm firms are established in the County representing employment of 2,342. Government jobs represent 18.8% of total employment in Torrance County, compared to 13.4% for the nation. Government accounts for a larger 19.1% of total personal income.

#### Employment Diversity

When we examine employment from earned income (wage and salary jobs only) for Torrance County, we find the largest sectors are government, retail trade, and administrative and waste services. Comparing the County's earned income employment with the U.S. norm, we find the County demonstrates a fragile employment base with a lack of diversity in its job sectors. Employment sectors (wage and salary jobs only) that diverge most from the U.S. norm are:

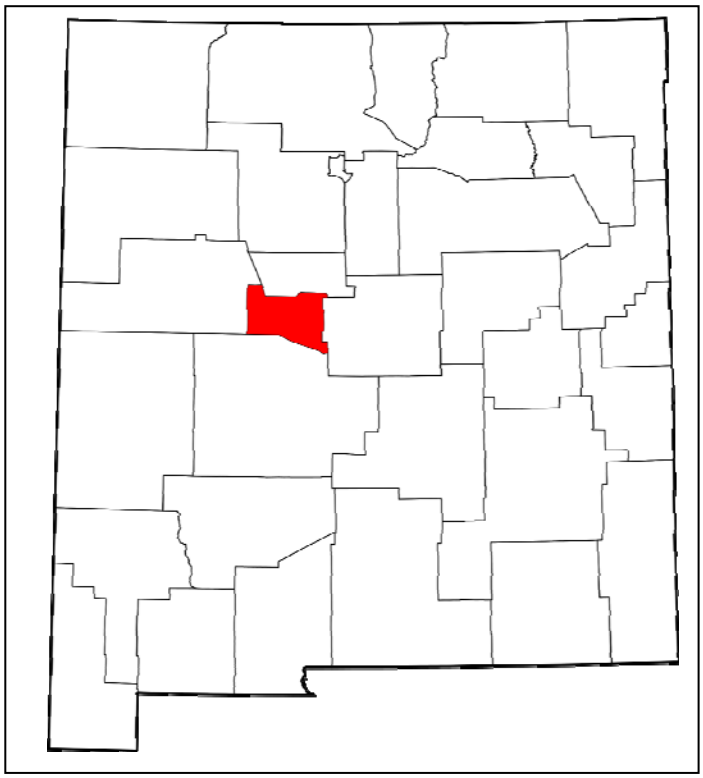
- Over reliance on government (35.6% compared to 7.2% in the U.S.);
- Under reliance on health care and social services (< 0.5% compared to 12.20% in the U.S.);
- Under reliance on manufacturing (3.6% compared to 10.1% in the U.S.); and
- Over reliance on administration and waste services (11.7% compared to 6.2% in the U.S.).

**Exhibit 8. Torrance County Wage and Salary Employment by Industry Sector Indexed to U.S. Norm, 2008**




Source: Quarterly Census of Employment and Wages, Bureau of Labor Statistics, U.S. Department of Labor. Found at http://www.bls.gov/
Occupational Employment & Wage Estimates, Bureau of Labor Statistics, U.S. Department of Labor. Found at http://www.bls.gov/oes/oes_dl.htm

### 2.2.4 VALENCIA COUNTY



Valencia County covers 1,068 square miles of desert mesa and includes stretches of the Rio Grande and the southern portion of the Manzano Mountains. Much of the County's population is located in small communities established alongside the Rio Grande. The County is home to an estimated 72,207 people. From 1970 to 2008, the County's population grew by 31,631 individuals, a 78.0% increase, accounting for an annual growth rate of 1.53%, less than the State (1.77%) but greater than the national (1.06%) averages.

Employment and income data for Valencia County show healthy growth in both jobs and income. From 1970 through 2007, the County recorded an average annual growth in jobs of 1.86%, less than the State rate (2.82%) but higher than the rate for the U.S. (1.86%). Per capita income, a traditional indicator of economic health, was estimated at $26,715 for 2007, well below the State ($30,706) and national ($38,615) averages.

The percentage of the adult population in Valencia County with a college degree is low at 14.8%; this compares to 23.5% college-educated Statewide and 24.4% on average for the nation. Some 1,026 private, nonfarm firms are established in the County representing employment of 12,159. Government jobs represent 16.2% of total employment in Valencia County, compared to 18.8% for the State and 13.4% for the nation. The government accounts for 18.3% of total personal income, compared to 19.1% for the State and 13.4% for the U.S.

#### Employment Diversity

When we examine employment from earned income (wage and salary jobs only) for Valencia County, we find the largest sectors are government, health care and social assistance, and retail trade. Comparing the County's earned income employment with the U.S. norm, we find the County hosts a moderately active and healthy economy, diverse in many respects, but somewhat dependent on a large number of government jobs. Employment sectors (wage and salary jobs only) that diverge most from the U.S. norm are:

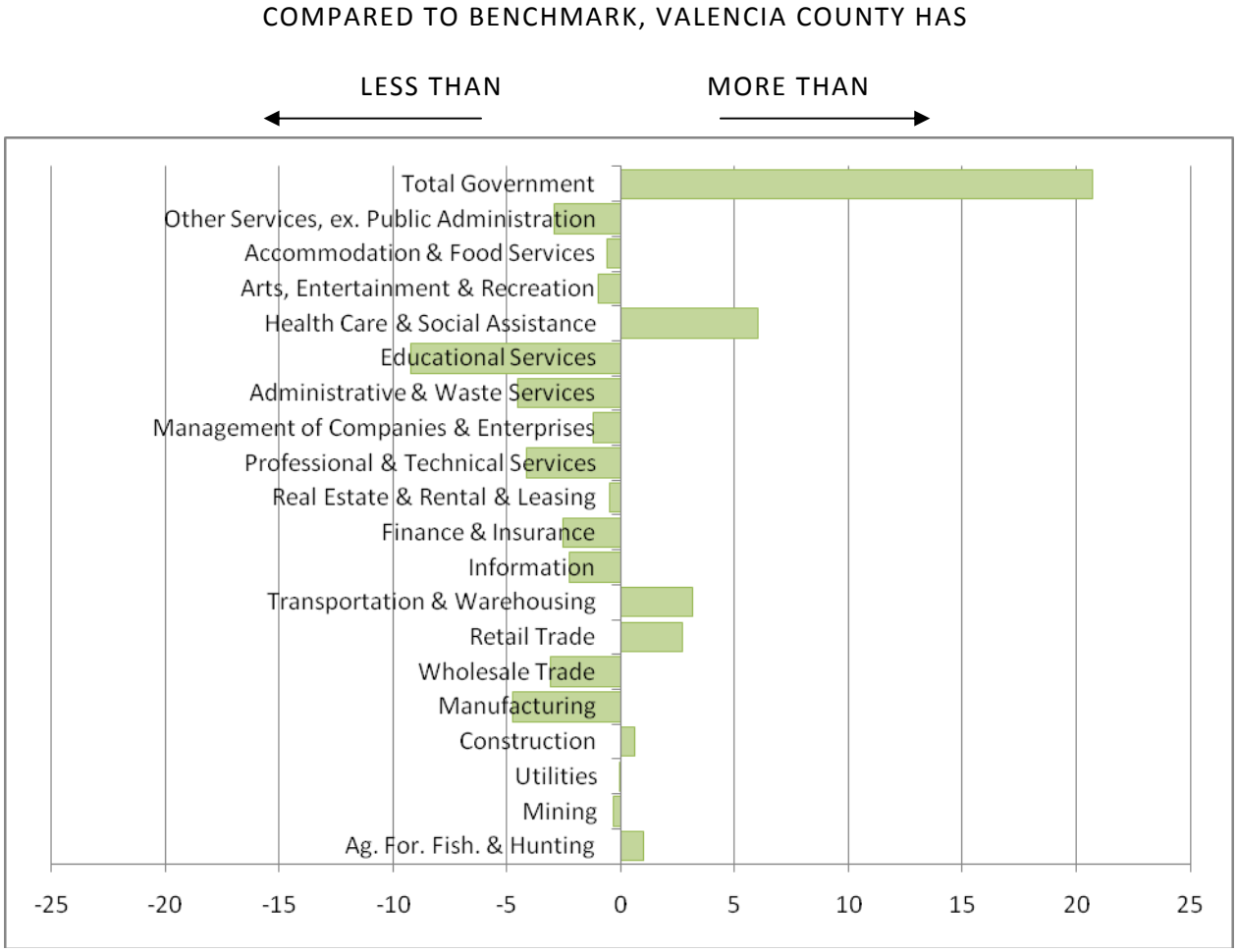
- Over reliance on government (28.0% compared to 7.2% in the U.S.);
- Under reliance on educational services (0.16% compared to 9.4% in the U.S.);



Valencia County, which was formerly much larger in area, lost 80% of its territory in 1981 with the creation of

- Over reliance on health care and social assistance (18.2% compared to 12.2% in the U.S.); and
- Under reliance on manufacturing (5.4% compared to 10.1% in the U.S.).

**Exhibit 9. Valencia County Wage and Salary Employment by Industry Sector Indexed to the U.S. Norm, 2008**




Source: Regional Economic Accounts, Bureau of Economic Analysis, U.S. Department of Commerce. Found at http://www.bea.gov/regional/reis/action.cfm.
Occupational Employment & Wage Estimates, Bureau of Labor Statistics, U.S. Department of Labor. Found at http://www.bls.gov/oes/oes_dl.htm

# 3.0 METHODOLOGY

## 3.1 Data Collection

Exhibit 10 provides the baseline employment and spending data (inputs) used for this economic analysis. The analysis is conducted using data from Federal Fiscal Year (FY) 2008, the most current year for which consistent data can be found across all agencies. Results were estimated for the 2008 calendar year.

## 3.2 KAFB

KAFB is a large installation with a significant role in providing munitions maintenance, research and development, readiness, air rescue and special operations, and base operating support. The 377th Air Base Wing of the Air Force Materiel Command (AFMC) manages KAFB facilities. The installation hosts well over 100 Federal units with thousands of contractors providing support. Some contractors currently work at locations off-site, as space on and near KAFB is limited.

Federal operations based on KAFB are:

- Air Force Nuclear Weapons Center and its subordinate wings, the 498th Nuclear Systems Wing and the 377th Air Base Wing;
- Defense Threat Reduction Agency, Albuquerque Office;
- Air Force Safety Center;
- Air Force Inspection Agency;
- Air Force Operational Test and Evaluation Center;
- 58th Special Operations Wing;
- Space Development and Test Wing;
- New Mexico Air National Guard's 150th Fighter Wing;
- Directed Energy and Space Vehicle Directorates of the Air Force Research Laboratory;
- Department of Energy (DOE) Albuquerque Office;
- National Nuclear Security Administration; and
- Sandia National Laboratories.

By far, the largest employers at KAFB are the U.S. Air Force, Sandia National Laboratories and the Albuquerque DOE office. Other tenants account for merely 4.1% of employment and less than 3.0% of total outside spending.

Considerable effort was made during the course of this analysis to account for employment and spending at all military, defense-related and tenant organizations associated with KAFB — military, Federal civilian and contractor. However, some organizations on KAFB require high levels of security clearance for employment, and the number of jobs, the amount of payroll and contract spending at these offices may be unavailable.

**Exhibit 10. Input Data for New Mexico-Only Employment and Spending by Organization, 2008**

| | Employment | | | | Spending | | |
|---|---|---|---|---|---|---|---|
| Agency | Active Duty, Guard & Reserve | Federal Appropriated | Contractor & Unappropriated Positions | Total Employment | Active Duty & Civilian Payroll | Procurement & Contract | Total Regional Spending |
| **KAFB** | 4,188 | 2,791 | 2,718 | 9,697 | $729,652,824 | $982,576,981 | $1,712,229,805 |
| **Sandia / DOE** | n/a | 8,885 | 2,139 | 11,024 | $975,903,800 | $672,885,796 | $1,648,789,596 |
| **Total** | **4,188** | **11,676** | **4,857** | **20,721** | **$1,705,556,624** | **$1,655,462,777** | **$3,361,019,401** |

Source: *Economic Impact Statement, Fiscal Year 2008.* Office of Public Affairs, Kirtland AFB. Issued March 2009.
DOE employment and contract data provided for by DOE-Albuquerque for SNL, NNSA HQ, SC, SSO, LASO, EM, Emr Ops, OST, NA-64. Provided Aug. 21, 2009.

## 3.3 Data Analysis

Input-Output (I/O) analysis is a scientifically reliable method for measuring the economic consequences of employment and spending and was used to determine the impacts on employment (jobs), value-added (income), and total industry output (materials, services, labor and inter-industry dependencies) on the four-county MRCOG region. For this study, I/0 also was used to estimate impacts at the county level in jobs and income.

The equation for I/O modeling can be interpreted as:

$$\Delta Y = (I - A)^{-1} \Delta X$$

Where:

$\Delta Y$ = Change in total industry output, value added, or employment

$(I - A)^{-1}$ = Multiplier

$\Delta X$ = Change in employment or spending at military installation

Data on the economic sector linkages for KAFB was obtained from the IMPLAN 3.0.2.1 (2009) database, a popular software program used to estimate the impact of changes in spending in 436 industrial sectors. An older version of the IMPLAN software was adopted by the U.S. Department of Defense and used for impact estimations during the 2005 BRAC process.

Data analysis took into account two kinds of spending: (1) military procurement, construction and general contracting and (2) household spending from military and tenant payrolls. Total impact on jobs and income for each kind of spending was calculated as the sum of the direct, indirect and induced effects.

To determine the impact from spending on procurement, construction and general contracting, the model took into account the types of spending. For example, much of the spending at KAFB serves a research, testing and support mission. This differs from direct spending on military construction. To account for this difference, the "Scientific Research and Development" industry sector (376) was used to model research and development activities, while the noncommercial "New Nonresidential Structures" sector (36) was used to determine impacts from construction.

To determine the impact from payrolls, household spending was modeled using a nationwide median-income sector as a proxy. Because of spending patterns of military personnel, who tend to purchase certain household commodities from military sources on base, rather than in the local community, an adjustment factor of 0.85 was used on direct payroll figures, as is standard in studies of this type.

The model estimates economic impact or, from another perspective, the gain (or loss) to the region should employment or spending be increased (or reduced). Under no circumstance does the model predict the expansion or reduction of any agency or facility at KAFB.

A note here about I/O modeling: no single modeling technique is perfect for all purposes. Following are several assumptions of I/O modeling that should be taken into account when interpreting the results:

- Impacts are calculated as numerically linear and proportional;
- Each industry is assumed to have unlimited access to the materials necessary for its production;
- Changes in the economy are assumed to affect an industry's output but will not alter the mix of materials and services that are required to make an industry's products; and
- Each industry is treated as if it provides a single primary or main product, and all other products of that industry are viewed as byproducts.

## 3.4 Impact Analysis and Multipliers

Impact analysis involves the use of multipliers [the $(I - \alpha)^{-1}$ in the earlier I/O equation] to estimate the direct, indirect and induced impacts of a change in spending on the regional economy. The basic premise underlying the multiplier process is that one individual's spending is another person's income. An initial injection of funds into an economy will stimulate the recipient to spend. The spending will become income for another. The second person will spend some of that income, which will become a third person's income, and so on. Not all of the initial injection of funds stays in the local economy. Some money will be saved; some will be paid in taxes and some will be spent on goods and services outside of the local area.

The size of a community's multiplier is a function of the local economy's propensity to import from outside the area; the propensity of individuals to save and the amount of taxes paid. For the current study, hundreds of multipliers were calculated specific to the MRCOG region, each of MRCOG's four counties and for each of the region's active industrial sectors.

An example of employment multipliers used in the study:

| Employment | |
|---|---|
| Security services | 0.417 |
| Scientific research & development services | 1.494 |
| Environmental services | 1.681 |

# 4.0 FINDINGS

This analysis estimates the economic impact of employment and spending at KAFB including its defense industry tenants, Sandia National Laboratories and the DOE Albuquerque Office as well as several smaller, associate units. Exhibit 11 shows estimated impacts for the four-county MRCOG region as a whole. Exhibits 12 through 15 provide impacts for each of MRCOG's individual county governments of Bernalillo, Sandoval, Torrance and Valencia.

Employment and dollar-value impacts are estimated as direct (real dollars or employment), indirect, and induced and are summed for their total. Direct impacts are those identified in actual job numbers and dollars spent. Indirect impacts are the result of direct spending in the local economy, allowing for ordinary growth in manpower and costs as local employment and spending changes. Induced impacts are those felt at the level of the household as income changes.

Final impacts are presented (fifth column) as a percentage of their contribution to the region's total economy.

**Exhibit 11. Estimated Impacts of Employment and Spending on the MRCOG Region, 2008**

| | Military & Civilian Appropriated | Contractor, Construction & Procurement | Totals | % Regional Total |
|---|---|---|---|---|
| Employment (job number) | | | | |
| Direct | 15,864 | 4,857 | 20,721 | |
| Indirect | 0 | 2,887 | 2,887 | |
| Induced | 9,287 | 1,856 | 11,143 | |
| Total | 25,151 | 9,600 | 34,751 | 9.11 |
| | | | | |
| Labor Income ($) | | | | |
| Direct | 1,498,093,000 | 252,469,300 | 1,750,562,300 | |
| Indirect | 0 | 110,364,261 | 110,364,261 | |
| Induced | 320,135,281 | 63,496,563 | 383,631,844 | |
| Total | 1,818,228,281 | 426,330,124 | 2,244,558,405 | 14.96 |
| | | | | |
| Total Industry Output ($) | | | | |
| Direct | 1,809,643,000 | 1,058,374,000 | 2,868,017,000 | |
| Indirect | 0 | 334,322,679 | 334,322,679 | |
| Induced | 998,859,955 | 199,447,306 | 1,198,307,261 | |
| Total | 2,808,502,955 | 1,592,143,985 | 4,400,646,940 | 9.76 |

Source: Impacts calculated in IMPlan v. 3.0.2.1. Author's calculations.

As shown, the analysis finds employment and spending associated with KAFB account for 34,751 in regional jobs, $2.24 billion in annual wages and salaries, and $4.40 billion in total industry output, an aggregate measure of the total impacts to all sectors. Compared to the region's total economic base, the estimates represent 9.11% of all jobs, 14.96% of all earned income and 9.76% of the region's total industrial output.

## 4.1 County Estimates

In this section, impacts are calculated for each of MRCOG's four-member counties. Final impacts are presented as a percentage of their contribution to the county's total economy.

**Exhibit 12. Estimated Impacts of Employment and Spending on Bernalillo County, 2008**

| | Military & Civilian Appropriated | Contractor, Construction & Procurement | Totals | % County Total |
|---|---|---|---|---|
| Employment (job number) | | | | |
| Direct | 14,702 | 3,679 | 18,381 | |
| Indirect | 0 | 2,676 | 2,676 | |
| Induced | 8,994 | 1,759 | 10,753 | |
| Total | 23,696 | 8,114 | 31,810 | 9.56 |
| | | | | |
| Labor Income ($) | | | | |
| Direct | 1,430,828,000 | 181,968,384 | 1,612,796,384 | |
| Indirect | 0 | 102,544,384 | 102,544,384 | |
| Induced | 312,743,300 | 61,083,904 | 373,827,204 | |
| Total | 1,743,571,300 | 345,596,672 | 2,089,167,972 | 15.67 |
| | | | | |
| Total Industry Output ($) | | | | |
| Direct | 1,718,347,000 | 803,450,880 | 2,521,797,880 | |
| Indirect | 0 | 309,858,304 | 309,858,304 | |
| Induced | 967,998,700 | 189,246,464 | 1,157,245,164 | |
| Total | 2,686,345,700 | 1,302,555,648 | 3,988,901,348 | 10.44 |

Source: Impacts calculated in IMPlan v. 3.0.2.1. Author's calculations.

**Exhibit 13. Estimated Impacts of Employment and Spending on Sandoval County, 2008**

| | Military & Civilian Appropriated | Contractor, Construction & Procurement | Totals | % County Total |
|---|---|---|---|---|
| Employment (job number) | | | | |
| Direct | 617 | 400 | 1,017 | |
| Indirect | 0 | 22 | 22 | |
| Induced | 5 | 4 | 9 | |
| Total | 622 | 426 | 1,048 | 3.51 |
| | | | | |
| Labor Income ($) | | | | |
| Direct | 35,159,050 | 20,230,610 | 55,389,660 | |
| Indirect | 0 | 1,083,265 | 1,083,265 | |
| Induced | 155,167 | 94,144 | 249,311 | |
| Total | 35,314,217 | 21,408,019 | 56,722,236 | 4.95 |
| | | | | |
| Total Industry Output ($) | | | | |
| Direct | 44,259,230 | 74,828,490 | 119,087,720 | |
| Indirect | 0 | 3,902,849 | 3,902,849 | |
| Induced | 744,434 | 452,430 | 1,196,864 | |
| Total | 45,003,664 | 79,183,769 | 124,187,433 | 2.55 |

Source: Impacts calculated in IMPlan v. 3.0.2.1. Author's calculations.

**Exhibit 14. Estimated Impacts of Employment and Spending on Torrance County, 2008**

| | Military & Civilian Appropriated | Contractor, Construction & Procurement | Totals | % County Total |
|---|---|---|---|---|
| Employment (job number) | | | | |
| Direct | 102 | 0 | 102 | |
| Indirect | 0 | 80 | 80 | |
| Induced | 7 | 4 | 11 | |
| Total | 109 | 84 | 193 | 5.86 |
| | | | | |
| Labor Income ($) | | | | |
| Direct | 5,797,311 | 0 | 5,797,311 | |
| Indirect | 0 | 2,904,836 | 2,904,836 | |
| Induced | 168,271 | 90,139 | 258,410 | |
| Total | 5,965,582 | 2,994,975 | 8,960,557 | 9.36 |
| | | | | |
| Total Industry Output ($) | | | | |
| Direct | 7,197,493 | 0 | 7,197,493 | |
| Indirect | 0 | 9,475,414 | 9,475,414 | |
| Induced | 1,031,631 | 556,892 | 1,588,523 | |
| Total | 8,229,124 | 10,032,306 | 18,261,430 | 4.48 |

Source: Impacts calculated in IMPlan v. 3.0.2.1. Author's calculations.

**Exhibit 15. Estimated Impacts of Employment and Spending on Valencia County, 2008**

| | Military & Civilian Appropriated | Contractor, Construction & Procurement | Totals | % Regional Total |
|---|---|---|---|---|
| Employment (job number) | | | | |
| Direct | 443 | 778 | 1,221 | |
| Indirect | 0 | 109 | 109 | |
| Induced | 281 | 89 | 370 | |
| Total | 724 | 976 | 1,700 | 10.82 |
| | | | | |
| Labor Income ($) | | | | |
| Direct | 26,308,639 | 50,270,306 | 76,578,945 | |
| Indirect | 0 | 3,831,776 | 3,831,776 | |
| Induced | 7,068,543 | 2,228,376 | 9,296,919 | |
| Total | 33,377,182 | 56,330,458 | 89,707,640 | 20.78 |
| | | | | |
| Total Industry Output ($) | | | | |
| Direct | 39,839,277 | 180,094,630 | 219,933,907 | |
| Indirect | 0 | 11,086,112 | 11,086,112 | |
| Induced | 29,085,190 | 9,191,520 | 38,276,710 | |
| Total | 68,924,467 | 200,372,262 | 269,296,729 | 17.01 |

Source: Impacts calculated in IMPlan v. 3.0.2.1. Author's calculations.

As shown, KAFB demonstrates estimated impacts of 10% or greater in jobs and income in Bernalillo and Valencia counties. Income from labor is calculated at a 9.36% of the total in Torrance County, although a smaller 5.86% is represented in employment. This is likely the result of Federal-level

salaries associated with KAFB, generally higher than other average salaries paid in the State. Impacts from employment and spending at KAFB show the least impact on Sandoval County, north of Bernalillo. Nevertheless, earned income associated with KAFB in that County represents a significant 4.95% of all wages and salaries paid.

## 4.2 Impacts of the Albuquerque International Sunport

The Albuquerque International Sunport is a public airport located in southeast Albuquerque, adjacent to KAFB. It is the largest commercial airport in New Mexico. In 2008 it served a record 6,467,263 passengers and moved 67,000 tons of cargo.

In land area, the Sunport covers 2,039 acres and supports four runways, one of which, 17/35 is slated for closure. It has a single terminal with 25 gates in three concourses. Although owned by the city, the Sunport serves jointly as a training facility for KAFB, which adjoins the Sunport to the east and shares in the cost of its maintenance and operations.

An estimate is provided here of the impact of the commercial operations of the Sunport on regional employment, income and total industry output. The impact is provided separately as the Sunport is likely to remain a central hub for regional commercial air traffic with or without the support provided by KAFB.

**Exhibit 16. Estimated Impacts of Albuquerque's International Sunport on the MRCOG Four-County Region, 2008**

| | Impacts | % Regional Total |
|---|---|---|
| Employment (job number) | | |
| Direct | 3,400 | |
| Indirect | 2,308 | |
| Induced | 2,286 | |
| Total | 7,994 | 2.05 |
| | | |
| Labor Income ($) | | |
| Direct | 212,492,000 | |
| Indirect | 88,907,240 | |
| Induced | 77,448,030 | |
| Total | 378,847,270 | 2.52 |
| | | |
| Total Industry Output ($) * | | |
| Direct | 870,258,900 | |
| Indirect | 261,391,100 | |
| Induced | 246,886,000 | |
| Total | 1,378,536,000 | 3.06 |

Source: Impacts calculated in IMPlan v. 3.0.2.1. Author's calculations.
*Total Industry Output = total value of all sectors affected by employment and spending at Albuquerque's Sunport.

# 5.0 COMPARING THE TWO IMPACT ANALYSES: KAFB VS. JLUS

## 5.1 KAFB Data

Biennially, KAFB's host unit, the 377th Air Base Wing, publishes its *Economic Impact Statement* for employment and contract spending at the air base. The statement includes calculated impacts from employment and spending by DoD and delineates employment and spending within the region by DOE/Sandia, the largest tenant group residing "inside the fence" at Kirtland. The method used by the Air Force at Kirtland is replicated at most air bases across the U.S. and provides an annual source of reliable data.

Because employment and spending data for KAFB can be difficult to access due to the high level of security at the base, annual data on direct employment and spending supplied by KAFB is recommended as a consistent source for plotting trends. Federal databases that list contract dollar amounts by location, such as OMB Watch's website at www.fedspedning.org/, can be helpful in calculating the percentage of locally issued contract dollars that remain within the region.

## 5.2 How the Two Analyses Compare

The values calculated for this analysis differ from the values published in KAFB's 2008 *Economic Impact Statement*. The differences can be attributed chiefly to differences in timeline, geographic scope, and the specific multipliers used. Exhibit 17 highlights the differences in impact values for the two analyses. Exhibit 18 compares the methods and sources of data used to calculate the values. JLUS summary data found in Exhibit 19 is used for the comparison.

**Exhibit 17. Comparison of Economic Impact Values: KAFB vs. JLUS Economic Analyses**

| | KAFB Totals | JLUS Totals | % Difference |
|---|---|---|---|
| Employment (job number) | | | |
| Direct | 20,721 | 24,121 | 16.4 |
| Indirect | 26,937 | 5,195 | |
| Induced | n/a | 13,429 | |
| Total | 47,658 | 42,745 | (10.3) |
| | | | |
| Labor Income ($) | | | |
| Direct | 1,705,556,624 | 1,963,054,300 | 15.1 |
| Indirect | 894,732,780 | 199,271,501 | |
| Induced | n/a | 461,079,874 | |
| Total | 2,600,289,404 | 2,623,405,675 | 0.9 |
| | | | |
| Total Industry Output ($) * | | | |
| Direct | n/a | 3,758,275,900 | |
| Indirect | n/a | 595,713,779 | |
| Induced | n/a | 1,445,193,261 | |
| Total | 5,643,519,254 | 5,779,182,940 | 2.4 |

*Total Industry Output = total value of all sectors affected by employment and spending at KAFB.

**Exhibit 18. Comparison of Methodologies and Sources of Data: KAFB vs. JLUS Economic Analyses**

| | KAFB | JLUS |
|---|---|---|
| **Dates Used for Analysis** | Federal fiscal year (Oct. 1, 2007- Sep. 30, 2008) | Federal fiscal year input data Calendar year impact estimates |
| **Geographic Scope** | 50-mile radius (mostly Bernalillo, Sandoval, and Valencia counties) | MRCOG member counties (Bernalillo, Sandoval, Torrance, and Valencia) |
| **Tenant Organizations** | DoD, Sandia and DOE units | Mostly DoD, Sandia, DOE units, and the Albuquerque International Sunport |
| **Method for Calculating Employment** | Direct employment plus direct employment multiplied by 1.3, then totaled | More than 300 industry multipliers accounting for direct, indirect and induced impacts, all totaled |
| **Method for Calculating Labor Income** | Total payroll plus direct employment multiplied by 1.3, then multiplied by average Bernalillo County salary of $34,000, all dollars totaled | More than 300 industry multipliers accounting for direct, indirect and induced impacts, all totaled |
| **Method for Calculating Total Industry Output** | All dollar impacts totaled | All dollar impacts totaled |
| **Multipliers** | Air Force issued | IMPLAN 3.0.2.1 (2009) database |

# 6.0 RECOMMENDATIONS FOR LOCAL PLANNERS

Members of the MRCOG Board have approached the JLUS team for assistance in developing a method to measure the economic impact of KAFB and its tenant organizations. Local planners have stated their need for a method that is consistent, can be generated in-house (or found online) and is verifiable. Several methods that meet these criteria are described in sections 6.1 and 6.2.

## 6.1 Comparing Employment at KAFB to Regional Totals

A standard statistical measure used for planning purposes is the ratio or percentage of job numbers at a location or facility (i.e., KAFB) compared to the total number of jobs in the region. Using this method, a planner would identify the number of employees at KAFB and divide that number by total employment in the region. Direct employment for KAFB can be found in the annual KAFB *Economic Impact Statement*, while employment for each New Mexico county is recorded in the *Quarterly Census of Employment and Wages*, available online at the Department of Workforce Solutions website at (www.dws.state.nm.us).

Values can be calculated as such:

$$\gamma = \alpha/x$$

Where:

α = the number of employees at Kirtland AFB

x = total employment in the region, as defined by the planner

Using this method, changes in employment can be tracked by plotting the calculated values over time. A planner might also want to annualize the data, using year to year growth rates. In some cases, the annualized data may highlight subtle trends that might otherwise go unnoticed.

## 6.2 Employment Specialization Measures

A second economic measure that might be useful to planners can be found in diversity employment measures. Several are available. These measures are based on the concept that a broad-based economy is indicative of a strong economy, one that can more easily withstand downturns or economic insults. These measures are recommended for the MRCOG region as a way to assess the impact of a large employer, such as KAFB.

One diversity measure is the Shannon-Weaver Diversity Index. It can be found online or may be calculated:

$$H' = -\sum_{i=1}^{S}(p_i \ln p_i) - [(S-1)/2N]$$

*Where:*

$n_i$ = number of individuals (jobs )in a range i ; the abundance of the individuals (jobs) in the range i.

*S* = total number of jobs

*N* = total number of all individuals employed

$p_i$ = relative abundance of jobs, calculated as the proportion of individuals of a given species to the total number of individuals in the community: $\frac{n_i}{N}$

Using this method, the closer an economy comes to reaching full diversity, the closer its index will be to 1. Among the MRCOG counties, Bernalillo's Shannon-Weaver Index value demonstrates the greatest diversity.

| | | |
|---|---|---|
| Bernalillo | = | 0.70275 |
| Sandoval | = | 0.64534 |
| Torrance | = | 0.61105 |
| Valencia | = | 0.63079 |

# 7.0 CONCLUSION

This report analyzes the impact of employment and spending associated with KAFB, the largest military installation in the State of New Mexico. The report provides a separate analysis for the Albuquerque International Sunport, a public airport that shares facilities and operating costs with KAFB. Prior to the analysis, a good deal of time was spent collecting input data from various work sites at KAFB, an installation that hosts a large number of operations with special security clearance requirements. Accordingly, some work areas at KAFB were not permitted to share their employment or contract information for this report. Nevertheless, this report is likely to be among the first to capture employment and spending data both for the Sandia National Laboratories location at KAFB and for its administrative unit within DOE, as well as a number of smaller offices.

The report is part of a larger effort by MRCOG to assist the community in developing a plan for the appropriate use of land near and surrounding KAFB. The air base has found itself at risk due to regional population growth and the need to identify suitable land for development in the Albuquerque area. One element in the planning process is an understanding of the economic value of KAFB to the region's economy. A summary of impacts is provided here:

**Exhibit 19. Summary Impacts from Employment and Spending at KAFB and Commercial Operations at the Albuquerque International Sunport**

| | Impacts | % Regional Total |
|---|---|---|
| Employment (job number) | | |
| Direct | 24,121 | |
| Indirect | 5,195 | |
| Induced | 13,429 | |
| Total | 42,745 | 11.21 |
| | | |
| Labor Income ($) | | |
| Direct | 1,963,054,300 | |
| Indirect | 199,271,501 | |
| Induced | 461,079,874 | |
| Total | 2,623,405,675 | 17.48 |
| | | |
| Total Industry Output ($) * | | |
| Direct | 3,758,275,900 | |
| Indirect | 595,713,779 | |
| Induced | 1,445,193,261 | |
| Total | 5,779,182,940 | 12.82 |

Source: Impacts calculated in IMPlan v. 3.0.2.1. Author's calculations
*Total Industry Output = total value of all sectors affected by employment and spending at KAFB and Albuquerque's Sunport.

Based on the summary, KAFB and the Sunport together account for 42,745 in regional jobs, $2.6 billion in regional wage and salary compensation, and $5.8 billion in total regional industry output. Job impacts represent 11.2% of total regional employment, or, stated in another way, one in every nine jobs in the four-county MRCOG region is associated with employment and spending at KAFB and the adjacent Sunport. Income from KAFB and the Sunport represents 17.5% of all earned income in the MRCOG region, or one in every five to six dollars in wages or salaries. In terms of total industrial output, KAFB and the Sunport account for 12.8% of all activity, or about one in every eight dollars of regional output value.

These numbers are significant and highlight the value of KAFB and the Sunport to the regional economy. They are intended to provide guidance during the planning and land use process, allowing for better, more informed decision-making. Too, there are no known institutions or employers in the region that could replace the beneficial economic impacts if KAFB were to close or experience cutbacks. Because of this, the impact data draw attention to the need to preserve the capacity of the base to support its current and future missions.