



FORT SAM HOUSTON IMPACT STUDY

THE EFFECT OF BRAC 2005 ON THE CITY OF SAN ANTONIO



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Purpose of the study

The study estimates the economic and occupational impacts of the construction work at Fort Sam Houston and other military bases as a result of the Base Realignment and Closure process of 2005 (BRAC 2005). The study includes some of the socio-economic effects of these changes and their implications for the City of San Antonio.

Fort Sam Houston must renovate and build new facilities for training and housing for students coming to San Antonio but because much of Fort Sam Houston is built on a flood plain, there is no room for housing construction on the post. Additionally, Lackland AFB will be constructing new facilities for the Air Force Center for Excellence, now located at Brooks City-Base; and Randolph AFB will also receive new units as a result of BRAC 2005.

The study also shows the economic and occupational impacts of the future operations of the transformed BAMC, which will become part of what is to be known as San Antonio Military Medical Center (SAMMC).

About BRAC 2005

Fort Sam Houston (FSH) provides medical training and support to military activities, and it is host to the Head Quarters of the U.S. 5th Army, to Brooke Army Medical Center (BAMC), to the Institute of Surgical Research (ISR), to the U.S. Army Medical Department Center and School (AMEDDC&S), the U.S. Army Center Brigade, and to the U.S. Army Medical Command (MEDCOM).

With BRAC 2005 the new SAMMC will have a northern campus located at Fort Sam Houston and a southern campus at Lackland AFB. The Fort will receive the inpatient activities of Wilford Hall Medical Center from Lackland AFB.

Under BRAC 2005, Fort Sam Houston will become a Joint Center for Excellence for Battlefield Health and Trauma Care. The Fort will also become a center for excellence in cardio-vascular care, eye care, maternal child care, and amputee care. These centers will consolidate research

programs from different Air Force, Army, and Navy bases with the Institute for Surgical Research (ISR) at Fort Sam Houston. This will expand the biomedical research capabilities of the Fort.

With BRAC 2005, Fort Sam Houston will be transformed into a joint medical training center (Medical Education and Training Campus). The Fort will host the enlisted basic and specialty medical training for several armed force centers providing students a better training in a joint military environment.

Additionally, Fort Sam Houston will host new head quarters for several armed force agencies like the Installation Management Agency (IMA), the Army Contracting Agency (ACA) E-commerce region, and the Community and Family Support Center (CFSC).

Area of study

The study focuses on the San Antonio Metropolitan Statistical Area (MSA). This area includes eight counties: Bexar, Guadalupe, Comal, Wilson, Atascosa, Medina, Bandera, and Kendall. The City of San Antonio is the most important geographic and economic unit.

The San Antonio MSA has a civilian labor force of approximately 940,600 people and an unemployment rate of 4.6 percent, as of July 2007. This rate is below the national and state rates, and is comparable to other regional MSAs in Texas (see Table 1). Different from other cities (like Dallas or Houston), the City of San Antonio makes up most of the corresponding MSA, and has a slightly lower unemployment rate when compared to the San Antonio MSA rate.

Table 1. Labor Force Data

Area	Civilian Labor Force	Unemployment Rate
U.S.	154,871,000	4.90%
Texas	11,643,000	4.80%
Austin MSA	851,900	4.00%
Dallas MSA	3,163,200	4.60%
Houston MSA	2,758,200	4.60%
San Antonio MSA	940,600	4.60%
City of Dallas	616,306	4.90%
City of Austin	419,804	3.70%
City of Houston	1,017,181	4.60%
City of San Antonio	619,032	4.50%
Bexar county	750,666	4.60%

Source: Texas Labor Market Review, August 2007, TWC

The household median income for the San Antonio MSA is \$45,019 (for the year 2006). This median income is below the U.S. average of \$48,451 but above the Texas average of \$44,922. The San Antonio MSA household median income is also relatively low when compared to other MSAs, like Phoenix (\$51,862) or Houston (\$50,250).¹

Population growth in the San Antonio MSA has been strong in recent years. The rate of growth is well above the national one. For the period 1990-2000 the MSA grew by 21.6 percent while the nation grew at a rate of 13.2 percent. This process continued during the period 2000-2004 as can be seen in Table 2. The table also shows the growth of the Phoenix MSA, one of the fastest growing regions in the nation in recent years.

Table 2. Population Growth in Selected Areas (Thousands)

Region	1990	2000	2003	2004	Percent change 1990-2000	Percent change 2000-2004
San Antonio MSA	1,408	1,712	1,816	1,854	21.6%	8.3%
Phoenix MSA	2,238	3,252	3,593	3,715	45.3%	14.2%
U.S.	248,718	281,425	290,789	293,655	13.2%	4.3%

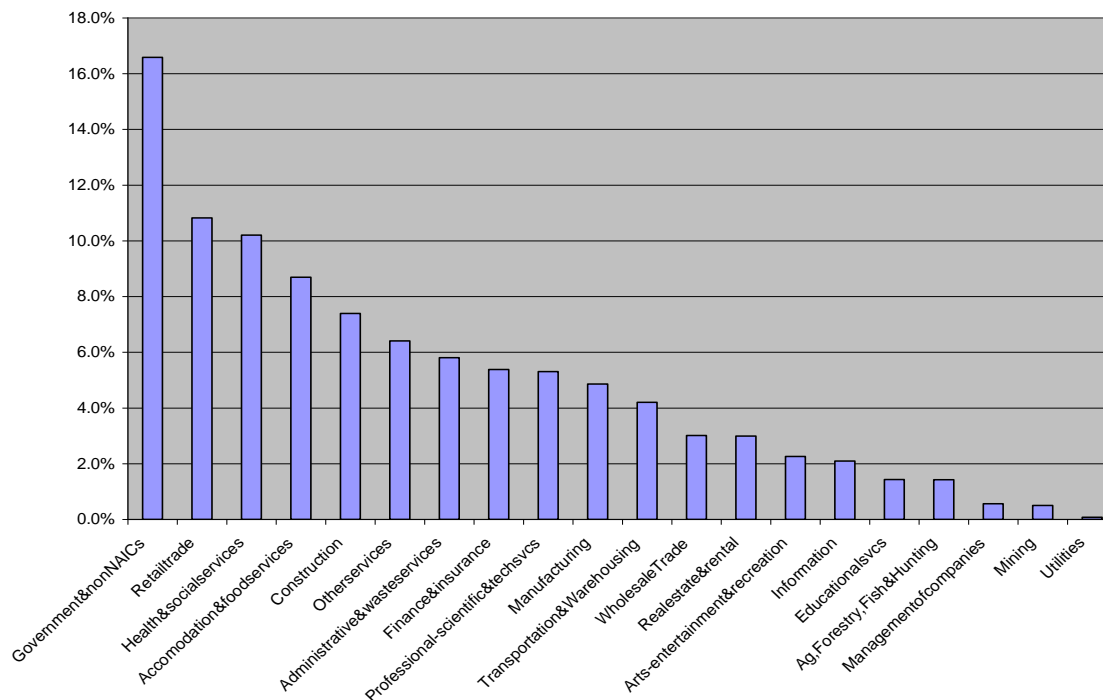
Source: Statistical Abstract of the US 2004-2005

The City of San Antonio is the host to several military facilities: Fort Sam Houston, Lackland Air Force Base, Randolph Air Force Base, parts of Brooks City-Base, and Camp Bullis. Because of BRAC 2005, these facilities have been considerably affected.

The government is the most important employer in the San Antonio MSA with more than 16.0 percent of the jobs (based on IMPLAN data for the year 2004). Federal and military jobs already play an important role in the area (see Figure 1).

¹ According to data from the American Community Survey (2006).

Figure 1. San Antonio MSA: Industry Employment, IMPLAN data (2004)



Fort Sam Houston and BAMC will expand their functions in the coming years. One of the important changes is the co-location at BAMC of the 59th Medical Wing (USAF) as Wilford Hall Medical Center (WHMC) ceases to receive inpatients. As a result of these and other changes, Fort Sam Houston will experience several additions and renovations with an approximate cost of \$1.4 billion through the year 2011.

Overall, fifty different military construction projects were identified as relevant for the study.² Construction expenditures for the four military posts are estimated to reach \$2.08 billion. The amount of \$1.4 billion allocated to Fort Sam Houston represents 66.7 percent of the total.

² Appendix A shows the list of the different projects at the military posts. This list offers only an illustration of the schedule for the different projects and is not intended to show the actual construction activity.

Table 3. Planned Investments in millions of Dollars

Military Installation	2007	2008	2009	2010	2011	Totals
Fort Sam Houston	\$116.1	\$531.9	\$499.7	\$231.9	\$7.5	\$1,387.1
Lackland AFB	\$53.4	\$51.0	\$128.6	\$152.4	\$188.0	\$573.4
Randolph AFB	\$6.4	\$10.9	\$1.3	\$0.0	\$29.0	\$47.7
Camp Bullis	\$45.5	\$8.0	\$18.0	\$0.0	\$0.0	\$71.5
Subtotals	\$221.4	\$601.8	\$647.7	\$384.3	\$224.5	\$2,079.6

The number of new positions moving to Fort Sam Houston due to BRAC 2005 is close to 11,449. However, only 4,099 are new jobs moving to San Antonio, the rest correspond to new students (5,120) attending medical school or to transfers from other local installations (2,230), like those transferred from Lackland or from Brooks City-Base. Of the 4,099 new jobs coming to San Antonio, close to 2,500 are civilian workers and close to 1,600 are military. They are accompanied by approximately 5,804 family members, of whom 2,252 are school-aged children and 3,552 are adults.

Figure 2. Map of Fort Sam Houston



Methodology

To understand the impacts of the BRAC 2005, the study considered the following five activities:

- 1) Construction at military bases related to BRAC 2005 (from all military posts).
- 2) Construction of city infrastructure related to Fort Sam Houston's realignment.
- 3) Construction of homes for newcomers to San Antonio.
- 4) Increased operations and expenditures due to new workers coming to San Antonio.
- 5) Expenditures by new students coming to San Antonio.

The economic impacts of these projects were estimated using the software IMPLAN.³ This software uses input-output techniques to establish not only relationships among industrial sectors but also to establish monetary relationships among different institutions (for example, the government, on one hand, and households, on the other, are related by taxes paid and welfare benefits received).

The occupational impacts were estimated using matrices developed by the IMPLAN Group with modifications implemented by the Institute for Economic Development (IED) using information from the Texas Workforce Commission.⁴ With these modifications, IED estimated the amount of specific occupations demanded during the construction phase at the military bases (from 2007 through 2011), and during the operations phase at the new facilities (assumed to begin in 2011).

In order to translate military occupations into civilian ones, IED used information elaborated by the Defense Manpower Data Center (see Appendix F for a detailed explanation of the methodology).

³ IMPLAN is a product of the Minnesota IMPLAN Group (MIG).

⁴ See Appendixes D and F for a more detailed explanation of some of the methodologies used in this report.

Construction Phase

Based on the information obtained and using the software and database from IMPLAN for the year 2004, the impacts of the construction phase of the projects are shown in Table 4.

Table 4. Accumulated Effects of All Construction Activities

(Millions of Dollars)

Years	Output	State Revenues	Retail Sales	Payroll	Employment (Number of Jobs)
2007-11	\$4,476.9	\$54.2	\$319.9	\$1,378.9	8,868 *

* Average per year

For the period 2007-2011, these investments will create an accumulated output close to \$4.5 billion, accumulated State revenues close to \$54.2 million, accumulated payroll close to \$1.4 billion, and will support a yearly average employment of 8,868 jobs. These impacts include the direct, indirect, and induced effects of the planned investments.

Construction at Military Bases

Considering only the construction activities at military bases (without city infrastructure or home building), the construction impacts are shown in Table 5.

Table 5. Effects of Construction Activity at Military Bases
(Millions of Dollars)

Year	Output	State Revenues	Retail Sales	Payroll	Employment
2007	\$394.9	\$4.8	\$26.2	\$123.6	4,097
2008	\$1,068.8	\$12.6	\$68.7	\$336.9	10,982
2009	\$1,156.2	\$13.4	\$77.3	\$370.4	11,892
2010	\$687.5	\$7.8	\$46.6	\$219.8	6,903
2011	\$407.3	\$4.6	\$30.4	\$136.8	4,278
Accumulated	\$3,714.7	\$43.2	\$249.1	\$1,187.4	7,631*

* Average per year.

From 2007 through 2011, these results show an accumulated output close to \$3.7 billion, accumulated State revenues close to \$43.2 million, an accumulated payroll close to \$1.2 billion, and a yearly average employment impact of 7,631 jobs.

These impacts are the result of adding the direct, indirect, and induced effects for each economic indicator. For example, Table 6 shows the impacts for the year 2007.⁵

⁵ See Appendix B for the tables for each year from 2008 through 2011. The value of Gross State Product represents the value added by the project.

Table 6. Estimated Impacts of Construction Investment at Military Bases, 2007

Economic Impacts				
	Direct	Indirect	Induced	Total
Output	\$221,629,984	\$65,051,996	\$108,209,995	\$394,891,976
Employment	2,534	577	987	4,097
Payroll	\$73,058,104	\$20,616,739	\$29,894,341	\$123,569,184

Fiscal Impacts				
	Direct	Indirect	Induced	Total
Gross State Product	\$124,360,376	\$37,589,072	\$65,097,869	\$227,047,317
Retail Sales	\$0	\$12,243,204	\$13,936,831	\$26,180,035
Estimated State Revenue	\$0	\$0	\$0	\$4,819,547

For the year 2007, the study considered a total investment of around \$221.6 million at the military posts. These investments demanded the employment of 2,534 full-time jobs and generate \$73.0 million in wages and salaries (payroll). Suppliers for the construction industries spent an additional \$65.1 million and hired 577 full-time workers with a total payroll of \$20.6 million. The income generated by the direct and indirect jobs was spent in the local economy creating induced effects on output worth \$108.2 million, supporting 891 full-time jobs, and additional payroll payments of about \$29.9 million. The addition of these effects resulted in a total output of \$394.9 million, a total employment of 4,097 supported jobs, and a total payroll of \$123.6 million.

Therefore, these activities impacted not only construction firms and their suppliers but also other non-related industries in the San Antonio MSA. For the year 2007, the ten most impacted industries,⁶ in terms of jobs, are shown in Table 7.

⁶ See Appendix C for a larger list of the industries affected by the construction phase.

Table 7. Top Ten Industries Impacted by Construction at Military Bases (2007)

Industry	Total Jobs
Commercial and institutional buildings	2,154
Highway- street- bridge- and tunnel construction	349
Architectural and engineering services	123
Food services and drinking places	120
Wholesale trade	66
Employment services	61
General merchandise stores	57
Food and beverage stores	47
Non-store retailers	45
Real estate	43

Source: IMPLAN simulations.

Construction and related industries, as architectural and engineering services, were highly impacted during this period. Additionally, food services and drinking places, among other industries, were also importantly impacted by the construction phase. In general, these impacts will show similar effects on these industries for the period 2008-2011.

Construction activities at the military bases will also impact specific occupations in the San Antonio MSA.⁷ For the year 2007 (and the list is similar for the period 2008-2011), Table 8 shows a list of the major occupational categories impacted,⁸ in terms of payroll received.

⁷ See Appendix D for a larger list of specific occupations affected by the construction phase. Appendix E shows a ranking of major occupations by wage for the San Antonio MSA (2004 wages). This appendix also has a methodological section explaining how the occupational impacts were obtained.

⁸ Based on BLS definitions there are 22 major occupational titles and 714 detailed occupational titles. Appendix D shows a list of the top 30 detailed occupations impacted by the construction phase.

Table 8. Major Occupational Categories Impacted by Construction at Military Bases, 2007

Major Occupational Category	Occupational Impact 2007	Total Payroll	Percent of Payroll
Construction and extraction occupations	1,492	\$46,019,576	29.50%
Management occupations	375	\$32,897,852	21.09%
Office and administrative support occupations	486	\$14,291,136	9.16%
Architecture and engineering occupations	177	\$11,269,811	7.23%
Business and financial operations occupations	142	\$7,927,405	5.08%
Installation, maintenance, and repair occupations	206	\$7,545,233	4.84%
Sales and related occupations	258	\$7,468,461	4.79%
Transportation and material moving occupations	263	\$7,406,458	4.75%
Production occupations	135	\$3,896,611	2.50%
Healthcare practitioners and technical occupations	62	\$3,878,416	2.49%
Food preparation and serving related occupations	136	\$2,334,698	1.50%
Computer and mathematical science occupations	36	\$2,251,097	1.44%
Arts, design, entertainment, sports, and media occupations	37	\$1,762,377	1.13%
Building and grounds cleaning and maintenance occupations	77	\$1,487,209	0.95%
Personal care and service occupations	71	\$1,328,299	0.85%
Education, training, and library occupations	24	\$931,287	0.60%
Legal occupations	10	\$840,659	0.54%
Healthcare support occupations	37	\$813,403	0.52%
Life, physical, and social science occupations	12	\$677,385	0.43%
Community and social services occupations	12	\$414,874	0.27%
Protective service occupations	15	\$360,275	0.23%
Farming, fishing, and forestry occupations	8	\$175,309	0.11%
Total *	4,071	\$155,977,828	100.00%

* The total differs from the 4,097 due to rounding procedures. The total value of payroll is larger than the one obtained in the IMPLAN simulations because in this table wages for some occupations are higher than the average shown in the software.

These results are important for the understanding of the income effects of the construction phase of BRAC 2005 in San Antonio. For instance, a ranking of major occupational categories according to the wages or salaries they earn (for the MSA),⁹ shows the category management occupations at the top of the ranking, and personal care and service occupations at the bottom. Applying the ranking to the occupational impact, we can observe that the lowest wage categories obtain a small percentage of the income generated by the construction phase of the realignment

⁹ Based on information from the Texas Workforce Commission. See Appendix E for the ranking.

(0.85 percent).¹⁰ On the other hand, an important proportion of the incomes generated correspond to high-wage occupational groups like management (21.1 percent), architecture (7.2 percent), and business and financial occupations (5.1 percent). These percentages show a boost to high-wage jobs in the San Antonio MSA with the construction activity of the BRAC 2005 activities.

On the other hand, important percentages of wages and salaries generated during the construction activity at the military bases correspond to: construction occupations (29.5 percent), and office and administrative support occupations (9.2 percent). In general, these two categories are close to the average wage of the MSA ranking, and in this sense contribute to improve the income distribution in the area as mentioned by the PEW Hispanic Center study.

Infrastructure Construction

The approval of the \$550 million bond proposal on May 2007 allows the City of San Antonio to invest on infrastructure projects in several locations. Some of the projects related to the needs of the Fort Sam Houston are as follows:

- a) Fort Sam Transportation Projects: Amount \$4.0 million.

Candidate projects include: widening at Winans Gate to two inbound lanes; the addition of a left turn lane off of Harry Wurzbach; the construction of sidewalks to Dodd Field; bridging of the railroad crossing at the Binz Engleman/Salado Creek Area; and, widening necessary for the construction of the two new access control points on Petroleum Drive.

- b) Walters Street (IH-35 N to Fort Sam Main Gate): Project amount \$4.0 million.

Reconstruct and widen existing roadway to a proposed six-lane roadway, with sidewalks, driveway approaches, bike lanes, turn lanes at major intersections, a raised median, and necessary drainage and traffic signal improvements. Project includes the purchase of right-of-way as required. The total cost for this project is currently

¹⁰ According to the PEW Hispanic Center: “Newly arrived Hispanic workers also were much less likely to be low-wage earners in 2005 than in 1995, in part because they were older, better educated and more likely to be employed in construction than in agriculture.” Retrieved on August 27, 2007 from the center’s web site.

estimated to be \$13.6 million, with the City's share expected to equal approximately 29 percent of this total.

- c) Fort Sam Houston Drainage: Project amount \$6.26 million.
Address drainage needs for Fort Sam Houston including a bridge crossing at Salado Creek.

It was assumed that \$25.0 million on construction infrastructure will be spent in the year 2008. The projects would have the following total impacts:

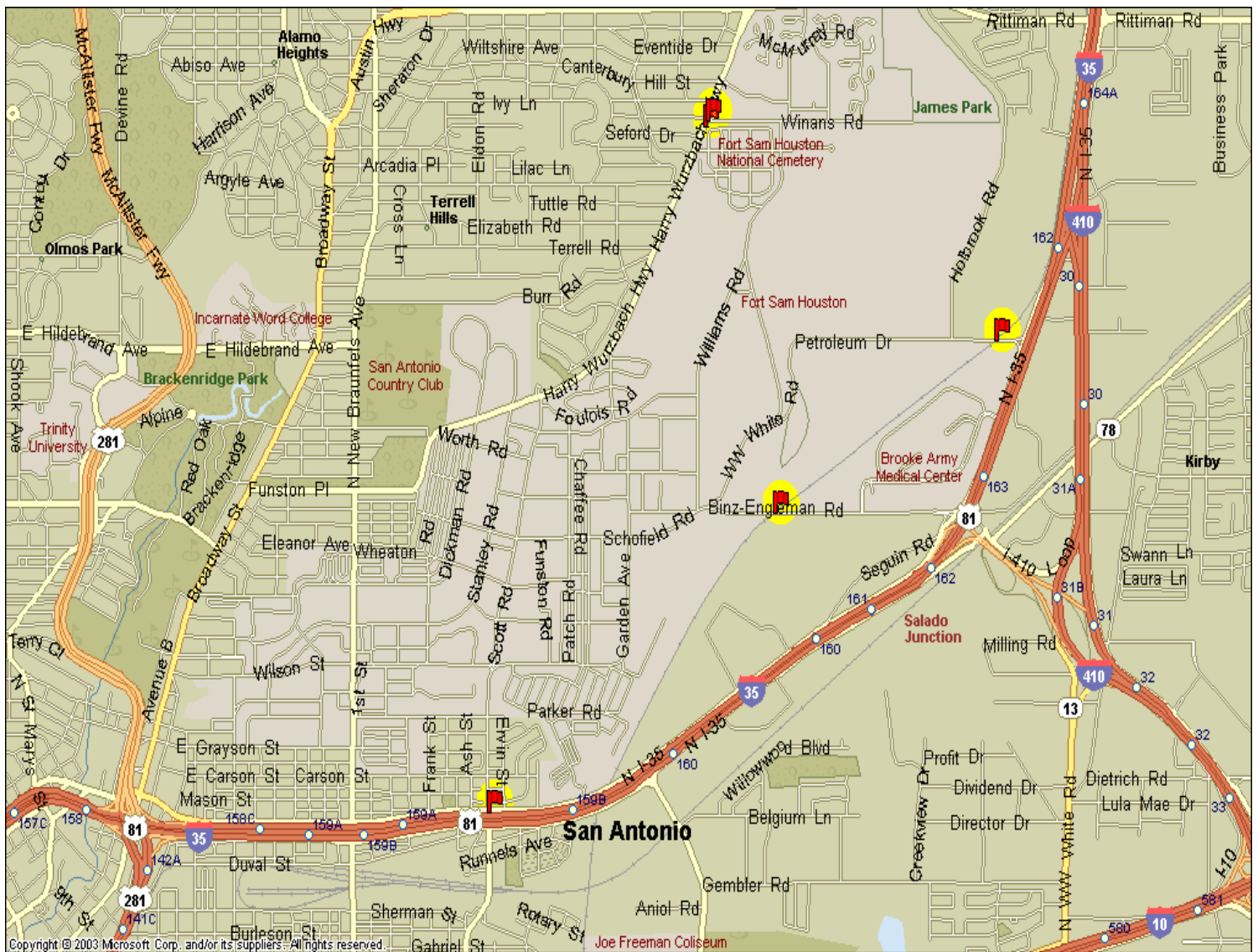
Table 9. Effects of Infrastructure Construction, (2008)

Output	State Revenues	Retail Sales	Payroll	Employment (Number of Jobs)
\$43,459,281	\$483,025	\$2,069,827	\$12,816,126	410

Source: IMPLAN simulations.

For the year 2008, construction projects on infrastructure will generate an output of \$42.5 million, State revenues of \$456,799, payroll payments of \$12.7 million, and support 395 jobs.

Figure 3. Map of Fort Sam Houston and Related Infrastructure Construction



Note: The red flags show the locations of the different city projects around Fort Sam Houston.

The impacts are the result of the addition of direct, indirect, and induced effects, as shown in the following table:

Table 10. Estimated Impact of Infrastructure Construction, 2008

Economic Impacts				
	Direct	Indirect	Induced	Total
Output	\$25,000,000	\$7,046,429	\$11,412,856	\$43,459,281
Employment	257	51	102	410
Payroll	\$7,740,918	\$1,901,918	\$3,173,291	\$12,816,126

Fiscal Impacts				
	Direct	Indirect	Induced	Total
Gross State Product	\$13,165,489	\$3,948,389	\$6,855,464	\$23,969,342
Retail Sales	\$0	\$588,256	\$1,481,571	\$2,069,827
Estimated State Revenue	\$0	\$0	\$0	\$483,025

Source: IMPLAN simulations.

There is a direct investment of \$25.0 million, and the addition of indirect and induced effects creates a total output of \$43.5 million. The initial investment creates 257 direct jobs, adds 51 indirect, and 102 induced jobs for a total of 410 supported jobs. The initial investment generates a direct payroll of \$7.7 million, indirect payroll of \$1.9 million, and induced payroll of \$3.2 million for a total of \$12.8 million.

Residential Construction

The incoming new workers to San Antonio will create a demand of approximately 3,959 (less than the 4,099 estimated newcomers). For the study it was assumed that only half of this approximate demand will require new construction, the other half could be served with available existing inventory of homes in San Antonio. It was also assumed that the new housing construction occurs in the year 2009 with a mean price, at 2007 dollars, of \$192,800. The estimated expenditures on housing are close to \$382.3 million. The addition of the direct, indirect, and induced effects are presented in the following table:

Table 11. Effects of Residential Construction (2009)

Output	State Revenues	Retail Sales	Payroll	Employment (Number of Jobs)
\$718,749,864	\$10,483,067	\$68,741,212	\$178,624,442	5,778

Source: IMPLAN simulations.

Residential construction will generate \$718.7 in total output, support 5,778 jobs, and generate \$178.6 million in payroll. These impacts are the result of adding direct, indirect, and induced effects as shown in the following table:

Table 12. Estimated Impact for Residential Construction (2009)

Economic Impacts				
	Direct	Indirect	Induced	Total
Output	\$402,433,448	\$163,918,157	\$152,398,258	\$718,749,864
Employment	2,943	1,503	1,332	5,778
Payroll	\$84,961,493	\$51,024,632	\$42,638,317	\$178,624,442

Fiscal Impacts				
	Direct	Indirect	Induced	Total
Gross State Product	\$169,213,494	\$95,267,012	\$91,409,817	\$355,890,323
Retail Sales	\$0	\$48,806,068	\$19,935,144	\$68,741,212
Estimated State Revenue	\$0	\$0	\$0	\$10,483,067

Source: IMPLAN simulations.

Operations Phase

It was assumed that the educational and training facilities will begin to operate in the year 2011. The combined effects of the additional 4,099 new jobs and the additional 5,120 students coming to San Antonio to Fort Sam Houston will have the following impacts: annual output impact close to \$852.1 million, annual State revenues impact close to \$10.8 million, annual payroll impact close to \$385.9 million, and annual employment impact of 7,687 jobs.

Table 13. Combined Effects of Operations of Facilities and Students Expenditures, 2011

Output	State Revenues	Retail Sales	Payroll	Employment (Number of Jobs)
\$852,098,013	\$10,836,635	\$52,861,046	\$385,962,383	7,687

Source: IMPLAN simulations.

These impacts include operations and expenditures of the new facilities and the spending of the 5,120 new students coming to Fort Sam Houston.

Operations of New Facilities

Considering only the new operations at Fort Sam Houston (without expenditures from students), the impacts are: annual output impact close to \$658.7 million, annual State revenues impact close to \$7.5 million, annual payroll impact close to \$343.8 million, annual employment impact of 6,457 jobs.

Table 14. Estimated Effects of Operations of New Facilities,* 2011

Output	State Revenues	Retail Sales	Payroll	Employment (Number of Jobs)
\$658,683,511	\$7,566,091	\$33,854,861	\$343,763,139	6,457

* These are annual, recurring, effects

Source: IMPLAN simulations.

These impacts are the result of adding the direct, indirect, and induced effects of the operations of new facilities, assuming they begin in the year 2011:

Table 15. Estimated Impact for Operations of New Facilities, 2011

Economic Impacts				
	Direct	Indirect	Induced	Total
Output	\$371,272,115	\$54,326,854	\$233,084,543	\$658,683,511
Employment	4,099	408	1,950	6,457
Payroll	\$262,973,784	\$14,798,225	\$65,991,130	\$343,763,139

Fiscal Impacts				
	Direct	Indirect	Induced	Total
Gross State Product	\$302,894,936	\$31,547,708	\$139,427,036	\$473,869,680
Retail Sales	\$1,966,008	\$955,607	\$30,933,246	\$33,854,861
Estimated State Revenue				\$7,566,091

Source: IMPLAN simulations.

New operations at Fort Sam Houston's facilities will impact several industries in the San Antonio MSA. Beginning in the year 2011, the ten most impacted industries by the operations phase,¹¹ in terms of jobs, are shown in Table 16.

Table 16. Top Ten Industries Impacted by New Operations, (2011)

IMPLAN sector *	Total Jobs
Colleges- universities- and junior colleges	630
Food services and drinking places	259
Scientific research and development services	224
Facilities support services	143
Elementary and secondary schools	129
Employment services	120
Hospitals	119
Nursing and residential care facilities	117
Real estate	105
Air transportation	94

* Additionally, the Federal Military sector with 2,569

Source: IMPLAN simulations.

¹¹ Appendix F shows a larger list of industries affected by these operations, and a description of the methodology used for this part of the report.

New operations at Fort Sam Houston will also impact specific occupations in the San Antonio MSA. For the year 2011, the major occupational categories impacted are ranked, in terms of payroll received, in the following table (with 2007 wages): ¹²

Table 17. Major Occupational Categories Impacted by New Operations, (2011)

Description	Occupational Impact	Income	Percent of Income
Business and financial operations occupations	652	\$41,928,437	13.38%
Management occupations	410	\$38,269,333	12.21%
Office and administrative support occupations	1,080	\$36,474,796	11.64%
Education, training, and library occupations	520	\$25,879,368	8.26%
Healthcare practitioners and technical occupations	358	\$25,385,778	8.10%
Architecture and engineering occupations	234	\$17,393,453	5.55%
Life, physical, and social science occupations	244	\$16,269,578	5.19%
Computer and mathematical science occupations	195	\$13,508,709	4.31%
Transportation and material moving occupations	310	\$13,076,090	4.17%
Legal occupations	160	\$13,069,287	4.17%
Protective service occupations	302	\$12,782,897	4.08%
Sales and related occupations	385	\$12,696,348	4.05%
Installation, maintenance, and repair occupations	302	\$11,997,729	3.83%
Food preparation and serving related occupations	346	\$6,406,915	2.04%
Production occupations	168	\$5,363,458	1.71%
Personal care and service occupations	184	\$4,362,667	1.39%
Arts, design, entertainment, sports, and media occupations	90	\$4,337,202	1.38%
Building and grounds cleaning and maintenance occupations	191	\$3,975,428	1.27%
Healthcare support occupations	145	\$3,557,229	1.14%
Construction and extraction occupations	95	\$3,370,547	1.08%
Community and social services occupations	63	\$2,599,587	0.83%
Farming, fishing, and forestry occupations	23	\$681,109	0.22%
Total *	6,457	\$313,385,946	100.00%

* This total is an average from wages from civilian occupations and the total value is lower than the payroll from the IMPLAN simulation because in the software the imputed wage for the military sector is relatively high when compare to the MSA wages for equivalent civilian occupations.

¹² Similar to the construction phase, based on BLS definitions, there are 22 major occupational titles and 714 detailed occupational titles. Appendix G shows a list of the top 30 detailed occupations impacted by the operations phase. Also, for an explanation of the methodology used to obtain occupational impacts see Appendix D.

Different from the occupational impacts from the construction phase, with the operations of the new facilities a very important percentage of the wages and salaries generated correspond to high-wage categories. Business and finance (13.4 percent), management (12.2 percent), health care and technical occupations (8.1 percent), among others, appear at the top of the table. These percentages indicate a boost to high-wage jobs in the MSA.

Students Expenditures

Another area of interest was the impact that the 5,120 new students would have in the economy. For this matter the income of the students was assumed to be 34.97 percent of the average payroll for the Federal Military industrial sector (the national average for the military sector is \$66,867). This percentage was derived from a recent study commissioned by the Office of the Secretary of Defense through the Joint Process Action Team, to estimate the pay ratio between average member of the U.S. military and students in basic training. This translates into an average wage of \$23,383 for the students.

Table 18. Effects of New Students Expenditures (2011) *

Output	State Revenues	Retail Sales	Payroll	Employment (Number of Jobs)
\$193,414,501	\$3,270,544	\$19,006,185	\$42,199,244	1,230

* These are annual, repetitive, effects

Source: IMPLAN simulations.

The lower income census tract areas are of great importance for city officials and economic development agencies. The areas show not only differences in income but also differences in ethnic composition and occupation characteristics, as can be seen in the following table:

Table 19. 2000 Census Demographics

Census Tract Number	1110	1201	1202	1205.01	1307	1308	1204
Population	2,549	5,508	6,275	7,805	2,695	3,707	5,019
Race and Ethnicity							
American Indian, Eskimo, Aleut	1.20%	0.80%	1.00%	0.70%	0.70%	0.20%	0.20%
Asian, and Hawaiian or other Pacific Islander	0.90%	4.00%	1.70%	3.80%	1.20%	0.50%	0.20%
Black	8.40%	27.30%	7.60%	13.80%	20.90%	73.30%	0.50%
White	63.80%	56.40%	74.90%	67.30%	48.70%	11.60%	95.40%
Other	22.00%	7.50%	11.90%	10.60%	23.60%	12.00%	2.40%
Two or More Races	3.70%	3.90%	2.90%	3.80%	4.90%	2.50%	1.30%
Hispanic Ethnicity	77.10%	17.00%	48.00%	38.30%	72.20%	22.60%	11.70%
Not of Hispanic Ethnicity	22.90%	83.00%	52.00%	61.70%	27.80%	77.40%	88.30%
Educational Attainment:							
Total Population Age 25+	1,604	2,281	4,024	5,163	1,262	2,268	3,419
Grade K - 9	21.70%	1.00%	9.10%	3.10%	16.60%	8.30%	1.60%
Grade 9 - 11, No diploma	24.90%	2.20%	10.60%	13.10%	28.70%	20.20%	1.80%
High School Graduate	18.60%	14.40%	18.90%	23.20%	29.40%	21.80%	7.40%
Associates Degree	4.50%	15.60%	5.50%	6.50%	2.30%	4.30%	17.70%
Bachelor's Degree	5.20%	20.70%	18.50%	11.50%	3.40%	9.40%	3.70%
Graduate Degree	1.20%	13.20%	13.30%	6.60%	0.00%	4.70%	41.40%
Some College, No Degree	16.20%	32.90%	23.10%	34.50%	14.60%	28.70%	26.40%
No Schooling Completed	7.90%	0.00%	1.10%	1.50%	5.00%	2.80%	0.00%
Household Income							
Average Household Income	\$27,263	\$53,111	\$43,022	\$38,788	\$23,594	\$35,354	\$118,629
Median Household Income	\$18,497	\$45,217	\$28,829	\$34,864	\$17,373	\$28,041	\$82,897
Per Capita Income	\$9,583	\$8,890	\$19,142	\$16,037	\$7,065	\$13,123	\$45,216
Occupation							
% Blue Collar Workers	67.30%	27.40%	43.10%	38.40%	60.60%	44.30%	13.80%
% White Collar Workers	32.70%	72.60%	56.90%	61.60%	39.40%	55.70%	86.20%

Source: SiteOnTexas.

Census tracts 1110 and 1307 show the lowest median household incomes, while tracts 1202 and 1308 show similar values but lower than census tract 1205.01 and 1201. Tract 1204 is a very different case: shows a very high median household income and corresponds to one of the most affluent areas in the City of San Antonio.

Census tracts 1110 and 1307 also show the largest percentages of Hispanic population, more than 72.0 percent, while census tract 1308 shows the largest percentage of Black population with 73.3 percent. While tracts 1201 and 1204 show low percentages of Hispanic population, tract 1201

shows a relatively high percentage of Black population (27.3 percent), even more when compared to tract 1204 (0.5 percent).

Census tracts 1110 and 1307 show the highest rates of no schooling population while tracts 1201, 1202, and 1204 show high percents of bachelor's and graduate degrees. The case of tract 1202 maybe related to the fact that several college students may live around the campuses close to it. Again, tract 1204 belongs to the most affluent areas in San Antonio and 1201 is the population living at the Fort.

The next table shows some employment data. Most of enlisted military personnel do not live in the surrounding census tract areas, with the relative exception of census tract 1205.01 where close to 4.0 percent of the labor force serves in the Armed Forces. In contrast, census tracts 1110, 1307, and 1308 show zero percent of enlisted personnel living in the areas.

Table 20. Employment by Census Tract, 2000 Census

Census Tract Numbers	1110.00	1201.00	1202.00	1205.01	1307.00	1308.00	1204.00
Occupation & Employment							
Not in Labor Force	886	544	2,064	2,466	865	1,382	3,767
In Labor Force	1,098	3,456	3,135	3,729	832	1,322	2,196
Employed	90.30%	25.90%	87.00%	89.10%	88.70%	85.20%	97.60%
Unemployed	9.70%	1.30%	11.60%	6.90%	11.30%	14.60%	1.80%
In Armed Forces	0.00%	72.80%	1.40%	4.00%	0.00%	0.20%	0.60%

Source: IMPLAN simulations.

The fact that census tract 1202 shows a high rate of unemployment maybe, in part, related to the college-age student population in the area. On the contrary, the high rates of unemployment in tracts 1308, 1307, and 1110 may indicate long-term issues in these tracts (correlated with income and education levels).

Census tract areas 1110, 1307, and 1308 are part of the targeted areas for housing assistance, on one hand, and for investment and job creation incentives, on the other, by the City of San Antonio and the County of Bexar.¹⁴ These areas are also part of the Empowerment Zones (EZs) that the

¹⁴ See Appendix H, in this report, for a map of targeted areas in the city of San Antonio. For detailed information on tax incentives see the *Tax Phase-in guidelines for Bexar County and City of San Antonio*.

Department of Housing and Urban Development (HUD) supports with tax incentives and tax credits, among other benefits.

Changes due to BRAC 2005 affect these tracts in different ways: by the construction investments in the areas during the period 2007-2011; and by the operations of the facilities once the construction phase is completed.

Employment and Occupation in Targeted Census Tracts

A list of the top ten industrial employers in census tract 1110 appears in Figure 5. It shows the construction sector as the most important employer for the area. Given the important construction activities, due to BRAC 2005, in military bases and in different parts of the city, it is reasonable to expect that several potential unemployed workers in the area may find jobs during the period 2007-2011.

Figure 5.

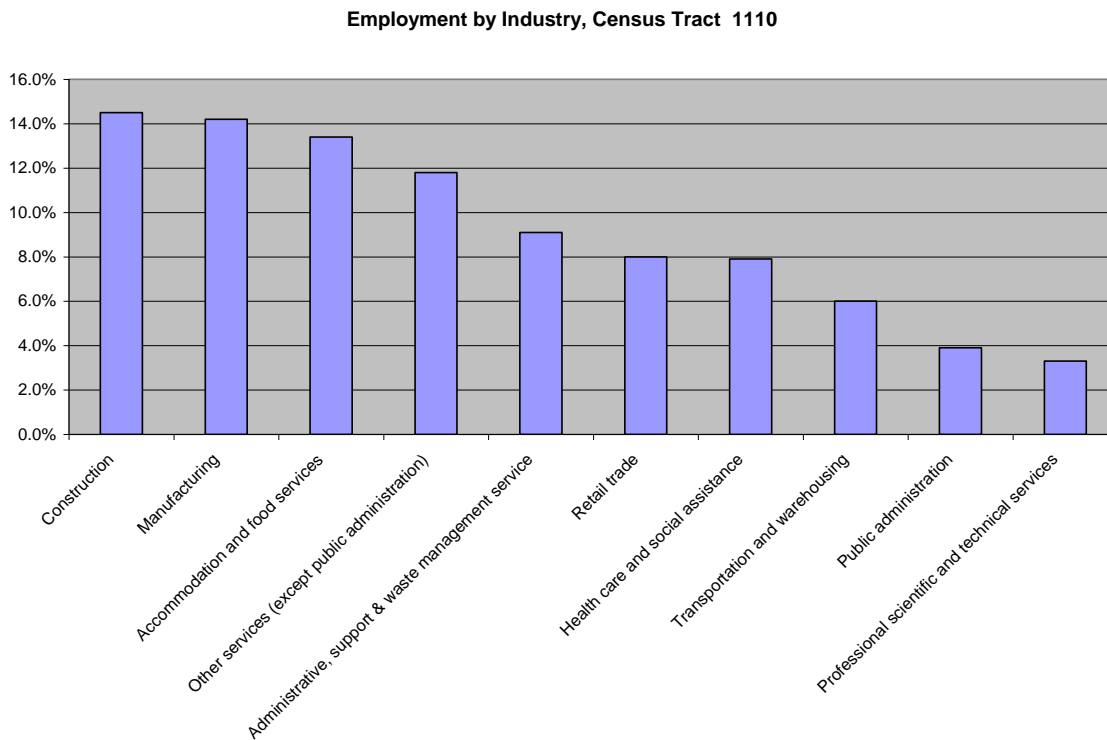


Figure 6

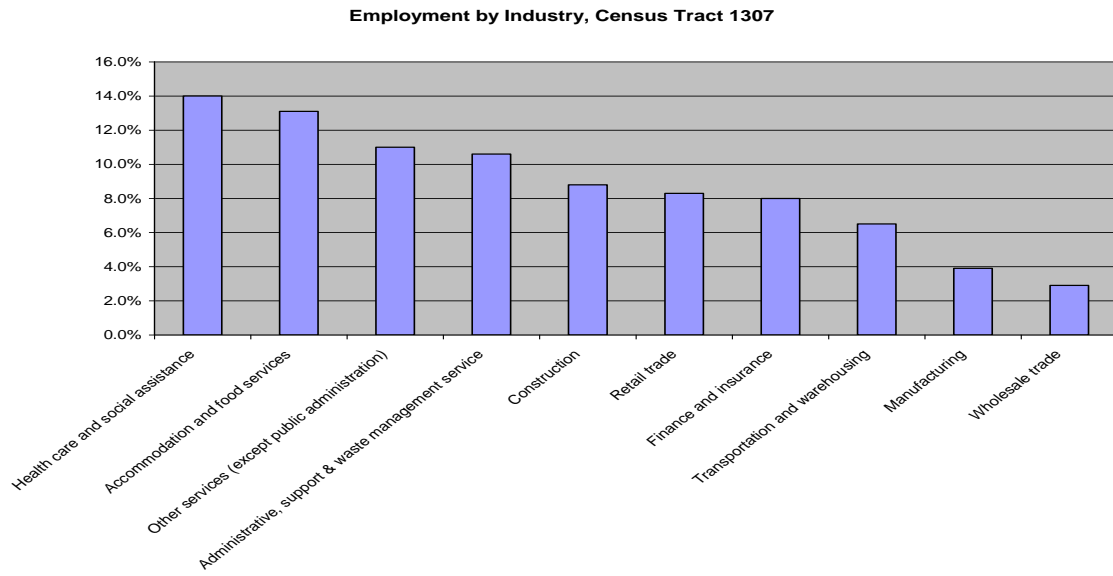
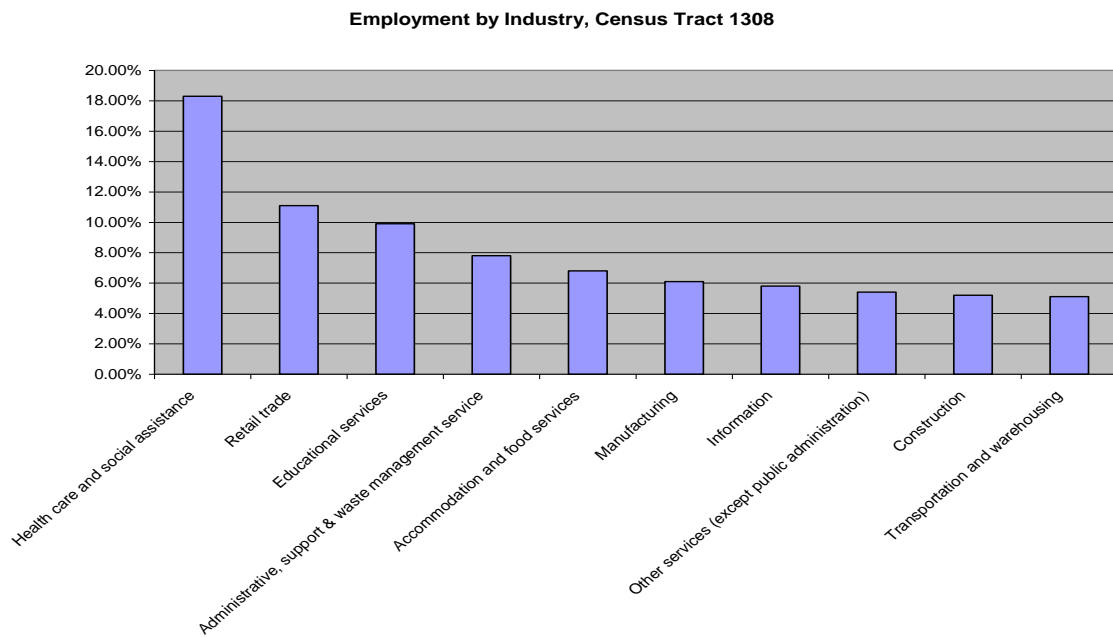


Figure 7.



On the other hand, employment by industry for census areas 1307 and 1308 show the health care and social assistance sector as the most important employer in both areas, particularly for area 1308 (see Figures 6 and 7). It is reasonable to expect that the future activities of the medical and educational facilities in BAMC may have a positive employment effect in the area.

Occupations by Census Tract

The top two occupations for census tract 1110: production, and office and administrative support receive wages closer to the mean wage of the MSA, (see Figure 8).

The top occupational categories for census tract 1307 correspond to one of the lowest wage occupations in the MSA ranking, building and grounds cleaning, while the rest of the top five are closer to the mean wage for the MSA. Some of these occupations maybe employed in the health care and social assistance industry, (see Figure 9).

Figure 8

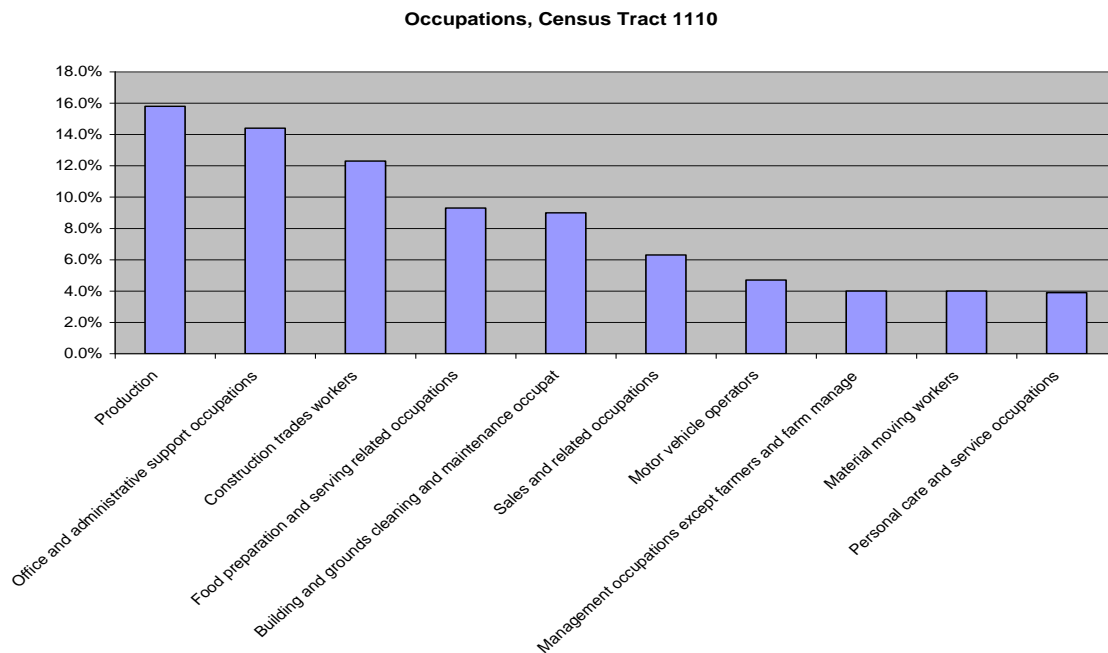
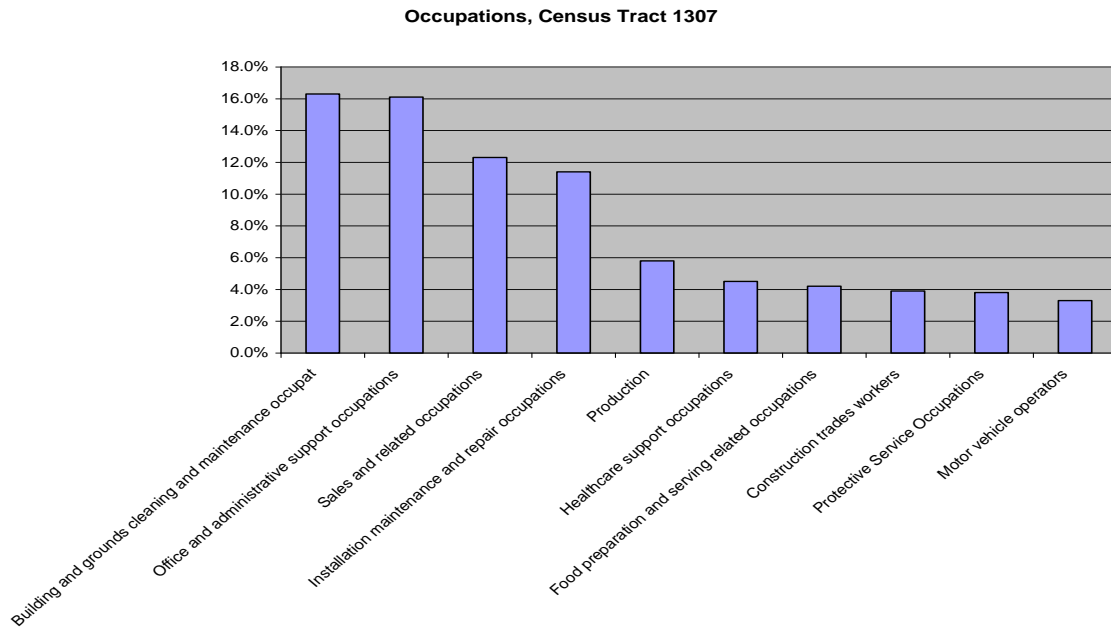
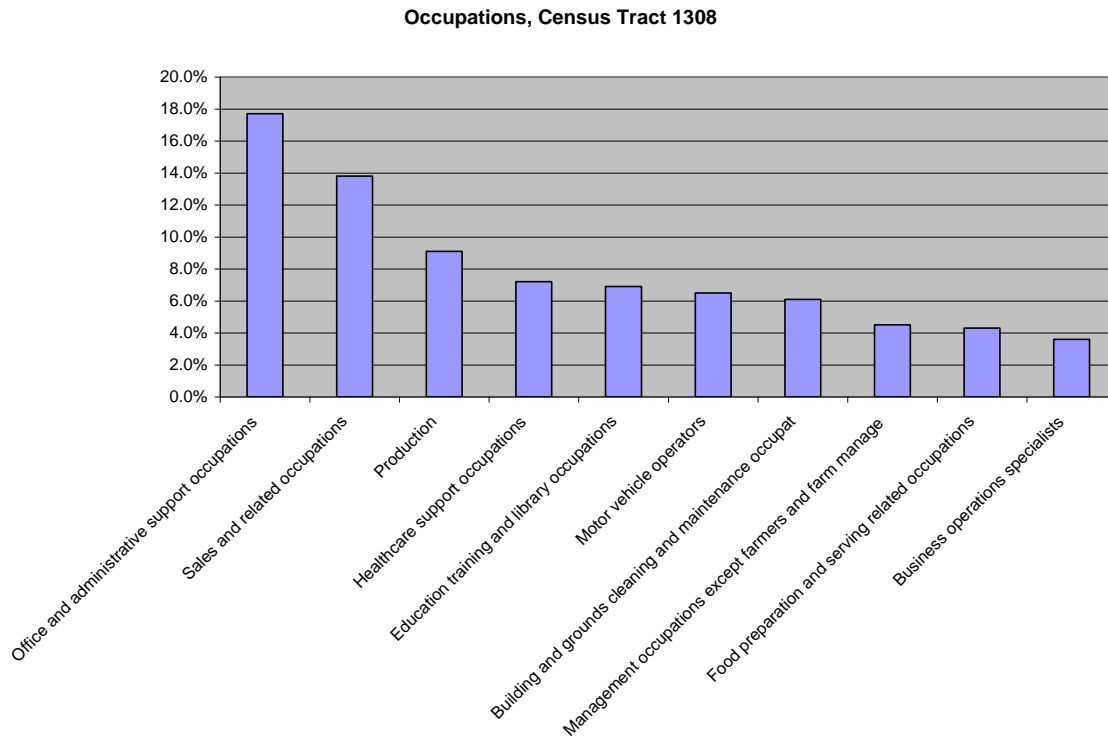


Figure 9



Census tract 1308 has two of the lowest paid occupations among the top ten in the area: food preparation and serving; and building and grounds cleaning. That might explain why census tract 1308 shows a lower median income when compared to tract 1205.01 (see Figure 10).

Figure 10



Consumption Expenditures and Business Opportunities

Based on the national Consumer Expenditure Survey for 2005 (BLS), Table 21 shows the shares of expenditures for five occupational categories. The differences among occupational categories affect the amount of economic activity for particular industries.

Some of the items included in the national expenditures survey include the following:

- Food, which considers not only groceries but also whether people consume at home or away from home (restaurants, for example).
- Housing, which includes not only annual mortgage payments but also property taxes, maintenance, and rent payments. It also includes utilities payments (gas, electricity, etc.), household personal services, housekeeping supplies, and household furnishings and supplies (like floor coverings, appliances, etc.)

- Transportation, which includes purchases of new and used cars and trucks; expenditures on gasoline, maintenance and repairs; vehicle insurance; and car rentals, among others. It also includes expenditures in public transportation.
- Personal insurance and pensions, which includes life and personal insurance together with social security.

As a result of BRAC 2005, San Antonio businesses will benefit from the expenditures of the new workers coming to the city. Among the most benefited would be the four mentioned previously: food, housing, transportation, and personal insurance.

**Table 21. National shares of average expenditures by occupation,
Consumer Expenditure Survey, 2005 (BLS)**

Item	Managers and Professionals	Technicians, sales, and clerical workers	Service workers	Construction workers, and mechanics	Operators fabricators and laborers
Food	11.70%	12.60%	13.90%	14.60%	14.00%
Housing	32.20%	32.00%	34.80%	30.80%	31.30%
Apparel and services	4.20%	4.20%	4.80%	3.60%	4.10%
Transportation	17.00%	19.90%	18.30%	20.30%	19.30%
Health care	4.50%	4.90%	4.50%	4.20%	5.10%
Entertainment	5.30%	5.20%	4.40%	5.30%	5.20%
Personal care	1.20%	1.20%	1.20%	1.00%	1.00%
Reading	0.30%	0.20%	0.20%	0.20%	0.20%
Education	2.70%	2.00%	1.50%	1.40%	1.40%
Tobacco products and smoking	0.40%	0.70%	1.00%	1.20%	1.30%
Miscellaneous	1.70%	1.70%	1.60%	1.80%	1.70%
Cash contributions	3.80%	3.00%	2.50%	2.80%	2.70%
Personal insurance and pensions	14.20%	11.60%	10.40%	11.60%	11.50%
Others	0.80%	0.80%	0.90%	1.20%	1.20%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Source: BLS, Consumer Expenditure Survey, 2005.

Tables 22 and 23 show the estimated expenditures for different items per occupation. The major BLS occupational categories are grouped into five census occupational categories: managers and

professionals; technicians, sales and clerical workers; service workers; construction and mechanics; and operators and laborers. These values assume that only a percentage of the wages and salaries received are spent on consumption items because there are income taxes paid. Therefore, the total amount of expenditures for the construction and operations phases in Tables 22 and 23 are lower than the total wages and salaries earned shown in Tables 8 and 17. We estimated the amount of expenditures out of wages based on information from the BLS.

During the construction phase, food and transportation have larger shares than during the operations phase. The opposite occurs with personal insurance and pensions.

Table 22 shows total annual expenditures of \$129.9 million for the year 2007 during the construction phase at the military posts. Of this amount, close to \$41.2 million (31.7 percent of total expenditures) is spent on housing; this item includes mortgage interest and charges, property taxes, maintenance, repairs, rents, and other lodging expenditures.

The next item during construction at military posts is transportation with \$24.5 million (18.8 percent of total expenditures). This item includes annual payments for cars and trucks (new and used), gasoline, motor oil, finance charges, maintenance, repair, vehicle insurance, vehicle rentals, and public transportation use.

Food expenditures represent the third important category with \$17.1 million (around 13.1 percent of total expenditures). This category includes food at home and food away from home. Within the food at home sub-category we have: cereals, meats (beef, pork, and poultry, among others), dairy products, fruits, vegetables, and other items consumed at home (like sugar, oil, etc.).

Personal insurance and pensions represent the fourth important category with \$16.2 million (12.6 percent of total expenditures). As mentioned before this category includes life and other personal insurance, as well as pensions and social security contributions.

Table 22. Construction Phase, BRAC 2005: New Expenditures by Occupation (2007)

Construction	Managers and Professionals	Technicians, sales, and clerical workers	Service workers	Construction workers, and mechanics	Operators fabricators and laborers	Subtotals
Food	\$5,645,644	\$2,481,465	\$848,860	\$6,717,685	\$1,382,617	\$17,076,271
Housing	\$15,537,584	\$6,302,134	\$2,125,203	\$14,171,555	\$3,091,136	\$41,227,613
Apparel and services	\$2,026,641	\$827,155	\$293,132	\$1,656,416	\$404,909	\$5,208,253
Transportation	\$8,203,072	\$3,919,140	\$1,117,564	\$9,340,343	\$1,906,036	\$24,486,155
Health care	\$2,171,402	\$965,014	\$274,811	\$1,932,485	\$503,668	\$5,847,379
Entertainment	\$2,557,428	\$1,024,097	\$268,704	\$2,438,612	\$513,543	\$6,802,384
Personal care	\$579,040	\$236,330	\$73,283	\$460,115	\$98,758	\$1,447,527
Reading	\$144,760	\$39,388	\$12,214	\$92,023	\$19,752	\$308,137
Education	\$1,302,841	\$393,883	\$91,604	\$644,162	\$138,262	\$2,570,751
Tobacco products and smoking	\$193,013	\$137,859	\$61,069	\$552,139	\$128,386	\$1,072,466
miscellaneous	\$820,307	\$334,801	\$97,711	\$828,208	\$167,889	\$2,248,916
Cash contributions	\$1,833,628	\$590,825	\$152,673	\$1,288,323	\$266,648	\$4,132,096
Personal insurance and pensions	\$6,851,978	\$2,284,524	\$635,118	\$5,337,339	\$1,135,721	\$16,244,680
others	\$386,027	\$157,553	\$54,962	\$552,139	\$118,510	\$1,269,191
Totals	\$48,253,367	\$19,694,169	\$6,106,906	\$46,011,543	\$9,875,835	\$129,941,820

Table 23 shows expenditures during the operations phase of the projects without student expenditures. For this phase, the total amount of expenditures is close to \$256.6 million. Of this amount, close to \$82.9 million (32.3 percent) goes to housing, \$46.1 million (17.9 percent) goes to transportation, \$33.3 million (13.0 percent) goes to personal insurance, and close to \$31.8 million (12.3 percent) goes to food. In this case personal insurance is in third place as opposed to fourth place in Table 22. This switch occurs because managers and professionals get a larger share of the income produced in this phase, and this group allocates a higher percentage of their expenditures to insurance and pensions than any of the other occupational categories.

Table 23. Operations Phase, BRAC 2005: New Expenditures by Occupation (2011)

Operations	Managers and Professionals	Technicians, sales, and clerical workers	Service workers	Construction workers, and mechanics	Operators fabricators and laborers	Subtotals
Food	\$17,843,024	\$5,639,716	\$4,172,582	\$1,927,371	\$2,255,567	\$31,838,260
Housing	\$49,106,443	\$14,323,088	\$10,446,466	\$4,065,960	\$5,042,804	\$82,984,760
Apparel and services	\$6,405,188	\$1,879,905	\$1,440,892	\$475,242	\$660,559	\$10,861,786
Transportation	\$25,925,762	\$8,907,170	\$5,493,400	\$2,679,837	\$3,109,460	\$46,115,630
Health care	\$6,862,702	\$2,193,223	\$1,350,836	\$554,449	\$821,671	\$11,782,881
Entertainment	\$8,082,738	\$2,327,502	\$1,320,817	\$699,662	\$837,782	\$13,268,501
Personal care	\$1,830,054	\$537,116	\$360,223	\$132,012	\$161,112	\$3,020,516
Reading	\$457,513	\$89,519	\$60,037	\$26,402	\$32,222	\$665,695
Education	\$4,117,621	\$895,193	\$450,279	\$184,816	\$225,557	\$5,873,466
Tobacco products and smoking	\$610,018	\$313,318	\$300,186	\$158,414	\$209,446	\$1,591,381
miscellaneous	\$2,592,576	\$760,914	\$480,297	\$237,621	\$273,890	\$4,345,299
Cash contributions	\$5,795,170	\$1,342,789	\$750,464	\$369,633	\$435,002	\$8,693,059
Personal insurance and pensions	\$21,655,636	\$5,192,119	\$3,121,932	\$1,531,336	\$1,852,787	\$33,353,811
Others	\$1,220,036	\$358,077	\$270,167	\$158,414	\$193,334	\$2,200,029
Totals	\$152,504,482	\$44,759,648	\$30,018,579	\$13,201,169	\$16,111,194	\$256,595,073

Source: Estimations by author.

Conclusion

With an accumulated output of close to \$4.5 billion over a four year period (2007 to 2011), BRAC 2005 will have a profound impact on the City of San Antonio. Apart from the sheer economic impact of BRAC 2005, the individual components such as SAMMC and the Institute for Surgical Research will greatly expand the biomedical research capabilities of the Fort and add highly skilled professionals to the San Antonio MSA. The expansion of Fort Sam Houston activities will likely greatly influence the surrounding infrastructure and socio-economic characteristics of the surrounding communities.

Whether through additional construction at military bases related to BRAC 2005 (from all military posts), construction of city infrastructure related to Fort Sam Houston's realignment, construction of homes for newcomers to San Antonio, increased operations and expenditures due to new workers coming to San Antonio, and/or expenditures by new students coming to San Antonio, several businesses will benefit from these additional activities.

APPENDIX A

Projects in millions of dollars								
Location	ID	Project name	2007	2008	2009	2010	2011	Total
FSH	1	Medical Education and Training Campus	1.1	17.6	7.6	8.7	3.0	38.0
CB	2	Armed Forces Reserve Center	44.0	0.0	0.0	0.0	0.0	44.0
FSH	3	Battlefield Health and Trauma	53.5	43.0	10.0	0.0	0.0	106.5
FSH	4	Budge Dental Clinic	1.0	0.4	0.0	0.0	0.0	1.4
FSH	5	McWethy Health Clinic Alteration	0.0	1.0	0.0	0.0	0.0	1.0
FSH	6	Youth Center	5.2	0.0	0.0	0.0	0.0	5.2
FSH	7	METC Instruction Facility	0.2	126.4	66.9	31.6	0.0	225.0
FSH	8	METC Student dorm 1	0.3	49.6	35.1	0.0	0.0	85.0
FSH	9	METC Student dorm 2	0.3	49.6	35.1	0.0	0.0	85.0
FSH	10	FSH Health Clinic	0.0	40.0	3.0	0.0	0.0	43.0
FSH	11	San Antonio Military MEDCEN (2 Parking)	33.5	186.0	167.0	80.0	3.5	470.0
FSH	12	METC Dining Facilities	8.0	16.0	16.0	0.0	0.0	40.0
FSH	13	AMEDD C&S Photovoltaic System	2.0	0.0	0.0	0.0	0.0	2.0
FSH	14	Renovate Building 2791	0.0	0.0	12.0	0.0	0.0	12.0
FSH	15	Repair Building 2000	12.0	0.0	0.0	0.0	0.0	12.0
LAFB	16	Intel Ops Center	10.0	0.0	0.0	0.0	0.0	10.0
LAFB	17	Medical Admin Center Lackland	15.0	0.0	0.0	0.0	0.0	15.0
LAFB	18	Telecom Switch	4.0	0.0	0.0	0.0	0.0	4.0
LAFB	19	BEAST Ph 1	4.0	0.0	0.0	0.0	0.0	4.0
RAFB	20	IFF Bed Down	6.0	0.0	0.0	0.0	0.0	6.0
LAFB	21	BEAST Phase 2	0.0	14.0	0.0	0.0	0.0	14.0
CB	22	First Medical Training Facilities	0.0	2.5	17.5	0.0	0.0	20.0
FSH	23	METC Student Dorm #3	0.0	0.0	85.0	0.0	0.0	85.0
LAFB	24	Directed Energy Lab	20.0	17.0	38.0	0.0	0.0	75.0
LAFB	25	BMT Recruit Dorm #1	0.0	20.0	55.0	0.0	0.0	75.0
LAFB	26	BMT Satellite Classroom/Dinner Facility #1	0.0	0.0	25.0	0.0	0.0	25.0
LAFB	27	BMT Central Preparation Kitchen	0.0	0.0	7.6	22.4	0.0	30.0
RAFB	28	AF Audit Agency	0.0	0.0	1.0	0.0	0.0	1.0
RAFB	29	MWR Academy	0.0	5.0	0.0	0.0	0.0	5.0
FSH	30	Building 2263	0.0	0.0	0.0	3.0	0.0	3.0
LAFB	31	Consolidated Cryptologic Maintenance Facility	0.0	0.0	0.0	2.0	0.0	2.0
CB	32	METC Fitness Center	1.5	5.5	0.0	0.0	0.0	7.0
FSH	33	Convert Building 2264 for IMCOM HQ	0.0	0.0	0.0	15.0	0.0	15.0
FSH	34	Convert Building 2266 for IMCOM HQ	0.0	0.0	0.0	15.0	0.0	15.0
FSH	35	Vehicle Parking and Roads	0.0	0.0	0.0	10.0	0.0	10.0
LAFB	36	WHMC Ambulatory Care Clinic	0.0	0.0	3.0	37.0	0.0	40.0
LAFB	37	BMT Recruit Dorm #2	0.0	0.0	0.0	91.0	9.0	100.0
FSH	38	Enlisted UPH	0.0	0.0	0.0	10.0	0.0	10.0
LAFB	39	BMT Recruit Dorm #3	0.0	0.0	0.0	0.0	77.0	77.0
LAFB	40	BMT Recruit Dorm #4	0.0	0.0	0.0	0.0	77.0	77.0
LAFB	41	BMT Satellite Classroom/Din Facility #2	0.0	0.0	0.0	0.0	25.0	25.0
RAFB	42	Command Control Facility	0.0	0.0	0.0	0.0	1.0	1.0
RAFB	43	Approach Lights and Taxiway	0.0	5.0	0.0	0.0	0.0	5.0
RAFB	44	Scott Road ACP/VCP	0.0	0.0	0.0	0.0	8.0	8.0
RAFB	45	Fire Crash Rescue Station	0.0	0.0	0.0	0.0	10.0	10.0

RAFB	46	NOSC	0.0	0.0	0.0	0.0	11.0	11.0
(Continued)								
FSH	47	Company Operations Facility	0.0	0.0	5.0	5.0	0.0	10.0
FSH	48	Child Development Center, under 6 years	0.0	1.5	3.5	0.0	0.0	5.0
FSH	49	Construct UPEH Barracks	0.0	1.5	4.6	3.4	0.0	9.5
FSH	50	AIT Trainee Complex	0.0	0.0	50.0	50.0	0.0	100.0
Totals			221.6	601.6	647.8	384.1	224.5	2,079.6

Source: Estimations by author.

SH = Fort Sam Houston
LAFB = Lackland AFB
RAFB = Randolph AFB
CB = Camp Bullis

As mentioned before, the values of the different projects were implied from the information available at the time of the research. They do not represent the real and final values for the projects.

APPENDIX B**Estimated Impact of Construction Investment
(2008)**

Economic Impacts				
	Direct	Indirect	Induced	Total
Output	\$601,549,952	\$170,213,172	\$296,992,786	\$1,068,755,910
Employment	6,891	1,440	2,652	10,982
Payroll	\$202,076,880	\$52,215,508	\$82,577,458	\$336,869,846

Fiscal Impacts				
	Direct	Indirect	Induced	Total
Gross State Product	\$339,033,248	\$97,940,926	\$178,397,321	\$615,371,495
Retail Sales	\$0	\$30,120,454	\$38,554,388	\$68,674,842
Estimated State Revenue	\$0	\$0	\$0	\$12,583,861

Source: IMPLAN simulations.

**Estimated Impact of Construction Investment
(2009)**

Economic Impacts				
	Direct	Indirect	Induced	Total
Output	\$647,800,192	\$181,258,968	\$327,172,931	\$1,156,232,091
Employment	7,511	1,522	2,859	11,892
Payroll	\$222,818,816	\$56,068,231	\$91,537,097	\$370,424,144

Fiscal Impacts				
	Direct	Indirect	Induced	Total
Gross State Product	\$370,504,160	\$104,653,464	\$196,241,277	\$671,398,902
Retail Sales	\$0	\$34,480,720	\$42,797,376	\$77,278,096
Estimated State Revenue	\$0	\$0	\$0	\$13,392,149

Source: IMPLAN simulations.

**Estimated Impact of Construction Investment
(2010)**

Economic Impacts				
	Direct	Indirect	Induced	Total
Output	\$383,700,096	\$109,684,462	\$194,084,999	\$687,469,557
Employment	4,344	899	1,660	6,903
Payroll	\$131,014,896	\$34,126,580	\$54,629,704	\$219,771,180

Fiscal Impacts				
	Direct	Indirect	Induced	Total
Gross State Product	\$218,773,536	\$63,386,794	\$116,252,586	\$398,412,915
Retail Sales	\$0	\$21,007,926	\$25,575,690	\$46,583,616
Estimated State Revenue	\$0	\$0	\$0	\$7,836,742

Source: IMPLAN simulations.

**Estimated Impact of Construction Investment
(2011)**

Economic Impacts				
	Direct	Indirect	Induced	Total
Output	\$225,499,904	\$60,441,520	\$121,402,415	\$407,343,839
Employment	2,750	512	1,016	4,278
Payroll	\$83,132,448	\$19,296,204	\$34,371,380	\$136,800,032

Fiscal Impacts				
	Direct	Indirect	Induced	Total
Gross State Product	\$134,859,120	\$35,301,608	\$72,621,003	\$242,781,731
Retail Sales	\$0	\$14,305,246	\$16,111,821	\$30,417,067
Estimated State Revenue	\$0	\$0	\$0	\$4,586,610

Source: IMPLAN simulations.

APPENDIX C**Estimated Employment Impact Construction Phase, year 2007**

Industrial Sector	Total
Commercial and institutional buildings	2,154
Highway- street- bridge- and tunnel construction	349
Architectural and engineering services	123
Food services and drinking places	120
Wholesale trade	66
Employment services	61
General merchandise stores	57
Food and beverage stores	47
Nonstore retailers	45
Real estate	43
Offices of physicians- dentists- and other health	38
Clothing and clothing accessories stores	35
Nursing and residential care facilities	35
Motor vehicle and parts dealers	34
Miscellaneous store retailers	32
Automotive repair and maintenance- except car wash	32
Private households	31
Truck transportation	31
Hospitals	29
Health and personal care stores	25
Building material and garden supply stores	24
Services to buildings and dwellings	23
Social assistance- except child day care services	22
Home health care services	21
Other new construction	21
Civic- social- professional and similar organization	21
Child day care services	20
Gasoline stations	19
Monetary authorities and depository credit interme	19
Other amusement- gambling- and recreation industries	19
Legal services	18
Insurance carriers	16
Furniture and home furnishings stores	14
Other Federal Government enterprises	13
Non-depository credit intermediation and related a	13
Hotels and motels- including casino hotels	12
Accounting and bookkeeping services	12
Sporting goods- hobby- book and music stores	12

(Continued)	
Other ambulatory health care services	12
Management of companies and enterprises	11
Personal care services	11
Electronics and appliance stores	10
Business support services	9
Other State and local government enterprises	9
New multifamily housing structures- all	9
Investigation and security services	9

APPENDIX D**Top Thirty Occupational Impacts of Construction Phase, year 2007**

Code	Occupation Title	Estimated Occupational Impacts	Estimated Payroll (Income) Effects
47-1011	First-line supervisors/managers of construction trades and extraction workers	221	\$10,513,528
11-1021	General and operations managers	99	\$9,365,350
11-9021	Construction managers	129	\$9,084,235
47-2061	Construction laborers	393	\$7,821,447
47-2031	Carpenters	252	\$7,729,139
17-2051	Civil engineers	54	\$4,078,449
11-1011	Chief executives	27	\$3,884,897
11-9041	Engineering managers	33	\$3,339,264
13-1051	Cost estimators	60	\$3,209,836
47-2051	Cement masons and concrete finishers	123	\$3,206,203
47-2073	Operating engineers and other construction equipment operators	88	\$2,662,577
17-2141	Mechanical engineers	34	\$2,316,018
41-2031	Retail salespersons	100	\$2,245,510
43-6011	Executive secretaries and administrative assistants	61	\$2,153,148
53-3032	Truck drivers, heavy and tractor-trailer	65	\$2,148,947
51-4121	Welders, cutters, solderers, and brazers	66	\$2,068,947
11-3031	Financial managers	19	\$1,990,605
13-2011	Accountants and auditors	34	\$1,902,748
43-3031	Bookkeeping, accounting, and auditing clerks	63	\$1,899,977
49-9042	Maintenance and repair workers, general	66	\$1,862,988
47-4061	Rail-track laying and maintenance equipment operators	42	\$1,792,742
47-2011	Boilermakers	31	\$1,661,798
47-2152	Plumbers, pipe fitters, and steamfitters	43	\$1,567,995
43-9061	Office clerks, general	66	\$1,563,412
43-1011	First-line supervisors/managers of office and administrative support workers	35	\$1,556,200
53-7062	Laborers and freight, stock, and material movers, hand	71	\$1,440,149
43-6014	Secretaries, except legal, medical, and executive	54	\$1,438,240
	(Continued)		
17-1011	Architects, except landscape and naval	22	\$1,384,099
11-3061	Purchasing managers	13	\$1,173,339
11-2021	Marketing managers	12	\$1,167,142

Source: Estimations by author.

Methodological issues

To obtain the number of occupations impacted by the different activities in these projects, the Institute for Economic Development (IED) developed a specific occupations-by-industry matrix for the San Antonio MSA using information from the Minnesota IMPLAN Group (MIG) and the Texas Workforce Commission (TWC).

The IMPLAN group has developed a national occupations-by-industry matrix for the year 2002 based on data from the Bureau of Labor Statistics (BLS) in order to allocate jobs to occupations by industry. Based on this data, IED used information from the TWC at the State and MSA levels. The TWC develops information of occupations-by-industry at both levels and IED used this information to modify the original matrix developed by the IMPLAN group.

The new matrix allowed IED to translate the usual number of jobs per industry from the impact simulations to number of occupations per industry. This new information, in terms of occupations impacted, is useful to get a better understanding of the income effects of the projects. Based on wage data per occupation from the TWC for the San Antonio MSA, the impact results can show what percentage and how much of the income generated from the projects corresponds to the different occupations affected by the projects themselves.

APPENDIX E

Occupation Code	Group	Rank	Occupational Title	Annual Mean Wage
11-0000	I	1	Management occupations	\$79,620
23-0000		2	Legal occupations	\$70,080
15-0000	II	3	Computer and mathematical occupations	\$59,710
17-0000		4	Architecture and engineering occupations	\$56,220
13-0000		5	Business and financial operations occupations	\$54,010
19-0000		6	Life, physical, and social science occupations	\$53,440
29-0000		7	Healthcare practitioners and technical occupations	\$52,960
25-0000		8	Education, training, and library occupations	\$39,810
27-0000	III	9	Arts, design, entertainment, sports, and media occupations	\$35,260
21-0000		10	Community and social services occupations	\$34,020
49-0000		11	Installation, maintenance, and repair occupations	\$33,330
33-0000		12	Protective service occupations	\$31,790
41-0000		IV	13	Sales and related occupations
43-0000	14		Office and administrative support occupations	\$26,820
47-0000	15		Construction and extraction occupations	\$26,640
51-0000	16		Production occupations	\$24,500
53-0000	17		Transportation and material moving occupations	\$23,870
31-0000	18		Healthcare support occupations	\$21,380
45-0000	V	19	Farming, fishing, and forestry occupations	\$19,710
37-0000		20	Building and grounds cleaning and maintenance occupations	\$17,820
35-0000		21	Food preparation and serving related occupations	\$15,990
39-0000		22	Personal care and service occupations	\$15,960

| The average wage for all occupations is \$32,670 |

APPENDIX F**Top Thirty Industries Affected by Operations of New Facilities**

Industrial Sector	Estimated Impact
Federal Military	2,569
Colleges- universities- and junior colleges	630
Food services and drinking places	259
Scientific research and development services	224
Facilities support services	143
Elementary and secondary schools	129
Employment services	120
Hospitals	119
Nursing and residential care facilities	117
Real estate	105
Air transportation	94
Wholesale trade	88
Offices of physicians- dentists- and other health	75
Private households	62
General merchandise stores	60
Food and beverage stores	57
Home health care services	53
Legal services	52
Automotive repair and maintenance- except car wash	52
Health and personal care stores	50
Social assistance- except child day care services	44
Motor vehicle and parts dealers	43
Miscellaneous store retailers	42
Services to buildings and dwellings	40
Child day care services	40
Civic- social- professional and similar organizations	39
Clothing and clothing accessories stores	38
Other amusement- gambling- and recreation ind.	37
Insurance carriers	35
Telecommunications	33

Methodological issues

Because the software IMPLAN uses a generic sector, Federal Military, for military activities with no indirect effects, the study implemented a mapping of military occupational categories (MOCs) to equivalent civilian standard occupational categories (SOCs). Furthermore, an additional mapping of the SOCs to IMPLAN's industrial sectors was developed by IED using information from the occupations-by-industry matrices from the Minnesota IMPLAN Group (MIG), at the national level, and the Texas Workforce Commission (TWC), at the State and MSA levels. Based on this information, the number of active military occupations (for the year 2002) in Bexar County was transformed into the number of jobs per industry in the IMPLAN software. In the cases where MOCs could not be translated into SOCs they were allocated to the Federal Military industry in IMPLAN.

The translation of military occupations to jobs per industry allowed IED to obtain a distribution of the employment by industry in Bexar County. Considering the characteristics of the BRAC 2005 with respect to Fort Sam Houston, the previous structure was modified to give a greater weight to the colleges and universities sector; to give a lower weight to the hospitals and to the Federal Military sectors. The final jobs per industry structure and the allocation of the new 4,099 jobs are shown in the following table:

IMPLAN sector	IMPLAN sector	Percent	Jobs
462	Colleges- universities- and junior colleges	30.06%	1232
505	Federal Military	25.35%	1039
446	Scientific research and development services	10.61%	435
453	Facilities support services	6.93%	284
391	Air transportation	4.37%	179
467	Hospitals	2.98%	122
463	Other educational services	2.85%	117
461	Elementary and secondary schools	2.85%	117
468	Nursing and residential care facilities	2.32%	95
454	Employment services	1.34%	55
406	Health and personal care stores	1.27%	52
437	Legal services	0.88%	36
422	Telecommunications	0.88%	36
444	Management consulting services	0.66%	27
445	Environmental and other technical consulting services	0.66%	27
420	Radio and television broadcasting	0.63%	26
439	Architectural and engineering services	0.63%	26
441	Custom computer programming services	0.63%	26
442	Computer systems design services	0.63%	26
443	Other computer related services- including facilit.	0.63%	26
464	Home health care services	0.51%	21
481	Food services and drinking places	0.51%	21
427	Insurance carriers	0.46%	19
484	Electronic equipment repair and maintenance	0.46%	19
498	State and local government electric utilities	0.44%	18
37	Manufacturing and industrial buildings	0.44%	18
	Total *	100.00%	4,099

* The numbers may not add up to the total due to rounding procedures for this table.

The weight for the sector scientific research and development services was also increased in a significant way, given the importance of these activities for the new Battlefield Health and Trauma Center (a transformation from the Institute for Surgical Research that operates at Fort Sam Houston).

The operations values of the report were the result of averaging two simulations. One simulation allocated all jobs to the Federal Military sector. The other simulation allocated the jobs according to the structure of military jobs in Bexar County (including the military sector).

Sources

The information to transform military occupations, in Bexar County, into civilian ones followed the methodology used by the Joint Process Action Team (JPAT) in the economic impact studies developed for the BRAC process.

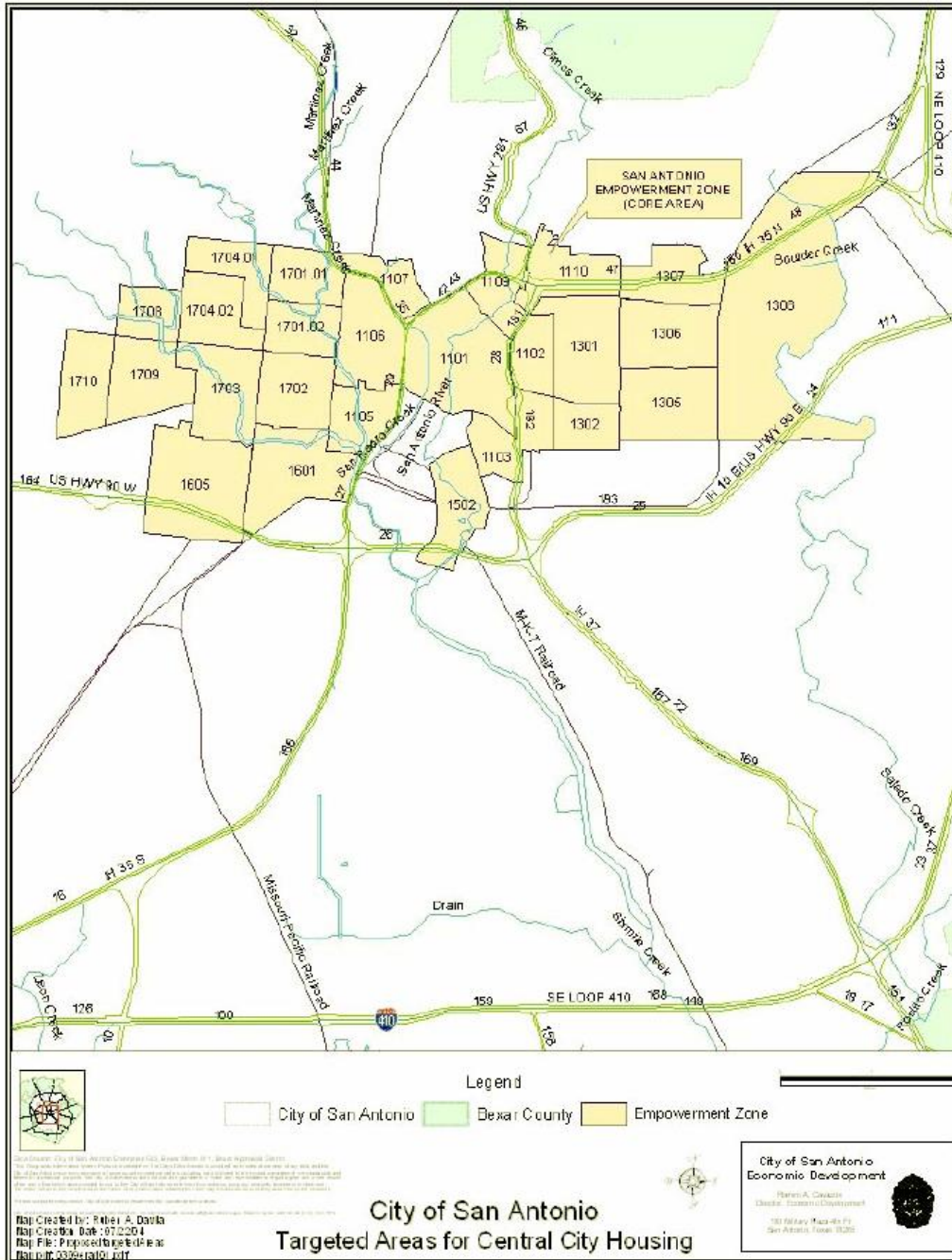
To analyze the types of military occupations that existed in Bexar County, IED used the list of military occupations for the county from the document: *MOS by State and County*, elaborated by the Defense Manpower Data Center (DMDC); and to transform military occupations to civilian ones IED used the list from the DMDC's crosswalk document from September 2001.

APPENDIX G**Top 30 Detailed Occupational Impacts of Operations Phase, year 2007**

Occupational code	Occupation Title	Occupation Impact	Payroll (Income) Effects
13-1199	All other business operations specialists	199	\$12,787,974
43-4199	All other financial, information, and record clerks	187	\$8,099,199
11-9199	All other managers	91	\$8,080,433
29-1111	Registered nurses	135	\$7,788,870
23-1011	Lawyers	70	\$7,769,857
11-1021	General and operations managers	73	\$6,921,271
29-1061	Physicians and surgeons	33	\$6,249,584
13-1111	Management analysts	87	\$5,579,664
25-1011	Postsecondary teachers	73	\$5,362,030
25-2021	Elementary school teachers, except special education	108	\$5,216,196
13-2011	Accountants and auditors	73	\$4,075,181
25-2031	Secondary school teachers, except special and vocational education	73	\$3,678,477
43-6014	Secretaries, except legal, medical, and executive	135	\$3,593,076
33-9099	All other protective service workers	97	\$3,489,864
53-2021	Air traffic controllers	31	\$3,465,646
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation	62	\$3,328,477
13-2081	Tax examiners, collectors, and revenue agents	49	\$3,120,950
11-3031	Financial managers	29	\$3,031,687
43-9061	Office clerks, general	127	\$3,004,001
43-1011	First-line supervisors/managers of office and administrative support workers	65	\$2,911,679
33-3012	Correctional officers and jailers	72	\$2,893,294
25-2022	Middle school teachers, except special and vocational education	59	\$2,864,554
41-2031	Retail salespersons	126	\$2,838,436
17-2072	Electronics engineers, except computer	32	\$2,755,143
13-1023	Purchasing agents, except wholesale, retail, and farm products	47	\$2,735,922
11-9041	Engineering managers	25	\$2,525,369
17-2199	All other engineers	29	\$2,409,797
11-9121	Natural sciences managers	21	\$2,238,990
15-1051	Computer systems analysts	31	\$2,206,976
49-9042	Maintenance and repair workers, general	76	\$2,146,172

APPENDIX H

Revised 5/1/07



PLEASE NOTE:

Pursuant to program eligibility criteria for Tax Abatement under Central City mixed-use multi-family housing, please note that census tracts 1708, 1709, and 1710 were added as Central City Housing Targeted Areas effective July 12, 2004. Resolution number EZGB-2004-01 of the Interim Empowerment Zone Governance Board authorized submission of the boundary expansion request. Qualification within the additional census tracts is not retroactive. Projects pursuing qualification within the additional tracts as Central City mixed use multi-family housing before July 12, 2004 do not qualify under this designation.

Institute for Economic Development, 2007

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