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2002 Economic Impact of White Sands Missile Range (WSMR) on the Regional Economy

David A. Schauer
University of Texas at El Paso, dschauer@utep.edu

Dennis L. Soden
University of Texas at El Paso, desoden@utep.edu

Brent McCune

David Coronado
University of Texas at El Paso

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by

David A. Schauer, Ph.D.
Dennis L. Soden, Ph.D.
Brent McCune
David Coronado

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Institute for Policy and Economic Development
University of Texas at El Paso
COBA 314
El Paso, Texas 79968-0703
915.747.7974
Fax: 915.747.7948
Email: iped@utep.edu
Web: iped.utep.edu

FACT SHEET

2002 Economic Impact of White Sands Missile Range (WSMR) on the Regional Economy

2002 Key Statistics

Regional Economy (Dona Ana, El Paso, Otero and Socorro)

✓ Gross Regional Product/Income	$ 20,217.3 million
✓ Total Retail & Wholesale Sales	$ 11,254.2 million
✓ Employed Civilian Labor Force	395,953

White Sands Missile Range

WSMR-Related Business Effects

✓ Increased Sales Volume	$	684.0 million
✓ Increased Sales/Regional Retail & Whls. Sales	$	6.1 %
✓ Increased Use of Business Property	$	192.5 million
✓ Expansion in Regional Depository Institutions' Credit Base	$	93.9 million

WSMR-Related Household Effects

✓ Increased Income	$	551.1 million
✓ Increased Income/Gross Regional Income	$	2.7 %
✓ Net Incremental Employment		5,542

WSMR-Related Government Effects

✓ Net Local Government Outlays to Provide Municipal Services Allocable to WSMR-Related Influence	$	48.5 million
✓ Capital Required by Local Government to Provide WSMR-Related Public Goods and Services	$	57.6 million
✓ Increased Regional Sales/Net Local Government Outlays		14 to 1
✓ Increased Regional Income/Net Local Government Outlays		11 to 1
✓ Increased Regional Business Property Utilization/ Capital Requirements by Local Government		3 to 1

EXECUTIVE SUMMARY

2002 Economic Impact of White Sands Missile Range (WSMR) on the Regional Economy

Introduction

In the fall of 2002, the Institute for Policy and Economic Development (IPED) at the University of Texas at El Paso was contracted by WSMR to develop and implement a model for estimating the economic impact of the WSMR facility on the regional economy. This Executive Summary presents an overview of the results of IPED's economic impact analysis of WSMR on the region; defined as Dona Ana, El Paso, Otero, and Socorro counties.

WSMR has a rich history and tradition in the region spanning more than 55 years. Yet, there has been no detailed analysis of WSMR's effects upon regional sales volume, household income, and local governments' revenue/expense streams. The present study fills this gap.

Methodology

To implement the study, data concerning the WSMR workforce and WSMR expenditures was acquired from the relevant offices at WSMR along with information from a variety of other local, state, and national sources. In addition, a survey instrument was designed and given to active duty and civilian personnel at WSMR. Specifically, the 5600+ (5611) employees at WSMR were given the opportunity to respond to a questionnaire seeking information concerning their rank/grade/title at WSMR, the status of other family members, the location and nature of their residence, along with values for monthly income and expenditures. Overall, 1079 usable responses were obtained; a 19.2 percent response rate.

The information outlined above was analyzed by IPED's Regional Impact Model (IPED-RIM) to assess the economic effects of the WSMR facilities and their employees upon the region's economy. The IPED-RIM has evolved from the so-called Caffrey-Isaacs model developed in 1971. This comprehensive model was, and is, generally considered the classic approach for determining the economic effects of a public institution or government installation. The model consists of a sophisticated system of equations (technically, linear cash flow formulas) for a variety of sub-sectors of the installation being analyzed. These equations are employed to determine the economic effects on the regional business, household, and local government sectors. (A full copy of this study, including the survey instrument and the IPED-RIM is available at iped.utep.edu/reports).

Results

WSMR-Related Business Effects

The presence of the WSMR facility in the region generates an increase of $ 684.0 million in annual sales volume; an amount which would not occur if WSMR were not part of the regional economic make-up. This value is the sum of:

- ✓ The direct purchases from local businesses made by WSMR itself and its employees (active military and civilian).
- ✓ The purchases from regional sources by firms in support of their WSMR-related business volume.

- ✓ The amount of business volume generated by the expenditures of WSMR-related income received by individuals/households other than WSMR personnel.

The last two components estimate the so-called "indirect' or "second round" or "multiplier" effects. The $ 684.0 million figure represents 6.1 percent of total regional retail and wholesale sales on an annual basis.

In addition, the increase in business activity requires incremental utilization of capital goods (for example, machinery and equipment) and property by regional firms. The increased use of such business property is calculated to be $192.5 million.

The regional economy also benefits from the addition of $ 93.9 million to the credit base of depository institutions in the region. This amount represents a source of loanable funds to the Alamogordo, El Paso, and Las Cruces communities.

WSMR-Related Household Effects

The impacts, direct and indirect, of WSMR on the regional household sector are also dramatic. The incremental effect on household income is $ 551.1 million annually. This value is the sum of two factors:

- ✓ The income of WSMR personnel.
- ✓ The income of regional individuals employed as a result of WSMR-related business volume.

The $ 550+ figure represents 2.7 percent of the area's gross income.

The impact upon regional employment levels is significant as well. Overall, 13,396 additional civilian jobs are generated given the presence of WSMR in the region. The IPED-RIM nets those jobs held by dependents of WSMR personnel for a net, and more conservative impact, of 5,542 incremental jobs.

WSMR-Related Government Effects

The final component of the IPED-RIM focuses upon the relationships between WSMR and local government units in the region. Specifically, net local government outlays to provide municipal services, including public schools, allocable to WSMR-related influences are $ 48.5 million in 2002. The figure reflects the combined effects of:

- ✓ WSMR-related revenues received by local governments (sales, tax, property tax, and the portion of state/federal funding to local public schools due to children of WSMR-related families).
- ✓ Value of municipal-typed services self-provided by WSMR.
- ✓ The operating cost of government provided municipal services allocable to WSMR-related influences.

The first two factors are netted from the third to determine the net $ 48.5 million cost.

In addition, annual services ranging from education, utilities, and use of other public infrastructure tied to the WSMR presence require local government to acquire additional capital goods (for example: land, school and other buildings, equipment, and machinery) to support the municipal services' demands allocable to WSMR. At present, the incremental investment in capital goods by local governments is $ 57.6 million. This figure is not an annual expense or cost value as is

the $ 48.5 million value above. Rather, it represents the current value of local government capital goods/properties required as a result of the WSMR presence in the area.

The annual net cost and incremental capital stock figures presented above are significant. However, these government costs should be viewed as investments in the regional economy and should be evaluated in terms of the returns generated to the region in the form of increased business activity, private land and capital goods utilization, and household income. Consider the following:

- ✓ For every $ 1 of net annual operating cost to local government, $ 14 of incremental business revenues is realized and $ 11 of additional income to regional households is generated. Benefit/cost ratios of 14 to 1 and 11 to 1 are impressive by any standard!

- ✓ For each $ 1 of additional capital goods acquired by local government to support WSMR-related municipal services' demand, utilization of private property/capital goods increases $ 3. Once again, a strong return in any economic environment.

As noted, the "region" in this study is defined to include Dona Ana, El Paso, Otero, and Socorro counties. The data made available to IPED for this study suggest the following distribution of economic impacts:

- ✓ Dona Ana 65 %
- ✓ El Paso 20 %
- ✓ Otero 12 %
- ✓ Socorro/Other 3 %

Finally, lack of data prevented a detailed analysis of the regional economic impacts resulting from the presence of WSMR-related retirees in the area. Such analysis was conducted for Ft. Bliss-related retirees in El Paso County in 2002. To the extent that the Ft. Bliss retiree group's income/expenditure levels and patterns are typical, a reasonable estimate of WSMR-related retirees in the region outside of El Paso is:

- ✓ Increased Regional Sales Volume per 1,000 Retirees $ 16.3 million
- ✓ Increased Regional Credit Base per 1,000 Retirees $ 42.0 million
- ✓ Increased Regional Household Income per 1,000 Retirees $ 47.5 million

Available information also indicates that 1,013 retirees reside in the Las Cruces area alone.

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Introduction

In the fall of 2002, the Institute for Policy and Economic Development (IPED) at The University of Texas at El Paso (UTEP) was contracted by WSMR to develop and implement a model for estimating the economic impact of the WSMR facility on the regional economy. This report presents the results of IPED's economic impact analysis of WSMR on the region; defined to be Dona Ana, El Paso, Otero, and Socorro counties. Specifically, this study examines the facility and its personnel in terms of:

(1) Economic Impact on Regional Businesses.

(2) Economic Impact on Regional Households.

(3) Economic Impact on Local Government Units in the Region.

WSMR has a rich history and tradition in the area spanning more than 55 years. The installation has been a significant contributor and mainstay of the regional economy, a fact that is often overlooked in discussions about the development of the regional economy. The present study develops analysis to fill this gap.

Methodology

This study required the development of an analytical framework meeting two criteria: (1) the model must identify relevant segments of the regional economy (once again, Dona Ana, El Paso, Otero, and Socorro counties) impacted by WSMR, and (2) the model must lend itself to quantification; that is, data must be available or be generated in a timely, cost effective manner so that the conceptual equations may be estimated and applied to the current relationships between WSMR and the region.

IPED's Regional Impact Model (IPED-RIM) was utilized to identify and assess the economic effects of the WSMR facilities and their employees upon the region's economy. The IPED-RIM has evolved from the so-called Caffrey-Isaacs model developed in 1971. This comprehensive model was, and is, generally considered the classic approach for determining the economic effects of a public institution or government installation. Originally developed to study the role of educational institutions in a regional economy (Caffrey and Isaacs, 1971), the model was modified for application to military institutions by UTEP in its analysis of the economic impact of Ft. Bliss in 1989 (Schauer and King, 1989). The model continued to evolve and was implemented in an updated study of Ft. Bliss in 2002 (Schauer and Soden, 2002). The model consists of a sophisticated system of equations (technically, linear cash flow formulas) for a variety of sub-sectors of the installation being analyzed. These equations are employed to determine the economic effects on the regional business, household, and local government sectors.

To operationalize the IPED-RIM, data concerning the WSMR workforce and WSMR expenditures was acquired from the relevant offices at WSMR along with information from a variety of other local, state, and national sources. In addition, a survey instrument was designed and given to active duty and civilian personnel at WSMR. Specifically, the 5600+ employees at WSMR were given the opportunity to respond to a questionnaire seeking information concerning their rank/grade/title at WSMR, the status of other family members, the location and nature of their residence, along with values for monthly income and expenditures. Overall, 1079 usable responses were obtained; a 19.2 percent response rate. A copy of the survey instrument is provided in Appendix A to this report.

Survey Results

As noted, a sample representing 19 percent of the WSMR employee population was generated in the survey. Overall, the sample size provides a confidence level and interval of 99 percent plus/minus 4 percent. Table 1 provides a more detailed breakdown by Active Military and Civilian Employee groups. The table reveals the following:

- The WSMR-related employee population assumed in this study is 5613; 90.0 percent of which are Civilian Employees. This compares to 91.8 percent of the response group being Civilians.

- The WSMR population was divided into two components: Active Military and Civilian Employees. The Active Military sub-group was divided into six categories. The response group distribution is similar to that of the population with two exceptions: Group D is over-represented and Group F is under-represented. Given this, population distribution weights were utilized in the analysis.

- The Civilian Employees component was broken down into five categories. The response group distribution is highly similar to that of the population. Nevertheless, population weights were employed in estimating the economic impact values.

TABLE 1

WSMR Population and Response Group Distribution

Distribution	**Population (%)**	**Response Group (%)**
Active Military		
Group A - O7, O6	1.4	1.5
B - O5, O4	9.2	9.6
C - O3, O2	5.3	4.3
D - E9, E8, E7	4.7	19.7
E - E6, E5	24.9	22.2
F - E4, E3, E2	54.5	42.6
Population =	510	
Response Group =	89 (17.5 % response rate)	
Civilian Employees		
Group 1 - SES, GS 13-15, and equivalent	17.7	16.9
2 - GS 10-12 and equivalent	53.1	52.6
3 - GS 7- 9 and equivalent	12.2	12.3
4 - GS 4- 6 and equivalent	13.9	4.5
5 - GS 1- 3 and equivalent	3.1	3.7
Population =	5,103	
Response Group =	990 (19.4 % response rate)	

TABLE 2

Characteristics of WSMR-Related Households

	Active Military	Civilian Employees
Nature of Residence		
On-Post Quarters	88.6 %	7.0 %
Rent of Lease Off-Post	2.3 %	11.7 %
Own or Buy Off-Post	9.1 %	81.3 %
Annual Property Taxes (1)	$ 925	$ 1,510
Family Members – Employment Status (2)		
Average Number of Household Members Employed in Region	0.99	1.54
Monthly Gross Income and Expenditures		
Income	$ 3,765	$ 5,965
Housing/Utilities	$ 362	$ 2,148
Groceries (3)	$ 300	$ 438
Auto (3, 4)	$ 201	$ 510
Retail Purchases (3)	$ 222	$ 274
Entertainment (3)	$ 175	$ 225
Charitable Contributions	$ 54	$ 177
Other	$ 242	$ 419
Average Balances in Regional Depository Institutions		
Checking Account	$ 1,407	$ 4,412
Savings/Time Deposit Accounts	$ 4,450	$ 13,412

(1) For those who Own or are Buying.
(2) Excluding the WSMR employee and only non-WSMR jobs held by household member.
(3) Does not include any expenses or purchases at any base facility such as the Commissary, Post Exchange, Exchange Concession, MWR, etc.
(4) Does not include car insurance payments.

Table 2 presents additional information concerning WSMR-related households. Specifically:

- As expected, almost 90 percent of Active Military respondents live On- Post. Over 90 percent of Civilian Employees live Off-Post with eight of nine households owning or buying their home.

- Active Military household income runs approximately 60 percent of Civilian households. A similar relationship holds with respect to property tax levels for those respondents buying their home.

- Other than Housing/Utilities monthly expenses, Military household expenditures run roughly 60 percent of the Civilian household level.

- The expenditure levels/patterns revealed for WSMR households, both Active Military and Civilian, are similar to those identified in the 2002 Ft. Bliss study (Schauer and Soden, 2002).

- WSMR-related households are two (or more) income families. This is especially the case with Civilian households.

- WSMR households maintain significant checking and saving/time deposit accounts in regional depository institutions. Generally, $3 of savings/time deposits are held for every $1 of transactions balances; a ratio found throughout the United States. Also, Civilian household balances are three times that of Active Military families.

Complete frequency data for the WSMR group to all questions posed in the survey instrument are provided in Appendix B to this report.

Economic Impact Analysis

The first part of the IPED-RIM estimates the increase in commercial activities resulting from the presence of WSMR. The Business (B) portion of the model has three components:

- B-l: WSMR-Related Local Business Volume

- B-2: Expansion in Regional Depository Institutions' Credit Base Resulting from WSMR-Related Deposits

- B-3: Value of Local Business Property Committed to WSMR-Related Business

The specifics concerning each of these components along with the estimates of the relevant economic affects are presented below.

White Sands Missile Range-Related Regional Business Volume

This component and its sub-sections sum the direct purchases from regional businesses made by WSMR organizations, its staff, and visitors (B-1.1); the purchases from local sources by businesses in support of their WSMR-Related business volume (B-1.2); and, the amount of business volume generated by the expenditure of WSMR-Related income of regional individuals (B-1.3). B-1.2 and B-1.3 estimate the so-called "second round" purchases. Specifically, beginning with Model Estimator 1:

Model Estimator 1:
White Sands Missile Range-Related Business Volume

Total WSMR-Related Local Business Volume (BV_{WSMR})		$ 683,989,964
BV_{WSMR} =	$(E_L)_{WSMR} + (P_{LB})_{WSMR} + (BV_I)_{WSMR}$	
$(E_L)_{WSMR}$ =	WSMR-Related Local Expenditures (B-1.1)	$ 302,169,571
$(P_{LB})_{WSMR}$ =	Purchases from Local Sources by Local Businesses in Support of Their WSMR-Related Business Volume (B-1.2)	$ 327,536,883
$(BV_I)_{WSMR}$ =	Regional Business Volume Stimulated By the Expenditure of WSMR-Related Income by Individuals Other than Staff, or Visitors (B-1.3)	$ 54,283,511

Further:

B-1.1: WSMR-Related Local Expenditures

B-1.1 totals the expenditures by WSMR as an organization (B-1.1.1), by staff (B-1.1.2), and by visitors (B-1.1.3). That is:

B-1.1 =	WSMR-Related Regional Expenditures $(EL)_{WSMR}$	$ 302,169,571
$(E_L)_{WSMR}$ =	$(E_L)_O + (E_L)_S + (E_L)_S$	
$(E_L)_O$ =	Local Expenditures by the Organization (B-1.1.1)	$ 157,924,678
$(E_L)_{SR}$ =	Local Expenditures by Staff (B-1.1.2)	$ 143,535,471
$(E_L)_V$ =	Local Expenditures by Visitors (B-1.1.3)	$ 709,422

Model Estimator 2:
White Sands Missile Range Organizational Expenditures

B-1.1.1 estimates the value of purchases of goods and services by the On-post organizations from regional businesses. $(EL)_o$ is derived from both appropriated and non-appropriated funds. Appropriated fund expenditures include military construction, supplies and maintenance. Non-appropriated expenditures include those of the Exchange, Commissary, and other miscellaneous non-appropriated accounts such as the Chaplain's fund and other associations. More specifically, B-1.1.1 includes:

Regional Expenditures by WSMR $(EL)_O$		$ 157,924,678
$(E_L)_O$ =	$(E_L)_A + (E_L)_E + (E_L)_C + (E_L)_M$	
$(E_L)_A$ =	Appropriated Funds	$ 154,532,137
$(E_L)_E$ =	Exchange Expenditures	$ 740,000
$(E_L)_C$ =	Commissary Expenditures	$ 211,000
$(E_L)_M$ =	Miscellaneous Expenditures	$ 2,441,541

Model Estimator 3:
Personnel Impact

B-1.1.2 estimates the dollar volume of regional purchases of personal goods and services by the Active Military and Civilian Employees of WSMR. Both rental housing and non-housing expenditures by residents are considered. Non-rental housing is considered as part of the value of local real property related to WSMR. Details include:

Regional Expenditures by Staff $(EL)_S$		$ 143,535,471
$(E_L)_S$ =	$(E_H)_S + (E_{NH})_S$	
$(E_H)_S$ =	Expenditures by Staff for Local Rental Housing	$ 11,143,226
$(E_{NH})_S$ =	Regional Non-Housing Expenditures by Staff	$ 132,392,245

Model Estimator 4:
Visitors

The direct and indirect impact of WSMR visitors and their expenditures is calculated as:

Total Local Expenditures by Visitors $(E_L)_V$		$	709,422
$(E_L)_V$ =	$(P_{OFF})(PD)(V_L) + (P_{ON})(PD)(E_{OFF})(V_L)$		
(P_{OFF}) =	Number of Personnel TDY to WSMR, Off-post		4,166
(P_{ON}) =	Number of Personnel TDY to WSMR, On-post		2,839
(PD) =	Average Per Diem Dollars	$	48.50
(V_L) =	Average Length of Visit in Days		3.0
(E_{OFF}) =	Portion of Expenditures Made Off-post		0.25

The next two sections of the business impact component of the model quantify the additional or "second round" expenditure volume resulting from the stimulus provided by the purchases of goods and services identified in B-1.1, such that when White Sands Missile Range and its personnel buy from a regional supplier or when a visitor eats in a regional restaurant, a chain of economic transactions is triggered. The initial dollar of expenditure will be re-spent a number of times. To the extent that these additional spending episodes occur within the regional economy, more business volume will be generated. These additional sales benefit the region and are due, indirectly, to the presence of WSMR. B-1.2 and B-1.3 measure these additional impacts.

Model Estimator 5:
Purchases from Regional Sources by Business in Support of Their White Sands Missile Range-Related Business Volume

B-1.2 =

Purchases from Regional Sources by Businesses in Support of Their WSMR-Related Business Volume $(P_{LB})_{WSMR}$		$327,536,883
$(P_{LB})_{WSMR}$ =	(mp) (E_L)	
mp =	Coefficient Representing the Degree to which Regional Businesses Purchase Goods and Services from Regional Sources or Non-Regional Sources	1.08395
$(E_L)_{WSMR}$ =	WSMR-Related Regional Expenditures (B-1.1)	$302,169,571

Model Estimator 6:
Business Volume Stimulated by the Expenditure of White Sands Missile Range-Related Income by Regional Individuals Other than Staff or Visitors

The second estimation of indirect effects of WSMR-Related business activity represents personal income-induced business activity in the region. Some of the receipts by businessmen will be paid out to residents in the form of wages, salaries, and entrepreneurial returns, and a portion of this money will be spent for the everyday purposes of its recipients. The coefficient m_i represents the proportion of income received from regional WSMR-Related business activity that is spent and re-spent in the area. Specifically:

B-1.3 =

Regional Business Volume Stimulated by the Expenditure of WSMR-Related Income by Local Individuals Other than Staff or Visitors (BV_I)		$ 54,283,511
$(BV_I)_{WSMR}$ =	$(m_i)(I_L)_{WSMR}$	
(m_i) =	Coefficient Representing the Degree to which Individual Income Received from Regional Business Activity is Spent and Re-Spent	.28171
$(I_L)_{WSMR}$ =	WSMR-Related income by area Individuals (I-2.4)	$192,689,846

Model Estimator 7:
Expansion in Regional Depository Institutions Resulting from White Sands Missile Range-Related Deposits

Another effect of economic activity by White Sands Missile Range is the expansion in the credit base at regional banks. This results from deposits made by base personnel. (White Sands Missile Range does not deposit any federal funds in checking or time deposits at area institutions.) The specifics of B-2 are presented below:

B-2 =

Expansion of Regional Financial Institutions' Credit Base Resulting from WSMR-Related Deposits (CB)		$ 93,927,115
CB =	D_A+D_C	
D_A =	Savings and Checking Account Balances of Active Duty Military	$ 2,975,275
D_C =	Savings and Checking Account Balances of Civilian Employees	$ 90,951,841

Model Estimator 8:
Value of Regional Business Property Committed to White Sands Missile Range -Related Business

Component B-3 captures the capital and property related to business volume generated by the presence of WSMR. That is:

B-3 =

Value of Regional Business Property Committed to WSMR-Related Business $(P_B)_{WSMR}$		$ 192,517,654
$(P_B)_{WSMR}$ =	$BV_{WSMR}/BV_L * V_B$	
BV_{WSMR} =	WSMR-Related Business Volume	$ 683,989,964
BV_L =	Regional Total Business Volume	$20,217,306,294
V_B =	Assessed Valuation of Regional Business Property	$ 5,690,417,366

Economic Impact on Area Households and Individuals

The next portion of the impact model quantifies the increase in employment and income to the region as a result of WSMR. The Household and Individual (I) section has two components:

- I-1: Regional Jobs Attributable to the Presence of WSMR.
- I-2: Personal Income Resulting from WSMR-Related Jobs and Business Activities.

The details concerning each of these sub-sectors along with the estimates or their values are presented below.

Model Estimator 9:
Number of Regional Jobs Attributable to
White Sands Missile Range

The model assumes that the ratio of WSMR-Related business volume to gross regional sales is the same as the ratio of area jobs attributable to the presence of WSMR to total employment. The employment value emerging from this relationship is then adjusted downward by the number of local jobs held by family members of WSMR personnel. Specifically:

I-1 =	Number of area jobs attributable to the presence of WSMR (J_L)	5,542
J_L =	$(BV_{WSMR}/BV_L)LF_L + (L_A - L_{DA})$	
BV_{WSMR} =	WSMR-Related Business Volume	$ 683,989,964
BV_L =	Regional Business Volume	$20,217,306,294
LF_L =	Local Employed Civilian Labor Force	395,953
L_A =	Active Military	508
L_{DA} =	Employed Family Members & WSMR Personnel	8,362

Model Estimator 10:
Personal Income of Individuals and Households from
White Sands Missile Range -Related Jobs and Business Activities

The personal income estimate is the sum of two factors: (1) The income of those directly associated with WSMR. This includes the average family incomes of Active Military and Civilian Employees less allotments of pay sent out of the area. (2) Income of local persons employed as a result of WSMR-Related business volume. That is:

I-2 =

Personal Income of Individuals from WSMR-Related jobs and Business Activities (PI)		$ 551,062,841
PI_{WSMR} =	$A(FI_A-PA_A)+C(FI_C-PA_C)+ (CP_{EP}/ELF_{EP})*ELF_{WSMR}$	
A =	Active Military	508
C =	WSMR Civilian Employees	5,103

FI_A =	Average Annual Family Income Active Military	$	45,176
PA_A =	Average Annual Pay Allotments Active Military	$	10,175
FI_C =	Average Annual Family Income Civilian Employees at WSMR	$	71,577
PA_C =	Average Annual Pay Allotments Civilian Employees at WSMR	$	4,834
CP_{EP} =	Total Annual Civilian Payroll		$5,695,507,000
ELF_{EP} =	Total Employed Civilian Labor Force		395,953
ELF_{WSMR} =	Off-post Employed Civilian Labor Force as a result of WSMR Activities		13,396

Economic Impact of White Sands Missile Range on Local Governments in Region

The final segment of the impact model is designed to reveal the effects of the presence of WSMR upon local government revenues and expenditures. This portion of the model (G) identifies five areas of interaction between the military base and local government units.

- G-1: WSMR-Related Revenues Received by Local Governments
- G-2: Value of Municipal-Type Services Self-Provided by WSMR
- G-3: Operating Cost of Government Provided Municipal Services Allocable to WSMR-Related Influences
- G-4: Real Estate Taxes Foregone Through the Tax Exempt Status of WSMR
- G-5: Value of Local Government Properties Allocable to WSMR-Related Portion of Services Provided

Model Estimator 11:
White Sands Missile Range-Related Revenues Received by Local Government Units

This component of the Government section of the model summarizes the annual tax receipts, federal aid and other local government receipts derived from WSMR Range and from White Sands Missile Range-Related individuals and business activities. Specifically:

G-1 =

WSMR-Related Revenues Received by Local Government Units $(R)_{WSMR}$		$	16,207,466
R_{WSMR} =	$(R_{RE})_{WSMR} + (R_{NRE})_{WSMR} + (R_{ST})_{WSMR} + (R_A)_{WSMR}$		
$(R_{RE})_{WSMR}$ =	WSMR-Related Real Estate Taxes Paid to Local Governments (G-1.1)	$	11,578,543
$(R_{NRE})_{WSMR}$ =	WSMR-Related Taxes, Other Than Real-Estate, Paid To Local Governments (G-1.2)	$	2,386,287
$(R_{ST})_{WSMR}$ =	Sales Tax Revenue Received by Local governments as a Result of WSMR-Related local purchases (G-1.3)	$	1,984,376
$(R_A)_{WSMR}$ =	Federal Aid to Local Governments Allocable to the		

Presence of White Sands Missile Range (G-1.4)	$	258,260

Model Estimator 12:
White Sands Missile Range-Related Real Estate Taxes Paid to Local Governments

G-1.1 estimates the annual payment of real estate taxes to local governments by Active Duty, Civilian Employees, and by local businesses for real property allocable to WSMR-Related business. (WSMR itself pays no real estate taxes to local governments.) Details are presented below:

G-1.1 =

WSMR-Related Real Estate Taxes Paid Local Governments $(R_{RE})_{WSMR}$	$	11,578,543
$(R_{RE})_{WSMR}$ = $(R_{RE})_A + (R_{RE})_C + (R_{RE,B})_{CR}$		
$(R_{RE})_A$ = Real Estate Taxes Paid To Local Governments By Active Military (G-1.1.1)	$	100,290
$(R_{RE})_C$ = Real Estate Taxes Paid To Local Governments By Civilian Employees (G-1.1.2.)	$	5,676,156
$(R_{RE,B})_{Cr}$ = Real Estate Taxes Paid To Local Governments By Local Businesses For Real Property Allocable To WSMR -Related Business (G-1.1.3)	$	5,802,097

And:

G-1.1.1 Real Estate Taxes Paid to Local Governments by Active Military $(R_{RE})_A$.	$	100,290
$(R_{RE})_A$ = $(M_{RE})_A$ * AM		
$(M_{RE})_A$ = Mean Real Estate Taxes Paid to Local Governments by Active Military	$	197
AM = Number Active Military Paying Real Estate Taxes		508
G-1.1.2 Real-Estate Taxes Paid to Local Governments by Civilian Employees $(R_{RE})_C$	$	5,676,156
$(R_{RE})_C$ = $(M_{RE})_C$ * AC		
$(M_{RE})C$ = Mean Real Estate Taxes paid to Local Governments by Civilian Employees	$	1,112
AC = Number of Civilian Employees Paying Real Estate Taxes		5,103
G-1.1.3 Real-Estate Taxes Paid to Local Governments by Local Business for Real Property Allocable to WSMR-Related Business $(R_{RE},B)_{WSMR}$	$	5,802,097

$$(R_{RE,B})_{WSMR} = (PT)\ \frac{(BV_{WSMR})}{(BV_L)}\ (V_B)$$

PT= Average Property Tax Rate for Region		.030138
BV_{WSMR} = WSMR-Related Regional Business Volume (B-1)	$	683,989,964

B_{VL} =	Regional Business Volume	$20,217,306,294
V_B =	Assessed Valuation of Regional Business Real Property	$ 5,690,417,366

Model Estimator 13:
White Sands Missile Range-Related Taxes, Other Than Real Estate Paid to Local Governments

G-1.2 estimates the inventory and other non real property taxes paid to local governments by businesses for assets allocable to WSMR-Related volume. Specifically:

G-1.2 =

Inventory and Other Nonreal-Property Taxes paid to Local Governments by Area Businesses for Assets Allocable to WSMR-Related Business	$(R_{NRE})_{WSMR}$ =	$ 2,386,287

$(R_{NRE})_{WSMR}$ = $(it)(I_B)_{WSMR}$

it =	Local Inventory Tax Rate	.030138
$(I_B)_{WSMR}$ =	Value Of Regional Business Inventory Committed To WSMR-Related Business	$ 79,178,667

$(I_B)_{WSMR}$ = $(BV_{WSMR})\ (I_n/S_n)$

(I_n/S_n) =	National Inventory to Sales Ratio	.11576

Model Estimator 14:
Sales Tax Revenue Received by Local Governments as a Result of White Sands Missile Range-Related Local Purchases

Local governments in the region levy sales taxes and receive a share of the sales taxes collected by the state. G-1.3 represents the sales tax revenue received by local governments as result of White Sands Missile Range-Related local purchases.

G-1.3 =

Sales Tax Revenue Received by Local Governments as a Result of WSMR-Related Local Purchases	$(R_{ST})_{WSMR}$ =	$ 1,984,376

$(R_{ST})_{WSMR}$ = $(ST_{LG}) * (TP_A + TP_C + TP_V)$

ST_{LG} =	Proportion Of Sales Tax Returned To Local Governments	.019
TP_A =	Taxable Purchases Active Military	$ 5,446,776
TP_C =	Taxable Purchases Civilian Employees	$ 98,283,780
TP_V =	Taxable Purchases Visitors	$ 709,422

Model Estimator 15:
Federal Aid to Local Governments Allocable to the Presence of White Sands Missile Range in the Region

G-1.4 summarizes another source of WSMR-Related revenue for the local government units. It shows Federal Aid to local public schools allocable to children of WSMR families.

G-1.4 =

Federal Aid to Local Public Schools Allocable to Children of White Sands Missile Range-Related Families $(R_A)_{CH}$ = $ 258,260

Model Estimator 16:
Value of Municipal-Type Services Self-Provided by White Sands Missile Range

This component estimates the value of municipal services provided by WSMR instead of relying on provision of such services by local government units. In this sense, this factor represents an annual savings to local government.

G-2 =

Value of Municipal-Type Services Self -Provided by WSMR[1] $(OC_M)_{SC}$ $ 2,385,000

$(OC_M)_{SFB}$ =
1) Police and security services
2) Sanitation
3) Street, lighting
4) Street maintenance
5) Other services

Model Estimator 17:
Operating Cost of Government Provided Municipal Services Allocable to White Sands Missile Range-Related Influences

G-3 intends to estimate the annual operating costs of government services provided to WSMR and/or to individuals related to WSMR. These costs include those for municipal services allocable to WSMR-Related activities and costs for local public schools allocable to WSMR associated persons. That is:

G-3 =

Operating Cost of Local Government Provided Municipal and Public School Services Allocable to WSMR Influences $(OC_{M,PS})_{WSMR}$ = $ 66,392,852

$(OC_{M,PS})_{WSMR} = (OC_M)_{WSMR} + (OC_{PS})_{WSMR}$

$(OC_M)_{WSMR}$ = operating cost of local government provided municipal services allocable to WSMR-Related influences (G-3.1) $ 26,622,761

$(OC_{PS})_{WSMR}$ = operating cost of local public schools allocable to WSMR-Related persons (G-3.2) $ 39,770,091

Further:

[1] Value estimated by White Sands Missile Range Public Affairs Office.

Model Estimator 18:
Operating Cost of Government Provided Municipal Services Allocable to White Sands Missile Range-Related Influences

G-3.1 estimates the cost of government provided municipal services allocable to WSMR-Related influences. If it were possible to separate these services into those that are people-oriented versus those that are property-oriented, allocation could be made on a prorated basis with respect to population in the first case and with respect to either geographic area or value of property in the second. Such a distinction, however, is not easily made, and for the present purpose, population relationships will be emphasized.

G-3.1 =

Operating cost of government provided municipal services allocated to WSMR-Related Influences $(OC_M)_{WSMR}$		$ 26,622,761
$(OC_M)_{WSMR}$ =	$POP * (B_M/POP_{LR})$	
POP_{WSMR} =	Total Number of WSMR Staff And Dependents	26,779
POP_{LR} =	Total Resident Population	943,432
B_M =	Local Governments' Operating Budget for Municipal Services	$ 937,927,656

Model Estimator 19:
Operating Costs of Local Public Schools Allocable to White Sands Missile Range-Related Persons

In G-3.2, the portion of the operating cost of local public education allocable to WSMR related persons is determined under the assumption that the WSMR community population bears a proportionate share of total public education expenses in the region. That is:

G-3.2 =

Operating Costs Of Local Public Schools In Region Allocable To WSMR Related-Persons $(OC_{PS})_{WSMR}$		$ 39,770,091
$(OC_{PS})_{WSMR}$ =	$(B_{PS}/POP_{LR}) * (POP_{WSMR})$	
B_{PS} =	Local Governments' Operating Budgets for Public Schools	$1,401,111,936
POP_{LR} =	Total Population in Region	943,432
POP_{WSMR} =	Total Population of WSMR Community	26,779

Model Estimator 20:
Real Estate Taxes Foregone Through Tax-Exempt Status

Real Estate Taxes Foregone through the Tax-Exempt Status of WSMR are estimated in G-4 and represents the amount of taxes foregone by local governments as a result of WSMR tax-exempt status. The model assumes that the assessed value of WSMR property is similar to that of like-property in the region. Specifically:

G-4 =

Real Estate Taxes Forgone Through the Tax Exempt

Status of WSMR $(RF_{RE})_{WSMR}$ =		$ 709,234
$(RF_{RE})_{WSMR}$ =	$PV_{WSMR} * TR_L$	
PV_{WSMR} =	Potential Taxable Property Values WSMR Property	$ 68,878,529
TR_L =	Local Tax Rate for Similar Properties	0.0103

Model Estimator 21:
Value of Local Government's Properties Allocable to
White Sands Missile Range-Related Portion of Services Provided

G-5 determines the current dollar value of local government owned capital facilities employed to support services provided to WSMR and to WSMR-Related individuals. This is:

G-5 =

Value of Local Government Properties Allocable to WSMR-Related Population $(GP)_{WSMR}$		$ 57,592,070
GP_{WSMR} =	$POP_{WSMR} * (GP_M/POP_{LR})$	
POP_{WSMR} =	Total Population WSMR-Related	26,779
POP_{LR} =	Total Resident Population	943,432
GP_M =	Regional Government Properties	$2,028,985,471

The G-1 through G-4 components of the Government sector represent annual revenue and/or saving streams to and expenditures flows from local government units, given the presence of WSMR. If we sum these four components, we estimate the annual cost carried by local government to support WSMR activities. The net annual cost is $48,509,620. Thus, local government spends approximately $48.5 million per year and employs over $57.5 million in capital and property (G-5) to support WSMR-Related activity. Of course, the region receives significant increases in sales volume, income and jobs for this investment.

Economic Impact by County

As noted, the "region" in this study is defined to include Dona Ana, El Paso, Otero, and Socorro counties. Based upon information generated in the survey and data provided by WSMR concerning the location of the residence of WSMR personnel and the distribution of WSMR expenditures by geographical area, the economic impact figures presented above can be allocated as follows:

- Dona Ana 65 %
- El Paso 20 %
- Otero 12 %
- Socorro/Other 3 %

White Sands Missile Range-Related Retirees in Region

Lack of data prevented a detailed analysis of the regional economic impacts resulting from the presence of WSMR-related retirees in the area. Such analysis was conducted for Ft. Bliss-related retirees in El Paso county in 2002. To the extent that the Ft. Bliss retiree group's income/expenditure levels and patterns are typical, a reasonable estimate of the impacts of WSMR-related retirees in the region outside of El Paso is:

- Increased Regional Sales Volume per 1,000 Retirees	$ 16.3 million
- Increased Regional Credit Base per 1,000 Retirees	$ 42.0 million
- Increased Regional Household Income per 1,000 Retirees	$ 47.5 million

Available information indicates that 1,013 retirees reside in the Las Cruces area alone.

Summary and Implications

This study estimates the economic impact of WSMR on the regional economy. The impact model designed for this purpose identifies three sectors of the economic system which are affected by the presence of WSMR:

1. Local Business Sector
2. Local Individual and Household Sector
3. Local Government Sector

To implement the model, data was acquired from the Public Affairs Office at WSMR, along with information from a variety of other local, state and national sources. In addition, a survey instrument was constructed and given to Active Duty and Civilian Personnel at White Sands Missile Range.

The impact on the business sector is estimated to be:

• Increase in Business Volume:	$ 683,989,964
• Expansion in Regional Banks' Credit Base:	$ 93,927,115
• Increase in Commercial Property Employed to Support WSMR -Related Business Activity:	$ 192,517,654

The individual and household sector of the impact model determines the additional jobs and income resulting from the presence of White Sands Missile Range in the region. Specifically:

• Increase in employment attributable to WSMR:	5,542
• Increase in income of individuals from WSMR-Related jobs and business activity:	$ 551,062,841

The final component of the model concentrates on the relationships between WSMR and local government units in the region. While local government does receive some revenues and/or cost savings from the presence of the military base, local government expenditures to provide public school and other municipal services to WSMR and related individuals and business activities are

much greater. In addition, local government must allocate capital and other property to support the provision of municipal services to WSMR-Related factors. That is:

- WSMR-Related revenues received by local government units $ 16,207,466
- Savings from WSMR self-provided municipal services $ 2,385,000
- Cost of providing municipal services to WSMR-Related influence $ 66,392,852
- Real Estate taxes foregone due to tax-exempt status of WSMR $ 709,234
- Amount of local government property required to support municipal services to WSMR-Related population $ 57,592,070

The first four values listed above imply that local government units spend a net $48,509,620 per year to provide municipal services to WSMR oriented activity. In addition, over $57 million in capital and property is utilized to support this level of service.

The figures just noted suggest a major annual investment on the part of local government in WSMR. The returns to this investment come in the form of increased sales, jobs, and income.

Specifically:

- Business sales volume increases by $684 million per year; a 14.1 benefit to cost ratio ($684.0 million divided by $48.5 million).
- Income to individuals and households rises roughly $551 million per annum; an 11.1 ratio ($551.1 million divided by $48.5 million).
- Over 5,500 jobs are generated.
- Local banks' credit base expands by almost $94 million; providing a foundation for increased lending and future expansion in the regional economy.
- Local government allocates over $57 million in property to support provision of municipal services to WSMR-Related activities. But, local commercial property employed to support military basic related activity is over $192 million; a 3:1 benefit to cost factor ($192.5 million divided by $57.6 million).

If WSMR-related retires are included in the analysis, the impacts upon the regional sales, credit base, and household income are $16.3 million, $42.0 million, and $47.5 million, respectively per 1,000 retires.

The analysis presented in this report quantifies the impacts upon the area if WSMR was not a component of the regional economy. In this regard, regardless of one's political stance or view of the regional economy, all efforts should be made to support WSMR. Specifically:

- Local political and economic interests are well-served by WSMR.
- A concentrated effort to maintain WSMR and support potential expansion of the facility should be a primary agenda item for civic and local government groups.
- Local government units should be aware that the return on investment to the overall regional economy far exceeds the costs incurred by any cost to benefit ratio standard.

- Local government units should also recognize that the property tax dollars lost by the WSMR presence are well offset by additional business and residential developments resulting from WSMR.

- WSMR should be protected as an economic asset at almost all costs.

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Appendix A: Survey Instrument

IMPACT OF WHITE SANDS MISSILE RANGE COMMUNITY ON THE REGIONAL ECONOMY (DOÑA ANA, OTERO, AND EL PASO COUNTIES)

This questionnaire is being provided to you because of your association with White Sands Missile Range. The Institute for Policy and Economic Development has been contracted to examine the economic impact of White Sands on the local area economy.

Responses to the following questions will remain strictly confidential and only considered in the aggregate with all other responses. Your participation in this survey is completely voluntary. You are **not** required to place your name, signature, or address on the form. Please mail the completed survey in the enclosed postage pre-paid envelope by May 21st. If you have any questions concerning this survey, please call Dr. David Schauer (915.747.7790) or Karen Hoover (915.747.7939). We appreciate your participation.

1. What is your principal status in relationship to White Sands Missile Range? Please check the appropriate response.

   a. Active U. S. military _____
   b. Civilian employee at White Sands _____
   c. Retired U. S. military _____
   d. Foreign military _____
   e. Reserve _____
   f. Other_____
   (Please write-in)

2. Please indicate the status of **other** family members that reside with you in the regional area community that includes **Doña Ana, Otero, and El Paso** counties.

   a. Number that are students in regional area public schools (pre-K -12). _____
   b. Number that are students in regional area private schools (pre-K -12). _____
   c. Number that are students in regional area colleges, or universities. _____
   d. Number, other than you, that are employed in area, but are not active or foreign military on duty at White Sands. _____
   e. Number, other than you, that are active U. S. military. _____
   f. Number that are over 18 years of age but are not employed. _____

3. Describe your residence at White Sands or in the regional area.

   a. On post quarters (i.e., BOQ)_____ b. Rent or lease off-post _____
   c. Own or buy off-post _____ d. Do not reside in area _____
   e. Other_____(Please write-in)

4. If you own or are buying a home in the region, estimate your most recent **annual** real estate or property taxes. $_____

5. If you own or are buying a home in the region, please circle the letter that **best** describes your home.

   a. Single family-dwelling b. Apartment c. Condominium
   d. Mobile home e. Other _____

6. What is your average daily commute in miles? _____ (Please write-in)

7. Estimate your **monthly** expenditures with the businesses in the region. **DO NOT** include expenses or purchases at any base facility such as, the Commissary, post Exchange, Exchange Concessions, and MWR, etc.

   a. **Monthly** housing and utilities $_____
   b. **Monthly** entertainment (i.e., movies, restaurants) $_____
   c. **Monthly** groceries $_____
   d. **Monthly** charitable contributions (e.g., United Way, Church) $_____
   e. **Monthly** auto expenses (e.g., car payment, gas, repairs) $_____
   f. **Monthly** retail purchases (e.g., clothing, shoes, internet shopping) $_____
   g. **Monthly** all other expenses $_____

8. Estimate your family's **monthly** gross income before deductions.(e.g., Before Federal Taxes, FICA, Retirement or Allotments.) $_____

9. If you are disabled, estimate your **monthly** gross disability pay. $_____

10. Estimate your family's **monthly** pay or allowance allotments that are sent out of the regional area. $_____

11. Estimate your family's **average** account balance in the regional area depository institutions:

    a. Checking accounts (all) $_____
    b. Savings (e.g., CDs, regular savings, money markets, etc.) $_____

12. Please indicate your ZIP Code _____

13. Please write in your rank/grade_____

14. Once you are no longer in the Military or employed as a civilian would you or do you intend to remain or return to the White Sands Missile Range regional area? Please check your answer.

    a. Yes _____
    b. No _____
    c. Don't Know _____

Thank you for your participation.

Appendix B: Figures and Tables