

May 2010

Economic Impacts Attributable to Federal Grants and Payments to Seven Insular Areas

Final Report

Prepared for

Office of Insular Affairs
U.S. Department of the Interior
1849 C Street, NW
Washington, DC 20240

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EXECUTIVE SUMMARY

The Office of Insular Affairs (OIA) carries out the Department of the Interior's responsibilities for U.S.-affiliated insular areas. These areas include the territories of American Samoa, Guam, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands as well as the Freely Associated States (FAS)¹ of the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau.

OIA will provide \$479.6 million in grants and payments to the insular areas during FY2010. This assistance plays an important role in the economies of each of these areas by providing financial and technical assistance to promote economic growth, education, public health, and the development of more efficient and effective government. However, no rigorous economic studies have been conducted to quantify the importance of this assistance because of a lack of sophisticated economic data series for these insular areas. As a result, territorial and federal leaders are largely deprived of the type of thorough economic analysis that would assist them in making more informed policy decisions.

OIA contracted with RTI International in April 2010 to develop a methodology that, despite data limitations, estimates the economic impact of OIA grants and payments to the insular areas. To meet OIA's needs, RTI canvassed existing secondary data and provided OIA with a methodology for rapidly approximating the economic impact of OIA payments. This methodology was used to estimate the impact of payments on each of the following economic aggregates for each insular area:

- Employment: the number of individuals gainfully employed, which typically consists of full-time and part-time employees but excludes subsistence agriculture and fishing
- Employee compensation: payments made to all employees during the year, including salaries, wages, and other forms of compensation
- Gross domestic product (GDP): a measure of each area's economic output—typically defined as the value of all final goods and services made within the borders of the insular area in a particular year

Table ES-1 summarizes the results of this analysis.

¹FAS are independent nations that were at one time governed by the United States and continue to maintain a close relationship with the United States through the Compact of Free Association, which makes them eligible to receive funds and assistance from U.S. federal agencies.

Table ES-1. Economic Impact Summary of OIA Grants and Payments, FY2010

	Total OIA Payments (\$'000; 2009\$)	Total OIA Employment Impact (#)	National Employment Supported by OIA Payments (%)	Total OIA Employee Compensation Impact (\$'000; 2009\$)	National Employee Compensation Supported by OIA Payments (%)	Total OIA GDP Impact (\$'000; 2009\$)	National GDP Supported by OIA Payments (%)
American Samoa	35,365	1,575	9%	26,510	14%	51,022	9%
Guam	67,412	4,109	6%	91,076	7%	305,179	7%
Northern Mariana Islands	17,604	640	2%	9,685	3%	24,514	2%
U.S. Virgin Islands	142,599	8,763	18%	286,054	19%	860,960	18%
Micronesia	108,800	8,570	54%	46,868	69%	140,722	54%
Marshall Islands	70,049	4,510	44%	39,121	39%	68,208	44%
Palau	15,678	1,490	12%	16,921	17%	21,194	12%
Total	457,507	29,656	15%	516,235	14%	1,471,798	13%

Note: Approximately \$22.1 million of the total \$479.6 million was spent outside the seven insular areas that were the primary focus of this study.

Source: RTI estimates.

ES.1 FY2010 OIA Payments to the Insular Areas

OIA's responsibilities are framed by the long-term security interests of the United States in the western Pacific and serious economic and fiscal problems affecting the U.S. territories. Although each territory's situation is unique, they share common challenges, including limited land and resources, small populations, limited local technical expertise, narrow economic bases, and exposure to natural disasters, such as hurricanes and typhoons. OIA strives to empower the local communities, foster economic development, promote sound management, and improve quality of life while respecting and preserving local cultures.

U.S. per capita GDP was estimated to be approximately \$47,300 in 2007 when adjusting for inflation (Census, 2010). By contrast, per capita GDP for the insular areas averages to less than \$20,000, although there is great variability in income across areas (Table ES-2). GDP per capita (2008) is lowest in the three FAS areas, ranging from \$2,400 in Micronesia, \$2,500 in the Marshall Islands, to \$8,600 in Palau. 2007 GDP per capita is relatively greater in the four U.S. territories, ranging from \$8,100 in American Samoa, \$17,000 in the Northern Mariana Islands, \$26,000 in Guam, to \$41,000 in the U.S. Virgin Islands.

Table ES-2. Estimated Economic Characteristics by Insular Area

	Estimated Population (#)	Estimated Employment (#)	Estimated Employee Compensation (\$'000; 2009\$)	GDP (\$'000; 2009\$)	GDP per Capita (2009\$)
American Samoa	68,200	16,990	191,675	550,461	8,071
Guam	173,456	67,229	1,361,210	4,428,521	25,531
Northern Mariana Islands	58,629	25,977	291,172	995,382	16,978
U.S. Virgin Islands	114,743	48,234	1,535,214	4,738,931	41,300
Micronesia	110,123	15,962	68,071	262,103	2,380
Marshall Islands	58,316	10,209	100,362	154,397	2,648
Palau	20,162	11,947	98,483	169,990	8,431

Note: Data on estimated 2007 population and GDP for the four U.S. territories were collected from BEA (2010). Data on estimates 2007 population and GDP data were obtained for the three FAS from World Bank (2010a; 2010b). RTI constructed estimated employment and employee compensation statistics from the most recent secondary sources available and represent various years. The construction of this data for each insular area is explained in more detail in the full report.

For FY2010, OIA will provide \$479.6 million in technical assistance, grants, and payments to the insular areas, of which nearly 93% is considered mandatory, essential assistance to provide basic services, or defined by law (OIA, 2010). Only about 7% is considered to be truly discretionary. OIA payments fund health care, education, government operations, roads, and other types of social and physical infrastructure. From a budgetary standpoint, payments can be separated into three primary categories (Table ES-3):

- *fiscal payments*, which are the return of taxes collected by the U.S. federal government to Guam and the U.S. Virgin Islands, as required by law
- *Assistance to Territories*, which provides general technical assistance, finances education and health care operations, funds and maintains essential infrastructure, and supports environmental initiatives, including Brown Tree Snake control and the Coral Reef Initiative
- *Compact of Free Association*, which distributes annual payments to FAS, per their treaties with the United States, and provides support to the U.S. western Pacific territories and Hawaii to offset the impact the Compact has on regional social infrastructure

Table ES-3. FY2010 OIA Payments by Area

	Fiscal Payments (\$'000; 2009\$)	Assistance to Territories (\$'000; 2009\$)	Compact of Free Association (\$'000; 2009\$)	Total OIA Payments (\$'000; 2009\$)
American Samoa	—	35,351	14	35,365
Guam	39,000	11,585	16,827	67,412
Northern Mariana Islands	—	15,674	1,930	17,604
U.S. Virgin Islands	138,000	4,599	—	142,599
Micronesia	—	4,796	104,004	108,800
Marshall Islands	—	2,748	67,456	70,204
Palau	—	1,643	14,035	15,678
Other ^a	—	8,799	13,327	22,126
Total	177,000	85,195	217,437	479,632

^a This other category represents payments being spent outside the seven insular areas, such as Washington, DC; Hawaii; Georgia; and others.

Source: RTI estimates based on detailed budget information provided by OIA (2010).

ES.2 Study Methodology

Total economic impacts are the sum of direct economic impact and indirect/induced economic impact resulting from recipient organizations' consumption of goods and services and household spending by organizations' employees. RTI reviewed employment, employee compensation, and activity trends for each insular area to estimate the direct impact of OIA payments.

Indirect/induced impacts were estimated using economic base analysis (EBA). The reasoning underlying EBA is that an individual region's economic activity is derived from its "base" or "primary" sectors, which are defined as those sectors whose revenue is received primarily from outside the region. Base sectors often include manufacturing, mines, agriculture, and fisheries that produce goods for export as well as activities that are funded by the U.S. federal government and aid organizations.

RTI's selection of EBA as an analytical strategy was motivated by the importance of offering OIA a methodology for estimating economic impacts that could be applied using data currently available and that could be updated as needed, either for future fiscal years' payments or as new economic data are made available for the insular areas.

In addition to its primary analysis of the seven insular areas, RTI also conducted a supplemental analysis of the economic impact of OIA spending on Washington, DC, and Hawaii. Because input-output statistical data were available for these two areas, RTI used IMPLAN, a static input-output model of economic activity, to quantify the impact OIA spending has on each economic region.

ES.3 Economic Impact Results

Using the analytical methodology described above, RTI estimated the direct, indirect/induced, and total economic impacts of OIA payments on each insular area in terms of employment, employee compensation, and GDP.

Estimates of local employment supported by OIA payments are presented in Table ES-4. Based on RTI's analysis of the economic structure of each insular area, it was determined that for every 1 job directly supported by OIA payments, approximately 1.90 jobs were supported elsewhere in each insular economy, on average. Base employment multiplier estimates ranged from 1.96 in the Northern Mariana Islands to 3.77 in the U.S. Virgin Islands.

Table ES-4. Estimated Employment Impact for FY2010 OIA Payments, by Insular Area

	Direct Employment Impact (#)	Indirect/Induced Employment Impact (#)	Total Employment Impact (#)	National Employment Supported by OIA Payments (%)
American Samoa	766	809	1,575	9%
Guam	1,294	2,816	4,109	6%
Northern Mariana Islands	326	313	640	2%
U.S. Virgin Islands	2,327	6,436	8,763	18%
Micronesia	3,150	5,420	8,570	54%
Marshall Islands	1,879	2,631	4,510	44%
Palau	480	1,009	1,490	12%
Total	10,222	19,434	29,656	15%

Source: RTI estimates.

In the cases of the Marshall Islands and Micronesia, a significant portion of national employment is directly and indirectly supported by OIA payments. Approximately 54% of total recorded employment in Micronesia was either directly or indirectly supported by OIA payments. These data do not include subsistence agriculture or fishing.

Estimates of the amount of employee compensation supported by OIA payments are presented in Table ES-5. Based on RTI's analysis of the economic structure of each insular area, it was determined that for every \$1 of employee compensation directly supported by OIA payments, approximately \$2.26 of employee compensation was supported elsewhere in the insular economy, on average. Base employee compensation multiplier estimates ranged from 1.95 in the Marshall Islands to 3.87 in the U.S. Virgin Islands.

Table ES-5. Estimate of Employee Compensation Impact for FY2010 OIA Payments by Insular Area

	Direct Employee Compensation Impact ('000; 2009\$)	Indirect/Induced Employee Compensation Impact ('000; 2009\$)	Total Employee Compensation Impact ('000; 2009\$)	National Employee Compensation Supported by OIA Payments (%)
American Samoa	11,260	15,249	26,510	14%
Guam	26,951	64,125	91,076	7%
Northern Mariana Islands	3,967	5,718	9,685	3%
U.S. Virgin Islands	73,986	212,068	286,054	19%
Micronesia	16,213	30,655	46,868	69%
Marshall Islands	20,019	19,102	39,121	39%
Palau	5,790	11,131	16,921	17%
Total	158,186	358,049	516,235	14%

Source: RTI estimates.

In the cases of the Marshall Islands and Micronesia, a significant portion of national employee compensation is directly and indirectly supported by OIA payments. For example approximately 69% of total estimated recorded employee compensation in the Federated States of Micronesia is either directly or indirectly supported by OIA payments.

Estimates of the amount of GDP supported by OIA payments are presented in Table ES-6. Based on RTI's analysis of the economics of each insular area, it was determined that for every \$1 of GDP directly supported by OIA payments, approximately \$2.28 of GDP was supported elsewhere in the insular economy on average. As a result, a significant portion of national employee compensation is directly and indirectly supported by OIA payments. For example, approximately 54% of total GDP in Micronesia is either directly or indirectly supported by OIA payments.

Table ES-6. Estimate of GDP Impact for FY2010 OIA Payments, by Insular Area

	Direct GDP Impact (‘000; 2009\$)	Indirect/Induced GDP Impact (‘000; 2009\$)	Total GDP Impact (‘000; 2009\$)	National GDP Supported by OIA Payments (%)
American Samoa	24,825	26,197	51,022	9%
Guam	96,069	209,110	305,179	7%
Northern Mariana Islands	12,510	12,004	24,514	2%
U.S. Virgin Islands	228,627	632,333	860,960	18%
Micronesia	51,722	89,000	140,722	54%
Marshall Islands	28,419	39,788	68,208	44%
Palau	6,831	14,363	21,194	12%
Total	449,003	1,022,795	1,471,798	13%

Source: RTI estimates.

In addition to the analysis of the seven insular areas, RTI also conducted a supplemental analysis of the economic impact of OIA operations in Washington, DC, and Hawaii. RTI estimated that approximately \$7.2 million of OIA’s operating budget was spent in Washington, DC. Approximately \$13.4 million in Hawaii for OIA operations and to offset the impact Compact provisions have on Hawaii’s social infrastructure. To estimate the economic impacts, RTI used IMPLAN modeling software to construct input-output models of each region. Using these models, RTI estimated that OIA’s operations and payments would create approximately 37 employees in Washington, DC, receiving \$4.3 million of employee compensation and 199 employees in Hawaii receiving \$10.4 million of employee compensation.

SECTION 1 INTRODUCTION

The Office of Insular Affairs (OIA) contracted with RTI International in April 2010 to estimate the economic impacts of federal payments and grants to U.S.-affiliated insular areas. These areas include the U.S. territories of American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and the U.S. Virgin Islands as well as the freely associated states (FAS) of the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau.

OIA will distribute approximately \$480 million in technical assistance, grants, and payments to the insular areas during fiscal year (FY) 2010. These payments play an important role in each area's economy, supporting local jobs and providing employee compensation in regions where per capita income is one-half to less than one-quarter of that of the United States. The economic characteristics of these areas are displayed in Table 1-1.

Because the insular areas are not included in most U.S. statistical surveys of economic activity, critical data on local economic activity is not captured. As a result, federal and insular officials do not have detailed economic data with which to inform their policy decisions, including input-output (I/O) and other data necessary for measuring the economic impact of federal grants and payments with the same level of precision and accuracy available for U.S. states.¹

In this study, RTI estimated direct economic impacts and multipliers for estimating total economic impact, which includes indirect and induced impacts, for each of the seven insular area's economies. Analysis results were designed to be integrated into a larger report that estimates the economic benefits of lands and other resources managed by the Department of the Interior, thus enabling OIA to report on its economic impacts in the same manner as other Department offices and bureaus (DOI, 2009).

¹In contrast, the U.S. Bureau of Economic Analysis (BEA) provides benchmark input-output data for the United States. The benchmark accounts show how industries interact at the detailed level; specifically, they show how approximately 500 industries provide input to, and use output from, each other to produce gross domestic product (GDP). These accounts provide detailed information on the flows of the goods and services that make up the production processes of industries. See <http://www.bea.gov>.

Table 1-1. Economic Characteristics by Insular Area

	Estimated Population (#)	Estimated Employment (#)	Estimated Employee Compensation (\$'000; 2009\$)	GDP (\$'000; 2009\$)	GDP per Capita (2009\$)
American Samoa	68,200	16,990	191,675	550,461	8,071
Guam	173,456	67,229	1,361,210	4,428,521	25,531
Northern Mariana Islands	58,629	25,977	291,172	995,382	16,978
U.S. Virgin Islands	114,743	48,234	1,535,214	4,738,931	41,300
Micronesia	110,123	15,962	68,071	262,103	2,380
Marshall Islands	58,316	10,209	100,362	154,397	2,648
Palau	20,162	11,947	98,483	169,990	8,431

Note: Data on estimated 2007 population and GDP for the four U.S. territories were collected from BEA (2010). Data on estimates 2007 population and GDP data were obtained for the three FAS from World Bank (2010a; 2010b). RTI constructed estimated employment and employee compensation statistics from the most recent secondary sources available and represent various years. The construction of this data for each insular area is explained in more detail in the full report.

1.1 FY2010 OIA Payments to Insular Areas

By the close of FY2010, OIA will have provided \$480 million in assistance, grants, and payments to the insular areas during the fiscal year. In this report, all grants, assistance, and compacts will be referred to collectively as “payments.” Nearly 93% of all payments are considered mandatory, essential assistance to provide basic services, or defined by law (OIA, 2010). Only about 7% is considered to be truly discretionary. OIA payments fund health care, education, government operations, roads, and other types of social and physical infrastructure. From a budgetary standpoint, payments can be separated into three primary categories:

- *fiscal payments*, which are the return of taxes collected by the U.S. federal government to Guam and the U.S. Virgin Islands, as required by law
- *Assistance to Territories*, which provides general technical assistance, finances education and health care operations, funds and maintains essential infrastructure, and supports environmental initiatives, including Brown Tree Snake control and the Coral Reef Initiative
- *Compact of Free Association*, which distributes annual payments to FAS, per their treaties with the United States, and provides support to the U.S. western Pacific territories and Hawaii to offset the impact the Compact has on regional social infrastructure

For the purposes of this analysis, RTI received detailed budget information from OIA, which was then used to estimate expenditures in each insular area related to OIA payments

(Table 1-2). Although this determination was typically straightforward, in some cases it was difficult to determine where spending would be directed. In these cases, assumptions had to be made, which are detailed in Appendix A.

Table 1-2. FY2010 OIA Payments by Insular Area

	Fiscal Payments (\$'000; 2009\$)	Assistance to Territories (\$'000; 2009\$)	Compact of Free Association (\$'000; 2009\$)	Total OIA Payments (\$'000; 2009\$)
American Samoa	—	35,351	14	35,365
Guam	39,000	11,585	16,827	67,412
Northern Mariana Islands	—	15,674	1,930	17,604
U.S. Virgin Islands	138,000	4,599	—	142,599
Micronesia	—	4,796	104,004	108,800
Marshall Islands	—	2,748	67,456	70,204
Palau	—	1,643	14,035	15,678
Other ^a	—	8,799	13,327	22,126
Total	177,000	85,195	217,437	479,632

^a This other category represents payments being spent outside the seven insular areas, such as Washington, DC; Hawaii; Georgia; and others.

Sources: RTI estimates based on detailed budget information provided by the Office of Insular Affairs (2010).

1.2 Study Objectives

The objectives of this study were to

- estimate the direct economic impacts of OIA payments and indirect/induced multipliers and impacts relevant for OIA grant and payment categories for each insular area;
- review FY2010 grants and payments, and determine affected economic sectors for the American Samoa Operations Grant, Brown Tree Snake Initiative, Compact of Free Association (permanent and current), Coral Reef Initiative, covenant grants, maintenance assistance fund, return of federal taxes to U.S. Virgin Islands and Guam, technical assistance, and water and wastewater projects;
- model the direct and indirect/induced economic impacts of FY2010 grants and payments for each insular area and for each payment category; and
- prepare a final report that summarizes assumptions and provides tabular data on economic impacts.

1.3 Overview of Study Methodology

Typically, the economic impacts of government spending on specific regions are estimated using I/O models. These models use multipliers to simulate how employment or income generated in one industry can generate additional jobs, income, and output in other industries and for the region's economy as a whole. These methods also allow a breakout between indirect and induced effects that can be useful for policy analysis.

Because no publicly available I/O models existed for the economies of the seven insular areas, RTI developed multipliers for each of the seven insular areas using economic base analysis (EBA).² RTI's selection of EBA was motivated by the importance of offering OIA a methodology for estimating economic impacts that can be updated as needed, either for future fiscal years' payments or as new economic data are made available for the insular areas.

EBA is one of the simplest and most widely used techniques for regional economic analysis because it is supported by both the intuitive insights of urban planners and geographers and the formal theory of modern economics (Klosterman, 1990). The reasoning underlying EBA is that an individual region's economic activity is derived from its "base" or "primary" sectors, which are defined as those sectors whose revenue is received primarily from outside the region—base sectors typically include manufacturing firms, mines, and farms that produce goods for export as well as activities that are funded by the federal government (Klosterman, 1990). As a result, EBA is best applied to small, relatively specialized regions whose economies rely to a larger extent on exports (Wang and vom Hofe, 2007). Consequently, this methodological approach is well suited to studying the economies of the seven insular areas.

Estimating the economic impact of federal funds on economic aggregates like regional employment is typically accomplished using a simple mathematical representation of a region's economy, such as

$$\Delta Y = s * \Delta X \tag{1.1}$$

where

²Other researchers have used I/O models for Hawaii to model economic impacts for U.S. insular territories; however, RTI does not recommend this approach because it assumes that the economic structure of the insular area is the same as that for Hawaii (see Pike [2007]). The model is also static and does not adjust for sectoral responses to materially-significant shocks. Another alternative, but one that requires extensive data collection, would be the same as that employed in a 2008 analysis performed for the Department of Commerce and American Samoa (see ASDC [2008]). This latter method is resource intensive but may narrow the confidence interval surrounding economic multipliers.

ΔY is change in total employment,
 ΔX is the change in base sector employment (direct impact), and
 s is total employment/base sector employment (the base employment multiplier).

This model represents how an increase in base-sector employment will generate a larger increase in the region's total employment because of the ripple effect as new base-sector employees spend money on locally produced goods and services. This ripple effect is quantified by the "s" term, called the "base employment multiplier," which is typically estimated by taking the ratio of total employment to base-sector employment.

Using this simple approach as a starting point for modeling the economy of each insular area, RTI estimated economic impacts for each of the seven insular areas in a short time period using available economic data. First, RTI computed an estimate of direct impacts for each of the 10 grant and payment categories for each of the seven insular areas. This entailed combining these data with existing information on employment and income associated with government spending and other economic activities. Direct impacts are usually computed using ratios of employment or income created per dollar of government funding that have been derived from historical data. Second, to estimate the combined indirect and induced impact, RTI calculated multipliers for employment, income, and other economic aggregates by examining the economic structure and activities of each insular area.

To better illustrate this approach, consider the following *hypothetical* example. Suppose that Guam received \$50 million of grants and other payments from OIA in 2008. That same year, the Government of Guam received total funding of \$513.2 million (or \$511.3 million in 2009 dollars) and employed approximately 11,260 workers (GBSP, 2009). Assuming the ratio of government revenue per employee remains constant ($\$511.3 \text{ million} / 11,260 = \$45,410$ per employee), we estimate that the \$50 million of funding would have supported approximately 1,101 jobs on the island ($\$50 \text{ million} / \$45,410 = 1,101$). These jobs would be considered the direct employment impact of OIA grants and payments.

To estimate how this direct employment impact would influence Guam's total employment, RTI calculated base multipliers using available data on employment by industry, such as those reported in Table 1-3. Base employment multipliers are calculated by taking the ratio of total employment to employment in base sectors. Base sector employment is ideally measured through surveys or the use of location quotients. However, in instances where data are limited, it is acceptable to assume that the entire workforce in those sectors that tend to derive much of their revenue from outside the region can be considered base-sector employment.

Table 1-3. Guam Employment by Industry (2008)

Industry	2008 Average Employment
Agriculture	355
Construction	6,520
Manufacturing	1,693
Transportation	4,810
Trade	13,733
Finance, insurance, and real estate	2,530
Accommodations	7,566
Other services	8,789
Government	21,234
Government of Guam	11,260
Federal government—Military	6,331
Federal government—Nonmilitary	3,643
Total Employment, All industries	67,229

Note: Average nonmilitary employment was calculated by taking the average of Guam 2008 employment estimates for March, June, September, and December as reported in Table 15-10 of the 2008 Guam *Statistical Yearbook*. These data include full-time and part-time employees who worked during or received pay for any part of the pay period that included the 12th day of the survey months. Proprietors, self-employed unpaid family workers, and domestic servants are excluded from these estimates. An estimate of active military personnel is included as reported in Table 8-03 of the 2008 Guam *Statistical Yearbook*. However, one should note that military employment is likely to increase drastically in coming years because of the anticipated military scale-up on the island.

Source: Guam Bureau of Statistics and Plans, 2009.

In this example, we used the standard assumption that base employment can be estimated as the sum of employment in the agriculture, manufacturing, and federal government sectors (12,022 employees). As a result, the base employment multiplier is estimated to be 5.6 ($67,230/12,022 = 5.6$). This means that for every one new job supported in the base sector, 4.6 jobs are created elsewhere in the economy. Therefore, the payments support 1,101 jobs directly and support 5,065 additional jobs indirectly elsewhere in the economy as a result of the multiplier process ($1,101 * 4.6 = 6,803$) for a total of 6,166 jobs in the region.

Although this hypothetical example is appropriate for illustrative purposes, this study improved on this simple analytical construction in several ways. First, in the example, economic impacts are estimated using only a single output-to-employee ratio. However, to obtain more accurate measures of the direct employment impact of OIA payments, one must obtain an understanding of who receives these payments and what they are being spent on. For example,

OIA payments used to fund a construction project will have different employment impacts than OIA payments used to fund education. Therefore, the first question asked when creating a more refined analysis is how OIA payments should be classified or treated as direct impacts. For the purposes of this study, OIA payments can be classified in six different ways:

- Education: payments associated with training or education inside the relevant insular area.
- Construction: payments associated with building new or maintaining existing structures.
- Government: payments associated with general government operations or general technical assistance.
- Health care: payments associated with providing medical and other health care services.
- Private: this classification is used only for payments to the Prior Service Benefits program. This is money that is received by beneficiaries in appreciation for their service during World War II and it generates an economic impact when recipients spend it on goods and services. Since data are not available on the spending behavior of these beneficiaries, precise output and employee compensation per worker ratios were difficult to obtain. Therefore, RTI typically used ratios that represented averages for the private nonagricultural sector and assumed 100% of beneficiary funds were spent locally.
- Wholesale: payments associated with purchasing goods or equipment from local wholesalers (companies involved in the resale, sale without transformation, of new and used goods to retailers; to industrial, commercial, institutional or professional users; or to other wholesalers). This treatment assumes that the goods or equipment themselves were not manufactured in the insular area.

In addition to improving our classification of OIA payments, this study seeks to refine economic impact estimates in a second way. In the example above, only the standard industries (agriculture, mining, manufacturing, and federal government) were assumed to be part of the economic base. However, many insular areas attract a number of tourists, which will also contribute to the economic base. Similarly, government operations that are funded from external sources should also be included in measures of economic base employment and employee compensation.

In the analysis described in this report, RTI incorporated both refinements into its economic impact assessment approach to provide OIA with the most accurate estimates possible, given existing data restrictions. RTI also used IMPLAN to model the economic impact of OIA activities in Hawaii and the District of Columbia, areas in which OIA has operations.

1.4 Methodological Limitations

Although EBA has several significant advantages that make it the most reasonable methodological approach for this study, several limitations are associated with it that one must keep in mind when interpreting analysis results.

First, the quality of economic base multipliers relies heavily on the quality of data being used. Most developing areas have a substantial informal sector composed of subsistence agriculture and fishing, domestic aids, street vendors, producers of clothing and handicrafts, and other workers whose occupation and income often goes unreported.

Although accurate data on the size and makeup of the informal sector are difficult to gather, the informal sector in developing island areas is assumed to make up a significant percentage of official employment and income statistics. In a study of 110 countries, Schneider (2002) found that the informal sector made up 41% of official gross national income in developing countries and 38% in transition countries. Lal and Raj (2006) compiled data on the informal sector in developing island nations (data on the insular areas was not included) and found that self-employment as a percentage of total nonagricultural employment averaged 35% for the six islands for which these data were available. Data on the informal sector in the Pacific Island areas may be particularly difficult to obtain because, as a result of the rural nature of these areas, most informal workers operate from homes rather than working as street vendors, transportation providers, or other typically urban occupations (Duncan and Voigt-Graf, 2008).

Because of the size of the informal sector in the insular areas, much of data used in this analysis likely underestimate employment, labor income, and GDP. Subsistence agriculture often makes up a substantial portion of unreported employment. A 1996 survey in Palau estimated the value of the primarily agricultural informal sector at \$5 million, or twice the size of the recorded agricultural sector in that year. Most of these goods, however, are consumed by the household and traded informally and do not reach the market (FAO, 2006).

Second, the division between base and nonbase sectors is often unclear. In this analysis, RTI used standard assumptions for identifying which sectors are considered base and nonbase. However, companies within these sectors are often engaged in satisfying both local and external demand. For example, local manufacturers may produce products that are exported and also consumed by local residents. This concern can often be minimized by using techniques for better estimating the portions of each sector that are truly base and nonbase (for example, surveys can be used to collect this information directly from local businesses); however, given the time and data constraints, these techniques were not feasible for this analysis.

Lastly, EBA focuses exclusively on external demand. Therefore, supply constraints are assumed to not be binding, and nondemand factors that may contribute to regional growth are ignored (such as capital accumulation or productivity improvements). Because supply-side considerations are typically most important for long-term growth, EBA is best suited for short-term analyses.

1.5 Report Organization

A separate report section detailing the payments, economic multipliers, and economic impacts was prepared for each insular area (Sections 2 through 8). In addition, a section for Hawaii and the District of Columbia was prepared (Section 9), because OIA locates significant operations in these regions. Section 10 presents summary economic impact data for all FY2010 payments.

SECTION 2 AMERICAN SAMOA

2.1 FY2010 OIA Payments Summary

American Samoa faces a number of obstacles to economic development, including limited land and resources, a small population, limited local technical expertise, a narrow economic base, and vulnerability to natural disasters. In addition, American Samoa faces high unemployment rates after the 2009 closure of one of two major tuna canneries on the island that resulted in over 2,000 layoffs, or approximately 12% of total employment (The Hudson Institute, 2009). The average GDP per capita for American Samoa in 2007 was \$8,100, as compared to approximately \$47,300 in the United States (BEA, 2010).

OIA strives to foster economic development, promote sound management, and improve quality of life in American Samoa. OIA payments to American Samoa in FY2010 totaled \$35.4 million and were primarily directed toward the government and health care sectors with additional support for education and construction (Table 2-1).

The largest block of OIA payments came in the form of Assistance to Territories funding, the largest proportion of which is operations grants that total nearly \$23 million. These operation grants are used to fund basic Samoan government operations and to support the American Samoa High Court (the highest court in American Samoa excluding the U.S. Supreme Court), and the operation of the LBJ Hospital. The American Samoa Operations Grants make up approximately 11% of American Samoa's general fund and 29% of LBJ Hospital's revenue (OIA, 2010).

Other Assistance to Territories funding, totaling \$12.6 million, is used to fund economic development programs, judicial training, and other initiatives such as the Coral Reef Initiative, which pursues the sustainable maintenance and protection of coral reefs through initiatives such as education and outreach programs and the establishment of protection areas, and the Pacific & Virgin Islands Training Initiatives (PITI-VITI). PITI-VITI was established to assist island governments in developing superior leadership, financial stability, accountability, program effectiveness, and economic growth.

In addition to funding received from OIA's Assistance to Territories, American Samoa also receives \$14 million through the Compact of Free Association Compact Impact Grant, which offsets costs incurred by American Samoan health, educational, and social systems from in-migration of FAS residents.

Table 2-1. American Samoa: OIA Payments (FY 2010)

Appropriation	Spending (\$'000; 2009\$)	Impact Treatment
<u>Compact of Free Association</u>		
Compact impact	14	Health care
<i>Total, Compact of Free Association</i>	<i>14</i>	
<u>Assistance to Territories</u>		
American Samoa operations grant—Basic operations	14,240	Government
American Samoa operations grant—LBJ hospital operations	7,657	Health care
American Samoa operations grant—High court	855	Government
<i>Subtotal, American Samoa Operations Grants</i>	<i>22,752</i>	
General technical assistance—Direct grants	2,200	Government
General technical assistance—Judicial training	46	Government
General technical assistance—Economic development	29	Government
General technical assistance—USDA Grad School PITI VITI	200	Education
General technical assistance—Close Up Foundation	143	Education
<i>Subtotal, General Technical Assistance</i>	<i>2,617</i>	
Coral Reef Initiative	100	Government
Maintenance assistance	350	Government
Northern Mariana Covenant Grants—American Samoa construction	9,383	Construction
Office of Insular Affairs	149	Government
<i>Subtotal, Other Assistance to Territories</i>	<i>9,982</i>	
<i>Total, Assistance to Territories</i>	<i>35,351</i>	
Total Spending Inside American Samoa	35,365	

Source: RTI estimates based on OIA, 2010.

2.2 Direct Economic Impacts of OIA Payments

Direct economic impacts of OIA payments were assigned to four economic sectors—education, construction, government, and health care. To calculate the employment and employee compensation impacts associated with this spending, as described in the methodology, the following “output” and employee compensation-to-employee ratios were used:¹

- **Education:** Based on sales and payroll data from the 2007 Economic Census for American Samoa, the average output and employee compensation per worker ratios in the education sector (NAICS 61) were estimated to be \$44,907 per employee and

¹All adjustments for inflation were made using the U.S. Consumer Price Index for All Urban Consumers (BLS, 2010).

\$11,760 per employee, respectively (U.S. Department of Commerce, Bureau of the Census [“Census”] 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$46,465** and an employee compensation-to-employee ratio of **\$12,168**.

- **Construction:** Based on sales and payroll data from the 2007 Economic Census, the average output and employee compensation per worker ratios in the construction sector (NAICS 23) were \$52,431 per employee and \$11,724 per employee, respectively (Census, 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$54,251** and an employee compensation-to-employee ratio of **\$12,131**.
- **Government:** According to American Samoa’s Basic Financial Statements (American Samoa Treasury Department [ASTD], 2008), the government of American Samoa received approximately \$185 million dollars in revenue and employed 4,142 individuals in 2007. Adjusting for inflation, this implies an output-to-employee ratio of **\$46,320**. Because data on government employee compensation was unavailable, the average payroll per worker ratio for nonagricultural private-sector workers (\$11,759) from the 2007 Economic Census was used as a proxy (Census, 2009). Adjusting for inflation, this implies an employee compensation-to-employee ratio of **\$12,167**.
- **Health care:** Based on sales and payroll data from the 2007 Economic Census, the average output and employee compensation per worker ratios per worker in the health care sector (NAICS 62) were \$37,445 per employee and \$21,245 per employee, respectively (Census, 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$38,745** and an employee compensation-to-employee ratio of **\$21,983**.

Dividing the payments directed toward each sector by the employment and employee compensation ratios yields the direct employment and employee compensation impacts reported in Table 2-2.

Table 2-2. American Samoa: Estimated Direct Economic Impacts (FY2010)

Industry	FY2010 Payments (\$'000; 2009\$)	Output-to-Employee Ratio (\$/employee)	Employee Compensation-to-Employee Ratio (\$/employee)	Direct Employment Impact (#)	Direct Employee Compensation Impact (\$'000; 2009\$)
Education	343	46,465	12,168	7	90
Construction	9,383	54,251	12,131	173	2,098
Government	17,968	46,320	12,167	388	4,720
Health care	7,671	38,745	21,983	198	4,352
Total	35,365			766	11,260

Sources: RTI estimates based on Census, 2009; OIA, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

2.3 Indirect and Induced Economic Impacts (Base Multipliers)

The employment and employee compensation multipliers were developed using the best available employment and employee compensation data for American Samoa (Table 2-3). Table 2-3 was developed from a combination of data sources. First, data for 2008 employment in the manufacturing industry and for American Samoa as a whole were obtained from American Samoa's Financial Statement (ASTD, 2008). Next, employment for nonmanufacturing industries was distributed assuming that the proportion of total employment associated with each nonmanufacturing industry was the same as it was in 2002 (2002 employment data by industry was obtained from American Samoa Department of Commerce[ASDC] [2008]). After employment by industry was estimated, total employee compensation in each industry was estimated by applying employee compensation-per-worker ratios for each industry that were obtained from the 2007 Economic Census and 2002 Agricultural Census to the employment totals (Census, 2009; USDA, 2005). Because employee compensation data for government employees were not available from either of these sources, government employees were assumed to earn the same employee compensation-per-worker as the average for the nonagricultural private sector.

The economic base of American Samoa is agriculture, fishing, mining, manufacturing, and federal government activities. Industries supported by tourism can also be considered part of the economic base. Ideally, data would be available on measures of the number of employees who are supported by tourism. However, because these data were unavailable, we assumed that the entire accommodation and food services industries are supported by tourism and therefore part of the economic base.² This is likely a conservative approach because, to the extent that this approximation overrepresents the portion of the economy supported by tourism, employment and employee compensation multipliers will be reduced.

In addition to these industries, a portion of American Samoa's territorial government is considered part of the economic base. Because an average of approximately 50% of American Samoa's budget comes from external sources, this analysis assumes 50% of territorial government employment is considered base employment (GAO, 2006).³ Based on these assumptions and the data in Table 2-3, the following multipliers were calculated:

²A similar approach for creating a proxy for measuring the role of tourism in insular area economies was used in GAO (2006).

³In addition to payments from the OIA and the Department of the Interior, the government of American Samoa also receives support from various other federal government agencies, including the Department of Education, the Department of Agriculture, and the Department of Health and Human Services.

Table 2-3. American Samoa: Employment and Employee Compensation by Industry (2008)

Industry	Employment (#)	Employee Compensation (\$'000; 2009\$)
Economic Base Industries		
Agriculture, fishing, and mining	514	516
Government - American Samoa government ^a	4,142	50,398
Government - Federal government	156	1,902
Manufacturing - Fish processing	4,861	48,367
Manufacturing - Other	55	551
Tourism - Accommodation	44	349
Tourism - Food services and drinking places	565	4,531
Noneconomic Base Industries		
Construction	592	7,177
Educational and health care services	758	9,220
Financial activities	324	7,213
Information	291	4,833
Other services	347	3,051
Professional and business services	890	15,483
Retail trade	1,834	20,537
Transportation and warehousing	778	6,418
Utilities	491	5,970
Wholesale trade	348	5,158
Total	16,990	191,675

^a Because only 50% of American Samoa's budget comes from external sources, it was assumed that only 50% of the employment and employee compensation associated with the territorial government was part of the base sector. The remaining employees and employee compensation were assumed to be part of the nonbase sector.

Sources: RTI estimates based on Census, 2009; USDA, 2007; ASDC, 2008; All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

- **Base employment multiplier:** base employment was calculated to include 8,267 employees out of a total of 16,990. Dividing total employment by base employment yields a multiplier of **2.06**, meaning that for every base employment position supported by OIA funding, an estimated 1.06 additional jobs are formed elsewhere in the economy. This estimate matches the 2005 economic base multiplier that was estimated for American Samoa in the 2008 OIA study on the prospective economic impact of the decline of the Samoa cannery industry (ASDC, 2008).
- **Employee compensation multiplier:** Employee compensation associated with base employment was estimated to be \$81 million. Dividing total employee compensation

by base employee compensation yields a base multiplier of **2.35**, meaning that every dollar of employee compensation supported by the 2010 spending will create an additional \$1.35 in employee compensation.

Multiplying the direct employment impact and employee compensation impacts in Table 2-2 by these multipliers yields a total employment impact of 1,575 employees and a total employee compensation impact of \$27 million.

2.4 Summary Economic Impact Estimate for FY2010

In summary, the \$36 million of OIA payments directly supports 766 jobs and \$11.3 million in employee compensation. Accounting for the multiplier process, OIA spending supports a total 1,575 jobs and \$26.5 million in employee compensation.

Because precise GDP multipliers could not be computed because of data unavailability, the impact of OIA payments on GDP was estimated by multiplying the number of jobs supported through OIA by the ratio of GDP to total employees. It is estimated that American Samoa’s GDP was \$550.5 million in 2009 (BEA, 2010). Dividing this by the total number of employees estimated to be working in American Samoa in 2007 (16,990) implies a GDP-to-employee ratio of \$32,399. Multiplying this ratio by the direct and total employment impacts calculated above, it is estimated that *OIA spending supports direct GDP impacts of \$25 million and total impacts of \$51 million.* A summary of economic impact measures is presented in Table 2-4.

Table 2-4. American Samoa: Total Estimated Economic Impact (FY2010)

	Direct Economic Impact	Indirect/Induced Economic Impact	Total Economic Impact
Employment (#)	766	809	1,575
Employee compensation (\$'000; 2009\$)	11,260	15,249	26,510
GDP (\$'000; 2009\$)	24,825	26,197	51,022

Sources: RTI estimates based on Census, 2009; OIA, 2010; USDA, 2007; BEA, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

The significance of OIA’s economic contributions can be better understood when viewed in relation to the American Samoa economy as a whole, which is summarized in Table 2-5. As this table illustrates, the 1,600 jobs directly and indirectly supported by OIA payments represent 9% of American Samoa’s estimated total employment. Similarly, \$27 million of employee compensation associated with these employees accounts for approximately 14% of total employee compensation inside the region, and the \$51 million of GDP associated with these employees represents 9% of total GDP produced by the region.

Table 2-5. American Samoa: Estimated Impact Relative to National Economy (FY2010)

	Total Economic Impact for FY2010 OIA Payments	National Data	Impact as Percentage of Total Economy
Employment (#)	1,575	16,990	9%
Employee compensation (\$'000; 2009\$)	26,510	191,675	14%
GDP (\$'000; 2009\$)	51,022	550,461	9%

Sources: RTI estimates based on Census, 2009; OIA, 2010; USDA, 2007; BEA, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

SECTION 3 GUAM

3.1 FY2010 OIA Payments Summary

Although Guam is among the wealthiest of the insular areas, it continues to face challenges in implementing effective government, health care, and education systems. Guam's economy is largely based on tourism from Asia and is therefore sensitive to regional consumer spending trends. The U.S. military buildup, which may increase Guam's population by an estimated 45%, creates uncertainty for Guam, which could see an increase in employment but also strains on its infrastructure (*Washington Post*, 2010). The average GDP per capita for Guam in 2007 was \$25,500, slightly over half the U.S GDP per capita in the same year (\$47,300) (BEA, 2010).

OIA payments to Guam in FY2010 totaled \$67.4 million and were primarily directed to the government sector with additional support for health care, education, and construction. A detailed breakdown of OIA payments is presented in Table 3-1. The largest block of OIA payments, totaling \$39 million, came in the form of fiscal payments associated with Section 30 Income Taxes. These are funds transferred by OIA from the U.S. Treasury to Guam and largely consist of federal income taxes paid by military personnel stationed on Guam, immigration fees, and miscellaneous duties (Limtiaco, 2008). OIA also provided nearly \$17 million through the Compact of Free Association, which Guam intends to use for a variety of equipment purchases and infrastructure.

Assistance to Territories payments, which total about \$11.6 million, provide for direct grants, economic development, and judicial training, and the PITI-VITI. OIA also distributed funds for the Coral Reef Initiative, which supports the sustainable maintenance and protection of coral reefs through initiatives such as education and outreach programs and the establishment of protection areas. Other technical assistance programs, which make up about \$4.8 million of the Assistance to Territories payments, include infrastructure maintenance assistance, funding for Guam Construction, Brown Tree Snake Control, and the Close Up Foundation. The Brown Tree Snake Control program is intended to fund research and implementation techniques to eradicate this invasive species. The Close Up Foundation is a civic education program designed to teach democracy and citizenship and improve civic education in the insular areas.

3.2 Direct Economic Impacts of OIA Payments

Direct economic impacts of OIA payments were assigned to four economic sectors—education, construction, government, and wholesale. To calculate the employment and employee

Table 3-1. Guam: OIA Payments by Appropriation (FY 2010)

Appropriation	Spending (\$'000; 2009\$)	Impact Treatment
<u>Fiscal Payments</u>		
Guam Section 30 income taxes	39,000	Government
<i>Total, Fiscal Payments</i>	<i>39,000</i>	
<u>Compact of Free Association</u>		
DPW schools leaseback	7,100	Education
GMHA capital improvements & equipment	3,500	Construction
DPR Northern Sports Recreation Complex	2,700	Construction
GFD equipment (fire pumper trucks)	750	Wholesale
GPD equipment (patrol vehicles)	527	Wholesale
DPH&SS pharmaceutical supplies	500	Wholesale
DOC equipment (standby generators)	500	Wholesale
DMH&SA permanent injunction projects	500	Government
DISID permanent injunction projects	500	Government
DYA building renovations & equipment	\$50	Construction
<i>Total, Compact of Free Association</i>	<i>16,827</i>	
<u>Assistance to Territories</u>		
General technical assistance—Direct grants	1,000	Government
General technical assistance—Judicial training	46	Government
General technical assistance—Economic development	29	Government
General technical assistance—USDA Grad School PITI VITI	200	Education
General technical assistance—Close Up Foundation	143	Education
<i>Subtotal, General Technical Assistance</i>	<i>6,777</i>	
Brown Tree Snake Control	2,208	Government
Guam infrastructure	2,000	Construction
Maintenance assistance	300	Government
Coral Reef Initiative	\$50	Government
Northern Mariana Covenant Grants—Guam construction	5,360	Construction
Wastewater projects	250	Construction
<i>Subtotal, Other</i>	<i>4,808</i>	
<i>Total, Assistance to Territories</i>	<i>11,585</i>	
Total Spending Inside Guam	67,412	

Source: RTI estimates based on OIA, 2010.

compensation impacts associated with this spending, as described in the methodology, the following output and employee compensation-to-employee ratios were used:¹

- **Education:** Based on sales and payroll data from the 2007 Economic Census for Guam, the average output and employee compensation per worker ratios in the education sector (NAICS 61) were \$38,853 per employee and \$15,477 per employee, respectively (Census, 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$40,202** and an employee compensation-to-employee ratio of **\$16,014**.
- **Construction:** Based on sales and payroll data from the 2007 Economic Census, the average output and employee compensation per worker ratios in the construction sector (NAICS 23) were \$96,302 per employee and \$20,176 per employee, respectively (Census, 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$99,643** and an employee compensation-to-employee ratio of **\$20,876**.
- **Government:** According to the 2008 Guam Statistical Yearbook, the government of Guam received approximately \$513 million in revenue and employed approximately 11,260 individuals in 2007 (GBSP, 2009). Adjusting for inflation, this implies an output-to-employee ratio of **\$45,415**. Because data on government employee compensation were unavailable, the average employee compensation-per-worker ratio for nonagricultural private-sector workers (\$21,006) from the 2007 Economic Census was used as a proxy (Census, 2009). Adjusting for inflation, this implies an employee compensation-to-employee ratio of **\$21,735**.
- **Wholesale:** Based on sales and payroll data from the 2007 Economic Census, the average output and employee compensation per worker ratios in the wholesale sector (NAICS 42) were \$334,104 per employee and \$23,270 per employee, respectively (Census, 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$345,698** and an employee compensation-to-employee ratio of **\$24,078**.

Dividing the payments directed toward each sector by the employment and employee compensation ratios yields the direct employment and employee compensation impacts reported in Table 3-2.

¹All adjustments for inflation were made using the U.S. Consumer Price Index for All Urban Consumers (BLS, 2010).

Table 3-2. Guam: Estimated Direct Economic Impacts (FY2010)

Industry	FY2010 Payments (\$'000; 2009\$)	Output-to- Employee Ratio (\$/employee)	Employee Compensation- to-Employee Ratio (\$/employee)	Direct Employment Impact (#)	Direct Employee Compensation Impact (\$'000; 2009\$)
Education	7,443	40,202	16,014	185	2,965
Construction	14,060	99,643	20,876	141	2,946
Government	43,632	45,415	21,735	961	20,882
Wholesale	2,277	345,698	24,078	7	159
Total	67,412			1,294	26,951

Sources: RTI estimates based on Census, 2009; OIA, 2010; GBSP, 2009. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

3.3 Indirect and Induced Economic Impacts (Base Multipliers)

The employment and employee compensation multipliers were developed using the best available employment and employee compensation data presented in Table 3-3. This table was developed from a combination of data sources. First, 2008 data on employment by industry were obtained for the 2008 Guam Statistical Yearbook. Next, employee compensation for each industry was estimated by applying the annual payroll to employee ratios found in the 2007 Economic and Agricultural Censuses (adjusted for inflation) to the employment totals (Census, 2009; USDA, 2009a).

The economic base of Guam is agriculture, manufacturing, and federal government activities. Industries supported by tourism can also be considered part of the economic base. Ideally, data would be available on the number of employees supported by tourism. However, because these data were unavailable, we assumed that the entire accommodation and food services industries are supported by tourism and therefore part of the economic base.² This is likely a conservative approach because, to the extent that this approximation over-represents the portion of the economy supported by tourism, employment and employee compensation multipliers will be reduced.

In addition to these industries, a portion of Guam's territorial government is considered part of the economic base. Because 14% of Guam's government revenue comes from external sources, 14% of territorial government employment was included in the base employment for the

²A similar approach for creating a proxy for measuring the role of tourism in insular area economies was used in GAO (2006).

Table 3-3. Guam: Estimated Employment and Employee Compensation by Industry (2008)

Industry	Employment (#)	Employee Compensation (\$'000; 2009\$)
Economic Base Industries		
Agriculture	355	548
Government - Government of Guam ^a	11,260	244,737
Government - Federal government (Military)	6,331	137,605
Government - Federal government (Nonmilitary)	3,643	79,170
Manufacturing	1,693	45,243
Tourism - Accommodation and food services	7,566	105,972
Noneconomic Base Industries		
Construction	6,520	136,111
Finance, insurance, and real estate	2,530	68,888
Other services	8,789	151,616
Trade	13,733	275,030
Transportation	4,810	116,289
Total	67,229	1,361,210

^a Note that because only 14% of Guam's budget comes from external sources, it was assumed that only 14% of the employment and employee compensation associated with the territorial government were part of the base sector. The remaining employees and employee compensation were assumed to be part of the nonbase sector.

Sources: RTI estimates based on GBSP, 2009 and Census, 2009. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

purpose of calculating base multipliers (GBSP, 2009).³ Based on these assumptions and the data in Table 3-3, the following multipliers were calculated:

- **Base employment multiplier:** Base employment was calculated to include 21,163 employees out of a total of 67,229. Dividing total employment by base employment yields a multiplier of **3.18**, meaning that for every base employment position supported by OIA funding, an estimated 2.18 additional jobs are formed elsewhere in the economy.
- **Employee compensation multiplier:** Employee compensation associated with base employment was estimated to be \$402 million. Dividing total employee compensation by base employee compensation yields a base multiplier of **3.38**, meaning that every dollar of employee compensation supported by the 2010 spending will create an additional \$2.38 in employee compensation elsewhere in the economy.

³In addition to payments from the OIA and the Department of the Interior, the government of Guam also receives support from various other federal government agencies, including the Department of Education, Department of Health and Human Services, and Department of Homeland Security (GAO, 2006).

Multiplying the direct employment impact and employee compensation impacts in Table 3-2 by these multipliers yields a total employment impact of 4,109 employees and a total employee compensation impact of \$91 million.

3.4 Summary Economic Impact Estimate for FY2010

In summary, the \$67 million of OIA payments directly supports 1,294 jobs and \$27 million in employee compensation. Accounting for the multiplier process, OIA spending supports a total of 4,109 jobs and \$91.1 million in employee compensation.

Because exact GDP multipliers could not be computed due to data unavailability, the impact of OIA payments on GDP was approximated by multiplying the number of jobs supported through OIA by the ratio of GDP to total employees. GDP for Guam was estimated to be \$4,280 in 2007, or \$4,428 in 2009 dollars (BEA, 2010). Dividing this estimate by the total number of employees reported earlier yields a GDP-to-employee ratio of \$74,266 per worker. Multiplying this ratio by the direct and total employment impacts calculated above, *it is estimated that OIA spending supports direct GDP impacts of \$96.1 million and total impacts of \$305.2 million.* A summary of economic impact measures is presented in Table 3-4.

Table 3-4. Guam: Total Estimated Economic Impact (FY2010)

	Direct Economic Impact	Indirect/Induced Economic Impact	Total Economic Impact
Employment (#)	1,294	2,816	4,109
Employee compensation (\$'000; 2009\$)	26,951	64,125	91,076
GDP (\$'000; 2009\$)	96,069	209,110	305,179

Sources: RTI estimates based on Census, 2009; OIA, 2010; BEA, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

The significance of OIA's economic contributions can be better understood when viewed in relation to the Guam economy as a whole, which is summarized in Table 3-5. As this table illustrates, the 4,109 jobs directly and indirectly supported by OIA payments represent 6% of Guam's total employment in 2007. Similarly, \$91.1 million of employee compensation associated with these employees accounts for approximately 7% of total employee compensation inside the region, and the \$305 million of GDP associated with these employees represents 7% of total GDP produced by the region.

Table 3-5. Guam: Estimated Impacts Relative to National Economy (FY2010)

	Total Economic Impact for FY2010 OIA Payments	National Data	Impact as Percentage of Total Economy
Employment (#)	4,109	67,229	6%
Employee compensation (\$'000; 2009\$)	91,076	1,361,210	7%
GDP (\$'000; 2009\$)	305,179	4,428,521	7%

Sources: RTI estimates based on Census, 2009; OIA, 2010; BEA, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

SECTION 4

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS (CNMI)

4.1 FY2010 OIA Payments Summary

In 2007, the average GDP per capita for CNMI was approximately \$17,000 in 2009 dollars, close to 40% U.S. GDP per capita in the same year (\$47,300). However, this country continues to face economic development and infrastructural challenges. Once home to a billion-dollar garment industry, CNMI lost many factories because of foreign competition and was the only one of the four U.S. territories to experience a drop in GDP between 2002 to 2007 (*Saipan Tribune*, 2010). OIA payments to CNMI in 2010 totaled \$17.6 million and were primarily directed to the construction and government sectors with additional support for education and the private sector (Table 4-1).

Assistance to Territories payments, totaling about \$15.7 million, made up the majority of funding to CNMI. General technical assistance, which makes up \$2.5 million of all Assistance to Territories, provides for direct grants, economic development, judicial training, and PITI-VITI. Also included in general technical assistance are the Close Up Foundation, the CNMI Ombudsman's Office, CNMI Immigration, Labor and Law Enforcement General, and the Prior Service Benefits Program, which issues benefits to CNMI citizens who worked for the U.S. Navy or the U.S. Trust Territory of the Pacific Islands from 1944 through 1968. The remainder of the Assistance to Territories funding goes to other activities such as the Coral Reef Initiative, wastewater improvements, and Brown Tree Snake Control. Wastewater funding for 2009 was used by CNMI to develop disinfection techniques and improve compliance with the Clean Water Act and the Safe Drinking Water Act.

OIA also provided nearly \$2 million through the Compact of Free Association, which CNMI intends to use for a variety of government and educational purposes, including funding for the Northern Marianas College and the public school system.

4.2 Direct Economic Impacts of OIA Payments

Direct economic impacts of OIA payments were assigned to four economic sectors—education, construction, government, and the general private sector. To calculate the employment and employee compensation impacts associated with this spending, as described in

Table 4-1. CNMI: OIA Payments (FY 2010)

Appropriation	Spending (\$'000; 2009\$)	Impact Treatment
<i>Compact of Free Association</i>		
Department of Public Health	414	Government
Division of Youth Services	45	Government
Department of Public Safety	371	Government
Department of Corrections	155	Government
Office of Public Defender	37	Government
Northern Marianas College	122	Education
Public school system	786	Education
<i>Total, Compact of Free Association</i>	<i>1,930</i>	
<i>Assistance to Territories</i>		
General technical assistance—Direct grants	1,000	Government
General technical assistance—Judicial training	46	Government
General technical assistance—Economic development	29	Government
General technical assistance—USDA Grad School PITI VITI	200	Education
General technical assistance—Close Up Foundation	143	Education
General technical assistance—CNMI Ombudsman’s Office	250	Government
General technical assistance—CNMI Immigration, Labor and Law Enforcement	617	Government
General technical assistance—Prior Service Benefits Program	215	Private
<i>Subtotal, General Technical Assistance</i>	<i>2,499</i>	
Brown Tree Snake Control	577	Government
Coral Reef Initiative	85	Government
Maintenance assistance	417	Government
Northern Mariana Covenant Grants—CNMI construction	10,995	Construction
Office of Insular Affairs	350	Government
Wastewater projects	750	Government
<i>Subtotal Other</i>	<i>13,174</i>	
<i>Total, Assistance to Territories</i>	<i>15,674</i>	
Total Spending Inside CNMI	17,604	

Source: RTI estimates based on OIA, 2010.

the methodology, the following output and employee compensation-to-employee ratios were used:¹

- **Education:** Based on sales and payroll data from the 2007 Economic Census for CNMI, the average output and employee compensation per worker ratios in the education sector (NAICS 61) were \$26,225 per employee and \$8,934 per employee, respectively (Census, 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$27,138** and an employee compensation-to-employee ratio of **\$9,244**.
- **Construction:** Based on sales and payroll data from the 2007 Economic Census, the average output and employee compensation per worker ratios in the construction sector (NAICS 23) were \$59,466 per employee and \$12,962 per employee, respectively (Census, 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$61,529** and an employee compensation-to-employee ratio of **\$13,412**.
- **Government:** According to CNMI's Single Audit Financial Statements, the government of CNMI received approximately \$159 million in revenue in 2007 or \$165 million in 2009 dollars (CNMI Office of the Public Auditor, 2008). Although 2007 employment data were not available, available data indicate that the public administration employment in 2005 included 3,153 workers. Assuming employment stayed approximately the same in 2007, this implies a government-to-employee ratio of **\$52,473**. Because data on government employee compensation were unavailable, the average employee compensation-per-worker ratio for nonagricultural private-sector workers (\$10,879) from the 2007 Economic Census was used as a proxy (Census, 2009). Adjusting for inflation, this implies an employee compensation-to-employee ratio of **\$11,257**.
- **Private:** Based on sales and payroll data from the 2007 Economic Census, the average output and employee compensation per worker ratios in the nonagricultural private sector were \$56,767 per employee and \$10,879 per employee, respectively (Census, 2009). Adjusting for inflation, private-sector output and employee compensation-to-employee ratios are **\$58,737** and **\$11,257** in 2009 dollars, respectively.

Dividing the payments directed toward each sector by the employment and employee compensation ratios yields the direct employment and employee compensation impacts reported in Table 4-2.

4.3 Indirect and Induced Economic Impacts (Base Multipliers)

The employment and employee compensation multipliers were developed using the employment and employee compensation data presented in Table 4-3. This table was developed

¹All adjustments for inflation were made using the U.S. Consumer Price Index for All Urban Consumers (BLS, 2010).

Table 4-2. CNMI: Estimated Direct Economic Impacts (FY2010)

Industry	FY2010 Payments (\$'000; 2009\$)	Output-to- Employee Ratio (\$/employee)	Employee Compensation- to-Employee Ratio (\$/employee)	Direct Employment Impact (#)	Direct Employee Compensation Impact (\$'000; 2009\$)
Education	1,251	27,138	9,244	46	426
Construction	10,995	61,529	13,412	179	2,397
Government	5,143	52,473	11,257	98	1,103
Private	215	58,737	11,257	4	41
Total	17,604			326	3,967

Sources: RTI estimates based on Census, 2009; OIA, 2010; CNMI Office of the Public Auditor, 2008, All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

from a combination of data sources. First, employment and employee compensation information for nonagricultural, private-sector industries was obtained from the 2007 Economic Census (Census, 2009). Next, employment and employee compensation data for the agricultural industry were obtained from the 2007 Agricultural Census (USDA, 2009b). Lastly, 2005 employment data were used for the public administration sector because these were the most recent data available (CNMI Department of Commerce, 2008). To estimate employee compensation information for the public administration industry, we used the average employee compensation-per-worker ratio for nonagricultural, private-sector industries.

The economic base of CNMI is agriculture, fishing, mining, and manufacturing. Industries supported by tourism can also be considered part of the economic base. Ideally, data would be available on the number of employees who are supported by tourism. However, because these data were unavailable, we assumed that the entire accommodation and food services industries are supported by tourism and therefore part of the economic base.² This is likely a highly conservative approach because, to the extent that this approximation overrepresents the portion of the economy supported by tourism, employment and employee compensation multipliers will be reduced.

In addition to these industries, a portion of CNMI's territorial government is considered part of the economic base. Specifically, because 20% of CNMI's government revenue comes from external sources, 20% of territorial government (public administration) employment was

²A similar approach for creating a proxy for measuring the role of tourism in insular area economies was used in GAO (2006).

Table 4-3. CNMI: Estimated Employment and Employee Compensation by Industry (2007)

Industry	Employment (#)	Employee Compensation (\$'000; 2009\$)
Economic Base Industries		
Agriculture	170	1,026
Government (Public administration) ^a	3,153	35,493
Mining, quarrying, and oil and gas extraction	10	203
Manufacturing	7,094	58,528
Tourism - Accommodation and food services	4,772	46,361
Tourism - Arts, entertainment, and recreation	580	6,057
Noneconomic Base Industries		
Administrative and support and waste management and remediation services	1,358	16,153
Construction	528	7,081
Educational services	136	1,257
Finance and insurance	536	13,212
Information	604	13,331
Health care and social assistance	267	4,581
Management of companies and enterprises	60	1,270
Other services (except public administration)	547	5,370
Professional, scientific, and technical services	404	8,986
Real estate and rental and leasing	637	8,127
Retail trade	2,770	29,570
Transportation and warehousing	1,105	16,179
Utilities	375	7,995
Wholesale trade	872	10,393
Total	25,977	291,172

^a Note that because only 20% of CNMI's budget comes from external sources, it was assumed that only 20% of the employment and employee compensation associated with the territorial government were part of the base sector. The remaining employees and employee compensation were assumed to be part of the nonbase sector.

Sources: Census, 2009; USDA, 2007; CNMI Department of Commerce, 2008. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

included in the base employment for the purpose of calculating base multipliers (GAO, 2006).³ Based on these assumptions and the data in Table 4-3, the following multipliers were calculated:

- **Base employment multiplier:** Base employment was calculated to include 13,256 employees out of a total of 25,977. Dividing total employment by base employment yields a multiplier of **1.96**, meaning that for every base employment position supported by OIA funding, an estimated 0.96 additional jobs are formed elsewhere in the economy.
- **Employee compensation multiplier:** Employee compensation associated with base employment was estimated to be \$120 million. Dividing total employee compensation by base employee compensation yields a base multiplier of **2.44**, meaning that every dollar of employee compensation supported by the 2010 spending will create an additional \$1.44 in employee compensation elsewhere in the economy.

Multiplying the direct employment impact and employee compensation impacts in Table 4-2 by these multipliers yields a total employment impact of 640 employees and a total employee compensation impact of \$9.7 million.

4.4 Summary Economic Impact Estimate for FY2010

In summary, the \$17.6 million of OIA payments directly supports 326 jobs and \$4.0 million in employee compensation. Accounting for the multiplier process, OIA spending supports a total 640 jobs and \$9.7 million in employee compensation.

Because GDP multipliers could not be computed as a result of data unavailability, the impact of OIA payments on GDP was estimated by multiplying the number of jobs supported through OIA by the ratio of GDP to total employees. GDP for CNMI was estimated to be \$962 million in 2007 or \$995 million in 2009 dollars (BEA, 2010). Dividing this total GDP by the total employment reported above yields a GDP-to-employee ratio of \$38,319. Multiplying this ratio by the direct and total employment impacts calculated above, *it is estimated that OIA spending supports direct GDP impacts of \$12.5 million and total impacts of \$24.5 million.* A summary of economic impact measures is presented in Table 4-4.

The significance of OIA's economic contributions can be better understood when viewed in relation to the CNMI economy as a whole, which is summarized in Table 4-5. As this table illustrates, the 640 jobs directly and indirectly supported by OIA payments represent 2% of CNMI's total employment in 2007. Similarly, \$9.7 million of employee compensation associated with these employees accounts for approximately 3% of total employee compensation inside the

³In addition to payments from the OIA and the Department of the Interior, the government of CNMI also receives support from various other federal government agencies, including the Department of Agriculture, Department of Health and Human Services, and Department of Homeland Security (GAO, 2006).

region, and the \$24.5 million of GDP associated with these employees represents 2% of total GDP produced by the region.

Table 4-4. CNMI: Total Estimated Economic Impact (FY2010)

	Direct Economic Impact	Indirect/Induced Economic Impact	Total Economic Impact
Employment (#)	326	313	640
Employee compensation (\$'000; 2009\$)	3,967	5,718	9,685
GDP (\$'000; 2009\$)	12,510	12,004	24,514

Sources: RTI estimates based on Census, 2009; USDA, 2007; CNMI Department of Commerce, 2008; BEA, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

Table 4-5. CNMI: Estimated Impacts Relative to National Economy (FY2010)

	Total Economic Impact for FY2010 OIA Payments	National Data	Impact as Percentage of Total Economy
Employment (#)	640	25,977	2%
Employee compensation (\$'000; 2009\$)	9,685	291,172	3%
GDP (\$'000; 2009\$)	24,514	995,382	2%

Sources: RTI estimates based on Census, 2009; USDA, 2007; CNMI Department of Commerce, 2008; BEA, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

SECTION 5
U.S. VIRGIN ISLANDS (USVI)

5.1 FY2010 OIA Payments Summary

USVI is the wealthiest of the insular areas, with an average GDP per capita nearly as high as that of the United States. In 2007, the GDP per capita in USVI was about \$41,300 (in 2009 dollars) compared to \$47,300 in the United States that same year (BEA, 2010; Census, 2010). Among the major factors underlying USVI’s economy are tourism and the oil refining industry. The Hovensa oil refinery, located on St. Croix, is one of the world’s largest oil refineries (BEA, 2010).

OIA payments to USVI in 2010 totaled \$142.6 million (Table 5-1). The largest block of OIA payments to USVI comes in the form of Rum Excise Tax Payments totaling \$138 million. Under current U.S. law, excise taxes are collected on rum imported into the United States that is not of USVI or Puerto Rican origin. A fixed percentage of these excise taxes is distributed by the U.S. government to USVI. Although this funding is not designated for a particular purpose, USVI generally uses it to finance public infrastructure or provide support to the rum industry (Maguire and Teefy, 2010). The Assistance to Territories payments total about \$4.6 million and provide for general technical assistance for direct grants, economic development, judicial training, the Close Up Foundation, and the PITI-VITI, which are jointly managed by the USDA Graduate School.

Through other Assistance to Territories programs, which make up \$3.1 million in payments, OIA funds items such as wastewater improvements, USVI construction as part of the Northern Mariana Covenant Grant, and the Coral Reef Initiative. Wastewater funding was previously used for the Coral Bay Water Station project, which seeks to provide a potable water supply to the Coral Bay area of St. John (OIA, 2010).

5.2 Direct Economic Impacts of OIA Payments

Direct economic impacts of OIA payments were assigned to three economic sectors—education, construction, and government. To calculate the employment and employee compensation impacts associated with this spending, as described in the methodology, the following “output” and employee compensation-to-employee ratios were used:¹

¹All adjustments for inflation were made using the U.S. Consumer Price Index for All Urban Consumers (BLS, 2010).

Table 5-1. USVI: OIA Payments by Appropriation (FY 2010)

Appropriation	Spending (\$'000; 2009\$)	Impact Treatment
<u>Fiscal Payment</u>		
USVI rum excise tax payments	138,000	Government
<i>Total, Fiscal Payments</i>	<i>138,000</i>	
<u>Assistance to Territories</u>		
General technical assistance—Direct grants	1,000	Government
General technical assistance—Judicial training	46	Government
General technical assistance—Economic development	29	Government
General technical assistance—USDA Grad School PITI VITI	200	Education
General technical assistance—Close Up Foundation	143	Education
<i>Subtotal, General Technical Assistance</i>	<i>1,417</i>	
Coral Reef Initiative	300	Government
Northern Mariana Covenant Grants—USVI construction	1,982	Construction
Wastewater project	900	Construction
<i>Subtotal, Other</i>	<i>3,182</i>	
<i>Total, Assistance to Territories</i>	<i>4,599</i>	
Total Spending Inside Virgin Islands	142,599	

Source: RTI estimates based on OIA, 2010.

- **Education:** Based on sales and payroll data from the 2007 Economic Census for USVI, the average output and employee compensation per worker ratios in the education sector (NAICS 61) were \$66,737 per employee and \$14,404 per employee, respectively (Census, 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$69,053** and an employee compensation-to-employee ratio of **\$14,903**.
- **Construction:** Based on sales and payroll data from the 2007 Economic Census for USVI, the average output and employee compensation per worker ratios in the construction sector (NAICS 23) were \$103,782 per employee and \$33,993 per employee, respectively (Census, 2009). Adjusting these ratios to 2009 dollars gives an output-to-employee ratio of **\$107,384** and an employee compensation-to-employee ratio of **\$35,173**.
- **Government:** According to the U.S. Virgin Islands Annual Economic Indicators (U.S. Virgin Islands Bureau of Economic Research, 2009), the government revenue-to-employee ratio in 2008 was \$60,940. Adjusting this ratio to 2009 dollars gives an output ratio of **\$60,724**. Because data on government employee compensation were unavailable, the average payroll-per-worker ratio for nonagricultural private-sector workers (\$30,725) from the 2007 Economic Census was used as a proxy (Census,

2009). Adjusting for inflation, this implies an employee compensation-to-employee ratio of **\$31,791**.

Dividing the payments directed toward each sector by the employment and employee compensation ratios yields the direct employment and employee compensation impacts reported in Table 5-2.

Table 5-2. USVI: Estimated Direct Economic Impacts (FY2010)

Industry	FY2010 Payments (\$'000; 2009\$)	Output-to- Employee Ratio (\$/employee)	Employee Compensation-to- Employee Ratio (\$/employee)	Direct Employment Impact (#)	Direct Employee Compensation Impact (\$'000; 2009\$)
Education	343	69,053	14,903	5	74
Construction	2,882	107,384	35,173	27	944
Government	139,374	60,724	31,791	2,295	72,968
Total	142,599			2,327	73,986

Sources: RTI estimates based on Census, 2009; OIA, 2010; U.S. Virgin Islands Bureau of Economic Research, 2009. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

5.3 Indirect and Induced Economic Impacts (Base Multipliers)

The employment and employee compensation multipliers were developed using the employment and employee compensation data presented in Table 5-3. This table was developed from a combination of data sources. First, employment and employee compensation information for nonagricultural, private-sector industries was obtained from the 2007 Economic Census. Next, employment and employee compensation data for the agricultural industry were obtained from the 2007 Agricultural Census (USDA, 2009c). Lastly, employment associated with the federal and territorial governments was obtained for 2008 from the USVI Annual Economic Indicators (U.S. Virgin Islands Bureau of Economic Research, 2009). To estimate employee compensation information for these government workers, we used the average employee compensation-per-worker ratio for nonagricultural, private-sector industries.

The economic base of USVI is agriculture, fishing, mining, manufacturing, and federal government activities. Industries supported by tourism can also be considered part of the economic base. Ideally, data would be available on measures of the number of employees supported by tourism. However, because these data were unavailable, we assumed that the entire accommodation and food services industries are supported by tourism and therefore part of the

Table 5-3. USVI: Estimated Employment and Employee Compensation by Industry (2007)

Industry	Employment (#)	Employee Compensation (\$'000; 2009\$)
Economic Base Industries		
Agriculture	511	516
Government - Federal government	959	30,488
Government - Territorial government ^a	12,015	381,973
Mining, quarrying, and oil and gas extraction	39	1,777
Manufacturing	1,750	129,235
Tourism - Accommodation and food services	6,146	134,133
Tourism Arts, entertainment, and recreation	1,001	24,531
Noneconomic Base Industries		
Administrative and support and waste management and remediation services	2,498	64,196
Construction	3,388	119,165
Educational services	57	849
Finance and insurance	1,555	69,142
Health care and social assistance	2,624	60,509
Information	892	37,671
Management of companies and enterprises	83	2,466
Other services (except public administration)	2,160	87,468
Professional, scientific, and technical services	1,370	62,134
Real estate and rental and leasing	1,296	46,118
Retail trade	6,773	151,221
Transportation and warehousing	1,571	50,759
Utilities	750	55,365
Wholesale trade	797	25,496
Total	48,234	1,535,214

^a Note that because only 20% of USVI's budget comes from external sources, it was assumed that only 20% of the employment and employee compensation associated with the territorial government was part of the base sector. The remaining employees and employee compensation were assumed to be part of the nonbase sector.

Sources: 2007 Economic Census; 2007 Agricultural Census; U.S. Virgin Islands Bureau of Economic Research, 2009. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

economic base.² This is likely a conservative approach because, to the extent that this approximation overrepresents the portion of the economy supported by tourism, employment and employee compensation multipliers will be reduced.

In addition to these industries, a portion of USVI's territorial government is considered part of the economic base. Because 20% of USVI's government revenue comes from external sources, 20% of territorial government employment was also included in the base employment for the purpose of calculating base multipliers (GAO, 2006).³ Based on these assumptions and the data in Table 5-3, the following multipliers were calculated:

- **Base employment multiplier:** Base employment was calculated to include 12,809 employees out of a total of 48,234. Dividing total employment by base employment yields a multiplier of **3.77**, meaning that for every base employment position supported by OIA funding, an estimated 2.77 additional jobs are formed elsewhere in the economy.
- **Employee compensation multiplier:** Employee compensation associated with base employment was estimated to be \$397 million. Dividing total employee compensation by base employee compensation yields a base multiplier of **3.87**, meaning that every dollar of employee compensation supported by the 2010 spending will create an additional \$2.87 in employee compensation.

Multiplying the direct employment impact and employee compensation impacts in Table 5-2 by these multipliers yields a total employment impact of 8,763 employees and a total employee compensation impact of \$286 million.

5.4 Summary Economic Impact Estimate for FY2010

In summary, the \$142.6 million spent by OIA directly supports 2,327 jobs and \$74 million in employee compensation. Accounting for the multiplier process, OIA spending supports a total of 8,763 jobs and \$286 million in employee compensation.

Because GDP multipliers could not be computed as a result of data unavailability, the impact of OIA payments on GDP was estimated by multiplying the number of jobs supported through OIA by the ratio of GDP to total employees. GDP for USVI was estimated to be \$4,580 in 2007, or \$4,739 in 2009 dollars (BEA, 2010). Dividing this estimate by the total number of employees reported earlier yields a GDP-to-employee ratio of \$98,249 per worker. Multiplying

²A similar approach for creating a proxy for measuring the role of tourism in insular area economies was used in GAO (2006).

³In addition to payments from the OIA and the Department of the Interior, the government of USVI also receives support from various other federal government agencies, including the Department of Education and Department of Homeland Security (GAO, 2006).

this ratio by the direct and total employment impacts calculated above *it is estimated that OIA spending supports direct GDP impacts of \$228.6 million and total impacts of \$861 million.* A summary of economic impact measures is presented in Table 5-4.

Table 5-4. USVI: Total Estimated Economic Impact (FY2010)

	Direct Economic Impact	Indirect/Induced Economic Impact	Total Economic Impact
Employment (#)	2,327	6,436	8,763
Employee compensation (\$'000; 2009\$)	73,986	212,068	286,054
GDP (\$'000; 2009\$)	228,627	632,333	860,960

Sources: RTI estimates based on Census, 2009; OIA, 2010; BEA, 2010; USDA, 2007. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

The significance of OIA's economic contributions can be better understood when viewed in relation to the USVI economy as a whole, which is summarized in Table 5-5. As this table illustrates, the 8,763 jobs directly and indirectly supported by OIA payments represent 18% of USVI's total employment in 2007. Similarly, \$286 million of employee compensation associated with these employees accounts for approximately 19% of total employee compensation inside the region, and the \$861 million of GDP associated with these employees represents 18% of total GDP produced by the region.

Table 5-5. USVI: Estimated Impacts Relative to National Economy (FY2010)

	Total Economic Impact for FY2010 OIA Payments	National Data	Impact as Percentage of Total Economy
Employment (#)	8,763	48,234	18%
Employee compensation (\$'000; 2009\$)	286,054	1,535,214	19%
GDP (\$'000; 2009\$)	860,960	4,738,931	18%

Sources: RTI estimates based on Census, 2009; OIA, 2010; BEA, 2010; USDA, 2007. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

SECTION 6
FEDERATED STATES OF MICRONESIA (FSM)

6.1 FY2010 OIA Payments Summary

The FSM is among the least wealthy of the insular areas, with an average GDP per capita of about \$2,400 in 2007. As a result, FSM faces severe challenges in implementing effective government, education, and health care systems and relies heavily on OIA support. FSM's economy is based in large part on the fishing industry, which earns income through licensing fees charged to foreign tuna fishing vessels for fishing rights in FSM's exclusive economic zone.

OIA spending inside FSM in 2010 totaled \$107.3 million. A detailed breakdown of these payments is presented in Table 6-1. The largest block of OIA payments to FSM, totaling \$104 million, comes through the Compact of Free Association. The Compact provides essential funding for operating FSM's education, health care, and government systems as well as improves infrastructure.

Payments associated with Assistance to Territories totaled \$3.3 million. General technical assistance provides direct grants, economic development, judicial training, the Close Up Foundation, the Prior Service Benefits Program, and the PITI-VITI. Other Assistance to Territories programs include items such as the Coral Reef Initiative and FEMA disaster assistance.

6.2 Direct Economic Impacts of OIA Payments

Direct economic impacts of OIA payments were assigned to five economic sectors—education, construction, government, health care, and an assortment of private industries through the spending Prior Service Benefits recipients. To calculate the employment and employee compensation impacts associated with this spending, as described in the methodology, the following output and employee compensation-to-employee ratios were used.¹

¹All adjustments for inflation were made using the U.S. Consumer Price Index for All Urban Consumers (BLS, 2010).

Table 6-1. FSM: OIA Payments by Appropriation (FY 2010)

Appropriation	Spending (\$'000; 2009\$)	Impact Treatment
<i>Compact of Free Association</i>		
Education	28,774	Education
Health	21,008	Health care
Capacity building	2,888	Government
Private sector	2,334	Government
Environment	1,580	Government
Infrastructure	24,304	Construction
Other	23,117	Government
<i>Total, Compact of Free Association</i>	<i>104,004</i>	
<i>Assistance to Territories</i>		
General technical assistance—Direct grants	800	Government
General technical assistance—Judicial training	46	Government
General technical assistance—Economic development	29	Government
General technical assistance—USDA Grad School PITI VITI	200	Education
General technical assistance—Close Up Foundation	143	Education
General technical assistance—Prior Service Benefits Program	452	Private
<i>Subtotal, General Technical Assistance</i>	<i>1,669</i>	
Federal services assistance	1,545	Internal transfer
Judicial training U.S. territories	169	Government
FEMA disaster assistance	229	Government
Maintenance assistance	739	Government
Coral Reef Initiative	300	Government
Office of Insular Affairs	145	Government
<i>Subtotal, Other</i>	<i>3,127</i>	
<i>Total, Assistance to Territories</i>	<i>4,796</i>	
Total Payments	108,800	
Spending Outside FSM	1,545	
Total Spending Inside FSM	107,255	

Source: OIA, 2010

- **Education:** Based on employment and gross wage data provided in Fiscal Year 2008 Economic Review for FSM, the employee compensation-to-employee ratio for private-sector workers in the education sector was \$5,000 in 2007. Adjusting for inflation, this yields an employee compensation-to-employee ratio of **\$5,174** in 2009 dollars. Because information was not available for output associated with the education industry, the output-to-employee ratio for American Samoa was used (\$46,465). American Samoa was chosen to be the best point of comparison in this context because economic metrics, such as GDP per capita, were more similar to FSM than for any other area for which output-per-worker data were available. However, it should be noted that to the extent this proxy overestimates the true output per-worker ratio for FSM the direct impacts of OIA spending will be underestimated because more jobs will be supported by each dollar of OIA spending.
- **Construction:** Based on employment and gross wage data provided in Fiscal Year 2008 Economic Review for FSM, the employee compensation-to-employee ratio for private-sector workers in the construction sector was \$4,711 in 2007. Adjusting for inflation, this yields an employee compensation-to-employee ratio of **\$4,875** in 2009 dollars. Because information was not available for output associated with the construction industry, the output-to-employee ratio for American Samoa was used (\$54,251).
- **Government:** According to the Fiscal Year 2008 Economic Review for FSM (OIA, 2009a), the government of Micronesia received approximately \$145.2 million in revenue and employed approximately 6,834 individuals in 2007. Adjusting for inflation, this implies an output-to-employee ratio of **\$21,171**. Similarly, according to information presented in the same report, these workers received approximately \$27.3 million in employee compensation in 2007. Adjusting for inflation, this implies an employee compensation-to-employee ratio of **\$4,139** in 2009 dollars.
- **Health care:** Based on employment and gross wage data provided in Fiscal Year 2008 Economic Review for FSM, the employee compensation-to-employee ratio for private-sector workers in the health care sector was \$7,918 in 2007. Adjusting for inflation, this yields an employee compensation-to-employee ratio of **\$8,192**. Because information was not available for output associated with the health care industry, the output-to-employee ratio for American Samoa was used (\$38,745).
- **Private:** Based on employment and gross wage data provided in Fiscal Year 2008 Economic Review for FSM, the average wage for a private-sector worker was \$3,994 in 2007. Adjusting for inflation gives an employee compensation-to-employee ratio of **\$4,133** in 2009 dollars. Because information was not available for output associated with the private sector, the output-to-employee ratio for American Samoa was used (\$117,589).

Dividing the payments directed toward each sector by the employment and employee compensation ratios yields the direct employment and employee compensation impacts reported in Table 6-2.

Table 6-2. FSM: Estimated Direct Economic Impacts (FY2010)

Industry	FY2010 Payments (\$'000; 2009\$)	Output-to- Employee Ratio (\$/employee)	Employee Compensation- to-Employee Ratio (\$/employee)	Direct Employment Impact (#)	Direct Employee Compensation Impact (\$'000; 2009\$)
Education	29,117	46,465	5,174	627	3,242
Construction	24,304	54,251	4,875	448	2,184
Government	32,375	21,171	4,139	1,529	6,329
Health care	21,008	38,745	8,192	542	4,442
Private	452	117,589	4,133	4	16
Total	107,255			3,150	16,213

Sources: RTI estimates based on OIA, 2009a; OIA, 2010: All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

6.3 Indirect and Induced Economic Impacts (Base Multipliers)

The employment and employee compensation multipliers were developed using 2007 employment and gross wage data from the Micronesia Fiscal Year 2008 Economic Review (Table 6-3).

The economic base of FSM is agriculture, fishing, manufacturing, and federal government activities. Industries supported by tourism can also be considered part of the economic base. Ideally, data would be available on the number of employees who are supported by tourism. However, because these data were unavailable, we assumed that the entire accommodation and food services industries are supported by tourism and therefore part of the economic base.² This is likely a conservative approach because, to the extent that this approximation overrepresents the portion of the economy supported by tourism, employment and employee compensation multipliers will be reduced.

In addition to these industries, a portion of FSM's territorial government is considered part of the economic base. Specifically, because over half of FSM's government revenue comes from external sources, approximately 67% of public administration was also included in the base

²A similar approach for creating a proxy for measuring the role of tourism in insular area economies was used in GAO (2006).

employment for the purpose of calculating base multipliers.³ Based on these assumptions and the data in Table 6-3, the following multipliers were calculated:

- **Base employment multiplier:** Base employment was calculated to include 5,867 employees out of a total of 15,962. Dividing total employment by base employment yields a multiplier of **2.72**, meaning that for every base employment position supported by OIA funding, an estimated 1.72 additional jobs are formed elsewhere in the economy.

Employee compensation multiplier: Employee compensation associated with base employment was estimated to be \$23.5 million. Dividing total employee compensation by base employee compensation yields a base multiplier of **2.89**, meaning that every dollar of employee compensation supported by the 2010 spending will create an additional \$1.89 in employee compensation.

Multiplying the direct employment and employee compensation impacts in Table 6-2 by these multipliers yields a total employment impact of 8,570 employees and \$46.9 million of employee compensation.

6.4 Summary Economic Impact Estimate for FY2010

In summary, the \$107 million spent by OIA inside FSM directly supports 3,150 jobs, \$16.2 million in employee compensation, and a \$51.7 million in GDP. Accounting for the multiplier process, OIA spending supports a total 8,570 jobs, \$46.9 million in employee compensation, and \$140.7 million in GDP. This information is summarized in Table 6-4.

Because GDP multipliers could not be computed as a result of data unavailability, the impact of OIA payments on GDP was estimated by multiplying the number of jobs supported through OIA by the ratio of GDP to total employees. GDP for FSM was estimated to be \$253.3 million in 2007 or \$262.1 million in 2009 dollars (World Bank, 2010). Dividing this estimate by the total number of employees reported yields a GDP-to-employee ratio of \$16,420 per worker. Multiplying this ratio by the direct and total employment impacts calculated above, it is estimated that OIA spending supports direct GDP impacts of \$51.7 million and total impacts of \$140.7 million. A summary of the economic impacts associated with OIA payments is presented in Table 6-4.

³ Based on GAO (2008), over half of FSM's government revenue is derived from external sources. RTI estimates the specific portion to be approximately 67% based on OIA payments to the region in FY2010 (over \$100 million) compared to government revenue in 2008 (\$150 million) (OIA, 2009).

Table 6-3. FSM: Estimated Employment and Employee Compensation by Industry (2007)

Industry	Employment (#)	Employee Compensation (\$'000; 2009\$)
Economic Base Industries		
Agriculture, hunting, and forestry	26	62
Fishing	244	928
Extra-territorial organizations	58	240
Government (Public administration) ^a	6,834	28,285
Manufacturing	100	346
Tourism - Hotels and restaurants	860	3,021
Noneconomic Base Industries		
Construction	650	3,169
Education	909	4,703
Electricity, gas, and water supply	361	1,692
Financial intermediation	219	1,908
Health and social work	92	754
Other services	701	2,481
Private households with employed persons	2	6
Real estate, renting, and business activities	438	1,987
Transport, storage, and communications	1,138	5,502
Wholesale and retail trade and repairs	3,330	12,990
Total	15,962	68,071

^a Because only 67% of FSM's budget comes from external sources, it was assumed that only 67% of the employment and employee compensation associated with public administration was part of the base sector. The remaining employees and employee compensation were assumed to be part of the nonbase sector.

Note: A significant portion of employment across all sectors was accounted for by public enterprises. However, employee compensation statistics were only provided for private-sector workers. Therefore, to estimate total employee compensation for all workers across industries, we assumed that the employee compensation-to-employee ratio was the same for public-sector workers and private-sector workers in each industry.

Source: RTI estimates based on OIA (2010).

Table 6-4. FSM: Total Estimated Economic Impact (FY2010)

	Direct Economic Impact	Indirect/Induced Economic Impact	Total Economic Impact
Employment (#)	3,150	5,420	8,570
Employee compensation (\$'000; 2009\$)	16,213	30,655	46,868
GDP (\$'000; 2009\$)	51,722	89,000	140,722

Sources: RTI estimates based on OIA, 2010; OIA 2009; World Bank, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

The significance of OIA's economic contributions can be better understood when viewed in relation to the FSM economy as a whole, which is summarized in Table 6-5. The 8,570 jobs directly and indirectly supported by OIA payments represent 54% of FSM's total employment in 2008. Similarly, \$46.9 million of employee compensation associated with these employees accounts for approximately 69% of total employee compensation inside the region, and the \$140.7 million of GDP associated with these employees represents 54% of the \$262 million of total GDP produced by the region.

Table 6-5. FSM: Estimated Impacts Relative to National Economy (FY2010)

	Total Economic Impact for FY2010 OIA Payments	National Data	Impact as Percentage of Total Economy
Employment (#)	8,570	15,962	54%
Employee compensation (\$'000; 2009\$)	46,868	68,071	69%
GDP (\$'000; 2009\$)	140,722	262,103	54%

Sources: RTI estimates based on OIA, 2010; OIA 2009; World Bank, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

SECTION 7
REPUBLIC OF THE MARSHALL ISLANDS (RMI)

7.1 FY2010 OIA Payments Summary

Along with the Federated States of Micronesia, RMI is among the least wealthy of the insular areas, with an average GDP per capita of only about \$2,600 in 2007. As a result, RMI faces severe challenges in implementing effective government, education, and health care systems and relies heavily on OIA support. RMI's economy is based on fishing, subsistence farming, and production of copra, its largest export.

OIA payments to RMI in 2010 totaled \$69.7 million. A detailed breakdown of these payments is presented in Table 7-1. The largest block of OIA payments, totaling \$66.9 million in spending inside RMI, comes through the Compact of Free Association. The Compact provides essential funding for operating RMI's education, government, and health care systems; improving infrastructure; and protecting the environment. In 2009, the Compact and Ebeye Special Needs contributed nearly 50% of the funding available for education in RMI and 40% of the budget for health care (OIA, 2010).

Assistance to Territories payments total \$2.7 million. General technical assistance provides direct grants, economic development, judicial training, the 4 Atoll Health Care Program (which provides health care services, including a full-time primary care physician for each atoll, for Enewetak, Bikini, Rongelap and Utrik), the Close Up Foundation, the Prior Service Benefits Program, and PITI-VITI. Other Assistance to Territories programs include items such as the Coral Reef Initiative.

7.2 Direct Economic Impacts of OIA Payments

Direct economic impacts of OIA payments were assigned to five economic sectors—education, construction, government, health care, and an assortment of private industries through the spending of Prior Service Benefits recipients. To calculate the employment and employee compensation impacts associated with this spending, as described in the methodology, the following output and employee compensation-to-employee ratios were used:¹

¹All adjustments for inflation were made using the U.S. Consumer Price Index for all Urban Consumers (BLS, 2010).

Table 7-1. RMI: OIA Payments by Appropriation (FY 2010)

Appropriation	Spending (\$'000; 2009\$)	Impact Treatment
<i>Compact of Free Association</i>		
Federal services	387	Spent outside area
Enewetak	500	31%, spent outside area, 69% government
FEMA disaster assistance	229	Government
Judicial training U.S. territories	169	Government
Education	11601	Education
Health	7160	Health care
Capacity building	413	Government
Infrastructure	11,189	Construction
Ebeye Special Needs—Education	1726	Education
Ebeye Special Needs—Health care	1726	Health care
Kwajalein environmental impact	230	Government
Other	32,128	Government
<i>Total, Compact of Free Association</i>	<i>67,456</i>	
<i>Assistance to Territories</i>		
General technical assistance—4 Atoll Health Care Program	985	Health care
General technical assistance—Direct grants	800	Government
General technical assistance—Judicial training	46	Government
General technical assistance—Economic development	29	Government
General technical assistance—USDA Grad School PITI VITI	200	Education
General technical assistance—Close Up Foundation	143	Education
General technical assistance—Prior Service Benefits Program	142	Private
<i>Subtotal, General Technical Assistance</i>	<i>2,344</i>	
Coral Reef Initiative	60	Government
Maintenance assistance	250	Government
Office of Insular Affairs	94	Government
Office of Insular Affairs	94	Government
<i>Subtotal, Other</i>	<i>404</i>	
<i>Total, Assistance to Territories</i>	<i>2,748</i>	
Total Payments	70,204	
Spending Outside RMI	541	
Total Spending Inside RMI	69,663	

Source: RTI estimates based on OIA, 2010.

- **Education:** Based on employment and wage cost data provided in the Fiscal Year 2008 Economic Review for RMI, the employee compensation-to-employee ratio for private-sector workers in the education sector was \$11,529 in 2007 (OIA, 2009b). Adjusting for inflation, this yields an employee compensation-to-employee ratio of **\$11,929** in 2009 dollars. Because information was not available for output associated with the education industry, the output-to-employee ratio for American Samoa was used (\$46,465). American Samoa was chosen to be the best point of comparison in this context because economic metrics, such as GDP per capita, were more similar to RMI than for any other area for which output-per-worker data were available. However, it should be noted that to the extent this proxy overestimates the true output-per-worker ratio for RMI the direct impacts of OIA spending will be underestimated because more jobs will be supported by each dollar of OIA spending.
- **Construction**– Based on employment and wage cost data provided in the Fiscal Year 2008 Economic Review for RMI, the employee compensation-to-employee ratio for private-sector workers in the construction sector was estimated to be \$5,828 in 2007 (OIA, 2009b). Adjusting for inflation, this yields an employee compensation-to-employee ratio of **\$6,030** in 2009 dollars. Because information was not available for output associated with the construction industry, the output-to-employee ratio for American Samoa was used (\$54,251).
- **Government:** Based on data provided in the Fiscal Year 2008 Economic Review for RMI, the RMI government received approximately \$108.2 million in revenue and employed approximately 3,514 individuals in 2007 (OIA, 2009b). Adjusting for inflation, this implies an output-to-employee ratio of **\$30,682** in 2009 dollars. Similarly, these workers received \$39.5 million in employee compensation in 2007. Adjusting for inflation, this implies an employee compensation-to-employee ratio of **\$11,631**.
- **Health care:** Based on employment and wage cost data provided in the Fiscal Year 2008 Economic Review for RMI, the employee compensation-to-employee ratio for private-sector workers in the health care sector was estimated to be \$8,351 in 2007 (OIA, 2009b). Adjusting for inflation, this yields an employee compensation-to-employee ratio of **\$8,641** in 2009 dollars. Because information was not available for output associated with the health care industry, the output-to-employee ratio for American Samoa was used (\$38,745). American Samoa was chosen to be the best point of comparison in this context because economic metrics, such as GDP per capita, were more similar to RMI than for any other area for which data were available.
- **Private:** According to the Fiscal Year 2008 Economic Review for RMI, the average wage for a private worker in RMI was estimated to be \$4,956 in 2007 (OIA, 2009b). Adjusting for inflation gives an employee compensation-to-employee ratio of **\$5,128** in 2009 dollars. Because information was not available for output associated with the private industry, the output-to-employee ratio for American Samoa was used (\$117,589). American Samoa was chosen to be the best point of comparison in this context because economic metrics, such as GDP per capita, were more similar to RMI than for any other area for which data were available.

Dividing the payments directed toward each sector by the employment and employee compensation ratios yields the direct employment and employee compensation impacts reported in Table 7-2.

Table 7-2. RMI: Estimated Direct Economic Impacts (FY2010)

Industry	FY2010 Payments (\$'000; 2009\$)	Output-to-Employee Ratio (\$/employee)	Employee Compensation-to-Employee Ratio (\$/employee)	Direct Employment Impact (#)	Direct Employee Compensation Impact (\$'000; 2009\$)
Education	13,669	46,465	11,929	294	3,509
Construction	11,189	54,251	6,030	206	1,244
Government	34,447	30,682	11,631	1,123	13,058
Health care	9871	\$38,745	8,641	255	2,201
Private	142	117,589	5,128	1	6
Total	69,318			1,879	20,019

Sources: RTI estimates based on OIA, 2010; OIA, 2009b. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

7.3 Indirect and Induced Economic Impacts (Base Multipliers)

The employment and employee compensation multipliers were developed using data from the RMI Fiscal Year 2008 Economic Review (Table 7-3).

The economic base of RMI is agriculture, hunting, forestry, manufacturing, and federal government activities. Industries supported by tourism can also be considered part of the economic base. Ideally, data would be available on the number of employees supported by tourism. However, because these data were unavailable, we assumed that the entire accommodation and food services industries are supported by tourism and therefore part of the economic base.² This is likely a conservative approach because, to the extent that this approximation overrepresents the portion of the economy supported by tourism, employment and employee compensation multipliers will be reduced.

In addition to these industries, a portion of RMI's territorial government is considered part of the economic base. Specifically, because approximately two-thirds of RMI's government revenue comes from external sources, two-thirds of public administration was also included in

² A similar approach for creating a proxy for measuring the role of tourism in insular area economies was used in GAO (2006).

the base employment for the purpose of calculating base multipliers (GAO, 2008). Based on these assumptions and the data in Table 7-3, the following multipliers were calculated:

- **Base employment multiplier:** Base employment was calculated to include 4,254 employees out of a total of 10,209. Dividing total employment by base employment yields a multiplier of **2.40**, meaning that for every base employment position supported by OIA funding, an estimated 1.40 additional jobs are formed elsewhere in the economy.
- **Employee compensation multiplier:** Employee compensation associated with base employment was estimated to be \$51.4 million. Dividing total employee compensation by base employee compensation yields a base multiplier of **1.95**, meaning that every dollar of employee compensation supported by the 2010 spending will create an additional \$0.95 in employee compensation.

Multiplying the direct employment and employee compensation impacts in Table 7-2 by these multipliers yields a total employment impact of 4,510 employees and \$39.1 million of employee compensation.

7.4 Summary Economic Impact Estimate for FY2010

In summary, the \$68 million spent by OIA in RMI directly supports 1,879 jobs and \$20.0 million in employee compensation. Accounting for the multiplier process, OIA spending supports a total 4,510 jobs and \$39.1 million in employee compensation. This information is summarized in Table 7-4.

Because GDP multipliers could not be computed as a result of data unavailability, the impact of OIA payments on GDP was estimated by multiplying the number of jobs supported through OIA by the ratio of GDP to total employees. GDP for RMI was estimated to be \$149.2 million in 2007, or \$154.4 million in 2009 dollars. Dividing this estimate by the total number of employees reported earlier yields a GDP-to-employee ratio of \$15,124 per worker (World Bank, 2010). Multiplying this ratio by the direct and total employment impacts calculated above, *it is estimated that OIA spending supports direct GDP impacts of \$28.4 million and total impacts of \$68.2 million.*

The significance of OIA's economic contributions can be better understood when viewed in relation to the RMI economy as a whole, which is summarized in Table 7-5. As this table illustrates, the 4,510 jobs directly and indirectly supported by OIA payments represent 44% of RMI's total employment in 2008. Similarly, \$39.1 million of employee compensation associated with these employees accounts for approximately 39% of total employee compensation inside

Table 7-3. RMI: Estimated Employment and Employee Compensation by Industry (2007)

Industry	Employment (#)	Employee Compensation (\$'000; 2009\$)
Economic Base Industries		
Agriculture, hunting, and forestry	31	88
Fishing	314	1,920
Extra-territorial organizations	1,210	20,126
Government (Public administration) ^a	3,514	40,871
Manufacturing	60	405
Tourism - Hotels and restaurants	296	1,571
Noneconomic Base Industries		
Community, Social & Personal Service Activities	81	529
Construction	772	4,655
Education	435	5,189
Electricity, Gas and Water Supply	274	3,514
Financial intermediation	208	3,553
Health and social work	276	2,385
Private households with employed person	3	29
Real estate, renting, and business activities	207	1,377
Transport, storage, and communications	695	5,605
Wholesale and retail trade	1,833	8,546
Total	10,209	100,362

^a Because only two-thirds of RMI's budget comes from external sources, it was assumed that only two-thirds of the employment and employee compensation associated with public administration was part of the base sector. The remaining employees and employee compensation were assumed to be part of the nonbase sector.

Note: A significant portion of employment across all sectors was accounted for by public enterprises. However, employee compensation statistics were provided only for private-sector workers. Therefore, to estimate total employee compensation for all workers across industries, we assumed that the employee compensation-to-employee ratio was the same for public-sector workers and private-sector workers in each industry.

Table 7-4. RMI: Total Estimated Economic Impact (FY2010)

	Direct Economic Impact	Indirect/Induced Economic Impact	Total Economic Impact
Employment (#)	1,879	2,631	4,510
Employee compensation (\$'000; 2009\$)	20,019	19,102	39,121
GDP (\$'000; 2009\$)	28,419	39,788	68,208

Sources: RTI estimates based on OIA, 2010; OIA, 2009b; World Bank, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

Table 7-5. RMI: Estimated Impacts Relative to National Economy (FY2010)

	Total Economic Impact for FY2010 OIA Payments	National Data	Impact as Percentage of Total Economy
Employment (#)	4,510	10,209	44%
Employee compensation (\$'000; 2009\$)	39,121	100,362	39%
GDP (\$'000; 2009\$)	68,208	154,397	44%

Sources: RTI estimates based on OIA, 2010; OIA, 2009b; World Bank, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

the region, and the \$68.2 million of GDP associated with these employees represents 44% of total GDP produced by the region.

SECTION 8 REPUBLIC OF PALAU

8.1 FY2010 OIA Payments Summary

Like the other insular areas, Palau faces a number of obstacles to economic development, including limited land and resources, a small population, limited local technical expertise, a narrow economic base, and vulnerability to natural disasters. The average GDP per capita for Palau in 2007 was \$8,400, as compared to that of roughly \$47,300 in the United States (BEA 2010). Through their funding and support, OIA strives to foster economic development, promote sound management, and improve quality of life in Palau.

OIA payments made inside Palau in 2010 totaled \$14.8 million and were primarily dedicated to the government sector with some additional support for education and the private sector. A detailed breakdown of OIA payments to Palau is presented in Table 8-1. The largest block of OIA payments to Palau, totaling \$13.2 million in spending inside the island, comes through the Compact of Free Association. This includes the Palau Compact and the Palau Program Grant Assistance, a special fund set aside for education programs.

Assistance to Territories payments total \$1.6 million. General technical assistance provides direct grants, economic development, judicial training, the Close Up Foundation, the Prior Service Benefits Program, and the PITI-VITI. Other Assistance to Territories programs include items such as the Coral Reef Initiative.

8.2 Direct Economic Impacts of Payments

Direct economic impacts of OIA payments were assigned to three economic sectors—education, government, and an assortment of private industries through the spending of Prior Service Benefits recipients. To calculate the employment and employee compensation impacts associated with this spending, as described in the methodology, the following output and employee compensation-to-employee ratios were used:¹

- **Education:** Based on 2007 quarterly employment and gross wage reports from the Palau Office of Planning and Statistics (POPS), the average employee compensation per worker in the education sector in 2007 was \$8,736. Adjusting for inflation, this implies an employee compensation-to-employee ratio of **\$9,039** in 2009 dollars. Because information was not available for output associated with the education sector, the output-to-employee ratio for American Samoa was used (\$46,465). American Samoa was chosen to be the best point of comparison in this context

¹All adjustments for inflation were made using the U.S. Consumer Price Index for all Urban Consumers (BLS, 2010).

Table 8-1. Palau: Grant Spending by Appropriation (FY 2010)

Appropriation	Spending (\$'000; 2009\$)	Impact Treatment
<u>Compact of Free Association</u>		
Palau Compact	11,148	Government
Federal services	887	Internal transfer
Palau program grant assistance	2,000	Government
<i>Total, Compact of Free Association</i>	<i>14,035</i>	
<u>Assistance to Territories</u>		
General technical assistance—Direct grants	800	Government
General technical assistance—Judicial training	46	Government
General technical assistance—Economic development	29	Government
General technical assistance—USDA Grad School PITI VITI	200	Education
General technical assistance—Close Up Foundation	143	Education
General technical assistance—Prior Service Benefits Program	191	Private
<i>Subtotal, General Technical Assistance</i>	<i>1,408</i>	
Maintenance assistance	185	Government
Coral Reef Initiative	50	Government
<i>Subtotal, Other</i>	<i>235</i>	
<i>Total, Assistance to Territories</i>	<i>1,643</i>	
Total Payments	15,678	
Spending Outside Palau	887	
Total Spending Inside Palau	14,791	

Source: RTI estimates based on OIA, 2010.

because economic metrics, such as GDP per capita, were more similar to Palau than for any other area for which data were available. However, it should be noted that to the extent this proxy overestimates the true output-per-worker ratio for RMI the direct impacts of OIA spending will be underestimated because more jobs will be supported by each dollar of OIA spending.

- **Government:** Based on data reports by POPS, the government of Palau received \$83.7 million in revenue in 2006 and employed approximately 2,942 people that year (POPS, 2010; POPS, 2007). This implies the ratio of government revenue to government employees was \$28,440 in 2006, or **\$30,265** in 2009 dollars. Similarly, based 2007 quarterly employment and gross wage reports from POPS, the employee compensation-to-employee ratio for public administration sector workers was estimated to be \$11,719 in 2007, or **\$12,126** in 2009 dollars.
- **Private:** Based on quarterly employment and gross wage/salary reports from POPS, 8,929 workers were located in the private sector who received \$59.8 million in

employee compensation in 2007, or \$61.9 million in 2009 dollars. This implies an average employee compensation-per-worker ratio of **\$6,930** in 2009 dollars. Because information was not available for output associated with the private sector, the output-to-employee ratio for American Samoa was used (\$117,589).

Dividing the payments directed toward each sector by the employment and employee compensation ratios yields the direct employment and employee compensation impacts reported in Table 8-2.

Table 8-2. Palau: Estimated Direct Economic Impacts (FY2010)

Industry	FY2010 Payments (\$'000; 2009\$)	Output-to- Employee Ratio (\$/employee)	Employee Compensation- to-Employee Ratio (\$/employee)	Direct Employment Impact (#)	Direct Employee Compensation Impact (\$'000; 2009\$)
Education	343	46,465	9,039	7	67
Government	14,257	30,265	12,126	471	5,712
Private	191	117,589	6,930	2	11
Total	14,791			480	5,790

Sources: RTI estimates based on OIA, 2010; POPS, 2008. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

8.3 Indirect and Induced Economic Impacts (Base Multipliers)

The employment and employee compensation multipliers were developed using POPS data. The latest year for which data were available was 2008 (Table 8-3).

The economic base of Palau is agriculture, hunting, forestry, manufacturing, and federal government activities. Industries supported by tourism can also be considered part of the economic base. Ideally, data would be available on measures of the number of employees who are supported by tourism. However, because these data were unavailable, we assumed that the entire accommodation and food services industries are supported by tourism and therefore part of the economic base.² This is likely a conservative approach because, to the extent that this approximation overrepresents the portion of the economy supported by tourism, employment and employee compensation multipliers will be reduced.

² A similar approach for creating a proxy for measuring the role of tourism in insular area economies was used in GAO (2006).

Table 8-3. Palau: Estimated Employment and Employee Compensation by Industry (2008)

Industry	Employment (#)	Employee Compensation (\$'000; 2009\$)
Economic Base Industries		
Agriculture, hunting, and forestry	129	344
Fishing	144	675
Extra-territorial organizations	13	170
Government (Public administration) ^a	3,005	36,438
Mining and quarrying	22	161
Manufacturing	408	3,439
Tourism - Hotels and restaurants	1,632	10,691
Noneconomic Base Industries		
Construction	1,044	6,597
Education	576	5,207
Financial intermediation	151	2,744
Health and social work	91	646
Other service activities	289	1,440
Private households with employed person	902	1,585
Real estate, renting, and business activities	812	7,239
Transport, storage, and communications	880	9,221
Wholesale and retail trade; repair of motorcycles; personal and household goods	1,849	11,887
Total	11,947	98,483

^a Note that because only 50% of Palau's budget comes from external sources, it was assumed that only 50% of the employment and employee compensation associated with public administration was part of the base sector. The remaining employees and employee compensation were assumed to be part of the nonbase sector.

Source: POPS, 2008.

In addition to these industries, a portion of Palau's territorial government is considered part of the economic base. Because approximately half of Palau's government revenue came from external sources from 2000 to 2006, 50% of public administration was included in the base employment for the purpose of calculating base multipliers (GAO, 2008). Based on these assumptions and the data in Table 8-3, the following multipliers were calculated:

- **Base employment multiplier:** Base employment was calculated to include 3,851 employees out of a total of 11,947. Dividing total employment by base employment yields a multiplier of **3.10**, meaning that for every base employment position supported by OIA spending, an estimated 2.10 additional jobs are formed elsewhere in the economy.

- **Employee compensation multiplier:** Employee compensation associated with base employment was estimated to be \$33.7 million. Dividing total employee compensation by base employee compensation yields a base multiplier of **2.92**, meaning that every dollar of employee compensation supported by the 2010 spending will create an additional \$1.92 in employee compensation.

Multiplying the direct employment and employee compensation impacts in Table 8-2 by these multipliers yields a total employment impact of 1,490 employees and \$16.9 million of employee compensation.

8.4 Summary Economic Impact Estimate for FY2010

In summary, the \$14,791,000 spent by OIA inside Palau directly supports 480 jobs and \$5.8 million in employee compensation. Accounting for the multiplier process, OIA spending supports a total 1,490 jobs and \$16.9 million in employee compensation.

Because GDP multipliers could not be computed as a result of data unavailability, the impact of OIA payments on GDP was estimated by multiplying the number of jobs supported through OIA by the ratio of GDP to total employees. GDP for Palau was estimated to be \$164.3 million in 2007, or \$169.99 in 2009 dollars (World Bank, 2010). Dividing this estimate by the total number of employees reported earlier yields a GDP-to-employee ratio of \$14,229 per worker. Multiplying this ratio by the direct and total employment impacts calculated above, *it is estimated that OIA spending generates direct GDP impacts of \$6.8 million and total GDP impacts of \$21.2 million.* A summary of the economic impacts associated with OIA payments is presented in Table 8-4.

Table 8-4. Palau: Total Estimated Economic Impact (FY2010)

	Direct Economic Impact	Indirect/Induced Economic Impact	Total Economic Impact
Employment (#)	480	1,009	1,490
Employee compensation (\$'000; 2009\$)	5,790	11,131	16,921
GDP (\$'000; 2009\$)	6,831	14,363	21,194

Sources: RTI estimates based on OIA, 2010; POPS, 2008; World Bank, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

The significance of OIA's economic contributions can be better understood when viewed in relation to the Palau economy as a whole, which is summarized in Table 8-5. Specifically, the

Table 8-5. Palau: Estimated Impacts Relative to National Economy (FY2010)

	Total Economic Impact for FY2010 OIA Payments	National Data	Impact as Percentage of Total Economy
Employment (#)	1,490	11,947	12%
Employee compensation (\$'000; 2009\$)	16,921	98,483	17%
GDP (\$'000; 2009\$)	21,194	169,990	12%

Sources: RTI estimates based on OIA, 2010; POPS, 2008; World Bank, 2010. All data were adjusted to 2009 dollars using the consumer price index (BLS, 2010).

1,490 jobs directly and indirectly supported by OIA payments represent 12% of Palau's total employment. Similarly, \$16.9 million of employee compensation associated with these employees accounts for approximately 17% of total employee compensation inside the region, and the \$22 million of GDP associated with these employees represents 12% of total GDP produced by the region.

SECTION 9
DISTRICT OF COLUMBIA AND HAWAII

The economic impact of OIA operations in the District of Columbia and Hawaii was calculated using IMPLAN I/O modeling software.¹ Unlike modeling for the insular areas, IMPLAN uses an I/O modeling framework that allows specific multipliers to be calculated for each industry. The economic model was modified for each area so that spending associated with the OIA's DC and Hawaii operations would be consistent with data provided in the Budget Justification. Specifically, the Budget Justification indicates that \$9.28 million of funding was allocated to OIA for continued operations and for continued employment of 41 full-time equivalents (FTEs) being paid \$5.2 million in employee compensation and benefits. This implies that the funding-per-worker ratio was \$226,341 and that the employee compensation-per-worker ratio was \$126,537. These data were used to modify the assumptions underlying the IMPLAN model.

9.1 Economic Impact Assessment of OIA Operations in Washington, DC

The FY2010 budget for OIA operations in Washington, DC, was \$7.2 million, which falls within the IMPLAN industry code 506: Federal Non-Military. Similar to the analysis used for the insular areas, direct employment and employee compensation impacts can be measured using the output-per-worker and employee compensation-per-worker ratios for this sector.

Direct impacts were multiplied by IMPLAN-generated multipliers to estimate the total impact of OIA activity in Washington, DC. The relevant multipliers and total impacts that were estimated for this analysis are reported in Table 9-1. The total economic impacts of OIA operations on DC are

- 37 employees,
- \$4.3 million in employee compensation, and
- \$7.9 million in output.

¹ To estimate the total economic impact associated with this funding, we used 2004 I/O models of the Washington, DC, and Hawaii economies constructed using IMPLAN economic modeling software. IMPLAN categorizes businesses in these industries into a system of 509 industry codes. IMPLAN was selected because it is one of the most widely used I/O modeling software packages in economic development analysis. IMPLAN, like all I/O models, quantifies the economic impact using multipliers to represent indirect and induced impacts. Total impacts can be estimated by multiplying the direct impacts of the project by these multipliers.

Table 9-1. Economic Impact Assessment of OIA Operations in Washington, DC (FY2010)

Federal Nonmilitary (506)	Employment (# of workers)	Employee Compensation (\$2009 millions)	Output (\$2009 millions)
Direct Economic Impact			
OIA operations	32	\$4.0	\$7.2
Indirect and Induced Economic Impacts			
Multiplier	1.2	1.1	1.1
Total Economic Impact	37	\$4.3	\$7.9

Sources: RTI estimates based on OIA, 2010; IMPLAN.

9.2 Economic Impact Assessment of OIA Operations in Hawaii

The FY2010 budget for OIA operations in Hawaii was \$13.4 million. The details of these payments and the IMPLAN codes to which they were assigned are reported in Table 9-2.

Table 9-2. 2010 OIA Operations in Hawaii and Corresponding IMPLAN Codes

Funding Description	Funding Amount (\$2009)	Industry Description	IMPLAN Code
Coral Reef Initiative	\$15,000	Federal nonmilitary	506
Office of Insular Affairs	\$1,373,650	Federal nonmilitary	506
Pacific Basin Development Center	\$197,126	Grant making and giving and social advocacy	492
University of Hawaii/ Pacific Business Center	\$616,769	Grant making and giving and social advocacy	492
Compact Impact Grant	\$11,229,000	Hospitals	467

Sources: RTI estimates based on OIA, 2010; IMPLAN.

As in the previous analysis, direct impacts were estimated using output and employee compensation-to-employee ratios from the IMPLAN model. The direct employment, employee compensation, and output inputs are reported in Table 9-3.

As previously discussed, direct impacts were multiplied by Type II SAM multipliers generated in IMPLAN to estimate the total impact of OIA payments on the state economy. The relevant multipliers that were estimated for this analysis are reported in Table 9-4.

Table 9-3. Direct Economic Impacts of OIA Operations in Hawaii (FY2010)

Industry Description	IMPLAN Code	Employment (# of workers)	Employee Compensation (\$2009 millions)	Output (\$2009 millions)
Federal nonmilitary	506	56	\$1.4	\$1.4
Grant making and giving and social advocacy	492	16	\$.9	\$8.1
Hospitals	467	92	\$5.5	\$11.2

Sources: RTI estimates based on OIA, 2010; IMPLAN.

Table 9-4. Selected Multipliers by Industry, Hawaii

Industry Description	IMPLAN Code	Total Employment Impact Multiplier	Total Employee Compensation Multiplier	Total Output Impact Multiplier
Federal nonmilitary	506	1.8	1.2	1.4
Grant making and giving and social advocacy	492	1.7	1.4	2.4
Hospitals	467	1.8	1.5	1.7

Source: IMPLAN.

Using these multipliers, we can compute the total economic impacts associated with OIA operations in Hawaii. The total economic impacts of this activity in Hawaii are

- 199 employees,
- \$10.4 million in employee compensation, and
- \$23.1 million in output.

These impacts are reported in Table 9-5.

Table 9-5. Total Economic Impacts of OIA Payments, Hawaii

Industry Description	IMPLAN Code	Employment (# of workers)	Employee Compensation (\$2009 millions)	Output (\$2009 millions)
Federal nonmilitary	506	11	\$1.0	\$2.0
Grant making and giving and social advocacy	492	27	\$1.3	\$2.0
Hospitals	467	162	\$8.1	\$19.2
Total^a		199	\$10.4	\$23.1

^a Values may not add to total due to rounding.

Sources: RTI estimates based on OIA, 2010; IMPLAN.

SECTION 10
ANALYSIS SUMMARY

The purpose of this study was to measure the economic impact of OIA payments on insular areas as measured by economic aggregates such as employment, employee compensation, and GDP. This task was accomplished primarily through the use of simple economic base models that were constructed for each of the seven insular areas. The results of this analysis are presented in the following tables and in the Executive Summary.

Table 10-1. Estimated Employment Impact of OIA Payments (FY2010)

	Direct Employment Impact (#)	Indirect/Induced Employment Impact (#)	Total Employment Impact (#)	Percentage of National Employment Supported by OIA Payments (%)
American Samoa	766	809	1,575	9%
Guam	1,294	2,816	4,109	6%
Northern Mariana Islands	326	313	640	2%
U.S. Virgin Islands	2,327	6,436	8,763	18%
Micronesia	3,150	5,420	8,570	54%
Marshall Islands	1,879	2,631	4,510	44%
Palau	480	1,009	1,490	12%
Total	10,222	19,434	29,656	15%

Source: RTI estimates.

Table 10-2. Estimated Employee Compensation Impact of OIA Payments (FY2010)

	Direct Employee Compensation Impact (‘000; 2009\$)	Indirect/Induced Employee Compensation Impact (‘000; 2009\$)	Total Employee Compensation Impact (‘000; 2009\$)	Percentage of National Employee Compensation Supported by OIA Payments (%)
American Samoa	11,260	15,249	26,510	14%
Guam	26,951	64,125	91,076	7%
Northern Mariana Islands	3,967	5,718	9,685	3%
U.S. Virgin Islands	73,986	212,068	286,054	19%
Micronesia	16,213	30,655	46,868	69%
Marshall Islands	20,019	19,102	39,121	39%
Palau	5,790	11,131	16,921	17%
Total	158,186	358,049	516,235	14%

Source: RTI estimates.

Table 10-3. Estimated GDP Impact of OIA Payments (FY2010)

	Direct GDP Impact (‘000; 2009\$)	Indirect/Induced GDP Impact (‘000; 2009\$)	Total GDP Impact (‘000; 2009\$)	Percentage of National GDP Supported by OIA Payments (%)
American Samoa	24,825	26,197	51,022	9%
Guam	96,069	209,110	305,179	7%
Northern Mariana Islands	12,510	12,004	24,514	2%
U.S. Virgin Islands	228,627	632,333	860,960	18%
Micronesia	51,722	89,000	140,722	54%
Marshall Islands	28,419	39,788	68,208	44%
Palau	6,831	14,363	21,194	12%
Total	449,003	1,022,795	1,471,798	13%

Source: RTI estimates.

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APPENDIX A
ALLOCATION OF FY2010 TECHNICAL ASSISTANCE
AND OTHER PAYMENTS BY INSULAR AREA

OIA grants and federal payments for technical assistance and other initiatives are made or distributed as needed during each fiscal year. Table A-1 presents a breakdown of general technical assistance by grant/program and by the insular area receiving the funds. In several cases, the exact amount of funding going to each insular area was indicated in the Budget Justification. However, in several cases, information was not available for how the funds associated with particular grants/programs would be distributed by area, so assumptions were made. These cases included the following:

- **USDA Grad School PITI-VITI:** A total of \$1.6 million was allocated to this program for FY2010. Because the PITI-VITI serves all seven insular areas, this \$1.6 million was distributed evenly across all seven areas.
- **Close Up Foundation:** A total of \$1 million was allocated to this program for FY2010. This money is received directly by the Close Up Foundation, but no additional information for how these funds might be distributed across each insular areas was provided. Therefore, the \$1 million was divided evenly across all seven insular areas.
- **Prior Service Benefits Program:** A total of \$1 million was allocated to this program, which is distributed to 359 recipients in CNMI, 753 in FSM, 236 in RMI, and 319 in Palau. It was assumed that this \$1 million was distributed to each of these insular areas in proportion to the number of recipients located in each.
- **Judicial training:** A total of \$320,000 was allocated to this program for FY2010. Without additional information, these funds were distributed evenly across the seven insular areas.
- **Economic development:** A total of \$200,000 was allocated to this program for FY2010. Without addition information, these funds were distributed evenly across the seven insular areas.
- **CNMI Immigration, Labor, and Law Enforcement:** At the time of this report, the exact funding awards for CNMI Immigration, Labor, and Law Enforcement and the University of Hawaii's Pacific Business Center were not available, but it was indicated that total funding for both awards would be \$1,233,539. Without additional information for a better determination, RTI split this funding evenly between the two awards.

In addition to general technical assistance, at the time the FY2010 budget was finalized, the actual allocation of several categories of payments by insular area was unknown. Therefore, the distribution for FY2010 payments was assumed to be the same as FY2009. The FY2010 budget for the Coral Reef Initiative, Brown Tree Snake, maintenance assistance, and OIA

operations was allocated by area using the percentage distribution of FY2009's budget (Table A-2).

Table A-1. Estimation of FY 2010 General Technical Assistance by Area

	Treatment	American Samoa	CNMI	Guam	US Virgin Islands	Federated States of Micronesia	Republic of Marshall Islands	Republic of Palau	Hawaii	Other	Total	
	Direct grants to insular areas	Government	\$2,200,000	\$1,000,000	\$1,000,000	\$1,000,000	\$800,000	\$800,000	\$800,000		\$7,600,000	
	USDA Grad School PITI VITI	Education	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,600,000	
	U.S. Bureau of Commerce, BEA (for GDP data)	Internal transfer								\$600,000	\$600,000	
	Close Up Foundation	Education	\$142,857	\$142,857	\$142,857	\$142,857	\$142,857	\$142,857			\$1,000,000	
	Junior Statesmen	Spending Outside Insular areas								\$266,100	\$266,100	
	4 A Toll Health Care Program	Health care					\$985,235				\$985,235	
	Pacific Basin Development Center	Nonprofit							\$197,126		\$197,126	
	Prior Service Benefits Program	Private		\$215,357		\$451,710	\$141,572	\$191,362			\$1,000,000	
	Judicial training	Government	\$45,714	\$45,714	\$45,714	\$45,714	\$45,714	\$45,714			\$320,000	
	Economic development	Government	\$28,571	\$28,571	\$28,571	\$28,571	\$28,571	\$28,571			\$200,000	
	CDC	Internal transfer								\$50,000	\$50,000	
	CNMI Ombudsman's Office	Government		\$250,000							\$250,000	
	CNMI Immigration, Labor and Law Enforcement	Government		\$616,770							\$616,770	
	University of Hawaii/Pacific Business Center Pr.	Education							\$616,770		\$616,770	
	Total		\$2,617,143	\$2,499,269	\$1,417,143	\$1,417,143	\$1,668,853	\$2,343,950	\$1,408,505	\$1,013,896	\$916,100	\$15,302,000

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Table A-2. Estimation for FY2010 Payments by Insular Area Using FY2009 Actuals

Insular Area	FY2009 Actual Payments (\$'000; 2009\$)	FY2009 Distribution, by Insular Area (%)	Estimated FY2010 Payments (\$'000; 2009\$)
Brown Tree Snake			
American Samoa	—	0.0%	—
Federated States of Micronesia	—	0.0%	—
Guam	1,936	73.6%	2,208
Hawaii	189	7.2%	216
Northern Mariana Islands	506	19.2%	577
Republic of Palau	—	0.0%	—
Republic of the Marshall Islands	—	0.0%	—
U.S. Virgin Islands	—	0.0%	—
Other	—	0.0%	—
Total	2,631		2,785
Coral Reef Initiative			
American Samoa	100	10.0%	100
Federated States of Micronesia	300	30.0%	300
Guam	50	5.0%	50
Hawaii	15	1.5%	15
Northern Mariana Islands	85	8.5%	85
Republic of Palau	50	5.0%	50
Republic of the Marshall Islands	60	6.0%	60
U.S. Virgin Islands	300	30.0%	300
Other	40	4.0%	40
Total	1,000		1,000
Maintenance Assistance			
American Samoa	350	15.6%	350
Federated States of Micronesia	739	33.0%	739
Guam	300	13.4%	300
Hawaii	—	0.0%	—
Northern Mariana Islands (CNMI)	417	18.6%	417
Republic of Palau	185	8.2%	185
Republic of the Marshall Islands	250	11.2%	250
U.S. Virgin Islands	—	0.0%	—
Other	—	0.0%	—
Total	2,241		2,241

(continued)

**Table A-2. Estimation for FY2010 Payments by Insular Area Using FY2009 Actuals
(continued)**

Insular Area	FY2009 Actual Payments (\$'000; 2009\$)	FY2009 Distribution, by Insular Area (%)	Estimated FY2010 Payments (\$'000; 2009\$)
Office of Insular Affairs			
American Samoa	142	1.60%	149
District of Columbia	6,836	77.20%	7,168
Federated States of Micronesia	138	1.60%	145
Guam	—	0.00%	—
Hawaii	1,310	14.80%	1,374
Northern Mariana Islands (CNMI)	334	3.80%	350
Republic of Palau	—	0.00%	—
Republic of the Marshall Islands	90	1.00%	94
U.S. Virgin Islands	—	0.00%	—
Other	—	0.0%	—
Total	8,850		9,280

Sources: RTI estimates based on OIA (2010).