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The Contribution of the Casino Hotel Industry to New Jersey's Economy

Submitted to:

The Casino Association of New Jersey

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EXECUTIVE SUMMARY

This report examines the contribution of New Jersey's casino resort industry to the New Jersey economy. Table S1 summarizes the overall contribution of the industry (its direct effects plus their economic multipliers) by subsector. The table shows the spending by patrons at the casino resorts themselves and at other casino industry supported non-casino businesses in Atlantic City and the number of jobs and payroll generated as a result of that patron spending. The table also summarizes the impacts on New Jersey employment from the purchases made and local and state taxes and fees paid by the casino resort industry and non-casino, Atlantic City tourism businesses. While the subsector information is provided in more detail below, the summary table shows the significant total economic impact of the New Jersey casino resort industry as it annually supports approximately 101,500 jobs in the state that yield $4.2 billion in payroll income and $6.5 billion annually in GDP.

Table S1. Economic Effects of Casino Resorts on the State of New Jersey, 2008

	Output ($ millions)	Jobs	Payroll ($ millions)	GDP ($ millions)
Visitor Spending in Atlantic City				
Casino Resorts	$5,194.4	39,779	$1,777.2	$2,908.9
Non-Casino Resort Tourism	$1,911.2	23,160	$650.6	$1,096.4
Total	*$7,105.6*	*62,939*	*$2,427.8*	*$4,005.3*
Related Spending Statewide				
Multiplier Effects of Visitor Spending	$4,018.9	32,981	$1,577.6	$2,280.7
Total Effects of State's Casino Tax Revenues	$699.2	5,567	$225.0	$260.4
Total	*$4,718.1*	*38,548*	*$1,802.6*	*$2,541.1*
Total Casino Resort Industry Effects	***$11,823.7***	***101,487***	***$4,230.4***	***$6,546.4***

The Casino Resort Industry in Perspective. As noted above and also shown in Table S1, overall, in 2008 New Jersey's casino resort industry supported nearly 101,500 jobs, about 2.0 percent of the 5.2 million New Jersey jobs counted by the U.S. Bureau of Economic Analysis that year. It also generates over $11.8 billion annually in spending and 4.2 billion in payroll for the state. Given this level of contribution, the casino industry is responsible for far more New Jersey jobs than the state's Chemical manufacturing industry, which is composed of the pharmaceutical companies and petroleum refineries (among others) for which the New Jersey is well-known. (See Table S2 below.) Jobwise, it is also larger than the Federal government's military presence within the state. Moreover, it is nearly as large as two of the state's highly valued supersectors: the Arts and entertainment supersector and the Information supersector. The latter includes telecommunications manufacturing, broadcasting, internet services, other computer services, and publishing.

Moreover, the casino resort industry itself, when separated from its attenuating effects, employs more New Jersey residents than the investment and pharmaceutical industries which continue to be heralded as the roadway to state's economic future. It also employs more residents than the state's well-known transit industry and military sector.

Table S2: Direct Employment Counts for Selected New Jersey Industries, 2008

Industry/sector	2008 Jobs	2008 Payroll ($ million)	2007 GDP ($ million)
Farms[†]	15,859	$ 383.0	$ 792.0
Chemical manufacturing[†+]	66,512	$10,456.5	$18,939
Petroleum refineries[*]	2,606	$ 255.4	NA
Pharmaceutical and medicine manufacturing[*]	37,957	$ 4,917.8	NA
Wholesale trade[†]	251,624	$22,288.1	$37,092
Truck transportation[†]	56,053	$ 3,278.3	$ 4,004
Transit and ground passenger transportation[†]	41,834	$ 1,177.1	$ 1,241
Information supersector[†]	108,479	$11,563.4	$21,469
Investment banking and securities dealing[*]	21,386	$ 3,226.7	NA
Insurance carriers and related activities[†]	93,522	$ 9,362.1	$10,931
Accommodation[*]	65,282	$ 2,149.5	NA
Arts, entertainment, and recreation supersector[†]	105,783	$ 2,843.2	$ 4,517
Federal, military[†]	24,764	$ 1,435.3	$ 1,551

Source: [†]U.S. Bureau of Economic Analysis. 2010. Table SA25, Employment by Industry, State Annual Personal Income and Employment, Regional Economic Information System.

[*]U.S. Department of Labor, Bureau of Labor Statistics. 2010. 2008 Annual Report on the Quarterly Census of Employment and Wages, file: st34Nj08.enb.

+ Chemical manufacturing includes both Petroleum refineries and Pharmaceutical and medicine manufacturing as well as several other subsectors.

The total contribution of casino resorts to the nation's GDP is $6.5 billion dollars—this is more than that contributed by the state's entire Arts, entertainment, and recreation supersector and transit sector. More interestingly, while contributing approximately 39 percent of the complex's jobs total, the casino resorts themselves contribute nearly 45 percent of its GDP total.

Spending of Casino Taxes and Fees: In 2008, the casino resort industry is also directly responsible for approximately $664.3 million in state tax revenues/fees and $238.9 million in local tax revenues—a total of $903.2 million. This amount was $966.0 million in 2007 and $996.7 million in 2006. That is, including state income tax payments by its employees, the industry contributes nearly $1 billion annually to tax coffers within the state. Of course, about half of these tax revenues is allocated by the state to specific programs, as shown in Table S3. Much of it ($416.2 million) is targeted to medical, social, and transportation programs that are distributed to the state's population of senior citizens and, hence, are applied fairly evenly across the state. Economic development projects also are funded through a state tax that only casinos pay to the state. While much of its effort by law has been focused on improving Atlantic City, the Casino Reinvestment Development Authority has been funding projects in all 21 counties of the state, largely to house social programs and to produce affordable housing.

Atlantic City Tourism: In 2008, Atlantic City drew 34.4 million visitors who spent an estimated $7.5 billion. Casino resorts are a major draw, with 80 percent of visitors reporting that gambling was the primary purpose of their trip. Atlantic City captured 33.4 percent of total tourism expenditure in New Jersey in 2008.

Table S3. Economic Impact Resulting from Targeted State Use of Tax Revenues from the Casino Resort Industry

NJ/Local Taxes and Fees/Activity Funded	Taxes/Fees Generated ($ millions)	Jobs	Payroll ($ millions)	GDP ($ millions)
CRDA/Development Projects	$65.2	451	$27.6	$33.8
Casino Control Fund/Regulatory Agencies	$71.1	742	$47.0	$47.0
Casino Revenue Fund/Social Programs	$416.2	3,219	$97.9	$95.2
Multiplier effects of the above activities	$158.7	1154	$52.4	$84.4
Total	*$552.5*	*4,412*	*$172.5*	*$176.0*

Of course the casino resorts cater to tourists. Indeed, Atlantic City is a major tourist destination within the U.S. Among gaming destinations, it runs a close second to the Las Vegas Strip, which drew 51.6 million visitors in 2008. Certainly Atlantic City must be among the top destinations nationwide, although it seems very little vacation literature acknowledges this fact. According to *NYC Statistics* about 47.0 million visitors were drawn to New York City that same year. For further comparison, a 2007 report to theme parks notes the sum of visitations to Disney World's four theme parks also of about 47.0 million.

Details on the Multiplier Effects: The manner in which the casino resorts spend their revenues determines the intensity and the extent to which it reverberates within New Jersey's economy. The following few paragraphs detail some important aspects of their expenditures.

Casino Construction Projects (Capital Expenditures): Of course, a unique economic aspect of the NJ casino resort industry is that it until the recent economic downturn it had continued to expand. Over the past decade, the industry has invested over $7 billion in capital projects in Atlantic City. The $700 million in annual investment average over the period translates into about 3,200 year-round state-based construction jobs that are maintained each year. Naturally these construction jobs are themselves supported by about 4,000 state-based manufacturing and service jobs annually.

Purchases from NJ Vendors: The New Jersey casino industry purchased more than $2.3 billion worth of goods and services (about two thirds of the value of all purchases) in 2008 from 2,199 New Jersey vendors. There are multiple casino vendors in each of New Jersey's 21. Table S4 shows, for example, that Essex, Mercer, and Middlesex counties maintain healthy shares of vendor activity. The information on vendors is maintained by the New Jersey Casino Control Commission as part of an explicit effort to retain jobs and income within the state.

Casino Employees: Another unique mandate of casino resorts is that all of their casino employees must be licensed within New Jersey. To be licensed, a casino worker must register as residing within New Jersey. This is important to the economy since people tend to shop where they live. Hence the mandate secures that casino workers spend their money within the state, which enhances the multiplier effect.

Table S4. Geographic Distribution of New Jersey Casino In-State Vendors by County, 2008

County	Count of Vendors	Spending ($ millions)	Share of Total	County	Count of Vendors	Spending ($ millions)	Share of Total
Atlantic	1,048	$1,437.9	61.6%	Middlesex	62	$214.8	9.2%
Bergen	93	$42.0	1.8%	Monmouth	74	$15.5	0.1%
Burlington	145	$78.9	3.4%	Morris	44	$6.5	0.3%
Camden	189	$106.1	4.5%	Ocean	59	$22.4	1.0%
Cape May	63	$5.4	0.2%	Passaic	26	$2.0	0.1%
Cumberland	56	$55.1	2.4%	Salem	10	$16.6	0.7%
Essex	66	$74.7	3.2%	Somerset	27	$3.7	0.2%
Gloucester	88	$98.6	4.2%	Sussex	6	$0.1	0.0%
Hudson	37	$7.9	0.3%	Union	43	$12.4	0.5%
Hunterdon	2	$1.3	0.1%	Warren	5	$0.0	0.0%
Mercer	56	$134.4	5.8%	**Total**	**2,199**	**$2,336.2**	**100.0%**

Source: Casino Control Commission. 2009. *New Jersey Casino Gaming Economic Impact Report.* http://www.state.nj.us/casinos/financia/histori/docs/year-end-fourth_quarter_2008.xls

As explained in more detail in the report content that follows this Executive Summary, the New Jersey casino resort industry is a robust economic generator within this state. The economic effects it produces are among the greatest of those provided by any of the state's private industries. In addition, expansions of NJ's casino resort industry also contributed robustly to the state economy. On average, each $1 million of annual economic activity in this casino industry complex yields 13.2 jobs, $551,000 in payroll, $148,000 in tax payments to the State of New Jersey, $51,000 in local tax payments, and about $852,000 annually in GDP (or wealth) generated within the state.

Casino resort hotels themselves are, naturally, a subcomponent of the casino complex, albeit the largest piece. Hence, to the extent that the casino resort industry declines, other components of the casino complex (Atlantic City tourism, projects funded by the Casino Reinvestment Development Authority, activities of casino regulatory agencies, and state programs funded via Casino Revenue Fund) and their multiplier effects would decline as well. That is, the casino resorts necessarily drive the complex. And rather than looking at the average effects that attenuate from the complex's activity, which are discussed above, one could instead suggest that were it not for the casinos, the rest of the complex would not exist. In this vein, based on numbers in Table S1, a loss of $1 million in total casino revenues in New Jersey would on average cause a loss of 19.6 New Jersey jobs as well as $812,000 in payroll, $237,000 in tax payments to the state, $97,000 to local governments, and about $1,260,000 in total wealth.

TECHNICAL REPORT: THE CONTRIBUTION OF THE CASINO HOTEL INDUSTRY TO NEW JERSEY'S ECONOMY

INTRODUCTION.

The gaming industry has grown into a global market and continues to expand. For example, Macau's gaming revenue has surged such that it has surpassed the Las Vegas Strip as the world's biggest casino market. Over the past four decades, the U.S. gaming industry has grown from having only legalized commercial casinos in a single state with a few other states permitting pari-mutuel wagering or charitable bingo to a country with legalized gambling in 48 of 50 states.

Legal gambling includes charitable gaming, pari-mutuel betting, casino gaming, and lotteries. Today, all but two states, Utah and Hawaii, have some form of legalized gambling. Pari-mutuel racetracks and betting is the most widespread form, but lotteries are catching up, as 42 states and the District of Columbia currently run lotteries. Although more spatially constrained, casino gaming maintains the largest share of the commercial gaming market. For many years Nevada had a monopoly on casino gaming. New Jersey permitted casino gambling in 1978 (see Pollack, 2009, for more details), Iowa and South Dakota in 1990, and nine other states (Colorado, Illinois, Indiana, Louisiana, Michigan, Mississippi, Missouri, Ohio, and Pennsylvania) have since joined those ranks. According to the website of the Tribal Court Clearing House, 354 tribal government casino gaming establishments presently exist in 28 states. Indeed, casinos and other types of gaming on Indian reservations spread quickly across the country in the wake of the passage of the Indian Casino Gaming Regulatory Act of 1988. Domestically, the Unlawful Internet Gambling Enforcement Act, which was passed in 2006 and barred the use of electronic payment for any online gambling, undoubtedly helped to secure casino gaming's long-run promise.

While casino gaming continues its long-run rise in popularity, the slowdown of the overall U.S. economy since 2007 has heavily dampened the industry's immediate fortunes domestically. As a result, firms have focused on inventive ways to expand their business domestically, taking full advantage of opportunities in the new markets of Pennsylvania and Florida's Seminole Indian lands.

Still, the casino gaming market is not without challenges. As attendance at horse tracks has declined, track owners have petitioned states to help them revive their venues by enabling the tracks to be filled with slot machines with the hope of lending the tracks some of the appeal and appearance of commercial gaming casinos. Also, the U.S. Congress continues to consider amending the Indian Gaming Regulatory Act to limit the uses of net receipts from tribal casinos.

The legalization of casino gaming during the past four decades has been viewed through a political lens that has enabled society to see the industry as a means of achieving a "higher purpose," such as funding specialized public services for senior or non-ambulatory citizens or the reallocation of wealth to underprivileged groups. Such purposes can be fulfilled when a state captures some of the large economic benefits that can arise from legalizing a previously prohibited economic activity like casino gaming. More generally, the legalization of gaming has been made possible through the promise of economic development benefits from the existence of casinos, such as job creation, investment stimulation, tourism development, and urban revitalization. Indeed, one or both of these factors explain why Monaco, Macao, Nevada, the

Caribbean, and Atlantic City opted to pursue casino gaming. The economic development aspect was undoubtedly key to the more recent expansion of legalized gaming in the U.S. into such municipalities as East St. Louis, Illinois; Gary, Indiana; Tunica, Mississippi; New Orleans and Shreveport, Louisiana; Chester, Pennsylvania; and Detroit, Michigan.

Because it must be sanctioned by state government, the commercial casino industry is one of the most transparent, regulated, monitored, and taxed industries in the United States. Moreover, most commercial casino companies and gaming equipment manufacturers are publicly held companies whose equities are traded on stock exchanges. It is state governments that play the main role in regulating the industry. In turn, the regulating states receive a substantial portion of net casino receipts in the form of tax revenues. Casino gaming tax rates vary by state, ranging from as low as 6.75 percent of gaming revenues in Nevada to 55 percent in Pennsylvania. As suggested in the preceding paragraph, the billions of dollars in tax revenues from gaming casinos are typically targeted to fund programs and expenditures such as education, public safety, historic preservation, infrastructure improvements, economic development, and youth and senior services.

Of course, some of the tax revenues collected by states with legalized commercial casino gaming are used to fund state regulating agencies that enforce financial disclosure rules on casinos, which ensure that the states receive the taxes due to them each year. The agencies also direct and review audits of casino operators to ensure accurate measurement of the revenue numbers that result in state tax dollars. State regulation costs hundreds of millions of dollars annually: for example, in 2008 New Jersey employed 742 and the Nevada Gaming Control Board employed approximately 450 individuals.

Gaming casinos also are regulated at the federal level. In addition to complying with laws that apply to all U.S. businesses, casinos must observe several regulations designed for financial institutions because of the large size of transactions on their floors. The industry works closely with the Internal Revenue Service on a number of tax-related issues. Other federal laws also affect commercial casinos differentially. For example, riverboat casinos are subject to laws governing the federal Maritime Transportation Security Act.

NATIONAL OVERVIEW.

Casino Revenue.

As of 2008, the most recent year for which comprehensive national coverage is available, New Jersey was the country's second largest gambling destination (see Table 1). The state's 11 Atlantic City casinos attracted 34.5 million visitors and generated $4.5 billion in gross gaming revenue. The country's biggest gaming destination, the Las Vegas Strip, generated $6.1 billion. Although New Jersey is second in terms of total revenue, 7 of the top 15 gaming-revenue casino hotels in the nation are located in New Jersey. Since the start of the new century, both New Jersey and Nevada experienced steady growth in gaming revenues (more quickly in Nevada) until 2007 when they became affected by the recession's negative influence on travel and spending activities.

Table 1. Top 10 Casino Markets in the United States, 2008

Casino Market	Revenue in $ million
Las Vegas Strip, Nevada	$ 6,121
Atlantic City, New Jersey	$4,544
Chicago, Illinois/Indiana	$2,250
Connecticut	$1,570
Detroit, Michigan	$1,360
Tunica/Lula, Mississippi	$1,110
St. Louis, Missouri/Illinois	$1,030
Biloxi, Mississippi	$951
Shreveport, Louisiana	$848
Boulder Strip, Nevada	$837

Source: American Gaming Association. *State of the States 2009: The AGA Survey of Casino Entertainment*. http://www.americangaming.org/assets/files/aga-sos2009web.pdf.

Nevada, of which the Strip is a part, has a long history as a world-renowned gaming destination, having legalized gambling in 1931. It was not until 1976 that New Jersey became the second state to legalize gambling. Hence, Nevada is home to 266 casinos statewide averaging 51.6 million visitors annually, who generate a total of $11.6 billion in gross gaming revenue. The larger size of the Strip as well as that of the individual hotels compared to those in Atlantic City is partially responsible for the difference, which is readily revealed through employment and wages statistics across main gaming states, as shown in Table 2. The major reason is that Las Vegas is substantially more isolated geographically than Atlantic City: as a result, gaming visitors tend to stay longer in Nevada than they do in New Jersey—4.6 days versus 15 hours (Wittkowski, 2010). Consequently, the Strip generates more nongaming revenues per visitor and requires more space to accommodate these additional activities.

The longer average duration of stay may also partially explain why Nevada's casinos $8.7 billion payroll represents almost three quarters of gaming revenue. That is, a larger proportion of their workers are supported by revenue from non-gaming activities related to retail trade and both hospitality and entertainment services. While New Jersey's 0.39 share is above average, it is generally in line with that of other major gaming states. A notable outlier is Pennsylvania; due to lower labor costs associated with that state's current slots-only casinos, which are likely responsible for its unusually low 0.13 share of gaming revenues used as payroll.

State tax revenues from casinos as a share of total state gaming revenues generally correlate well with the year of legalization. The share ranges from about 8.0 percent in Nevada, the first state to legalize gambling, to 47.4 percent in Pennsylvania, the most recent state to legalize gambling. In line with the general trend, New Jersey's 9.5 percent places it above Nevada, but below the other states, all of which have legalized gambling only since 1989. As shown in Table 3, the allocation of tax revenues from gaming varies by state. All states that legalized gambling after New Jersey have, to some degree, followed the New Jersey model of allocating funds for social and economic development programs. Still, of the states, only New Jersey and Mississippi tend to be allocated to specific populations and less so for adding to general funds programs targeted to the general population.

Table 2: Casino Revenue, Payroll, and Taxes for Major Gaming States, 2008

State	Year Legalized	(1) Gaming Revenue ($)	(2) Payroll ($)	(3) Ratio (2)/(1)	(4) State Tax Revenue ($)	(5) Ratio (4)/(1)	(6) Jobs
Nevada	1931	11,599	8,687	0.75	924.5	0.080	202,216
New Jersey	1976	4,503	1,777†	0.39	426.8	0.095	38,585
Mississippi	1990	2,721	955	0.35	326.9	0.120	28,740
Indiana	1993	2,668	617	0.23	838.2	0.314	16,040
Louisiana	1991	2,584	643	0.25	626.3	0.242	17,268
Missouri	1993	1,682	361	0.21	442.8	0.263	11,658
Pennsylvania	2004	1,616	211	0.13	766.6	0.474	5,869
Illinois	1990	1,569	329	0.21	566.8	0.361	7,711
Iowa	1989	1,420	336	0.24	324.0	0.228	9,946
Michigan	1996	1,360	481	0.35	321.6	0.236	8,568
Colorado	1990	716	239	0.33	88.4	0.124	9,073
South Dakota	1989	102	40	0.39	15.4	0.150	1,640

Source: American Gaming Association. *State of the States 2009: The AGA Survey of Casino Entertainment.* http://www.americangaming.org/assets/files/aga-sos2009web.pdf.

†Source: Table 4, Employment and Employee Compensation Paid by New Jersey's Gaming Casinos

Table 3: Uses of State Casino Tax Revenues

States	Allocation of State Tax Revenues
Colorado	Local communities, historic preservation, general fund.
Illinois	Education assistance, local government.
Indiana	Economic Development, local government.
Iowa	Infrastructure, schools and universities, the environment, tourism projects, cultural initiatives, general fund.
Louisiana	General fund, City of New Orleans, public retirement systems, state capital improvements, rainy day fund.
Michigan	Public safety, capital improvements, youth programs, tax relief, neighborhood development and improvement, infrastructure repair and improvement.
Mississippi	Housing, education, transportation, health care services, youth counseling programs, local public safety programs.
Missouri	Education, local public safety programs, compulsive gambling treatment, veterans' programs, early childhood programs.
Nevada	Education, local government, general fund, problem gambling programs.
New Jersey	Senior Citizens, disabled, economic revitalization programs.
Pennsylvania	Property tax relief, economic development, tourism, horse racing industry, host local government.
South Dakota	Department of Tourism, Lawrence County, commission fund.

Source: American Gaming Association State of the States 2009: The *AGA Survey of Casino Entertainment*. http://www.americangaming.org/assets/files/aga-sos2009web.pdf.

LIFTING ATLANTIC CITY: THE CASINO GAMING ECONOMY IN NEW JERSEY

Even before gambling was legalized by voters, casino gaming in the State of New Jersey was perceived to be a way to enable Atlantic City to pull itself up by its bootstraps. By many key measures, "the experiment" has been a success. In the case of jobs, for example, just two years after Resorts International opened the first casino hotel in 1978, the job count in Atlantic City rose to more than 65 percent above levels from just five years earlier (Sternlieb and Hughes, 1983). Moreover, while a 1976 study projected that nearly 22,000 jobs might eventually be expected to emerge (Economic Research Associates, 1976), about 40,000 jobs were actually in place in Atlantic City casinos in 2008–more than 80 percent above expected levels!

Casino Employment and Labor Compensation.

Table 4 shows how many people New Jersey's casinos employed from 2006 to 2008 and how much they paid their employees in terms of salaries and wages as well as overall compensation. In 2008, nearly 40,000 workers were compensated over $1.5 billion—nearly $45,000 per worker. Note that although employment declined during this period, the pay of casino workers grew faster (3.39 percent from 2006 to 2007 and 3.58 percent from 2007 to 2008) than the pace of national average inflation in each year.

It is important to note that most jobs at casinos are full-time. In 2008, 32,755 or 82.3 percent of all jobs at New Jersey's gaming casinos were filled by full-time workers. Indeed, in terms of annual equivalent jobs, the U.S. Bureau of Labor Statistics reported 38,151 jobs in New Jersey's casino hotel sector (NAICS 72112) that received total salaries, tips, and wages of $1,396.9 million. This comports quite well with the total compensation figure for 2008 in Table 4 but excluding the figure for the benefits package, which totals $1,360.7 million.

Table 4. Employment and Employee Compensation Paid by New Jersey's Gaming Casinos

	2008	2007	2006
Full-time employees	32,755	34,048	34,541
Part-time employees	3,175	3,838	4,765
Other employees	3,850	3,325	3,688
Total employees*	39,779	41,211	42,994
Employee salaries & wages	$ 956,952,312	$ 974,962,832	$ 981,764,434
Employee tips (estimated)	247,503,091	251,621,759	253,254,598
NJ Employer Unemployment Tax	19,681,028	19,384,624	18,664,432
NJ Employer Disability Insurance	4,770,446	5,187,332	5,182,361
NJ Personal State Income Tax withheld	33,060,051	31,524,204	31,253,957
Employer FICA/Medicare	96,487,994	100,492,614	101,871,534
Employer Federal Unemployment Tax	2,282,903	2,437,905	2,734,108
Total benefit package	416,415,775	396,004,523	402,307,967
Total	$ 1,777,153,600	$ 1,781,615,793	$ 1,797,033,391
Total compensation per employee	$44,676	$43,232	$41,797

Source: Casino Association of New Jersey, 2010.

*Casino employment varies from month to month. For example in July 2006 the casinos employed 47,379 individuals, according to the New Jersey Casino Control Commission.

Table 5. Local Property Tax Revenues Collected from New Jersey's Gaming Casinos

	2008	2007	2006
Property Tax - City & Schools	$225,657,379	$223,939,164	$216,165,225
Property Tax - County and Other	13,244,525	12,264,888	9,906,975
Total Property Taxes	*$238,901,904*	*$236,204,052*	*226,072,199*

Source: Casino Association of New Jersey, 2010.

Casinos and Local Taxes

An exception to the overall downward trend for the effect of the casinos on Atlantic City has been property taxes. Table 5 presents the collections by type of jurisdiction. In 2008, $225.7 million was collected by Atlantic City and the Atlantic City School District in the form of property taxes. Another $13.2 million in property taxes was collected from the casinos largely by Atlantic County.

THE RELATIONSHIP BETWEEN NEW JERSEY'S CASINOS AND STATE'S ECONOMY

The laws controlling the state's casinos were designed to assure that the casinos economically benefit the state, as well as Atlantic City. A major component of the assurance is that all jobs affiliated with New Jersey's gaming casinos must be filled by New Jersey residents. Because of this, the New Jersey Casino Control Commission (NJ CCC) requires that potential workers apply for a license. As part of the licensing process workers must prove they are state residents. The upshot of this requirement is that incomes paid to casino workers are retained almost entirely by New Jersey since people tend to shop where they live. Thus essentially all but the federal taxes revenues in Table 4 are retained by state households for savings or spending. FICA, Medicare, and the Federal Unemployment Tax comprise $98.7 million of the $1.78 billion—5.6 percent—in the total payroll issued by the casinos. This point about New Jersey's retention of casino workers' income becomes especially important later in this report when the economic ramifications of household incomes are elaborated.

Atlantic City Tourism.

Atlantic City is a major tourism destination in the U.S. It drew 34.5 million visitors in 2008 according to *American Gaming Association's State of the States 2009*. New Jersey's casino resorts naturally cater to tourists. The fact is, Atlantic City is a major tourist destination within the U.S. As was noted earlier in this report, as a gaming destination, New Jersey runs a close second to the Las Vegas Strip, which drew 51.6 million visitors in 2008 according to *American Gaming Association's State of the States 2009*. Moreover Atlantic City itself is undoubtedly among the top tourist destinations nationwide, despite the fact that very little literature on tourism or for tourists, for that matter, acknowledges this. According to *NYC Statistics* (2010) about 47.0 million visitors were drawn to New York City that same year. And a report on 2007 to theme parks reports that the sum of visitations to Disney World four theme parks was also about 47.0 million (Themed Entertainment & Economic Research Associates, 2008), and few would argue against placing this park among the most visited vacation destinations in the U.S.

Of course, the point of introducing casinos to Atlantic City was to reinvigorate its tourism base, which had declined because of the popularity of the air travel through the mid-1970s. In 2008, Atlantic County captured 33.4 percent of total tourism expenditures in New Jersey (IHS

Global Insight, 2009). A major factor in Atlantic County's preeminence is the presence of Atlantic City's casino hotels. Casino gambling is a major draw for tourists. A recent report by Spectrum Gaming Group for the Atlantic City Convention and Visitors Authority entitled *Atlantic City Visitor Profile 2008* reports that gambling was the primary trip purpose for 80 percent of visitors to the city. For the same year, the South Jersey Transportation Authority counted 31.8 million trips to Atlantic City—81.4 percent of which traveled there by car and another 15.4 percent by charter bus (South Jersey Transportation Authority, 2009). Naturally, many visitors come from New York and Pennsylvania, which are within 120 and 60 miles, respectively, of New Jersey's casinos. Thus, the overall economic impact of casino resorts may be somewhat higher since any ancillary travel spending made by visitors en route is not included in this report's figures. Visitors traveling by car or bus undoubtedly contribute to the economy through their fuel, meal, and convenience purchases made along the way, as well as toll payments on the Atlantic City Expressway and Garden State Parkway.

Atlantic City Visitor Profile 2008 breaks down visitor spending by general expenditure category. Figure 1 shows that gaming revenues represent 60 percent of total expenditure. This suggests that the combined non-gaming spending by Atlantic City visitors amounts to 40 percent of total spending, or about two-thirds of total gaming revenues.

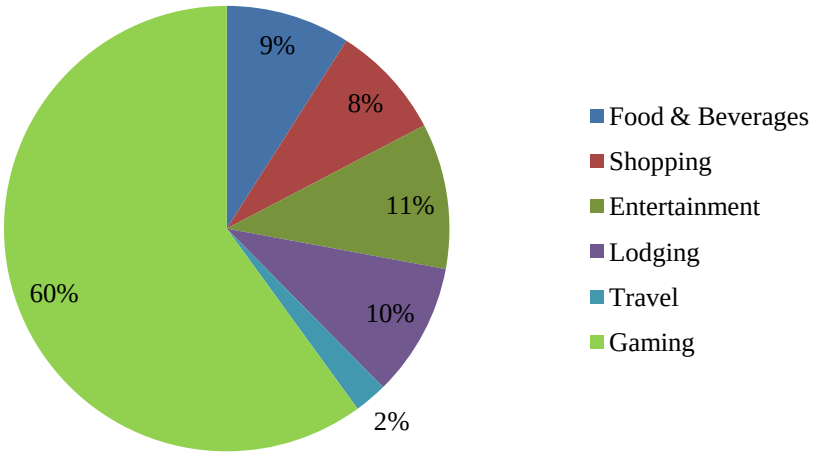
Table 6 shows the revenues that New Jersey's casinos report. For 2008, the casinos produced just over $4.5 billion in gaming revenues. This implies that visitors spent roughly another $3.0 billion in Atlantic City. Figure 1 summarizes the break out of the Atlantic City tourism spending. The small share of spending on lodging is due to the preponderance of visitation by day trippers. According to the Spectrum Gaming report, about 83.6 percent of all visits to Atlantic City are day trips.

Moreover, we can surmise from the casino's nongaming cash revenue in Table 6 that about $2.4 billion (28 percent) of this spending activity was absorbed by non-casino businesses in New Jersey. For the purposes of this report and given data in Figure 1, we assume that the $538.6 million in the form of the casinos' non-gaming revenues were spent in fairly equal shares across lodging, food and beverages, and entertainment.

Table 6. New Jersey Casino Revenue and General Expenditures by General Category, 2006-2008

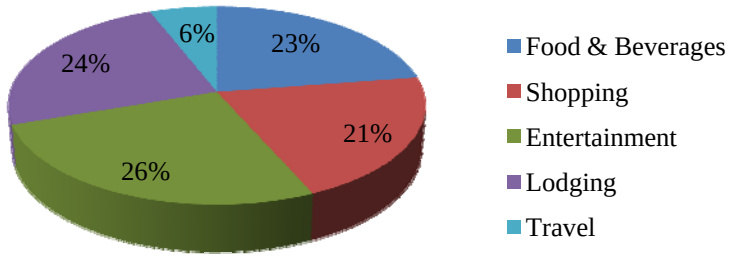
Revenue	2008	2007	2006
Gross Gaming Revenue	$4,544,961,000	$4,920,787,000	$5,217,714,000
Nongaming Cash Revenue	538,554,238	510,294,511	494,257,154
Pass-through Tax Revenues	110,902,886	109,226,675	99,214,063
Total NJ Casino Revenues	*$5,194,418,124*	*$5,540,308,186*	*$5,811,185,217*

Figure 1. Shares of Average Tourism Spending by General Expenditure Category, 2008



Source: *Atlantic City Visitor Profile 2008,* Spectrum Gaming Group.

Figure 2. Estimated Shares of Nongaming Tourism Spending



Source: *Atlantic City Visitor Profile 2008,* Spectrum Gaming Group.

To summarize, the presence of hotel casinos in Atlantic City induces about $7.5 billion in spending there. Of this, about 60 percent or $4.5 billion is spent on gaming. The remaining $3.0 billion is spent on various shopping and tourism services. Casinos capture a comparatively small share (roughly 25 percent) of this $3 billion in nongame spending; the remaining $2.3 billion is spent in neighborhoods surrounding the casinos. In the remainder of this report, the $2.3 billion in tourism spending is assumed to be allocated as shown in Figure 2.

Table 7. Taxes and Fees Paid to New Jersey's State Government by New Jersey's Gaming Casino, 2006-2008.

Revenue	2008	2007	2006
Gross Gaming Tax (8%)	$361,308,607	$393,299,126	$405,274,227
CRDA Obligation (1.25%)	50,746,719	58,912,373	61,394,873
Total Gaming Taxes	*$412,055,326*	*$452,211,499*	*$466,669,100*
Slot Machine License Fees	$17,760,609	$18,430,588	$19,273,427
Employee License Fees	2,684,214	1,501,741	1,713,214
CCC Operating Cost Fees	20,762,383	30,782,106	25,003,217
DGE Operating Cost Fees	18,233,921	13,880,252	13,974,779
Other Regulatory Fees (Annual License Fee)	2,600,407	3,541,164	482,414
Total Regulatory Fees	*$ 62,041,534*	*$ 68,135,850*	*$60,447,050*
Race Track Subsidy	*$22,500,000*	*$23,000,000*	*$22,000,000*
Atlantic City Casino Parking Facility Fees	$42,454,271	$46,144,487	$39,335,579
Atlantic City State Luxury Tax Collected	26,499,080	19,457,608	17,846,507
Total of Atlantic City-specific State Taxes	*$68,953,351*	*$65,602,095*	*$57,182,086*
Occupancy Fee	$23,321,337	$22,276,164	$23,030,857
Occupancy Fee on Complementary Rooms	10,529,058	15,739,698	24,832,915
Sales Taxes on Hotel Services	18,628,198	21,348,416	19,001,120
Sales Taxes on Purchases of Goods/Services	29,140,592	29,017,954	31,106,320
Total Occupancy & Sales Taxes	*$81,619,185*	*$88,382,232*	*$97,971,212*
NJ Corporation Business Tax	$17,170,660	$32,463,440	$61,971,600
Adjusted Net Profits Tax	—	—	4,384,118
Total Income Taxes	*$ 17,170,660*	*$32,463,440*	*$66,355,718*
Total State Taxes & Fees	**$664,340,056**	**$729,795,116**	**$770,625,166**

Source: Casino Association of New Jersey 2010.

State-Revenue Generation through New Jersey's Casinos.

Table 7 summarizes the tax revenues generated for the state by the hotel casinos from 2006 through 2008. The fact that most of the funds generated are designated for specific purposes as opposed to being allocated to the state's general fund is important to note. We discuss their purposes here since the targeted spending of these tax monies has specific effects upon the state's economy that are elaborated later in this report.

Earmarked State Tax Revenues. The lion's share of taxes paid by the hotel casinos (from $412 to $467 million in 2006-2008 or about 62 percent of all state taxes generated from casino operations) are those specifically designed at their outset for the state's casinos—the state's 8 percent Gaming Tax and the 1.25 percent tax obligated specifically for use by the Casino Reinvestment Development Authority (CRDA). The New Jersey Constitution requires that funds from the Gaming Tax be dedicated to programs for senior citizens and the disabled. The CRDA authorizes spending of funds for reinvestment in Atlantic City and other urban-aid municipalities

throughout the state. The disposition of each of these streams of funds is detailed later in this report.

In addition to the taxes above, the casinos are also under agreement to subsidize New Jersey's racetracks. In return, the state has continued to promise not to permit video lottery terminals or slot machines be installed at the state's race tracks. Table 7 shows that the subsidy has averaged $22.5 million annually during the study period (about 3.4 percent of all state tax revenues generated by casinos). The agreement is slated to end this year.

The next largest pool of state tax revenues generated from gaming activity (between $60-$70 million or roughly 9.3 percent of all tax revenues generated via casinos) is from regulatory fees, which are deposited into the Casino Control Fund. This set of funds is spent by the state to monitor the casino industry and pays the operating expenses of the state's Casino Control Commission (CCC) and the Division of Gaming Enforcement (DGE). The result is that the monitoring and regulation of the casinos is fully paid for through taxation of the casinos themselves.

Tax and Fees Paid to the State's General Fund. Casinos also pay some taxes and fees other than those mentioned above—regulatory fees, the gaming tax, the CRDA fund tax, and the racetrack subsidy. They, however, are not tagged by the state to cover pre-specified expenses. That is, the revenues from the remaining taxes and fees paid by casinos are allocated by the state to its General Fund. The economic impacts from spending via the General Fund are difficult to gauge, given its multifarious uses.

In addition to the above, the state levies a $3 per day fee on users of casino parking spaces. It also applies a luxury tax on specific services rendered in Atlantic City. In the case of casinos, the luxury tax takes the form of an extra 3 percent tax on the sale of alcoholic beverages as well as a 9 percent tax on entertainment cover charges, room rentals, and the rental of casino-owned cabanas and beach chairs. Combined total tax revenues from these sources have grown from $58.1 to $68.9 million over the three-year study period. Such rises go against the grain of most other tax collections during the recent recession's onslaught. In 2008, they comprised 10.4 percent of all state government revenues generated through the operation of casinos.

Remaining revenues collected by the state from casinos are applied statewide. Those collected by the casino hotels but paid by their customers are sales taxes, hotel occupancy fees, and corporate income taxes. Interestingly, with the exception of one category of these state revenues, these streams of income have been fairly stable over the study period. The exception has been occupancy taxes paid by the hotels for complimentary use rooms. The near-60 percent decline in this revenue stream over the past three years demonstrates how the hotels had to change their way of doing business during hard economic times. Rather than provide complimentary rooms to customers who are otherwise big spenders, it seems they have rather rapidly opted to lower the boom and charge many of these good, regular customers for their use of hotel rooms.

Corporate income taxes comprise the balance of the state's revenues collected from casinos. It consists of two pieces: the Corporation Business Tax and the Adjusted Net Profits Tax. The Corporation Business Tax rate is levied at 9 percent of net income. Regardless, as sources of income to the state, both dropped rapidly during the study period. Indeed, total revenues from these two sources in 2008 ($17.1 million) were nearly a quarter of what they were in 2006 when they provided the state with $66.4 million in revenues.

Table 8. Estimated Budgets, Payrolls and Jobs for New Jersey's Casino Regulatory Agencies, 2006-2008

	2008	2007	2006
Division of Gaming Enforcement Budget	*$ 42,884,896*	*$ 43,210,716*	*$ 42,800,990*
Payroll	28,299,926	28,053,403	27,507,300
Other	14,584,970	15,157,313	15,293,690
Jobs (estimated)	447	476	466
Casino Control Commission Budget	*$ 28,219,855*	*$ 28,938,095*	*$ 29,225,449*
Payroll	18,690,381	19,168,521	19,765,170
Other	9,529,474	9,769,574	9,460,279
Jobs (2006 estimated only)	295	325	335

Source: The 2008 Annual Report of the New Jersey Casino Control Commission. 2009. http://www.state.nj.us/casinos/about/commrepo/2006annualreport.html (except where noted as estimated).

DETAILS ON EARMARKED STATE FUNDS DERIVED FROM CASINO TAXATION.

Casino Control Fund: Casino Control Commission & Division of Gaming Enforcement.

As mentioned in the prior section, New Jersey's gaming casinos fully fund their regulators. New Jersey has two separate organizations that fulfill the required set of tasks—the Casino Control Commission (CCC) and the Division of Gaming Enforcement (DGE). Both are funded through the Casino Control Fund, which is replenished exclusively through regulatory fees.

Fundamentally, as an arm of the state's Attorney general's office, the DGE polices the casinos, overseeing and securing the integrity of their employees and machinery and undertaking prosecution when necessary. Similarly, the CCC is an independent agency housed under the state's Department of Treasury. It collects and analyzes data submitted by the casinos and acts in a quasi-judicial manner on applications submitted by casinos to the state and assesses penalties for any regulatory violations.

Table 8 shows the total budgets and payrolls for both of the casino regulatory agencies as reported in the CCC's *2007 Annual Report* and *2008 Annual Report* along with estimates of the number of jobs associated with each. CCC jobs counts for 2007 and 2008 are from the CCC's *2008 Annual Report*. It further shows that in 2008, the CCC and DGE combined for a total budget of $71.1 million, supporting roughly 750 state government jobs.

The Casino Reinvestment Development Authority Fund.

As noted previously, New Jersey's gaming casinos are required by the State of New Jersey to provide capital investment funds for economic development and community projects that respond to the changing economic and social needs of both Atlantic City and the State of New Jersey. The task of distributing the investment funds is the purview of the Casino Reinvestment Development Authority to which the casinos remit 1.25 percent of their annual gross revenues. The CRDA's mission is to encourage business development and permanent job creation, promote opportunities for business expansion, and both facilitate economic investment and stimulate job growth in New Jersey. Further, the spatial distribution of the CRDA funding is

regulated based on the number of years that contributing hoteliers have been operating (see Table 9).

In essence, the law requires each casino to invest all of its first three years of required investments in Atlantic City. Thereafter, the plan is for Atlantic City to be slowly weaned from CRDA funds, which are instead to be dispersed elsewhere in New Jersey with jurisdictions in South Jersey targeted most heavily in early years. Hence, by year 31, an age that several of New Jersey's casinos have now achieved, a quarter of all CRDA funds contributed are to be allocated to Atlantic City, a quarter to the rest of South Jersey, and a full 50 percent to North Jersey.

Moreover, there are some specific project types that are to be targets of CRDA funds. In the first three years, the entirety of each casino's investments is to be devoted to housing and community development projects in Atlantic City. In years 4 through 25, each casino is required to allocate half of its required Atlantic City obligations to housing and community development projects. In years 26 to 35, each casino is required to invest all of its Atlantic City investment obligations in economic development projects. Although there are not specific categorical allocations set for investments outside Atlantic City, eligible projects must be one of seven specified types. Those types are generally geared toward housing, economic development, and community services.

Table 9. Regulated Spatial Allocation of CRDA Funding by Age of Contributing Hotels

Investment by year	Atlantic City	South Jersey	North Jersey
1-3	100%	-	-
4-5	90%	8%	2%
6-10	80%	12%	8%
11-15	50%	28%	22%
16-20	30%	43%	27%
21-25	20%	45%	35%
26-30	65%	-	35%
31-35	25%	25%	50%
36-50	-	50%	50%

Table 10. Casino Reinvestment Development Funds Committed between 2003 and 2009 by Region

Summary	Committed Funding	Share
North Jersey	$ 41,761,837	9.2%
South Jersey	79,081,147	15.6%
Atlantic City	328,772,266	64.7%
Statewide	6,157,000	1.2%
Total	$455,772,250	100.0%

According to Table 7, CRDA obligations of the state's gaming casinos for 2006, 2007, and 2008 were $61.4, $58.9, and $50.7 million, respectively. Nonetheless, determining what CRDA project funding is actually spent within a given year is somewhat more difficult to discern. In part this is because so many CRDA-funded projects are active at any given point in time. Appendix A presents the list of projects to which CRDA funds were committed from 2003 through 2009. Table 10 summarizes that project-wise list by region.

It is clear from Table 10 that CRDA funds remain largely focused in Atlantic City, as about 65 percent of the $455.8 million in funds committed were allocated there. Still, over time increasingly greater shares are being allocated to other parts of the state. For example, in 2008 and 2009, Atlantic City International Airport received nearly $9.2 million to expand its apron and upgrade its inspection facilities. And in 2009, the South Jersey Workforce Housing Loan Fund was a recipient of $20 million in CRDA money. In 2006, Caldwell College in Essex County tapped $2 million in CRDA funds to construct student housing. And $5 million were committed in 2009 to build a home for the North Jersey Food Access Initiative.

Outside of a handful or two, the projects funded by the CRDA are capital expenditures, specifically building construction. Given commitments as well as the magnitude of year 2006 obligations, the ensuing impact analysis of CRDA activity assumes that on average $65.0 million is spent annually in New Jersey on CRDA-funded construction-based projects.

The Casino Revenue Fund.

The Casino Revenue Fund (CRF) was, according to state statute, established specifically to designate the tax revenues imposed on casinos for "reductions in property taxes, rentals, telephone, gas, electric, and municipal utilities charges of eligible senior citizens and disabled residents of the State, and for additional or expanded health services or benefits or transportation services or benefits to eligible senior citizens and disabled residents" (Office of the State Auditor, 2000). These programs are, of course, statewide in nature, and are largely used where the consuming population resides.

According to Table 11, in FY 2009 the total resources of the CRF were $368.4 million. For comparison purposes, the state's General Fund support for programs for the aged and disabled was $531.7 million. CRF support had typically been slightly higher than General Fund support. Over time the amount of General Fund support has increased while CRF resources have decreased. Since FY 2006 CRF resources have experienced somewhat sharp declines and have been surpassed by similar General Fund support. Indeed, between FY 2006 and the projection for FY 2010, CRF resources will have decreased by $150.5 million or approximately 30 percent.

A large share of the FY 2009 CRF appropriations were marked for medical assistance programs (79 percent), with a further 10 percent allocated for transportation assistance programs and 9.8 percent allocated for housing assistance programs. The largest of the programs is the Pharmaceutical Assistance to the Aged and Disabled (PAAD) Program, which, established in 1975, was first program enacted by a state to help low-income seniors pay for prescription drugs. Eligible individuals include persons disabled as defined by the Federal Social Security Act and persons up to 65 years of age with an income in the range of $9,000-$18,151 if single and $12,000-$22,256 if married. Eligible individuals below those income limits are funded by the Pharmaceutical Assistance to the Aged (PAA) program, which is drawn from the General Fund. Together with the expenditures from the Senior Gold Prescription Discount Program, which was

enacted in 2001 and funded using the settlement from state actions against tobacco companies, the state of New Jersey spends more than any other state on prescription drug coverage per Medicare beneficiary.

Table 11. Casino Revenue Fund and Similar General Fund Support: Summary and Projections by Fiscal Year† ($ millions)

Line Item	Revised 2010	Revised 2009	2008	2007	2006
Casino General Fund Support					
Medical Assistance					
Personal assistance	$ 3.7	$ 3.7	$ 3.7	$ 3.7	$ 3.7
Home care expansion	0.1	0.1	0.1	0.1	0.1
PAAD—expanded	144.9	158.5	220.1	205.3	276.0
Global Budget for Long Term Care	27.6	27.6	27.8	28.7	29.3
Disability Services Waivers	16.5	16.5	16.5	16.5	16.5
Respite care	5.4	5.4	5.4	5.4	5.6
Hearing aid assistance	0.2	0.2	0.1	0.1	0.1
Statewide birth defects registry	0.5	0.5	0.5	0.5	0.5
Health & senior services administration	0.9	0.9	0.9	0.9	1.0
Personal care	77.7	77.7	60.1	111	90.1
Transportation Assistance					
Senior citizens and disabled residents	30.2	33	36.9	34.9	34.4
Sheltered workshop transportation	2.2	2.4	2.4	2.4	2.4
Housing Programs					
Congregate housing support	2.0	2.0	2.0	2.0	2.0
Safe housing and transportation	1.7	1.7	1.7	1.7	1.7
Developmental Disabilities	32.5	32.5	32.5	31.8	32.4
Other Programs					
Home Delivered Meals	1.0	1.0	1.0	1.0	1.0
Adult Protective Services	1.8	1.8	1.8	1.8	1.8
Adult Day Care-Alzheimer's	2.7	2.7	2.7	2.7	2.7
Home Health Aide Certification	0.1	0.1	0.1	-	0.1
Total Casino Revenue Fund Support	***$351.8***	***$368.4***	***$416.2***	***$450.5***	***$501.3***
Similar General Fund Support					
SOBRA for Aged and Disabled	$185.2	$174.2	$166.2	$161.2	$205.1
Global Budget and Waivers	58.7	52.2	38.7	4.9	4.9
Personal Care	67.0	59.4	77.4	16.9	44.1
Senior Citizens Property Tax Freeze	172.5	169.0	148.5	127.6	99.0
PAAD—expanded	69.1	77.0	0.0	0.0	23.7
Total of Similar General Fund Support	***$552.6***	***$531.7***	***$430.8***	***$310.6***	***$376.8***

Source: New Jersey Casino Revenue Fund Advisory Commission. 2009. *2009 Annual Report of the New Jersey Casino Revenue Fund Advisory Commission—Recommendations for the Casino Revenue Fund Programs*. Presented to Richard Codey, Senate President; Joseph J. Roberts, Jr., Assembly Speaker, The New Jersey State Legislature, April.

† The fiscal year ending in the designated year.

According to the State Pharmacy Assistance Programs (SPAP) appropriations, New Jersey spends nearly three times the national average on such programs. This is undoubtedly due to the large influx of funds available through the CRF since 1979. Although twelve other states also use tobacco settlement funds to finance their SPAPs, only New Jersey makes provision for the use of casino-generated revenue as a resource for SPAPs. Sources of funding for other states include manufacturer rebates and enrollment fees, state general revenues, and other categorical revenues (Office of the State Auditor, 2000).

In 2009, the CRF provided just 65 percent of the total annual state cost for PAAD, with the General Fund providing the remainder. There has, however, been a significant reduction in the share of CRF funding assigned to the PAAD program, which made up 57 percent of total CRF appropriations in FY 2004 but only 43 percent in FY 2009 (New Jersey Casino Revenue Fund Advisory Commission, 2009). Undoubtedly, the change is partially the result of a shift in responsibilities with the implementation of Medicare Part D, which became effective in January 2006.

The share of CRF funds used for personal care peaked in 2007 at 25 percent. The Statewide Respite Care Program established in 1988 and historically financed through a CRF contribution and a sliding scale client cost-share, in 2009 received 1.5 percent of all CRF resources. The addition of funds from the tobacco settlement increased the program budget to $6.75 million in 2001, though it has remained constant at about $5.4 million for the period 2004-2009. The respite care program was intended to provide relief to unpaid caregivers of the elderly and disabled adults who meet certain financial eligibility requirements, and is administered on the county level.

The CRF provides much of the funding for transportation assistance for senior citizens and disabled residents—notably the Senior Citizen and Disabled Resident Transportation Assistance Program (SCDTAP), which means that the fortunes of the program are inextricably linked to the fortunes of Atlantic City's casinos. NJ Transit receives about 7.5 percent of all CRF funds annually, which is distributed to counties using a standardized formula. Due to falling casino revenues, the program's CRF funding was lowered by 10 percent for 2009, and is likely to be further reduced by another 10 percent for 2010. Assembly Bill 2046 and its counterpart Senate Bill 1830 request a short term solution in allocating the SCDTAP another 1 percent from the CRF to bring its share up to 8.5 percent. Governor John Corzine signed the bill into law in January 2010.

Of remaining programs, only those pertaining to housing programs for New Jersey residents who have developmental disabilities received a sizeable share of CRF money. This program has captured a fairly steady stream of funding from the CRF since 2006 (about $32.5 million annually), which amounted to about 8.8 percent of the CRF pot in 2009.

Through the CRF activity generated through New Jersey's casinos contributes to a large stream of funds that support some key state-funded social programs. Monies available from the CRF have been declining in the past few years and since they are state-mandated programs have consequently required supplementary allocations from the state's General Fund. CRF funds fell at the same pace as casino gaming revenues (17 percent) between 2006 and 2008. Hence, the fate of these CRF-supported social programs certainly rises and falls with the economic success of the state's casino gaming industry.

Unfortunately data on the jobs and payroll supported specifically by the CRF-supported programs are not collected. Still, it can be safely assumed that funds allocated to the PAAD program did not support many jobs. Rather these funds, which enabled senior citizens to purchase needed pharmaceuticals, simply is assumed to have improved the quality of life of the recipients of those monies. Hence, beyond the dollar figure itself—$202.1 million in 2008—this program is omitted from the remainder of the analysis in this report. Job and payroll estimates directly affiliated with spending on the remaining CRF-funded programs were generated by applying the funding levels to national equivalent industries—social services and paratransit—but assuming State of New Jersey average wage and productivity levels for those industries. The result is that programs supported by $196.1 million in CRF funds are estimated to have directly generated slightly more than 3,200 jobs that earned about $97.9 million in labor income in 2008.

ESTIMATING TOTAL ECONOMIC IMPACTS.

Total economic impacts encompass both *direct* and *multiplier* effects. The latter incorporate *indirect* and *induced* impacts. The character of the direct impacts of casino resorts is derived from the recipes noted above. The process for estimating a given project's indirect and induced economic impacts is more roundabout. By definition, a project's first round of indirect impact includes the purchases of any supplies and/or services that are required to produce the direct effects. Subsequent purchases of supplies and services generate other rounds of indirect impacts. The induced impacts are the purchases that arise, in turn, from the increase in aggregate labor income of households. Aggregate labor income is defined as the sum of wages, salaries, and proprietors' income earned by workers. Both the indirect and induced economic impacts demonstrate how the demand for direct requirements reverberates through an economy.

Figure 3 details the economic impacts of Casino Resort Hotels. The *direct impact* component consists of purchases made specifically from the people visiting the hotels. Direct impacts on the local economy are composed only of purchases from local organizations.

The *indirect impact* component consists of spending on goods and services by industries that produce the items purchased by the hotels. Among the many business relationships, consider for example, a hotel purchasing a new speaker system for its main ballroom for use at a special televised event. In order to install the speaker system, the hotel would hire an electrician and a sound technician. Both would need the various of tools, hardware, and testing instruments of their trades. In order to meet the hotel's needs, the installer must also hire workers and obtain materials and specialized services. The contractors and their suppliers expect to make a profit on the job, just as the hotel also hopes to make a profit for its owners and shareholders. Thus, the project's capital is spread through an extensive network of relationships based upon round after round after round of business transactions emanating from a single project. It is this network of transactions that describes the set of indirect impacts. A firm's net indirect contribution to the activity largely depends on: (1) the total value of its transactions in the network; and (2) the proximity of its business relationship(s) to the contractor within the project's business network. Similar to direct impacts, local indirect impacts are composed only of indirect business transactions that occur within the local economy.

Finally, *induced impacts* are a measure of household spending. They are a tally of the expenditures made by the households of employees of the hotel, as well as the households of employees of the hotel's supplying industries.

Figure 3. Examples of Direct and Multiplier Effects (Indirect and Induced Impacts) of Casino Resort Hotel Industry

MULTIPLIER EFFECTS		
DIRECT IMPACTS	**INDIRECT IMPACTS**	**INDUCED IMPACTS**
Purchases for: Casino hotels Nongaming Tourism	Purchases of: Bedding Slot machines Food goods Alcohol Paper products Retail & wholesale services Jewelry	Household spending on: Food, clothing, day care Retail services, public transit, utilities, car(s), oil & gasoline, property & income taxes, medical services, and insurance

One means of estimating indirect and induced impacts would be to conduct a survey of the business transactions of the primary contractor. The business questionnaire for this survey would ask for the names and addresses of the contractor's suppliers; what and how much they supply; the names and addresses of the contractor's employees; and the annual payroll.

A related questionnaire would cover the household spending of the employees of the surveyed firms. It would request a characterization of each employee's household budget by detailed line items, including names and addresses of the firms or organizations from which each line item is purchased.

Both questionnaires (which are expensive to effect) subsequently could be used to measure indirect and induced impacts of the primary contractor's activity. The business questionnaire would be sent to the business addresses identified by the primary contractor; the household questionnaire, in turn, would be sent to the homes of the employees of those businesses that responded to the survey. This "snowball-type" sampling would continue until time or money was exhausted. In order to keep each organization's or household's contribution to the project in proper perspective, its total spending would be weighted by the size of its transaction with its customers who were included in the survey activity. The sum of the weighted transaction values obtained through the surveys would be the total economic impact of the project.

This survey-based approach to estimating indirect and induced impacts consumes a great deal of money and time, however. In addition, response rates by firms and households on surveys regarding financial matters are notoriously low. Hence, in the rare cases where survey work has been conducted to measure economic impacts, the results have tended to be not statistically representative of the targeted network of organizations and households. Consequently, relatively less expensive economic models based on Census data are typically used to measure economic impacts.

The economic model that has proven to estimate the indirect and induced economic effects of events most accurately, and the one used in the current study, is the input-output model. Its advantage stems from its level of industry detail and its depiction of interindustry relations. As shown in Appendix B, a single calculation—known as the Leontief inverse—simulates the many rounds of business and household surveys. Input-output tables are

constructed from nationwide Census surveys of businesses and households. The most difficult part of regional impact analysis is modifying a national input-output model so that it can be used to estimate impacts at a subnational level. Regionalization of the model typically is undertaken by the model producer and requires a large volume of data on the economy being modeled. This study employs regional input-output models to estimate the extent of the indirect and induced economic effects of a direct investment in casino resort activities.

R/ECON I-O™ Model

The regional input-output model used by this study to derive the total economic impacts is a regionalized version of the R/ECON™ I-O model produced by CUPR. R/ECON™ I-O produces very accurate estimates of the total regional impacts of an economic activity and employs detail for more than 500 industries in calculating the effects.

This model and its predecessors have proven to be the best of the non-survey-based regional input-output models at measuring a region's economic self-sufficiency. The models also have a wide array of measures that can be used to analyze impacts. In particular, R/ECON™ produces one of the only regional economic models that enable an analysis of governmental revenue (i.e., tax) impacts and an analysis of gains in total regional wealth.

The results of R/ECON™ I-O include many fields of data. The fields most relevant to this study are the total impacts with respect to the following:

- **Jobs:** *Employment, both part- and full-time, by place of work, estimated using the typical job characteristics of each detailed industry.* (Manufacturing jobs, for example, tend to be full-time; in retail trade and real estate, part-time jobs predominate.) All jobs generated at businesses in the region are included, even though the associated labor income of commuters may be spent outside of the region. In this study, all results are for activities occurring within the time frame of one year. Thus, the job figures should be read as job-years, i.e.; several individuals might fill one job-year on any given project.
- **Income:** *"Earned" or "labor" income—specifically wages, salaries, and proprietors' income*. Income in this case does not include nonwage compensation (i.e., benefits, pensions, or insurance), transfer payments, or dividends, interest, or rents.
- **Gross State Product:** *Also known as "wealth accumulated" or "value added"—the equivalent at the subnational level of gross domestic product (GDP).* Value added is widely accepted by economists as the best single measure of economic well-being. It is estimated from state-level data by industry. For a firm, value added is the difference between the value of goods and services produced and the value of goods and nonlabor services purchased. For an industry, therefore, it is composed of labor income (net of taxes); taxes; nonwage labor compensation; profit (other than proprietors' income); capital consumption allowances; and net interest; dividends; and rents received.
- **Taxes**: *Tax revenues generated by the activity.* The tax revenues are detailed for the federal, state, and local levels of government. Totals are calculated by industry.

  Federal tax revenues include corporate and personal income, social security, and excise taxes, estimated from the calculations of value added and income generated.

State tax revenues include personal and corporate income, state property, excise, sales, and other state taxes, estimated from the calculations of value added and income generated (e.g., purchases by visitors).

Local tax revenues include payments to substate governments mainly through property taxes on new worker households and businesses. Local tax revenues can also include revenues from local income, sales, and other taxes.

R/Econ I-O expresses the resulting jobs, income, and wealth impacts in various levels of industry detail. The most convenient application breaks the industry-level results at the division level. This level has 11 industry divisions:

1. Agriculture
2. Agricultural, Fishing, and Forestry Services
3. Mining
4. Construction
5. Manufacturing
6. Transportation, Communications, and Public Utilities (TCPU)
7. Wholesale Trade
8. Retail Trade
9. Finance, Insurance, and Real Estate (FIRE)
10. Services
11. Government

R/ECON™ I-O provides results in two other industry breakdowns that detail subcategories under each of these eleven groups. These breakdowns use 86-industry specification and the full industry specification of the input-output model (about 517 industries). Jobs are also decomposed into occupation/skill categories in a separate table.

The model results, however, are only as good as the data that go into them. Thus, when the direct requirements are estimated, and the industry-level purchases are also estimated (as is the case in this study), care should be taken in interpreting model results, especially when they contain extreme categorical detail. Hence, the main body of reports based on the above tables tends to focus on the division-level (eleven-sector) results with the table of 86-industry results made available as exhibits that get some contextual elaboration. The purpose of providing such detail is to enable a better idea of the quality of jobs that are likely to be created and of the types of industries that are most likely to be affected by the focus of the analysis.

THE TOTAL ECONOMIC CONTRIBUTION OF CASINO HOTELS TO NEW JERSEY'S ECONOMY.

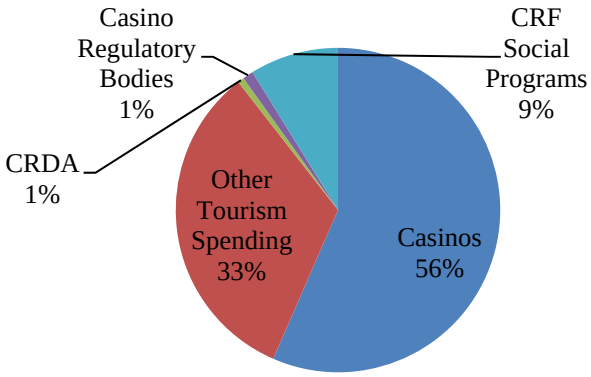
Summarizing the Direct Effects.

The direct effects of casinos on the State of New Jersey are summarized in Table 12. In total for the year 2008, 67,351 total jobs earning $2.6 billion in payroll income and culminating in the production of $4.2 billion in GDP, or net wealth, can be readily attributed to the presence of casinos in the state.

Table 12. Direct Effects of Casinos on the State of New Jersey

Activity	Spending ($ million)	Jobs	Payroll ($ million)	GDP ($ million)
Casinos	$5,194.4	39,779	$1,777.2	$2,908.9
Other Tourism Spending	1,911.2	23,160	650.6	1,096.4
CRDA Investments	53.2	451	27.6	33.8
Casino Regulatory Bodies	71.1	742	47.0	47.0
CRF Social Programs	416.2	3,219	97.9	95.2
Total	$7,646.1	67,351	$2,600.3	$4,181.2

Figure 4. Share of Direct Jobs Related to the Presence of Casino Hotels in New Jersey by Source, 2008



From Figure 4, it is clear that visitor spending, which is the sum of both the revenues of casinos as well as other tourism dollars spent in Atlantic City, dominates the overall picture. It comprises 89 percent of all direct jobs created. Of course, from a certain perspective it is this activity that makes the other direct effects possible. That is, if casinos did not exist, there would be no need for the regulatory bodies and the monies for the investments made by CRDA and spent by the state using taxes generated from the CRF would have to come from some other source. Of these three sets of funds, those used to fund social programs is yield by far the largest direct effects. Still, even the number of jobs generated via these funds amount to little more than 10 percent of the jobs generated directly through visitor spending.

Casinos themselves account for about 2 percent of all employment in New Jersey. The state's average annual wage in 2008 was about $59,900. The average annual payrolls per job directly created by Casino Regulation and by CRDA investment are above the state average, at $63,300 and $61,100, respectively. All other sectors that directly contribute to the greater casino resort industry have average wages below the state average, with "Other Tourism" generating the lowest paying jobs at about $28,100 per job. Clearly this sector includes a substantial number of part-time and seasonal jobs.

Casino Vendor Spending.

As suggested in the preceding section, the "first round" of indirect effects generated by the presence of hotel casinos in New Jersey are those spent upon goods and services provided by their vendors. Fortunately for the sake of the present study, one component of the NJ casino laws designed to energize the state's economy was a provision that the NJ CCC monitor all purchases and payments to casino vendors. The idea was to encourage casinos to spend within the state. According to Cooke (2009) the share of vendor spending captured by the state peaked in 2002 at 77 percent of all spending. As shown in Table 13, it has subsequently declined. New Jersey's share of vendor spending fell to 61.4 percent by 2006, and despite a mild rise in 2007, fell further to 56.3 percent in 2008.

Table 14 shows casino vendor spending in New Jersey by county. It is clear from the table that vendor specialties span the spectrum of New Jersey's economic make up. It turns out that 2,199 of the casinos' total 6,070 vendors are located in New Jersey and hail from all 21 counties in New Jersey. Both vendors and casino spending associated with them tend to be affiliated with Atlantic County. Still, over 9 percent of the total was paid to vendors in Middlesex County, nearly 6 percent in Mercer County, over 3 percent in Essex County, and nearly 2 percent in Bergen County. Hence, the benefits of casino hotel spending are experienced statewide.

New Jersey casino spending on vendors in 2008 was concentrated in a few industries, as is shown in Table 15. In particular, the key contributors to the casino hotel industry in New Jersey are wholesale and retail, construction, banking, and travel services. The glass industry is somewhat of an anomaly in 2008, due capital expenditure items that year. But advertising and legal services, repair and maintenance services, and sports and entertainment organizations are also consistently significant contributors to the industry's success. Still, due to the overall decline of the casino hotel industry during the study period, vendor spending has also declined.

Table 13. New Jersey Casino Hotel Expenditures, 2006-2008

Expenditure	2008	2007	2006
Labor Compensation*	$1,777,153,600	$1,781,615,793	$1,797,033,391
New Jersey Vendor Spending†	$2,336,219,824	$2,538,754,653	$2,158,405,006
Other Vendor Spending†	$1,814,241,701	$1,509,437,186	$1,355,094,555
Taxes, Licenses, and Fees*	$ 903,241,960	$ 965,999,168	$ 996,697,365

Sources: * Casino Association of New Jersey.
† Casino Control Commission. 2009. *New Jersey Casino Gaming Economic Impact Report.* http://www.state.nj.us/casinos/financia/histori/docs/year-end-fourth_quarter_2008.xls.

Table 14. Geographic Distribution of New Jersey Casino In-State Vendors by County, 2008

County	Count of Vendors	Spending	Share of Total
Atlantic	1,048	$1,437,900,399	61.6%
Bergen	93	$41,980,625	1.8%
Burlington	145	$78,912,132	3.4%
Camden	189	$106,122,592	4.5%
Cape May	63	$5,403,058	0.2%
Cumberland	56	$55,128,048	2.4%
Essex	66	$74,653,602	3.2%
Gloucester	88	$98,606,411	4.2%
Hudson	37	$7,896,354	0.3%
Hunterdon	2	$1,285,227	0.1%
Mercer	56	$134,389,839	5.8%
Middlesex	62	$214,778,904	9.2%
Monmouth	74	$15,466,918	0.1%
Morris	44	$6,472,905	0.3%
Ocean	59	$22,388,344	1.0%
Passaic	26	$2,044,715	0.1%
Salem	10	$16,585,956	0.7%
Somerset	27	$3,656,206	0.2%
Sussex	6	$115,760	0.0%
Union	43	$12,403,545	0.5%
Warren	5	$33,284	0.0%
Total	2,199	$2,336,219,824	100.0%

Source: Casino Control Commission. 2009. *New Jersey Casino Gaming Economic Impact Report.* http://www.state.nj.us/casinos/financia/histori/docs/year-end-fourth_quarter_2008.xls.

Table 15. New Jersey Casino Spending on State Vendors by Detailed Industry, 2008

Industry	Expenditures
Landscaping	$ 6,421,808
Construction	736,903,722
Furniture and wall coverings	298,358
Publishing and printing	18,508,006
Chemicals & plastics	330,887
Glass	100,711,176
Concrete	521,243
Bath fixtures	465,134
Food service equipment	10,895,281
Other equipment	16,643
Advertising material and signs	1,462,084
Bus and limousine companies	36,718,421
Airlines	630,871
Freight forwarding	15,069,410
Travel arrangement	149,170,468
Broadcasting	125,286
Utilities	5,527
Waste disposal	12,354,879
Wholesale-durable	364,331,433
Wholesale-nondurable	438,357,438
Retail	66,315,801
Vending machine operators	1,536,853
Computer processing & related services	3,783,277
Banks	124,714,547
Insurance	15,789,905
Real estate	2,586,314
Repair and maintenance services	66,691,534
Security	4,242,524
Equipment rental	1,311,988
Miscellaneous business services	9,216,058
Advertising services	23,700,449
Legal services	58,255,186
Engineering and architectural services	17,320,372
Consulting and accounting services	4,143,214
Auto rental and repairs	961,274
Parking	4,069,996
Filming	566,222
Sports and entertainment	33,876,318
Medical Services	9,605,850
Training and miscellaneous services	655,875
Total	$ 2,336,219,824

Source: Casino Control Commission. 2009. Special tabulation.

Multiplier Effects Beyond Casino Payments to Vendors.

Of course, vendors also have suppliers of goods and services that enable them to produce in direct service to the casino hotels, and their suppliers have suppliers, and so on. Moreover, while we might not be able to identify the specific hotels, eating places, and other retail establishments where other Atlantic City visitor spending takes place, we can, through an input-output model, have a very good notion of their spending structures since operating expenses do not vary much from one establishment to another within the same detailed industry. And then, of course, they too have suppliers and their suppliers have suppliers. Extending this approach further, we can also examine the multiplier effects of the investments funded by the CRDA, of the expenses of New Jersey's casino regulatory bodies, and of the CRF funds allocated to social services beyond PAAD. A complete set of summary model results tables are included in Appendix C, Tables C1-C6.

The upshot, according to findings summarized in Table 16, is that the direct effects are amplified somewhere between 51 and 63 percent, depending upon the economic measure examined. That is, 34,136 jobs are estimated to be created by the indirect and induced effects of economic activity in addition to the 67,351 total jobs that are directly attributable to the presence of casino hotels in New Jersey as displayed in Table 12. Those 34,136 jobs are supported by a payroll of about $1.6 billion—about $47,750 per job—and produce almost $2.4 billion of GDP.

Table 17 shows the total direct, indirect, and induced economic and tax impacts of each million dollars of initial expenditure on the state of New Jersey. Jobwise, the biggest returns come from tourism, which creates 15.5 jobs for each million dollars of expenditure. Most of the positions created by tourism are in the lower paying retail and service sectors. Hence, the average wage for jobs created by this sector is $32,416. The second largest creator of jobs per million dollars of initial expenditure are casino resorts at 12.7 jobs per million. Casino-created jobs are mostly found in the service sector, but there are also significant numbers in the retail and construction sectors as well as the finance, insurance, and real estate (FIRE) sector. Positions created by the casino resorts are generally better paying that those created by other tourism spending, with an average annual income of $46,017 dollars per job created.

Table 16. Multiplier Effects of Casinos on the State of New Jersey

Activity	Output ($ million)	Jobs	Payroll ($ million)	GDP ($ million)
Casinos	$3,119.7	26,104	$1,254.6	$1,790.7
Other Tourism Spending	899.2	6,878	323.0	490.0
CRDA Investments	29.6	224	10.4	15.5
Casino Regulatory Bodies	15.8	78	4.4	7.2
CRF Social Programs	113.3	852	37.7	61.8
Total	$4,177.6	34,136	$1,630.1	$2,365.2

Table 17. Economic and Tax Impacts per Million Dollars of Initial Expenditure

Economic Measure	Casino Regulatory Bodies	CRDA Infrastructure	Casinos	Other Tourism	CRF Social Programs	Weighted Average Impacts
Jobs	11.5	10.4	12.7	15.5	9.8	13.2
Income	$722,519.0	$582,630.2	$583,651.8	$502,976.7	$325,788.9	$550,631.3
State Taxes	$4,161.3	$27,848.1	$198,596.7	$98,171.1	$15,948.0	$147,845.0
Local Taxes	$5,115.6	$31,218.7	$71,763.4	$61,640.6	$17,896.2	$51,284.4
GDP	$761,800.5	$755,361.1	$904,743.5	$819,487.1	$377,190.9	$852,091.4

Casino regulatory bodies and the CRDA create fewer jobs per million of initial expenditure, but the jobs created are better paid. Casino regulatory bodies create 11.5 jobs per million, including a sizeable portion of government jobs. Overall, jobs created by regulatory bodies average $62,630 in annual wages. For each million dollars of initial expenditure, CRDA investments create 10.4 jobs, a majority of which are in the construction sector. The jobs created by CRDA investment pay an average wage of $56,221. CRF Social Programs is the smallest jobwise creator with 9.8 jobs created of each million in initial expenditure. Most of the positions are found in the service sector, and to a lesser degree in the transport and public utilities sector. The average wage for jobs created by this sector is $33,308—slightly above that of tourism-created jobs.

Table 17 also shows the variation in taxes generated by the economic activity of each sector. Casinos effect the most taxes by far, with almost $200,000 to the state and just shy of $72,000 to local governments for every million dollars of initial expenditure. Other tourism places second with regard to taxes generated, with nearly $100,000 in state taxes and more than $60,000 in local taxes resulting from each million dollars in economic activity of the sector. The fewest taxes are effected by the casino regulatory bodies, whose $4,000 in state and $5,000 in local are low due to the high number of government jobs in that sector. On average, the economic and tax impacts of casino resorts on the State of New Jersey per million dollars of initial expenditure result in 13.2 jobs, $550,000 in income, almost $200,000 in state and local taxes, and generate over $850,000 in GDP.

Table 18 shows the impacts of selected New Jersey Industries for context. The average jobs per million dollars of expenditure created by the greater New Jersey's casino resort industry is higher than for all industries selected other than Colleges and universities and Transit. Perhaps surprising is the rather low numbers for Drug manufacturing and Petroleum refining industries—just 1.6 and 0.4 jobs per million invested, respectively. This is largely due to relatively high capital intensity of these industries as well as their tendency to use suppliers and other vendors outside of the state. The greater casino resort industry also produces both more state and local taxes per million of expenditure than most other industries. The exception among the industries selected for this brief overview is the hotel industry, of which casino resorts themselves are a part.

Finally, Table 19 shows the total economic impact Atlantic City's $11.8 billion casino industry effects on the State of New Jersey: over 101,000 jobs, more than $4.2 billion in payroll, and over $6.5 billion in GDP. The total job count itself is about 2.0 percent of the 5.2 million New Jersey jobs counted by the U.S. Bureau of Economic Analysis (BEA) in 2008. This BEA figure

includes farm-related and government jobs. This broader casino industry generates over $11.8 billion annually in total spending and $4.2 billion in payroll for the state. Given this level of contribution, the casino industry is responsible for far more New Jersey jobs than the state's well-known Chemical manufacturing industry. (See Table 20.) Jobwise, it is also larger than the Federal government's military presence within the state. Moreover, it is nearly as large as two of the state's highly valued supersectors: the Arts and entertainment supersector and the Information supersector. The latter includes telecommunications manufacturing, broadcasting, internet services, other computer services, and publishing.

Moreover, the casino resort industry itself, when separated from its attenuating effects, employs more New Jersey residents than the investment and pharmaceutical industries, which is put forward by state policy officials as the state's economic future. Due in part to mandates by the Casino Control Commission it also employs more residents than the state's well-known transit industry and military sector.

Table 18. Impacts per Million Dollars of Initial Expenditure for Selected New Jersey Industries

Industry	Jobs	Payroll	GDP	State Taxes	Local Taxes
Holding and investment offices	7.9	981.9	1,544.2	83.3	130.3
Insurance carriers	6.7	641.0	1,210.3	23.3	36.4
Colleges and professional schools	23.3	1,277.3	1,130.6	3.3	5.2
Transit & related passenger transportation	33.1	864.2	1,078.1	8.6	13.4
Legal services	11.7	944.9	1,025.0	2.0	3.2
Computer & data processing services	9.0	864.8	973.6	9.4	14.7
Insurance agents, brokers, & services	8.8	779.5	915.2	3.9	6.1
Wholesale trade, nondurable	10.6	792.5	837.0	52.8	82.7
Trucking & courier services, except air	11.4	529.6	710.8	4.2	6.6
Performing arts & related entertainment	4.2	197.4	597.9	48.2	75.3
Hotels	6.8	305.9	500.8	155.5	41.1
Drug manufacturing	1.6	201.0	269.6	3.0	4.6
Petroleum refining	0.4	39.1	95.4	1.8	2.8

Table 19. Total Economic Impact of Casinos on the State of New Jersey

Activity	Output ($ million)	Jobs	Payroll ($ million)	GDP ($ million)
Casinos	8,314.2	65,883	3,031.7	4,699.6
Other Tourism Spending	2,810.3	30,037	973.7	1,586.4
CRDA Investments	82.8	676	38.0	49.2
Casino Regulatory Bodies	86.9	820	51.4	54.2
CRF Social Programs	529.5	4,071	135.6	157.0
Total	*11,823.7*	*101,487*	*4,230.4*	*6,546.4*

Table 20: Direct Employment Counts for Selected New Jersey Industries, 2008

Industry/sector	2008 Jobs	2008 Payroll ($ million)	2007 GDP ($ million)
Farms[†]	15,859	383.0	792.0
Chemical manufacturing[†+]	66,512	10,456.5	18,939
Petroleum refineries[*]	2,606	255.4	NA
Pharmaceutical and medicine manufacturing[*]	37,957	4,917.8	NA
Wholesale trade[†]	251,624	22,288.1	37,092
Truck transportation[†]	56,053	3,278.3	4,004
Transit and ground passenger transportation[†]	41,834	1,177.1	1,241
Information supersector[†]	108,479	11,563.4	21,469
Investment banking and securities dealing[*]	21,386	3,226.7	NA
Insurance carriers and related activities[†]	93,522	9,362.1	10,931
Accommodation[*]	65,282	2,149.5	NA
Arts, entertainment, and recreation supersector[†]	105,783	2,843.2	4,517
Federal, military[†]	24,764	1,435.3	1,551

Source: [†]U.S. Bureau of Economic Analysis. 2010. Table SA25, Employment by Industry, State Annual Personal Income and Employment, Regional Economic Information System.

[*]U.S. Department of Labor, Bureau of Labor Statistics. 2010. 2008 Annual Report on the Quarterly Census of Employment and Wages, file: st34Nj08.enb.

+ Chemical manufacturing includes both Petroleum refineries and Pharmaceutical and medicine manufacturing as well as several other subsectors.

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APPENDIX A
LIST OF PROJECTS WITH COMMITTED
CRDA FUNDING BY REGION: 2003-2009

NORTH JERSEY CRDA PROJECTS: 2003 - 2009

Project Name	Municipality	County	Total Project Commitment
Branch Brook Park	Newark City	Essex	2,000,000
King Plaza	Perth Amboy	Middlesex	11,000,000
NJSEA Racetrack Project	Bergen / Monmouth Counties	Bergen / Monmouth	650,000
East Orange Neighborhood Improvement	East Orange City	Essex	75,000
New Jersey National Guard Armory Recreation	Jersey City	Hudson	560,000
North Ward Center Pre-School	Newark City	Essex	2,750,000
South Mountain Arena	West Orange	Essex	3,000,000
Raritan Valley YMCA	East Brunswick	Middlesex	3,900,000
YMCA of Eastern Union County	Union City	Union	1,000,000
Central Jersey Regional Airport	Hillsborough	Somerset	1,000,000
Center for Hope Hospice & Palliative Care	Scotch Plains	Union	1,500,000
YWCA Central NJ Early Childhood Center	Plainfield	Union	201,837
Community Foodbank of New Jersey	Hillside	Union	125,000
Mount St. Dominic Academy Athletic Facility	Caldwell	Essex	3,000,000
Cliffisde Park/Fairview Public Works Garage Demonstration Project - Joint Public Works Garage	Cliffside Park	Union	1,000,000
Holy Name Hospital Community, Conference, and Medical Surge Capacity Center Project	Teaneck	Union	1,000,000
Caldwell College Student Housing Project	Caldwell	Union	2,000,000
Seton Hall Law School Housing Project	Newark City	Essex	1,500,000
Newark Urban Environmental and Ecological Center	Newark City	Essex	500,000
North Jersey Food Access Initiative Project	Various		5,000,000
Total - North Jersey			**$41,761,837**

STATEWIDE PROGRAMS: 2003-2009

Project Name	Municipality	County	Total Project Commitment
Summit at the Shore	Statewide		1,245,000
Jersey Shore Marketing Campaign	Statewide		500,000
Summit on the Shore, NJ Commerce Economic Growth	Statewide		200,000
Jersey Shore Grand Prix	Statewide		92,000
Downtown, It's a Shore Thing	Statewide		80,000
Artificial Reef Surfing Project	Statewide		40,000
Urban Housing Assistance Project	Statewide		4,000,000
Statewide - not included in above regional subtotals			**$6,157,000**

SOUTH JERSEY CRDA PROJECTS : 2003 - 2009

Project Name	Municipality	County	Total Project Commitment
Shepherds Farm Senior Housing	West Deptford	Gloucester	1,250,000
Lakewood Blue Claws Park & Ride	Lakewood Township	Ocean	1,330,000
Camden Aquarium Expansion	Camden City	Camden	2,500,000
Maple Shade Senior Housing	Maple Shade	Burlington	2,025,000
Woodbine Airport	Woodbine	Cape May	135,000
West Electronics Senior Residence	Burlington City	Burlington	500,000
Bellmawr Senior Housing Campus	Bellmawr	Camden	675,000
Rutgers Food Innovation Research & Extension Center	Bridgeton	Cumberland	2,000,000
Seabrook House MatriArk Family Center	Cumberland County	Cumberland	1,463,000
Egg Harbor City Capital Improvements	Egg Harbor City	Atlantic	1,950,000
Route 40 Redevelopment	Egg Harbor Township	Atlantic	3,000,000
Atlantic County 4-H	Galloway Township	Atlantic	90,000
Richland Village South Jersey Railroad	Buena Vista Township	Atlantic	500,000

Wildwood Gateway Signage	Wildwood Crest	Cape May	300,000
Cape May County Zoo Gateway	Middle Township	Cape May	1,000,000
Cape May Convention & Performing Arts Center	Cape May	Cape May	3,000,000
Camden Dreams Center for Family Services	Camden	Camden	850,000
Special Olympics Headquarters Sports & Training Facility	Lawrenceville	Mercer	1,500,000
Egg Harbor City Redevelopment Feasibility Study	Egg Harbor City	Atlantic	50,000
Cape May Stage Theater	Cape May	Cape May	100,000
Surflight Theatre	Beach Haven	Ocean	100,000
Appel Farm Arts & Music Center Grant	Elmer	Salem	100,000
World War II Coastal Artillery Lookout Tower Phase I	Lower Township	Cape May	637,500
Salem County Rail Line (SJ Rail Line)	Alloway/Pilesgrove/Mannington	Salem	1,750,000
Wildwood Crest Development Project	Wildwood Crest	Cape May	140,000
Institute for Service Excellence Project - Hamilton Mall - ACCC	Hamilton Township, Atlantic County	Atlantic	100,000
New Jersey Multi-Species Aquaculture Demonstration Facility Project	Cape May	Cape May	260,000
South Jersey Regional Fire Training Center Project	Blackwood	Camden	3,500,000
Transportation Master Plan Project	Countywide	Atlantic	2,155,000
Greater Trenton Area YMCA Project	Trenton	Mercer	5,525,000
South Jersey Housing Transportation and Green Sustainable Initiative Fund	Various		6,700,000
Atlantic City International Airport Apron Expansion Project	Egg Harbor Township / Galloway Township	Atlantic	5,200,000
South Jersey Transportation and Land Use Program (DCA)	Various		1,000,000
Aviation Research and Technology Park Project	Egg Harbor Township	Atlantic	1,695,647
South Jersey Workforce Housing Loan Fund	Various		20,000,000
South Jersey Food Access Initiative Project	Various		2,000,000
Atlantic City International Airport Federal Inspection Services Facility Project	Egg Harbor Township / Galloway Township	Atlantic	4,000,000
Total - South Jersey			**$79,081,147**

ATLANTIC CITY CRDA PROJECTS : 2003 - 2009

Project Name	Municipality	County	Total Project Commitment
Home Team Project	Atlantic City	Atlantic	41,000
North Carolina Avenue Widening	Atlantic City	Atlantic	2,604,700
St. James Neighborhood Strategy Area	Atlantic City	Atlantic	600,000
Salvation Army Child Facility	Atlantic City	Atlantic	2,500
Adventure Learning Community Center	Atlantic City	Atlantic	5,000
Dwayne Harris Memorial Ballfield	Atlantic City	Atlantic	510,000
Clean & Green	Atlantic City	Atlantic	13,000
Atlantic City's Marina District Improvements	Atlantic City	Atlantic	3,000,000
Resorts / Resorts Icon	Atlantic City	Atlantic	250,000
Washington Square	Atlantic City	Atlantic	2,798,631
Fairmount Avenue Façade	Atlantic City	Atlantic	60,000
Caesar's BoE Building Purchase	Atlantic City	Atlantic	4,000,000
Madison Landing III	Atlantic City	Atlantic	21,364
Tranquil Heaven Feasibility	Atlantic City	Atlantic	15,000
The Walk I - Sun Bank Property Purchase	Atlantic City	Atlantic	3,500,000
Northeast Inlet Redevelopment Plan	Atlantic City	Atlantic	36,100
The Cove at Gardner's Basin	Atlantic City	Atlantic	136,000
Carnegie Library/Civil Rights Garden	Atlantic City	Atlantic	550,000
Dante Hall	Atlantic City	Atlantic	100,000
Millennia Square Project	Atlantic City	Atlantic	836,870
Pennsylvania Avenue Homes	Atlantic City	Atlantic	156,000
Cityscape	Atlantic City	Atlantic	389,142
Vision 2000 Home Ownership Program	Atlantic City	Atlantic	61,300
Headstart Day Care	Atlantic City	Atlantic	13,685
North Carolina Avenue Homes	Atlantic City	Atlantic	6,757,728
Allen Community Life Center Housing	Atlantic City	Atlantic	117,525
Lighthouse District	Atlantic City	Atlantic	4,245
Boardwalk Streetscape Façade Program	Atlantic City	Atlantic	792,000

Vision 2000 Community Development Corporation	Atlantic City	Atlantic	550,000
Business Park	Atlantic City	Atlantic	37,750
Swirls Ice Cream	Atlantic City	Atlantic	18,100
Atlantic Avenue Façade Program	Atlantic City	Atlantic	289,232
Shellem Field Club	Atlantic City	Atlantic	20,500
Health Plex	Atlantic City	Atlantic	2,225,000
Atlantic City Boys & Girls Club	Atlantic City	Atlantic	21,400
Church of the Ascension Historic Restoration Feasibility	Atlantic City	Atlantic	4,954
NJDA - Sounds of Philadelphia / Tropicana	Atlantic City	Atlantic	2,400,000
Ducktown Arts & Retail	Atlantic City	Atlantic	99,000
Los Amigos Restaurant	Atlantic City	Atlantic	11,700
Corridor Retail Development	Atlantic City	Atlantic	100,000
Gardner's Basin Retail	Atlantic City	Atlantic	10,000
Venice Park Bulkhead Project	Atlantic City	Atlantic	13,940,000
Pete Pallitto Field	Atlantic City	Atlantic	405,000
Pennsylvania Avenue Firehouse Conversion	Atlantic City	Atlantic	1,010,000
Boardwalk Revitalization Project	Atlantic City	Atlantic	35,102,633
Atlantic City Day Nursery Playground & Handicap Ramp	Atlantic City	Atlantic	35,000
Maine Ave Project (Reflections)	Atlantic City	Atlantic	6,500,000
Atlantic City Bus Terminal (Cordish)	Atlantic City	Atlantic	200,000
Corridor Land Acquisition	Atlantic City	Atlantic	16,000,000
Aerial Tramway Feasibility	Atlantic City	Atlantic	47,500
Hope VI Housing	Atlantic City	Atlantic	6,846,900
Green Space Planning	Atlantic City	Atlantic	66,000
Laser Lighthouse Relocation	Atlantic City	Atlantic	1,000,000
Fannie Lou Hamer Memorial	Atlantic City	Atlantic	24,466
Atlantic City Main Street Feasibility Study	Atlantic City	Atlantic	110,000
Chesapeake Point	Atlantic City	Atlantic	344,921
Chelsea Historic District	Atlantic City	Atlantic	40,000
Stockton Campus Project	Atlantic City	Atlantic	40,000
The Walk - Phase II - Public Amenity Imp	Atlantic City	Atlantic	1,250,000
The Walk - Phase II - Green Acres	Atlantic City	Atlantic	1,681,200

NY to AC Premium Express Rail Service	Atlantic City	Atlantic	4,500,000
Smuggler's Cove	Atlantic City	Atlantic	100,000
Ocean One Pier Signage	Atlantic City	Atlantic	10,000,000
Borgata Hotel Expansion	Atlantic City	Atlantic	17,120,908
IMAX Theater	Atlantic City	Atlantic	3,771,000
Showboat House of Blues & Façade	Atlantic City	Atlantic	26,436,196
Renaissance Plaza & Supermarket	Atlantic City	Atlantic	400,000
Resorts Façade Restoration & Expansion Project	Atlantic City	Atlantic	3,398,702
Belmont Project / Tropicana	Atlantic City	Atlantic	4,000,000
Jersey Shore Grand Prix Marketing	Atlantic City	Atlantic	15,000
Atlantic City Minor League Baseball Stadium	Atlantic City	Atlantic	75,000
Dr. Martin Luther King Boulevard Widening	Atlantic City	Atlantic	10,641,734
Trump Taj Mahal Hotel - New Tower	Atlantic City	Atlantic	15,388,294
Bader Field Redevelopment	Atlantic City	Atlantic	500,000
Corridor Garage & Office Complex Project	Atlantic City	Atlantic	38,400,000
South Inlet Transportation Improvement Project	Atlantic City	Atlantic	37,000,000
Bally's Boardwalk Demolition Project	Atlantic City	Atlantic	15,680,786
Atlantic City Traffic Operations Center Project	Atlantic City	Atlantic	246,000
Law Enforcement Technology Project	Atlantic City	Atlantic	150,000
Lighthouse District Park Project	Atlantic City	Atlantic	431,000
Mississippi Avenue Widening	Atlantic City	Atlantic	5,900,000
Atlantic-Pacific Avenues One-Way Pair Project	Atlantic City	Atlantic	2,500,000
Workforce Housing Development/Investment Program	Atlantic City	Atlantic	93,600
Atlantic City National Guard Armory Project	Atlantic City	Atlantic	1,020,000
NJDA - Taste of the Shore / Harrah's	Atlantic City	Atlantic	2,326,000
Vermont Plaza	Atlantic City	Atlantic	1,800,000
The Walk - Phase III	Atlantic City	Atlantic	9,000,000
Tax Certificate Acq	Atlantic City	Atlantic	75,000
Total - Atlantic City			**$328,772,266**

APPENDIX B
INPUT-OUTPUT ANALYSIS:
TECHNICAL DESCRIPTION AND APPLICATION

This appendix discusses the history and application of input-output analysis and details the input-output model, called the R/ECON™ I-O model, developed by Rutgers University. This model offers significant advantages in detailing the total economic effects of an activity (such as historic rehabilitation and heritage tourism), including multiplier effects.

ESTIMATING MULTIPLIERS

The fundamental issue determining the size of the multiplier effect is the "openness" of regional economies. Regions that are more "open" are those that import their required inputs from other regions. Imports can be thought of as substitutes for local production. Thus, the more a region depends on imported goods and services instead of its own production, the more economic activity leaks away from the local economy. Businessmen noted this phenomenon and formed local chambers of commerce with the explicit goal of stopping such leakage by instituting a "buy local" policy among their membership. In addition, during the 1970s, as an import invasion was under way, businessmen and union leaders announced a "buy American" policy in the hope of regaining ground lost to international economic competition. Therefore, one of the main goals of regional economic multiplier research has been to discover better ways to estimate the leakage of purchases out of a region or, relatedly, to determine the region's level of self-sufficiency.

The earliest attempts to systematize the procedure for estimating multiplier effects used the economic base model, still in use in many econometric models today. This approach assumes that all economic activities in a region can be divided into two categories: "basic" activities that produce exclusively for export, and region-serving or "local" activities that produce strictly for internal regional consumption. Since this approach is simpler but similar to the approach used by regional input-output analysis, let us explain briefly how multiplier effects are estimated using the economic base approach. If we let x be export employment, l be local employment, and t be total employment, then

$$\mathbf{t} = \mathbf{x} + \mathbf{l}$$

For simplification, we create the ratio **a** as

$$\mathbf{a} = \mathbf{l}/\mathbf{t}$$

so that $\mathbf{l} = \mathbf{at}$

then substituting into the first equation, we obtain

$$\mathbf{t} = \mathbf{x} + \mathbf{at}$$

By bringing all of the terms with t to one side of the equation, we get

$$\mathbf{t} - \mathbf{at} = \mathbf{x} \text{ or } \mathbf{t}\,(1-\mathbf{a}) = \mathbf{x}$$

Solving for **t,** we get $\mathbf{t} = \mathbf{x}/(1-\mathbf{a})$

Thus, if we know the amount of export-oriented employment, **x,** and the ratio of local to total employment, **a**, we can readily calculate total employment by applying the economic base multiplier, 1/(1-**a**), which is embedded in the above formula. Thus, if 40 percent of all regional employment is used to produce exports, the regional multiplier would be 2.5. The assumption behind this multiplier is that all remaining regional employment is required to support the export employment. Thus, the 2.5 can be decomposed into two parts the direct effect of the exports, which is always 1.0, and the indirect and induced effects, which is the remainder—in this case 1.5. Hence, the multiplier can be read as telling us that for each export-oriented job another 1.5 jobs are needed to support it.

This notion of the multiplier has been extended so that **x** is understood to represent an economic change demanded by an organization or institution outside of an economy—so-called final demand. Such changes can be those effected by government, households, or even by an outside firm. Changes in the economy can therefore be calculated by a minor alteration in the multiplier formula:

$$\Delta \mathbf{t} = \Delta \mathbf{x}/(1-\mathbf{a})$$

The high level of industry aggregation and the rigidity of the economic assumptions that permit the application of the economic base multiplier have caused this approach to be subject to extensive criticism. Most of the discussion has focused on the estimation of the parameter **a**. Estimating this parameter requires that one be able to distinguish those parts of the economy that produce for local consumption from those that do not. Indeed, virtually all industries, even services, sell to customers both inside and outside the region. As a result, regional economists devised an approach by which to measure the *degree* to which each industry is involved in the nonbase activities of the region, better known as the industry's *regional purchase coefficient*. Thus, they expanded the above formulations by calculating for each ***i*** industry

$$\mathbf{l}_i = \mathbf{r}_i \mathbf{d}_i$$

and

$$\mathbf{x}_i = \mathbf{t}_i - \mathbf{r}_i \mathbf{d}_i$$

given that $\mathbf{d}_i$ is the total regional demand for industry ***i***'s product. Given the above formulae and data on regional demands by industry, one can calculate an accurate traditional aggregate economic base parameter by the following:

$$\mathbf{a} = \mathbf{l}/\mathbf{t} = \Sigma \mathbf{l}_{ii}/\Sigma \mathbf{t}_i$$

Although accurate, this approach only facilitates the calculation of an aggregate multiplier for the entire region. That is, we cannot determine from this approach what the effects are on the various sectors of an economy. This is despite the fact that one must painstakingly calculate the regional demand as well as the degree to which they each industry is involved in nonbase activity in the region. As a result, a different approach to multiplier estimation that takes advantage of the detailed demand and trade data was developed. This approach is called input-output analysis.

REGIONAL INPUT-OUTPUT ANALYSIS: A BRIEF HISTORY

The basic framework for input-output analysis originated nearly 250 years ago when François Quesenay published *Tableau Economique* in 1758. Quesenay's "tableau" graphically and numerically portrayed the relationships between sales and purchases of the various industries of an economy. More than a century later, his description was adapted by Leon Walras, who advanced input-output modeling by providing a concise theoretical formulation of an economic system (including consumer purchases and the economic representation of "technology").

It was not until the twentieth century, however, that economists advanced and tested Walras's work. Wassily Leontief greatly simplified Walras's theoretical formulation by applying the Nobel prize–winning assumptions that both technology and trading patterns were fixed over time. These two assumptions meant that the pattern of flows among industries in an area could be considered stable. These assumptions permitted Walras's formulation to use data from a single time period, which generated a great reduction in data requirements.

Although Leontief won the Nobel Prize in 1973, he first used his approach in 1936 when he developed a model of the 1919 and 1929 U.S. economies to estimate the effects of the end of World War I on national employment. Recognition of his work in terms of its wider acceptance and use meant development of a standardized procedure for compiling the requisite data (today's national economic census of industries) and enhanced capability for calculations (i.e., the computer).

The federal government immediately recognized the importance of Leontief's development and has been publishing input-output tables of the U.S. economy since 1939. The most recently published tables are those for 1987. Other nations followed suit. Indeed, the United Nations maintains a bank of tables from most member nations with a uniform accounting scheme.

Framework

Input-output modeling focuses on the interrelationships of sales and purchases among sectors of the economy. Input-output is best understood through its most basic form, the *interindustry transactions table* or matrix. In this table (see figure 1 for an example), the column industries are consuming sectors (or markets) and the row industries are producing sectors. The content of a matrix cell is the value of shipments that the row industry delivers to the column industry. Conversely, it is the value of shipments that the column industry receives from the row industry. Hence, the interindustry transactions table is a detailed accounting of the disposition of the value of shipments in an economy. Indeed, the detailed accounting of the interindustry transactions at the national level is performed not so much to facilitate calculation of national economic impacts as it is to back out an estimate of the nation's gross domestic product.

For example, in Figure B1, agriculture, as a producing industry sector, is depicted as selling $65 million of goods to manufacturing. Conversely, the table depicts that the manufacturing industry purchased $65 million of agricultural production. The sum across columns of the interindustry transaction matrix is called the *intermediate outputs vector*. The sum across rows is called the *intermediate inputs vector*.

FIGURE B1
Interindustry Transactions Matrix (Values)

	Agriculture	Manufacturing	Services	Other	Final Demand	Total Output
Agriculture	10	65	10	5	10	$100
Manufacturing	40	25	35	75	25	$200
Services	15	5	5	5	90	$120
Other	15	10	50	50	100	$225
Value Added	20	95	20	90		
Total Input	100	200	120	225		

A single *final demand* column is also included in Figure B1. Final demand, which is outside the square interindustry matrix, includes imports, exports, government purchases, changes in inventory, private investment, and sometimes household purchases.

The *value added* row, which is also outside the square interindustry matrix, includes wages and salaries, profit-type income, interest, dividends, rents, royalties, capital consumption allowances, and taxes. It is called value added because it is the difference between the total value of the industry's production and the value of the goods and nonlabor services that it requires to produce. Thus, it is the *value* that an industry *adds* to the goods and services it uses as inputs in order to produce output.

The value added row measures each industry's contribution to wealth accumulation. In a national model, therefore, its sum is better known as the gross domestic product (GDP). At the state level, this is known as the gross state product—a series produced by the U.S. Bureau of Economic Analysis and published in the Regional Economic Information System. Below the state level, it is known simply as the regional equivalent of the GDP—the gross regional product.

Input-output economic impact modelers now tend to include the household industry within the square interindustry matrix. In this case, the "consuming industry" is the household itself. Its spending is extracted from the final demand column and is appended as a separate column in the interindustry matrix. To maintain a balance, the income of households must be appended as a row. The main income of households is labor income, which is extracted from the value-added row. Modelers tend not to include other sources of household income in the household industry's row. This is not because such income is not attributed to households but rather because much of this other income derives from sources outside of the economy that is being modeled.

The next step in producing input-output multipliers is to calculate the *direct requirements matrix*, which is also called the technology matrix. The calculations are based entirely on data from Figure B1. As shown in Figure B2, the values of the cells in the direct requirements matrix are derived by dividing each cell in a column of figure 1, the interindustry transactions matrix, by its column total. For example, the cell for manufacturing's purchases from agriculture is 65/200 = .33. Each cell in a column of the direct requirements matrix shows how many cents of each producing industry's goods and/or services are required to produce one dollar of the consuming industry's production and are called *technical coefficients*. The use of the terms "technology" and "technical" derive from the fact that a column of this matrix represents a recipe for a unit of

an industry's production. It, therefore, shows the needs of each industry's production process or "technology."

FIGURE B2
Direct Requirements Matrix

	Agriculture	Manufacturing	Services	Other
Agriculture	.10	.33	.08	.02
Manufacturing	.40	.13	.29	.33
Services	.15	.03	.04	.02
Other	.15	.05	.42	.22

Next in the process of producing input-output multipliers, the *Leontief Inverse* is calculated. To explain what the Leontief Inverse is, let us temporarily turn to equations. Now, from figure 1 we know that the sum across both the rows of the square interindustry transactions matrix (**Z**) and the final demand vector (**y**) is equal to vector of production by industry (**x**). That is,

$$\mathbf{x} = \mathbf{Zi} + \mathbf{y}$$

where **i** is a summation vector of ones. Now, we calculate the direct requirements matrix (**A**) by dividing the interindustry transactions matrix by the production vector or

$$\mathbf{A} = \mathbf{Z}\mathbf{X}^{-1}$$

where $\mathbf{X}^{-1}$ is a square matrix with inverse of each element in the vector **x** on the diagonal and the rest of the elements equal to zero. Rearranging the above equation yields

$$\mathbf{Z} = \mathbf{AX}$$

where **X** is a square matrix with the elements of the vector **x** on the diagonal and zeros elsewhere. Thus,

$$\mathbf{x} = (\mathbf{AX})\mathbf{i} + \mathbf{y}$$

or, alternatively,

$$\mathbf{x} = \mathbf{Ax} + \mathbf{y}$$

solving this equation for **x** yields

x =	$(\mathbf{I}-\mathbf{A})^{-1}$		**y**
Total =	Total	*	Final
Output	Requirements		Demand

The Leontief Inverse is the matrix $(\mathbf{I}-\mathbf{A})^{-1}$. It portrays the relationships between final demand and production. This set of relationships is exactly what is needed to identify the economic impacts of an event external to an economy.

Because it does translate the direct economic effects of an event into the total economic effects on the modeled economy, the Leontief Inverse is also called the *total requirements matrix.* The total requirements matrix resulting from the direct requirements matrix in the example is shown in Figure B3.

FIGURE B3
Total Requirements Matrix

	Agriculture	Manufacturing	Services	Other
Agriculture	1.5	.6	.4	.3
Manufacturing	1.0	1.6	.9	.7
Services	.3	.1	1.2	.1
Other	.5	.3	.8	1.4
Industry Multipliers	.33	2.6	3.3	2.5

In the direct or technical requirements matrix in Figure 2, the technical coefficient for the manufacturing sector's purchase from the agricultural sector was .33, indicating the 33 cents of agricultural products must be directly purchased to produce a dollar's worth of manufacturing products. The same "cell" in Figure 3 has a value of .6. This indicates that for every dollar's worth of product that manufacturing ships out of the economy (i.e., to the government or for export), agriculture will end up increasing its production by 60 cents. The sum of each column in the total requirements matrix is the *output multiplier* for that industry.

Multipliers

A *multiplier* is defined as the system of economic transactions that follow a disturbance in an economy. Any economic disturbance affects an economy in the same way as does a drop of water in a still pond. It creates a large primary "ripple" by causing a *direct* change in the purchasing patterns of affected firms and institutions. The suppliers of the affected firms and institutions must change their purchasing patterns to meet the demands placed upon them by the firms originally affected by the economic disturbance, thereby creating a smaller secondary "ripple." In turn, those who meet the needs of the suppliers must change their purchasing patterns to meet the demands placed upon them by the suppliers of the original firms, and so on; thus, a number of subsequent "ripples" are created in the economy.

The multiplier effect has three components—direct, indirect, and induced effects. Because of the pond analogy, it is also sometimes referred to as the *ripple effect*.

- A *direct effect* (the initial drop causing the ripple effects) is the change in purchases due to a change in economic activity.
- An *indirect effect* is the change in the purchases of suppliers to those economic activities directly experiencing change.
- An *induced effect* is the change in consumer spending that is generated by changes in labor income within the region as a result of the direct and indirect effects of the economic activity. Including households as a column and row in the interindustry matrix allows this effect to be captured.

Extending the Leontief Inverse to pertain not only to relationships between *total* production and final demand of the economy but also to *change*s in each permits its multipliers to be applied to many types of economic impacts. Indeed, in impact analysis the Leontief Inverse

lends itself to the drop-in-a-pond analogy discussed earlier. This is because the Leontief Inverse multiplied by a change in final demand can be estimated by a power series. That is,

$$(\mathbf{I}-\mathbf{A})^{-1}\,\Delta\mathbf{y} = \Delta\mathbf{y} + \mathbf{A}\,\Delta\mathbf{y} + \mathbf{A}(\mathbf{A}\,\Delta\mathbf{y}) + \mathbf{A}(\mathbf{A}(\mathbf{A}\,\Delta\mathbf{y})) + \mathbf{A}(\mathbf{A}(\mathbf{A}(\mathbf{A}\,\Delta\mathbf{y}))) + \ldots$$

Assuming that $\Delta\mathbf{y}$—the change in final demand—is the "drop in the pond," then succeeding terms are the ripples. Each "ripple" term is calculated as the previous "pond disturbance" multiplied by the direct requirements matrix. Thus, since each element in the direct requirements matrix is less than one, each ripple term is smaller than its predecessor. Indeed, it has been shown that after calculating about seven of these ripple terms that the power series approximation of impacts very closely estimates those produced by the Leontief Inverse directly.

In impacts analysis practice, $\Delta\mathbf{y}$ is a single column of expenditures with the same number of elements as there are rows or columns in the direct or technical requirements matrix. This set of elements is called an *impact vector*. This term is used because it is the *vector* of numbers that is used to estimate the *economic impacts* of the investment.

There are two types of changes in investments, and consequently economic impacts, generally associated with projects—*one-time impacts* and *recurring impacts*. One-time impacts are impacts that are attributable to an expenditure that occurs once over a limited period of time. For example, the impacts resulting from the construction of a project are one-time impacts. Recurring impacts are impacts that continue permanently as a result of new or expanded ongoing expenditures. The ongoing operation of a new train station, for example, generates recurring impacts to the economy. Examples of changes in economic activity are investments in the preservation of old homes, tourist expenditures, or the expenditures required to run a historical site. Such activities are considered changes in final demand and can be either positive or negative. When the activity is not made in an industry, it is generally not well represented by the input-output model. Nonetheless, the activity can be represented by a special set of elements that are similar to a column of the transactions matrix. This set of elements is called an economic disturbance or impact vector. The latter term is used because it is the vector of numbers that is used to estimate the impacts. In this study, the impact vector is estimated by multiplying one or more economic *translators* by a dollar figure that represents an investment in one or more projects. The term translator is derived from the fact that such a vector *translates* a dollar amount of an activity into its constituent purchases by industry.

One example of an industry multiplier is shown in Figure B4. In this example, the activity is the preservation of a historic home. The *direct impact* component consists of purchases made specifically for the construction project from the producing industries. The *indirect impact* component consists of expenditures made by producing industries to support the purchases made for this project. Finally, the *induced impact* component focuses on the expenditures made by workers involved in the activity on-site and in the supplying industries.

FIGURE B4
Components of the Multiplier for the
Historic Rehabilitation of a Single-Family Residence

DIRECT IMPACT	INDIRECT IMPACT	INDUCED IMPACT
Excavation/Construction Labor Concrete Wood Bricks Equipment Finance and Insurance	Production Labor Steel Fabrication Concrete Mixing Factory and Office Expenses Equipment Components	Expenditures by wage earners on-site and in the supplying industries for food, clothing, durable goods, entertainment

REGIONAL INPUT-OUTPUT ANALYSIS

Because of data limitations, regional input-output analysis has some considerations beyond those for the nation. The main considerations concern the depiction of regional technology and the adjustment of the technology to account for interregional trade by industry.

In the regional setting, local technology matrices are not readily available. An accurate region-specific technology matrix requires a survey of a representative sample of organizations for each industry to be depicted in the model. Such surveys are extremely expensive.[1] Because of the expense, regional analysts have tended to use national technology as a surrogate for regional technology. This substitution does not affect the accuracy of the model as long as local industry technology does not vary widely from the nation's average.[2]

Even when local technology varies widely from the nation's average for one or more industries, model accuracy may not be affected much. This is because interregional trade may mitigate the error that would be induced by the technology. That is, in estimating economic impacts via a regional input-output model, national technology must be regionalized by a vector of regional purchase coefficients,[3] **r**, in the following manner:

$$(\mathbf{I}-\mathbf{rA})^{-1}\,\mathbf{r}\cdot\Delta\mathbf{y}$$

or

[1]The most recent statewide survey-based model was developed for the State of Kansas in 1986 and cost on the order of $60,000 (in 1990 dollars). The development of this model, however, leaned heavily on work done in 1965 for the same state. In addition the model was aggregated to the 35-sector level, making it inappropriate for many possible applications since the industries in the model do not represent the very detailed sectors that are generally analyzed.

[2]Only recently have researchers studied the validity of this assumption. They have found that large urban areas may have technology in some manufacturing industries that differs in a statistically significant way from the national average. As will be discussed in a subsequent paragraph, such differences may be unimportant after accounting for trade patterns.

[3]A regional purchase coefficient (RPC) for an industry is the proportion of the region's demand for a good or service that is fulfilled by local production. Thus, each industry's RPC varies between zero (0) and one (1), with one implying that all local demand is fulfilled by local suppliers. As a general rule, agriculture, mining, and manufacturing industries tend to have low RPCs, and both service and construction industries tend to have high RPCs.

$$\mathbf{r}\cdot\Delta\mathbf{y} + \mathbf{rA}\,(\mathbf{r}\cdot\Delta\mathbf{y}) + \mathbf{rA}(\mathbf{rA}\,(\mathbf{r}\cdot\Delta\mathbf{y})) + \mathbf{rA}(\mathbf{rA}(\mathbf{rA}\,(\mathbf{r}\cdot\Delta\mathbf{y}))) + \ldots$$

where the vector-matrix product **rA** is an estimate of the region's direct requirements matrix. Thus, if national technology coefficients—which vary widely from their local equivalents—are multiplied by small RPCs, the error transferred to the direct requirements matrices will be relatively small. Indeed, since most manufacturing industries have small RPCs and since technology differences tend to arise due to substitution in the use of manufactured goods, technology differences have generally been found to be minor source error in economic impact measurement. Instead, RPCs and their measurement error due to industry aggregation have been the focus of research on regional input-output model accuracy.

A COMPARISON OF THREE MAJOR REGIONAL ECONOMIC IMPACT MODELS

In the United States there are three major vendors of regional input-output models. They are U.S. Bureau of Economic Analysis's (BEA) RIMS II multipliers, Minnesota IMPLAN Group Inc.'s (MIG) IMPLAN Pro model, and CUPR's own R/ECON™ I–O model. CUPR has had the privilege of using them all. (R/Econ™ I–O builds from the PC I–O model produced by the Regional Science Research Corporation's (RSRC).)

Although the three systems have important similarities, there are also significant differences that should be considered before deciding which system to use in a particular study. This document compares the features of the three systems. Further discussion can be found in Brucker, Hastings, and Latham's article in the Summer 1987 issue of *The Review of Regional Studies* entitled "Regional Input-Output Analysis: A Comparison of Five Ready-Made Model Systems." Since that date, CUPR and MIG have added a significant number of new features to PC I–O (now, R/ECON™ I–O) and IMPLAN, respectively.

Model Accuracy

RIMS II, IMPLAN, and R/ECON™ I–O all employ input-output (I–O) models for estimating impacts. All three regionalized the U.S. national I–O technology coefficients table at the highest levels of disaggregation (more than 500 industries). Since aggregation of sectors has been shown to be an important source of error in the calculation of impact multipliers, the retention of maximum industrial detail in these regional systems is a positive feature that they share. The systems diverge in their regionalization approaches, however. The difference is in the manner that they estimate regional purchase coefficients (RPCs), which are used to regionalize the technology matrix. An RPC is the proportion of the region's demand for a good or service that is fulfilled by the region's own producers rather than by imports from producers in other areas. Thus, it expresses the proportion of the purchases of the good or service that do not leak out of the region, but rather feed back to its economy, with corresponding multiplier effects. Thus, the accuracy of the RPC is crucial to the accuracy of a regional I–O model, since the regional multiplier effects of a sector vary directly with its RPC.

The techniques for estimating the RPCs used by CUPR and MIG in their models are theoretically more appealing than the location quotient (LQ) approach used in RIMS II. This is because the former two allow for crosshauling of a good or service among regions and the latter does not. Since crosshauling of the same general class of goods or services among regions is quite common, the CUPR-MIG approach should provide better estimates of regional imports and

exports. Statistical results reported in Stevens, Treyz, and Lahr (1989) confirm that LQ methods tend to overestimate RPCs. By extension, inaccurate RPCs may lead to inaccurately estimated impact estimates.

Further, the estimating equation used by CUPR to produce RPCs should be more accurate than that used by MIG. The difference between the two approaches is that MIG estimates RPCs at a more aggregated level (two-digit SICs, or about 86 industries) and applies them at a desegregate level (over 500 industries). CUPR both estimates and applies the RPCs at the most detailed industry level. The application of aggregate RPCs can induce as much as 50 percent error in impact estimates (Lahr and Stevens, 2002).

Although both R/ECON™ I–O and IMPLAN use an RPC-estimating technique that is theoretically sound and update it using the most recent economic data, some practitioners question their accuracy. The reasons for doing so are three-fold. First, the observations currently used to estimate their implemented RPCs are based on 30-year old trade relationships—the Commodity Transportation Survey (CTS) from the 1977 Census of Transportation. Second, the CTS observations are at the state level. Therefore, RPC's estimated for substate areas are extrapolated. Hence, there is the potential that RPCs for counties and metropolitan areas are not as accurate as might be expected. Third, the observed CTS RPCs are only for shipments of goods. The interstate provision of services is unmeasured by the CTS. IMPLAN replies on relationships from the 1977 U.S. Multiregional Input-Output Model that are not clearly documented. R/ECON™ I–O relies on the same econometric relationships that it does for manufacturing industries but employs expert judgment to construct weight/value ratios (a critical variable in the RPC-estimating equation) for the nonmanufacturing industries.

The fact that BEA creates the RIMS II multipliers gives it the advantage of being constructed from the full set of the most recent regional earnings data available. BEA is the main federal government purveyor of employment and earnings data by detailed industry. It therefore has access to the fully disclosed and disaggregated versions of these data. The other two model systems rely on older data from *County Business Patterns* and Bureau of Labor Statistic's Quarterly Covered Employment and Wage data, which have been "improved" by filling-in for any industries that have disclosure problems (this occurs when three or fewer firms exist in an industry or a region).

Model Flexibility

For the typical user, the most apparent differences among the three modeling systems are the level of flexibility they enable and the type of results that they yield. R/Econ™ I–O allows the user to make changes in individual cells of the 515-by-515 technology matrix as well as in the 11 515-sector vectors of region-specific data that are used to produce the regionalized model. The 11 sectors are: output, demand, employment per unit output, labor income per unit output, total value added per unit of output, taxes per unit of output (state and local), nontax value added per unit output, administrative and auxiliary output per unit output, household consumption per unit of labor income, and the RPCs. Te PC I–O model tends to be simple to use. Its User's Guide is straightforward and concise, providing instruction about the proper implementation of the model as well as the interpretation of the model's results.

The software for IMPLAN Pro is Windows-based, and its User's Guide is more formalized. Of the three modeling systems, it is the most user-friendly. The Windows

orientation has enabled MIG to provide many more options in IMPLAN without increasing the complexity of use. Like R/ ECON ™ I–O, IMPLAN's regional data on RPCs, output, labor compensation, industry average margins, and employment can be revised. It does not have complete information on tax revenues other than those from indirect business taxes (excise and sales taxes), and those cannot be altered. Also like R/ECON™, IMPLAN allows users to modify the cells of the 538-by-538 technology matrix. It also permits the user to change and apply price deflators so that dollar figures can be updated from the default year, which may be as many as four years prior to the current year. The plethora of options, which are advantageous to the advanced user, can be extremely confusing to the novice. Although default values are provided for most of the options, the accompanying documentation does not clearly point out which items should get the most attention. Further, the calculations needed to make any requisite changes can be more complex than those needed for the R/ ECON ™ I–O model. Much of the documentation for the model dwells on technical issues regarding the guts of the model. For example, while one can aggregate the 538-sector impacts to the one- and two-digit SIC level, the current documentation does not discuss that possibility. Instead, the user is advised by the Users Guide to produce an aggregate model to achieve this end. Such a model, as was discussed earlier, is likely to be error ridden.

For a region, RIMS II typically delivers a set of 38-by-471 tables of multipliers for output, earnings, and employment; supplementary multipliers for taxes are available at additional cost. Although the model's documentation is generally excellent, use of RIMS II alone will not provide proper estimates of a region's economic impacts from a change in regional demand. This is because no RPC estimates are supplied with the model. For example, in order to estimate the impacts of rehabilitation, one not only needs to be able to convert the engineering cost estimates into demands for labor as well as for materials and services by industry, but must also be able to estimate the percentage of the labor income, materials, and services which will be provided by the region's households and industries (the RPCs for the demanded goods and services). In most cases, such percentages are difficult to ascertain; however, they are provided in the R/Econ™ I–O and IMPLAN models with simple triggering of an option. Further, it is impossible to change any of the model's parameters if superior data are known. This model ought not to be used for evaluating any project or event where superior data are available or where the evaluation is for a change in regional demand (a construction project or an event) as opposed to a change in regional supply (the operation of a new establishment).

Model Results

Detailed total economic impacts for about 500 industries can be calculated for jobs, labor income, and output from R/ECON™ I–O and IMPLAN only. These two modeling systems can also provide total impacts as well as impacts at the one- and two-digit industry levels. RIMS II provides total impacts and impacts on only 38 industries for these same three measures. Only the manual for R/Econ™ I–O warns about the problems of interpreting and comparing multipliers and any measures of output, also known as the value of shipments.

As an alternative to the conventional measures and their multipliers, R/ECON™ I–O and IMPLAN provide results on a measure known as "value added." It is the region's contribution to the nation's gross domestic product (GDP) and consists of labor income, nonmonetary labor compensation, proprietors' income, profit-type income, dividends, interest, rents, capital consumption allowances, and taxes paid. It is, thus, the region's production of wealth and is the single best economic measure of the total economic impacts of an economic disturbance.

In addition to impacts in terms of jobs, employee compensation, output, and value added, IMPLAN provides information on impacts in terms of personal income, proprietor income, other property-type income, and indirect business taxes. R/ECON™ I–O breaks out impacts into taxes collected by the local, state, and federal governments. It also provides the jobs impacts in terms of either about 90 or 400 occupations at the users request. It goes a step further by also providing a return-on-investment-type multiplier measure, which compares the total impacts on all of the main measures to the total original expenditure that caused the impacts. Although these latter can be readily calculated by the user using results of the other two modeling systems, they are rarely used in impact analysis despite their obvious value.

In terms of the format of the results, both R/ECON™ I–O and IMPLAN are flexible. On request, they print the results directly or into a file (Excel®, Lotus®, MS Word®, tab delimited, or ASCII text). It can also permit previewing of the results on the computer's monitor. Both now offer the option of printing out the job impacts in either or both levels of occupational detail.

RSRC Equation

The equation currently used in the R/ECON™ I–O model for estimating RPCs is reported in Treyz and Stevens (1985). In this paper, the authors show that they estimated the RPC from the 1977 CTS data by estimating the demands for an industry's production of goods or services that are fulfilled by local suppliers (*LS*) as

$$\boldsymbol{LS = D^{e(-1/x)}}$$

and where, for a given industry, $\boldsymbol{x = k\, Z_1^{a_1} Z_2^{a_2}\, P_j\, Z_j^{a_j}}$ and $\boldsymbol{D}$ is its total local demand. Since for a given industry RPC = *LS*/*D* then

$$\ln\{-1/[\ln(\ln \boldsymbol{LS}/\ln \boldsymbol{D})]\} = \ln \mathbf{k} + \mathbf{a}_1 \ln \boldsymbol{Z}_1 + \mathbf{a}_2 \ln \boldsymbol{Z}_2 + \mathbf{S}_j\, \mathbf{a}_j \ln \boldsymbol{Z}_j$$

which was the equation that was estimated for each industry.

This odd nonlinear form not only yielded high correlations between the estimated and actual values of the RPCs, it also assured that the RPC value ranges strictly between 0 and 1. The results of the empirical implementation of this equation are shown in Treyz and Stevens (1985, table 1). The table shows that total local industry demand (Z_1), the supply/demand ratio (Z_2), the weight/value ratio of the good (Z_3), the region's size in square miles (Z_4), and the region's average establishment size in terms of employees for the industry compared to the nation's (Z_5) are the variables that influence the value of the RPC across all regions and industries. The latter of these maintain the least leverage on RPC values.

Because the CTS data are at the state level only, it is important for the purposes of this study that the local industry demand, the supply/demand ratio, and the region's size in square miles are included in the equation. They allow the equation to extrapolate the estimation of RPCs for areas smaller than states. It should also be noted here that the CTS data only cover manufactured goods. Thus, although calculated effectively making them equal to unity via the above equation, RPC estimates for services drop on the weight/value ratios. A very high weight/value ratio like this forces the industry to meet this demand through local production.

Hence, it is no surprise that a region's RPC for this sector is often very high (0.89). Similarly, hotels and motels tend to be used by visitors from outside the area. Thus, a weight/value ratio on the order of that for industry production would be expected. Hence, an RPC for this sector is often about 0.25.

The accuracy of CUPR's estimating approach is exemplified best by this last example. Ordinary location quotient approaches would show hotel and motel services serving local residents. Similarly, IMPLAN RPCs are built from data that combine this industry with eating and drinking establishments (among others). The result of such aggregation process is an RPC that represents neither industry (a value of about 0.50) but which is applied to both. In the end, not only is the CUPR's RPC-estimating approach the most sound, but it is also widely acknowledged by researchers in the field as being state of the art.

Advantages and Limitations of Input-Output Analysis

Input-output modeling is one of the most accepted means for estimating economic impacts. This is because it provides a concise and accurate means for articulating the interrelationships among industries. The models can be quite detailed. For example, the current U.S. model currently has about 500 industries representing many six-digit North American Industrial Classification System (NAICS) codes. CUPR's model used in this study has the same number. Further, the industry detail of input-output models provides not only a consistent and systematic approach but also more accurately assesses multiplier effects of changes in economic activity. Research has shown that results from more aggregated economic models can have as much as 50 percent error inherent in them. Such large errors are generally attributed to poor estimation of regional trade flows resulting from the aggregation process.

Input-output models also can be set up to capture the flows among economic regions. For example, the model used in this study could have estimated impacts for each major island as well as the total territory economy, if the data on employment and imports had been made available.

The limitations of input-output modeling should also be recognized. The approach makes several key assumptions. First, the input-output model approach assumes that there are no economies of scale to production in an industry; that is, the proportion of inputs used in an industry's production process does not change regardless of the level of production. This assumption will not work if the technology matrix depicts an economy of a recessional economy (e.g., 1982) and the analyst is attempting to model activity in a peak economic year (e.g., 1989). In a recession year, the labor-to-output ratio tends to be excessive because firms are generally reluctant to lay off workers when they believe an economic turnaround is about to occur.

A less-restrictive assumption of the input-output approach is that technology is not permitted to change over time. It is less restrictive because the technology matrix in the United States is updated frequently and, in general, production technology does not radically change over short periods.

Finally, the technical coefficients used in most regional models are based on the assumption that production processes are spatially invariant and are well represented by the nation's average technology.

APPENDIX C
BASIC TABLES OF RESULTS FOR THE NEW JERSEY CASINO RESORT HOTEL INDUSTRY FROM THE R/ECON I-O MODEL

Exhibit C1
Economic and Tax Impacts on New Jersey of Casino Hotels

	Economic Component			
	Output ($000 $)	**Employment (jobs)**	**Income (000)**	**Gross Domestic Product (000)**
I. TOTAL EFFECTS (Direct and Indirect/Induced)*				
1. Agriculture	4,724.2	22	611.3	1,234.4
2. Agri. Serv., Forestry, & Fish	8,460.7	146	4,414.5	7,097.4
3. Mining	6,084.3	11	1,026.2	3,363.5
4. Construction	506,612.4	4,788	292,099.6	389,494.6
5. Manufacturing	250,665.6	1,077	58,029.0	74,392.3
6. Transport. & Public Utilities	353,405.0	2,325	113,914.2	162,592.7
7. Wholesale	230,870.5	1,276	93,884.0	99,160.1
8. Retail Trade	502,845.5	7,932	187,029.0	292,987.4
9. Finance, Ins., & Real Estate	665,997.5	2,735	242,919.2	456,217.6
10. Services	5,756,914.0	45,297	2,020,444.8	3,194,728.6
Private Subtotal	8,286,579.7	65,609	3,014,371.9	4,681,268.7
11. Government	27,587.8	274	17,359.4	18,347.3
Total Effects (Private and Public)	8,314,167.4	65,883	3,031,731.3	4,699,616.0
II. DISTRIBUTION OF EFFECTS/MULTIPLIER				
1. Direct Effects	5,194,418.1	39,779	1,777,153.6	2,908,874.1
2. Indirect and Induced Effects	3,119,749.3	26,104	1,254,577.7	1,790,741.8
3. Total Effects	8,314,167.4	65,883	3,031,731.3	4,699,616.0
4. Multipliers (3/1)	1.601	1.656	1.706	1.616
III. COMPOSITION OF GROSS STATE PRODUCT				
1. Wages--Net of Taxes				1,607,703.6
2. Taxes				1,746,655.8
a. Local				294,531.4
b. State				963,074.9
c. Federal				489,049.5
General				322,628.0
Social Security				166,421.5
3. Profits, dividends, rents, and other				1,345,256.7
4. Total Gross State Product (1+2+3)				4,699,616.0
IV. TAX ACCOUNTS		**Business**	**Household**	**Total**
1. Income --Net of Taxes		1,607,703.6	3,009,149.9	--
2. Taxes		1,746,655.8	610,554.9	2,357,210.6
a. Local		294,531.4	78,237.9	372,769.3
b. State		963,074.9	68,519.4	1,031,594.3
c. Federal		489,049.5	463,797.6	952,847.1
General		166,421.5	463,797.6	630,219.0
Social Security		322,628.0	0.0	322,628.0
V. EFFECTS PER MILLION DOLLARS OF INITIAL EXPENDITURE				
Employment (Jobs)				12.7
Income				583,651.8
State Taxes				198,596.7
Local Taxes				71,763.4
Gross State Product				904,743.5
INITIAL EXPENDITURE IN DOLLARS				5,194,418,124.0

Note: Detail may not sum to totals due to rounding.

Exhibit C2
Economic and Tax Impacts on New Jersey of Atlantic City Tourism Net of Gaming

	Economic Component			
	Output ($000 $)	**Employment (jobs)**	**Income (000)**	**Gross Domestic Product (000)**
I. TOTAL EFFECTS (Direct and Indirect/Induced)*				
1. Agriculture	3,558.4	16	426.7	891.1
2. Agri. Serv., Forestry, & Fish	2,388.7	39	1,156.8	1,973.6
3. Mining	5,021.5	6	711.3	2,696.4
4. Construction	71,350.3	533	32,441.8	46,304.3
5. Manufacturing	108,006.1	331	18,904.3	23,568.5
6. Transport. & Public Utilities	140,686.9	784	43,221.0	62,503.5
7. Wholesale	130,741.7	723	53,166.4	56,154.3
8. Retail Trade	781,855.1	14,568	278,447.8	398,328.9
9. Finance, Ins., & Real Estate	212,594.8	807	72,544.7	156,638.8
10. Services	1,342,246.3	12,113	465,194.8	829,424.0
Private Subtotal	2,798,449.6	29,920	966,215.7	1,578,483.3
11. Government	11,884.4	118	7,462.1	7,905.0
Total Effects (Private and Public)	2,810,334.0	30,037	973,677.9	1,586,388.4
II. DISTRIBUTION OF EFFECTS/MULTIPLIER				
1. Direct Effects	1,911,156.3	23,160	650,640.9	1,096,359.6
2. Indirect and Induced Effects	899,177.7	6,878	323,037.0	490,028.8
3. Total Effects	2,810,334.0	30,037	973,677.9	1,586,388.4
4. Multipliers (3/1)	1.470	1.297	1.496	1.447
III. COMPOSITION OF GROSS STATE PRODUCT				
1. Wages--Net of Taxes				665,664.1
2. Taxes				411,495.9
a. Local				94,231.1
b. State				168,065.2
c. Federal				149,199.5
General				103,482.1
Social Security				45,717.4
3. Profits, dividends, rents, and other				509,228.5
4. Total Gross State Product (1+2+3)				1,586,388.4
IV. TAX ACCOUNTS		**Business**	**Household**	**Total**
1. Income --Net of Taxes		665,664.1	916,917.8	--
2. Taxes		411,495.9	195,833.8	607,329.7
a. Local		94,231.1	25,094.6	119,325.7
b. State		168,065.2	21,977.4	190,042.6
c. Federal		149,199.5	148,761.8	297,961.3
General		45,717.4	148,761.8	194,479.2
Social Security		103,482.1	0.0	103,482.1
V. EFFECTS PER MILLION DOLLARS OF INITIAL EXPENDITURE				
Employment (Jobs)				15.5
Income				502,976.7
State Taxes				98,171.1
Local Taxes				61,640.6
Gross State Product				819,487.1
INITIAL EXPENDITURE IN DOLLARS				1,935,830,873.2

Note: Detail may not sum to totals due to rounding.

Exhibit C3
Annual Economic and Tax Impacts on New Jersey of CRDA Investments

	Economic Component			
	Output (000 $)	**Employment (jobs)**	**Income (000$)**	**Gross Domestic Product (000$)**
I. TOTAL EFFECTS (Direct and Indirect/Induced)*				
1. Agriculture	62.8	0	8.1	16.6
2. Agri. Serv., Forestry, & Fish	160.2	3	80.1	133.4
3. Mining	559.5	3	167.1	352.1
4. Construction	28,672.8	313	18,450.5	23,903.9
5. Manufacturing	17,786.8	87	4,850.2	5,789.3
6. Transport. & Public Utilities	4,049.8	21	1,135.4	1,681.4
7. Wholesale	5,586.5	31	2,271.8	2,399.4
8. Retail Trade	5,645.5	90	2,120.3	3,250.0
9. Finance, Ins., & Real Estate	6,763.1	27	2,542.1	4,923.3
10. Services	13,122.7	98	6,100.5	6,526.8
Private Subtotal	82,409.8	672	37,726.0	48,976.1
11. Government	411.5	4	261.5	273.4
Total Effects (Private and Public)	82,821.3	676	37,987.5	49,249.5
II. DISTRIBUTION OF EFFECTS/MULTIPLIER				
1. Direct Effects	53,213.5	451	27,568.4	33,791.1
2. Indirect and Induced Effects	29,607.7	224	10,419.1	15,458.4
3. Total Effects	82,821.3	676	37,987.5	49,249.5
4. Multipliers (3/1)	1.556	1.497	1.378	1.457
III. COMPOSITION OF GROSS STATE PRODUCT				
1. Wages--Net of Taxes				34,845.8
2. Taxes				7,185.8
a. Local				1,054.8
b. State				956.8
c. Federal				5,174.1
General				4,044.0
Social Security				1,130.1
3. Profits, dividends, rents, and other				7,218.0
4. Total Gross State Product (1+2+3)				49,249.5
IV. TAX ACCOUNTS		**Business**	**Household**	**Total**
1. Income --Net of Taxes		34,845.8	33,946.8	--
2. Taxes		7,185.8	7,653.1	14,838.8
a. Local		1,054.8	980.7	2,035.5
b. State		956.8	858.9	1,815.7
c. Federal		5,174.1	5,813.5	10,987.7
General		1,130.1	5,813.5	6,943.7
Social Security		4,044.0	0.0	4,044.0
V. EFFECTS PER MILLION DOLLARS OF INITIAL EXPENDITURE				
Employment (Jobs)				10.4
Income				582,630.2
State Taxes				27,848.1
Local Taxes				31,218.7
Gross State Product				755,361.1
INITIAL EXPENDITURE IN DOLLARS				65,200,000.0

Note: Detail may not sum to totals due to rounding.

Exhibit C4
Economic and Tax Impacts on New Jersey of the NJ CCC and NJ DGE

	Economic Component			
	Output ($000 $)	**Employment (jobs)**	**Income (000)**	**Gross Domestic Product (000)**
I. TOTAL EFFECTS (Direct and Indirect/Induced)*				
1. Agriculture	11.8	0	1.4	3.2
2. Agri. Serv., Forestry, & Fish	79.1	1	41.8	67.2
3. Mining	131.8	0	21.0	72.2
4. Construction	5,538.5	13	762.9	1,847.0
5. Manufacturing	1,581.5	6	341.7	402.0
6. Transport. & Public Utilities	1,552.7	7	445.5	657.2
7. Wholesale	533.1	3	216.8	229.0
8. Retail Trade	730.0	12	269.5	413.5
9. Finance, Ins., & Real Estate	2,007.2	7	525.8	1,544.7
10. Services	45,863.2	471	29,666.9	29,838.1
Private Subtotal	58,028.8	519	32,293.4	35,074.0
11. Government	28,827.2	301	19,081.2	19,093.6
Total Effects (Private and Public)	86,856.1	820	51,374.5	54,167.6
II. DISTRIBUTION OF EFFECTS/MULTIPLIER				
1. Direct Effects	71,104.8	742	46,990.3	46,990.3
2. Indirect and Induced Effects	15,751.3	78	4,384.2	7,177.3
3. Total Effects	86,856.1	820	51,374.5	54,167.6
4. Multipliers (3/1)	1.222	1.105	1.093	1.153
III. COMPOSITION OF GROSS STATE PRODUCT				
1. Wages--Net of Taxes				50,755.3
2. Taxes				1,026.1
a. Local				265.1
b. State				209.5
c. Federal				551.5
General				406.8
Social Security				144.7
3. Profits, dividends, rents, and other				2,386.3
4. Total Gross State Product (1+2+3)				54,167.6
IV. TAX ACCOUNTS		**Business**	**Household**	**Total**
1. Income --Net of Taxes		50,755.3	3,415.0	--
2. Taxes		1,026.1	769.9	1,796.0
a. Local		265.1	98.7	363.7
b. State		209.5	86.4	295.9
c. Federal		551.5	584.8	1,136.3
General		144.7	584.8	729.5
Social Security		406.8	0.0	406.8
V. EFFECTS PER MILLION DOLLARS OF INITIAL EXPENDITURE				
Employment (Jobs)				11.5
Income				722,519.0
State Taxes				4,161.3
Local Taxes				5,115.6
Gross State Product				761,800.5
INITIAL EXPENDITURE IN DOLLARS				71,104,751.0

Note: Detail may not sum to totals due to rounding.

Exhibit C5
Economic and Tax Impacts of CRF-Funded Social Programs on New Jersey's Economy

	Economic Component			
	Output (000 $)	**Employment (jobs)**	**Income (000$)**	**Gross Domestic Product (000$)**
I. TOTAL EFFECTS (Direct and Indirect/Induced)*				
1. Agriculture	379.7	2	43.6	91.7
2. Agri. Serv., Forestry, & Fish	239.7	4	121.6	197.0
3. Mining	390.6	0	55.5	209.9
4. Construction	3,967.4	9	548.9	1,342.8
5. Manufacturing	10,693.4	35	2,048.6	2,337.0
6. Transport. & Public Utilities	51,413.7	713	20,560.8	26,286.4
7. Wholesale	6,885.5	38	2,800.0	2,957.4
8. Retail Trade	21,897.4	359	8,121.3	12,272.3
9. Finance, Ins., & Real Estate	31,686.7	111	9,980.7	24,633.5
10. Services	400,128.7	2,790	90,769.6	85,818.1
Private Subtotal	527,682.7	4,061	135,050.7	156,146.1
11. Government	1,798.0	10	542.6	840.8
Total Effects (Private and Public)	529,480.7	4,071	135,593.3	156,986.8
II. DISTRIBUTION OF EFFECTS/MULTIPLIER				
1. Direct Effects	416,200.0	3,219	97,909.7	95,214.2
2. Indirect and Induced Effects	113,280.7	852	37,683.6	61,772.7
3. Total Effects	529,480.7	4,071	135,593.3	156,986.8
4. Multipliers (3/1)	1.272	1.265	1.385	1.649
III. COMPOSITION OF GROSS STATE PRODUCT				
1. Wages--Net of Taxes				125,793.2
2. Taxes				24,337.9
a. Local				3,923.0
b. State				3,550.1
c. Federal				16,864.8
General				14,537.7
Social Security				2,327.1
3. Profits, dividends, rents, and other				6,855.8
4. Total Gross State Product (1+2+3)				156,986.8
IV. TAX ACCOUNTS		**Business**	**Household**	**Total**
1. Income --Net of Taxes		125,793.2	122,034.0	--
2. Taxes		24,337.9	27,511.8	51,849.7
a. Local		3,923.0	3,525.4	7,448.4
b. State		3,550.1	3,087.5	6,637.6
c. Federal		16,864.8	20,898.9	37,763.7
General		2,327.1	20,898.9	23,226.0
Social Security		14,537.7	0.0	14,537.7
V. EFFECTS PER MILLION DOLLARS OF INITIAL EXPENDITURE				
Employment (Jobs)				9.8
Income				325,788.9
State Taxes				15,948.0
Local Taxes				17,896.2
Gross State Product				377,190.9
INITIAL EXPENDITURE IN DOLLARS				416,200,000.0

Note: Detail may not sum to totals due to rounding.

Exhibit C6
Total Economic and Tax Impacts on New Jersey's Economy, 2008

	Economic Component			
	Output ($000 $)	**Employment (jobs)**	**Income (000)**	**Gross Domestic Product (000)**
I. TOTAL EFFECTS (Direct and Indirect/Induced)*				
1. Agriculture	8,736.9	39.7	1,091.2	2,236.9
2. Agri. Serv., Forestry, & Fish	11,328.3	193.3	5,814.9	9,468.7
3. Mining	12,187.8	20.4	1,981.1	6,694.1
4. Construction	616,141.3	5,655.3	344,303.6	462,892.7
5. Manufacturing	388,733.4	1,536.4	84,173.8	106,489.0
6. Transport. & Public Utilities	551,108.2	3,849.2	179,276.9	253,721.3
7. Wholesale	374,617.3	2,070.5	152,339.0	160,900.2
8. Retail Trade	1,312,973.4	22,960.5	475,988.0	707,252.0
9. Finance, Ins., & Real Estate	919,049.2	3,686.2	328,512.6	643,957.9
10. Services	7,558,274.8	60,768.8	2,612,176.6	4,146,335.6
Private Subtotal	11,753,150.6	100,780.3	4,185,657.7	6,499,948.3
11. Government	70,508.9	706.9	44,706.8	46,460.1
Total Effects (Private and Public)	11,823,659.5	101,487.1	4,230,364.5	6,546,408.4
II. DISTRIBUTION OF EFFECTS/MULTIPLIER				
1. Direct Effects	7,646,092.7	67,350.9	2,600,262.9	4,181,229.3
2. Indirect and Induced Effects	4,177,566.8	34,136.3	1,630,101.6	2,365,179.1
3. Total Effects	11,823,659.5	101,487.1	4,230,364.5	6,546,408.4
4. Multipliers (3/1)	1.546	1.507	1.627	1.566
III. COMPOSITION OF GROSS STATE PRODUCT				
1. Wages--Net of Taxes				2,484,761.9
2. Taxes				2,190,701.3
a. Local				394,005.4
b. State				1,135,856.5
c. Federal				660,839.5
General				445,098.7
Social Security				215,740.8
3. Profits, dividends, rents, and other				1,870,945.2
4. Total Gross State Product (1+2+3)				6,546,408.4
IV. TAX ACCOUNTS		**Business**	**Household**	**Total**
1. Income --Net of Taxes		2,484,761.9	4,085,463.5	--
2. Taxes		2,190,701.3	842,323.5	3,033,024.8
a. Local		394,005.4	107,937.3	501,942.6
b. State		1,135,856.5	94,529.6	1,230,386.1
c. Federal		660,839.5	639,856.6	1,300,696.1
General		215,740.8	639,856.6	855,597.4
Social Security		445,098.7	0.0	445,098.7
EFFECTS PER MILLION DOLLARS OF INITIAL EXPENDITURE				
Employment (Jobs)				13.2
Income				550,631.3
State Taxes				147,845.0
Local Taxes				51,284.4
Gross State Product				852,091.4
INITIAL EXPENDITURE IN DOLLARS				7,682,753,748.2

Note: Detail may not sum to totals due to rounding.