2006 VIRGINIA BEACH TOURISM ECONOMIC IMPACT STUDY

by

Gilbert R. Yochum, Ph.D.
gyochum@odu.edu

Vinod B. Agarwal, Ph.D.
vagarwal@odu.edu

Bureau of Research
College of Business and Public Administration
Old Dominion University
Norfolk, Virginia 23529
(757) 683-3567

MAY 2007

1

TABLE OF CONTENTS

Introduction

Study Objectives

The purpose of this study is to estimate the *total* economic impact and the *direct* taxes and fees generated by the 2006 in-flow of visitors to the City of Virginia Beach's tourist industry. Total tourism economic impact is defined as the sum of direct, indirect and induced output, employment and earnings that result from visitor spending in Virginia Beach.

Direct taxes and fees are the total payments to the City whose ultimate source are *businesses that have direct contact with visitors*. The estimation of 2006 visitor generated direct taxes and fees allows for their comparison with city tourist related expenditures in 2006. This comparison permits an examination of the net inflow/outflow of revenue to the City that results from businesses that have direct contact with visitors and from City spending to attract those visitors.

The Tourist Industry

What is the tourist industry? For that matter, what is tourism? As with industries such as those that create automobiles, steel, chemicals and the myriad of products produced in the U.S., the U.S. Government has set the standards for defining and measuring the tourist industry. The series of definitions central to defining the tourist industry that immediately follow are those of the U.S. Department of Commerce (for citations and further details see Appendix I). They are arranged in sequence in order to give the reader a solid basis from which to understand and evaluate the industry, its quantitative measurement and its subsequent economic impact on Virginia Beach. These definitions form the basic building blocks of this study.

Visitor: "A visitor is a person who either travels outside of his or her "usual environment" for a period of less than a year *or* who stays overnight in a hotel or motel. The person may travel for personal pleasure or on industry or government business." (Italics added)

Usual Environment: "The usual environment is defined as the area within 50-100 miles of home, depending on available data sources."

Tourism: "The activities of visitors while traveling."

Tourism Commodities: "Tourism commodities are the commodities typically purchased by visitors directly from producers."

Tourism Employment: "All jobs that involve the production of tourism output."

Tourism Industries: "Industries that include tourism commodities as a primary product are classified as tourism industries."

Tourism Industry Total Output: "a measure of the value of domestically produced goods and services for tourists and all supporting production."

New for 2006

As with all like economic estimates, data availability is critical to best estimates of economic impacts. Each year's edition of the Virginia Beach Tourism Impact Study is based upon the best information available at the time. This year's study incorporates an updated and revised algorithm for estimating personal property taxes paid by the tourism industry which was estimated from previously unavailable data.

Study Presentation

The study is organized with the summary of results presented first and details of the method and additional information as follows:

Appendix I: Definitions and General Methodology

Appendix II: Detailed Methodology: Direct Impact

Appendix III: Detailed Methodology: Indirect and Induced Impact

Appendix IV: Time Series Data

Appendix V: Other Studies

Appendix VI: Data Sources

Appendix VII: City Operating and Capital Expenditures.

Appendix VIII: Indirect, Induced and Total Effects of Visitors Spending .

2006 Virginia Beach Visitor Annual Summary

This study is designed to estimate the direct impact of visitors' spending in 2006 and the subsequent total economic impact that visitor spending creates in the City of Virginia Beach. The first step in this process is to estimate visitor spending from primary data sources that include a series of visitor surveys and government tax and demographic data. From the visitor spending estimates, the total economic impact is simulated within an economic model of Virginia Beach.
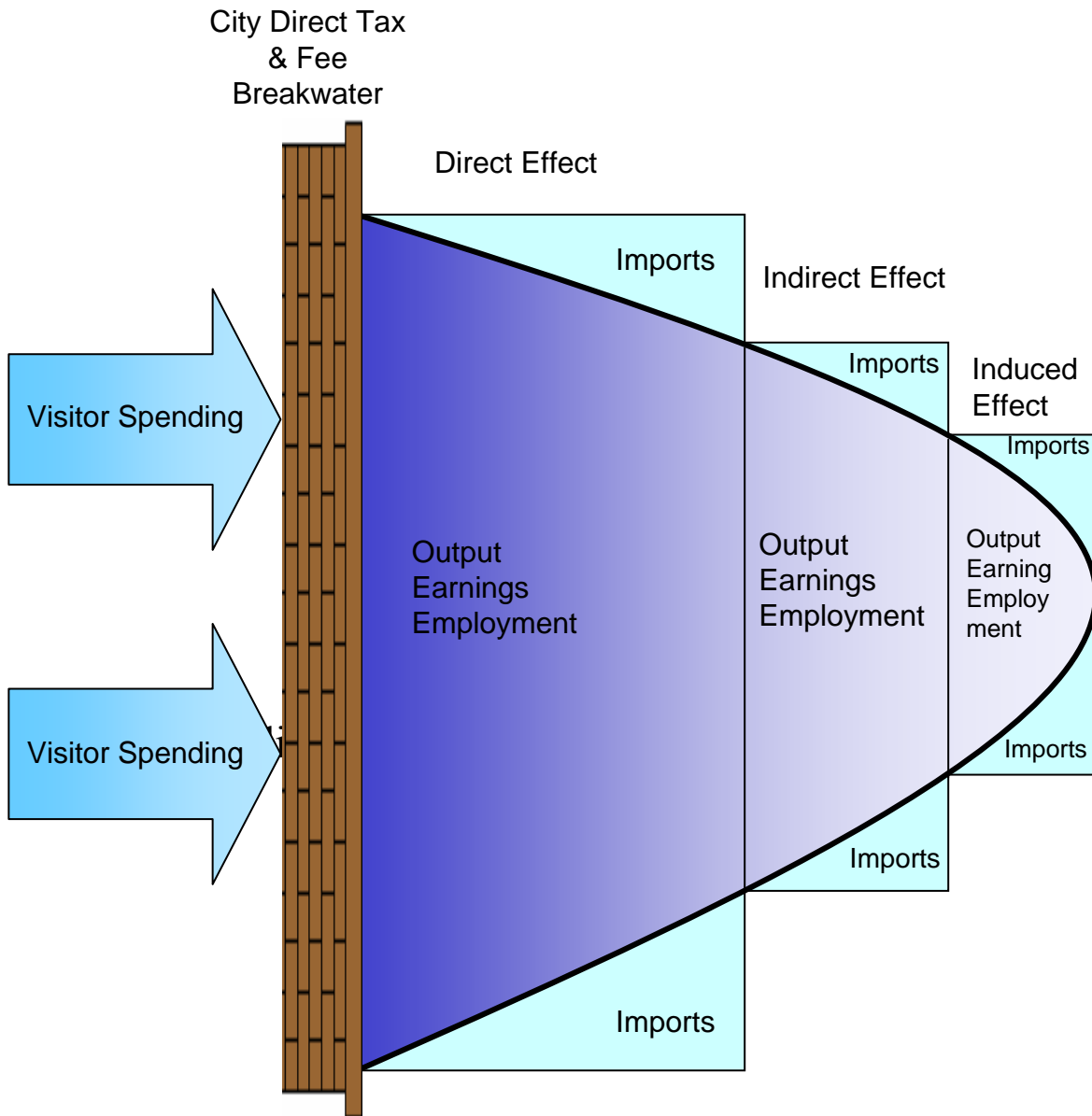
Tourism: An Economic Tsunami

One image useful to comprehending the total economic impact of visitor spending, the source of which *originates from outside* of an area, is to think of the way energy is released from a tidal wave. The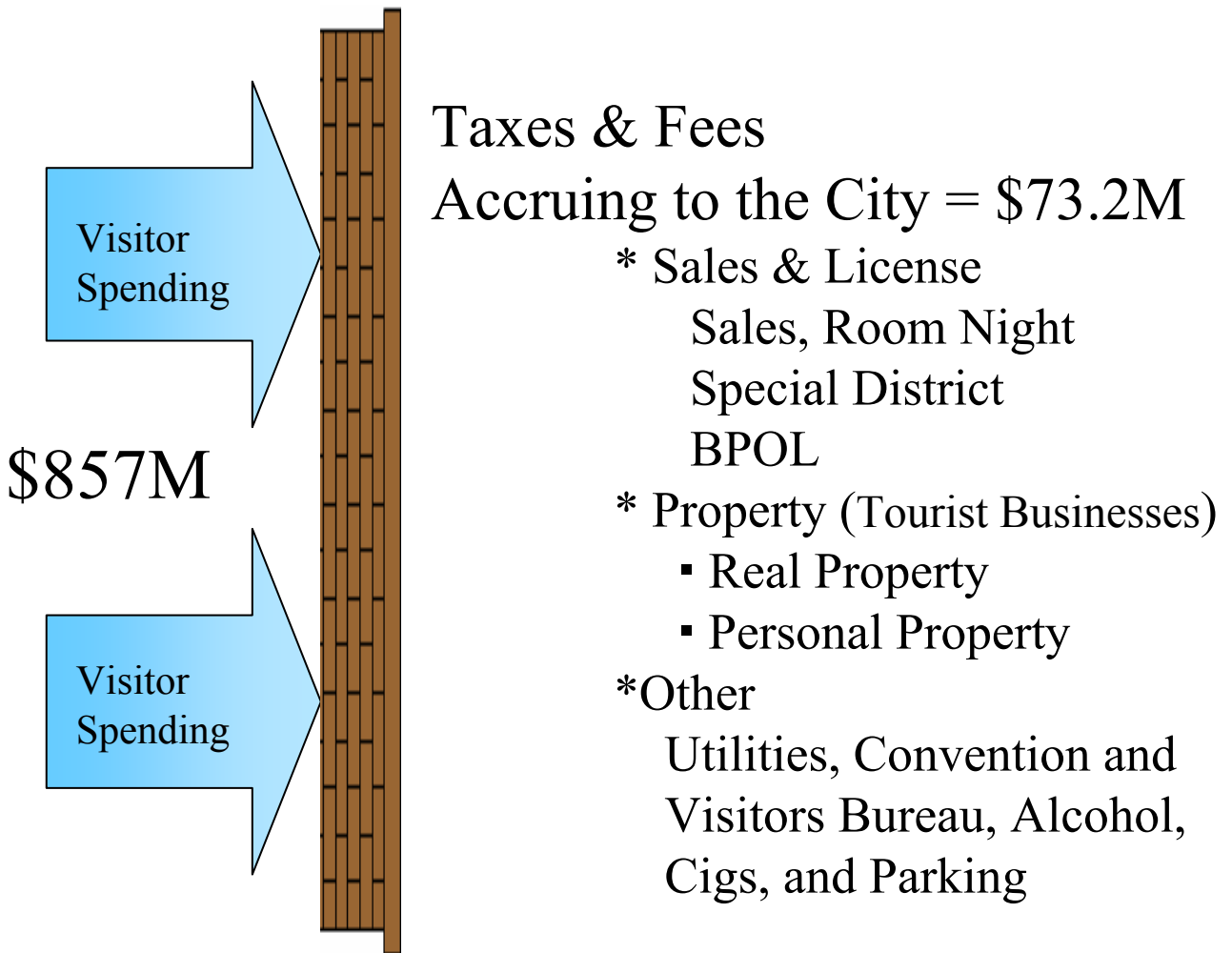 wave may hit a breakwater that absorbs some of its momentum but it will continue on to wash over the beach hinterland until all of its energy is spent. Likewise, dollars spent by visitors to Virginia Beach flow through the City's economy creating taxes, spending, earnings and jobs. Though the initial energy of the spending is absorbed by taxes at the point of sale, as well as by those industries that have "*direct*" contact with visitors, the effect of the spending flow continues through the City's economy. For example, industries that have direct contact with visitors pay employees, pay additional taxes and purchase goods and services from intermediate suppliers. Some of the goods and services are "imported" from suppliers located outside of Virginia Beach so that the economic energy of visitor spending leaks away and is incrementally dissipated. However, some suppliers to the industries that have direct contact with visitors are located in Virginia Beach. Output, earnings and jobs are created in Virginia Beach within these "*indirect*" industries that meet the factor demands of the industries with direct visitor contact. The final burst of economic energy created by the flow of visitor spending is expended by subsequent purchases from Virginia Beach industries whose source is spending *"induced"* by the household earnings created in the direct and indirect industries.

Visitors to Virginia Beach spent an estimated $857 million in 2006. Based on our simulation of the effect of this spending, we estimate that the total economic impact of visitor spending, the sum of the direct, indirect and induced effects described above, is roughly $1.4 billion dollars of output from Virginia Beach industries, 14,900 jobs and $364 million dollars in earnings in Virginia Beach in 2006.

2006 visitor spending was responsible for generating more than 10,800 jobs and $73.2 million in taxes and fees paid to Virginia Beach from those industries having *direct* contact with visitors. To help attract both new and repeat visitors, as well as to provide additional services to residents, the City of Virginia Beach spent an estimated $64.4 million in tourist related expenditures in 2006. Net revenue was $8.8 million, resulting in a net return on expenditures of 13.7% to the City of Virginia Beach.

Direct City Taxes & Fees: Taxes and Fees on Industries that have Direct Contact with Visitors (Accommodations, Food Service and Drinking Places, Retail and Entertainment) that accrue to the City

Visitor Spending

$857M

Visitor Spending

Taxes & Fees
Accruing to the City = $73.2M
* Sales & License
Sales, Room Night
Special District
BPOL
* Property (Tourist Businesses)
▪ Real Property
▪ Personal Property
*Other
Utilities, Convention and
Visitors Bureau, Alcohol,
Cigs, and Parking

Direct Effect of Visitor Spending on Output, Employment and Earnings in Virginia Beach's *Private Sector Industries* that have Direct Contact with Visitors.

Output	$ 783.9 M
Earnings:	$ 212.8 M
Employment:	10,782 Jobs

City Direct Tax & Fee Breakwater

Direct Effect

Imports

Indirect Effect

Imports

Induced Effect

Imports

Visitor Spending

Visitor Spending

Output Earnings Employment

Output Earnings Employment

Output Earning Employment

Imports

Imports

Imports
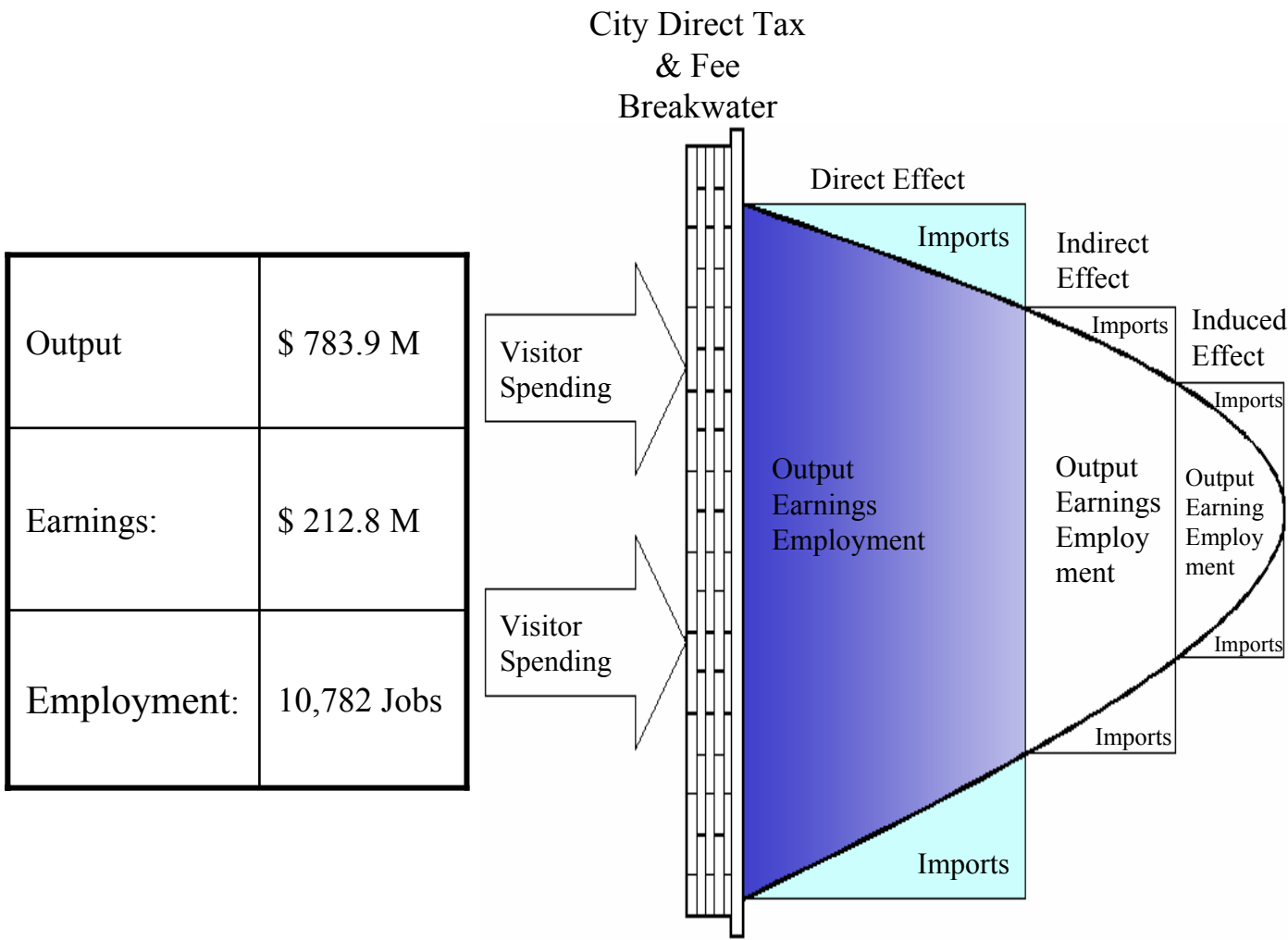
Indirect Effect of Visitor Spending on Output, Earnings and Employment in Virginia Beach *Private Sector Industries* that Provide Goods and Services to Virginia Beach Businesses that have Direct Contact with Visitors

Output:	$269.0 M
Earnings:	$ 59.4 M
Employment:	1,424 Jobs

City Direct Tax & Fee Breakwater

Direct Effect

Imports

Indirect Effect

Imports

Induced Effect

Imports

Visitor Spending

Output Earnings Employment

Output Earnings Employment

Output Earning Employment

Imports

Visitor Spending

Imports

Imports
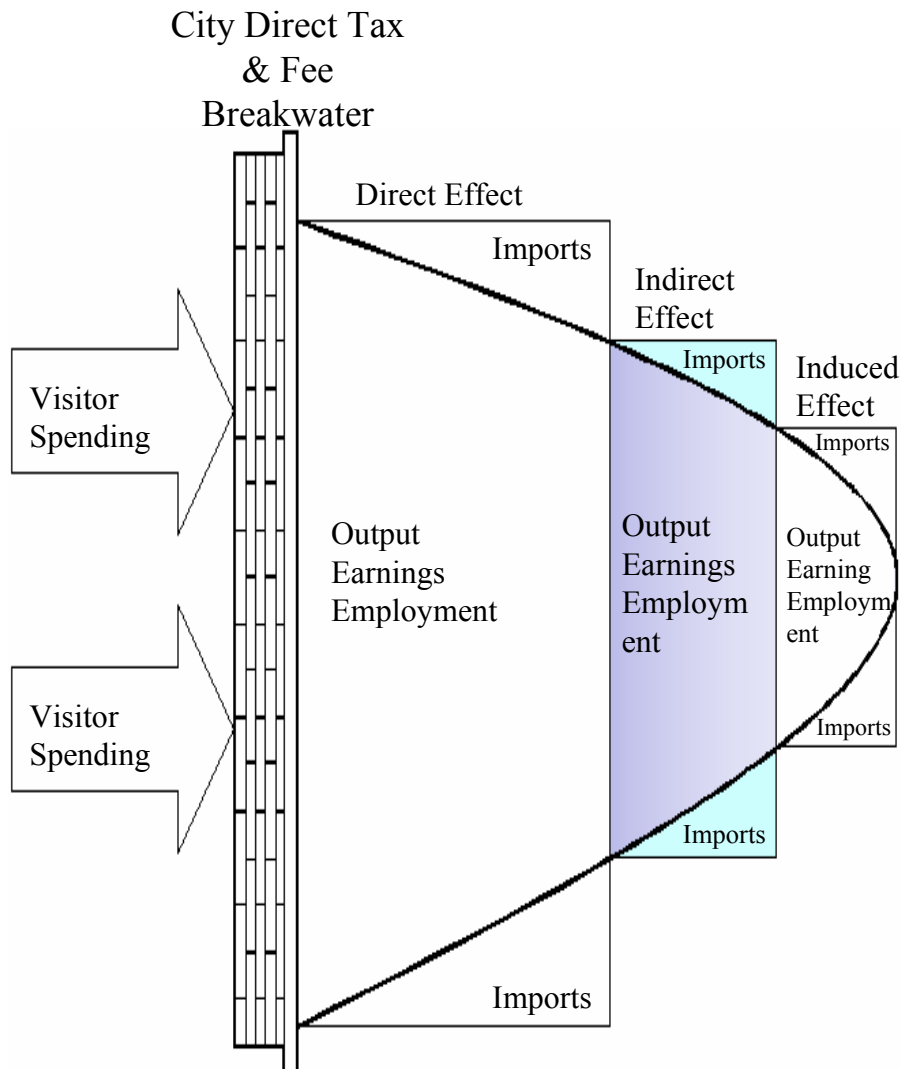
Indirect Effect of Tourism: Estimated 2006 Output and Jobs Created in the Top *Private Sector* Virginia Beach Industries that Provide Goods and Services to Virginia Beach Businesses that have Direct Contact with Visitors.
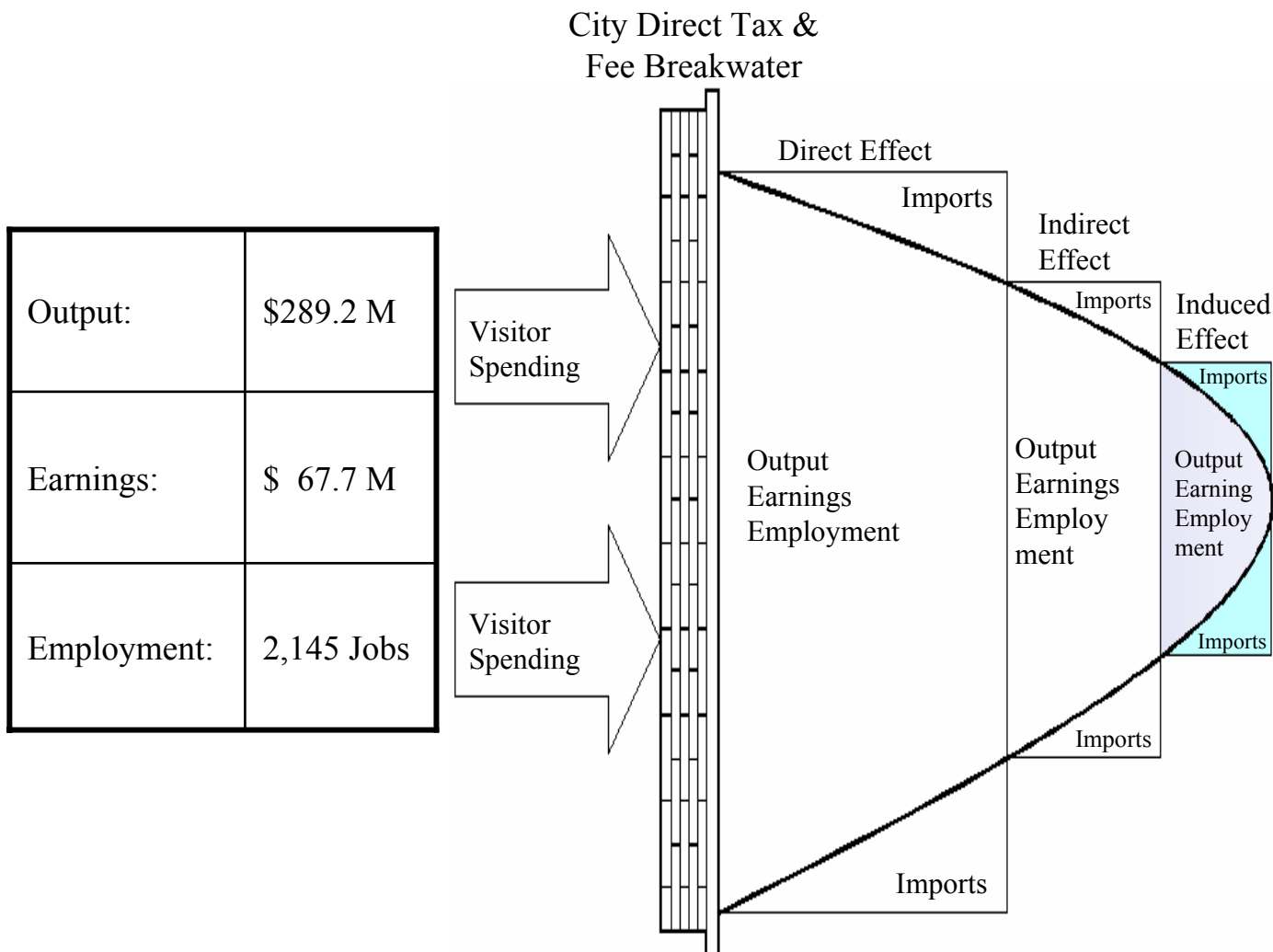
Industry	Spending	Jobs
Top Six Industries		
Real Estate, Rental and Leasing:	$ 51.9M	134
Information Services:	$ 36.6M	81
Professional, Technical & Scientific Services:	$ 36.3M	189
Finance and Insurance:	$ 27.7M	93
Administrative and Waste Management Services:	$ 23.7M	279
Management of Companies:	$ 20.5M	108
…………		
Total (Sum of All Indirect Effects in 2006)	$269.0M	1,424

Induced Effect of Visitor Spending on *Private Sector* Output, Earnings and Employment in Virginia Beach. Induced Effects Result from the Increase in Virginia Beach Household Income Created by the Direct and Indirect Effects of Visitor Spending

City Direct Tax &
Fee Breakwater

Direct Effect

Imports

Indirect
Effect

Imports

Induced
Effect

Imports

Output:	$289.2 M
Earnings:	$ 67.7 M
Employment:	2,145 Jobs

Visitor
Spending

Visitor
Spending

Output
Earnings
Employment

Output
Earnings
Employ
ment

Output
Earning
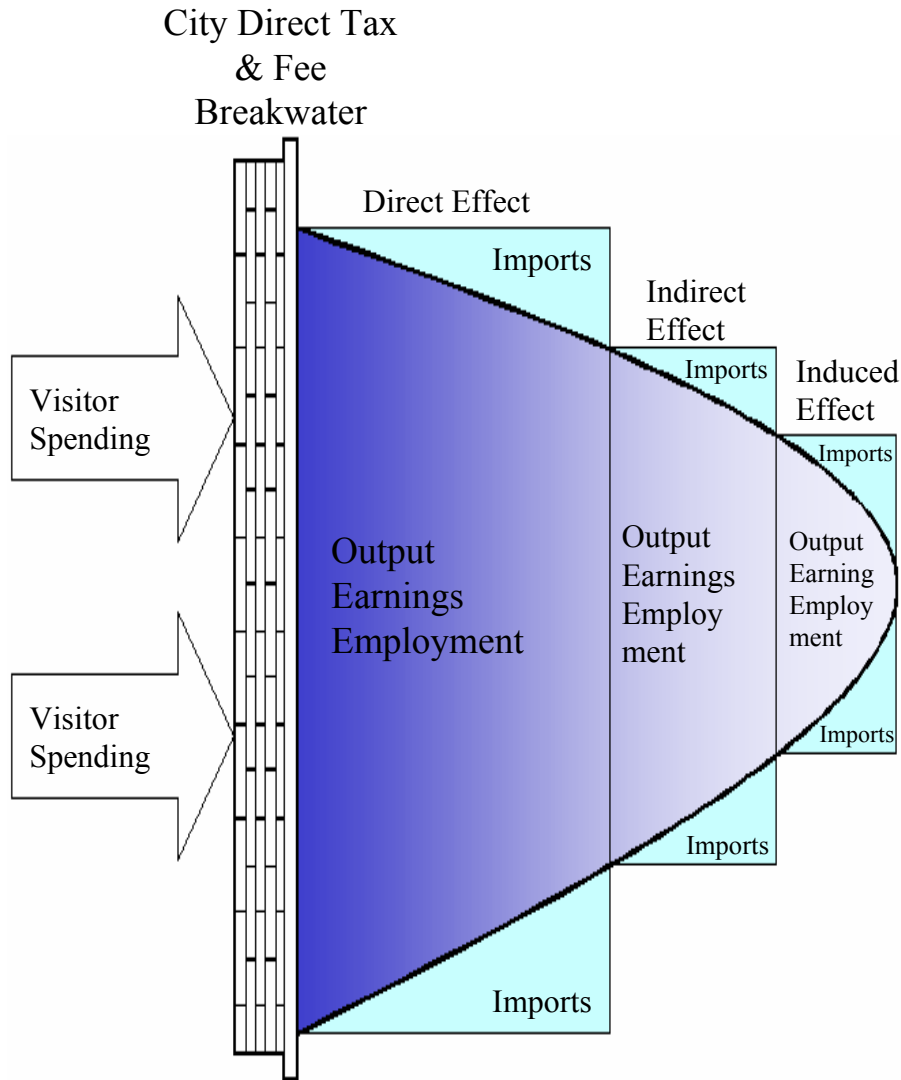Employ
ment

Imports

Imports

Imports

The Induced Effect of Visitor Spending on Output and Employment in the Top *Private Sector* Virginia Beach Industries. Induced Effects Result from the Increase in Virginia Beach Household Income Created by the Direct and Indirect Effects of Visitor Spending

Industry	Spending	Jobs
Top Six Industries		
Real Estate, Rental and Leasing:	$ 57.7M	148
Health Care and Social Assistance:	$ 37.6M	384
Retail Trade:	$ 37.5M	469
Finance and Insurance:	$ 34.6M	136
Information Services:	$ 19.9M	46
Accommodation and Food Services:	$ 18.7M	303
…………		
Total (Sum of All Induced Effects in 2006)	$289.2M	2,145

Total *Private Sector* Effect of Visitor Spending on Output, Employment and Earnings in Virginia Beach in 2006

City Direct Tax & Fee Breakwater

Direct Effect

Imports

Indirect Effect

Imports

Induced Effect

Imports

Output:	$1,342.1 M
Earnings:	$ 339.9 M
Employment:	14,351 Jobs

Visitor Spending

Visitor Spending

Output
Earnings
Employment

Output
Earnings
Employment

Output
Earning
Employment

Imports

Imports

Total Tourism Economic Impact: Summed Effect of Visitor Spending on *Government and Private Sector* Output, Earnings and Employment in Virginia Beach in 2006

Output:	$1.389 B
Earnings:	$ 363.6 M
Employment:	14,870 Jobs

# Each $1 Million of Additional Visitor Spending in Virginia Beach Creates an Estimated:

- 17 new jobs in Virginia Beach

- $397,000 in additional earnings for Virginia Beach employees and business owners

- $1.57 Million in additional output in industries located in Virginia Beach

Direct City Taxes and Fees from Businesses that have Direct Contact with Visitors, 2006*
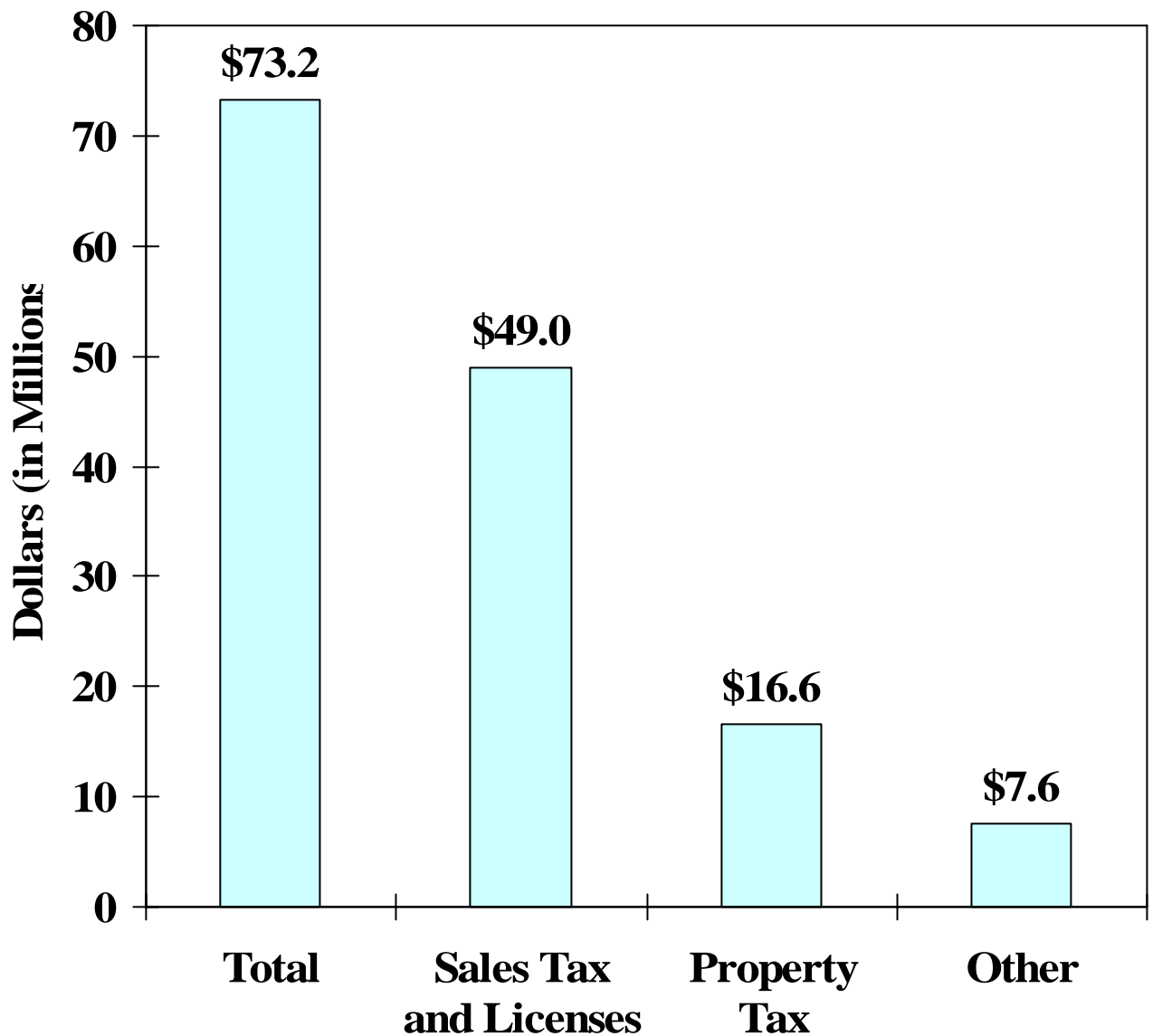
*Includes Convention and Visitors Bureau (CVB) Revenue

Direct City Expenditures for Tourism, 2006*
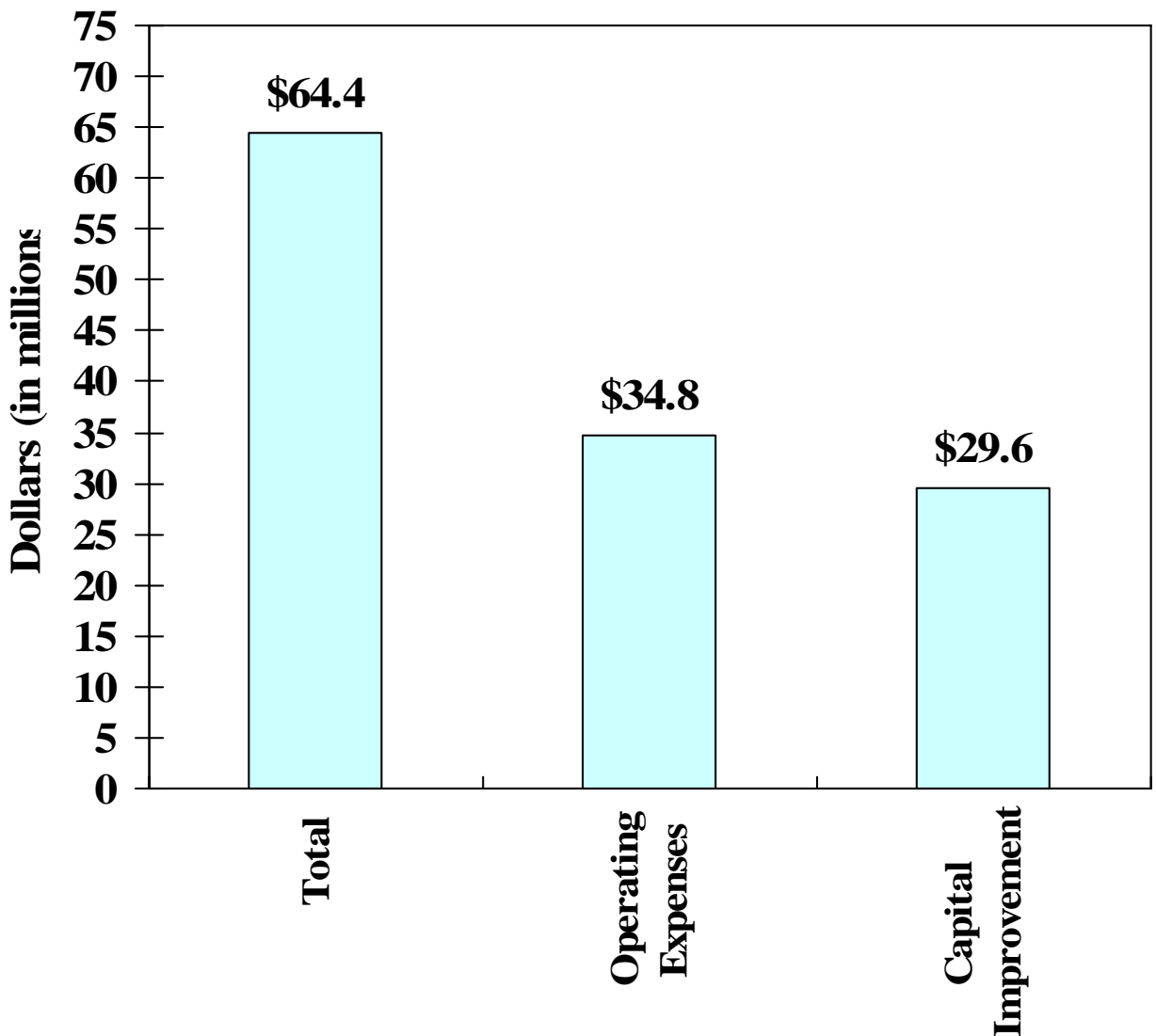
Source: City of Virginia Beach. *See Appendix for a listing of expenditure categories.

Estimated Average Rate of Return from City of Virginia Beach 2006 Tourism Expenditures

---

$8.8M Net Direct City Return

$64.4M Direct City Expenditures

=

13.7%

Net Return = Revenue- Expenditures

Overnight Visitors in Virginia Beach, 2006
Total Visitors = 2.75 million

Month	Visitors
Jan	127,799
Feb	146,212
Mar	206,071
Apr	214,092
May	244,708
Jun	245,752
Jul	449,693
Aug	374,171
Sep	258,407
Oct	158,278
Nov	170,161
Dec	149,853
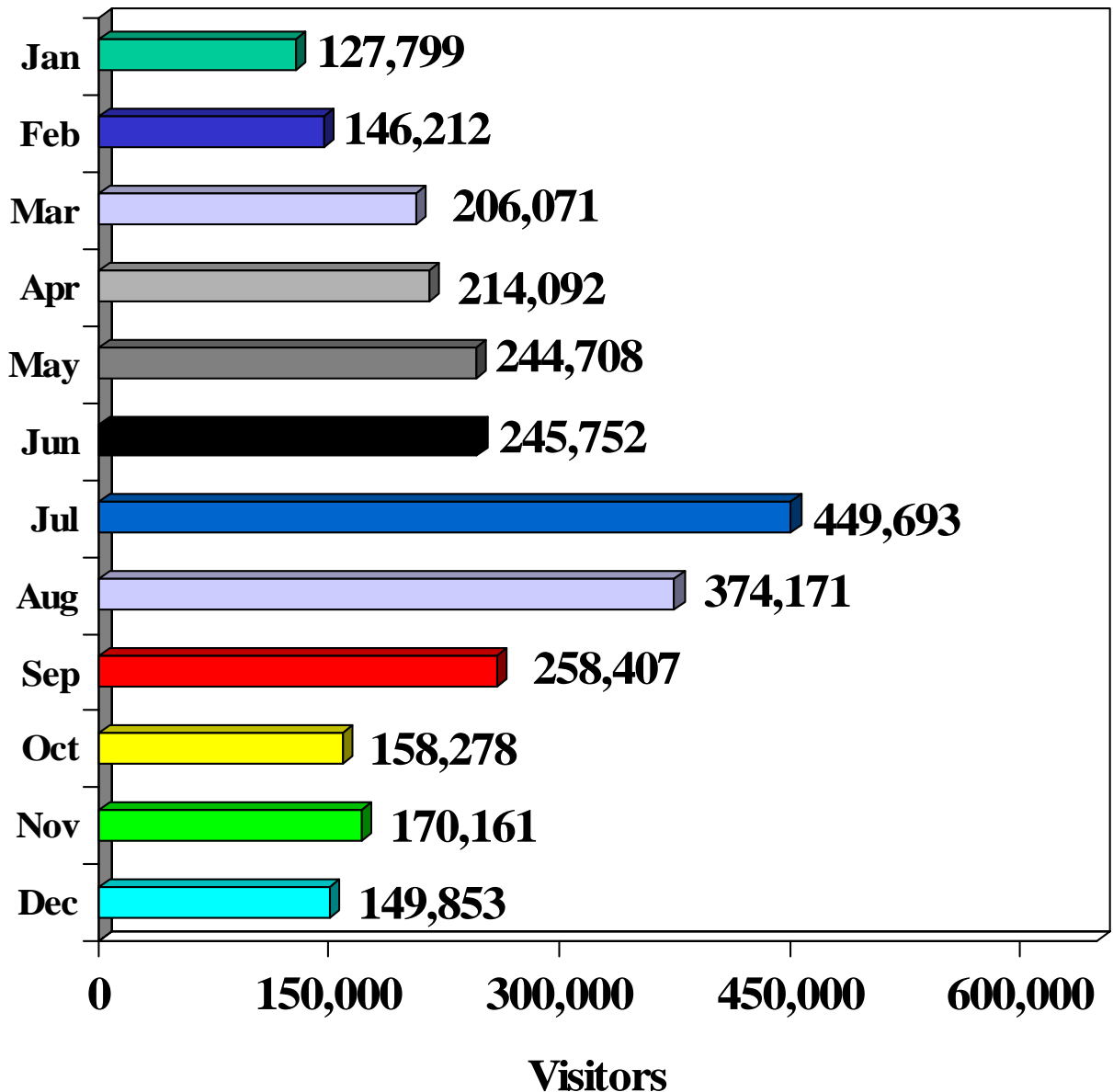
Visitors

Distribution of Visitors Staying *Overnight* in Virginia Beach by Type of Lodging, 2006
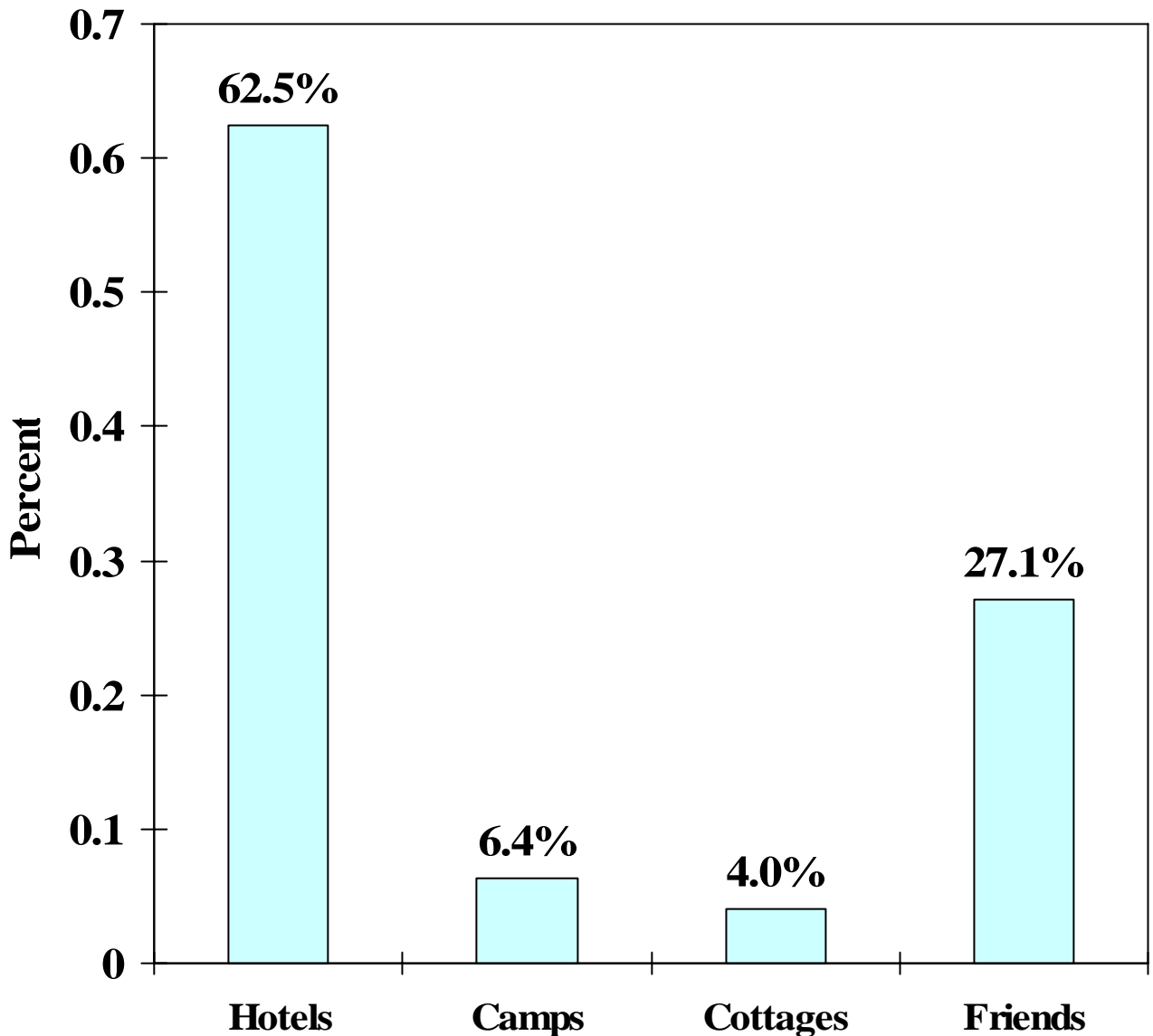
Distribution of Visitor Spending by Type of Lodging, 2006

Bar chart of Percent (y-axis, 0 to 0.8) by type of lodging:

- Hotels: 67.1%
- Camps: 4.7%
- Cottages: 6.9%
- Friends: 17.9%
- Day Non-MSA Visitors: 3.4%

City of Virginia Beach Hotel Rooms, 1981-2006

Rooms

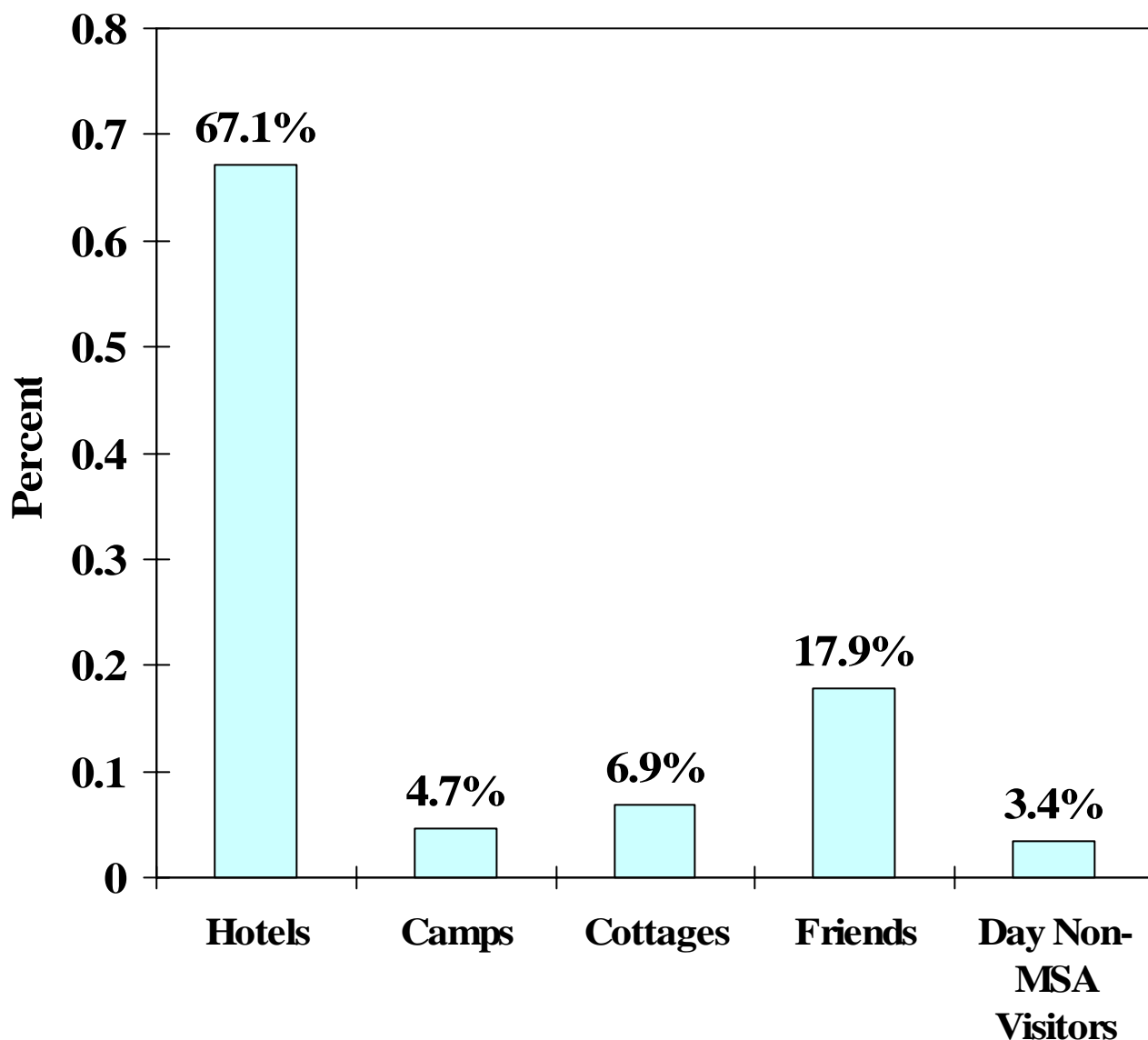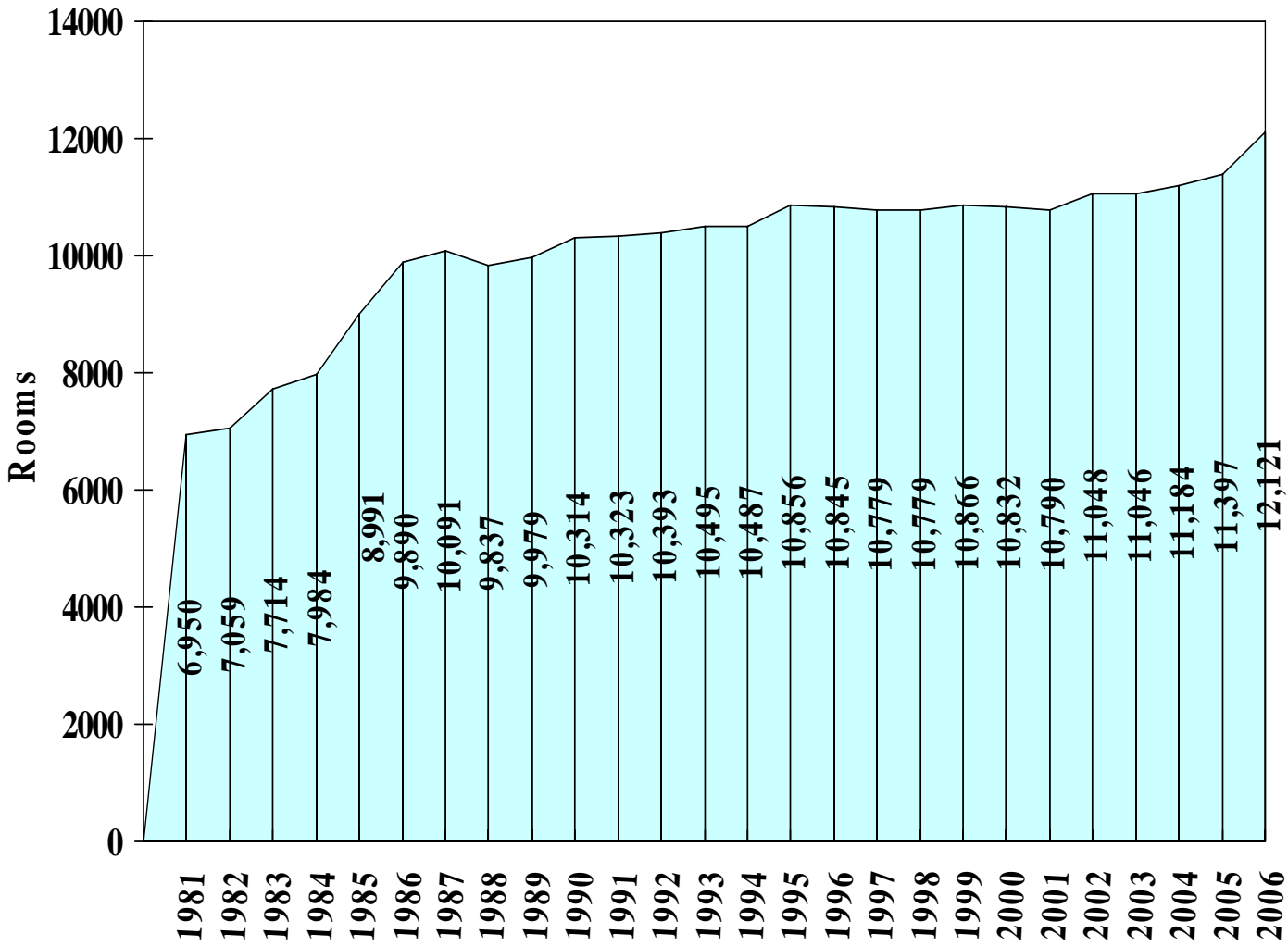| Year	Rooms
1981	6,950
1982	7,059
1983	7,714
1984	7,984
1985	8,991
1986	9,890
1987	10,091
1988	9,837
1989	9,979
1990	10,314
1991	10,323
1992	10,393
1993	10,495
1994	10,487
1995	10,856
1996	10,845
1997	10,779
1998	10,779
1999	10,866
2000	10,832
2001	10,790
2002	11,048
2003	11,046
2004	11,184
2005	11,397
2006	12,121

22

Virginia Beach Hotel Capacity Utilization, 2006
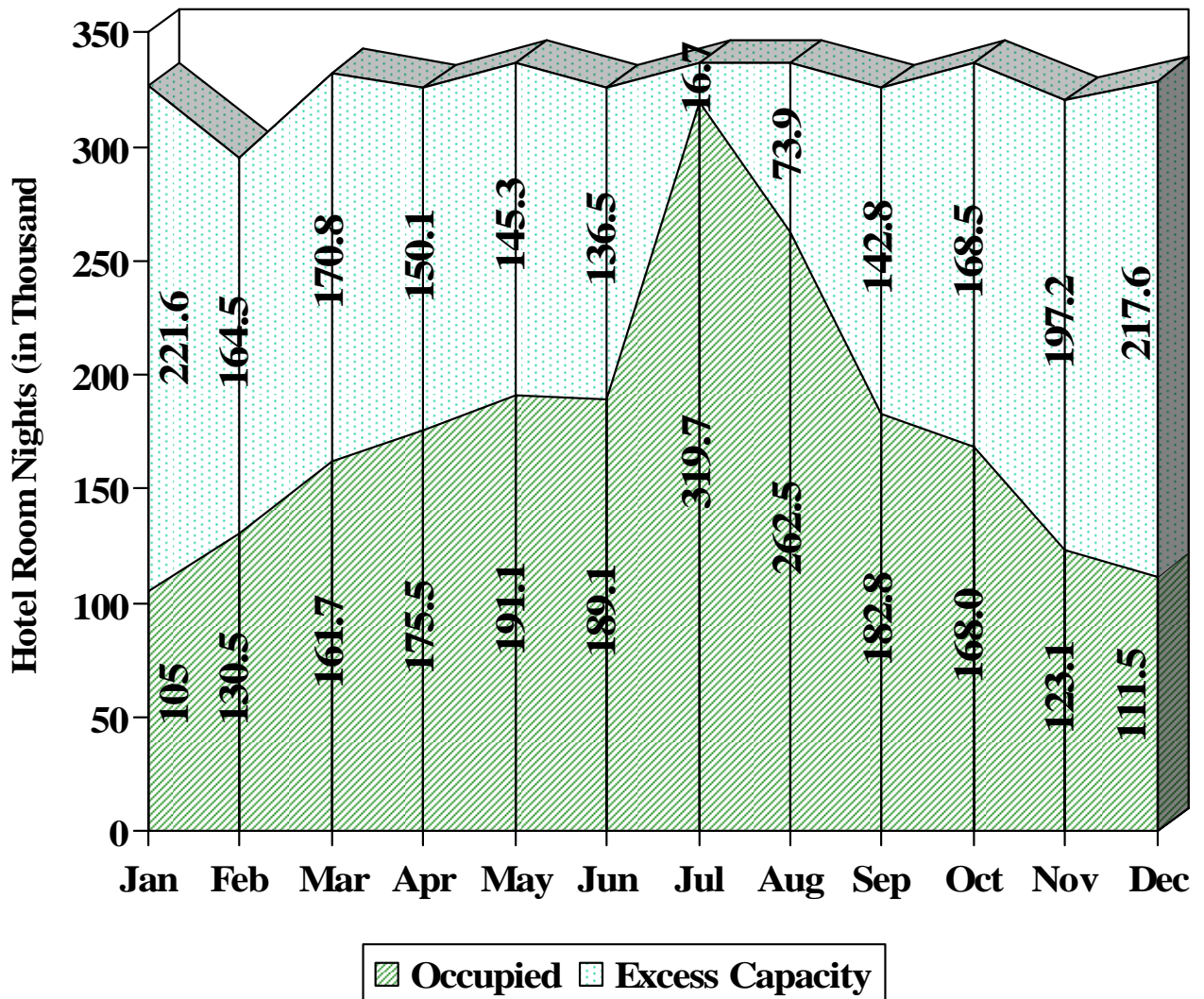
Source: Smith Travel Research Trend Report March 22, 2007 ,
City of Virginia Beach and Old Dominion University Bureau of
Research.

Overnight Visitors On Beach And Boardwalk, 2006
Selected Demographic Data

CHARACTERISTICS	MAR-APR*	MAY	SUMMER	SEP	OCT-NOV*
Average Nights Stayed	3.5	3.7	4.3	4.0	4.1
Average Party Size	3.1	3.3	4.0	3.2	2.4
Average Age in Years	44.6	44.5	43.2	48.7	46.1
Average Income	$81,227	$73,270	$82,803	$74,048	$78,313
Average Party Expenditures	$827	$1,103	$1,655	$1,118	$894
Married	69.3%	66.5%	74.2%	71.5%	67.3%
Repeat Visitors	69.3%	76.0%	80.9%	83.0%	66.0%
Staying at Motels	85.5%	70.0%	73.7%	79.5%	81.5%
Advanced Reservations	N/A	88.2%	88.2%	82.4%	N/A
Education beyond High School	82.2%	71.0%	77.6%	76.0%	82.5%

❖These surveys were conducted on Beach, Boardwalk, Atlantic Avenue and at hotels.

APPENDIX I: CORE DEFINITIONS AND GENERAL METHODOLOGY

Definitions:

In estimating the economic impact of tourism in Virginia Beach, this study follows the definitions of assessing the economic value of the U.S. tourist industry established by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA) in the creation of its Tourism Satellite Accounts. (See for example the *Survey of Current Business,* U.S Department of Commerce, June 2005, p.20). It is also noteworthy that tourist industry definitions are standardized worldwide. See for example the United Nations Statistics Division's *Tourism Satellite Account: Recommended Methodological Framework*, United Nations publication sales no: E.01.XVII.9, c2001). Although the tourist industry does not fall under the definitional framework of the North American Industry Classification System (NAICS), the BEA has created the tourism account by identifying "commodities that are purchased by visitors and the corresponding industries (NAICS) that produce these commodities." ("U.S. Travel and Tourism and Satellite Accounts for 1992", *Survey of Current Business*, U.S. Department of Commerce, July 1998, p.8).

For a description of some of the terms used in the national account see "U.S. Travel and Tourism Satellite Accounts for 2001-2004" in the June 2005 issue of (1) the *Survey of Current Business*, pages 17 to 29 (especially page 20) and (2) "U.S. Travel and Tourism and Satellite Accounts for 1992" (especially p. 11). The following terms used in this study are defined in the preceding two publications of the U.S Department of Commerce. These definitions set the standard in defining the measurement of the tourist industry:

Visitor: "A visitor is a person who either travels outside of his or her "usual environment" for a period of less than a year *or* who stays overnight in a hotel or motel. The person may travel for personal pleasure or on industry or government business." (2, p.11) (Italics added)

Usual Environment: "the usual environment is defined as the area within 50-100 miles of home, depending on available data sources." (2, p. 11) (Note: The intensive survey technique used by Continental Research Inc. in conducting the visitor surveys employed by this study allow for use of the 50 mile visitor definition).

Tourism: "The activities of visitors while traveling." (2, p.11)

Tourism Commodities: "Tourism commodities are the commodities typically purchased by visitors directly from producers." (2 p.11)

Tourism Output: "Domestically (Virginia Beach) produced tourism goods and services purchased by travelers" (1, p.20) (Parenthesis added)

Tourism Employment: "All jobs that involve the production of tourism output." (1, p.20)

Tourism Industries: "Industries that include tourism commodities as a primary product are classified as tourism industries." (2, p.12)

Tourism Industry Total Output: "a measure of the value of domestically produced goods and services for tourists and all supporting production." (1, p. 17)

In addition to the above definitions that conform to BEA standards for measuring the tourist industry this study will rely on the following definitions of taxes, visitor accommodations and earnings. These definitions, of taxes, visitor spending and earnings can be interpreted as minimum estimates of the tourist related industry's economic effect on the City of Virginia Beach, as explained below.

Tourism Demand: Travel related expenditures by visitors.

Total Tourism Demand: Total direct expenditures of all visitors.

Total Tourism-Related Output: Direct tourism output plus indirect output created by enterprises that support direct output. (The related industries' total output can be identified as the sum of direct and indirect output in Virginia Beach that results from visitor spending.)

Direct Taxes and Fees: Taxes and fees paid by *only* those businesses with *direct contact* with visitors or fees paid directly to the city government (CVB) by visitors. This study *does not* include taxes paid to the City of Virginia Beach by businesses affected by the indirect and induced effects of visitor spending, by households who have family members who work in a business with direct contact with visitors, or payment of taxes and fees by resident households that resulted from the addition to household income generated by total tourism related output. For example, the taxes (property, sales, utility and etc.) paid by a hotel manager who earns a living in the hotel industry or, the taxes paid by an accountant who earns a living working for an auditing firm that provides services to the hotel industry are not included.

Visitor Accommodations: Includes hotels, campgrounds and seasonally leased houses and condominiums in Sandbridge and the North End. This study does not include the approximately 1,500 seasonally rented or vacation houses and condominiums located inside Virginia Beach but outside of Sandbridge or the North End. The Department of Commerce recommends including such housing in estimates of economic output in the tourist industry (see for example a paper by a group of BEA economists, Okubo, Fraumeni

and Fahim-Nader, *Expanded U.S. Travel and Tourism Satellite Accounts: Extension to Include Imputed Services of Motor Vehicles and Vacation Homes*, presented at the Canadian Conference on Tourism Satellite Models, 2001, *or* U.S. Tourism and Satellite Accounts for 1992, *Survey of Current Business*, U.S. Department of Commerce, July 1998, p.12.) Because of data limitations, imputed rent and spending for these properties are not included in this study and therefore imply an underestimation of tourism's economic impact on Virginia Beach.

Total Tourism Economic Impact: The total or sum of direct, indirect and induced effects on employment, earnings, spending and taxes that are created as a consequence of visitor spending in Virginia Beach. Economic impact is simply the sum of identified tourist industry activities that create an estimated sum of spending, taxes and government expenditures. No comparison with other alternative economic activities to tourism, or what might take place should it vanish, is considered or implied.

Rate of Return from Tourism Expenditures: The flow of net revenue (revenue minus expenditures), generated by businesses and government institutions that have ***direct contact*** with visitors *who are visiting* Virginia Beach, that accrues to the City in a given time period divided by the flow of City visitor related expenditures in the same period. This rate ***does not*** include revenue accruing to the City from direct, indirect or induced earnings or indirect and induced private sector taxes.

Earnings: The sum of wages and salaries, proprietor's income, director's fees and employer contributions to health insurance less personal contributions to social insurance. This is the definition of earnings used by the U.S. Department of Commerce in its RIMS II model.

General Methodology

Direct Effect:

Given that the City of Virginia Beach's tourism dedicated expenditures are directed toward attracting visitors, this study is designed to measure the economic impact of *only the in-flow of domestic and international visitors to Virginia Beach*. The basic procedure followed in the estimation of Virginia Beach's *direct* tourism economic impact relies on data provided by a series of visitor surveys conducted by a professional survey research firm designed to allow for the estimation of visitor spending within NAICS categories. All surveys are conducted within the local area. The survey is administered concurrent with a visitor's stay, or in the case of friends and family visits, both by the visitor survey and a telephone survey of families with visitors. In addition tax, accommodation room night and expenditure data are provided by the City of Virginia Beach. Employment is estimated from the RIMs II economic model of Virginia Beach. These data are corroborated with outside data (if available) from sources

such as the Virginia Department of Taxation, the Virginia Auditor of Public Accounts, the Virginia Employment Commission (VEC) establishment data files, Smith Travel Research, the U.S. Department of Commerce and national surveys conducted by consulting firms and the U.S. government.

Indirect and Induced Effect:

Indirect supplier inputs and the induced general economic effects of tourism are modeled and estimated using the latest version (2003) of the U.S. Department of Commerce, Bureau of Commerce, Bureau of Economic Analysis (BEA) 2003 Regional Industry Modeling System (RIMS II). The effects of visitor commodity purchases are modeled in the NAICS category designated by the BEA as part of the Tourism Satellite Accounts. A detailed description of this method and the algorithms used in its application are presented in Appendix III .

Economic Impact Components Not Estimated in This Study

Economic impact studies, especially those based on survey data, as is the case with studies of tourism, are by their nature attempts to *approximate* actual economic events. At their best economic impact studies conducted over a series of years, as with the creation of a statistical time series of economic data, will attempt to successively approximate economic events with incremental improvements in analysis as a better understanding of the subject, better methods or better data become available. At times however, restrictive assumptions that may be part of a study's objectives, the lack of method, lack of available data or the absence of reasonable alternatives for making a statistical judgment may limit efforts to take a more comprehensive measure of economic impact or to draw reasonable inferences from existing information. For example, this study can be thought of as a minimum estimate of the aggregate economic impact of visitor spending in Virginia Beach in 2005. Not included in the Total Tourism Economic Impact are:

1. Taxes and revenue that accrue to the City of Virginia Beach as a result of increased earnings of direct, indirect and induced effects are not included in the tax and fee estimates. In addition, *taxes* paid by businesses that result from the indirect and induced effect of tourism are not estimated. Only the taxes and fees collected and paid by businesses that have direct contact with visitors and revenue of the CVB are estimated under direct taxes and fees.

2. With the exception of direct Virginia Beach government employment, City payment for tourist based goods and services are not included in this study's economic impact estimate. For example, the money spent on building the new convention center and any of its indirect or induced effects are not counted as part of the 2005 economic impact. There are two reasons for this: first, we do not know how much of this type spending is contracted for

with businesses that are located in Virginia Beach. It is possible that all spending of this type is contracted for with businesses located outside of Virginia Beach and would therefore be properly categorized as spending on imports to the City with no resulting economic impact. Second, City spending on special projects is transitory by nature. Adding such projects may mask period-to-period changes in the core tourist industry.

3. Large private sector variance in spending on tourist commodities or infrastructure is not included in this study. For example, the base year of the input-output model used in this study is 2003. Large or unusual increases in construction spending for hotels in 2005 relative to 2003, will therefore not be accounted for in this model. Those data could be accounted for outside of the model but we do not currently have information on the either the magnitude of such spending or whether or not Virginia Beach firms were the recipients of it.

4. Data constraints may lead to underestimation of the direct visitor spending impacts. For example, as mentioned above, although recommended by the Department of Commerce this study does not include the direct visitor spending of approximately 1,500 seasonally rented or vacation houses and condominiums located inside Virginia Beach but outside of Sandbridge or the North End. Real estate taxes paid for these properties are not estimated.

5. Because it is difficult to estimate the real estate taxes paid by eating establishments located in malls, hotels and larger buildings these taxes are not included in estimates of taxes and fees.

6. Time share taxes and revenue are not readily available. In particular, estimating time share implicit rent requires the ability to distinguish Virginia Beach resident owners from those owners residing outside of Virginia Beach.

7. Only in-flows of visitors are considered in this analysis of the tourist industry.

Satellite Accounts and the Virginia Beach Economic Impact Study
This study, using the survey I-O methodology outlined above, follows the definitions of tourism demand set out by the U.S. Department of Commerce and focuses, as suggested by Michigan State University Professor Daniel Stynes ("Estimating Economic Impacts of Tourist Spending on Local Regions: A Comparison of Satellite and Survey/I-O Approaches" p.8, a paper for presentation at Censtates, TTRA, Sept 20, 2001), particularly on visitors *to* Virginia Beach and the resulting economic impact of that demand. As with the satellite account method, this study links visitor spending to the NAICS industries that produce tourism goods and services.

Wilkerson ("Travel and Tourism: An Overlooked Industry in the U.S." Tenth District Economic Review, Federal Reserve Bank of Kansas City, Third Quarter, 2003) suggests a method for Federal Reserve district regions, states and localities that uses national satellite account industry ratios and relative employment statistics by NAICS industry to estimate the size of the tourism industry in a region or locality. For example, applying Wilkerson's suggested technique, national satellite account and industry employment data applied to food service and drinking places (restaurants) suggest that about 27.4 percent of Virginia Beach's restaurant demand is due to visitor spending.

Virginia Aquarium & Marine Science Center Operating Revenue and Expenses

Previously unavailable data on tourist related revenue and operating costs associated with the Virginia Aquarium & Marine Science Center are now available in 2006. Because of our current lack of information and resulting uncertainty about the nature of the Virginia Aquarium's operating budgeting process and its degree of independence from the City treasury, for purposes of this study we will treat the Virginia Aquarium as a "quasi-public" enterprise with its own operating budget but with tourist related capital spending on Virginia Aquarium capital projects included as a cost to the City of Virginia Beach (listed under Virginia Beach Capital expenditures in Appendix VII). 2006 Virginia Aquarium tourist related operating revenue is reported by the City as $2,561,474 with 2006 expenditures of $2,494,914. The net of the 2006 revenue and expenditures of the Virginia Aquarium would add $66,560 to the City's net direct city revenue return from tourism but would reduce the City's estimated ratio of net revenue to expenditure to 13.3% in 2006.

APPENDIX II: DETAILED METHODOLOGY: DIRECT IMPACT

Overnight Visitor Estimation:

Hotels:

$$V_{1j} = X_{1j} \cdot \left(P_{1j} / L_{1j} \right) \cdot VAR_{1j}$$

$$V_1 = \sum_{j=1}^{12} V_{1j}$$

Where:

V_1 = Hotel Visitors
X = room nights
P = party size
L = length of stay
VAR = room occupancy variance adjustment
j = month
1 = ith lodging type, for hotels

Cottage/Condo:

$$V_{2j} = U_{2j} \cdot D_j \cdot \left(P_{2j} / L_{2j} \right) \cdot O_{2j}$$

$$V_2 = \sum_{j=1}^{12} V_{2j}$$

Where:

V_2 = Cottage/Condo Visitors
U = rental units
D = days in jth month
O = occupancy rate
2 = ith lodging type, for cottage/condo

Friends and Family:

$$V_{3f} = H_{3f} \cdot \text{Prop}_{3f} \cdot P_{3f} \quad f = 1,2,3,4$$

$$V_{3j} = V_{3f} / 3 \quad \text{for each } f$$

$$V_3 = \sum_{j=1}^{12} V_{3j}$$

Where:

V_3 = Friends and Family Visitors
H = Virginia Beach households
Prop = Proportion of Households with visitors (1st)

f = quarter

j = Month

3 =ith lodging type, for friends and families

Campgrounds:

$$V_4 = \sum_{j=1}^{12} IC_{1j}$$

Where:

V_4= Campground Visitors

IC = estimated visitors to an individual campground

l = lth campground

j = month

4 = ith lodging type, for campgrounds

Total Overnight Visitors:

$$V = \sum_{i=1}^{4} \sum_{j=1}^{12} V_{ij}$$

Where:

V = Total Overnight Visitors

i = lodging type

Overnight Visitor Spending Estimation:

$$TOVS = \sum_{i=1}^{4} \sum_{j=1}^{12} V_{ij} \cdot PS_{ij}$$

Where:

$TOVS$ = Total Overnight Visitor Spending

PS = per person per visitor spending

i = lodging type

j= month

Tax and Fee Revenue Estimation:

Sales and License Taxes:

Accommodations:

$$AST = TLS \cdot (\alpha + \beta) + TLS \cdot \gamma + S \cdot \lambda + TRNT$$

Where:

AST = Lodging Sales Tax

TLS = Total Lodging Sales

S = Sandbridge sales

$TRNT$ = Total Room Night Taxes

α = local lodging tax rate for accommodations

β = cumulative state sales tax rate returned to localities (includes both direct and education functionally dependent on sales).

γ = BPOL tax rate

λ = Sandbridge special tax district sales tax rate.

Restaurants:

$$TVRS = TOVS \cdot r$$

Where:

$TVRS$ = estimated total visitor restaurant spending

r = weighted proportion TOVS spent in restaurants

and

$$r = \frac{\sum_{i=1}^{6}(k_i/6) + t}{2}$$

Where:

k = off-season proportion restaurant spending

t = in-season proportion restaurant spending

$$TXRS = TVRS \cdot d \cdot \mu$$

Where:

$TXRS$ = estimated taxable restaurant sales

d = tips adjustment

μ = state and local sales tax rates adjustment

$$RST = TXRS \cdot (\rho + \beta)$$

Where:

RST = estimated tax from restaurant sales

ρ = local restaurant tax rate

$$TRST = RST + TXRS \cdot \gamma$$

Where:

$TRST$ = Restaurant Taxes

Amusement and Participatory Sports:

$$AT = TAT \cdot \theta \cdot \tau$$

Where:

AT = amusement sales tax
TAT = total taxable amusement spending
θ = estimated visitor proportion of taxable amusement spending
τ = local amusement sales tax rate

$$PT = TPT \cdot \omega \cdot \psi$$

Where:

PT = participatory sports tax
TPT = total taxable sports spending
ω = estimated visitor proportion of taxable sports spending
ψ = local participatory sports tax rate

$$APS = PT + AT$$

Where:

APS = amusement and participatory sports taxes

Retail Sales:

$$RETS = TOVS - TLS - TVRS - AM$$

Where:

$RETS$ = estimated retail sales
AM = total amusement and participatory sports spending

$$TRETS = RETS \cdot (1 - \sigma) \cdot \beta$$

Where:

$TRETS$ = retail sales tax
σ = Virginia sales tax rate

Total Sales and License Taxes:

$$TSLT = AST + TRST + APS + TRETS$$

Where:

$TSLT$ = estimated total sales and license taxes

Property Taxes:

Accommodations:

Hotels:
Real Property:

$$HPT = AHV \cdot \varphi$$

Where:

HPT = hotel property tax
AHV = assessed hotel value
φ = real property tax rate

Personal Property:

$$HPERS = (AHV \cdot D \cdot PPTR) \cdot 0.11$$

Where:

$HPERS$ = estimated hotel personal property tax
$PPTR$ = personal property tax rate
D=depreciation

Sandbridge:

$$SPV = APV \cdot \delta \cdot \varphi$$

Where:

SPV = estimated Sandbridge property tax
APV = Sandbridge assessed property value
δ = seasonal rental property proportion in Sandbridge

Restaurants:
Real Estate:

$$RRT = ARV \cdot \kappa \cdot \varphi$$

Where:

RRT = estimated restaurant real estate taxes
ARV = Restaurants assessed property value
κ = visitor proportion of total restaurant sales

Personal Property:

$$RPP = 2(HPERS/HPT) \cdot RRT$$

Where:

RPP = estimated restaurant personal property tax

Retail, Amusement and Participatory Sports:

Real Estate:

$$RAP = (RRT/TXRS) \cdot (RETS + AM)$$

Where:

RAP = estimated retail real estate tax

Personal Property:

$$RETPP = (RPP/TXRS) \cdot (RETS + AM)$$

Where:

$RETPP$ = estimated total retail personal property taxes

Total Property Taxes:

$$TPT = HPT + HPERS + SPV + RRT + RPP + RAP + RETPP$$

Where:

TPT = estimated total property taxes

TOTAL TAX and FEE Revenue Estimation:

$$T = TSLT + TPT + CVBR$$

Where:

T = estimated total taxes and fees
$CVBR$ = Convention & Visitors Bureau revenue

APPENDIX III: DETAILED METHODOLOGY: INDIRECT AND INDUCED IMPACT

While the direct impact of visitor spending is estimated as defined in previous sections, indirect and induced impact estimation requires a different methodology. In this section, attention is focused on the estimation of indirect and induced economic impact of visitors.

I. Indirect and Induced Economic Impacts

Regional input-output modeling provides the best estimate of indirect and induced economic impacts. Hence, an input-output model is used to estimate these economic impacts.

Estimates of indirect and induced economic impacts in this report are based on the Federal Government's Regional Input-Output Model System II (RIMS II). The Bureau of Economic Analysis, U.S. Department of Commerce, provided the RIMS II model for the City of Virginia Beach. This model is based on the national input-output table for 2003, which was regionalized utilizing 2003 data.

The national input-output table is made region-specific by the use of a Location Quotient (LQ) approach. The LQ approach is necessary because the inter-industry requirements supplied by a region are likely to be substantially different for the region as compared to the entire nation. The LQ's are used to estimate the extent to which inter-industry requirements are supplied by firms within a particular region.

In input-output models, economic sectors within a region are interrelated as other firms in the region purchase some of the output of firms and some output is sold as final demand. This inter-industry relationship may be mathematically presented as:

$$\mathbf{X} = \mathbf{AX} + \mathbf{Y} \qquad (1)$$

where:

$\mathbf{X}$ = Gross sales for each sector;
$\mathbf{Y}$ = Final demands for each sector; and
$\mathbf{A}$ = Regional direct coefficient matrix.

Equation (1) states that total sales ($\mathbf{X}$) of various sectors in the local economy equal intermediate sales, i.e., sales to other sectors of the economy ($\mathbf{AX}$), and final sales for each sector ($\mathbf{Y}$). Final sales represent mostly demand by consumers but also include demand by local public agencies as well as demand for goods originating from outside the local region.

Equation (1), utilizing the full matrix notation can be written as:

$$\begin{bmatrix} X_1 \\ \vdots \\ X_n \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} & a_{13} & \cdots & a_{1n} \\ \vdots & & & & \vdots \\ a_{n1} & \cdots & \cdots & \cdots & a_{nn} \end{bmatrix} \begin{bmatrix} X_1 \\ \vdots \\ X_n \end{bmatrix} + \begin{bmatrix} Y_1 \\ \vdots \\ Y_n \end{bmatrix}(\text{i'})$$

The full matrix notion is useful in understanding the basic features of input-output modeling. The aij coefficients of matrix A are interpreted as the dollar value of inputs from sector i necessary to produce one dollar's worth of output for section j. Second, the dimensions of Matrix A, and therefore, of X, are determined by the number of sectors included in the inter-industry matrix. Often, at a regional level, households are included in Matrix A to permit calculation of induced effects caused by changes in household incomes due to direct and indirect economic activity.

The RIMS II Input-Output models used for this study contain 60 sectors that consist of 59 industrial sectors and one household sector. These 60 sectors are described fully in Table III-1.

TABLE III-1
INDUSTRIAL SECTORS IN RIMS II MODEL

Industrial Sectors
1. Crop and animal production
2. Forestry, fishing, and related activities
3. Oil and gas extraction
4. Mining, except oil and gas
5. Support activities for mining
6. Utilities
7. Construction
8. Wood product manufacturing
9. Nonmetallic mineral product manufacturing
10. Primary metal product manufacturing
11. Fabricated metal product manufacturing
12. Machinery manufacturing
13. Computer and electric product manufacturing
14. Electrical equipment and appliance manufacturing
15. Motor vehicle, body, trailer, and parts manufacturing
16. Other transportation equipment manufacturing
17. Furniture and related product manufacturing

18. Miscellaneous manufacturing
19. Food, beverage, and tobacco product manufacturing
20. Textile and textile product mills
21. Apparel, leather, and allied products manufacturing
22. Paper manufacturing
23. Printing and other related support activities
24. Petroleum and coal products manufacturing
25. Chemical manufacturing
26. Plastics and rubber products manufacturing
27. Wholesale Trade
28. Retail Trade
29. Air transportation
30. Rail transportation
31. Water transportation
32. Truck transportation
33. Transit and ground passenger transportation
34. Pipeline transportation
35. Other transportation and support activities
36. Warehousing and storage
37. Publishing including software
38. Motion pictures and sound recording industries
39. Broadcasting and telecommunications
40. Information and data processing services
41. Federal Reserve banks, credit intermediation and related activities
42. Securities, commodity contracts, investments
43. Insurance carriers and related activities
44. Funds, trusts, and other financial vehicles
45. Real Estate
46. Rental and leasing services and lessors of tangible assets
47. Professional, scientific, and technical services
48. .Management of companies and enterprises
49. Administrative and support services
50. Waste management and remediation services
51. Educational services
52. Ambulatory health care services
53. Hospitals and nursing and residential care facilities
54. Social assistance
55. Performing arts, museums, and related activities
56. Amusements, gambling, and recreation
57. Accommodations
58. Food services and drinking places
59. Other services
60. Households

The regional Input-Output model, as described in Equation (1), shows the linkages between various sectors of the economy. This equation must be mathematically manipulated to estimate the indirect and induced economic impacts. Equation (1) can be written as:

$$\mathbf{X} - \mathbf{AX} = \mathbf{Y}$$

or $\qquad$ $$\mathbf{IX} - \mathbf{AX} = \mathbf{Y}$$

or $\qquad$ $$\mathbf{(I\text{-}A)X} = \mathbf{Y}$$

where $\mathbf{I}$ is an identify matrix

or $\qquad$ $$\mathbf{X} = \mathbf{(I - A)^{-1} Y}$$

Letting $\qquad$ $$\mathbf{B} = \mathbf{(I - A)^{-1}}$$

$$\mathbf{X} = \mathbf{BY} \qquad\qquad (2)$$

Again using full matrix notation

$$
\begin{bmatrix} X_1 \\ X_2 \\ X_i \\ X_n \end{bmatrix} =
\begin{bmatrix}
B_{11} & B_{12} & \cdots & B_{1n} \\
B_{21} & B_{22} & \cdots & B_{2n} \\
B_{i1} & B_{i2} & \cdots & B_{in} \\
B_{n1} & B_{n2} & \cdots & B_{nn}
\end{bmatrix}
\begin{bmatrix} Y_1 \\ Y_2 \\ Y_i \\ Y_n \end{bmatrix}
\qquad\qquad (2')
$$

Matrix B is known as the total requirements matrix. This matrix can provide output requirements from each sector resulting from a one-dollar change in final demand from any one sector. Addition of each column of Matrix B, excluding the household sector, provides the total sales effect associated with a one-dollar change in final demand for that sector. The coefficients associated with household sector are typically termed earning (income) impact. Theoretically, matrix B should consist of 60 rows and 60 columns representing the 60 industrial sectors including the households. However, BEA provides this information, at a regional level, only for 20 industry groups (representing rows of matrix B), and for each of the 60 column industries. Therefore, matrix B, used in this study consists of 20 row industry group and 60 column industries including the household sector. Industry groups comprising 20 row industries and their composition is shown in Table III-2

TABLE III-2
INDUSTRY AGGREGATION IN RIMS II MODEL

Industry Groups

Agriculture, forestry, fishing, and Hunting
1. Crop and animal production
2. Forestry, fishing, and related activities

Mining
3. Oil and gas extraction
4. Mining, except oil and gas
5. Support activities for mining

Utilities
6. Utilities

Construction
7. Construction

Manufacturing
8. Wood product manufacturing
9. Nonmetallic mineral product manufacturing
10. Primary metal product manufacturing
11. Fabricated metal product manufacturing
12. Machinery manufacturing
13. Computer and electric product manufacturing
14. Electrical equipment and appliance manufacturing
15. Motor vehicle, body, trailer, and parts manufacturing
16. Other transportation equipment manufacturing
17. Furniture and related product manufacturing
18. Miscellaneous manufacturing
19. Food, beverage, and tobacco product manufacturing
20. Textile and textile product mills
21. Apparel, leather, and allied products manufacturing
22. Paper manufacturing
23. Printing and other related support activities
24. Petroleum and coal products manufacturing
25. Chemical manufacturing
26. Plastics and rubber products manufacturing

Wholesale Trade

27.   Wholesale Trade

Retail Trade

28.   Retail Trade

Transportation and Warehousing

29.   Air transportation
30.   Rail transportation
31.   Water transportation
32.   Truck transportation
33.   Transit and ground passenger transportation
34.   Pipeline transportation
35.   Other transportation and support activities
36.   Warehousing and storage

Information

37.   Publishing including software
38.   Motion pictures and sound recording industries
39.   Broadcasting and telecommunications
40.   Information and data processing services

Finance and Insurance

41.   Federal Reserve banks, credit intermediation and related activities
42.   Securities, commodity contracts, investments
43.   Insurance carriers and related activities
44.   Funds, trusts, and other financial vehicles

Real Estate and rental and leasing

45.   Real Estate
46.   Rental and leasing services and lessors of tangible assets

Professional, scientific, and technical services

47.   Professional, scientific, and technical services

Management of companies and enterprises

48.   Management of companies and enterprises

Administrative and waste management services

49.   Administrative and support services
50.   Waste management and remediation services

Educational services

51.   Educational services

Health care and social assistance

52.   Ambulatory health care services
53.   Hospitals and nursing and residential care facilities
54.   Social assistance

Arts, entertainment, and recreation

55.   Performing arts, museums, and related activities
56.   Amusements, gambling, and recreation

Accommodation and food services

57.   Accommodations
58.   Food services and drinking places

Other services

59.   Other services

Households

60.   Households

For illustration purposes, the following matrix B shows the effects of one-dollar increases in final demand for both the retail trade and accommodation sectors. (Sector 28 and 57 in the RIMS II model represent the retail trade and accommodation sectors respectively). As final demand for both these sectors increases by one dollar each, total output in the economy increases by $3.40. A one-dollar increase in demand for retail sector requires total sales of all sectors to increase by $1.723. Similarly, total sales increase by $1.677 to satisfy a one-dollar increase in demand for the accommodation sector. Since the above dollar increases in sales represent the total impact, the indirect and induced impact due to one-dollar initial increases in the demand for both the retail and accommodation sectors is $0.723 and $0.677, respectively. A similar interpretation follows for increases in demand for other sectors.

$$
\begin{array}{c c}
 & \quad 1 \quad 2 \ \ldots \quad 28 \ldots\ldots\ldots \ 57\ldots \ \ 60 \\
\begin{array}{c}
1 \\
2 \\
\vdots \\
7 \\
\vdots \\
18 \\
\vdots \\
20
\end{array}
&
\left[
\begin{array}{cc}
 & \\
 & \\
 & \\
1.057 & \quad 0.054 \\
 & \\
0.032 & \quad 1.029 \\
 & \\
0.458 & \quad 0.433
\end{array}
\right]
\end{array}
$$

Total B_1 B_2 1.723   1.677 B_{60}

     The numbers presented within the Matrix B, B_{ij}, are called partial multipliers. For example, $B_{7,\,28}$ and $B_{18,\,28}$ equal \$1.057 and \$0.032 respectively (Rows 7 and 18 in the RIMS II model represent the retail trade, and accommodation and food services industry groups respectively). These entries respectively represent the total effect of an increase in demand for the retail trade sector for one-dollar on the retail trade, and accommodation and food services industry groups. In other words, to satisfy one dollar of demand in the retail trade sector, retail industry group produces 1.057 dollars worth of output and the accommodation and food services group produces 0.032 dollars worth of output. Likewise, the partial multiplier effects of one-dollar increases in final demand for accommodation on retail and accommodation and food services groups are \$0.054 and \$1.029. The partial multipliers are often useful in calculating the effects of increases in final demand on specific sectors and/or in the calculation of secondary tax effects if the tax rates on sectors included in the inter-industry matrix are different. The total earning effect of a dollar increase in final demand for both retail trade and accommodation sectors on households are 0.458 and 0.433 respectively.

     Above discussion applied to estimate one of the effects in the Input Output models, namely the output or spending effect. Same methodology was applied to estimate earning and employment effects. In addition, if households are excluded from the initial matrix A, and the above analysis is performed; we get only the direct and indirect effects.

     To separate the indirect effects from the induced effects, we used two separate RIMS II models for the City of Virginia Beach. First model included households as a part of the direct requirement matrix. This model generated indirect and induced effects on output (spending), earnings, and employment. Second model excluded households from the direct requirement matrix and it provided indirect effects on output (spending), earning, and employment. Subtraction of indirect effects obtained from the second model from the results of the first model provides estimates of the induced effects.

II. Calculation of Indirect and Induced Economic Impacts on Private Sector

This section outlines the algorithms used to calculate the indirect and induced economic impact of visitor expenditures on the private sector industries. Details are shown only for output (spending) impact as the analysis to obtain earning and employment impacts is similar. The following algorithm is used for the calculation of Indirect and Induced Impact:

$$
\begin{bmatrix} \text{Indirect \&} \\ \text{Induced} \\ \text{Spending} \\ \text{Impact} \end{bmatrix} = \begin{bmatrix} \text{Total} \\ \text{Spending} \\ \text{Impact} \end{bmatrix} - \begin{bmatrix} \text{Direct} \\ \text{Spending} \\ \text{Impact} \end{bmatrix}
$$

A. Indirect and Induced Spending Impact

The direct sales impact is the expenditures of visitors. These expenditures *exclude* all local and state sales taxes. These expenditures include four categories of spending: Accommodation, Food services, Sports and Amusement, and Retail Sales. Total Spending Impact is estimated from the Input-Output model, in particular the total requirement matrix (B). The algorithm for estimating total spending impact is:

$$
\begin{bmatrix} \text{Total} \\ \text{spending} \\ \text{impact on} \\ \text{Privare Sector} \end{bmatrix} = \sum_{i=1}^{20} \sum_{j} B_{ij} \times \begin{bmatrix} \text{Direct} \\ \text{Spending} \\ \text{for Industrial} \\ \text{Sector}_j \end{bmatrix}
$$

$$
= \sum_{i=1}^{20} B_{i,\text{Retail}} \times \begin{bmatrix} \text{Direct} \\ \text{Spending} \\ \text{on Retail} \\ \text{Sales} \end{bmatrix} + \sum_{i=1}^{20} B_{i,\text{Amusements}} \times \begin{bmatrix} \text{Direct} \\ \text{Spending} \\ \text{on} \\ \text{Amusements} \end{bmatrix} +
$$

$$
\sum_{i=1}^{20} B_{i,\text{Accommodations}} \times \begin{bmatrix} \text{Direct} \\ \text{Spending} \\ \text{on} \\ \text{Accommodations} \end{bmatrix} + \sum_{i=1}^{20} B_{i,\text{Food}} \times \begin{bmatrix} \text{Direct} \\ \text{Spending} \\ \text{on} \\ \text{Food Services} \end{bmatrix}
$$

As previously described, the indirect and induced impacts represent the difference between the total sales impact and the direct sales impact. Similar methodology is used to calculate the indirect and induced impacts on earnings and employment but here matrix A will represent earning requirements and employment requirements respectively. This obviously will result in different indirect requirement matrices B for the earning as well as employment impacts. The resulting new matrix B coefficients are then applied to the appropriate direct spending expenditures to obtain indirect and induced impacts on earning and employment.

B. <u>Indirect Impact</u>

The above algorithms are also used to calculate the indirect impact on output (spending), earnings, and employment. The difference here is that households are excluded from the direct coefficient matrix. Finally, the difference between the indirect and induced impacts obtained earlier and the indirect impacts obtained by excluding the household sector is the induced impact and is calculated as follows:

$$\begin{bmatrix} \text{Induced} \\ \text{Impact} \end{bmatrix} = \begin{bmatrix} \text{Indirect \&} \\ \text{Induced} \\ \text{Impact} \end{bmatrix} - \begin{bmatrix} \text{Indirect} \\ \text{Impact} \end{bmatrix}$$

III. Calculation of Total Tourism Economic Impact

In order to obtain total tourism economic impact it is necessary to add to the total private sector impacts, obtained above, the direct local sales taxes that accrue to the city as a result of their direct spending in Virginia Beach. This impact should also take into account number of city employees directly associated with the tourism activity and their earnings. Addition of these three categories to the private sector impact yields total tourism economic impact.

APPENDIX IV: TIME SERIES DATA

The availability of more recent and contemporaneous data, as well as incremental methodological improvements in successive years of Virginia Beach economic impact studies, create the opportunity to update past studies relative to a 2005 benchmark in order that inter-year comparisons of visitor spending on latest available data and comparable (apples-to-apples) basis can be undertaken. Accordingly, revisions to previous studies to insure inter-year comparability and uniformity of technique, the outcomes of which are displayed in the accompanying Table IV-1, are detailed as follows.

1. Census household data, an important component in the estimation of visitors and their spending through the study years, recently have become available with a one-year lag. Therefore the estimation of yearly visitors and their spending data have been updated to reflect the latest available information from the U.S. Census and the American Community Survey.

2. Estimates of visitors staying in hotels in 2000 and 2001 were originally based on occupancy study (survey data) while those for 2002 to 2004 were based on hotel room nights from the Tourism Indicators Report. More accurate disaggregated tax data are now available and hotel room nights have been revised accordingly.

3. All data are adjusted to conform to the U. S. Department of Commerce BEA Satellite Account definitions of the tourist industry.

4. House/Condo rentals as well as hotels are adjusted for previously not available or updated property tax data.

5. Hotel visitors have been adjusted to reflect the statistical variance in multiple party room reservations.

6. Visitor spending data have been adjusted to reflect the effect of potential survey over-estimation of taxable sales or for the potential overlap created by U.S. Department of Commerce NAICS definitions.

7. A new mathematical model has been developed to more closely represent the effect of the Commonwealth's distribution of sales tax revenue created by visitor spending.

Table IV-1: TIME SERIES ESTIMATES OF VISITOR SPENDING, CITY REVENUE AND CITY EXPENDITURES IN VIRGINIA BEACH*

Year	Visitor Spending (Millions $)	City Revenue (Millions $)	City Expenditures (Millions $)
2000	$647.6	$50.5	$34.3
2001	$685.0	$53.6	$32.3
2002	$726.9	$62.3	$32.8
2003	$756.8	$65.6	$39.8
2004	$791.6	$68.8	$47.4
2005	$828.0	$70.5	$60.9
2006	$856.9	$73.2	$64.4

*Updated to include the most recently available data and method as described on the previous page.

APPENDIX V: Additional Estimates of Visitor Spending on Virginia Beach, 2004

In interpreting the statistics of this study it is important to recognize that a number of the study's estimates are based on survey data and are therefore potentially subject to estimation error. Alternative estimates of statistics subject to estimation error provide the means to further weigh and access their relative value. Fortunately, in the case of Virginia Beach, other estimates of visitor spending based on different surveys and methods are available.

The Virginia Tourism Corporation contracted with the Travel Industry of America (TIA) in 2004 to estimate visitor spending in Virginia along with that in its cities and counties. The TIA using its Travel Industry Economic Model (TIEM) estimated 2004 domestic visitor spending in Virginia Beach at $894.8 million ("The Economic Impact of Domestic Travel Expenditures on Virginia Counties 2004" TIA, December 2005). Tables V-1 and V-2 that follow use the 2004 TIEM visitor spending data, along with TIEM's proportional distribution of visitor spending by spending category in Virginia Beach, to demonstrate the yield to the City of Virginia Beach of only *locally levied point of sale taxes* as derived from the TIEM aggregate visitor spending and spending distribution data.

Table V-1: Taxable Sales based on TIA's TIEM Estimate of Visitor Spending ($894.8M) and TIA's Distribution of Spending by Category in Virginia Beach, 2004

Category	Proportion of Total Visitor Spending*	Total Spending by Category ($ Millions)	Estimated Taxable Sales** ($ Millions)
Lodging	.289	$258.60	$229.35
Food Service	.298	$266.65	$241.86
Entertainment	.061	$ 54.58	$ 49.51
Other	.352	$314.97	$300.69
Total	1.00	$894.80	$821.41

*Source: TIA and the Virginia Tourism Corporation.
**Taxable sales are the residual of estimated spending in the category exclusive of any sales taxes.

Table V-2: Estimated *City Collected Sales Taxes* accruing to the City of Virginia Beach derived from TIA's estimate of Visitor Spending, 2004

Category	Taxable Sales ($ Millions)*	Virginia Beach Tax Rate**	Estimated City Taxes (Millions $)
Lodging	$229.35	8.0%	$18.35
Food Service	$241.86	5.5%	$13.30
Entertainment	$ 49.51	8.0%	$ 3.96
Other	$300.69	0%	$ 0.00
Room Night Tax		$1 per night	$ 2.10
Total	$821.41		$37.71

*Source: Table V-1
**Source: City of Virginia Beach. The entertainment tax is estimated as the weighted mean value of the Amusement and Participatory Sports tax rate. Room night taxes are based on City Tax estimate of 2004 room nights.

Given the data in Tables V-1 and V-2, estimated local taxes accruing to the City of Virginia Beach in 2004 based on TIA's spending estimates, and only those taxes levied at the point of sale by the City, are $37.71 million compared to $37.62 million as reported by TIA. The projections in Tables V-1 and V-2 *do not* include real estate taxes, personal property taxes, state sales tax rebates to the City, utility, cigarette and alcohol taxes, BPOL taxes, special district taxes or CVB revenue, all of which accrued to the City of Virginia Beach as a result of visitor spending in 2004.

TIA's estimate of visitor spending in 2005 is $985 million. If the visitor spending distribution were the same in 2005 as that observed for 2004, estimated city taxes would be roughly $40 to $41 million.

APPENDIX VI: DATA SOURCES

U.S. Census, American Community Survey

U.S. Department of Commerce, RIMS II Input Output Model

2005 Virginia Beach Summer Visitor Profile

Virginia Beach City Treasurer's Office

Virginia Beach Department of Finance

Statistical Abstract of the United States, 2004

Virginia Employment Commission

Virginia Department of Taxation

Virginia Beach School Board

Virginia Auditor of Public Accounts

Virginia Tourism Corporation

Travel Industry of America

An Economic Evaluation of Tourism Advertising Expenditures

Continental Research Inc. Surveys

 US Department of Commerce, Bureau of Economic Analysis

Virginia Beach Convention & Visitors Bureau

Federal Reserve Economic Data (Fred)

Smith Travel Research

United Nations, World Tourism Organization

APPENDIX VII: 2006 CITY OF VIRGINIA BEACH TOURISM RELATED EXPENDITURES BY CATEGORY OF EXPENDITURE

Operating Expenditures

Convention & Visitors Bureau	$	3,753,701
TAP Special Revenue Fund	$	8,558,186
Convention Center/Pavilion Operations (includes CC Utilities)	$	1,014,548
Mgmt Serv: Office Lease for CVB	$	343,692
Parking Enterprise Fund	$	1,334,438
Major Projects Special Revenue Fund	$	343,523
PW: 10020 Beach Management & Engineering	$	161,366
PW: 10612 Dredge Maintenance	$	1,465,000
PW: 10615 Beach Operations (portion of)	$	859,845
PW: 10625 TGIF Beach Operations (portion of)	$	302,580
PW: 10655 Resort Building Maintenance	$	611,025
PW: 10659 TGIF Resort Building Maintenance	$	227,280
PW: 10614 Traffic Operations (portion of)	$	278,145
PW: 10703 Resort Street Sweeping (portion of)	$	90,000
PW: Utilities @ Oceanfront (excludes most of Convention Center)	$	408,510
PW: 16th Street Outfall Improvement Project	$	500,000
P&R: 11044 Resort Area Landscape	$	1,523,702
P&R: 11048 TGIF Resort Area Landscape	$	35,399
Mass Transit	$	326,962
Boardwalk Art Show	$	10,100
CVB: Oceanfront Events	$	2,949,540
Public Safety:		
EMS	$	845,957
Fire	$	2,761,878
Police	$	4,894,441
COMIT E911 Call Center: 21040	$	1,192,259
Total Operating Expenditures	$	34,792,077

Source: City of Virginia Beach

CAPITAL IMPROVEMENT PROJECTS

Capital Improvement Project Expenditures

Project	Tourism Related Spending
Dome Site Safety Improvements	$ 9,820
24th Street Park	$ 45,500
Resort Area Parking Improvements	$ 137,125
Rudee Inlet Seabee Demonstration	$ 12,325
Navigation Aide	$ 8,625
Resort Streetscape Improvements	$ 2,305,852
MSM Expansion	$ 851,144
Conf/Conv Facility Expansion Site	$ 202,810
Virginia Aquarium Parking	$ 285,000
Convention Ctr Replacement	$ 15,255,880
31st St Parking Garage	$ 2,261,775
31st Street Development/Site Acquis	$ 171,955
24th Street Stage Renovations	$ 78,654
Beach Erosion Ctl/Hurr Prot	$ 3,523,316
Rudee Loop Development	$ 1,376,321
Economic & Tourism Develop Studies	$ 61,750
19th Street Corridor Design/Improve	$ 96,424
Virginia Aquarium Phase III	$ 6,248
Virginia Aquarium Renewal & Replacement	$ 26,688
City Gateway Project	$ 130,413
Ocean Walk	$ 35,494
Beach Street USA Phase 1	$ 97,500
Nature-Based Visitation Development	$ 3,750
Atlantic Ave Trolley Lanes	$ 73,838
Public Beach Improvement Program	$ 28,995
Rudee Walk Phase 1	$ 17,418
Dome Area Development	$ 42,446
Museum Park/Nature Area	$ 8,625
Rudee Inlet Outer Channel Maint Dred	$ 50,614
Beach Profile Monitoring System	$ 18,938
Beach Replenishment	$ 314,476
Rudee Inlet Dredging (local)	$ 365,668
Beach Borough Service Center	$ 150,518
Laskin Rd Gateway	$ 1,154,576
19th Street Corridor Design and Improvements	$ 96,429
Total Capital Improvement Spending	$ 29,589,543

Source: City of Virginia Beach

APPENDIX VIII: INDIRECT, INDUCED AND TOTAL EFFECTS OF VISITOR SPENDING

Indirect Effect of Visitor Spending on Output and Employment in Virginia Beach *Private Sector Industries*

Industry	Spending	Jobs
Real Estate, Rental and Leasing	$ 51.9M	134
Information Services	$ 36.6M	81
Professional, Technical & Scientific Services	$ 36.3M	189
Finance and Insurance	$ 27.7M	93
Administrative and Waste Management Services	$ 23.7M	279
Management of Companies	$ 20.5M	108
Wholesale Trade	$ 13.6M	65
Manufacturing	$ 12.5M	51
Transportation and Warehousing	$ 9.5M	71
Other Services	$ 9.1M	72
Construction	$ 7.4M	49
Retail Trade	$ 6.6M	82
Accommodation and Food Services	$ 5.8M	91
Utilities	$ 3.5M	4
Agriculture, Forestry, Fishing, and Hunting	$ 2.4M	24
Arts, Entertainment, and Recreation	$ 1.7M	26
Educational Services	$ 0.3M	4
Health Care and Social Assistance	$ 0.08M	1
Total	**$269.0M**	**1,424**

Induced Effect of Visitor Spending on Output and Employment in Virginia Beach
Private Sector Industries

Industry	Spending	Jobs
Real Estate, Rental and Leasing	$ 57.7M	148
Health Care and Social Assistance	$ 37.6M	384
Retail Trade	$ 37.5M	469
Finance and Insurance	$ 34.6M	136
Information Services	$ 19.9M	46
Accommodation and Food Services	$ 18.7M	303
Professional, Technical & Scientific Services	$ 16.7M	87
Other Services	$ 16.1M	171
Wholesale Trade	$ 12.8M	61
Administrative and Waste Management Services	$ 9.5M	110
Manufacturing	$ 5.4M	24
Educational Services	$ 4.8M	59
Arts, Entertainment, and Recreation	$ 4.2M	66
Transportation and Warehousing	$ 3.8M	28
Management of Companies	$ 3.6M	19
Construction	$ 2.5M	16
Utilities	$ 2.2M	2
Agriculture, Forestry, Fishing, and Hunting	$ 1.4M	13
Total	$289.2M	2,145

Total Effect of Visitor Spending on Output and Employment in Virginia Beach *Private Sector Industries*

Industry	Spending	Jobs
Accommodation and Food Services	$484.2M	7,067
Retail Trade	$351.4M	4,402
Real Estate, Rental and Leasing	$109.6M	282
Finance and Insurance	$ 62.3M	229
Information Services	$ 56.6M	127
Professional, Technical & Scientific Services	$ 53.0M	276
Health Care and Social Assistance	$ 37.7M	384
Administrative and Waste Management Services	$ 33.2M	389
Wholesale Trade	$ 26.4M	127
Other Services	$ 25.3M	244
Management of Companies	$ 24.1M	127
Arts, Entertainment, and Recreation	$ 22.8M	352
Manufacturing	$ 17.9M	76
Transportation and Warehousing	$ 13.3M	100
Construction	$ 9.8M	65
Utilities	$ 5.7M	6
Educational Services	$ 5.1M	63
Agriculture, Forestry, Fishing, and Hunting	$ 3.7M	37
Total	$ 1.34B	10,782

NOTES