

**The Economic Impact  
of Travel on  
Massachusetts Counties  
2006**

A Study Prepared for the  
**Massachusetts Office of Travel and Tourism**  
by the  
Research Department of the  
Travel Industry Association  
Washington, D.C.  
September 2007



## **PREFACE**

This study was conducted by the Research Department of the Travel Industry Association (TIA) for the **Massachusetts Office of Travel and Tourism**. The study provides 2005 and preliminary 2006 estimates of domestic and international traveler expenditures in Massachusetts, as well as the employment, payroll income, and federal, state and local tax revenue directly generated by these expenditures. Multiplier impact of travel spending is also included. For the purpose of comparison, historical impact data are covered in this report.

Additionally, this study provides estimates by county for domestic travel expenditures and employment, payroll income, and state and local tax revenue directly generated by domestic expenditures.

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Washington, D.C.  
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## **INTRODUCTION**

This report presents preliminary 2006 estimates of the impact of U.S. resident traveler and international traveler spending in Massachusetts and U.S. resident traveler spending in Massachusetts' 14 counties, as well as the employment, payroll income and tax revenue directly generated by the spending. For the purpose of comparison, historical impact data are also included in this report.

All estimates of the economic impact of travel contained in this report are the product of TIA's Travel Economic Impact Model (TEIM), a proprietary economic model developed expressly to indicate the expenditures, employment, payroll, and tax revenue generated by travel away from home in the United States.

The Travel Economic Impact Model (TEIM) was initially developed in 1975 for the U.S. Department of the Interior to indicate the economic value of travel and tourism to states and counties. The original TEIM has been revised substantially based upon more accurate and targeted input data available from governments and the private sector.

The domestic component of TEIM is based on national surveys conducted by TIA and other travel-related data developed by TIA, various federal agencies and national travel organizations each year. A summary of the methodology is provided in Appendix A.

The international travel expenditure estimates are based on the Office of Travel and Tourism Industries' (OTTI) In-Flight Survey and data provided to OTTI from Canada and Mexico. Other estimates of the economic impact of international visitors to the U.S. are generated by the TEIM by incorporating the estimated international travelers' expenditures with the data series utilized to produce the domestic estimates.

U.S. residents traveling in Massachusetts includes both state residents and out-of-state visitors traveling away from home overnight in paid accommodations, or on day trips to places 50 miles or more away from home. Travel commuting to and from work; travel by those operating an airplane, bus, truck, train or other form of common carrier transportation; military travel on active duty; and travel by students away at school are all excluded from the model. In addition, the payroll and employment estimates represent impact generated in the private sector and exclude public-supported payroll and employment.

Since additional data relating to travel and its economic impact in 2006 will become available subsequent to this study, TIA reserves the right to revise these estimates in the future.

## **EXECUTIVE SUMMARY**

### **Total Impact of Travel**

- Total domestic and international traveler spending in Massachusetts, including direct and indirect spending, was nearly \$22.6 billion in 2006, up 8.9 percent from 2005.
- Total payroll income generated by travel spending was close to \$6.5 billion in 2006, up 3.5 percent from 2005.
- Domestic and international traveler expenditures generated 207.9 thousand jobs in Massachusetts during 2006, a 0.3 percent increase from 2005. These jobs represent 6.4 percent of the state's total non-farm employment.

### **Direct Impact of Travel**

- Domestic and international travelers directly spent over \$14.2 billion in Massachusetts during 2006, up 8.6 percent from 2005. Domestic traveler spending increased 7.7 percent while international traveler spending increased 16.6 percent.
- Payroll income generated by direct travel spending in Massachusetts totaled nearly \$3.4 billion during 2006, up 3.5 percent from 2005.
- Travel expenditures directly generated 125.8 thousand jobs within Massachusetts in 2006, up 0.5 percent from 2005. Travel-generated jobs in Massachusetts comprised 3.9 percent of the total non-farm employment in the state during 2006.
- On average, every \$112,952 spent in Massachusetts by domestic and international travelers generated one job in 2006.
- Travel spending in Massachusetts directly generated nearly \$2.2 billion in tax revenue for federal, state and local governments in 2006, up 5.8 percent from 2005.
- Suffolk County, which includes the city of Boston, received close to \$6.0 billion in domestic travel expenditures to lead all Massachusetts counties during 2006.

## TRAVEL IMPACT ON U.S. ECONOMY - 2006

The U.S. economy continued to grow in 2006, with real GDP increasing 2.9 percent. Both real disposable income and real personal consumption expenditures rose 3.1 percent from 2005. The U.S. job market improved during 2006 as annual average total non-farm employment increased nearly 2.5 million to 136.2 million. This reduced the national unemployment rate to 4.6 percent. The Consumer Price Index (CPI), an indicator of the level of price inflation, was up 3.2 percent in 2006, while TIA’s Travel Price Index increased 4.8 percent during the same period, primarily due to a significant increase in the price of gasoline. The total U.S. current account deficit rose to a record high of \$811.5 billion in 2006. The U.S. travel industry, however, generated a \$13.7 billion trade surplus for the country in 2006 (excluding international passenger fares).

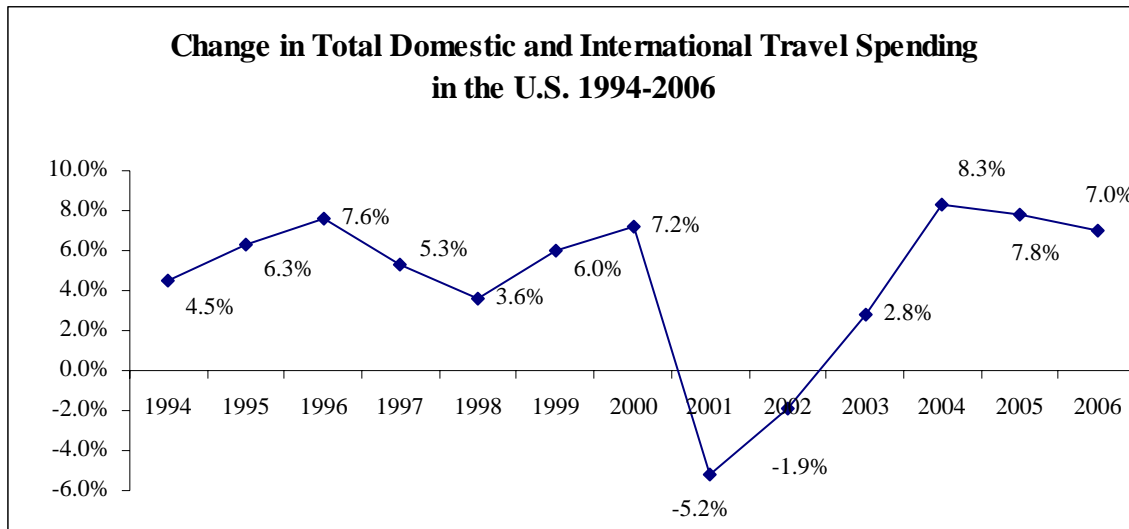
### U.S. Travel Volume in 2006

In 2006, total U.S. domestic person-trips were up 0.4 percent over 2005, according to TIA TravelScope®/DIRECTIONS® by DKS&A survey.

International visitors to the U.S. increased 3.8 percent in 2006 to 51.1 million. However, the volume of international travel to the U.S. remained 0.3 percent lower than its historical record set in 2000.

### Travel Expenditures in 2006

Domestic travelers spent \$614.2 billion in the U.S. during 2006, an increase of 7.3 percent over 2005. International traveler expenditures in the U.S., excluding international passenger fares, increased 4.8 percent to total \$85.7 billion in 2006. Combined domestic and international travel expenditures in the U.S. totaled nearly \$700 billion, 7.0 percent more than in 2005.



Sources: TIA, OTTI

Domestic travel spending on auto transportation jumped 10.1 percent over 2005, to \$117 billion, reflecting the dramatic increase in gasoline prices during 2006.

Domestic travel spending on lodging increased 8.4 percent over 2005. According to Smith Travel Research, hotel room demand (hotel room-nights sold) grew 1.1 percent and average daily rate jumped 7.0 percent.

**Table 1: Travel Expenditures in the U.S. 2005-2006**

<u>Industry Sector*</u>	2006 Travel Spending in The U.S. (\$ Billions)	2005 Travel Spending in The U.S. (\$ Billions)	2006 Percent Change Over 2005 (%)
Public Transportation	\$116.8	\$108.5	7.6%
Auto Transportation	117.0	106.3	10.1%
Lodging	111.2	102.5	8.4%
Foodservice	149.3	141.6	5.5%
Entertainment	71.3	66.8	6.8%
General Retail	48.6	46.5	4.5%
Domestic Travelers	\$614.2	\$572.1	7.3%
International Travelers*	\$85.7	\$81.8	4.8%
Total	\$699.9	\$653.9	7.0%

Source: TIA

\* Total international traveler spending does not include international passenger fares.

## Travel Employment in 2006

Nearly 2.5 million jobs were added to the non-farm sector of the strengthening U.S. economy in 2006, a 1.8 percent increase from 2005, according to the U.S. Bureau of Labor Statistics (BLS). This reduced the national unemployment to 4.6 percent in 2006 from 5.1 percent in 2005. Domestic and international travelers' spending in the U.S. directly generated 7.5 million jobs for the U.S. economy in 2006, up 0.4 percent from 2005.

Domestic travel expenditures directly generated 6.6 million jobs for the travel and tourism industry in 2006, representing a 0.5 percent increase from 2005. Among all travel industry categories investigated in this report, the greatest gain occurred in the arts/entertainment/recreation industry, with employment up 1.8 percent from 2005. Travel-generated employment in the public transportation sector decreased 2.6 percent, mainly due to a large decline in the airline industry. The employment generated by travel in the retail industry experienced a slight decline as well.

**Table 2: Travel-Generated Employment in the U.S., 2005-2006**

<u>Industry Sector</u>	<u>2006 Travel-Generated Employment (Thousands)</u>	<u>2005 Travel-Generated Employment (Thousands)</u>	<u>2006 Percent Change Over 2005 (%)</u>
Public Transportation	904.6	928.4	-2.6%
Auto Transportation	267.9	265.4	1.0%
Lodging	1,238.9	1,228.8	0.8%
Foodservice	2,594.4	2,566.9	1.1%
Entertainment	1,130.5	1,110.1	1.8%
General Retail	337.3	340.6	-1.0%
Travel Planning	176.3	173.7	1.5%
Domestic Travelers	6,649.9	6,613.9	0.5%
International Travelers*	892.2	894.9	-0.3%
Total	7,542.1	7,508.8	0.4%

Sources: TIA, BLS

\* Excludes jobs generated by international passenger fare payments.

**Table 3: Overall U.S. Economic Developments, 2004-2006**

<u>Sector</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Nominal gross domestic product (\$ Billions)	\$11,685.9	\$12,433.9	\$13,194.7
Real gross domestic product (\$ Billions)*	\$10,675.8	\$11,003.4	\$11,319.4
Real disposable personal income (\$ Billions)*	\$8,008.9	\$8,147.9	\$8,396.9
Real personal consumption expenditures (\$ Billions)*	\$7,561.4	\$7,803.6	\$8,044.1
Consumer price index**	188.9	195.3	201.6
Travel Price Index**	210.2	221.4	232.0
Non-farm payroll employment (Millions)	131.4	133.7	136.2
Unemployment rate (%)	5.5	5.1	4.6
<b><i>Percentage change from previous year</i></b>			
Nominal gross domestic product	6.6%	6.4%	6.1%
Real gross domestic product	3.6%	3.1%	2.9%
Real disposable personal income	3.6%	1.7%	3.1%
Real personal consumption expenditures	3.6%	3.2%	3.1%
Consumer price index	2.7%	3.4%	3.2%
Travel Price Index	4.5%	5.3%	4.8%
Non-farm payroll employment	1.1%	1.7%	1.8%

Sources: U.S. Dept. of Commerce, U.S. Dept. of Labor, U.S. Census Bureau, TIA

\* Chained 2000 dollars

\*\* Base period: 1982-84=100

**Table 4: U.S. Travel Trends, 2002-2006p**

<u>Category</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006p</u>
U.S. travel expenditures (\$ billions)	\$478.3	\$495.8	\$532.4	\$572.1	\$614.17
International travel expenditures in the U.S.* (\$ billions)	\$66.6	\$64.4	\$74.5	\$81.8	\$85.7
Total travel expenditures (\$billions)	\$544.9	\$560.1	\$606.9	\$653.9	\$699.9
Travel price index**	196.3	201.1	210.2	221.4	232.0
Travel-generated employment*** (thousands)	7,440.5	7,336.0	7,452.7	7,508.8	7,542.1

***Percentage change from previous year***

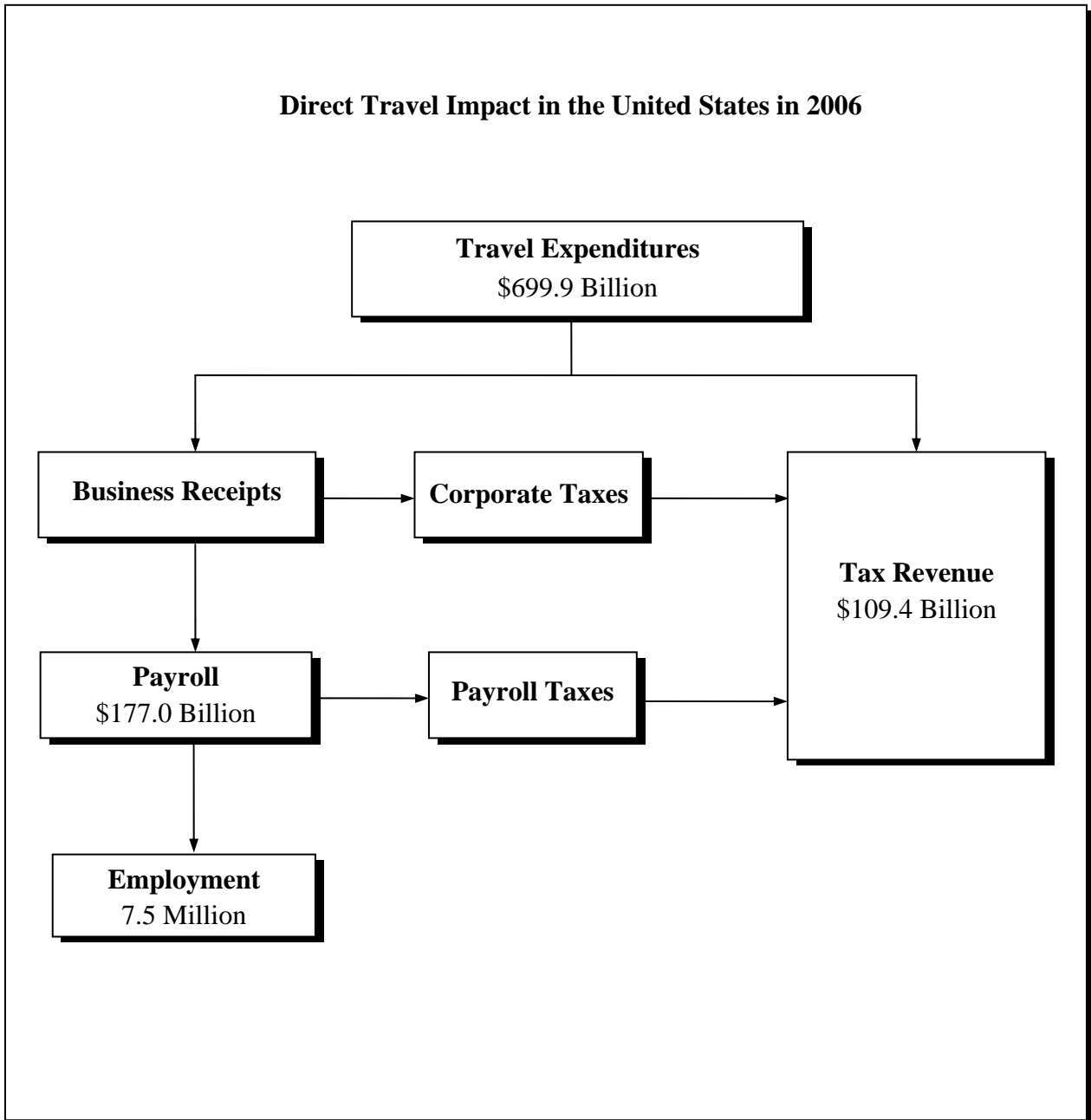
U.S. travel expenditures	-1.1%	3.7%	7.4%	7.5%	7.3%
International travel expenditures in the U.S.	-7.4%	-3.4%	15.8%	9.7%	4.8%
Total travel expenditures (\$billions)	-1.9%	2.8%	8.3%	7.8%	7.0%
Travel price index	-0.3%	2.4%	4.5%	5.3%	4.8%
Travel-generated employment	-3.0%	-1.4%	1.6%	0.8%	0.4%

Sources: TIA, Office of Travel and Tourism Industries (OTTI)/International Trade Administration, BLS, BEA

\* International traveler spending does not include international passenger fares.

\*\* Base period: 1982-84=100

\*\*\*Includes employment generated by both domestic and international travel expenditures.



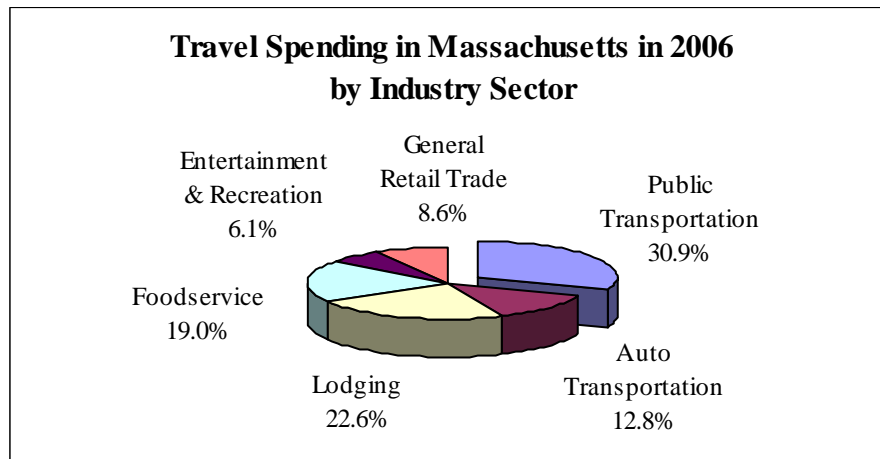
Source: TIA

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## TRAVEL IMPACT ON MASSACHUSETTS - 2006

### Travel Expenditures

- Domestic and international travelers in Massachusetts directly spent over \$14.2 billion on transportation, lodging, food, entertainment and recreation and incidentals during 2006. This represents an increase of 8.6 percent from 2005. Domestic travelers spent nearly \$12.6 billion while international travelers spent over \$1.6 billion, up 7.7 percent and 16.6 percent, respectively, from 2005.
- In 2006, domestic and international travelers spent nearly \$4.4 billion on public transportation, up 8.3 percent from 2005.
- Domestic and international travelers spent over \$3.2 billion on lodging during 2006, an increase of 11.9 percent from 2005.
- Spending on foodservice by domestic and international travelers totaled \$2.7 billion, up 6.8 percent from 2005.
- Domestic and international travel spending on auto transportation increased by 7.3 percent in 2006 to more than \$1.8 billion.



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1. Foodservice sector includes restaurants, grocery stores and other eating and drinking establishments.
  2. Lodging sector consists of hotels and motels, campgrounds, and ownership or rental of vacation or second homes.
  3. Public transportation sector comprises air, intercity bus, rail, boat or ship, and taxicab or limousine service.
  4. Auto transportation sector includes privately-owned vehicles that are used for trips (e.g., automobiles, trucks, campers or other recreational vehicles), gasoline stations, and automotive rental.
  5. General retail trade sector includes gifts, clothes, souvenirs, and other incidental retail purchases.
  6. Entertainment and recreation sector includes such items as golf, skiing and gaming.
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**Table 5: Travel Expenditures in Massachusetts by Industry Sector, 2005-2006**

<i>2006 Expenditures</i>	Domestic (\$ Millions)	International (\$ Millions)	Total (\$ Millions)	% of Total
Public Transportation	\$4,168.6	\$216.4	\$4,385.0	30.9%
Auto Transportation	1,802.0	22.1	1,824.1	12.8%
Lodging	2,644.0	571.8	3,215.8	22.6%
Foodservice	2,403.8	296.8	2,700.6	19.0%
Entertainment & Recreation	733.2	135.7	868.9	6.1%
General Retail Trade	840.6	376.2	1,216.8	8.6%
<b>Total</b>	<b>\$12,592.2</b>	<b>\$1,619.1</b>	<b>\$14,211.3</b>	<b>100.0%</b>

**2005 Expenditures**

Public Transportation	\$3,861.3	\$187.3	\$4,048.6	31.0%
Auto Transportation	1,681.6	18.2	1,699.8	13.0%
Lodging	2,397.7	476.8	2,874.6	22.0%
Foodservice	2,271.0	257.3	2,528.3	19.3%
Entertainment & Recreation	685.0	120.2	805.2	6.2%
General Retail Trade	794.9	328.6	1,123.5	8.6%
<b>Total</b>	<b>\$11,691.7</b>	<b>\$1,388.3</b>	<b>\$13,080.0</b>	<b>100.0%</b>

**Percentage change  
2006 over 2005**

	Domestic (%)	International (%)	Total (%)
Public Transportation	8.0%	15.6%	8.3%
Auto Transportation	7.2%	21.7%	7.3%
Lodging	10.3%	19.9%	11.9%
Foodservice	5.8%	15.4%	6.8%
Entertainment & Recreation	7.0%	12.9%	7.9%
General Retail Trade	5.8%	14.5%	8.3%
<b>Total</b>	<b>7.7%</b>	<b>16.6%</b>	<b>8.6%</b>

Source: TIA

Travel Expenditures in Massachusetts, 2002-2006

**Table 6: Travel Expenditures in Massachusetts by Industry Sector, 2002-2006**  
(Expenditures in millions of dollars)

	2002	2002	2002	2003	2003	2003	2004	2004	2004	2005	2005	2005	2006	2006	2006
<b>Expenditures</b>	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Transportation	3,207.0	194.4	3,401.4	3,224.1	171.5	3,395.6	3,602.9	190.2	3,793.2	3,861.3	187.3	4,048.6	4,168.6	216.4	4,385.0
Auto Transportation	1,265.9	17.9	1,283.8	1,325.8	16.1	1,341.8	1,532.0	18.2	1,550.2	1,681.6	18.2	1,699.8	1,802.0	22.1	1,824.1
Lodging	2,084.3	492.9	2,577.2	2,051.7	415.0	2,466.6	2,248.6	488.1	2,736.7	2,397.7	476.8	2,874.6	2,644.0	571.8	3,215.8
Foodservice	1,958.5	271.5	2,230.0	2,024.5	233.1	2,257.6	2,170.3	267.7	2,438.0	2,271.0	257.3	2,528.3	2,403.8	296.8	2,700.6
Entertainment & Rec.	611.9	124.6	736.5	618.7	111.1	729.8	655.3	124.6	779.9	685.0	120.2	805.2	733.2	135.7	868.9
General Retail Trade	689.8	339.1	1,028.9	707.6	299.9	1,007.4	766.3	343.2	1,109.5	794.9	328.6	1,123.5	840.6	376.2	1,216.8
<b>Total</b>	<b>9,817.4</b>	<b>1,440.4</b>	<b>11,257.8</b>	<b>9,952.3</b>	<b>1,246.6</b>	<b>11,198.9</b>	<b>10,975.4</b>	<b>1,432.0</b>	<b>12,407.5</b>	<b>11,691.7</b>	<b>1,388.3</b>	<b>13,080.0</b>	<b>12,592.2</b>	<b>1,619.1</b>	<b>14,211.3</b>
<b>% Change*</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>
Public Transportation	-6.1%	-22.0%	-7.2%	0.5%	-11.8%	-0.2%	11.8%	10.9%	11.7%	7.2%	-1.5%	6.7%	8.0%	15.6%	8.3%
Auto Transportation	-3.4%	-19.5%	-3.6%	4.7%	-10.2%	4.5%	15.6%	13.5%	15.5%	9.8%	-0.4%	9.6%	7.2%	21.7%	7.3%
Lodging	-0.6%	-21.0%	-5.3%	-1.6%	-15.8%	-4.3%	9.6%	17.6%	10.9%	6.6%	-2.3%	5.0%	10.3%	19.9%	11.9%
Foodservice	0.9%	-20.3%	-2.3%	3.4%	-14.1%	1.2%	7.2%	14.8%	8.0%	4.6%	-3.9%	3.7%	5.8%	15.4%	6.8%
Entertainment & Rec.	-0.1%	-20.0%	-4.2%	1.1%	-10.8%	-0.9%	5.9%	12.1%	6.9%	4.5%	-3.6%	3.2%	7.0%	12.9%	7.9%
General Retail Trade	-1.0%	-18.7%	-7.6%	2.6%	-11.6%	-2.1%	8.3%	14.5%	10.1%	3.7%	-4.3%	1.3%	5.8%	14.5%	8.3%
<b>Total</b>	<b>-2.6%</b>	<b>-20.4%</b>	<b>-5.3%</b>	<b>1.4%</b>	<b>-13.5%</b>	<b>-0.5%</b>	<b>10.3%</b>	<b>14.9%</b>	<b>10.8%</b>	<b>6.5%</b>	<b>-3.1%</b>	<b>5.4%</b>	<b>7.7%</b>	<b>16.6%</b>	<b>8.6%</b>
<b>% of Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>
Public Transportation	32.7%	13.5%	30.2%	32.4%	13.8%	30.3%	32.8%	13.3%	30.6%	33.0%	13.5%	31.0%	33.1%	13.4%	30.9%
Auto Transportation	12.9%	1.2%	11.4%	13.3%	1.3%	12.0%	14.0%	1.3%	12.5%	14.4%	1.3%	13.0%	14.3%	1.4%	12.8%
Lodging	21.2%	34.2%	22.9%	20.6%	33.3%	22.0%	20.5%	34.1%	22.1%	20.5%	34.3%	22.0%	21.0%	35.3%	22.6%
Foodservice	19.9%	18.8%	19.8%	20.3%	18.7%	20.2%	19.8%	18.7%	19.6%	19.4%	18.5%	19.3%	19.1%	18.3%	19.0%
Entertainment & Rec.	6.2%	8.7%	6.5%	6.2%	8.9%	6.5%	6.0%	8.7%	6.3%	5.9%	8.7%	6.2%	5.8%	8.4%	6.1%
General Retail Trade	7.0%	23.5%	9.1%	7.1%	24.1%	9.0%	7.0%	24.0%	8.9%	6.8%	23.7%	8.6%	6.7%	23.2%	8.6%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: TIA

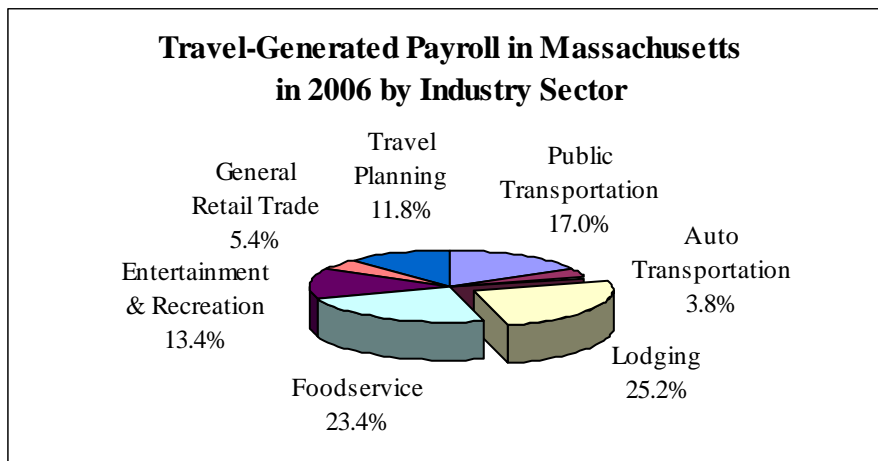
\* Compared with previous year.

## TRAVEL IMPACT ON MASSACHUSETTS – 2006

### Travel-Generated Payroll

Travel-generated payroll is the wage and salary income paid to employees directly serving travelers within the industry sectors from which these travelers purchase goods and services. One dollar of travel spending generates different amounts of payroll income within the various travel industry sectors depending on the labor content and the wage structure of each sector.

- The payroll income paid by Massachusetts travel-related firms and directly attributable to domestic and international travel increased 3.5 percent from 2005, totaling nearly \$3.4 billion in 2006.
- In 2006, payroll directly attributable to domestic traveler spending totaled close to \$3.0 billion, a 3.2 percent increase from 2005. International traveler expenditures generated close to \$405.7 million in payroll income for Massachusetts' residents, up 6.0 percent from 2005.
- On average, every dollar spent by domestic and international travelers produced 24 cents in payroll income for Massachusetts' residents during 2006.
- Domestic and international travel-generated payroll on public transportation decreased 0.3 percent from 2005, mainly due to airlines layoffs. The travel planning sector realized the largest payroll increase in 2006, up 9.0 percent over 2005.



**Table 7: Travel-Generated Payroll in Massachusetts by Industry Sector, 2005-2006**

<b>2006 Payroll</b>	<b>Domestic (\$ Millions)</b>	<b>International (\$ Millions)</b>	<b>Total (\$ Millions)</b>	<b>% of Total</b>
Public Transportation	\$548.5	\$26.0	\$574.5	17.0%
Auto Transportation	126.0	1.8	127.8	3.8%
Lodging	701.3	151.3	852.5	25.2%
Foodservice	702.0	89.9	791.9	23.4%
Entertainment & Recreation	380.3	73.2	453.6	13.4%
General Retail Trade	117.8	63.6	181.4	5.4%
Travel Planning *	400.0	—	400.0	11.8%
<b>Total</b>	<b>\$2,976.0</b>	<b>\$405.7</b>	<b>\$3,381.6</b>	<b>100.0%</b>
<b>2005 Payroll</b>				
Public Transportation	\$551.3	\$25.2	\$576.5	17.7%
Auto Transportation	124.4	1.7	126.1	3.9%
Lodging	675.5	139.6	815.1	25.0%
Foodservice	674.8	82.7	757.5	23.2%
Entertainment & Recreation	364.5	68.3	432.8	13.3%
General Retail Trade	125.8	65.2	191.0	5.8%
Travel Planning	367.0	—	367.0	11.2%
<b>Total</b>	<b>\$2,883.3</b>	<b>\$382.6</b>	<b>\$3,265.9</b>	<b>100.0%</b>
<b>Percentage change 2006 over 2005</b>				
	<b>Domestic (%)</b>	<b>International (%)</b>	<b>Total (%)</b>	
Public Transportation	-0.5%	3.0%	-0.3%	
Auto Transportation	1.3%	8.2%	1.4%	
Lodging	3.8%	8.4%	4.6%	
Foodservice	4.0%	8.7%	4.5%	
Entertainment & Recreation	4.4%	7.2%	4.8%	
General Retail Trade	-6.3%	-2.5%	-5.0%	
Travel Planning *	9.0%	—	9.0%	
<b>Total</b>	<b>3.2%</b>	<b>6.0%</b>	<b>3.5%</b>	

Source: TIA

\*Refers to payroll income that goes to travel agents, tour operators, and other travel service employees who arrange passenger transportation, lodging, tours and other related services.

Travel-Generated Payroll in Massachusetts, 2002-2006

**Table 8: Travel Payroll in Massachusetts by Industry Sector, 2002-2006**  
(Payroll in millions of dollars)

	2002	2002	2002	2003	2003	2003	2004	2004	2004	2005	2005	2005	2006	2006	2006
<b>Payroll</b>	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Trans.	633.0	34.9	667.9	611.8	29.2	641.0	583.5	28.7	612.2	551.3	25.2	576.5	548.5	26.0	574.5
Auto Trans.	112.3	1.8	114.1	114.9	1.7	116.5	120.8	1.8	122.5	124.4	1.7	126.1	126.0	1.8	127.8
Lodging	592.4	150.3	742.7	620.1	132.2	752.3	650.4	143.4	793.8	675.5	139.6	815.1	701.3	151.3	852.5
Foodservice	605.5	93.3	698.8	629.0	79.7	708.7	661.2	85.8	747.0	674.8	82.7	757.5	702.0	89.9	791.9
Entertainment & Rec.	325.5	71.6	397.1	345.5	66.6	412.1	359.3	71.2	430.6	364.5	68.3	432.8	380.3	73.2	453.6
General Retail Trade	110.7	68.5	179.2	116.6	62.7	179.2	124.8	68.1	192.9	125.8	65.2	191.0	117.8	63.6	181.4
Travel Planning	324.6	—	324.6	327.2	—	327.2	345.8	—	345.8	367.0	—	367.0	400.0	—	400.0
<b>Total</b>	<b>2,704.0</b>	<b>420.5</b>	<b>3,124.5</b>	<b>2,765.1</b>	<b>372.1</b>	<b>3,137.2</b>	<b>2,845.8</b>	<b>399.0</b>	<b>3,244.9</b>	<b>2,883.3</b>	<b>382.6</b>	<b>3,265.9</b>	<b>2,976.0</b>	<b>405.7</b>	<b>3,381.6</b>
<b>% Change*</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>
Public Trans.	-6.7%	-17.8%	-7.4%	-3.3%	-16.5%	-4.0%	-4.6%	-1.7%	-4.5%	-5.5%	-12.2%	-5.8%	-0.5%	3.0%	-0.3%
Auto Trans.	0.9%	-12.5%	0.6%	2.3%	-8.2%	2.1%	5.1%	4.5%	5.1%	3.0%	-6.1%	2.9%	1.3%	8.2%	1.4%
Lodging	-0.9%	-15.8%	-4.4%	4.7%	-12.0%	1.3%	4.9%	8.5%	5.5%	3.9%	-2.7%	2.7%	3.8%	8.4%	4.6%
Foodservice	1.8%	-13.1%	-0.5%	3.9%	-14.5%	1.4%	5.1%	7.6%	5.4%	2.1%	-3.6%	1.4%	4.0%	8.7%	4.5%
Entertainment & Rec.	1.6%	-13.2%	-1.4%	6.2%	-7.0%	3.8%	4.0%	7.0%	4.5%	1.4%	-4.2%	0.5%	4.4%	7.2%	4.8%
General Retail Trade	-2.4%	-14.8%	-7.5%	5.3%	-8.5%	0.0%	7.0%	8.7%	7.6%	0.8%	-4.4%	-1.0%	-6.3%	-2.5%	-5.0%
Travel Planning	-2.0%	—	-2.0%	0.8%	—	0.8%	5.7%	—	5.7%	6.1%	—	6.1%	9.0%	—	9.0%
<b>Total</b>	<b>-1.6%</b>	<b>-14.8%</b>	<b>-3.6%</b>	<b>2.3%</b>	<b>-11.5%</b>	<b>0.4%</b>	<b>2.9%</b>	<b>7.2%</b>	<b>3.4%</b>	<b>1.3%</b>	<b>-4.1%</b>	<b>0.6%</b>	<b>3.2%</b>	<b>6.0%</b>	<b>3.5%</b>
<b>% of Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>
Public Trans.	23.4%	8.3%	21.4%	22.1%	7.8%	20.4%	20.5%	7.2%	18.9%	19.1%	6.6%	17.7%	18.4%	6.4%	17.0%
Auto Trans.	4.2%	0.4%	3.7%	4.2%	0.5%	3.7%	4.2%	0.4%	3.8%	4.3%	0.4%	3.9%	4.2%	0.4%	3.8%
Lodging	21.9%	35.7%	23.8%	22.4%	35.5%	24.0%	22.9%	35.9%	24.5%	23.4%	36.5%	25.0%	23.6%	37.3%	25.2%
Foodservice	22.4%	22.2%	22.4%	22.7%	21.4%	22.6%	23.2%	21.5%	23.0%	23.4%	21.6%	23.2%	23.6%	22.2%	23.4%
Entertainment & Rec.	12.0%	17.0%	12.7%	12.5%	17.9%	13.1%	12.6%	17.9%	13.3%	12.6%	17.8%	13.3%	12.8%	18.0%	13.4%
General Retail Sales	4.1%	16.3%	5.7%	4.2%	16.8%	5.7%	4.4%	17.1%	5.9%	4.4%	17.0%	5.8%	4.0%	15.7%	5.4%
Travel Planning	12.0%	0.0%	10.4%	11.8%	0.0%	10.4%	12.2%	0.0%	10.7%	12.7%	—	11.2%	13.4%	—	11.8%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: TIA

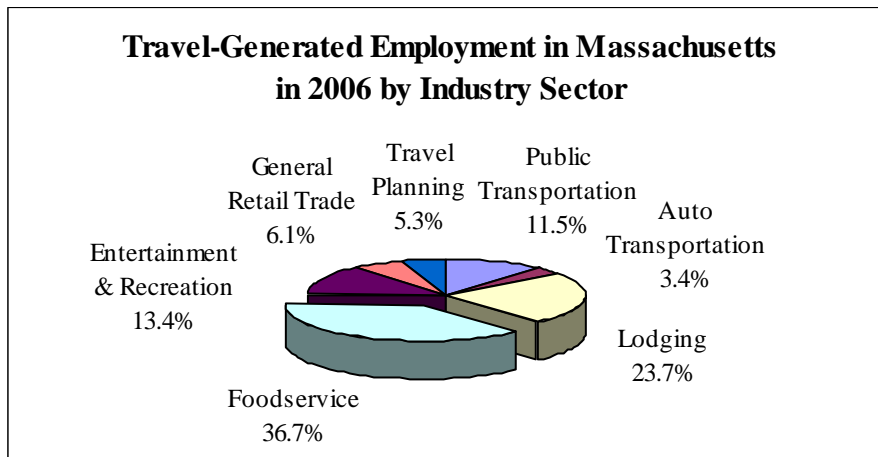
\* Compared with previous year.

## TRAVEL IMPACT ON MASSACHUSETTS - 2006

### Travel-Generated Employment

The most impressive contribution that travel and tourism make to the Massachusetts economy is the number of businesses and jobs it supports. These jobs include a large number of executive and managerial positions, as well as service-oriented occupations.

- During 2006, domestic and international traveler spending in Massachusetts generated around 125,800 jobs, including full-time and seasonal/part-time positions in the state, up 0.5 percent from 2005. Employment generated by domestic traveler spending remained unchanged while employment generated by international traveler spending increased 4.2 percent.
- On average, every \$112,952 spent by domestic and international travelers in Massachusetts directly supported one job in 2006.
- It is important to note that these travel-related jobs composed 3.9 percent of total non-agricultural employment in Massachusetts during 2006. Without these jobs generated by travel, Massachusetts's 2005 unemployment rate of 5.0 percent would have been 3.7 percentage points higher than it was, or 8.7 percent of the labor force.
- Domestic and international traveler spending on foodservice, including restaurants and other eating and drinking places, provided more jobs than any other industry sector, up 1.6 percent from 2005 to 46,100.



**Table 9: Travel-Generated Employment in Massachusetts by Industry Sector, 2005-2006**

<i>2006 Employment</i>	Domestic (Thousands)	International (Thousands)	Total (Thousands)	% of Total
Public Transportation	13.8	0.7	14.5	11.5%
Auto Transportation	4.2	0.1	4.2	3.4%
Lodging	25.0	4.7	29.8	23.7%
Foodservice	41.4	4.8	46.1	36.7%
Entertainment & Recreation	14.3	2.5	16.8	13.4%
General Retail Trade	5.1	2.49	7.6	6.1%
Travel Planning *	6.7	=	6.7	5.3%
<b>Total</b>	<b>110.5</b>	<b>15.3</b>	<b>125.8</b>	<b>100.0%</b>
<b>2005 Employment</b>				
Public Transportation	14.1	0.7	14.8	11.8%
Auto Transportation	4.1	0.1	4.2	3.4%
Lodging	25.1	4.6	29.7	23.7%
Foodservice	40.9	4.5	45.4	36.3%
Entertainment & Recreation	14.1	2.4	16.5	13.2%
General Retail Trade	5.2	2.4	7.6	6.1%
Travel Planning *	6.9	=	6.9	5.5%
<b>Total</b>	<b>110.5</b>	<b>14.7</b>	<b>125.2</b>	<b>100.0%</b>
<b>Percentage change 2006 over 2005</b>				
	Domestic (%)	International (%)	Total (%)	
Public Transportation	-2.0%	1.4%	-1.9%	
Auto Transportation	0.5%	7.3%	0.6%	
Lodging	-0.3%	4.1%	0.4%	
Foodservice	1.1%	5.7%	1.6%	
Entertainment & Recreation	1.3%	4.1%	1.7%	
General Retail Trade	-1.6%	2.5%	-0.3%	
Travel Planning *	-2.7%	=	-2.7%	
<b>Total</b>	<b>0.0%</b>	<b>4.2%</b>	<b>0.5%</b>	

Source: TIA

\* Refers to jobs created in travel arrangement firms such as travel agencies, wholesale and retail tour companies, and other travel-related service businesses.

Travel-Generated Employment in Massachusetts, 2002-2006

**Table 10: Travel Employment in Massachusetts by Industry Sector, 2002-2006**  
(Employment in thousands)

	2002	2002	2002	2003	2003	2003	2004	2004	2004	2005	2005	2005	2006	2006	2006
<b>Employment</b>	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Public Trans.	16.8	0.9	17.7	15.7	0.7	16.4	14.8	0.7	15.6	14.1	0.7	14.8	13.8	0.7	14.5
Auto Trans.	3.9	0.1	4.0	4.0	0.1	4.0	4.1	0.1	4.2	4.1	0.1	4.2	4.2	0.1	4.2
Lodging	24.7	5.2	29.9	25.0	4.4	29.4	24.7	4.6	29.3	25.1	4.6	29.7	25.0	4.7	29.8
Foodservice	39.3	5.2	44.5	40.1	4.3	44.4	40.7	4.5	45.3	40.9	4.5	45.4	41.4	4.8	46.1
Entertainment & Rec.	13.3	2.6	15.9	14.0	2.3	16.3	14.1	2.5	16.6	14.1	2.4	16.5	14.3	2.5	16.8
General Retail Trade	5.0	2.6	7.6	5.1	2.4	7.5	5.2	2.5	7.7	5.2	2.4	7.6	5.1	2.5	7.6
Travel Planning	7.1	—	7.1	6.7	—	6.7	6.8	—	6.8	6.9	—	6.9	6.7	—	6.7
<b>Total</b>	<b>110.1</b>	<b>16.5</b>	<b>126.7</b>	<b>110.6</b>	<b>14.3</b>	<b>124.8</b>	<b>110.5</b>	<b>14.9</b>	<b>125.3</b>	<b>110.5</b>	<b>14.7</b>	<b>125.2</b>	<b>110.5</b>	<b>15.3</b>	<b>125.8</b>
<b>% Change*</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>
Public Trans.	-7.4%	-20.7%	-8.2%	-6.3%	-19.0%	-6.9%	-5.6%	-1.9%	-5.4%	-4.8%	-7.6%	-4.9%	-2.0%	1.4%	-1.9%
Auto Trans.	-1.4%	-15.5%	-1.7%	0.5%	-9.8%	0.4%	3.6%	4.1%	3.6%	0.9%	-2.9%	0.9%	0.5%	7.3%	0.6%
Lodging	-1.2%	-18.8%	-4.8%	1.3%	-14.8%	-1.5%	-1.4%	3.6%	-0.6%	1.7%	-0.5%	1.4%	-0.3%	4.1%	0.4%
Foodservice	1.0%	-16.9%	-1.5%	2.0%	-16.1%	-0.1%	1.7%	4.8%	2.0%	0.5%	-0.8%	0.3%	1.1%	5.7%	1.6%
Entertainment & Rec.	1.8%	-16.0%	-1.5%	4.7%	-8.3%	2.6%	1.0%	5.3%	1.6%	-0.1%	-1.3%	-0.3%	1.3%	4.1%	1.7%
General Retail Trade	-0.8%	-16.7%	-7.0%	3.7%	-9.9%	-1.0%	1.8%	4.4%	2.6%	-0.6%	-1.4%	-0.8%	-1.6%	2.5%	-0.3%
Travel Planning	-9.5%	N/A	-9.5%	-6.1%	N/A	-6.1%	0.9%	N/A	0.9%	1.8%	—	1.8%	-2.7%	—	-2.7%
<b>Total</b>	<b>-1.7%</b>	<b>-17.8%</b>	<b>-4.1%</b>	<b>0.4%</b>	<b>-13.7%</b>	<b>-1.4%</b>	<b>-0.1%</b>	<b>4.1%</b>	<b>0.4%</b>	<b>0.0%</b>	<b>-1.3%</b>	<b>-0.1%</b>	<b>0.0%</b>	<b>4.2%</b>	<b>0.5%</b>
<b>% of Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>	<b>Dom</b>	<b>Int'l</b>	<b>Total</b>
Public Trans.	15.2%	5.5%	14.0%	14.2%	5.2%	13.2%	13.4%	4.9%	12.4%	12.8%	4.6%	11.8%	12.5%	4.4%	11.5%
Auto Trans.	3.6%	0.4%	3.2%	3.6%	0.4%	3.2%	3.7%	0.4%	3.3%	3.8%	0.4%	3.4%	3.8%	0.4%	3.4%
Lodging	22.4%	31.5%	23.6%	22.6%	31.0%	23.6%	22.3%	30.9%	23.4%	22.7%	31.1%	23.7%	22.7%	31.1%	23.7%
Foodservice	35.7%	31.3%	35.1%	36.2%	30.4%	35.6%	36.9%	30.6%	36.1%	37.0%	30.7%	36.3%	37.4%	31.1%	36.7%
Entertainment & Rec.	12.1%	15.5%	12.5%	12.6%	16.4%	13.1%	12.8%	16.6%	13.2%	12.8%	16.6%	13.2%	12.9%	16.6%	13.4%
General Retail Sales	4.5%	15.9%	6.0%	4.7%	16.6%	6.0%	4.7%	16.6%	6.1%	4.7%	16.6%	6.1%	4.6%	16.3%	6.1%
Travel Planning	6.5%	—	5.6%	6.1%	—	5.4%	6.1%	—	5.4%	6.2%	—	5.5%	6.1%	—	5.3%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: TIA

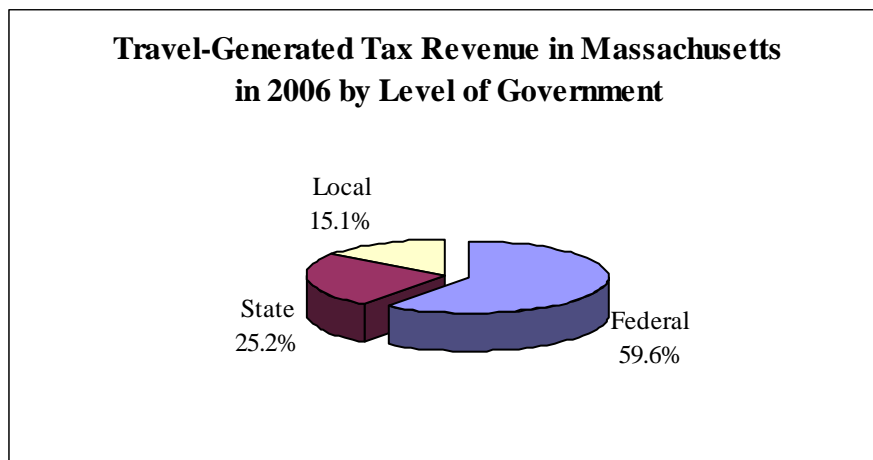
\* Compared with previous year.

## TRAVEL IMPACT ON MASSACHUSETTS - 2006

### Travel-Generated Tax Revenue

Travel tax receipts are the federal, state and local tax revenues attributable to travel spending in Massachusetts. Travel-generated tax revenue is a significant economic benefit, as governments use these funds to support the travel infrastructure and help support a variety of public programs.

- In 2006, domestic and international traveler spending generated nearly \$2.2 billion tax revenue for federal, state and local governments, up 5.8 percent from 2005. Domestic travelers generated more than \$1.9 billion while international travelers generated close to \$265.8 million, up 5.2 percent and 11.2 percent, respectively, from 2005.
- Domestic and international traveler spending in Massachusetts generated more than \$1.3 billion for the federal government during 2006, up 5.4 percent from 2005. This represented 59.6 percent of all travel-generated tax collections in the state. Each dollar spent by domestic and international travelers in Massachusetts produced 9.2 cents for federal tax coffers.
- Domestic and international traveler spending in Massachusetts also generated \$554.2 million in tax revenue for the state treasury through state sales and excise taxes, and taxes on personal and corporate income during 2006, up 5.7 percent from 2005. This \$554.2 million comprised 25.2 percent of all travel-generated tax revenue for 2006 collected in the state. On average, each travel dollar produced nearly 3.9 cents in state tax receipts.
- Local governments in Massachusetts directly benefited from travel as well. During 2006, domestic and international traveler spending generated \$333.0 million in sales and property tax revenue for the localities, up 7.7 percent from 2005. This represents 15.1 percent of total travel-generated tax revenue in the state during 2006. Each domestic travel dollar produced more than 2.3 cents for local tax coffers.



**Table 11: Travel-Generated Tax Revenue in Massachusetts by Level of Government, 2005-2006**

<i>2006 Tax Revenue</i>	<u>Domestic (\$ Millions)</u>	<u>International (\$ Millions)</u>	<u>Total (\$ Millions)</u>	<u>% of Total</u>
Federal	\$1,142.1	\$168.9	\$1,311.0	59.6%
State	489.9	64.3	554.2	25.2%
Local	300.4	32.6	333.0	15.1%
<b>Total</b>	<b>\$1,932.4</b>	<b>\$265.8</b>	<b>\$2,198.1</b>	<b>100.0%</b>
<b>2005 Tax Revenue</b>				
Federal	\$1,090.9	\$152.5	\$1,243.4	59.9%
State	466.3	57.8	524.1	25.2%
Local	280.4	28.8	309.2	14.9%
<b>Total</b>	<b>\$1,837.7</b>	<b>\$239.1</b>	<b>\$2,076.7</b>	<b>100.0%</b>
<b>Percentage change 2006 over 2005</b>				
	<u>Domestic (%)</u>	<u>International (%)</u>	<u>Total (%)</u>	
Federal	4.7%	10.8%	5.4%	
State	5.1%	11.1%	5.7%	
Local	7.1%	13.3%	7.7%	
<b>Total</b>	<b>5.2%</b>	<b>11.2%</b>	<b>5.8%</b>	

Source: TIA

Travel-Generated Tax Revenue in Massachusetts, 2002-2006

**Table 12: Travel Tax Revenue in Massachusetts by Industry Sector, 2002-2006**  
(Tax Revenues in millions of dollars)

	2002			2003			2004			2005			2006		
<b>Tax Revenue</b>	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Federal	984.8	165.7	1,150.5	1,001.8	146.3	1,148.1	1,057.8	157.3	1,215.1	1,090.9	152.5	1,243.4	1,142.1	168.9	1,311.0
State	420.8	56.1	476.9	426.9	49.2	476.1	451.6	59.0	510.6	466.3	57.8	524.1	489.9	64.3	554.2
Local	238.9	30.5	269.4	247.7	26.9	274.6	268.5	29.0	297.5	280.4	28.8	309.2	300.4	32.6	333.0
<b>Total</b>	<b>1,644.5</b>	<b>252.3</b>	<b>1,896.8</b>	<b>1,676.5</b>	<b>222.3</b>	<b>1,898.7</b>	<b>1,777.9</b>	<b>245.3</b>	<b>2,023.2</b>	<b>1,837.7</b>	<b>239.1</b>	<b>2,076.7</b>	<b>1,932.4</b>	<b>265.8</b>	<b>2,198.1</b>
-															
<b>% Change*</b>	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Federal	-3.2%	-17.4%	-5.6%	1.7%	-11.7%	-0.2%	5.6%	7.6%	5.8%	3.1%	-3.1%	2.3%	4.7%	10.8%	5.4%
State	-1.1%	-18.0%	-3.4%	1.5%	-12.4%	-0.2%	5.8%	20.1%	7.2%	3.3%	-2.1%	2.7%	5.1%	11.1%	5.7%
Local	-0.7%	-20.1%	-3.4%	3.7%	-11.9%	1.9%	8.4%	8.0%	8.4%	4.4%	-0.8%	3.9%	7.1%	13.3%	7.7%
<b>Total</b>	<b>-2.3%</b>	<b>-17.9%</b>	<b>-4.7%</b>	<b>1.9%</b>	<b>-11.9%</b>	<b>0.1%</b>	<b>6.1%</b>	<b>10.4%</b>	<b>6.6%</b>	<b>3.4%</b>	<b>-2.6%</b>	<b>2.6%</b>	<b>5.2%</b>	<b>11.2%</b>	<b>5.8%</b>
-															
<b>% of Total</b>	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total	Dom	Int'l	Total
Federal	59.9%	65.7%	60.7%	59.8%	65.8%	60.5%	59.5%	64.1%	60.1%	59.4%	63.8%	59.9%	59.1%	63.6%	59.6%
State	25.6%	22.2%	25.1%	25.5%	22.1%	25.1%	25.4%	24.1%	25.2%	25.4%	24.2%	25.2%	25.4%	24.2%	25.2%
Local	14.5%	12.1%	14.2%	14.8%	12.1%	14.5%	15.1%	11.8%	14.7%	15.3%	12.0%	14.9%	15.5%	12.3%	15.1%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: TIA

\* Compared with previous year.

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## MULTIPLIER IMPACT OF TRAVEL SPENDING IN MASSACHUSETTS

Travelers in the Massachusetts area produce "secondary" impacts over and above that of their original expenditures previously detailed. These secondary outputs (sales) and earnings (wage and salary income) arise from "indirect" and "induced" spending.

*Indirect* impact occurs as travel industry business operators, such as restaurateurs, purchase goods, such as food and beverages, and services, such as electricity and building maintenance, from local suppliers. These purchases generate additional output or sales indirectly. *Induced* impact occurs as a result of the employees of businesses, and their suppliers, spending part of their earnings in the area. This spending itself generates sales additional to the indirect impact.

The sum of the indirect and induced effects comprises the total secondary impact of traveler expenditures in the area. The ratio of the sum of primary output generated (travel spending) plus secondary output to initial expenditures alone is commonly termed the sales or output "multiplier".

During the secondary impact process, wage and salary income (earnings) is generated additional to that produced by the initial travel expenditures as the suppliers employ labor to produce the additional output. The "earnings multiplier" is the ratio of the total primary and secondary earnings generated by the initial travel spending to that spending. Just as additional earnings are created, employment is also generated during the secondary impact process. The "employment multiplier" represents the number of jobs provided, directly and indirectly, for each one million dollars of output or expenditures generated.

Table 13 summarizes the direct, indirect and induced, and total impacts of travel spending on the Massachusetts economy from 2002 to 2006. Table 14 shows the comparison of expenditure, earning, and employment multipliers for the same period.

In 2006, the \$14.2 billion spent directly by domestic and international travelers in Massachusetts generated total output value of nearly \$22.6 billion, up 8.9 percent from 2005. The ratio of total output to the initial spending is 1.59, the output multiplier. This indicates that the average travel dollar generated an additional 59 cents in secondary sales.

In addition to the nearly \$3.4 billion in payroll income generated by direct travel spending, close to \$3.1 billion in earnings was produced by secondary impact in 2006. The ratio of total earnings generated to the initial spending is 0.45, the earnings multiplier.

Travel spending also produced around 207,900 jobs for Massachusetts' residents, including direct and secondary employment in 2006. The ratio of total employment generated to initial spending is 14.6, the employment multiplier. This means that every one million dollars of travel expenditures produced around 15 jobs in Massachusetts during 2006.

Multiplier Impact of Travel Spending in Massachusetts

**Table 13: Multiplier Impact of Traveler Spending in Massachusetts, 2002-2006**

Year	Impact Measure	Direct Impact	Indirect & Induced Impact	Total Impact
2006	Expenditures (millions)	\$14,211.3	\$8,376.9	\$22,588.3
	Earnings (millions)	\$3,381.6	\$3,074.3	\$6,456.0
	Employment (thousands)	125.8	82.0	207.9
2005	Expenditures (millions)	\$13,080.0	\$7,655.3	\$20,735.3
	Earnings (millions)	\$3,265.9	\$2,972.9	\$6,238.8
	Employment (thousands)	125.2	82.2	207.3
2004	Expenditures (millions)	\$12,407.5	\$7,302.9	\$19,710.4
	Earnings (millions)	\$3,244.9	\$3,002.6	\$6,247.4
	Employment (thousands)	125.3	83.3	208.6
2003	Expenditures (millions)	\$11,198.9	\$6,669.8	\$17,868.6
	Earnings (millions)	\$3,137.2	\$2,901.8	\$6,038.9
	Employment (thousands)	124.8	83.5	208.3
2002	Expenditures (millions)	\$11,257.8	\$6,797.7	\$18,055.5
	Earnings (millions)	\$3,124.5	\$2,910.1	\$6,034.6
	Employment (thousands)	126.7	86.6	213.3

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, RIMS II; TIA

**Table 14: Multipliers of Travel in Massachusetts, 2002-2006**

Multipliers	2002	2003	2004	2005	2006
Output Multiplier	1.60	1.60	1.59	1.59	1.59
Earning Multiplier	0.54	0.54	0.50	0.48	0.45
Employment Multiplier	18.9	18.6	16.8	15.9	14.6

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, RIMS II; TIA

## **DOMESTIC TRAVEL IMPACT ON MASSACHUSETTS COUNTIES - 2006**

During 2006, domestic travelers spent nearly \$12.6 billion while traveling in Massachusetts, up 7.7 percent from 2005. These expenditures directly generated close to \$3.0 billion in payroll income and around 110,500 jobs for Massachusetts' residents.

Travel expenditures occurred throughout all fourteen counties in Massachusetts. The top five counties in Massachusetts received \$10.0 billion in direct domestic travel expenditures, 79.5 percent of the state total. Spending by domestic travelers in the top five counties generated close to \$2.4 billion in payroll income (79.9 percent) and around 86,900 jobs (78.6 percent) in 2006.

Additionally, domestic traveler expenditures generated nearly \$489.9 million in tax revenue for the state treasury and \$300.4 million tax revenue for local governments in 2006. The top five counties in Massachusetts contributed 74.5 percent of the total tax revenue for the state treasury and local governments.

### **Domestic Travel Impact on Top 5 Counties**

**Suffolk County**, which includes the city of Boston, led all counties in direct domestic travel expenditures, payroll income and jobs directly generated by visitor spending in 2006. Direct domestic travel expenditures in Suffolk County totaled close to \$6.0 billion, accounting for 47.3 percent of the state total, up 9.5 percent from 2005. These expenditures generated close to \$1.3 billion in payroll income and around 42,900 jobs for the county residents.

**Middlesex County** ranked second with close to \$1.9 billion in domestic travel spending in 2006, up 8.0 percent from 2005. These expenditures represented a 14.7 percent of the state total. The payroll income and jobs directly attributable to domestic travel spending reached \$515.4 million and around 20,200 jobs.

**Barnstable County** posted \$793.9 million in domestic expenditures to rank third, up 3.4 percent from 2005. These expenditures generated \$208.5 million in payroll as well as around 8,900 jobs within the county.

**Norfolk County** received \$769.8 million from domestic travelers, 6.1 percent of the state total. These travel expenditures benefited county residents with \$253.5 million in payroll income and 9,400 jobs.

**Worcester County** ranked fifth with \$638.1 million in domestic travel spending in 2006, a 5.9 percent increase from 2005. The payroll income and jobs directly attributable to domestic travel spending reached \$133.3 million and 5,500 jobs.

Domestic Travel Impact on Massachusetts - Top 5 Counties

**Table 15: Domestic Travel Impact in Massachusetts - Top 5 Counties, 2005-2006**

**2006 Impact**

County	Expenditures (\$ Millions)	Payroll (\$ Millions)	Employment*	State Tax Receipts (\$ Millions)	Local Tax Receipts (\$ Millions)
Suffolk	\$5,955.3	\$1,266.7	42.9	\$154.4	\$105.2
Middlesex	1,854.2	515.4	20.2	100.1	47.0
Barnstable	793.9	208.5	8.9	33.0	45.2
Norfolk	769.8	253.5	9.4	40.6	16.1
Worcester	638.1	133.3	5.5	33.6	13.6
<b>Five County Total</b>	<b>\$10,011.3</b>	<b>\$2,377.2</b>	<b>86.9</b>	<b>\$361.7</b>	<b>\$227.1</b>
<b>State Totals</b>	<b>\$12,592.2</b>	<b>\$2,976.0</b>	<b>110.5</b>	<b>\$489.9</b>	<b>\$300.4</b>
<b>Share of Top 5 Counties</b>	<b>79.5%</b>	<b>79.9%</b>	<b>78.6%</b>	<b>73.8%</b>	<b>75.6%</b>

**2005 Impact**

Suffolk	\$5,439.5	\$1,210.6	42.4	\$144.0	\$96.0
Middlesex	1,716.1	501.9	20.0	94.6	43.5
Barnstable	768.0	209.1	9.1	32.6	43.7
Norfolk	720.3	244.1	9.4	38.8	15.0
Essex	606.3	155.3	6.4	32.6	15.1
<b>Five County Total</b>	<b>\$9,250.1</b>	<b>\$2,321.0</b>	<b>87.4</b>	<b>\$342.5</b>	<b>\$213.3</b>
<b>State Total</b>	<b>\$11,691.7</b>	<b>\$2,883.3</b>	<b>110.5</b>	<b>\$466.3</b>	<b>\$280.4</b>
<b>Share of Top 5 Counties</b>	<b>79.1%</b>	<b>80.5%</b>	<b>79.1%</b>	<b>73.4%</b>	<b>76.1%</b>

**Percent Change  
2006 over 2005**

Suffolk	9.5%	4.6%	1.1%	7.2%	9.6%
Middlesex	8.0%	2.7%	1.1%	5.8%	8.2%
Barnstable	3.4%	-0.3%	-2.7%	1.2%	3.5%
Norfolk	6.9%	3.8%	-0.1%	4.7%	7.0%
Worcester	5.9%	1.7%	-1.8%	3.7%	6.0%
<b>Five County Total</b>	<b>8.2%</b>	<b>2.4%</b>	<b>-0.5%</b>	<b>5.6%</b>	<b>6.5%</b>
<b>State Total</b>	<b>7.7%</b>	<b>3.2%</b>	<b>0.0%</b>	<b>5.1%</b>	<b>7.1%</b>

Source: TIA

\* Employment numbers are rounded to the nearest hundred.

## COUNTY TABLES

The following tables list the results of the County Economic Impact Component of the TIA's Travel Economic Impact Model for Massachusetts 2005 and preliminary 2006 estimates by county. The estimates presented are for direct domestic travel expenditures and related economic impact. Detailed international impact data are not available below the state level.

- Table A** shows the counties listed alphabetically, with 2006 travel expenditures, travel-generated payroll and employment, and state tax revenue and the local tax revenue for each.
- Table B** ranks the counties in order of 2006 travel expenditures from highest to lowest.
- Table C** shows the percent distribution for each impact measure in 2006.
- Table D** shows the percent change in 2006 over 2005 estimates for each of the measures of economic impact.
- Table E** shows the counties listed alphabetically, with 2005 travel expenditures, travel-generated payroll and employment, and state tax revenue and local tax revenue shown for each.
- Table F** shows the annual domestic travel expenditures and percentage change over previous year by county from 2002 to 2006.
- Table G** shows the domestic travel-generated payroll and percentage change over previous year by county from 2002 to 2006.
- Table H** shows the domestic travel-generated employment and percentage change over previous year by county from 2002 to 2006.
- Table I** shows the domestic travel-generated tax revenue and percentage change over previous year by county for state government from 2002 to 2006.
- Table J** shows the domestic travel-generated tax revenue and percentage change over previous year by county for local government from 2002 to 2006.

Table A: Alphabetical by County, 2006

<b>2006 Domestic Travel Impact on Massachusetts</b>					
<b>Table A: Alphabetical by County, 2006</b>					
<u>County</u>	<u>Expenditures (\$ Millions)</u>	<u>Payroll (\$ Millions)</u>	<u>Employment (Thousands)</u>	<u>State Tax Receipts (\$ Millions)</u>	<u>Local Tax Receipts (\$ Millions)</u>
Barnstable	\$793.93	\$208.46	8.90	\$32.96	\$45.22
Berkshire	319.04	85.93	3.73	15.72	8.40
Bristol	362.13	78.21	3.06	19.05	6.73
Dukes	109.25	26.77	1.14	4.12	6.08
Essex	635.44	157.61	6.33	33.44	15.82
Franklin	46.40	8.65	0.37	2.59	1.45
Hampden	409.76	91.13	3.27	22.29	7.72
Hampshire	96.01	22.24	0.87	5.12	2.50
Middlesex	1,854.16	515.35	20.18	100.06	47.02
Nantucket	158.30	31.52	1.10	4.53	5.23
Norfolk	769.75	253.47	9.42	40.58	16.06
Plymouth	444.58	96.66	3.78	21.40	19.44
Suffolk	5,955.31	1,266.68	42.86	154.41	105.19
<u>Worcester</u>	<u>638.15</u>	<u>133.29</u>	<u>5.53</u>	<u>33.65</u>	<u>13.56</u>
<b>State Totals</b>	<b>\$12,592.22</b>	<b>\$2,975.96</b>	<b>110.5</b>	<b>\$489.90</b>	<b>\$300.41</b>

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Table B: Ranking of Counties by Expenditure Levels, 2006

<b>2006 Domestic Travel Impact on Massachusetts</b>					
<b>Table B: Ranking of Counties by Expenditure Levels, 2006</b>					
<u>County</u>	<u>Expenditures (\$ Millions)</u>	<u>Payroll (\$ Millions)</u>	<u>Employment (Thousands)</u>	<u>State Tax Receipts (\$ Millions)</u>	<u>Local Tax Receipts (\$ Millions)</u>
Suffolk	\$5,955.3	\$1,266.7	42.9	\$154.4	\$105.2
Middlesex	1,854.2	515.4	20.2	100.1	47.0
Barnstable	793.9	208.5	8.9	33.0	45.2
Norfolk	769.8	253.5	9.4	40.6	16.1
Worcester	638.1	133.3	5.5	33.6	13.6
Essex	635.4	157.6	6.3	33.4	15.8
Plymouth	444.6	96.7	3.8	21.4	19.4
Hampden	409.8	91.1	3.3	22.3	7.7
Bristol	362.1	78.2	3.1	19.1	6.7
Berkshire	319.0	85.9	3.7	15.7	8.4
Nantucket	158.3	31.5	1.1	4.5	5.2
Dukes	109.2	26.8	1.1	4.1	6.1
Hampshire	96.0	22.2	0.9	5.1	2.5
Franklin	46.4	8.7	0.4	2.6	1.4
<b>State Totals</b>	<b>\$12,592.22</b>	<b>\$2,975.96</b>	<b>110.5</b>	<b>\$489.90</b>	<b>\$300.41</b>

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Table C: Percent Distribution by County, 2006

<b>2006 Domestic Travel Impact on Massachusetts</b>					
<b>Table C: Percent Distribution by County, 2006</b>					
<u>County</u>	<u>Expenditures</u>	<u>Payroll</u>	<u>Employment</u>	<u>State Tax Receipts</u>	<u>Local Tax Receipts</u>
Barnstable	6.30%	7.00%	8.05%	6.73%	15.05%
Berkshire	2.53%	2.89%	3.38%	3.21%	2.80%
Bristol	2.88%	2.63%	2.76%	3.89%	2.24%
Dukes	0.87%	0.90%	1.04%	0.84%	2.02%
Essex	5.05%	5.30%	5.72%	6.82%	5.27%
Franklin	0.37%	0.29%	0.33%	0.53%	0.48%
Hampden	3.25%	3.06%	2.96%	4.55%	2.57%
Hampshire	0.76%	0.75%	0.79%	1.04%	0.83%
Middlesex	14.72%	17.32%	18.26%	20.42%	15.65%
Nantucket	1.26%	1.06%	1.00%	0.92%	1.74%
Norfolk	6.11%	8.52%	8.52%	8.28%	5.35%
Plymouth	3.53%	3.25%	3.42%	4.37%	6.47%
Suffolk	47.29%	42.56%	38.77%	31.52%	35.02%
Worcester	5.07%	4.48%	5.00%	6.87%	4.51%
<b>State Totals</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

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Table D: Percent Change over 2005

<b>2006 Domestic Travel Impact on Massachusetts</b>					
<b>Table D: Percent Change over 2005</b>					
<u>County</u>	<u>Expenditures</u>	<u>Payroll</u>	<u>Employment</u>	<u>State Tax Receipts</u>	<u>Local Tax Receipts</u>
Barnstable	3.37%	-0.30%	-2.67%	1.23%	3.48%
Berkshire	5.34%	1.38%	-1.94%	3.16%	5.45%
Bristol	7.70%	4.73%	0.61%	5.47%	7.80%
Dukes	5.57%	0.99%	-0.38%	3.39%	5.68%
Essex	4.81%	1.50%	-1.75%	2.64%	4.92%
Franklin	5.49%	0.65%	-2.78%	3.30%	5.59%
Hampden	5.28%	1.77%	-1.98%	3.10%	5.38%
Hampshire	6.08%	3.13%	-0.73%	3.89%	6.19%
Middlesex	8.05%	2.67%	1.07%	5.81%	8.15%
Nantucket	2.40%	-3.31%	-4.75%	0.28%	2.50%
Norfolk	6.87%	3.82%	-0.07%	4.66%	6.97%
Plymouth	6.37%	3.99%	0.28%	4.17%	6.48%
Suffolk	9.48%	4.64%	1.13%	7.22%	9.59%
Worcester	5.88%	1.71%	-1.78%	3.69%	5.98%
<b>State Totals</b>	<b>7.70%</b>	<b>3.21%</b>	<b>0.04%</b>	<b>5.05%</b>	<b>7.13%</b>

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Table E: Alphabetical by County, 2005

<b>2006 Domestic Travel Impact on Massachusetts</b>					
<b>Table E: Alphabetical by County, 2005</b>					
<u>County</u>	<u>Expenditures (\$ Millions)</u>	<u>Payroll (\$ Millions)</u>	<u>Employment (Thousands)</u>	<u>State Tax Receipts (\$ Millions)</u>	<u>Local Tax Receipts (\$ Millions)</u>
Barnstable	\$768.02	\$209.09	9.14	\$32.56	\$43.70
Berkshire	302.86	84.76	3.81	15.24	7.97
Bristol	336.24	74.68	3.04	18.07	6.24
Dukes	103.48	26.50	1.15	3.98	5.75
Essex	606.25	155.28	6.44	32.57	15.08
Franklin	43.98	8.59	0.38	2.51	1.37
Hampden	389.23	89.54	3.34	21.62	7.32
Hampshire	90.51	21.56	0.88	4.93	2.35
Middlesex	1,716.06	501.95	19.97	94.56	43.47
Nantucket	154.60	32.60	1.16	4.52	5.10
Norfolk	720.28	244.14	9.42	38.78	15.02
Plymouth	417.95	92.95	3.77	20.54	18.25
Suffolk	5,439.50	1,210.56	42.38	144.02	95.98
Worcester	602.71	131.05	5.63	32.45	12.79
<b>State Totals</b>	<b>\$11,691.66</b>	<b>\$2,883.26</b>	<b>110.5</b>	<b>\$466.33</b>	<b>\$280.41</b>

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Table F: Domestic Travel Expenditures by County, 2002-2006

<b>Table F: Domestic Travel Expenditures by County, 2002-2006</b>					
<i>Expenditures (in \$ Millions)</i>					
<b>County</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Barnstable	\$685.6	\$684.3	\$745.6	\$768.0	\$793.9
Berkshire	256.4	260.5	282.7	302.9	319.0
Bristol	281.5	286.5	311.6	336.2	362.1
Dukes	93.8	91.9	96.9	103.5	109.2
Essex	528.7	535.6	577.3	606.3	635.4
Franklin	39.8	39.9	41.9	44.0	46.4
Hampden	332.4	339.6	371.0	389.2	409.8
Hampshire	78.2	79.8	86.5	90.5	96.0
Middlesex	1,452.7	1,465.3	1,617.2	1,716.1	1,854.2
Nantucket	142.4	139.9	149.7	154.6	158.3
Norfolk	617.8	626.4	677.9	720.3	769.8
Plymouth	341.1	353.1	384.2	418.0	444.6
Suffolk	4,463.1	4,528.7	5,064.6	5,439.5	5,955.3
Worcester	504.0	520.7	568.2	602.7	638.1
<b>State Totals</b>	<b>\$9,817.4</b>	<b>\$9,952.3</b>	<b>\$10,975.4</b>	<b>\$11,691.7</b>	<b>\$12,592.2</b>
<i>Percentage Change Over Previous Year</i>					
<b>County</b>	<b>2002/2001</b>	<b>2003/2002</b>	<b>2004/2003</b>	<b>2005/2004</b>	<b>2006/2005</b>
Barnstable	3.3%	-0.2%	9.0%	3.0%	3.4%
Berkshire	7.9%	1.6%	8.5%	7.1%	5.3%
Bristol	4.3%	1.8%	8.8%	7.9%	7.7%
Dukes	-0.9%	-2.0%	5.5%	6.8%	5.6%
Essex	-2.6%	1.3%	7.8%	5.0%	4.8%
Franklin	-2.7%	0.2%	5.1%	4.9%	5.5%
Hampden	3.8%	2.2%	9.2%	4.9%	5.3%
Hampshire	7.3%	2.1%	8.5%	4.6%	6.1%
Middlesex	-3.4%	0.9%	10.4%	6.1%	8.0%
Nantucket	2.8%	-1.7%	7.0%	3.3%	2.4%
Norfolk	-0.1%	1.4%	8.2%	6.3%	6.9%
Plymouth	6.0%	3.5%	8.8%	8.8%	6.4%
Suffolk	-6.2%	1.5%	11.8%	7.4%	9.5%
Worcester	3.2%	3.3%	9.1%	6.1%	5.9%
<b>State Totals</b>	<b>-2.6%</b>	<b>1.4%</b>	<b>10.3%</b>	<b>6.5%</b>	<b>7.7%</b>

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Table G: Domestic Travel-Generated Payroll by County, 2002-2006

<b>Table G: Domestic Travel-Generated Payroll by County, 2002-2006</b>					
<i>Payroll (in \$ Millions)</i>					
<b>County</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Barnstable	\$198.4	\$199.8	\$207.9	\$209.1	\$208.5
Berkshire	75.7	77.6	80.3	84.8	85.9
Bristol	67.6	69.4	71.9	74.7	78.2
Dukes	25.5	25.2	25.4	26.5	26.8
Essex	147.1	150.4	154.2	155.3	157.6
Franklin	8.7	8.7	8.5	8.6	8.7
Hampden	83.6	86.2	89.3	89.5	91.1
Hampshire	20.2	20.8	21.3	21.6	22.2
Middlesex	460.7	468.9	487.6	501.9	515.4
Nantucket	33.5	33.3	33.1	32.6	31.5
Norfolk	226.1	231.3	237.7	244.1	253.5
Plymouth	81.1	84.7	87.6	93.0	96.7
Suffolk	1,153.9	1,181.6	1,211.2	1,210.6	1,266.7
Worcester	121.9	127.1	129.9	131.1	133.3
<b>State Totals</b>	<b>\$2,704.0</b>	<b>\$2,765.1</b>	<b>\$2,845.8</b>	<b>\$2,883.3</b>	<b>\$2,976.0</b>
<i>Percentage Change Over Previous Year</i>					
<b>County</b>	<b>2002/2001</b>	<b>2003/2002</b>	<b>2004/2003</b>	<b>2005/2004</b>	<b>2006/2005</b>
Barnstable	4.2%	0.7%	4.1%	0.6%	-0.3%
Berkshire	8.9%	2.5%	3.5%	5.5%	1.4%
Bristol	5.3%	2.7%	3.6%	3.8%	4.7%
Dukes	0.0%	-1.2%	0.8%	4.2%	1.0%
Essex	-1.7%	2.2%	2.5%	0.7%	1.5%
Franklin	-1.8%	1.1%	-3.1%	1.4%	0.6%
Hampden	4.7%	3.1%	3.6%	0.3%	1.8%
Hampshire	8.3%	3.0%	2.6%	1.1%	3.1%
Middlesex	-2.6%	1.8%	4.0%	2.9%	2.7%
Nantucket	3.7%	-0.8%	-0.6%	-1.4%	-3.3%
Norfolk	0.8%	2.3%	2.7%	2.7%	3.8%
Plymouth	7.0%	4.5%	3.4%	6.1%	4.0%
Suffolk	-5.4%	2.4%	2.5%	0.0%	4.6%
Worcester	4.2%	4.3%	2.2%	0.9%	1.7%
<b>State Totals</b>	<b>-1.6%</b>	<b>2.3%</b>	<b>2.9%</b>	<b>1.3%</b>	<b>3.2%</b>

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Table H: Domestic Travel-Generated Employment by County, 2002-2006

<b>Table H: Domestic Travel-Generated Employment by County, 2002-2006</b>					
<i>Employment (in Thousands)</i>					
<b>County</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Barnstable	9.4	9.3	9.3	9.1	8.9
Berkshire	3.7	3.7	3.7	3.8	3.7
Bristol	3.0	3.0	3.0	3.0	3.1
Dukes	1.2	1.2	1.1	1.1	1.1
Essex	6.6	6.6	6.5	6.4	6.3
Franklin	0.4	0.4	0.4	0.4	0.4
Hampden	3.4	3.4	3.4	3.3	3.3
Hampshire	0.9	0.9	0.9	0.9	0.9
Middlesex	19.8	19.8	19.9	20.0	20.2
Nantucket	1.3	1.2	1.2	1.2	1.1
Norfolk	9.4	9.4	9.4	9.4	9.4
Plymouth	3.6	3.7	3.7	3.8	3.8
Suffolk	42.0	42.2	42.4	42.4	42.9
Worcester	5.6	5.8	5.7	5.6	5.5
<b>State Totals</b>	<b>110.1</b>	<b>110.6</b>	<b>110.5</b>	<b>110.5</b>	<b>110.5</b>
<i>Percentage Change Over Previous Year</i>					
<b>County</b>	<b>2002/2001</b>	<b>2003/2002</b>	<b>2004/2003</b>	<b>2005/2004</b>	<b>2006/2005</b>
Barnstable	3.8%	-1.1%	0.2%	-1.5%	-2.7%
Berkshire	8.5%	0.7%	-0.7%	3.0%	-1.9%
Bristol	4.8%	0.8%	0.2%	1.2%	0.6%
Dukes	-0.5%	-2.9%	-2.1%	1.6%	-0.4%
Essex	-2.1%	0.4%	-1.0%	-1.3%	-1.7%
Franklin	-2.2%	-0.7%	-5.3%	0.7%	-2.8%
Hampden	4.3%	1.3%	-0.1%	-1.9%	-2.0%
Hampshire	7.9%	1.1%	-1.2%	-0.8%	-0.7%
Middlesex	-3.0%	-0.1%	0.2%	0.5%	1.1%
Nantucket	3.3%	-2.6%	-3.7%	-1.5%	-4.8%
Norfolk	0.4%	0.5%	-0.6%	0.3%	-0.1%
Plymouth	6.5%	2.6%	-0.3%	3.2%	0.3%
Suffolk	-5.8%	0.5%	0.4%	0.0%	1.1%
Worcester	3.7%	2.4%	-1.4%	-1.1%	-1.8%
<b>State Totals</b>	<b>-1.7%</b>	<b>0.4%</b>	<b>-0.1%</b>	<b>0.0%</b>	<b>0.0%</b>

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Table I: Domestic Travel-Generated Tax Revenue for MA State Government by County, 2002-2006

<b>Table I: Domestic Travel-Generated Tax Revenue for MA State Government by County, 2002-2006</b>					
<i>Tax Revenue for State Government (in \$ Millions)</i>					
<b>County</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Barnstable	\$31.1	\$31.0	\$32.5	\$32.6	\$33.0
Berkshire	13.8	14.0	14.6	15.2	15.7
Bristol	16.2	16.5	17.2	18.1	19.1
Dukes	3.9	3.8	3.8	4.0	4.1
Essex	30.4	30.8	31.9	32.6	33.4
Franklin	2.4	2.4	2.5	2.5	2.6
Hampden	19.7	20.2	21.2	21.6	22.3
Hampshire	4.5	4.6	4.8	4.9	5.1
Middlesex	85.6	86.4	91.8	94.6	100.1
Nantucket	4.4	4.4	4.5	4.5	4.5
Norfolk	35.6	36.1	37.6	38.8	40.6
Plymouth	17.9	18.6	19.4	20.5	21.4
Suffolk	126.3	128.3	138.1	144.0	154.4
Worcester	29.0	30.0	31.5	32.5	33.6
<b>State Totals</b>	<b>\$420.8</b>	<b>\$426.9</b>	<b>\$451.6</b>	<b>\$466.3</b>	<b>\$489.9</b>
<i>Percentage Change Over Previous Year</i>					
<b>County</b>	<b>2002/2001</b>	<b>2003/2002</b>	<b>2004/2003</b>	<b>2005/2004</b>	<b>2006/2005</b>
Barnstable	3.7%	-0.1%	4.9%	0.0%	1.2%
Berkshire	8.4%	1.7%	4.5%	4.0%	3.2%
Bristol	4.8%	1.8%	4.7%	4.8%	5.5%
Dukes	-0.5%	-2.0%	1.6%	3.7%	3.4%
Essex	-2.1%	1.4%	3.8%	2.0%	2.6%
Franklin	-2.2%	0.2%	1.2%	1.8%	3.3%
Hampden	4.3%	2.2%	5.2%	1.9%	3.1%
Hampshire	7.8%	2.1%	4.4%	1.6%	3.9%
Middlesex	-3.0%	0.9%	6.2%	3.1%	5.8%
Nantucket	3.2%	-1.7%	3.0%	0.3%	0.3%
Norfolk	0.3%	1.4%	4.2%	3.2%	4.7%
Plymouth	6.5%	3.6%	4.7%	5.7%	4.2%
Suffolk	-5.8%	1.5%	7.7%	4.3%	7.2%
Worcester	3.7%	3.4%	5.0%	3.0%	3.7%
<b>State Totals</b>	<b>-1.1%</b>	<b>1.5%</b>	<b>5.8%</b>	<b>3.3%</b>	<b>5.1%</b>

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Table J: Domestic Travel-Generated Tax Revenue for Local Governments in Massachusetts by County, 2002-2006

<b>Table J: Domestic Travel-Generated Tax Revenue for Local Governments in Massachusetts by County, 2002-2006</b>					
<i>Tax Revenue for Local Governments (in \$ Millions)</i>					
<b>County</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Barnstable	\$39.2	\$40.1	\$43.1	\$43.7	\$45.2
Berkshire	6.8	7.1	7.6	8.0	8.4
Bristol	5.3	5.5	5.9	6.2	6.7
Dukes	5.2	5.3	5.5	5.8	6.1
Essex	13.2	13.7	14.6	15.1	15.8
Franklin	1.2	1.3	1.3	1.4	1.4
Hampden	6.3	6.6	7.1	7.3	7.7
Hampshire	2.0	2.1	2.3	2.4	2.5
Middlesex	37.0	38.2	41.6	43.5	47.0
Nantucket	4.7	4.8	5.0	5.1	5.2
Norfolk	13.0	13.5	14.4	15.0	16.1
Plymouth	15.0	15.9	17.1	18.3	19.4
Suffolk	79.2	82.3	90.8	96.0	105.2
Worcester	10.8	11.4	12.3	12.8	13.6
<b>State Totals</b>	<b>\$238.9</b>	<b>\$247.7</b>	<b>\$268.5</b>	<b>\$280.4</b>	<b>\$300.4</b>
<i>Percentage Change Over Previous Year</i>					
<b>County</b>	<b>2002/2001</b>	<b>2003/2002</b>	<b>2004/2003</b>	<b>2005/2004</b>	<b>2006/2005</b>
Barnstable	4.0%	2.3%	7.5%	1.3%	3.5%
Berkshire	8.7%	4.1%	7.0%	5.4%	5.4%
Bristol	5.0%	4.3%	7.3%	6.2%	7.8%
Dukes	-0.2%	0.4%	4.1%	5.0%	5.7%
Essex	-1.9%	3.8%	6.3%	3.3%	4.9%
Franklin	-2.0%	2.7%	3.7%	3.2%	5.6%
Hampden	4.5%	4.7%	7.8%	3.2%	5.4%
Hampshire	8.1%	4.6%	7.0%	2.9%	6.2%
Middlesex	-2.8%	3.3%	8.9%	4.4%	8.2%
Nantucket	3.5%	0.7%	5.5%	1.6%	2.5%
Norfolk	0.6%	3.9%	6.8%	4.5%	7.0%
Plymouth	6.8%	6.1%	7.3%	7.0%	6.5%
Suffolk	-5.6%	4.0%	10.3%	5.7%	9.6%
Worcester	4.0%	5.9%	7.6%	4.4%	6.0%
<b>State Totals</b>	<b>-0.7%</b>	<b>3.7%</b>	<b>8.4%</b>	<b>4.4%</b>	<b>7.1%</b>

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**APPENDICES**

## Appendix A: Travel Economic Impact Model

### Introduction

The Travel Economic Impact Model (TEIM) was developed by the research department at TIA (formerly known as the U.S. Travel Data Center) to provide annual estimates of the impact of the travel activity of U.S. residents on national, state and county economies in this country. It is a disaggregated model comprised of 16 travel categories. The TEIM estimates travel expenditures and the resulting business receipts, employment, personal income, and tax receipts generated by these expenditures.

The TEIM has the capability of estimating the economic impact of various types of travel, such as business and vacation, by transport mode and type of accommodations used, and other trip and traveler characteristics. The County Impact Component of the TEIM allows estimates of the economic impact of travel at the county and city level.

### Definition of Terms

There is no commonly accepted definition of travel in use at this time. For the purposes of the estimates herein, *travel* is defined as activities associated with all overnight and day trips to places 50 miles away or more, one way, from the traveler's origin and any overnight trips away from home in paid accommodations.

The word *tourism* is avoided in this report because of its vague meaning. Some define tourism as all travel away from home while others use the dictionary definition that limits tourism to personal or pleasure travel.

The *travel industry*, as used herein, refers to the collection of 16 types of businesses that provide goods and services to the traveler or potential traveler at the retail level (see Glossary of Terms). With the exception of Amtrak and second home ownership and rental, these business types are defined by the Office of Management and Budget in the 1997 North American Industry Classification System (NAICS) and well as in its predecessor, the 1987 Standard Industrial Classification System (SIC). In each case, the relevant NAICS and SIC codes are included.

Travel *expenditure* is assumed to take place whenever traveler exchanges money for an activity considered part of his/her trip. Total travel expenditures are separated into 16 categories representing traveler purchases of goods and services at the retail level. One category, travel agents, receives no travel expenditures as these purchases are allocated to the category (i.e. air transportation) actually providing the final good or service to the traveler. Travel expenditures are allocated among states by simulating where the exchange of money for goods or service actually took place. By their nature, some travel expenditures are assumed to occur at the traveler's origin, some at his/her destination, and some enroute.

*Economic impact* is represented by measures of spending, employment, payroll, business receipts and tax revenues generated by traveler spending. *Payroll* includes all forms of compensation, such as salaries, wages, commissions, bonuses, vacation allowances, sick leave pay and the value of payments in kind paid during the year to all employees. Payroll is reported before deductions for social security, income tax insurance, union dues, etc. This definition follows that used by the U.S. Census Bureau in the quinquennial Census of Service Industries.

*Employment* represents the number of jobs generated by traveler spending, both full and part-time. As such, it is consistent with the U.S. Department of Labor series on nonagricultural payroll employment. *Tax revenues* include corporate income, individual income, sales and gross receipts, and excise taxes by level of government. *Business receipts* reflect travel expenditures less the sales and excise taxes imposed on those expenditures.

## **Description of the Model**

### *Estimates of Travel Expenditures*

Total travel expenditures includes spending by travelers on goods and services during their trips, such as lodging, transportation, meals, entertainment, retail shopping. Sixteen (16) categories of activities are covered in the TEIM. Generally, the TEIM combines the activity levels for trips to places within the United States with the appropriate average costs of each unit of travel activity, (e.g., cost per mile by mode of transport, cost per night by type of accommodation), to produce estimates of the total amount spent on each of 16 categories of travel-related goods and services by state. For example, the number of nights spent by travel parties in hotels in Vermont is multiplied by the average cost per night per travel party of staying in a hotel in the state to obtain the estimate of traveler expenditures for hotel accommodations.

The data on domestic travel activity levels (e.g., number of miles traveled by mode of transportation, the number of nights spent away from home by type of accommodation) are based on national travel surveys conducted by TIA, The Bureau of Labor Statistics' Survey of Consumer Expenditures, Smith Travel Research's Hotel and Motel Survey, etc. Average cost data are purchased and collected from different organizations and government agencies. Total sales and revenue and other data collected from state, local and federal government and other organizations are employed to compare, adjust and update the spending database of TEIM, as well as linking spending to other impact components.

The international travel expenditure estimates are based on Tourism Industries' (OTTI) In-Flight Survey and data provided to OTTI from Canada and Mexico. Other estimates of the economic impact of international visitors to the U.S. are generated by TEIM by incorporating the estimated international traveler expenditures with the data series utilized to produce the domestic estimates.

### *Estimates of Business Receipts, Payroll and Employment*

The Economic Impact Component of the TEIM estimates travel generated business receipts, employment, and payroll. Basically, the 16 travel categories are associated with a type of travel-related business. For example, traveler spending on commercial lodging in a state is related to the business receipts, employment and payroll of hotels, motels and motor hotels (SIC 701; NAICS 7211) in the state. It is assumed that travel spending in each category, less sales and excise taxes, equals business receipts for the related business type as defined by the U.S. Census Bureau.

It is assumed that each job in a specific type of business in a state is supported by some amount of business receipts and that each dollar of wages and salaries is similarly supported by some dollar volume of business receipts. The ratios of employment to business receipts are computed for each industry in each state. These ratios are then multiplied by the total amount of business receipts generated by traveler spending in a particular type of business to obtain the measures of travel generated employment and payroll of each type of business in each state. For example, the ratio of employees to business receipts in the state commercial lodging establishments is multiplied by travel generated business receipts of these

establishments to obtain traveler generated employment in commercial lodging. A similar process is used for the payroll estimates.

The total sales, payroll and employment data of each travel related industry (by SIC and NAICS) are provided by and collected from state, local and federal government, such as the Bureau of Labor Statistics, the Bureau of Economic Analysis, Census Bureau and The Bureau of Transportation Statistics.

#### Estimates of Tax Revenues

The Fiscal Impact Component of the TEIM is used to estimate traveler generated tax revenues of federal, state and local governments. The yield of each type of tax is related to the best measure of the relevant tax base available for each state consistent with the output of the Economic Impact Component. The ratios of yield to base for each type of tax in each state are then applied to the appropriate primary level output to obtain estimates of tax receipts generated by travel. For example, the ratio of Massachusetts State personal income tax collections to payroll in the state is applied to total travel generated payroll to obtain the estimate of state personal income tax receipts attributable to traveler spending in Massachusetts.

#### Estimates for Counties and Local Areas

Local area travel impact estimates is derived by distributing the state estimates to the area using proper proportions of each related category in the area. The proportions of a local area are calculated based on a set of data collected from federal, state and local governments and private organizations. The data can be gathered at the zip code level.

Data from the U.S. Bureau of the Census, Smith Travel Research, Enos Foundation, Runzheimer International, Cruise Lines International Association, Prentice-Hall, U.S. Department of Labor's Consumer Expenditure Survey and ES-202, American Society of Travel Agents, the Federal Aviation Administration, the Department of Transportation, Amtrak, the Federal Highway Administration, state revenue departments, TIA's travel surveys and other sources are used in building and updating the model. These data indicate the change in travel spending for each of the expenditure categories for each state over the previous year, as well as changes in the relationship of travel spending to employment, payroll and tax revenue.

#### **Limitations of the Study**

This study is designed to indicate the impact of U.S. traveler expenditures on employment, payroll, business receipts and tax revenue in each of the states. These impact estimates reflect the limitations inherent in the definition of travel expenditures. Two important classes of travel-related expenses have not been estimated due to various reasons. Consumers purchase certain goods and services in anticipation of a trip away from home. These include sports equipment (tennis racquet, skis, scuba gear, etc.), travel books and guides, and services such as language lessons and lessons for participatory sports (tennis, skiing, underwater diving, etc.). The magnitude of these purchases in preparation for a trip cannot be quantified due to lack of sound, relevant data.

The second type of spending not covered due to lack of sufficient data is the purchase of major consumer durables generally related to outdoor recreation on trips. Further research is required in this area to determine to what extent pre-trip spending on consumer durable products can justifiably be included within a travel economic impact study.

## **Appendix B: Glossary of Terms – TEIM**

Automobile Transportation Expenditure. This category includes a prorated share of the fixed costs of owning an automobile, truck, camper, or other recreational vehicle, such as insurance, license fees, tax, and depreciation costs. Also included are the variable costs of operating an automobile, truck, camper, or other recreational vehicle on a trip, such as gasoline, oil, tires, and repairs. The costs of renting an automobile or other motor vehicle are included in this category as well.

Entertainment/Recreation Expenditure. Traveler spending on recreation facility user fees, admissions at amusement parks and attractions, attendance at nightclubs, movies, legitimate shows, sports events, and other forms of entertainment and recreation while traveling.

Food Expenditure. Traveler spending in commercial eating facilities and grocery stores or carry-outs, as well as on food purchased for off-premise consumption.

Incidental Purchase Expenditure. Traveler spending on retail trade purchases including gifts for others, medicine, cosmetics, clothing, personal services, souvenirs, and other items of this nature.

Lodging Expenditures. Traveler spending on hotels and motels, campgrounds and trailer parks, rental of vacation homes and other types of lodging.

Public Transportation Expenditures. This includes traveler spending on air, bus, rail and boat/ship transportation, and taxicab or limousine service between airports and central cities. Also included are expenditures on "other transportation" as indicated in the TravelScope® survey.

Tourism. Generally avoided in this study, this can be used to refer to pleasure or personal travel, a subset of travel.

Travel. The act of taking a "trip".

Traveler. Person taking a "trip".

Travel Expenditure. The exchange of money or the promise of money for goods or service while traveling, including any advance purchase of public transportation tickets, lodging or other items normally considered incidental to travel, but which may be purchased in advance of the trip. In addition, certain of the "fixed" or capital costs of owning a motor vehicle (including campers, motor homes, etc.) or a vacation or second home are included as associated with taking a trip.

Generally, expenditures are assumed to take place at the point where the good or service is bought while traveling. The two exceptions to this rule are that the fixed costs of operating a motor vehicle while on a trip are allocated to the traveler's area of residence, and the "imputed rent" of spending nights in the traveler's own vacation home is allocated to the area visited.

Travel-generated Employment. The number of jobs attributable to travel expenditures in an area. These estimates of employment follow the "establishment payroll survey definition" rather than the "household survey definition." Consequently, the TEIM estimates are more closely related to the number of jobs than to the number of employees. For a detailed description of the household and establishment survey differences, please refer to <http://www.bls.gov/lau/lauhvse.htm>.

Travel-generated Payroll. This is the payroll, or wage and salary income, attributable to travel expenditures in an area. Payroll includes all forms of compensation, such as salaries, wages,

commissions, bonuses, vacation allowances, sick leave pay, and the value of payments in kind (such as free meals and lodgings) paid during the year to all employees. Trips and gratuities received by employees from patrons and reported to employers are included. For corporations, it includes amounts paid to officers and executives; for unincorporated businesses, it does not include profit nor other compensation of proprietors or partners. Payroll is reported before deductions for social security, income tax, insurance, union dues, etc.

Travel-generated Tax Receipts. These federal, state and local tax revenues are attributable to travel in an area. For a given state locality, all or some of the taxes may apply. "Local" includes county, city or municipality, and township units of government actually collecting the receipts, and not the level that may end up receiving it through intergovernmental transfers.

Federal. These receipts include corporate income taxes, individual income taxes, employment taxes, gasoline excise taxes, and airline ticket taxes.

State. These receipts include corporate income taxes, individual income taxes, sales and gross receipts taxes, and excise taxes.

Local. These include county and city receipts from individual and corporate income taxes, sales, excise and gross receipts taxes, and property taxes.

Travel-generated Wage and Salary Income. The same as "travel-generated payroll."

Trip. A trip occurs, for the purpose of the model, every time one or more persons goes to a place 50 miles or more, each way, from home in one day, or is out of town one or more nights in paid accommodations, and returns to his/her origin. Specifically excluded from this definition are: (1) travel as part of an operating crew on a train, plane, bus, truck or ship; (2) commuting to a place of work; (3) student trips to school or those taken while in school.

## Appendix C: Travel-Related Industry Measurement

### SIC-NAICS Transition

As described in Appendix A, the 16 types of travel categories used in TEIM are associated with types of travel-related businesses. For many years, TIA selected these business types using 1987 U.S. Standard Industrial Classification (SIC) system codes.

The SIC system has been used for decades with tremendous success to classify all businesses in the U.S. by the types of products or services they make available. To its credit, the SIC system has facilitated the collection, tabulation and analysis of data. It has also promoted “apples-to-apples” comparability in statistical analyses. At the industry group level, SIC Codes report industry groups as 2 or 3 digit categories to 4 digits at their most specific.

However, as a direct consequence of rapid and widespread structural changes throughout the American economy in recent years, the SIC system has become largely outdated. Therefore, its business classification capabilities have become increasingly less than optimal.

In 1998, the United States Office of Management and Budget published a new industry classification system – the 1997 North American Industry Classification System (NAICS) to replace the SIC system. In contrast, the 2- to 6-digit NAICS industry classification system includes more useful and detailed economic data and provides a more comprehensive statistical representation of our industry. NAICS offers four major advantages over the SIC system:

**Relevance:** NAICS identifies hundreds of new, emerging, and advanced technology industries. Perhaps most important in terms of quantification of travel-related activity, NAICS reorganizes industries into more meaningful sectors, especially in the service-producing segments of the economy. A few examples of travel-related industries that are separately recognized for the first time:

- Convenience stores
- Gas stations with convenience stores
- Casino hotels
- Casinos
- Other gambling industries
- Bed and breakfast inns
- Limited service restaurants

**International Comparability:** NAICS was developed by the U.S. Office of Management and Budget (OMB) in cooperation with Statistics Canada and Mexico’s Instituto Nacional de Estadística, Geografía e Informática (INEGI). NAICS provides for comparable statistics among the three NAFTA trading partners.

**Consistency:** NAICS defines industries according to a consistent principle -- businesses that use similar processes are grouped together.

**Adaptability:** NAICS will be reviewed every five years, so classifications and information keep up with our changing economy.

### **TEIM: SIC/NAICS Industry Categories**

With the transition to NAICS, TIA has adjusted its selections of the travel-related business types using the new NAICS codes and brought its travel economic research into conformity with NAICS. For measurement purposes, TIA's Travel Economic Impact Model, tracks business activity in seven (7) major travel-related industry groups. These, in turn, are comprised of sixteen (16) business subcategories.

The industry groups and subcategories used in the model are outlined below, followed by a detailed table of SIC and NAICS Codes.

1. Automobile Transportation Industry: Gasoline service stations, motor vehicle/parts dealers and passenger car rental.
2. Entertainment/Recreation Industry: Entertainment, art and recreation industry.
3. Foodservice Industry: Eating & drinking places, and grocery stores.
4. General Retail Trade Industry: General merchandise group stores and miscellaneous retail stores, including gift and souvenir shops.

Incidental Purchases Industry: See above, General Retail Trade Industry.

5. Lodging Industry: This industry includes hotels, motels, and motor hotels, camps and trailer parks.
6. Public Transportation Industry: Air transportation, taxicab companies, interurban & rural bus transportation, railroad passenger transportation (Amtrak) and water passenger transportation. Also is the "dummy" industry of "other transportation."
7. Travel Arrangement Industry: This includes travel agencies, tour operators, and other travel arrangement & reservation services.

1987 SIC – 1997 NAICS:  
SELECTED TRAVEL-RELATED CATEGORIES

SIC DESCRIPTION(S)	SIC CODE(S)	NAICS DESCRIPTION(S)	NAICS CODE(S)
<b>Accommodations</b>			
<i>Hotels and Motels</i>	701	<i>Traveler Accommodation</i>	7211
<i>Recreational Vehicle Parks &amp; Campsites</i>	703	<i>Recreational Vehicle Parks &amp; Campgrounds</i>	7212
<b>Auto Transportation</b>			
<i>Passenger Car Rental</i>	7514	<i>Passenger Car Rental</i>	532111
<i>Gasoline Service Stations</i>	554	<i>Gasoline Stations with Convenience Stores; Other Gasoline Stations</i>	447110; 447190
<i>Automotive Dealers</i>	55 (excl. 554)	<i>Motor Vehicle &amp; Parts Dealers</i>	4411; 4412; 4413
<b>Entertainment and Recreation</b>			
<i>Amusement and Recreational Services</i>	79	<i>Amusement, Gambling &amp; Recreation Industries</i>	713
		<i>Performing Arts, Spectator Sports &amp; Related Industries</i>	711
<i>Museums, Art Galleries, Botanical and Zoological Gardens</i>	84	<i>Museums, Historical Sites &amp; Similar Institutions</i>	712
<b>Food</b>			
<i>Eating &amp; Drinking Places (Alcoholic Beverages)</i>	581	<i>Foodservices &amp; Drinking Places</i>	7221; 7222; 7224
<i>Grocery Stores</i>	541	<i>Food and Beverage stores</i>	4451; 4452; 4453
<b>Public Transportation</b>			
<i>Air Transportation</i>	45	<i>Passenger Air Transportation; Airport Support Activities</i>	481; 4881
<i>Rail - Local &amp; Suburban Transit</i>	4111	<i>Rail Transportation</i>	485112
<i>Interurban &amp; Rural Bus Carriers</i>	413	<i>Interurban &amp; Rural Bus Transportation</i>	4852
<i>Charter Bus/Interstate</i>	4142	<i>Charter Bus (interstate/interurban)</i>	4855102
<i>Taxi &amp; Limousine Services</i>	412	<i>Taxi &amp; Limousine Services</i>	4853
<i>Water Transportation of Passengers</i>	448	<i>Water Passenger Transportation</i>	483112; 483114; 483212
--	--	<i>Scenic &amp; Sightseeing Transportation (New industry-includes parts of SICs 4119,4489,4522,4789,7999)</i>	487
<b>Retail</b>			
<i>General Merchandise Stores</i>	53	<i>General Merchandise Stores</i>	452
<i>Miscellaneous Retail Stores</i>	59	<i>Other Retail Stores</i>	453; 44611; 4483; 45111; 45112; 45121
<b>Travel Arrangement</b>			
<i>Travel Arrangement</i>	472	<i>Travel Arrangement &amp; Reservation Services (includes travel agencies and tour operators)</i>	5615

## **Appendix D: Sources of Data**

This appendix presents the sources of data used in this report.

### Organizations

Air Transport Association  
American Automobile Association  
Amtrak  
American Society of Travel Agents  
Bureau of Census, U.S. Department of Commerce  
Bureau of Economic Analysis, U.S. Department of Commerce  
Bureau of Labor Statistics, U.S. Department of Labor  
Federal Aviation Administration, U.S. Department of Transportation  
Federal Highway Administration, U.S. Department of Transportation  
National Park Service  
Massachusetts Office of Travel and Tourism  
Massachusetts Department of Revenue  
Peterson, Howell & Heather, Inc.  
Runzheimer International Ltd.  
Smith Travel Research  
OTTI/International Trade Administration, U.S. Department of Commerce  
Travel Industry Association

**Appendix E: RIMS II**

**REGIONAL INPUT-OUTPUT MODELING SYSTEM**

**A BRIEF DESCRIPTION**

Regional Economic Analysis Division  
Bureau of Economic Analysis  
U.S. Department of Commerce  
Washington, D.C. 20230  
(202) 523-0594

## **RIMS II**

Many types of public sector and private sector decisions require an evaluation of probable regional effects. For example, Federal requirements for environmental impact statements and the urban impact of Federal policies necessitate regional impact analyses. A growing concern, therefore, about the effects of public and private decisions has created a demand for regional economic models.

As a result of this demand, economic impact models have been developed for many States and regions. These models vary considerably in terms of structure, reliability, sectoral and geographical detail, flexibility in application, and cost of development and use. In general, the models that provide the most reliable and industrially-detailed secondary impact estimates are the most expensive to construct, while the less costly models that can be used in numerous small-area studies often provide less accurate estimates.

In response to the growing need for improved techniques for regional impact analysis, the Regional Economic Analysis Division of the Bureau of Economic Analysis (BEA) developed the Regional Industrial Multiplier System (RIMS) in the mid-1970's. RIMS was designed to estimate input-output type multipliers for use in estimating the secondary regional impacts of public and private economic development policies. RIMS was capable of estimating multipliers for any region composed of one or more contiguous counties and for any of the 478 industrial sectors in the 1967 BEA national input-output (I-O) table. A significant improvement over the more summary measures often used in regional impact analysis, RIMS was capable of providing reliable multiplier estimates without the high cost of gathering survey data.

The Regional Input-Output Modeling System (RIMS II) is a major revision of RIMS. The basic differences between RIMS II and RIMS are the use of more recent national I-O tables (1987), the use of more detailed and more current data for regionalizing the national I-O tables, and greater flexibility in the derivation of regional impact estimates through the use of a matrix inversion technique that provides industrially-disaggregated impacts. RIMS II developmental research is focused currently on estimating regional transaction tables, and comparing RIMS II estimates of state-specific imports and exports with survey-based estimates from the Census Bureau's Commodity Transportation Survey. RIMS II is also being adapted to analyze the regional and industrial impacts of defense procurement.

## **RIMS II METHODOLOGY**

In order to estimate impacts such as those presented above, RIMS II uses the BEA national I-O tables that show the input and output structure of 500 industries. Since firms in all national industries are not found in each region, some direct requirements that are not produced in a study region are identified, using Bureau of Economic Analysis (BEA) 4-digit Standard Industrial Classification (SIC) county earnings data. The earnings data are used as proxies for the industry-specific input and output data which are seldom available at the small-area level. Using the same earning data, the resulting regional I-O table then can be aggregated to the level of industrial detail appropriate for the impact study. More specifically, the RIMS II approach can be viewed as three-step process. In the first step, the national I-O matrix is made region-specific by using corresponding 4-digit SIC location quotients (LQ's). The LQ's are used to estimate the extent to which requirements are supplied by firms within the region. For this purpose, RIMS II employs LQ's based on two types of data. According to this mixed- LQ Approach, BEA county personal income data, by place of residence, are used for the calculation of LQ's in the service sectors, while BEA earnings data, by place of work, are used for the LQ's in the nonservice sectors.

The second step involves estimations of the household row and the household column of the matrix. The household-row coefficients are estimated based on value-added gross-output ratios from the national I-O table and introduced into each industry's coefficient column. A household column is constructed, based on national consumption and savings rate data and national and regional tax rate data.

The last step in the RIMS II estimating procedure is to calculate the multipliers. Since it is most often necessary to trace the impact of changes in final demand on numerous individual directly-and indirectly-affected industries, RIMS II applications employ the Leontief inversion approach for obtaining multipliers. This inversion process produces output and earnings multipliers for all additionally affected industries.

## **ACCURACY OF RIMS II**

Empirical test of the accuracy of RIMS II multipliers indicates that RIMS II yields estimates that are not substantially different from those generated by regional I-O models based on the costly gathering of survey data. For example, a comparison of 224 industry-specific multipliers from survey based tables for Illinois, Washington, and West Virginia indicate that the RIMS II average multipliers overestimate the average multipliers from the survey based tables by approximately 5 percent, and, for the majority of individual industry-specific multipliers is less than 10 percent. In addition, RIMS II and survey multipliers show a statistically-similar distribution of affected industries.

## **ADVANTAGES OF RIMS II**

There are numerous advantages to RIMS II. First, it is possible to provide estimates of economic impact without building a complete survey I-O model for each region under study, since RIMS II produces multipliers that are derived from secondary data sources. Second, the RIMS II multipliers are derived from a limited number of secondary data sources, thus eliminating the costs associated with the compilation of data from a wide variety of these sources. Third, because of the disaggregated sectoring plan employed by RIMS II, analysis may be performed at a detailed industrial level, thereby avoiding aggregation errors that often occur when different industries are combined. Fourth, the RIMS II multipliers are based on a consistent set of procedures across areas, thus making comparisons among areas more meaningful than would be the case if the results were obtained from incompatible impact models designed only for an individual area. Fifth, the multipliers can be updated to reflect the most recent local area earning and personal income data.

The industrial output and personal earnings impacts estimated by RIMS II can be crucial for estimating effects not directly specified by RIMS II itself. For example, the estimation of regional, fiscal, labor migration and environmental effects often depends on the estimation of the regional output and earnings impact of the initial stimulus. Since many of these important effects are often best analyzed on a case-by-case basis, one of the major advantages of using RIMS II is that valuable research resources can be spent on the analysis of these effects, rather than on the construction of an impact model. Therefore, when using RIMS II, a cost-effective impact study might devote most of its research budget to specifying initial impacts in industry specific detail, and analyzing the implications for other important aspects of regional economic activity of the RIMS II estimates impacts.

This overview briefly describes RIMS II multiplier, the multiplier-estimation procedures, and some of the advantages and uses for RIMS II. For additional information, see *Regional Multipliers, A User Handbook for the Regional Input-Output Modeling System (RIMS II)*, third edition. This handbook is produced by the U.S. Department of Commerce and available from the U.S. Government Printing Office.