

10-1-2002

# Medical product industries cluster in Tampa Bay : an analysis performed by Center for Economic Development Research, College of Business Administration, University of South Florida

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# **Medical Product Industries Cluster in Tampa Bay**

An Analysis Performed by

**CENTER FOR ECONOMIC DEVELOPMENT RESEARCH**  
College of Business Administration



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October, 2002

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## Preface

*The Florida Medical Manufacturers Consortium is a trade association of medical device manufacturers and related businesses. The Consortium motivated this study and, through sponsorship by Pinellas County Economic Development, commissioned the Center for Economic Development Research (CEDR), College of Business Administration, University of South Florida, to conduct this study of the medical devices industries cluster in Tampa Bay. The purpose of the study is to analyze the medical product industries cluster in Tampa Bay to determine the levels of economic activity.*

*CEDR provides information and conducts research on issues related to economic growth and development in the Nation, in the state of Florida, and particularly in the central Florida region. The Center serves the faculty, staff, and students of the College of Business Administration, the University, and individuals and organizations in the University's service area. CEDR's activities are designed to further the objectives of the University and specifically the objectives of the College of Business Administration.*

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## Executive Summary

The overall purpose of this study is to analyze the medical product industries cluster in the Tampa Bay region. We quantify the cluster’s baseline economic activity and its economic contribution to the region.

We categorized the selected primary industries by segment: 1) the Pharmaceuticals segment, 2) the Biotech segment, and 3) the Medical Devices segment. Then we use the IMPLAN Professional™ input-output model to identify the supplier chains (indirect industries) of the primary industries and to derive a measure of the “magnitude of clustering.”

We find that in the sense of a cluster exhibiting common supplier-links, the Pharmaceuticals segment of the selected primary industries is not a “good fit” with the Biotech and Medical Devices segments. However, the selected industries in the Biotech segment and the Medical Devices segment exhibit common supplier-linkages.

Next, using the REMI™ economic policy-insight model, we estimate the baseline economic activity of the primary industries. Employment, output and employee income measure the baseline economic activity. Our findings for Tampa Bay for 2002 are:

<u>Segment</u>	<u>Employment</u>	<u>Output (Billions 2001\$)</u>	<u>Income (Millions nominal\$)</u>
Biotech	878	\$0.154	\$031
Medical Devices	<u>7,331</u>	<u>\$1.213</u>	<u>\$451</u>
	8,208	\$1.367	\$482
Pharmaceuticals	<u>1,873</u>	<u>\$0.740</u>	<u>\$093</u>
	10,081	\$2.107	\$575

Most of the more than 10,000 jobs (about 70%) are in Pinellas County and total jobs for the three segments constitute almost 1.2% of total employment in Pinellas County. The Pharmaceuticals, Biotech and Medical Devices segments are expected to produce nearly \$2.1 billion of economic activity in the Tampa Bay region during 2002 and most of this activity (almost 63%) occurs in Pinellas County. Similarly, residents of Tampa Bay working in these industry segments are expected to earn \$575 million during 2002, with almost 65% of these wage and salary disbursements paid to residents of Pinellas County.

Data on workers covered by the national Unemployment Insurance program in 2001 gauge the employment structure of the primary industries in Tampa Bay.

<u>Segment</u>	<u>Firms</u>	<u>Covered Jobs</u>	<u>Jobs paying &lt;\$35K</u>	<u>Jobs paying \$35K to \$60K</u>
Biotech	55	724	8.9%	91.1%
Medical Devices	<u>131</u>	<u>8,221</u>	15.8%	83.6%
	186	8,945	15.2%	84.2%
Pharmaceuticals	<u>17</u>	<u>1,350</u>	5.9%	94.1%
	203	10,295	14.0%	85.5%

We assess the economic contribution of the primary industries using the traditional counter-factual approach. With this approach, we use the REMI<sup>TM</sup> model to remove the actual output produced by the primary industries. The model tabulates the direct effects of the removal of the primary economic activities as well as the ripple, or secondary, effects throughout Tampa Bay. We provide three measurements of the economic contribution for each segment of the primary industries: 1) employment, 2) output, and 3) personal income.

We expect that the economic contributions of the segments during 2002 will be:

<u>Segment</u>	<u>Employment</u>	<u>Output (Billions 2001\$)</u>	<u>Income (Millions nominal\$)</u>
Biotech	5,109	\$0.305	\$163
Medical Devices	35,875	\$4.080	\$1,282
Pharmaceuticals	9,129	\$1.305	\$348

We consider the Medical Product Industries cluster to encompass the Biotech and Medical Devices segments. The economic contribution of the cluster is slightly greater than the sum of the individual segment's contributions, because of the dynamic properties of the regional economy. In Tampa Bay, the economic contribution of the cluster is about 40,900 jobs, with the workers in these jobs earning just over \$1.44 billion in wages and producing more than \$5.38 billion of output. Almost half of this economic activity takes place in Pinellas County.

## Section 1: Introduction

The medical product and associated industries are a growing part of Tampa Bay's economy.

The overall purpose of this study is to analyze the medical product industries cluster in the Tampa Bay region to quantify the cluster's baseline economic activity and its economic contribution to the region.

We begin the study by defining the Medical Product Industries cluster in Tampa Bay. We define the cluster by examining industries generally associated with medical product activity for commonality of supplier chains. We develop a "picture" of the cluster in terms of primary industries and supplier industries (indirect industries). The results of this analysis are reported in **Section 2, An Operational Definition of the Medical Product Industries Cluster.**

In **Section 3, Baseline Contributions of the Primary Industries,** we estimate the economic activity of the primary industries of the Medical Product Industries cluster. The measures of the baseline economic activity are employment, output, and income. In **Section 4, Employment Structure of the Primary Industries,** we report the number of firms and the number of employees for the primary industries of the Medical Product Industries cluster. Additionally, we analyze the range of wages paid to workers in the primary industries. Finally, in **Section 5, Economic Contribution of the Primary Industries,** we estimate the total impact of the primary industries of the Medical Product Industries cluster on the economy of the Tampa Bay region. The total impact includes the baseline economic activity of the primary industries, plus the indirect impact as the baseline activity ripples through the regional economy. The measures of economic contribution are employment, output, and income.

Throughout our report of findings, we group the primary industries into three segments: Pharmaceuticals, Biotech, and Medical Devices. In Sections 3, 4 and 5 we separately report findings for each segment. We believe that the aggregation of the segments to form an industry cluster may arguably include the Biotech and Medical Devices segments, but not the Pharmaceuticals segment. Therefore, we have placed the aggregations of our findings in Appendixes A through E. Generally, we report the aggregate economic activity, employment structure, and economic contribution for the combined Pharmaceuticals, Biotech and Medical Devices segments, as well as reporting an aggregation for only the Biotech and Medical Devices segments.

## Section 2: An Operational Definition of the Medical Product Industries Cluster

The purpose of this section is to describe the Medical Product Industries cluster in Tampa Bay.

Harvard economist, Michael Porter, in *The Competitive Advantage of Nations* (1990) and in *On Competition* (1998), develops a model in which competitive advantages are generated by the spatial concentration of firms in an industry as they interact with regional and national factors conducive to their profitability. As applied to a regional economy, Porter's model relates the growth of a regional industry to regional infrastructure, to the spatial proximity of upstream industries that supply inputs into the production process, and to the proximity of downstream customers who purchase the industry's products and services.<sup>1</sup> Porter calls the grouping of an industry along with its upstream suppliers and downstream customers an industry cluster.

In order to develop a picture of the Medical Product Industries cluster in Tampa Bay, we start with selected primary industries and use the IMPLAN Professional<sup>TM</sup> input-output model to identify the supplier chains (indirect industries) for the primary industries.<sup>2</sup> The selected **primary industries** are listed below by Standard Industrial Classification (SIC) code or code groupings and their corresponding IMPLAN sector number. We call the consolidation of primary industries the Medical Product Industries group. The Medical Product Industries group consists of:

### PHARMACEUTICALS SEGMENT

IMPLAN sector 195, **Drugs** = SICs 2833 (medicinal chemicals and botanical products), 2834 (pharmaceutical preparations), 2835 (in vitro and in vivo diagnostic substances), and 2836 (biological products, except diagnostic substances).

### BIOTECH SEGMENT

Part of IMPLAN sector 509, **Research, Development and Testing Services** = SIC 8731 (commercial physical and biological research).<sup>3</sup>

### MEDICAL DEVICES SEGMENT

IMPLAN sector 218, **Gaskets, Packing and Sealing Devices** = SIC 3053 (gaskets, packing and sealing devices).

IMPLAN sector 219, **Fabricated Rubber Products, N.E.C.** = SIC 3060 (fabricated rubber products, not elsewhere classified).

IMPLAN sector 403, **Mechanical Measuring Devices** = SICs 3823 (industrial instruments for measurement, display, and control of process variables; related products), 3824 (totalizing fluid

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<sup>1</sup> Porter represents regional competitive advantage as a "diamond", the four corners of which are made up of the competitive nature of the industry, the interaction of firms in the industry with suppliers, the interaction with informed domestic customers, and the traditional country-specific factor cost and supply conditions.

<sup>2</sup> Detailed results were reported in CEDR's "Medical Products Industries Clustering in Tampa Bay, Preliminary Report," April, 2002.

<sup>3</sup> In addition to SIC 8731, IMPLAN sector 509 includes SIC 8732 (commercial economic, sociological, and educational research), SIC 8733 (noncommercial research organizations), and SIC 8734 (testing laboratories). In the process used to describe the cluster, we cannot model the SICs of IMPLAN sector 509 separately. We address this limitation in the body of this report.



meters and counting devices), and 3829 (measuring and controlling devices, not elsewhere classified).

IMPLAN sector 405, **Analytical Instruments** = SIC 3826 (laboratory analytical instruments).<sup>4</sup>

IMPLAN sector 406, **Optical Instruments and Lenses** = SIC 3827 (optical instruments and lenses).

IMPLAN sector 407, **Surgical and Medical Instruments** = SIC 3841 (surgical and medical instruments and apparatus).

IMPLAN sector 408, **Surgical Appliances and Supplies** = SIC 3842 (orthopedic, prosthetic, and surgical appliances and supplies).

IMPLAN sector 409, **Dental Equipment and Supplies** = SIC 3843 (dental equipment and supplies).

IMPLAN sector 410, **X-ray Apparatus** = SIC 3844 (x-ray apparatus and tubes and related irradiation apparatus).

IMPLAN sector 411, **Electromedical Apparatus** = SIC 3845 (electromedical and electrotherapeutic apparatus).

IMPLAN sector 412, **Ophthalmic Goods** = SIC 3851 (ophthalmic goods).

To measure the “magnitude of clustering,” we introduce into the model a \$100 million increase in the output of each primary industry. We then measure the consequent percentage increase (as a percent of the increased primary output) in other regional industries. The greater the percentage, the more economic activity there is between an indirect industry and the primary industries. To better organize the inter-industry relationships, three tiers are used. Tier 1 relationships occur when an indirect industry’s output increases by more than 1% of the increase in primary output. A Tier 2 relationship is between 0.5% and 1%. All remaining inter-industry relationships fall in Tier 3.

Because we cannot measure the “magnitude of clustering” for the Commercial Physical and Biological Research industry separately from other research industries with IMPLAN’s sector classifications (IMPLAN sector 509), we examine the clustering effect with and without sector 509.

**Tables 2.1 and 2.2** present the frequency with which individual Tier 1 supplier-industries service primary industry sectors. The statistics in Table 2.1 include IMPLAN sector 509, which is excluded as a primary industry sector in Table 2.2. Following the tables is an explanation of our findings.

When the Research, Development and Testing Services group (IMPLAN sector 509) is excluded from the model, the Tier 1 supplier-industries of Table 2.2 are the same as the Tier 1 industries of Table 2.1. However, there are some small differences in the “magnitude of clustering” as evidenced by the relative changes in frequencies attained by the industries.

The Wholesale Trade industry is the top Tier 1 industry in the cluster as well as a Tier 1 supplier-industry for each primary industry and primary industry group. We estimate that

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<sup>4</sup> There was no firm in the Laboratory Analytical Instruments industry (SIC 3826) operating in Tampa Bay in 1999.

between 17.4% and 24.3% of Wholesale Trade economic activity in Tampa Bay is linked to the clustering of Medical Product Industries.

Tampa Bay

Tier 1 Industries, Frequency by Implan Sector

Including Implan 509, Research, Development and Testing Services

Table 2.1

SIC Code	IMPLAN Sector	Description	Total Frequency	Drugs (Implan 195)	Medical Measuring Devices (Implan 403)	Optical Instruments & Lenses (Implan 406)	Surgical & Medical Instruments (Implan 407)	Surgical Appliances & Supplies (Implan 408)	Dental Equipment & Supplies (Implan 409)	X-Ray Apparatus (Implan 410)	Electrical Apparatus (Implan 411)	Ophthalmic Goods (Implan 412)	Research & Development (Implan 509)	Gaskets, Packing and Sealing Devices (Implan 218)	Fabricated Rubber Products, N.E.C. (Implan 219)	Average All Industries
5000,5100	447	Wholesale Trade	13	1	1	1	1	1	1	1	1	1	1	1	1	1
6000	456	Banking	12		1	1	1	1	1	1	1	1	1	1	1	1
6500	462	Real Estate	12		1	1	1	1	1	1	1	1	1	1	1	1
4810,20,40,90	441	Communications- Except Radio and TV	11		1	1	1	1	1	1	1	1	1	1		1
	56	Maintenance and Repair Other Facilities	11		1	1	1	1	1	1	1	1		1	1	1
	475	Computer and Data Processing Services	10		1	1	1	1	1		1		1	1	1	1
7370	475	Other Business Services	10		1	1	1	1	1		1		1	1	1	1
7320,31,38,83,89	470	Electronic Components- N.E.C.	9	1		1	1	1	1			1	1		1	1
3675,6,7,8,9	378	Personnel Supply Services	7		1	1	1	1		1	1					1
7360	474	Motor Freight Transport and Warehousing	6				1	1	1				1	1		1
4200	435	Legal Services	6				1	1	1						1	1
8110	494	Printed Circuit Boards	5		1	1			1	1	1					1
3672	376	Accounting- Auditing and Bookkeeping	5							1	1					1
8720,8990	507	Management and Consulting Services	4	1		1							1			1
8740	508	Paperboard Containers and Boxes	4				1	1	1				1			1
2650	164	Synthetic Rubber	3				1	1	1					1	1	1
2822	192	Surgical Appliances and Supplies	3				1	1								1
3842	408	Newspapers	2						1			1				
2710	174	Glass and Glass Products- Exc	2													
3210,29,30	230	Containers	2			1						1				
3841	407	Surgical and Medical Instrument	2				1	1								
4830	442	Radio and TV Broadcasting	2						1			1				
8330	498	Job Trainings & Related Services	2					1	1							
8730	509	Research- Development & Testing Services	2	1									1			
2821	191	Plastics Materials and Resins	2											1	1	
4910	443	Electric Services	2											1	1	
8710	506	Engineering- Architectural Services	2										1		1	
2720	175	Periodicals	1									1				
2750	179	Commercial Printing	1									1				
1475	44	Phosphate Rock	1												1	
2830	195	Drugs	1	1												
			145	5	8	11	15	15	14	8	9	12	11	11	12	14

Source: This table was constructed by CEDR based on IMPLAN output tables, which are contained in this report.

Use of Table: This table shows the industries in Tier 1 in a particular Sector of the Tampa Bay economy. For example, Real Estate is in Tier 1 in all Sectors except Drugs.

Tampa Bay

Tier 1 Industries, Frequency by Implan Sector

Excluding Implan 509, Research, Development, and Testing Services

Table 2.2

SIC Code	IMPLAN Sector	Description	Total Frequency	Drugs (Implan 195)	Medical Measuring Devices (Implan 403)	Optical Instruments & Lenses (Implan 406)	Surgical & Medical Instruments (Implan 407)	Surgical Appliances & Supplies (Implan 408)	Dental Equipment & Supplies (Implan 409)	X-Ray Apparatus (Implan 410)	Electrical Apparatus (Implan 411)	Ophthalmic Goods (Implan 412)	Gaskets, Packing and Sealing Devices (Implan 218)	Fabricated Rubber Products, N.E.C. (Implan 219)	Average All Industries
5000,5100	447	Wholesale Trade	12	1	1	1	1	1	1	1	1	1	1	1	1
		Maintenance and Repair													
	56	Other Facilities	11		1	1	1	1	1	1	1	1	1	1	1
6000	456	Banking	11		1	1	1	1	1	1	1	1	1	1	1
6500	462	Real Estate	11		1	1	1	1	1	1	1	1	1	1	1
		Communications- Except													
4810,20,40,90	441	Radio and TV	10		1	1	1	1	1	1	1	1	1		1
		Computer and Data													
7370	475	Processing Services	9		1	1	1	1	1		1		1	1	1
		Other Business													
7320,31,38,83,89	470	Services	8	1	1	1	1	1	1			1		1	1
		Electronic Components-													
		N.E.C.													
3675,6,7,8,9	378	Legal Services	7		1	1	1	1	1	1	1				1
8110	494	Motor Freight Transport	6												1
		and Warehousing													
4200	435	Printed Circuit Boards	6		1	1	1	1	1				1	1	1
3672	376	Personnel Supply	5		1	1				1	1				1
		Services													
7360	474	Paperboard Containers	4				1	1	1				1		
		and Boxes													
2650	164	Accounting- Auditing	3				1	1	1						
		and Bookkeeping													
8720,8990	507	Synthetic Rubber	3	1	1								1	1	1
2822	192	Surgical Appliances and	3												
		Supplies					1	1							
3842	408	Newspapers	2						1			1			
2710	174	Glass and Glass	2												
		Products- Exc													
3210,29,30	230	Containers	2			1						1			
		Surgical and Medical													
3841	407	Instrument	2				1	1							
		Radio and TV													
4830	442	Broadcasting	2						1			1			
		Job Trainings & Related													
8330	498	Services	2					1	1						
		Management and													
8740	508	Consulting Services	2				1					1			
		Plastics Materials and													
2821	191	Resins	2										1	1	
4910	443	Electric Services	2										1	1	
2720	175	Periodicals	1									1			
1475	44	Phosphate Rock	1											1	
2750	179	Commercial Printing	1									1			
2830	195	Drugs	1	1											
		Research- Development													
		& Testing Services													
8730	509	Engineering-	1	1											
		Architectural Services													
8710	506		1											1	
			133	5	8	11	15	15	14	8	9	12	11	12	13

Source: This table was constructed by CEDR based on IMPLAN output tables, which are contained in this report.

Use of Table: This table shows the industries in Tier 1 in a particular Sector of the Tampa Bay economy. For example, Real Estate is in Tier 1 in all Sectors except Drugs.

Except the Pharmaceuticals segment, all of the selected primary industries or industry groups exhibit “clustering” in the sense that they tend to have the same supplier-industries. The Pharmaceuticals segment has only four supplier-industries or supplier industry groups in common with any industry of the Biotech segment and the Medical Devices segment. The four common supplier-links are 1) Wholesale Trade, 2) Other Business Services, 3) Accounting, Auditing and Bookkeeping and 4) Research, Development and Testing Services. If we exclude Research, Development and Testing Services (IMPLAN sector 509) from the primary industries, the Pharmaceuticals segment has only three supplier-industries in common with any industry of the Biotech and Medical Devices segments.

Thus, we find that in the sense of a cluster exhibiting common supplier-links, the Pharmaceuticals segment of the selected primary industries for Medical Product Industries’ clustering in Tampa Bay is not a “good fit” with the Biotech and Medical Devices segments. However, the selected industries in the Biotech segment and the Medical Devices segment exhibit common supplier-linkages.

Based on the input-output analysis, the cluster of medical products firms in Tampa Bay is broadly defined to include the primary industries of the Biotech segment and the Medical Devices segment plus their Tier 1 and Tier 2 supplier-industries. The analysis also supports a narrow definition, which would exclude Tier 2 supplier-industries and thereby regard Tier 2 industries as tangential to the clustering of medical products firms.

### Section 3: Baseline Contributions of the Primary Industries

Using the REMI™ model, we estimate the economic contributions of the primary industries. We divide the primary industries into three segments: 1) Pharmaceuticals segment, 2) Biotech segment and 3) Medical Devices segment. The industries included in each segment are listed in Section 2 of this report.

We measure the baseline economic contributions of the primary industries by employment, output, and personal income.<sup>5</sup> That is, the industries hire a number of workers (employment), who produce goods and services of value (output).<sup>6</sup> The value-added – less indirect business taxes – from production is distributed among the workers (wage and salary disbursements) and the owners (rental, dividend and interest income) of the capital that the workers use in the production process.

**Table 3.1 (Pharmaceuticals segment)** shows estimates of employment by location (place of work) from 2002 to 2007 for the Drugs Industry Group. Panel A shows total employment in each county and a summation of the counties' employment for the Tampa Bay region. Panel B reflects employment by the Drugs Industry Group. Panel C gives the percentage of total employment contributed by jobs in the Drugs Industry Group for each location

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<sup>5</sup> Personal income is a Bureau of Economic Analysis (BEA) concept based on place of residence. It is the sum of wage and salary disbursements, other labor income, proprietors' income, rental income, personal dividend income, personal interest income, and transfer payments, less personal contributions for social insurance. In this analysis, however, only the wage and salary disbursements portion of personal income is reported.

<sup>6</sup> Output equals sales plus or minus an inventory adjustment.

Table 3.1  
Pharmaceuticals segment - Medical Products Industry Cluster - REMI Baseline

Primary Industries: SIC 283 Drugs Industry Group  
EMPLOYMENT

Panel A

Employment (000s) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Drugs Group Employment (000s) Manufacturing > Non-durables > Chemicals

Location	2002	2003	2004	2005	2006	2007
Hernando	0.000	0.000	0.000	0.000	0.000	0.000
Hillsborough	0.487	0.495	0.501	0.507	0.513	0.519
Manatee	0.120	0.123	0.125	0.128	0.130	0.133
Pasco	0.021	0.022	0.023	0.024	0.025	0.025
Pinellas	1.209	1.224	1.236	1.249	1.265	1.280
Polk	0.002	0.003	0.003	0.003	0.003	0.003
Sarasota	0.034	0.035	0.035	0.036	0.036	0.037
Tampa Bay	1.873	1.902	1.923	1.947	1.972	1.997

Panel C

Drugs Group Employment (% of Total) Manufacturing > Non-durables > Chemicals

Location	2002	2003	2004	2005	2006	2007
Hernando	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hillsborough	0.06%	0.06%	0.06%	0.06%	0.06%	0.06%
Manatee	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%
Pasco	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Pinellas	0.21%	0.21%	0.21%	0.21%	0.21%	0.21%
Polk	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sarasota	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Tampa Bay	0.09%	0.09%	0.09%	0.09%	0.09%	0.09%

There are approximately 1,900 jobs in this segment in the Tampa Bay region. Most of these jobs, about 1,200 or 0.2% of countywide employment, are in Pinellas County.

**Table 3.2 (Biotech segment)** shows estimates of employment by location (place of work) from 2002 to 2007 for the Commercial Physical and Biological Research industry. Panel A shows total employment in each county and a summation of the counties' employment for the Tampa Bay region. Panel B reflects employment by the Commercial Physical and Biological

Research industry. Panel C gives the percentage of total employment contributed by jobs in the Commercial Physical and Biological Research industry for each location.

Table 3.2  
Biotech Segment - Medical Products Industry Cluster - REMI Baseline

Primary Industry: SIC 8731 Commercial Physical and Biological Research  
EMPLOYMENT

Panel A

Employment (000s) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Commercial Physical and Biological Research Employment (000s) Non-manufacturing > Services

Location	2002	2003	2004	2005	2006	2007
Hernando	0.000	0.000	0.000	0.000	0.000	0.000
Hillsborough	0.223	0.231	0.239	0.248	0.256	0.265
Manatee	0.023	0.024	0.025	0.026	0.027	0.028
Pasco	0.071	0.073	0.075	0.078	0.080	0.082
Pinellas	0.411	0.425	0.438	0.452	0.465	0.479
Polk	0.030	0.031	0.032	0.034	0.035	0.036
Sarasota	0.120	0.125	0.129	0.133	0.137	0.141
Tampa Bay	0.878	0.909	0.940	0.970	1.000	1.031

Panel C

Commercial Physical and Biological Research Employment (% of Total) Non-manufacturing > Services

Location	2002	2003	2004	2005	2006	2007
Hernando	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hillsborough	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%
Manatee	0.01%	0.02%	0.02%	0.02%	0.02%	0.02%
Pasco	0.07%	0.07%	0.07%	0.07%	0.07%	0.07%
Pinellas	0.07%	0.07%	0.07%	0.08%	0.08%	0.08%
Polk	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Sarasota	0.06%	0.06%	0.06%	0.06%	0.06%	0.06%
Tampa Bay	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%

There are approximately 900 jobs in the Biotech segment in the Tampa Bay region. Just under half, about 410, of those jobs are in Pinellas County. In both Pinellas County and Pasco County, employment in the Biotech segment comprises approximately 0.07% of all jobs in each county.



**Table 3.3 (Medical Devices segment)** shows estimates of employment by location (place of work) from 2002 to 2007 for the industries included in this segment. Panel A shows total employment in each county and a summation of the counties' employment for the Tampa Bay region. Panel B reflects employment in the Medical Devices segment. Panel C gives the percentage of total employment contributed by jobs in the Medical Devices segment for each location.

Table 3.3  
 Medical Devices Segment - Medical Products Industry Cluster - REMI Baseline

Primary Industries:  
 SIC 3053 Gaskets, Packing & Sealing Devices  
 SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
 SIC 3069 Fabricated Rubber Products, nec  
 SIC 3823 Industrial Instruments for Measurement, Display, and Control  
 SIC 3824 Totalizing Fluid Meters and Counting Devices  
 SIC 3826 Laboratory Analytical Instruments  
 SIC 3827 Optical Instruments and Lenses  
 SIC 3829 Measuring and Controlling Devices, nec  
 SIC 3840 Medical Instruments & Supplies  
 SIC 3851 Ophthalmic Goods

EMPLOYMENT

Panel A

Employment (000s) Total						
Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Medical Devices Employment (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.147	0.153	0.160	0.167	0.171	0.176
Hillsborough	0.568	0.558	0.550	0.540	0.527	0.516
Manatee	0.619	0.626	0.626	0.617	0.610	0.599
Pasco	0.029	0.028	0.027	0.027	0.027	0.027
Pinellas	5.298	5.385	5.455	5.484	5.503	5.488
Polk	0.409	0.395	0.386	0.378	0.365	0.357
Sarasota	0.260	0.259	0.261	0.260	0.260	0.258
Tampa Bay	7.331	7.403	7.465	7.474	7.463	7.422

Panel C

Medical Devices Employment (% of Total)						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.33%	0.34%	0.35%	0.36%	0.37%	0.37%
Hillsborough	0.07%	0.07%	0.07%	0.07%	0.06%	0.06%
Manatee	0.39%	0.39%	0.38%	0.37%	0.36%	0.35%
Pasco	0.03%	0.03%	0.03%	0.02%	0.02%	0.02%
Pinellas	0.91%	0.92%	0.92%	0.91%	0.91%	0.89%
Polk	0.17%	0.16%	0.15%	0.15%	0.14%	0.14%
Sarasota	0.12%	0.12%	0.12%	0.12%	0.11%	0.11%
Tampa Bay	0.34%	0.34%	0.34%	0.33%	0.33%	0.32%

There are approximately 7,400 jobs in the Medical Devices segment in the Tampa Bay region. Most of those jobs, about 72%, are in Pinellas County. Jobs in the Medical Devices segment comprise almost 1% of total employment in Pinellas County.

Pinellas County is the predominant location for jobs in each of the three segments of Medical Product Industries that we examined.

Aggregated estimates of employment by location (place of work) from 2002 to 2007 for the Pharmaceuticals, Biotech and Medical Devices segments are in Appendix A. There are approximately 10,000 jobs in the Pharmaceuticals, Biotech and Medical Devices segments in the Tampa Bay region. Most of those jobs, almost 70%, are in Pinellas County.

**Table 3.4 (Pharmaceuticals segment)** shows estimates of output by location (place of business) from 2002 to 2007 for the Drugs Industry Group. Panel A shows total output in each county and a summation of the counties' output for the Tampa Bay region. Panel B reflects output by the Drugs Industry Group. Panel C gives the percentage of total output contributed by the Drugs Industry Group for each location.

Table 3.4  
Pharmaceuticals Segment - Medical Products Industry Cluster - REMI Baseline

Primary Industries: SIC 283 Drugs Industry Group  
OUTPUT

Panel A

Output (Bil. 01\$) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Drugs Group Output (Bil. 01\$) Manufacturing > Non-durables > Chemicals

Location	2002	2003	2004	2005	2006	2007
Hernando	0.000	0.000	0.000	0.000	0.000	0.000
Hillsborough	0.201	0.209	0.216	0.223	0.232	0.240
Manatee	0.051	0.053	0.055	0.056	0.059	0.061
Pasco	0.012	0.013	0.013	0.014	0.014	0.015
Pinellas	0.455	0.470	0.487	0.505	0.523	0.543
Polk	0.001	0.001	0.001	0.001	0.001	0.001
Sarasota	0.020	0.020	0.021	0.021	0.022	0.023
Tampa Bay	0.740	0.766	0.794	0.821	0.851	0.884

Panel C

Drugs Group Output (% of Total) Manufacturing > Non-durables > Chemicals

Location	2002	2003	2004	2005	2006	2007
Hernando	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hillsborough	0.33%	0.33%	0.33%	0.33%	0.33%	0.33%
Manatee	0.42%	0.43%	0.43%	0.43%	0.43%	0.44%
Pasco	0.18%	0.19%	0.19%	0.20%	0.19%	0.20%
Pinellas	0.99%	0.99%	0.99%	1.00%	1.01%	1.01%
Polk	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%
Sarasota	0.13%	0.13%	0.13%	0.13%	0.13%	0.14%
Tampa Bay	0.45%	0.45%	0.45%	0.46%	0.46%	0.46%

We expect the Drugs Industry Group to produce \$740 million, or almost 0.5%, of economic activity (output) in the Tampa Bay region during 2002. Approximately 62%, or \$455 million, of this economic activity is attributable to businesses that are located in Pinellas County. By 2007, output of the Drugs Industry Group is expected to grow to \$884 million in the Tampa Bay region.

**Table 3.5 (Biotech Segment)** shows estimates of output by location (place of business) from 2002 to 2007 for the Commercial Physical and Biological Research industry. Panel A shows total output in each county and a summation of the counties' output for the Tampa Bay region. Panel B reflects output by the Commercial Physical and Biological Research industry. Panel C gives the percentage of total output contributed by the Commercial Physical and Biological Research industry for each location.

Table 3.5  
Biotech Segment - Medical Products Industry Cluster - REMI Baseline

Primary Industry: SIC 8731 Commercial Physical and Biological Research

OUTPUT

Panel A

Output (Bil. 01\$) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Commercial Physical and Biological Research Output (Bil. 01\$) Non-manufacturing > Services

Location	2002	2003	2004	2005	2006	2007
Hernando	0.000	0.000	0.000	0.000	0.000	0.000
Hillsborough	0.038	0.040	0.043	0.046	0.049	0.052
Manatee	0.004	0.004	0.004	0.005	0.005	0.005
Pasco	0.010	0.011	0.012	0.013	0.013	0.014
Pinellas	0.076	0.081	0.086	0.091	0.096	0.102
Polk	0.005	0.005	0.006	0.006	0.006	0.007
Sarasota	0.021	0.022	0.023	0.025	0.026	0.028
Tampa Bay	0.154	0.164	0.174	0.185	0.196	0.207

Panel C

Commercial Physical and Biological Research Output (% of Total) Non-manufacturing > Services

Location	2002	2003	2004	2005	2006	2007
Hernando	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hillsborough	0.06%	0.06%	0.06%	0.07%	0.07%	0.07%
Manatee	0.03%	0.03%	0.03%	0.03%	0.04%	0.04%
Pasco	0.15%	0.16%	0.17%	0.17%	0.18%	0.18%
Pinellas	0.17%	0.17%	0.18%	0.18%	0.19%	0.19%
Polk	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%
Sarasota	0.14%	0.14%	0.15%	0.15%	0.16%	0.16%
Tampa Bay	0.09%	0.10%	0.10%	0.10%	0.11%	0.11%

We expect the Commercial Physical and Biological Research industry to produce \$154 million of economic activity (output) in the Tampa Bay region during 2002. Approximately 49%, or \$76 million, of this economic activity is attributable to businesses that are located in Pinellas County. By 2007, output of the Commercial Physical and Biological Research industry is expected to grow to \$207 million in the Tampa Bay region.

**Table 3.6 (Medical Devices segment)** shows estimates of output by location (place of business) from 2002 to 2007 for the Medical Devices segment. Panel A shows total output in each county and a summation of the counties' output for the Tampa Bay region. Panel B reflects output by the Medical Devices segment. Panel C gives the percentage of total output contributed by the Medical Devices segment for each location.

Table 3.6  
 Medical Devices Segment - Medical Products Industry Cluster - REMI Baseline

Primary Industries:  
 SIC 3053 Gaskets, Packing & Sealing Devices  
 SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
 SIC 3069 Fabricated Rubber Products, nec  
 SIC 3823 Industrial Instruments for Measurement, Display, and Control  
 SIC 3824 Totalizing Fluid Meters and Counting Devices  
 SIC 3826 Laboratory Analytical Instruments  
 SIC 3827 Optical Instruments and Lenses  
 SIC 3829 Measuring and Controlling Devices, nec  
 SIC 3840 Medical Instruments & Supplies  
 SIC 3851 Ophthalmic Goods

OUTPUT

Panel A

Output (Bil. 01\$) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Medical Devices Output (Bil. 01\$)

Location	2002	2003	2004	2005	2006	2007
Hernando	0.037	0.041	0.045	0.048	0.051	0.053
Hillsborough	0.137	0.144	0.149	0.153	0.158	0.159
Manatee	0.109	0.114	0.117	0.119	0.120	0.121
Pasco	0.002	0.002	0.002	0.002	0.002	0.002
Pinellas	0.781	0.823	0.856	0.888	0.915	0.943
Polk	0.099	0.103	0.106	0.109	0.111	0.112
Sarasota	0.047	0.049	0.051	0.053	0.054	0.056
Tampa Bay	1.213	1.276	1.327	1.372	1.411	1.446

Panel C

Medical Devices Output (% of Total)

Location	2002	2003	2004	2005	2006	2007
Hernando	1.40%	1.48%	1.59%	1.62%	1.69%	1.73%
Hillsborough	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%
Manatee	0.91%	0.92%	0.91%	0.90%	0.88%	0.87%
Pasco	0.02%	0.03%	0.03%	0.03%	0.03%	0.03%
Pinellas	1.70%	1.73%	1.74%	1.76%	1.76%	1.76%
Polk	0.50%	0.51%	0.51%	0.51%	0.50%	0.49%
Sarasota	0.31%	0.32%	0.33%	0.33%	0.33%	0.33%
Tampa Bay	0.74%	0.75%	0.76%	0.76%	0.76%	0.76%

We expect the Medical Devices segment to produce over \$1.2 billion of economic activity (output) in the Tampa Bay region during 2002. Approximately 65%, or \$781 million, of this economic activity is attributable to businesses that are located in Pinellas County. By 2007, output of the Medical Devices segment is expected to grow to almost \$1.5 billion in the Tampa Bay region.

Aggregated estimates of output by location (place of business) from 2002 to 2007 for the Pharmaceuticals, Biotech and Medical Devices segments are in Appendix B. We expect that the Pharmaceuticals, Biotech and Medical Devices segments will produce nearly \$1.4 billion of economic activity in the Tampa Bay region during 2002. Most of this activity, almost 63%, occurs in Pinellas County.

**Table 3.7 (Pharmaceuticals segment)** shows estimates of income by location (place of residence) from 2002 to 2007 for the Drugs Industry Group. Here, we report wage and salary disbursements, which are a portion of the personal income block of the REMI™ model. In the model, wage and salary disbursements are disaggregated at the major industry group level.<sup>7</sup> Panel A shows total wage and salary disbursements in each county and a summation of disbursements for the counties' of the Tampa Bay region. Panel B reflects wage and salary disbursements by the Drugs Industry Group. Panel C gives the percentage of total wage and salary disbursements that are contributed by the Drugs Industry Group for each location.

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<sup>7</sup> Other components of personal income are only available for the major divisions of an economy, i.e. 1-digit SIC code level. In 2001, total personal income of Tampa bay residents was \$106.942 billion, and wage and salary disbursements were \$55.013 billion or 51.44% of total personal income.



Table 3.7  
Pharmaceuticals Segment - Medical Products Industry Cluster - REMI Baseline

Primary Industries: SIC 283 Drugs Industry Group  
PERSONAL INCOME

Panel A

Personal Income (Bil. nominal) Total Wage & Salary Disbursements

Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

Panel B

Drugs Group Personal Income (Bil. Nominal) Manufacturing > Non-durables > Chemicals

Location	2002	2003	2004	2005	2006	2007
Hernando	0.000	0.000	0.000	0.000	0.000	0.000
Hillsborough	0.028	0.029	0.031	0.032	0.034	0.036
Manatee	0.005	0.005	0.006	0.006	0.006	0.007
Pasco	0.000	0.000	0.000	0.000	0.000	0.000
Pinellas	0.058	0.061	0.064	0.067	0.070	0.075
Polk	0.000	0.000	0.000	0.000	0.000	0.000
Sarasota	0.002	0.002	0.002	0.002	0.002	0.002
Tampa Bay	0.093	0.098	0.103	0.108	0.114	0.120

Panel C

Drugs Group Personal Income (% of Total) Manufacturing > Non-durables > Chemicals

Location	2002	2003	2004	2005	2006	2007
Hernando	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hillsborough	0.13%	0.13%	0.13%	0.13%	0.13%	0.13%
Manatee	0.16%	0.17%	0.17%	0.17%	0.17%	0.17%
Pasco	0.03%	0.03%	0.02%	0.02%	0.02%	0.02%
Pinellas	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%
Polk	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sarasota	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%
Tampa Bay	0.18%	0.19%	0.18%	0.18%	0.18%	0.18%

We expect residents of Tampa Bay working in the Drugs Industry Group to receive \$93 million in wages and salaries during 2002. About 62%, or \$58 million, will be paid to Pinellas County residents. Including estimated future inflation, we expect that by 2007 residents of the Tampa Bay region working in the Drugs Industry Group will earn \$120 million of wages and salaries.

**Table 3.8 (Biotech segment)** shows estimates of income (wage and salary disbursements only) by location (place of residence) from 2002 to 2007 for the Commercial Physical and Biological Research industry. Panel A shows total wage and salary disbursement in each county and a summation of disbursements for the counties' of the Tampa Bay region. Panel B reflects wage and salary disbursements by the Commercial Physical and Biological Research industry. Panel C gives the percentage of total wage and salary disbursements contributed by the Commercial Physical and Biological Research industry for each location.

Table 3.8  
Biotech Segment - Medical Products Industry Cluster - REMI Baseline

Primary Industry: SIC 8731 Commercial Physical and Biological Research

PERSONAL INCOME

Panel A

Personal Income (Bil. nominal) Total Wage & Salary Disbursements

Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

Panel B

Commercial Physical and Biological Research Personal Inc (Bil. nominal) Non-manufacturing > Services

Location	2002	2003	2004	2005	2006	2007
Hernando	0.000	0.000	0.000	0.000	0.000	0.000
Hillsborough	0.010	0.011	0.012	0.013	0.014	0.015
Manatee	0.001	0.001	0.001	0.001	0.001	0.001
Pasco	0.002	0.002	0.002	0.002	0.002	0.002
Pinellas	0.014	0.015	0.017	0.018	0.019	0.021
Polk	0.001	0.001	0.001	0.001	0.001	0.001
Sarasota	0.004	0.004	0.004	0.005	0.005	0.005
Tampa Bay	0.031	0.034	0.036	0.039	0.043	0.046

Panel C

Commercial Physical and Biological Research Personal Inc (% of Total) Non-manufacturing > Services

Location	2002	2003	2004	2005	2006	2007
Hernando	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hillsborough	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%
Manatee	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Pasco	0.10%	0.10%	0.11%	0.11%	0.11%	0.11%
Pinellas	0.10%	0.10%	0.10%	0.11%	0.11%	0.11%
Polk	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Sarasota	0.08%	0.08%	0.09%	0.09%	0.09%	0.09%
Tampa Bay	0.06%	0.06%	0.07%	0.07%	0.07%	0.07%

We expect residents of Tampa Bay working in the Commercial Physical and Biological Research industry to receive \$31 million in wages and salaries during 2002. About 45%, or \$14

million, will be paid to Pinellas County residents. Including estimated future inflation, we expect that by 2007 residents of the Tampa Bay region working in the Commercial Physical and Biological Research industry will earn \$46 million of wages and salaries.

**Table 3.9 (Medical Devices segment)** shows estimates of income (wage and salary disbursements only) by location (place of residence) from 2002 to 2007 for the Medical Devices segment. Panel A shows total wage and salary disbursement in each county and a summation of disbursements for the counties' of the Tampa Bay region. Panel B reflects wage and salary disbursements by the Medical Devices segment. Panel C gives the percentage of total wage and salary disbursements contributed by the Medical Devices segment for each location.

Table 3.9  
 Medical Devices Segment - Medical Products Industry Cluster - REMI Baseline

Primary Industries:  
 SIC 3053 Gaskets, Packing & Sealing Devices  
 SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
 SIC 3069 Fabricated Rubber Products, nec  
 SIC 3823 Industrial Instruments for Measurement, Display, and Control  
 SIC 3824 Totalizing Fluid Meters and Counting Devices  
 SIC 3826 Laboratory Analytical Instruments  
 SIC 3827 Optical Instruments and Lenses  
 SIC 3829 Measuring and Controlling Devices, nec  
 SIC 3840 Medical Instruments & Supplies  
 SIC 3851 Ophthalmic Goods

PERSONAL INCOME

Panel A

Personal Income (Bil. nominal) Total Wage & Salary Disbursements

Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

Panel B

Medical Devices Personal Income (Bil. Nominal) Manufacturing > Durables > Instruments

Location	2002	2003	2004	2005	2006	2007
Hernando	0.004	0.004	0.005	0.005	0.005	0.006
Hillsborough	0.052	0.052	0.054	0.056	0.058	0.060
Manatee	0.025	0.025	0.026	0.028	0.028	0.029
Pasco	0.001	0.001	0.001	0.001	0.001	0.001
Pinellas	0.299	0.315	0.332	0.347	0.362	0.376
Polk	0.036	0.036	0.037	0.038	0.040	0.040
Sarasota	0.035	0.036	0.037	0.039	0.040	0.042
Tampa Bay	0.451	0.470	0.492	0.513	0.534	0.555

Panel C

Medical Devices Personal Income (% of total) Manufacturing > Durables > Instruments

Location	2002	2003	2004	2005	2006	2007
Hernando	0.51%	0.48%	0.59%	0.62%	0.59%	0.67%
Hillsborough	0.25%	0.24%	0.23%	0.23%	0.22%	0.21%
Manatee	0.80%	0.79%	0.78%	0.78%	0.74%	0.74%
Pasco	0.07%	0.06%	0.06%	0.06%	0.06%	0.06%
Pinellas	2.08%	2.09%	2.09%	2.08%	2.06%	2.03%
Polk	0.69%	0.67%	0.65%	0.63%	0.63%	0.60%
Sarasota	0.77%	0.75%	0.74%	0.73%	0.72%	0.72%
Tampa Bay	0.90%	0.89%	0.88%	0.87%	0.86%	0.84%

We expect residents of Tampa Bay working for a firm in the Medical Devices segment to receive \$451 million in wages and salaries during 2002. About 66%, or \$299 million, will be paid to Pinellas County residents. Including estimated future inflation, we expect that by 2007 residents of the Tampa Bay region working in the Medical Devices segment will earn \$555 million of wages and salaries.

Aggregated estimates of income by location (place of residence) from 2002 to 2007 for the Pharmaceuticals, Biotech and Medical Devices segments are in Appendix C. We expect that employees, who live in Tampa Bay, of firms in the Pharmaceuticals, Biotech and Medical Devices segments will earn \$574 million of wages and salaries during 2002. Residents of Pinellas County earn most of these disbursements, almost 65%.

#### **Section 4: Employment Structure of the Primary Industries**

We use ES-202 data to compile the number of employees, average annual wages, and the number of firms for each of the primary industries. The Bureau of Labor Statistics (BLS) Covered Employment and Wages data (also called the ES-202 data) is based on the national Unemployment Insurance program for which premiums are collected monthly by state agencies. ES-202 data is gathered from the information sent to a state agency by firms that employ “covered workers”. For this study, we use annualized average ES-202 data from the year 2001, which is the most recent period available to us.

We choose three ranges of average wage to organize and present our findings. The ranges are 1) below \$35,000, 2) between \$35,000 and \$60,000, and 3) above \$60,000. For each location, we divide total wages paid by an industry during 2001 by the average number of employees during the year to obtain an average wage for the year.

**Table 4.1** reveals that the 17 Tampa Bay firms in the Pharmaceuticals segment were employing 1,350 workers during 2001. Employers were paying annualized wages of less than \$35,000 to 79 workers (6%), and were paying annualized wages of between \$35,000 and \$60,000 to 1,271 workers (94%). There were no annualized wages over \$60,000 in the Pharmaceuticals segment in 2001. Seven Pharmaceuticals firms, which are based in Pinellas County, employ 1,258 workers, or 93% of all workers employed by the Pharmaceuticals segment in the Tampa Bay region. Most of these workers are earning an annualized wage between \$35,000 and \$60,000 (24 out of the 1,258 are earning less than \$35,000). Hillsborough County is the home base of the second largest number of firms (6 firms) in the Pharmaceuticals segment in the Tampa Bay region.

Table 4.1  
Medical Product Industries Cluster - ES 202 Employment Data

Primary Industries: Pharmaceuticals Segment  
EMPLOYEES

Number of Employees by Average Annualized Wage

SIC	Description	Hernando			Hillsborough			Manatee		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
2833	Medical Chemicals and Botanical Products	24								
2834	Pharmaceutical Preparations					37				
2835	In Vitro and In Vivo Diagnostic Substances									
2836	Biological Products, except Diagnostic Substances									
Total Pharmaceuticals Segment		24	0	0	0	37	0	0	0	0

Number of Firms

	Hernando			Hillsborough			Manatee		
	Firms	Firms	Firms	Firms	Firms	Firms	Firms	Firms	Firms
Total Pharmaceuticals Segment	1			6			0		

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
2833	Medical Chemicals and Botanical Products	2								
2834	Pharmaceutical Preparations					1,217				
2835	In Vitro and In Vivo Diagnostic Substances					17				
2836	Biological Products, except Diagnostic Substances				24			21		
Total Pharmaceuticals Segment		2	0	0	24	1,234	0	21	0	0

Number of Firms

	Pasco			Pinellas			Polk		
	Firms	Firms	Firms	Firms	Firms	Firms	Firms	Firms	Firms
Total Pharmaceuticals Segment	1			7			1		

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
2833	Medical Chemicals and Botanical Products				26	0	0
2834	Pharmaceutical Preparations	8			8	1,254	0
2835	In Vitro and In Vivo Diagnostic Substances				0	17	0
2836	Biological Products, except Diagnostic Substances				45	0	0
Total Pharmaceuticals Segment		8	0	0	79	1,271	0

Number of Firms

	Sarasota			Tampa Bay		
	Firms	Firms	Firms	Firms	Firms	Firms
Total Pharmaceuticals Segment	1			17		

**Table 4.2** reveals that the 55 Tampa Bay firms in the Biotech segment were employing an average of 724 workers during 2001. Employers were paying annualized wages of less than \$35,000 to 64 workers (8.9%) and annualized wages between \$35,000 and \$60,000 to 660 workers (91.1%). An equal number of Biotech firms (19 each) are based in Hillsborough and Pinellas counties. The firms employ 305 and 331 workers, respectively, for a total of 88% of all workers employed by the Biotech segment in the Tampa Bay region. The three firms in Pasco County are the only Biotech firms in Tampa Bay to pay average wages above \$60,000.

Table 4.2  
Medical Product Industries Cluster - ES 202 Employment Data

Primary Industries: Biotech Segment EMPLOYEES										
Number of Employees by Average Annualized Wage										
SIC	Description	Hernando			Hillsborough			Manatee		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
8731	Commercial Physical and Biological Research					305			1	
Total	Biotech Segment	0	0	0	0	305	0	1	0	0
Number of Firms										
Total	Biotech Segment	Firms			Firms			Firms		
		0			19			1		
Number of Employees by Average Annualized Wage										
SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
8731	Commercial Physical and Biological Research			41		331			24	
Total	Biotech Segment	0	0	41	0	331	0	0	24	0
Number of Firms										
Total	Biotech Segment	Firms			Firms			Firms		
		3			19			5		
Number of Employees by Average Annualized Wage										
SIC	Description	Sarasota			Tampa Bay					
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K			
8731	Commercial Physical and Biological Research	63			64	660				
Total	Biotech Segment	63	0	0	64	660	0			
Number of Firms										
Total	Biotech Segment	Firms			Firms					
		8			55					



**Table 4.3** reveals that the 131 Tampa Bay firms in the Medical Devices segment were employing 8,221 workers during 2001. Employers were paying annualized wages of less than \$35,000 to 1,300 workers (15.8%) and annualized wages of between \$35,000 and \$60,000 to 6,870 workers (83.6%). Medical Devices firms based in Pinellas County employ 6,094 workers, or 74% of all workers employed by Medical Devices firms in the Tampa Bay region.

Table 4.3  
Medical Product Industries Cluster - ES 202 Employment Data

Primary Industries: Medical Devices  
EMPLOYEES

Number of Employees by Average Annualized Wage

SIC	Description	Hernando			Hillsborough			Manatee		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
3053	Gaskets, Packing, and Sealing Devices						6			
3060	Fabricated Rubber Products, NEC Industrial Instruments for Measurement, Display, and Control of Process									
3823	Variables, Related Products Totalizing Fluid Meters and Counting	4			21					
3824	Devices									
3826	Laboratory Analytical Instruments			5						
3827	Optical Instruments and Lenses Measuring and Controlling Devices,								21	
3829	NEC				7					
3841	Surgical and Medical Instruments and Apparatus	4				257		87		
3842	Appliances and Supplies		16		276			170		
3843	Dental Equipment and Supplies									
3844	X-Ray Apparatus and Tubes and Related Irradiation Apparatus									
3845	Electromedical and Electrotherapeutic Apparatus					20			188	
3851	Ophthalmic Goods				189					
Total	Medical Devices	8	16	5	493	277	6	257	209	0

Number of Firms

	Firms	Firms	Firms
Total Medical Devices	4	20	7

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
3053	Gaskets, Packing, and Sealing Devices		6					2		
3060	Fabricated Rubber Products, NEC Industrial Instruments for Measurement, Display, and Control of Process									
3823	Variables, Related Products Totalizing Fluid Meters and Counting					169			216	
3824	Devices				8			2		
3826	Laboratory Analytical Instruments									
3827	Optical Instruments and Lenses Measuring and Controlling Devices,		22			343				
3829	NEC					48		2		
3841	Surgical and Medical Instruments and Apparatus					1,295				2
3842	Appliances and Supplies	8				1,498			49	
3843	Dental Equipment and Supplies				3					
3844	X-Ray Apparatus and Tubes and Related Irradiation Apparatus				8					
3845	Electromedical and Electrotherapeutic Apparatus					832				
3851	Ophthalmic Goods					1,890				3
Total	Medical Devices	8	28	0	19	6,075	0	6	265	5

Table 4.3 (continued)  
 Medical Product Industries Cluster - ES 202 Employment Data

		Primary Industries: Medical Devices EMPLOYEES					
Number of Firms		Sarasota		Tampa Bay			
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
Total	Medical Devices	<u>Firms</u>		<u>Firms</u>		<u>Firms</u>	
		4			69		13
Number of Employees by Average Annualized Wage							
SIC	Description	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
3053	Gaskets, Packing, and Sealing Devices				2	6	6
3060	Fabricated Rubber Products, NEC				0	0	0
3823	Industrial Instruments for Measurement, Display, and Control of Process Variables, Related Products	4			29	385	0
	Totalizing Fluid Meters and Counting Devices						
3824	Devices	276			286	0	0
3826	Laboratory Analytical Instruments				0	0	5
3827	Optical Instruments and Lenses				0	386	0
3829	Measuring and Controlling Devices, NEC			35	9	48	35
3841	Surgical and Medical Instruments and Apparatus				91	1,552	2
3842	Orthopedic, Prosthetic, and Surgical Appliances and Supplies	200			654	1,563	0
3843	Dental Equipment and Supplies	5			8	0	0
3844	X-Ray Apparatus and Tubes and Related Irradiation Apparatus	6			14	0	0
	Electromedical and Electrotherapeutic Apparatus				0	852	0
3851	Ophthalmic Goods	18			207	2,078	3
Total	Medical Devices	<u>509</u>	<u>0</u>	<u>35</u>	<u>1,300</u>	<u>6,870</u>	<u>51</u>
Number of Firms							
Total	Medical Devices	<u>Firms</u>		<u>Firms</u>		<u>Firms</u>	
		14			131		

Aggregated employment by average annual wage and number of firms for the Pharmaceuticals, Medical Devices, and Biotech segments are in Appendix D.

## Section 5: Economic Contribution of the Primary Industries

We assess the economic contribution of the primary industries using the traditional counter-factual approach. With this approach, we use the REMI<sup>TM</sup> model to remove the actual output produced by the primary industries. (See Tables 3.4, 3.5 and 3.6 for the primary industries' baseline output.) The model tabulates the direct effects of the removal of the primary economic activities as well as the ripple, or secondary, effects throughout Tampa Bay.

We provide three measurements of the economic contribution for each segment of the primary industries: 1) employment, 2) output, and 3) personal income.

**Table 5.1** reports the contribution of the Pharmaceuticals segment measured by employment. Panel A shows total employment in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary Pharmaceuticals industries' output from the economy. Panel B shows total employment in each county and a summation for the Tampa Bay region after the hypothetical removal of the primary pharmaceutical industries' output from the economy. Panels C and D show the difference in employment before removal and after removal of the primary pharmaceutical industries' output. In Panel C the difference is expressed as thousands of jobs that would be lost. In Panel D the difference is expressed as the percentage of jobs lost from the total employment base after the hypothetical removal of the primary pharmaceutical industries' output from the economy.

As expressed in Panels C or D of Table 5.1, *the difference in employment measures the economic contribution of the Pharmaceuticals segment.*

In terms of the number of jobs, Pinellas County benefits most from the economic activities of the Pharmaceuticals segment in Tampa Bay. In Pinellas County, the segment is contributing about 5,225 jobs during 2002. As a percentage of total employment, Pinellas County also benefits most from the economic activities of the Pharmaceuticals segment. In Pinellas County, the segment is contributing approximately 0.9% of total employment during 2002.

The Pharmaceuticals segment is contributing over 9,000 jobs to the Tampa Bay region.

Table 5.1  
Pharmaceuticals Segment - REMI Counter-factual Removal of Output

Primary Industries: SIC 283 Drugs Industry Group  
EMPLOYMENT

Panel A

Total Employment before Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Total Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.820	44.563	45.276	45.919	46.480	47.042
Hillsborough	780.699	795.927	811.769	826.935	842.399	858.458
Manatee	158.873	161.736	164.738	167.546	170.288	173.063
Pasco	105.560	106.938	108.255	109.457	110.585	111.787
Pinellas	574.888	581.716	589.068	595.983	602.991	610.472
Polk	245.770	249.848	253.734	257.294	260.759	264.313
Sarasota	214.801	217.869	220.852	223.615	226.225	229.013
Tampa Bay	2124.411	2158.597	2193.692	2226.749	2259.727	2294.148

Panel C

Difference in Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.032	-0.032	-0.031	-0.030	-0.029	-0.030
Hillsborough	-2.807	-2.805	-2.751	-2.690	-2.663	-2.639
Manatee	-0.423	-0.423	-0.419	-0.408	-0.407	-0.408
Pasco	-0.177	-0.184	-0.180	-0.180	-0.179	-0.182
Pinellas	-5.225	-5.136	-5.005	-4.909	-4.848	-4.826
Polk	-0.198	-0.198	-0.193	-0.187	-0.183	-0.181
Sarasota	-0.267	-0.256	-0.251	-0.242	-0.242	-0.245
Tampa Bay	-9.129	-9.034	-8.830	-8.646	-8.551	-8.511

Panel D

Difference in Employment after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.07%	-0.07%	-0.07%	-0.07%	-0.06%	-0.06%
Hillsborough	-0.36%	-0.35%	-0.34%	-0.33%	-0.32%	-0.31%
Manatee	-0.27%	-0.26%	-0.25%	-0.24%	-0.24%	-0.24%
Pasco	-0.17%	-0.17%	-0.17%	-0.16%	-0.16%	-0.16%
Pinellas	-0.91%	-0.88%	-0.85%	-0.82%	-0.80%	-0.79%
Polk	-0.08%	-0.08%	-0.08%	-0.07%	-0.07%	-0.07%
Sarasota	-0.12%	-0.12%	-0.11%	-0.11%	-0.11%	-0.11%
Tampa Bay	-0.43%	-0.42%	-0.40%	-0.39%	-0.38%	-0.37%

**Table 5.2** reports the contribution of the Biotech segment measured by employment. Panel A shows total employment in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary biotech industries' output from the economy. Panel B shows total employment in each county and a summation for the Tampa Bay region after the hypothetical removal of the primary biotech industries' output from the economy. Panels C and D show the difference in employment before removal and after removal of the primary biotech industries' output. In Panel C the difference is expressed as thousands of jobs that would be lost. In Panel D the difference is expressed as the percentage of jobs lost from the total employment base after the hypothetical removal of the primary biotech industries' output from the economy.

As expressed in Panels C or D of Table 5.2, *the difference in employment measures the economic contribution of the Biotech segment.*

In terms of the number of jobs, Pinellas County benefits most from the economic activities of the Biotech segment in Tampa Bay. In Pinellas County, the segment is contributing over 2,400 jobs during 2002. As a percentage of total employment, Pinellas County also benefits most from the economic activities of the Biotech segment. In Pinellas County, the segment is contributing approximately 0.4% of total employment during 2002.

The Biotech segment is contributing over 5,100 jobs to the Tampa Bay region.

**Table 5.3** reports the contribution of the Medical Devices segment measured by employment. Panel A shows total employment in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary medical product industries' output from the economy. Panel B shows total employment in each county and a summation for the Tampa Bay region after the hypothetical removal of the primary medical product industries' output from the economy. Panels C and D show the difference in employment before removal and after removal of the primary medical product industries' output. In Panel C the difference is expressed as thousands of jobs that would be lost. In Panel D the difference is expressed as the percentage of jobs lost from the total employment base after the hypothetical removal of the primary medical product industries' output from the economy.

As expressed in Panels C or D of Table 5.2, *the difference in employment measures the economic contribution of the Medical Devices segment.*

In terms of the number of jobs, Pinellas County benefits most from the economic activities of the Medical Devices segment in Tampa Bay. In Pinellas County, the segment is contributing slightly more than 18,000 jobs during 2002. As a percentage of total employment, Pinellas County also benefits most from the economic activities of the Medical Devices segment. In Pinellas County, the segment is contributing approximately 3.2% of total employment during 2002. Employment in the industries of the Medical Devices segment also makes up about 2.2% of the total jobs in Sarasota County.

The Medical Devices segment is contributing over 35,800 jobs to the Tampa Bay region.

Table 5.2  
Biotech Segment - REMI Counter-factual Removal of Output

Primary Industry: SIC 8731 Commercial Physical and Biological Research  
EMPLOYMENT

Panel A

Total Employment before Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Total Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.839	44.581	45.292	45.934	46.494	47.055
Hillsborough	782.079	797.244	812.965	828.035	843.404	859.360
Manatee	159.156	161.993	164.995	167.796	170.540	173.289
Pasco	105.426	106.784	108.074	109.283	110.387	111.567
Pinellas	577.695	584.331	591.508	598.245	605.135	612.489
Polk	245.768	249.845	253.729	257.256	260.720	264.274
Sarasota	214.468	217.514	220.483	223.194	225.789	228.560
Tampa Bay	2128.431	2162.292	2197.046	2229.743	2262.469	2296.594

Panel C

Difference in Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.013	-0.014	-0.015	-0.015	-0.015	-0.017
Hillsborough	-1.427	-1.488	-1.555	-1.590	-1.658	-1.737
Manatee	-0.140	-0.166	-0.162	-0.158	-0.155	-0.182
Pasco	-0.311	-0.338	-0.361	-0.354	-0.377	-0.402
Pinellas	-2.418	-2.521	-2.565	-2.647	-2.704	-2.809
Polk	-0.200	-0.201	-0.198	-0.225	-0.222	-0.220
Sarasota	-0.600	-0.611	-0.620	-0.663	-0.678	-0.698
Tampa Bay	-5.109	-5.339	-5.476	-5.652	-5.809	-6.065

Panel D

Difference in Employment after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.03%	-0.03%	-0.03%	-0.03%	-0.03%	-0.04%
Hillsborough	-0.18%	-0.19%	-0.19%	-0.19%	-0.20%	-0.20%
Manatee	-0.09%	-0.10%	-0.10%	-0.09%	-0.09%	-0.11%
Pasco	-0.29%	-0.32%	-0.33%	-0.32%	-0.34%	-0.36%
Pinellas	-0.42%	-0.43%	-0.43%	-0.44%	-0.45%	-0.46%
Polk	-0.08%	-0.08%	-0.08%	-0.09%	-0.09%	-0.08%
Sarasota	-0.28%	-0.28%	-0.28%	-0.30%	-0.30%	-0.31%
Tampa Bay	-0.24%	-0.25%	-0.25%	-0.25%	-0.26%	-0.26%

Table 5.3  
 Medical Devices Segment - REMI Counter-factual Removal of Output

Primary Industries:  
 SIC 3053 Gaskets, Packing & Sealing Devices  
 SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
 SIC 3069 Fabricated Rubber Products, nec  
 SIC 3823 Industrial Instruments for Measurement, Display, and Control  
 SIC 3824 Totalizing Fluid Meters and Counting Devices  
 SIC 3826 Laboratory Analytical Instruments  
 SIC 3827 Optical Instruments and Lenses  
 SIC 3829 Measuring and Controlling Devices, nec  
 SIC 3840 Medical Instruments & Supplies  
 SIC 3851 Ophthalmic Goods

EMPLOYMENT

Panel A

Total Employment before Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Total Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.339	44.076	44.792	45.433	46.005	46.579
Hillsborough	776.768	792.089	808.114	823.438	839.109	855.324
Manatee	157.149	160.026	163.108	165.960	168.770	171.604
Pasco	105.247	106.628	107.934	109.148	110.285	111.496
Pinellas	562.087	569.007	576.702	583.921	591.274	599.063
Polk	242.619	246.695	250.637	254.255	257.779	261.392
Sarasota	210.456	213.661	216.764	219.626	222.329	225.182
Tampa Bay	2097.665	2132.182	2168.051	2201.781	2235.551	2270.640

Panel C

Difference in Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.513	-0.519	-0.515	-0.516	-0.504	-0.493
Hillsborough	-6.738	-6.643	-6.406	-6.187	-5.953	-5.773
Manatee	-2.147	-2.133	-2.049	-1.994	-1.925	-1.867
Pasco	-0.490	-0.494	-0.501	-0.489	-0.479	-0.473
Pinellas	-18.026	-17.845	-17.371	-16.971	-16.565	-16.235
Polk	-3.349	-3.351	-3.290	-3.226	-3.163	-3.102
Sarasota	-4.612	-4.464	-4.339	-4.231	-4.138	-4.076
Tampa Bay	-35.875	-35.449	-34.471	-33.614	-32.727	-32.019

Panel D

Difference in Employment after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-1.18%	-1.18%	-1.15%	-1.14%	-1.10%	-1.06%
Hillsborough	-0.87%	-0.84%	-0.79%	-0.75%	-0.71%	-0.67%
Manatee	-1.37%	-1.33%	-1.26%	-1.20%	-1.14%	-1.09%
Pasco	-0.47%	-0.46%	-0.46%	-0.45%	-0.43%	-0.42%
Pinellas	-3.21%	-3.14%	-3.01%	-2.91%	-2.80%	-2.71%
Polk	-1.38%	-1.36%	-1.31%	-1.27%	-1.23%	-1.19%
Sarasota	-2.19%	-2.09%	-2.00%	-1.93%	-1.86%	-1.81%
Tampa Bay	-1.68%	-1.64%	-1.57%	-1.50%	-1.44%	-1.39%

**Table 5.4** reports the contribution of the Pharmaceuticals segment by output. Panel A shows total output in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary pharmaceutical industries' output from the economy. Panel B shows total output in each county and a summation for the Tampa Bay region *after* the hypothetical removal on the primary pharmaceutical industries' output from the economy. Panels C and D show the difference in output before removal and after removal of the primary pharmaceutical industries' output. In Panel C the difference is expressed as output that would be lost. In Panel D the difference is expressed as the percentage of output lost from total output after the hypothetical removal of the primary pharmaceutical industries' output from the economy.

As expressed in Panels C or D of Table 5.4, *the difference in output measures the economic contribution of the Pharmaceuticals segment.*

In terms of output, Pinellas County benefits most from the economic activities of the Pharmaceuticals segment in Tampa Bay. The segment is contributing almost \$750 million of output to Pinellas County's economy during 2002. As a percentage of the county's total economy, as measured by output, the Pharmaceuticals segment is contributing 1.65% in 2002.

The Pharmaceuticals segment is contributing \$1.3 billion to the economy of the Tampa Bay region during 2002. That is 0.8% of the region's total economic activity.

**Table 5.5** reports the contribution of the Biotech segment by output. Panel A shows total output in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary biotech industries' output from the economy. Panel B shows total output in each county and a summation for the Tampa Bay region *after* the hypothetical removal on the primary biotech industries' output from the economy. Panels C and D show the difference in output before removal and after removal of the primary biotech industries' output. In Panel C the difference is expressed as output that would be lost. In Panel D the difference is expressed as the percentage of output lost from total output after the hypothetical removal of the primary biotech industries' output from the economy.

As expressed in Panels C or D of Table 5.5, *the difference in output measures the economic contribution of the Biotech segment.*

In terms of output, Pinellas County benefits most from the economic activities of the Biotech segment in Tampa Bay. The segment is contributing almost \$144 million of output to Pinellas County's economy during 2002. As a percentage of the county's total economy, as measured by output, the Pharmaceuticals segment is contributing 0.3% in 2002.

The Biotech segment is contributing \$305 million to the economy of the Tampa Bay region during 2002. That is almost 0.2% of the region's total economic activity.



Table 5.4  
Pharmaceuticals Segment - REMI Counter-factual Removal of Output

Primary Industries: SIC 283 Drugs Industry Group  
OUTPUT

Panel A						
Total Output (Bil. 01\$) before Removal						
Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

  

Panel B						
Total Output (Bil. 01\$) after Removal						
Location	2002	2003	2004	2005	2006	2007
Hernando	2.675	2.763	2.847	2.924	3.001	3.072
Hillsborough	61.430	63.623	65.792	67.873	70.080	72.298
Manatee	11.940	12.353	12.751	13.121	13.495	13.859
Pasco	6.748	6.929	7.104	7.265	7.434	7.599
Pinellas	45.316	46.851	48.365	49.789	51.271	52.752
Polk	19.728	20.362	20.958	21.513	22.084	22.641
Sarasota	14.843	15.288	15.720	16.129	16.547	16.970
Tampa Bay	162.679	168.169	173.538	178.614	183.910	189.193

  

Panel C						
Difference in Output after Removal (Bil. 01\$)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-0.003	-0.001	-0.004	-0.002	-0.001	-0.004
Hillsborough	-0.394	-0.401	-0.404	-0.406	-0.414	-0.421
Manatee	-0.073	-0.075	-0.078	-0.075	-0.081	-0.081
Pasco	-0.022	-0.024	-0.024	-0.027	-0.027	-0.025
Pinellas	-0.747	-0.758	-0.762	-0.772	-0.786	-0.800
Polk	-0.029	-0.027	-0.030	-0.028	-0.028	-0.029
Sarasota	-0.038	-0.036	-0.038	-0.035	-0.039	-0.040
Tampa Bay	-1.305	-1.322	-1.341	-1.345	-1.375	-1.399

  

Panel D						
Difference in Output after Removal (% change)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-0.12%	-0.04%	-0.16%	-0.08%	-0.04%	-0.14%
Hillsborough	-0.64%	-0.63%	-0.61%	-0.60%	-0.59%	-0.58%
Manatee	-0.61%	-0.61%	-0.61%	-0.57%	-0.60%	-0.58%
Pasco	-0.33%	-0.35%	-0.34%	-0.36%	-0.36%	-0.33%
Pinellas	-1.65%	-1.62%	-1.58%	-1.55%	-1.53%	-1.52%
Polk	-0.15%	-0.13%	-0.14%	-0.13%	-0.13%	-0.13%
Sarasota	-0.25%	-0.24%	-0.24%	-0.22%	-0.23%	-0.23%
Tampa Bay	-0.80%	-0.78%	-0.77%	-0.75%	-0.74%	-0.73%

Table 5.5  
Biotech Segment - REMI Counter-factual Removal of Output

Primary Industry: SIC 8731 Commercial Physical and Biological Research  
OUTPUT

Panel A

Total Output (Bil. 01\$) before Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Total Output (Bil. 01\$) after Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	2.677	2.764	2.848	2.926	3.002	3.075
Hillsborough	61.734	63.932	66.101	68.182	70.392	72.613
Manatee	12.005	12.419	12.820	13.190	13.566	13.931
Pasco	6.756	6.937	7.110	7.272	7.439	7.606
Pinellas	45.919	47.458	48.978	50.407	51.901	53.394
Polk	19.743	20.377	20.975	21.527	22.098	22.657
Sarasota	14.846	15.290	15.723	16.128	16.547	16.971
Tampa Bay	163.680	169.178	174.555	179.632	184.946	190.247

Panel C

Difference in Output after Removal (Bil. 01\$)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.001	0.000	-0.003	-0.001	0.000	-0.002
Hillsborough	-0.091	-0.093	-0.096	-0.097	-0.102	-0.106
Manatee	-0.008	-0.009	-0.010	-0.007	-0.009	-0.009
Pasco	-0.014	-0.017	-0.018	-0.019	-0.021	-0.019
Pinellas	-0.144	-0.150	-0.149	-0.154	-0.156	-0.157
Polk	-0.013	-0.011	-0.013	-0.013	-0.013	-0.013
Sarasota	-0.034	-0.034	-0.034	-0.036	-0.039	-0.039
Tampa Bay	-0.305	-0.314	-0.324	-0.327	-0.339	-0.345

Panel D

Difference in Output after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.04%	0.00%	-0.12%	-0.04%	0.00%	-0.07%
Hillsborough	-0.15%	-0.15%	-0.15%	-0.14%	-0.14%	-0.15%
Manatee	-0.06%	-0.07%	-0.08%	-0.05%	-0.07%	-0.06%
Pasco	-0.21%	-0.24%	-0.25%	-0.26%	-0.28%	-0.25%
Pinellas	-0.31%	-0.32%	-0.30%	-0.30%	-0.30%	-0.29%
Polk	-0.07%	-0.05%	-0.06%	-0.06%	-0.06%	-0.06%
Sarasota	-0.23%	-0.22%	-0.22%	-0.23%	-0.23%	-0.23%
Tampa Bay	-0.19%	-0.19%	-0.19%	-0.18%	-0.18%	-0.18%

**Table 5.6** reports the contribution of the Medical Devices segment by output. Panel A shows total output in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary medical product industries' output from the economy. Panel B shows total output in each county and a summation for the Tampa Bay region *after* the hypothetical removal on the primary medical product industries' output from the economy. Panels C and D show the difference in output before removal and after removal of the primary medical product industries' output. In Panel C the difference is expressed as output that would be lost. In Panel D the difference is expressed as the percentage of output lost from total output after the hypothetical removal of the primary medical product industries' output from the economy.

As expressed in Panels C or D of Table 5.4, *the difference in output measures the economic contribution of the Medical Devices segment.*

In terms of output, Pinellas County benefits most from the economic activities of the Medical Devices segment in Tampa Bay. The segment is contributing slightly more than \$1.9 billion of output to Pinellas County's economy during 2002. As a percentage of Pinellas county's total economy, as measured by output, the Medical Devices segment is contributing 4.35% in 2002. The Medical Devices segment is also a large contributor to Hillsborough County's economy. During 2002, we estimate that the segment is contributing \$795 million, or 1.3%, to Hillsborough County's economy.

The Medical Devices segment is contributing over \$4 billion to the economy of the Tampa Bay region during 2002. This equates to almost 2.5% of the region's total economic activity.

Table 5.6  
 Medical Devices Segment - REMI Counter-factual Removal of Output

Primary Industries:  
 SIC 3053 Gaskets, Packing & Sealing Devices  
 SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
 SIC 3069 Fabricated Rubber Products, nec  
 SIC 3823 Industrial Instruments for Measurement, Display, and Control  
 SIC 3824 Totalizing Fluid Meters and Counting Devices  
 SIC 3826 Laboratory Analytical Instruments  
 SIC 3827 Optical Instruments and Lenses  
 SIC 3829 Measuring and Controlling Devices, nec  
 SIC 3840 Medical Instruments & Supplies  
 SIC 3851 Ophthalmic Goods

OUTPUT

Panel A

Total Output (Bil. 01\$) before Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Total Output (Bil. 01\$) after Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	2.599	2.681	2.762	2.835	2.909	2.981
Hillsborough	61.029	63.219	65.397	67.484	69.703	71.932
Manatee	11.797	12.210	12.617	12.988	13.367	13.735
Pasco	6.729	6.911	7.084	7.247	7.416	7.584
Pinellas	44.143	45.657	47.180	48.611	50.110	51.604
Polk	19.314	19.941	20.535	21.089	21.658	22.217
Sarasota	14.294	14.735	15.162	15.565	15.981	16.399
Tampa Bay	159.905	165.355	170.737	175.819	181.144	186.453

Panel C

Difference in Output after Removal (Bil. 01\$)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.080	-0.083	-0.089	-0.092	-0.093	-0.096
Hillsborough	-0.795	-0.805	-0.800	-0.795	-0.791	-0.787
Manatee	-0.215	-0.218	-0.213	-0.209	-0.209	-0.204
Pasco	-0.041	-0.042	-0.044	-0.044	-0.044	-0.041
Pinellas	-1.919	-1.951	-1.947	-1.949	-1.947	-1.947
Polk	-0.443	-0.447	-0.453	-0.452	-0.453	-0.453
Sarasota	-0.586	-0.590	-0.595	-0.599	-0.605	-0.611
Tampa Bay	-4.080	-4.136	-4.141	-4.139	-4.142	-4.139

Panel D

Difference in Output after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-3.06%	-3.09%	-3.24%	-3.23%	-3.19%	-3.22%
Hillsborough	-1.30%	-1.27%	-1.22%	-1.18%	-1.13%	-1.09%
Manatee	-1.83%	-1.78%	-1.69%	-1.61%	-1.56%	-1.49%
Pasco	-0.61%	-0.61%	-0.62%	-0.61%	-0.60%	-0.54%
Pinellas	-4.35%	-4.27%	-4.13%	-4.01%	-3.89%	-3.77%
Polk	-2.29%	-2.24%	-2.21%	-2.14%	-2.09%	-2.04%
Sarasota	-4.10%	-4.00%	-3.93%	-3.85%	-3.79%	-3.72%
Tampa Bay	-2.49%	-2.44%	-2.37%	-2.30%	-2.24%	-2.17%

**Table 5.7** reports the contribution of the Pharmaceuticals segment measured by income, i.e. private, non-farm, wage and salary disbursements. Panel A shows total income in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary pharmaceutical industries' output from the economy. Panel B shows total income in each county and a summation for the Tampa Bay region *after* the hypothetical removal on the primary pharmaceutical industries' output from the economy. Panels C and D show the difference in income before removal and after removal of the primary pharmaceutical industries' output. In Panel C the difference is expressed as income that would be lost. In Panel D the difference is expressed as the percentage of income lost from total income after the hypothetical removal of the primary pharmaceutical industries' output from the economy.

As expressed in Panels C or D of Table 5.4, *the difference in income measures the economic contribution of the Pharmaceuticals segment.*

In terms of income, Pinellas County benefits most from the economic activities of the Pharmaceuticals segment in Tampa Bay. The segment is contributing \$195 million of income to workers in Pinellas County during 2002. As a percentage of Pinellas County's total wage and salary disbursements, the Pharmaceuticals segment is contributing almost 1.4% of income in 2002. The Pharmaceuticals segment also contributes \$117 million of income to workers in Hillsborough County in 2002.

The Pharmaceuticals segment is contributing \$348 million to non-farm payroll in the Tampa Bay region during 2002. This equates to almost 0.7% of the region's total non-farm payrolls.

**Table 5.8** reports the contribution of the Biotech segment measured by income, i.e. private, non-farm, wage and salary disbursements. Panel A shows total income in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary biotech industries' output from the economy. Panel B shows total income in each county and a summation for the Tampa Bay region *after* the hypothetical removal on the primary biotech industries' output from the economy. Panels C and D show the difference in income before removal and after removal of the primary biotech industries' output. In Panel C the difference is expressed as income that would be lost. In Panel D the difference is expressed as the percentage of income lost from total income after the hypothetical removal of the primary biotech industries' output from the economy.

As expressed in Panels C or D of Table 5.4, *the difference in income measures the economic contribution of the Biotech segment.*

In terms of income, Pinellas County benefits most from the economic activities of the Biotech segment in Tampa Bay. The segment is contributing \$76 million of income to workers in Pinellas County during 2002. As a percentage of Pinellas County's total wage and salary disbursements, the Biotech segment is contributing 0.4% of income in 2002. Regionally, the Biotech segment is contributing \$163 million to non-farm payroll in the Tampa Bay during 2002. This equates to about 0.3% of the region's total non-farm payrolls.

Table 5.7  
Pharmaceuticals Segment - REMI Counter-factual Removal of Output

Primary Industries: SIC 283 Drugs Industry Group  
PERSONAL INCOME

Panel A

Personal Income (Bil. nominal) Total Wage & Salary Disbursements before Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

Panel B

Personal Income (Bil. nominal) Total Wage & Salary Disbursements after Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	0.685	0.724	0.765	0.806	0.847	0.891
Hillsborough	20.499	21.771	23.118	24.534	26.062	27.703
Manatee	3.037	3.197	3.370	3.553	3.748	3.957
Pasco	1.730	1.814	1.900	1.990	2.084	2.186
Pinellas	14.184	14.894	15.655	16.458	17.320	18.248
Polk	5.166	5.440	5.718	6.007	6.312	6.637
Sarasota	4.545	4.789	5.037	5.296	5.565	5.854
Tampa Bay	49.846	52.629	55.563	58.644	61.938	65.476

Panel C

Difference in Wage & Salary Disbursements after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Hillsborough	-0.117	-0.127	-0.133	-0.136	-0.141	-0.144
Manatee	-0.014	-0.015	-0.015	-0.016	-0.016	-0.017
Pasco	-0.005	-0.005	-0.005	-0.005	-0.006	-0.005
Pinellas	-0.195	-0.208	-0.215	-0.222	-0.230	-0.237
Polk	-0.007	-0.007	-0.008	-0.008	-0.008	-0.007
Sarasota	-0.009	-0.010	-0.011	-0.010	-0.010	-0.011
Tampa Bay	-0.348	-0.373	-0.388	-0.398	-0.412	-0.422

Panel D

Difference in Wage & Salary Disbursements after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.15%	-0.14%	-0.13%	-0.12%	-0.12%	-0.11%
Hillsborough	-0.57%	-0.58%	-0.58%	-0.55%	-0.54%	-0.52%
Manatee	-0.46%	-0.47%	-0.45%	-0.45%	-0.43%	-0.43%
Pasco	-0.29%	-0.28%	-0.26%	-0.25%	-0.29%	-0.23%
Pinellas	-1.37%	-1.40%	-1.37%	-1.35%	-1.33%	-1.30%
Polk	-0.14%	-0.13%	-0.14%	-0.13%	-0.13%	-0.11%
Sarasota	-0.20%	-0.21%	-0.22%	-0.19%	-0.18%	-0.19%
Tampa Bay	-0.69%	-0.70%	-0.69%	-0.67%	-0.66%	-0.64%

Table 5.8  
Biotech Segment - REMI Counter-factual Removal of Output

Primary Industry: SIC 8731 Commercial Physical and Biological Research  
PERSONAL INCOME

Panel A

Personal Income (Bil. nominal) Total Wage & Salary Disbursements before Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

Panel B

Personal Income (Bil. nominal) Total Wage & Salary Disbursements after Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	0.685	0.725	0.765	0.806	0.848	0.891
Hillsborough	20.563	21.837	23.182	24.597	26.124	27.761
Manatee	3.047	3.207	3.380	3.563	3.759	3.968
Pasco	1.728	1.811	1.896	1.986	2.079	2.180
Pinellas	14.303	15.014	15.775	16.577	17.440	18.367
Polk	5.167	5.441	5.719	6.007	6.312	6.636
Sarasota	4.538	4.780	5.027	5.283	5.551	5.838
Tampa Bay	50.031	52.815	55.744	58.819	62.113	65.641

Panel C

Difference in Wage & Salary Disbursements after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.001	0.000	-0.001	-0.001	0.000	-0.001
Hillsborough	-0.053	-0.061	-0.069	-0.073	-0.079	-0.086
Manatee	-0.004	-0.005	-0.005	-0.006	-0.005	-0.006
Pasco	-0.007	-0.008	-0.009	-0.009	-0.011	-0.011
Pinellas	-0.076	-0.088	-0.095	-0.103	-0.110	-0.118
Polk	-0.006	-0.006	-0.007	-0.008	-0.008	-0.008
Sarasota	-0.016	-0.019	-0.021	-0.023	-0.024	-0.027
Tampa Bay	-0.163	-0.187	-0.207	-0.223	-0.237	-0.257

Panel D

Difference in Wage & Salary Disbursements after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.15%	0.00%	-0.13%	-0.12%	0.00%	-0.11%
Hillsborough	-0.26%	-0.28%	-0.30%	-0.30%	-0.30%	-0.31%
Manatee	-0.13%	-0.16%	-0.15%	-0.17%	-0.13%	-0.15%
Pasco	-0.41%	-0.44%	-0.47%	-0.45%	-0.53%	-0.50%
Pinellas	-0.53%	-0.59%	-0.60%	-0.62%	-0.63%	-0.64%
Polk	-0.12%	-0.11%	-0.12%	-0.13%	-0.13%	-0.12%
Sarasota	-0.35%	-0.40%	-0.42%	-0.44%	-0.43%	-0.46%
Tampa Bay	-0.32%	-0.35%	-0.37%	-0.38%	-0.38%	-0.39%

**Table 5.9** reports the contribution of the Medical Devices segment measured by income, i.e. private, non-farm, wage and salary disbursements. Panel A shows total income in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary medical product industries' output from the economy. Panel B shows total income in each county and a summation for the Tampa Bay region *after* the hypothetical removal on the primary medical product industries' output from the economy. Panels C and D show the difference in income before removal and after removal of the primary medical product industries' output. In Panel C the difference is expressed as income that would be lost. In Panel D the difference is expressed as the percentage of income lost from total income after the hypothetical removal of the primary medical product industries' output from the economy.

As expressed in Panels C or D of Table 5.4, *the difference in income measures the economic contribution of the Medical Devices segment.*

In terms of income, Pinellas County benefits most from the economic activities of the Medical Devices segment in Tampa Bay. The segment is contributing \$654 million of income to workers in Pinellas County during 2002. As a percentage of Pinellas County's total wage and salary disbursements, the Medical Devices segment is contributing almost 4.8% of income in 2002. The Medical Devices segment also contributes \$272 million of income to workers in Hillsborough County in 2002.

The Medical Devices segment is contributing nearly \$1.3 billion to non-farm payroll in the Tampa Bay region during 2002. This equates to 2.55% of the region's total non-farm payrolls.



Table 5.9  
 Medical Devices Segment - REMI Counter-factual Removal of Output

Primary Industries:  
 SIC 3053 Gaskets, Packing & Sealing Devices  
 SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
 SIC 3069 Fabricated Rubber Products, nec  
 SIC 3823 Industrial Instruments for Measurement, Display, and Control  
 SIC 3824 Totalizing Fluid Meters and Counting Devices  
 SIC 3826 Laboratory Analytical Instruments  
 SIC 3827 Optical Instruments and Lenses  
 SIC 3829 Measuring and Controlling Devices, nec  
 SIC 3840 Medical Instruments & Supplies  
 SIC 3851 Ophthalmic Goods  
**PERSONAL INCOME**

Panel A

Personal Income (Bil. nominal) Total Wage & Salary Disbursements before Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

Panel B

Personal Income (Bil. nominal) Total Wage & Salary Disbursements after Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	0.674	0.713	0.752	0.793	0.834	0.877
Hillsborough	20.344	21.607	22.953	24.370	25.904	27.549
Manatee	2.993	3.150	3.322	3.504	3.700	3.909
Pasco	1.720	1.804	1.890	1.980	2.075	2.177
Pinellas	13.725	14.405	15.150	15.943	16.800	17.725
Polk	5.063	5.330	5.605	5.891	6.195	6.518
Sarasota	4.393	4.631	4.876	5.131	5.398	5.684
Tampa Bay	48.912	51.640	54.548	57.612	60.906	64.439

Panel C

Difference in Wage & Salary Disbursements after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.012	-0.012	-0.014	-0.014	-0.014	-0.015
Hillsborough	-0.272	-0.291	-0.298	-0.300	-0.299	-0.298
Manatee	-0.058	-0.062	-0.063	-0.065	-0.064	-0.065
Pasco	-0.015	-0.015	-0.015	-0.015	-0.015	-0.014
Pinellas	-0.654	-0.697	-0.720	-0.737	-0.750	-0.760
Polk	-0.110	-0.117	-0.121	-0.124	-0.125	-0.126
Sarasota	-0.161	-0.168	-0.172	-0.175	-0.177	-0.181
Tampa Bay	-1.282	-1.362	-1.403	-1.430	-1.444	-1.459

Panel D

Difference in Wage & Salary Disbursements after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-1.78%	-1.68%	-1.86%	-1.77%	-1.68%	-1.71%
Hillsborough	-1.34%	-1.35%	-1.30%	-1.23%	-1.15%	-1.08%
Manatee	-1.94%	-1.97%	-1.90%	-1.86%	-1.73%	-1.66%
Pasco	-0.87%	-0.83%	-0.79%	-0.76%	-0.72%	-0.64%
Pinellas	-4.77%	-4.84%	-4.75%	-4.62%	-4.46%	-4.29%
Polk	-2.17%	-2.20%	-2.16%	-2.10%	-2.02%	-1.93%
Sarasota	-3.66%	-3.63%	-3.53%	-3.41%	-3.28%	-3.18%
Tampa Bay	-2.55%	-2.57%	-2.51%	-2.42%	-2.32%	-2.21%

An aggregate of our estimate of the economic contribution for all three segments, Pharmaceuticals, Biotech and Medical Devices is in Appendix E. Additionally, an aggregate estimate of the economic contribution of the Biotech and Medical Devices segments is in Appendix F. The aggregations are not strictly summations of the contributions of each segment. Rather the REMI<sup>TM</sup> economic model, which we use to generate our estimates, employs dynamic feedback loops that consider the simultaneous impacts of each segment's economic activity.

## Appendix A: Employment - Medical Product Industries Clustering

Tables A.1 and A.2 show aggregated employment estimates. In Table A.1, we aggregate jobs in all three segments: Pharmaceuticals, Biotech and Medical Devices. Because the Pharmaceuticals segment of the selected primary industries for Medical Product Industries' clustering in Tampa Bay does not seem to be a "good fit" with the Biotech and Medical Devices segments, we also display aggregate employment for the latter two segments in Table A.2. (The Pharmaceuticals segment does not seem to be a "good fit" in the sense of commonality of supplier-industries. See Section 1 of this report.)

**Table A.1** shows aggregated estimates of employment by location (place of work) from 2002 to 2007 for the Pharmaceuticals, Biotech and Medical Devices segments. Panel A shows total employment in each county and a summation of the counties' employment for the Tampa Bay region. Panel B reflects aggregate employment in the segments. Panel C gives the percentage of employment contributed by jobs in the three segments for each location.

There are approximately 10,000 jobs in the Pharmaceuticals, Biotech and Medical Devices segments in the Tampa Bay region. Most of those jobs, almost 70%, are in Pinellas County. Jobs in the three segments comprise almost 1.2% of total employment in Pinellas County.

**Table A.2** shows aggregated estimates of employment by location (place of work) from 2002 to 2007 for the Biotech and Medical Devices segments. Panel A shows total employment in each county and a summation of the counties' employment for the Tampa Bay region. Panel B reflects aggregate employment in the segments. Panel C gives the percentage of employment contributed by jobs in the two segments for each location.

Because employment in the Pharmaceuticals segment is relatively small, there are only slight differences between the findings of Tables A.1 and A.2.

Table A.1  
Pharmaceuticals, Biotech & Medical Devices Segments - REMI Baseline

EMPLOYMENT

Panel A

Employment (000s) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Pharmaceuticals, Biotech & Medical Devices Segments Employment (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	0.147	0.153	0.160	0.167	0.171	0.176
Hillsborough	1.278	1.284	1.290	1.295	1.296	1.300
Manatee	0.762	0.773	0.777	0.772	0.767	0.761
Pasco	0.121	0.123	0.126	0.129	0.132	0.134
Pinellas	6.918	7.033	7.129	7.185	7.234	7.247
Polk	0.441	0.429	0.421	0.415	0.403	0.397
Sarasota	0.414	0.418	0.425	0.429	0.433	0.436
Tampa Bay	10.081	10.214	10.327	10.391	10.436	10.450

Panel C

Pharmaceuticals, Biotech & Medical Devices Segments Employment (% of Total)

Location	2002	2003	2004	2005	2006	2007
Hernando	0.33%	0.34%	0.35%	0.36%	0.37%	0.37%
Hillsborough	0.16%	0.16%	0.16%	0.16%	0.15%	0.15%
Manatee	0.48%	0.48%	0.47%	0.46%	0.45%	0.44%
Pasco	0.11%	0.12%	0.12%	0.12%	0.12%	0.12%
Pinellas	1.19%	1.20%	1.20%	1.20%	1.19%	1.18%
Polk	0.18%	0.17%	0.17%	0.16%	0.15%	0.15%
Sarasota	0.19%	0.19%	0.19%	0.19%	0.19%	0.19%
Tampa Bay	0.47%	0.47%	0.47%	0.46%	0.46%	0.45%

Table A.2  
Biotech & Medical Devices Segments - REMI Baseline

EMPLOYMENT

Panel A

Employment (000s) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Biotech & Medical Devices Segments Employment (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	0.147	0.153	0.160	0.167	0.171	0.176
Hillsborough	0.791	0.789	0.789	0.788	0.783	0.781
Manatee	0.642	0.650	0.652	0.644	0.637	0.628
Pasco	0.100	0.101	0.103	0.105	0.107	0.109
Pinellas	5.709	5.809	5.893	5.936	5.969	5.967
Polk	0.439	0.426	0.418	0.412	0.400	0.394
Sarasota	0.380	0.383	0.390	0.393	0.397	0.399
Tampa Bay	8.208	8.312	8.404	8.444	8.464	8.453

Panel C

Biotech Medical & Devices Segments Employment (% of Total)

Location	2002	2003	2004	2005	2006	2007
Hernando	0.33%	0.34%	0.35%	0.36%	0.37%	0.37%
Hillsborough	0.10%	0.10%	0.10%	0.09%	0.09%	0.09%
Manatee	0.40%	0.40%	0.39%	0.38%	0.37%	0.36%
Pasco	0.09%	0.09%	0.09%	0.10%	0.10%	0.10%
Pinellas	0.98%	0.99%	0.99%	0.99%	0.98%	0.97%
Polk	0.18%	0.17%	0.16%	0.16%	0.15%	0.15%
Sarasota	0.18%	0.18%	0.18%	0.18%	0.18%	0.17%
Tampa Bay	0.38%	0.38%	0.38%	0.38%	0.37%	0.37%

## Appendix B: Output - Medical Product Industries Clustering

Tables B.1 and B.2 show aggregated output estimates. In Table B.1, we aggregate output in all three segments: Pharmaceuticals, Biotech and Medical Devices. Because the Pharmaceuticals segment of the selected primary industries for Medical Product Industries' clustering in Tampa Bay does not seem to be a "good fit" with the Biotech and Medical Devices segments, we also display aggregate output for the latter two segments in Table B.2. (The Pharmaceuticals segment does not seem to be a "good fit" in the sense of commonality of supplier-industries. See Section 1 of this report.)

**Table B.1** shows aggregated estimates of output by location (place of business) from 2002 to 2007 for the Pharmaceuticals, Biotech and Medical Devices segments. Panel A shows total output in each county and a summation of the counties' output for the Tampa Bay region. Panel B reflects aggregate output in the segments. Panel C gives the percentage of output contributed by jobs in the three segments for each location.

Table B.1  
Pharmaceuticals, Biotech & Medical Devices Segments - REMI Baseline

OUTPUT

Panel A

Output (Bil. 01\$) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Pharmaceuticals, Biotech & Medical Devices Segments Output (Bil. 01\$)

Location	2002	2003	2004	2005	2006	2007
Hernando	0.037	0.041	0.045	0.048	0.051	0.053
Hillsborough	0.376	0.393	0.408	0.422	0.438	0.451
Manatee	0.164	0.171	0.176	0.179	0.183	0.187
Pasco	0.024	0.027	0.028	0.029	0.030	0.032
Pinellas	1.313	1.375	1.430	1.484	1.535	1.588
Polk	0.105	0.109	0.113	0.116	0.119	0.120
Sarasota	0.087	0.091	0.096	0.099	0.103	0.107
Tampa Bay	2.106	2.207	2.295	2.378	2.459	2.537

Panel C

Pharmaceuticals, Biotech & Medical Devices Segments Output (% of Total)

Location	2002	2003	2004	2005	2006	2007
Hernando	1.40%	1.48%	1.59%	1.62%	1.69%	1.73%
Hillsborough	0.61%	0.61%	0.62%	0.62%	0.62%	0.62%
Manatee	1.36%	1.38%	1.37%	1.36%	1.35%	1.34%
Pasco	0.36%	0.38%	0.39%	0.40%	0.40%	0.42%
Pinellas	2.85%	2.89%	2.91%	2.94%	2.95%	2.96%
Polk	0.53%	0.54%	0.54%	0.54%	0.54%	0.53%
Sarasota	0.59%	0.59%	0.61%	0.61%	0.62%	0.63%
Tampa Bay	1.28%	1.30%	1.31%	1.32%	1.33%	1.33%

Combined, the Pharmaceuticals, Biotech and Medical Devices segments will produce over \$2.1 billion of output in Tampa Bay during 2002. This approximate \$2.1 billion of output constitutes almost 1.3% of Tampa Bay's economy. About 62%, or more than \$1.3 billion, of this economic activity is attributable to businesses that are located in Pinellas County. The aggregate output of the three segments in the Tampa Bay region is expected to grow to approximately \$2.5 billion by 2007.

**Table B.2** shows aggregated estimates of output by location (place of business) from 2002 to 2007 for the Biotech and Medical Devices segments. Panel A shows total output in each county and a summation of the counties' output for the Tampa Bay region. Panel B reflects aggregate output in the segments. Panel C gives the percentage of output contributed by jobs in the two segments for each location.

Table B.2  
Biotech & Medical Devices Segments - REMI Baseline

OUTPUT

Panel A

Output (Bil. 01\$) Total						
Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Biotech & Medical Devices Segments Output (Bil. 01\$)						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.037	0.041	0.045	0.048	0.051	0.053
Hillsborough	0.175	0.184	0.192	0.199	0.206	0.211
Manatee	0.113	0.118	0.121	0.123	0.125	0.126
Pasco	0.012	0.014	0.014	0.015	0.016	0.016
Pinellas	0.858	0.904	0.943	0.980	1.012	1.044
Polk	0.104	0.108	0.112	0.115	0.118	0.119
Sarasota	0.067	0.071	0.075	0.078	0.081	0.084
Tampa Bay	1.366	1.440	1.501	1.557	1.607	1.653

Panel C

Biotech & Medical Devices Segments Output (% of Total)						
Location	2002	2003	2004	2005	2006	2007
Hernando	1.40%	1.48%	1.59%	1.62%	1.69%	1.73%
Hillsborough	0.28%	0.29%	0.29%	0.29%	0.29%	0.29%
Manatee	0.94%	0.95%	0.94%	0.93%	0.92%	0.91%
Pasco	0.18%	0.19%	0.20%	0.21%	0.21%	0.21%
Pinellas	1.86%	1.90%	1.92%	1.94%	1.94%	1.95%
Polk	0.53%	0.53%	0.53%	0.53%	0.53%	0.52%
Sarasota	0.45%	0.46%	0.47%	0.48%	0.49%	0.49%
Tampa Bay	0.83%	0.85%	0.86%	0.87%	0.87%	0.87%

Output of the Pharmaceuticals segment (\$740 million in 2002) equals 35% of the aggregate output of all three segments (\$2.106 billion in 2002). Hence, when we exclude the Pharmaceuticals segment from aggregated output in Table B.2, the remainder, almost \$1.4 billion, constitutes slightly over 0.8% of Tampa Bay's economy versus 1.3% with Pharmaceuticals included.



## **Appendix C: Income - Medical Product Industries Clustering**

Tables C.1 and C.2 show aggregated income estimates. Our income estimates are for wage and salary disbursements only. In Table C.1, we aggregate wage and salary disbursements for all three segments: Pharmaceuticals, Biotech and Medical Devices. Because the Pharmaceuticals segment of the selected primary industries for Medical Product Industries' clustering in Tampa Bay does not seem to be a "good fit" with the Biotech and Medical Devices segments, we also display aggregate output for the latter two segments in Table C.2. (The Pharmaceuticals segment does not seem to be a "good fit" in the sense of commonality of supplier-industries. See Section 1 of this report.)

**Table C.1** shows aggregated estimates of wage and salary disbursements by location (place of residence) from 2002 to 2007 for the Pharmaceuticals, Biotech and Medical Devices segments. Panel A shows total wage and salary disbursements in each county and a summation of the disbursements for the counties' of the Tampa Bay region. Panel B reflects wage and salary disbursements by all three of the segments. Panel C gives the percentage of wage and salary disbursements contributed by the three segments for each location.

Table C.1  
Pharmaceuticals, Biotech & Medical Devices Segments - REMI Baseline

PERSONAL INCOME

Panel A

Personal Income (Bil. nominal) Total Wage & Salary Disbursements

Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

Panel B

Pharmaceuticals, Biotech & Medical Devices Segments Wage & Salary Disbursements (Bil. nominal)

Location	2002	2003	2004	2005	2006	2007
Hernando	0.004	0.004	0.005	0.005	0.005	0.006
Hillsborough	0.089	0.092	0.096	0.101	0.105	0.110
Manatee	0.030	0.032	0.033	0.035	0.035	0.037
Pasco	0.003	0.003	0.004	0.004	0.004	0.004
Pinellas	0.371	0.392	0.412	0.431	0.452	0.471
Polk	0.037	0.037	0.039	0.039	0.041	0.042
Sarasota	0.041	0.042	0.043	0.045	0.047	0.050
Tampa Bay	0.574	0.602	0.632	0.661	0.690	0.721

Panel C

Pharmaceuticals, Biotech & Medical Devices Segments Wage & Salary Disbursements (% of Total)

Location	2002	2003	2004	2005	2006	2007
Hernando	0.51%	0.48%	0.59%	0.62%	0.59%	0.67%
Hillsborough	0.43%	0.42%	0.41%	0.41%	0.40%	0.40%
Manatee	0.99%	0.98%	0.97%	0.97%	0.93%	0.94%
Pasco	0.19%	0.19%	0.19%	0.19%	0.19%	0.19%
Pinellas	2.58%	2.59%	2.60%	2.59%	2.57%	2.55%
Polk	0.71%	0.69%	0.67%	0.65%	0.65%	0.63%
Sarasota	0.89%	0.88%	0.86%	0.86%	0.85%	0.85%
Tampa Bay	1.14%	1.14%	1.13%	1.12%	1.11%	1.09%

Residents of Tampa Bay, who work for firms in the Pharmaceuticals, Biotech and Medical Devices segments, will earn \$574 million in wages and salary disbursements during 2002. These wage and salary disbursements constitute almost 1.2% of total disbursements in Tampa Bay. Nearly 65%, or \$371 million, of these disbursements will be paid to residents of Pinellas County. Including estimated future inflation, the aggregate wage and salary disbursements of the three segments in the Tampa Bay region are expected to grow to approximately \$721 million by 2007.

**Table C.2** shows aggregated estimates of wage and salary disbursements by location (place of residence) from 2002 to 2007 for the Medical Devices and Biotech segments. Panel A shows total wage and salary disbursements in each county and a summation of the disbursements for the counties' of the Tampa Bay region. Panel B reflects wage and salary disbursements for the two segments. Panel C gives the percentage of wage and salary disbursements contributed by the two segments for each location.

Table C.2  
Biotech & Medical Devices Segments - REMI Baseline

PERSONAL INCOME

Panel A						
Personal Income (Bil. nominal) Total Wage & Salary Disbursements						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

  

Panel B						
Biotech & Medical Devices Segments Wage & Salary Disbursements (Bil. nominal)						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.004	0.004	0.005	0.005	0.005	0.006
Hillsborough	0.061	0.063	0.066	0.069	0.071	0.074
Manatee	0.025	0.026	0.027	0.029	0.029	0.030
Pasco	0.003	0.003	0.003	0.003	0.004	0.004
Pinellas	0.313	0.331	0.348	0.365	0.382	0.397
Polk	0.037	0.037	0.038	0.039	0.041	0.042
Sarasota	0.039	0.040	0.042	0.044	0.045	0.048
Tampa Bay	0.482	0.504	0.529	0.553	0.576	0.601

  

Panel C						
Biotech & Medical Devices Segments Wage & Salary Disbursements (% of Total)						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.51%	0.48%	0.59%	0.62%	0.59%	0.67%
Hillsborough	0.30%	0.29%	0.28%	0.28%	0.27%	0.27%
Manatee	0.83%	0.81%	0.80%	0.80%	0.76%	0.76%
Pasco	0.17%	0.17%	0.16%	0.17%	0.17%	0.17%
Pinellas	2.18%	2.19%	2.20%	2.19%	2.17%	2.15%
Polk	0.71%	0.68%	0.67%	0.65%	0.65%	0.63%
Sarasota	0.85%	0.84%	0.82%	0.82%	0.81%	0.81%
Tampa Bay	0.96%	0.95%	0.95%	0.94%	0.92%	0.91%

Because wage and salary disbursements in the Pharmaceuticals segment are a relatively small portion of the total disbursements of all three segments - \$93 million out of \$574 million - there are only slight differences between the findings of Tables C.1 and C.2.

## Appendix D: Aggregated ES-202 Employment

Tables D.1 and D.2 show aggregated employment from annualized average ES-202 data for the year 2001. In Table D.1, we aggregate ES-202 data in all three segments: Pharmaceuticals, Medical Devices, and Biotech. Because the Pharmaceuticals segment of the primary industries for Medical Product Industries' clustering in Tampa Bay does not seem to be a "good fit" with the Medical Devices and Biotech segments, we also show aggregate ES-202 data for the latter two segments in Table D.2.

**Table D.1** sums up the number of employees by average annual wages and the number of firms in the Pharmaceuticals, Medical Devices, and Biotech segments in the Tampa Bay region. In 2001, there were 203 firms employing 10,336 workers. These employers were paying 14% of the workers annualized wages less than \$35,000, 85% of the workers annualized wages between \$35,000 and \$60,000, and 1% of the workers annualized wages over \$60,000. Firms based in either Pasco County or Sarasota County employed the majority of workers earning over \$60,000. The Pinellas County firms employ many more workers than the other counties in the Tampa Bay region.

Table D.1  
ES 202 Employment Data

Primary Industries: Pharmaceuticals Segment, Biotech Segment, and Medical Devices Segment

EMPLOYEES

Number of Employees by Average Annualized Wage

SIC	Description	Hernando			Hillsborough			Manatee		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
2833-2836	Pharmaceuticals Segment	24	0	0	0	37	0	0	0	0
8731	Biotech Segment	0	0	0	0	305	0	1	0	0
*	Medical Devices Segment	8	16	5	493	277	6	257	209	0
Total		32	16	5	493	619	6	258	209	0

Number of Firms

	Firms	Firms	Firms
Total	5	45	8

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
2833-2836	Pharmaceuticals Segment	2	0	0	24	1,234	0	21	0	0
8731	Biotech Segment	0	0	41	0	331	0	0	24	0
*	Medical Devices Segment	8	28	0	19	6,075	0	6	265	5
Total		10	28	41	43	7,640	0	27	289	5

Number of Firms

	Firms	Firms	Firms
Total	8	95	19

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
2833-2836	Pharmaceuticals Segment	8	0	0	79	1,271	0
8731	Biotech Segment	63	0	0	64	660	41
*	Medical Devices Segment	509	0	35	1,300	6,870	51
Total		580	0	35	1,443	8,801	92

Number of Firms

	Firms	Firms
Total	23	203

\* Includes SIC 3053, 3060, 3823, 3824, 3826, 3827, 3829, 3841-3845, and 3851.

**Table D.2** sums up the number of employees by average wages and the number of firms in the Medical Devices and Biotech segments in the Tampa Bay region. In 2001, there were 186 firms employing 8,986 workers. These employers were paying 15% of the workers annualized wages less than \$35,000, 84% of the workers annualized wages between \$35,000 and \$60,000, and 1% of the workers annualized wages over \$60,000. Similar to the findings reported in Table D.1, firms based in either Pasco County or Sarasota County employed most of workers earning

over \$60,000. Also, Pinellas County firms employ many more workers than other counties in the Tampa Bay region.

Table D.2  
Medical Product Industries Cluster - ES 202 Employment Data

Primary Industries: Biotech Segment, and Medical Devices Segment

EMPLOYEES

Number of Employees by Average Annualized Wage

SIC	Description	Hernando			Hillsborough			Manatee		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
8731	Biotech Segment	0	0	0	0	305	0	1	0	0
*	Medical Devices Segment	8	16	5	493	277	6	257	209	0
Total		8	16	5	493	582	6	258	209	0

Number of Firms

	Hernando			Hillsborough			Manatee		
	Firms			Firms			Firms		
Total	4			39			8		

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
8731	Biotech Segment	0	0	41	0	331	0	0	24	0
*	Medical Devices Segment	8	28	0	19	6,075	0	6	265	5
Total		8	28	41	19	6,406	0	6	289	5

Number of Firms

	Pasco			Pinellas			Polk		
	Firms			Firms			Firms		
Total	7			88			18		

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
8731	Biotech Segment	63	0	0	64	660	41
*	Medical Devices Segment	509	0	35	1,300	6,870	51
Total		572	0	35	1,364	7,530	92

Number of Firms

	Sarasota			Tampa Bay		
	Firms			Firms		
Total	22			186		

\* Includes SIC 3053, 3060, 3823, 3824, 3826, 3827, 3829, 3841-3845, and 3851.

## Appendix E: Economic Contribution – Medical Product Industries Cluster

The tables in this appendix show aggregated estimates of economic contribution of the Medical Product Industries cluster in Tampa Bay.

In Tables E.1 through E.3, we aggregate the estimates of economic contribution for all three segments: Pharmaceuticals, Biotech and Medical Devices segments. Because the Pharmaceuticals segment of the selected primary industries for Medical Product Industries' clustering in Tampa Bay does not seem to be a "good fit" with the Medical Devices and Biotech segments, we also display the aggregate economic contribution for these two segments in Tables E.4 through E.6. (The Pharmaceuticals Segment does not seem to be a "good fit" in the sense of commonality of supplier-industries. See Section 1 of this report.)

**Table E.1** reports the contribution of all three segments measured by employment. Panel A shows total employment in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary industries' output from the economy. Panel B shows total employment in each county and a summation for the Tampa Bay region after the hypothetical removal of the primary industries' output from the economy. Panels C and D show the difference in employment before removal and after removal of the primary industries' output. In Panel C the difference is expressed as thousands of jobs that would be lost. In Panel D the difference is expressed as the percentage of jobs lost from the total employment base after the hypothetical removal of the primary industries' output from the economy.

As expressed in Panels C or D of Table E.1, *the difference in employment measures the economic contribution of the Medical Product Industries cluster in Tampa Bay* when all three segments are considered to be included in the cluster.

In terms of the number of jobs, Pinellas County benefits most from the economic activities of the cluster in Tampa Bay. In Pinellas County, the cluster is contributing about 25,680 jobs during 2002. As a percentage of total employment, Pinellas County also benefits most from the economic activities of the cluster. In Pinellas County, the cluster is contributing approximately 4.6% of total employment during 2002.

The Medical Product Industries cluster is contributing over 51,160 jobs to the Tampa Bay region, or 3.3% of total regional employment.

Table E.1  
Pharmaceuticals, Medical Devices & Biotech Segments  
REMI Counter-factual Removal of Output

Primary Industries:  
SIC 283 Drugs Industry Group  
SIC 8731 Commercial Physical and Biological Research  
SIC 3053 Gaskets, Packing & Sealing Devices  
SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
SIC 3069 Fabricated Rubber Products, nec  
SIC 3823 Industrial Instruments for Measurement, Display, and Control  
SIC 3824 Totalizing Fluid Meters and Counting Devices  
SIC 3826 Laboratory Analytical Instruments  
SIC 3827 Optical Instruments and Lenses  
SIC 3829 Measuring and Controlling Devices, nec  
SIC 3840 Medical Instruments & Supplies  
SIC 3851 Ophthalmic Goods

EMPLOYMENT

Panel A

Total Employment before Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Total Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.293	44.029	44.745	45.387	45.958	46.531
Hillsborough	772.453	787.714	803.727	819.080	834.711	850.872
Manatee	156.574	159.423	162.514	165.380	168.194	171.002
Pasco	104.757	106.104	107.390	108.609	109.726	110.908
Pinellas	554.431	561.326	569.099	576.325	583.679	591.384
Polk	241.285	245.398	249.389	253.025	256.596	260.245
Sarasota	209.580	212.785	215.883	218.713	221.401	224.231
Tampa Bay	2082.373	2116.779	2152.747	2186.519	2220.265	2255.173

Panel C

Difference in Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.559	-0.566	-0.562	-0.562	-0.551	-0.541
Hillsborough	-11.053	-11.018	-10.793	-10.545	-10.351	-10.225
Manatee	-2.722	-2.736	-2.643	-2.574	-2.501	-2.469
Pasco	-0.980	-1.018	-1.045	-1.028	-1.038	-1.061
Pinellas	-25.682	-25.526	-24.974	-24.567	-24.160	-23.914
Polk	-4.683	-4.648	-4.538	-4.456	-4.346	-4.249
Sarasota	-5.488	-5.340	-5.220	-5.144	-5.066	-5.027
Tampa Bay	-51.167	-50.852	-49.775	-48.876	-48.013	-47.486

Panel D

Difference in Employment after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-1.29%	-1.29%	-1.26%	-1.24%	-1.20%	-1.16%
Hillsborough	-1.43%	-1.40%	-1.34%	-1.29%	-1.24%	-1.20%
Manatee	-1.74%	-1.72%	-1.63%	-1.56%	-1.49%	-1.44%
Pasco	-0.94%	-0.96%	-0.97%	-0.95%	-0.95%	-0.96%
Pinellas	-4.63%	-4.55%	-4.39%	-4.26%	-4.14%	-4.04%
Polk	-1.94%	-1.89%	-1.82%	-1.76%	-1.69%	-1.63%
Sarasota	-2.62%	-2.51%	-2.42%	-2.35%	-2.29%	-2.24%
Tampa Bay	-2.40%	-2.35%	-2.26%	-2.19%	-2.12%	-2.06%



**Table E.2** reports the contribution of the cluster by output. Panel A shows total output in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary industries' output from the economy. Panel B shows total output in each county and a summation for the Tampa Bay region *after* the hypothetical removal of the primary industries' output from the economy. Panels C and D show the difference in output before removal and after removal of the primary industries' output. In Panel C the difference is expressed as output that would be lost. In Panel D the difference is expressed as the percentage of output lost from total output after the hypothetical removal of the primary industries' output from the economy.

As expressed in Panels C or D of Table E.2, *the difference in output measures the economic contribution of the Medical Product Industries cluster in Tampa Bay* when all three segments are considered to be included in the cluster.

In terms of output, Pinellas County benefits most from the economic activities of the cluster in Tampa Bay. The cluster is contributing over \$2.8 billion of output to Pinellas County's economy during 2002. As a percentage of the county's total economy, as measured by output, the cluster is contributing 6.5% in 2002.

The Medical Product Industries cluster is contributing \$5.85 billion to the economy of the Tampa Bay region during 2002. That is 3.57% of the region's total economic activity.

Table E.2  
Pharmaceuticals, Medical Devices & Biotech Segments  
REMI Counter-factual Removal of Output

Primary Industries:  
SIC 283 Drugs Industry Group  
SIC 8731 Commercial Physical and Biological Research  
SIC 3053 Gaskets, Packing & Sealing Devices  
SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
SIC 3069 Fabricated Rubber Products, nec  
SIC 3823 Industrial Instruments for Measurement, Display, and Control  
SIC 3824 Totalizing Fluid Meters and Counting Devices  
SIC 3826 Laboratory Analytical Instruments  
SIC 3827 Optical Instruments and Lenses  
SIC 3829 Measuring and Controlling Devices, nec  
SIC 3840 Medical Instruments & Supplies  
SIC 3851 Ophthalmic Goods

OUTPUT

Panel A

Total Output (Bil. 01\$) before Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Total Output (Bil. 01\$) after Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	2.595	2.678	2.759	2.832	2.906	2.976
Hillsborough	60.539	62.718	64.888	66.972	69.181	71.398
Manatee	11.714	12.124	12.529	12.900	13.279	13.645
Pasco	6.689	6.869	7.041	7.204	7.372	7.538
Pinellas	43.251	44.750	46.267	47.686	49.170	50.643
Polk	19.124	19.751	20.345	20.896	21.466	22.026
Sarasota	14.222	14.662	15.089	15.491	15.904	16.321
Tampa Bay	158.135	163.553	168.918	173.982	179.278	184.547

Panel C

Difference in Output after Removal (Bil. 01\$)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.083	-0.086	-0.093	-0.095	-0.096	-0.101
Hillsborough	-1.286	-1.307	-1.309	-1.308	-1.313	-1.321
Manatee	-0.298	-0.304	-0.300	-0.296	-0.296	-0.295
Pasco	-0.081	-0.084	-0.087	-0.087	-0.088	-0.087
Pinellas	-2.812	-2.858	-2.860	-2.875	-2.887	-2.908
Polk	-0.633	-0.637	-0.643	-0.644	-0.645	-0.644
Sarasota	-0.658	-0.663	-0.668	-0.673	-0.681	-0.689
Tampa Bay	-5.850	-5.938	-5.960	-5.977	-6.007	-6.044

Panel D

Difference in Output after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-3.19%	-3.22%	-3.36%	-3.35%	-3.31%	-3.38%
Hillsborough	-2.12%	-2.08%	-2.02%	-1.95%	-1.90%	-1.85%
Manatee	-2.55%	-2.51%	-2.40%	-2.29%	-2.23%	-2.16%
Pasco	-1.21%	-1.22%	-1.24%	-1.21%	-1.20%	-1.16%
Pinellas	-6.50%	-6.39%	-6.18%	-6.03%	-5.87%	-5.74%
Polk	-3.31%	-3.23%	-3.16%	-3.08%	-3.00%	-2.92%
Sarasota	-4.63%	-4.52%	-4.43%	-4.34%	-4.28%	-4.22%
Tampa Bay	-3.57%	-3.50%	-3.41%	-3.32%	-3.24%	-3.17%

**Table E.3** reports the contribution of the cluster measured by income, i.e. private, non-farm, wage and salary disbursements. Panel A shows total income in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary industries' output from the economy. Panel B shows total income in each county and a summation for the Tampa Bay region *after* the hypothetical removal on the primary industries' output from the economy. Panels C and D show the difference in income before removal and after removal of the primary industries' output. In Panel C the difference is expressed as income that would be lost. In Panel D the difference is expressed as the percentage of income lost from total income after the hypothetical removal of the primary industries' output from the economy.

As expressed in Panels C or D of Table E.3, *the difference in income measures the economic contribution of the Medical Product Industries cluster in Tampa Bay* when all three segments are considered to be included in the cluster.

In terms of income, Pinellas County benefits most from the economic activities of the cluster in Tampa Bay. The cluster is contributing slightly over \$920 million of income to workers in Pinellas County during 2002. As a percentage of Pinellas County's total wage and salary disbursements, the cluster is contributing slightly over 6.8% of income in 2002. The cluster also contributes \$445 million of income to workers in Hillsborough County in 2002.

The Medical Product Industries cluster is contributing \$1.89 billion to non-farm payroll in the Tampa Bay region during 2002. This equates to almost 3.8% of the region's total non-farm payrolls.

Table E.3  
Pharmaceuticals, Medical Devices & Biotech Segments  
REMI Counter-factual Removal of Output

Primary Industries:  
SIC 283 Drugs Industry Group  
SIC 8731 Commercial Physical and Biological Research  
SIC 3053 Gaskets, Packing & Sealing Devices  
SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
SIC 3069 Fabricated Rubber Products, nec  
SIC 3823 Industrial Instruments for Measurement, Display, and Control  
SIC 3824 Totalizing Fluid Meters and Counting Devices  
SIC 3826 Laboratory Analytical Instruments  
SIC 3827 Optical Instruments and Lenses  
SIC 3829 Measuring and Controlling Devices, nec  
SIC 3840 Medical Instruments & Supplies  
SIC 3851 Ophthalmic Goods  
PERSONAL INCOME

Panel A

Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

Panel B

Location	2002	2003	2004	2005	2006	2007
Hernando	0.605	0.652	0.673	0.711	0.751	0.791
Hillsborough	20.171	21.416	22.749	24.157	25.681	27.316
Manatee	2.976	3.130	3.302	3.483	3.678	3.886
Pasco	1.709	1.791	1.875	1.965	2.059	2.160
Pinellas	13.458	14.115	14.845	15.622	16.466	17.375
Polk	5.016	5.281	5.554	5.839	6.142	6.465
Sarasota	4.367	4.603	4.845	5.098	5.363	5.647
Tampa Bay	48.302	50.988	53.843	56.875	60.140	63.640

Panel C

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.081	-0.073	-0.093	-0.096	-0.097	-0.101
Hillsborough	-0.445	-0.482	-0.502	-0.513	-0.522	-0.531
Manatee	-0.075	-0.082	-0.083	-0.086	-0.086	-0.088
Pasco	-0.026	-0.028	-0.030	-0.030	-0.031	-0.031
Pinellas	-0.921	-0.987	-1.025	-1.058	-1.084	-1.110
Polk	-0.157	-0.166	-0.172	-0.176	-0.178	-0.179
Sarasota	-0.187	-0.196	-0.203	-0.208	-0.212	-0.218
Tampa Bay	-1.892	-2.014	-2.108	-2.167	-2.210	-2.258

Panel D

Location	2002	2003	2004	2005	2006	2007
Hernando	-13.39%	-11.20%	-13.82%	-13.50%	-12.92%	-12.77%
Hillsborough	-2.21%	-2.25%	-2.21%	-2.12%	-2.03%	-1.94%
Manatee	-2.52%	-2.62%	-2.51%	-2.47%	-2.34%	-2.26%
Pasco	-1.52%	-1.56%	-1.60%	-1.53%	-1.51%	-1.44%
Pinellas	-6.84%	-6.99%	-6.90%	-6.77%	-6.58%	-6.39%
Polk	-3.13%	-3.14%	-3.10%	-3.01%	-2.90%	-2.77%
Sarasota	-4.28%	-4.26%	-4.19%	-4.08%	-3.95%	-3.86%
Tampa Bay	-3.77%	-3.80%	-3.77%	-3.67%	-3.54%	-3.43%

**Table E.4** reports the contribution of the Medical Devices and Biotech segments measured by employment. Panel A shows total employment in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary industries' output from the economy. Panel B shows total employment in each county and a summation for the Tampa Bay region after the hypothetical removal of the primary industries' output from the economy. Panels C and D show the difference in employment before removal and after removal of the primary industries' output. In Panel C the difference is expressed as thousands of jobs that would be lost. In Panel D the difference is expressed as the percentage of jobs lost from the total employment base after the hypothetical removal of the primary industries' output from the economy.

As expressed in Panels C or D of Table E.4, *the difference in employment measures the economic contribution of the Medical Devices and Biotech segments in Tampa Bay.*

In terms of the number of jobs, Pinellas County benefits most from the economic activities of the cluster in Tampa Bay. In Pinellas County, the two segments are contributing about 20,500 jobs during 2002. As a percentage of total employment, Pinellas County also benefits most from the economic activities of these segments. In Pinellas County, the two segments are contributing approximately 3.7% of total employment during 2002.

The Medical Devices and Biotech segments are contributing over 42,000 jobs to the Tampa Bay region, or about 2.0% of total regional employment.

Table E.4  
 Medical Devices & Biotech Segments  
 REMI Counter-factual Removal of Output

Primary Industries:

- SIC 8731 Commercial Physical and Biological Research
- SIC 3053 Gaskets, Packing & Sealing Devices
- SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods
- SIC 3069 Fabricated Rubber Products, nec
- SIC 3823 Industrial Instruments for Measurement, Display, and Control
- SIC 3824 Totalizing Fluid Meters and Counting Devices
- SIC 3826 Laboratory Analytical Instruments
- SIC 3827 Optical Instruments and Lenses
- SIC 3829 Measuring and Controlling Devices, nec
- SIC 3840 Medical Instruments & Supplies
- SIC 3851 Ophthalmic Goods

EMPLOYMENT

Panel A

Total Employment before Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.852	44.595	45.307	45.949	46.509	47.072
Hillsborough	783.506	798.732	814.520	829.625	845.062	861.097
Manatee	159.296	162.159	165.157	167.954	170.695	173.471
Pasco	105.737	107.122	108.435	109.637	110.764	111.969
Pinellas	580.113	586.852	594.073	600.892	607.839	615.298
Polk	245.968	250.046	253.927	257.481	260.942	264.494
Sarasota	215.068	218.125	221.103	223.857	226.467	229.258
Tampa Bay	2133.540	2167.631	2202.522	2235.395	2268.278	2302.659

Panel B

Total Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	43.324	44.060	44.775	45.416	45.987	46.560
Hillsborough	775.252	790.514	806.476	821.771	837.377	853.516
Manatee	156.996	159.846	162.933	165.788	168.602	171.411
Pasco	104.932	106.286	107.569	108.789	109.904	111.090
Pinellas	559.631	566.448	574.100	581.238	588.536	596.222
Polk	241.482	245.596	249.582	253.212	256.780	260.428
Sarasota	209.846	213.040	216.134	218.953	221.642	224.476
Tampa Bay	2091.463	2125.790	2161.569	2195.167	2228.828	2263.703

Panel C

Difference in Employment after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.528	-0.535	-0.532	-0.533	-0.522	-0.512
Hillsborough	-8.254	-8.218	-8.044	-7.854	-7.685	-7.581
Manatee	-2.300	-2.313	-2.224	-2.166	-2.093	-2.060
Pasco	-0.805	-0.836	-0.866	-0.848	-0.860	-0.879
Pinellas	-20.482	-20.404	-19.973	-19.654	-19.303	-19.076
Polk	-4.486	-4.450	-4.345	-4.269	-4.162	-4.066
Sarasota	-5.222	-5.085	-4.969	-4.904	-4.825	-4.782
Tampa Bay	-42.077	-41.841	-40.953	-40.226	-39.450	-38.956

Panel D

Difference in Employment after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-1.22%	-1.21%	-1.19%	-1.17%	-1.14%	-1.10%
Hillsborough	-1.06%	-1.04%	-1.00%	-0.96%	-0.92%	-0.89%
Manatee	-1.47%	-1.45%	-1.36%	-1.31%	-1.24%	-1.20%
Pasco	-0.77%	-0.79%	-0.81%	-0.78%	-0.78%	-0.79%
Pinellas	-3.66%	-3.60%	-3.48%	-3.38%	-3.28%	-3.20%
Polk	-1.86%	-1.81%	-1.74%	-1.69%	-1.62%	-1.56%
Sarasota	-2.49%	-2.39%	-2.30%	-2.24%	-2.18%	-2.13%
Tampa Bay	-1.97%	-1.93%	-1.86%	-1.80%	-1.74%	-1.69%

**Table E.5** reports the contribution of the Medical Devices and Biotech segments by output. Panel A shows total output in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary industries' output from the economy. Panel B shows total output in each county and a summation for the Tampa Bay region *after* the hypothetical removal of the primary industries' output from the economy. Panels C and D show the difference in output before removal and after removal of the primary industries' output. In Panel C the difference is expressed as output that would be lost. In Panel D the difference is expressed as the percentage of output lost from total output after the hypothetical removal of the primary industries' output from the economy.

As expressed in Panels C or D of Table E.5, *the difference in output measures the economic contribution of the medical devices and Biotech segments in Tampa.*

In terms of output, Pinellas County benefits most from the economic activities of the two segments in Tampa Bay. The segments are contributing almost \$2.1 billion of output to Pinellas County's economy during 2002. As a percentage of the county's total economy, as measured by output, the segments are contributing about 4.7% in 2002.

The Medical Devices and Biotech segments are contributing slightly more than \$4.5 billion to the economy of the Tampa Bay region during 2002. That is about 2,8% of the region's total economic activity.

Table E.5  
 Medical Devices & Biotech Segments  
 REMI Counter-factual Removal of Output

Primary Industries:  
 SIC 8731 Commercial Physical and Biological Research  
 SIC 3053 Gaskets, Packing & Sealing Devices  
 SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
 SIC 3069 Fabricated Rubber Products, nec  
 SIC 3823 Industrial Instruments for Measurement, Display, and Control  
 SIC 3824 Totalizing Fluid Meters and Counting Devices  
 SIC 3826 Laboratory Analytical Instruments  
 SIC 3827 Optical Instruments and Lenses  
 SIC 3829 Measuring and Controlling Devices, nec  
 SIC 3840 Medical Instruments & Supplies  
 SIC 3851 Ophthalmic Goods

OUTPUT

Panel A

Total Output (Bil. 01\$) before Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	2.678	2.764	2.852	2.927	3.002	3.077
Hillsborough	61.824	64.024	66.197	68.280	70.494	72.719
Manatee	12.013	12.428	12.830	13.196	13.575	13.940
Pasco	6.770	6.953	7.128	7.291	7.460	7.625
Pinellas	46.062	47.608	49.127	50.561	52.057	53.551
Polk	19.757	20.388	20.988	21.540	22.111	22.670
Sarasota	14.881	15.325	15.758	16.164	16.586	17.010
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Total Output (Bil. 01\$) after Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	2.598	2.680	2.761	2.834	2.908	2.979
Hillsborough	60.932	63.119	65.293	67.379	69.596	71.819
Manatee	11.788	12.200	12.607	12.978	13.358	13.725
Pasco	6.713	6.894	7.065	7.229	7.396	7.564
Pinellas	43.995	45.505	47.028	48.456	49.953	51.443
Polk	19.153	19.779	20.373	20.924	21.495	22.055
Sarasota	14.259	14.700	15.127	15.528	15.942	16.361
Tampa Bay	159.437	164.876	170.253	175.328	180.648	185.946

Panel C

Difference in Output after Removal (Bil. 01\$)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.081	-0.084	-0.091	-0.093	-0.094	-0.098
Hillsborough	-0.892	-0.906	-0.903	-0.900	-0.898	-0.900
Manatee	-0.224	-0.228	-0.223	-0.219	-0.218	-0.214
Pasco	-0.057	-0.060	-0.063	-0.062	-0.064	-0.061
Pinellas	-2.067	-2.104	-2.099	-2.105	-2.104	-2.108
Polk	-0.604	-0.610	-0.615	-0.616	-0.616	-0.615
Sarasota	-0.622	-0.625	-0.631	-0.636	-0.644	-0.649
Tampa Bay	-4.548	-4.615	-4.625	-4.631	-4.637	-4.646

Panel D

Difference in Output after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-3.10%	-3.13%	-3.28%	-3.27%	-3.23%	-3.30%
Hillsborough	-1.46%	-1.43%	-1.38%	-1.34%	-1.29%	-1.25%
Manatee	-1.90%	-1.86%	-1.77%	-1.68%	-1.63%	-1.56%
Pasco	-0.86%	-0.87%	-0.89%	-0.86%	-0.87%	-0.80%
Pinellas	-4.70%	-4.62%	-4.46%	-4.34%	-4.21%	-4.10%
Polk	-3.15%	-3.08%	-3.02%	-2.95%	-2.87%	-2.79%
Sarasota	-4.36%	-4.25%	-4.17%	-4.10%	-4.04%	-3.97%
Tampa Bay	-2.77%	-2.72%	-2.64%	-2.57%	-2.50%	-2.44%



**Table E.6** reports the contribution of the Medical Devices and Biotech segments measured by income, i.e. private, non-farm, wage and salary disbursements. Panel A shows total income in each county and a summation for the Tampa Bay region *before* the hypothetical removal of the primary industries' output from the economy. Panel B shows total income in each county and a summation for the Tampa Bay region *after* the hypothetical removal on the primary industries' output from the economy. Panels C and D show the difference in income before removal and after removal of the primary industries' output. In Panel C the difference is expressed as income that would be lost. In Panel D the difference is expressed as the percentage of income lost from total income after the hypothetical removal of the primary industries' output from the economy.

As expressed in Panels C or D of Table E.6, *the difference in income measures the economic contribution of the Medical Devices and Biotech segments in Tampa Bay.*

In terms of income, Pinellas County benefits most from the economic activities of the two segments in Tampa Bay. The segments are contributing about \$730 million of income to workers in Pinellas County during 2002. As a percentage of Pinellas County's total wage and salary disbursements, the segments are contributing slightly over 5.3% of income in 2002. These segments also contribute \$328 million of income to workers in Hillsborough County in 2002.

The Medical Devices and Biotech segments are contributing \$1.48 billion to non-farm payroll in the Tampa Bay region during 2002. This equates to almost 3.0% of the region's total non-farm payrolls.

Table E.6  
 Medical Devices & Biotech Segments  
 REMI Counter-factual Removal of Output

Primary Industries:  
 SIC 8731 Commercial Physical and Biological Research  
 SIC 3053 Gaskets, Packing & Sealing Devices  
 SIC 3061 Molded, Extruded, & Lathe-cut Mechanical Rubber Goods  
 SIC 3069 Fabricated Rubber Products, nec  
 SIC 3823 Industrial Instruments for Measurement, Display, and Control  
 SIC 3824 Totalizing Fluid Meters and Counting Devices  
 SIC 3826 Laboratory Analytical Instruments  
 SIC 3827 Optical Instruments and Lenses  
 SIC 3829 Measuring and Controlling Devices, nec  
 SIC 3840 Medical Instruments & Supplies  
 SIC 3851 Ophthalmic Goods

PERSONAL INCOME

Panel A

Personal Income (Bil. nominal) Total Wage & Salary Disbursements before Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	0.686	0.725	0.766	0.807	0.848	0.892
Hillsborough	20.616	21.898	23.251	24.670	26.203	27.847
Manatee	3.051	3.212	3.385	3.569	3.764	3.974
Pasco	1.735	1.819	1.905	1.995	2.090	2.191
Pinellas	14.379	15.102	15.870	16.680	17.550	18.485
Polk	5.173	5.447	5.726	6.015	6.320	6.644
Sarasota	4.554	4.799	5.048	5.306	5.575	5.865
Tampa Bay	50.194	53.002	55.951	59.042	62.350	65.898

Panel B

Personal Income (Bil. nominal) Total Wage & Salary Disbursements after Removal

Location	2002	2003	2004	2005	2006	2007
Hernando	0.674	0.712	0.752	0.792	0.833	0.876
Hillsborough	20.288	21.542	22.881	24.293	25.821	27.460
Manatee	2.989	3.144	3.317	3.498	3.694	3.903
Pasco	1.714	1.796	1.881	1.971	2.064	2.165
Pinellas	13.650	14.318	15.056	15.840	16.692	17.608
Polk	5.023	5.288	5.562	5.846	6.150	6.473
Sarasota	4.376	4.613	4.855	5.108	5.374	5.658
Tampa Bay	48.714	51.413	54.304	57.348	60.628	64.143

Panel C

Difference in Wage & Salary Disbursements after Removal (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.012	-0.013	-0.014	-0.015	-0.015	-0.016
Hillsborough	-0.328	-0.356	-0.370	-0.377	-0.382	-0.387
Manatee	-0.062	-0.068	-0.068	-0.071	-0.070	-0.071
Pasco	-0.021	-0.023	-0.024	-0.024	-0.026	-0.026
Pinellas	-0.729	-0.784	-0.814	-0.840	-0.858	-0.877
Polk	-0.150	-0.159	-0.164	-0.169	-0.170	-0.171
Sarasota	-0.178	-0.186	-0.193	-0.198	-0.201	-0.207
Tampa Bay	-1.480	-1.589	-1.647	-1.694	-1.722	-1.755

Panel D

Difference in Wage & Salary Disbursements after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-1.78%	-1.83%	-1.86%	-1.89%	-1.80%	-1.83%
Hillsborough	-1.62%	-1.65%	-1.62%	-1.55%	-1.48%	-1.41%
Manatee	-2.07%	-2.16%	-2.05%	-2.03%	-1.89%	-1.82%
Pasco	-1.23%	-1.28%	-1.28%	-1.22%	-1.26%	-1.20%
Pinellas	-5.34%	-5.48%	-5.41%	-5.30%	-5.14%	-4.98%
Polk	-2.99%	-3.01%	-2.95%	-2.89%	-2.76%	-2.64%
Sarasota	-4.07%	-4.03%	-3.98%	-3.88%	-3.74%	-3.66%
Tampa Bay	-2.95%	-3.00%	-2.94%	-2.87%	-2.76%	-2.66%