

5-1-2002

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

University of South Florida. Center for Economic Development Research

Follow this and additional works at: http://scholarcommons.usf.edu/business_pub

 Part of the [Business Commons](#)

Scholar Commons Citation

University of South Florida. Center for Economic Development Research, "Development industry cluster in Tampa Bay : an analysis performed by Center for Economic Development Research, College of Business Administration, University of South Florida" (2002). *College of Business Publications*. Paper 13.

http://scholarcommons.usf.edu/business_pub/13

This Article is brought to you for free and open access by the College of Business at Scholar Commons. It has been accepted for inclusion in College of Business Publications by an authorized administrator of Scholar Commons. For more information, please contact scholarcommons@usf.edu.

Development Industry Cluster in Tampa Bay

An Analysis Performed by

CENTER FOR ECONOMIC DEVELOPMENT RESEARCH
College of Business Administration



1101 Channelside Dr., 2nd Floor N., Tampa, Florida 33602
Office: (813) 905-5854 or Fax: (813) 905-5856

May, 2002

Preface

The Tampa Bay Regional Water Coalition is a trade association of land development, construction, building materials and related businesses. The Coalition commissioned the Center for Economic Development Research (CEDR), College of Business Administration, University of South Florida, to conduct a four-part study of the development industry cluster in Tampa Bay.

This document is a final report of a four-part study. The purpose of the study is to analyze the development industry cluster in Tampa Bay to determine the levels of activity and potential alternatives for employment by workers in this industry should it be curtailed.

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.

Robert Anderson, Dean, College of Business Administration (COBA), USF
Kenneth Wieand, Director, Center for Economic Development Research (CEDR), COBA, USF
Dennis G. Colie, Economist and Principal Investigator, CEDR, COBA, USF
Alexander A. McPherson, Research Associate, CEDR, COBA, USF
Carol Wallace, Information Technology Specialist, CEDR, COBA, USF

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	II
SECTION 1: INTRODUCTION	1
SECTION 2: AN OPERATIONAL DEFINITION OF THE DEVELOPMENT INDUSTRY CLUSTER.....	3
SECTION 3: BASELINE CONTRIBUTIONS OF THE PRIMARY INDUSTRIES	9
SECTION 4: EMPLOYMENT STRUCTURE OF THE PRIMARY INDUSTRIES	21
SECTION 5: ECONOMIC CONTRIBUTION OF THE DEVELOPMENT INDUSTRY CLUSTER.....	32
SECTION 6: ECONOMIC IMPACTS OF A SLOWDOWN IN DEVELOPMENT.....	37
APPENDIX A	51
PRIMARY INDUSTRIES INCLUDE REAL ESTATE AGENTS AND MANAGERS	51
APPENDIX B	58
EMPLOYMENT STRUCTURE INCLUDING REAL ESTATE AGENTS AND MANAGERS.....	58
APPENDIX C	62
DIFFERENCE IN EMPLOYMENT BY OCCUPATION	62

Executive Summary

The purpose of this study is to examine the economic impacts, such as loss of jobs, on Tampa Bay's economy, if there were a sharp reduction of development activity in the region.

We begin the study by defining the Development Industry cluster in Tampa Bay. We select potential primary industries and use the IMPLANTM input-output economic model to measure the "magnitude of clustering" in the sense that the primary industries would tend to have the same supplier-industries. We conclude that the five construction major industry groups and a portion of the Real Estate sector form the primary industries of the Development Industry cluster by virtue of commonality of supplier industries.

The five construction industry groups are 1) residential construction, 2) industrial / commercial construction, 3) utility construction, 4) highway construction and 5) construction of government facilities. The Real Estate industries included among the primary industries are Nonresidential Building Operators and Subdividers and Developers. These construction and real estate industries exhibit strong supplier-linkages with other industries in Tampa Bay to form the Development Industry cluster. The top five Tier 1 supplier industries or industry groups in the cluster are 1) engineering – architectural services, 2) wholesale trade, 3) management and consulting services, 4) motor freight transport and warehousing and 5) other business services.

Next, using the REMITM economic policy-insight model, we estimate the baseline economic contributions of the primary industries of the Development Industry cluster. We find that over 156,000, or about 7.3%, of the jobs in Tampa Bay are in the primary industries of the cluster. And, the firms in these primary industries produce more than \$16 billion annually or 10.25% of regional economic activity.

We also use Covered Employment and Wages (ES-202) data for 2nd quarter, 2001 (most recent available) to provide a jobs-based perspective of the primary industries of the Development Industry cluster in Tampa Bay. The data are organized by Standard Industrial Classification (SIC) codes. We find that the 2,537 Tampa Bay firms in the General Building Contractors (SIC 15) group employ 14,898 workers. The majority (78%) of these workers receives an annualized wage between \$35,000 and \$60,000. The 455 Tampa Bay firms in the Heavy Construction (SIC 16) group employ 13,224 workers. The majority (51%) of these workers receives an annualized wage between \$35,000 and \$60,000. The 6,463 firms in the Special Trade Contractors (SIC 17) group employ 58,852 workers. The majority (91%) of these workers receives annualized wages of less than \$35,000. The 422 Tampa Bay firms in the Operators of Nonresidential Buildings (SIC 6512) industry and in the Land Subdividers & Developers (SIC 6552) industry employ 3,034 workers. Employers were paying annualized wages of less than \$35,000 to 69% of these workers.

By comparing 1999 ES-202 data with another source, the U.S. Commerce Department's 1999 (most recent available) Regional Economic Information System data series, we are able to conclude that approximately 29.6% of persons working in construction in Tampa Bay were sole proprietors. Sole proprietors are not included in ES-202 data. Assuming that the percentage has remained stable, we estimate that about 37,295 sole proprietors are working in construction in Tampa Bay in 2002.

We assess the economic contribution of the Development Industry cluster using the traditional counter-factual approach. With this approach, we use the REMITM model to remove the actual output produced by the primary industries of the cluster. The model tabulates the direct effects of the removal of the primary economic activities as well as the ripple, or secondary, effects throughout the Tampa Bay economy. We find that the Development Industry cluster contributes approximately 275,500 jobs, or 12.9% of total employment, to the Tampa Bay region. As measured by output, the cluster contributes about \$27 billion of economic activity, or 16.5% of total output, to the region. And, the cluster is responsible for the generation of approximately \$10.6 billion of personal income, or 15.1% of labor and property income, for the workers and owners of capital in Tampa Bay.

While the counter-factual approach provides a way to derive a valid assessment of the economic contribution of the Development Industry cluster, it does not portray a realistic scenario of a slowdown in regional development. The counter-factual approach simulates a complete cessation of the productive activities of the cluster's primary industries. This is unlikely. Even if development were proscribed in some areas, economic principle tells us that substitute activities, such as remodeling or expansion of existing facilities, would occur. Therefore, rather than simulating a complete cessation, we gauge the regional economy's expected response to a 20% slowdown in production by the primary industries of the Development Industry cluster. We measure the response by the aggregated primary and secondary impacts on employment, output and personal income.

We estimate that the total impact on employment in the Tampa Bay region would be a loss of nearly 56,000 jobs or 2.6% of the employment base during the first year of a 20% slowdown. Five years after the start of the slowdown, Tampa Bay would still be 48,000 jobs below the baseline.

We also estimate that the total impact on output in the Tampa Bay region would be a loss of nearly \$5.5 billion of output or 3.3% of the output base during the first year of the slowdown. Five years later, annual output in Tampa Bay would still be almost \$5.0 billion below the baseline. Additionally, the total impact on personal income would be a loss of over \$2.2 billion or 3.2% of the personal income base during the first year. Five years after the start of the slowdown, annual personal income in Tampa Bay would still be almost 2.8% below the baseline.

With the loss of nearly 56,000 jobs in the first year of the slowdown, Tampa Bay's labor force also shrinks. We anticipate that in the first year the labor force would decline by about 11,000 workers. Furthermore, a 20% slowdown would have a significant impact on economic migration into the Tampa Bay region. In the first year of a slowdown approximately 11,800 fewer economic migrants (15.9% less in-migrants) will move into the Tampa Bay region than previously anticipated. Non-economic migrants, such as retired persons (age 65 or older), will be little affected by the slowdown.

Although, about 40,000 people out-migrate from Tampa Bay each year, this number will increase by only a few hundred people each year as a result of a slowdown. In the first year of the slowdown, we estimate that Tampa Bay's population would be about 11,950 persons less than if there were no slowdown. The reduction in population would almost entirely be due to a decline in the number of economic in-migrants.

Section 1: Introduction

The land development, construction, building materials, and associated industries are an integral part of Tampa Bay's economy. As growth management issues continue to be publicly debated, these industries come under increasingly closer scrutiny. Officials often point out that growth seriously strains government's ability to supply the infrastructure needed to support more people and businesses in the region. Consequently, some have gone as far as to suggest a moratorium on new growth.

While a moratorium, or slowdown, on new developments in the region can reduce the demand for public-sector infrastructure, it could have a deleterious impact on the Tampa Bay economy. For instance, the construction industries in Tampa Bay currently employ about 5.9%, or 126,000, of the region's workers. Even a small reduction in development activity, say 10%, can be expected to lead to the loss of 12,600 construction jobs.

The purpose of this study is to examine the economic impacts, such as a loss of jobs, on Tampa Bay's economy, if there were a sharp reduction of development activity in the region.

We begin the study by defining the Development Industry cluster in Tampa Bay. We define the cluster by examining industries generally associated with development 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 Development Industry Cluster.**

In **Section 3, Baseline Contributions of the Primary Industries,** we estimate the economic contributions of the primary industries of the Development Industry cluster. The principal measures of the baseline economic contributions are employment and output. These economic contributions provide the baseline from which we assess the economic contribution of the Development Industry cluster of Tampa Bay and the economic impacts of an interruption of development activity in the Tampa Bay region.

In **Section 4, Employment Structure of the Primary Industries,** we use the Bureau of Labor Statistics Covered Employment and Wages data to provide a jobs-based perspective of the primary industries in the Development Industry cluster in Tampa Bay. We compile and report the number of employees, average annualized wages, and the number of firms for each industry.

Next, we assess the economic contribution of the Development Industry cluster using the traditional counter-factual approach. With this approach, we use the REMITM model to simulate removal of the baseline output produced by the primary industries of the cluster. The model tabulates the direct effects of the removal as well as the ripple, or secondary, effects throughout the Tampa Bay economy. Employment, output and personal income measure the economic contribution and are report in **Section 5, Economic Contribution of the Development Industry Cluster.**

In **Section 6, Economic Impacts of a Slowdown in Development,** we gauge the regional economy's expected response to a 20% slowdown in production by the primary

industries of the Development Industry cluster in Tampa bay. As in Section 5, we aggregate the direct and secondary effects as measured by employment, output and personal income. Then we trace the impact of lost jobs by occupation, the impacts on the region's labor force and population. We show that a slowdown significantly affects economic migration into Tampa Bay.

Section 2: An Operational Definition of the Development Industry Cluster

The purpose of this section is to describe the Development Industry 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.¹ 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 Development Industry cluster in Tampa Bay, we start with selected primary industries and use the IMPLAN ProfessionalTM input-output model to identify the supplier chains (indirect industries) for the primary industries. 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 Development Industry group. The Development Industry group consists of:

IMPLAN sector 48 **Residential Construction** = parts of SICs 15 (general building contractors), 16 (heavy construction except buildings), and 17 (special trade contractors).

IMPLAN sector 49 **Industrial / Commercial Construction** = parts of SICs 15, 16, and 17.

IMPLAN sector 50 **Utility Construction** = parts of SICs 15, 16, and 17.

IMPLAN sector 51 **Highway Construction** = parts of SICs 15, 16, and 17.

IMPLAN sector 54 **Construction of Government Facilities** = parts of SICs 15, 16, and 17.

IMPLAN sector 462 **Real Estate** = SIC 6500 which includes real estate operators and lessors, real estate agents and managers, title abstract offices, and subdividers and developers.

To measure the "magnitude of clustering," we introduce into the model a \$1 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%. Tier 3 fills out the one-page summary of inter-industry relationships.

Because spatial concentration is also an element of the clustering phenomenon, we examine the effect of introducing increased output into the model using several regional impact groupings. The regional groupings used in this study are: 1) individually, each of the seven

¹ 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.

counties that make up Tampa Bay, 2) individually, each of the three metropolitan statistical areas that make up Tampa Bay, and 3) the Tampa Bay Region as a whole.

We find 24 Tier 1 supplier-industries. The Tier 1 supplier-links to the primary industries, in order of frequency, are:

<u>Supplier-industry</u>	<u>Frequency</u>
Engineering – Architectural Services	73
Wholesale Trade (see note on page 6)	70
Management and Consulting Services	56
Motor Freight Transport and Warehousing	54
Other Business Services ²	48
Real Estate (see note on page 5)	37
Accounting, Auditing and Bookkeeping	22
Personnel Supply Services	17
Computer and Data Processing Services	11
Maintenance and Repair – Residential	10
Maintenance and Repair Other Facilities	10
Services to Buildings	10
Communications except Radio and TV	7
Miscellaneous Retail	7
Automotive Dealers & Service Stations	6
Paving Mixtures and Blocks	6
Equipment Rental and Leasing	6
Asphalt Felts and Coatings	4
Banking	4
Refrigeration and Heating Equipment	3
Structural Wood Members – not elsewhere considered	3
Electric Services	1
Dimension Stone	1
Veneer and Plywood	1

² Credit Reporting and Collection, Direct Mail Advertising Services, Secretarial and Court Reporting, News Syndicates, and Business Services not elsewhere considered.

Table 2.1

Tier 1 Industries, Frequency by Location

SIC Code	IMPLAN		Total Frequency	Hernando	Hillsborough	Manatee	Pasco	Pinellas	Sarasota	Polk County/ Lakeland- Winter Haven	Sarasota- Bradenton MSA	Tampa- St.Petersburg MSA	Tampa Bay
	Sector	Description		County	County	County	County	County	County	County	MSA	MSA	MSA
8710	506	Engineering- Architectural Services	73	7	7	8	6	7	7	8	7	8	8
5000,5100	447	Wholesale Trade	70	7	7	7	7	7	7	7	7	7	7
8740	508	Management and Consulting Services	56	0	7	7	0	7	7	7	7	7	7
4200	435	Motor Freight Transport and Warehousing	54	7	7	3	7	4	2	7	3	7	7
7320,31,38,83,89	470	Other Business Services	48	2	6	0	1	7	7	7	4	7	7
6500	462	Real Estate	37	2	5	3	2	4	3	4	4	5	5
8720,8990	507	Accounting- Auditing and Bookkeeping	22	0	3	1	0	2	2	4	2	4	4
7360	474	Personnel Supply Services	17	0	2	1	0	2	0	1	1	5	5
7370	475	Computer and Data Processing Services	11	0	3	0	0	0	0	0	0	4	4
	55	Maintenance and Repair- Residential	10	1	1	1	1	1	1	1	1	1	1
	56	Maintenance and Repair Other Facilities	10	1	1	1	1	1	1	1	1	1	1
7340	472	Services To Buildings	10	1	1	1	1	1	1	1	1	1	1
4810,20,40,90	441	Communications- Except Radio and TV	7	0	0	0	0	1	1	0	1	2	2
5900	455	Miscellaneous Retail	7	0	1	1	0	1	1	0	1	1	1
5500	451	Automotive Dealers & Service Stations	7	0	1	0	0	1	1	1	1	1	1
2951	211	Paving Mixtures and Blocks	6	1	1	0	0	1	0	1	0	1	1
7350	473	Equipment Rental and Leasing	6	0	1	0	1	1	0	1	0	1	1
2952	212	Asphalt Felts and Coatings	4	1	0	0	0	0	0	1	0	1	1
6000	456	Banking	4	0	1	0	0	1	0	0	0	1	1
3585	347	Refrigeration and Heating Equipment	3	0	2	0	0	0	0	0	1	0	0
2439	140	Structural Wood Members- N.E.C	3	1	0	1	0	1	0	0	0	0	0
4910	443	Electric Services	1	0	0	0	0	0	0	0	0	1	0
1410,20	40	Dimension Stone	1	1	0	0	0	0	0	0	0	0	0
2435,6	139	Veneer and Plywood	1	0	0	0	0	0	1	0	0	0	0

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 frequency with which an industry is in Tier 1 in a particular location. For example, Engineering-Architectural Services is in Tier 1 in Hernando County 7 times. The maximum for a single industry in one location is eight, i.e. the six primary industries plus all "Construction Industries", plus "All Industries". See also the accompanying "Tier 1 Industries, Frequency by Industry".

Table 2.2

Tier 1 Industries, Frequency by Primary Industry

SIC Code	IMPLAN Sector	Description	Total Frequency	Residential Construction (Implan 48)	Commercial/Industrial Construction (Implan 49)	Utility Construction (Implan 50)	Highway Construction (Implan 51)	Government Building Construction (Implan 54)	Average Construction (Implan 48, 49, 50, 51, and 54)	Real Estate (Implan 462)	Average All Industries
8710	506	Engineering- Architectural Services	73	9	10	10	10	10	10	4	10
5000,5100	447	Wholesale Trade	70	10	10	10	10	10	10	0	10
8740	508	Management and Consulting Services	56	8	8	8	8	8	8	0	8
4200	435	Motor Freight Transport and Warehousing	54	10	6	6	10	6	9	0	7
7320,31,38,83,89	470	Other Business Services	48	0	7	8	6	8	7	6	6
6500	462	Real Estate	37	7	0	3	0	7	0	10	10
8720,8990	507	Accounting- Auditing and Bookkeeping	22	0	4	7	0	8	3	0	0
7360	474	Personnel Supply Services	17	4	2	2	0	7	2	0	0
7370	475	Computer and Data Processing Services	11	0	2	3	0	3	3	0	0
	55	Maintenance and Repair- Residential	10	0	0	0	0	0	0	10	0
	56	Maintenance and Repair Other Facilities	10	0	0	0	0	0	0	10	0
7340	472	Services To Buildings	10	0	0	0	0	0	0	10	0
4810,20,40,90	441	Communications- Except Radio and TV	7	2	0	0	0	0	0	5	0
5500	451	Automotive Dealers & Service Stations	7	7	0	0	0	0	0	0	0
5900	455	Miscellaneous Retail	7	7	0	0	0	0	0	0	0
7350	473	Equipment Rental and Leasing	6	6	0	0	0	0	0	0	0
2951	211	Paving Mixtures and Blocks	6	0	0	0	6	0	0	0	0
6000	456	Banking	4	4	0	0	0	0	0	0	0
2952	212	Asphalt Felts and Coatings	4	0	0	0	4	0	0	0	0
3585	347	Refrigeration and Heating Equipment	3	2	1	0	0	0	0	0	0
2439	140	Structural Wood Members- N.E.C	3	3	0	0	0	0	0	0	0
4910	443	Electric Services	1	0	0	0	0	0	0	1	0
1410,20	40	Dimension Stone	1	0	0	0	1	0	0	0	0
2435,6	139	Veneer and Plywood	1	1	0	0	0	0	0	0	0

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 frequency with which an industry is in Tier 1 in a particular Sector. For example, Engineering-Architectural Services is in Tier 1 in the Residential Construction Sector 9 times. The maximum for a single industry in one Sector is ten, i.e. the seven counties of Tampa Bay, the Tampa-St. Petersburg MSA, the Sarasota-Bradenton MSA, and Tampa Bay. See also the accompanying "Tier 1 Industries, Frequency by Location".

Five of the six primary industries exhibit “clustering” in the sense that they tend to have the same supplier-industries. The Real Estate industry, however, appears to rely on a somewhat different set of suppliers than the other five, which are construction industries. This finding is likely due to the Standard Industrial Classification (SIC) definition of the Real Estate industry division to which the input-output model conforms. About one-half of the Real Estate industry division in Tampa Bay is comprised of Real Estate Agents and Managers, who presumably mostly deal with the resale of properties.

Importantly, however, the Real Estate industry also includes Land Subdividers and Developers, who would be closely related to construction industries. The IMPLAN model does not allow the separation of the Real Estate industry division into its individual industry components for refined analysis. But, from the frequency table by primary industry, it can be seen that there are three Tier 1 supplier-industries, which are solely related to Real Estate. These three industries are 1) Maintenance and Repair – Residential, 2) Maintenance and Repair Other Facilities, and 3) Services to Buildings. Also, the Residential Construction industry, the Utility Construction industry and Government Building Construction industry exhibit links with the Real Estate industry, while the Commercial / Industrial Construction industry and the Highway Construction industry do not exhibit a link with Real Estate.

The findings further show that within the construction-industries grouping there are no supplier linkages between construction industries. In contrast, the Real Estate industry emerges as a Tier 1 industry, when the only primary industry considered is the Real Estate industry itself. This indicates intra-industry linkages within the classification of businesses called Real Estate.

The following is a list of supplier links that appear at least once in Tier 2, but never appear in Tier 1:

- Automotive Repair and Services
- Miscellaneous Repair Shops
- Legal Services
- Building Material and Gardening
- Credit Agencies
- Wood Kitchen Cabinets
- General Merchandise Stores
- Insurance Carriers
- Landscape and Horticultural Services
- Water Transportation
- Millwork
- Industrial and Fluid Valves
- Glass and Glass Products except Containers
- Security and Commodity Brokers
- Sanitary Services and Steam Supply
- Commercial Printing
- Wood Preserving
- Reconstituted Wood Products

We conclude that the five construction major industry groups and a portion of the Real Estate sector form the primary industries of the Development Industry cluster by virtue of commonality of supplier industries.

The Real Estate industries included among the primary industries are Nonresidential Building Operators (SIC 6512), Subdividers and Developers (SIC 6552), and possibly Real Estate Agents and Managers (SIC 6531). The Real Estate industries not included among the primary industries of the cluster are Tier 1 suppliers to the primary industries.

Based on the input-output analysis, the Development Industry cluster in Tampa Bay is broadly defined to include the primary industries plus their Tier 1 and Tier 2 supplier-industries.

Tables 2.1 and 2.2 show the frequency with which the Tier 1 industries emerge by location, i.e. regional grouping, and by primary industry, respectively. Because we use ten regional groupings (the Lakeland-Winter Have MSA is coincident with Polk County) and eight industry groupings, the maximum frequency a Tier 1 supplier-industry can achieve is 80.

Section 3: Baseline Contributions of the Primary Industries

Using the REMI™ model, we estimate the economic contributions of the primary industries of the Development Industry cluster. These economic contributions provide a baseline from which we assess the economic impacts of the cluster. (Economic impacts are discussed later in this report.)

Based on the results reported in Section 2 of this report, we define the primary industries of the Development Industry cluster to be:

Construction Major Industry Group
Residential Construction
Industrial / Commercial Construction
Utility Construction
Highway Construction
Construction of Government Facilities

and two industries of the Real Estate Group
Subdividers and Developers
Nonresidential Building Operators.³

We measure the baseline economic contributions of the primary industries within the cluster by employment, output, and personal income.⁴ That is, the industries hire a number of workers (employment), who produce goods and services of value (output).⁵ The value-added – less indirect business taxes - from production is distributed among the workers and the owners of the capital that the workers use in the production process (personal income).

Table 3.1 shows estimates of employment by location (place of work) from 2002 to 2007. 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 construction major industry groups in each county and Tampa Bay. Panel C gives the percentage of total employment contributed by jobs in the construction industries for each location.

³ It is also possible that some activities of the Real Estate Agents and Managers industry are consistent with a primary industry of the Development Industry cluster. However, data are not available to quantify the applicable proportion of the Real Estate Agents and Managers industry that applies to the cluster. The tables in Appendix A describe the baseline for the primary industries of the cluster, if the Real Estate Agents and Managers industry were included in its entirety as a primary industry of the cluster. Including Real Estate Agents and Managers as a primary industry within the cluster does not materially effect the findings of this study.

⁴ Estimates of personal income are only available for the construction major industry group.

⁵ In this context, workers include both wage earning and salaried employees as well as sole proprietors under contract to a firm in one of the primary industries. Technically, output is equal to sales plus or minus an inventory adjustment.

Table 3.1

Development Industry Cluster – REMI Baseline

**Primary Industries: Construction Major Industry Groups
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

Construction Employment (000s) by Sector > Non-Manufacturing > Construction						
Location	2002	2003	2004	2005	2006	2007
Hernando	3.463	3.473	3.478	3.469	3.454	3.446
Hillsborough	41.619	41.681	41.745	41.683	41.668	41.788
Manatee	8.258	8.253	8.253	8.224	8.195	8.187
Pasco	9.168	9.160	9.144	9.099	9.052	9.036
Pinellas	32.770	32.571	32.380	32.111	31.885	31.787
Polk	15.690	15.788	15.851	15.854	15.856	15.899
Sarasota	15.201	15.203	15.173	15.082	14.980	14.929
Tampa Bay	126.169	126.129	126.024	125.522	125.090	125.072

Panel C

Construction Employment (% of Total) by Sector > Non-Manufacturing > Construction						
Location	2002	2003	2004	2005	2006	2007
Hernando	7.90%	7.79%	7.68%	7.55%	7.43%	7.32%
Hillsborough	5.31%	5.22%	5.13%	5.02%	4.93%	4.85%
Manatee	5.18%	5.09%	5.00%	4.90%	4.80%	4.72%
Pasco	8.67%	8.55%	8.43%	8.30%	8.17%	8.07%
Pinellas	5.65%	5.55%	5.45%	5.34%	5.25%	5.17%
Polk	6.38%	6.31%	6.24%	6.16%	6.08%	6.01%
Sarasota	7.07%	6.97%	6.86%	6.74%	6.61%	6.51%
Tampa Bay	5.91%	5.82%	5.72%	5.62%	5.51%	5.43%

Almost six percent of the jobs in Tampa Bay are in the construction industries. Among the counties of Tampa Bay, the number of jobs in construction ranges from approximately 41,600 in Hillsborough County to 3,500 in Hernando County. Pasco County has the largest share of its employment (8.67% in 2002) in construction, while Manatee County has the smallest

percentage (5.18% in 2002) of its employment in construction. Barring an unforeseen economic shock, we expect construction jobs in Tampa Bay to slightly decline from about 126,200 in 2002 to 125,100 in 2007.

Table 3.2 shows estimates of output by location from 2002 to 2007. 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 construction major industry groups in each county and Tampa Bay. Panel C gives the percentage of total output contributed by the construction industries for each location.

Table 3.2

Development Industry Cluster – REMI Baseline

Primary Industries: Construction Major Industry Groups

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

Output (Bil. 01\$) Construction

Location	2002	2003	2004	2005	2006	2007
Hernando	0.305	0.308	0.311	0.313	0.315	0.317
Hillsborough	3.943	3.999	4.037	4.069	4.115	4.171
Manatee	0.754	0.763	0.770	0.773	0.780	0.786
Pasco	0.804	0.813	0.817	0.821	0.825	0.832
Pinellas	3.008	3.028	3.034	3.036	3.049	3.071
Polk	1.463	1.490	1.506	1.519	1.535	1.555
Sarasota	1.397	1.414	1.420	1.424	1.430	1.439
Tampa Bay	11.675	11.815	11.895	11.953	12.049	12.172

Panel C

Output (% of Total) Construction

Location	2002	2003	2004	2005	2006	2007
Hernando	11.38%	11.15%	10.92%	10.68%	10.49%	10.30%
Hillsborough	6.38%	6.25%	6.10%	5.96%	5.84%	5.74%
Manatee	6.28%	6.14%	6.00%	5.86%	5.74%	5.64%
Pasco	11.88%	11.69%	11.47%	11.25%	11.06%	10.91%
Pinellas	6.53%	6.36%	6.18%	6.00%	5.86%	5.74%
Polk	7.41%	7.31%	7.18%	7.05%	6.94%	6.86%
Sarasota	9.39%	9.22%	9.01%	8.81%	8.62%	8.46%
Tampa Bay	7.12%	6.97%	6.80%	6.64%	6.50%	6.39%

Over seven percent of the Tampa Bay economy is generated by the economic activity of the construction industries. Among the counties of Tampa Bay, construction output ranges from approximately \$3.9 billion in Hillsborough County to \$305 million in Hernando County. The economies of Hernando County and Pasco County heavily depend on the construction industries as evidenced by their 11.38% and 11.88%, respectively, construction output to total output shares. While we expect construction jobs in Tampa Bay to gradually decline, construction output is expected to increase from about \$11.67 billion in 2002 to \$12.17 billion in 2007 (in constant 2001 \$s). The anticipated decline in employment and contemporaneous rise in output is indicative of increasing productivity in the construction industries.

Table 3.3 shows estimates of personal income originating in the construction industries by location from 2002 to 2007. Panel A shows total personal income originating in each county and a summation of the counties' personal income for the Tampa Bay region. Panel B reflects personal income originating in the construction major industry groups in each county and Tampa Bay. Panel C gives the percentage of total personal income originating in the construction industries for each location.

Over six percent of personal income originating in Tampa Bay is derived from the output of the construction industries. Among the counties of Tampa Bay, personal income from construction industries' production ranges from \$1.6 billion in Hillsborough County to \$92 million in Hernando County. As a percentage of a county's total personal income, construction industries in Pasco County contribute the largest share (9.03%), closely followed by Hernando County (8.21%) and Sarasota County (8.06%). In Tampa Bay, personal income - measured in nominal dollars - derived from the construction industries is expected to increase from about \$4.4 billion in 2002 to \$5.2 billion in 2007. This is an 18.2% increase over five years, indicating that personal income from construction would keep up with an average inflation rate of about 3.64% per annum.

Table 3.3

Development Industry Cluster – REMI Baseline

Primary Industries: Construction Major Industry Groups
PERSONAL INCOME

Panel A

Personal Income (Bil. nominal)		Total Labor & Property Income				
Location	2002	2003	2004	2005	2006	2007
Hernando	1.120	1.182	1.245	1.310	1.376	1.445
Hillsborough	28.469	30.165	31.960	33.845	35.878	38.049
Manatee	4.541	4.772	5.019	5.280	5.558	5.854
Pasco	2.759	2.891	3.026	3.167	3.314	3.472
Pinellas	19.491	20.441	21.450	22.514	23.657	24.881
Polk	7.754	8.156	8.566	8.992	9.443	9.919
Sarasota	6.337	6.667	7.004	7.355	7.721	8.112
Tampa Bay	70.471	74.274	78.270	82.463	86.947	91.732

Panel B

Personal Income (Bil. nominal)		Total Labor & Property Income > Non-manufacturing > Construction				
Location	2002	2003	2004	2005	2006	2007
Hernando	0.092	0.095	0.099	0.102	0.106	0.109
Hillsborough	1.610	1.677	1.745	1.810	1.880	1.960
Manatee	0.274	0.283	0.293	0.302	0.312	0.323
Pasco	0.249	0.258	0.266	0.274	0.282	0.292
Pinellas	1.108	1.141	1.174	1.207	1.242	1.284
Polk	0.542	0.565	0.588	0.609	0.631	0.656
Sarasota	0.511	0.528	0.545	0.560	0.576	0.594
Tampa Bay	4.386	4.547	4.710	4.864	5.029	5.218

Panel C

Personal Income (% of Total)		Total Labor & Property Income > Non-manufacturing > Construction				
Location	2002	2003	2004	2005	2006	2007
Hernando	8.21%	8.04%	7.95%	7.79%	7.70%	7.54%
Hillsborough	5.66%	5.56%	5.46%	5.35%	5.24%	5.15%
Manatee	6.03%	5.93%	5.84%	5.72%	5.61%	5.52%
Pasco	9.03%	8.92%	8.79%	8.65%	8.51%	8.41%
Pinellas	5.68%	5.58%	5.47%	5.36%	5.25%	5.16%
Polk	6.99%	6.93%	6.86%	6.77%	6.68%	6.61%
Sarasota	8.06%	7.92%	7.78%	7.61%	7.46%	7.32%
Tampa Bay	6.22%	6.12%	6.02%	5.90%	5.78%	5.69%

Tables 3.4 and 3.5 show the baseline economic contributions of Subdividers and Developers (SIC 6552) and Nonresidential Building Operators (SIC 6512). We measure the contributions by employment and output. Consistent with available government data, the REMI™ model's results for employment and output are aggregated for major group 65, Real Estate. We apportioned the model's results to estimate the contributions of these two industries. We use information from the U.S. Census

Bureau's 1997 Economic Census to apportion output to our industries of interest.⁶ The apportionment is made in accord with sales per employee in each of the industries of the major group. For example, sales per employee for Nonresidential Building Operators (SIC 6512) is \$164,637 (92 \$s), which is 19.37% of the total of sales per employee for all industries within the major group. Thus, we assign 19.37% of the REMITM model's results for Real Estate output to Nonresidential Building Operators. Similarly, sales per employee for Subdividers and Developers (SIC 6552) is \$143,105 (92 \$s) or 16.84% of the major group total. We then divide the apportioned output by sales per employee (01 \$s) to calculate the number of employees needed to generate the apportioned level of output. Furthermore, the REMITM model results for personal income are aggregated at the division level, i.e. Finance, Insurance, and Real Estate (FIRE). We were unable to make a reliable apportionment of personal income to our real estate industries of interest.

Table 3.4 shows estimates of employment by location (place of work) from 2002 to 2007. 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 Subdividers and Developers (SIC 6552) and Nonresidential Building Operators (SIC 6512) in each county and Tampa Bay. These two real estate industries are part of the Development Industry cluster. Panel C gives the percentage of total employment contributed by jobs in the two real estate industries for each location.

About 1.4 percent of the jobs in Tampa Bay are in the two aforementioned real estate industries. Among the counties of Tampa Bay, the number of jobs in these industries ranges from approximately 11,300 in Hillsborough County to 435 in Hernando County. Sarasota County has the largest share of its employment (1.67% in 2002) in these real estate industries, while Polk County has the smallest percentage (0.88% in 2002) of its employment in the industries. We expect jobs in the two industries in Tampa Bay to increase from about 30,200 in 2002 to 35,000 in 2007.

⁶ The Economic Census is a full-blown census of U.S. business establishments and is carried out every 5 years (years ending in 2 and 7). Due to a disclosure problem, the information we use for apportionment – the Comparative Statistics for Florida, which is taken from the 1997 census report, actually reflects 1992 data.

Table 3.4

Development Industry Cluster – REMI Baseline

**Primary Industries: Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
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

Industry Employment (000s) by Sector > Non-Manufacturing > Real Estate > SICs 6552 & 6512						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.435	0.450	0.464	0.478	0.494	0.508
Hillsborough	11.318	11.715	12.123	12.518	12.939	13.358
Manatee	2.095	2.163	2.233	2.299	2.370	2.438
Pasco	1.038	1.068	1.101	1.132	1.165	1.198
Pinellas	9.539	9.809	10.092	10.367	10.663	10.960
Polk	2.163	2.236	2.311	2.382	2.457	2.530
Sarasota	3.598	3.693	3.789	3.883	3.982	4.081
Tampa Bay	30.185	31.134	32.113	33.059	34.071	35.073

Panel C

Industry Employment (% of Total) by Sector > Non-Manufacturing > Real Estate > SICs 6552 & 6512						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.99%	1.01%	1.02%	1.04%	1.06%	1.08%
Hillsborough	1.44%	1.47%	1.49%	1.51%	1.53%	1.55%
Manatee	1.31%	1.33%	1.35%	1.37%	1.39%	1.41%
Pasco	0.98%	1.00%	1.02%	1.03%	1.05%	1.07%
Pinellas	1.64%	1.67%	1.70%	1.73%	1.75%	1.78%
Polk	0.88%	0.89%	0.91%	0.92%	0.94%	0.96%
Sarasota	1.67%	1.69%	1.71%	1.73%	1.76%	1.78%
Tampa Bay	1.41%	1.44%	1.46%	1.48%	1.50%	1.52%

Table 3.5 shows estimates of output by location from 2002 to 2007. 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 Subdividers and Developers (SIC 6552) and Nonresidential Building

Operators (SIC 6512) in each county and Tampa Bay. Panel C gives the percentage of total output contributed by jobs in the two real estate industries for each location.

Table 3.5

Development Industry Cluster – REMI Baseline

**Primary Industries: Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)**

OUTPUT

Panel A

Output (Bil. 01\$) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	2.68	2.76	2.85	2.93	3.00	3.08
Hillsborough	61.82	64.02	66.20	68.28	70.49	72.72
Manatee	12.01	12.43	12.83	13.20	13.58	13.94
Pasco	6.77	6.95	7.13	7.29	7.46	7.62
Pinellas	46.06	47.61	49.13	50.56	52.06	53.55
Polk	19.76	20.39	20.99	21.54	22.11	22.67
Sarasota	14.88	15.32	15.76	16.16	16.59	17.01
Tampa Bay	163.985	169.491	174.878	179.959	185.285	190.592

Panel B

Output (Bil. 01\$) BY Real Estate > SICs 6552 & 6512

Location	2002	2003	2004	2005	2006	2007
Hernando	0.074	0.076	0.079	0.081	0.084	0.086
Hillsborough	1.923	1.991	2.060	2.127	2.199	2.270
Manatee	0.356	0.368	0.380	0.391	0.403	0.414
Pasco	0.176	0.182	0.187	0.192	0.198	0.204
Pinellas	1.621	1.667	1.715	1.762	1.812	1.862
Polk	0.368	0.380	0.393	0.405	0.418	0.430
Sarasota	0.611	0.627	0.644	0.660	0.677	0.693
Tampa Bay	5.130	5.291	5.457	5.618	5.790	5.960

Panel C

Output (% of Total) by Real Estate > SICs 6552 & 6512

Location	2002	2003	2004	2005	2006	2007
Hernando	2.76%	2.76%	2.76%	2.77%	2.80%	2.81%
Hillsborough	3.11%	3.11%	3.11%	3.12%	3.12%	3.12%
Manatee	2.96%	2.96%	2.96%	2.96%	2.97%	2.97%
Pasco	2.61%	2.61%	2.63%	2.64%	2.65%	2.67%
Pinellas	3.52%	3.50%	3.49%	3.48%	3.48%	3.48%
Polk	1.86%	1.86%	1.87%	1.88%	1.89%	1.90%
Sarasota	4.11%	4.09%	4.09%	4.08%	4.08%	4.08%
Tampa Bay	3.13%	3.12%	3.12%	3.12%	3.12%	3.13%

Over three percent of the Tampa Bay economy is generated by the economic activity of the two aforementioned real estate industries. Among the counties of Tampa Bay, output by these two industries ranges from approximately \$1.9 billion in Hillsborough County to \$74

million in Hernando County. Over four percent of Sarasota County's economy depends on the activities of these two real estate industries. We expect output in these industries to gradually increase from about \$5.13 billion in 2002 to \$5.96 billion in 2007 (in constant 2001 \$s).

Tables 3.6 and 3.7 show the baseline contributions of the Development Industry cluster as measured by employment and output, respectively.

Table 3.6 shows estimates of employment by location (place of work) from 2002 to 2007. 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 primary industries of the Development Industry cluster in each county and Tampa Bay. Panel C gives the percentage of total employment contributed by jobs in the primary industries for each location.

Over seven percent of the jobs in Tampa Bay are in the primary industries of the Development Industry cluster. Among the counties of Tampa Bay, the number of jobs in the primary industries ranges from approximately 52,900 in Hillsborough County to 3,900 in Hernando County. Pasco County has the largest share of its employment (9.65% in 2002) in the primary industries, while Manatee County has the smallest percentage (6.50% in 2002) of its employment in the cluster's primary industries. Absent an unforeseen and destabilizing economic shock, we expect jobs in Tampa Bay's primary development industries to gradually increase from about 156,400 to about 160,100 during the next five years. However, this increase in employment is expected at a lower rate than the overall Tampa Bay growth rate in employment, as indicated by the decline in the percentage of employment in the primary development industries from 7.33% in 2002 to 6.95% in 2007.

Table 3.7 shows estimates of output by location from 2002 to 2007. 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 primary industries of the Development Industry cluster in each county and Tampa Bay. Panel C gives the percentage of total output contributed by the primary industries for each location.

Table 3.6**Development Industry Cluster – REMI Baseline****Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
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	814.52	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

Construction Employment (000s) by Sector > Non-Manufacturing > Construction Industry Employment (000s) by Sector > Non-Manufacturing > Real Estate > SICs 6552 & 6512						
Location	2002	2003	2004	2005	2006	2007
Hernando	3.898	3.923	3.942	3.947	3.948	3.954
Hillsborough	52.937	53.396	53.868	54.201	54.607	55.146
Manatee	10.353	10.416	10.486	10.523	10.565	10.625
Pasco	10.206	10.228	10.245	10.231	10.217	10.234
Pinellas	42.309	42.380	42.472	42.478	42.548	42.747
Polk	17.853	18.024	18.162	18.236	18.313	18.429
Sarasota	18.799	18.896	18.962	18.965	18.962	19.010
Tampa Bay	156.354	157.263	158.137	158.581	159.161	160.145

Panel C

Construction Employment (% of Total) by Sector > Non-Manufacturing > Construction Industry Employment (% of Total) by Sector > Non-Manufacturing > Real Estate > SICs 6552 & 6512						
Location	2002	2003	2004	2005	2006	2007
Hernando	8.89%	8.80%	8.70%	8.59%	8.49%	8.40%
Hillsborough	6.76%	6.69%	6.61%	6.53%	6.46%	6.40%
Manatee	6.50%	6.42%	6.35%	6.27%	6.19%	6.13%
Pasco	9.65%	9.55%	9.45%	9.33%	9.22%	9.14%
Pinellas	7.29%	7.22%	7.15%	7.07%	7.00%	6.95%
Polk	7.26%	7.21%	7.15%	7.08%	7.02%	6.97%
Sarasota	8.74%	8.66%	8.58%	8.47%	8.37%	8.29%
Tampa Bay	7.33%	7.26%	7.18%	7.09%	7.02%	6.95%

Table 3.7

Development Industry Cluster – REMI Baseline

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
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

Output (Bil. 01\$) Construction

Output (Bil. 01\$) by Real Estate > SICs 6552 & 6512

Location	2002	2003	2004	2005	2006	2007
Hernando	0.379	0.385	0.390	0.394	0.399	0.403
Hillsborough	5.866	5.990	6.097	6.196	6.314	6.441
Manatee	1.110	1.131	1.149	1.164	1.182	1.201
Pasco	0.980	0.994	1.004	1.013	1.023	1.035
Pinellas	4.629	4.695	4.749	4.798	4.861	4.934
Polk	1.831	1.870	1.899	1.923	1.953	1.985
Sarasota	2.009	2.041	2.064	2.083	2.107	2.133
Tampa Bay	16.804	17.106	17.353	17.571	17.839	18.132

Panel C

Output (% of Total) Construction

Output (% of Total) by Real Estate > SICs 6552 & 6512

Location	2002	2003	2004	2005	2006	2007
Hernando	14.14%	13.91%	13.68%	13.45%	13.28%	13.11%
Hillsborough	9.49%	9.36%	9.21%	9.07%	8.96%	8.86%
Manatee	9.24%	9.10%	8.96%	8.82%	8.71%	8.61%
Pasco	14.48%	14.30%	14.09%	13.89%	13.71%	13.58%
Pinellas	10.05%	9.86%	9.67%	9.49%	9.34%	9.21%
Polk	9.27%	9.17%	9.05%	8.93%	8.83%	8.76%
Sarasota	13.50%	13.32%	13.10%	12.89%	12.70%	12.54%
Tampa Bay	10.25%	10.09%	9.92%	9.76%	9.63%	9.51%

Over ten percent of the Tampa Bay economy is generated by the economic activity of the primary industries of the Development Industry cluster. Among the counties of Tampa Bay, the primary industries' output ranges from approximately \$5.9 billion in Hillsborough County to \$379 million in Hernando County. The economies of Hernando County and Pasco County

heavily depend on the primary industries of the Development Industry cluster as evidenced by their 14.14% and 14.48%, respectively, industry output to total output shares. The primary industries' output is expected to increase from about \$16.8 billion in 2002 to \$18.1 billion in 2007 (in constant 2001 \$s). Steady employment and a contemporaneous rise in output is indicative of increasing productivity in the primary industries of the Development Industry cluster.

Section 4: Employment Structure of the Primary Industries

Based on the results reported in Section 2 of the report, we define the primary industries of the Development Industry cluster to be:

Construction Major Industry Groups

- Residential Construction
- Industrial / Commercial Construction
- Utility Construction
- Highway Construction
- Construction of Government Facilities

and two industries of the Real Estate Group

- Subdividers and Developers
- Nonresidential Building Operators.⁷

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 of the Development Industry cluster. 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 ES-202 data from the 2nd Quarter 2001, which is the most recent period available to us.

Tables 4.1 through 4.3 show the number of employees, average annualized wages, and the number of firms for each industry in the General Building Contractors (SIC 15), Heavy Construction - except buildings (SIC 16), and Special Trades Contractors (SIC 17) major groups, respectively.⁸ Table 4.4 displays the number of employees, average annual wages, and the number of firms in the two pertinent industries of the Real Estate group. Table 4.5 aggregates the findings presented in Tables 4.1 through 4.4 in order to provide a complete picture of the employment structure of the primary industries of the Development Industry cluster in Tampa Bay.

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 the 2nd Quarter 2001 by the average number of employees during that quarter to obtain an average wage for the quarter. We then annualize the average quarterly wage.

⁷ It is also possible that some activities of the Real Estate Agents and Managers industry are consistent with a primary industry of the Development Industry cluster. However, data are not available to quantify the applicable proportion of the Real Estate and Managers industry that applies to the cluster. The tables in Appendix B describe the employment structure for the primary industries of the cluster, if the Real Estate Agents and Managers industry were included in its entirety as a primary industry of the cluster. Including Real Estate Agents and Managers as a primary industry within the cluster does not materially effect the findings of this study.

⁸ Here we use the descriptive titles for the construction major industry groups from the Standard Industrial Classification (SIC) system. These three SIC groups, when aggregated, correspond to the five groups of the IMPLANTM model’s scheme, which are listed in the first paragraph of this section.

Table 4.1 reveals that the 2,537 Tampa Bay firms in the General Building Contractors group were employing 14,898 workers during the 2nd Quarter 2001. Employers were paying annualized wages of less than \$35,000 to 2,509 workers (17%), annualized wages of between \$35,000 and \$60,000 to 11,687 workers (78%), and annualized wages over \$60,000 to 702 workers (5%). Building contractors, who are based in Hillsborough County, employ 5,094 workers, or 34% of all workers employed by building contractors in Tampa Bay. Most of these workers are earning an annualized wage between \$35,000 and \$60,000 (47 out of the 5,094 are earning less than \$35,000). Only firms based in Manatee County or Sarasota County pay employees more than \$60,000, annualized. Pasco County is the home base of the largest number of firms (775 firms) in the General Building Contractors group in Tampa Bay.

Table 4.2 reveals that the 455 Tampa Bay firms in the Heavy Construction group were employing 13,224 workers during the 2nd Quarter 2001. Employers were paying annualized wages of less than \$35,000 to 6,482 workers (49%) and annualized wages of between \$35,000 and \$60,000 to 6,742 workers (51%). Heavy construction firms, which are based in Hillsborough County, employ 4,439 workers, or 34% of all workers employed by the Heavy Construction industry group in Tampa Bay.

Table 4.3 reveals that the 6,463 Tampa Bay firms in the Special Trades Contractors group were employing 58,852 workers during the 2nd Quarter 2001. Employers were paying annualized wages of less than \$35,000 to 53,548 workers (91%) and annualized wages of between \$35,000 and \$60,000 to 5,304 workers (9%). Special trades contractors, who are based in Hillsborough County, employ 20,006 workers, or 34% of all workers employed by the special trades in Tampa Bay.

Table 4.1
Development Industry Cluster – ES 202 Employment Data

Primary Industries: General Building Contractors (SIC 15)
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
1521	Single Family Housing	267				3,034			627	
1522	Other Residential Construction	12			47			48		
1531	Operative Builders	12				77		4		
1541	Industrial Buildings	28				371			89	
1542	Other Non-res. Construction		25			1,564				179
Total	General Building Contractors	319	25	0	47	5,047	0	52	716	179
		Firms			Firms			Firms		
Total	General Building Contractors	83			528			56		

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
1521	Single Family Housing	721				2,433		934		
1522	Other Residential Construction	24				247			60	
1531	Operative Builders					43		4		
1541	Industrial Buildings	15				183			446	
1542	Other Non-res. Construction		20			1,153		370		
Total	General Building Contractors	760	20	0	0	4,059	0	1,308	506	0
		Firms			Firms			Firms		
Total	General Building Contractors	775			515			219		

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
1521	Single Family Housing		1,271		1,922	7,365	
1522	Other Residential Construction	23			154	307	
1531	Operative Builders		14		20	134	
1541	Industrial Buildings		30		43	1,119	
1542	Other Non-res. Construction			523	370	2,761	702
Total	General Building Contractors	23	1,315	523	2,509	11,687	702
		Firms			Firms		
Total	General Building Contractors	351			2,527		

Table 4.2
Development Industry Cluster – ES 202 Employment Data

Primary Industries: Heavy Construction (SIC 16)
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
1611	Highway & Street Construction		82			1,343		253		
1622	Bridge, Tunnel, & Elevated Highway					307		18		
1623	Water, Sewer, Pipeline & Communications	28			1,578			663		
1629	Heavy Construction NEC		213			1,211			268	
Total	Heavy Construction	110	213	0	1,578	2,861	0	934	268	0

Number of Firms

	Firms	Firms	Firms
Total Heavy Construction	15	119	36

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
1611	Highway & Street Construction	188			495				1,717	
1622	Bridge, Tunnel, & Elevated Highway				211					
1623	Water, Sewer, Pipeline & Communications	247			955			471		
1629	Heavy Construction NEC	122				455			1,228	
Total	Heavy Construction	557	0	0	1,661	455	0	471	2,945	0

Number of Firms

	Firms	Firms	Firms
Total Heavy Construction	43	108	85

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
1611	Highway & Street Construction	537			1,555	3,060	
1622	Bridge, Tunnel, & Elevated Highway				229	307	
1623	Water, Sewer, Pipeline & Communications	430			4,372		
1629	Heavy Construction NEC	204			326	3,375	
Total	Heavy Construction	1,171	0	0	6,482	6,742	0

Number of Firms

	Firms	Firms
Total Heavy Construction	49	455

Table 4.3
Development Industry Cluster – ES 202 Employment Data

Primary Industries: Special Trade Contractors (SIC 17)
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
1711	Plumbing, Heating & Air Conditioning	297			3,690			750		
1721	Painting & Paper Hanging	41			1,138			162		
1731	Electrical Work	113			4,246			455		
1741	Masonry, Stone Setting, & Other Stone Work	90			918			157		
1742	Plastering, Drywall, Acoustical & Insulation Work	192				1,752		302		
1743	Terrazzo, Tile, Marble, & Mosaic Work	23			218			37		
1751	Carpentry Work	218			911			146		
1752	Floor Laying and Other Floor Work NEC	1			240			27		
1761	Roofing, Siding, & Sheet Metal Work	144			1,259			464		
1771	Concrete Work	234			1,710			242		
1781	Water Well Drilling	16					166	60		
1791	Structural Steel Erection	23					294	158		
1793	Glass & Glazing Work				314					
1794	Excavation Work		109		602			145		
1795	Wrecking & Demolition Work					393		1		
1796	Installation or Erection of Building Equipment NEC					420			23	
1799	Special Trade Contractors NEC	160				1,735		162		
Total	Special Trade Contractors	1,552	109	0	15,246	4,760	0	3,268	23	0

Number of Firms

	Firms	Firms	Firms
Total Special Trade Contractors	316	1,619	496

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
1711	Plumbing, Heating & Air Conditioning	993			3,340			1,347		
1721	Painting & Paper Hanging	212			605			403		
1731	Electrical Work	623			3,444			1,098		
1741	Masonry, Stone Setting, & Other Stone Work	292			613			247		
1742	Plastering, Drywall, Acoustical & Insulation Work	144			1,271			118		
1743	Terrazzo, Tile, Marble, & Mosaic Work	136			313			56		
1751	Carpentry Work	402			678			180		
1752	Floor Laying and Other Floor Work NEC	18			222			66		
1761	Roofing, Siding, & Sheet Metal Work	341			1,048			461		
1771	Concrete Work	419			1,637			406		
1781	Water Well Drilling	52			12			108		
1791	Structural Steel Erection	214			199			301		
1793	Glass & Glazing Work	31			186			78		
1794	Excavation Work	390			591			496		
1795	Wrecking & Demolition Work	13				28		2		
1796	Installation or Erection of Building Equipment NEC	2				129			192	
1799	Special Trade Contractors NEC	593			976			609		
Total	Special Trade Contractors	4,875	0	0	15,135	157	0	5,976	192	0

Number of Firms

	Firms	Firms	Firms
Total Special Trade Contractors	676	1,584	699

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
1711	Plumbing, Heating & Air Conditioning	1,646			12,063		
1721	Painting & Paper Hanging	326			2,887		
1731	Electrical Work	1,295			11,274		
1741	Masonry, Stone Setting, & Other Stone Work	688			3,005		
1742	Plastering, Drywall, Acoustical & Insulation Work	307			2,334	1,752	
1743	Terrazzo, Tile, Marble, & Mosaic Work	282			1,065		
1751	Carpentry Work	593			3,128		
1752	Floor Laying and Other Floor Work NEC	40			614		
1761	Roofing, Siding, & Sheet Metal Work	474			4,191		
1771	Concrete Work	882			5,530		
1781	Water Well Drilling	49			297	166	
1791	Structural Steel Erection		21		895	315	
1793	Glass & Glazing Work	86			695		
1794	Excavation Work	444			2,668	109	
1795	Wrecking & Demolition Work	7			23	421	
1796	Installation or Erection of Building Equipment NEC		42		2	806	
1799	Special Trade Contractors NEC	377			2,877	1,735	
Total	Special Trade Contractors	7,496	63	0	53,548	5,304	0

Number of Firms

	Firms	Firms
Total Special Trade Contractors	1,073	6,463

Table 4.4 reveals that the 422 Tampa Bay firms in the two real estate industries of interest were employing 3,034 workers during 2nd Quarter 2001. Employers were paying annualized wages of less than \$35,000 to 2,081 workers (69%), annualized wages between \$35,000 and \$60,000 to 730 workers (24%), and annualized wages over \$60,000 to 223 workers (7%). All of the 223 employees earning an annualized wage over \$60,000 work for firms based in Sarasota County. Firms based in Hillsborough County employ the largest number of these workers: 978 in the Nonresidential Building Operators industry and 470 in the Subdividers and Developers industry.

Table 4.4
Development Industry Cluster – ES 202 Employment Data

Primary Industries: Real Estate (SIC 65)
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
6512	Operators of Nonresidential Buildings	11			978			60		
6552	Land Subdividers & Developers	80				470			111	
Total	Real Estate	91	0	0	978	470	0	60	111	0

Number of Firms

		Firms	Firms	Firms
Total	Real Estate	8	126	28

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
6512	Operators of Nonresidential Buildings	44			440			45		
6552	Land Subdividers & Developers		149		278			107		
Total	Real Estate	44	149	0	718	0	0	152	0	0

Number of Firms

		Firms	Firms	Firms
Total	Real Estate	33	134	34

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
6512	Operators of Nonresidential Buildings	39			1,617	0	0
6552	Land Subdividers & Developers			223	465	730	223
Total	Real Estate	39	0	223	2,082	730	223

Number of Firms

		Firms	Firms
Total	General Building Contractors	59	422

Table 4.5 sums up the number of employees by average annual wages and the number of firms in the primary industries of the Development Industry cluster in Tampa Bay. In 2nd Quarter of 2001, there were 9,867 firms employing 90,008 workers. These employers were paying 72% of the workers annualized wages less than \$35,000, 27% 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 Sarasota County or Manatee County employed all of the workers earning over \$60,000. Although an almost equal number of firms are based in Pinellas County and in Hillsborough County, the Hillsborough County firms employ many more workers than the Pinellas County firms.

Table 4.5
Development Industry Cluster – ES 202 Employment Data

**Primary Industries: General Building Contractors (SIC 15, Heavy Construction (SIC 16),
Special Trade Contractors (SIC 17), and Real Estate (SIC 65)**
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
15xx	General Building Contractors	319	25		47	5,047		52	716	179
16xx	Heavy Construction	110	213		1,578	2,861		934	268	
17xx	Special Trade Contractors	1,552	109		15,246	4,760		3,268	23	
65xx	Real Estate	91			978	470		60	111	
Total		2,072	347	0	17,849	13,138	0	4,314	1,118	179

Number of Firms

	Firms	Firms	Firms
Total	422	2,392	616

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
15xx	General Building Contractors	760	20			4,059		1,308	506	
16xx	Heavy Construction	557			1,661	455		471	2,945	
17xx	Special Trade Contractors	4,875			15,135	157		5,976	192	
65xx	Real Estate	44	149		718			152		
Total		6,236	169	0	17,514	4,671	0	7,907	3,643	0

Number of Firms

	Firms	Firms	Firms
Total	1,527	2,341	1,037

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
15xx	General Building Contractors	23	1,315	523	2,509	11,688	702
16xx	Heavy Construction	1,171			6,482	6,742	0
17xx	Special Trade Contractors	7,496	63		53,548	5,304	0
65xx	Real Estate	39		223	2,082	730	223
Total		8,729	1,378	746	64,621	24,464	925

Number of Firms

	Firms	Firms
Total	1,532	9,867

The ES-202 employment and wage data presented above do not include sole proprietors, who do not pay unemployment insurance premiums. Another source, the Regional Economic Information System (REIS) reports employment and income that includes sole proprietors.⁹ The REIS is the most comprehensive of the federal income and employment data. REIS provides income data broken out by sources other than job earnings (including investment income and transfer payments) and job data beyond wage and salary jobs (including proprietorships and military employment). The collected data are by-products of various federal and state programs, such as unemployment insurance, Social Security, federal income taxes, veterans benefits, and military payroll.

The latest REIS information available to us is for the year 1999. REIS provides employment data for industry divisions (1-digit SIC level), such as Division C – Construction or Division H – Finance, Insurance, and Real Estate (FIRE). And, REIS provides income data at the major group level (2-digit SIC level), such as Major Group 15 – General Building Contractors or Major Group 65 – Real Estate. In contrast, the ES-202 data set provides employment data and wage data at the industry level (4-digit SIC level).

We compare REIS and ES-202 1999 data sets for Division C - Construction in order to examine the role of sole proprietorships in the Development Industry cluster.¹⁰

Table 4.6 is the comparison of 1999 REIS employment data with 1999 ES-202 employment data for Division C – Construction. We obtain the ES-202 annual employment numbers by taking an average over the four quarters of 1999. The comparison implies that in 1999 approximately 29.56% of persons working in construction in Tampa Bay were sole proprietors. Assuming the percentage has remained stable, we estimate that of the 126,169 persons, who are working in construction in Tampa Bay in 2002, about 37,295 are sole proprietors.¹¹

⁹ The Bureau of Economic Analysis, U. S. Department of Commerce, collects and publishes the REIS data series.

¹⁰ A similar comparison for the cluster's primary industries, which are in Major Group 65 – Real Estate, is not possible because the employment data are aggregated at the Division level.

¹¹ See Table 3.1, Section 3, for total employment of 126,169 in the Construction Major Industry Groups in Tampa Bay. The REMI™ baseline we use for employment data in Section 3 includes sole proprietors.

Table 4.6
Development Industry Cluster - Comparison of REIS and ES 202 Employment Data

Division C – Construction				
	Source Data: 1999 REIS	Source Data: 1999 ES 202	Implied Sole Proprietors	Implied % of Proprietors
Number of Persons Working				
Location				
Hernando	3,098	1,537	1,561	50.39%
Hillsborough	35,244	27,426	7,818	22.18%
Manatee	7,845	4,459	3,386	43.16%
Pasco	7,960	5,315	2,645	33.23%
Pinellas	28,463	20,044	8,419	29.58%
Polk	14,209	9,934	4,275	30.09%
Sarasota	13,880	9,264	4,616	33.26%
Tampa Bay	110,699	77,979	32,720	29.56%

Table 4.7 is a comparison of income and wage data for the construction division of Tampa Bay’s economy. The source of the income data is the 1999 REIS data set; the source of the wage data is 1999 ES-202 data. Income is a different metric from wages. Income is a more comprehensive measure than wages and includes such items as dividends, interest, rents, and royalties. However, probably the most important difference between income and wages for our purpose of comparison is that ES-202 wages do not include benefits received by an employee in-kind, such as medical insurance, while income does include the value of in-kind employment benefits.

In Panel A of Table 4.7, we report the estimation of an Implied Average Income for a sole proprietor in the construction industries. We find the Implied Average Income by subtracting total ES-202 wages from total REIS income for each location. This yields total Implied Proprietors’ Income, which we then divided by our estimate of the number of sole proprietors, as shown in Table 4.6, to obtain the Implied Average Income per Proprietor. We estimate the Implied Average Income per Proprietor for the construction industries in Tampa Bay to be \$32,547 (99 \$s).

In Panel B of Table 4.7, we compare the Implied Average Income per Proprietor to the average ES-202 wage. We find that in Tampa Bay during 1999, on average, a sole proprietor working in the construction industries had an income that was 109% of the wage of an employee in the construction industries. The proprietor income-to-employee wage differential ranged from 122% in both Manatee County and Sarasota County to 102% in Pinellas County.

Table 4.7
Development Industry Cluster – Comparison of REIS and ES 202 Wage/Income Data

Division C – Construction

Panel A

	Source Data: 1999 REIS	Source Data: 1999 ES 202	Implied Proprietors' Income	Implied Average Income per Proprietor
Income / Wages (99 \$s)				
Location				
Hernando	\$72,026,000	\$32,575,037	\$39,450,963	\$25,273
Hillsborough	\$1,194,616,000	\$907,509,863	\$287,106,137	\$36,724
Manatee	\$233,092,000	\$121,056,845	\$112,035,155	\$33,088
Pasco	\$192,353,000	\$123,493,671	\$68,859,329	\$26,034
Pinellas	\$853,901,000	\$597,858,873	\$256,042,127	\$30,412
Polk	\$437,527,000	\$293,759,331	\$143,767,669	\$33,630
Sarasota	\$417,272,000	\$259,602,198	\$157,669,802	\$34,157
Tampa Bay	\$3,400,787,000	\$2,335,855,818	\$1,064,931,182	\$32,547

Panel B

	Implied Average Income per Proprietor	Source Data: 1999 ES 202 Avg. Wage	Implied Average Income per Proprietor relative to ES 202 Avg. Wage
Income / Wages (99 \$s)			
Location			
Hernando	\$25,273	\$21,194	119%
Hillsborough	\$36,724	\$33,089	111%
Manatee	\$33,088	\$27,149	122%
Pasco	\$26,034	\$23,235	112%
Pinellas	\$30,412	\$29,827	102%
Polk	\$33,630	\$29,571	114%
Sarasota	\$34,157	\$28,023	122%
Tampa Bay	\$32,547	\$29,955	109%

One plausible explanation for the observed differentials is that sole proprietors require a higher rate of payment for services than employees in order to purchase their own benefits package. Another possible explanation is that sole proprietors tend to have more investment income than employees. A third explanation may be that sole proprietors work more hours in a year than employed persons do in the construction industries.

Although we are not able to compare REIS and ES-202 data for the real estate industries, anecdotal evidence suggests that the industries also rely on sole proprietors acting as independent agents. Hence, we remind the reader that while the employment structure depicted by Tables 4.1 through 4.5 of this report offers more current information than the latest available REIS data and gives a breakdown to industry level (4-digit SIC) not available from REIS, the picture is incomplete. However, the REMI™ model we use for describing the Development Industry

cluster's baseline in Section 3 and the economic impacts of the cluster in Section 5 does include sole proprietors in its metrics.

Section 5: Economic Contribution of the Development Industry Cluster

We assess the economic contribution of the Development Industry cluster using the traditional counter-factual approach. With this approach, we use the REMI™ model to remove the actual output produced by the primary industries of the cluster. (See Table 3.7 for the primary industries' output.) The model tabulates the direct effects of the removal of the primary economic activities as well as the ripple, or secondary, effects throughout the Tampa Bay economy.

We provide three measurements of the economic contribution of the Development Industry cluster: 1) employment, 2) output, and 3) personal income.

Table 5.1 reports the contribution 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 5.1, *the difference in employment measures the economic contribution of the Development Industry cluster.*

In terms of the number of jobs, Hillsborough County benefits most from the economic activities of the Development Industry cluster in Tampa Bay. In Hillsborough County, the cluster contributes slightly over 99,000 jobs.¹² As a percentage of total employment, Pasco County benefits most from the economic activities of the Development Industry cluster. In Pasco County, the cluster contributes 16% of total employment.

The Development Industry cluster contributes approximately 275,500 jobs, or 12.9% of total employment, to the Tampa Bay region.

¹² See Panel C, Table 5.1. Hypothetically, counter-factual removal of the economic output of the primary industries of the Development Industry cluster in 2002 would result in a loss of 99,111 jobs in Hillsborough County. In subsequent years, the model predicts that the employment impact would be lessened by job creation in other industries so that by 2007 the loss in Hillsborough County would be 81,231 jobs from the baseline shown in Panel A, Table 5.1. In all locations, the model predicts that the employment impact will be ameliorated through time.

Table 5.1

Development Industry Cluster – REMI Counter-factual Removal of Output

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
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	814.52	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	37.922	38.797	39.661	40.473	41.181	41.829
Hillsborough	684.395	702.285	722.238	741.663	760.92	779.866
Manatee	142.369	145.747	149.363	152.79	156.04	159.214
Pasco	88.818	90.487	92.263	93.945	95.505	96.869
Pinellas	505.386	515.493	526.698	537.352	547.552	557.166
Polk	213.775	218.339	223.168	227.777	232.16	236.391
Sarasota	185.389	189.828	194.236	198.31	202.026	205.642
Tampa Bay	1858.054	1900.976	1947.627	1992.31	2035.384	2076.977

Panel C

Difference in Employment after Removal (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-5.930	-5.798	-5.646	-5.476	-5.328	-5.243
Hillsborough	-99.111	-96.447	-92.282	-87.962	-84.142	-81.231
Manatee	-16.927	-16.412	-15.794	-15.164	-14.655	-14.257
Pasco	-16.919	-16.635	-16.172	-15.692	-15.259	-15.100
Pinellas	-74.727	-71.359	-67.375	-63.540	-60.287	-58.132
Polk	-32.193	-31.707	-30.759	-29.704	-28.782	-28.103
Sarasota	-29.679	-28.297	-26.867	-25.547	-24.441	-23.616
Tampa Bay	-275.486	-266.655	-254.895	-243.085	-232.894	-225.682

Panel D

Difference in Employment after Removal (% change)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-13.52%	-13.00%	-12.46%	-11.92%	-11.46%	-11.14%
Hillsborough	-12.65%	-12.08%	-11.33%	-10.60%	-9.96%	-9.43%
Manatee	-10.63%	-10.12%	-9.56%	-9.03%	-8.59%	-8.22%
Pasco	-16.00%	-15.53%	-14.91%	-14.31%	-13.78%	-13.49%
Pinellas	-12.88%	-12.16%	-11.34%	-10.57%	-9.92%	-9.45%
Polk	-13.09%	-12.68%	-12.11%	-11.54%	-11.03%	-10.63%
Sarasota	-13.80%	-12.97%	-12.15%	-11.41%	-10.79%	-10.30%
Tampa Bay	-12.91%	-12.30%	-11.57%	-10.87%	-10.27%	-9.80%

Table 5.2 reports the contribution measured 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 5.2, *the difference in output measures the economic contribution of the Development Industry cluster.*

In terms of output, Hillsborough County benefits most from the economic activities of the Development Industry cluster in Tampa Bay. In Hillsborough County, the cluster contributes slightly over \$10 billion of output. As a percentage of total output, Pasco County benefits most from the economic activities of the Development Industry cluster. In Pasco County, the cluster contributes over 21% of total output.

The Development Industry cluster contributes approximately \$27 billion of output, or 16.5% of total output, to the Tampa Bay region.

Table 5.3 reports the contribution measured by personal income. Panel A shows total personal income (labor & property 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 personal income (labor & property income) 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 total personal income (labor & property 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 personal income after the hypothetical removal of the primary industries' output from the economy.

As expressed in Panels C or D of Table 5.2, *the difference in personal income measures the economic contribution of the Development Industry cluster.*

In terms of personal income, Hillsborough County benefits most from the economic activities of the Development Industry cluster in Tampa Bay. In Hillsborough County, the cluster contributes over \$4.3 billion of income. As a percentage of total personal income, Pasco County benefits most from the economic activities of the Development Industry cluster. In Pasco County, the cluster contributes over 18% of total personal income.

The Development Industry cluster contributes approximately \$10.6 billion of personal income, or 15.14% of total personal income (labor & property income), to the Tampa Bay region.

Table 5.2

Development Industry Cluster – REMI Counter-factual Removal of Output

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
OUTPUT**

Panel A						
Output before Removal (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						
Output after Removal (Bil. 01\$) Total						
Location	2002	2003	2004	2005	2006	2007
Hernando	2.152	2.246	2.340	2.427	2.513	2.590
Hillsborough	51.723	54.075	56.556	58.971	61.465	63.904
Manatee	10.410	10.862	11.315	11.739	12.156	12.557
Pasco	5.331	5.529	5.735	5.931	6.125	6.299
Pinellas	38.598	40.353	42.172	43.905	45.653	47.316
Polk	16.763	17.453	18.152	18.818	19.483	20.116
Sarasota	11.954	12.465	12.986	13.476	13.965	14.440
Tampa Bay	136.931	142.982	149.255	155.266	161.359	167.222

Panel C						
Difference in Output after Removal (Bil. 01\$)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-0.526	-0.518	-0.511	-0.499	-0.489	-0.487
Hillsborough	-10.101	-9.950	-9.640	-9.309	-9.028	-8.815
Manatee	-1.602	-1.566	-1.515	-1.458	-1.419	-1.383
Pasco	-1.439	-1.425	-1.393	-1.361	-1.335	-1.325
Pinellas	-7.465	-7.256	-6.956	-6.655	-6.404	-6.235
Polk	-2.994	-2.935	-2.836	-2.722	-2.628	-2.554
Sarasota	-2.927	-2.859	-2.772	-2.688	-2.621	-2.570
Tampa Bay	-27.053	-26.509	-25.623	-24.692	-23.926	-23.370

Panel D						
Difference in Output after Removal (% change)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-19.63%	-18.74%	-17.93%	-17.06%	-16.30%	-15.83%
Hillsborough	-16.34%	-15.54%	-14.56%	-13.63%	-12.81%	-12.12%
Manatee	-13.34%	-12.60%	-11.81%	-11.05%	-10.45%	-9.92%
Pasco	-21.26%	-20.49%	-19.54%	-18.66%	-17.90%	-17.38%
Pinellas	-16.21%	-15.24%	-14.16%	-13.16%	-12.30%	-11.64%
Polk	-15.15%	-14.40%	-13.51%	-12.64%	-11.89%	-11.27%
Sarasota	-19.67%	-18.66%	-17.59%	-16.63%	-15.80%	-15.11%
Tampa Bay	-16.50%	-15.64%	-14.65%	-13.72%	-12.91%	-12.26%

Table 5.3

Development Industry Cluster – REMI Counter-factual Removal of Output

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
PERSONAL INCOME**

Panel A

Personal Income (Total Labor & Property Income) before Removal (Bil. nominal)

Location	2002	2003	2004	2005	2006	2007
Hernando	1.120	1.182	1.245	1.310	1.376	1.445
Hillsborough	28.469	30.165	31.960	33.845	35.878	38.049
Manatee	4.541	4.772	5.019	5.280	5.558	5.854
Pasco	2.759	2.891	3.026	3.167	3.314	3.472
Pinellas	19.491	20.441	21.450	22.514	23.657	24.881
Polk	7.754	8.156	8.566	8.992	9.443	9.919
Sarasota	6.337	6.667	7.004	7.355	7.721	8.112
Tampa Bay	70.471	74.274	78.270	82.463	86.947	91.732

Panel B

Personal Income (Total Labor & Property Income) after Removal (Bil. nominal)

Location	2002	2003	2004	2005	2006	2007
Hernando	0.948	0.999	1.055	1.116	1.178	1.243
Hillsborough	24.155	25.560	27.250	29.104	31.131	33.286
Manatee	3.968	4.169	4.407	4.666	4.943	5.237
Pasco	2.261	2.362	2.480	2.611	2.750	2.893
Pinellas	16.624	17.453	18.452	19.547	20.728	21.965
Polk	6.564	6.879	7.247	7.651	8.085	8.542
Sarasota	5.284	5.584	5.916	6.271	6.642	7.032
Tampa Bay	59.804	63.006	66.807	70.966	75.457	80.198

Panel C

Difference in Personal Income (Labor & Property Inc.) after Removal (Bil. nominal)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.172	-0.183	-0.190	-0.194	-0.198	-0.202
Hillsborough	-4.314	-4.605	-4.710	-4.741	-4.747	-4.763
Manatee	-0.573	-0.603	-0.612	-0.614	-0.615	-0.617
Pasco	-0.498	-0.529	-0.546	-0.556	-0.564	-0.579
Pinellas	-2.867	-2.988	-2.998	-2.967	-2.929	-2.916
Polk	-1.190	-1.277	-1.319	-1.341	-1.358	-1.377
Sarasota	-1.053	-1.083	-1.088	-1.084	-1.079	-1.080
Tampa Bay	-10.667	-11.268	-11.463	-11.497	-11.490	-11.534

Panel D

Difference in Personal Income (Labor & Property Inc.) after Removal (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-15.36%	-15.48%	-15.26%	-14.81%	-14.39%	-13.98%
Hillsborough	-15.15%	-15.27%	-14.74%	-14.01%	-13.23%	-12.52%
Manatee	-12.62%	-12.64%	-12.19%	-11.63%	-11.07%	-10.54%
Pasco	-18.05%	-18.30%	-18.04%	-17.56%	-17.02%	-16.68%
Pinellas	-14.71%	-14.62%	-13.98%	-13.18%	-12.38%	-11.72%
Polk	-15.35%	-15.66%	-15.40%	-14.91%	-14.38%	-13.88%
Sarasota	-16.62%	-16.24%	-15.53%	-14.74%	-13.97%	-13.31%
Tampa Bay	-15.14%	-15.17%	-14.65%	-13.94%	-13.21%	-12.57%

Section 6: Economic Impacts of a Slowdown in Development

While the counter-factual approach used in Section 5 provides the means to derive a valid assessment of the total economic contribution of the Development Industry cluster, it does not portray a realistic scenario of a slowdown in regional development. This is so, because the counter-factual approach calls for the complete cessation of the productive activities of the cluster's primary industries. A complete cessation is most unlikely. Even if development of agricultural acreage or wilderness were proscribed, for example, economic principle tells us that substitute activities, such as remodeling or expansion of existing facilities, would take place.

Therefore, rather than simulating a complete cessation, we gauge the regional economy's expected response to a 20% slowdown in production (output) by the primary industries of the Development Industry cluster. As in Section 5, the measurements of the economic impact of a 20% slowdown are: 1) employment, 2) output, and 3) personal income.

Table 6.1 reports the economic impact measured by employment. Panel A shows total employment in each county and a summation for the Tampa Bay region *before* the 20% slowdown in production by the primary industries of the cluster. Panel B shows total employment in each county and a summation for the Tampa Bay region *after* the 20% slowdown in production by the primary industries of the cluster. Panels C and D show the difference in employment before slowdown and after slowdown. 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 20% slowdown in production by the primary industries of the cluster.

The loss of jobs, which is reported in Panels C or D of Table 6.1, reflects the aggregated primary and secondary effects. The primary effect is the direct loss of jobs in the construction and real estate industries due to the 20% slowdown in production. The secondary effect, or multiplier effect, is caused by two phenomena. First, jobs are lost in industries that supply goods and services to the construction and real estate industries. Second, lost jobs translate into lost income. And, less income means reduced spending by households and, as a result, more jobs are lost in industries that traditionally provide households with goods and services.

In terms of the number of jobs lost, Hillsborough County would experience the greatest economic impact of a 20% slowdown of economic activity in the Development Industry cluster. Hillsborough County loses over 20,000 jobs in the first year of the slowdown. Pinellas County would also experience a severe economic impact losing over 15,000 jobs in the first year. In terms of the percent of total employment lost, Pasco County would experience an economic impact of more than three percent of the jobs in the county lost during the first year of the slowdown.

Table 6.1**Development Industry Cluster – REMI 20% Development Slowdown****Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
EMPLOYMENT**

Panel A

Total Employment before 20% Slowdown (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	814.52	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 20% Slowdown (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	42.656	43.416	44.156	44.821	45.404	45.974
Hillsborough	763.391	779.088	795.599	811.408	827.411	843.817
Manatee	155.873	158.820	161.923	164.822	167.635	170.458
Pasco	102.300	103.723	105.105	106.373	107.552	108.782
Pinellas	564.921	572.281	580.205	587.667	595.116	602.901
Polk	239.443	243.593	247.625	251.337	254.914	258.535
Sarasota	209.047	212.351	215.570	218.532	221.300	224.189
Tampa Bay	2077.631	2113.272	2150.183	2184.960	2219.332	2254.656

Panel C

Difference in Employment after 20% Slowdown (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-1.196	-1.179	-1.151	-1.128	-1.105	-1.098
Hillsborough	-20.115	-19.644	-18.921	-18.217	-17.651	-17.280
Manatee	-3.423	-3.339	-3.234	-3.132	-3.060	-3.013
Pasco	-3.437	-3.399	-3.330	-3.264	-3.212	-3.187
Pinellas	-15.192	-14.571	-13.868	-13.225	-12.723	-12.397
Polk	-6.525	-6.453	-6.302	-6.144	-6.028	-5.959
Sarasota	-6.021	-5.774	-5.533	-5.325	-5.167	-5.069
Tampa Bay	-55.909	-54.359	-52.339	-50.435	-48.946	-48.003

Panel D

Difference in Employment after 20% Slowdown (% change)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-2.73%	-2.64%	-2.54%	-2.45%	-2.38%	-2.33%
Hillsborough	-2.57%	-2.46%	-2.32%	-2.20%	-2.09%	-2.01%
Manatee	-2.15%	-2.06%	-1.96%	-1.86%	-1.79%	-1.74%
Pasco	-3.25%	-3.17%	-3.07%	-2.98%	-2.90%	-2.85%
Pinellas	-2.62%	-2.48%	-2.33%	-2.20%	-2.09%	-2.01%
Polk	-2.65%	-2.58%	-2.48%	-2.39%	-2.31%	-2.25%
Sarasota	-2.80%	-2.65%	-2.50%	-2.38%	-2.28%	-2.21%
Tampa Bay	-2.62%	-2.51%	-2.38%	-2.26%	-2.16%	-2.08%

We estimate that the total impact on employment in the Tampa Bay region would be a loss of nearly 56,000 jobs or 2.62% of the employment base during the first year of the slowdown. Furthermore, we find that five years after the start of the slowdown, employment in Tampa Bay would still be 48,000 jobs below the baseline.

Table 6.2 reports the economic impact measured by output per annum. Panel A shows total output in each county and a summation for the Tampa Bay region *before* the 20% slowdown in output by the primary industries of the cluster. Panel B shows total output in each county and a summation for the Tampa Bay region *after* the 20% slowdown in output by the primary industries of the cluster. Panels C and D show the difference in output before slowdown and after slowdown. In Panel C the difference is expressed as billions of dollars in output that would be lost. In Panel D the difference is expressed as the percentage of output lost from the total output base after the 20% slowdown in output by the primary industries of the cluster.

The loss of output, which is reported in Panels C or D of Table 6.2, reflects the aggregated primary and secondary effects. The primary effect is the 20% direct reduction of output in the construction and real estate industries. The secondary effect, or multiplier effect, is caused by two phenomena. First, sales, i.e. output, are lost in industries that supply goods and services to the construction and real estate industries. Second, lost sales translate into lost income. And, less income means reduced spending by households and, as a result, more sales are lost in industries that traditionally provide households with goods and services.

In terms of output lost, Hillsborough County would experience the greatest economic impact of a 20% slowdown of economic activity in the Development Industry cluster. Hillsborough County loses over \$2.0 billion in the first year of the slowdown. Pinellas County would also experience a severe economic impact losing over \$1.5 billion of output in the first year. In terms of the percent of total output lost, Pasco County would experience an economic impact of more than four percent of output in the county lost during the first year of the slowdown.

We estimate that the total impact on output in the Tampa Bay region would be a loss of nearly \$5.5 billion of output or 3.34% of the output base during the first year of the slowdown. Furthermore, we find that five years after the start of the slowdown, annual output in Tampa Bay would still be almost \$5.0 billion below the baseline.

Table 6.3 reports the economic impact measured by personal income (labor & property income) per annum. Panel A shows total personal income in each county and a summation for the Tampa Bay region *before* the 20% slowdown in output by the primary industries of the cluster. Panel B shows total personal income in each county and a summation for the Tampa Bay region *after* the 20% slowdown in output by the primary industries of the cluster. Panels C and D show the difference in personal income before slowdown and after slowdown. In Panel C the difference is expressed as billions of dollars in personal income that would be lost. In Panel D the difference is expressed as the percentage of personal income lost from the total personal income base after the 20% slowdown in output by the primary industries of the cluster.

Table 6.2**Development Industry Cluster – REMI 20% Development Slowdown****Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
OUTPUT**

Panel A

Output before 20% Slowdown (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

Output after 20% Slowdown (Bil. 01\$) Total

Location	2002	2003	2004	2005	2006	2007
Hernando	2.572	2.660	2.747	2.824	2.901	2.974
Hillsborough	59.780	62.003	64.226	66.360	68.610	70.855
Manatee	11.690	12.111	12.519	12.898	13.279	13.649
Pasco	6.480	6.664	6.843	7.010	7.180	7.349
Pinellas	44.550	46.131	47.702	49.182	50.713	52.231
Polk	19.150	19.794	20.408	20.978	21.561	22.129
Sarasota	14.289	14.744	15.190	15.610	16.037	16.465
Tampa Bay	158.511	164.107	169.636	174.862	180.281	185.653

Panel C

Difference in Output after 20% Slowdown (Bil. 01\$)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.106	-0.104	-0.105	-0.103	-0.101	-0.103
Hillsborough	-2.044	-2.021	-1.970	-1.919	-1.884	-1.864
Manatee	-0.322	-0.317	-0.310	-0.298	-0.296	-0.290
Pasco	-0.290	-0.289	-0.285	-0.282	-0.281	-0.276
Pinellas	-1.512	-1.478	-1.425	-1.378	-1.344	-1.320
Polk	-0.606	-0.594	-0.580	-0.562	-0.550	-0.541
Sarasota	-0.592	-0.581	-0.568	-0.554	-0.549	-0.544
Tampa Bay	-5.473	-5.384	-5.243	-5.097	-5.004	-4.939

Panel D

Difference in Output after 20% Slowdown (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-3.96%	-3.76%	-3.68%	-3.51%	-3.35%	-3.34%
Hillsborough	-3.31%	-3.16%	-2.98%	-2.81%	-2.67%	-2.56%
Manatee	-2.68%	-2.55%	-2.42%	-2.26%	-2.18%	-2.08%
Pasco	-4.29%	-4.16%	-4.00%	-3.86%	-3.76%	-3.62%
Pinellas	-3.28%	-3.10%	-2.90%	-2.73%	-2.58%	-2.46%
Polk	-3.07%	-2.91%	-2.76%	-2.61%	-2.49%	-2.39%
Sarasota	-3.98%	-3.79%	-3.60%	-3.43%	-3.31%	-3.20%
Tampa Bay	-3.34%	-3.18%	-3.00%	-2.83%	-2.70%	-2.59%

The loss of income, which is reported in Panels C or D of Table 6.2, reflects the aggregated primary and secondary effects. The primary effect is the loss of income from the construction and real estate industries due to the 20% slowdown in production. The secondary effect, or multiplier effect, is caused by two phenomena. First, personal income is lost in industries that supply goods and services to the construction and real estate industries. Second, less income means reduced spending by households and, as a result, sales and income are lost in industries that traditionally provide households with goods and services.

In terms of income lost, Hillsborough County would experience the greatest economic impact of a 20% slowdown of economic activity in the Development Industry cluster. Hillsborough County loses almost \$1.0 billion in the first year of the slowdown. Pinellas County would also experience a severe economic impact, losing about \$0.6 billion of income in the first year. In terms of the percent of total personal income lost, Pasco County would experience an economic impact of almost 3.8% of income in the county lost during the first year of the slowdown.

We estimate that the total impact on personal income in the Tampa Bay region would be a loss of over \$2.2 billion or 3.17% of the personal income base during the first year of the slowdown. Furthermore, we find that five years after the start of the slowdown, annual personal income in Tampa Bay would still be almost 2.78% below the baseline.

In summary, we estimate that a 20% slowdown in production by the primary industries of the Development Industry cluster of Tampa Bay would have the following first-year consequences: 1) nearly 56,000 lost jobs, 2) over \$5 billion of sales foregone, and 3) over \$2 billion of lost income. With 56,000 lost jobs, what other structural changes to Tampa Bay's economy may be expected?

Table C.1, Appendix C, shows the difference in employment by occupation in Tampa Bay after a 20% slowdown in production in the primary industries of the Development Industry cluster. Panel A, Table C.1, lists those occupations that lose more than 1,000 jobs. Not surprisingly, the construction trades suffer the biggest impact with a loss of about 12,640 jobs. Panel B, Table C.1, lists occupations that are expected to lose between 100 and 999 jobs. And, Panel C, Table C.1, lists occupations that are expected to lose less than 100 jobs. Notably, there is no occupation that is expected to gain in jobs as a result of a 20% slowdown in the primary industries of the Development Industry cluster.

Table 6.3**Development Industry Cluster – REMI 20% Development Slowdown****Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
PERSONAL INCOME**

Panel A

Personal Income (Total Labor & Property Income) before 20% Slowdown (Bil. nominal)

Location	2002	2003	2004	2005	2006	2007
Hernando	1.120	1.182	1.245	1.310	1.376	1.445
Hillsborough	28.469	30.165	31.960	33.845	35.878	38.049
Manatee	4.541	4.772	5.019	5.280	5.558	5.854
Pasco	2.759	2.891	3.026	3.167	3.314	3.472
Pinellas	19.491	20.441	21.450	22.514	23.657	24.881
Polk	7.754	8.156	8.566	8.992	9.443	9.919
Sarasota	6.337	6.667	7.004	7.355	7.721	8.112
Tampa Bay	70.471	74.274	78.270	82.463	86.947	91.732

Panel B

Personal Income (Total Labor & Property Income) after 20% Slowdown (Bil. nominal)

Location	2002	2003	2004	2005	2006	2007
Hernando	1.084	1.143	1.204	1.268	1.333	1.401
Hillsborough	27.565	29.187	30.949	32.818	34.840	36.998
Manatee	4.422	4.644	4.888	5.148	5.424	5.719
Pasco	2.655	2.778	2.908	3.045	3.190	3.345
Pinellas	18.891	19.806	20.806	21.870	23.013	24.235
Polk	7.505	7.885	8.283	8.702	9.146	9.616
Sarasota	6.117	6.436	6.769	7.117	7.481	7.870
Tampa Bay	68.239	71.879	75.807	79.968	84.427	89.184

Panel C

Difference in Personal Income (Labor & Property Inc.) after 20% Slowdown (Bil. nominal)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.036	-0.039	-0.041	-0.042	-0.043	-0.044
Hillsborough	-0.904	-0.978	-1.011	-1.027	-1.038	-1.051
Manatee	-0.119	-0.128	-0.131	-0.132	-0.134	-0.135
Pasco	-0.104	-0.113	-0.118	-0.122	-0.124	-0.127
Pinellas	-0.600	-0.635	-0.644	-0.644	-0.644	-0.646
Polk	-0.249	-0.271	-0.283	-0.290	-0.297	-0.303
Sarasota	-0.220	-0.231	-0.235	-0.238	-0.240	-0.242
Tampa Bay	-2.232	-2.395	-2.463	-2.495	-2.520	-2.548

Panel D

Difference in Personal Income (Labor & Property Inc.) after 20% Slowdown (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-3.21%	-3.30%	-3.29%	-3.21%	-3.12%	-3.04%
Hillsborough	-3.18%	-3.24%	-3.16%	-3.03%	-2.89%	-2.76%
Manatee	-2.62%	-2.68%	-2.61%	-2.50%	-2.41%	-2.31%
Pasco	-3.77%	-3.91%	-3.90%	-3.85%	-3.74%	-3.66%
Pinellas	-3.08%	-3.11%	-3.00%	-2.86%	-2.72%	-2.60%
Polk	-3.21%	-3.32%	-3.30%	-3.23%	-3.15%	-3.05%
Sarasota	-3.47%	-3.46%	-3.36%	-3.24%	-3.11%	-2.98%
Tampa Bay	-3.17%	-3.22%	-3.15%	-3.03%	-2.90%	-2.78%

With the loss of nearly 56,000 jobs in the first year of the slowdown, Tampa Bay's labor force also shrinks. We anticipate that in the first year the labor force would decline by about 11,000 workers. Although the labor force begins to grow again in the second year after a slowdown, the trend continues to be below the baseline. **Table 6.4** depicts the labor force. Panel A shows the total labor force in each county and a summation for the Tampa Bay region *before* the 20% slowdown in output by the primary industries of the cluster. Panel B shows the total labor force in each county and a summation for the Tampa Bay region *after* the 20% slowdown in output by the primary industries of the cluster. Panels C and D show the difference in the size of the labor force before slowdown and after slowdown. In Panel C the difference is expressed in thousands of workers that would be lost from the labor force. In Panel D the difference is expressed as the percentage decline from the labor force baseline after the 20% slowdown in output by the primary industries of the cluster.

We find that a 20% slowdown in production by the primary industries of the Development Industry cluster would have a significant impact on economic migration into the Tampa Bay region. **Table 6.5** depicts economic in-migration.¹³ Panel A shows anticipated yearly economic in-migration for each county and a summation for the Tampa Bay region *before* the 20% slowdown in output by the primary industries of the cluster. Panel B shows anticipated yearly economic in-migration for each county and a summation for the Tampa Bay region *after* the 20% slowdown in output by the primary industries of the cluster. Panels C and D show the difference in the number of anticipated economic in-migrants before slowdown and after slowdown. In Panel C the difference is expressed in thousands of previously anticipated economic in-migrants who would not come to Tampa Bay. In Panel D the difference is expressed as the percentage decline of anticipated economic in-migrants from the baseline after the 20% slowdown in output by the primary industries of the cluster.

The principal reason for the decline of in-migration to Tampa Bay is a reduction in the relative employment opportunity. In the first year of a slowdown approximately 11,800 fewer economic migrants (15.9% less in-migrants) will move into the Tampa Bay region than previously anticipated.

¹³ Economic migrants are persons under age 65 (who were part of the civilian population of the US the proceeding year) who respond to economic and / or amenity factors by moving into a region. The relative employment opportunity, the real relative wage rate, the relative wage mix and an amenity factor determine the rate of economic migration.

Table 6.4**Development Industry Cluster – REMI 20% Development Slowdown****Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
LABOR FORCE**

Panel A

Total Labor Force before 20% Slowdown (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	53.124	54.342	55.575	56.740	58.050	59.286
Hillsborough	549.669	564.210	578.586	592.488	606.332	620.283
Manatee	135.562	139.347	142.963	146.358	149.755	153.015
Pasco	171.525	176.562	181.326	185.789	190.315	194.502
Pinellas	481.769	491.664	501.114	509.960	518.828	527.569
Polk	235.083	240.970	246.752	252.217	257.712	263.035
Sarasota	156.769	160.790	164.633	168.236	171.859	175.324
Tampa Bay	1783.501	1827.885	1870.949	1911.788	1952.851	1993.014

Panel B

Total Labor Force after 20% Slowdown (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	52.786	53.739	54.813	55.865	57.089	58.258
Hillsborough	546.326	557.941	570.483	583.063	595.942	609.164
Manatee	134.769	137.874	141.067	144.159	147.333	150.426
Pasco	170.328	174.385	178.557	182.600	186.819	190.770
Pinellas	478.748	486.105	493.998	501.765	509.877	518.071
Polk	233.729	238.449	243.479	248.387	253.459	258.449
Sarasota	155.741	158.952	162.312	165.565	168.931	172.200
Tampa Bay	1772.427	1807.445	1844.709	1881.404	1919.450	1957.338

Panel C

Difference in Labor Force after 20% Slowdown (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.338	-0.603	-0.762	-0.875	-0.961	-1.028
Hillsborough	-3.343	-6.269	-8.103	-9.425	-10.390	-11.119
Manatee	-0.793	-1.473	-1.896	-2.199	-2.422	-2.589
Pasco	-1.197	-2.177	-2.769	-3.189	-3.496	-3.732
Pinellas	-3.021	-5.559	-7.116	-8.195	-8.951	-9.498
Polk	-1.354	-2.521	-3.273	-3.830	-4.253	-4.586
Sarasota	-1.028	-1.838	-2.321	-2.671	-2.928	-3.124
Tampa Bay	-11.074	-20.440	-26.240	-30.384	-33.401	-35.676

Panel D

Difference in Labor Force after 20% Slowdown (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.64%	-1.11%	-1.37%	-1.54%	-1.66%	-1.73%
Hillsborough	-0.61%	-1.11%	-1.40%	-1.59%	-1.71%	-1.79%
Manatee	-0.58%	-1.06%	-1.33%	-1.50%	-1.62%	-1.69%
Pasco	-0.70%	-1.23%	-1.53%	-1.72%	-1.84%	-1.92%
Pinellas	-0.63%	-1.13%	-1.42%	-1.61%	-1.73%	-1.80%
Polk	-0.58%	-1.05%	-1.33%	-1.52%	-1.65%	-1.74%
Sarasota	-0.66%	-1.14%	-1.41%	-1.59%	-1.70%	-1.78%
Tampa Bay	-0.62%	-1.12%	-1.40%	-1.59%	-1.71%	-1.79%

Table 6.5**Development Industry Cluster – REMI 20% Development Slowdown****Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
ECONOMIC IN-MIGRATION**

Panel A

Economic In-migrants before 20% Slowdown (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	2.880	2.772	2.712	2.658	2.557	2.462
Hillsborough	20.328	19.047	18.097	17.369	16.923	16.642
Manatee	6.869	6.264	5.842	5.462	5.102	4.798
Pasco	8.417	7.622	7.066	6.605	6.177	5.877
Pinellas	16.979	15.510	14.665	14.020	13.573	13.331
Polk	9.470	8.776	8.205	7.646	7.148	6.724
Sarasota	9.477	8.754	8.310	7.884	7.467	7.115
Tampa Bay	74.420	68.745	64.897	61.644	58.947	56.949

Panel B

Economic In-migrants after 20% Slowdown (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	2.548	2.351	2.422	2.412	2.351	2.287
Hillsborough	16.517	14.223	14.741	14.643	14.722	14.851
Manatee	6.055	5.234	5.125	4.877	4.629	4.413
Pasco	7.241	6.132	6.046	5.759	5.48	5.297
Pinellas	13.834	11.587	11.955	11.882	11.897	12.004
Polk	7.97	6.841	6.813	6.479	6.172	5.901
Sarasota	8.424	7.437	7.421	7.153	6.87	6.623
Tampa Bay	62.589	53.805	54.523	53.205	52.121	51.376

Panel C

Difference of Economic In-migrants after 20% Slowdown (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.332	-0.421	-0.290	-0.246	-0.206	-0.175
Hillsborough	-3.811	-4.824	-3.356	-2.726	-2.201	-1.791
Manatee	-0.814	-1.030	-0.717	-0.585	-0.473	-0.385
Pasco	-1.176	-1.490	-1.020	-0.846	-0.697	-0.580
Pinellas	-3.145	-3.923	-2.710	-2.138	-1.676	-1.327
Polk	-1.500	-1.935	-1.392	-1.167	-0.976	-0.823
Sarasota	-1.053	-1.317	-0.889	-0.731	-0.597	-0.492
Tampa Bay	-11.831	-14.940	-10.374	-8.439	-6.826	-5.573

Panel D

Difference of Economic In-migrants after 20% Slowdown (% change)

Location	2002	2003	2004	2005	2006	2007
Hernando	-11.53%	-15.19%	-10.69%	-9.26%	-8.06%	-7.11%
Hillsborough	-18.75%	-25.33%	-18.54%	-15.69%	-13.01%	-10.76%
Manatee	-11.85%	-16.44%	-12.27%	-10.71%	-9.27%	-8.02%
Pasco	-13.97%	-19.55%	-14.44%	-12.81%	-11.28%	-9.87%
Pinellas	-18.52%	-25.29%	-18.48%	-15.25%	-12.35%	-9.95%
Polk	-15.84%	-22.05%	-16.97%	-15.26%	-13.65%	-12.24%
Sarasota	-11.11%	-15.04%	-10.70%	-9.27%	-8.00%	-6.91%
Tampa Bay	-15.90%	-21.73%	-15.99%	-13.69%	-11.58%	-9.79%

Economic migrants are a subset of all migrants. **Table 6.6** depicts in-migration whether motivated by economic factors or otherwise. Panel A shows anticipated yearly in-migration for each county and a summation for the Tampa Bay region *before* the 20% slowdown in output by the primary industries of the cluster. Panel B shows anticipated yearly in-migration for each county and a summation for the Tampa Bay region *after* the 20% slowdown in output by the primary industries of the cluster. Panels C and D show the difference in the number of anticipated in-migrants before slowdown and after slowdown. In Panel C the difference is expressed in thousands of previously anticipated in-migrants who would not come to Tampa Bay. In Panel D the difference is expressed as the percentage decline of anticipated in-migrants from the baseline after the 20% slowdown in output by the primary industries of the cluster.

Compare the difference in in-migrants (Table 6.6, Panel C) with the difference in economic in-migrants (Table 6.5, Panel C). Note that almost the entire decline of in-migration is due to a decline in economic in-migration. This observation implies that non-economic in-migration, such as retired persons (age 65 or older), will be little affected by a slowdown in production by the primary industries of the Development Industry cluster.

In the previous discussion of this Section of our report, we have described the economic impact of a 20% slowdown in production in the primary industries of the Development Industry cluster. The economic impact manifests itself and is measured by changes in employment, output and personal income. We also described how the slowdown motivates structural changes in Tampa Bay's economy. Thus far, we examined changes in the labor force and migration into the Tampa Bay region.

Now, we further examine structural changes to the region's economy through differences from the baseline in population and out-migration.

Table 6.7 reports population. Panel A shows total population in each county and a summation for the Tampa Bay region *before* the 20% slowdown in output by the primary industries of the cluster. Panel B shows total population in each county and a summation for the Tampa Bay region *after* the 20% slowdown in output by the primary industries of the cluster. Panels C and D show the difference in population before slowdown and after slowdown. In Panel C the difference is expressed in thousands of people. In Panel D the difference is expressed as the percentage of people lost from the total population baseline after the 20% slowdown in output by the primary industries of the cluster.

In the first year, we estimate that Tampa Bay's population would be about 11,950 less than if there were no slowdown. The reduction in population is almost entirely due to a decline in the number of economic in-migrants, who quickly recognize the relative decline in employment opportunities in the region. (See from Panel C, Table 6.5 that the difference in economic in-migrants in year 2002 is close to the difference in population.)

Table 6.6**Development Industry Cluster – REMI 20% Development Slowdown****Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
IN-MIGRATION**

Panel A

In-migrants before 20% Slowdown (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	3.463	3.342	3.270	3.201	3.096	2.993
Hillsborough	25.746	24.357	23.305	22.483	21.950	21.579
Manatee	7.804	7.181	6.742	6.346	5.980	5.671
Pasco	8.322	7.508	6.926	6.429	5.998	5.697
Pinellas	17.558	16.047	15.161	14.472	13.995	13.727
Polk	11.429	10.706	10.112	9.533	9.022	8.583
Sarasota	10.555	9.804	9.333	8.879	8.455	8.095
Tampa Bay	84.877	78.945	74.849	71.343	68.496	66.345

Panel B

In-migrants after 20% Slowdown (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	3.131	2.921	2.979	2.955	2.89	2.817
Hillsborough	21.935	19.534	19.95	19.758	19.75	19.79
Manatee	6.99	6.151	6.026	5.761	5.507	5.286
Pasco	7.147	6.018	5.906	5.584	5.301	5.117
Pinellas	14.414	12.125	12.451	12.335	12.32	12.402
Polk	9.929	8.772	8.72	8.366	8.047	7.76
Sarasota	9.502	8.487	8.444	8.148	7.858	7.603
Tampa Bay	73.048	64.008	64.476	62.907	61.673	60.775

Panel C

Difference of In-migrants after 20% Slowdown (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-0.332	-0.421	-0.291	-0.246	-0.206	-0.176
Hillsborough	-3.811	-4.823	-3.355	-2.725	-2.200	-1.789
Manatee	-0.814	-1.030	-0.716	-0.585	-0.473	-0.385
Pasco	-1.175	-1.490	-1.020	-0.845	-0.697	-0.580
Pinellas	-3.144	-3.922	-2.710	-2.137	-1.675	-1.325
Polk	-1.500	-1.934	-1.392	-1.167	-0.975	-0.823
Sarasota	-1.053	-1.317	-0.889	-0.731	-0.597	-0.492
Tampa Bay	-11.829	-14.937	-10.373	-8.436	-6.823	-5.570

Panel D

Difference of In-migrants after 20% Slowdown (% change)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-9.59%	-12.60%	-8.90%	-7.69%	-6.65%	-5.88%
Hillsborough	-14.80%	-19.80%	-14.40%	-12.12%	-10.02%	-8.29%
Manatee	-10.43%	-14.34%	-10.62%	-9.22%	-7.91%	-6.79%
Pasco	-14.12%	-19.85%	-14.73%	-13.14%	-11.62%	-10.18%
Pinellas	-17.91%	-24.44%	-17.87%	-14.77%	-11.97%	-9.65%
Polk	-13.12%	-18.06%	-13.77%	-12.24%	-10.81%	-9.59%
Sarasota	-9.98%	-13.43%	-9.53%	-8.23%	-7.06%	-6.08%
Tampa Bay	-13.94%	-18.92%	-13.86%	-11.82%	-9.96%	-8.40%

Table 6.7**Development Industry Cluster – REMI 20% Development Slowdown****Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
POPULATION**

Panel A

Population before 20% Slowdown (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	135.179	137.715	140.195	142.637	145.002	147.291
Hillsborough	1083.049	1114.384	1144.902	1174.821	1204.424	1233.865
Manatee	285.692	292.853	299.698	306.258	312.564	318.665
Pasco	359.788	366.290	372.426	378.240	383.815	389.262
Pinellas	963.966	978.119	991.820	1005.274	1018.707	1032.290
Polk	517.351	530.011	542.200	553.932	565.260	576.248
Sarasota	349.431	357.524	365.280	372.713	379.845	386.737
Tampa Bay	3694.456	3776.896	3856.521	3933.875	4009.617	4084.358

Panel B

Population after 20% Slowdown (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	134.842	136.949	139.127	141.307	143.448	145.540
Hillsborough	1079.209	1105.628	1132.634	1159.626	1186.793	1214.182
Manatee	284.871	290.981	297.072	302.999	308.774	314.425
Pasco	358.580	363.556	368.625	373.540	378.357	383.156
Pinellas	960.789	970.945	981.816	992.978	1004.557	1016.616
Polk	515.840	526.529	537.261	547.738	557.986	568.034
Sarasota	348.369	355.119	361.944	368.593	375.065	381.394
Tampa Bay	3682.500	3749.707	3818.479	3886.781	3954.980	4023.347

Panel C

Difference in Population after 20% Slowdown (000s)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-0.337	-0.766	-1.068	-1.330	-1.554	-1.751
Hillsborough	-3.840	-8.756	-12.268	-15.195	-17.631	-19.683
Manatee	-0.821	-1.872	-2.626	-3.259	-3.790	-4.240
Pasco	-1.208	-2.734	-3.801	-4.700	-5.458	-6.106
Pinellas	-3.177	-7.174	-10.004	-12.296	-14.150	-15.674
Polk	-1.511	-3.482	-4.939	-6.194	-7.274	-8.214
Sarasota	-1.062	-2.405	-3.336	-4.120	-4.780	-5.343
Tampa Bay	-11.956	-27.189	-38.042	-47.094	-54.637	-61.011

Panel D

Difference in Population after 20% Slowdown (% change)						
Location	2002	2003	2004	2005	2006	2007
Hernando	-0.25%	-0.56%	-0.76%	-0.93%	-1.07%	-1.19%
Hillsborough	-0.35%	-0.79%	-1.07%	-1.29%	-1.46%	-1.60%
Manatee	-0.29%	-0.64%	-0.88%	-1.06%	-1.21%	-1.33%
Pasco	-0.34%	-0.75%	-1.02%	-1.24%	-1.42%	-1.57%
Pinellas	-0.33%	-0.73%	-1.01%	-1.22%	-1.39%	-1.52%
Polk	-0.29%	-0.66%	-0.91%	-1.12%	-1.29%	-1.43%
Sarasota	-0.30%	-0.67%	-0.91%	-1.11%	-1.26%	-1.38%
Tampa Bay	-0.32%	-0.72%	-0.99%	-1.20%	-1.36%	-1.49%

As the slowdown continues beyond year 2002, the population difference from the predicted baseline grows larger each year. However, note from Panel C, Table 6.5 (and Panel C, Table 6.6) that the loss of in-migrants peaks in the second year (year 2003) of a slowdown and then the loss gets smaller thereafter. As this occurs, there would also be a significant change in out-migration from the Tampa Bay region.

The difference in population would effect the more populous counties, of course. Without a future shock to the regional economy, such as a slowdown in development activities, we expect Hillsborough County's population to reach about 1,234,000 persons by 2007. With a slowdown, we estimate the 2007 population would be about 19,700 fewer people, or a 1.60% reduction. We also expect Pinellas County's population to reach about 1,032,000 persons by 2007. With a slowdown, we estimate the 2007 population would be about 15,700 fewer people, or a 1.52% reduction.

Without a future shock to the regional economy, we anticipate the Tampa Bay region's population to be approximately 4,084,000 persons in 2007. With a slowdown in development activities, we estimate the 2007 population would be about 61,000 fewer people, or a 1.49% reduction.

The population differences, which were just described above, are due to a large decline of in-migration and a small increase in out-migration. **Table 6.8** reports differences from the baseline in population, in-migration and out-migration.¹⁴ Panel A shows the difference in population from the baseline after a 20% slowdown. Panel B shows the difference in in-migrants after a 20% slowdown. Panel C shows the difference in out-migrants after a 20% slowdown. To approximate the number of out-migrants we assume that the net effect of births and deaths is zero.¹⁵

In the first year of the slowdown about 127 more people leave Tampa Bay than would have otherwise out-migrated. This number grows to about 804 additional out-migrants five years after the slowdown began. Over the six years that we model the slowdown scenario, there would be 3,043 additional out-migrants over a baseline of approximately 240,000 persons, or a 1.27% increase of out-migration.

In conclusion, we find that a 20% slowdown in the output of the primary industries of the Development Industry cluster would have the following first-year consequences: 1) nearly 56,000 jobs lost, 2) over \$5 billion of sales foregone, and 3) over \$2 billion of lost income. Over time, structural changes in Tampa Bay's economy include a diminishing rate of growth of both the population and the labor force. Economic in-migration falls off significantly, while non-

¹⁴ Between 1996 and 2000, *net* migration for Tampa Bay has averaged 41,030 persons per year. See "Tampa Bay Region: 2001 Economic Market report," prepared for the Tampa Bay Partnership by the USF Center for Economic Development Research. We estimate that, on average, in-migrants have been outnumbering out-migrants by two-to-one. About 40,000 people out-migrated from Tampa Bay annually.

¹⁵ This is a simplifying assumption. In Tampa Bay, through 1996 to 1999 deaths have slightly exceeded births. The net effect of births and deaths on Tampa Bay's population, 1996 to 1999, was -975, -527, -771, and -916. See "Tampa Bay Region: 2001 Economic Market report," prepared for the Tampa Bay Partnership by the USF Center for Economic Development Research.

economic in-migration – such as persons 65 and older – is not affected. Out-migration would increase slightly over the baseline.

Table 6.8

Development Industry Cluster – REMI 20% Development Slowdown

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)
OUT-MIGRATION**

Panel A

Difference in Population after 20% Slowdown (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.337	-0.766	-1.068	-1.330	-1.554	-1.751
Hillsborough	-3.840	-8.756	-12.268	-15.195	-17.631	-19.683
Manatee	-0.821	-1.872	-2.626	-3.259	-3.790	-4.240
Pasco	-1.208	-2.734	-3.801	-4.700	-5.458	-6.106
Pinellas	-3.177	-7.174	-10.004	-12.296	-14.150	-15.674
Polk	-1.511	-3.482	-4.939	-6.194	-7.274	-8.214
Sarasota	-1.062	-2.405	-3.336	-4.120	-4.780	-5.343
Tampa Bay	-11.956	-27.189	-38.042	-47.094	-54.637	-61.011

Panel B

Difference of In-migrants after 20% Slowdown (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.332	-0.421	-0.291	-0.246	-0.206	-0.176
Hillsborough	-3.811	-4.823	-3.355	-2.725	-2.200	-1.789
Manatee	-0.814	-1.030	-0.716	-0.585	-0.473	-0.385
Pasco	-1.175	-1.490	-1.020	-0.845	-0.697	-0.580
Pinellas	-3.144	-3.922	-2.710	-2.137	-1.675	-1.325
Polk	-1.500	-1.934	-1.392	-1.167	-0.975	-0.823
Sarasota	-1.053	-1.317	-0.889	-0.731	-0.597	-0.492
Tampa Bay	-11.829	-14.937	-10.373	-8.436	-6.823	-5.570

Panel C

Difference of Out-migrants after 20% Slowdown (000s)

Location	2002	2003	2004	2005	2006	2007
Hernando	-0.005	-0.008	-0.011	-0.016	-0.018	-0.021
Hillsborough	-0.029	-0.093	-0.157	-0.202	-0.236	-0.263
Manatee	-0.007	-0.021	-0.038	-0.048	-0.058	-0.065
Pasco	-0.033	-0.036	-0.047	-0.054	-0.061	-0.068
Pinellas	-0.033	-0.075	-0.120	-0.155	-0.179	-0.199
Polk	-0.011	-0.037	-0.065	-0.088	-0.105	-0.117
Sarasota	-0.009	-0.026	-0.042	-0.053	-0.063	-0.071
Tampa Bay	-0.127	-0.296	-0.480	-0.616	-0.720	-0.804

Appendix A

Primary Industries Include Real Estate Agents and Managers

Some activities of the Real Estate Agents and Managers (SIC 6531) industry are consistent with a primary industry within the Development Industry cluster. For instance, commercial real estate transactions and activity associated with the sale of new residential structures are consistent with the primary economic activities of firms in the cluster.

However, data are not available to quantify the applicable proportion of the Real Estate Agents and Managers industry that applies to the cluster. Thus, the information in this appendix depicts the Development Industry cluster, if the Real Estate Agents and Managers industry were included *in toto* as a primary industry within the cluster. We apportion the REMI™ model's result from major group 65, Real Estate, to the Real Estate Agents and Managers industry in the same manner as described in Section 3 for the other primary real estate industries.

Table A.1 shows estimates of employment by location (place of work) from 2002 to 2007. 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 Real Estate Agents and Managers (SIC 6531) in each county and Tampa Bay. Panel C gives the percentage of total employment contributed by jobs in the Real Estate Agents and Managers industry for each location.

About 0.7 percent of the jobs in Tampa Bay are in Real Estate Agents and Managers industry. Among the counties of Tampa Bay, the number of jobs in this industry ranges from approximately 5,700 in Hillsborough County to 218 in Hernando County. Sarasota County has the largest share of its employment (0.84% in 2002) in the industry, while Polk County has the smallest percentage (0.44% in 2002) of its employment in the industry. We expect jobs in the industry in Tampa Bay to increase from about 15,000 in 2002 to 17,500 in 2007.

Table A.1

Development Industry Cluster – REMI Baseline

**Real Estate Agents and Managers (SIC 6531)
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	814.52	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						
Industry Employment (000s) by Sector > Non-Manufacturing > Real Estate > SIC 6531						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.218	0.225	0.232	0.239	0.247	0.254
Hillsborough	5.659	5.858	6.061	6.259	6.470	6.679
Manatee	1.047	1.081	1.117	1.150	1.185	1.219
Pasco	0.519	0.534	0.551	0.566	0.582	0.599
Pinellas	4.769	4.905	5.046	5.183	5.332	5.480
Polk	1.081	1.118	1.156	1.191	1.228	1.265
Sarasota	1.799	1.846	1.895	1.942	1.991	2.040
Tampa Bay	15.093	15.567	16.056	16.529	17.035	17.537

Panel C						
Industry Employment (% of Total) by Sector > Non-Manufacturing > Real Estate > SIC 6531						
Location	2002	2003	2004	2005	2006	2007
Hernando	0.50%	0.50%	0.51%	0.52%	0.53%	0.54%
Hillsborough	0.72%	0.73%	0.74%	0.75%	0.77%	0.78%
Manatee	0.66%	0.67%	0.68%	0.68%	0.69%	0.70%
Pasco	0.49%	0.50%	0.51%	0.52%	0.53%	0.53%
Pinellas	0.82%	0.84%	0.85%	0.86%	0.88%	0.89%
Polk	0.44%	0.45%	0.46%	0.46%	0.47%	0.48%
Sarasota	0.84%	0.85%	0.86%	0.87%	0.88%	0.89%
Tampa Bay	0.71%	0.72%	0.73%	0.74%	0.75%	0.76%

Table A.2 shows estimates of output by location from 2002 to 2007. 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 Real Estate Agents and Managers (SIC 6531) industry in each county and Tampa Bay. Panel C gives the percentage of total output contributed by jobs in the Real Estate Agents and Managers industry for each location.

Table A.2

Development Industry Cluster – REMI Baseline

Real Estate Agents and Managers (SIC 6531)**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

Output (Bil. 01\$) BY Real Estate > SIC 6531

Location	2002	2003	2004	2005	2006	2007
Hernando	0.019	0.019	0.020	0.020	0.021	0.022
Hillsborough	0.481	0.498	0.516	0.532	0.550	0.568
Manatee	0.089	0.092	0.095	0.098	0.101	0.104
Pasco	0.044	0.045	0.047	0.048	0.050	0.051
Pinellas	0.406	0.417	0.429	0.441	0.453	0.466
Polk	0.092	0.095	0.098	0.101	0.104	0.108
Sarasota	0.153	0.157	0.161	0.165	0.169	0.174
Tampa Bay	1.284	1.324	1.366	1.406	1.449	1.491

Panel C

Output (% of Total) by Real Estate > SIC 6531

Location	2002	2003	2004	2005	2006	2007
Hernando	0.69%	0.69%	0.69%	0.69%	0.70%	0.70%
Hillsborough	0.78%	0.78%	0.78%	0.78%	0.78%	0.78%
Manatee	0.74%	0.74%	0.74%	0.74%	0.74%	0.74%
Pasco	0.65%	0.65%	0.66%	0.66%	0.66%	0.67%
Pinellas	0.88%	0.88%	0.87%	0.87%	0.87%	0.87%
Polk	0.47%	0.47%	0.47%	0.47%	0.47%	0.47%
Sarasota	1.03%	1.02%	1.02%	1.02%	1.02%	1.02%
Tampa Bay	0.78%	0.78%	0.78%	0.78%	0.78%	0.78%

About 0.8 percent of the Tampa Bay economy is generated by the economic activity of the two aforementioned real estate industries. Among the counties of Tampa Bay, output by the Real Estate Agents and Managers (SIC 6531) industry ranges from approximately \$481 million in Hillsborough County to \$19 million in Hernando County. Slightly over one percent of Sarasota County's economy depends on the activities of by the Real Estate Agents and Managers (SIC 6531) industry. We expect output in the industry to gradually increase from about \$1.3 billion in 2002 to \$1.5 billion in 2007 (in constant 2001 \$s).

Tables A.3 and A.4 show the baseline contributions of the Development Industry cluster, if the Real Estate Agents and Managers industry were included *in toto* as a primary industry of the Development Industry cluster. Employment and output measure baseline contributions.

Table A.3 shows estimates of employment by location (place of work) from 2002 to 2007. 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 primary industries of the Development Industry cluster in each county and Tampa Bay. Panel C gives the percentage of total employment contributed by jobs in the primary industries for each location.

Approximately 8.04 percent of the jobs in Tampa Bay are in the primary industries of the Development Industry cluster. This is less than a one percent (about 15,000 jobs) increase in the employment baseline, when Real Estate Agents and Managers are added as a primary industry of the cluster.

Table A.4 shows estimates of output by location from 2002 to 2007. 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 primary industries of the Development Industry cluster in each county and Tampa Bay. Panel C gives the percentage of total output contributed by the primary industries for each location.

Table A.3

Development Industry Cluster – REMI Baseline

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552),
Nonresidential Building Operators (SIC 6512) and
Real Estate Agents and Managers (SIC 6531)
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	814.52	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

Construction Employment (000s) by Sector > Non-Manufacturing > Construction
Industry Employment (000s) by Sector > Non-Manufacturing > Real Estate > SICs 6552
& 6512 & 6531

Location	2002	2003	2004	2005	2006	2007
Hernando	4.116	4.147	4.173	4.186	4.195	4.209
Hillsborough	58.596	59.254	59.929	60.460	61.077	61.825
Manatee	11.400	11.497	11.603	11.673	11.750	11.844
Pasco	10.725	10.763	10.796	10.797	10.799	10.833
Pinellas	47.078	47.285	47.517	47.661	47.880	48.227
Polk	18.934	19.142	19.318	19.427	19.541	19.694
Sarasota	20.599	20.742	20.857	20.907	20.953	21.050
Tampa Bay	171.447	172.830	174.193	175.110	176.196	177.682

Panel C

Construction Employment (% of Total) by Sector > Non-Manufacturing > Construction
Industry Employment (% of Total) by Sector > Non-Manufacturing > Real Estate > SICs
6552 & 6512 & 6531

Location	2002	2003	2004	2005	2006	2007
Hernando	9.39%	9.30%	9.21%	9.11%	9.02%	8.94%
Hillsborough	7.48%	7.42%	7.36%	7.29%	7.23%	7.18%
Manatee	7.16%	7.09%	7.03%	6.95%	6.88%	6.83%
Pasco	10.14%	10.05%	9.96%	9.85%	9.75%	9.67%
Pinellas	8.12%	8.06%	8.00%	7.93%	7.88%	7.84%
Polk	7.70%	7.66%	7.61%	7.54%	7.49%	7.45%
Sarasota	9.58%	9.51%	9.43%	9.34%	9.25%	9.18%
Tampa Bay	8.04%	7.97%	7.91%	7.83%	7.77%	7.72%

Table A.4

Development Industry Cluster – REMI Baseline

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552),
Nonresidential Building Operators (SIC 6512) and
Real Estate Agents and Managers (SIC 6531)
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

**Output (Bil. 01\$) Construction
Output (Bil. 01\$) BY Real Estate > SICs 6552 & 6512 & 6531**

Location	2002	2003	2004	2005	2006	2007
Hernando	0.397	0.404	0.410	0.414	0.420	0.425
Hillsborough	6.347	6.488	6.612	6.728	6.864	7.009
Manatee	1.199	1.223	1.244	1.262	1.283	1.304
Pasco	1.025	1.040	1.051	1.061	1.072	1.086
Pinellas	5.035	5.112	5.178	5.239	5.315	5.400
Polk	1.923	1.965	1.997	2.025	2.057	2.093
Sarasota	2.162	2.198	2.225	2.249	2.276	2.306
Tampa Bay	18.088	18.430	18.718	18.977	19.288	19.623

Panel C

**Output (% of Total) Construction
Output (% of Total) by Real Estate > SICs 6552 & 6512 & 6531**

Location	2002	2003	2004	2005	2006	2007
Hernando	14.84%	14.60%	14.38%	14.15%	13.98%	13.81%
Hillsborough	10.27%	10.13%	9.99%	9.85%	9.74%	9.64%
Manatee	9.98%	9.84%	9.70%	9.56%	9.45%	9.36%
Pasco	15.13%	14.95%	14.75%	14.55%	14.38%	14.24%
Pinellas	10.93%	10.74%	10.54%	10.36%	10.21%	10.08%
Polk	9.73%	9.64%	9.52%	9.40%	9.30%	9.23%
Sarasota	14.53%	14.34%	14.12%	13.91%	13.72%	13.56%
Tampa Bay	11.03%	10.87%	10.70%	10.54%	10.41%	10.30%

About 11.03 percent of the Tampa Bay economy is generated by the economic activity of the primary industries of the Development Industry cluster. This is less than a one percent

(about \$1.3 billion) increase in the output baseline, when Real Estate Agents and Managers are added as a primary industry of the cluster.

Because only some activities of the Real Estate Agents and Managers (SIC 6531) industry are consistent with a primary industry within the Development Industry cluster, we conclude that the effect of omitting a portion of this industry from the cluster's baseline is small – less than 15,000 jobs and less than \$1.3 billion of output.

We point out that the omission of a portion of the Real Estate Agents and Managers industry from the cluster will have a downward bias, i.e. the results are not exaggerated, on our examination of the Economic Impact of the Development Industry Cluster in Section 5 of this report.

Appendix B

Employment Structure Including Real Estate Agents and Managers

Some activities of the Real Estate Agents and Managers (SIC 6531) industry are consistent with a primary industry within the Development Industry cluster. For instance, commercial real estate transactions and activity associated with the sale of new residential structures are consistent with the primary economic activities of firms in the cluster.

However, data are not available to quantify the applicable proportion of the Real Estate Agents and Managers industry that applies to the cluster. Thus, the information in this appendix depicts the employment structure of the Development Industry cluster, if Real Estate Agents and Managers were included *in toto* as a primary industry of the cluster.

Table B.1 is an extension of Table 4.4. In Table B.1 the Real Estate Agents and Managers industry (SIC 6531) is aggregated with Operators of Nonresidential Buildings (SIC 6512) and Land Subdividers and Developers (SIC 6552).

Table B.1 reveals that the 2,773 Tampa Bay firms in these three real estate industries of interest were employing 13,532 workers during 2nd Quarter 2001. Employers were paying annualized wages of less than \$35,000 to 9,336 workers (69%), annualized wages between \$35,000 and \$60,000 to 3,973 workers (29%), and annualized wages over \$60,000 to 223 workers (2%). All of the 223 employees earning an annualized wage over \$60,000 work for firms based in Sarasota County in the Land Subdividers and Developers industry. All employees in the Real Estate Agents and Managers industry in Tampa Bay were being paid less than \$35,000 in annualized wages – except in Hillsborough County where annualized wages were at the \$35,000 to \$60,000 level.

Table B.1
Development Industry Cluster – ES 202 Employment Data

Primary Industries: Real Estate (SIC 65)
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
6512	Operators of Nonresidential Buildings	11			978			60		
6531	Real Estate Agents & Managers	170				3,243		581		
6552	Land Subdividers & Developers	80				470			111	
Total	Real Estate	261	0	0	978	3,713	0	641	111	0

Number of Firms

SIC	Description	Hernando			Hillsborough			Manatee		
		Firms	Firms	Firms	Firms	Firms	Firms	Firms	Firms	Firms
Total	Real Estate	57			781			169		

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
6512	Operators of Nonresidential Buildings	44			440			45		
6531	Real Estate Agents & Managers	559			3,828			804		
6552	Land Subdividers & Developers		149		278			107		
Total	Real Estate	603	149	0	4,546	0	0	956	0	0

Number of Firms

SIC	Description	Pasco			Pinellas			Polk		
		Firms	Firms	Firms	Firms	Firms	Firms	Firms	Firms	Firms
Total	Real Estate	193			872			246		

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
6512	Operators of Nonresidential Buildings	39			1,617	0	0
6531	Real Estate Agents & Managers	1,312			7,254	3,243	0
6552	Land Subdividers & Developers			223	465	730	223
Total	Real Estate	1,351	0	223	9,336	3,973	223

Number of Firms

SIC	Description	Sarasota			Tampa Bay		
		Firms	Firms	Firms	Firms	Firms	Firms
Total	Real Estate	455			2,773		

Table B.2 shows the employment structure of the Development Industry cluster, if the Real Estate Agents and Managers industry were included *in toto* as a primary industry of the Development Industry cluster.

Table B.2
Development Industry Cluster – ES 202 Employment Data

**Primary Industries: General Building Contractors (SIC 15), Heavy Construction (SIC 16),
Special Trade Contractors (SIC 17), and Real Estate (SIC 65)**
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
15xx	General Building Contractors	319	25		47	5,047		52	716	179
16xx	Heavy Construction	110	213		1,578	2,861		934	268	
17xx	Special Trade Contractors	1,552	109		15,246	4,760		3,268	23	
65xx	Real Estate	261			978	3,713		641	111	
Total		2,242	347	0	17,849	16,381	0	4,895	1,118	179

Number of Firms

	Firms	Firms	Firms
Total	471	3,047	757

Number of Employees by Average Annualized Wage

SIC	Description	Pasco			Pinellas			Polk		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
15xx	General Building Contractors	760	20			4,059		1,308	506	
16xx	Heavy Construction	557			1,661	455		471	2,945	
17xx	Special Trade Contractors	4,875			15,135	157		5,976	192	
65xx	Real Estate	603	149		4,546			956		
Total		6,795	169	0	21,342	4,671	0	8,711	3,643	0

Number of Firms

	Firms	Firms	Firms
Total	1,687	3,079	1,249

Number of Employees by Average Annualized Wage

SIC	Description	Sarasota			Tampa Bay		
		<\$35K	\$35-60K	>\$60K	<\$35K	\$35-60K	>\$60K
15xx	General Building Contractors	23	1,315	523	2,509	11,688	702
16xx	Heavy Construction	1,171			6,482	6,742	0
17xx	Special Trade Contractors	7,496	63		53,548	5,304	0
65xx	Real Estate	1,351		223	9,336	3,973	223
Total		10,041	1,378	746	71,875	27,707	925

Number of Firms

	Firms	Firms
Total	1,928	12,218

Table B.2 is a summation of the number of employees by average annual wages and the number of firms in the primary industries of the Development Industry cluster (including Real Estate Agents and Managers) in Tampa Bay. In 2nd Quarter of 2001, there were 12,218 firms employing 100,507 workers. These employers were paying 72% of the workers annualized wages less than \$35,000, almost 28% of the workers annualized wages between \$35,000 and \$60,000, and under 1% of the workers annualized wages over \$60,000.

Appendix C

Difference in Employment by Occupation

Table C.1 shows the difference in employment by occupation in Tampa Bay after a 20% slowdown in production by the primary industries of the Development Industry cluster. Panel A, Table C.1, lists those occupations that lose more than 1,000 jobs. Not surprisingly, the construction trades suffer the biggest impact with a loss of about 12,640 jobs. Panel B, Table C.1, lists occupations that are expected to lose between 100 and 999 jobs. And, Panel C, Table C.1, lists occupations that are expected to lose less than 100 jobs. Notably, there is no occupation that is expected to gain in jobs as a result of a 20% slowdown in the primary industries of the Development Industry cluster.

Table C.1
Development Industry Cluster – REMI 20% Development Slowdown

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)**
EMPLOYMENT BY OCCUPATION

Tampa Bay

Panel A

Difference in Employment after Slowdown (000s) - More than 1,000 Lost Jobs

Occupation	2002	2003	2004	2005	2006	2007
Construction trades	-12.640	-12.510	-12.320	-12.090	-11.900	-11.760
Managerial & administration	-4.908	-4.791	-4.636	-4.489	-4.374	-4.300
Help, laborers & mat movers hand	-4.878	-4.742	-4.578	-4.414	-4.273	-4.169
Other cleric & admin support workers	-2.808	-2.738	-2.637	-2.546	-2.479	-2.441
Food prep and service	-2.001	-1.859	-1.704	-1.569	-1.467	-1.403
Blue collr wrker supervisors	-1.731	-1.706	-1.670	-1.632	-1.601	-1.581
Management support	-1.633	-1.599	-1.545	-1.494	-1.455	-1.433
Secretar, stenog & typists	-1.577	-1.517	-1.443	-1.373	-1.314	-1.269
Other mech, inst & rep	-1.458	-1.437	-1.407	-1.376	-1.351	-1.336
Motor vehicle operators	-1.391	-1.342	-1.281	-1.222	-1.174	-1.141
Fin records processing	-1.306	-1.249	-1.185	-1.125	-1.074	-1.035
All other sales & rel wrkrs	-1.249	-1.171	-1.083	-1.002	-0.935	-0.887
Mach&rel mech, inst & rep	-1.246	-1.247	-1.237	-1.226	-1.220	-1.220
Gard, nurs, greenhse, lawn serv	-1.130	-1.122	-1.105	-1.087	-1.074	-1.067
Clean & blding serv, ex priv hh	-1.128	-1.075	-1.011	-0.954	-0.910	-0.879
Salespersons, retail	-1.078	-1.009	-0.931	-0.860	-0.805	-0.767
Material rec, sched, disp & distr	-1.002	-0.937	-0.862	-0.794	-0.739	-0.699

Table C.1 (continued)
Development Industry Cluster – REMI 20% Development Slowdown

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)**
EMPLOYMENT BY OCCUPATION

Tampa Bay

Panel B

Difference in Employment after Slowdown (000s) - 100 to 999 Lost Jobs

Occupation	2002	2003	2004	2005	2006	2007
Cashiers	-0.855	-0.800	-0.738	-0.683	-0.640	-0.612
Protective service	-0.653	-0.748	-0.804	-0.852	-0.895	-0.937
Information clerks	-0.621	-0.599	-0.572	-0.551	-0.536	-0.530
Hand wrkrs, incl assem&fabricat	-0.606	-0.553	-0.496	-0.445	-0.403	-0.372
Material moving equip oper	-0.589	-0.577	-0.562	-0.547	-0.534	-0.526
Comput, math & oper res	-0.571	-0.554	-0.525	-0.496	-0.472	-0.458
Mktng & sales worker suprvisrs	-0.548	-0.517	-0.482	-0.451	-0.426	-0.410
Engin & scienc tech & technol	-0.516	-0.494	-0.467	-0.441	-0.420	-0.405
Vehicle&mobile equip mech & rep	-0.469	-0.448	-0.424	-0.403	-0.386	-0.375
Engineers	-0.462	-0.442	-0.418	-0.394	-0.375	-0.362
Personal service	-0.441	-0.401	-0.361	-0.329	-0.308	-0.296
Teachers, librarians, couns	-0.428	-0.483	-0.514	-0.542	-0.569	-0.598
Tech, xcpt hlth, engin & scienc	-0.383	-0.366	-0.344	-0.324	-0.308	-0.297
Oth mach setters&oper&nders	-0.367	-0.331	-0.292	-0.258	-0.230	-0.209
All other service wrkrs	-0.343	-0.332	-0.317	-0.304	-0.294	-0.288
Real est agents, brokers & apprais	-0.325	-0.329	-0.329	-0.329	-0.330	-0.331
Writers, artists & entertainers	-0.308	-0.283	-0.256	-0.232	-0.213	-0.200
Adjstrs, investiga & collectors	-0.302	-0.283	-0.262	-0.244	-0.230	-0.221
Private household wrkrs	-0.253	-0.214	-0.177	-0.147	-0.125	-0.109
Recrd processing, xcpt fin	-0.249	-0.235	-0.219	-0.204	-0.192	-0.185
Farm wrkrs	-0.235	-0.227	-0.216	-0.206	-0.199	-0.195
Lawyers	-0.214	-0.208	-0.199	-0.191	-0.184	-0.180
Social, rec & relig wrkrs	-0.199	-0.215	-0.225	-0.235	-0.247	-0.261
Hlth technic & technologists	-0.174	-0.177	-0.180	-0.186	-0.196	-0.211
Counter and rental clerks	-0.171	-0.159	-0.146	-0.136	-0.128	-0.122
All other profes wrkrs	-0.165	-0.163	-0.158	-0.152	-0.148	-0.146
Inspect, tsters & graders precis	-0.118	-0.106	-0.093	-0.082	-0.073	-0.066
All other extraction & rel wrkrs	-0.116	-0.114	-0.111	-0.108	-0.105	-0.103
Secur & finan serv sales wrkrs	-0.116	-0.105	-0.094	-0.085	-0.078	-0.073
Veter asst, all other rel wrkrs	-0.115	-0.112	-0.107	-0.103	-0.100	-0.098
Woodwrkrs, precision	-0.106	-0.102	-0.097	-0.093	-0.089	-0.087

Table C.1 (continued)
Development Industry Cluster – REMI 20% Development Slowdown

**Primary Industries: Construction Major Industry Groups plus
Subdividers and Developers (SIC 6552) and
Nonresidential Building Operators (SIC 6512)**
EMPLOYMENT BY OCCUPATION

Tampa Bay

Panel C

Difference in Employment after Slowdown (000s) – Less than 100 Lost Jobs

Occupation	2002	2003	2004	2005	2006	2007
Hlth assessmnt & treating	-0.094	-0.099	-0.106	-0.117	-0.133	-0.153
Insurance sales wrkrs	-0.087	-0.082	-0.076	-0.071	-0.068	-0.066
Metal wrkrs, precision	-0.085	-0.073	-0.061	-0.050	-0.041	-0.035
Architects & surveyors	-0.083	-0.079	-0.075	-0.071	-0.067	-0.065
Electr equip mech, inst & rep	-0.082	-0.075	-0.068	-0.062	-0.057	-0.053
Mach tool cut&form oper, met&plast	-0.073	-0.062	-0.050	-0.040	-0.032	-0.026
Mail clerks & messengers	-0.073	-0.068	-0.062	-0.058	-0.054	-0.051
Health service	-0.072	-0.078	-0.085	-0.095	-0.110	-0.128
All other transp&mat mov equip oper	-0.070	-0.069	-0.068	-0.066	-0.065	-0.064
Communic equip operators	-0.067	-0.060	-0.052	-0.046	-0.040	-0.036
Other precision wrkrs	-0.065	-0.061	-0.057	-0.053	-0.050	-0.047
Metal fabricat mach oper	-0.064	-0.061	-0.058	-0.055	-0.053	-0.051
Textile and related oper	-0.063	-0.055	-0.046	-0.039	-0.034	-0.030
Print, binding & rel wrkrs	-0.058	-0.052	-0.046	-0.040	-0.036	-0.032
Comput oper & periph equip oper	-0.056	-0.050	-0.044	-0.038	-0.034	-0.030
Physical scientists	-0.049	-0.048	-0.045	-0.043	-0.042	-0.041
Farm oper & managers	-0.048	-0.046	-0.044	-0.043	-0.041	-0.041
All other plant & syst oper	-0.045	-0.044	-0.042	-0.040	-0.038	-0.037
Food wrkrs, precision	-0.042	-0.037	-0.033	-0.029	-0.026	-0.023
Woodworking mach oper	-0.041	-0.039	-0.036	-0.034	-0.032	-0.030
Supervisors, farm&for&agri rel	-0.041	-0.041	-0.040	-0.039	-0.039	-0.039
Text, appar & furn wrkrs, precis	-0.038	-0.034	-0.029	-0.026	-0.023	-0.021
Social scientists	-0.037	-0.040	-0.041	-0.041	-0.042	-0.043
Assemblers, precision	-0.036	-0.028	-0.020	-0.013	-0.008	-0.003
Life scientists	-0.035	-0.037	-0.037	-0.038	-0.039	-0.039
Commun equip mech, inst & rep	-0.033	-0.030	-0.027	-0.024	-0.022	-0.020
Anim brdrs&trnrs; caretak, ex farm	-0.029	-0.029	-0.027	-0.026	-0.026	-0.026
Forestry & logging	-0.026	-0.026	-0.026	-0.025	-0.024	-0.024
Met&plast process mach oper	-0.025	-0.020	-0.014	-0.008	-0.004	-0.001
Printing wrkrs, precision	-0.020	-0.019	-0.017	-0.015	-0.013	-0.012
Stationary engineers	-0.014	-0.015	-0.015	-0.015	-0.015	-0.016
Health diagnosing	-0.014	-0.015	-0.017	-0.020	-0.024	-0.030
Travel agents	-0.010	-0.008	-0.006	-0.005	-0.004	-0.003
Water&liqu wste trtmnt plant&syst oper	-0.008	-0.014	-0.019	-0.022	-0.025	-0.027
Comb mach tool setters&oper&tnders	-0.007	-0.006	-0.004	-0.003	-0.002	-0.001
Oil and gas extraction	-0.007	-0.006	-0.005	-0.005	-0.004	-0.004
Rail transportation wrkrs	-0.006	-0.006	-0.005	-0.005	-0.004	-0.004
Fish, hunters & trappers	-0.006	-0.005	-0.005	-0.005	-0.004	-0.004
Water transp & rel wrkrs	-0.005	-0.004	-0.003	-0.003	-0.002	-0.002
Num ctrl mach tool oper, met&plast	-0.005	-0.003	-0.002	-0.001	0.000	0.001
Elec pwr gen plant oper&distr&disp	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
Judges, magis & oth judic wrkrs	-0.002	-0.005	-0.008	-0.009	-0.011	-0.012
Chemic plant & syst oper	-0.002	-0.002	-0.001	-0.001	0.000	0.000
Gas & petro plant & syst	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001
Mining, quarry & tunneling	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001
Post clerks & mail carriers	0.000	0.000	0.000	0.000	0.000	0.000